



# **RC003COMM (RC004-16) EMS**

## **User Manual**

**RC-A043-V25-050715-EN**

**Beijing Raisecom Science & Technology Co., Ltd.**

**Copyright © 2005 Raisecom Company**

---

# Legal Notices

**Beijing Raisecom Science & Technology Co., Ltd** makes no warranty of any kind with regard to this manual, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. **Beijing Raisecom Science & Technology Co., Ltd** shall not be held liable for errors contained herein or direct, indirect, special, incidental or consequential damages in connection with the furnishing, performance, or use of this material.

## Warranty

A copy of the specific warranty terms applicable to your Raisecom product and replacement parts can be obtained from Service Office.

## Restricted Rights Legend

All rights are reserved. No part of this document may be photocopied, reproduced, or translated to another language without the prior written consent of **Beijing Raisecom Science & Technology Co., Ltd**. The information contained in this document is subject to change without notice.

## Copyright Notices

Copyright ©2005 Raisecom. All rights reserved.

No part of this publication may be excerpted, reproduced, translated or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in Writing from **Beijing Raisecom Science & Technology Co., Ltd**.

## Trademark Notices

**RAISECOM** is the trademark of **Beijing Raisecom Science & Technology Co., Ltd**.

Java™ is a U.S. trademark of Sun Microsystems, Inc.

Microsoft® is a U.S. registered trademark of Microsoft Corporation.

Windows NT® is a U.S. registered trademark of Microsoft Corporation.

Windows® 2000 is a U.S. registered trademark of Microsoft Corporation.

Windows® XP is a U.S. registered trademark of Microsoft Corporation.

Windows® and MS Windows® are U.S. registered trademarks of

---

Microsoft Corporation.

# Contact Information

## Technical Assistance Center

The Raisecom TAC is available to all customers who need technical assistance with a Raisecom product, technology or solution. You can communication with us through the following methods:

**Add:** 1120, Haitai Tower, 229 Fourth North Loop Middle Road, Haidian District,  
Beijing 100083

**Tel:** +86-10-82884499 Ext.878 (International Department)

**Fax:** +86-10-82885200, +86-10-82884411

## World Wide Web

You can access the most current Raisecom product information on the World Wide Web at the following URL:

<http://www.raisecom.com>

## Feedback

Comments and questions about this manual are welcome. Please review the FAQ in the related manual, and if your question is not covered, send email by using the following web page:

<http://www.raisecom.com/en/xcontactus/contactus.htm>.

If you have comments on the EMS specification, instead of the web page above, please send comments to:

[export@raisecom.com](mailto:export@raisecom.com)

We hope to hear from you!

---

---

**CONTENTS**

<b>CHAPTER 1. PREFACE</b> .....	<b>1</b>
1.1 ABOUT THIS MANUAL .....	1
1.2 WHO SHOULD READ THIS MANUAL .....	1
1.3 COMPLIANCE .....	1
<b>CHAPTER 2. OVERVIEW</b> .....	<b>3</b>
2.1 FUNCTION OVERVIEW .....	3
2.2 PRODUCT MODELS .....	3
2.2.1 1U Standalone PDH Multiplexer .....	3
2.2.2 Modular Multiplexer .....	4
<b>CHAPTER 3. MODULE MANAGEMENT</b> .....	<b>6</b>
3.1 1U STANDALONE PDH MANAGEMENT .....	6
3.2 DEVICE VIEW .....	6
3.2.1 Device Management .....	7
3.2.2 SubCard Managment .....	12
3.3 10U MODULAR PDH MANAGEMENT .....	15
3.3.1 Device View .....	15
3.3.2 Device Management .....	15
<b>CHAPTER 4. RUNNING AND MAINTENANCE</b> .....	<b>19</b>
4.1 RC004-16 ELEMENT MANAGMENT .....	19
4.1.1 Trap Receipt Configuration .....	19
4.1.2 System Information Configuration .....	20
4.1.3 E1 Line Information .....	20
4.1.4 Power Supply And Fan Status .....	23
4.1.5 Data List .....	23
4.2 PC COM PORT MANAGEMENT MODE .....	27
4.2.1 Trap Configuration .....	28
4.2.2 System Configuration .....	28
4.2.3 E1 Line Details .....	28
4.2.4 COM Port Configuration .....	28
4.3 DEVICE BROWSER TREE MANAGEMENT .....	32

---

4.3.1	Function Overview .....	32
4.3.2	Specific Operations .....	33
4.4	CONTROL TOOL BAR ON THE VIEW .....	35
<b>CHAPTER 5. ALARM AND EVENT MANAGEMENT .....</b>		<b>36</b>
5.1	VIEWING CURRENT ALARM.....	36
5.2	VIEWING HISTORY ALARM.....	37
<b>APPENDIX A ALARM TYPE.....</b>		<b>39</b>
1.	THE ALARM TYPIES SUPPORTED BY STANDALONE PDH.....	39
2.	THE ALARM TYPIES SUPPORTED BY RC004-16 MODULAR PDH.....	41
<b>APPENDIX B ABBREVIATION LIST .....</b>		<b>43</b>

## Chapter 1. Preface

### 1.1 About This Manual

This manual introduces primary functions of the configuration management software for RC series products.

### 1.2 Who Should Read This Manual

Sales and marketing engineers, after service staff and telecommunication network design engineers could use this manual as a valuable reference. If you want to get an overview on features, applications, architectures and specifications of Raisecom RC series integrated access devices, you could find useful information in this manual as well.

### 1.3 Compliance

The RC series products developed by Raisecom are strictly complied with the following standards as well as ITU-T, IEEE, IETF and related standards from other international telecommunication standard organizations:

YD/T900-1997 SDH Equipment Technical Requirements - Clock

YD/T973-1998 SDH 155Mb/s and 622Mb/s Technical conditions of optical transmitter module and receiver module

YD/T1017-1999 Network node interface for the Synchronous Digital Hierarchy (SDH)

YD/T1022-1999 Requirement of synchronous digital hierarchy (SDH) equipment function

YD/T1078-2000 SDH Transmission Network Technique Requirements-Interworking of Network Protection Architectures

YD/T1111.1-2001 Technical Requirements of SDH Optical Transmitter/Optical Receiver Modules——2.488320 Gb/s Optical Receiver Modules

YD/T1111.2- 2001 Technical Requirements of SHD Optical Transmitter/Optical Receiver Modules——2.488320 Gb/s Optical Transmitter Modules

YD/T1179- 2002 Technical Specification of Ethernet over SDH

G.703 Physical/electrical characteristics of hierarchical digital interfaces

G.704 Synchronous frame structures used at 1544, 6312, 2048, 8448 and 44 736 kbit/s hierarchical levels

G.707 Network node interface for the synchronous digital hierarchy (SDH)

G.774 Synchronous digital hierarchy (SDH) - Management information model for the network element view

G.781 Synchronization layer functions

G.783 Characteristics of synchronous digital hierarchy (SDH) equipment functional blocks

