Loop-IP6700
TDMoEthernet
User's Manual

LOOP TELECOMMUNICATION INTERNATIONAL, INC.
8F, NO. 8, HSIN ANN RD.
SCIENCE-BASED INDUSTRIAL PARK
HSINCHU, TAIWAN
Tel: +886-3-578-7696
Fax: +886-3-578-7695

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

D Bitte führen Sie das Gerät am Ende seinerLewbensdauer den zue Verfügung stehended Rückgabeund Sammelsystemen zu.

GB At the end of the product's useful life, please dispose of it at appropriate collection points provided in your country

F Une fois le produit en fin devie, veuillez le déposer dans un point de recyclage approprié.

ES Para preservar el medio ambiente, al final dela vida útil de su producto, depositelo en los laguares destinado aello de acuerdo con la legislación vigente.

P No final de vida útil do producto, por favor coloque no ponto de recolha apropriado.

I Onde tutelare l'ambiente, non buttate l'apparecchio trai i normali rifiuti al termine della sua vita utile, ma portatelo presso i punti do taccolta specifici per questi rifiuti previsti dalla normativa vigente.

NL Wij raden u aan het apparant aan het einde van zijn nuttige levensduur, niet bij hey gewone huisafval te deponeren, maar op de dearvoor bestemde adressen.

DK Når produktet er udtjent, bor det børtskaffes via de sæ rlige indsamlingssteder i landet.

N Ved slutten av produktets levetid bør det avhendes på en kommunal miljøstasjon eller leveres til en elektroforhandler.

S Lämna vänligen in produkten på lämplig återvinningsstation när den är förbrukad.

FIN Hävitä tuote käytöiän päättyessä viemällä se asianmukaiseen keräyspisteeseen.

PL Gdy produkt nie nadaje sie juz do dalszego uzytku, nalezy zostawic go w jednym ze specjalnych punktów zajmujacych sie zbiórka zuzytych producktów w wybranych miejscach na terenie kraju.

CZ Po skončení jeho životnosti odložte prosím výrobek na přislušném sběrném místé zřízeném dle předpisů ve vaší zemi.

SK Po skončení jeho životnosti odovzdajte prosím zariadenie na príslušnom zbernom mieste podía platných miestnych predpisov a noriem.

SLO Ko se izdelku izteče življenska doba, ga odnesite na ustrezno zbirno mesto oziroma ga odvrzite v skladu z veljavnimi predpisi.

GR Στο Τέλος της λειτουργικής Ζωής του προϊόντος παρακαλώ
Πετξτε το στα ειδικά σημεία που Παρέχονται οτη χωρα σας.

PRC 當產品使用壽命結束,請在你的國家所提供的適當地點做好回收處理

1 PRODUCT DESCRIPTION

1.1 Description

Loop-IP6700 TDMoEthernet is designed to transport E1/T1/DTE/E3/DS3 signal with timing plus Ethernet traffic over IP network, electrical or optical. This is a cost effective way of migrating to IP network from existing voice and data network using existing TDM based equipment.

TDMoEthernet is a system that could be used to transport multiple E1, T1, DTE, E3, DS3, and 10/100BT Ethernet traffic through 10/100BT Ethernet. The number of E1/T1/DTE/DS3 interfaces can be factory optioned from 1 to 4 (4 T1/ 4 E1/ 2 DTEs / 1 E3 / 1 DS3 Max.). TDMoEthernet has built-in AC or DC power, console port, Ethernet port, and SNMP port with inband management for remote.

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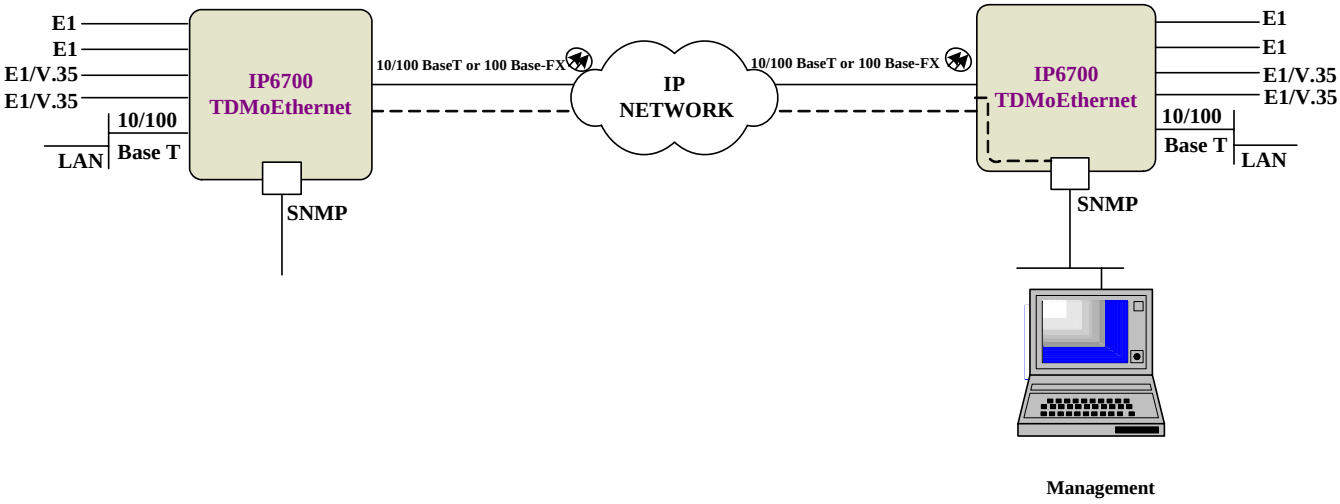
1.2 Features

The features for Loop-IP6700:

- Support- E1 / T1 on the main board
  - E1 / T1 / V.35 / E3 / DS3 on the daughter board
- E1/T1 interfaces: 1 to 4 framed or unframed with BNC/RJ connectors
- LAN interface: one 10/100 BT Ethernet
- WAN interface: 10/100 Base-Tx UTP or standard open Fiber slot for SFP Transceiver
- Each port timing source can be chosen from:
  (a) Internal
  (b) External (for low speed card only)
  (c) from its own or other's line/ WAN
- Alarm relay
- Console port, Ethernet, SNMP
- Inband management: through any time slot of the transported E1
- Support VLAN packet transparency i.e. up to Max 1536 bytes
- Multi-color LED indicators
- LCD/Keypad

1.3 Applications

For Low Speed



For High Speed

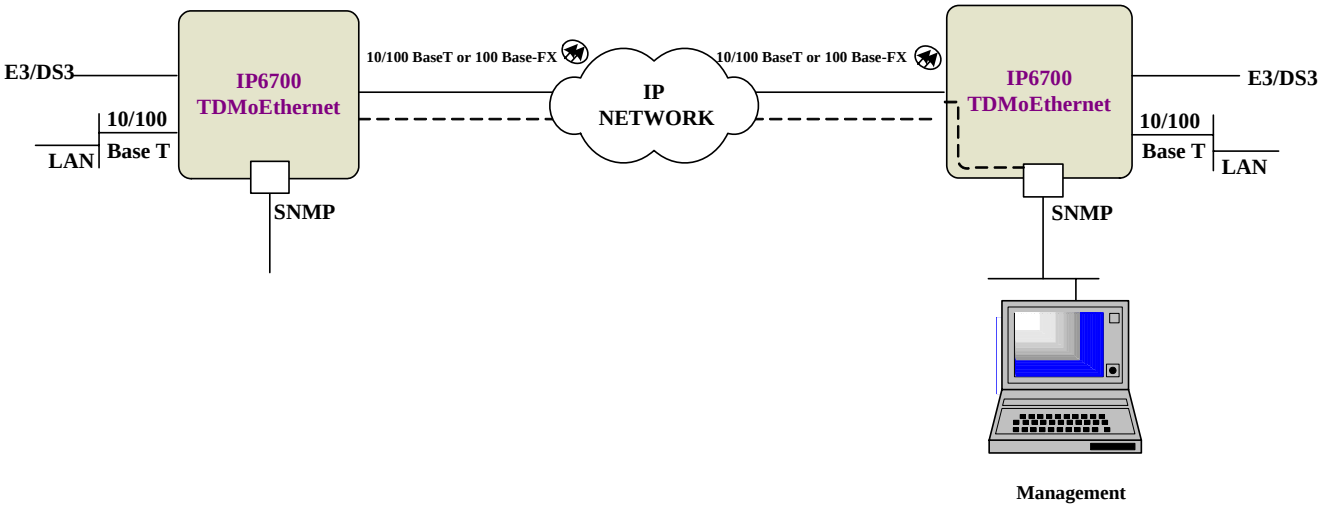


Figure 1- 1 Application Diagram

1.4 Specification

Network Interface (E1):

Line rate	2.048 Mbps ± 50ppm	Input signal	ITU G.703
Framing	ITU G.704	Output signal	ITU G.703
Line code	AMI/HDB3	Jitter	ITU G.823
Connector	BNC and RJ48C	Electrical	75 ohm coax/120 ohm twisted pair

Network Line Interface (T1):

Line rate	1.544 Mbps ± 32 ppm	Input signal	DS-1 from 0 dB to -26 dB w/ALBO
Framing	D4/ ESF/ ESF&T1.403/ NONE (Clear Channel)	Output signal	DSX-1, DS-1
		Surge Protection	FCC Part 68 Sub-Part D
Line code	AMI / B8ZS	Pulse Template	Per AT&T TR 62411
Connector	RJ48C		

NOTE:

Large configurable jitter buffers, on a per bundle basis, that compensate for the delay variation introduced by the IP/MPLS network, with the following maximal depths:

For E1:	up to 256 ms	For framed T1:	up to 256 ms
For unframed T1:	up to 340 ms	For framed T1 with CAS:	up to 192 ms

Ethernet (WAN)

Connector	RJ45
Speed	10/100 Base T

Ethernet (LAN)

Connector	RJ45
Speed	10/100 Base T

Optical (WAN)

Connector	SFP 3.3V
Speed	10/100 Base-FX

DTE Interface (V.35)

Data Rate	n x 56 (n= 1 to 31)
Data Rate	n x 64 Kbps (n= 1 to 32)
Connector	DB25S for V.35
Standard	

Alarm Relay

Alarm Relay	Fuse alarm, performance alarm
Connector	3 pin terminal block

External Clock

Input signal	ITU G.703
Connector	BNC
Input signal	

Network Management

Console Port

Connector	DB9 at Front Panel
Electrical	RS232 interface
Protocol	Menu driven VT-100 terminal

SNMP Port

Connector	RJ45 at front panel
Protocol	Telnet (VT100) and Embedded SNMP

Inband Management

Any 64 Kbps DS0 can be assigned for management
HDLC Management Protocol

Performance monitor(T1,E1)

Performance store	The last 24 hours performance in 15-minute intervals
Monitor registers	Line, user and remote site
Performance reports	Date &Time, Error second, Degraded minutes, Unavailable second, Bursty error second, severe error second, controlled slip second, and loss of frame count
Alarm history	Date & time, alarm type(i.e. master clock loss, RAI, AIS, LOS, BPV, ES, CSS)
Threshold	Second, degrade minutes

Diagnostics test(T1, E1)

Loopback	Line loopback, payload loopback and local loopback
Remote loopback	Line loopback and payload loopback

Front Panel

Keypad / LCD (future option)
LED

Physical

Dimensions	**212.6 x 43.7 x 197 mm. (WxHxD)**	Power	Single AC power or DC power.
Temperature	0 -50°C		DC: 20 to 72 Vdc
Humidity	0-95% RH (NON-CONDENSING)		AC: 100 to 240 Vac, 50/60Hz
Mounting	Desk-top stackable, wall mount		Power Consumption: 10W Max

Compliance Standard:

G.823/G.824, G.826, TDMoEthernet for structured traffic, SATOP for unstructured traffic

2 INSTALLATION

2.1 Site Selection

The following list indicates a site selection guideline. Users need to follow this guideline to select a proper installation site.

Location of the Loop-IP6700 unit should be part of the central office equipment layout design. Considerations should be given to entrance cable routing.

The installation site should provide proper room for adequate ventilation and cable routing. Reserve at least 0.5 m at the rear of the unit for human access, cables, and air flow.

The site should provide a stable environment. The operating area should be clean and free from extremes of temperature, humidity, shock, and vibration.

Relative humidity should stay between 0 and 95%.

2.2 Mechanical Installation

Loop-IP6700 is a desk top unit, which offers installation for power supply: on board fixed. The front panel is shown in Figure 2-1, and the rear panel is shown in Figure 2-2.

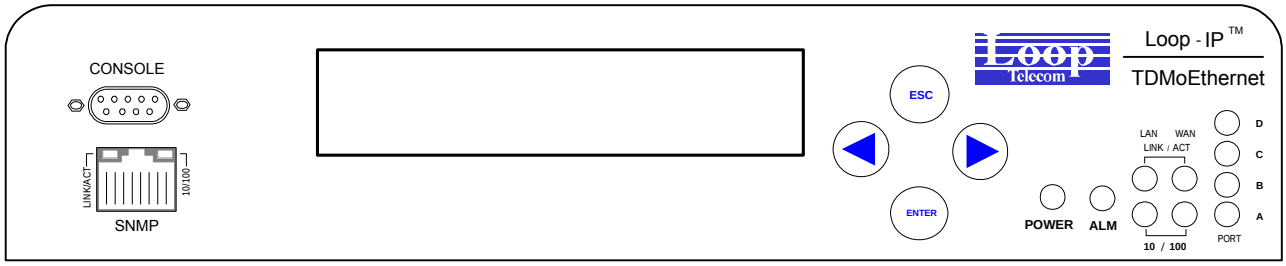


Figure 2- 1 Front Panel View (with LCD)

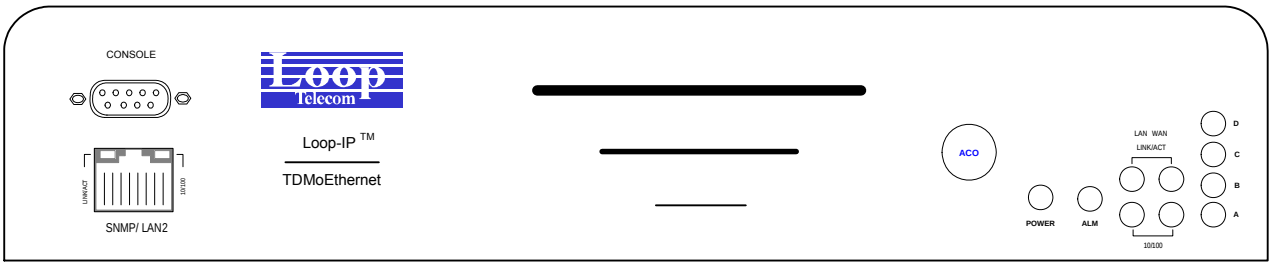


Figure 2- 2 Front Panel View (without LCD)

There are 4 models of Loop IP6700 available. The models are shown in the following figures.

Rear Panel

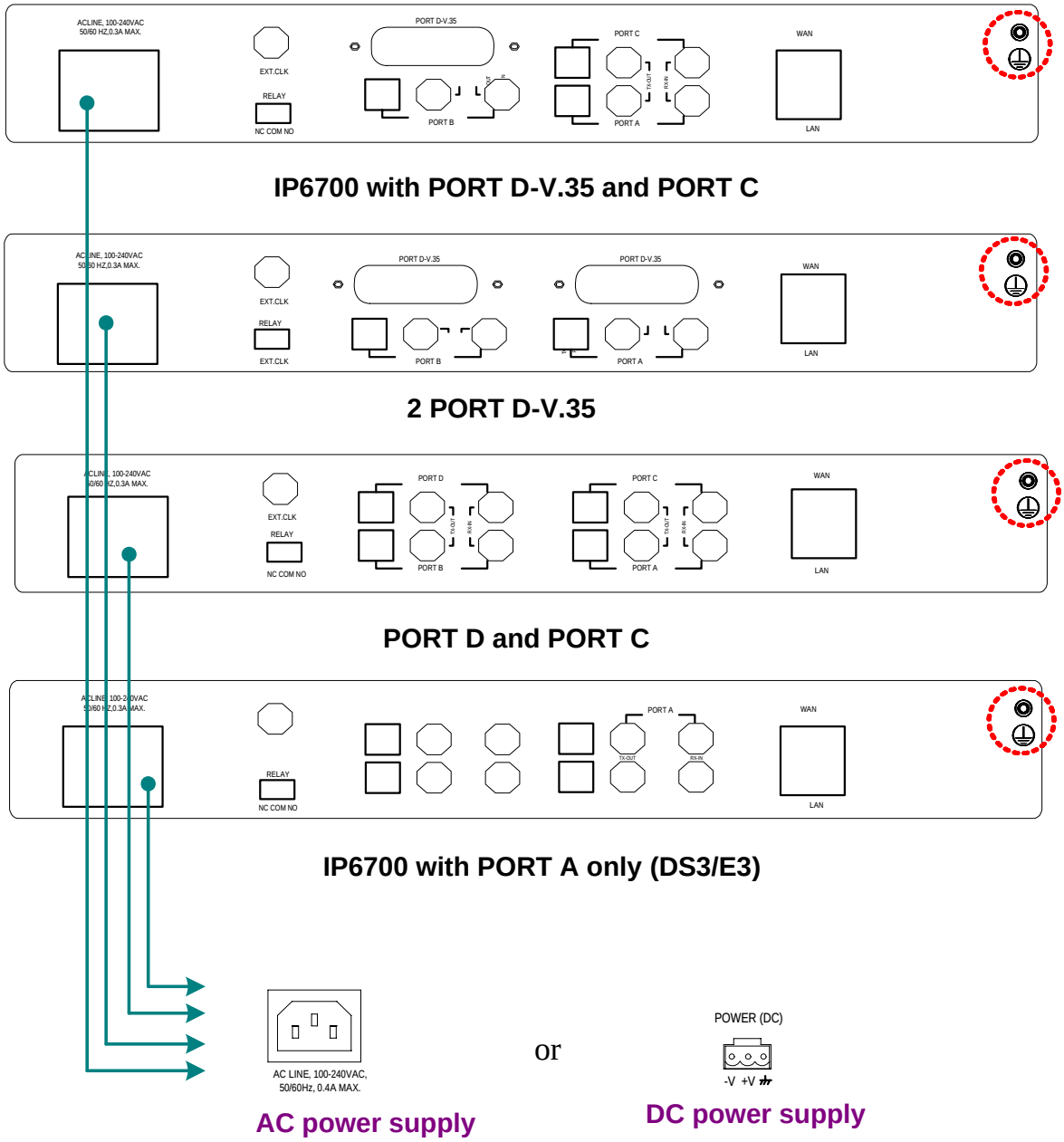


Figure 2- 3 Rear Panel Views

Table 2- 1 Jumper Setting for Main Board

PORT	**A**			**B**		
PART	JP6, JP8, JP10, JP11	JP5	JP22	JP14, JP16, JP18, JP19	JP13	JP22
E1 120	PIN (2,3) ON	OFF	PIN (1,2) OFF PIN (3,4) OFF	PIN (2,3) ON	OFF	PIN (5,6) OFF PIN (7,8) OFF
E1 75	PIN (1,2) ON	PIN (2,3) ON	PIN (1,2) OFF PIN(3,4) ON	PIN (1,2) ON	PIN (2,3) ON	PIN (5,6) OFF PIN (7,8) ON
T1 100	PIN (2,3) ON	PIN (1,2) ON	PIN (1,2) ON PIN (3,4) OFF	PIN (2,3) ON	PIN (1,2) ON	PIN (5,6) ON PIN (7,8) OFF
No card			PIN (1,2) ON PIN (3,4) ON			PIN (1,2) ON PIN (3,4) ON

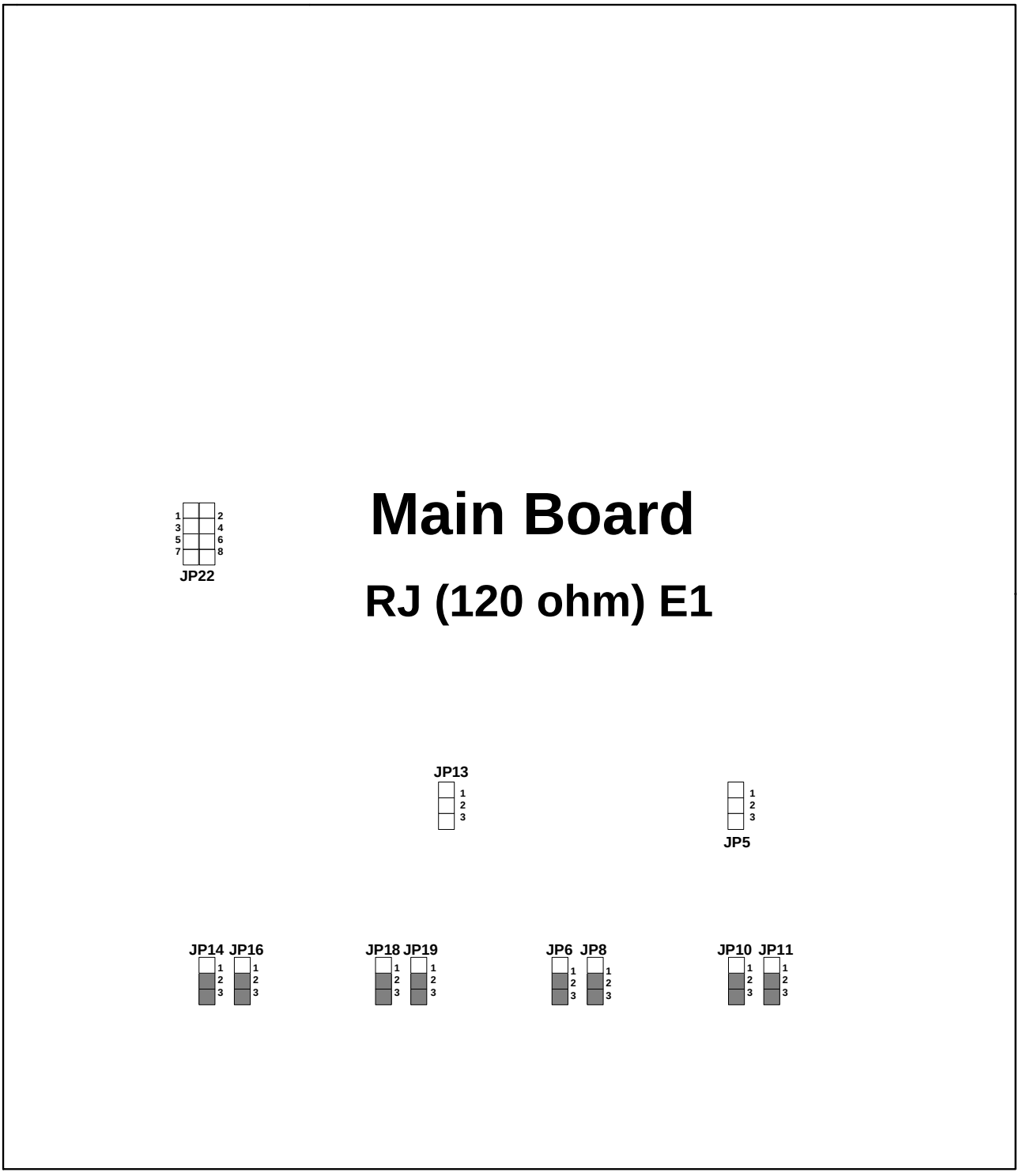


Figure 2- 4 Main Board Jumpers Setting-E1, RJ (120 ohm)

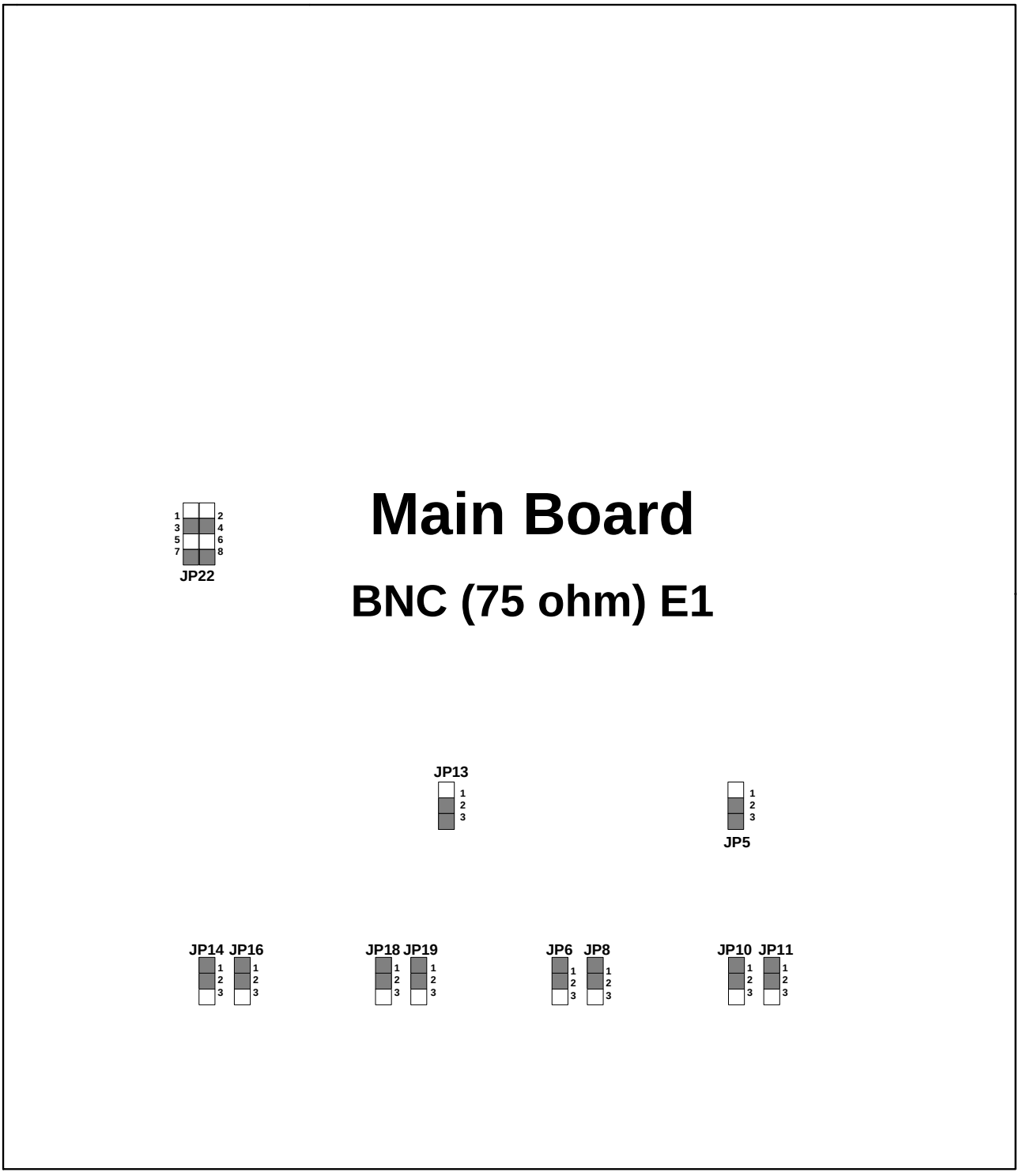


Figure 2- 5 Main Board Jumpers Setting-E1, BNC (75 ohm)

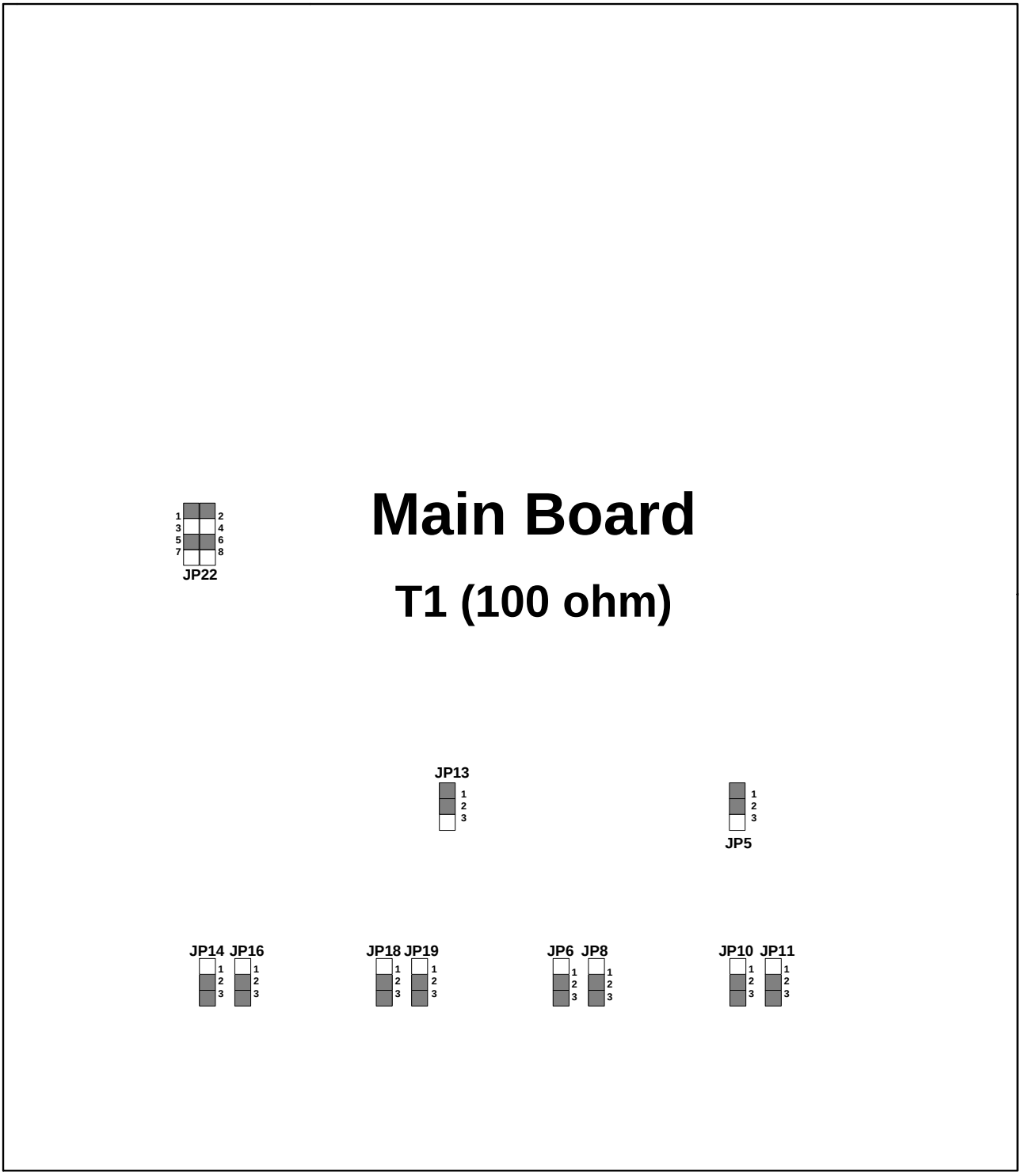


Figure 2- 6 Main Board Jumpers Setting - T1

Table 2- 2 Jumper Setting for Daughter Board

PORT C OR D	T1/E1 Daughter Card				
PART	JP5, JP7, JP9, JP10	JP1	JP2	JP12	JP4
E1 120	PIN (2,3) ON	OFF	OFF	ON	OFF
E1 75	PIN (1,2) ON	OFF	ON	ON	PIN (2,3) ON
T1 100	PIN (2,3) ON	ON	OFF	ON	PIN (1,2) ON

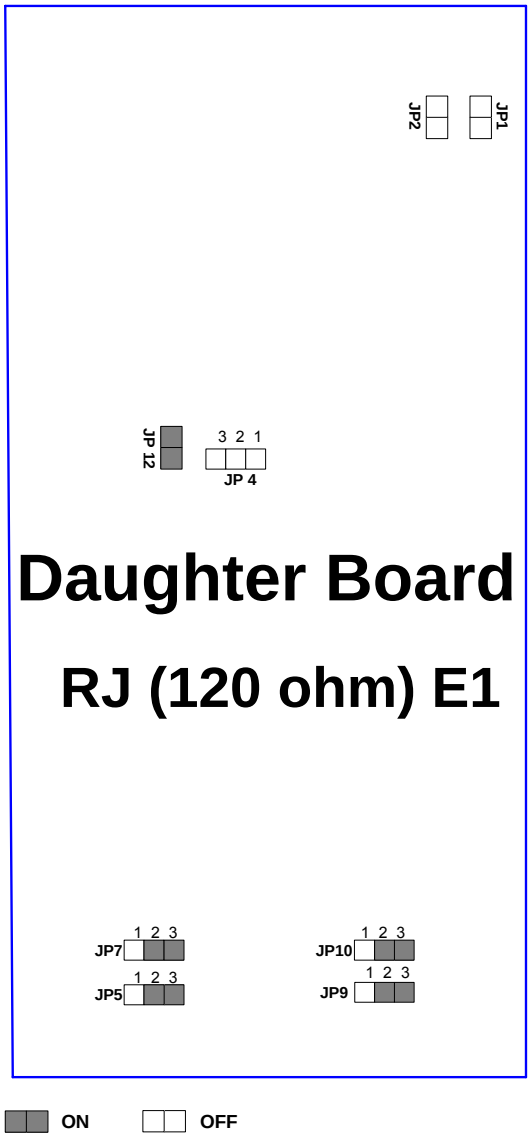


Figure 2- 7 Daughter Board Jumpers Setting - E1, RJ (120 ohm)

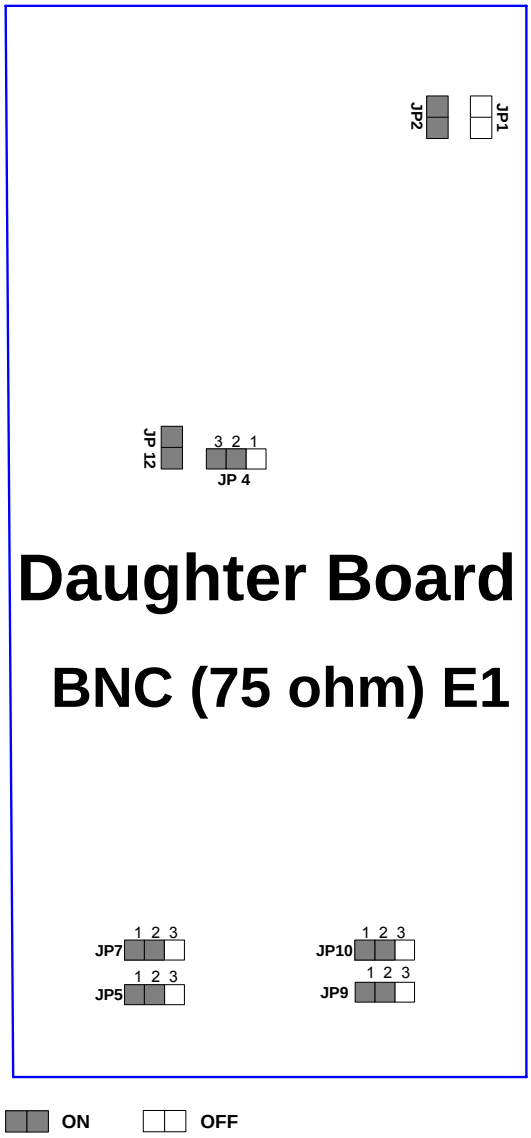


Figure 2- 8 Daughter Board Jumpers Setting - E1, BNC (75 ohm)

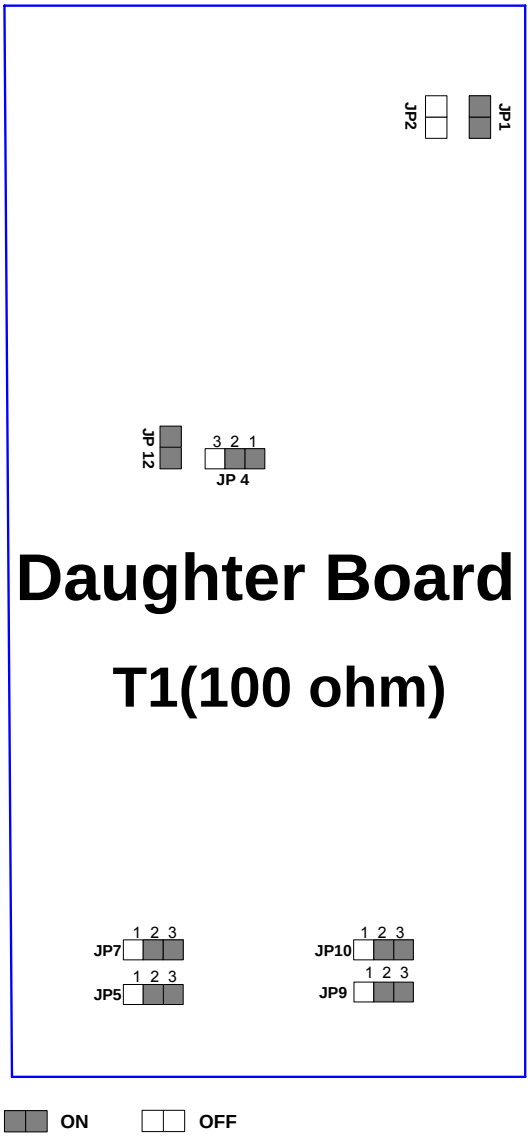


Figure 2- 9 Daughter Board Jumpers Setting – T1

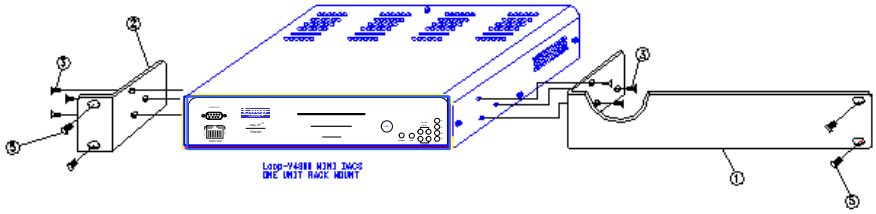


Figure 2- 10 Installation Diagram (Single)

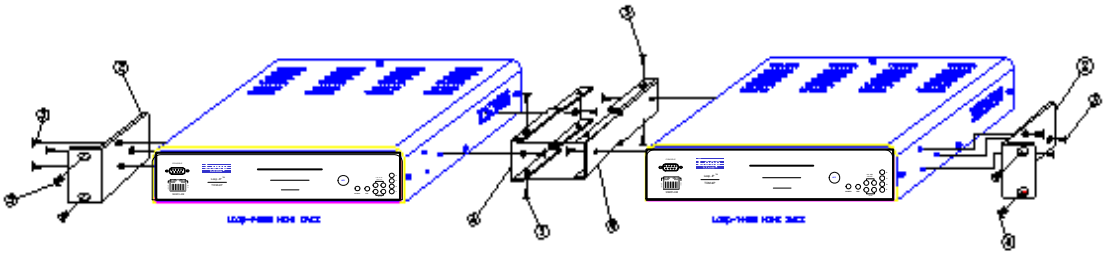


Figure 2- 11 Installation Diagram (Double)

Chassis Grounding
The chassis is grounded when rack mounted. However, for stand alone units or extra grounding protection for rack mounted units, a dedicated chassis ground screw and lock washer is provided. The chassis ground screw is located on the right side of rear panel.

