Olencom FM-16
Fiber Optical Mux
User’s Manual

02/2004 Version 1.0

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1 PRODUCT DESCRIPTION

1.1 Function Description

OLENCOM's Fiber Optical Mux product family provides ideal solutions for building fiber based E1 or T1 networks. As one of this family, model Olencom FM-16 can multiplex up to 16 E1 signals for transmission over an optical fiber, resulting in longer reach without repeaters and superior performance compared to copper media.

To select protection level, users can choose either a single pair or dual pair fiber, either a single power supply or dual supplies.

Olencom FM-16 support local control and diagnostics using 2-line by 16-character LCD display and keypads or DB9S console port.

Olencom FM-16 support local and remote monitoring and diagnostics through the use of front panel switches and LED indicators. Contacts for office alarms are available.

Application for Olencom FM-16 include interconnections for LAN, WAN, SONET/SDH, ATM and DLC.

1.2 Features

Below lists the features for Olencom FM-16:

- Up to 16 E1/ T1 links on one fiber
- Support 4-RS232
- Support 10/100M Bridge
- Support optical 1+1 line protection
- Support dual power protection
- 50 Km reach, other distance available
- 30 dB gain
- Local and remote performance indicators
- Local and remote loop backs for optical link and each E1 link
- Management through Console port, Ethernet port, and SNMP agents.
- Office alarm contacts
- LCD display
- Multicolor LED indicators

1.3 Application

Olencom FM-16 can be used as a high speed baseband modem that connects two DTEs over a leased line as illustrated in the following figure.

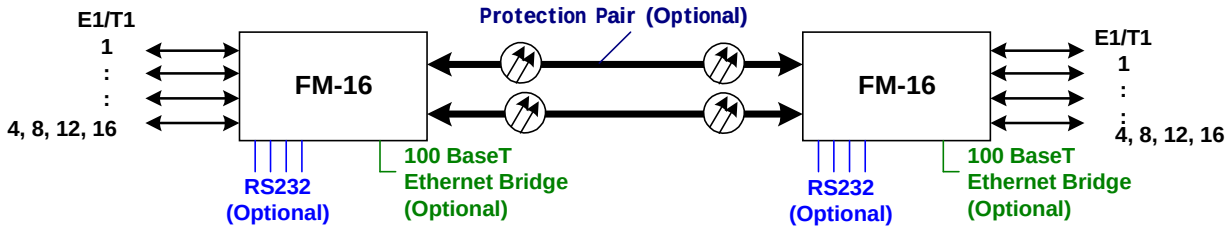


Figure 1- 1 Application Illustration

1.4 Specifications

Optical Fiber Interface

Source	MLM Laser	System Gain	12 to 30 dB
Wavelength	1310 ± 50 nm, 1550 ± 40 nm	Line Code	Scrambled NRZ
Power	-26 or -8 dBm	Detector Type	PIN-FET
Receiver Sensitivity	-38 dBm at BER < 10-10	Fiber Type	Single mode
50 Km reach		Protection	Optional 1+1 APS

NOTE: Longer or shorter, 25 to 100Km, on special order.

E1 Line Interface

Number of E1 lines	16	Line Impedance	120Ω twisted pair, 75Ω for BNC
Line Rate	2.048 Mbps ±50 ppm	Connector	RJ48C, BNC, DB37
Line Code	HDB3	Output Signal	ITU G.703

NOTE: Other Impedance, 100Ω and 110Ω, on special order.

T1 Line Interface

Number of T1 lines	16	Framing	ID4/ESF (selectable)
Line Rate	1.544 Mbps ± 32 ppm	Connector	RJ48C
Line Code	AMI / B8ZS	Output Signal	DSX-1 w/0, -7.5, -15 dB LBO
Line Impedance	120Ω twisted pair	Pulse Template	Per AT&T TR 62411

NOTE: Other Impedance, 100Ω and 110Ω, on special order.

Bridge

- 100 Mbps full duplex ethernet bridging and 100 Mbps operation on the HDLC port
- ANSI/ IEEE Std. 802.1D MAC Bridging capabilities (without spanning tree algorithm)
- Automatic MAC table learning and aging
- Support VLAN and extended Ethernet frame support
- Default Configuration : Autonegotiation with flow control

4-RS232

Connector	DB25
Data Rate	Up to 64Kbps

Console

Connector	DB9 at front panel
Electrical	RS232 interface
Protocol	Menu driven VT-100 terminal

Switches and Contacts

- Power, Alarm Cut-Off, Reset, A & B dip switches for command setup, and ENTER for command execute.
- Major and Minor alarm contact closures, DB9F connector.

Indicators

- Power, Major & Minor Alarms, System Fail, Abnormal Operation, Electrical Failure.
- Receive signal indications for all E1s.
- Local optical signal receive indication, working and protection.
- Remote optical signal receive indication, working and protection.
- Laser operation, working and protection.
- Command execution complete.

Physical/Electrical

Dimensions for 1U	44 x 432 x 255 mm (H xWx D)
Dimensions for 2U	88 x 432 x 255 mm (H xWx D)
Mounting	Stand-alone, 19 or 23 inch rack mount
Power source	-42 to -60 Vdc or 100 to 240 Vac, 50/ 60 Hz
Power protection	Optional 1+1 APS
Power consumption	< 30 W
Temperature range	0°C to 50°C
Humidity	0% - 95% RH (non-condensing)

Diagnostics Test

Optical Fiber	Local and remote loopbacks
E1 Lines	Local and remote loopbacks

Compliance

EMI/EMC	EN50082-1, EN55022
ITU	G.703, G.706, G.732, G.823
Safety	EN60950

2 INSTALLATION

2.1 Site Selection

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

- Location of the Olencom FM-16 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

Olencom FM-16 is a desktop unit, which offers two kinds of installation for power supply: on board fixed or plug-in.

One option of power module is available for on board fixed: AC power, and three options of power module are available for plug-in: (1) single AC, (2) 24Vdc single DC, (3) 48Vdc single DC.

If on-board fixed power supply is selected, users are not allowed to use plug-in power module in this unit. That means this unit can has single power supply only.

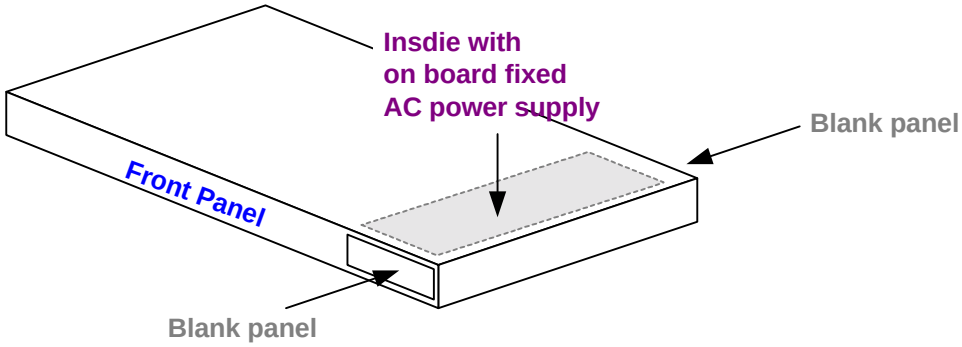


Figure 2- 1 Illustration for main unit with on board fixed power supply

If on-board fixed power supply is not selected, users are allowed to use one or two plug-in power supplies in this unit. That means this unit can have single power supply or dual power supply (for redundancy).

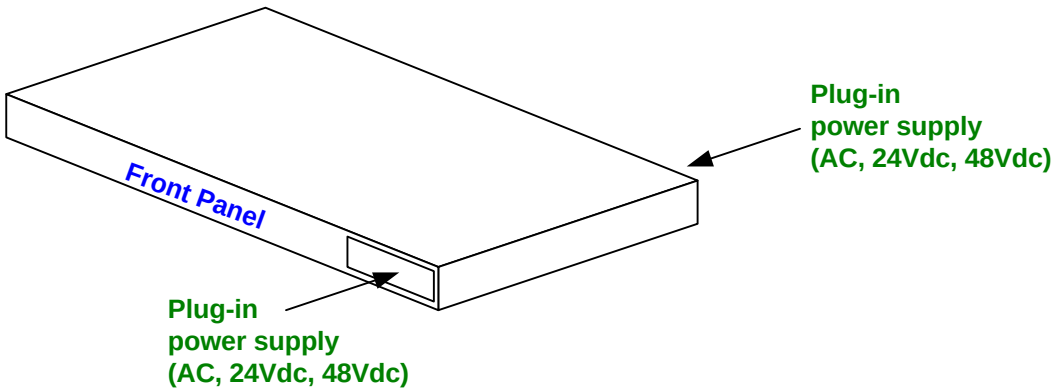


Figure 2- 2 Illustration for main unit with plug-in power supplies

The front panel and the rear panel are shown in the following figures.

