



Loop-IP6702A TDMoEthernet User's Manual

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1. PRODUCT DESCRIPTION

1.1. Description

The **Loop-IP6702A** device allows operators to transport Unframed/Framed 1 E1 (1 Unframed/Framed T1) data stream with timing information over PSN (Packet Switched Network) via Pseudowire Protocol – SAToP or CESoPSN . Another IP6702A converts the received packet stream back to original E1 or T1 data stream with original timing information. This allows cost-effective migration from existing legacy TDM networks to Packet Switched Network.

1.2. Features

Mechanics and Electrics

- ANSI shelf
- Power:
 - Fixed AC
 - Fixed DC
 - Combined AC and DC (AoD)

Ethernet Interface

- Four Ethernet ports for WAN or LAN port assignment
 - One Fast Ethernet with 1 SFP housing
 - Three 10/100 BaseT Ethernet

User Tributary Interface

- TDM Tributary interfaces: up to 1 E1 or 1 T1 Unframed mode/Framed mode
DTE interface: 1 RS422/V.11

L2 Switching

- Jumbo frame size up to 2048 bytes
- VLAN:
 - Maximum 4K VLAN ID
 - Maximum 16 con-current VLAN Groups
 - Support C-VLAN/S-VLAN tag adding and removing on Pseudowire
 - Support 802.1q Port-Based VLAN on Ethernet/SNMP Port
- Support 802.1d MAC Learning
- Support 803.3x Flow control on input ports
- Packet Transparency

Pseudowire Capability

- Support SAToP and CESoPSN
- Support E1/T1 traffic emulation over UDP/IP Network

- Maximum 16 Pseudowires
- PDV Compensation Depth: up to 256 ms
- Jitter Buffer Size: up to 256 frames

Pseudowire Diagnostic Function

- Built-in BERT for E1/T1 to Line or WAN direction
- IP – MAC Table Display

Jitter & Wander

PPM version: conforms to G.823 Traffic Interface (+/- 1ppm)

Timing Reference

- Internal (4.6 ppm)
- Line (E1/T1)
- Adaptive Clock Recovery: 4 ACR clock servos can recovery clock from any 4 Pseudowires

OAM Capability

- Support 1 SNTP timing reference
- LOS, LOF, LCV*, RAI, AIS, FEBE*, BES, DM*, ES, SES, UAS and LOMF*
- Multi-color LED indicators
- Alarm relay
- ACO (Alarm Cutoff) button

Management Interfaces

- 1 user-selectable Ethernet/SNMP port
- SNMP v1/v3 with 5 SNMP trap IP
- DB-9 Console port with VT-100 menu
- Telnet and SSH v2
- C-VLAN tag on management traffic

Standards Compliance

- SAToP and CESoPSN
- MEF8*

* Future Option

1.3.Applications

Point to Point Application

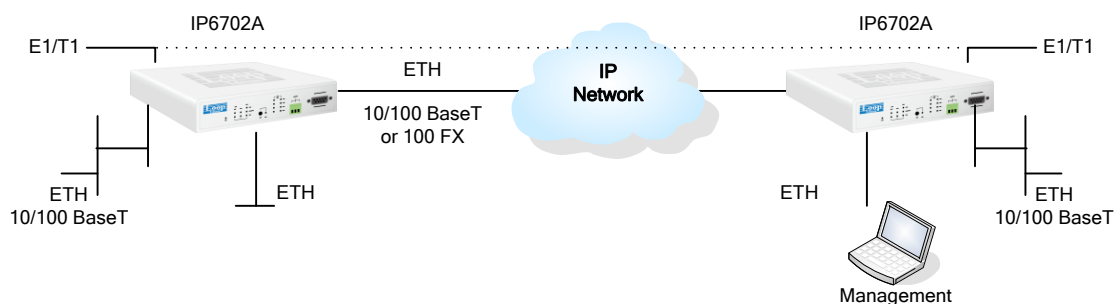


Figure 1-1 IP6702A Point-to-Point Application

Fractional E1 Point to Multipoint Application

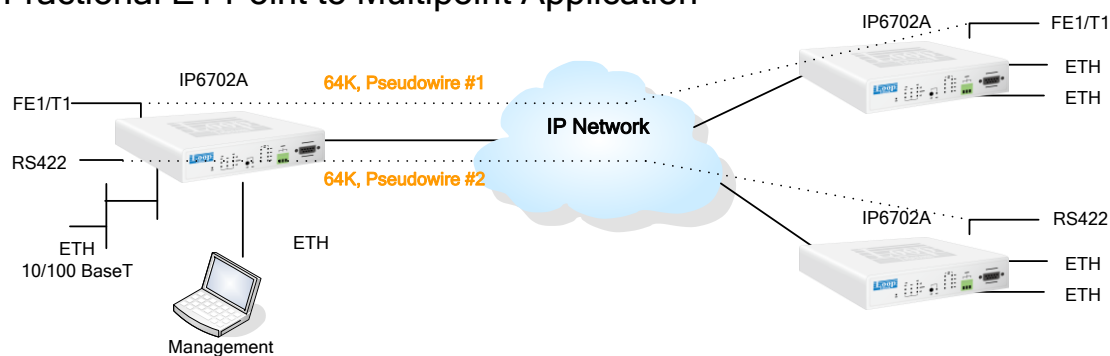


Figure 1-2 IP6702A Fractional E1 Point to Multipoint Application

E1/LAN Ethernet Radio Application

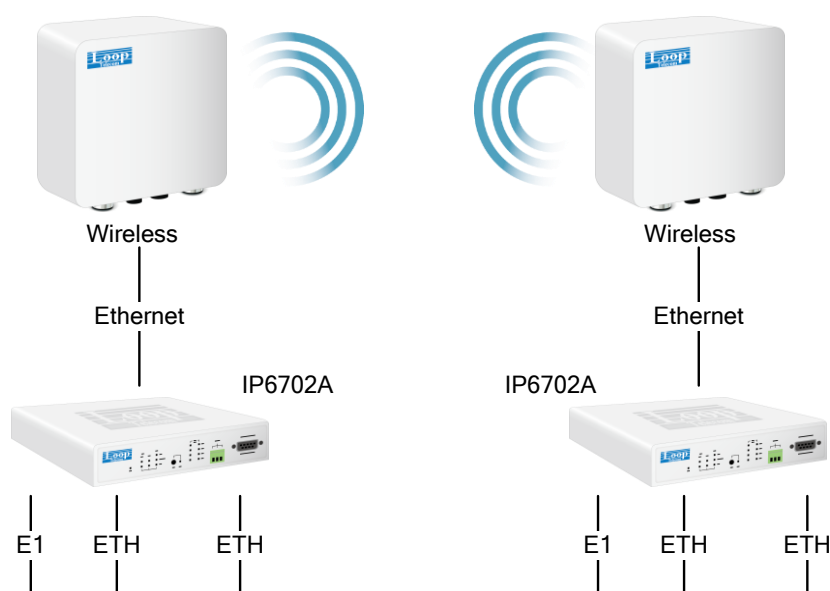


Figure 1-3 IP6702A E1/LAN Ethernet Radio Application

1.4.Specifications

Specifications

SFP Optical Module

Please refer to SFP optical module brochure for detail.

Ethernet Optical Interface

Number of Ports: Optical port

Optical Port

Speed : 100 BaseFX
(802.3u)

Connector: SFP

Ethernet Electrical Interface

Number of Ports: 3
Speed: 10/100 BaseT (802.3i, 802.3u)

Auto-negotiation (10/100)

Auto MDI/MDIX

Full/Half Duplex

Connector: RJ45

E1 Tributary Interface

Number of Ports: 1
Line Rate: 2.048 Mbps $\pm$ 50 ppm
Line Code: AMI/HDB3
Framing: CCITT G.704

Input Signal: ITU G.703
Output Signal: ITU G.703
Jitter and Wander: ITU G.823 traffic mode
Impedance: 75 ohm coax/120 ohm twisted pair
Connector: BNC and RJ48C

T1 Tributary Interface

Number of ports: 1
Line Rate: 1.544 Mbps $\pm$ 32 ppm
Line Code: AMI/B8ZS
Framing: None

Input Signal: DS-1 from 0dB to -26 dB w/ALBO
Output Signal: DSX-1, DS-1
Jitter and Wander: AT&T TR 62411
Connector: RJ48C

Serial Tributary Interface

Number of Ports: 1
Type: DCE
Line Rate: n x 56K bps (n= 1 to 31) or n x 64K bps (n= 1 to 32)
Interface/Connector: RS422/V.11 DB25S

Timing Source

Primary/Secondary Clock: Internal (4.6 ppm), E1/T1 line , Adaptive Clock Recovery

Alarm Relay

Alarm Relay: Fuse alarm, performance alarm
Connector: 3 pin terminal block
Maximum Current: 1A for 30 Vdc

Network Management

Console Port

Electrical: RS232 interface
Terminal: Menu driven VT-100
Connector: DB9, female and DCE
Support RADIUS checking login

SNMP Port

Protocol: SNMP v1/v3
Connector: RJ45 at rear panel

Performance Monitors (E1/T1)

Performance Store: The last 24 hours performance in 15-minute intervals
Performance Reports: Date &Time, Error Second (ES), Unavailable Second (UAS), Bursty Errored Second (BES), and Severe Error Second (SES)

Alarm Reports (E1/T1)

Alarm History: Date & time, alarm type(i.e. clock loss, LOS, BPV, ES)
 Alarm Queue: Contains up to 4000 alarm records of latest alarm types, alarm severity, date and time.

Diagnostics Test (E1/T1)

Loopback: Line loopback and Local loopback

Power

AC (fixed module): 100 to 240 Vac
 DC (fixed module): -42 to -72 Vdc
 AC & DC: 100 to 240 Vac and -42 to -72 Vdc
 Consumption: Maximum 5.0 W

Physical and Environmental

Dimensions 210 x 41.5 x 140 mm
 (W x H x D): (8.27" x 1.63" x 5.51")
 Net Weight: 1.0 Kg (2.2lbs)
 Temperature: 0 -50°C
 Humidity: 0-95% RH (non-condensing)
 Mounting: Desk-top stackable, wall mountable,
 rack mount with 19" tray available

Standards Compliance**IEEE**

802.1p Priority Code Point
 802.1q VLAN Tagging
 802.3i 10BaseT
 802.3u 100BaseT, 100 BaseFX

ITU

G.703 E1/DS1
 G.706 Frame Alignment and CRC
 G.823/ Traffic and Synchronous Interface
 G.824* (Traffic only)
 G.826 End to End Error Performance
 PWE3 Pseudo Wire Emulation
 Edge-to-Edge

IETF

RFC 3411 SNMPv1, v2c*, v3*
 RFC4553 SAToP

MEF

8* CESoETH

RoHS

Restriction of Hazardous
 Substances Directive

Certifications

EMC: EN55022 Class A, EN50024, EN300 386, FCC Part 15 Subpart B Class A
 Safety: IEC60950-1(CB), EN60950-1(CE)

*Future option

Note: Non-Loop SFP modules are not guaranteed to work with our equipments. It is strongly recommended to buy Loop-logo SFP modules.

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-IP6702A 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-IP6702A is a desk top unit, which offers installation for power supply: hot swappable. The front panel is shown in Figure 2-1, and the rear panel is shown in Figure 2-2 and Figure 2-2.

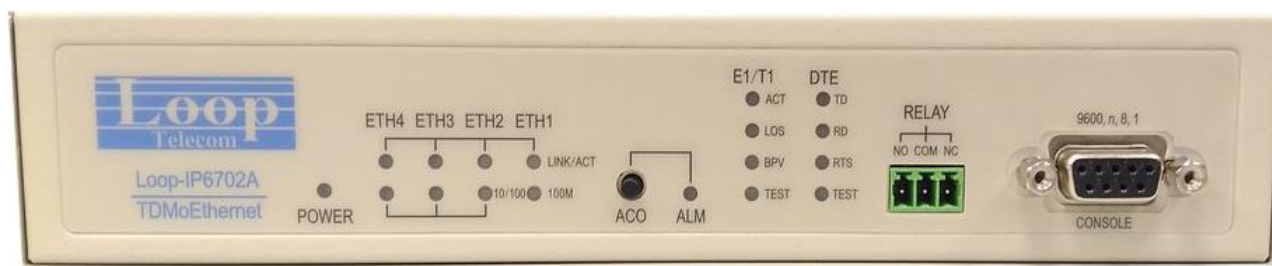


Figure 2-1 Front Panel View

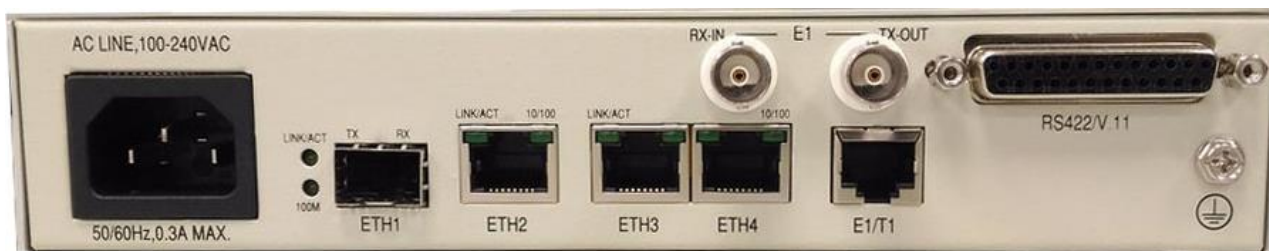


Figure 2-2 Rear Panel View (AC Power)

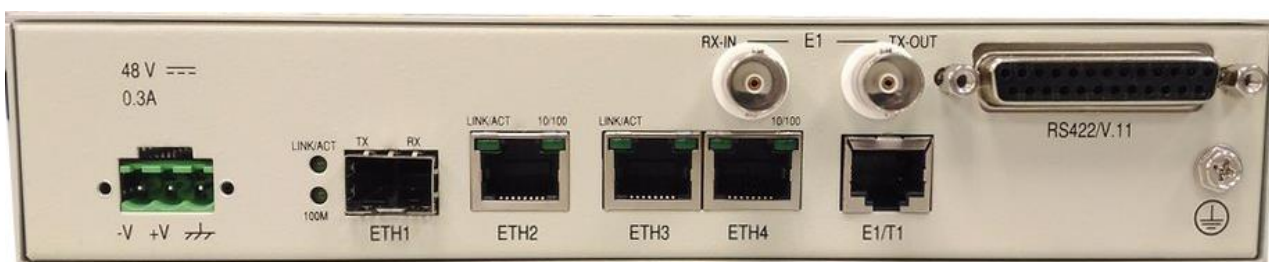


Figure 2-3 Rear Panel View (DC Power)

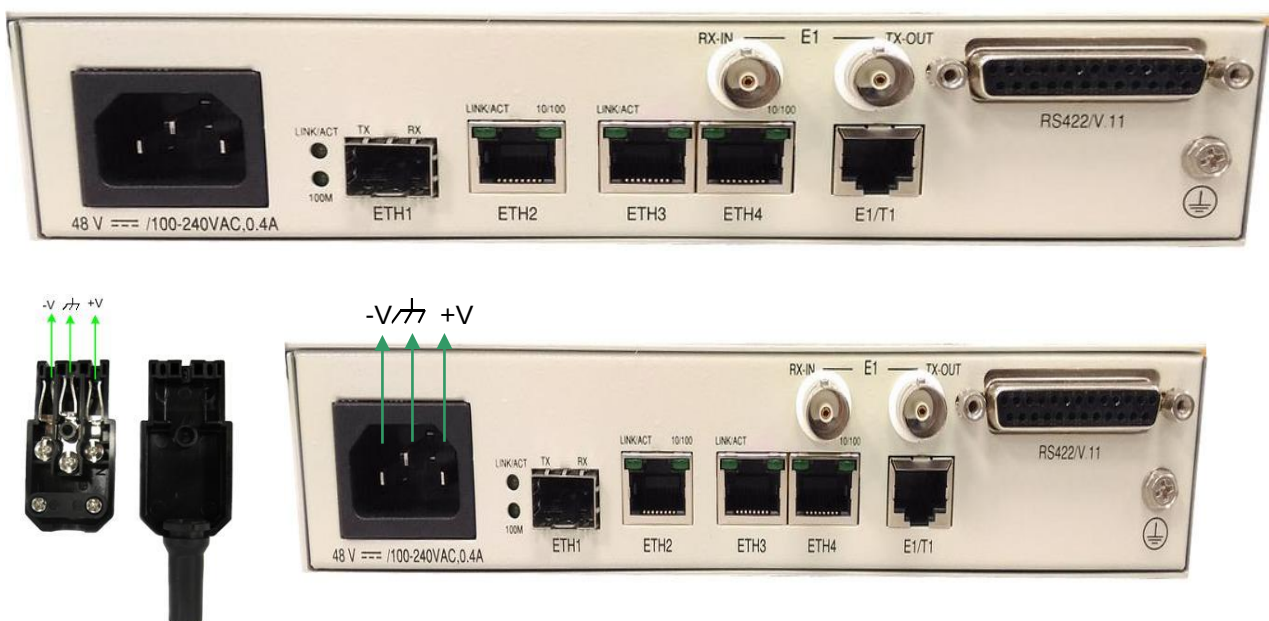


Figure 2-4 Rear Panel View (AoD Power)

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.
- Unplanted 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.

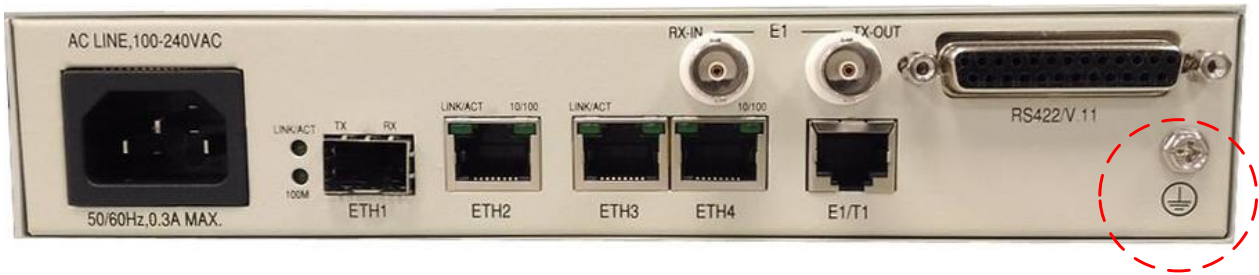


Figure 2-5 Chassis Grounding

Console port can be connected via RS422 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.