- G.784 Synchronous digital hierarchy (SDH) management
- G.803 Architecture of transport networks based on the synchronous digital hierarchy (SDH)
- G.813 Timing characteristics of SDH equipment slave clocks (SEC)
- G.823 The control of jitter and wander within digital networks which are based on the 2048 kbit/s hierarchy
- G.825 The control of jitter and wander within digital networks which are based on the synchronous digital hierarchy (SDH)
- G.826 End-to-end error performance parameters and objectives for international, constant bit-rate digital paths and connections
- G.828 Error performance parameters and objectives for international, constant bit-rate synchronous digital paths
- G.829 Error performance events for SDH multiplex and regenerator sections
- G.831 Management capabilities of transport networks based on the synchronous digital hierarchy (SDH)
- G.841 Types and characteristics of SDH network protection architectures
- G.842 Interworking of SDH network protection architectures
- G.957 Optical interfaces for equipments and systems relating to the synchronous digital hierarchy
- G.691 Optical interfaces for single channel STM-64 and other SDH systems with optical amplifiers
- G.664 Optical safety procedures and requirements for optical transport systems
- I.731 ATM Types and general characteristics of ATM equipment
- I.732 ATM Functional characteristics of ATM equipment
- IEEE 802.1Q Virtual Local Area Networks (LANs)
- IEEE 802.1p Traffic Class Expediting and Dynamic Multicast Filtering
- IEEE 802.3 CSMA/CD Access Method and Physical Layer Instruction



## Chapter 2. Overview

### 2.1 Function Overview

**RC003COMM (RC004-16) Element Management System (EMS)** provides GUI for device management. A device view generated by the EMS is identical with appearance of the real device. In addition, that view could truly reflect current status of the device, so you can monitor and maintain the device in a centralized and quick way.

**RC003COMM (RC004-16) EMS** enables you to manage RC003 standalone 1U PDH and RC004-16 Modular PDH.

**RC003COMM (RC004-16) EMS** supports two management modes. The first mode enables you to manage devices connected to COM ports on a PC through the Agent software running on the PC. At present, you can manage up to 16 COM ports in this mode, and each port can connect 1 to 40 devices depending on the type of those connected devices. The manageable devices in this mode cover 1U standalone PDH. The second mode enables you to manage PDH modules through the Agent software running on the RC004-16 NMS master control card which is plugged in Slot 0 of Chassis 1. Slot 1 to 15 could be used to insert PDH modules. One Agent software could manage up to 4 10U big chassis.

### 2.2 Product Models

#### 2.2.1 1U Standalone PDH Multiplexer

*Standalone PDH Product Model Number and Product Model Identification Table:*

Serial Number	Model Number	Product Model Identification
1	1	RC801-240B(REV.B) Dual-strand PDH
2	2	RC803-240B(REV.B) single-strand PDH, 1310 nm TX
3	3	RC805-240B(REV.B) single-strand PDH, 1550 nm TX
4	4	MS2104-240(REV.B) Dual-strand PCM
5	5	MS2304-240(REV.B) single-strand PCM, 1310 nm TX
6	6	MS2504-240(REV.B) single-strand PCM, 1550 nm TX
7	7	RC801-480B(REV.A) Dual-strand PDH
8	8	RC803-480B(REV.A) single-strand PDH, 1310 nm TX
9	9	RC805-480B(REV.A) single-strand PDH, 1550 nm TX
10	10	RC801-120C(REV.A) Dual-strand PDH
11	11	RC803-120C(REV.A) single-strand PDH, 1310 nm TX
12	12	RC805-120C(REV.A) single-strand PDH, 1550 nm TX
13	13	RCMS2104-120(REV.A) Dual-strand PCM
14	14	RCMS2304-120(REV.A) single-strand PCM, 1310 nm TX
15	15	RCMS2504-120(REV.A) single-strand PCM, 1550 nm TX
16	22	RC801-240B(REV.M) Dual-strand PDH

17	23	RC803-240B(REV.M) single-strand PDH, 1310 nm TX
18	24	RC805-240B(REV.M) single-strand PDH, 1550 nm TX
19	29	RC801-120B(REV.M) Dual-strand PDH
20	30	RC803-120B(REV.M) single-strand PDH
21	31	RC805-120B(REV.M) single-strand PDH
22	34	RC801-480B(REV.M) Dual-strand PDH
23	35	RC803-480B(REV.M) single-strand PDH
24	36	RC805-480B(REV.M) single-strand PDH

### 2.2.2 Modular Multiplexer

*RC004-16 Product Model Number and Product Model Identification Table:*

Serial Number	Model Number	Product Model Identification
1	2	RC802-240B(REV.B) Dual-strand PDH module
2	3	RC804-240B(REV.B) Single-strand PDH module
3	4	RC802-120BX2(REV.B) Dual-strand PDH module
4	5	RC804-120BX2(REV.B) Single-strand PDH module
5	6	RC802-240B(REV.C)+RC802-240BS(REV.A) Dual-strand PDH module, Master Console
6	7	RC804-240B(REV.C)+RC802-240BS(REV.A) Single-strand PDH module, Master Console
7	8	RCMS2204-240(REV.A) Dual-strand PCM module
8	9	RCMS2404-240(REV.A) Single-strand PCM module
9	14	RC802-240B(REV.C) Dual-strand PDH module
10	15	RC804-240B(REV.C) Single-strand PDH module
11	25	RC802-240B(REV.M) Dual-strand PDH module
12	26	RC804-240B(REV.M) Single-strand PDH module
13	27	RC802-120B*2(REV.M) Dual-strand PDH module
14	28	RC804-120B*2(REV.M) Single-strand PDH module
15	32	RC802-120B*1(REV.M) Dual-strand PDH module
16	33	RC804-120B*1(REV.M) Single-strand PDH module
17	995	RC802-240B(REV.M)+RC802-240BS(REV.M) Dual-strand PDH module, Master Console
18	996	RC804-240B(REV.M)+RC802-240BS(REV.M) Single-strand PDH module, Master Console
19	997	RC802-240B(REV.M)+RC802-240BS(REV.M) Dual-strand PDH module, Slave Console

---

20	998	RC804-240B(REV.M)+RC802-240BS(REV.M)	Single-strand	PDH
		module, Slave Console		
21	999	RC802-240B(REV.C)+RC802-240BS(REV.A)	Dual-strand	PDH
		module, Slave Console		
22	38	RC804-240B(REV.C)+RC802-240BS(REV.A)	Single-strand	PDH
		module, Slave Console		

## Chapter 3. Module Management

### 3.1 1U Standalone PDH Management

The following section provides instruction on management of local and remote devices by taking RC805-240B (REV.M) as example.