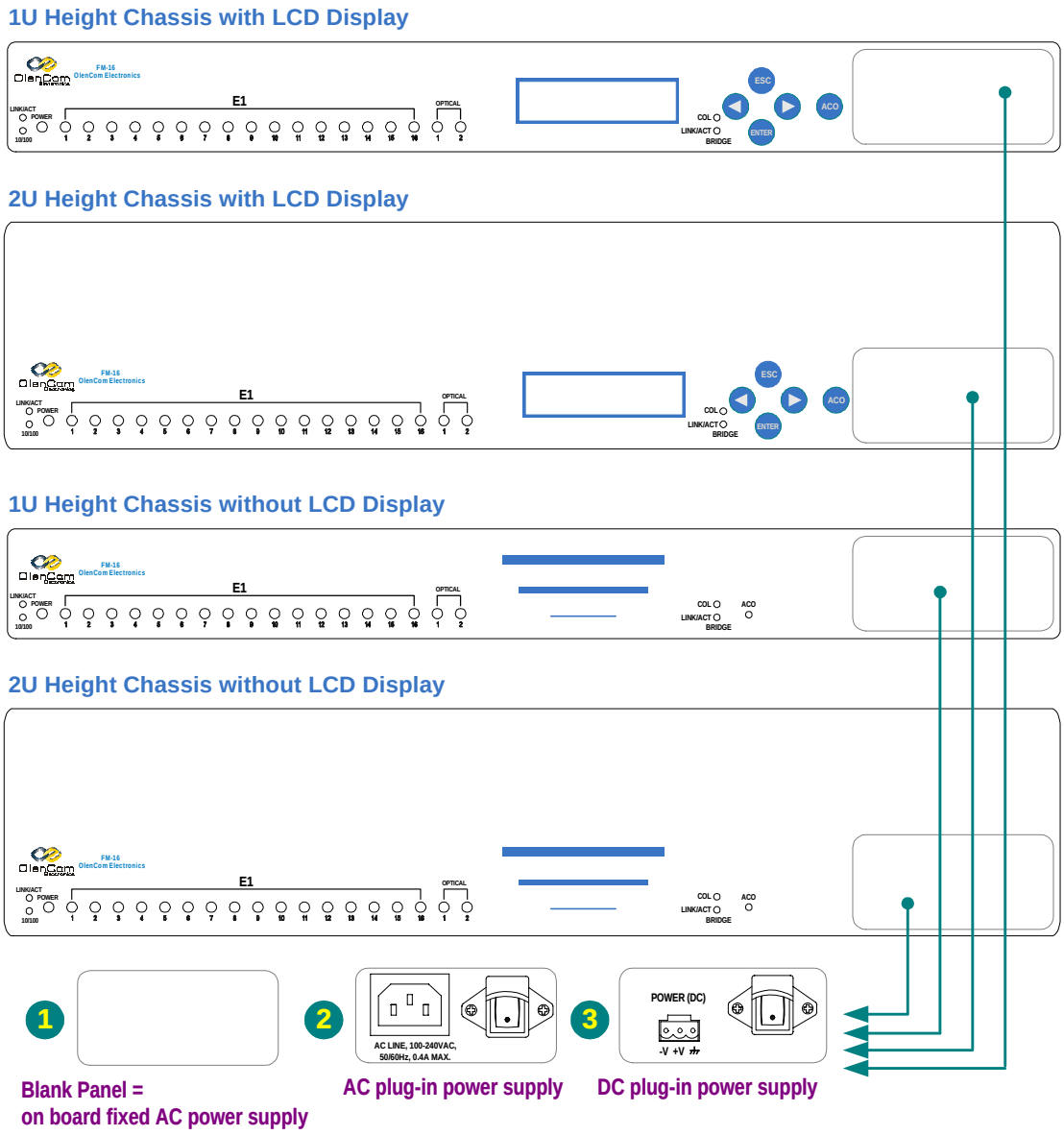


Figure 2- 3 Front Panel View

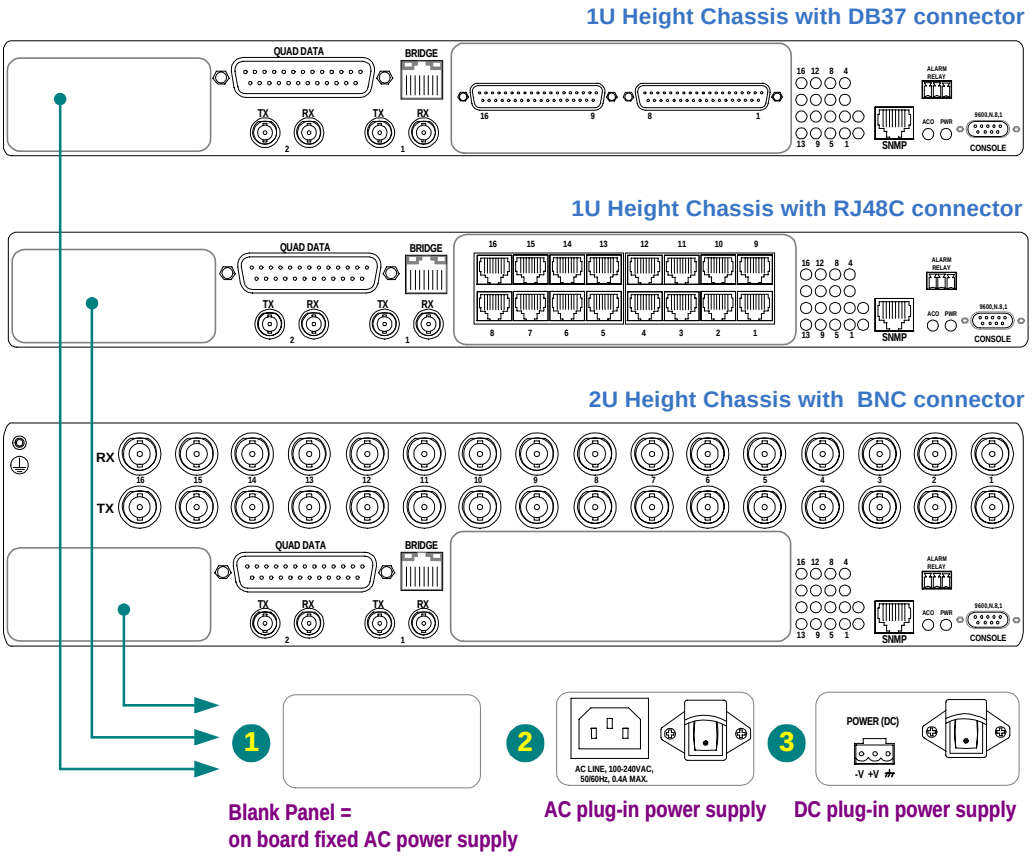


Figure 2- 4 Rear Panel View

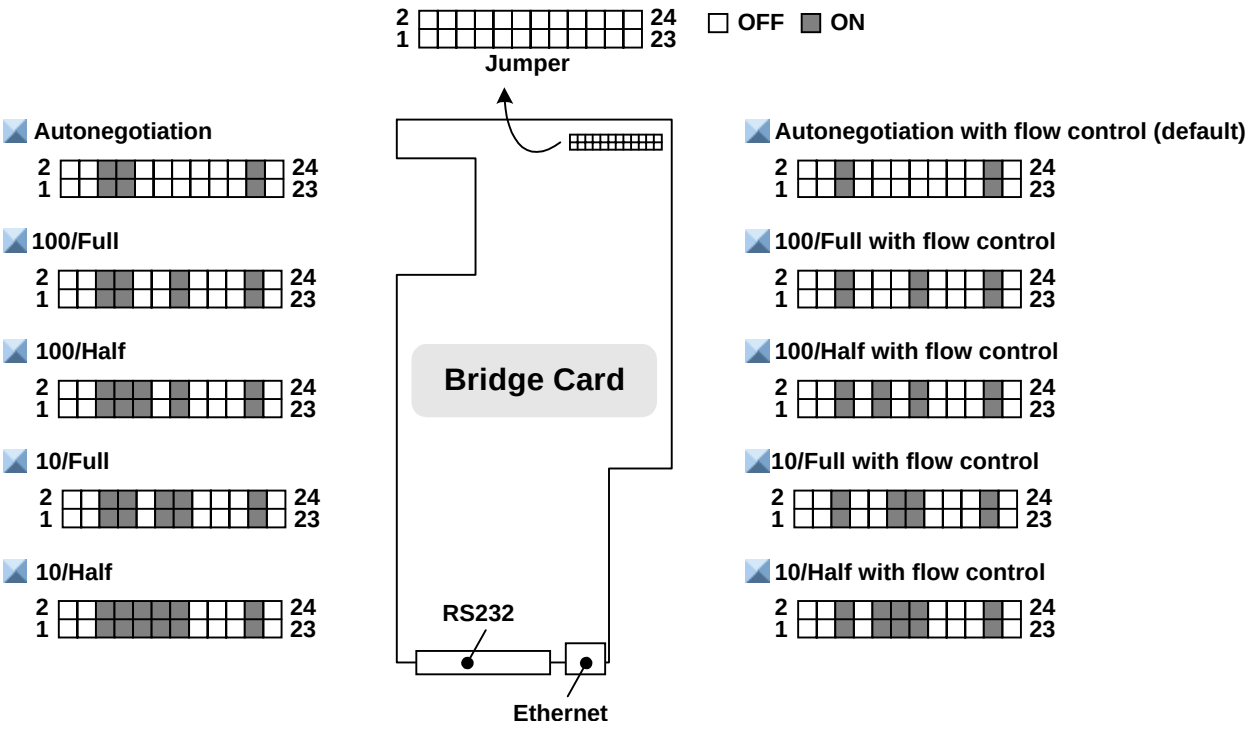
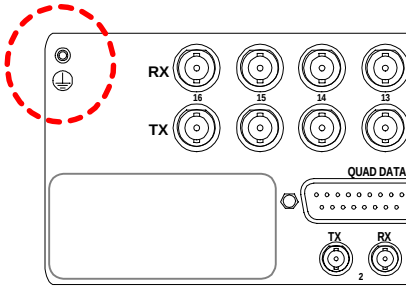


Figure 2- 5 Brige Card Jumper Setting

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 rear side of the unit close to the power supply.

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



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

Table 2- 1 DB9S Console Port Pin Assignment

Pin Number	Signal	Description
1	Data Carrier Detect	To DS1
2	Receive Data	To DS1
3	Transmit Data	From DS1
4	Unassigned	
5	Signal Ground	
6	Data Set Ready	To DS1
7	Unassigned	
8	Clear to send	To DS1
9	Unassigned	

Table 2- 2 Ethernet Port

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

Table 2- 3 Alarm Relay Connector

Pin Number	Signal	Description
1	Alarm Fuse	Normal Close
2	Alarm Fuse	Common
3	Alarm Fuse	Normal Open

Table 2- 4 Power Connector

Pin Number	Signal	Description
1	-V	-DC 24 or 48 Volts
2	+V	+DC Return
3	⏚	Chassis Ground

Table 2- 5 E1/ RJ48C Line Connector

Pin Number	Signal	Signal Direction
1	Receive Ring	Input to FM-16
2	Receive Tip	Input to FM-16
4	Transmit Ring	Output from FM-16
5	Transmit Tip	Output from FM-16
7	Unassignment	
8	Unassignment	

Table 2- 6 Quad Data DB25 Connector

Pin Number	Signal
1	Chassis Ground
2	Chassis Ground
3	Chassis Ground
4	Chassis Ground
5	Chassis Ground
6	Chassis Ground
7	Chassis Ground
8	Chassis Ground
9	Unassigned
10	Unassigned
11	Unassigned
12	Unassigned
13	Unassigned
14	Transmit Data (Port 1)
15	Receive Data (Port 1)
16	Receive Data (Port 2)
17	Transmit Data (Port 2)
18	Transmit Data (Port 3)
19	Transmit Data (Port 4)
20	Receive Data (Port 3)
21	Receive Data (Port 4)
22	Unassigned
23	Unassigned
24	Unassigned
25	Unassigned

Table 2- 7 DB37 E1 Port Pin Definition

Pin Number	Signal	Channel Conn. CH 1-8	Chann.Conn. CH 9-16
1	Transmit Tip	1	9
2	Receive Tip	1	9
3	Transmit Tip	2	10
4	Receive Tip	2	10
5	Transmit Tip	3	11
6	Receive Tip	3	11
7	Transmit Tip	4	12
8	Receive Tip	4	12
9	Transmit Tip	5	13
10	Receive Tip	5	13
11	Transmit Tip	6	14
12	Receive Tip	6	14
13	Transmit Tip	7	15
14	Receive Tip	7	15
15	Transmit Tip	8	16
16	Receive Tip	8	16
17	Unassigned		
18	Unassigned		
19	Unassigned		
20	Transmit Ring	1	9
21	Receive Ring	1	9
22	Transmit Ring	2	10
23	Receive Ring	2	10
24	Transmit Ring	3	11
25	Receive Ring	3	11
26	Transmit Ring	4	12
27	Receive Ring	4	12
28	Transmit Ring	5	13
29	Receive Ring	5	13
30	Transmit Ring	6	14
31	Receive Ring	6	14
32	Transmit Ring	7	15
33	Receive Ring	7	15
34	Transmit Ring	8	16
35	Receive Ring	8	16
36	Unassigned		
37	Unassigned		