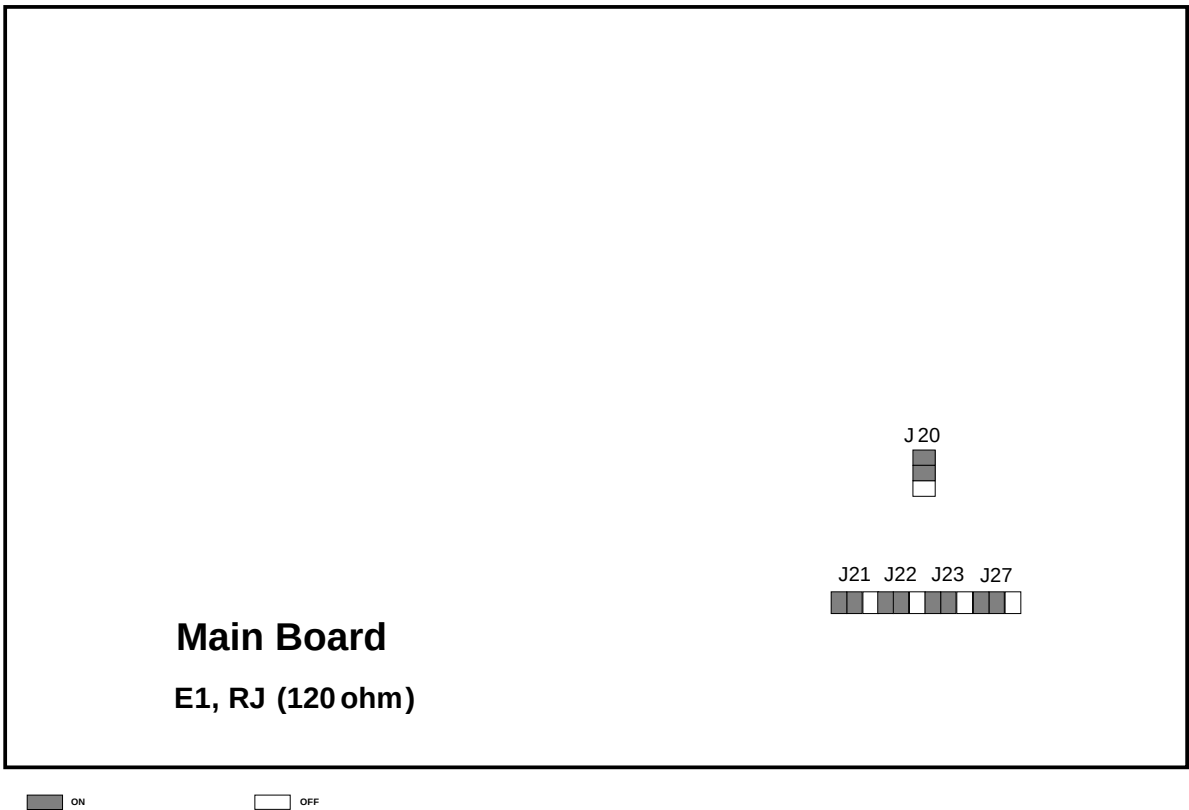


Figure 2-6 Main Board Jumper Setting of Line - E1, RJ (120 ohm)

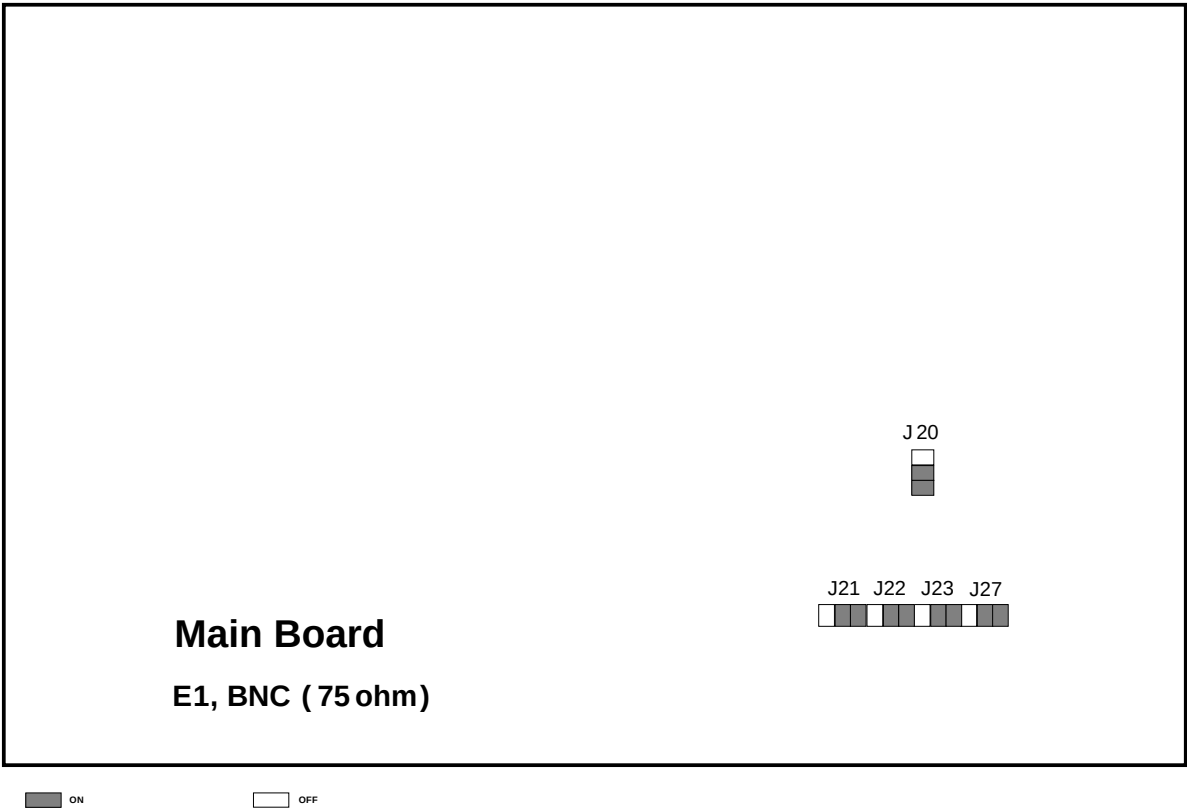


Figure 2-7 Main Board Jumper Setting of Line - E1, BNC (75 ohm)

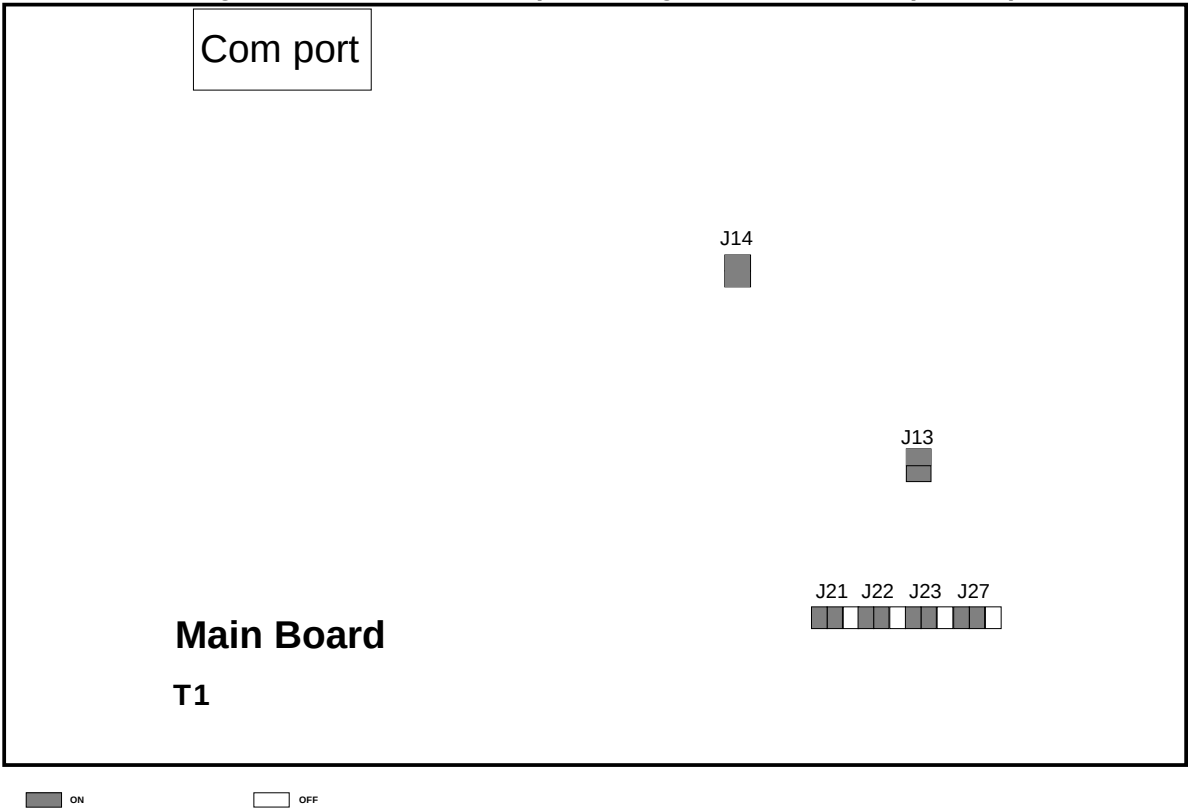


Figure 2-8 Main Board Jumper Setting of Line - T1

2.3.Assignment Information

Table 2-1 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 2-2 Alarm Relay Connector

Signal	Description
NC	Normal Close
COM	Common
NO	Normal Open

Table 2-3 Power Connector

Signal	Description
-V	-DC 48 Volts
+V	+DC Return
	Chassis Ground

Table 2-4 RJ45 for Ethernet Port

Pin Number	Signal	Signal Direction
1	Transmit Data +	Output from IP6702A
2	Transmit Data -	Output from IP6702A
3	Receive Data +	Input to IP6702A
4	No Connection	
5	No Connection	
6	Receive Data -	Input to IP6702A
7	No Connection	
8	No Connection	

The DTE port is configured as a serial device. There are 2 different DTE boards: X.21 and RS422. Pin definitions are defined in Table 2-5 to 2-6.

Table 2-5 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 2-6 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	

2.4.Default Setting

Table 2-7 Default Software Configuration

Configuration		Option	Default
E1 Line	Frame	ON, OFF,CAS,CRC, CAS+CRC	ON
	Code	HDB3, AMI	HDB3
	INTF	120 OHM, 75OHM	120 OHM
	AIS	ON, OFF	ON
	RAI	ON, OFF	OFF
	IDLE CODE	00-FF	D5
	OOS	BUSY,IDLE	BUSY
T1 Line*	Frame	D4, None, ESF, ESF & T1 403	D4
	Code	B8ZS, AMI	B8ZS
	YEL	ON, OFF	OFF
	AIS	ON, OFF	ON
	CAS	ON, OFF	OFF
	OOS	IDLE, BUSY_IDLE, IDLE_BUSY, BUSY	IDLE
	IDLE	00-ff	D5
	INTF	SHORT HAUL	SHORT HAUL
	EQU	SHORT HAUL = EQU (0-133, 133-266, 266-366, 399-533, 533-655)	0-133
	OOS	BUSY, IDLE	BUSY
Clock	Master_Clk Source	INTERNAL, A(LINE), ACR1, ACR2, ACR3, ACR4	INTERNAL
	Second_Clk Source	INTERNAL, A(LINE), ACR1, ACR2, ACR3, ACR4	INTERNAL
	Current Clock	MASTER_CLK, SECOND_CLK,INTERNAL	MASTER_CLK
	Clk Recover Mode	AUTOMATIC, MANUAL	AUTOMATIC
	Clock Status	NORMAL, LOSS (Status)	
Console port	Baud rate	9600,19200,38400,57600,115200	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	ETH1	100	100
	ETH2	AUTO, full-100,half-100, full-10,half-10	AUTO
	ETH3	AUTO, full-100,half-100, full-10,half-10	AUTO
	ETH4	AUTO, full-100,half-100, full-10,half-10	AUTO
Network management	IP address		192.168.1.1
	Subnet mask		255.255.255.0
SNMP	Trap IP		0.0.0.0
	Community Name		Public
	Device name	IP6702A	IP6702A
SNMPv3	User Name	loopmd5, loopsha	loopmd5
	Auth Protocol	MD5, SHA	MD5
	Auth Key		loop1234
	Priv Protocol	DES	DES
	Priv Key		loop1234
	Group Name		initial
Log on	User Name	ADMIN, OPERATOR	
	Password		LOOP

3. OPERATION

3.1. 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 default setting of LOOP.

3.3. Return to Default

The unit is shipped with factory default setting. To restore to factory setting in the future, press the "ACO" button in system booting.

3.4. Using Terminal

Management from a Telnet or Network Management System (NMS) can be effected through a Ethernet Port. Use the DB9S console port of IP6702A'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 5 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-IP6702A 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,CRITICAL,MINOR,MAJOR,INFO	DISABLE
	AIS			
	LOS			
	LOF			
	BPV	Alarm	DISABLE,CRITICAL,MINOR,MAJOR,INFO	DISABLE
		Threshold	10E- (5, 6, 7, 8, 9)	10E-5
	ES	Alarm	DISABLE,CRITICAL,MINOR,MAJOR,INFO	DISABLE
		Threshold	1-900	1
UAS	Alarm	DISABLE,CRITICAL,MINOR,MAJOR,INFO	DISABLE	
	Threshold	1-900	1	
E1	CSS	Alarm	DISABLE,CRITICAL,MINOR,MAJOR,INFO	DISABLE
		Threshold	1-900	1
T1 Line*	YEL		DISABLE,CRITICAL,MINOR,MAJOR,INFO	DISABLE
	AIS			
	LOS			
	LOF			
	BPV	Alarm	DISABLE,CRITICAL,MINOR,MAJOR,INFO	DISABLE
		Threshold	10E- (5, 6, 7, 8, 9)	10E-5
	ES	Alarm	DISABLE,CRITICAL,MINOR,MAJOR,INFO	DISABLE
		Threshold	1-900	1
UAS	Alarm	DISABLE,CRITICAL,MINOR,MAJOR,INFO	DISABLE	
	Threshold	1-900	1	
T1*	CSS	Alarm	DISABLE,CRITICAL,MINOR,MAJOR,INFO	DISABLE
		Threshold	1-900	1

3.7.Report

For E1/T1 line receiver, Loop-IP6702A has two sets of performance registers. These are line and user,. The line performance register tracks the E1/T1 line receiver performance status. The user performance register tracks the E1/T1 line receiver as well, but user may clear at any time.

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 $\geq$ 1, OOF $\geq$ 1, or CS $\geq$ 1.	CRC $\geq$ 1, OOF $\geq$ 1, or CS $\geq$ 1.
UAS	Unavailable Second	$\geq$ 10 consecutive SES	$\geq$ 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	CSS	BPV
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	Y	Y
	LINE [Network]	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C

Y = Report available and can be cleared by admin terminal command “K” Clear Performance Date.

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-IP6702A has multi-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 (Front Panel)

LED	Color	Indication
POWER	Off	Power off, self-test failure
	Green	Normal operation
ALM	Off	No alarm

		Red	Detected any E1/T1 or WAN/LAN or DTE port alarms
ETH1	LINK/ ACT	Off	Link Down
		Green	Link Up A valid network connection on the Ethernet port.
	100	Green	100Mbps
ETH2-ET H4	LINK/ ACT	Off	Link Down
		Green	Link Up A valid network connection on the Ethernet port.
		Flashing Green	Active. Data is being transmitted or received through the Ethernet port.
	10/100	Off	10Mbps(only for electrical Ethernet)
		Green	100Mbps
E1/T1	ACT	Off	Signal unsync
		Green	Line Sync
	TEST	Off	Not in test mode
		Flashing Green	Testing: during BERT or loopback
	LOS	Off	No LOS detected
		Red	Alarm: Detected lost of E1/T1 signal
	BPV	Off	No BPV detected
		Red	Alarm: detected bipolar violations
		Off	No transmit data present
DTE	TD	Flashing Green	Transmit data present
	RD	Off	No receive data present
		Flashing Green	Receive data present
	RTS	GREEN	Normal
		Red	RTS Loss/ DTE Clock Loss
	TEST	Off	Not in test mode
		Flashing Green	Testing: during BERT or loopback

Table 3-6 LED Indication for Main Unit (Rear Panel)

LED		Color	Indication
ETH1	LINK/ ACT	Off	Link Down
		Green	Link Up A valid network connection on the Fiber ETH port.
	100	Green	100Mbps
ETH2-ET	LINK/	OFF	Link Down

H4	ACT	Green	Link Up A valid network connection on the RJ-45 ETH port.
		Flashing Green	Active. Data is being transmitted or received through the RJ-45 ETH port.
	10/100	Off	10Mbps(only for electrical Ethernet)
		Green	100Mbps

3.9. Management Port (Ethernet Port)

As two IP6702A are connected: one is set as local unit and the other is set as remote unit. See also the following diagram.

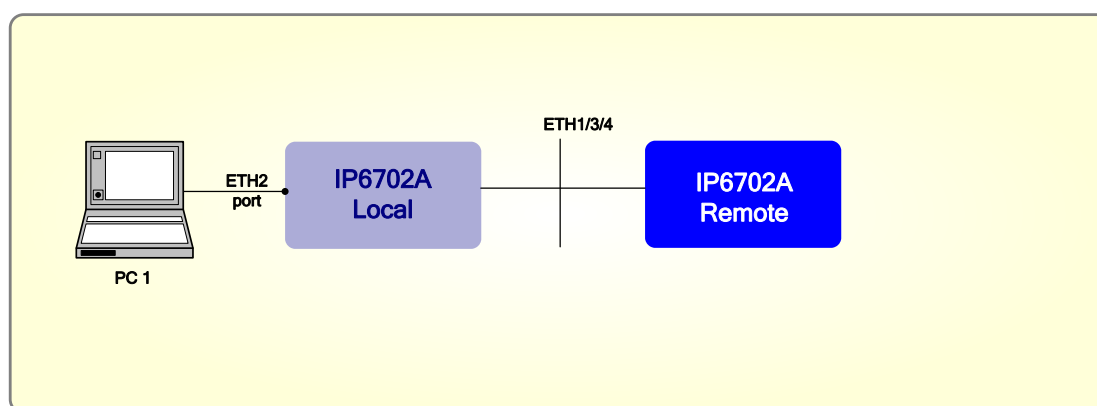


Figure 3-1 Management Port

NOTES: 1. The management PC can initiate and send a ping signal to the ETH1/3/4 port of the IP6702A. The IP6702A, however, cannot initiate and send a ping signal to the management PC.

3.10. User Data Port (Ethernet)

IP6702A's User Data Port is used to transmit or receive data only no matter IP6702A is set as Ethernet.

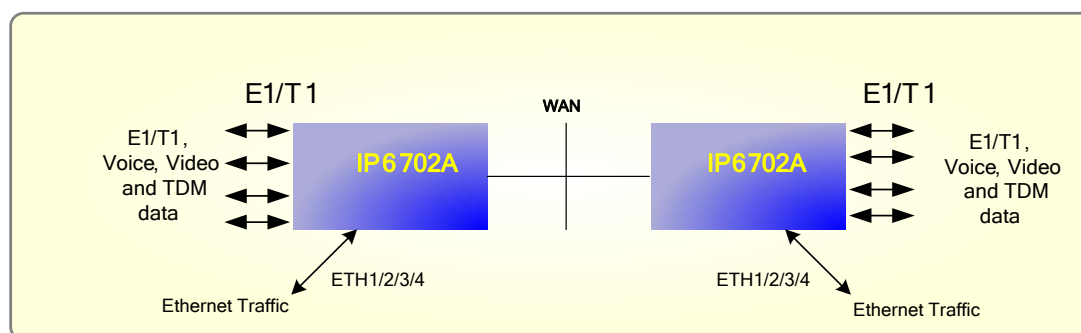


Figure 3-2 Ethernet Port

4. MAINTENANCE

4.1. Self Test

When the Loop-IP6702A 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-IP6702A. 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 E1/T1 Line signal is loopback to the E1/T1 Line before the Payload mapper. This Line Loopback is used to isolate the local equipment from a problematic E1/T1 transmission line. Line loopback test can be activated from the VT-100 terminal.