### 3.2 Device View

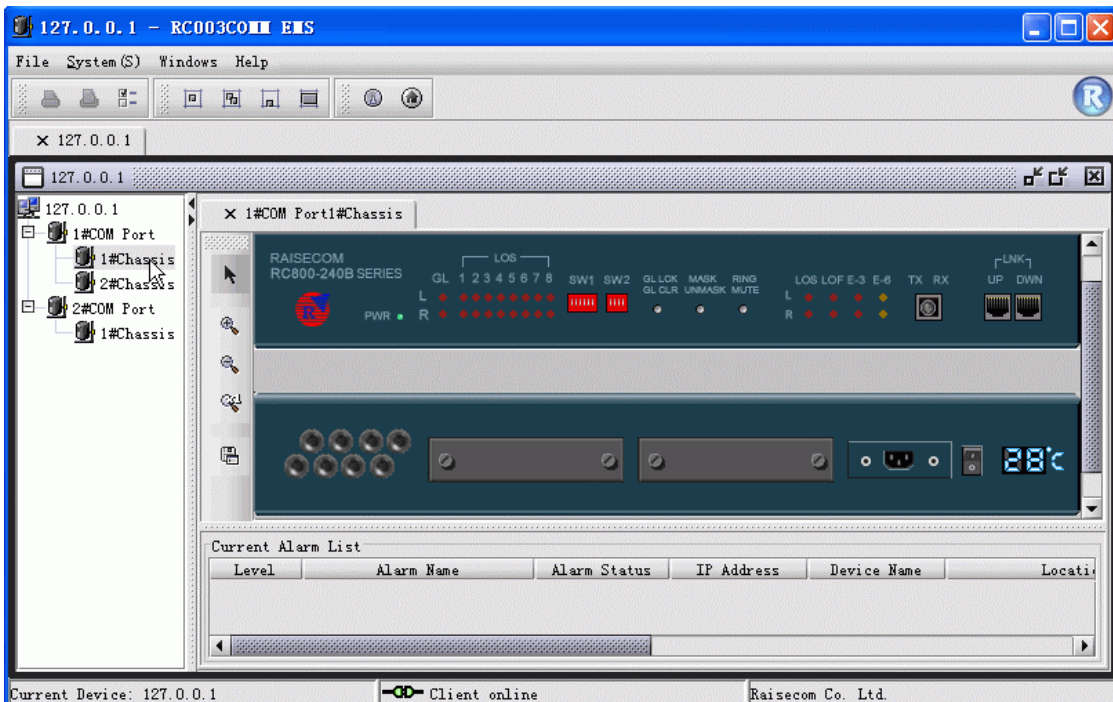


Figure 3-1 The Device View of Standalone PDH

As the figure shows above, double click a chassis node beneath the Chassis tree on left side of the window, and the views for front panel and rear panel of this device will appear in the tab page on right.

If some a device view has already opened with several other ones, you can access this view simply by double clicking the relevant tab, and the tab will bulge for displaying the desired view as figure 3-2 shows.

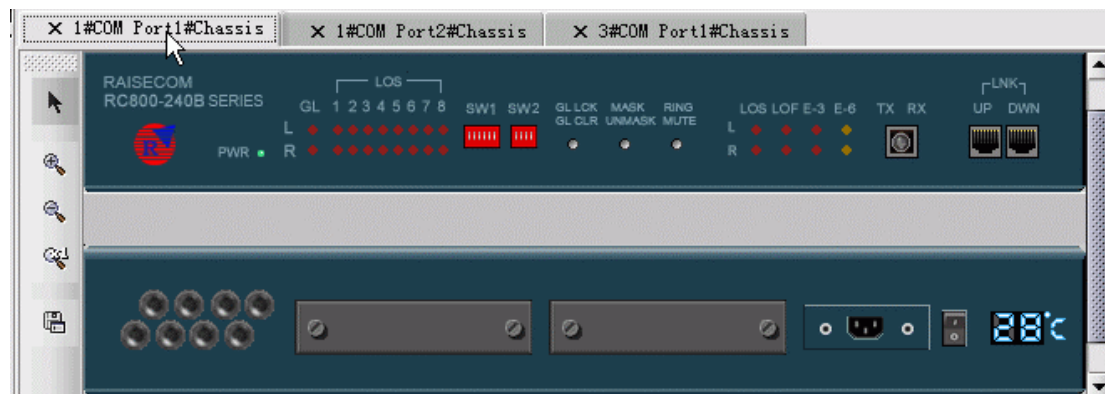


Figure 3-2 The Device View Tabs

### 3.2.1 Device Management

Right click on the front panel or rear panel of selected device, a menu listing several commands will popup as follows:

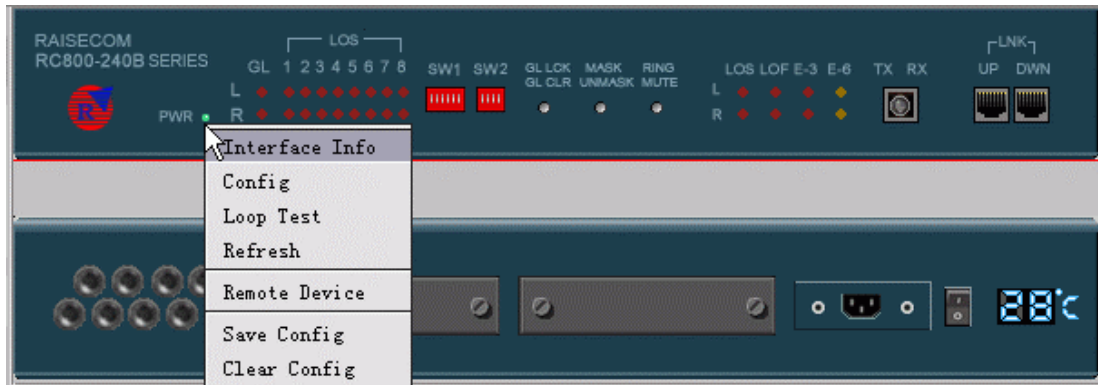


Figure 3-3 The right click menu

#### 3.2.1.1 Interface Information

Select [**Interface Info**] from the right click menu, a configuration dialog box similar to figure 3-4 will popup. It provides access to the information like LOS Status, LOF Status, Loop Status and so on.

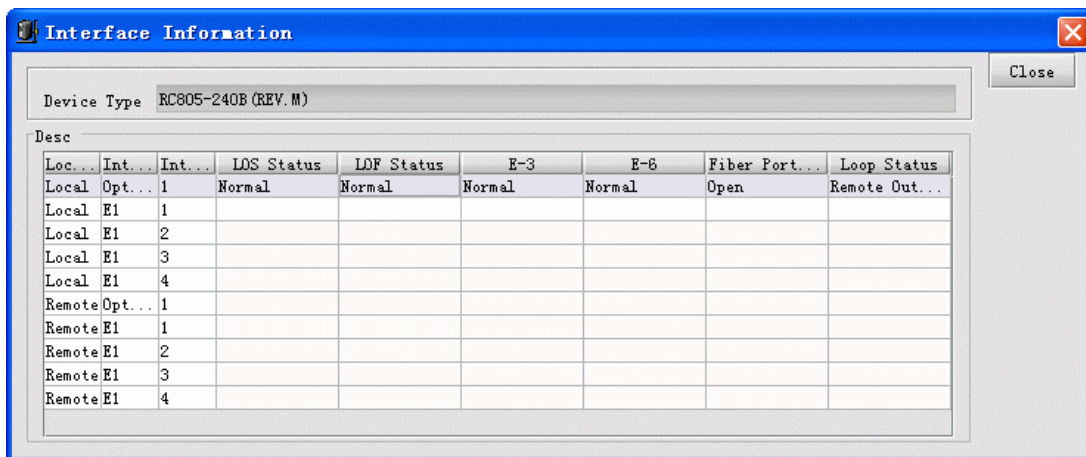


Figure 3-4 The Interface Information dialog box

The Interface Information dialog box launched from the front panel of this device only displays information of E1 lines within basic subsystems other than displaying that of expansion cards. When you launch this dialog box from per subcard, that information would be displayed.

#### 3.2.1.2 Configuration

Select [**Config**] from the right click menu, a **Config Management** dialog box similar to figure 3-5 will appear.