Table 2- 8 Default Software Configuration

Configuration		Option	Default
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
Password	Lock	DISABLE, ENABLE	DISABLE
	Password		OLENCOM
Network management	IP interface	ETHERNET_PORT, EOC_PORT	ETHERNET_PORT
	IP address		0.0.0.0
	Subnet mask		0.0.0.0
	Gateway IP		0.0.0.0
SNMP	Trap IP		255.255.255.255
	Community name		Public
	Device name		OLENCOM FM-16
Network cascade		DISABLE, ENABLE	DISABLE

Alarm			Option	Default
System	Alarm cut off		DISABLE, ENABLE	DISABLE
	Protection switch		DISABLE, ENABLE	DISABLE
	Relay		DISABLE, ENABLE	DISABLE
Optical	LOF		DISABLE, ENABLE	DISABLE
	ES	Alarm	DISABLE, ENABLE	DISABLE
		Threshold	1-900	1
	SES	Alarm	DISABLE, ENABLE	DISABLE
		Threshold	1-900	1
	UAS	Alarm	DISABLE, ENABLE	DISABLE
		Threshold	1-900	1
E1/T1	LOS		DISABLE, ENABLE	DISABLE
	AIS		DISABLE, ENABLE	DISABLE
	BPV	Alarm	DISABLE, ENABLE	DISABLE
		Threshold	1~16383	1
	ES	Alarm	DISABLE, ENABLE	DISABLE
		Threshold	1-900	1
	SES	Alarm	DISABLE, ENABLE	DISABLE
		Threshold	1-900	1
	UAS	Alarm	DISABLE, ENABLE	DISABLE
		Threshold	1-900	1

3 OPERATION

This chapter describes the Olencom FM-16 configuration options and operational functions. User should refer to CHAPTER 5: FRONT PANEL OPERATION, and CHAPTER 6: TERMINAL OPERATION for detailed operation.

3.1 Quick Start for Olencom FM-16

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

3.1.1 Power On

Turn power on by attaching power cable at the rear of the unit. On the LCD, unit will first display SELF TEST followed by the main menu.

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 OLENCOM. To change the password for the first time, enter the default password when prompted for the old password.

If the password is forgotten, the only recourse is to return to the factory setting of OLENCOM. To restore the factory default configuration, press ESC key during power up and then press the ENTER key while LCD displays "TEST... PASS". If the operation is successful, the LCD will show "LOAD DEFAULT CONFIGURATION". All user configuration settings will be lost.

To use the front panel to configure the unit, use the four keys to the right of the LCD. The menu is tree structured, with the main menu at the root of the tree. The ESC key brings the user towards to root. The ENTER key is used (a) to descend to branches of the menu, or (b) to confirm a selection. The left and right arrow keys are used to move the selection left or right.

3.3 Review of Default Settings

All the default settings can be reviewed or changed. This is done by selecting the menu item. Either a sub-menu is shown or the selected setting is indicated with an asterisk.

3.4 Using Front Panel

To use the front panel to configure the unit, use the four keys to the right of the LCD. The menu is tree structured, with the main menu at the root of the tree. The ESC key brings the user towards to root. The ENTER key is used (a) to descend to branches of the menu, or (b) to confirm a selection. The left and right arrow keys are used to move the selection left or right. For more detail information, see also the chapter 5 in this menu.

3.5 Using Terminal

Use the DB9S console port of FM-16's front 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.

Press O (Log On) to see the full menu.

Press S (System Setup) to review or change the configuration.

For more detail information, see also the chapter 6 in this menu.

3.6 System Configuration

3.1.2 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
Stop Bit	1
Parity	NONE

3.7 Alarm

When the Olencom FM-16 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 Type Table

Alarm			Option	Default
System	Alarm cut off		DISABLE, ENABLE	DISABLE
	Protection switch		DISABLE, ENABLE	DISABLE
	Power Fail		DISABLE, ENABLE	DISABLE
	Relay		DISABLE, ENABLE	DISABLE
Optical	LOF		DISABLE, ENABLE	DISABLE
	ES	Alarm	DISABLE, ENABLE	DISABLE
		Threshold	1-900	1
	SES	Alarm	DISABLE, ENABLE	DISABLE
		Threshold	1-900	1
	UAS	Alarm	DISABLE, ENABLE	DISABLE
		Threshold	1-900	1
E1/T1	LOS		DISABLE, ENABLE	DISABLE
	AIS		DISABLE, ENABLE	DISABLE
	BPV	Alarm	DISABLE, ENABLE	DISABLE
		Threshold	1~16383	1
	ES	Alarm	DISABLE, ENABLE	DISABLE
		Threshold	1-900	1
	SES	Alarm	DISABLE, ENABLE	DISABLE
		Threshold	1-900	1
	UAS	Alarm	DISABLE, ENABLE	DISABLE
		Threshold	1-900	1

3.8 Reports

For DS1 line receiver, Olencom FM-16 has three sets of performance registers. These are line, user, and far-end. The line performance register tracks the DS1 line receiver performance status. The user performance register tracks the DS1 line receiver as well, but user may clear at any time. The far-end performance register tracks the far-end DS1 receiver status. The performance parameters are listed in the following tables.

Each performance parameter has ninety six sets of registers to record 24 hours history in 15 minute intervals.

Table 3 - 3 Performance Parameter List – Optical

Performance Parameter	Description	Definition 2-Frame/Multiframe	Definition 16-Frame/Multiframe
ES	Error Second	BPV≥1, OOF≥1, or CS≥1.	CRC ≥ 1, OOF ≥1, or CS ≥1.
SES	Severe Error Second	BPV ≥ 2048, or OOF ≥ 1	CRC ≥ 805, or OOF ≥ 1
UAS	Unavailable Second	≥ 10 consecutive SES	≥ 10 consecutive SES

Table 3 - 4 Performance Parameter List - DS1

Performance Parameter	Description	Definition 2-Frame/Multiframe	Definition 16-Frame/Multiframe
ES	Error Second	BPV≥1, OOF≥1, or CS≥1.	CRC ≥ 1, OOF ≥1, or CS ≥1.
SES	Severe Error Second	BPV ≥ 2048, or OOF ≥ 1	CRC ≥ 805, or OOF ≥ 1
UAS	Unavailable Second	≥ 10 consecutive SES	≥ 10 consecutive SES
BPV	Bipolar Violation	Bipolar Error Count	Bipolar Error Count

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

Table 3 - 5 Performance Report Options

Report Type [Menu Command]	Category	Report		
		ES	SES	BPV
Front Panel Reports	USER [Network]	Y	Y	Y
1-Hour Terminal Reports Menu Option [1]	USER [Network]	Y	Y	Y
	LINE [Network]	N/C	N/C	N/C
	FAR-END	N/C	N/C	—
24-Hour Terminal Reports Menu Option [2]	USER [Network]	Y	Y	Y
	LINE [Network]	N/C	N/C	N/C
	FAR-END	N/C	N/C	—

Y = Report available and can be cleared by front panel "RESET" or admin terminal command "Y".

X = Report available and can be cleared by front panel "RESET" or admin terminal command "X".

N/C = No clear. Report available, but counts cannot be cleared by the user.

– = Report not available.

3.9 LED

The front panel of the Olencom FM-16 has mulit-color LEDs for operation and error indications. The indication is either off, steady on, or flickering. The following table lists each LED and its color and the meaning it represents.

Note that when powering up and selftest is in progress, the unit front panel LEDs are also used to indicate fault conditions.

Table 3 - 6 LED Status

LED	Color	Indication
POWER	Off	Power off, self-test failure
	Flash Green	Normal operation
	Flash Red	Alarm indication
E1/T1 #n (1~16)	Off	Not exist
	Red	Unsync
	Green	Sync
	Flashing Green	Loopback testing
Optical #n (1~2)	Off	Not exist
	Red	Unsync
	Green	Sync
	Flashing Green	Loopback testing

3.10 Error Messages

Olencom FM-16 provides various error messages on the LCD display to indicate abnormal conditions as listed in the following table.

Table 3 - 7 Error Message Table

ERR01: No response
ERR02: LCD operation is locked
ERR03: Line unsync
ERR04: A loopback is in effect
ERR05: A test is in progress
ERR06: Illegal Date/Time format
ERR07: Time out
ERR08: EOC is not ready
ERR09: Illegal value

Note**:** If error displayed is not listed above, call factory for service.

4 MAINTENANCE

4.1 Self-Test

When the Olencom FM-16 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 analogic local loopback, digital local loopback, and line loopback are activated by the Olencom FM-16. The loopbacks are at the near end facility. The following paragraph describes each loopback in detail.

4.2.1 E1/ T1 Analog Local Loopback

Analog loopback is a loopback in either direction that is associated with the line side of a DCE piece of equipment.

4.2.2 E1/ T1 Digital Local Loopback

Digital loopback is a loopback in either direction that is associated with the DTE port of a DCE piece of equipment.

4.2.3 E1/ T1 Line Loopback

Line loopback is illustrated in Figure 4-1. The incoming DS1 line signal is loopback to the outgoing DS1 signal before the DS1 transceiver framer. This loopback is used to isolate the local equipment from a troubled DS1 transmission line. Line loopback test can be activated from the terminal.

4.2.4 Optical Local Loopback

Optical local loopback is illustrated in Figure 4-1. The outgoing optical signal is looped back through the optical PCM transceiver. All its channels are looped back to the receiver path. This loopback test is activated by the test command.