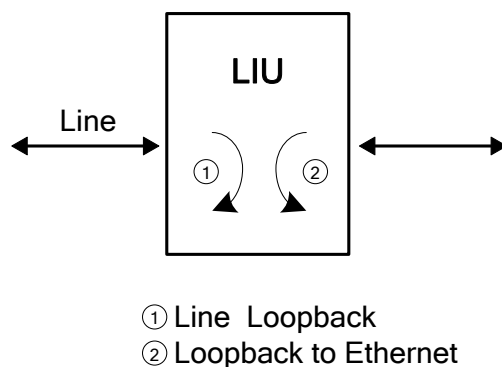


Figure 4-1 Loopback Block Diagram

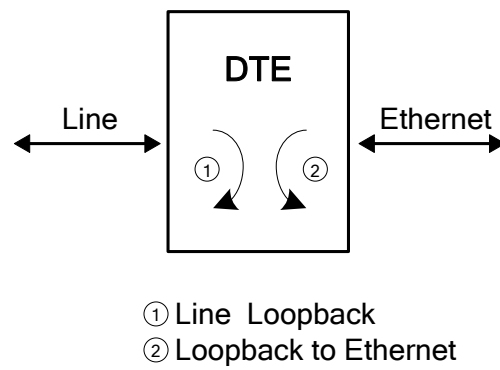


Figure 4-2 DTE Loopback Block Diagram

5. TERMINAL OPERATION

The Loop-IP6702A provides comprehensive report and configuration capability through the console port. By using single-character commands and arrow keys, the Loop-IP6702A can be configured and monitored through the use of a VT-100 terminal. The single-character commands are not case sensitive, except for when using a password. On each screen, the available commands and the configurable fields are highlighted.

When a VT-100 terminal is connected to the CONSOLE port of the Loop-IP6702A, a main menu is displayed on the VT-100 monitor. The main menu consists of four groups of commands, DISPLAY, LOG, SETUP, and MISC. All commands are detailed in the VT-100 Controller Menu Tree illustrations below.

This chapter provides detailed setup instructions. After connecting your VT-100 monitor to the Loop device, your first setup steps should be as follows:

1. Log on and set up your password (see Logon and Password Setup Section)

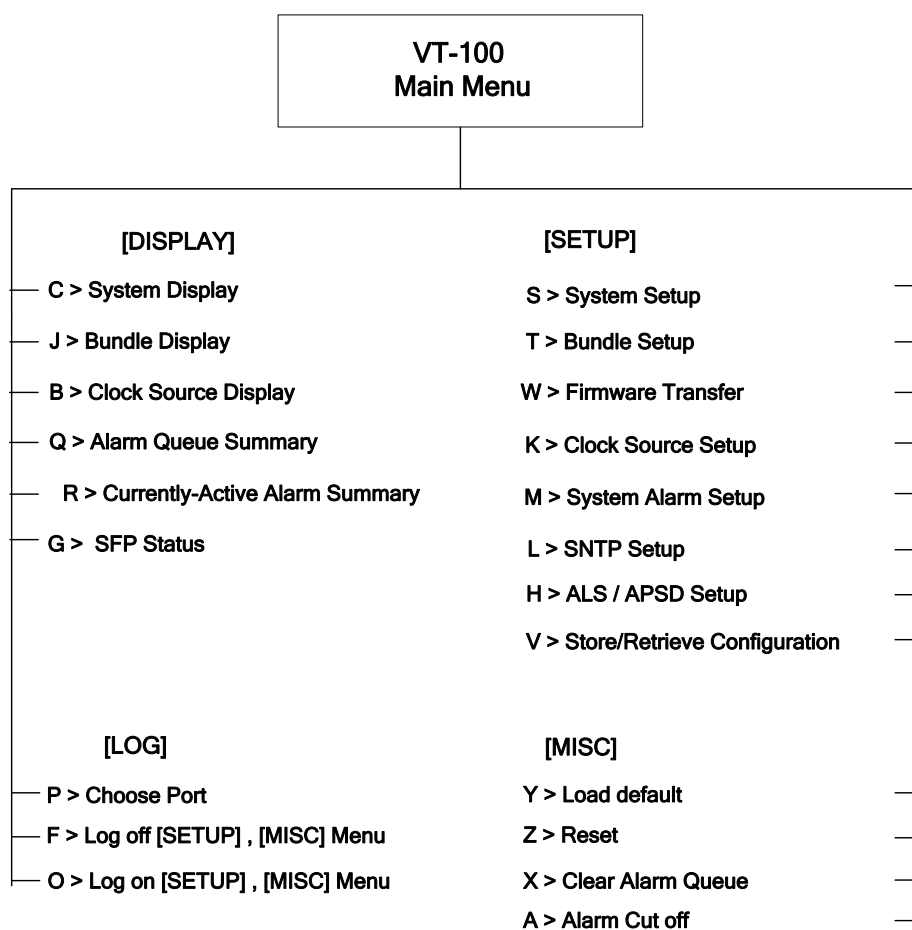


Figure 5-1 VT-100 Main Menu Overview

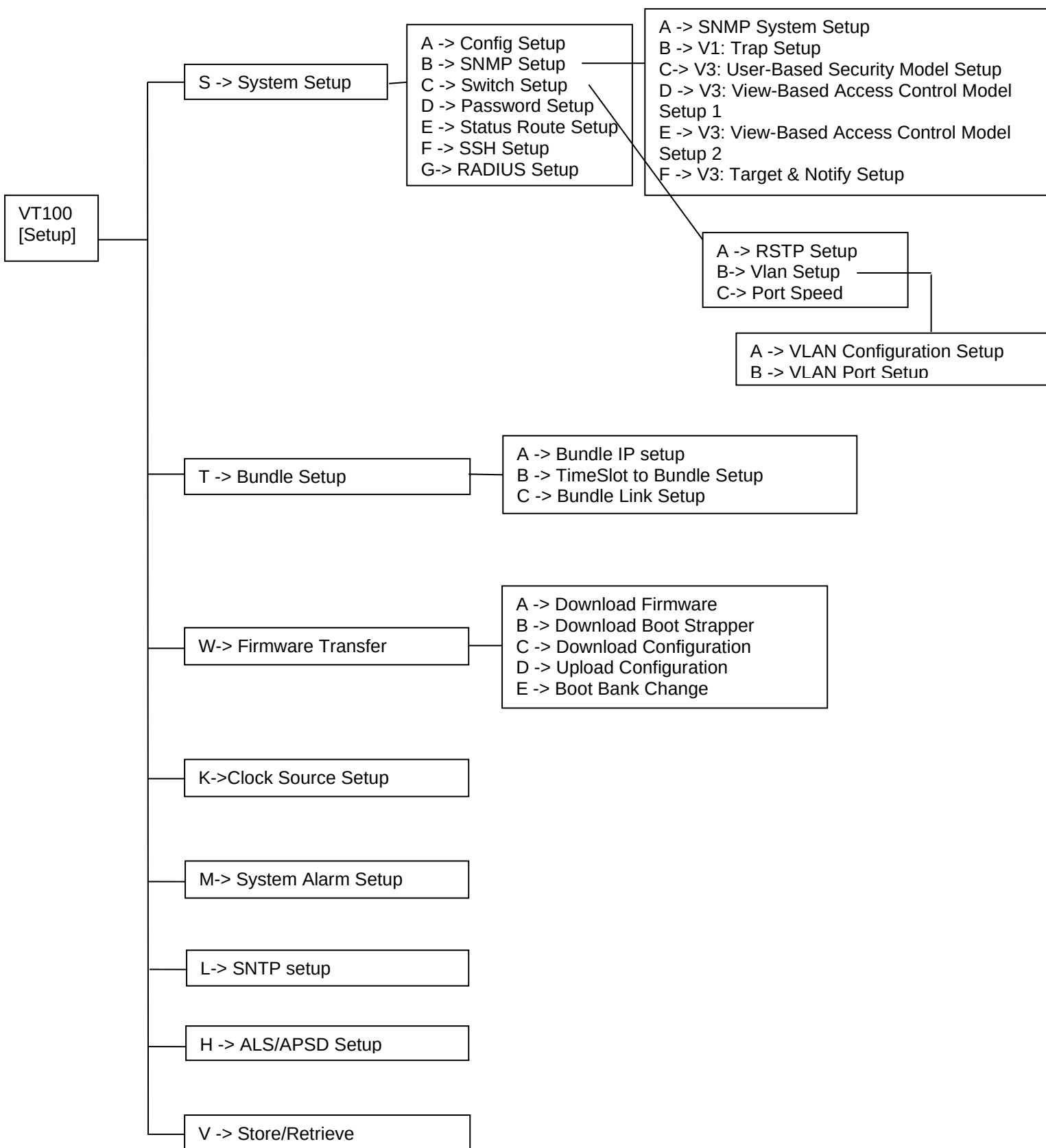


Figure 5-2 VT-100 Setup Menu Overview

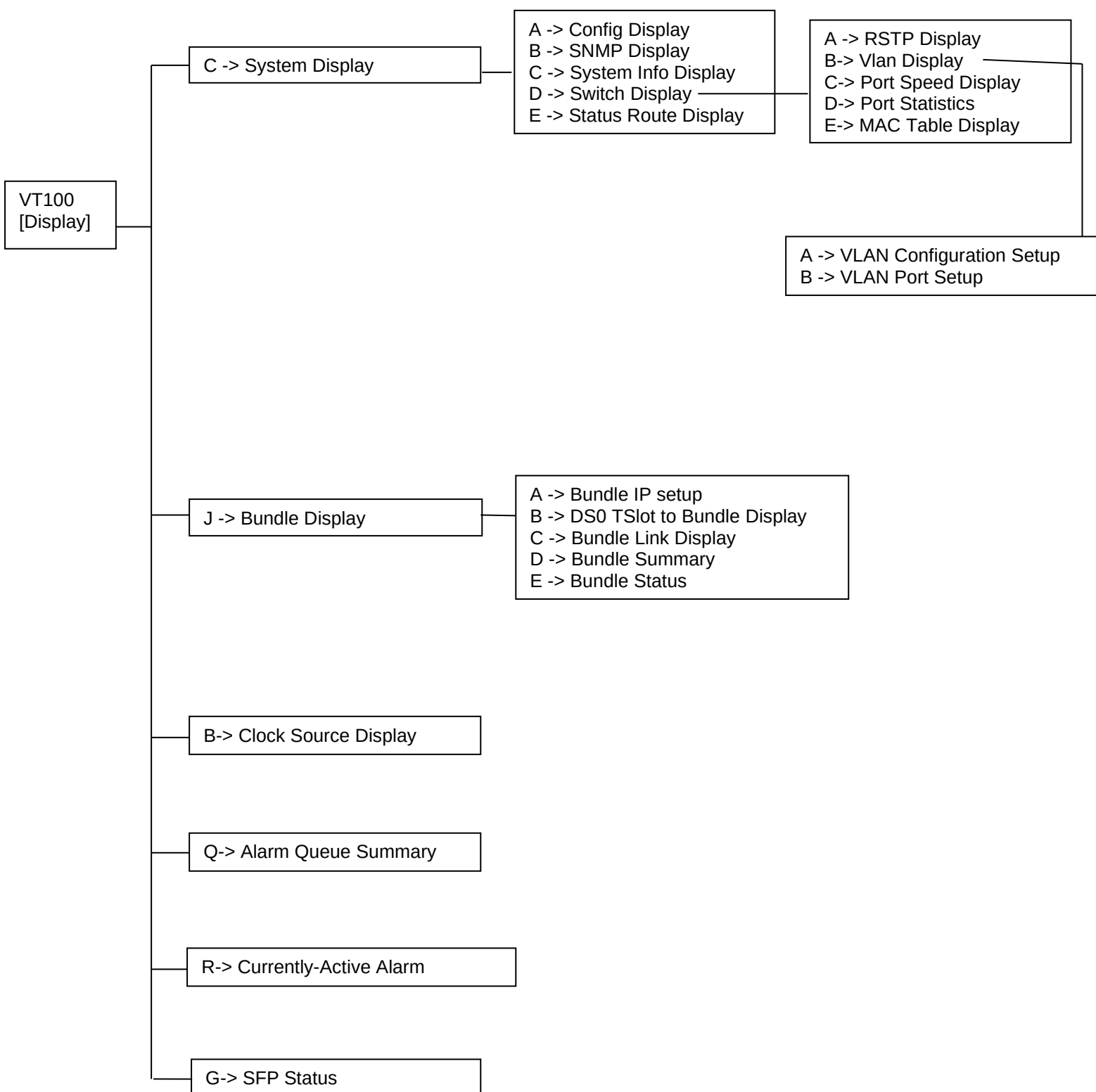


Figure 5-3 VT-100 Display Menu Overview

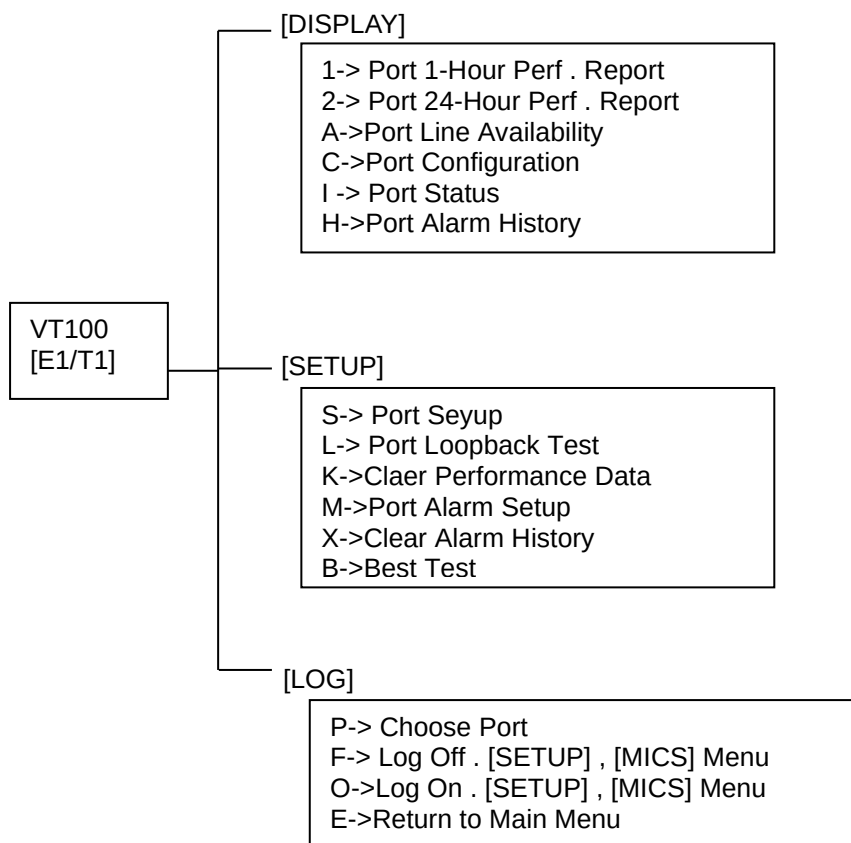


Figure 5-4 VT-100 E1/T1 Menu Tree

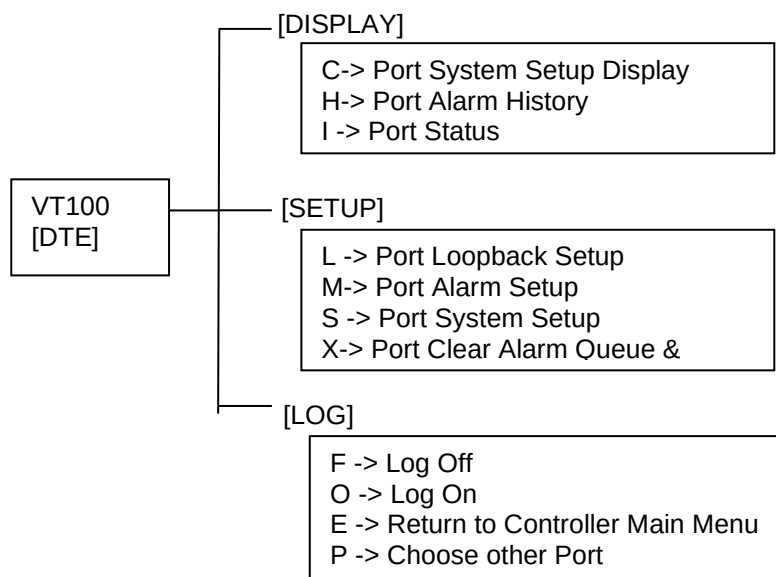


Figure 5-5 VT-100 DTE Menu Tree

5.1. Log on

Follow the procedures below to log on:

When the Loop-IP6702A is powered on, the main menu will appear as shown below:

```
IP6702A          === Main Menu ===          12:05:14 01/18/2016

Serial Number   : 3                      Device Name : IP6702A (OCXO)
Hardware Version: Ver.A FPGA:1(DC)       Start Time  : 12:00:55 01/18/2016
Software Version: V1.01.01 (0172)        Connect port: TELNET_1

[DISPLAY]                      [SETUP]
C -> System Display
J -> Bundle Display
B -> Clock Source Display
Q -> Alarm Queue Summary
R -> Currently-Active Alarm Summary
G -> SFP Status

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

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

Press **O** to log on. The system will request for user name and password, the user name is ADMIN and the password is LOOP.

```
IP6702A E1       === Main Menu ===          12:06:00 01/18/2016

Serial Number   : 506                      Device Name : IP6702A (TCXO)
Hardware Version: Ver.B FPGA:3(12)        Start Time  : 12:00:20 01/18/2016
Software Version: V1.03.02 (0023)        Connect port: TELNET_2

[DISPLAY]                      [SETUP]

[LOG]                      [MISC]
F -> Log Off
O -> Log On

USERNAME:

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

```

IP6702A E1                      === Main Menu ===                      12:06:00 01/18/2016

Serial Number   : 506                      Device Name : IP6702A (TCXO)
Hardware Version: Ver.B FPGA:3(12)         Start Time  : 12:00:20 01/18/2016
Software Version: V1.03.02 (0023)          Connect port: TELNET_2

[DISPLAY]                      [SETUP]

[LOG]                          [MISC]

F -> Log Off
O -> Log On

USERNAME: ADMIN                PASSWORD:

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

```

After logon, the main menu will appear as shown below.

```

IP6702A                      === Main Menu ===                      12:05:14 01/18/2016

Serial Number   : 3                      Device Name : IP6702A (OCXO)
Hardware Version: Ver.A FPGA:1(DC)         Start Time  : 12:00:55 01/18/2016
Software Version: V1.01.01 (0172)          Connect port: TELNET_1

[DISPLAY]                      [SETUP]
C -> System Display              S -> System Setup
J -> Bundle Display             T -> Bundle Setup
B -> Clock Source Display       W -> Firmware Transfer
Q -> Alarm Queue Summary        K -> Clock Source Setup
R -> Currently-Active Alarm Summary M -> System Alarm Setup
G -> SFP Status                 L -> SNTP Setup
                                H -> ALS/APSD Setup
                                V -> Store/Retrieve Configuration

[LOG]                          [MISC]
P -> Choose Port                Y -> Load default
F -> Log Off [SETUP],[MISC] Menu Z -> Reset
O -> Log On  [SETUP],[MISC] Menu X -> Clear Alarm Queue
                                A -> Alarm Cut Off

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

```

5.2.System Setup

The full menu path for system setup is as follows:

O > Logon

S > System Setup

The screen of System Setup will show as below.

```

IP6702A T1                      === System Setup ===                  12:22:59 01/18/2016

                                A -> Config Setup
                                B -> SNMP Setup
                                C -> Switch Setup
                                D -> Password Setup

```

```

E -> Static Route Setup

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

```

5.2.1. Config Setup

The full menu path for Config Setup is as follows:

O > Logon
S > System Setup
A > Config Setup

The screen of Config Setup will show as below.

```

IP6702A          === Config Setup ===          12:12:31 01/18/2016
ARROW KEYS: CURSOR MOVE, Please Input: hh:mm:ss mm/dd/yyyy, BACKSPACE to edit

Time/Date       : 12:12:31 01/18/2016
IP Addr.        : 192.168.001.001
Subnet Mask     : 255.255.255.000

Remote loss     : continue
Active bundle Timer (s) : 00000090

[CONSOLE port]
Baud Rate       : 9600
Data Length     : 8-Bits
Stop Bit        : 1-Bit
Parity          : NONE

<< Press ESC key to return to previous menu or save the setup>>

```

Table 5-1 Config Setup

Field		Setting Options	Default Setting
System	Time/Date	hr (0-23):min.(0-59):sec.(0-59) month(1-12):day(1-31):year (4 digits)	
	IP Addr.	000~255	192.168.001.001
	Subnet Mask	000~255	255.255.255.000
MISC	Remote loss	continue, stop	continue
	Active Bundle Timer(s)	5~99999999	90
Console Port	Baud Rate	9600, 19200, 38400, 57600, 115200	9600
	Data Length	7-Bits, 8-Bits	8-Bits
	Stop Bit	1-Bit, 2-Bits	1-Bit
	Parity	None, Even, Odd	None

5.2.2. SNMP Setup

The full menu path for SNMP Setup is as follows:

O > Logon
S > System Setup
B > SNMP Setup

The screen of SNMP Setup will show as below.

```
IP6702A T1                      === SNMP Setup ===                      12:24:37 01/18/2016

A -> SNMP System Setup
B -> V1: Trap Setup
C -> V3: User-Based Security Model Setup
D -> V3: View-Based Access Control Model Setup 1
E -> V3: View-Based Access Control Model Setup 2
F -> V3: Target & Notify Setup

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

5.2.2.1. SNMP System Setup

The full menu path for SNMP System Setup is as follows:

O > Logon
S > System Setup
B > SNMP Setup
A > SNMP System Setup

The screen of SNMP System Setup will show as below.