When attaching a ground wire to the chassis ground screw, please follow these instructions:
- Use copper grounding conductors of 18 AWG
- Conductors should not be of dissimilar metals.
- The bare conductors should be coated with anti-oxidant before crimp connections are made.
- Unplated connection surfaces, connectors, braided strap and bus bars must be bought to a bright finish and coated with anti-oxidant before connections are made.
- Listed connectors and fastening hardware must be used.

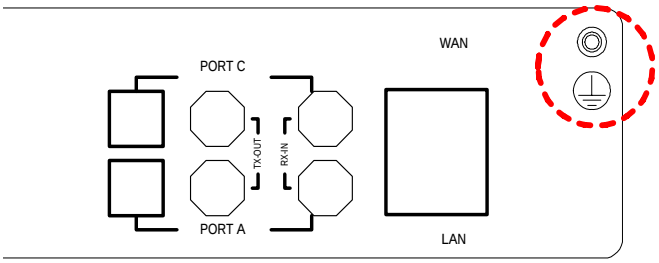


Figure 2- 12 Chassis Grounding

Console port can be connected via RS232 interface to a configuration device a VT100 terminal or equivalent. Pin definition and pin connection of the console port are listed in the following table.

Table 2- 3 DB9S Console Port Pin Assignment

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

Table 2- 4 SNMP Port

Pin Number	Signal	Description
1	TPTX+	TP Driver Output
2	TPTX-	
3	TPRX+	TP Receive Input
6	TPRX-	
7	Chassis GND	
8	Chassis GND	

Table 2- 5 Alarm Relay Connector

Pin Number	Signal	Description
1	NC	Normal Close
2	COM	Common
3	NO	Normal Open

Table 2- 6 Power Connector

Pin Number	Signal	Description
1	-V	-DC 48 Volts
2	+V	+DC Return
3	⏚	Chassis Ground

Table 2- 7 T1/ E1/ RJ48C Line Connector

Pin Number	Signal	Signal Direction
1	Receive Ring	Input to IP6700
2	Receive Tip	Input to IP6700
4	Transmit Ring	Output from IP6700
5	Transmit Tip	Output from IP6700
7	Unassignment	
8	Unassignment	

Table 2- 8 RJ-45 for Ethernet Port

Pin Number	Signal	Signal Direction
1	Transmit Data +	Output from IP6700
2	Transmit Data -	Output from IP6700
3	Receive Data +	Input to IP6700
4	No Connection	
5	No Connection	
6	Receive Data -	Input to IP6700
7	No Connection	
8	No Connection	

The DTE port is configured as a DCE device. There are 5 different DTE boards: V.35/DB25, EIA530/DB25, X.21/DB15, RS449/DB37 and RS422. Pin definitions are defined in Table 2-9 to 2-13.

Table 2- 9 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	Local Loopback	DTE
19	Unassigned	
20	Data Terminal Ready	DTE
21	Remote Loopback	DTE
22	Unassigned	
23	Unassigned	
24	External Clock	DTE
25	Test Mode	DCE

Table 2- 10 EIA530/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	Data Carrier Detect Return	DCE
11	External Clock Return	DTE
12	Transmit Clock Return	DCE
13	Clear To Send Return	DCE
14	Transmit Data Return	DTE
15	Transmit Clock	DCE
16	Receive Data Return	DCE
17	Receive Clock	DCE
18	Local Loopback	DTE
19	Request To Send Return	DTE
20	Data Terminal Ready	DTE
21	Remote Loopback	DTE
22	Data Set Ready Return	DCE
23	Data Terminal Ready Return	DTE
24	External Clock	DTE
25	Test Mode	DCE

Table 2- 11 X.21/DB15 DTE Port Pin Definition

Pin Number	Signal	Source
1	Cable Shield	
2	Transmit Data	DTE
3	Control	DTE
4	Receive Data	DCE
5	Indication	DCE
6	Signal Timing	DCE
7	External Clock	DTE
8	Signal Ground	
9	Transmit Data Return	DTE
10	Control Return	DTE
11	Receive Data Return	DCE
12	Indication Return	DCE
13	Signal Timing Return	DCE
14	External Clock Return	DTE
15	Unassigned	

Table 2- 12 RS449/DB37 DTE Port Pin Definition

Pin Number	Signal	Source
1	Cable Shield	
2	Unassigned	
3	Unassigned	
4	Transmit Data	DTE
5	Transmit Clock	DCE
6	Receive Data	DCE
7	Request To Send	DTE
8	Receive Clock	DCE
9	Clear To Send	DCE
10	Local Loopback	DTE
11	Data Set Ready	DCE
12	Data Terminal Ready	DTE
13	Data Carrier Detect	DCE
14	Remote Loopback	DTE
15	Unassigned	
16	Unassigned	
17	External Clock	DTE
18	Test Mode	DCE
19	Signal Ground	
20	Unassigned	
21	Unassigned	
22	Transmit Data Return	DTE
23	Transmit Clock Return	DCE
24	Receive Data Return	DCE
25	Request To Send Return	DTE
26	Receive Clock Return	DCE
27	Clear To Send Return	DCE
28	Unassigned	
29	Data Set Ready Return	DCE
30	Data Terminal Ready Return	DTE
31	Data Carrier Detect Return	DCE
32	Unassigned	
33	Unassigned	
34	Unassigned	
35	External Clock Return	DTE
36	Unassigned	
37	Unassigned	

Table 2- 13 RS422 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	Data Carrier Detect Return	DCE
11	External Clock Return	DTE
12	Transmit Clock Return	DCE
13	Clear To Send Return	DCE
14	Transmit Data Return	DTE
15	Transmit Clock	DCE
16	Receive Data Return	DCE
17	Receive Clock	DCE
18	Unassigned	
19	Request To Send Return	DTE
20	Data Terminal Ready	DTE
21	Unassigned	
22	Data Set Ready Return	DCE
23	Data Terminal Ready Return	DTE
24	External Clock	DTE
25	Unassigned	

Table 2- 14 Default Software Configuration

Configuration		Option	Default
E1 Line	Frame	ON:OFF	OFF
	Code	HDB3, AMI	HDB3
	CRC	ON, OFF	ON
	RAI	ON:OFF	ON
	FDL	OFF, FDL, HDLC	OFF
	IDLE	0-ff	D5
	S-Bit	Sa4, Sa5….Sa8, Sa4+5	Sa4
	CAS	ON:OFF	OFF
	I/ F	RJ, BNC	BNC
Clock	Master Clock	Line, Internal, External, Bundle 0	Internal
	2nd Clock	Line, Internal, External, Bundle 0	Internal
	Current Clock	Master, 2nd, Internal	Internal
	Clock_Recover_Mode	MANUAL, AUTO	AUTO
Console port	Baud rate	2400, 4800, 9600, 19200, 38400	9600
	Data length	8-bits, 7-bits	8-bits
	Stop bits	1-bit, 2-bits	1-bit
	Parity	NONE, EVEN, ODD	NONE
Ethernet port			
Speed/Duplex	SNMP	AUTO, FULL_100M, HALF_100M, FULL_10M, HALF_10M	AUTO
	WAN	AUTO, FULL_100M, HALF_100M, FULL_10M, HALF_10M	AUTO
	LAN	AUTO, FULL_100M, HALF_100M, FULL_10M, HALF_10M	AUTO
Network management	IP address		0.0.0.0
	Subnet mask		0.0.0.0
	Gateway IP		0.0.0.0
SNMP	Trap IP		0.0.0.0
	Community Name		Public
	Device name	IP6700	IP6700

Note:

1.Frame

For the E1 line interface, the frame format is ITU G.704. Either 2-frame, or 16-frame structure can be selected. E1 supports clear channel mode, called E1 FRAME OFF mode, which can map to E1 same mode.

2.Code

For the E1 line interface, either AMI (Alternate Mark Inverting) or HDB3 (high density bipolar of length 3) line code format can be chosen, be sure this setting matches that of the network.

3. CRC

For the E1 line interface, the frame format is ITU G.704. Either 2-frame, or 16-frame structure can be selected. Only the 16-frame provides CRC (Cycle Redundancy Check).

For two frame mode, set CRC to OFF. For multiframe mode, set CRC to ON.

E1 can be used in two frames or multiframe mode. If CRC is OFF, 2 frame format results. If CRC is ON, 16 frame format results. For E1, the cyclic redundancy check function can be turned ON or OFF. Unlike bipolar violation, which can monitor only one span, CRC allows error monitoring through multiple spans of DS0 lines. For E1, if CAS is ON, a 16-frame structure is used, which is independent of the 16-frame structure for CRC. A proprietary facility data link is implemented in both modes to facilitate remote system control and performance and statistics monitoring.

4. RAI

Remote Alarm Indication, transmits a return signal back out to indicate loss of signal and loss of frame sync at the receiving side if the port. This action can be turned ON or OFF.

5. AIS

AIS, alarm indication signal, notify the far end that a loopback and diagnostic test are in progression. Thus customer signals are blocked. The AIS can be sent two ways. In the framed mode, all time slots will have all ones sent but the framing pattern will be preserved. In the unframed mode, all ones are sent for all time slots.

6. CAS

CAS (Channel-Associated Signaling) is a method for sending signaling information where time slot 16 of the E1 format is shared for each of 30 other time slots within the same E1. Off designation is for CAS disabled. For E1, when disabled, the 256N multiframe is used when time slot 16 is available to the user. The maximum number of time slots available for payload is 31. ON designation is for CAS enabled. When enabled, the 256S multiframe is used when time slot 16 is reserved for the transmission for end-to-end signaling using CAS. The maximum number of time slots available for payload is then 30.

7.CGA

Carrier Group Alarm, CGA, is necessary for proper operation of the switched network in the face of possible faults of the transport system. In the “normal” option, when a carrier facility fails, the switching system must be notified so that it should cease to use that facility until repair is made. In the “transparent” option, the signaling bits are left alone in fault conditions.

8.OOS

Out Of Service Signaling, for normal CGA option, when failure of the facility occurs, if there are calls in progress, the billing system should be notified to stop charging the customer at the time of facility failure.

9.FDL

FDL for E1 is used to achieve remote system Loopback.

10.IDLE

Any DS0 time slot, which is not assigned is an idle time slot. An idle code is transmitted on idle DS0 time slots. The idle time slot may be programmed to any bit pattern from 0x00 to 0Xff.

11.INTF

E1 interface only display 120 Ohm twisted pair / 75 Ohm BNC.

3 OPERATION

This chapter describes the Loop-IP6700 configuration options and operational functions. User should refer to CHAPTER 6: TERMINAL OPERATION for detailed operation.

3.1 Quick Start for Loop-IP6700

After installation, the user may want to familiarize with the equipment immediately. The following abbreviated instructions will give the user a quick start.

3.1.1 Power On

Turn power on by attaching power cable at the rear of the unit.
Return to Default Setting.
The unit is shipped with factory default setting.

3.2 Self Test

If password is enabled, users must enter the password when logging in to gain the privilege to change system configurations on the terminal. The default condition is password disabled. The default password is LOOP. To change the password for the first time, enter the default password when prompted for the old password.
If the password is forgotten, the only recourse is to return to the factory setting of LOOP.

3.3 Return to Default

The unit is shipped with factory default setting.
To restore to factory setting in the future, immediately after power on, and during the display of “ESC” on the LCD, press ESC key followed by pressing ENTER when “RET” is displayed. Unit will confirm with LOAD DEFAULT CONFIGURATION.

3.4 Using Terminal

Management from a Telnet or Network Management System (NMS) can be effected through a LAN. Use the DB9S console port of IP6700’s rear panel to connect a VT100 terminal to configure the unit. The VT100 terminal can be a PC running a VT100 emulator software.
Upon connection, press ENTER and ESC alternately to bring the main menu into view.
Under the "Main Menu", press "O" (Log On) to see the full menu.
Under the "Main Menu", press "S" to change the system configuration.
For more detail information, see also the chapter 6 in this menu.

3.5 System Configuration

3.5.1 Console Port

The console port allows the user either to use a local VT-100 terminal or use a remote VT-100 terminal via modem for system configuration, diagnostics, polling status reports, etc. The console port Baud rate, data bit length, stop bit length, and parity bit length are defaulted, as shown below.

Table 3- 1 Console Port Setting

Item	Fixed Setting
Baud	9600
Data Length	8-Bits
Stop Bit	1-Bits
Parity	NONE

3.6 Alarm

When the Loop-IP6700 reports an alarm condition, such as loss of synchronization, the ALARM will cause the LED on the front panel to light. Each alarm can be individually enabled or disabled. The alarm types are listed in the table as below.

Table 3- 2 Alarm Default - for System and Line

Alarm			Option	Default
E1 Line	RAI		DISABLE, ENABLE	MAJOR
	AIS		DISABLE, ENABLE	MAJOR
	LOS		DISABLE, ENABLE	MAJOR
	LOF		DISABLE, ENABLE	MAJOR
	BPV	Alarm	DISABLE, ENABLE	MAJOR
		Threshold	10E- (5, 6, 7, 8, 9)	10E-5
	ES	Alarm	DISABLE, ENABLE	MAJOR
		Threshold	1-900	1
	UAS	Alarm	DISABLE, ENABLE	MAJOR
		Threshold	1-900	1
E1	CSS	Alarm	DISABLE, ENABLE	MAJOR
		Threshold	1-900	
	Bundle	Status	DISABLE, ENABLE	MAJOR
	Mac	Change	DISABLE, ENABLE	MAJOR
T1 (future option)				
DTE (future option)	V.35			
Ethernet				

3.7 Reports

For DS1 line receiver, Loop-IP6700 has three sets of performance registers. These are line, user, and far-end. The line performance register tracks the DS1 line receiver performance status. The user performance register tracks the DS1 line receiver as well, but user may clear at any time. The far-end performance register tracks the far-end DS1 receiver status. The performance parameters are listed in the following tables.
Each performance parameter has ninety six sets of registers to record 24 hours history in 15 minute intervals.

Table 3- 3 Performance Parameter List - LINE

Performance Parameter	Description	Definition 2-Frame/Multiframe	Definition 16-Frame/Multiframe
BPV	Bipolar Violation	Bipolar Error Count	Bipolar Error Count
ES	Error Second	BPV≥1, OOF≥1, or CS≥1.	CRC ≥ 1, OOF ≥1, or CS ≥1.
UAS	Unavailable Second	≥ 10 consecutive SES	≥ 10 consecutive SES

Below lists the types of reports available, performance parameters provided by each report, and the reset commands for each report.

Table 3- 4 Performance Report Options

Report Type [Menu Command]	Category	Report					
		ES	BES	SES	UAS	AS	EFS
1-Hour Terminal Reports Menu Option [1]	USER [Network]	Y	Y	Y	Y	Y	Y
	LINE [Network]	N/C	N/C	N/C	N/C	N/C	N/C
24-Hour Terminal Reports Menu Option [2]	USER [Network]	Y	Y	Y	Y	Y	Y
	LINE [Network]	N/C	N/C	N/C	N/C	N/C	N/C

Y = Report available and can be cleared by front panel "RESET" or admin terminal command "Y".
X = Report available and can be cleared by front panel "RESET" or admin terminal command "X".
N/C = No clear. Report available, but counts cannot be cleared by the user.
– = Report not available.

3.8 LED

The front panel of the Loop-IP6700 has mulit-color LEDs for operation and error indications. The indication is either off, steady on, or flickering. The following table lists each LED and its color and the meaning it represents. Note that when powering up and self test is in progress, the unit front panel LEDs are also used to indicate fault conditions.

Table 3- 5 LED Indication for Main Unit

LED		Color	Indication
POWER		Off Flashing Green Red	Power off, self-test failure Normal operation Alarm occurs
SNMP /WAN/ LAN	LINK/ACT	Green	Link. A valid network connection on the RJ-45 SNMP port.
		Flashing Green	Activity. Data is being transmitted or received through the RJ-45 SNMP port.
	10/100	Off	10Mbps
		Green	100Mbps
E1 V.35 (A, B, C, D)		Green	Normal (Line in Sync)
		Flashing Green	Testing
		Red	Loss of Frame (LOF) or Loss of Signal (LOS)
		Flashing Red	Alarm Indication Signal (AIS)

3.9 Management Port (SNMP Port)

As two IP6700s are connected: one is set as local unit, the other is set as remote unit. See also the following diagram.

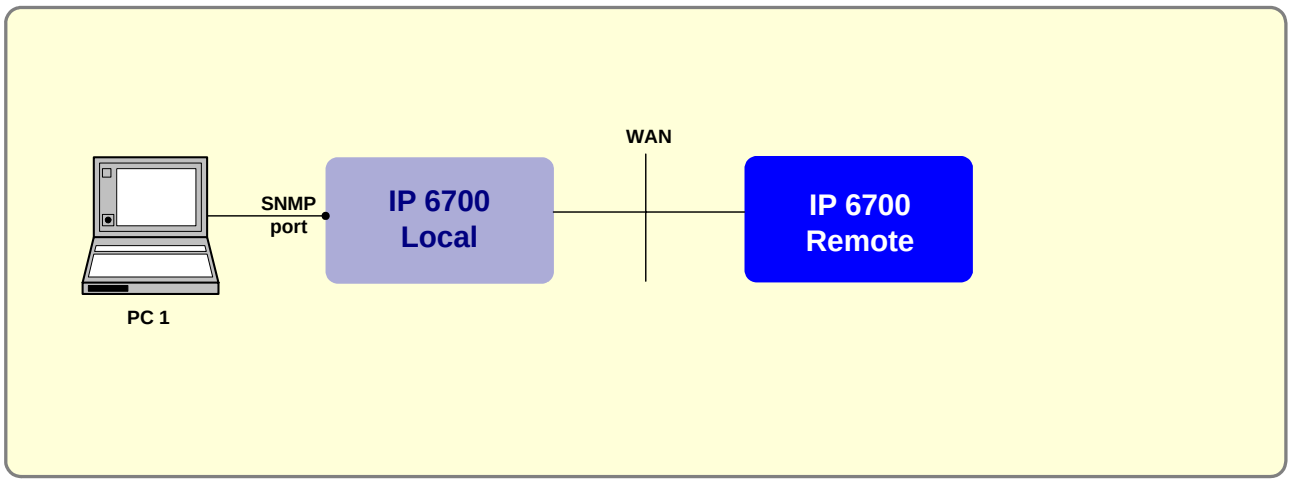


Figure 3- 1 Management Port

3.10 User Data Port (Ethernet)

IP6700's User Data Port is used to transmit or receive data only no matter IP6700 is set as Ethernet.

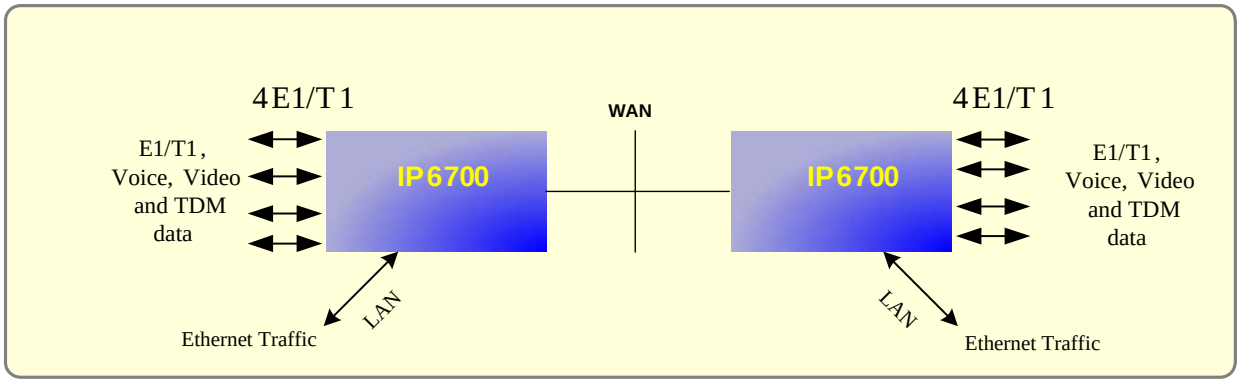


Figure 3- 2 Ethernet Port

4 MAINTENANCE

4.1 Self-Test

When the Loop-IP6700 is powered up, a complete self-test routine is run to check all I/O ports, read/write memory, and data paths to validate system integrity. During system self test, "TESTING" message and testing code are shown on the VT100 terminal screen. If any error is found, a testing code is shown on the VT100 terminal display. Various system diagnostic methodology can be found in the following paragraphs.

4.2 Near End Loopback

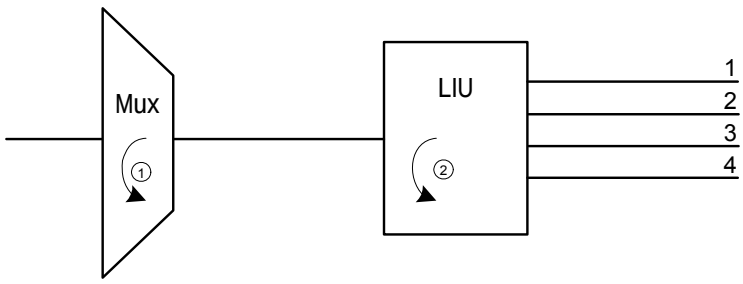
The near end loopbacks such as digital local loopback, and line loopback are activated by the Loop-IP6700. The loopbacks are at the near end facility. The following paragraph describes each loopback in detail.

4.2.1 E1/T1 Line Loopback

Line loopback is illustrated in Figure 4-1. The incoming optical line signal is loopback to the outgoing optical signal before the optical mapper. This loopback is used to isolate the local equipment from a troubled optical transmission line. Line loopback test can be activated from the terminal.

4.2.2 E1/T1 Payload Loopback

Payload loopback is illustrated in Figure 4-1. The incoming signal is loopback to the outgoing line signal after the optical mapper. This loopback is used to isolate the TSI from the troubled transmission line. Payload loopback test can be activated from the front panel and terminal.



① PLB (Payload Loopback)
② LLB (Line Local Loopback)

Figure 4- 1 Loopback Block Diagram

4.3 Far End Loopback

Far-end loopbacks (remote line loopback, remote payload loopback, remote channel loopback, U-PORT loopback, and HDSL loopback) can be activated by the local IP6700 to cause a remote loopback commands to the far-end facility. Inband code words are supported by FDL (facility data link) to initiate the loopback in the case of the DS1 line, and either M channel in the case of the U-interface line. When using FDL messages, FDL must be turned ON. All remote loopback can be activated from the terminal.

If the remote facility responds to a remote loopback activate command, a LOOPED message appears in the lower left corner of the display. If the remote facility responds to a remote loopback deactivate command, a NO LOOP message appears. If the remote activation/deactivation fails, an error message appears.

Either proprietary remote loopback commands can be used, or the industry standard V.54 loopback codes can be used.

It is best to use remote loopbacks in conjunction with PRBS diagnostics testing to measure the DS1 network line or U line integrity. The procedure is as follows:

1. Send a remote loopback command to cause the remote facility to perform a loopback.
2. Activate the PRBS or QRSS diagnostics test.
3. The far end loopback is illustrated in Figure 4-2.

Figure 4- 2 Far End Diagram

5 FRONT PANEL OPERATION

The front panel LCD utilizes a 2-line by 16-character display and four keys labeled ESC, ENTER, left arrow '<', and right arrow '>', as shown in Figure 5-1. The ENTER key is to enable a selection, while the left and right arrow keys move the cursor to the left and right respectively. The ESC key returns to the next higher level of selection or to the main menu without performing any operation. When the menu selected has no further sub-menus, the current item selected is indicated by "*".

NOTE: For each selection or change, ENTER key must be pressed to confirm.

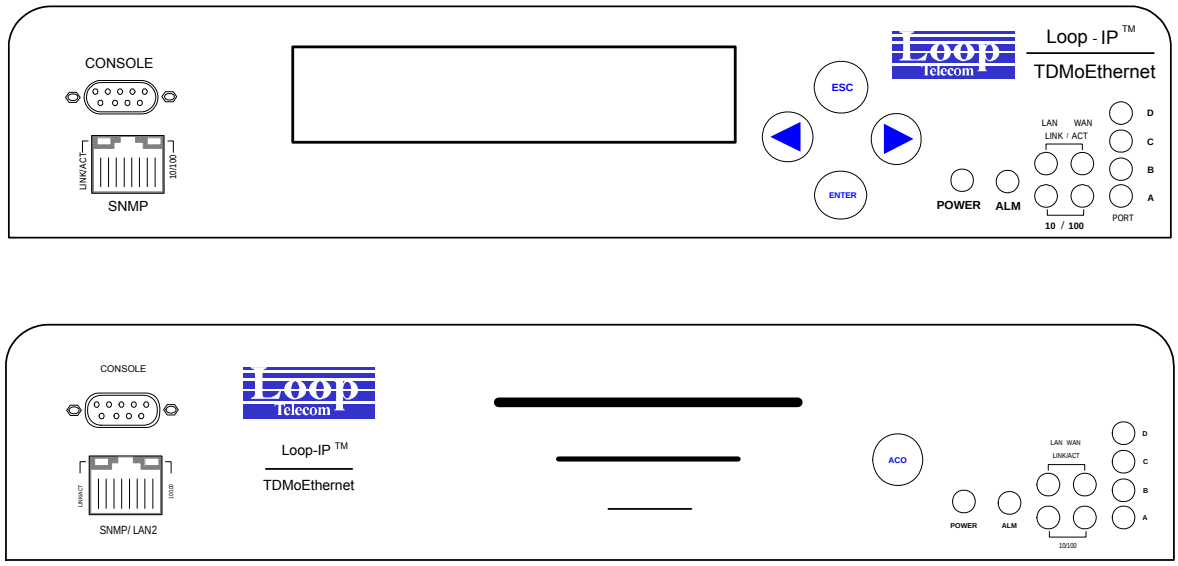


Figure 5- 1 Front Panels

The entire LCD menu tree is shown below. By successively selecting the menu item at each level, the desired operation or display can be obtained. Use left or right key to select the desired main menu branch and press ENTER.