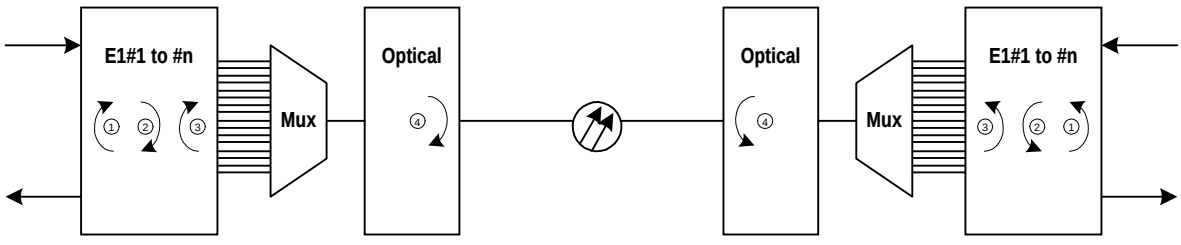
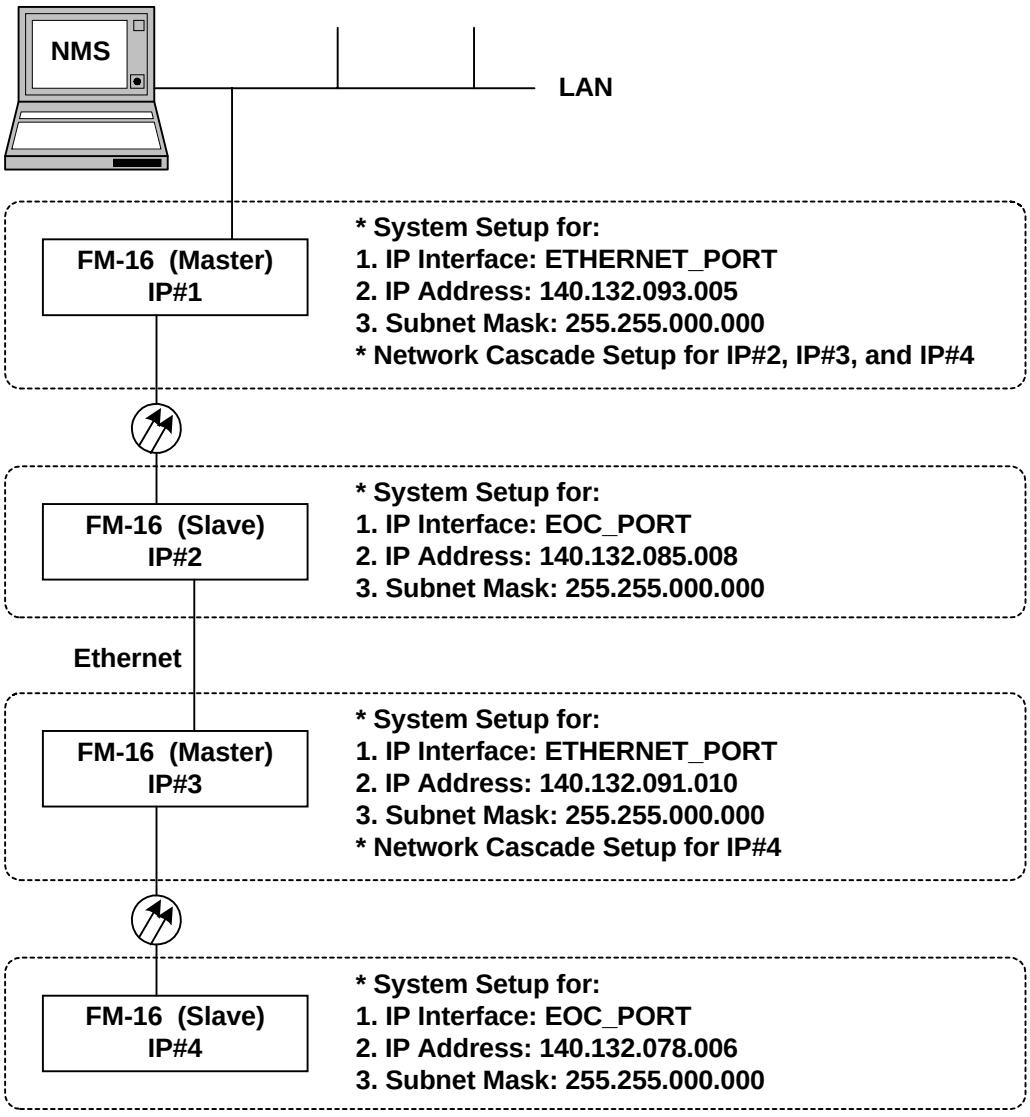


Figure 4- 1 Loopback Block Diagram

4.3 Network Cascade Setup

Olencom FM-16 can also allow remote management through console port as the below application illustration shows.



NOTE: See the following screens for the detail setup.

Figure 4- 2 Network Cascade Illustration

First, press “S” from the main menu to enter into the system setup submenu.

```
E1-FOM                          === Main Menu ===            23:14:10 10/01/2002

Serial Number   : 009300                Device Name : OLENCOM FM-16
Hardware Version: Ver.A 01/01/2003      Connect Port: SUPV_PORT
Firmware Version: S1.H0 03/02/2003      Start Time  : 08:17:05 10/01/2002

[DISPLAY]                               [SETUP]
1 -> 1 Hour Perf. Report                P -> Password Setup
2 -> 24 Hour Perf. Report               S -> System Setup
C -> System Configuration               M -> System Alarm Setup
Q -> Alarm Queue                        T -> Loopback Test
H -> Alarm History                      L -> File Transfer
I -> Information Summary                V -> Store/Retrieve Configuration


[LOG]                                   [MISC]
F -> Log Off [SETUP],[MISC] Menu        A -> Alarm Cut Off
O -> Log On  [SETUP],[MISC] Menu        K -> Clear Performance Data
R -> Connect to Remote Terminal         X -> Clear Alarm Queue and History
                                        Y -> Return to Default
                                        Z -> System Reset


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

Under the submenu, press “A” to setup IP interface, IP address, and subnet mask address for each FM-16.

```
E1-FOM                          === System Setup ===         23:18:53 10/01/2002



                            A -> System
                            B -> Network Cascade
                            C -> Command Line

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

The IP interface for master unit should be set as ETHERNET_PORT, and the IP interface for slave unit should be set as EOC_PORT. Please note that subnet mask IP address for each unit should be the same address.

```
E1-FOM                        === System Setup ===          23:19:11 10/01/2002
ARROW KEYS: CURSOR MOVE, Please Input: hh:mm:ss mm/dd/yyyy, BACKSPACE to edit
[System]
Time/Date      : 23:19:11 10/01/2002
IP Interface   : ETHERNET_PORT
IP Address     : 140.132.093.005
Subnet Mask    : 255.255.000.000        Gateway IP     : 000.000.000.000
Trap IP Address: 255.255.255.255        Community Name : public
Device Name    : OLENCOM FM-16
System Location:



System Contact :



[CONSOLE port]
Baud Rate      : 38400
Data Length    : 8-Bits
Stop Bit       : 1-Bit
Parity         : NONE

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

In the master FM-16 (IP#1), press “B” to done the network cascade setup for slave FM-16 (IP#2 and IP#4) and master FM-16 (IP#3). Then repeat the same step in the salve FM-16 (IP#4) to done the network cascade setup for slave FM-16 (IP#4).

For FM-16 (Master) IP#1:

```
E1-FOM                      === Network Cascade ===         23:19:23 10/01/2002
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

Network Cascade: ENABLE

[Routing Table]
IP Address 1   : 140.132.085.008
IP Address 2   : 140.132.091.010
IP Address 3   : 140.132.078.006
IP Address 4   : 000.000.000.000









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

For FM-16 (Slave) IP#2:

```
E1-FOM                    === Network Cascade ===         23:19:23 10/01/2002
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

Network Cascade: DISABLE

[Routing Table]
IP Address 1   : 000.000.000.000
IP Address 2   : 000.000.000.000
IP Address 3   : 000.000.000.000
IP Address 4   : 000.000.000.000









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

For FM-16 (Master) IP#3:

```
E1-FOM                    === Network Cascade ===         23:19:23 10/01/2002
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

Network Cascade: ENABLE

[Routing Table]
IP Address 1   : 140.132.078.006
IP Address 2   : 000.000.000.000
IP Address 3   : 000.000.000.000
IP Address 4   : 000.000.000.000









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

For FM-16 (Slave) IP#4:

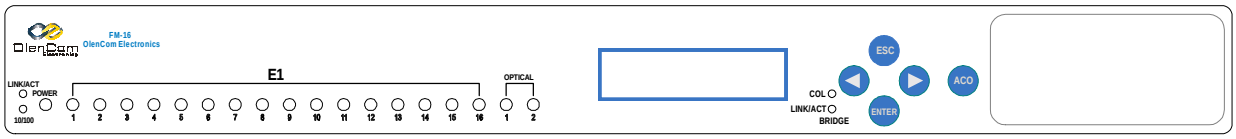
```
E1-FOM                    === Network Cascade ===         23:19:23 10/01/2002
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

Network Cascade: DISABLE

[Routing Table]
IP Address 1   : 000.000.000.000
IP Address 2   : 000.000.000.000
IP Address 3   : 000.000.000.000
IP Address 4   : 000.000.000.000









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

5 FRONT PANEL OPERATION

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

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

1U Height Chassis with LCD Display



2U Height Chassis with LCD Display

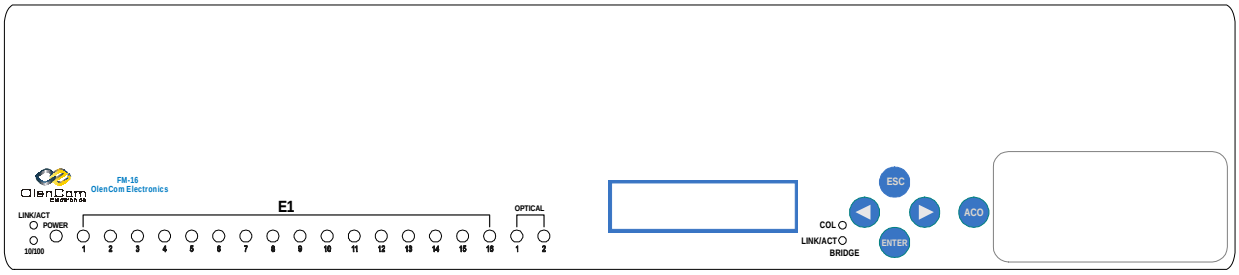


Figure 5- 1 Front Panels

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

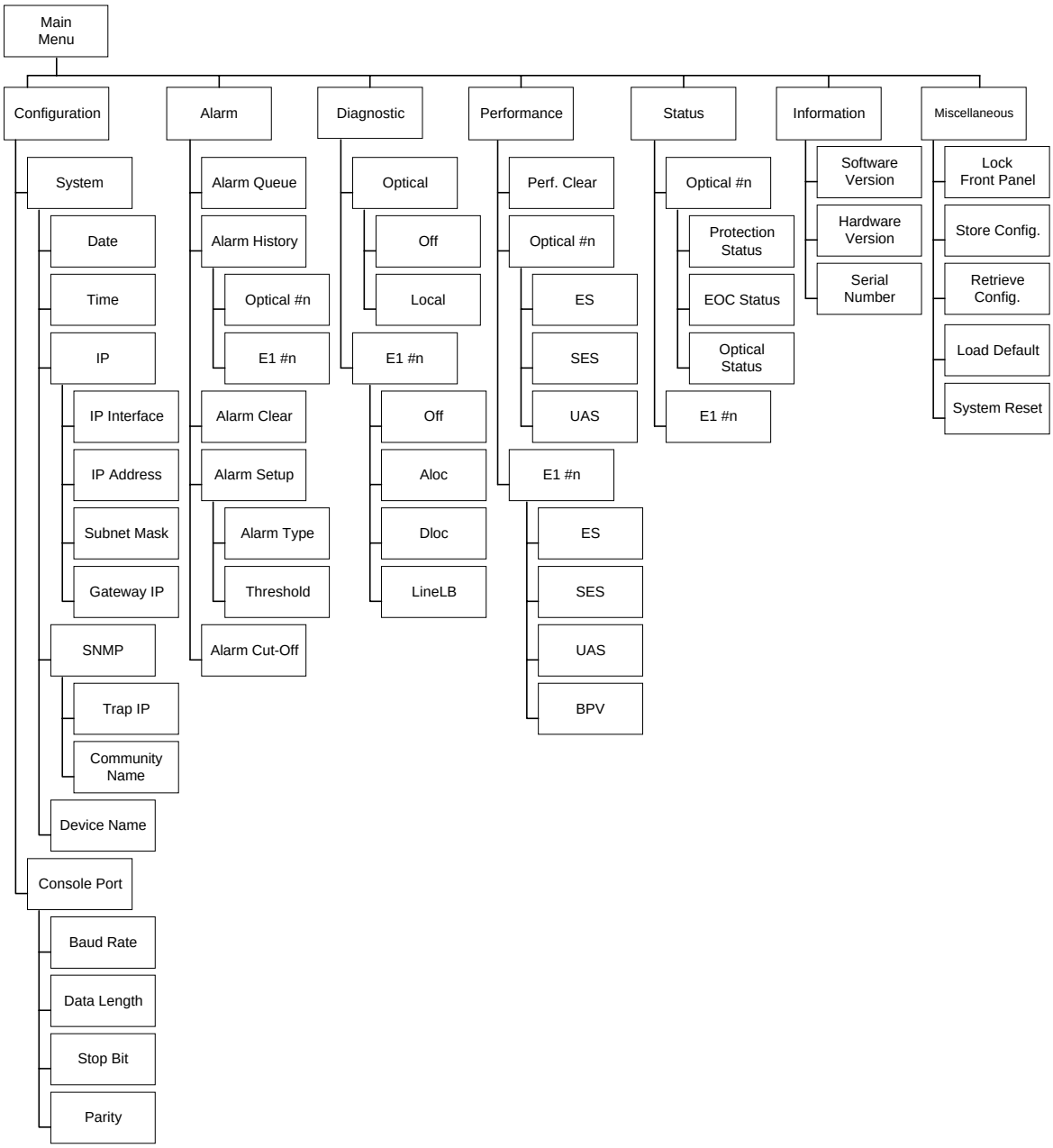
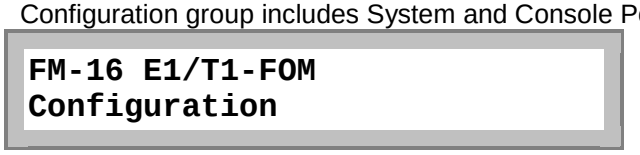


Figure 5- 2 LCD Menu Tree

5.1 Configuration

Configuration group includes System and Console Port menus.

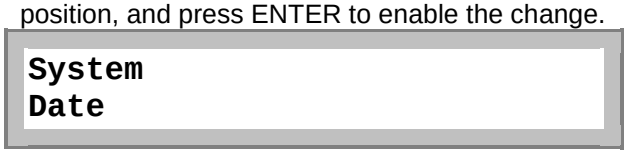


5.1.1 System

Press ENTER from the above menu to enter into the System menu, which includes Date, Time, IP, and SNMP submenus.

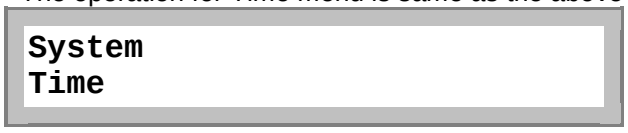
5.1.1.1 Date

Press ENTER from the System menu. Use arrow keys to select Date, then press ENTER. The Date menu is used to set a new real time clock date. To change the datre, move the cursor at the digital position, and press ENTER to cycle through the desired numbers. This operation must be concluded by moveing the cursor to OK position, and press ENTER to enable the change.



5.1.1.2 Time

The operation for Time menu is same as the above Date menu.



5.1.1.3 IP

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