```
IP6702A T1                      === SNMP System Setup ===                12:26:45 01/18/2016
ARROW KEYS: CURSOR MOVE, BACKSPACE to edit, ESC to abort

Device Name      : IP6702A
Location         :

Contact          :

SNMP Model       : v1 only
```

```
<< Press ESC key to return to previous menu or save the setup>>
```

Table 5-2 SNMP SystemSetup

Field	Setting Options	Default Setting
SNMP Model	V1 only, V3 only, V1+V3	V1 only

5.2.2.2. V1: Trap Setup

The full menu path for V1: Trap Setup is as follows:

O > Logon
S > System Setup
B > SNMP Setup
B > V1: Trap Setup

The screen of V1: Trap Setup will show as below.

```
IP6702A T1                      === Trap Setup ===                      12:28:52 01/18/2016
ARROW KEYS: CURSOR MOVE, BACKSPACE to edit, ESC to abort

Community (Get): public_____ Community (Set): public

Trap IP 1      : 000.000.000.000 Community      : public
Trap IP 2      : 000.000.000.000 Community      : public
Trap IP 3      : 000.000.000.000 Community      : public
Trap IP 4      : 000.000.000.000 Community      : public
Trap IP 5      : 000.000.000.000 Community      : public

<< Press ESC key to return to previous menu or save the setup>>
```

Table 5-3 V1 Community & Trap Setup

Field	Setting Options	Default Setting
Community(Get)	1 ~ 12 alphanumeric characters	public
Community(Set)		public
Trap IP Address1~5	000~255	000.000.000.000
Community1~5	1 ~ 12 alphanumeric digits	public

5.2.2.3. V3: User-Based Security Model Setup

The full menu path for V3: User-Based Security Model Setup is as follows:

O > Logon
S > System Setup
B > SNMP Setup
C > V3: User-Based Security Model Setup

The screen of V3: User-Based Security Model Setup will show as below.

```
IP6702A T1                      === SNMP Setup (USM) ===                  12:29:51 01/18/2016

[My Engine]
Engine ID : 0000263F000000050C60FA8B9
```

```

Boots      : 2
Total User: 2

[User 01]
Engine ID   : 0000263F000000050C60FA8B9
User Name   : loopmd5
Auth Protocol: MD5
Auth Key    : 22970DFDBDC8F39EBB323FFB4886B126
Priv Protocol: DES
Priv Key    : 22970DFDBDC8F39EBB323FFB4886B126
Status      : Active
Storage     : NonVolatile

<< ESC=>return to previous menu, LEFT/RIGHT=>prev/next user, F=>find user >>
<< E=>edit engine, ENTER=>edit user, C=>clone user, A=>add user, D=>delete >>

```

5.2.2.4. V3: View-Based Access Control Model Setup 1

The full menu path for V3: View-Based Access Control Model Setup 1 is as follows:

```

O > Logon
S > System Setup
B > SNMP Setup
D > V3: View-Based Access Control Model Setup 1

```

The screen of V3: View-Based Access Control Model Setup 1 will show as below.

```

IP6702A T1          === SNMP Setup (VACM) ===          12:30:51 01/18/2016

[Context] : (empty)

[Security to Group] 1/2
Security Model: V3(USM)
Security Name : loopmd5
Group Name    : initial
Status        : Active
Storage       : NonVolatile

<< ESC=>return to menu, UP/DOWN=>context/group, LEFT/RIGHT=>prev/next >>
<< F=>find, ENTER=>edit, A=>add, D=>delete >>

```

5.2.2.5. V3: View-Based Access Control Model Setup 2

The full menu path for V3: View-Based Access Control Model Setup 2 is as follows:

```

O > Logon
S > System Setup
B > SNMP Setup
E > V3: View-Based Access Control Model Setup 2

```

The screen of V3: View-Based Access Control Model Setup 2 will show as below.

```

IP6702A T1                === SNMP Setup (VACM) ===                12:32:15 01/18/2016

[Access] 1/1
Group Name      : initial
Security Model  : V3(USM)
Security Level  : AuthPriv
Context Prefix  : (reserved)
Context Match   : (reserved)
Read View Name  : two
Write View Name : two
Notify View Name: (reserved)
Status         : Active
Storage        : NonVolatile

[View Family] 1/1
View Name      : two
Sub-tree       : 1.3.6
Mask           : (reserved)
Type           : include
Status        : Active
Storage        : NonVolatile

<< ESC=>return to previous menu, UP/DOWN=>Access/View, LEFT/RIGHT=>prev/next >>

```

5.2.2.6. V3: Target & Notify Setup

The full menu path for V3: Target & Notify Setup is as follows:

```

O > Logon
S > System Setup
B > SNMP Setup
F > V3: Target & Notify Setup

```

The screen of V3: Target & Notify Setup will show as below.

```

IP6702A T1                === SNMP Setup (Target & Notify) ===      12:33:23 01/18/2016

[Target] 1/1
Target Name: mytarget
Domain      : UDP
IP Address  : 192.168.1.254    Notify Port: 162
Tag         : group1
Timeout     : 3                Retry       : 0
Parameter   : myparam
Status      : Active

[Parameter] 1/1
Param Name  : myparam
MP Model    : V3
Sec Model   : V3
Sec Level   : NoAuthNoPriv
Sec Name    : loopmd5
Status      : Active

[Notify] 1/1
Name        : group1
Tag         : group1
Type        : Trap
Status      : Active

<< ESC=>return to menu, UP/DOWN=>Target/Parameter/Notify, LEFT/RIGHT=>prev/next <<
ENTER=>edit, A=>add, D=>delete >>

```

5.2.3. Switch Setup

The full menu path for Switch Setup is as follows:

```

O > Logon
S > System Setup
C > Switch Setup

```

The screen of Switch Setup will show as below.

```
IP6702A                               === Switch Setup ===                12:16:01 01/18/2016

                                     A -> RSTP Setup
                                     B -> Vlan Setup
                                     C -> Port Speed Setup

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

5.2.3.1. RSTP Setup

The full menu path for RSTP Setup is as follows:

O > Logon
S > System Setup
C > Switch Setup
A > RSTP Setup

The screen of RSTP Setup will show as below.

```
IP6702A                               === RSTP Setup ===                12:18:12 01/18/2016

Select Action >>  *RSTP  ETH
```

The RSTP Disabled screen:

Use the tab key to select among STP, RSTP, or disable (default). Press Enter after you have made your configuration.

```
IP6702A                               === RSTP Setup ===                15:16:28 01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS
RSTP: Disable
```

```
<< Press ESC key to return to previous menu or save the setup>>
```

The RSTP Enabled screen:

```
IP6702A                === RSTP Setup ===                12:26:42 01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS
RSTP:  RSTP

Designated Root MAC ADDR: 97:DC:00:3A:97:E4
Designated Root Priority: 0
Designated Root Cost      : 6139
Root Max Age: 220 sec      Hello Time: 251 sec      Forward Delay: 0 sec

Bridge ID MAC ADDR: 00:00:00:00:00:00
Bridge ID Priority: 32768
Bridge Max Age: 20 sec     Hello Time: 02 sec       Forward Delay: 15 sec
Aging time      : 300 sec

NOTE: Acceptable value:
      max-age >= 2 * (hello-time + 1)
      max-age <= 2 * (forward-delay - 1)

>> Save configuration (Y/N)?
```

Table 5-4 RSTP Setup

Field	Setting Options	Default Setting
RSTP	Disable, STP, RSTP	Disable
Bridge ID Priority	0 ~ 65535	32768
Bridge Max Age (sec)	6 ~ 40	20
Hello Time (sec)	1 ~ 10	02
Forward Delay (sec)	4 ~ 30	15

Table 5-5 Defining Parameters in RSTP

Parameter	Definition
Bridge ID Priority	Bridge priority is used in selecting the root device, root port, and designated port. The device with the highest priority (lower value) becomes the root device
Bridge Maximum Age	The time that a bridge stores a BPDU (Bridge Protocol Data Unit) before discarding it.
Hello time	The time interval between the sending of configuration BPDUs.
Forward Delay	The time that the bridge spends in the listening and learning states.

The ETH screen when STP is selected:

```
IP6702A                === RSTP Setup ===                13:21:28 01/18/2016
ARROW KEYS: CURSOR MOVE, Please Input: 0~65535, BACKSPACE to edit

  Port  RootP State  Cost  Prio Edg-p  P-P
  ----  ----  -
ETH1  No    Dis    00000    000    No   shared
```

ETH2	No	Fwd	0	000	No	shared
ETH3	No	Dis	00000	000	No	shared
ETH4	No	Dis	00000	000	No	shared

<< Press ESC key to return to previous menu or save the setup>>

Table 5-6 ETH Setup (with STP selected)

Field	Setting Options	Default Setting
Cost	0 ~ 65535	00000
Prio	0 ~ 240	000

The ETH screen when RSTP is selected:

IP6702A						
=== RSTP Setup ===						
15:27:21 01/18/2016						
ARROW KEYS: CURSOR MOVE, Please Input: 0~65535, BACKSPACE to edit						
Port	RootP	State	Cost	Prio	Edg-p	P-P
----	----	----	----	----	----	----
ETH1	No	Dis	00000	000	No	shared
ETH2	No	Fwd	0	000	No	shared
ETH3	No	Dis	00000	000	No	shared
ETH4	No	Dis	00000	000	No	shared

<< Press ESC key to return to previous menu or save the setup>>

Table 5-7 RSTP Setup (with RSTP selected)

Field	Setting Options	Default Setting
ETH1	Cost	0 ~ 65535
ETH2	Prio	0 ~ 240
ETH3	Edg-p	NO, YES
ETH4	P-p	Shared, p-to-p, auto

5.2.3.2. Vlan Setup

The full menu path for Vlan Setup is as follows:

O > Logon
S > System Setup
D > Switch Setup
B > Vlan Setup

The screen of Vlan Setup will show as below.

```

IP6702A                               === VLAN Setup ===                12:37:53 01/18/2016

                                     A -> VLAN Configuration Setup
                                     B -> VLAN Port Setup

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

```

• 5.2.4.3.1. VLAN Configuration Setup

The full menu path for Vlan Configuration Setup is as follows:

```

O > Logon
S > System Setup
C > Switch Setup
B > Vlan Setup
A > VLAN Configuration Setup

```

The screen of Vlan Configuration Setup will show as below.

VLANID=1

```

IP6702A                               === VLAN Configuration Setup ===    12:02:18 01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

VLAN ID : 0001

VLAN      : Enable

[Intf]   [Join]   [Tx Tagging]
ETH1    : ON      Disable
ETH2    : ON      Disable
ETH3    : ON      Disable
ETH4    : ON      Disable
MGMT    : ON      Disable
TDM     : ON      Disable

<< Press ESC key to return to previous menu or save the setup>>

```

VLANID=2~4094

```

IP6702A                               === VLAN Configuration Setup ===    12:06:15 01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

VLAN ID : 0002

VLAN      : Disable

[Intf]   [Join]   [Tx Tagging]
ETH1    : OFF     Disable
ETH2    : OFF     Disable
ETH3    : OFF     Disable
ETH4    : OFF     Disable
MGMT    : OFF     Disable
TDM     : OFF     Disable

```

<< Press ESC key to return to previous menu or save the setup>>

Table 5-8 VLAN Configuration Setup

Field		Setting Options	Default Setting
VLAN ID		1 ~ 4094	0001
* VLANID=1			
VLAN		Enable, Disable	Enable
Interface			
ETH1	Join	ON, OFF	ON
	Tx Tagging	Enable, Disable	Disable
ETH2	Join	ON, OFF	ON
	Tx Tagging	Enable, Disable	Disable
ETH3	Join	ON, OFF	ON
	Tx Tagging	Enable, Disable	Disable
ETH4	Join	ON, OFF	ON
	Tx Tagging	Enable, Disable	Disable
MGNT	Join	ON, OFF	ON
	Tx Tagging	Enable, Disable	Disable
TDM	Join	ON, OFF	ON
	Tx Tagging	Enable, Disable	Disable

* VLANID=2~4094			
VLAN		Enable, Disable	Disable
Interface			
ETH1	Join	ON, OFF	OFF
	Tx Tagging	Enable, Disable	Disable
ETH2	Join	ON, OFF	OFF
	Tx Tagging	Enable, Disable	Disable
ETH3	Join	ON, OFF	OFF
	Tx Tagging	Enable, Disable	Disable
ETH4	Join	ON, OFF	OFF
	Tx Tagging	Enable, Disable	Disable
MGNT	Join	ON, OFF	OFF
	Tx Tagging	Enable, Disable	Disable
TDM	Join	ON, OFF	OFF
	Tx Tagging	Enable, Disable	Disable

• 5.2.4.3.2. VLAN Port Setup

The full menu path for Vlan Port Setup is as follows:

O > Logon

S > System Setup

C > Switch Setup

B > Vlan Setup

B > VLAN Port Setup

The screen of Vlan Port Setup will show as below.

```
IP6702A          === VLAN Port Setup ===          12:43:43 01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS
```

```

802.1Q : Disable

[Intf]  [PVID]
ETH1   : 0001
ETH2   : 0001
ETH3   : 0001
ETH4   : 0001
MGMT   : 0001
TDM    : 0001

<< Press ESC key to return to previous menu or save the setup>>

```

Table 5-9 VLAN Port Setup

Field		Setting Options	Default Setting
802.1Q		Disable, Enable	Disable
PVID	ETH1	1 ~ 4094	0001
	ETH2	1 ~ 4094	0001
	ETH3	1 ~ 4094	0001
	ETH4	1 ~ 4094	0001
	MGMT	1 ~ 4094	0001
	TDM	1 ~ 4094	0001

Note: To activate your configuration on VLAN, you have to “Enable” 802.1Q.

5.2.3.3. Port Speed Setup

The full menu path for Port Speed Setup is as follows:

```

O > Logon
S > System Setup
C > Switch Setup
C > Port Speed Setup

```

The screen of Port Speed Setup will show as below.

```

IP6702A          ===Port Speed Setup ===          12:05:54 01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS
Physical Ethernet Port
ETH1 Speed      : 100          (Link-Down)
ETH2 Speed      : AUTO        (Link-Up )
ETH3 Speed      : AUTO        (Link-Down)
ETH4 Speed      : AUTO        (Link-Down)

Logical Ethernet Port Isolation
      ETH1    ETH2    ETH3    ETH4    MGMT    TDM
Group 1 : No   Yes    No     No     Yes     No
Group 2 : No   No     Yes    No     No     Yes
Group 3 : No   No     No     No     No     No
Group 4 : No   No     No     No     No     No

```

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

Table 5-10 Port Speed Setup

Field		Setting Options	Default Setting
Physical Ethernet Port	ETH1 Speed	100	100
	ETH2 Speed	AUTO, full-100, half-100, full-10, half-10	AUTO
	ETH3 Speed	AUTO, full-100, half-100, full-10, half-10	AUTO
	ETH4 Speed	AUTO, full-100, half-100, full-10, half-10	AUTO

Field		Setting Options	Default Setting					
		ETH1~4, MGMT, TDM	ETH1	ETH2	ETH3	ETH4	MGMT	TDM
Logical Ethernet Port Isolation	Group 1	YES, NO	NO	YES	NO	NO	YES	NO
	Group 2		NO	NO	YES	NO	NO	YES
	Group 3		NO	NO	NO	NO	NO	NO
	Group 4		NO	NO	NO	NO	NO	NO

5.2.4. Password Setup

The full menu path for Password Setup is as follows:

O > Logon

S > System Setup

D > Password Setup

The screen of Password Setup will show as below.

```
IP6702A                === Password Setup ===                12:48:45 01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

    Enable Password : NO
    Change Password : NO

<< Press ESC key to return to previous menu or save the setup>>
```

Table 5-11 Password Setup

Field	Setting Options	Default Setting
Enable Password	NO, YES	NO
Change Password		NO

5.2.5. Static Route Setup

The full menu path for Static Route Setup is as follows:

O > Logon

S > System Setup

E > Static Route Setup

The screen of Static Route Setup will show as below.

Loop Telecommunication International, Inc.

[illegible]

Table 5-12 Static Route Setup

Field	Setting Options	Default Setting
Net_Destination	000 ~ 255	000.000.000.000
Netmask		
Gateway_Address		
NI	NONE, SNMP	NONE

NOTES: 1. If you want to remove a set Static Route, select **NONE** from NI and save the configuration.

Static Route determines the path of data communication by manually adding routes into the routing table. This enables network administrators to control over routing information of every router. With set Static Route, routers within the network need not find new path(s) or exchange their routing information. Hence, all the bandwidths can be applied to handle and transfer data. Moreover, since all the routes are fixed, routers do not spend CPU resources on finding new routing records, which increases routers' efficiency and reduces unnecessary costs.

One thing should be taken notice of: Static Route has the highest priority within all the Routings. When Dynamic Route conflicts with Static Route, the latter one is the norm. To add Static Route, if data are to be transferred from IP6702A to the Remote PC, the Static Route should include: (1) an output NI (=Network Interface) of IP6702A, (2) Gateway, and (3) Destination Network, as shown in the figure below.

To configure Static Route, the setup procedure is:

- The Netmask and Net Destination of the Remote PC should be keyed in.
- IP address of the Gateway should be keyed in.
- An output interface of IP6702A should be selected.