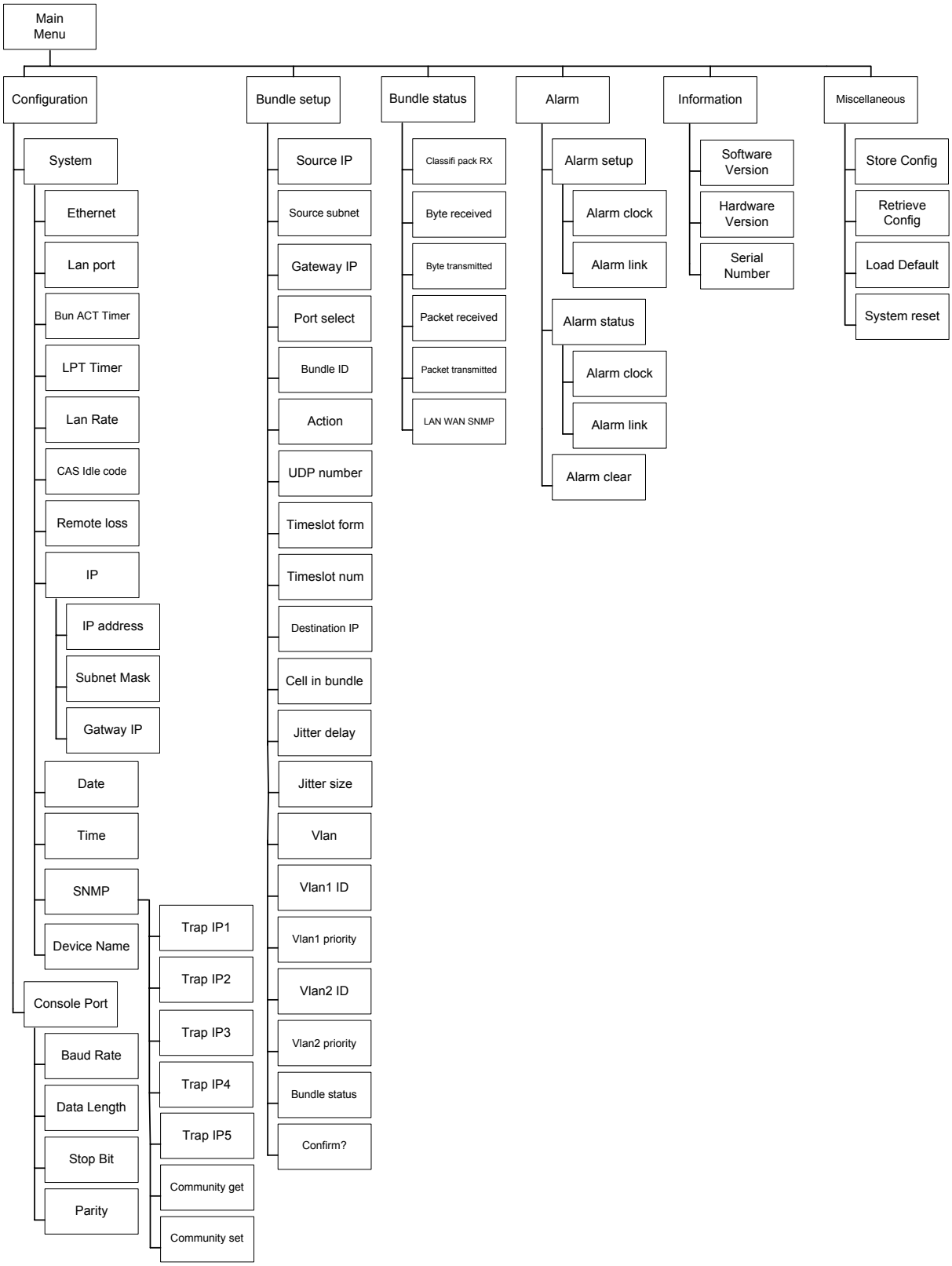


Figure 5- 2 LCD Menu Tree

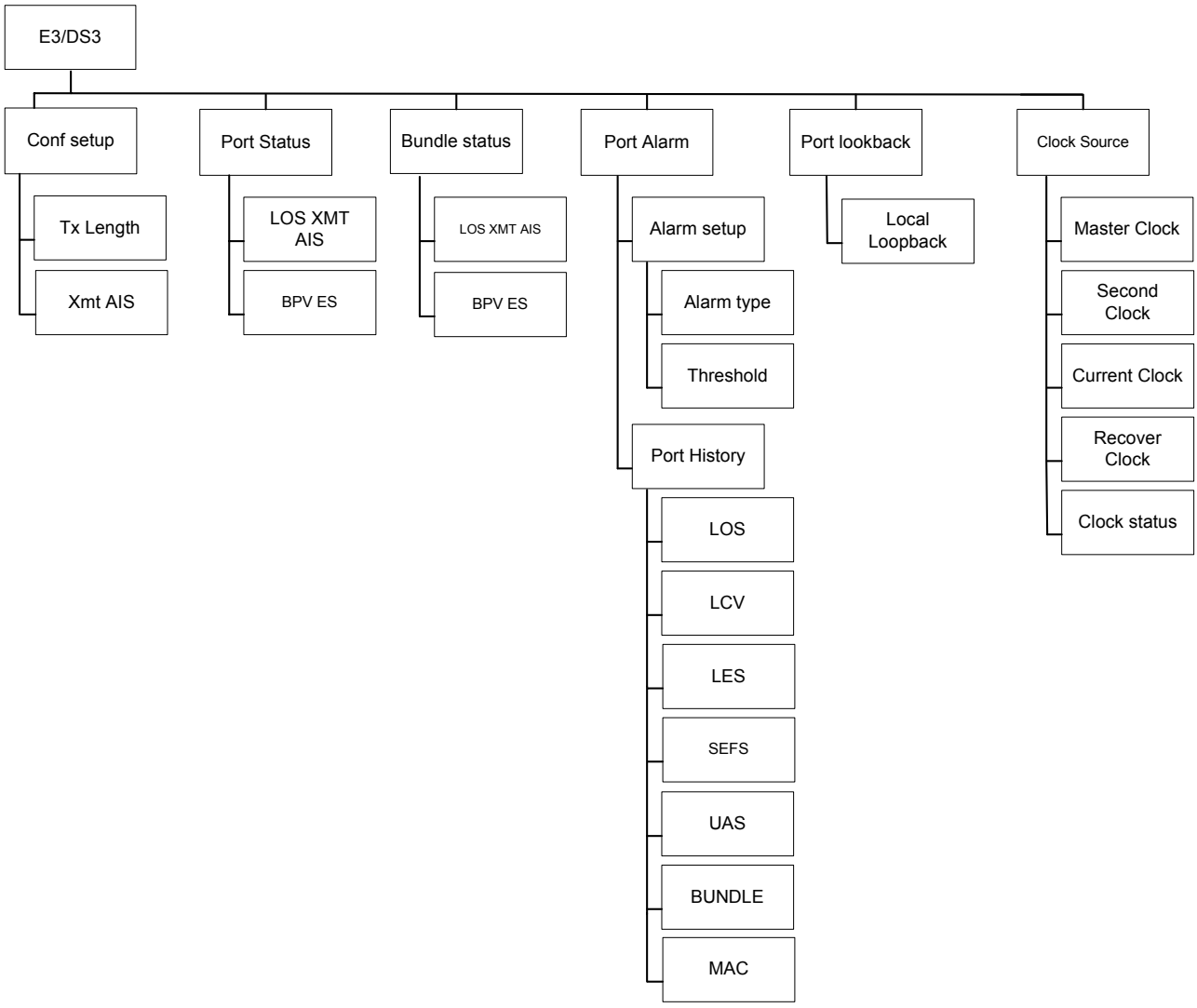


Figure 5- 3 E3/DS3 LCD Menu Tree

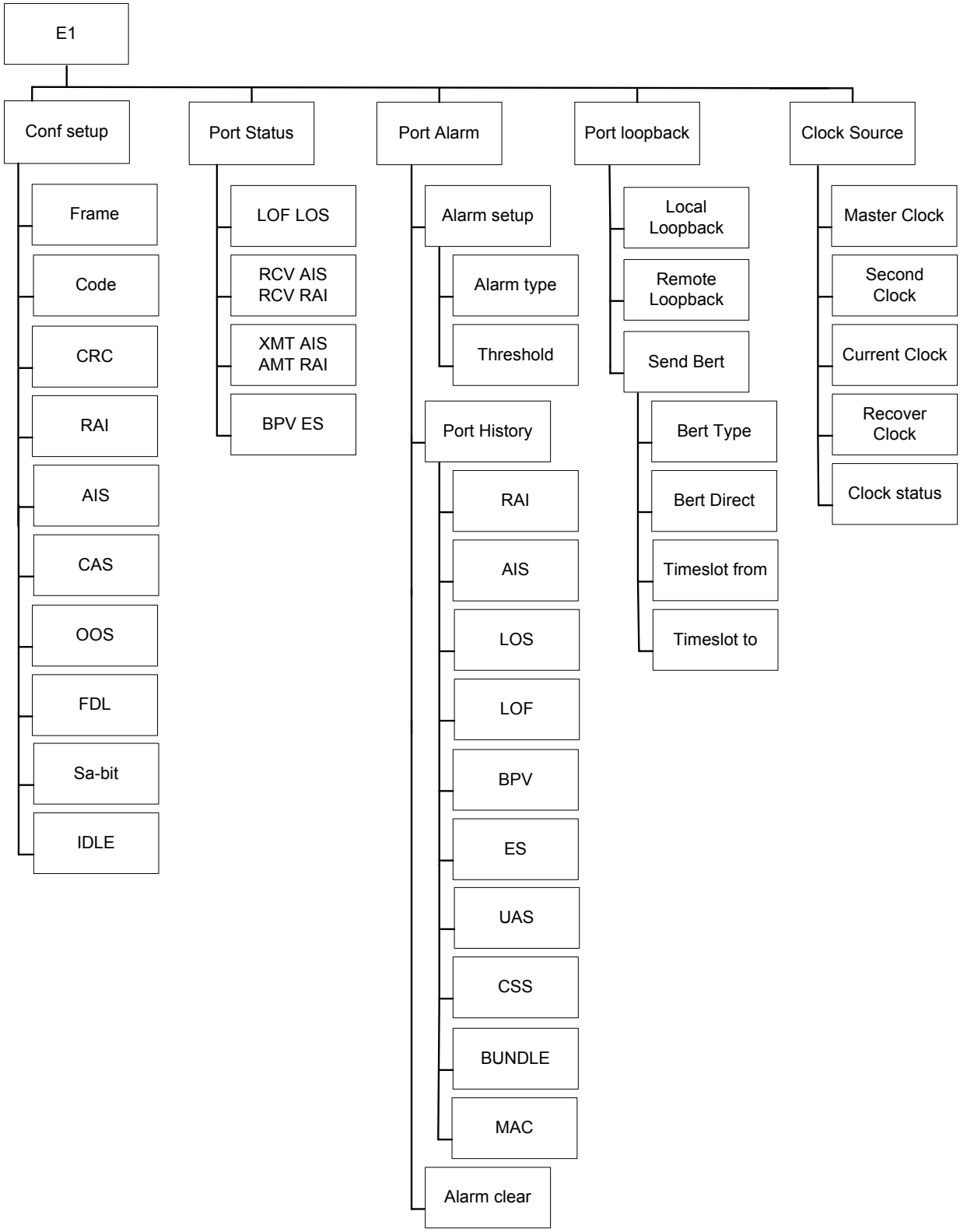


Figure 5- 4 E1 LCD Menu Tree

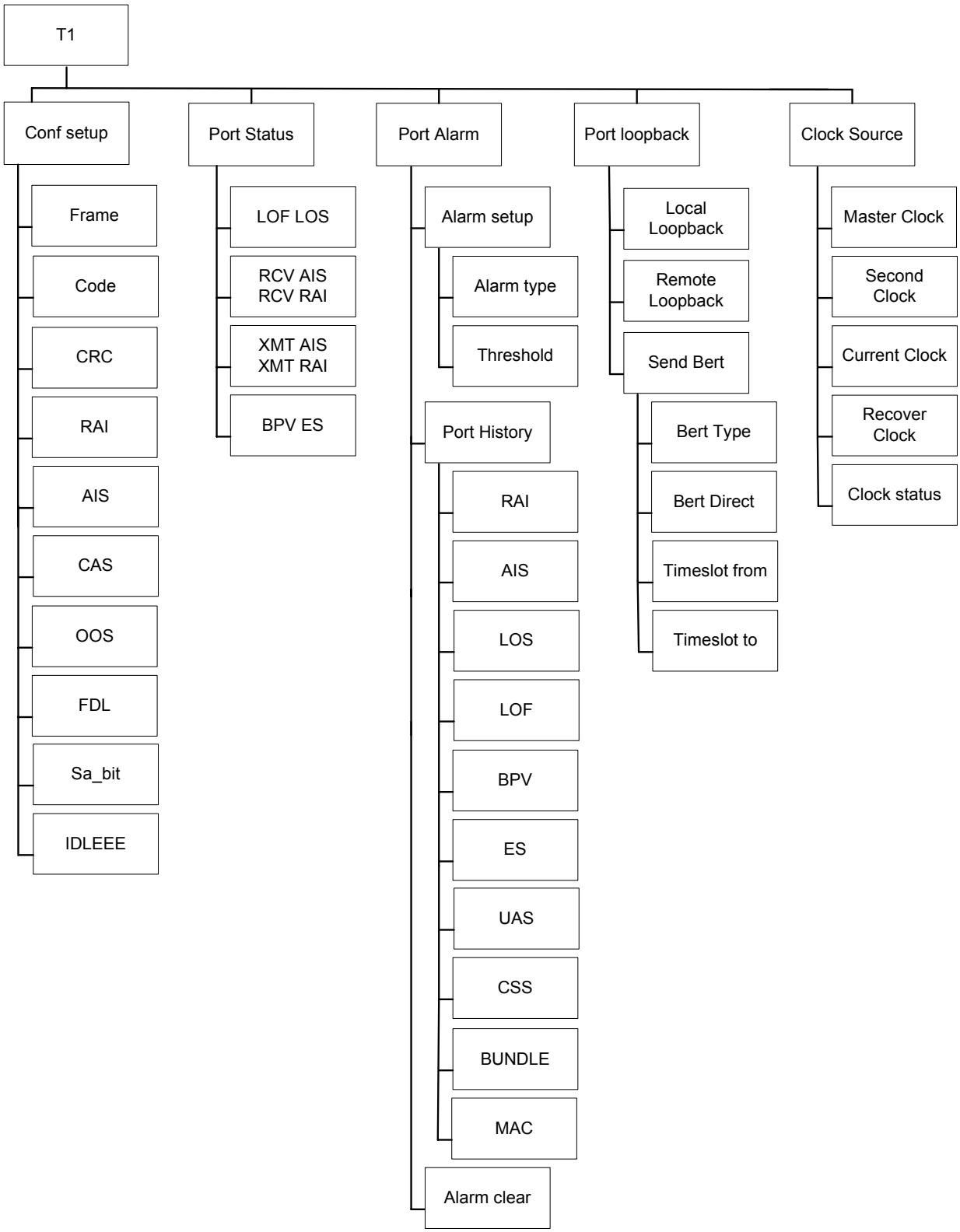


Figure 5- 5 T1 LCD Menu Tree

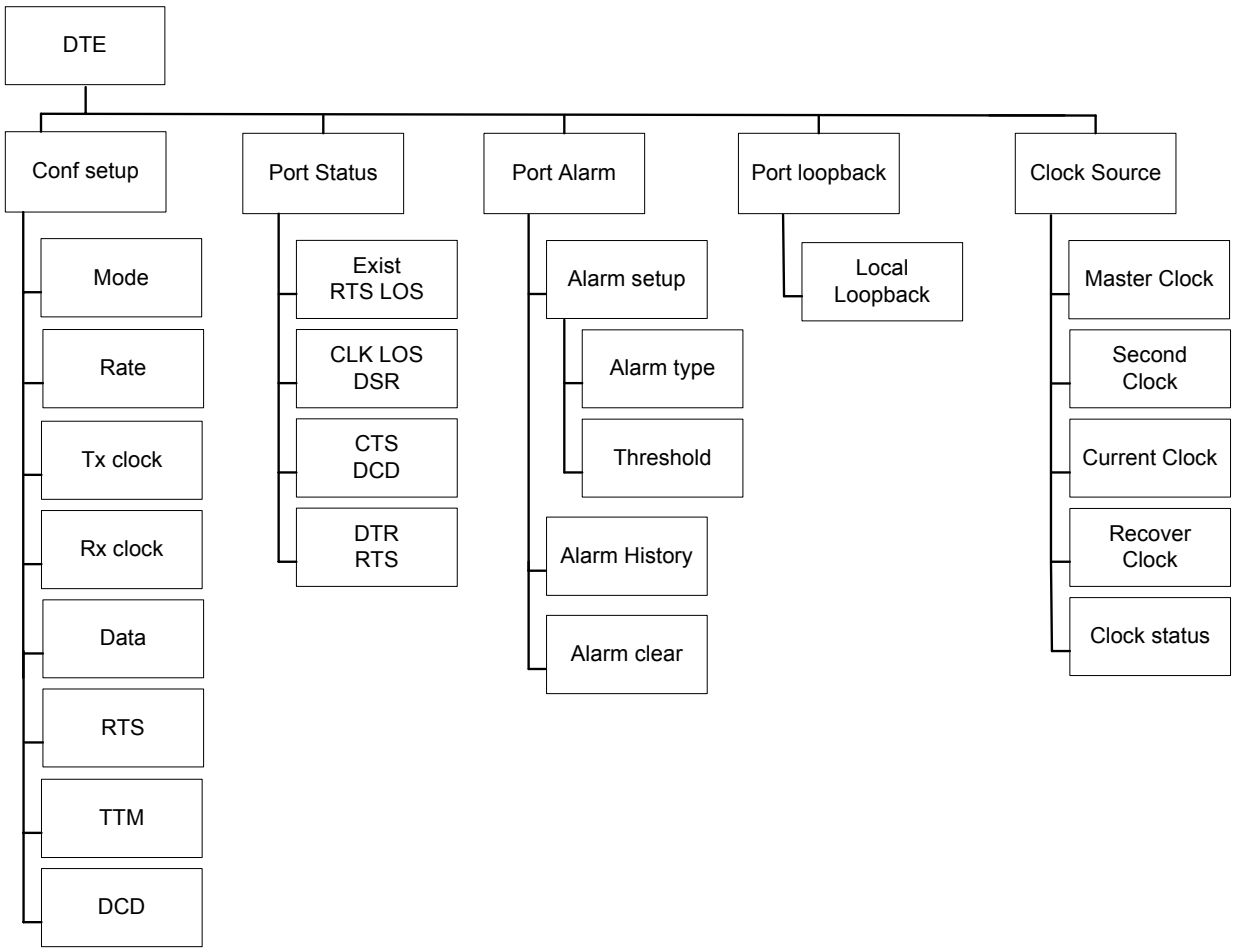


Figure 5- 6 DTE LCD Menu Tree

5.1 Configuration

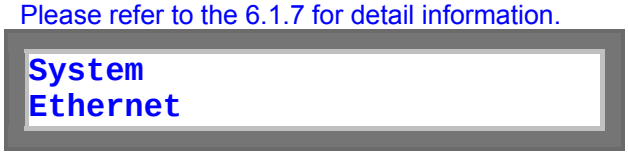
Configuration group includes System and Console Port menus.

5.1.1 System

Press ENTER from the above menu to enter into the System menu, which includes Ethernet, Lan port, Bun ACT Timer, LPT Timer Lan Rate, CAS Idle code, Remote loss, IP, Date, Time, and SNMP submenus.

5.1.1.1 Ethernet

Presses ENTER from the System menu. Use arrow keys to select ENABLE or DISABLE, then press ENTER. Please refer to the 6.1.7 for detail information.

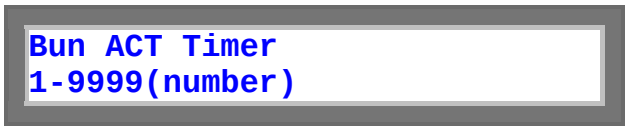


5.1.1.2 Lan Port

Press ENTER from the System menu. Use arrow keys to select Lan Port, then press ENTER. Please refer to the 6.1.1.1 for detail information.

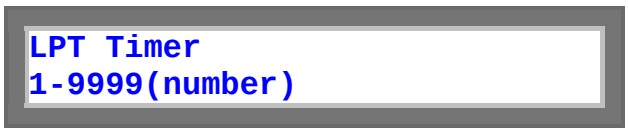
5.1.1.3 Bun ACT Timer

Press ENTER from the System menu. Use arrow keys to select Bun ACT Timer, then press ENTER. Bun ACT Timer is used t setup the regular time to do activation. When the local side sets up a bundle, a signal is sent to see if the remote side is online or not. When the local side and the Remote side are both on line, the activation can be done.



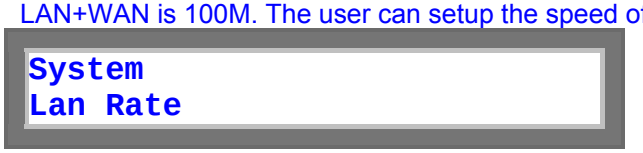
5.1.1.4 LPT Timer

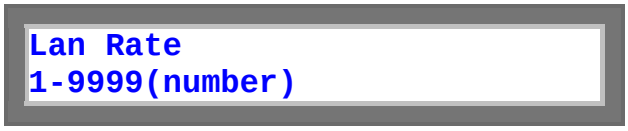
Press ENTER from the System menu. Use arrow keys to select LPT Timer, then press ENTER. When remote side through FDL ask to do Loopback, Local side will do time setup. After time setup it will cancel Loopback automatically.



5.1.1.5 Lan Rate

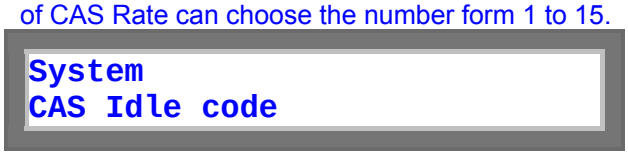
Press ENTER from the System menu. Use arrow keys to select Lan Rate, then press ENTER. The speed of LAN+WAN is 100M. The user can setup the speed of LAN in order to keep the WAN rate.

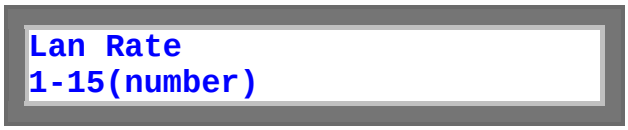




5.1.1.6 CAS Idle code

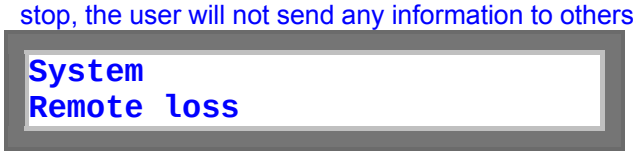
Press ENTER from the System menu. Use arrow keys to select CAS Idle code, then press ENTER. The code of CAS Rate can choose the number form 1 to 15.





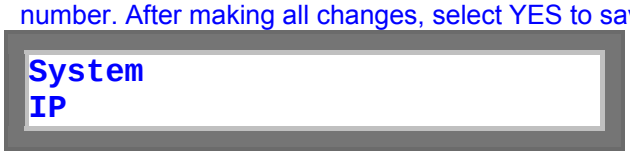
5.1.1.7 Remote loss

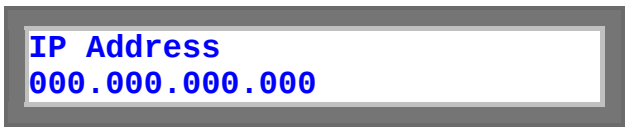
Press ENTER from the System menu. Use arrow keys to select Remote loss, then press ENTER. When the user cannot receive bundle packet from others, it will still send user's bundle packet. After the user presses the stop, the user will not send any information to others. In addition, the user will stop send information to others.

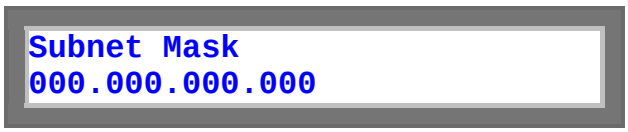


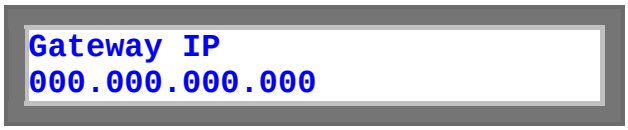
5.1.1.8 IP

The IP menu allows modification of device IP address, IP address for Subnet Mask and Gateway, and IP interface. Each IP address can be modified by moving the cursor to the desired position and selecting a number. After making all changes, select YES to save the changes.







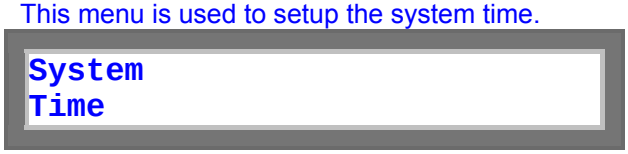


5.1.1.9 Date

Press ENTER from the System menu. Use arrow keys to select Date, then press ENTER. This is used to setup the system data.

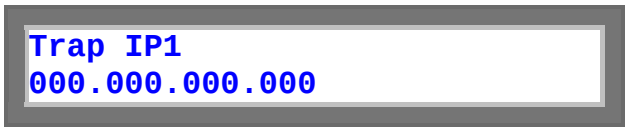
5.1.1.10 Time

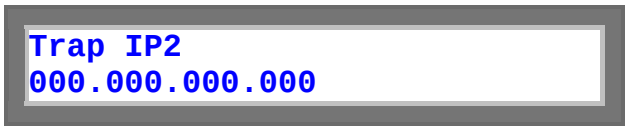
This menu is used to setup the system time.

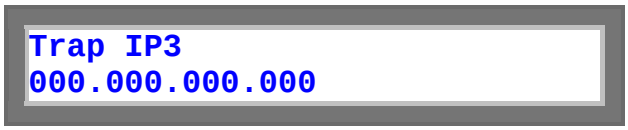


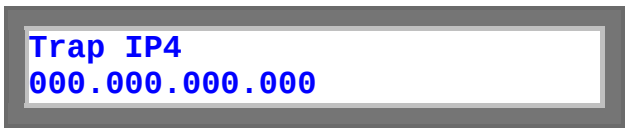
5.1.1.11 SNMP

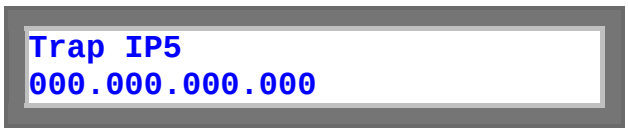
This menu is used to select SNMP. Under Main menu, use left or right key to select SNMP menu. Under SNMP sub-menu, use arrow keys to select a desired option
Its sub-menus include these options: Trap IP1, Trap IP2, TrapIP3, Trap IP4, Trap IP5, Community get and Community set.





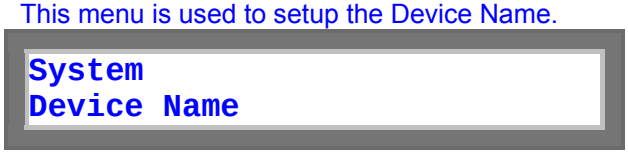




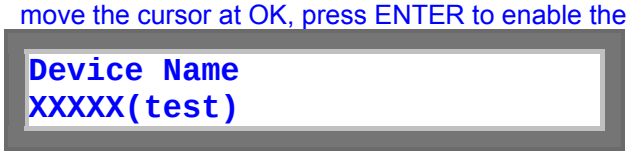


5.1.1.12 Device Name

This menu is used to setup the Device Name.



To rename the device name, use arrow keys to select a desired number or character, press ENTER. Then move the cursor at OK, press ENTER to enable the device name.

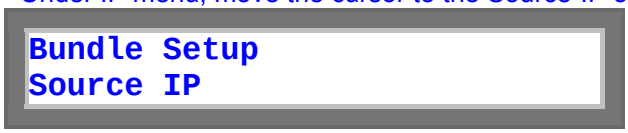


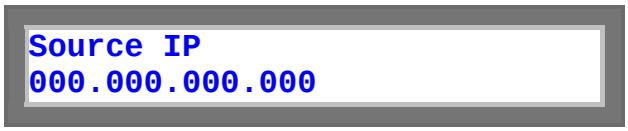
5.2 Bundle Setup

The menus are used to configure console port to select Source IP, Source subnet, Gateway IP, Port select, Bundle ID, Action, UDP number, Timeslot from, Timeslot num, Destination IP, Cell in bundle, Jitter delay, Jitter size, Vlan, Vlan1 ID, Vlan1 priority, Vlan2 ID, Vlan2 priority, Bundle status, and Confirm. Under Bundle setup menu, use left or right key to select Console Port menu. Press ENTER to enter into its submenus.

5.2.1 Source IP

Under IP menu, move the cursor to the Source-IP option; the system will show Source IP Address as below.



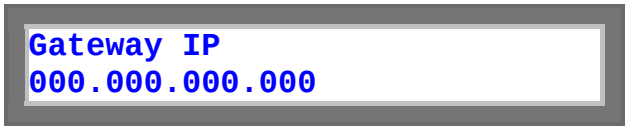


5.2.2 Source subnet

Under IP menu, move the cursor to the Source-subnet option; the system will show Source Subnet Address as below.

5.2.3 Gateway IP

If source IP and destination IP are not in a LAN the user must setup the LAN router address to the Getway IP.

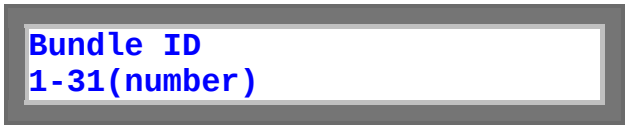


5.2.4 Port Select

Under Port Select menu, the user can select what port they want to setup.

5.2.5 Bundle ID

Move the cursor to select Bundle ID, press ENTER. Please refer to 6.1.2.2 (table of Maximum Bundle Allocation) for detail information.

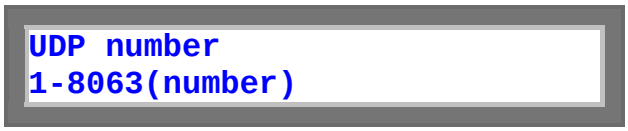


5.2.6 Action

The Action has two options, “Add bundle” and “Delete bundle”. Move the cursor to select action, press ENTER.

5.2.7 UDP number

There are 4 ports to have UDP number from 1 to 8063. If one port gets UDP number such as 100, another port cannot use same UDP number (refer to Figure 6-1 for detail). Move the cursor to select UDP number, press ENTER.



5.2.8 Timeslot from

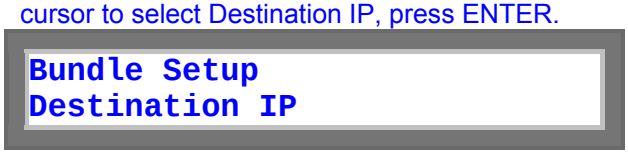
To modify the Timeslot from, first move the cursor to the digit to be modified. Press enter.

5.2.9 Timeslot num

To modify the Timeslot num, first move the cursor to the digit to be modified. Press enter.

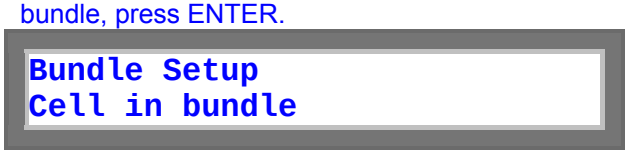
5.2.10 Destination IP

The Destination Address field identifies the station or stations that are to receive the packet. The Source Address identifies the station that originated the packet. A Destination Address may specify either an "individual address" destined for a single station, or a "multicast address" destined for a group of stations. A Destination Address of all 1 bits refers to all stations on the LAN and is called a "broadcast address". Move the cursor to select Destination IP, press ENTER.



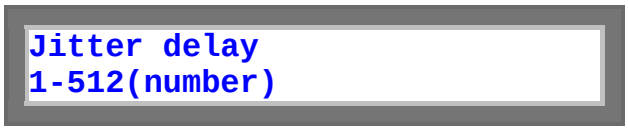
5.2.11 Cell in bundle

In one bundle, how many cell will include (refer to Figure 8-5 for detail). Move the cursor to select Cell in bundle, press ENTER.



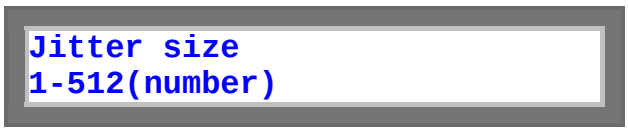
5.2.12 Jitter delay

Move the cursor to select Jitter delay, press ENTER. The number is from 1 to 512. Total delay buffer n × 0.5 ms max.



5.2.13 Jitter size

Move the cursor to select Jitter size, the number is from 1-512, press ENTER. Packet delay cannot ≧n x 0.5 ms.

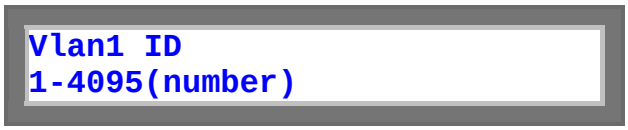


5.2.14 Vlan

Move the cursor to select Current Vlan press ENTER. Under Vlan sub-menu, use arrow keys to select a desired option.
Their submenu includes these options: OFF, 1-VLAN and 2-VLAN

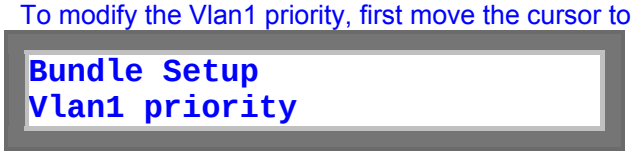
5.2.15 Vlan1 ID

To modify the Vlan1 ID, first move the cursor to the digit to be modified. Press enter.



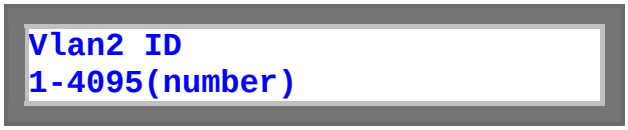
5.2.16 Vlan1 priority

To modify the Vlan1 priority, first move the cursor to the digit to be modified. Press enter.



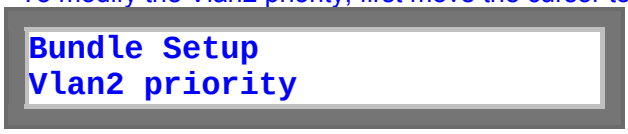
5.2.17 Vlan2 ID

To modify the Vlan2 ID, first move the cursor to the digit to be modified. Press enter.



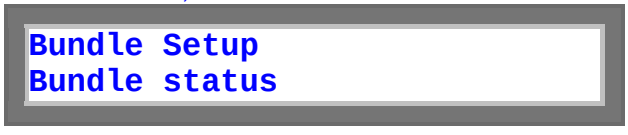
5.2.18 Vlan2 priority

To modify the Vlan2 priority, first move the cursor to the digit to be modified. Press enter.



5.2.19 Bundle status

Bundle status menu shows the current parity selection of Deactive, NONE, or Active. To active or deactive Bundle status, move cursor to a desired selection and press ENTER.



5.2.20 Confirm?

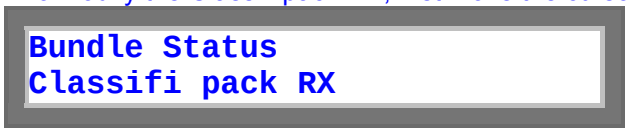
Move the cursor to confirm, press ENTER. Move the cursor to NO or YES to confirm the Bundle setup.

5.3 Bundle Status

The menus are used to configure Bundle status to select Classifi pack RX, Byte received, Byte transmitted, Packet received, Packet transmitted and LAN WAN SNMP. Under Bundle status menu, use left or right key to select Console Port menu. Press ENTER to enter into its submenus.

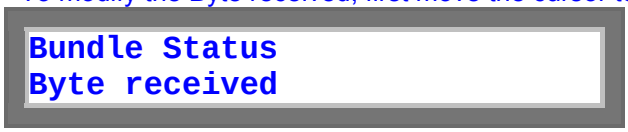
5.3.1 Classifi pack RX

To modify the Classifi pack RX, first move the cursor to the digit to be modified. Press enter.



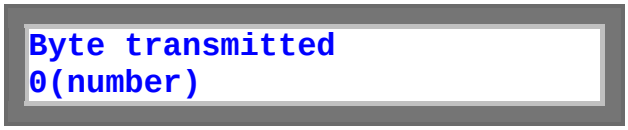
5.3.2 Byte received

To modify the Byte received, first move the cursor to the digit to be modified. Press enter.



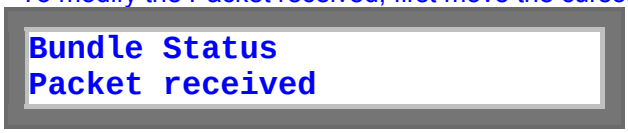
5.3.3 Byte transmitted

To modify the Byte transmitted, first move the cursor to the digit to be modified. Press enter.



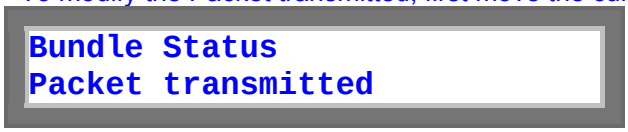
5.3.4 Packet received

To modify the Packet received, first move the cursor to the digit to be modified. Press enter.



5.3.5 Packet transmitted

To modify the Packet transmitted, first move the cursor to the digit to be modified. Press enter.



```
Packet transmitted
0(number)
```

5.3.6 LAN WAN SNMP

Move the cursor to select LAN WAN SNMP, press ENTER.

```
Bundle Status
LAN WAN SNMP
```

```
LAN WAN SNMP
Down Down UP
```

5.4 Alarm

The menus are used to select Alarm in order to setup alarm, clear alarm and to clear alarm. Under Alarm menu, use left or right key to select Console Port menu. Press ENTER to enter into its submenus.

```
Configuration
Alarm
```

5.4.1 Alarm setup

Move the cursor to NEXT or PREV to view alarm, then go to EDIT option with pressing ENTER to do alarm setup.

```
Alarm
Alarm setup
```

5.4.1.1 Alarm clock

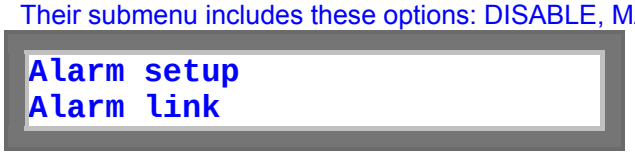
The setup menu is used to setup clock alarm. The clock alarm occur when the clock source change.

```
Alarm setup
Alarm clock
```

```
Alarm clock
DISABLE
```

5.4.1.2 Alarm link

Press ENTER from the Alarm link menu. Use arrow keys to select alarm link, then press ENTER. Their submenu includes these options: DISABLE, MAJOR< CRITICAL and MINOR.