```
System
IP
```

Physical interfaces can be selected as ETHERNET_PORT or EOC_PORT.

```
IP Interface
ETHERNET_PORT
```

```
IP Address    OK
*140.132.093.001
```

```
Subnet Mask   OK
*255.255.000.000
```

```
Gateway IP    OK
*140.132.001.001
```

5.1.1.4 SNMP

The SNMP group includes Trap IP and Community Name.

```
Configuration
SNMP
```

The Trap IP Address menu shows the current destination IP address the OLENCOM-V 4200 uses to send an SNMP trap. The default Trap IP address is a broadcast address (255.255.255.255).

```
SNMP
Trap IP
```

To change the Trap IP address, use the arrow keys to cycle through to the position, and press **ENTER** to cycle through the numbers. This operation must be concluded by moving the cursor to OK position and pressing **ENTER** to enable the changes.

```
Trap IP       OK
*255.255.255.255
```

This menu is used to have a name for comminity. To rename it, use arrow keys to select a desired number or character, press ENTER. Then move the cursor at OK, press ENTER to enable the community name.

```
Community Name
public
```

5.1.1.5 Device Name

This menu is used to name the main unit.

```
Configuration
Device Name
```

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

```
Device Name
OLENCOM FM-16
```

5.1.2 Console Port

The menus are used to configure console port to select Baud rate, data bits, stop bits, and parity bit. Under Configuration menu, use left or right key to select Console Port menu. Press ENTER to enter into its submenus.

```
Configuration
Console Port
```

5.1.2.1 Baud Rate

Move the cursor to select Baud Rate, press ENTER.

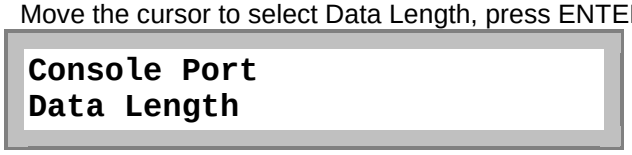
```
Console Port
Baud Rate
```

To change data speed, use left and right arrow key to cycle through to a desired selection and press ENTER. The current selection will be highlighted by an asterisk(*).

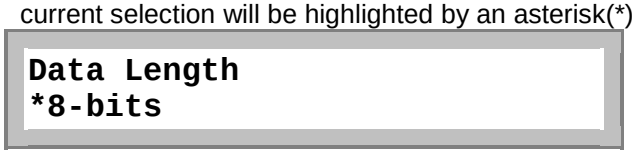
```
Baud Rate
*38400
```

5.1.2.2 Data Length

Move the cursor to select Data Length, press ENTER.

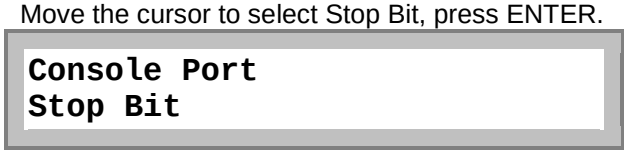


To change data bits, use left and right arrow key to cycle through to a desired selection and press ENTER. The current selection will be highlighted by an asterisk(*).

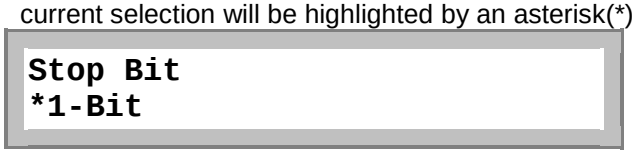


5.1.2.3 Stop Bit

Move the cursor to select Stop Bit, press ENTER.

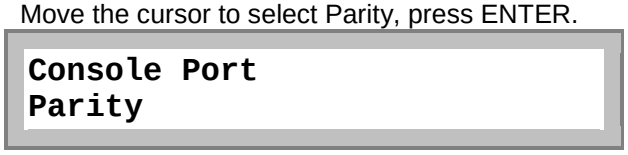


To change stop bits, use left and right arrow key to cycle through to a desired selection and press ENTER. The current selection will be highlighted by an asterisk(*).

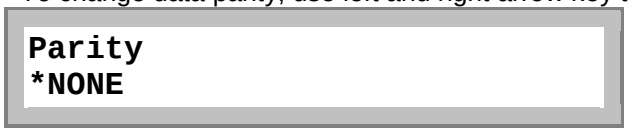


5.1.2.4 Parity

Move the cursor to select Parity, press ENTER.



To change data parity, use left and right arrow key to cycle through to a desired selection and press ENTER.



5.2 Alarm

The Alarm menu is used to view the alarm queue and alarm history, to clear the alarm queue, alarm history, and alarm relay, as well as setup alarm threshold, etc..

```
FM-16 E1/T1-FOM
Alarm
```

5.2.1 Alarm Queue

The Alarm Queue menu is used to view the alarm queue. From the Alarm menu, use the arrow keys to select Alarm Queue menu. Then press ENTER.

```
Alarm
Alarm Queue
```

The alarm queue is a list of the latest 40 alarms from the unit selected. The upper right shows the alarm sequence and the total number of alarms. The lower left is the alarm type number. The lower right is the date and time of the alarm.

```
Alarm Queue
01 E1#8 UAS
```

```
01 E1#8 UAS
00:01:30 10/02
```

5.2.2 Alarm History

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

```
Alarm
Alarm History
```

5.2.2.1 Optical #n

Use arrow keys to select Optical and press ENTER to view its alarm history.

```
Alarm History
Optical #1
```

```
Opt. #1 LOF
DIS   OK   0000
```

5.2.2.2 E1 #n

Use arrow keys to select E1 and press ENTER to view its alarm history.

```
Alarm History
E1#01 LOS
```

```
E1#01 LOS
ENB  ALM   0001
```

5.2.3 Alarm Clear

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

```
Alarm
Alarm Clear
```

Press ENTER to confirm the clear.

```
Alarm Clear
Confirm ?
```

```
Alarm Clear
Clearning...OK
```

5.2.4 Alarm Setup

The Alarm Setup menu is used to set up the threshold level of each alarm type, and enable alarm relay and auto dial out function. Some types of alarm do not have threshold levels. From the Alarm menu, use the arrow keys to select Alarm Setup menu.

```
Alarm
Alarm Setup
```

5.2.4.1 Alarm Type

Press ENTER to enter into the submenu.

```
Alarm Setup
Alarm Type
```

Use arrow keys to select the desired alarm type.

```
Alarm Type
Alarm Cut Off
```

```
larm Cut Off
*ENABLE
```

```
Alarm Type
Opt. Switch
```

```
Opt. Switch
*ENABLE
```

```
Alarm Type
Power Fail
```

```
Power Fail
*ENABLE
```

```
Alarm Type
Relay
```

```
Relay
*ENABLE
```

```
Alarm Type
Opt. LOF
```

5.2.4.2 Threshold

To setup ES, SES, UAS, and BPV is similar. For example, to setup E1 Line Bipolar Violation threshold level and press ENTER.

```
Alarm Setup
Threshold
```

```
Threshold
Opt. ES
```

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

```
Opt. ES       OK
*900      (1-900)
```

5.2.5 Alarm Cut-Off

This menu is used to cut off alarm queue and history.

```
Alarm
Alarm Cut-Off
```

```
Alarm Cut-Off
Confirm ?
```

Press ENTER from the above menu.

```
Alarm Cut-Off
ACO...OK
```

5.3 Diagnostic

Diagnostic group includes local loopback for optical and analogic local loopback, digital local loopback, and line loopback for DS1.

```
FM-16 E1/T1-FOM
Diagnostic
```

5.3.1 Optical

Use arrow keys to select Optical option, press ENTER.

```
Diagnostic
Optical
```

Two options, Off and Local Loopback, are available for Optical. Move the cursor to the desired option, then press ENTER to confirm it. The current selection will be highlighted by an asterisk (*).

```
Optical
*Off
```

5.3.2 E1 #n

Use arrow keys to select E1 #1, press ENTER.

```
Diagnostic
E1 #1
```

Four options are available for DS1: Off, Analogic Local Loopback, Digital Local Loopback, and Line Loopback. Move the cursor to the desired option, then press ENTER to confirm it. The current selection will be highlighted by an asterisk (*).