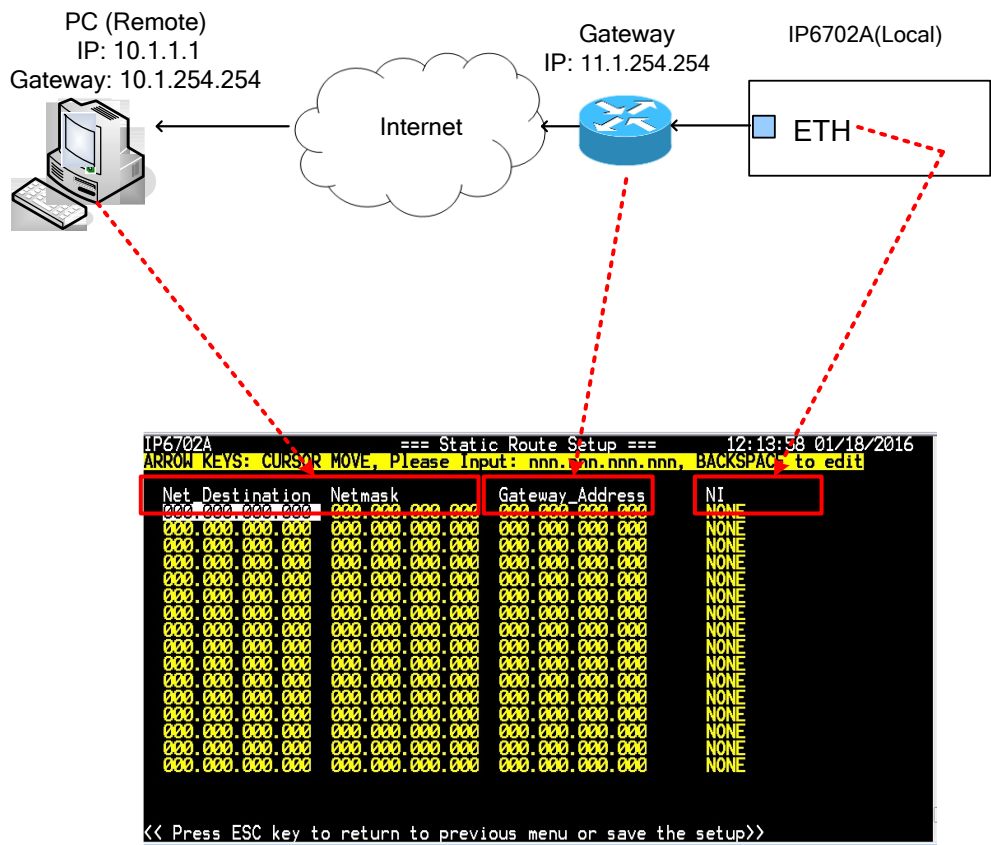


Figure 5-6 Static Route Setup

5.2.6. SSH Setup

The full menu path for SSH Setup is as follows:

- O > Logon
- S > System Setup
- F > SSH Setup

The screen of SSH Setup will show as below.

IP6702A T1	=== SSH Setup ===	03:56:40 01/19/2016
ARROW KEYS : CURSOR MOVE , ENTER KEY : ITEM SELECT		
SSH	Server : OFF	
<< Press ESC key to return to previous menu or save the setup>>		

Table 5-19 SSH Setup

Field	Setting Options	Default Setting
SSH Server	ON, OFF	OFF

5.2.7. RADIUS Setup

The full menu path for RADIUS Setup is as follows:

O > Logon

S > System Setup

G > RADIUS Setup

```

IP6702A T1                               === RADIUS setup ===                16:29:11 01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

  Server1: DISABLE
           IP: 000.000.000.000
           Key:
           Port: 01812

  Server2: DISABLE
           IP: 000.000.000.000
           Key:
           Port: 01812

Auth. Console via RADIUS: DISABLE      (if server is connected)

For Management-Privilege-Level >>
  OPERATOR Privilege Level: 002
  ADMIN Privilege Level: 005

<< Press ESC key to return to previous menu or save the setup>>

```

Table 5-20 RADIUS Setup

Field		Setting Options	Default Setting
Server 1	Server 2	DISABLE, ENABLE	DISABLE
IP	IP	nnn.nnn.nnn.nnn	000.000.000.000
Key	Key	Alphabet or number	
Port	Port	1~65535	01812
Auth. Console via RADIUS		DISABLE, ENABLE	DISABLE
OPERATOR Privilege Level		0~255	002
ADMIN Privilege Level		0~255	005

5.3.Bundle Setup

The full menu path for Bundle Setup is as follows:

O > Logon

T > Bundle Setup

The screen of Bundle Setup will show as below.

```

IP6702A                               === Bundle Setup ===                12:14:27 01/18/2016

                                     A -> Bundle IP setup
                                     B -> TimeSlot to Bundle Setup
                                     C -> Bundle Link Setup

```

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

5.3.1. Bundle IP Setup

The full menu path for Bundle IP Setup is as follows:

O > Logon

T > Bundle Setup

A > Bundle IP Setup

The screen of Bundle IP Setup will show as below.

```
IP6702A                === Bundle IP Setup ===                12:14:54 01/18/2016
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
Gateway IP      : 000.000.000.000
Source MAC Addr : 00:50:c6:c2:00:08

<< Press ESC key to return to previous menu or save the setup>>
```

Table 5-13 Bundle IP Setup

Field	Setting Options	Default Setting
Src. IP Address	000 ~ 255	000.000.000.000
Subnet Mask		000.000.000.000
Gateway IP		000.000.000.000

5.3.2. TimeSlot to Bundle Setup

The full menu path for TimeSlot to Bundle Setup is as follows:

O > Logon

T > Bundle Setup

B > TimeSlot to Bundle Setup

The screen of TimeSlot to Bundle Setup will show as below.

```
IP6702A T1          === TimeSlot to Bundle Setup ===      12:07:56 01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

Port: A
TS0 : idle      ID:          TS16: Idle      ID:
TS1 : Idle      ID:          TS17: Idle      ID:
TS2 : Idle      ID:          TS18: Idle      ID:
TS3 : Idle      ID:          TS19: Idle      ID:
TS4 : Idle      ID:          TS20: Idle      ID:
TS5 : Idle      ID:          TS21: Idle      ID:
TS6 : Idle      ID:          TS22: Idle      ID:
TS7 : Idle      ID:          TS23: Idle      ID:
TS8 : Idle      ID:          TS24: Idle      ID:
TS9 : Idle      ID:          TS25:          ID:
TS10: Idle      ID:          TS26:          ID:
TS11: Idle      ID:          TS27:          ID:
TS12: Idle      ID:          TS28:          ID:
TS13: Idle      ID:          TS29:          ID:
TS14: Idle      ID:          TS30:          ID:
TS15: Idle      ID:          TS31:          ID:

<< Press ESC key to return to previous menu or save the setup>>
```

Table 5-14 TimeSlot to Bundle Setup

Field	Setting Options	Default Setting
TS1~TS24	Bundle ID: 0~15	0

5.3.3. Bundle Link Setup

The full menu path for Bundle Link setup is as follows:

O > Logon

T > Bundle Setup

C > Bundle Link Setup

CESoPSN

```

P6702                === Bundle Link Setup ===                12:57:10 01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

    Port: A
    Bundle ID : 0                TS      STATUS                TS      STATUS
    Action : None                0      None                16     None
    Encap. Type : CESoPSN        1      ID 0                17     None
    Tos : 000                    2      ID 0                18     None
    Dst UDP Num : 02142          3      ID 0                19     None
    Src UDP Num : 00001          4      ID 0                20     None
    Dest. IP : 000.000.000.000  5      ID 0                21     None
    Stratum : 1                  6      ID 0                22     None
    Number of TS: 12             7      ID 0                23     None
    Number of Frame: 0016 (192 Bytes) 8      ID 0                24     None
    Jitter Tol : 020            9      ID 0                25     None
    Jitter Buf : 256            10     ID 0                26     None
    VLAN : OFF                  11     ID 0                27     None
    CVLAN ID :                  12     ID 0                28     None
    CVLAN Priority :             13     None                29     None
    SVLAN ID :                  14     None                30     None
    SVLAN Priority :             15     None                31     None
    SVLAN TPID(hex):

<< Press ESC key to return to previous menu or save the setup>>

```

SAToP

```

IP6702A              === Bundle Link Setup ===                13:00:02 01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

    Port: A
    Bundle ID : 0                TS      STATUS                TS      STATUS
    Action : None                0      ID 0                16     ID 0
    Encap. Type : SAToP          1      ID 0                17     ID 0
    Tos : 000                    2      ID 0                18     ID 0
    Dst UDP Num : 02142          3      ID 0                19     ID 0
    Src UDP Num : 00001          4      ID 0                20     ID 0
    Dest. IP : 000.000.000.000  5      ID 0                21     ID 0
    Stratum : 1                  6      ID 0                22     ID 0
    Number of TS: 32             7      ID 0                23     ID 0
    Number of Frame: 0016 (512 Bytes) 8      ID 0                24     ID 0
    Jitter Tol : 020            9      ID 0                25     ID 0
    Jitter Buf : 256            10     ID 0                26     ID 0
    VLAN : OFF                  11     ID 0                27     ID 0
    CVLAN ID :                  12     ID 0                28     ID 0
    CVLAN Priority :             13     ID 0                29     ID 0
    SVLAN ID :                  14     ID 0                30     ID 0
    SVLAN Priority :             15     ID 0                31     ID 0
    SVLAN TPID(hex):

<< Press ESC key to return to previous menu or save the setup>>

```

Table 5-15 Bundle Link Setup

Field		Setting Options	Default Setting
Port		Port A, B	Port A
Bundle ID	E1	0 ~ 15	0
	DTE	0 ~ 15	0
Action		Add bundle, Delete bundle, Delete all, Active all	None
Encap. Type	Unframe	SAToP	SAToP
	Frame	CESoPSN	CESoPSN
Tos		0 ~ 255	0
Dst UDP Num		1 ~ 65535	02142
Src UDP Num	CESoPSN	1 ~ 65535	00001
	SAToP		00001
Dest. IP	CESoPSN	Enter the destination IP address	000.000.000.000
	SAToP		000.000.000.000
Stratum		1, 2, 3, 3E, 4	3
When format is CESoPSN			

Number of frame (See Note1)	8 ~ 1500			0016	
Jitter Tol	1 ~ 256			020	
Jitter Buf	1 ~ 256			256	
VLAN	OFF, 1-VLAN, 2-VLAN			OFF	
When format is SAToP					
Number of frame	8 ~ 1500			0016	
Jitter Tol	1 ~ 256			020	
Jitter Buf	1 ~ 256			256	
VLAN	OFF	1-VLAN,	2-VLAN	OFF	
CVLAN ID	X	1 ~ 4094	1 ~ 4094	1	1
CVLAN Priority	X	0 ~ 7	0 ~ 7	7	7
SVLAN	X	X	1 ~ 4094	0001	
SVLAN Priority	X	X	0 ~ 7	7	
SVLAN TPID(hex) (See Note2)	X	X	0~FFFF	8100	

- NOTES:**
1. This is payload size. (XXXX Bytes =Number of Frame*Number of TS)
 2. If you create different 2-vlan bundles and you should setup the same SVLAN TPID

Select stratum according to the different clock source				
	Standard	Accuracy	Time To First Frame Slip	Corresponding clock source
Stratum 1	G.811 PRC	1 x 10 ⁻¹¹	72 Days	GPS
Stratum 2	G.812 Type II	1.6 x 10 ⁻⁸	7 Days	ANT20
Stratum 3 E	G.812 Type III	1.0 x 10 ⁻⁶	3.5 Hours	Firebert6000
Stratum 3	G.812 Type IV	4.6 x 10 ⁻⁶	6 Minutes (255 in 24 Hrs)	TCXO internal clock
Stratum 4E		32 x 10 ⁻⁶		
Stratum 4		32 x 10 ⁻⁶		

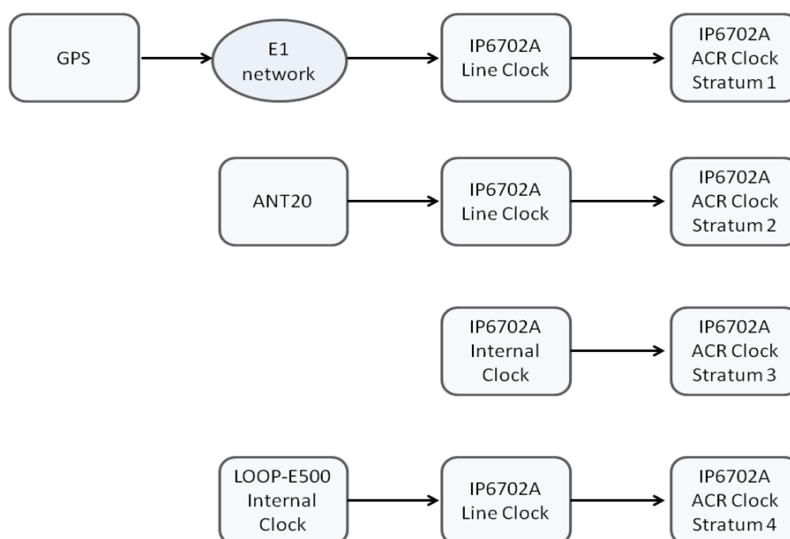


Figure 5-7 Stratum Setting

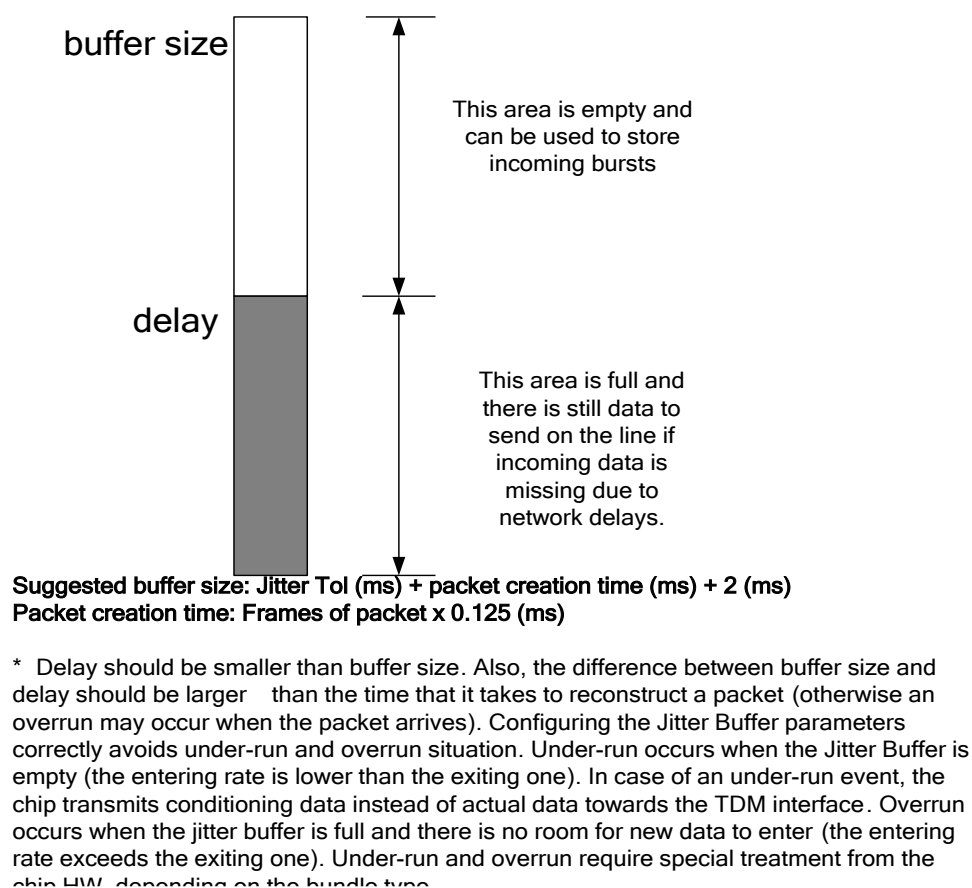


Figure 5-8 Jitter Buffer Diagram

5.4. Firmware Transfer

The full menu path for Firmware Transfer is as follows:

O > Logon

W > Firmware Transfer

The screen of Firmware Transfer will show as below.

```
IP6702A                               === Firmware Transfer ===          13:00:39 01/18/2016

A -> Download Firmware
B -> Download Boot Strapper
C -> Download Configuration
D -> Upload Configuration
E -> Boot Bank Change

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

5.4.1. Download Firmware

The full menu path for Download Firmware setup is as follows:

O > Logon

W > Firmware Transfer

A > Download Firmware

The screen of Download Firmware will show as below.

Enter the TFTP Server IP and the firmware file name.

```
IP6702A                               === Download Firmware ===          12:31:31 01/18/2016
ARROW KEYS: CURSOR MOVE, Please Input: nnn.nnn.nnn.nnn, BACKSPACE to edit

Firmware 1 Version   : V1.01.01 (0170)
Firmware 2 Version   : V1.01.01 (T172)
Current Firmware Bank: 1
Next Boot Firmware   : 2
TFTP Server IP       : 000.000.000.000
Firmware File Name    :
```

5.4.2. Download Boot Strapper

The full menu path for Download Boot Strapper is as follows:

O > Logon

W > Firmware Transfer

B > Download Boot Strapper

The screen of Download Boot Strapper will show as below.

Enter the TFTP server IP and the firmware file name you would like to download.

```
IP6702A          === Download Bootup Code ===          12:32:23 01/18/2016
ARROW KEYS: CURSOR MOVE, Please Input: nnn.nnn.nnn.nnn, BACKSPACE to edit
```

```
Strapper Version      : V1.03 06/14/2016
TFTP Server IP        : 000.000.000.000
Download File Name    :
```

```
<< Press ESC key to return to previous menu or save the setup>>
```

5.4.3. Download Configuration

The full menu path for Download Configuration is as follows:

O > Logon

W > Firmware Transfer

C > Download Configuration

The screen of Download Configuration will show as below.

Enter the TFTP Server IP and the Config file name.

```
IP6702A          === Download Configuration ===        13:04:53 01/18/2016
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 or save the setup>>
```

5.4.4. Upload Configuration

The full menu path for Upload Configuration is as follows:

O > Logon

W > Firmware Transfer

D > Upload Configuration

The screen of Upload Configuration will show as below.

Enter the TFTP Server IP and the Config file name to upload configuration.

```
IP6702A                === Upload Configuration ===                13:07:20 01/18/2016
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 or save the setup>>
```

5.4.5. Boot Bank Change

The full menu path for Boot Bank Change is as follows:

O > Logon

W > Firmware Transfer

E > Boot Bank Change

The screen of Boot Bank Change will show as below.

```
IP6702A                === Boot Bank Change ===                    13:48:21 01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS
```

```
Bank1 Firmware : V1.01.01 (0103)
Bank2 Firmware : V1.01.01 (0127)
Current Boot Bank : 1
Next Boot Bank   : 2
```

```
<< Press ESC key to return to previous menu or save the setup>>
```

Table 5-16 Boot Bank Change

Field	Setting Options	Default Setting
Next Boot Bank	1, 2	

5.5.Clock Source Setup

The full menu path for Clock Source Setup is as follows:

O > Logon

K > Clock Source Setup

Input the port number (A~B): A

The screen of Clock Source Setup will show as below.