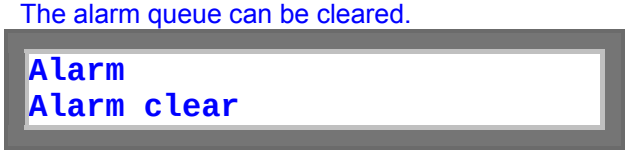


5.4.2 Alarm status

Move the cursor to select alarm status, press ENTER. Move the cursor to NO or YES to confirm the alarm status.

5.4.3 Alarm clear

Pressing enter when cursor is on NEXT will move to the next alarm item. To confirm the existing option, move cursor to EDIT and press ENTER. Then move cursor to the desired option and press ENTER.
The alarm queue can be cleared.

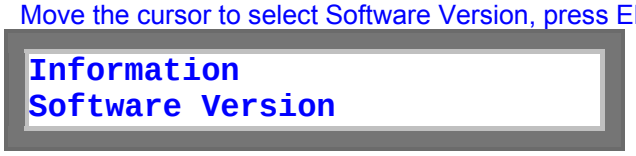


5.5 Information

The menus are used to select Software version, Hardware version and Serial number. Under Information menu, use left or right key to select Console Port menu. Press ENTER to enter into its submenus.

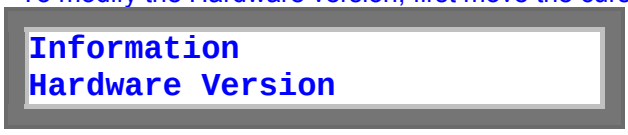
5.5.1 Software Version

Move the cursor to select Software Version, press ENTER.



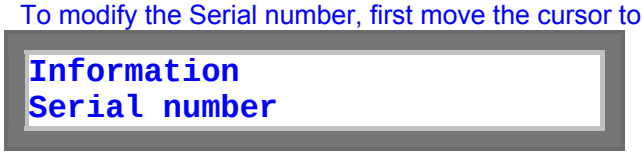
5.5.2 Hardware Version

To modify the Hardware version, first move the cursor to the text to be modified. Press enter.



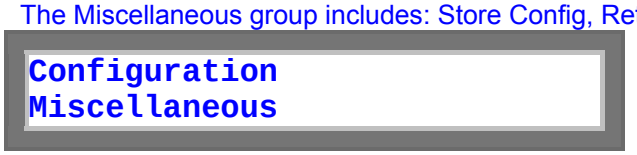
5.5.3 Serial number

To modify the Serial number, first move the cursor to the text to be modified. Press enter.



5.6 Miscellaneous

The Miscellaneous group includes: Store Config, Retrieve Config, Load Default, and System reset.

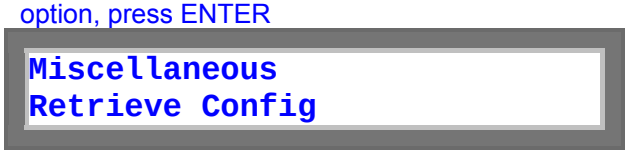


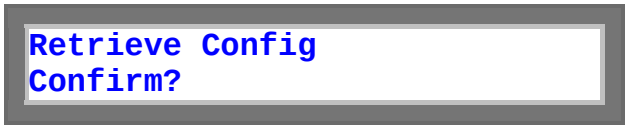
5.6.1 Store Config

Pressing enter when cursor is on NEXT will move to the next Store Config item. To confirm the existing option, press ENTER.

5.6.2 Retrieve Config

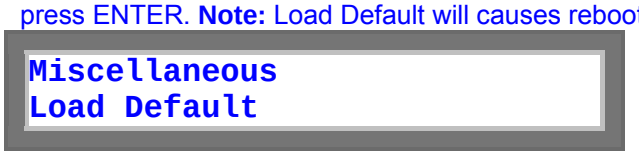
Pressing enter when cursor is on NEXT will move to the next Retrieve Config item. To confirm the existing option, press ENTER





5.6.3 Load Default

Pressing enter when cursor is on NEXT will move to the next Load Default item. To confirm the existing option, press ENTER. **Note:** Load Default will causes reboot.

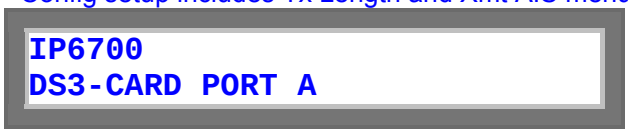


5.6.4 System reset

Pressing enter when cursor is on NEXT will move to the next System reset item. To confirm the existing option, press ENTER.

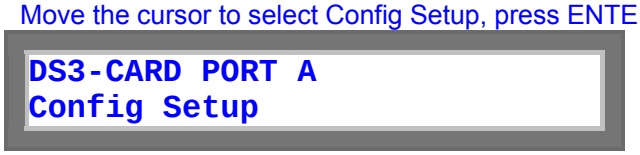
5.7 E3/DS3 Menu

Config setup includes Tx Length and Xmt AIS menus.



5.7.1 Config Setup

Move the cursor to select Config Setup, press ENTER.



5.7.1.1 Tx Length

Move the cursor to select Tx Length, press ENTER. The Length of TX could be from 0-255 or 255 to 450.

5.7.1.2 Xmt AIS

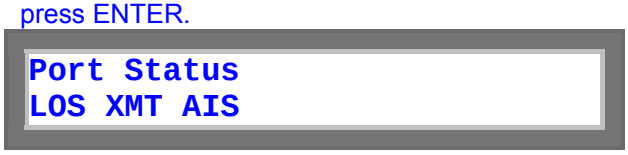
Move the cursor to select Xmt AIS, press ENTER. This action can be turned ON or OFF. When los happened, the Xmt AIS decide to transmitted AIS to line or not. When los sent AIS, use arrow keys to select ON. If the los do not send AIS, use arrow keys to select OFF.

5.7.2 Port Status

Move the cursor to select Port Status, press ENTER.

5.7.2.1 LOS XMT AIS

Under Port Status menu to select LOS XMT AIS, then Move the cursor to NO or YES to setup LOS XMT AIS, press ENTER.



5.7.2.2 BPV ES

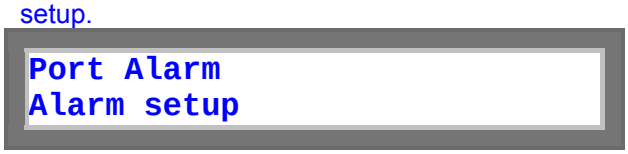
To setup the BPV ES, first move the cursor to the digit to be modified. Press enter.

5.7.3 Port Alarm

Move the cursor to select Port Alarm, press ENTER.

5.7.3.1 Alarm setup

Move the cursor to NEXT or PREV to view alarm, then go to EDIT option with pressing ENTER to do alarm setup.

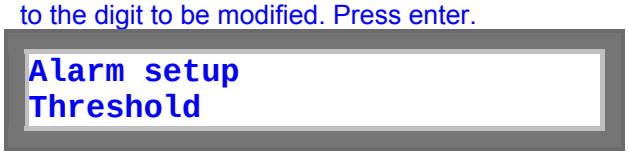


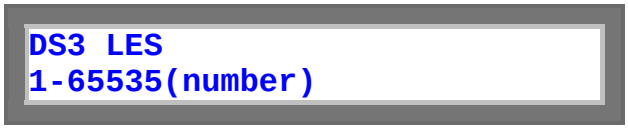
5.7.3.1.1 Alarm Type

Move the cursor to select Alarm Type, press ENTER. The alarm types include LOS, LCV, LES, SEFS, UAS, BUNDLE and MAC.

5.7.3.1.2 Threshold

Move the cursor to select Current Threshold press ENTER. Under Threshold sub-menu, use arrow keys to select a desired option.
Their submenu includes these options: DS3 LCV, DS3 LES, DS3 SEFS and ES3 UAS. Then move the cursor to the digit to be modified. Press enter.





```
DS3 SEFS
1-65535(number)
```

```
DS3 UAS
1-65535(number)
```

5.7.3.2 Port History

Move the cursor to select Current Port History, press ENTER. Under Port History sub-menu, use arrow keys to select a desired option. The menu is used to show Alarm History.
Their submenu includes these options: PORT A LOS, PORT A LCV, PORT A LES, PORT A SEFS, PORT A UAS, PORT A BUNDLE and PORT A MAC.

```
Config setup
Port History
```

```
PORT A LOS
OK MAJOR 0000
```

```
PORT A LCV
OK MAJOR 0000
```

```
PORT A LES
OK MAJOR 0000
```

```
PORT A SEFS
OK MAJOR 0000
```

```
PORT A UAS
OK MAJOR 0000
```

```
PORT A BUNDLE
OK MAJOR 0000
```

```
PORT A MAC
OK MAJOR 0000
```

5.7.3.3 Alarm clear

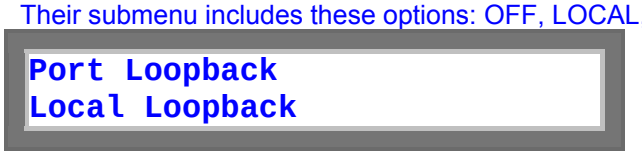
Pressing enter when cursor is on NEXT will move to the next alarm item. To confirm the existing option, move cursor to EDIT and press ENTER. Then move cursor to the desired option and press ENTER.
The alarm queue can be cleared.

5.7.4 Port lookback

Move the cursor to select Port Loopback, press ENTER.

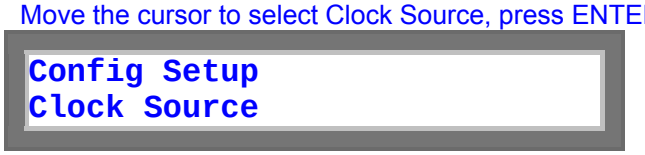
5.7.4.1 Local Loopback

Move the cursor to select Current Local Loopback press ENTER. Under Local Loopback sub-menu, use arrow keys to select a desired option.
Their submenu includes these options: OFF, LOCAL, PLB and LLB.



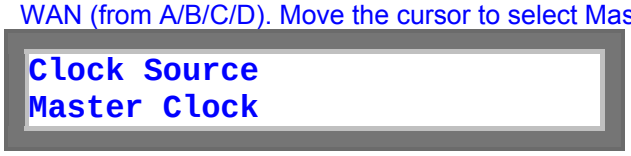
5.7.5 Clock Source

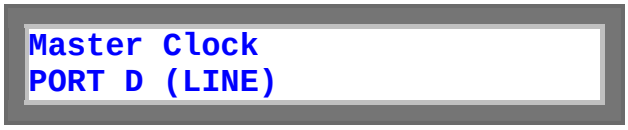
Move the cursor to select Clock Source, press ENTER.

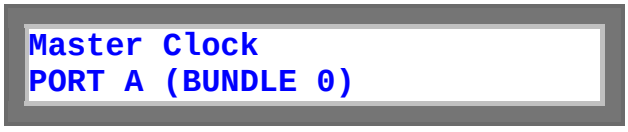


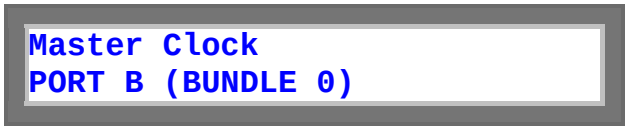
5.7.5.1 Master Clock

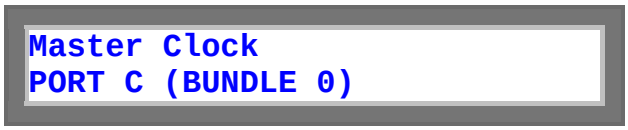
The IP6700 provide operator to setup each port's clock source from internal, external, line (from A/B/C/D), or WAN (from A/B/C/D). Move the cursor to select Master Clock press ENTER.

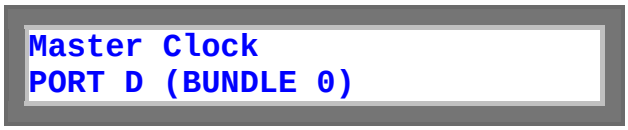






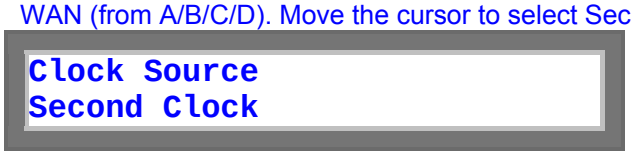


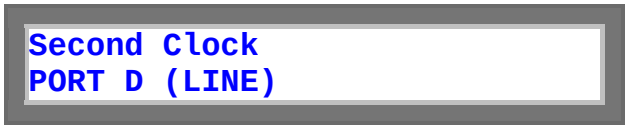


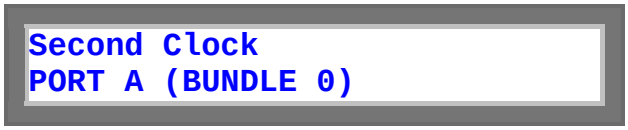


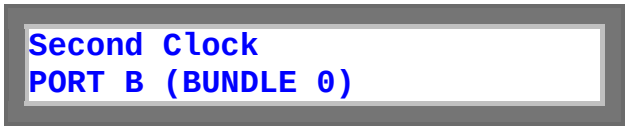
5.7.5.2 Second Clock

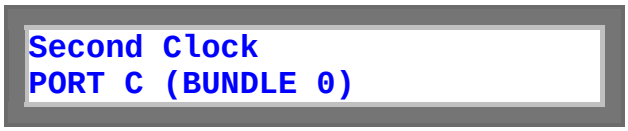
The IP6700 provide operator to setup each port's clock source from internal, external, line (from A/B/C/D), or WAN (from A/B/C/D). Move the cursor to select Second Clock press ENTER.

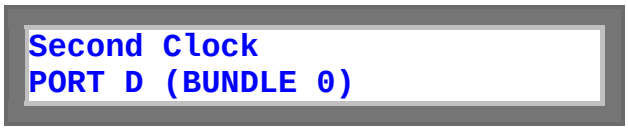












5.7.5.3 Current Clock

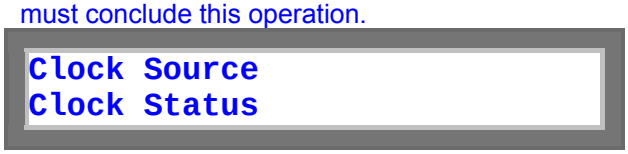
Move the cursor to select Current Clock press ENTER. Its sub-menus include these options: Current Clock, MASTER_CLK, SECOND_CLK and INTERNAL.

5.7.5.4 Recover Clock

Move the cursor to select Current Clock press ENTER. Under Recover clock sub-menu, use arrow keys to select a desired option.
Their submenu includes these options: MANUAL and AUTOMATIC

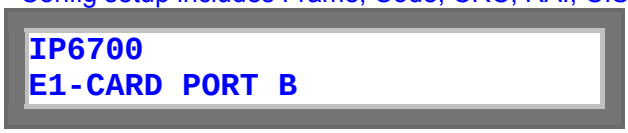
5.7.5.5 Clock Status

Move the cursor to select Clock Status press ENTER. Moving the arrow keys to Normal and pressing ENTER must conclude this operation.



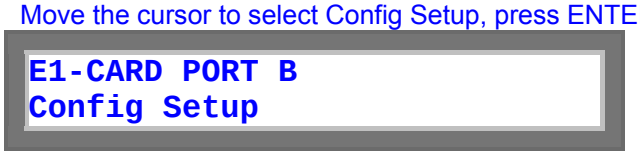
5.8 E1-CARD Menu

Config setup includes Frame, Code, CRC, RAI, CIS, CAS, OOS, FDL, Sa_bit and IDLE menus.



5.8.1 Config Setup

Move the cursor to select Config Setup, press ENTER.



5.8.1.1 Frame

Move the cursor to select Frame, press ENTER. To enable it, move the cursor to ON and press ENTER. To disable it, move the cursor to OFF and press ENTER.

5.8.1.2 Code

To select the coding scheme, use the arrow keys cycle through to a proper selection and press ENTER. The choices for E1 are AMI and HDB3. Using the arrow keys to change the setting, and press ENTER. Be sure that this setting matches that of the network.

5.8.1.3 CRC

The cyclic redundancy check function can be turned on or off. Unlike bipolar violation, which can monitor only one span, CRC menu allows error monitoring through multiple spans of E1 line. For two frame mode, set CRC to OFF. For multi-frame mode, set CRC to ON.

5.8.1.4 RAI

Remote Alarm Indication, transmits a return signal back out to indicate loss of signal and loss of frame sync at the receiving side if the port. This action can be turned ON or OFF.
Use arrow keys to select ON or OFF, then press ENTER to enable or disable the option.

5.8.1.5 AIS

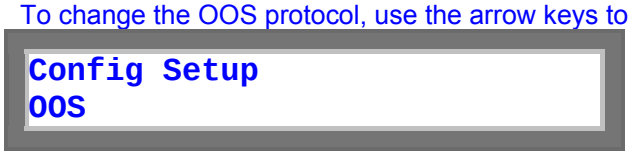
Under CIS submenu, use arrow keys to select ON or OFF, then press ENTER to enable or disable the option.

5.8.1.6 CAS

Signaling is either CAS (channel associated signalling) or out-of-band such as CCIS (common channel interoffice signalling). To change the signaling type, use the arrow keys to choose from CAS ON or CAS OFF and press ENTER.

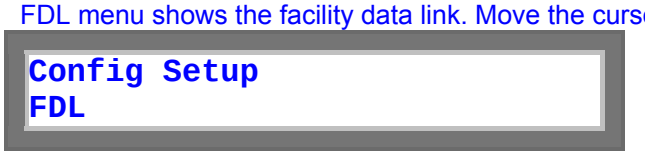
5.8.1.7 OOS

To change the OOS protocol, use the arrow keys to cycle through to the proper selection and Press ENTER.



5.8.1.8 FDL

FDL menu shows the facility data link. Move the cursor at a desired option, press ENTER to confirm it.

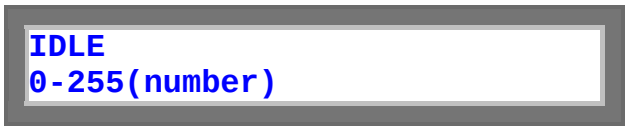


5.8.1.9 Sa_bit

To change a channel for FDL, move cursor to Sabit, and use left or right arrow keys to select a channel, press ENTER.

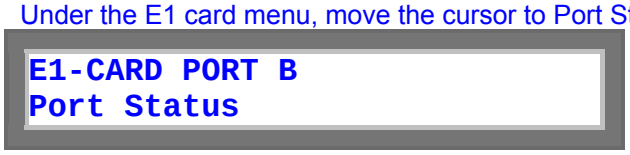
5.8.1.10 IDLE

Press ENTER for the Line Idle Code menu. The user can enter number from 0-255 to the Idle menu.



5.8.2 Port Status

Under the E1 card menu, move the cursor to Port Status option, then the system will show as below.



5.8.2.1 LOF LOS

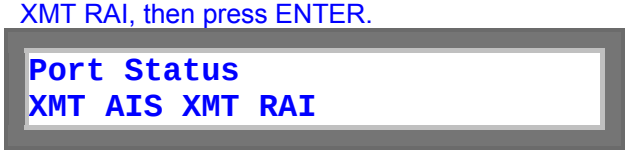
Under Port Status menu to select LOF LOS, and move the cursor to NO to setup LOF LOS then press ENTER.

5.8.2.2 RCV AIS RCV RAI

Under Port Status menu to select RCV AIS RCV RAI, press ENTER, move the cursor to NO to setup RCV AIS RCV RAI, then press ENTER.

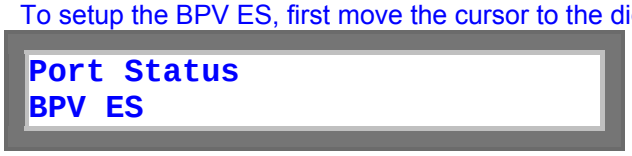
5.8.2.3 XMT AIS XMT RAI

Under Port Status menu to select XMT AIS XMT RAI, press ENTER, move the cursor to NO to setup XMT AIS XMT RAI, then press ENTER.



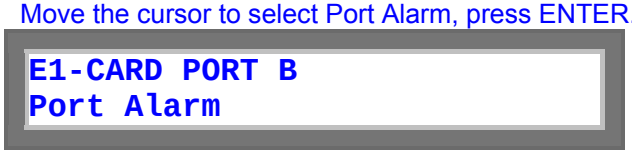
5.8.2.4 BPV ES

To setup the BPV ES, first move the cursor to the digit to be modified. Press enter.



5.8.3 Port Alarm

Move the cursor to select Port Alarm, press ENTER.



5.8.3.1 Alarm Setup

Move the cursor to NEXT or PREV to view alarm, then go to EDIT option with pressing ENTER to do alarm setup.

5.8.3.1.1 Alarm Type

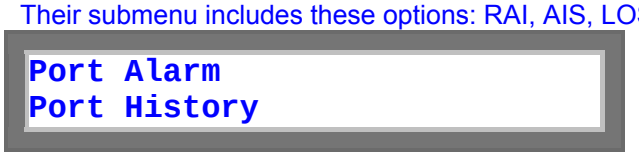
Move the cursor to select Alarm Type, press ENTER. The alarm types include RAI, AIS, LOS, LOF, BPV, ES, UAS, CSS, BUNDEL and MAC.

5.8.3.1.2 Threshold

Move the cursor to select Current Threshold press ENTER. Under Threshold sub-menu, use arrow keys to select a desired option.
Their submenu includes these options: E1 BPV, E1 ES, E1 UAS, and E1 CSS. Then move the cursor to the digit to be modified.

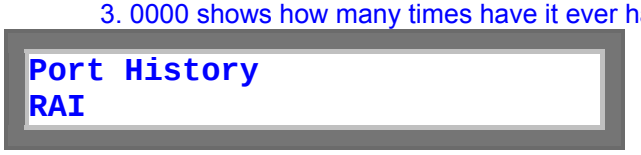
5.8.3.2 Port History

Move the cursor to select Current Port History, press ENTER. Under Port History sub-menu, use arrow keys to select a desired option.
Their submenu includes these options: RAI, AIS, LOS, LOF, BPV, ES, UAS, CSS, BUNDLE and MAC.



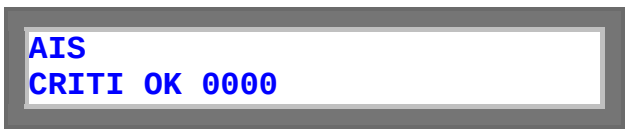
5.8.3.2.1 RAI

Move the cursor to select RAI, press ENTER.
Note: 1. CRITI is Critical
2. If the RAI alarm have ever happened, it will show alm. If it is not, will show OK.
3. 0000 shows how many times have it ever happened?



5.8.3.2.2 AIS

AIS menu shows the configuration set for the alarm indication signal. Move the cursor to select AIS, press ENTER.
Note: 1. CRITI is Critical
2. If the AIS alarm has ever happened, it will show alm. If it is not, will show OK.
3. 0000 shows how many times have it ever happened?



5.8.3.2.3 LOS

Move the cursor to select LOS, press ENTER.
Note: 1. CRITI is Critical
2. If the LOS alarm has ever happened, it will show alm. If it is not, will show OK.
3. 0000 shows how many times have it ever happened?

5.8.3.2.4 LOF

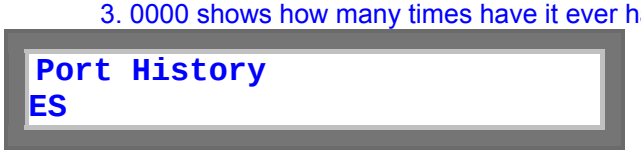
Move the cursor to select LOF, press ENTER.
Note: 1. CRITI is Critical
2. If the LOF alarm has ever happened, it will show alm. If it is not, will show OK.
3. 0000 shows how many times have it ever happened?

5.8.3.2.5 BPV

Move the cursor to select BPV, press ENTER.
Note: 1. CRITI is Critical
2. If the BPV alarm has ever happened, it will show alm. If it is not, will show OK.
3. 0000 shows how many times have it ever happened?

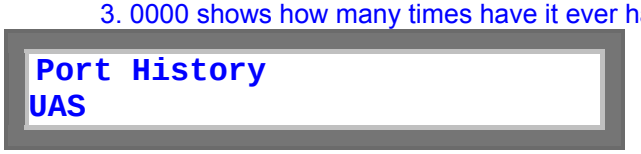
5.8.3.2.6 ES

Move the cursor to select ES, press ENTER.
Note: 1. CRITI is Critical
2. If the ES alarm has ever happened, it will show alm. If it is not, will show OK.
3. 0000 shows how many times have it ever happened?



5.8.3.2.7 UAS

Move the cursor to select UAS, press ENTER.
Note: 1. CRITI is Critical
2. If the UAS alarm has ever happened, it will show alm. If it is not, will show OK.
3. 0000 shows how many times have it ever happened?



5.8.3.2.8 CSS

Move the cursor to select CSS, press ENTER.
Note: 1. CRITI is Critical
2. If the CSS alarm has ever happened, it will show alm. If it is not, will show OK.
3. 0000 shows how many times have it ever happened?

5.8.3.2.9 BUNDLE

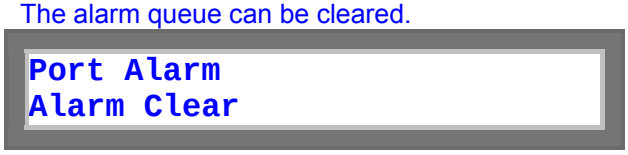
Move the cursor to select BUNDLE, press ENTER.
Note: 1. CRITI is Critical
2. If the BUNDLE alarm has ever happened, it will show alm. If it is not, will show OK.
3. 0000 shows how many times have it ever happened?

5.8.3.2.10 MAC

Move the cursor to select MAC, press ENTER.
Note: 1. CRITI is Critical
2. If the MAC alarm has ever happened, it will show alm. If it is not, will show OK.
3. 0000 shows how many times have it ever happened?

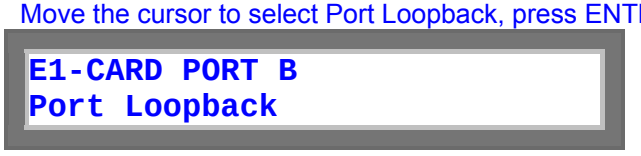
5.8.3.3 Alarm Clear

Pressing enter when cursor is on NEXT will move to the next alarm item. To confirm the existing option, move cursor to EDIT and press ENTER. Then move cursor to the desired option and press ENTER.
The alarm queue can be cleared.



5.8.4 Port Loopback

Move the cursor to select Port Loopback, press ENTER.

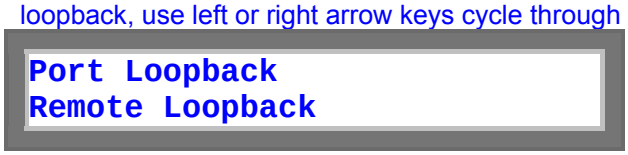


5.8.4.1 Local Loopback

Move the cursor to select Current Local Loopback press ENTER. Under Local Loopback sub-menu, use arrow keys to select a desired option.
Their submenu includes these options: OFF, LOCAL, PLB and LLB.

5.8.4.2 Remote Loopback

E1 remote loopback is used to activate E1 line remote loopback test. To activate or deactivate E1 remote loopback, use left or right arrow keys cycle through to a desired selection and press ENTER.

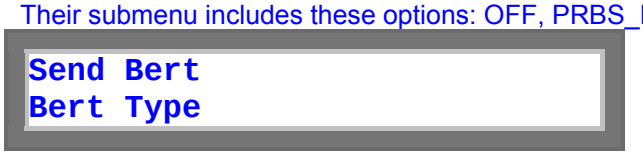


5.8.4.3 Send Bert

Move the cursor to select Send Bert, press ENTER.

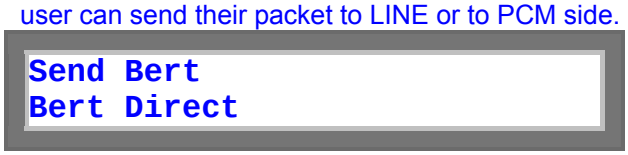
5.8.4.3.1 Bert Type

Move the cursor to select Current Bert Type press ENTER. Under Bert Type sub-menu, use arrow keys to select a desired option.
Their submenu includes these options: OFF, PRBS_FULL and N*64K.



5.8.4.3.2 Bert Direct

Move the cursor to select Bert Direct, press ENTER. Its sub-menus include these options: LINE and PCM. The user can send their packet to LINE or to PCM side.



5.8.4.3.3 Timeslot from

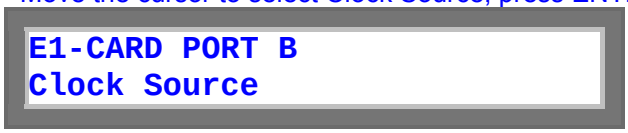
To modify the Timeslot from, first move the cursor to the digit to be modified. Press enter.

5.8.4.3.4 Timeslot to

To modify the Timeslot to, first move the cursor to the digit to be modified. Press enter.

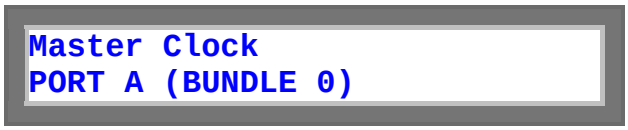
5.8.5 Clock Source

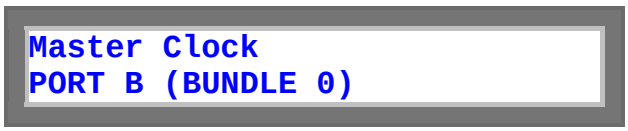
Move the cursor to select Clock Source, press ENTER.

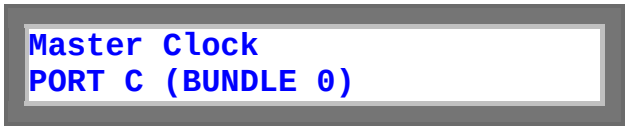


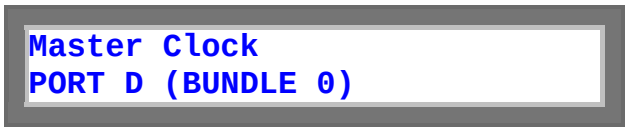
5.8.5.1 Master Clock

The IP6700 provide operator to setup each port's clock source from internal, external, line (from A/B/C/D), or WAN (from A/B/C/D). Move the cursor to select Master Clock press ENTER. Please refer to 6.1.5 for detail information.



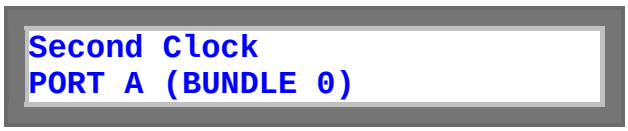


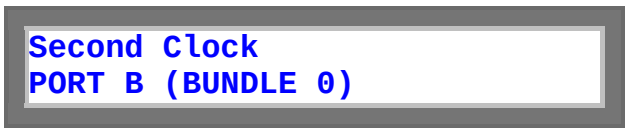


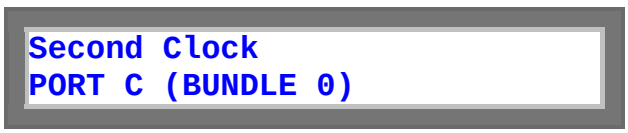


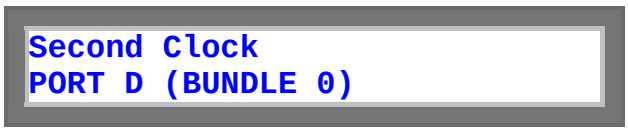
5.8.5.2 Second Clock

The IP6700 provide operator to setup each port's clock source from internal, external, line (from A/B/C/D), or WAN (from A/B/C/D). Move the cursor to Second Clock, press ENTER. Please refer to 6.1.5 for detail information.



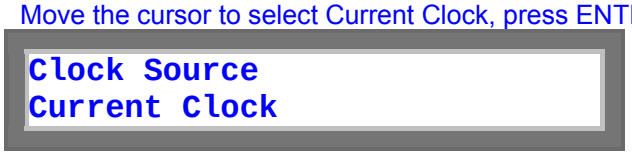






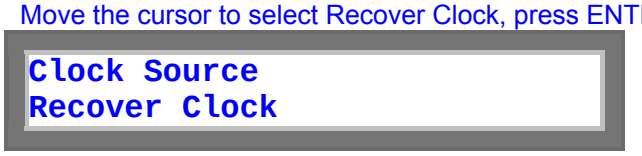
5.8.5.3 Current Clock

Move the cursor to select Current Clock, press ENTER. Please refer to 6.1.5 for detail information.



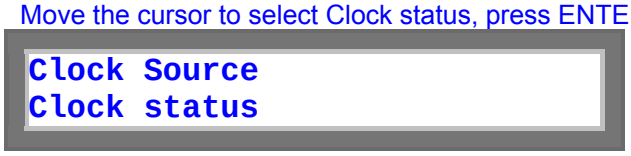
5.8.5.4 Recover Clock

Move the cursor to select Recover Clock, press ENTER. Please refer to 6.1.5 for detail information.



5.8.5.5 Clock status

Move the cursor to select Clock status, press ENTER. Please refer to 6.1.5 for detail information.

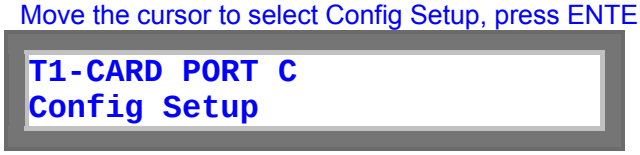


5.9 T1-CARD Menu

Config setup includes Frame, Code, YEL, AIS, CAS, OOS, INBAND, IDLE, INTE, LBO and FDL menus.

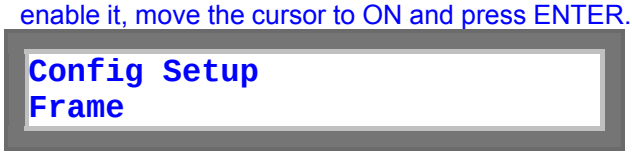
5.9.1 Config Setup

Move the cursor to select Config Setup, press ENTER.



5.9.1.1 Frame

Move the cursor to select Frame, press ENTER. The current selection is highlighted by an asterisk (*). To enable it, move the cursor to ON and press ENTER. To disable it, move the cursor to OFF and press ENTER.