```
E1 #1
*Off
```

5.4 Performance

Performance group includes clear performance, optical performance, and DS1 performance.

```
FM-16 E1/T1-FOM
Performance
```

5.4.1 Performance Clear

Use arrow keys to select Perf. Clear to clear performance.

```
Performance
Perf. Clear
```

```
Perf. Clear
Confirm ?
```

Press ENTER from the above menu to confirm it.

```
Perf. Clear
Clearing...OK
```

5.4.2 Optical #n

This menu is used to display performance report for optical.

```
Performance
Optical #1
```

Use arrow keys to switch the desired performance parameters.

```
Optical #1
ES
```

Press ENER from the above menu to view the detail information.

```
Cur.15m Cur.24h
    000   00000
```

```
last   2   3   4
 000 000 000 000
```

5.4.3 E1 #n

This menu is used to display performance report for DS1.

```
Performance
E1 #1
```

Use arrow keys to switch the desired performance parameters.

```
E1 #1
ES
```

Press ENER from the above menu to view the detail information.

```
Cur.15m Cur.24h
  00000 0000000
```

```
last 2   last 2
 0000000  0000000
```

5.5 Stauts

The Status menus are used to browser protection status, EOC status, optical status, and DS1 status.

```
FM-16 E1/T1-FOM
Status
```

5.5.1 Optical #n

Use arrow keys to select Optical #n, press ENTER to enter into its submenu.

```
Status
Optical #1
```

5.5.1.1 Protection Status

This menu is used to check the protection function is enable or disable.

```
Optical #1
Protection Status
```

```
Protection Status
Working
```

5.5.1.2 EOC (Embeded Operation Channel) Status

This menu is used to check the embeded operation channel is ready or not.

```
Optical #1
EOC Status
```

Press ENTER from the above menu to display its status.

```
EOC Status
Ready
```

5.5.1.3 Optical Status

This menu is used to display the detail information for optical status.

```
Optical #1
Optical Status
```

Press ENTER from the above menu.

```
Optical Status
LOF QRSS ES
```

```
LOF QRSS  ES
NO  00000 00000
```

5.5.2 E1 #n

This menu is used to display the detail information for DS1.

```
Status
E1 #1
```

```
E1 #1
LOF  AIS
```

```
LOF  AIS
YES  NO
```

```
BPV   ES
00000 00000
```

5.6 Information

The information menu provides detail information for software, hardware, and serial numbers.

```
FM-16 E1/T1-FOM
Information
```

5.6.1 Software Version

This menu displays the system software vrsion and date.

```
Information
Software Version
```

Press ENTER from the above menu.

```
Software Version
B1.00  01/01/203
```

5.6.2 Hardware Version

This menu displays the system hardware vrsion and date.

```
Information
Hardware Version
```

Press ENTER from the above menu.

```
Hardware Version
Ver.A  01/01/203
```

5.6.3 Serial Number

This menu displays the unit's serial number.

```
Information
Serial Number
```

Press ENTER from the above menu.

```
Serial Number
009300
```

5.7 Miscellaneous

The Miscellaneous group includes: lock front panel, sotre configuration, retrieve configuration, load default, and reset system.

```
FM-16 E1/T1-FOM
Miscellaneous
```

5.7.1 Lock Front Panel

This menu is used to control LCD panel operation. Normally, configuration can be changed from the front panel. Front panel configuration chages can be disabled by selecteding this menu. With a locked front panel, read only configuration information and line status can be obtained.

```
Miscellaneous
Lock front panel
```

To lock or unlock the front panel, a password must be entered.

```
Lock front panel
*ENABLE
```

Use arrow keys to select a desired number or character, press ENTER. Then move the cursor at OK, press ENTER to enable the password. Password modification can only be done by using terminal operation.

```
PW:__________ OK
0123456789ABCDEF
```

5.7.2 Store Configuration

This menu is used to store system configuration.

```
Miscellaneous
Store Config.
```

```
Store Config.
Confirm ?
```

Press ENTER from the above menu to done the saving.

```
Store Config.
Saving...OK
```

5.7.3 Retrieve Configuration

This menu is used to retrieve system configuration.

```
Miscellaneous
Retrieve Config.
```

```
Retrieve Config.
Confirm ?
```

Press ENTER from the above menu to done the retrieving.

```
Retrieve Config.
Retrieving...OK
```

5.7.4 Load Default

This menu is used to download default.

```
Miscellaneous
Load Default
```

```
Load Default
Confirm ?
```

Press ENTER from the above menu to confirm the download.

```
Store Config.
Waiting...OK
```

5.7.5 System Reset

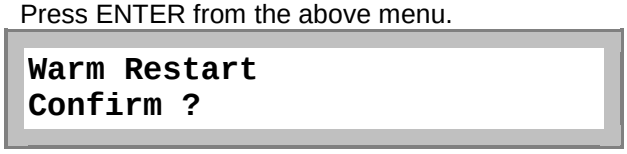
This menu is used to reset the system.

```
Miscellaneous
System Reset
```

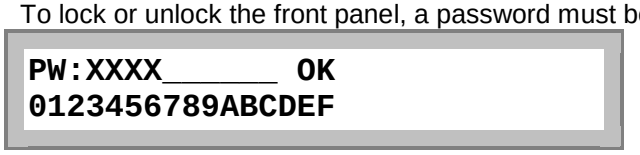
Two way for system reset are availave: warm restart or cold restart. Use arrow kes to select the desired way for reseting.

```
System Reset
Warm Restart
```

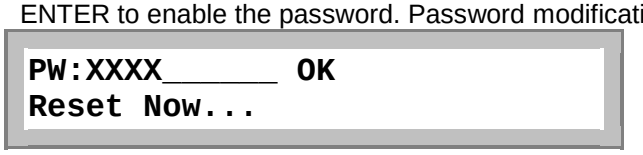
Press ENTER from the above menu.



To lock or unlock the front panel, a password must be entered.



Use arrow keys to select a desired number or character, press ENTER. Then move the cursor at OK, press ENTER to enable the password. Password modification can only be done by using terminal operation.



6 TERMINAL OPERATION

Olencom FM-16 provides comprehensive and enhanced configuration and test capability through the console port. A VT-100 type terminal or a modem can be connected to the console port on the front of the Olencom FM-16. By use of single-character commands and arrow keys, the Olencom FM-16 can be configured and tested. The single-character commands are not case sensitive. On each screen, the available commands and the configurable fields are highlighted. When the Olencom FM-16 is powered on, a main menu is shown.

```
E1-FOM                          === Main Menu ===            23:14:10 10/01/2002

Serial Number   : 009300                Device Name : OLENCOM FM-16
Hardware Version: Ver.A 01/01/2003      Connect Port: SUPV_PORT
Firmware Version: S1.H0 03/02/2003      Start Time  : 08:17:05 10/01/2002

[DISPLAY]                               [SETUP]
1 -> 1 Hour Perf. Report
2 -> 24 Hour Perf. Report
C -> System Configuration
Q -> Alarm Queue
H -> Alarm History
I -> Information Summary


[LOG]                                   [MISC]
F -> Log Off [SETUP],[MISC] Menu
O -> Log On  [SETUP],[MISC] Menu
R -> Connect to Remote Terminal




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

```
E1-FOM                          === Main Menu ===            23:14:10 10/01/2002

Serial Number   : 009300                Device Name : OLENCOM FM-16
Hardware Version: Ver.A 01/01/2003      Connect Port: SUPV_PORT
Firmware Version: S1.H0 03/02/2003      Start Time  : 08:17:05 10/01/2002

[DISPLAY]                               [SETUP]
1 -> 1 Hour Perf. Report                P -> Password Setup
2 -> 24 Hour Perf. Report               S -> System Setup
C -> System Configuration               M -> System Alarm Setup
Q -> Alarm Queue                        T -> Loopback Test
H -> Alarm History                      L -> File Transfer
I -> Information Summary                V -> Store/Retrieve Configuration


[LOG]                                   [MISC]
F -> Log Off [SETUP],[MISC] Menu        A -> Alarm Cut Off
O -> Log On  [SETUP],[MISC] Menu        K -> Clear Performance Data
R -> Connect to Remote Terminal         X -> Clear Alarm Queue and History
                                        Y -> Return to Default
                                        Z -> System Reset


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

6.1 1-Hour Peformance Report

To view 1 hour performance report, press "1" from Main Menu. The screen will show as below. Use TAB key to roll the desired option.

```
E1-FOM                === 1 Hour Performance Report ===    23:14:50 10/01/2002
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

Performance Port : Optical#1
Performance Type : USER









<< Press ESC key to abort, ENTER key to show Perf. Report >>
```

Press ENTER from the above screen to show the detail performance report as below shows.

```
E1-FOM                === 1 Hour Performance Report ===    23:14:58 10/01/2002
Optical#1 USER

-- Valid Seconds in Current 15-Min Interval : 898 seconds
                              (ES)    (SES)   (UAS)
   Current 15-Min Interval     :     0       0       0
   1st Nearest 15-Min Interval :     0       0       0
   2nd Nearest 15-Min Interval :     0       0       0
   3rd Nearest 15-Min Interval :     0       0       0
   4th Nearest 15-Min Interval :     0       0       0

-- Valid 15-Min Intervals in Current 24-Hour Interval: 59
                              (ES)    (SES)   (UAS)
   Current 24-Hour Interval    :     4       4       0
   09/30/2002                  : -----   -----   -----
   09/29/2002                  : -----   -----   -----
   09/28/2002                  : -----   -----   -----
   09/27/2002                  : -----   -----   -----
   09/26/2002                  : -----   -----   -----
   09/25/2002                  : -----   -----   -----
   09/24/2002                  : -----   -----   -----


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

```
E1-FOM                === 1 Hour Performance Report ===    23:15:11 10/01/2002
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

Performance Port : DS1#01
Performance Type : USER









<< Press ESC key to abort, ENTER key to show Perf. Report >>
```

```
E1-FOM                                                    23:15:19 10/01/2002
DS1#01    USER

-- Valid Seconds in Current 15-Min Interval : 18 seconds
                              (ES)    (SES)   (UAS)   (BPV)
   Current 15-Min Interval     :     0       0      18       0
   1st Nearest 15-Min Interval :     0       0     900       0
   2nd Nearest 15-Min Interval :     0       0     900       0
   3rd Nearest 15-Min Interval :     0       0     900       0
   4th Nearest 15-Min Interval :     0       0     900       0

-- Valid 15-Min Intervals in Current 24-Hour Interval: 60
                              (ES)    (SES)   (UAS)   (BPV)
   Current 24-Hour Interval    :     0       0   53880         0
   09/30/2002                  : -----   -----   -----   -------
   09/29/2002                  : -----   -----   -----   -------
   09/28/2002                  : -----   -----   -----   -------
   09/27/2002                  : -----   -----   -----   -------
   09/26/2002                  : -----   -----   -----   -------
   09/25/2002                  : -----   -----   -----   -------
   09/24/2002                  : -----   -----   -----   -------


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

6.2 24-Hour Peformance Report

Under Main Menu, press “2” to display 24 hours performance report. Use TAB key to select the desired option.