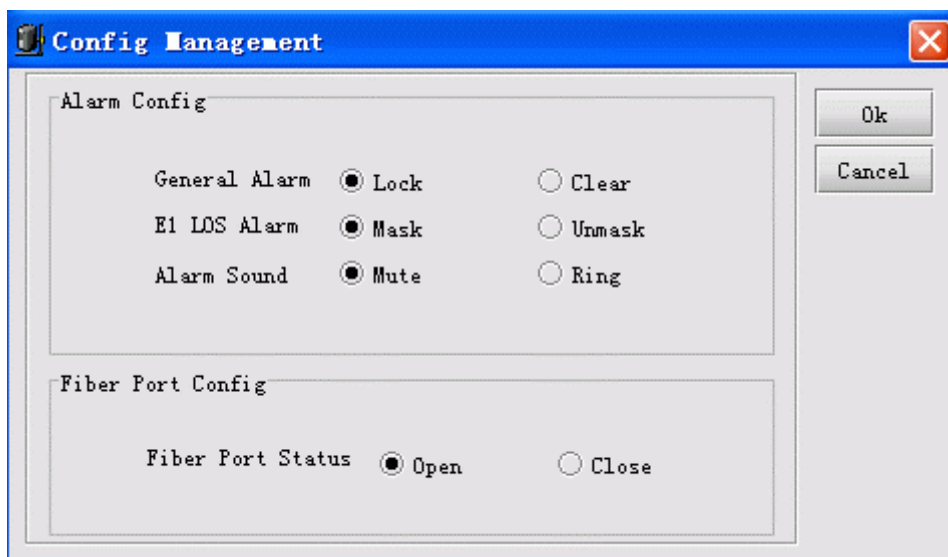


Figure 3-5 The Config Management interface

### 3.2.1.3 Loop Test

Select [**Loop Test**] from the right click menu, a **Config Management** dialog box similar to figure 3-6 will appear.

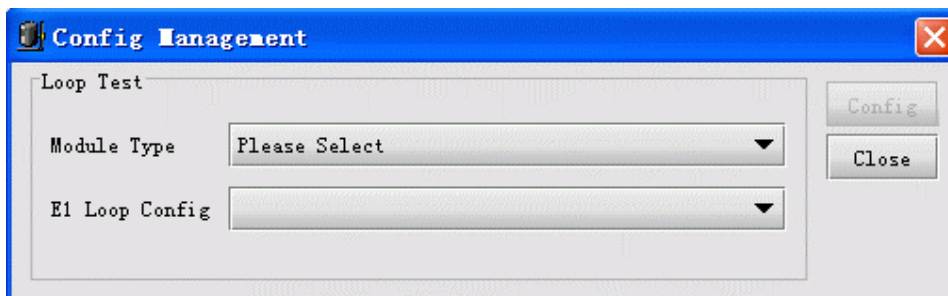


Figure 3-6 The Loop Test interface

To perform loop test, do the following:

Step 1. Select the module type to be configured.

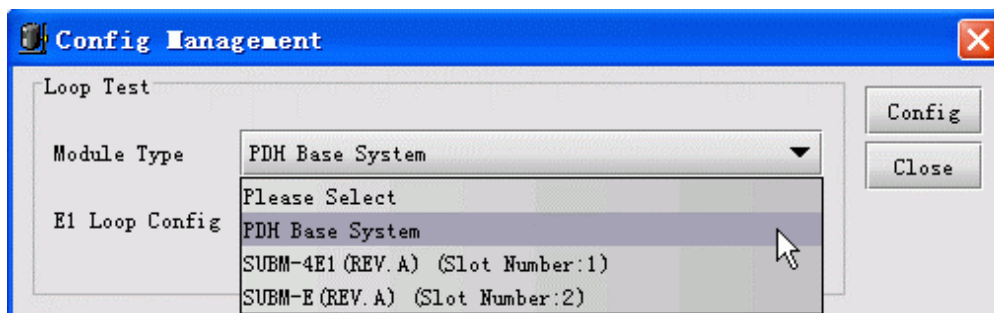


Figure 3-7 The Loop Test configuration procedure

**Note:** When this item is not configured, the [**Config**] button will be disabled.

After you select a module type, its relevant E1 Line will appear in the **E1 Loop Config** drop down menu. In this way, the [**Config**] button is enabled.



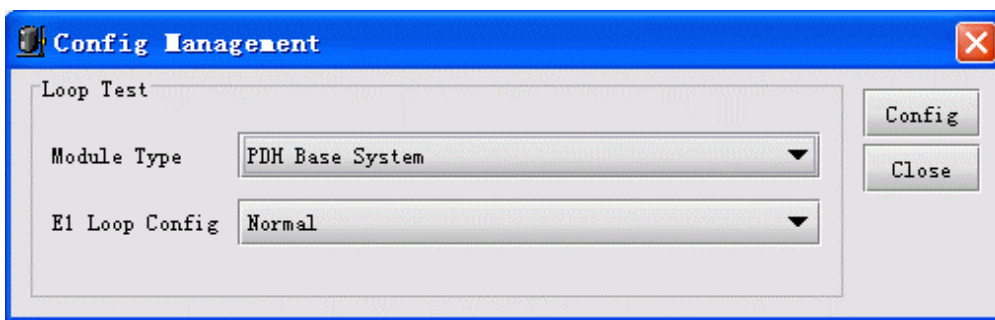


Figure 3-8 The Loop Test configuration procedure

Step 2. Select a loop item for E1 line.

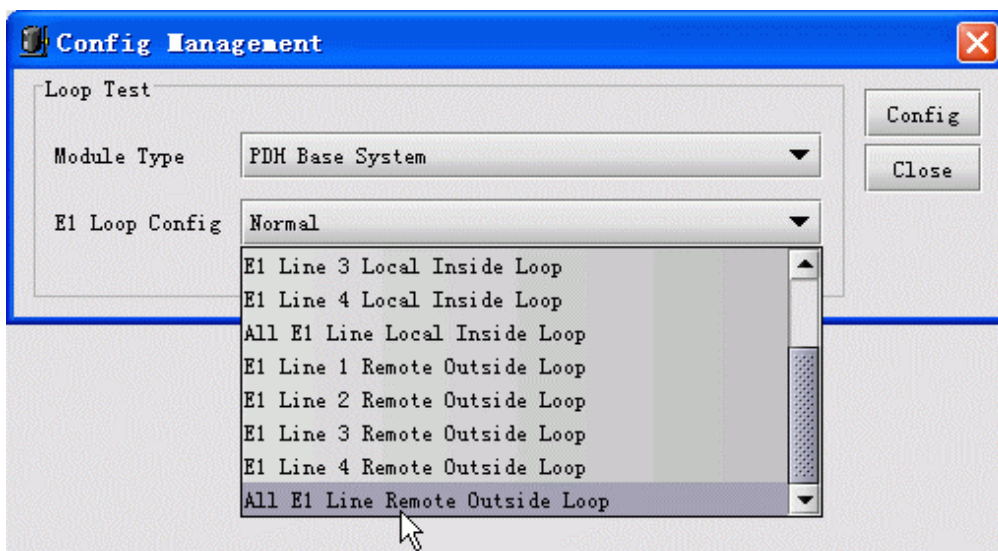


Figure 3-9 The Loop Test configuration procedure

Step 3. Click [Config] to apply the configuration.