5.9.1.2 Code

To select the coding scheme, use the arrow keys cycle through to a proper selection and press ENTER. The choices for T1 are AMI and HDB3. An asterisk (*) is placed by the currently selected item. Using the arrow keys to change the setting, and press ENTER. Be sure that this setting matches that of the network.

5.9.1.3 CRC

For two frame mode, set CRC to OFF. For multiframe mode, set CRC to ON. Move the cursor to select CRC, press ENTER. The current selection will be highlighted by an asterisk (*).

5.9.1.4 RAI

Use arrow keys to select ON or OFF, then press ENTER to enable or disable the option. The current selection will be highlighted by an asterisk (*).

5.9.1.5 AIS

Move the cursor to select AIS, press ENTER. To enable it, move the cursor to ON and press ENTER. To disable it, move the cursor to OFF and press ENTER.

5.9.1.6 CAS

Signaling is either CAS (channel associated signalling) or out-of-band such as CCIS (common channel interoffice signalling). To change the signaling type, use the arrow keys to choose from CAS ON or CAS OFF and press ENTER.

5.9.1.7 OOS

To change the OOS protocol, use the arrow keys to cycle through to the proper selection and Press ENTER.

5.9.1.8 FDL

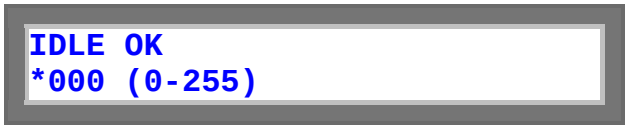
FDL menu shows the facility data link. To enable FDL by moving cursor to ON, while to disable it by moving cursor to OFF, and press ENTER. The current selection is highlighted by an asterisk "*".

5.9.1.9 Sa_bit

To change a channel for FDL, move cursor to Sa_bit, and use left or right arrow keys to select a channel, press ENTER. The current selection is highlighted by an asterisk (*).

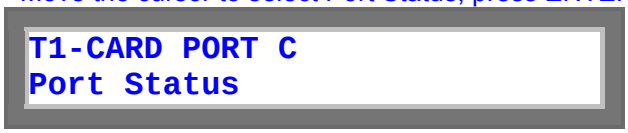
5.9.1.10 IDLE

Press ENTER for the Line Idle Code menu.
The Idle menu shows the transmission idle code when a DS0 time slot is in idle mode. To change the idle code, press ENTER to cycle through the selections. This operation must be concluded by moving the arrow keys to YES position and pressing ENTER to enable the changes.



5.9.2 Port Status

Move the cursor to select Port Status, press ENTER.

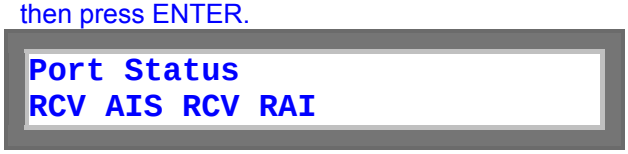


5.9.2.1 LOF LOS

Under Port Status menu to select LOF LOS, and move the cursor to NO or YES to setup LOF LOS then press ENTER.

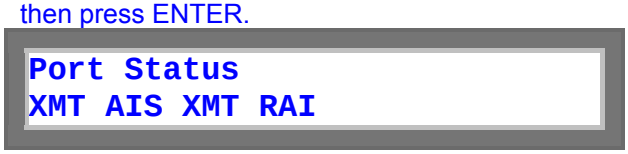
5.9.2.2 RCV AIS RCV RAI

Under Port Status menu to select RCV AIS RCV RAI, and move the cursor to NO to setup RCV AIS RCV RAI then press ENTER.



5.9.2.3 XMT AIS XMT RAI

Under Port Status menu to select XMT AIS AMT RAI, and move the cursor to NO to setup XMT AIS AMT RAI then press ENTER.

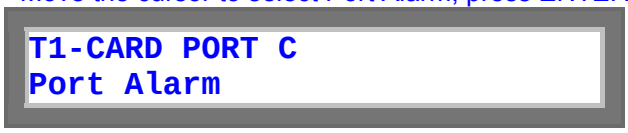


5.9.2.4 BPV ES

To setup the BPV ES, first move the cursor to the digit to be modified. Press enter.

5.9.3 Port Alarm

Move the cursor to select Port Alarm, press ENTER.



5.9.3.1 Alarm Setup

Move the cursor to select Alarm Setup, press ENTER.

5.9.3.1.1 Alarm Type

Move the cursor to select Alarm Type, press ENTER. The alarm types include YEL, AIS, LOS, LOF, BPV, ES, UAS, CSS, BUNDLE and MAC. The current selection is highlighted by an asterisk (*).

5.9.3.1.2 Threshold

Move the cursor to select Current Threshold press ENTER. Under Threshold sub-menu, use arrow keys to select a desired option.
Their submenu includes these options: T1 BPV, T1 ES, T1 UAS, and T1 CSS. Then move the cursor to the digit to be modified.

```
T1 ES OK
*0001 (1-65535)
```

```
T1 UAS OK
*00001 (1-65535)
```

```
T1 CSS OK
*00001 (1-65535)
```

5.9.3.2 Port History

Move the cursor to select Current Port History, press ENTER. Under Port History sub-menu, use arrow keys to select a desired option. The menu is used to show the Alarm History.
Their submenu includes these options: RAI, AIS, LOS, LOF, BPV, ES, UAS, CSS, BUNDLE and MAC.

```
Port Alarm
Port History
```

5.9.3.2.1 RAI

Move the cursor to select RAI, press ENTER. The menu shows the RAI alarm status.
Note: 1. MAJOR is Alarm Type
2. If the RAI alarm has ever happened, it will show alm. If it is not, will show OK.
3. 0000 shows how many times have it ever happened?

```
Port History
PORT B RAI
```

```
PORT B RAI
MAJOR OK 0000
```

5.9.3.2.2 AIS

AIS menu shows the configuration set for the alarm indication signal. Move the cursor to select AIS, press ENTER.
Note: 1. MAJOR is Alarm Type
2. If the AIS alarm has ever happened, it will show alm. If it is not, will show OK.
3. 0000 shows how many times have it ever happened?

```
Port History
PORT B AIS
```

```
PORT B AIS
MAJOR OK 0000
```

5.9.3.2.3 LOS

Move the cursor to select LOS, press ENTER. The menu shows the LOS alarm status.
Note: 1. MAJOR is Alarm Type
2. If the LOS alarm has ever happened, it will show alm. If it is not, will show OK.
3. 0000 shows how many times have it ever happened?

```
Port History
PORT B LOS
```

```
PORT B LOS
MAJOR OK 0000
```

5.9.3.2.4 LOF

Move the cursor to select LOF, press ENTER. The menu shows the LOF alarm status.
Note: 1. MAJOR is Alarm Type
2. If the LOF alarm has ever happened, it will show alm. If it is not, will show OK.
3. 0000 shows how many times have it ever happened?

```
Port History
PORT B LOF
```

```
PORT B LOF
MAJOR OK 0000
```

5.9.3.2.5 BPV

Move the cursor to select BPV, press ENTER. The menu shows the BPV alarm status.
Note: 1. MAJOR is Alarm Type
2. If the BPV alarm has ever happened, it will show alm. If it is not, will show OK.
3. 0000 shows how many times have it ever happened?

```
Port History
PORT B BPV
```

```
PORT B BPV
MAJOR OK 0000
```

5.9.3.2.6 ES

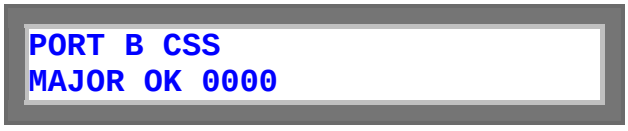
Move the cursor to select ES, press ENTER. The menu shows the ES alarm status.
Note: 1. MAJOR is Alarm Type
2. If the ES alarm has ever happened, it will show alm. If it is not, will show OK.
3. 0000 shows how many times have it ever happened?

5.9.3.2.7 UAS

Move the cursor to select UAS, press ENTER. The menu shows the UAS alarm status.
Note: 1. MAJOR is Alarm Type
2. If the UAS alarm has ever happened, it will show alm. If it is not, will show OK.
3. 0000 shows how many times have it ever happened?

5.9.3.2.8 CSS

Move the cursor to select CSS, press ENTER. The menu shows the CSS alarm status.
Note: 1. MAJOR is Alarm Type
2. If the CSS alarm has ever happened, it will show alm. If it is not, will show OK.
3. 0000 shows how many times have it ever happened?



5.9.3.2.9 BUNDLE

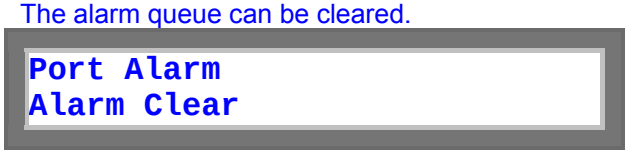
Move the cursor to select BUNDLE, press ENTER. The menu shows the BUNDLE alarm status.
Note: 1. MAJOR is Alarm Type
2. If the BUNDLE alarm has ever happened, it will show alm. If it is not, will show OK.
3. 0000 shows how many times have it ever happened?

5.9.3.2.10 MAC

Move the cursor to select MAC, press ENTER. The menu shows the MAC alarm status.
Note: 1. MAJOR is Alarm Type
2. If the MAC alarm has ever happened, it will show alm. If it is not, will show OK.
3. 0000 shows how many times have it ever happened?

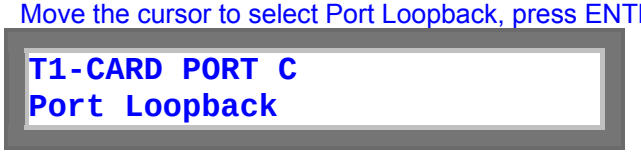
5.9.3.3 Alarm Clear

Pressing enter when cursor is on NEXT will move to the next alarm item. To confirm the existing option, move cursor to EDIT and press ENTER. Then move cursor to the desired option and press ENTER.
The alarm queue can be cleared.



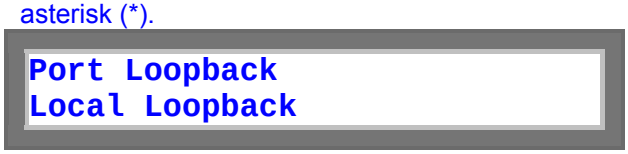
5.9.4 Port Loopback

Move the cursor to select Port Loopback, press ENTER.



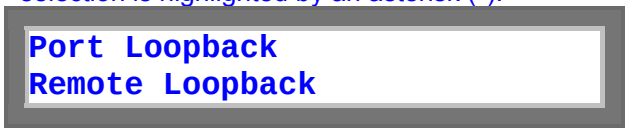
5.9.4.1 Local Loopback

Move the cursor to select Current Local Loopback press ENTER. Under Local Loopback sub-menu, use arrow keys to select a desired option.
Their submenu includes these options: OFF, LOCAL, PLB and LLB. . The current selection is highlighted by an asterisk (*).



5.9.4.2 Remote Loopback

T1 remote loopback is used to activate T1 line remote loopback test. To activate or deactivate T1 remote loopback, use left or right arrow keys cycle through to a desired selection and press ENTER. The current selection is highlighted by an asterisk (*).



5.9.4.3 Send Bert

Move the cursor to select Send Bert, press ENTER.

5.9.4.3.1 Bert Type

Move the cursor to select Current Bert Type press ENTER. Under Bert Type sub-menu, use arrow keys to select a desired option.
Their submenu includes these options: OFF, PRBS_FULL and N*64K. The current selection is highlighted by an asterisk (*).

5.9.4.3.2 Bert Direct

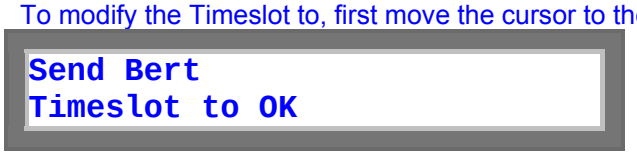
Move the cursor to select Bert Direct, press ENTER. Its sub-menus include these options: LINE and PCM. The current selection is highlighted by an asterisk (*).

5.9.4.3.3 Timeslot from

To modify the Timeslot from, first move the cursor to the digit to be modified. Press enter. The current selection is highlighted by an asterisk (*).

5.9.4.3.4 Timeslot to

To modify the Timeslot to, first move the cursor to the digit to be modified. Press enter.



5.9.5 Clock Source

Move the cursor to select Clock Source, press ENTER.

```
T1-CARD PORT C
Clock Source
```

5.9.5.1 Master Clock

The IP6700 provide operator to setup each port's clock source from internal, external, line (from A/B/C/D), or WAN (from A/B/C/D). Move the cursor to select Master Clock, press ENTER. The current selection is highlighted by an asterisk (*).

```
Clock Source
Master Clock
```

```
Master Clock
*INTERNAL
```

```
Master Clock
EXTERNAL
```

```
Master Clock
PORT A (LINE)
```

```
Master Clock
PORT B (LINE)
```

```
Master Clock
PORT C (LINE)
```

```
Master Clock
PORT D (LINE)
```

```
Master Clock
PORT A (BUNDLE 0)
```

```
Master Clock
PORT B (BUNDLE 0)
```

```
Master Clock
PORT C (BUNDLE 0)
```

```
Master Clock
PORT D (BUNDLE 0)
```

5.9.5.2 Second Clock

The IP6700 provide operator to setup each port's clock source from internal, external, line (from A/B/C/D), or WAN (from A/B/C/D). Move the cursor to Second Clock, press ENTER. The current selection is highlighted by an asterisk (*).

```
Clock Source
Second Clock
```

```
Second Clock
*INTERNAL
```

```
Second Clock
EXTERNAL
```

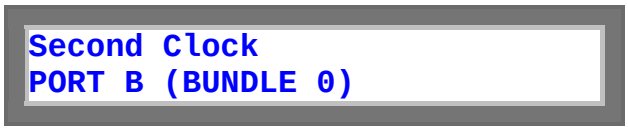
```
Second Clock
PORT A (LINE)
```

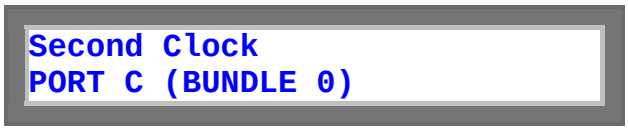
```
Second Clock
PORT B (LINE)
```

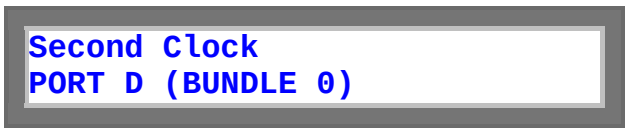
```
Second Clock
PORT C (LINE)
```

```
Second Clock
PORT D (LINE)
```

```
Second Clock
PORT A (BUNDLE 0)
```

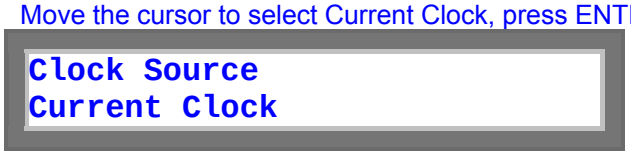






5.9.5.3 Current Clock

Move the cursor to select Current Clock, press ENTER. The current selection is highlighted by an asterisk (*).



5.9.5.4 Recover Clock

Move the cursor to select Current Clock press ENTER. Under Recover clock sub-menu, use arrow keys to select a desired option.
Their submenu includes these options: MANUAL and AUTOMATIC
The current selection is highlighted by an asterisk (*).

5.9.5.5 Clock status

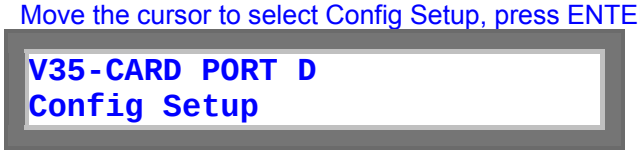
Move the cursor to select Clock status, press ENTER.

5.10 DTE Menu

Config setup includes Mode, Rate, Tx clock, Rx clock, Data, RTS, TTM and DCD menus.

5.10.1 Config Setup

Move the cursor to select Config Setup, press ENTER.



5.10.1.1 Mode

The Mode menu shows the current Mode is either FULL or 64 Kbps. To change the Mode data rate, move cursor to the desired selection and press ENTER. The current selection will be highlighted by an asterisk (*).

5.10.1.2 Rate

The Rate menu shows the current DTE data rate is either 64 or 56 Kbps. To change the DTE data rate, move cursor to the desired selection and press ENTER. The current selection will be highlighted by an asterisk (*).

5.10.1.3 Tx clock

The Data menu shows the current DTE Tx clock polarity (either normal or inverted) by placing an asterisk (*) at the appropriate selection. To change the DTE Tx clock polarity, move cursor to the desired selection and press ENTER.

5.10.1.4 Rx clock

The Data menu shows the current DTE Rx clock polarity (either normal or inverted) by placing an asterisk (*) at the appropriate selection. To change the DTE Rx clock polarity, move cursor to the desired selection and press ENTER.

5.10.1.5 DATA

The Data menu shows the current DTE data polarity (either normal or inverted) by placing an asterisk (*) at the appropriate selection. To change the DTE data polarity, move cursor to the desired selection and press ENTER.

```
DATA
Inverted
```

5.10.1.6 RTS

The RTS menu shows the current DTE RTS operation mode (either activate or permanent) by placing an asterisk (*) at the appropriate selection. To change the DTE RTS operation mode, move cursor to the desired selection and press ENTER.

```
Config Setup
RTS
```

```
RTS
*Active
```

```
RTS
Permanent
```

5.10.1.7 TTM

TTM menu shows the current DTE terminal timing mode (either OFF or ON) by placing an asterisk (*) at the appropriate selection. To change the DTE terminal timing mode, move cursor to the desired selection and press ENTER.

```
Config Setup
TTM
```

```
TTM
*Off
```

```
TTM
On
```

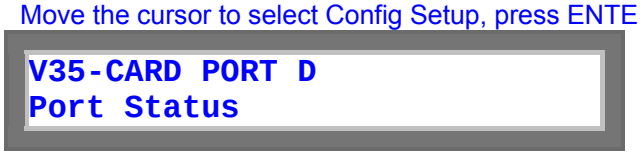
5.10.1.8 DCD

DCD menu shows the current DTE DCD mode (either Normal or On) by placing an asterisk (*) at the appropriate selection. To change the DTE DCD mode, move cursor to the desired selection and press ENTER.

```
Config Setup
DCD
```

5.10.2 Port Status

Move the cursor to select Config Setup, press ENTER.

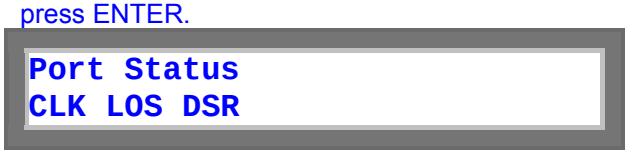


5.10.2.1 Exit RTS LOS

Under Port Status menu to select Exit RTS LOS, and move the cursor to NO or YES to setup Exit RTS LOS then press ENTER.

5.10.2.2 CLK LOS DSR

Under Port Status menu to select CLK LOS DSR, and move the cursor to NO to setup Exit CLK LOS DSR then press ENTER.



5.10.2.3 CTS DCD

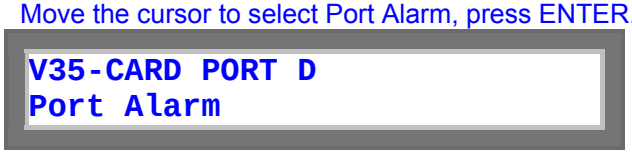
Under Port Status menu to select CTS DCD, and move the cursor to NO to setup CTS DCD then press ENTER.

5.10.2.4 DSR RTS

Under Port Status menu to select DSR RTS, and move the cursor to NO to setup DSR RTS then press ENTER.

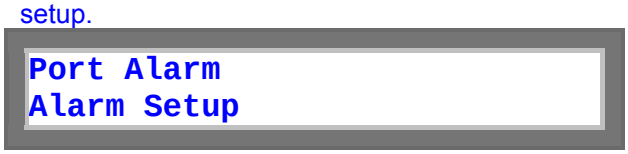
5.10.3 Port Alarm

Move the cursor to select Port Alarm, press ENTER.



5.10.3.1 Alarm Setup

Move the cursor to NEXT or PREV to view alarm, then go to EDIT option with pressing ENTER to do alarm setup.

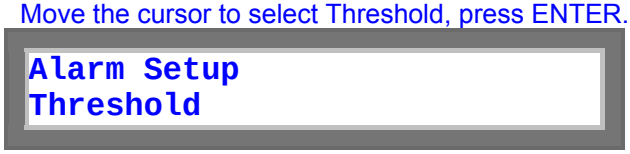


5.10.3.1.1 Alarm Type

Move the cursor to select Alarm Setup, press ENTER.

5.10.3.1.2 Threshold

Move the cursor to select Threshold, press ENTER.

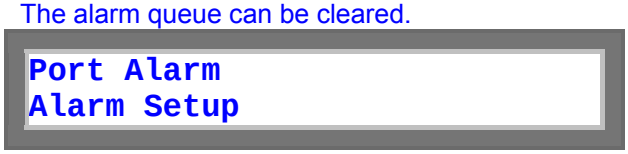


5.10.3.2 Alarm History

Move the cursor to select Alarm History, press ENTER.

5.10.3.3 Alarm Clear

Pressing enter when cursor is on NEXT will move to the next alarm item. To confirm the existing option, move cursor to EDIT and press ENTER. Then move cursor to the desired option and press ENTER.
The alarm queue can be cleared.



5.10.4 Port Loopback

Move the cursor to select Port Loopback, press ENTER.

```
V35-CARD PORT D
Port Loopback
```

5.10.4.1 Local Loopback

Under Port Loopback menu, use left or right key to select Local Loopback menu. Under Local Loopback sub-menu, use arrow keys to select a desired option.
Its sub-menus includes these options: OFF, TO_DTE and TO_WAN. The current selection is highlighted by an asterisk (*).

```
Port Loopback
Local Loopback
```

```
Local Loopback
*OFF
```

```
Local Loopback
TO-DTE
```

```
Local Loopback
TO-WAN
```

5.10.5 Clock Source

Move the cursor to select Clock Source, press ENTER.

```
V35-CARD PORT D
Clock Source
```

5.10.5.1 Master Clock

The IP6700 provide operator to setup each port's clock source from internal, external, line (from A/B/C/D), or WAN (from A/B/C/D). Move the cursor to select Master Clock press ENTER. The current selection is highlighted by an asterisk (*).

```
Clock Source
Master Clock
```


Master Clock
*INTERNAL

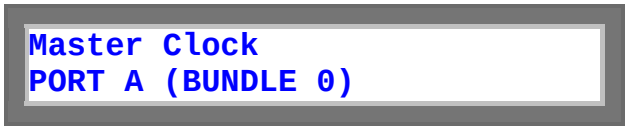

Master Clock
EXTERNAL

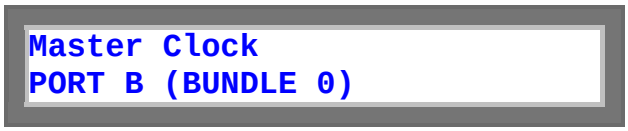

Master Clock
PORT A (LINE)

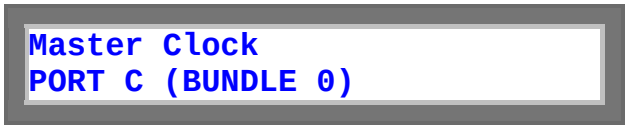

Master Clock
PORT B (LINE)

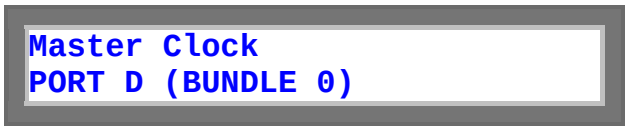

Master Clock
PORT C (LINE)


Master Clock
PORT D (LINE)


Master Clock
PORT A (BUNDLE 0)

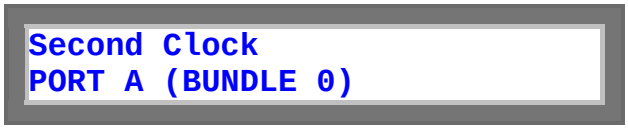

Master Clock
PORT B (BUNDLE 0)

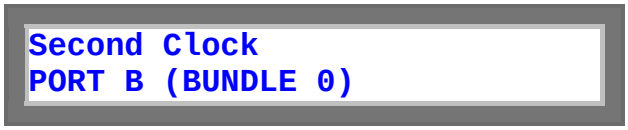

Master Clock
PORT C (BUNDLE 0)

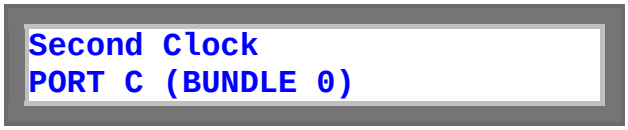

Master Clock
PORT D (BUNDLE 0)

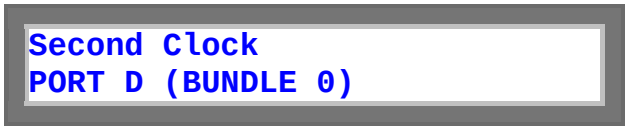
5.10.5.2 Second Clock

The IP6700 provide operator to setup each port's clock source from internal, external, line (from A/B/C/D), or WAN (from A/B/C/D). Move the cursor to select Second Clock press ENTER. The current selection is highlighted by an asterisk (*).



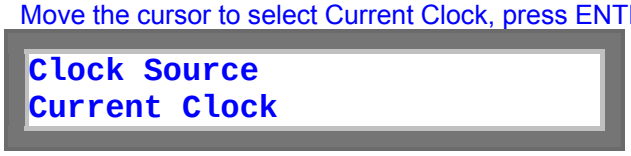






5.10.5.3 Current Clock

Move the cursor to select Current Clock, press ENTER. The current selection is highlighted by an asterisk (*).



5.10.5.4 Recover Clock

Move the cursor to select Current Clock press ENTER. Under Recover clock sub-menu, use arrow keys to select a desired option.
Their submenu includes these options: MANUAL and AUTOMATIC. The current selection is highlighted by an asterisk (*).

5.10.5.5 Clock status

Move the cursor to select Clock status, press ENTER.


Clock status
NORMAL

6 TERMINAL OPERATION

Loop-IP6700 provides comprehensive and enhanced configuration and test capability through the console port. A VT-100 type terminal or a modem can be connected to the console port on the front of the Loop-IP6700. By use of single-character commands and arrow keys, the Loop-IP6700 can be configured and tested. The single-character commands are not case sensitive. On each screen, the available commands and the configurable fields are highlighted. When the Loop-IP6700 is powered on, user has not logged on yet a main menu will show as below:

NOTE: On the upper right corner of the screen, a time-of day display indicates the time the current screen is shown. User may hit any key other than ESC to update the screen.

6.1 Main Menu

If the terminal screen is illegible, press the “enter’” and “esc” key alternatively to bring up the main menu. This is particularly needed if the terminal is connected to the controller while the power is already applied. If the main menu still fails to appear, check to see that the terminal is configured as 9600,9, n, 1, and that a proper null modem or a null modem cable is used.

```
LOOP IP6700                    === Main Menu ===            18:12:17 03/14/2000

Serial Number   :  -10485744
Hardware Version: Ver.B                 Start Time  : 15:49:05 03/14/2000
Software Version: V1.01.01 03/14/2006

[DISPLAY]                               [SETUP]
C -> System Configuration               S -> System Setup
J -> Time Slot IP Assignment            P -> Choose Port
B -> Clock source Configuration         T -> Time Slot IP Assignment
D -> Link Status                        W -> Firmware Transfer
Q -> Alarm Queue                        V -> Store/Retrieve Configuration
                                        K -> Clock Source Setup
                                        M -> System Alarm Setup

[LOG]                                   [MISC]
F -> Log Off [SETUP],[MISC] Menu        Y -> Return To Default
O -> Log On  [SETUP],[MISC] Menu        Z -> Reset
                                        X -> Clear Alarm Queue & History
                                        A -> Alarm Cut Off



>>SPACE bar to refresh or enter a command ===>
```

6.1.1 System Setup

Press "S" from the “Main Menu” to view the system setup. The screen will show as below.

```
LOOP IP6700                    === System Setup ===          00:00:29#01/01/UU93



                          A -> System
                          B -> Inband System Setup
                          C -> Password
                          D -> Port Speed Setup

<< Press ESC key to return to Main Menu or enter a command >>
```

6.1.1.1 System

Press "A" from the "System Setup" to display the current status for system and console port. Refer to the table below to see the differences when SNMP uses different ports.

```
LOOP IP6700              === System Setup (SYSTEM) ===      15:07:22 10/03/2006
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS
Time/Date      :15:07:26 10/03/2006  Ethernet Port:ENABLE  Lan Port: Data_only
IP Addr.:010.002.003.055 Subnet Mask:255.255.000.000 Gateway IP:000.000.000.000
Community:(Get)public           Community(Set)public       Wan Port: WAN_only
Trap IP Address1:000.000.000.000  Community1:public
Trap IP Address2:000.000.000.000  Community2:public
Trap IP Address3:000.000.000.000  Community3:public
Trap IP Address4:000.000.000.000  Community4:public
Trap IP Address5:000.000.000.000  Community5:public
Device Name    :LOOP IP6700
System Location:8F, No.8, HSIN ANN ROAD
                SCIENCE-BASED INDUSTRIAL PARK
                HSINCHU, 30077 TAIWAN

System Contact :Name: FAE   Tel:+886-3-5787696  Fax:+886-3-5787695
                E-mail:FAE@loop.com.tw

Active bundle Timer (s) : 00000090      Loopback Timer (s) : 00000060
LAN Rate Setup : 0100 x32K              CAS Idle Code : 01
[CONSOLE port]
Baud Rate :9600   Data Length :8-Bits   Stop Bit :1-Bit   Parity :NONE

<< Press ESC key to return to previous menu >>
```

Note:

1. IP address: device IP address
2. Gateway IP: company’s DNS server value
3. Trap IP address: the user can setup no more than 5 Trap IP addresses.
4. In any situation, the user cannot connect any two ports in one LAN. When SNMP is setup at the SNMP port, the WAN port and the LAN port act as switches. When SNMP is setup at the WAN port, the SNMP port will shut down. No matter what the user does in any setup, the LAN port and the WAN port act as switches.

	SNMP Port	LAN Port	WAN Port
When SNMP uses SNMP port	Enable	Data_only	WAN_only
When SNMP uses LAN port	×	D+S, S-on D+S, S-off	WAN_only
When SNMP uses WAN port	× (Shut down)	× (Data_only)	WAN +S

6.1.1.2 Inband Management

Press "B" from the "System Setup" to setup Inband Management. It is to manage remote device from local device. For example: one E1 assign one timeslot to manage other device. Please refer to Figure 6-1 for detail.

```
LOOP IP6700                  === Inband Management ===          13:12:52 12/06/2005
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

Inband      :OFF
Port        :PORT_A
Time Slot   :00

<< Press ESC key to return to previous menu >>
```

Note: 1. When Inband is on, the user needs to create a bundle.

2. Inband management can manage a pair only
3. Three ports in IP6700 cannot connect together in same switch. It will cause Ethernet Loop.

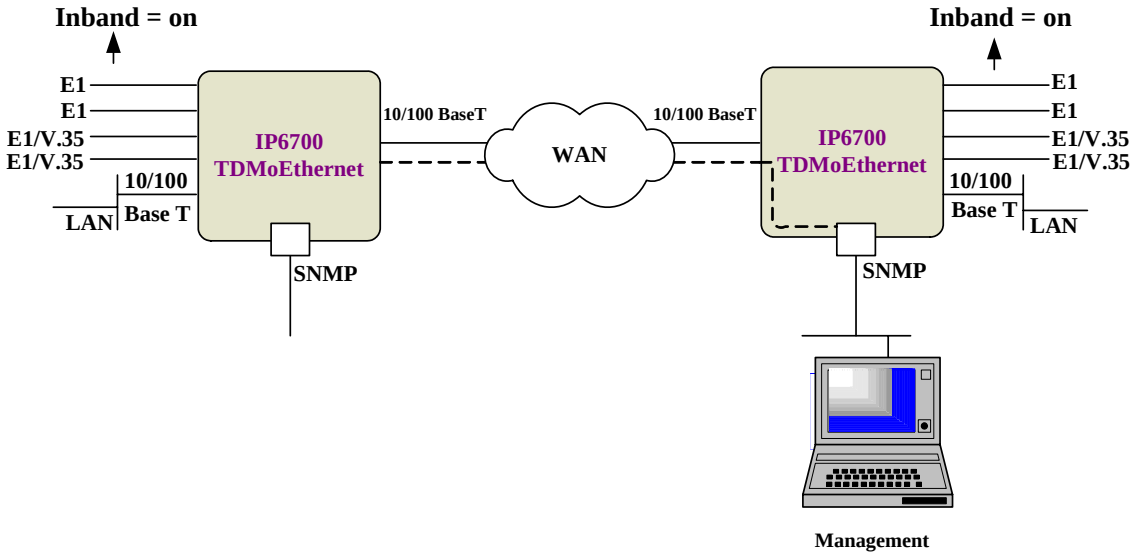


Figure 6- 1 Inband management Diagram

6.1.1.3 Password

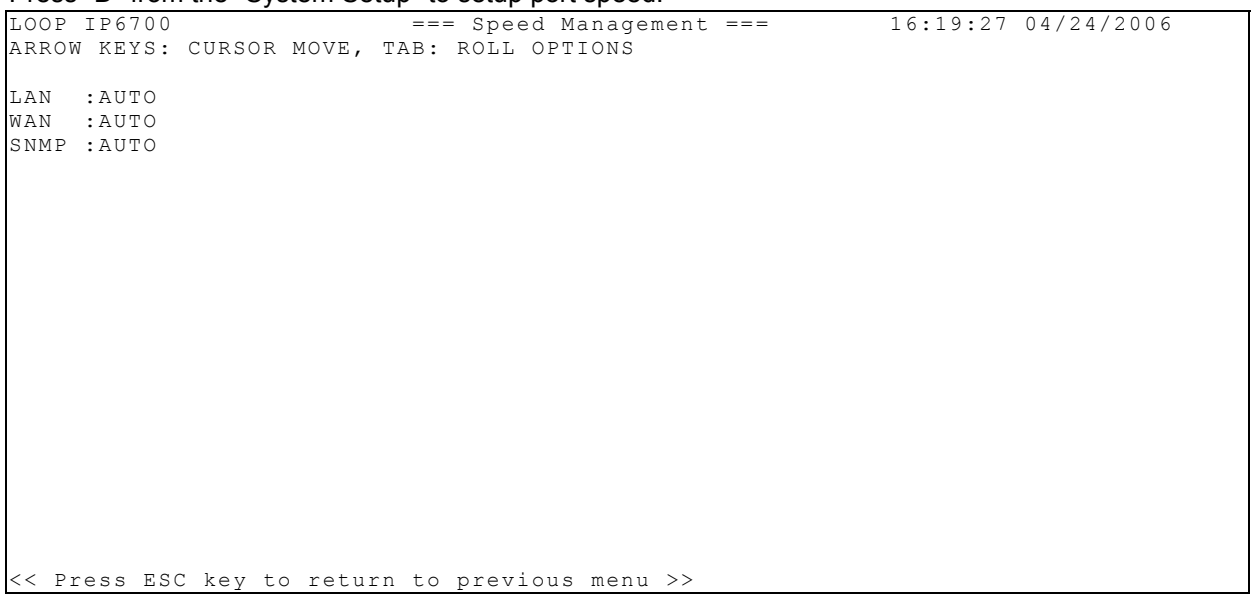
Press "B" from the "System Setup" to enter into the password setup screen. This menu is used to enable, disable, and change password. Use TAB key to roll up the desired options, then press ENTER to confirm the setting.

```
LOOP IP6700                    === Password Setup ===         14:08:45 12/06/2005
ARROW KEYS: CURSOR MOVE, BACKSPACE to edit, ESC to abort


       Enable Password : YES
       Change Password : YES
       Old    Password : XXXX_______
       New    Password : XXXX_______
       Confirm Password: ___________









 >> Please input new password again to confirm, then press ENTER .
```

6.1.1.4 Port Speed Setup

Press "D" from the "System Setup" to setup port speed.

```
LOOP IP6700                 === Speed Management ===        16:19:27 04/24/2006
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

LAN  :AUTO
WAN  :AUTO
SNMP :AUTO
```



6.1.1.5 Logoff

After completing the system setup or clear history data, user should log off to prevent accidentally changing the system configuration. Enters “F” to logoff.