```
E1-FOM               === 24 Hours Performance Report ===   23:15:30 10/01/2002
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

Performance Port : Optical#1
Performance Type : USER
Performance Regs : ES









<< Press ESC key to abort, ENTER key to show Perf. Report >>
```

To view the detail performance report, press ENTER from the above screen. Then the following screeen will show up.

```
E1-FOM               === 24 Hours Performance Report ===   23:15:35 10/01/2002
Optical#1 USER
-- Valid Seconds in Current 15-Min Interval : 35 seconds
-- Valid 15-Min Intervals in Current 24-Hour Interval: 60
                                (ES)    (SES)   (UAS)
   Current 15-Min Interval     :     0       0       0
   Current 24-Hour Interval    :     4       4       0

-- USER, ES , Last 96 15-Min Interval :
   01-08 >   0     0     0     0     0     0     0     0
   09-16 >   0     0     0     0     0     0     0     0
   17-24 >   0     0     0     0     0     0     0     0
   25-32 >   0     0     0     0     0     0     0     0
   33-40 >   0     0     0     0     0     0     0     0
   41-48 >   0     0     0     0     0     0     0     0
   49-56 >   0     0     0     0     0     0     0     0
   57-64 >   0     0     0     4   ----- ----- ----- -----
   65-72 > ----- ----- ----- ----- ----- ----- ----- -----
   73-80 > ----- ----- ----- ----- ----- ----- ----- -----
   81-88 > ----- ----- ----- ----- ----- ----- ----- -----
   89-96 > ----- ----- ----- ----- ----- ----- ----- -----


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

```
E1-FOM               === 24 Hours Performance Report ===   23:15:40 10/01/2002
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

Performance Port : DS1#01
Performance Type : USER
Performance Regs : ES









<< Press ESC key to abort, ENTER key to show Perf. Report >>
```

```
E1-FOM                                                    23:15:47 10/01/2002
DS1#01    USER
-- Valid Seconds in Current 15-Min Interval : 47 seconds
-- Valid 15-Min Intervals in Current 24-Hour Interval: 60
                                (ES)    (SES)   (UAS)   (BPV)
   Current 15-Min Interval     :     0       0      47       0
   Current 24-Hour Interval    :     0       0   53880       0

-- USER, ES , Last 96 15-Min Interval :
   01-08 >   0     0     0     0     0     0     0     0
   09-16 >   0     0     0     0     0     0     0     0
   17-24 >   0     0     0     0     0     0     0     0
   25-32 >   0     0     0     0     0     0     0     0
   33-40 >   0     0     0     0     0     0     0     0
   41-48 >   0     0     0     0     0     0     0     0
   49-56 >   0     0     0     0     0     0     0     0
   57-64 >   0     0     0     0   ----- ----- ----- -----
   65-72 > ----- ----- ----- ----- ----- ----- ----- -----
   73-80 > ----- ----- ----- ----- ----- ----- ----- -----
   81-88 > ----- ----- ----- ----- ----- ----- ----- -----
   89-96 > ----- ----- ----- ----- ----- ----- ----- -----


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

6.3 System Configuration

To display system configuration, press “C” from the Main Menu. The submenu for system configuration will show as below.

```
E1-FOM                    === System Configuration ===      23:15:54 10/01/2002



                           A -> System
                           B -> Power Status

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

6.3.1 System

Press “A” from the above menu, the detail information about system configuration will show up.

```
E1-FOM                    === System Configuration ===      23:16:02 10/01/2002

[System]
IP Interface   : ETHERNET_PORT
IP Address     : 140.132.093.005
Subnet Mask    : 255.255.000.000        Gateway IP     : 000.000.000.000
Trap IP Address: 255.255.255.255        Community Name : public
Device Name    : OLENCOM FM-16
System Location:



System Contact :



[CONSOLE port]
Baud Rate      : 38400
Data Length    : 8-Bits
Stop Bit       : 1-Bit
Parity         : NONE


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

6.3.2 Power Status

Press “B” from the System Configuration menu, the detail information about power status will show up.

```
E1-FOM                          === Power Status ===          16:27:30 10/03/2002




Power 1 Status : DC Normal
Power 2 Status : DC Normal









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

6.4 Alarm Queue

Under the Main Menu, press “Q” to view the summary for alarm queue.

```
E1-FOM                    === Alarm Queue Summary ===       23:16:26 10/01/2002
  1 -- E1-8 : LOS, Line-------------------------23:16:23 10/01/2002
  2 -- E1-7 : LOS, Line-------------------------23:16:23 10/01/2002
  3 -- E1-6 : LOS, Line-------------------------23:16:23 10/01/2002
  4 -- E1-5 : LOS, Line-------------------------23:16:23 10/01/2002
  5 -- E1-4 : LOS, Line-------------------------23:16:23 10/01/2002
  6 -- E1-3 : LOS, Line-------------------------23:16:23 10/01/2002
  7 -- E1-2 : LOS, Line-------------------------23:16:23 10/01/2002
  8 -- E1-1 : LOS, Line-------------------------23:16:23 10/01/2002
<< SPACE bar to refresh or ESC key return to main menu >>
```

6.5 Alarm History

To display alarm history, press “H” from the Main Menu. Then use TAB key to select the desired port.

```
E1-FOM                      === Alarm History ===          23:16:33 10/01/2002
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

Select Port :      Optical









<< Press ESC key to abort, ENTER key to continue >>
```

After done the port selection, press ENTER to show up the detail alarm history for it.

```
E1-FOM                      === Alarm History ===          23:16:38 10/01/2002

= Optical #1 =                          = Optical #2 =
[Alarm Type] [Curr State] [Count]       [Alarm Type] [Curr State] [Count]
 LOF, Line     Disable          0        LOF, Line     Disable          0
 ES,  Line     Disable          0        ES,  Line     Disable          0
 SES, Line     Disable          0        SES, Line     Disable          0
 UAS, Line     Disable          0        UAS, Line     Disable          0









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

6.6 Information Summary

To review the information summary for fiber optical interface and E1/T1 interface, press “I” from the Main Menu. The screen will show as below.

```
E1-FOM                    === Information Summary ===          23:18:31 10/01/2002

= Fiber Optical Interface =
#1 Protection State : Working          #2 Protection State : Stand by
#1              LOF : NO               #2              LOF : YES
#1    Framing error : 0                #2    Framing error : 0
#1 QRSS error count : 0                #2 QRSS error count : 0
#1   ES error count : 10               #2   ES error count : 0
#1       EOC Status : Ready            #2       EOC Status : Not Ready

= E1/T1 Interface =
 [No]   [LOS] [AIS]   [BPV]   [ES]       [No]   [LOS] [AIS]   [BPV]   [ES]
 #01 E1  YES   NO    0000000  00000      #09 not exist
 #02 E1  YES   NO    0000000  00000      #10 not exist
 #03 E1  YES   NO    0000000  00000      #11 not exist
 #04 E1  YES   NO    0000000  00000      #12 not exist
 #05 E1  YES   NO    0000000  00000      #13 not exist
 #06 E1  YES   NO    0000000  00000      #14 not exist
 #07 E1  YES   NO    0000000  00000      #15 not exist
 #08 E1  YES   NO    0000000  00000      #16 not exist



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

6.7 Password Setup

Press “P” from the Main Menu to enter into the password setup screen. This menu is used to enable, disable, and change password. Use TAB key to roll up the desired options, then press ENTER to confirm the setting.

```
E1-FOM                 === Password Setup (System) ===     23:18:46 10/01/2002
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS


       Enable Password : YES
       Change Password : NO

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

6.8 System Setup

To setup system configuration, press “S” from the Main Menu. Then the submenu for system setup will show up as below.

```
E1-FOM                          === System Setup ===          23:18:53 10/01/2002



                              A -> System
                              B -> Network Cascade
                              C -> Command Line

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

6.8.1 System

Press “A” from the above menu to get into the system setup submenu as below. Use arrow keys to move the cursor and BACKSPACE key to edit the setting. This menu is used to setup the configuration for system and console port.

```
E1-FOM                          === System Setup ===          23:19:11 10/01/2002
ARROW KEYS: CURSOR MOVE, Please Input: hh:mm:ss mm/dd/yyyy, BACKSPACE to edit
[System]
Time/Date       : 23:19:11 10/01/2002
IP Interface    : ETHERNET_PORT
IP Address      : 140.132.093.005
Subnet Mask     : 255.255.000.000         Gateway IP     : 000.000.000.000
Trap IP Address: 255.255.255.255          Community Name : public
Device Name     : OLENCOM FM-16
System Location:



System Contact :



[CONSOLE port]
Baud Rate       : 38400
Data Length     : 8-Bits
Stop Bit        : 1-Bit
Parity          : NONE

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

6.8.2 Network Cascade

To enable or disable the network cascade for OLENCOM-O series devices, press “B” from the system setup submenu to enter into the following screen. Use TAB key to switch options, then press ENTER. This menu is also used to setup IP addresses for master or slave devices.

```
E1-FOM                    === Network Cascade ===         23:19:23 10/01/2002
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

Network Cascade: ENABLE

[Routing Table]
IP Address 1   : 140.132.093.001
IP Address 2   : 140.132.042.137
IP Address 3   : 000.000.000.000
IP Address 4   : 000.000.000.000









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

6.8.3 Command Line

To view OLENCOM-O series commands, press “C” from the system setup submenu to enter into the following screen.

```
                                                16:28:20 Oct 03/02  Replace
Press ? get help or QUIT return.
FM-16@16:28:13 >>?
Available Commands:
  quit           help           ether          arp            clrarp
  ping           eoc
FM-16@16:28:15 >>help
FM-16 Commands Support:
  quit ------------------> Leave field support.
  arp/clrarp ------------> Print/Clear ARP table.
  ping ip ---------------> Ping an ip address.
  ether status/clear ----> Display/Clear ethernet status.
  eoc -------------------> Display EOC statistics.
FM-16@16:28:20 >>
```

6.9 Alarm Setup

To do the system alarm setup, press “M” from the Main Menu. Then the screen will show up as below. This menu is used to enable or disable alarm, alarm cut-off, relay, and protection switch functions. Users are also allowed to setup alarm threshold for optical interface and E1/T1 interface. Use TAB key to roll up the desired options, then press ENTER to confirm the setting.

```
E1-FOM                        === Alarm Setup ===           23:19:31 10/01/2002
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

[Control]
Alarm Cut Off     : ENABLE              Relay : ENABLE
Protection switch : ENABLE



[E1/T1]    [THRESHOLD]  [ALARM]         [OPTICAL]  [THRESHOLD]  [ALARM]
LOS, Line :             ENABLE          LOF, Line :             DISABLE
AIS, Line :             ENABLE          ES,  Line :     900     DISABLE
BPV, Line :   06001     ENABLE          SES, Line :     900     DISABLE
ES,  Line :     900     ENABLE          UAS, Line :     900     DISABLE
SES, Line :     900     ENABLE
UAS, Line :     090     ENABLE









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

6.10 Loopback Test

Under the Main Menu, press “T” to do the loopback test for optical interface an DS1 interface. Use arrow keys to move the cursor and ENTER key to select the desired items. Then press ENTER to confirm the new setting. The current selection will be highlighted by an asterisk (*).

ALoc: analogic local loopback

DLoc: digital local loopback

LineLB: line loopback

```
E1-FOM                         === Loopback Test ===          23:19:37 10/01/2002
ARROW KEYS : CURSOR MOVE , ENTER KEY : ITEM SELECT

Optical  *Off  Local

E1 #01 : *Off  ALoc  DLoc  LineLB
E1 #02 : *Off  ALoc  DLoc  LineLB
E1 #03 : *Off  ALoc  DLoc  LineLB
E1 #04 : *Off  ALoc  DLoc  LineLB
E1 #05 : *Off  ALoc  DLoc  LineLB
E1 #06 : *Off  ALoc  DLoc  LineLB
E1 #07 : *Off  ALoc  DLoc  LineLB
E1 #08 : *Off  ALoc  DLoc  LineLB




Status :



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

6.11 File Transfer

Under the Main Menu, press “L” to do file transfer. Then the submenu for file transfer will show up as below.

```
E1-FOM                        === File Transfer ===          23:19:43 10/01/2002



                            A -> Download Mainboard Firmware
                            B -> Upload Mainboard Firmware
                            C -> Copy Firmware to Remote

                            D -> Download Configuration
                            E -> Upload Configuration









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

6.11.1 Download Mainboard Firmware

Press “A” from the above menu to download the mainboad firmware. Use TAB key to roll up the desired options, press ENTER to confirm it.