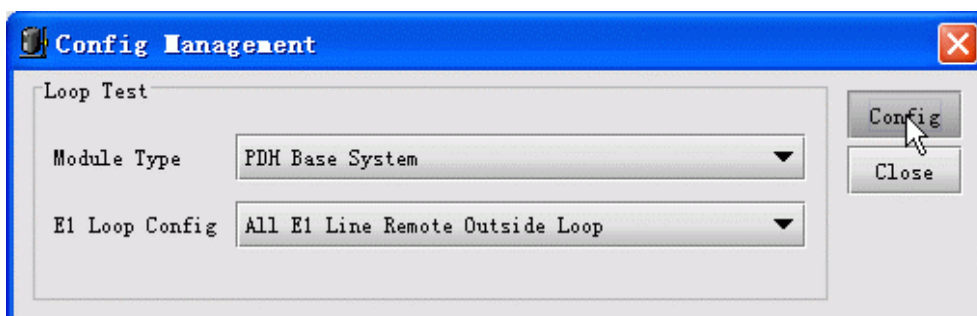


Figure 3-10 The Loop Test configuration procedure

Step 4. When you complete configuration, click [Close] button to exit this dialog box.

**Note:** The “Loop Test” configuration window for RCMS Ethernet Multiplexer is differing from the above one. It can be used for configuring more than one line looping simultaneously. The following graph is an example of that window:

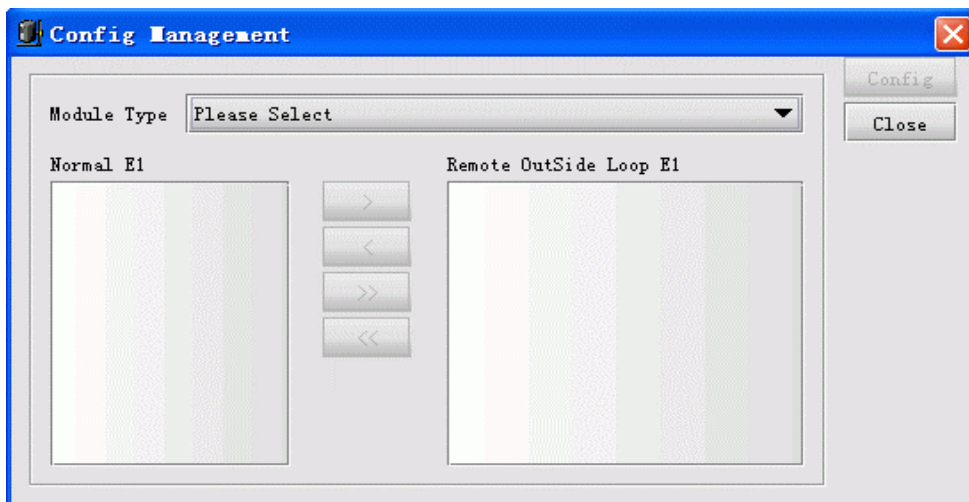


Figure 3-11 The Loop Test interface of RCMS-2000 Device

To perform configuration, do the following:

Step 1. Select the module type to be configured.

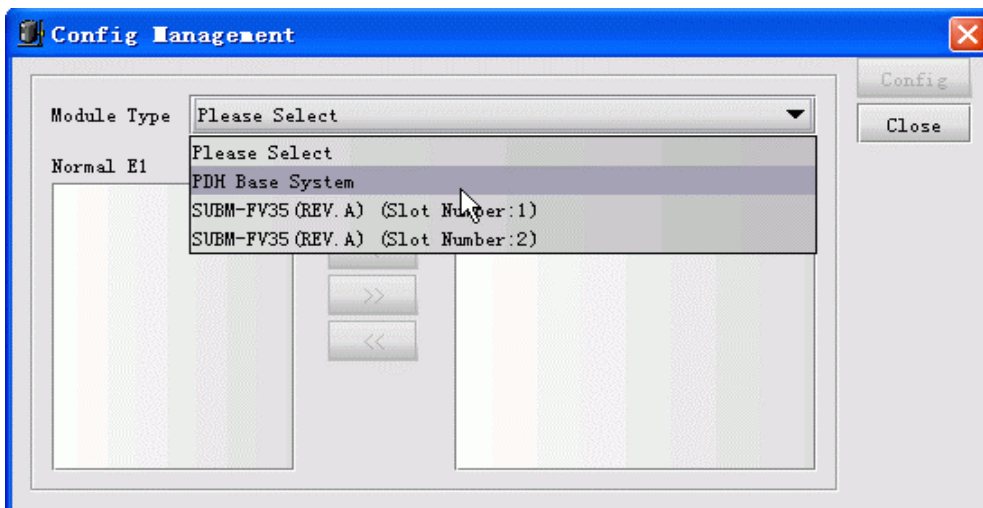


Figure 3-12 The Loop Test configuration procedure of RCMS-2000 Device

Step 2. Select the lines to be configured in “Normal” and “Loop” status.

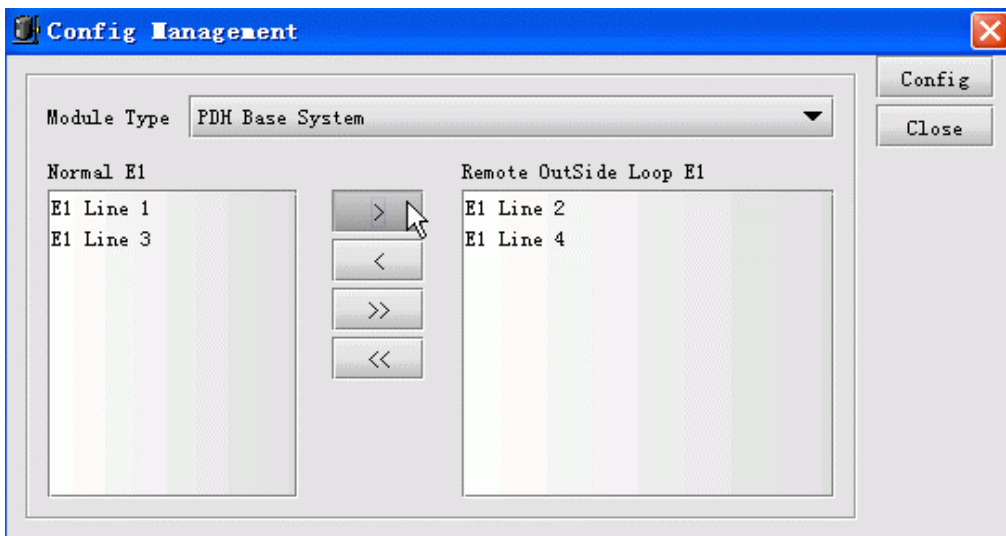


Figure 3-13 The Loop Test configuration procedure of RCMS-2000 Device



The descriptions for each button located at middle are as follows:

Item	Description
>	Move selected item(s) from left list to right list.
<	Move selected item(s) from right list to left list.
>>	Move all item(s) from left list to right list.
<<	Move all item(s) from right list to left list.

Step 3. Configure Loop or Normal settings for the E1 line.

Step 4. Click [**Close**] button to exit this dialog box when you complete configuration.

### 3.2.1.4 Refreshing

Select [**Refresh**] from the right click menu to perform refresh operation, the current device view will change to display in latest state accordingly. When Trap messages from the device cannot be received appropriately, this operation is useful for user to monitor real-time status of that device timely.

### 3.2.1.5 Opening Remote Device View

Select [**Remote Device**] from the right click menu on device view to open the remote device view.

You will see a message prompting “*Remote Device Offline!*” when selected remote device is not connected.