```

The screen of Clock Source Setup will show as below.
E1 Port A                               === Clock Source Setup ===          13:09:06 01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

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

      Port BID Enable Status
ACR1 : A      0    OFF  idle
ACR2 : A      0    OFF  idle
ACR3 : A      0    OFF  idle
ACR4 : A      0    OFF  idle

<< Press ESC key to return to previous menu or save the setup>>

```

Table 5-17 Clock Source Setup

Field	Setting Options	Default Setting
Master_Clk Source	A(LINE), ACR1, ACR2, ACR3, ACR4, INTERNAL	INTERNAL
Second_Clk Source	A(LINE), ACR1, ACR2, ACR3, ACR4, INTERNAL	INTERNAL
Current Clock	INTERNAL, MASTER_CLK, SECOND_CLK	MASTER_CLK
Clk_Recover_Mode	AUTOMATIC, MANUAL	AUTOMATIC

Field	Setting Options	Default Setting
ACR1~4	Port	Choose port
	BID	0 ~ 15
	Enable	ON, OFF
	Status	idle
		acquisition: Bundle start to lock clock
		tracking 1: Bundle Packets Variance < 10ms
		tracking 2: Bundle Packets Variance < 1ms
		tracking 3: Bundle Packets Variance < 0.1ms
		tracking 4: Bundle Packets Variance < 0.01ms
		tracking 4w: Bundle Packets Variance < 0.01ms & >10 minutes

5.6. System Alarm Setup

The full menu path for System Alarm Setup is as follows:

O > Logon

M > System Alarm Setup

The screen of System Alarm Setup will show as below.

```

IP6702A                      === System Alarm Setup ===          13:10:53 01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

[TYPE]                        [ALARM]
CLK Change                    DISABLE
Ethernet Link                 DISABLE
L-Bit                        DISABLE
R-Bit                        DISABLE
MAC Change                   DISABLE
Warm Restart                 DISABLE
OverRun                     DISABLE
UnderRun                    DISABLE
Rx-Lost                     DISABLE

<< Press ESC key to return to previous menu or save the setup>>

```

Table 5-18 System Alarm Setup

Field		Setting Options	Default Setting
CLK Change	Alarm	DISABLE, MAJOR, CRITICAL, MINOR, INFO	DISABLE
Ethernet Link			
L-Bit			
R-Bit			
MAC Change			
Warm Restart			
OverRun			
UnderRun			
Rx-Lost			

5.7. SNTP Setup

The full menu path for SNTP Setup is as follows:

O > Logon

L > SNTP Setup

The screen of SNTP Setup will show as below.

```

IP6702A                               === SNTP Setup ===                13:11:24 01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

SNTP ON/OFF      : OFF
SNTP server 1    : 000.000.000.000
SNTP server 2    : 000.000.000.000

SNTP timezone    : +0

<< Press ESC key to return to previous menu or save the setup>>

```

Table 5-19 SNTP Setup

Field		Setting Options	Default Setting
SNTP	ON/OFF	ON, OFF	OFF
SNTP	Server 1	000 ~ 255	000.000.000.000
SNTP	Server 2		000.000.000.000
SNTP	timezone	+0, +1~+12, -1~-12	+0

5.8.ALS/APSD Setup

The full menu path for ALS/APSD Setup is as follows:

O > Logon

H > ALS/APSD Setup

The screen of ALS/APSD Setup will show as below.

```

IP6702A                               === ALS/APSD Setup ===            12:29:28 01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

ETH1 Power down : OFF

ALS enable :OFF
pulse repetition time for automatic restart(sec) : 060

ETH1 manual restart : OFF

<< Press ESC key to return to previous menu or save the setup>>

```

Table 5-20 ALS/APSDSetup

Field	Setting Options	Default Setting
ETH1 Power down	ON, OFF	OFF

ALS enable	ON	OFF
pulse repetition time for automatic restart(sec)	60 ~ 300	060

5.9.Store/Retrieve Configuration

The full menu path for Store/Retrieve Configuration is as follows:

O > Logon

V > Store/Retrieve Configuration

The screen of Store/Retrieve Configuration will show as below.

```

IP6702A                ===Store/Retrieve Configuration===      13:14:43 01/18/2016

>> Select ?      *STORE      RETRIEVE

```

5.10. System Display

The full menu path for System Display is as follows:

O > Logon

C > System Display

The screen of System Display will show as below.

```

IP6702A                === System Display ===                  13:15:22 01/18/2016

A -> Config Display
B -> SNMP Display
C -> System Info Display
D -> Switch Display
E -> Static Route Display

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

```

5.10.1. Config Display

The full menu path for Config Display is as follows:

O > Logon
C > System Display
A > Config Display

The screen of Config Display will show as below.

```
IP6702A                      === Config Display ===                      12:38:34 01/18/2016

IP Addr.      : 192.168.220.046
Subnet Mask   : 255.255.255.000

Remote loss   : continue
Active bundle Timer (s) : 90

[CONSOLE port]
Baud Rate    : 9600
Data Length  : 8-Bits
Stop Bit     : 1-Bit
Parity       : NONE

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

5.10.2. SNMP Display

The full menu path for SNMP Display is as follows:

O > Logon
C > System Display
B > SNMP Display

The screen of SNMP Display will show as below.

```
IP6702A T1                    === SNMP Display ===                      12:04:59 01/18/2016

Device Name   : IP6702A
Location      : 8F, No.8 Hsin Ann Rd.
               Science-Based Industrial Park
               Hsinchu, 30077 Taiwan

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

SNMP Model    : V1 only

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

5.10.3. System Info Display

The full menu path for System Info Display is as follows:

- O** > Logon
- C** > System Display
- C** > System Info Display

The screen of System Info Display will show as below.

```
IP6702A                      === System Info Display ===          12:39:09 01/18/2016

Power 1   : dc
CPLD Ver  : 3

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

5.10.4. Switch Display

The full menu path for Switch Display is as follows:

- O** > Logon
- C** > System Display
- D** > Switch Display

The screen of Switch Display will show as below.

```
IP6702A                      === Switch Display ===              12:39:23 01/18/2016

A -> RSTP Display
B -> Vlan Display
C -> Port Speed Display
D -> Port Statistics
E -> MAC Table Display

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

5.10.4.1. RSTP Display

The full menu path for RSTP Display is as follows:

- O** > Logon
- C** > System Display
- D** > Switch Display
- A** > RSTP Display

The screen of RSTP Display will show as below.

```
IP6702A                      === Rstp Display ===          12:02:20 01/18/2016
```

5.10.4.2. VLAN Display

The full menu path for VLAN Display is as follows:

- O** > Logon
- C** > System Display
- D** > Switch Display
- B** > VLAN Display

The screen of VLAN Display will show as below.

```
IP6702A                      === VLAN Display ===          13:15:56 01/18/2016

                               A -> VLAN Configuration display
                               B -> VLAN Port display

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

- 5.10.4.2.1. VLAN Configuration

The full menu path for VLAN Configuration is as follows:

O > Logon
C > System Display
D > Switch Display
C > VLAN Display
A > VLAN Configuration

The screen of VLAN Configuration will show as below.

```
IP6702A          === VLAN Configuration Display===      13:16:29 01/18/2016
ARROW KEYS: CURSOR MOVE, Please Input: 1~4094, BACKSPACE to edit

VLAN ID : 0001

<< Press ESC key to return to previous menu or save the setup>>
```

- 5.10.4.2.2. VLAN Port Display

The full menu path for VLAN Port Display is as follows:

O > Logon
C > System Display
D > Switch Display
C > VLAN Display
B > VLAN Port Display

The screen of VLAN Port Setting will show as below.

```
IP6702A          === VLAN Port Display ===              12:41:13 01/18/2016

802.1Q : Disable

[Intf]  [PVID]
ETH1   : 0001
ETH2   : 0001
ETH3   : 0001
ETH4   : 0001
MGMT   : 0001
TDM    : 0001

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

5.10.4.3. Port Speed Display

The full menu path for Port Speed Display is as follows:

O > Logon
C > System Display
D > Switch Display
C > Port Speed Display

The screen of Port Speed Display will show as below.

```

IP6702A                === Port Speed Display ===                12:41:51 01/18/2016

Physical Ethernet Port
ETH1 Speed      : None           (Link-Down)
ETH2 Speed      : full-100       (Link-Up  )
ETH3 Speed      : None           (Link-Down)
ETH4 Speed      : None           (Link-Down)

Logical Ethernet Port Isolation
      ETH1    ETH2    ETH3    ETH4    MGMT    TDM
Group 1  : No    Yes    No     No     Yes     No
Group 2  : No    No     Yes    No     No     Yes
Group 3  : No    No     No     No     No     No
Group 4  : No    No     No     No     No     No

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

```

5.10.4.4. Port Statistics

The full menu path for Port Statistics is as follows:

O > Logon
C > System Display
D > Switch Display
D > Port Statistics

The screen of Port Speed Display will show as below.

```

IP6702A                ===Port Statistics ===                12:42:54 01/18/2016
ARROW KEYS: Please Use Left Arrow Key to Flush Count

===== [ETH1] [ETH2] [ETH3] [ETH4] =====
Receive Packet  0      58704  0      0
Transmit Packet  0      48979  0      0
CRC Error       0      0      0      0
Out Pause       0      0      0      0
In Pause        0      0      0      0
Under Size      0      0      0      0
Over Size       0      0      0      0

```

5.10.4.5. MAC Table Display

The full menu path for MAC Table Display is as follows:

O > Logon
C > System Display
D > Switch Display
E > MAC Table Display

The screen of MAC Table Display will show as below.

IP6702A		=== MAC Table Display ===			12:43:22 01/18/2016
Index	Name	MAC	vec	state	
0001	Eth2	(00-0c-29-70-9f-99)	0x02	01	
0002	Eth2	(00-0c-29-da-1d-77)	0x02	01	
0003	Eth2	(00-1e-08-09-9c-00)	0x02	01	
0004	Eth2	(00-1e-90-31-36-a3)	0x02	01	
0005	Eth2	(00-50-c6-b7-00-81)	0x02	01	
0006	Eth2	(00-50-c6-b7-00-f0)	0x02	01	
0007	Mgmt	(00-50-c6-c2-00-07)	0x10	01	
0008	Eth2	(00-50-fc-69-45-44)	0x02	01	
0009	Eth2	(00-60-e0-40-45-39)	0x02	01	
0010	Eth2	(00-e0-4c-68-02-85)	0x02	01	
0011	Eth2	(08-00-37-e2-4d-82)	0x02	01	
0012	Eth2	(14-dd-a9-4d-29-1e)	0x02	01	
0013	Eth2	(2c-60-0c-0b-53-81)	0x02	01	
0014	Eth2	(38-2c-4a-c6-06-25)	0x02	01	
0015	Eth2	(6c-0b-84-41-69-48)	0x02	01	
0016	Eth2	(78-24-af-84-67-20)	0x02	01	
0017	Eth2	(a0-1d-48-bd-92-fa)	0x02	01	
0018	Eth2	(ac-9e-17-f7-31-ec)	0x02	01	
<< SPACE bar to change page or ESC key return main menu >>					

5.10.5. Static Route Display

The full menu path for Static Route Display is as follows:

O > Logon
C > System Display
E > Static Route Display

The screen of Static Route Display will show as below.

IP6702A		=== Static Route Display ===		12:43:45 01/18/2016
Net_Destination	Netmask	Gateway_Address	NI	
000.000.000.000	000.000.000.000	000.000.000.000	NONE	
000.000.000.000	000.000.000.000	000.000.000.000	NONE	
000.000.000.000	000.000.000.000	000.000.000.000	NONE	
000.000.000.000	000.000.000.000	000.000.000.000	NONE	
000.000.000.000	000.000.000.000	000.000.000.000	NONE	
000.000.000.000	000.000.000.000	000.000.000.000	NONE	
000.000.000.000	000.000.000.000	000.000.000.000	NONE	
000.000.000.000	000.000.000.000	000.000.000.000	NONE	
000.000.000.000	000.000.000.000	000.000.000.000	NONE	
000.000.000.000	000.000.000.000	000.000.000.000	NONE	
000.000.000.000	000.000.000.000	000.000.000.000	NONE	
000.000.000.000	000.000.000.000	000.000.000.000	NONE	
000.000.000.000	000.000.000.000	000.000.000.000	NONE	
000.000.000.000	000.000.000.000	000.000.000.000	NONE	
000.000.000.000	000.000.000.000	000.000.000.000	NONE	
000.000.000.000	000.000.000.000	000.000.000.000	NONE	
<< ESC key to return to previous menu, SPACE bar to refresh >>				

5.11. Bundle Display

The full menu path for Bundle Display is as follows:

O > Logon

J > Bundle Display

The screen of Bundle Display will show as below.

```
IP6702A                               === Bundle Display ===          13:46:00 01/18/2016

                                     A -> Bundle IP Display
                                     B -> DS0 TSlot to Bundle Display
                                     C -> Bundle Link Display
                                     D -> Bundle Summary
                                     E -> Bundle Status

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

5.11.1. Bundle IP Display

The full menu path for Bundle IP Display is as follows:

O > Logon

J > Bundle Display

A > Bundle IP Display

The screen of Bundle Display will show as below.

```
IP6702A                               === Bundle IP Display ===        12:44:26 01/18/2016

Src. IP Address  :000.000.000.000
Subnet Mask      :000.000.000.000
Gateway IP       :000.000.000.000
Source MAC Addr  :00:50:c6:c2:00:08

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

5.11.2. DS0 TSlot to Bundle Display

The full menu path for DS0 TSlot to Bundle Display is as follows:

O > Logon

J > Bundle Display

B > DS0 TSlot to Bundle Display

The screen of DS0 TSlot to Bundle Display will show as below.

```
IP6702A          === DS0 TSlot to Bundle Display ===      12:44:40 01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

Port: A
TS0 : Idle      ID:          TS16: Idle      ID:
TS1 : Bundle    ID: 0        TS17: Idle    ID:
TS2 : Bundle    ID: 0        TS18: Idle    ID:
TS3 : Bundle    ID: 0        TS19: Idle    ID:
TS4 : Bundle    ID: 0        TS20: Idle    ID:
TS5 : Bundle    ID: 0        TS21: Idle    ID:
TS6 : Bundle    ID: 0        TS22: Idle    ID:
TS7 : Bundle    ID: 0        TS23: Idle    ID:
TS8 : Bundle    ID: 0        TS24: Idle    ID:
TS9 : Bundle    ID: 0        TS25: Idle    ID:
TS10: Bundle    ID: 0        TS26: Idle    ID:
TS11: Bundle    ID: 0        TS27: Idle    ID:
TS12: Bundle    ID: 0        TS28: Idle    ID:
TS13: Idle      ID:          TS29: Idle    ID:
TS14: Idle      ID:          TS30: Idle    ID:
TS15: Idle      ID:          TS31: Idle    ID:

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

5.11.3. Bundle Link Display

The full menu path for Bundle Link Display is as follows:

O > Logon

J > Bundle Display

C > Bundle Link Display

The screen of Bundle Link Display will show as below.

```
IP6702A          === Bundle Link Display ===              12:45:00 01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

      Port: A
Bundle ID : 0          TS   STATUS      TS   STATUS
      Action : None
Encap. Type : CESoPSN
      Tos : 0
Dst UDP Num : 2142
Src UDP Num : 0
  Dest. IP : 000.000.000.000
    Stratum : 3
Number of TS: 12
Number of Frame: 16    (192 Bytes)
  Jitter Tol : 20
  Jitter Buf : 256
      VLAN : OFF
    CVLAN ID : 0
  CVLAN Priority : 7
    SVLAN ID : 0
  SVLAN Priority : 7
SVLAN TPID(hex): 8100
<< ESC key to return to previous menu, SPACE bar to refresh >>
```

5.11.4. Bundle Summary

The full menu path for Bundle Summary is as follows:

O > Logon

J > Bundle Display

D> Bundle Summary

The screen of Bundle Summary will show as below.

```

IP6702A                                     === Bundle Summary ===                               13:47:59 01/18/2016

Po  BID  UDP   UDP   TOS   Jitter   Dest IP Address  Dest MAC Address      State
      Dst   Src      Thr/Siz                                     Bundle Arp
==  ==  ==  ==  ==  ==  ==  ==  ==  ==  ==  ==  ==  ==  ==  ==

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

```

NOTES:

1. State's Bundle :tx-on means TX bundle UDP traffic active ; none means TX bundle UDP inactive
2. State's Arp :up means it have received remote ARP ; down means it do no have receiving remote ARP.

5.11.5. Bundle Status

The full menu path for Bundle Status is as follows:

O > Logon

J > Bundle Display

E> Bundle Status

The screen of Bundle Summary will show as below.

```

IP6702A                               === Bundle Status ===                               13:48:18 01/18/2016

Po  BID  Jit-Buf  Jit-Buf  Jit-Buf  L-Bit  R-Bit  Tx-Good    Rx-Good    RxLost  Link
      UR / OR  Min/Max  Depth
==  ==  ==  ==  ==  ==  ==  ==  ==  ==  ==  ==

```

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

NOTES: 1. Link : up means it have receiving remote UDP traffic ; down means it do not have receiving remote UDP traffic.

5.12. Clock Source Display

The full menu path for Clock Source Display is as follows:

O > Logon

B > Clock Source Display

The screen of Clock Source Display will show as below.

```
IP6702A                               === Main Menu ===                      13:49:30 01/18/2016

Serial Number      : 5                      Device Name : IP6702A (TCXO)
Hardware Version: Ver.B FPGA:1(CD)          Start  Time : 12:00:19 01/18/2016
Software Version: V1.01.01 (0162)           Connect port: SUPV_PORT

[DISPLAY]                                     [SETUP]
C -> System Display                          S -> System Setup
J -> Bundle Display                          T -> Bundle Setup
B -> Clock Source Display                    W -> Firmware Transfer
Q -> Alarm Queue Summary                     K -> Clock Source Setup
R -> Currently-Active Alarm Summary          M -> System Alarm Setup
G -> SFP Status                             L -> SNTP Setup
I -> Port Display                           H -> ALS/APSD Setup
                                           V -> Store/Retrieve Configuration

[LOG]                                       [MISC]
P -> Choose Port                            Y -> Load default
F -> Log Off [SETUP],[MISC] Menu             Z -> Reset
O -> Log On  [SETUP],[MISC] Menu             X -> Clear Alarm Queue
                                           A -> Alarm Cut Off

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

Input the port number (A~B): A

```

IP6702A                === Clock Source Display ===                13:49:46 01/18/2016

Master_Clk Source : INTERNAL
Second_Clk Source : INTERNAL
Current_Clock      : MASTER_CLK
Clk_Recover_Mode   : AUTOMATIC
Clock_Status       : NORMAL

      Port BID Enable Status
ACR1  : A      0   OFF  idle
ACR2  : A      0   OFF  idle
ACR3  : A      0   OFF  idle
ACR4  : A      0   OFF  idle

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

```

NOTES: 1. PortA can use BID 0-15 (Related to table "TimeSlot to Bundle Setup").
 PortB can use BID 0-15.
 And we can select PortA ACR to BID from 0-15

For example, if we setup PortA E1 Master_Clk Source to ACR1 and ACR1 have two bundles with BID=0&1, and we want to do adaptive clock recovery from BID=1

Then we can setup as below:

Master_Clk Source : ACR1				
	Port	BID	Enable	Status
ACR1	A	1	ON	idle

5.13. Alarm Queue Summary

The full menu path for Alarm Queue Summary is as follows:

O > Logon

Q > Alarm Queue Summary

The screen of Alarm Queue Summary will show as below.