6.1.1.6 Logon

To show a full menu, user has to logon. If the password option is turned on, a prompt asking for password is shown.

```
==>> Enter password :
```

Only after a valid password is entered, the full menu is shown, otherwise user is asked to enter the correct password again.

```
>> Invalid input of password ! Try again ?[Y/N]
```

6.1.2 Time Slot IP Assignment

Press "T" from the “Main Menu” to view the Time Slot IP Assignment. The screen will show as below.

```
LOOP IP6700                   === MAP Setup ===            11:33:38 11/14/2006



                          V -> Bundle IP setup
                          W -> Time Slot IP Assignment



<< Press ESC key to return to Main Menu or enter a command >>
```

6.1.2.1 Bundle IP Setup

Press “V” to get the screen of Bundle IP Setup.

```
LOOP IP6700                 === Bundle IP Setup ===         15:54:38 11/03/2006
ARROW KEYS: CURSOR MOVE, Please Input: nnn.nnn.nnn.nnn, BACKSPACE to edit

Src. IP Address :000.000.000.000
Subnet Mask     :000.000.000.000
Gatway IP       :000.000.000.000









<< Press ESC key to return to previous menu >>
```

Note: The Src. IP Address should be IP 6700 WAN IP

6.1.2.2 Time Slot IP Assignment

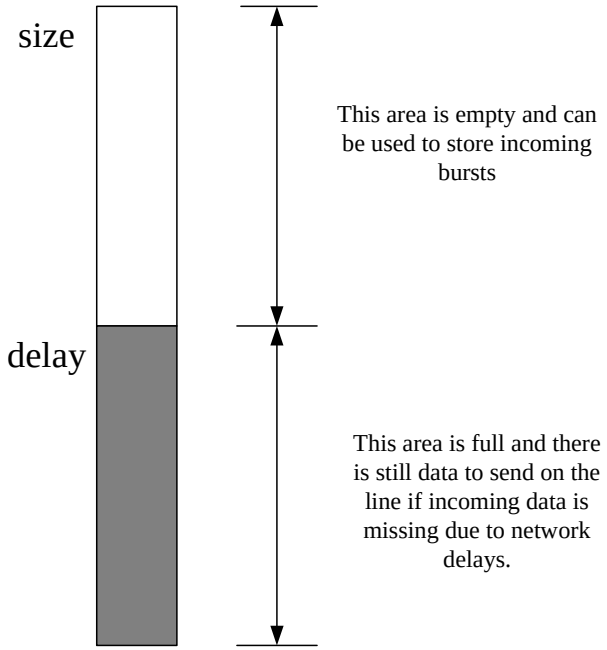
Press “T” to get into the screen of Time Slot IP Assignment

```
LOOP IP6700                 === System Setup(MAP) ===         11:33:53 11/14/2006
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS


                              PO/TS TS PO/TS TS BNDL ID/UDP NUM Dest IP Address
Port      : PORT_A            ===== == ===== == ================ ================
Bundle ID : 0
Action    : Add bundle
UDP Number: 0000                                Cell Num Jitter Delay Jitter Size
Time Slot : 00                                  ======== =========== ============
Time Slot#: 00
Dest IP Addr: 000.000.000.000
Cell in Bundle: 05
Jitter Delay:   020
Jitter Size:    256
VLAN:           OFF
VLAN1 ID:       0000
VLAN1 priority: 0
VLAN2 ID:       0000
VLAN2 priority: 0
Confirm?    Yes


<< Press ESC key to return to main menu or save system setup >>
```

Note:

1. For SW Version 1.01.07 or over, User needs to setup Bundle from Bundle 0 because only Bundle 0 can transfer clock.

2. Bundle ID — refer to table of Maximum Bundle Allocation below
   UDP number — There are 4 ports to have UDP number from 1 to 8063. If one port gets UDP number such as 100, another port cannot use same UDP number (refer to Figure 6-1 for detail).
   Cell in Bundle — In one bundle, how many cell will include (refer to Figure 8-5 for detail)
   Jitter Delay — Total delay buffer n x 0.5 ms max.
   Jitter Size — Packet delay cannot ≧n x 0.5 ms



＊Delay should be smaller than size. Also, the difference between size and delay should be larger than the time that it takes to reconstruct a packet (otherwise an overrun may occur when the packet arrives). Configuring the Jitter Buffer parameters correctly avoids under-run and overrun situation. Under-run occurs when the Jitter Buffer is empty (the entering rate is lower than the exiting one). In case of an under-run event, the chip transmits conditioning data instead of actual data towards the TDM interface. Overrun occurs when the jitter buffer is full and there is no room for new data to enter (the entering rate exceeds the exiting one). Under-run and overrun require special treatment from the chip HW, depending on the bundle type.

Figure 6- 2 Jitter Buffer Diagram

After configured it. Press “Y” or “N” to confirm it.

```
Are you sure [Y/N] ?
```

After confirmed to save the configuration.

```
LOOP IP6700                === System Setup(MAP) ===         11:39:48 11/14/2006
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS


                                PO/TS TS PO/TS TS BNDL ID/UDP NUM Dest IP Address
Port       : PORT_A             ===== == ===== == ================ ===============
Bundle ID  : 00                  A  1  1  A 17 17     0           1 010.003.013.004
Action     : Delete bundle       A  2  2  A 18 18
UDP Number: 0001                 A  3  3  A 19 19 Cell Num Jitter Delay Jitter Size
Time Slot  : 01                  A  4  4  A 20 20 ======== =========== ============
Time Slot#: 31                   A  5  5  A 21 21     5         20         256
Dest IP Addr: 010.003.013.004    A  6  6  A 22 22
Cell in Bundle: 05               A  7  7  A 23 23
Jitter Delay:   020              A  8  8  A 24 24
Jitter Size:    256              A  9  9  A 25 25
VLAN:           OFF              A 10 10  A 26 26
VLAN1 ID:       0000             A 11 11  A 27 27
VLAN1 priority: 0                A 12 12  A 28 28
VLAN2 ID:       0000             A 13 13  A 29 29
VLAN2 priority: 0                A 14 14  A 30 30
Confirm?    Yes                  A 15 15  A 31 31
                                 A 16 16

<< Press ESC key to return to main menu or save system setup >>
```

After configured it. Press “Y” or “N” to confirm it.

```
Are you sure [Y/N] ?
```

NOTE:

Configuration		Option	Default
E1 Line	Port	PORT_A, PORT_B, PORT_C, PORT_D	PORT_A
	Action	Add bundle, Delete bundle, Delete all, Active all, change bundle, stop to bundle	Add bundle
	Bundle ID	0-31	0
	Time Slot	1-31	1
	Time Slot#	1-31	1
	Payload	AAL1	AAL1
	UDP Number	1-8063	1
	IP Address	Range of valid IP	000.000.000.000
	Confirm?	NO, YES	NO

The Action has two options, “Add bundle” and “Delete bundle”. When user choose “Add bundle” option, the bundle ID must be unique for the particular port. When user choose “Delete bundle” option, the particular bundle must already been created. The UDP number need to unique for all the ports.

The chip supports up to 64 bundles. The maximum number of bundles that can be allocated per port is configured as below

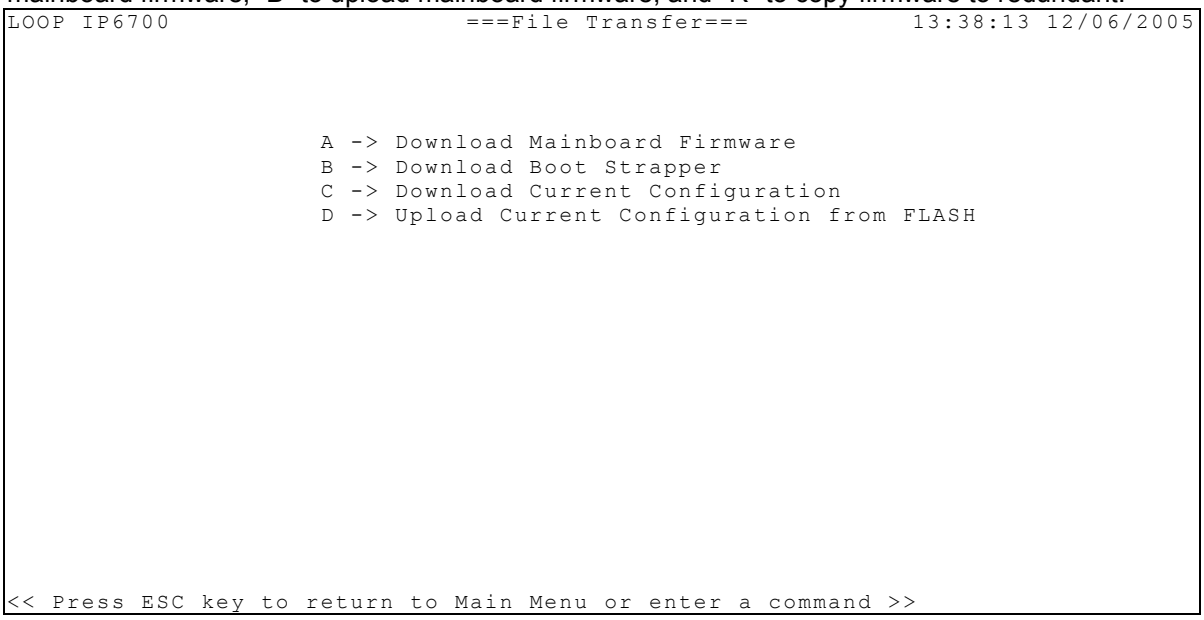
Maximum Bundle Allocation

Allocation No	Port 1	Port 2	Port 3	Port 4
1.	32	Disabled	32	Disabled
2.	32	Disabled	16	16
3.	16	16	32	Disabled
4.	16	16	16	16

The highest priority of Allocation Number is descended from Allocation No 4 to Allocation No1.

6.1.3 Firmware Transfer

Under the Main Menu, press “W” to enter in the screen of File Transfer as below. Press “A” to download mainboard firmware, “B” to upload mainboard firmware, and "R" to copy firmware to redundant.



6.1.3.1 Download Mainboard Firmware

```
LOOP IP6700                 === Download Firmware ===        13:38:34 12/06/2005
ARROW KEYS: CURSOR MOVE, Please Input: nnn.nnn.nnn.nnn, BACKSPACE to edit

Firmware 1 Version    : Empty or Invalid ver
Firmware 2 Version    : Empty or Invalid ver
Current Firmware Bank: 1
Next Boot Firmware    : 1
TFTP Server IP        : 000.000.000.000
Firmware File Name    :









<< Press ESC key to return to previous menu >>
```

6.1.3.2 Download Boot Strapper

```
LOOP IP6700                 === Download Bootup Code ===      18:11:15 12/06/2005
ARROW KEYS: CURSOR MOVE, Please Input: nnn.nnn.nnn.nnn, BACKSPACE to edit




TFTP Server IP        : 000.000.000.000
Download File Name    :









<< Press ESC key to return to previous menu >>
```

6.1.3.3 Download Current Configuration

```
LOOP IP6700           === Download Current Configuration === 13:39:27 12/06/2005
ARROW KEYS: CURSOR MOVE, Please Input: nnn.nnn.nnn.nnn, BACKSPACE to edit




TFTP Server IP       : 000.000.000.000
Config File Name     :









<< Press ESC key to return to previous menu >>
```

6.1.3.4 Upload Current Configuration from FLASH

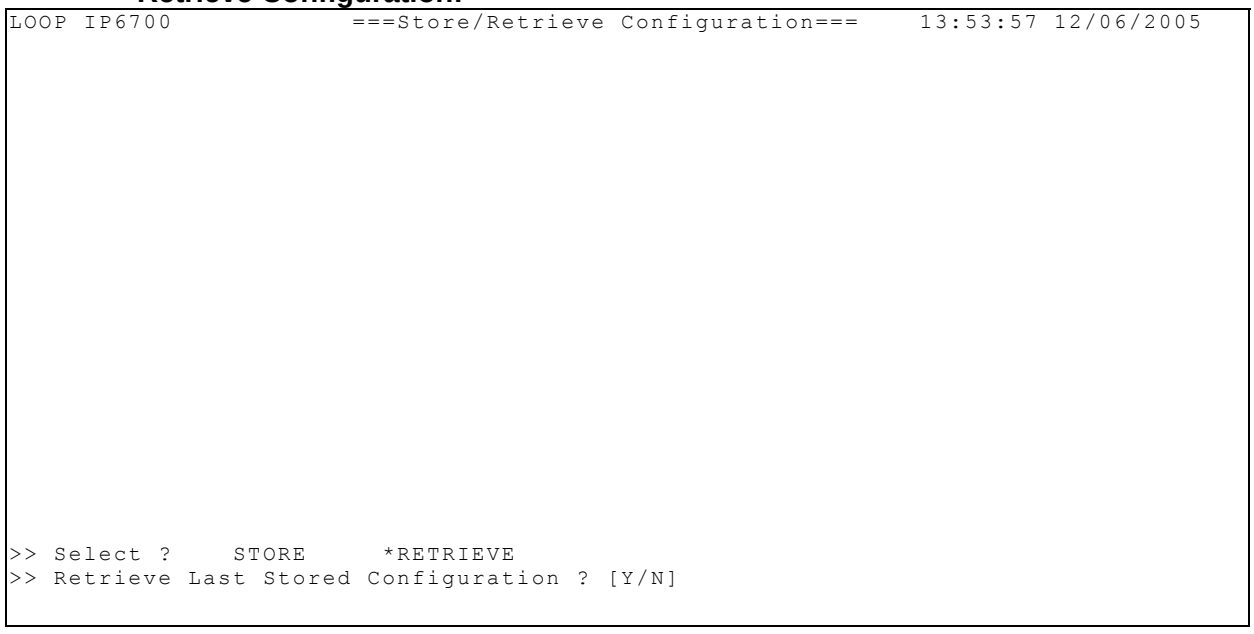
```
LOOP IP6700           === Upload Current Configuration ===  13:45:49 12/06/2005
ARROW KEYS: CURSOR MOVE, Please Input: nnn.nnn.nnn.nnn, BACKSPACE to edit




TFTP Server IP       : 000.000.000.000
Config File Name     :









<< Press ESC key to return to previous menu >>
```

6.1.4 Store/Retrieve Configuration

Under the Main Menu, press “V” to store or retrieve the current configuration as the following screen shows. Use TAB key to select STORE or RETRIEVE, press ENTER. The current selection will be highlighted by an asterisk (*).

Store Configuration:

Retrieve Configuration:



6.1.5 Clock Source Setup

Under the "MainMenu Setup" menu, press “K” to setup clock source as below.

```
==>> Input the E1 port number (A~D): A
```

The screen of clock will show as below after input E1 port number.

```
E1 Port A          === System Setup (CLOCK-Normal Mode) ===13:57:00 12/06/2005
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS


Master_Clk Source : INTERNAL
Second_Clk Source : INTERNAL
Current Clock     : MASTER_CLK
Clk_Recover_Mode  : MANUAL
Clock Status      : NORMAL









<< Press ESC key to return to previous menu >>
```

NOTE:

Configuration	Option	Default
Master_Clk Source	INTERNAL, EXTERNAL, PORT A(E1-LINE), PORT B(E1-LINE), PORT C(E1-LINE), PORT D(E1-LINE), PORT A(WAN), PORT B(WAN), PORT C(WAN), PORT D(WAN)	INTERNAL
Second_Clk Source	INTERNAL, EXTERNAL, PORT A(E1-LINE), PORT B(E1-LINE), PORT C(E1-LINE), PORT D(E1-LINE), PORT A(WAN), PORT B(WAN), PORT C(WAN), PORT D(WAN)	Add bundle
Current Clock	MASTER_CLK,SECOND_CLK,INTERNAL	MASTER_CLK
Clk_Recover_Mode	MANUAL, AUTOMATIC	AUTO
Clock Status	NORMAL	NORMAL

6.1.6 System Alarm Setup

Press “M from the Main Menu, the screen of System Alarm Setup will show as below.

```
LOOP IP6700                 === System Alarm Setup ===       14:58:14 12/06/2005
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

[TYPE]                 [ALARM]
CLK Change             DISABLE









<< Press ESC key to return to previous menu >>
```

6.1.7 System Configuration

Press “C” from the Main Menu, the screen of System Configuration will show as below.

```
LOOP IP6700               === System Configuration ===      13:58:21 12/06/2005

[System]
                                        Ethernet Port  :DISABLE
IP Address     :000.000.000.000         Subnet Mask    :000.000.000.000
Trap IP Address:000.000.000.000         Gateway IP     :000.000.000.000
Community(Get) :public                  Community(Set) :private
Device Name    :LOOP IP6700
System Location:8F, No.8, HSIN ANN ROAD
                SCIENCE-BASED INDUSTRIAL PARK
                HSINCHU, 30077 TAIWAN

System Contact :Name: FAE   Tel:+886-3-5787696  Fax:+886-3-5787695
                 E-mail:FAE@loop.com.tw

IP Interface   : ETHERNET_PORT
Lan Rate Setup : 100 x32K
[CONSOLE port]
Baud Rate      : 9600
Data Length    : 8-Bits
Stop Bit       : 1-Bit



<< ESC key to return to previous menu, SPACE bar to refresh >>
```

6.1.8 Display MAP IP Assignment

Press “J” from the Main Menu Configuration Menu, the screen will show as below.

```
LOOP IP6700                === System Setup (MAP) ===       13:59:40 12/06/2005

 Port Bundle UDP Cells Jitter   IP Address      Time Slot
      ID     Num  Num size/Delay
 ==== ====== ==== ==  ==== ==== =============== ==============================
  A       0      1  5    20  256 000.000.000.000 0,1,2,3,4,5,6,7,8,9,10,11,12,
                                                 13,14,15,16,17,18,19,20,21,22,
                                                 23,24,25,26,27,28,29,30,31









<< SPACE bar to refresh or ESC key return to main menu >>
```

The bundle entries are shown on the terminal as above. If the displaying entries are more than one page, hit space key other view the next page. To return to main menu, hit “ESC” key.

6.1.9 Clock source Configuration

Press “B” from the Main Menu, the screen of Clock Source Configuration will show as below.

```
LOOP IP6700                === Clock Source Setup ===       14:00:21 12/06/2005



Master_Clk Source : INTERNAL
Second_Clk Source : INTERNAL
Current Clock     : MASTER_CLK
Clk_Recover_Mode  : MANUAL
Clock Status      : NORMAL

<< ESC key to return to previous menu, SPACE bar to refresh >>
```

6.1.10 Byte and Packet Counters

Press “D” from the Main Menu, the screen of Byte and Packet Counters will show as below.

```
LOOP IP6700            === Byte and Packet Counters ===    18:02:03 05/15/2006

-- Transwitch Counters
   TXC Classified Packets Received  : 0
   TXC Byte Received                : 0
   TXC Byte Transmitted             : 1008
   TXC Packets Received             : 0
   TXC Packets Transmitted          : 24
   LAN Port Link Status             : Link Down
   WAN Port Link Status             : Link Down
   SNMP Port Link Status            : Link Down









<< ESC key to return to previous menu, SPACE bar to refresh >>
```

6.1.11 Alarm Queue

Press “Q” from the Main Menu, the Alarm Queue Configuration will show as below.

```
LOOP IP6700                === Unit Alarm Queue ===        18:56:30 03/14/2000

   1 -- Port D  E1: MAJOR    UAS remove-----------18:49:08 03/14/00
   2 -- Port C  E1: MAJOR    UAS remove-----------18:49:08 03/14/00
   3 -- Port A  E1: MAJOR    UAS remove-----------18:49:08 03/14/00
   4 -- Port D  E1: MAJOR    UAS------------------18:49:07 03/14/00
   5 -- Port C  E1: MAJOR    UAS------------------18:49:07 03/14/00
   6 -- Port A  E1: MAJOR    UAS------------------18:49:07 03/14/00
   7 -- Port A  E1: MAJOR    UAS remove-----------18:40:24 03/14/00
   8 -- Port A  E1: MAJOR    UAS------------------18:40:23 03/14/00
   9 -- Port A  E1: MAJOR    LOF------------------18:40:15 03/14/00
  10 -- Port A  E1: MAJOR    LOS------------------18:40:15 03/14/00
  11 -- Port A  E1: MAJOR    ES  remove-----------18:40:15 03/14/00
  12 -- Port A  E1: MAJOR    ES -------------------18:40:14 03/14/00
  13 -- Port D  E1: MAJOR    UAS remove-----------18:34:08 03/14/00
  14 -- Port C  E1: MAJOR    UAS remove-----------18:34:08 03/14/00
  15 -- Port D  E1: MAJOR    UAS------------------18:34:07 03/14/00
  16 -- Port C  E1: MAJOR    UAS------------------18:34:07 03/14/00
  17 -- Port D  E1: MAJOR    UAS remove-----------18:19:08 03/14/00
  18 -- Port C  E1: MAJOR    UAS remove-----------18:19:08 03/14/00
  19 -- Port D  E1: MAJOR    UAS------------------18:19:07 03/14/00
  20 -- Port C  E1: MAJOR    UAS------------------18:19:07 03/14/00


<< ESC key return to previous menu or SPACE bar to change page
```

NOTE:

The latest 40 alarm entries are shown on the terminal as above in two pages of 20 entries each. If there are more than 20 entries, hit any key other than “ESC” to view the second page. To return to main menu, hit “ESC” key.

6.1.12 Load Default Configuration

Press “Y” to return to default, then confirm it by pressing “Y” or “N”.

```
LOOP IP6700                    === Main Menu ===            18:56:56 03/14/2000

Serial Number   :  -10485744
Hardware Version: Ver.B                 Start Time  : 15:49:05 03/14/2000
Software Version: V1.01.01 03/14/2006

[DISPLAY]                               [SETUP]
C -> System Configuration               S -> System Setup
J -> Time Slot IP Assignment            P -> Choose E1 Port
B -> Clock source Configuration         T -> Time Slot IP Assignment
D -> Link Status                        W -> Firmware Transfer
Q -> Alarm Queue                        V -> Store/Retrieve Configuration
                                        K -> Clock Source Setup
                                        M -> System Alarm Setup

[LOG]                                   [MISC]
F -> Log Off [SETUP],[MISC] Menu        Y -> Return To Default
O -> Log On  [SETUP],[MISC] Menu        Z -> Reset
                                        X -> Clear Alarm Queue & History
                                        A -> Alarm Cut Off



>> Return to default - are you sure ? [Y/N]
```

6.1.13 Reset

Under Port Menu, press “Z” to reset unit. Press “Y” or “N” to confirm it.

```
LOOP IP6700                    === Main Menu ===            13:34:54 12/06/2005

Serial Number   :  -10485744
Hardware Version: Ver.B                 Start Time  : 11:09:23 12/06/2005
Software Version: V1.00.01 11/28/2005

[DISPLAY]                               [SETUP]
C -> System Configuration               S -> System Setup
J -> Time Slot IP Assignment            E -> E1 Setup
B -> Clock source Configuration         T -> Time Slot IP Assignment
D -> Counters Page                      W -> Firmware Transfer
Q -> Alarm Queue                        V -> Store/Retrieve Configuration
                                        K -> Clock Source Setup
                                        M -> System Alarm Setup

[LOG]                                   [MISC]
F -> Log Off [SETUP],[MISC] Menu        Y -> Return To Default
O -> Log On  [SETUP],[MISC] Menu        Z -> Reset
                                        X -> Clear Alarm Queue & History
                                        A -> Alarm Cut Off




Reset - are you sure ? [Y/N]
```

6.1.14 Clear Alarm Queue & History

Under Port Menu, press “X” to clear alarm queue and history. Press “Y” or “N” to confirm it.

```
LOOP IP6700                    === Main Menu ===            14:58:59 12/06/2005

Serial Number   :  -10485744
Hardware Version: Ver.B                 Start Time  : 11:09:23 12/06/2005
Software Version: V1.00.01 11/28/2005

[DISPLAY]                               [SETUP]
C -> System Configuration               S -> System Setup
J -> Time Slot IP Assignment            E -> E1 Setup
B -> Clock source Configuration         T -> Time Slot IP Assignment
D -> Counters Page                      W -> Firmware Transfer
Q -> Alarm Queue                        V -> Store/Retrieve Configuration
                                        K -> Clock Source Setup
                                        M -> System Alarm Setup

[LOG]                                   [MISC]
F -> Log Off [SETUP],[MISC] Menu        Y -> Return To Default
O -> Log On  [SETUP],[MISC] Menu        Z -> Reset
                                        X -> Clear Alarm Queue & History
                                        A -> Alarm Cut Off



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

6.1.15 Alarm Cut Off

Press “A” to show alarm cut off screen.

```
LOOP IP6700                    === Main Menu ===            16:15:49 04/24/2006

Serial Number   :  -10485744
Hardware Version: Ver.B                 Start Time  : 15:37:33 04/24/2006
Software Version: V1.01.01 03/29/2006

[DISPLAY]                               [SETUP]
C -> System Configuration               S -> System Setup
J -> Time Slot IP Assignment            P -> Choose E1 Port
B -> Clock source Configuration         T -> Time Slot IP Assignment
D -> Link Status                        W -> Firmware Transfer
Q -> Alarm Queue                        V -> Store/Retrieve Configuration
                                        K -> Clock Source Setup
                                        M -> System Alarm Setup

[LOG]                                   [MISC]
F -> Log Off [SETUP],[MISC] Menu        Y -> Return To Default
O -> Log On  [SETUP],[MISC] Menu        Z -> Reset
                                        X -> Clear Alarm Queue & History
                                        A -> Alarm Cut Off



>> Cut off alarm - are you sure (Y/N)?
```

6.2 E1 Sub-Menu

When P is selected and E1 port number is entered, the following Port Menu will show up.

```
==>> Input the E1 port number (A~D): A
```

```
E1 Port A                        === Port Menu ===            13:22:34 12/06/2005




[DISPLAY]                                [SETUP]
1 -> 1-Hour Perf. Report                 L -> Loopback Setup
2 -> 24-Hour Perf. Report                S -> System Setup
A -> Line Availability                   K -> Clear Performance Data
C -> Configuration                       M -> Alarm Setup
I -> Status                              X -> Clear Alarm History
H -> Alarm History


[LOG]
P -> Choose Port
F -> Log Off [SETUP],[MISC] Menu
O -> Log On  [SETUP],[MISC] Menu
E -> Return to Main Menu


>>SPACE bar to refresh or enter a command ===>
```

6.2.1 System Setup

To view the unit configuration, press “C” from Port Menu, then the screen will show as below.

```
E1 Port A                  === Port System Setup ===        13:29:13 12/06/2005


     FRAME      = OFF
     CODE       = HDB3
     CRC        = ON
     RAI        = ON
     AIS        = FRAMED
     CAS        = OFF
     SIGNALLING= TRANS
     CGA        = NORM
     OOS        = BUSY
     FDL        = OFF
     Sa_bit     = Sa4
     IDLE       = 0
     INTF       = 120 Ohm







<< ESC key to return to previous menu, SPACE bar to refresh >
```

6.2.2 Loopback Setup

Under Port Menu, press “L” to do Loopback Test, then the screen will show as below. Use arrow keys to move the cursor, press ENTER key to select items.

```
E1 Port A                  === Port Loopback Test ===       15:49:31#01/01/UU93
ARROW KEYS : CURSOR MOVE , ENTER KEY : ITEM SELECT

- NEAR-END LOOPBACK   : *OFF  LOCAL  PLB  LLB

- SEND LOOPBACK ACTIVATE CODE TO FAR-END:
        *PAYLOAD  LINE
- SEND LOOPBACK DEACTIVATE CODE TO FAR-END:
        *PAYLOAD  LINE
- SEND TEST PATTERN:
        *OFF  PRBS-FULL









- STATUS:


<< Press ESC key to return to previous menu >>
```

NOTE:

a. Near end loop-backs

1. Local loop-back: the out-going signal is looped back to the device to verify the device integrity.
2. Line loop-back: the entire incoming signal is looped back towards the line to isolate the device from the line
3. Payload loop-back: the payload of the incoming signal is looped back towards the line. This is done after the framer framed on the incoming signal.

b. Far end loop-backs

1. Remote line loop-back: the signal received by the remote unit is looped back towards the local device to verify line integrity.
2. Remote payload loop-back: the payload of the signal received by the remote unit is looped back towards the local device to verify the payload integrity.

c. Loop-back timer

The period of time from the activation of a loop-back to its de-activation is controlled by a timer. The default value of this timer is 60 seconds.

d. Diagnostics

Pseudo-random patterns are commonly used for diagnostic tests of digital systems. For E1, a 15-bit register PRBS (pseudo-random binary sequence) pattern is standard practice. This pattern is available for testing local system integrity by local loopback test, and for measuring the line quality. The diagnostics scenario is as follows:

1. First, send a remote loopback command to cause the remote facility to loopback DS0 time slots.
2. Then, activate the local PRBS diagnostics operation by using the Test command to enable the pattern and choose for test all time slots, or only idle time slots.
3. The FULL diagnostic uses a framed pattern. This is useful for testing full E1 loopback at the far-end.

When the PRBS pattern sync is found, a bit error counter tracks total bit errors. It is advised to send the pattern for more than 15-minute interval to evaluate the quality of loop condition and facility reliability.

User may utilize the '>' key to inject a single error, the '<' key to reset error counter, and 'ESC' to terminate the test. Read the performance report to understand the type of errors that occur.

6.2.3 Alarm Setup

To do alarm setup, press "M" from Port Menu, then the following screen will show up.

```
E1 Port A                  === Port Alarm Setup ===        13:33:25 12/06/2005
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

[TYPE]     [THRESHOLD] [ALARM]
RAI                    MAJOR
AIS                    MAJOR
LOS                    MAJOR
LOF                    MAJOR
BPV           10E-5    MAJOR
ES              001    MAJOR
UAS             001    MAJOR
CSS             001    MAJOR
BUNDLE STATUS          MAJOR
MAC CHANGE             MAJOR









<< Press ESC key to return to previous menu >>
```

NOTE:

Configuration			Options	Default
E1 Line	RAI		DISABLE, MAJOR, CRITICAL, MINOR	MAJOR
	AIS		DISABLE, MAJOR, CRITICAL, MINOR	MAJOR
	LOS		DISABLE, MAJOR, CRITICAL, MINOR	MAJOR
	LOF		DISABLE, MAJOR, CRITICAL, MINOR	MAJOR
	BPV	Alarm	DISABLE, MAJOR, CRITICAL, MINOR	MAJOR
		Threshold	10E- (5, 6, 7, 8, 9)	10E-5
	ES	Alarm	DISABLE, MAJOR, CRITICAL, MINOR	MAJOR
		Threshold	1-900	1
	UAS	Alarm	DISABLE, MAJOR, CRITICAL, MINOR	MAJOR
		Threshold	1-900	1
	CSS	Alarm	DISABLE, MAJOR, CRITICAL, MINOR	MAJOR
		Threshold	1-900	1
	Bundle	Status	DISABLE, MAJOR, CRITICAL, MINOR	MAJOR
	Mac	Change	DISABLE, MAJOR, CRITICAL, MINOR	MAJOR

For description of acronym, please refer to Glossary

6.2.4 Chose Port

Under Port Menu, press “P” to choose port, press ENTER to get into port menu.

```
E1 Port B                    === Port Menu ===            00:40:11#01/01/UU93




[DISPLAY]                                  [SETUP]
1 -> 1-Hour Perf. Report                   L -> Loopback Setup
2 -> 24-Hour Perf. Report                  S -> System Setup
A -> Line Availability                     K -> Clear Performance Data
C -> Configuration                         M -> Alarm Setup
I -> Status                                X -> Clear Alarm Queue & History
H -> Alarm History                         D -> Upgrade Firmware
Q -> Alarm Queue

[LOG]                                      [MISC]
P -> Choose Port                           Y -> Load Default Config
F -> Log Off [SETUP],[MISC] Menu           Z -> Reset
O -> Log On  [SETUP],[MISC] Menu
E -> Return to Main Menu

Port : A
```

6.2.5 Clear Performance Data

Press “K” from Port Menu to clear performance data, the screen will show as below. Press “Y” or “N” to confirm the command.

```
=>> Clear Performance Data (Y/N)?
```

6.2.6 Clear Alarm History

Under Port Menu, press “X” to clear alarm queue and history, then press “Y” or ”N” to confirm it.

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

6.2.7 1-Hour Performance Report

Press “1” from E1 Port Menu to view the 1-hour performance report. Use TAB key to select register type, USER or LINE. The current selection will be highlighted by an asterisk (*).