```
E1-FOM                      === Download Firmware ===        23:19:47 10/01/2002
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

Firmware 1 Version    : S1.H0 03/02/2003
Firmware 2 Version    : S1.H0 03/02/2003
Current Firmware Bank: 1
Next Boot Firmware    : 1
Transfer Protocol     : TFTP
Firmware File Name    :
TFTP Server IP        : 140.132.001.123









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

6.11.2 Upload Mainboard Firmware

Press “B” from the File Transfer submenu to upload the mainboad firmware. Use arrow keys to move the cursor at the desired position, BACKSPACE key to edit, ENTER key to continue the upload, and ESC key to abort the upload.

```
E1-FOM                    === Upload Firmware ===         23:19:53 10/01/2002
ARROW KEYS: CURSOR MOVE, BACKSPACE to edit, ESC to abort


Firmware 1 Version   : S1.H0 03/02/2003
Firmware 2 Version   : S1.H0 03/02/2003
Current Firmware Bank: 1
Transfer Protocol    : TFTP
Firmware File Name   : ____________________________________________________
TFTP Server IP       : 140.132.001.123
Firmware Bank Number : 1









<< Press ESC key to abort, ENTER key to continue >>
```

6.11.3 Copy Firmware to Remote

Press “C” from the File Transfer submenu to enter into the following screen. This menu is used to copy firmware to remote side. Press “Y” to confirm the copy, “N” to abort the copy, “W” to warm reset the system after the transfer is done, and “C” to cold reset the system after the transfer is done.

```
E1-FOM                     === Firmware Copy ===          23:20:03 10/01/2002




[Remote]
Firmware 1 Version   : S1.H0 03/03/2003
Firmware 2 Version   : S1.G0 03/03/2003
Current Firmware Bank: 1

Really want to copy ? (Y/N/W/C)
(Y=yes, N=no, W=warm reset after transfer completed, C=cold reset..)









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

6.11.4 Download Configuration

To download system configuration, press “D” from the File Transfer submenu. Press ENTER key to continue the download and ESC key to abort it.

```
E1-FOM                  === Download Configuration ===     23:20:11 10/01/2002
ARROW KEYS: CURSOR MOVE, BACKSPACE to edit, ESC to abort




Transfer Protocol    : TFTP
Firmware File Name   : FM-16.cfg_____________________________________________
TFTP Server IP       : 140.132.001.123









<< Press ESC key to abort, ENTER key to continue >>
```

6.11.5 Upload Configuration

To upload system configuration, press “E” from the File Transfer submenu. Press ENTER key to continue the upoload and ESC key to abort it.

```
E1-FOM                    === Upload Configuration ===      23:20:22 10/01/2002
ARROW KEYS: CURSOR MOVE, BACKSPACE to edit, ESC to abort




Transfer Protocol    : TFTP
Config File Name     : FM-16.cfg_____________________________________________
TFTP Server IP       : 140.132.001.123









<< Press ESC key to abort, ENTER key to continue >>
```

6.12 Sotre/ Retrieve Configuration

To store or retrieve system configuration, press “V” from the Main Menu, then the following screen will show up. Move the cursor at the desired option, STORE or RETRIEVE, then press ENTER to confirm it. The current selection will be highlighted by an asterisk (*).

```
E1-FOM                ===Store/Retrieve Configuration===    23:20:33 10/01/2002









>> Select ?    *STORE       RETRIEVE
```

6.13 Connect to Remote Terminal

To connect to remote terminal, press “R” from the Main Menu. Then enter the local password for system’s request.

```
EOC is ready, require your local password.
==>> Enter password : XXXX
```

6.14 Alarm Cut-Off

To cut off alarm, press “A” from the Main Menu. Then press “Y” to confirm or “N” to abort.

```
E1-FOM                          === Main Menu ===           23:21:09 10/01/2002

Serial Number   : 009300                Device Name : OLENCOM FM-16
Hardware Version: Ver.A 01/01/2003      Connect Port: SUPV_PORT
Firmware Version: S1.H0 03/02/2003      Start Time  : 08:17:05 10/01/2002

[DISPLAY]                               [SETUP]
1 -> 1 Hour Perf. Report                P -> Password Setup
2 -> 24 Hour Perf. Report               S -> System Setup
C -> System Configuration               M -> System Alarm Setup
Q -> Alarm Queue                        T -> Loopback Test
H -> Alarm History                      L -> File Transfer
I -> Information Summary                V -> Store/Retrieve Configuration


[LOG]                                   [MISC]
F -> Log Off [SETUP],[MISC] Menu        A -> Alarm Cut Off
O -> Log On  [SETUP],[MISC] Menu        K -> Clear Performance Data
R -> Connect to Remote Terminal         X -> Clear Alarm Queue and History
                                        Y -> Return to Default
                                        Z -> System Reset


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

6.15 Clear Performance Data

Press “K” from the Main Menu to clear performance data. Then press “Y” to confirm or “N” to abort.

```
E1-FOM                          === Main Menu ===           23:21:09 10/01/2002

Serial Number   : 009300                Device Name : OLENCOM FM-16
Hardware Version: Ver.A 01/01/2003      Connect Port: SUPV_PORT
Firmware Version: S1.H0 03/02/2003      Start Time  : 08:17:05 10/01/2002

[DISPLAY]                               [SETUP]
1 -> 1 Hour Perf. Report                P -> Password Setup
2 -> 24 Hour Perf. Report               S -> System Setup
C -> System Configuration               M -> System Alarm Setup
Q -> Alarm Queue                        T -> Loopback Test
H -> Alarm History                      L -> File Transfer
I -> Information Summary                V -> Store/Retrieve Configuration


[LOG]                                   [MISC]
F -> Log Off [SETUP],[MISC] Menu        A -> Alarm Cut Off
O -> Log On  [SETUP],[MISC] Menu        K -> Clear Performance Data
R -> Connect to Remote Terminal         X -> Clear Alarm Queue and History
                                        Y -> Return to Default
                                        Z -> System Reset


>> Clear Performance Data ? [Y/N]
```

6.16 Clear Alarm Queue and History

Press “X” from the Main Menu to clear alarm queue and alarm history. Then press “Y” to confirm or “N” to abort.

```
E1-FOM                          === Main Menu ===            23:21:09 10/01/2002

Serial Number   : 009300                Device Name : OLENCOM FM-16
Hardware Version: Ver.A 01/01/2003      Connect Port: SUPV_PORT
Firmware Version: S1.H0 03/02/2003      Start Time  : 08:17:05 10/01/2002

[DISPLAY]                               [SETUP]
1 -> 1 Hour Perf. Report                P -> Password Setup
2 -> 24 Hour Perf. Report               S -> System Setup
C -> System Configuration               M -> System Alarm Setup
Q -> Alarm Queue                        T -> Loopback Test
H -> Alarm History                      L -> File Transfer
I -> Information Summary                V -> Store/Retrieve Configuration


[LOG]                                   [MISC]
F -> Log Off [SETUP],[MISC] Menu        A -> Alarm Cut Off
O -> Log On  [SETUP],[MISC] Menu        K -> Clear Performance Data
R -> Connect to Remote Terminal         X -> Clear Alarm Queue and History
                                        Y -> Return to Default
                                        Z -> System Reset


>> Clear alarm queue - are you sure (Y/N)?
```

6.17 Return to Default

Press “Y” from the Main Menu to return the default. Then press “Y” to confirm or “N” to abort.

```
E1-FOM                          === Main Menu ===            23:21:09 10/01/2002

Serial Number   : 009300                Device Name : OLENCOM FM-16
Hardware Version: Ver.A 01/01/2003      Connect Port: SUPV_PORT
Firmware Version: S1.H0 03/02/2003      Start Time  : 08:17:05 10/01/2002

[DISPLAY]                               [SETUP]
1 -> 1 Hour Perf. Report                P -> Password Setup
2 -> 24 Hour Perf. Report               S -> System Setup
C -> System Configuration               M -> System Alarm Setup
Q -> Alarm Queue                        T -> Loopback Test
H -> Alarm History                      L -> File Transfer
I -> Information Summary                V -> Store/Retrieve Configuration


[LOG]                                   [MISC]
F -> Log Off [SETUP],[MISC] Menu        A -> Alarm Cut Off
O -> Log On  [SETUP],[MISC] Menu        K -> Clear Performance Data
R -> Connect to Remote Terminal         X -> Clear Alarm Queue and History
                                        Y -> Return to Default
                                        Z -> System Reset


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

6.18 System Reset

To reset the system, press “Z” from the Main Menu. After done the selection for reset site and reset mode, key in system password. Then press “Y” to confirm or “N” to abort.

```
E1-FOM                          === Main Menu ===            23:21:09 10/01/2002

Serial Number   : 009300                Device Name : OLENCOM FM-16
Hardware Version: Ver.A 01/01/2003      Connect Port: SUPV_PORT
Firmware Version: S1.H0 03/02/2003      Start Time  : 08:17:05 10/01/2002

[DISPLAY]                               [SETUP]
1 -> 1 Hour Perf. Report                P -> Password Setup
2 -> 24 Hour Perf. Report               S -> System Setup
C -> System Configuration               M -> System Alarm Setup
Q -> Alarm Queue                        T -> Loopback Test
H -> Alarm History                      L -> File Transfer
I -> Information Summary                V -> Store/Retrieve Configuration


[LOG]                                   [MISC]
F -> Log Off [SETUP],[MISC] Menu        A -> Alarm Cut Off
O -> Log On  [SETUP],[MISC] Menu        K -> Clear Performance Data
R -> Connect to Remote Terminal         X -> Clear Alarm Queue and History
                                        Y -> Return to Default
                                        Z -> System Reset
>> Reset Site ?   *Local   Remote
>> Restart Mode ?   *Warm Restart   Cold Restart
==>> Enter password : XXXX
```