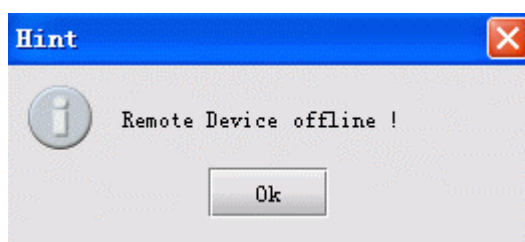


Figure 3-14 The Hint message

### 3.2.1.6 Saving Configuration

This function is only available in standalone PDH of REV.M version.

Select [**Save Config**] from the right click menu to apply configuration for this device. When restarted after power off, the device will resume to its previously saved configuration automatically. For example, when enable the “Alarm Sound Output” feature and perform “Save Config” operation, after you turn off the device and restart it, the “Alarm Sound Output” item will be still in enable state.

### 3.2.1.7 Clearing Configuration

This function is only available in standalone PDH of REV.M version.

Select [**Clear Config**] from the right click menu to perform clearance operation. The device will not perform reconfiguration after restarting once time, and will resume to settings preconfigured at factory.

### 3.2.1.8 Refreshing Chassis Temperature

Double click the temperature icon presented on rear panel view. The temperature value of current device will update simultaneously, as the figure shows below:



Figure 3-15 Refreshing chassis temperature

### 3.2.2 SubCard Management

#### 3.2.2.1 Basic Information

The device with expansion slot(s) currently supports 4 kinds of expansion cards. They are:

✓ *Expansion Card Model Table*





Serial Number	Model Number	Expansion Card Model	Description	Extended E1 Count
1	1	SUBM-4E1(REV.A) 4E1 Line Sub-module	Unintelligent Card	4
2	16	SUBM-E(REV.A) Ethernet Sub-module	Intelligent Card	1
3	20	SUBM-E(REV.B) Ethernet Sub-module	Intelligent Card	1
4	19	SUBM-FV35(REV.A) Frame, V35 Sub-module	Intelligent Card	1

The extended E1 Line number may be varying when plugging different expansion cards into expansion slots. The corresponding relationships between them are as follows:

✓ *Corresponding Relationship (between Extended E1 Line number of expansion card and slot number where the expansion card resides) Table*

Expansion Card Model	E1 Line Sequence For Slot 1	E1 Line Sequence For Slot 2
SUBM-4E1(REV.A) 4E1 Line Sub-module	5, 6, 7, 8	8, 7, 6, 5
SUBM-E(REV.A) Ethernet Sub-module	5	8
SUBM-E(REV.B) Ethernet Sub-module	5	8
SUBM-FV35(REV.A) Frame, V35 Sub-module	5	8

✓ *Expansion Card View*

Expansion Card Model	View
SUBM-4E1(REV.A) 4E1 Line Sub-module	
SUBM-E(REV.A) Ethernet Sub-module	
SUBM-E(REV.B) Ethernet Sub-module	
SUBM-FV35(REV.A) Frame, V35 Sub-module	

✓ **Indicator Description**

**SUBM-E Indicator Table**

Identification	Description
LAL	Indicates alarm status at local side. It represents “or” relationship among LOF, CRC and AIS. When one of these has alarm generated, the LAL indicator displays in “Red”; When the three all have no alarm generated, the LAL indicator displays in “Dark Red”.
RLP	Indicates loop status of remote module. When the module is looping toward remote side, this indicator displays in “Yellow”, otherwise it displays in “Dark Yellow”.
RAL	Indicates alarm status of remote module. When the sub-module working on remote device has any type of alarm generated, this indicator will light up.
LNK	Indicates LINK state of Ethernet interface on local sub-module. When LINK UP, this indicator will display in “Green”; when LINK DOWN, it will display in “Dark Green”.
FDX:	Indicates duplex state. When the duplex state of Ethernet interface on this module is configured as Full Duplex, this indicator will display in “Green”, otherwise (Half Duplex), it will display in “Dark Green”.

**SUBM-FV35 Indicator Table**

Identification	Description
LAL	Its meaning and state are identical with that of LAL indicator on SUBM-E module.
RAL	Its meaning and state are identical with that of RAL indicator on SUBM-E module.

**3.2.2.2 Subcard Operation**

Select a card and right click, a menu shown in following figure will popup:

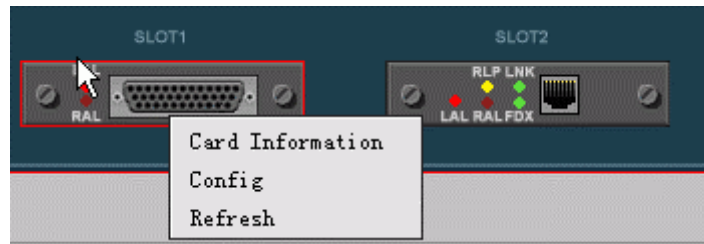


Figure 3-16 The right click menu available on the expansion card

Select [**Card Information**] item, a window similar to following figure will popup:

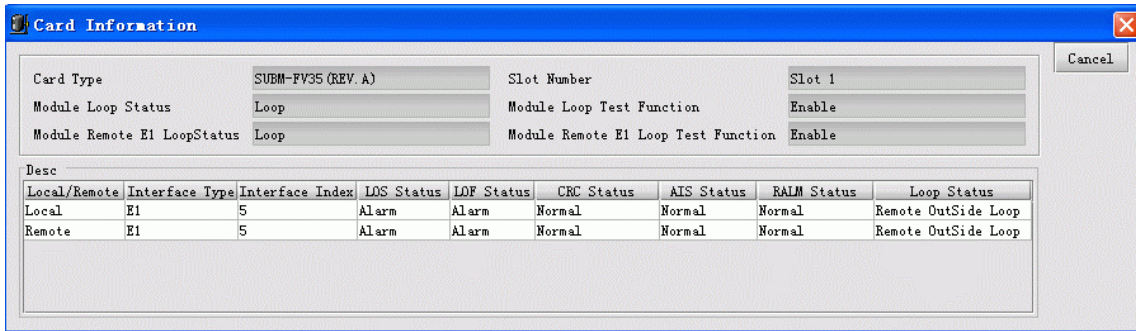


Figure 3-17 The Card Information dialog box

Select [**Config**] item, a window similar to following figure will popup:

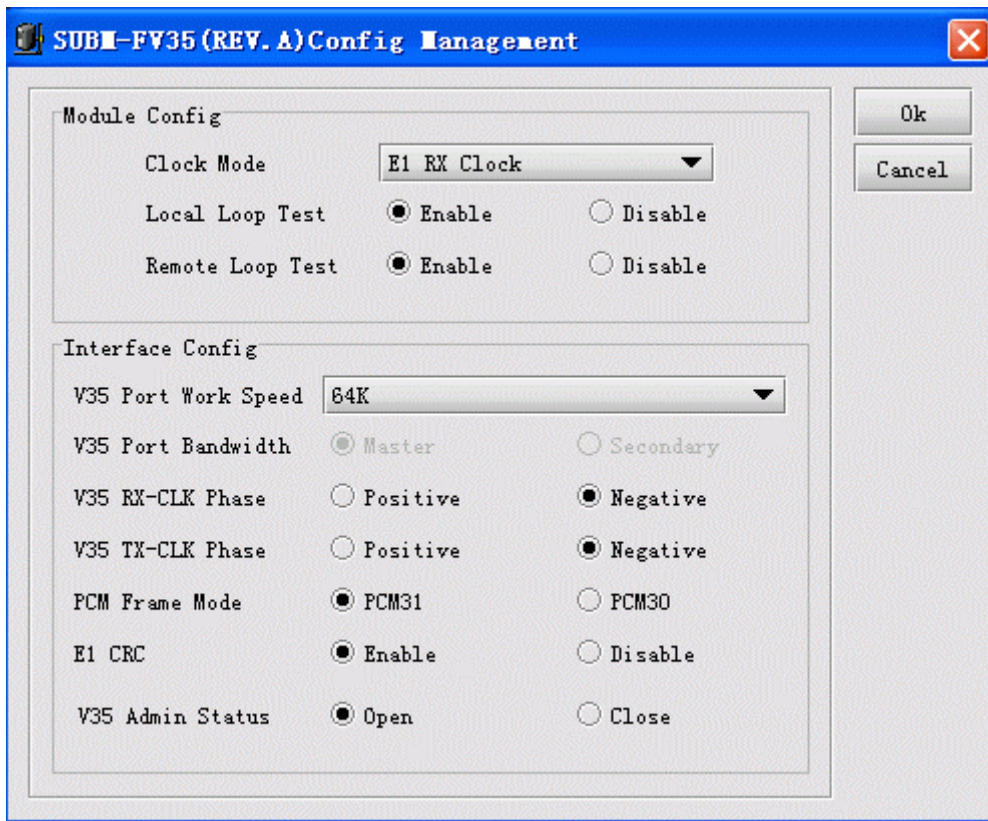


Figure 3-18 The Config Management dialog box for expansion subcard

Select [**Refresh**] item, the card type and indicators on this card for current device presented on the view will change simultaneously.



### 3.3 10U Modular PDH Management

#### 3.3.1 Device View

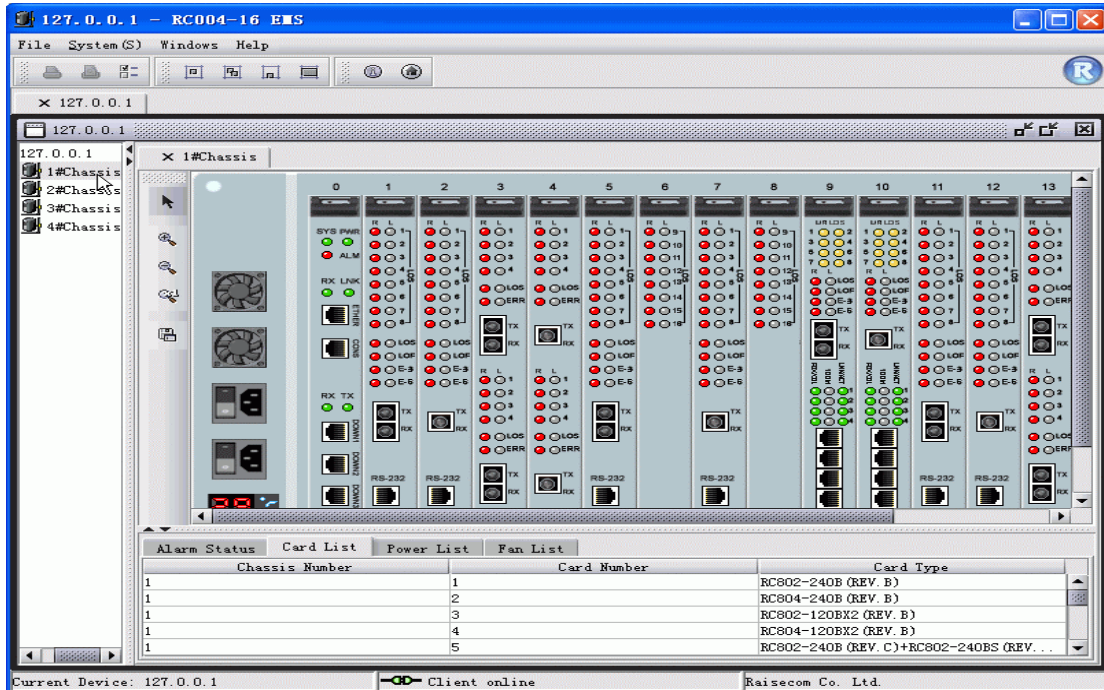


Figure 3-19 The Device View of RC004-16 device

Double click a node beneath the chassis tree on right to open the corresponding device view for a particular chassis.

If some a chassis view has already opened, when double clicking this node, the relevant tab will bulge for displaying the device view.

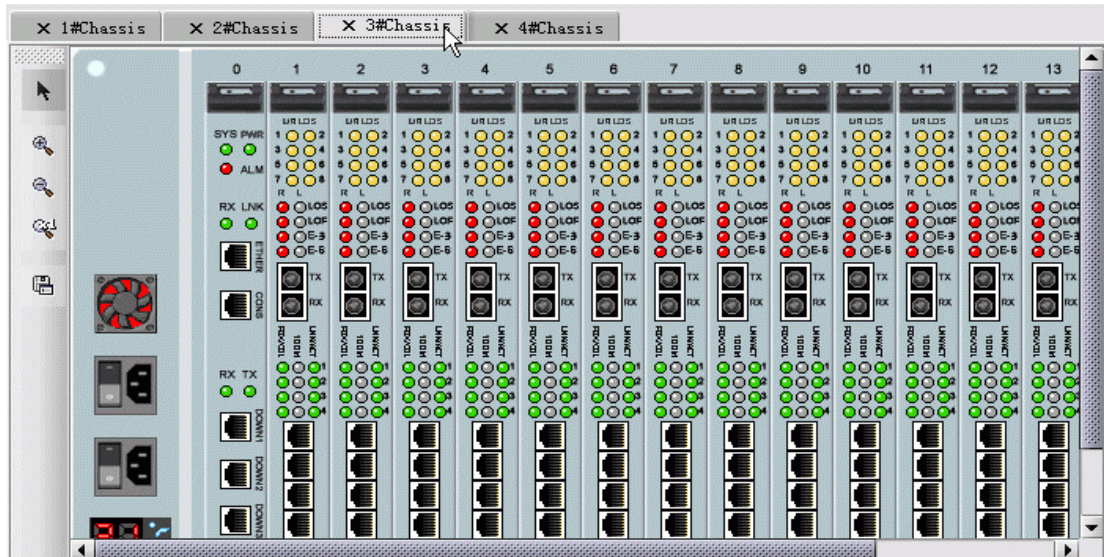


Figure 3-20 The Device view tabs

#### 3.3.2 Device Management

##### 3.3.2.1 Operations On Master Control Card

The Master Control Card resides in the slot 0 of the first chassis. Select the master control card and

right click, a menu similar to the following will appear:

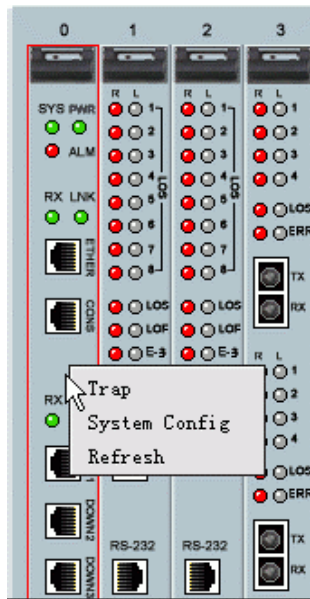


Figure 3-21 The right click menu available on the master control card

The “Trap” and “System Config” item are also available from the menu bar on top of the EMS window. See relevant description in this manual for details.