```
>> Select Register Type ? *USER  LINE
```

After pressing ENTER from the above screen, the following screen will show up

```
E1 Port A                === Port 1-Hour Stat. Report ===     13:26:57 12/06/2005
Start Time = 11:09:23 12/06/2005
USER
-- Valid Seconds in Current 15-Min Interval : 293 seconds
                                (ES)   (UAS)  (BES)  (SES)  (DM)   (CSS)
   Current 15-Min Interval     : 0      293    0      0      0      0
   1st Nearest 15-Min Interval : 0      900    0      0      0      1
   2nd Nearest 15-Min Interval : 0      900    0      0      0      0
   3rd Nearest 15-Min Interval : 0      900    0      0      0      0
   4th Nearest 15-Min Interval : 0      900    0      0      0      0

-- Valid 15-Min Intervals in Current 24-Hour Interval: 14
                                (ES)   (UAS)  (BES)  (SES)  (DM)   (CSS)
   Current 24-Hour Interval    : 0      12600  0      0      0      1
   12/05/2005                  : -----  -----  -----  -----  -----  -----
   12/04/2005                  : -----  -----  -----  -----  -----  -----
   12/03/2005                  : -----  -----  -----  -----  -----  -----
   12/02/2005                  : -----  -----  -----  -----  -----  -----
   12/01/2005                  : -----  -----  -----  -----  -----  -----
   11/30/2005                  : -----  -----  -----  -----  -----  -----
   11/29/2005                  : -----  -----  -----  -----  -----  -----

<< TAB key to show Statistics Report >>
<< ESC key to return to previous menu, SPACE bar to refresh >>
```

NOTE:

Performance Parameter	Description	Definition 2-Frame/Multiframe	Definition 16-Frame/Multiframe
ES	Error Second	BPV≥1, OOF≥1, or CS≥1.	CRC ≥ 1, OOF ≥1, or CS ≥1.
UAS	Unavailable Second	≥ 10 consecutive SES	≥ 10 consecutive SEC
BES	Bursty Error Second	1 < BPV < 2048	1 < CRC < 805
SES	Severe Error Second	BPV ≥ 2048, or OOF ≥1	CRC ≥ 805, or OOF ≥1.
DM	Degraded Minute	BPV ≥ 123	CRC ≥ 47
CSS	Controlled Slip Second	Frame slip ≥1	Frame slip ≥1

6.2.8 24-Hour Performance Report

Press “2” from E1 Port Menu to view the 24-hour performance report, use TAB key to select register type, USER or LINE, press ENTER.

```
>> Select Register Type ? *USER  LINE
>> Select Parameter ? *ES  UAS  BES  SES  CSS  DM  AS  EFS  BPV
```

Use the cursor to select the desired parameter. The current selection will be highlighted by an asterisk (*) and press ENTER key to view the report as follows.

```
E1 Port A              === Port 24-Hour Perf. Report ===    13:27:55 12/06/2005
Start Time = 11:09:23 12/06/2005
USER ES
-- Valid Seconds in Current 15-Min Interval : 384 seconds
-- Valid 15-Min Intervals in Current 24-Hour Interval: 14
                                  (ES)   (UAS)  (BES)  (SES)  (DM)   (CSS)
   Current 15-Min Interval     : 0      384    0      0      0      0
   Current 24-Hour Interval    : 0      12600  0      0      0      1

-- USER, ES, Last 96 15-Min Interval :
   01-08 > 0     0     0     0     0     0     0     0
   09-16 > 0     0     0     0     0     0     ----- -----
   17-24 > ----- ----- ----- ----- ----- ----- ----- -----
   25-32 > ----- ----- ----- ----- ----- ----- ----- -----
   33-40 > ----- ----- ----- ----- ----- ----- ----- -----
   41-48 > ----- ----- ----- ----- ----- ----- ----- -----
   49-56 > ----- ----- ----- ----- ----- ----- ----- -----
   57-64 > ----- ----- ----- ----- ----- ----- ----- -----
   65-72 > ----- ----- ----- ----- ----- ----- ----- -----
   73-80 > ----- ----- ----- ----- ----- ----- ----- -----
   81-88 > ----- ----- ----- ----- ----- ----- ----- -----
   89-96 > ----- ----- ----- ----- ----- ----- ----- -----
<< TAB key to show Statistics Report >>
<< ESC key to return to previous menu, SPACE bar to refresh
```

NOTE

Performance Parameter	Description	Definition 2-Frame/Multiframe	Definition 16-Frame/Multiframe
ES	Error Second	BPV≥1, OOF≥1, or CS≥1.	CRC ≥ 1, OOF ≥1, or CS ≥1.
UAS	Unavailable Second	≥10 consecutive SES	≥10 consecutive SES
BES	Bursty Error Second	1 < BPV < 2048	1 < CRC < 805
SES	Severe Error Second	BPV ≥ 2048, or OOF ≥1	CRC ≥ 805, or OOF ≥1.
CSS	Controlled Slip Second	Frame slip ≥1	Frame slip ≥1
DM	Degraded Minute	BPV ≥ 123	CRC ≥ 47
AS	Available Second	Frame slip ≥1	Frame slip ≥1
EFS	Error Free Second	Error Free Second	Error Free Second
BPV	Bipolar Violation	Bipolar Error Count	Bipolar Error Count

6.2.9 Line Availability

Under Port Menu, press “A” to view the line availability as the following screen shows, The information, based on user performance register set, includes the valid seconds, available seconds, unavailable seconds and the line availability.

```
E1 Port A               === Port Line Availability ===     13:28:51 12/06/2005

   Start Time         : 11:09:23 12/06/2005

-- Line Availability during Last 24-Hour:
   Valid Seconds      : 13071 seconds
   Available Seconds  : 0 seconds
   Unavailable Seconds: 13071 seconds
   Line Avaliability  : 0.0 %









<< ESC key to return to previous menu, SPACE bar to refresh >>
```

6.2.10 Unit Configuration

To view the unit configuration, press “C” from Port Menu, then the screen will show as below.

```
E1 Port A                 === Port System Setup ===        13:29:13 12/06/2005


     FRAME      = OFF
     CODE       = HDB3
     CRC        = ON
     RAI        = ON
     AIS        = FRAMED
     CAS        = OFF
     SIGNALLING= TRANS
     CGA        = NORM
     OOS        = BUSY
     FDL        = OFF
     Sa_bit     = Sa4
     IDLE       = 0
     INTF       = 120 Ohm









<< ESC key to return to previous menu, SPACE bar to refresh >
```

6.2.11 Unit Status

Press “I” from Port Menu, to show the screen of Status as below.

```
E1 Port A                      === Port Status ===          13:31:14 12/06/2005


-- LINE --
   LOS     : YES
   LOF     : NO
   RCV AIS : NO
   RCV RAI : NO
   XMT AIS : NO
   XMT RAI : NO
   BPV ERROR COUNT : 0
   ES  ERROR COUNT : 0

-- TEST --
   PATTERN TRANSMITTED : OFF
   NEAR-END LOOPBACK   : OFF









<< ESC key to return to previous menu, SPACE bar to refresh >>
```

6.2.12 Unit Alarm History

To view the unit alarm history, press “H” from Port Menu.

```
E1 Port A                  === Port Alarm History ===       13:31:31 12/06/2005
LOCAL
[ALARM-TYPE]    [THRESHOLD]    [CURR-STATE]    [COUNT]    [ALARM]
RAI                               OK             0         MAJOR
AIS                               OK             0         MAJOR
LOS                               ALM            1         MAJOR
LOF                               OK             0         MAJOR
BPV                10E-5          OK             0         MAJOR
ES                 1              OK             1         MAJOR
UAS                1              OK             15        MAJOR
CSS                1              OK             1         MAJOR
BUNDLE STATUS                     OK             0         MAJOR
MAC CHANGE                        OK             0         MAJOR









<< ESC key to return to previous menu, SPACE bar to refresh >>
```

6.3 T1 Sub-Menu

Under the Controller Menu, press “P” to choose port. The user can choose port B to do setup. Then the following Port Menu of T1 will show.

```
T1 Port B                        === Port Menu ===            15:09:53 10/03/2006




[DISPLAY]                                  [SETUP]
1 -> 1-Hour Perf. Report                   S -> System Setup
2 -> 24-Hour Perf. Report                  L -> Loopback Setup
A -> Line Availability                     K -> Clear Performance Data
C -> Configuration                         M -> Alarm Setup
I -> Status                                X -> Clear Alarm History
H -> Alarm History                         B -> Send Bert


[LOG]
P -> Choose Port
F -> Log Off [SETUP],[MISC] Menu
O -> Log On  [SETUP],[MISC] Menu
E -> Return to Main Menu


>>SPACE bar to refresh or enter a command ===>
```

6.3.1 System Setup

By Pressing “S”, the system setup menu is displayed as follows.

```
1 Port B                    === Port System Setup ===        15:10:21 10/03/2006
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

     FRAME      = NONE
     CODE       = B8ZS
     YEL        = ON
     AIS        = OFF
     CAS        = OFF
     SIGNALLING= TRANS
     CGA        = NORM
     OOS        = BUSY
     INBAND     = ON
     IDLE       = 0
     INTF       = LONG HAUL
     LBO        = 0 dB
     FDL        = OFF









<< Press ESC key to return to previous menu >>
```

6.3.2 Loopback Setup

To enter the T1 status menu, press “L”. The following screen appears.

```
T1 Port B                  === Port Loopback Test ===       15:11:15 10/03/2006
ARROW KEYS : CURSOR MOVE , ENTER KEY : ITEM SELECT

- NEAR-END LOOPBACK   : *OFF  LOCAL  PLB  LLB

- SEND LOOPBACK ACTIVATE CODE TO FAR-END:
        *IN-BAND  AT&T-P  ANSI-P  ANSI-L
- SEND LOOPBACK DEACTIVATE CODE TO FAR-END:
        *IN-BAND  AT&T-P  ANSI-P  ANSI-L









- STATUS:

<< Press ESC key to return to previous menu >>
```

6.3.3 Alarm Setup

Press “M” to view the alarm history.

```
T1 Port B                   === Port Alarm Setup ===        15:12:00 10/03/2006
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

[TYPE]    [THRESHOLD] [ALARM]
YEL                   MAJOR
AIS                   MAJOR
LOS                   MAJOR
LOF                   MAJOR
BPV           10E-5   MAJOR
ES              001   MAJOR
UAS             001   MAJOR
CSS             001   MAJOR
BUNDLE STATUS         MAJOR
MAC CHANGE            MAJOR









<< Press ESC key to return to previous menu >>
```

6.3.4 Bert Test

Press “B” to test the system.

```
T1 Port B                    ===    Bert test    ===          15:12:19 10/03/2006
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

    Type        = OFF
   Direct       = LINE
 TimeSlot From  = 1
 TimeSlot Num   = 1









<< Press ESC key to return to previous menu >>
```

6.3.5 Clear Performance Data

Press K to show Clear Performance Data screen.

```


=>> Clear Performance Data (Y/N)?
```

6.3.6 Clear Alarm History

Press X to show Clear Alarm History screen.

```


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

6.3.7 1-Hour Performance Report

Under Port Menu, press “1” to view the 1-hour performance report.

```
T1 Port B             === Port 1-Hour Stat. Report ===     15:15:29 10/03/2006
Start Time = 15:07:14 10/03/2006
USER
-- Valid Seconds in Current 15-Min Interval : 0 seconds
                               (ES)   (UAS)  (BES)  (SES)  (CSS)
   Current 15-Min Interval     : 0      0      0      0      0
   1st Nearest 15-Min Interval : -----  -----  -----  -----  -----
   2nd Nearest 15-Min Interval : -----  -----  -----  -----  -----
   3rd Nearest 15-Min Interval : -----  -----  -----  -----  -----
   4th Nearest 15-Min Interval : -----  -----  -----  -----  -----

-- Valid 15-Min Intervals in Current 24-Hour Interval: 0
                               (ES)   (UAS)  (BES)  (SES)  (CSS)
   Current 24-Hour Interval    : -----  -----  -----  -----  -----
   10/02/2006                  : -----  -----  -----  -----  -----
   10/01/2006                  : -----  -----  -----  -----  -----
   09/30/2006                  : -----  -----  -----  -----  -----
   09/29/2006                  : -----  -----  -----  -----  -----
   09/28/2006                  : -----  -----  -----  -----  -----
   09/27/2006                  : -----  -----  -----  -----  -----
   09/26/2006                  : -----  -----  -----  -----  -----

<< TAB key to show Statistics Report >>
<< ESC key to return to previous menu, SPACE bar to refresh >>
```

6.3.8 24-Hour Performance Report

Under Port Menu, press “2” to view the 24-hour performance report.

```
T1 Port B             === Port 24-Hour Perf. Report ===    15:29:02 10/03/2006
Start Time = 15:20:16 10/03/2006
USER ES
-- Valid Seconds in Current 15-Min Interval : 0 seconds
-- Valid 15-Min Intervals in Current 24-Hour Interval: 0
                               (ES)   (UAS)  (BES)  (SES)  (CSS)
   Current 15-Min Interval     : 0      0      0      0      0
   Current 24-Hour Interval    : -----  -----  -----  -----  -----

-- USER, ES, Last 96 15-Min Interval :
   01-08 > ----- ----- ----- ----- ----- ----- ----- -----
   09-16 > ----- ----- ----- ----- ----- ----- ----- -----
   17-24 > ----- ----- ----- ----- ----- ----- ----- -----
   25-32 > ----- ----- ----- ----- ----- ----- ----- -----
   33-40 > ----- ----- ----- ----- ----- ----- ----- -----
   41-48 > ----- ----- ----- ----- ----- ----- ----- -----
   49-56 > ----- ----- ----- ----- ----- ----- ----- -----
   57-64 > ----- ----- ----- ----- ----- ----- ----- -----
   65-72 > ----- ----- ----- ----- ----- ----- ----- -----
   73-80 > ----- ----- ----- ----- ----- ----- ----- -----
   81-88 > ----- ----- ----- ----- ----- ----- ----- -----
   89-96 > ----- ----- ----- ----- ----- ----- ----- -----
<< TAB key to show Statistics Report >>
<< ESC key to return to previous menu, SPACE bar to refresh >>
```

6.3.9 Line Availability

Under Port Menu, press “A” to view line availability as the following screen shows.

```
T1 Port B                === Port Line Availability ===     15:29:18 10/03/2006

   Start Time          : 15:20:16 10/03/2006

-- Line Availability during Last 24-Hour:
   Valid Seconds       : 0 seconds
   Available Seconds   : 0 seconds
   Unavailable Seconds: 0 seconds
   Line Avaliability   : 21474836.48 %









<< ESC key to return to previous menu, SPACE bar to refresh >>
```

6.3.10 Unit Configuration

To view the unit configuration, press “C” from Port menu, then the screen will show as below.

```
T1 Port B              === Port 1-Hour Stat. Report ===     15:15:29 10/03/2006
Start Time = 15:07:14 10/03/2006
USER
-- Valid Seconds in Current 15-Min Interval : 0 seconds
                                (ES)   (UAS)  (BES)  (SES)  (CSS)
   Current 15-Min Interval     : 0      0      0      0      0
   1st Nearest 15-Min Interval : -----  -----  -----  -----  -----
   2nd Nearest 15-Min Interval : -----  -----  -----  -----  -----
   3rd Nearest 15-Min Interval : -----  -----  -----  -----  -----
   4th Nearest 15-Min Interval : -----  -----  -----  -----  -----

-- Valid 15-Min Intervals in Current 24-Hour Interval: 0
                                (ES)   (UAS)  (BES)  (SES)  (CSS)
   Current 24-Hour Interval    : -----  -----  -----  -----  -----
   10/02/2006                  : -----  -----  -----  -----  -----
   10/01/2006                  : -----  -----  -----  -----  -----
   09/30/2006                  : -----  -----  -----  -----  -----
   09/29/2006                  : -----  -----  -----  -----  -----
   09/28/2006                  : -----  -----  -----  -----  -----
   09/27/2006                  : -----  -----  -----  -----  -----
   09/26/2006                  : -----  -----  -----  -----  -----

<< TAB key to show Statistics Report >>
<< ESC key to return to previous menu, SPACE bar to refresh >>
```

6.3.11 Unit Status

Press I from the port menu, to show the screen of Unit Status as below.

```
T1 Port B                    === Port Status ===          16:06:08 10/03/2006


-- LINE --
   LOS     : LOS
   LOF     : NO
   RCV AIS : NO
   RCV YEL : NO
   XMT AIS : NO
   XMT YEL : NO
   BPV ERROR COUNT : 0
   ES  ERROR COUNT : 0

-- TEST --
   PATTERN TRANSMITTED : OFF
   NEAR-END LOOPBACK   : OFF









<< ESC key to return to previous menu, SPACE bar to refresh >>
```

6.3.12 Unit Alarm History

To view the unit alarm history, press “H” from the Port Menu.

```
T1 Port B                  === Port Alarm History ===       16:06:27 10/03/2006
LOCAL
[ALARM-TYPE]    [THRESHOLD]    [CURR-STATE]    [COUNT]    [ALARM]
RAI                               OK             0         MAJOR
AIS                               OK             0         MAJOR
LOS                               ALM            1         MAJOR
LOF                               OK             0         MAJOR
BPV                10E-5          OK             0         MAJOR
ES                 1              OK             0         MAJOR
UAS                1              OK             0         MAJOR
CSS                1              OK             0         MAJOR
BUNDLE STATUS                     OK             0         MAJOR
MAC CHANGE                        OK             0         MAJOR









<< ESC key to return to previous menu, SPACE bar to refresh >>
```

6.4 DTE (V.35) Sub-Menu

Under the Controller Menu, press “P” to choose port. The user can choose either port C or port D to do setup. Then the following Port Menu of DTE (V.35) port will show.

```
DTE Port C                      === Port Menu ===            15:32:48 06/15/2006




[DISPLAY]                                   [SETUP]
C -> DTE Configuration                      S -> System Setup
I -> DTE Status                             L -> Loopback Test
H -> Alarm History                          M -> Alarm Setup
                                            X -> Clear Alarm History

[LOG]
P -> Choose Port
F -> Log Off
O -> Log On
E -> Return to Main Menu



>>SPACE bar to refresh or enter a command ===>
```

6.4.1 DTE Configuration

By Pressing “C”, the unit setup menu is displayed as follows.

```
DTE Port C                      === Port Status ===          09:23:36 07/17/2006


DTE Port C

[-------- LOCAL --------]
Channel   : 31
mode      : N*64K
Rate      : 64KBps
TX_Clock  : Normal
RX_Clock  : Normal
Data      : Normal
RTS       : Active
TTM       : Off
DCD       : Normal
intf      : V35









<< ESC key to return to previous menu, SPACE bar to refresh >>
```

6.4.2 DTE Status

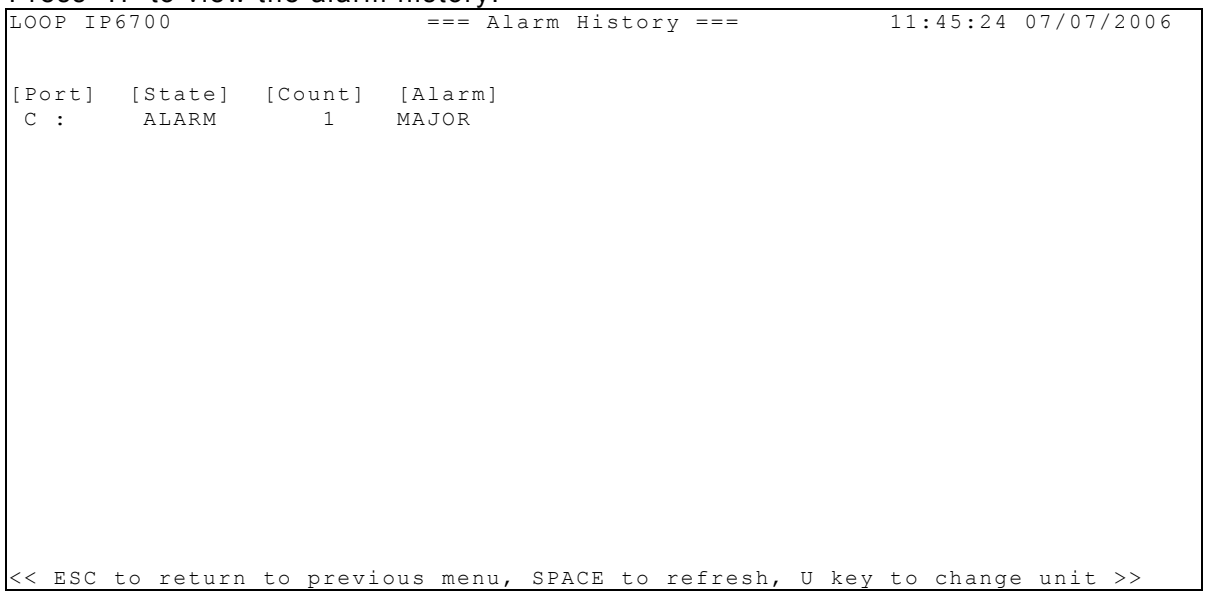
To enter the DTE status menu, press “I”. The following screen appears.

```
DTE Port C                    === Port Status ===          11:44:12 07/07/2006



[------ LOCAL ------]
DTE-3 existed : YES
RTS LOSS      : YES
EXT_CLK LOSS  : NO
DSR : NO
CTS : NO
DCD : NO
DTR : NO
RTS : NO

[Loopback Status]
DTE Loopback  : OFF
BERT          : OFF




<< ESC key to return to previous menu, SPACE bar to refresh >>
```

6.4.3 Alarm History

Press “H” to view the alarm history.

```
LOOP IP6700                   === Alarm History ===          11:45:24 07/07/2006


[Port]  [State]  [Count]  [Alarm]
 C :     ALARM       1    MAJOR
```



```
<< ESC to return to previous menu, SPACE to refresh, U key to change unit >>
```

6.4.4 System Setup

Press “S” to setup the system.

```
LOOP IP6700                  === Alarm History ===          11:45:24 07/07/2006


[Port]  [State]  [Count]  [Alarm]
 C :     ALARM       1    MAJOR









<< ESC to return to previous menu, SPACE to refresh, U key to change unit >>
```

6.4.5 Loopback Tsst

To enter the Loopback and Test screen, press “L”. The following screen appears.

```
LOOP IP6700             === Unit Loopback and Test ===     10:28:46 07/07/2006
ARROW KEYS: CURSOR MOVE; ENTER KEY: ITEM SELECT;

DTE Port C

[TEST MENU]
DTE Loopback                          : *OFF  TO-DTE  TO-WAN
```

6.4.6 Alarm Setup

To set up the alarm configuration, press “M”. The following screen is displayed.

```
LOOP IP6700                    === Alarm Setup ===          10:29:36 07/07/2006
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

[Port]    [Alarm]
 C :      MAJOR









<< Press ESC key to return to previous menu >>
```

6.4.7 Clear Alarm History

Under Port Menu, press “X” to clear alarm history, then press “Y” or “N” to confirm it.

```


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

6.5 DS3/E3 Sub-Menu

The user can choose either DS3 or E3 to do setup. When the user plug in the DS3 card, all machine is for port A only. In addition, DS3 Card needs to plug in Port C.

```
                              DS3/E3 menu                14:08:38 02/07/2007




[DISPLAY]                                  [SETUP]
1 -> 1-Hour Perf. Report                   S -> System Setup
2 -> 24-Hour Perf. Report                  L -> Loopback Setup
A -> Line Availability                     K -> Clear Performance Data
C -> Configuration                         M -> Alarm Setup
I -> Status                                X -> Clear Alarm History
H -> Alarm History


[LOG]
F -> Log Off [SETUP],[MISC] Menu
O -> Log On  [SETUP],[MISC] Menu
E -> Return to Main Menu



>>SPACE bar to refresh or enter a command ===>
```

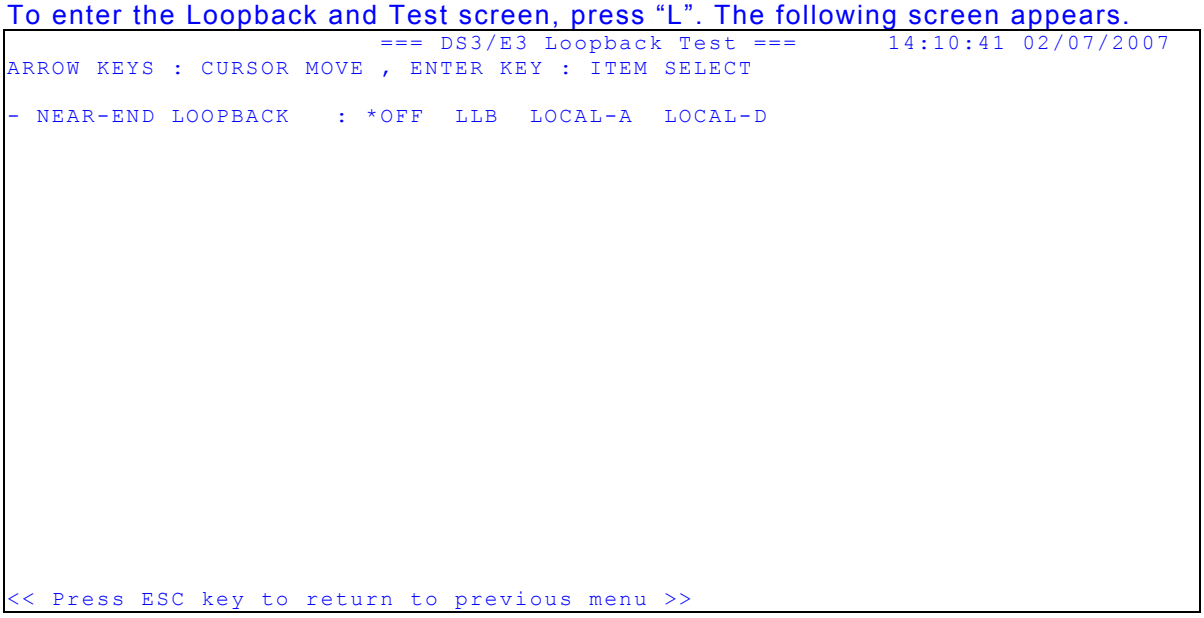
6.5.1 DS3/E3 System Setup

By Pressing “S”, the system setup menu is displayed as follows.

```
                        === DS3/E3 System Setup ===       14:10:03 02/07/2007
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

     CARD TYPE = DS3
     TX-LENGTH = 0-225
     XMT-AIS   = ON









<< Press ESC key to return to previous menu >>
```

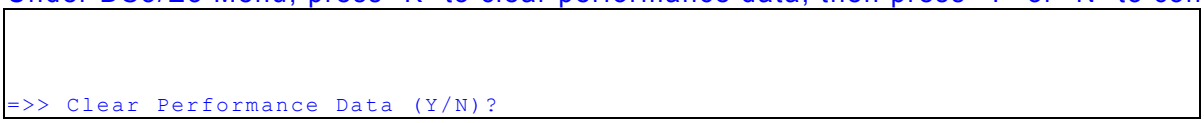
6.5.2 DS3/E3 Loopback Test

To enter the Loopback and Test screen, press “L”. The following screen appears.



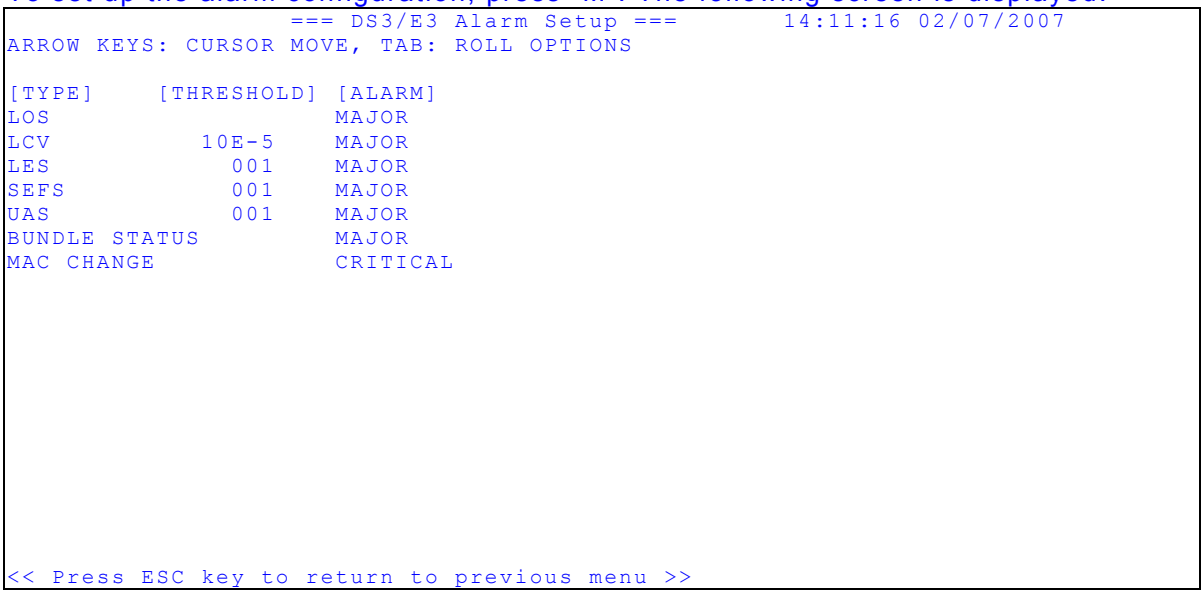
6.5.3 Clear Performance Data

Under DS3/E3 Menu, press “K” to clear performance data, then press “Y” or “N” to confirm it.



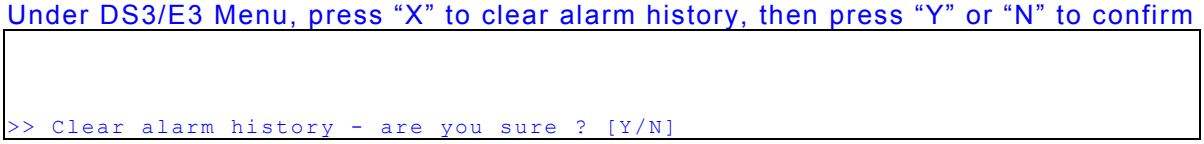
6.5.4 DS3/E3 Alarm Setup

To set up the alarm configuration, press “M”. The following screen is displayed.



6.5.5 Clear Alarm History

Under DS3/E3 Menu, press “X” to clear alarm history, then press “Y” or “N” to confirm it.



6.5.6 DS3/E3 1-Hour Performance Report

Press “1” from the DS3/E3 menu, the following screen is displayed. To view 1-hour performance repot by selecting register type, USER or LINE. The current selection will be highlighted by an asterisk (*).

```
=== DS3/E3 1-Hour Perf. Report ===     14:14:38 02/07/2007









>> Select Register Type ? *USER  LINE
```

```
  === DS3/E3 1-Hour Stat. Report ===     14:11:45 02/07/2007
Start Time = 14:04:55 02/07/2007
USER
-- Valid Seconds in Current 15-Min Interval : 407 seconds
                                (LES)  (UAS)  (SEFS) (LCV)
   Current 15-Min Interval     : 0      0      0      0
   1st Nearest 15-Min Interval : -----  -----  -----  -----
   2nd Nearest 15-Min Interval : -----  -----  -----  -----
   3rd Nearest 15-Min Interval : -----  -----  -----  -----
   4th Nearest 15-Min Interval : -----  -----  -----  -----

-- Valid 15-Min Intervals in Current 24-Hour Interval: 0
                                (LES)  (UAS)  (SEFS) (LCV)
   Current 24-Hour Interval    : -----  -----  -----  -----
   02/06/2007                  : -----  -----  -----  -----
   02/05/2007                  : -----  -----  -----  -----
   02/04/2007                  : -----  -----  -----  -----
   02/03/2007                  : -----  -----  -----  -----
   02/02/2007                  : -----  -----  -----  -----
   02/01/2007                  : -----  -----  -----  -----
   01/31/2007                  : -----  -----  -----  -----

<< TAB key to show Statistics Report >>
<< ESC key to return to previous menu, SPACE bar to refresh >>
```

6.5.7 DS3/E3 24-Hour Performance Report

Press “2” from the DS3/E3 menu, the following screen is displayed. To view 24-hour performance repot by selecting register type, USER or LINE. The current selection will be highlighted by an asterisk (*).

```
=== DS3/E3 24-Hour Perf. Report ===    14:15:08 02/07/2007









>> Select Register Type ? *USER  LINE
```

```
=== DS3/E3 24-Hour Perf. Report ===    14:12:36 02/07/2007









>> Select Register Type ? *USER  LINE
>> Select Parameter ? *LES  UAS   SEFS  LCV
```

```
=== DS3/E3 24-Hour Perf. Report ===   14:15:51 02/07/2007
Start Time = 14:04:55 02/07/2007
USER LES
-- Valid Seconds in Current 15-Min Interval : 653 seconds
-- Valid 15-Min Intervals in Current 24-Hour Interval: 0
                                (LES)  (UAS)  (SEFS) (LCV)
   Current 15-Min Interval     : 0      0      0      0
   Current 24-Hour Interval    : -----  -----  -----  -----

-- USER, LES, Last 96 15-Min Interval :
   01-08 > ----- ----- ----- ----- ----- ----- ----- -----
   09-16 > ----- ----- ----- ----- ----- ----- ----- -----
   17-24 > ----- ----- ----- ----- ----- ----- ----- -----
   25-32 > ----- ----- ----- ----- ----- ----- ----- -----
   33-40 > ----- ----- ----- ----- ----- ----- ----- -----
   41-48 > ----- ----- ----- ----- ----- ----- ----- -----
   49-56 > ----- ----- ----- ----- ----- ----- ----- -----
   57-64 > ----- ----- ----- ----- ----- ----- ----- -----
   65-72 > ----- ----- ----- ----- ----- ----- ----- -----
   73-80 > ----- ----- ----- ----- ----- ----- ----- -----
   81-88 > ----- ----- ----- ----- ----- ----- ----- -----
   89-96 > ----- ----- ----- ----- ----- ----- ----- -----
<< TAB key to show Statistics Report >>
<< ESC key to return to previous menu, SPACE bar to refresh >>
```

6.5.8 DS3/E3 Line Availability

Under DS3/E3 Menu, press “A” to view the line abailability as the following screen shows.

```
                  === DS3/E3 Line Availability ===    14:16:36 02/07/2007

   Start Time          : 14:04:55 02/07/2007

-- Line Availability during Last 24-Hour:
   Valid Seconds       : 698 seconds
   Available Seconds   : 698 seconds
   Unavailable Seconds: 0 seconds
   Line Avaliability   : 100.0 %









<< ESC key to return to previous menu, SPACE bar to refresh >>
```

6.5.9 DS3/E3 System Setup

To setup DS3/E3 system, press “S” from DS3/E3 Menu, then the following screen will show up. Use arrow keys to move the cursor, TAB key to roll up options.

```
                        === DS3/E3 System Setup ===       14:16:59 02/07/2007


     CARD TYPE = DS3
     TX-LENGTH = 0-225
     XMT-AIS   = ON









<< ESC key to return to previous menu, SPACE bar to refresh >>
```

6.5.10 DS3/E3 Status

Press “I” from DS3/E3 Menu, to show the screen of DS3//E3 Status as below.