```

IP6702A                === Alarm Queue Summary ===                14:05:08 01/18/2016

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

```

5.14. Currently-Active Alarm Summary

The full menu path for Currently-Active Alarm Summary is as follows:

O > Logon

R > Currently-Active Alarm Summary

The screen of Currently-Active Alarm Summary will show as below.

```
IP6702A                === Current Active Alarm Summary ===    14:05:57 01/18/2016

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

5.15. SFP Status

The full menu path for SFP Status is as follows:

O > Logon

G > SFP Status

The screen of SFP Status will show as below.

```
IP6702A                === SFP Status ===                      12:46:42 01/18/2016

[----- ETH1 -----]
Unequipped

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

5.16. E1/T1 Sub-Menu

5.16.1. E1 Sun-Menu

Press **P** to choose a port. Use the tab key to select. Press enter to apply. Now the system should be switched to the card type and the port you want. This information is indicated on the upper left corner of the screen. Below is an example of a unit menu for port A of an E1 card.

```
E1 Port A                               === E1/T1 Port ===          12:47:01 01/18/2016

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

[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 ==>
```

5.16.1.1. Port Setup

The full menu path for Port Setup is as follows:

O > Logon
P > Choose a Port
S > Port Setup

The screen of Port Setup will show as below.

```
E1 Port A                               === Port Setup ===          14:17:31 01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

FRAME      = ON
CODE       = HDB3
INTF       = 120 OHM
AIS        = ON
RAI        = OFF
IDLE CODE  = D5
OOS        = BUSY

<< Press ESC key to return to previous menu or save the setup>>
```

Table 5-21 Port Setup

Field	Setting Options	Default Setting
CODE	HDB3, AMI	HDB3
INTF	75 OHM, 120OHM	120 OHM
AIS	ON, OFF	ON
RAI	ON, OFF	OFF
IDLE CODE	0 ~ 9, A ~ F	D5
OOS	BUSY, IDLE	BUSY

Table 5-22 Defining Parameters in Port Setup

Parameters	Definition
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.
INTF	E1 interface only display 120 Ohm twisted pair, 75 Ohm BNC.
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.
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.
IDLE CODE	Any DS0/DS1 time slot, which is not assigned an idle time slot. An idle code is transmitted on idle DS0/DS1 time slots. The idle time slot may be programmed to any bit pattern from 0x00 to 0Xff.
OOS	Out Of Service Signaling, 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.

5.16.1.2. Port Loopback Test

The full menu path for Port Loopback Test is as follows:

O > Logon
P > Choose a Port
L > Port Loopback Test

The screen of Port Loopback Test will show as below.

Use arrow keys to move the cursor and enter key to start the loopback.

```

E1 Port A          === Port Loopback Test ===          14:18:57 01/18/2016
ARROW KEYS : CURSOR MOVE , ENTER KEY : ITEM SELECT

- NEAR-END LOOPBACK : *OFF LOCAL LLB

<< Press ESC key to return to previous menu or save the setup>>

```

5.16.1.3. Clear Performance Data

The full menu path for Clear Performance Data Test is as follows:

O > Logon

P > Choose a Port

K > Clear Performance Data

The screen of Clear Performance Data will show as below.

```

E1 Port A                               === E1/T1 Port ===          14:19:41 01/18/2016

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

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

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

```

5.16.1.4. Port Alarm Setup

The full menu path for Port Alarm Setup is as follows:

O > Logon

P > Choose a Port

M > Port Alarm Setup

The screen of Port Alarm Setup will show as below.

```

E1 Port A                               === Port Alarm Setup ===      12:55:22 01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

[TYPE]      [THRESHOLD] [ALARM]
RAI          DISABLE
AIS          DISABLE
LOS          DISABLE
LOF          DISABLE
BPV          10E-5      DISABLE
ES           001        DISABLE
UAS          001        DISABLE
CSS          001        DISABLE

<< Press ESC key to return to previous menu or save the setup>>

```

Table 5-23 Port Setup

Field	THRESHOLD		ALARM	
	Setting Options	Default	Setting Options	Default
RAI			MAJOR,CRITICAL, MINOR,INFO,DISABLE	DISABLE
AIS				DISABLE
LOS				DISABLE
LOF				DISABLE
BPV	10E-5 ~ 10E-9	10E-5		DISABLE
ES	001 ~ 900	001		DISABLE
UAS	001 ~ 900	001		DISABLE
CSS	001 ~ 900	001		DISABLE

5.16.1.5. Clear Alarm History

The full menu path for Clear Alarm History is as follows:

O > Logon
P > Choose a Port
X > Clear Alarm History

The screen of Clear Alarm History will show as below.

E1 Port A		=== E1/T1 Port ===	14:34:44 01/18/2016
[DISPLAY]		[SETUP]	
1 -> Port 1-Hour Perf. Report		S -> Port Setup	
2 -> Port 24-Hour Perf. Report		L -> Port Loopback Test	
A -> Port Line Availability		K -> Clear Performance Data	
C -> Port Configuration		M -> Port Alarm Setup	
I -> Port Status		X -> Clear Alarm History	
H -> Port Alarm History		B -> Bert Test	
[LOG]			
P -> Choose Port			
F -> Log Off [SETUP],[MISC] Menu			
O -> Log On [SETUP],[MISC] Menu			
E -> Return to Main Menu			
>> Clear alarm history - are you sure ? [Y/N]			

5.16.1.6. Bert Test

The full menu path for Bert Test is as follows:

O > Logon
P > Choose a Port
B > Bert Test

Table 5-24 Bert Test

Field	Setting Options	Default Setting
Type	FULL, SELECT	FULL
Direct	LINE, PCM	LINE
Enable	ENABLE, DISABLE	DISABLE

Type=FULL

E1 Port A		=== Bert test ===	13:53:18
01/18/2016			
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS			
Type	:	FULL	
Direct	:	LINE	

```

Time Slots   : 0      6      11     16     21     26     31
Map          : F TTTT TTTT TTTT TTTT TTTT TTTT T
Enable       : DISABLE
Test Pattern : 2^15 - 1

```

<< Press ESC key to return to previous menu or save the setup>>

Type=SELECT

```

E1 Port A          === Bert test ===          13:53:18
01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

Type              : SELECT
Direct           : LINE
Time Slots       : 0      6      11     16     21     26     31
Map              : F iiii iiii iiii iiii iiii iiii i
Enable           : DISABLE
Test Pattern     : 2^15 - 1

```

<< Press ESC key to return to previous menu or save the setup>>

5.16.1.7. Port 1-Hour Perf. Report

The full menu path for Port 1-Hour Perf. Report is as follows:

O > Logon

P > Choose a Port

1 > Port 1-Hour Perf. Report

The screen of Port 1-Hour Perf. Report will show as below.

```

E1 Port A          === Port 1-Hour Perf. Report ===      14:51:30 01/18/2016

>> Select Register Type ? *USER  LINE

```

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.

USER

```

E1 Port A          === Port 1-Hour Perf. Report ===      12:08:33 01/18/2016

USER
-- Valid Seconds in Current 15-Min Interval : 455 seconds
      (ES)   (UAS)   (BES)   (SES)   (BPV)   (CSS)
Current 15-Min Interval      : 0       455     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)   (BPV)   (CSS)
Current 24-Hour Interval    : -----
01/17/2016                  : -----
01/16/2016                  : -----
01/15/2016                  : -----
01/14/2016                  : -----
01/13/2016                  : -----
01/12/2016                  : -----
01/11/2016                  : -----

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

```

LINE

```

E1 Port A          === Port 1-Hour Perf. Report ===      12:08:46 01/18/2016

LINE
-- Valid Seconds in Current 15-Min Interval : 469 seconds
      (ES)   (UAS)   (BES)   (SES)   (BPV)   (CSS)
Current 15-Min Interval      : 0      469      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)   (BPV)   (CSS)
Current 24-Hour Interval      : -----
01/17/2016                    : -----
01/16/2016                    : -----
01/15/2016                    : -----
01/14/2016                    : -----
01/13/2016                    : -----
01/12/2016                    : -----
01/11/2016                    : -----

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

```

5.16.1.8. Port 24-Hour Perf. Report

The full menu path for Port 1-Hour Perf. Report is as follows:

O > Logon

P > Choose a Port

2 > Port 24-Hour Perf. Report

The screen of Port 24-Hour Perf. Report will show as below.

```

E1 Port A          === Port 24-Hour Perf. Report ===      18:32:16 01/18/2016

>> Select Register Type ? *USER  LINE

```

Use TAB key to select register type and the parameter. The current selection will be highlighted by an asterisk (*).

```

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

```

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

```

E1 Port A          === Port 24-Hour Perf. Report ===      12:09:11 01/18/2016

USER ES
-- Valid Seconds in Current 15-Min Interval : 493 seconds
-- Valid 15-Min Intervals in Current 24-Hour Interval: 0

      (ES)   (UAS)   (BES)   (SES)   (BPV)   (CSS)
Current 15-Min Interval      : 0      493      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 >>

```

5.16.1.9. Port Line Availability

The full menu path for Bert Test is as follows:

O > Logon

P > Choose a Port

A > Port Line Availability

The screen of Port Line Availability will show as below.

```

E1 Port A          === Port Line Availability ===      12:09:51 01/18/2016

-- Line Availability during Last 24-Hour:
Valid Seconds      : 532 seconds
Available Seconds  : 0 seconds
Unavailable Seconds: 532 seconds
Line Availability   : 0.0 %

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

```

5.16.1.10. Port Configuration

The full menu path for Bert Test is as follows:

O > Logon

P > Choose a Port

C > Port Configuration

The screen of Port Configuration will show as below.

```

E1 Port A                               == Port Configuration ==          15:03:56 01/18/2016

FRAME      = ON
CODE        = HDB3
INTF        = 120 OHM
AIS         = ON
RAI         = OFF
IDLE CODE   = D5
OOS         = BUSY

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

```

5.16.1.11. Port Status

The full menu path for Bert Test is as follows:

O > Logon

P > Choose a Port

I > Port Status

The screen of Port Status will show as below.

```

E1 Port A                               === Port Status ===              15:07:13 01/18/2016

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

-- TEST --
PATTERN TRANSMITTED : OFF
PRBS CHANNEL        : OFF

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

```

5.16.1.12. Port Alarm History

The full menu path for Bert Test is as follows:

O > Logon

P > Choose a Port

H > Port Alarm History

The screen of Port Alarm History will show as below.

```

E1 Port A          === Port Alarm History ===          15:08:18 01/18/2016
LOCAL
[ALARM-TYPE]      [THRESHOLD]    [CURR-STATE]    [COUNT]    [ALARM]
RAI                DISABLE        0             DISABLE
AIS                DISABLE        0             DISABLE
LOS                DISABLE        0             DISABLE
LOF                DISABLE        0             DISABLE
BPV                10E-5          DISABLE        0             DISABLE
ES                 1             DISABLE        0             DISABLE
UAS                 1             DISABLE        0             DISABLE
CSS                 1             DISABLE        0             DISABLE

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

```

5.16.2. T1 Sun-Menu

Press **P** to choose a port. Use the tab key to select. Press enter to apply. Now the system should be switched to the card type and the port you want. This information is indicated on the upper left corner of the screen. Below is an example of a unit menu for port A of an T1 card.

```

T1 Port A          === E1/T1 Port ===          12:47:01 01/18/2016

[DISPLAY]
1 -> Port 1-Hour Perf. Report
2 -> Port 24-Hour Perf. Report
A -> Port Line Availability
C -> Port Configuration
I -> Port Status
H -> Port Alarm History

[SETUP]
S -> Port Setup
L -> Port Loopback Test
K -> Clear Performance Data
M -> Port Alarm Setup
X -> Clear Alarm Queue & History
B -> Bert Test

[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 ==>

```

5.16.2.1. Port Setup

The full menu path for Port Setup is as follows:

O > Logon
P > Choose a Port
S > Port Setup

The screen of Port Setup will show as below.

```

T1 Port A          === Port Setup ===          12:52:55 01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

FRAME      = D4
CODE       = B8ZS
INTF       = SHORT HAUL
EQU        = 0-133
YEL        = OFF
AIS        = OFF
CAS        = ON
IDLE CODE  = D5
OOS        = BUSY

<< Press ESC key to return to previous menu or save the setup>>

```

Table 5-25 Port Setup

Field	Setting Options	Default Setting
FRAME	D4, ESF, ESF&T1.403, OFF	D4
CODE	B8ZS, AMI	B8ZS
INTF		SHORT HAUL
EQU	0-133, 133-266, 266-399, 399-533, 533-655	0-133
YEL	ON, OFF	OFF
AIS	ON, OFF	OFF
CAS	ON, OFF	ON
IDLE CODE	0 ~ 9, A ~ F	D5
OOS	BUSY, IDLE	BUSY

Table 5-26 Defining Parameters in Port Setup

Parameters	Definition
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.
EQU	For the equipment to show if the port is equipped.
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.
YEL	A transmit remote alarm indication at a DS1 interface means that the interface has a problem with the signal it is receiving from the far end equipment.
IDLE CODE	Any DS0/DS1 time slot, which is not assigned an idle time slot. An idle code is transmitted on idle DS0/DS1 time slots. The idle time slot may be programmed to any bit pattern from 0x00 to 0Xff.
OOS	Out Of Service Signaling, 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.

5.16.2.2. Port Loopback Test

The full menu path for Port Loopback Test is as follows:

O > Logon

P > Choose a Port

L > Port Loopback Test

The screen of Port Loopback Test will show as below.

Use arrow keys to move the cursor and enter key to start the loopback.

```
T1 Port A          === Port Loopback Test ===      14:18:57 01/18/2016
ARROW KEYS : CURSOR MOVE , ENTER KEY : ITEM SELECT

- NEAR-END LOOPBACK : *OFF LOCAL LLB

<< Press ESC key to return to previous menu or save the setup>>
```

5.16.2.3. Clear Performance Data

The full menu path for Clear Performance Data Test is as follows:

O > Logon

P > Choose a Port

K > Clear Performance Data

The screen of Clear Performance Data will show as below.

```
T1 Port A          === E1/T1 Port ===      14:19:41 01/18/2016

[DISPLAY]
1 -> Port 1-Hour Perf. Report
2 -> Port 24-Hour Perf. Report
A -> Port Line Availability
C -> Port Configuration
I -> Port Status
H -> Port Alarm History

[SETUP]
S -> Port Setup
L -> Port Loopback Test
K -> Clear Performance Data
M -> Port Alarm Setup
X -> Clear Alarm History
B -> Bert Test

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

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

5.16.2.4. Port Alarm Setup

The full menu path for Port Alarm Setup is as follows:

O > Logon

P > Choose a Port

M > Port Alarm Setup

The screen of Port Alarm Setup will show as below.

```

T1 Port A          === Port Alarm Setup ===          12:02:43 01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

[TYPE]      [THRESHOLD] [ALARM]
YEL                      DISABLE
AIS                      DISABLE
LOS                      DISABLE
LOF                      DISABLE
BPV          10E-5        DISABLE
ES              001        DISABLE
UAS              001        DISABLE
CSS              001        DISABLE

<< Press ESC key to return to previous menu or save the setup>>

```

Table 5-27 Port Setup

Field	THRESHOLD		ALARM	
	Setting Options	Default	Setting Options	Default
YEL			MAJOR,CRITICAL, MINOR,INFO,DISABLE	DISABLE
AIS				DISABLE
LOS				DISABLE
LOF				DISABLE
BPV	10E-5 ~ 10E-9	10E-5		DISABLE
ES	001 ~ 900	001		DISABLE
UAS	001 ~ 900	001		DISABLE
CSS	001 ~ 900	001		DISABLE

5.16.2.5. Clear Alarm History

The full menu path for Clear Alarm History is as follows:

O > Logon

P > Choose a Port

X > Clear Alarm History

The screen of Clear Alarm History will show as below.

```

T1 Port A                               === E1/T1 Port ===                14:34:44 01/18/2016

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

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

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

```

5.16.2.6. Bert Test

The full menu path for Bert Test is as follows:

O > Logon

P > Choose a Port

B > Bert Test

Table 5-28 Bert Test

Field	Setting Options	Default Setting
Type	FULL, SELECT	FULL
Direct	LINE, PCM	LINE
Enable	ENABLE, DISABLE	DISABLE

Type=FULL

```

T1 Port A                               === Bert test ===                13:01:54
01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

Type      : FULL
Direct     : LINE
Time Slots : 1      6      11     16     21
Map        : iTTTTT TTTTT TTTTT TTTTT TTTT
Enable     : DISABLE
Test Pattern : 2^15 - 1

<< Press ESC key to return to previous menu or save the setup>>

```

Type=SELECT

```

T1 Port A          === Bert test ===          13:01:54
01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

Type      : SELECT
Direct    : LINE
Time Slots : 1      6      11     16     21
Map       : i i i i i i i i i i i i i i i i i i
Enable    : DISABLE
Test Pattern : 2^15 - 1

<< Press ESC key to return to previous menu or save the setup>>

```

5.16.2.7. Port 1-Hour Perf. Report

The full menu path for Port 1-Hour Perf. Report is as follows:

O > Logon

P > Choose a Port

1 > Port 1-Hour Perf. Report

The screen of Port 1-Hour Perf. Report will show as below.

```

T1 Port A          === Port 1-Hour Perf. Report === 14:51:30 01/18/2016

>> Select Register Type ? *USER  LINE

```

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.