```
                        === DS3/E3 Status ===          14:17:17 02/07/2007


-- LINE --
   LOS      : NO
   XMT AIS  : NO
   BPV ERROR COUNT : 0
   ES  ERROR COUNT : 0









<< ESC key to return to previous menu, SPACE bar to refresh >>
```

6.5.11 DS3/E3 Alarm History

To view alarm history, press “H” from the DS3/E3 menu, then the following screen will show as below.

```
                          === DS3/E3 Alarm History ===      14:17:42 02/07/2007
LOCAL
[ALARM-TYPE]    [THRESHOLD]    [CURR-STATE]    [COUNT]    [ALARM]
LOS                              OK              0         MAJOR
LCV                10E-5         OK              0         MAJOR
LES                1             OK              0         MAJOR
SEFS               1             OK              0         MAJOR
UAS                1             OK              0         MAJOR
BUNDLE STATUS                    ALM             0         MAJOR
MAC CHANGE                       OK              0         CRITICAL









<< ESC key to return to previous menu, SPACE bar to refresh >>
```

7 STEP BY STEP OPERATION

7.1 Time Slot IP Assignment

7.1.1 Time Slot IP Assignment (Add bundle)

Under the Main Menu, press “T” to get into the screen of Time Slot IP Assignment, then choose “Add bundle” from the Action menu to create a new bundle.

```
LOOP IP6700                === System Setup(MAP) ===        15:09:10 10/03/2006
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS


                              PO/TS TS PO/TS TS BNDL ID/UDP NUM Dest IP Address
Port      : PORT_A            ===== == ===== == ================ ===============
Bundle ID : 00
Action    : Add bundle
UDP Number: 0001                                 Cell Num Jitter Delay Jitter Size
Time Slot : 00                                   ======== =========== ============
Time Slot#: 32
Dest IP Addr: 010.002.003.004
Cell in Bundle: 05
Jitter Delay:   020
Jitter Size:    256
VLAN:           OFF
VLAN1 ID:       0000
VLAN1 priority: 0
VLAN2 ID:       0000
VLAN2 priority: 0
Confirm?    No


<< Press ESC key to return to main menu or save system setup >>
```

Note: if it is unframe allocation, the bundle ID must be 0 and the Time Slot, Time Slot# will be skipped to disallow user set up.

If the IP Address is invalid. The error message will display.

```
Can not get target mac address
```

After confirm the configuration. Press “Y” or “N” to re-confirm it.

```
Are you sure [Y/N] ?
```

After save the configuration, the screen will refresh and display as follow

```
LOOP IP6700                === System Setup (MAP) ===       13:35:55 12/06/2005
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS


                              PO/TS TS PO/TS TS BNDL ID/UDP NUM   IP Address
Port      : PORT_A            ===== == ===== == ================ ===============
Action    : Add bundle         A  1  1  A 17 17    0          1 000.000.000.000
Bundle ID : 0                  A  2  2  A 18 18
UDP Number: 1                  A  3  3  A 19 19 Cell Num Jitter Size Jitter Delay
Time Slot : 01                 A  4  4  A 20 20 ======== =========== ============
Time Slot#: 01                 A  5  5  A 21 21    5        20        256
IP Address: 000.000.000.000    A  6  6  A 22 22
Cell in Bundle: 5              A  7  7  A 23 23
Jitter Delay:   20             A  8  8  A 24 24
Jitter Size:    256            A  9  9  A 25 25
Confirm?    Yes                A 10 10  A 26 26
                               A 11 11  A 27 27
                               A 12 12  A 28 28
                               A 13 13  A 29 29
                               A 14 14  A 30 30
                               A 15 15  A 31 31
                               A 16 16

<< Press ESC key to return to main menu or save system setup >>
```

To show all the information of time slot assignment which user has configured, Press “J” from the Main Menu Configuration Menu.

```
LOOP IP6700                === System Setup (MAP) ===       13:59:40 12/06/2005

 Port Bundle UDP Cells Jitter   IP Address      Time Slot
      ID     Num  Num size/Delay
 ==== ====== ==== ==  ==== ==== =============== ================================
  A       0      1  5    20  256 192.168.0.1     0,1,2,3,4,5,6,7,8,9,10,11,12,
                                                 13,14,15,16,17,18,19,20,21,22,
                                                 23,24,25,26,27,28,29,30,31

  B       0      2  5    20  256 192.168.0.2     0,1,2,3,4,5,6,7,8,9,10,11,12,
                                                 13,14,15,16,17,18,19,20,21,22,
                                                 23,24,25,26,27,28,29,30,31









<< SPACE bar to refresh or ESC key return to main menu >>
```

7.1.2 Time Slot IP Assignment (Delete bundle)

Choose the “Delete bundle” option from the Action menu. Then enter the valid bundle ID at the Bundle ID field.

```
LOOP IP6700                === System Setup (MAP) ===       15:44:10 12/19/2005
Please Input decimal number (0-31), BACKSPACE to edit


                              PO/TS TS PO/TS TS BNDL ID/UDP NUM   IP Address
Port      : PORT_A            ===== == ===== == =============== ===============
Action    : Delete bundle         1       17
Bundle ID : 0_                    2       18
UDP Number: 1                     3       19    Cell Num Jitter Size Jitter Delay
Time Slot : 01                    4       20    ======== =========== ============
Time Slot#: 01                    5       21
IP Address: 192.168.0.1           6       22
Cell in Bundle: 5                 7       23
Jitter Delay:   20                8       24
Jitter Size:    256               9       25
Confirm?    Yes                  10       26
                                 11       27
                                 12       28
                                 13       29
                                 14       30
                                 15       31
                                 16

<< Press ESC key to return to main menu or save system setup >>
```

If the value which user has entered is invalid, the error message will display.

```
Bundle ID not existed!
```

After confirm the configuration. Press “Y” or “N” to re-confirm it.

```
Are you sure [Y/N] ?
```

7.1.3 Time Slot IP Assignment (Delete all)

Choose the “Delete all” option from the Action menu. This option is used to clear all the bundles setup which has been created.

```
LOOP IP6700                === System Setup (MAP) ===       17:28:14 12/19/2005
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS


                              PO/TS TS PO/TS TS BNDL ID/UDP NUM   IP Address
Port      : PORT_A            ===== == ===== == ================ ===============
Action    : Delete all
Bundle ID : 00
UDP Number: 0001                                Cell Num Jitter Size Jitter Delay
Time Slot : 01                                  ======== =========== ============
Time Slot#: 01
IP Address: 000.000.000.000
Cell in Bundle: 05
Jitter Delay:   020
Jitter Size:    256
Confirm?    Yes









<< Press ESC key to return to main menu or save system setup >>
```

After confirm the configuration. Press “Y” or “N” to re-confirm it.

```
Are you sure [Y/N]?
```

7.2 Password Setup

Press “S” from the main menu to get into System Setup. Then press “C” to get into password setup.

7.2.1 Enter old password

Before making change of new password, user need to fill in the old password, the default password is “LOOP”.

```
LOOP IP6700                   === Password Setup ===         18:17:53 12/19/2005
ARROW KEYS: CURSOR MOVE, BACKSPACE to edit, ESC to abort


       Enable Password : YES
       Change Password : YES
       Old    Password : ___________









 >> Please input old password, then press ENTER .
```

7.2.2 Enter new password

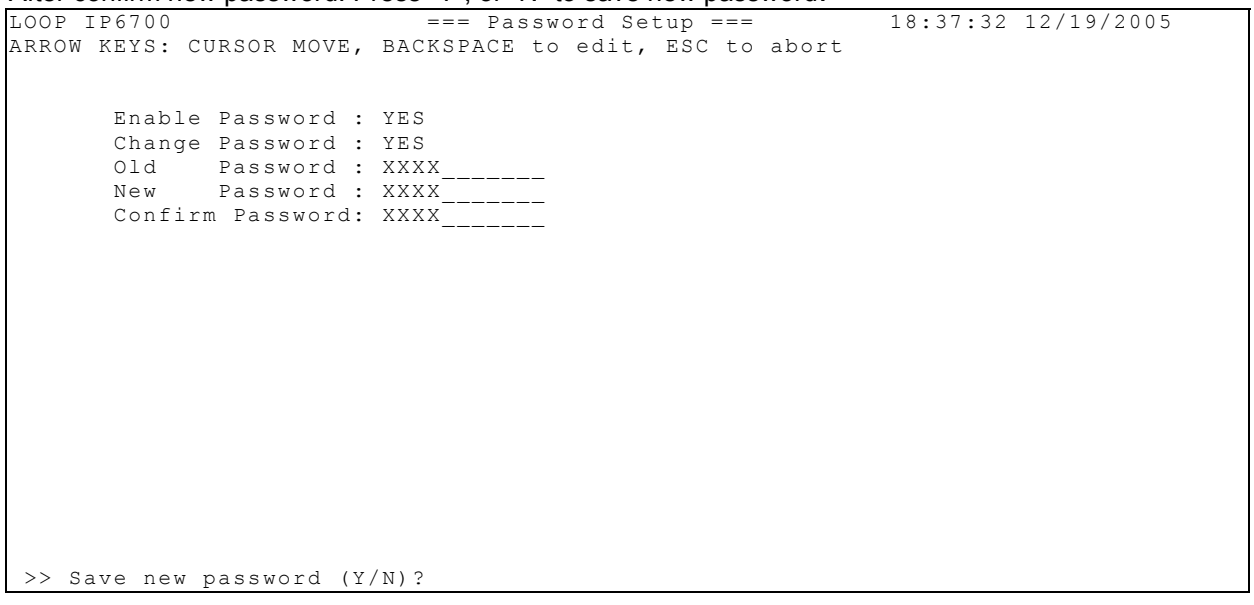
Enter the valid old password, then press ENTER, the new password will be required to enter.

```
LOOP IP6700                  === Password Setup ===          18:17:53 12/19/2005
ARROW KEYS: CURSOR MOVE, BACKSPACE to edit, ESC to abort


       Enable Password : YES
       Change Password : YES
       Old    Password : XXXX_______
       New    Password : XXXX_______









 >> Please input new password, then press ENTER .
```

7.2.3 Confirmation of new password

After confirm new password. Press “Y”, or “N” to save new password.

```
LOOP IP6700                  === Password Setup ===          18:37:32 12/19/2005
ARROW KEYS: CURSOR MOVE, BACKSPACE to edit, ESC to abort


       Enable Password : YES
       Change Password : YES
       Old    Password : XXXX_______
       New    Password : XXXX_______
       Confirm Password: XXXX_______
```



7.3 Clock source setup

The IP6700 provide operator to setup each port's clock source from internal, external, line (from A/B/C/D), or WAN (from A/B/C/D).

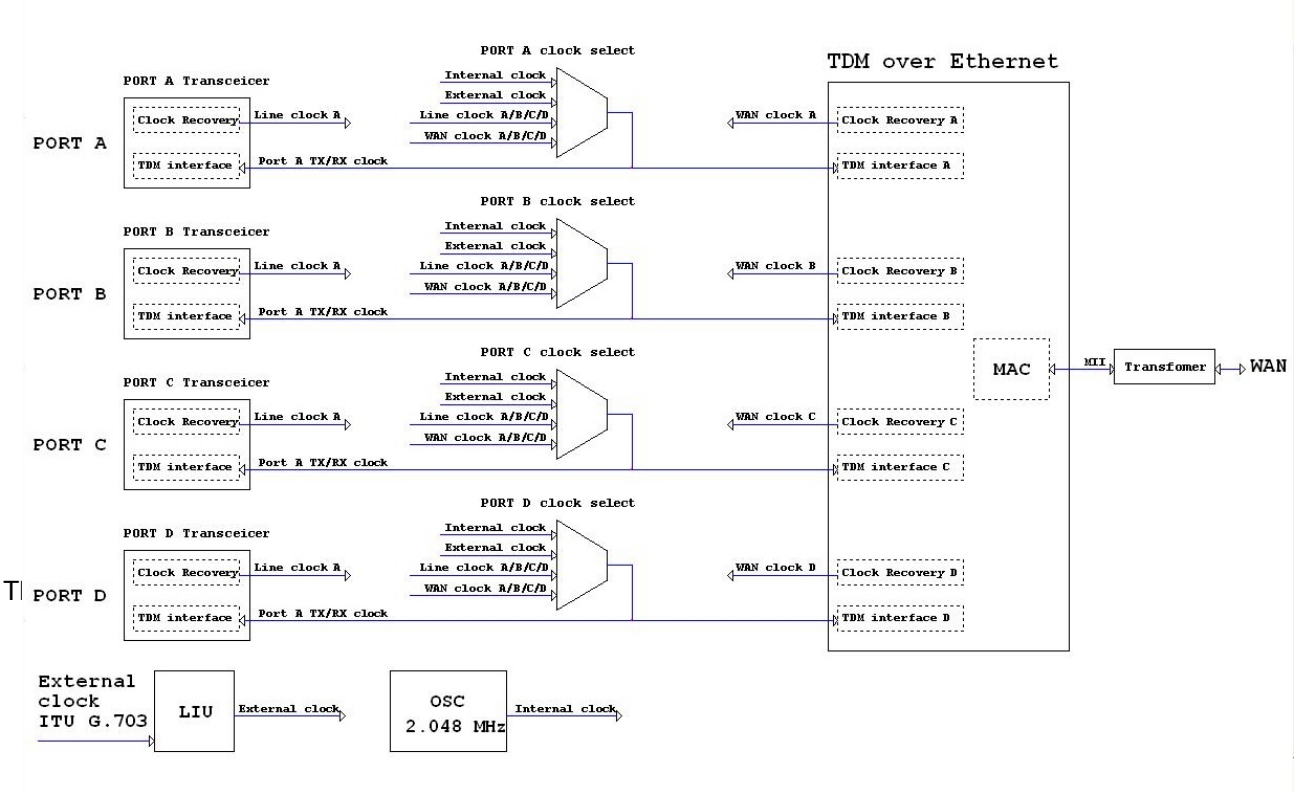


Figure 7- 1 Clock Source

7.3.1 Application

The application diagram of IP6700 clock source shows below.

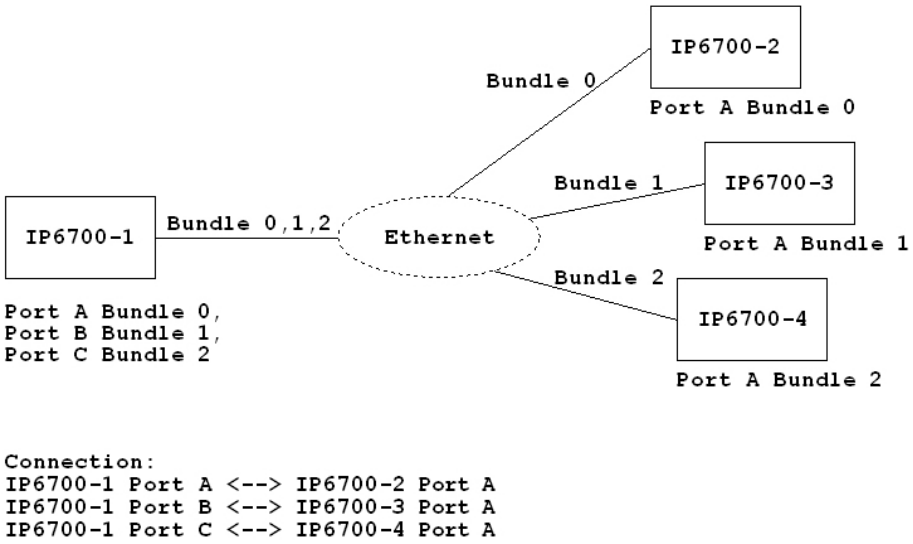


Figure 7- 2 Application Diagram of clock source

7.3.1.1 Example of clock source

For the clock source there are two examples to show as the table below.

Table 7- 1 Example 1: unique clock source (from IP6700-1 line clock of Port A)

	Port A	Port B	Port C	
IP6700-1	Line clock A	Line clock A	Line clock A	
IP6700-2	WAN clock A			
IP6700-3	WAN clock A			
IP6700-4	WAN clock A			

Table 7- 2 Example 2: independent clock source

	Port A	Port B	Port C	
IP6700-1	Line clock A	Line clock B	Line clock C	
IP6700-2	WAN clock A			
IP6700-3	WAN clock A			
IP6700-4	WAN clock A			

8 Functional Description

8.1 TDMoEthernet Packet Format

To transport TDM data through packet switched networks, the PacketTrunk-4 encapsulates it into Ethernet packets, as depicted in Figure 8-1. TDMoEthernet Encapsulation in an Ethernet Packet.

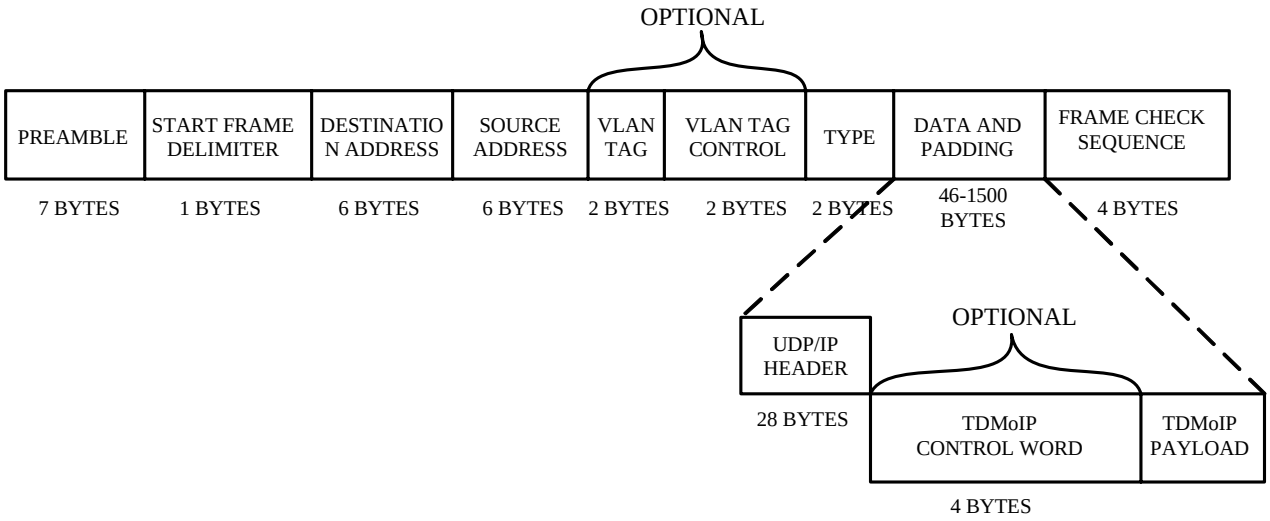


Figure 8- 3 TDMoEthernet Encapsulation in an Ethernet Packet

Table 8- 3 Ethernet Packet Structure

Field	Description
Preamble	A sequences of 56 bits (alternating 1 and 0 values) used for synchronization. Gives components in the network time to detect the presence of a signal.
Start frame delimiter	A sequence of 8 bits (10101011) that indicates the start of the packet.
Destination and source addresses	The Destination Address field identifies the station or stations that are to receive the packet. The Source Address identifies the station that originated the packet. A Destination Address may specify either an "individual address" destined for a single station, or a "multicast address" destined for a group of stations. A Destination Address of all 1 bits refers to all stations on the LAN and is called a "broadcast address".

Table 8- 4 Ethernet Packet Structure (Cont.)

Field	Description
Type	Protocol type
Data and padding	This field contains the data transferred from the source station to the destination station or stations. The maximum size of this field is 1500 bytes. If the size of this field is less than 46 bytes, then padding is used to bring the packet size up to the minimum length. A minimum Ethernet packet size is 64 bytes from the Destination Address field through the Frame Check Sequence.
Frame check sequence	This field contains a 4-byte cyclical redundancy check (CRC) value used for error checking. When a source station assembles a packet, it performs a CRC calculation on all the bits in the packet from the Destination Address through the Pad fields (that is, all fields except the preamble, start frame delimiter, and frame check sequence). The source station stores the value in this field and transmits it as part of the packet. When the packet is received by the destination station, it performs an identical check. If the calculated value does not match the value in this field, the destination station assumes an error has occurred during transmission and discards the packet.

8.1.1 VLAN Option

The original Ethernet standards defined the minimum packet size as 64 bytes and the maximum as 1518 bytes. These numbers include all bytes from the Destination Address field through the Frame Check Sequence field. The Preamble and Start Frame Delimiter fields are not included when quoting the size of a packet. The IEEE 802.3ac standard released in 1998 extended the maximum allowable packet size to 1522 bytes to allow a VLAN tag to be inserted into the Ethernet packet format. If present, the 2-byte VLAN tag is set to 0x8100, a reserved Type field assignment indicating the presence of the VLAN tag and a ‘traditional’ Type field 4 bytes further into the packet.

The 2-byte VLAN Tag Control field consists of:

First 3 bits User Priority field, used to assign a priority level to the Ethernet packet

Next 1 bit Canonical Format Indicator indicating the presence of a Router Information Field

Last 12 bits VLAN Identifier, uniquely identifying the VLAN to which the Ethernet packet belongs.

The packet may contain two VLAN tags to support VLAN stacking.

8.1.2 UDP/IP Header

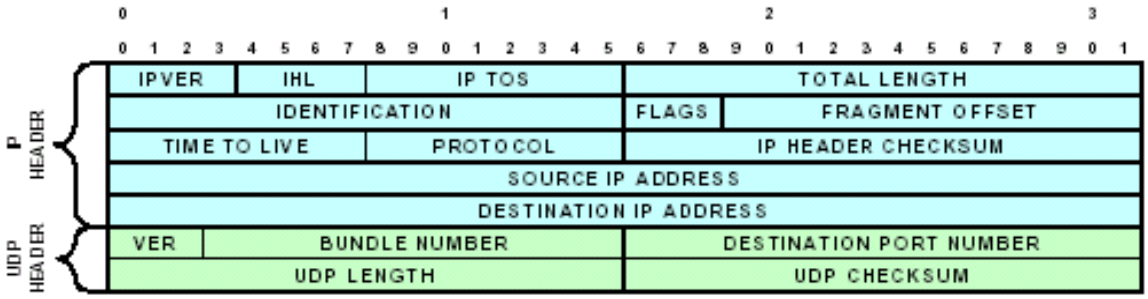


Figure 8- 4 UDP/IP Header

Table 8- 5 IP Header Structure

Field	Description
IPVER	IP version number, e.g. for IPv4 IPVER=4
IHL	Length in 32-bit words of the IP header, IHL=5
IP TOS	IP type of service
Total length	Length in octets of header and data
Identification	IP fragmentation identification
Flags	IP control flags; must be set to 010 to avoid fragmentation
Fragment offset	Indicates where in the datagram the fragment belongs; not used for TDMoEthernet
Time to live	IP time to live field; datagrams with zero in this field are to be discarded
Protocol	Must be set to 0x11 to signify UDP
IP Header checksum	Checksum for the IP header
Source IP address	IP address of the source
Destination IP address	IP address of the destination

Table 8- 6 UDP Header Structure

Field	Description
VER	TDMoEthernet version number. Presently VER=001
Bundle number	This field is usually dedicated to the Source Port Number, but here identifies the unique data stream emanating from a given trunk and sharing a common destination. This nonstandard use of a UDP port number is similar to RTP/RTCP's use of port numbers to uniquely identify sessions, and the common practice (sanctioned in H.225) of randomly allocating port numbers for VoIP sessions. Here placing the bundle identifier in the UDP header rather than the application area enables fast switching. Possible values are: 1-8063: valid bundle numbers 0: reserved 8191 (1FFF): used for OAM control messages the 127 ports 8064-8190: reserved.
Destination port number	Set to 0x085E (2142), the user port number which has been assigned to TDMoEthernet by the Internet Assigned Numbers Authority (IANA)
UDP length	Length in octets of UDP header and data
UDP checksum	Checksum of UDP/IP header and data. If not computed it must be set to zero.

8.1.3 TDMoEthernet Control Word

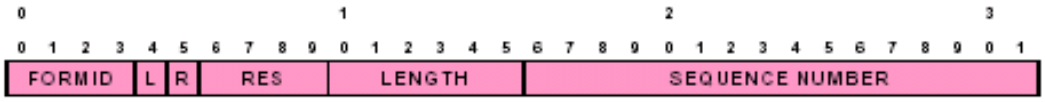


Table 8- 7 TDMoEthernet Control Word Structure

Field	Description
FORMID	Format Identifier: 1100 AAL1 unstructured 1101 AAL1 structured 1110 AAL1 structured with CAS 1111 HDLC
L	Local loss of sync failure. This bit is set by the CPU. A set L bit indicates that the source has detected or has been informed of a TDM physical layer fault impacting the data to be transmitted. This bit can be used to indicate physical layer LOS that should trigger AIS generation at the far end. Once set, if the TDM fault is rectified, the L bit must be cleared.
R	Remote receive failure. This bit is set by the CPU. A set R bit indicates that the source is not receiving packets at the Ethernet port, i.e., there is a failure of that direction of the bi-directional connection. This indication can be used to signal congestion or other network related faults. Receiving remote failure indication may trigger fall-back mechanisms for congestion avoidance. The R bit must be set after a preconfigured number of consecutive packets are not received, and must be cleared once packets are once again received.
RES	Reserved bits. Must be set to zero.
Length	The length of the TDMoEthernet packet (control word and payload), in case padding is employed to meet minimum transmission unit requirements of the PSN. It is used if the total packet length (including PSN, control word, and payload) is less than 64 bytes. Otherwise, it is set to zero.
Sequence number	TDMoEthernet sequence number, defined separately for each bundle and incremented by one for each TDMoEthernet packet sent for that bundle. The initial value of the sequence number is random (unpredictable) for security purposes, and the value is incremented modulo 2 16 separately for each bundle. Used by the receiver to detect packet loss and restore packet sequence.

8.1.4 TDMoEthernet Payload

This field can contain the following payload types:

• AAL1

The AAL1 payload type detail is provided in the ”AAL1 Payload Type Machine as below.

8.2 AAL1 PAYLOAD TYPE MACHINE

For the prevalent case for which the timeslot allocation is static and no activity detection is performed, the payload can be efficiently encoded using constant bit rate AAL1 adaptation.

In the TDM to Ethernet direction, the AAL1 Payload Type machine concatenates the bundle's timeslots payload into structures and then slices it into 48-octet AAL1 cells. After adding the AAL1 header, the cells are concatenated into the Ethernet packet payload.

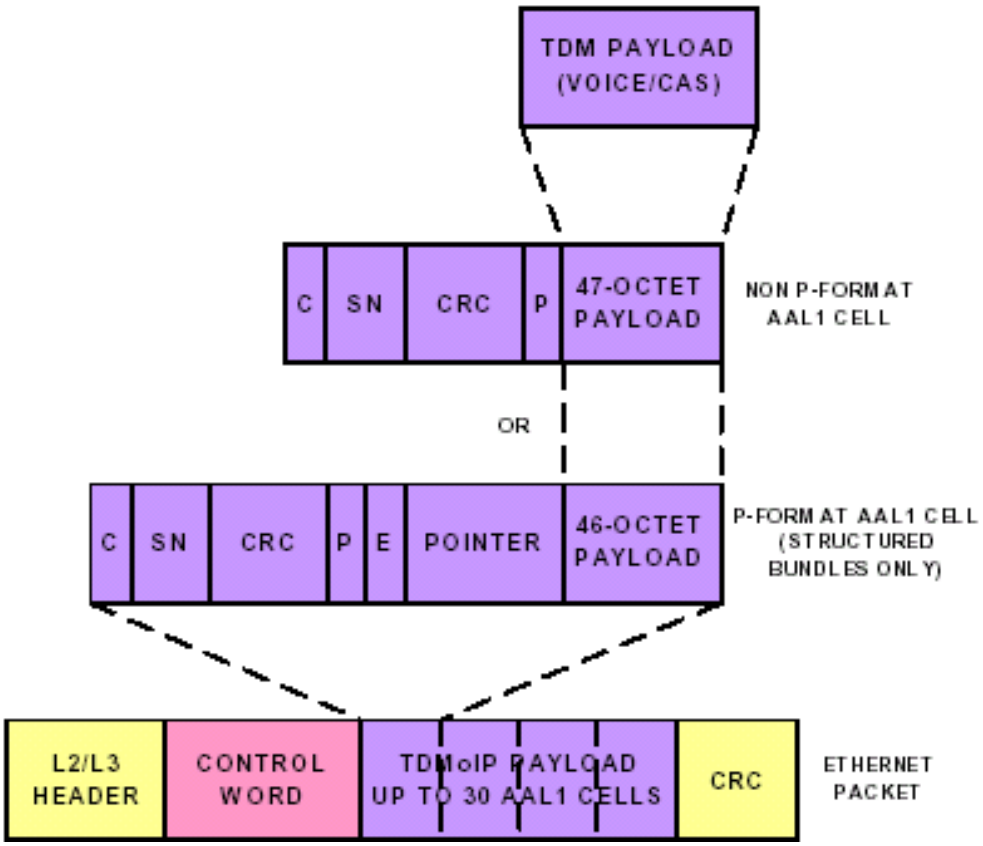


Figure 8- 5 AAL1 Processing

Table 8- 8 AAL1 Header Structure

Field	Length [bits]	Description
C	1	Indicates if there is a pointer in the 2nd octet of the cell. When set, a pointer exists.
SN	3	Cell sequence number
CRC	3	Error cyclic redundancy code on C and SN
P	1	Even parity bit on C, SN and CRC or the even byte parity LSB for the sequence number octet (P format cells only)
E	1	(P format cells only) Even byte parity MSB for pointer octet
Pointer	7	(P format cells only) Indicates the next structure boundary. It is always located at the first possible position in the sequence number cycle, in which a structure boundary occurs. The pointer indicates one of 93 octets (46 octets of the current cell + 47 octets of the next cell). P=0 indicates that the first octet of the current cell's payload is the first octet of the structure. P=93 indicates that the last octet of the next cell is the final octet of the structure.

The AAL1 block supports the following bundle types:

• Unstructured

• Structured without CAS

• Structured with CAS.

Unstructured bundles, as part of the E1/T1 interface, support rates of N × 64 kbps, where N is the number of timeslots configured to be assigned to a bundle. Unstructured bundles may also carry traffic of the whole low-speed interface (up to 4.6 Mbps), T1 interface (1.544 Mbps) and high-speed interface (up to 51.84 Mbps).

The 47-octet AAL1 type cell's payload contains 376 bits of pure TDM bit stream, without synchronization. Each cell has a one-byte header containing sequence number and protection fields.

Structured without CAS bundles, as part of the E1/T1 interface, support rates of

N × 64 kbps, where N is the number of timeslots configured to be assigned to a bundle. For this format, the timeslots belonging to the bundle are sequentially placed in a structure, one octet per timeslot, until all 47 octets are filled. The 47th octet may contain a timeslot other than the last one in the bundle. Therefore the 1st octet of the next cell will contain the next timeslot of the same bundle.

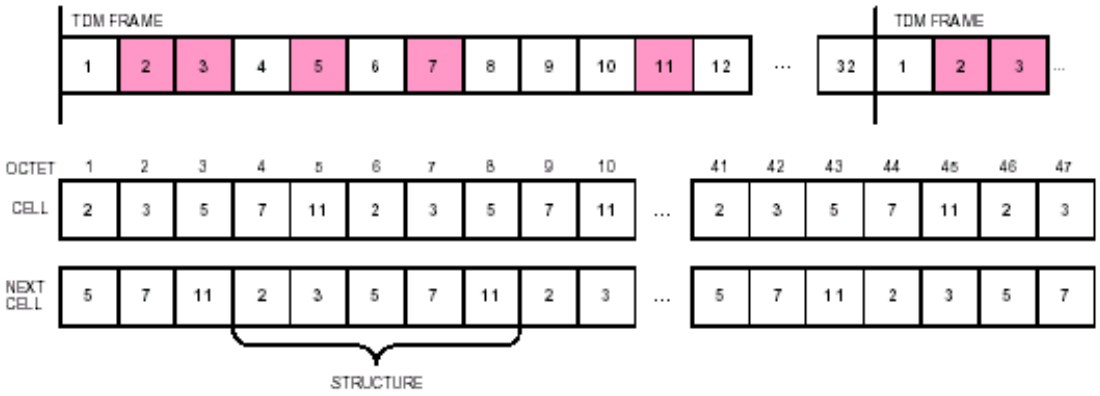


Figure 8- 6 AAL1 Processing for Structured without CAS Bundles

This means that each cell can start with a different timeslot. In order for the far end to recognize the first timeslot in the bundle, a pointer to it is sent periodically in one of the 8 cells of every SN cycle. When this pointer is sent, a P-format cell is used.

Structured with CAS bundles as part of the E1/T1 interface, support rates of N × 64 kbps, where N is the number of timeslots configured to be assigned to a bundle. For this format, the AAL1 header is identical with the previously explained one. The addition of CAS only affects the structure contents. CAS data of one timeslot is 4 bits long, meaning one octet can contain CAS data of 2 timeslots. Bundles containing an odd number of timeslots need a padding of 4 zeroes in the last CAS octet. For example, a 3-timeslot bundle of an E1 frame with CAS will yield the following structure octet sequence: TS1, TS2, TS3 repeated 16 times and then CAS1+CAS2, CAS3+padding.

In the Ethernet to TDM direction, cells/packets of a bundle are being received only after the synchronization process. The synchronization process includes cell SN synchronization, packet SN synchronization and pointer synchronization. Cells with CRC or parity errors in their header are discarded. Pointer mismatch imposes jitter buffer under-run and bundle resynchronization. Cell header errors or pointer errors may be ignored depending on per-bundle configuration. Missing cells or packets are detected and restored in the jitter buffer.

Glossary

AIS	Alarm Indication Signal
AS	Available Second
BES	Bursty Error Second
BPV	Bipolar Violation
CRC	Cyclical Redundancy Check
CSS	Controlled Slip Second
DM	Degraded Minute
DS1	Digital Signal, Level One - E1 or T1
DS3	Digital Signal, Level Three – E3 or T3
DTE	Data Terminal Equipment-an end-user machine. Eg. PC or workstation
EFS	Error Free Second
ES	Error Second
FDL	Facility Data Link
IP	Internet Protocol
LCD	Liquid Crystal Display
LAN	Local Area Network
LED	Light Emitting Diode
LIU	Line Interface Unit
LOF	Loss of Frame
LOS	Loss of Signal
NMS	Network Management System
PRBS	Pseudo Random Binary Sequence
QRSS	Quasi Random Signal Sequence
RAI	Remote Alarm Indication
SAToP	Structure Agnostic TDM over Packet
SES	Severe Error Second
SNMP	Simple Network Management Protocol
TDM	Time Division Multiplexing
UAS	Unavailable Second
VLAN	Virtual LAN Area Network
WAN	WAN wide Area Network