USER

```

T1 Port A          === Port 1-Hour Perf. Report ===      13:04:35 01/18/2016
USER
-- Valid Seconds in Current 15-Min Interval : 275 seconds
      (ES)   (UAS)   (BES)   (SES)   (BPV)   (CSS)
Current 15-Min Interval      : 0      275    0      0      0      255
1st Nearest 15-Min Interval : 0      900    0      0      0      255
2nd Nearest 15-Min Interval : 0      900    0      0      0      255
3rd Nearest 15-Min Interval : 0      900    0      0      0      255
4th Nearest 15-Min Interval : 0      877    0      0      0      255

-- Valid 15-Min Intervals in Current 24-Hour Interval: 4
      (ES)   (UAS)   (BES)   (SES)   (BPV)   (CSS)
Current 24-Hour Interval      : 0      3577   0      0      0      255
01/17/2016                    : -----
01/16/2016                    : -----
01/15/2016                    : -----
01/14/2016                    : -----
01/13/2016                    : -----
01/12/2016                    : -----
01/11/2016                    : -----

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

```

LINE

```

T1 Port A          === Port 1-Hour Perf. Report ===      13:04:50 01/18/2016
LINE
-- Valid Seconds in Current 15-Min Interval : 289 seconds
      (ES)   (UAS)   (BES)   (SES)   (BPV)   (CSS)
Current 15-Min Interval      : 0      289    0      0      0      255
1st Nearest 15-Min Interval : 0      900    0      0      0      255
2nd Nearest 15-Min Interval : 0      900    0      0      0      255
3rd Nearest 15-Min Interval : 0      900    0      0      0      255
4th Nearest 15-Min Interval : 0      881    0      0      0      255

-- Valid 15-Min Intervals in Current 24-Hour Interval: 4
      (ES)   (UAS)   (BES)   (SES)   (BPV)   (CSS)
Current 24-Hour Interval      : 0      3581   0      0      0      255
01/17/2016                    : -----
01/16/2016                    : -----
01/15/2016                    : -----
01/14/2016                    : -----
01/13/2016                    : -----
01/12/2016                    : -----
01/11/2016                    : -----

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

```

5.16.2.8. Port 24-Hour Perf. Report

The full menu path for Port 1-Hour Perf. Report is as follows:

O > Logon

P > Choose a Port

2 > Port 24-Hour Perf. Report

The screen of Port 24-Hour Perf. Report will show as below.

```

T1 Port A                === Port 24-Hour Perf. Report ===      18:32:16 01/18/2016

>> Select Register Type ? *USER  LINE

```

Use TAB key to select register type and the parameter. The current selection will be highlighted by an asterisk (*).

```

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

```

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

```

T1 Port A                === Port 24-Hour Perf. Report ===      12:09:11 01/18/2016

USER ES
-- Valid Seconds in Current 15-Min Interval : 493 seconds
-- Valid 15-Min Intervals in Current 24-Hour Interval: 0
      (ES)   (UAS)  (BES)  (SES)  (BPV)  (CSS)
Current 15-Min Interval      : 0      493    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 >>

```

5.16.2.9. Port Line Availability

The full menu path for Bert Test is as follows:

```

O > Logon
P > Choose a Port
A > Port Line Availability

```

The screen of Port Line Availability will show as below.

```

T1 Port A                === Port Line Availability ===      13:05:50 01/18/2016

-- Line Availability during Last 24-Hour:
Valid Seconds      : 3950 seconds
Available Seconds  : 23 seconds
Unavailable Seconds: 3927 seconds
Line Availability   : 0.58 %

```

5.16.2.10. Port Configuration

The full menu path for Bert Test is as follows:

```

O > Logon
P > Choose a Port
C > Port Configuration

```

The screen of Port Configuration will show as below.

```

T1 Port A                == Port Configuration ==          13:06:08 01/18/2016

FRAME      = D4
CODE       = B8ZS
INTF       = SHORT HAUL
EQU        = 0-133
YEL        = OFF
AIS        = OFF
CAS        = ON
IDLE CODE  = D5
OOS        = BUSY

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

```

5.16.2.11. Port Status

The full menu path for Bert Test is as follows:

```

O > Logon
P > Choose a Port
I > Port Status

```

The screen of Port Status will show as below.

```

T1 Port A                               === Port Status ===                13:06:22 01/18/2016

-- LINE --
  LOS      : LOS
  LOF      : LOF
  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 >>

```

5.16.2.12. Port Alarm History

The full menu path for Bert Test is as follows:

O > Logon

P > Choose a Port

H > Port Alarm History

The screen of Port Alarm History will show as below.

```

T1 Port A                               === Port Alarm History ===          13:06:39 01/18/2016
LOCAL
[ALARM-TYPE]  [THRESHOLD]  [CURR-STATE]  [COUNT]  [ALARM]
YEL           OK          0             0         MAJOR
AIS           OK          0             0         MAJOR
LOS           ALM         1             1         MAJOR
LOF           ALM         1             1         MAJOR
BPV           10E-5       OK          0             0         MAJOR
ES            1           OK          1             1         MAJOR
UAS            1           ALM         5             5         MAJOR
CSS            1           ALM         5             5         MAJOR

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

```

5.17. DTE Sub-Menu

Press **P** to choose a port. Use the tab key to select. Press enter to apply. Now the system should be switched to the card type and the port you want. This information is indicated on the upper left corner of the screen. Below is an example of a unit menu for port B of an DTE card.

```

PORT B   DTE                               === Port Menu ===                12:13:25 01/18/2016

[DISPLAY]                                [SETUP]
C -> Port System Setup Display          L -> Port Loopback Setup
H -> Port Alarm History                 M -> Port Alarm Setup
I -> Port Status                       S -> Port System Setup
                                       X -> Port Clear Alarm Queue & History

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

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

```

5.17.1. Port Loopback Setup

The full menu path for Port Loopback Setup is as follows:

O > Logon
P > Choose a Port
L > Port Loopback Setup

The screen of Port Loopback Setup will show as below.

```

PORT B   DTE                               === Port Loopback Test ===        12:14:28 01/18/2016
ARROW KEYS : CURSOR MOVE , ENTER KEY : ITEM SELECT

- DTE   LOOPBACK       : *OFF   TO-DTE   TO-BUNDLE

<< Press ESC key to return to previous menu or save the setup>>

```

5.17.2. Port Alarm Setup

The full menu path for Port Alarm Setup is as follows:

O > Logon
P > Choose a Port
M > Port Alarm Setup

The screen of Port Alarm Setup will show as below.

```

PORT B DTE          === Port Alarm Setup ===          12:16:12 01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

[TYPE]              [ALARM]
DTE_ALARM           DISABLE

<< Press ESC key to return to previous menu or save the setup>>

```

Table 5-29 Port Alarm Setup

Field	Setting Options	Default Setting
Alarm	DISABLE, MAJOR, CRITICAL, MINOR	DISABLE

5.17.3. Port System Setup

The full menu path for Port System Setup is as follows:

O > Logon

P > Choose a Port

S > Port System Setup

The screen of Port System Setup will show as below.

```

PORT B DTE          === Port System Setup ===          12:16:58 01/18/2016
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

    RATE  = 01 X 64K (BANDWIDTH: 64K)
    CLOCK = NORMAL
    DATA = NORMAL
    RTS   = ACTIVE
    TTM   = OFF
    INTERF= RS422

<< Press ESC key to return to previous menu or save the setup>>

```

Table 5-30 Port System Setup

Field	Setting Options	Default Setting
RATE	1~32 56K, 64K	1 64K
CLOCK	NORMAL, INVERTED	NORMAL
DATA	NORMAL, INVERTED	NORMAL
ACTIVE	ACTIVE, PERMANENT	ACTIVE

5.17.4. Port Clear Alarm Queue & History

The full menu path for Port Clear Alarm Queue & History is as follows:

O > Logon

P > Choose a Port

X > Port Clear Alarm Queue & History

The screen of Port Clear Alarm Queue & History will show as below.

```

PORT B   DTE                               === Port Menu ===                12:17:14 01/18/2016

[DISPLAY]                                [SETUP]
C -> Port System Setup Display          L -> Port Loopback Setup
H -> Port Alarm History                 M -> Port Alarm Setup
I -> Port Status                       S -> Port System Setup
                                      X -> Port Clear Alarm Queue & History

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

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

5.17.5. Port System Setup Display

The full menu path for Port System Setup Display is as follows:

O > Logon

P > Choose a Port

C > Port System Setup Display

The screen of Port System Setup Display will show as below.

```

PORT B   DTE                               === Port System Setup ===          12:12:00 01/18/2016

RATE  = 01    X 64K   (BANDWIDTH:    64K)
CLOCK = NORMAL
DATA  = NORMAL
RTS   = ACTIVE
TTM   = OFF
INTERF= RS422

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

5.17.6. Port Alarm History

The full menu path for Port Alarm History is as follows:

O > Logon

P > Choose a Port

H > Port Alarm History

The screen of Port 1-Hour Perf. Report will show as below.

```

PORT B   DTE                               === Port Alarm History ===          12:13:10 01/18/2016

[ALARM-TYPE]                [CURR-STATE]    [COUNT]    [ALARM]
DTE_ALARM                   DISABLE         0          DISABLE

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

```

5.17.7. Port Status

The full menu path for Port Status is as follows:

O > Logon

P > Choose a Port

I > Port Status

The screen of Port Status will show as below.

```

PORT B   DTE                               === Port Status ===                12:15:53 01/18/2016

-- DTE  --
  RCV RTS : ACTIVE
  DTE RTS LOSS : YES

-- TEST --
  DTE LOOPBACK : OFF

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

```

6. STEP BY STEP OPERATION

6.1. Password Setup

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

6.1.1. Enter Old Password

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

```
IP6702A                === Password Setup ===                15:45:09 01/18/2016
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 .
```

6.1.2. Enter New Password

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

```
IP6702A                === Password Setup ===                15:45:09 01/18/2016
ARROW KEYS: CURSOR MOVE, BACKSPACE to edit, ESC to abort

    Enable Password : YES
    Change Password : YES
    Old Password   : XXXX_____
    New Password   : _____

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

6.1.3. Confirmation of New Password

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

```
IP6702A                === Password Setup ===                12:28:10 01/18/2016
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_____

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

6.2. Clock Source Setup

The IP6702A provide operator to setup each port's clock source from internal, line (from A), or ACR(from 1/2/3/4).

The basic application will show as below.

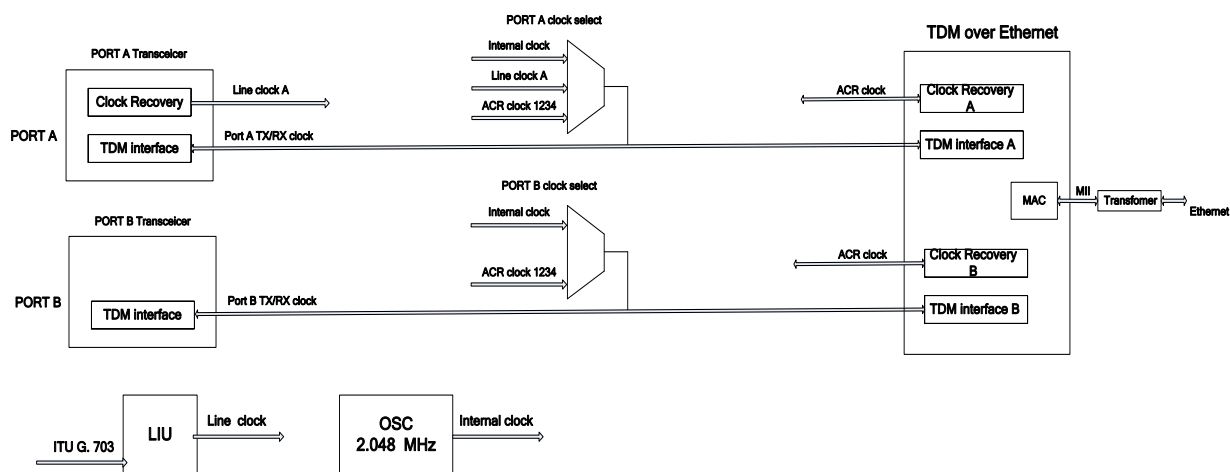


Figure 6-1 Clock Source

6.2.1. Clock Application

The wireline Ethernet network application diagram of IP6702A clock source shows below.

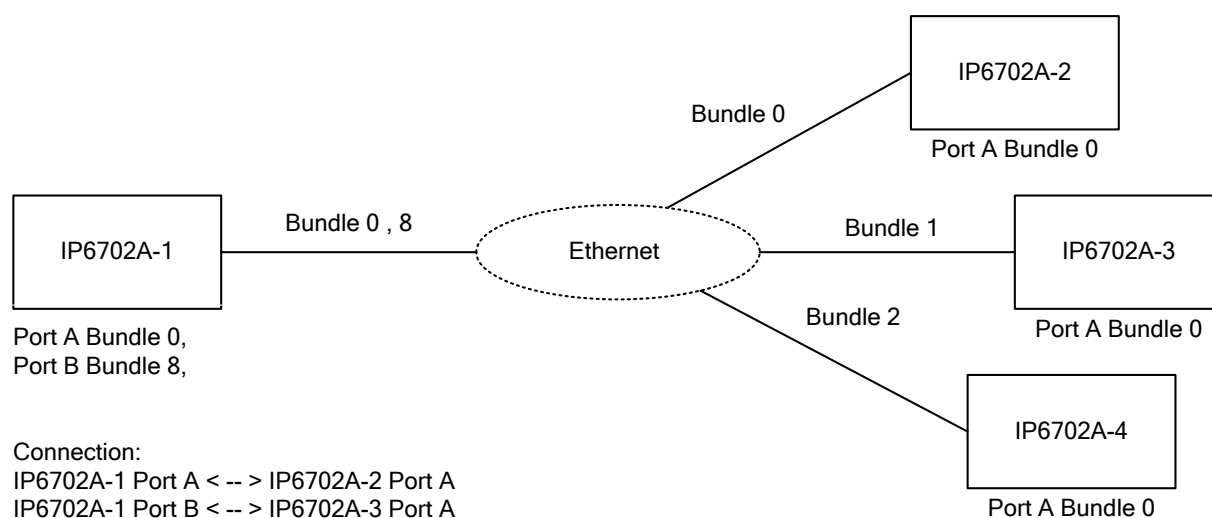


Figure 6-2 Clock Application

6.2.1.1. Example of Clock Source

For the clock source there is an example to show as the table below.

Table 6-1 Example 1: Independent Clock Source

	Port A	Port B
IP6702A-1	Line clock A	Internal clock
IP6702A-2	ACR clock 1(Bundle 0)	
IP6702A-3	ACR clock 1(Bundle 0)	
IP6702A-4	ACR clock 1(Bundle 0)	

7. SIGNAL DELAY AND WAN BANDWIDTH REQUIREMENT

This chapter provides formulas on how to calculate the delay time of delivering TDM data and the bandwidth that is required for TDM data transmission. The results present in this chapter are empirical and are derived from testing.

7.1. Signal Delay from TDM Port to Ethernet (WAN) Port

The TDMoIP frame format requires Ethernet, IP/UDP, control word, and payload header for a total overhead of 48 bytes. The payload size (portion of E1 signal) carried by the TDMoIP frame varies according to the format used, its associated parameters, and the jitter buffer threshold (jitter delay in ms).

TDMoEthernet Payload has the following three payload types:

- a. SAToP
- b. CESoPSN
- c. MEF8*

Each payload format has its unique formula on calculating the delay time, all of which are introduced in paragraphs below.

➤ SAToP

When using the SAToP format, the following parameters are included:

- a. the size of bytes in the payload: 24 to 1500 bytes

The delay time of SAToP format can be computed by the following formula, and a few examples are shown in the tables below.

$$\text{Initial Delay Time (ms) for E1} = (0.125 \times N) \times 2 + 0.625 + \text{Jitter Buffer Tolerance}$$

➤ CESoPSN

When using the CESoPSN format, the following parameters are included:

- a. Number of byte: 8 to 1500
- b. three bundles types:
 - Unstructured (=Unframed)

Loop Telecommunication International, Inc.

- Structured without CAS (= Framed without CAS)
- Structured with CAS (= Framed with CAS)

The delay time of CESoPSN format can be computed by the following formula, where N is the number of E1 frame:

$$\text{Initial Delay Time (ms) for E1} = (0.125 \times N) \times 2 + 0.625 + \text{Jitter Buffer Tolerance}$$

8. APPENDIX A – PROPER JITTER BUFFER SETUP FOR APPROPRIATE APPLICATION

This application is used to provide a hint for user to do proper jitter buffer setup.

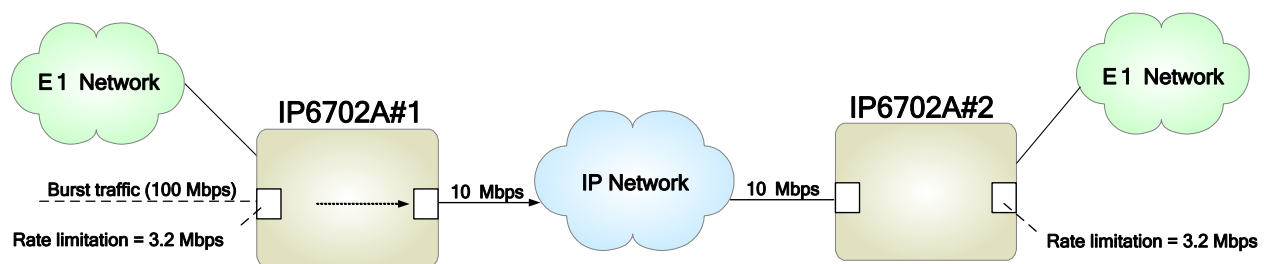


Figure 8-1 Proper Jitter Buffer Setup for Appropriate Application

In a packet network, the transit time delay of each packet is a variable. When a TDM signal, such as E1, traverses an IP Network, the jitter buffer allows the different packet delays to be compensated. The IP6702A allows the user to set delay buffer's maximum size and buffer delay (threshold). The size should be set to max. 256 ms as this should allow the maximum packet burst that happened in the IP network. Buffer delay (threshold) is the minimum delay before the packet is processed. For voice application to avoid echo, this should be set to as small as tolerable. The default jitter Tol. is 20 ms, and the recommended jitter buffer size is 256 ms.

9. APPENDIX B – MIB ALARM AND TRAP DESCRIPTIONS

9.1. MIB Alarm Descriptions

Card Type	Alarm Type	One-Shot	Alarm Name	Alarm Cause	Severity
E1	RAI		Remote Alarm Indication	The received data sequence shows that the downstream far end device is in red alarm.	major
	AIS		Alarm Indication Signal	A transmitted signal to indicate that a fault has happened upstream in the transmission path (remote line failure or card failure).	major
	LOS		Loss of Signal	The physical line is broken, not connected, or the remote device has no power.	major
	LOF		Loss of Frame	The expected frame format of the incoming signal cannot be found.	major
	BPV	Yes	Bipolar Violation	The line condition/quality is causing bipolar errors during transmission.	major
	ES	Yes	Error Second	An error is detected within any one second.	major
	UAS	Yes	Unavailable Second	The E1/T1 line is broken or bad line condition, resulting in seconds with no data.	major
	CSS	Yes	Control Slip Second	Within any one second, the difference between received clock and local is different enough to cause slip of whole frame.	major
	CLK Change	Yes	Clock change	Clock has changed.	major
	L-Bit		Bundle Local-Bit	When received, it means that the E1/T1 connection on the remote device is broken.	major
	R-Bit		Bundle Remote-Bit	When received, it means that part of the Ethernet network between the local and remote device is broken.	major
	MAC Change	Yes	MAC change	Remote bundle source MAC	major

				address has changed.	
	OverRun	Yes	OverRun	Jitter buffer overflow	major
	UnderRun	Yes	UnderRun	Jitter buffer underrun	major
	Rx-Lost	Yes	Rx-Lost	Sequence number discontinue.	major
DTE	DTE alarm		DTE alarm	RTS loss	major
System	Warm Restart	Yes	Warm Restart	When warm restarting the device.	major
Ethernet	Ethernet Link		Ethernet Link-Up/Down Alarm	Ethernet port is active/inactive.	major

9.2. Trap Descriptions

IP6702A Local Trap	Description	Value List
AlarmDesString	Alarm String	
AlarmTimeStamp	Alarm Timestamp	
AlarmSubrack	Subrack	shelf1(1)
AlarmSlot	Slot Number	slot1(1), power1(2), power2(3)
AlarmCardType	Card Type	e1(3), t1(4), v35(5), power(6), x21(7), rs232(8), system(9)
AlarmPortNum	Port Number	portA(1), portB(2), portC(3), portD(4), snmpport(5), eth1port(6), eth2port(7), eth3port(8), eth4port(9), power1port(10), power2port(11), systemport(12), noneport(13)
AlarmPortType	Port Type	e1type(1) t1type(2), ethernet(3), x21type(4), rs232type(5), powertype(6), systemtype(7), nonetype(8)

AlarmType :	AlarmType	ais(1), los(2), bpv(3), es(4), uas(5), rai(6), lof(7), css(8), aisRemove(9), losRemove(10), lofRemove(11), bpvRemove(12), esRemove(13), uasRemove(14), raiRemove(15), cssRemove(16), clockChg(17), linkup(18), linkdown(19), lobactive(20), lobinactive(21), macchg(22), lbit(23), rbit(24), underrun(25), overrun(26), warmrest(27), rxlost(28), powerunequip(29), powerequip(30), powerfail(31), powerok(32), dtealm(33), none(34)
AlarmStatus :	AlarmStatus	active(1) cleared(2) none(3)