Selecting “Refresh” item will refresh the state of ALM indicator on master control card. The ALM indicator is used to identify if there has alarms generated on the current chassis. If there are, the indicator will present “red”, otherwise it will be in “gray”. The alarm indicator will take effective only in case you configure the Chassis Alarm item to be enabled in “System Config”.

### 3.3.2.2 Operations On PDH Module

The following section provides instruction on operations for modular PDH by taking RC804-120B\*2(REV.M) as example. The panel of RC804-120B\*2(REV.M) comprises two parts, the Up PDH and Down PDH.

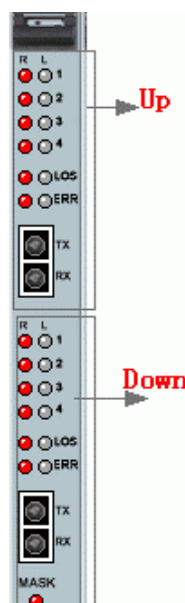


Figure 3-22 The demonstration of PDH module

Select a card from the slots labeled from 1 to 15 on RC004-16 chassis, a menu similar to the following will appear:

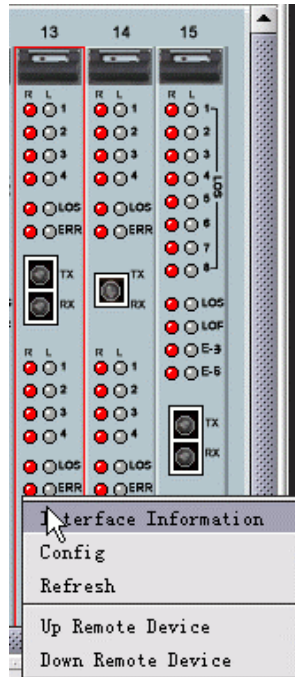


Figure 3-23 The right click menu available on the PDH module

### 3.3.2.2.1 Interface Information

Select [Interface Information] from the right click menu, a window similar to following figure will popup.

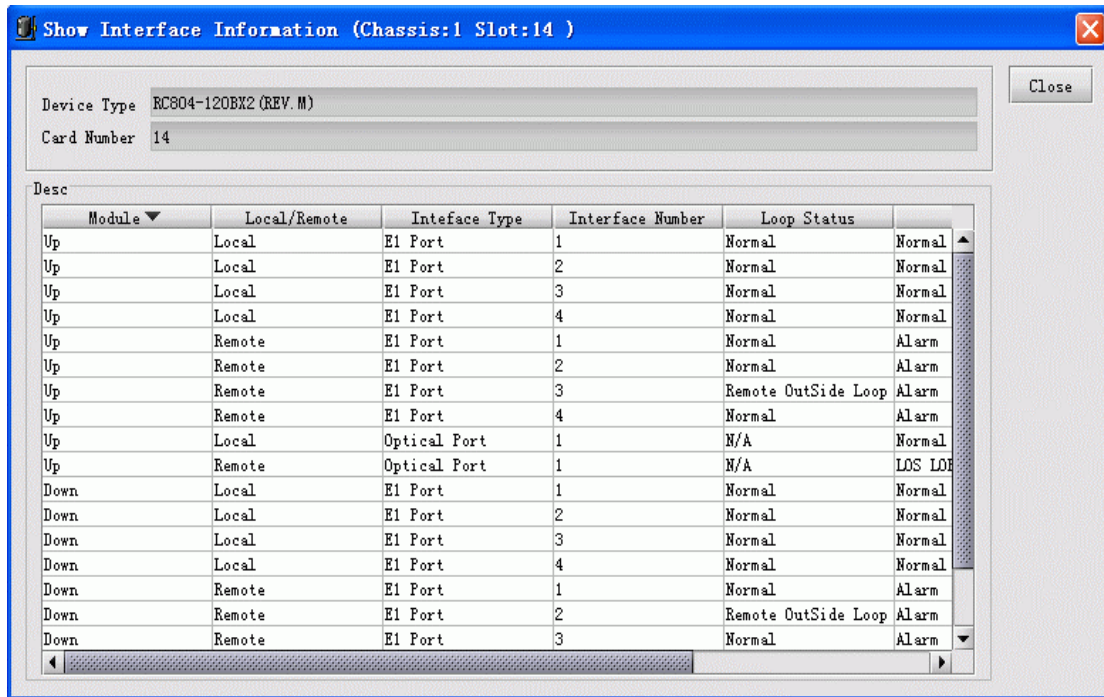


Figure 3-24 The Show Interface Information dialog box

Where the Desc table at lower section of this window displays a list of information for selected card,

which include Module (Up or Down), Local/Remote, Interface Type (E1 port or Optical Port), Loop Status and Alarm Status and so forth.

### 3.3.2.2.2 Configuration

Select [Config] from the right click menu, a configuration window similar to following figure will popup.

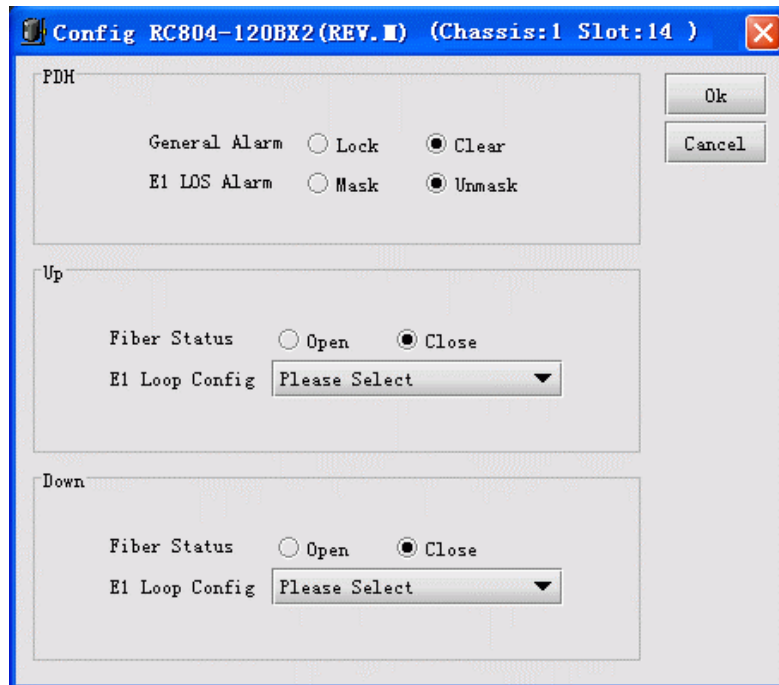


Figure 3-25 The Config interface

### 3.3.2.2.3 Refreshing

Select [Refresh] from the right click menu to perform refresh operation, the current card view will change to display in latest state accordingly. This operation is very useful for user to observe device's alarm indicator real-timely when the system cannot receive Trap messages from that device properly.

### 3.3.2.2.4 Up Remote PDH Device

Select [Up Remote Device] from the right click menu to open the view for remote 1U device(s) connected to the optical port of up remote PDH module.

### 3.3.2.2.5 Down Remote PDH Device

Select [Down Remote Device] from the right click menu to open the view for remote 1U device(s) connected to the optical port of down remote PDH module.



## Chapter 4. Running And Maintenance

### 4.1 RC004-16 Element Management

The main view of RC004-16 EMS looks like the following graph.

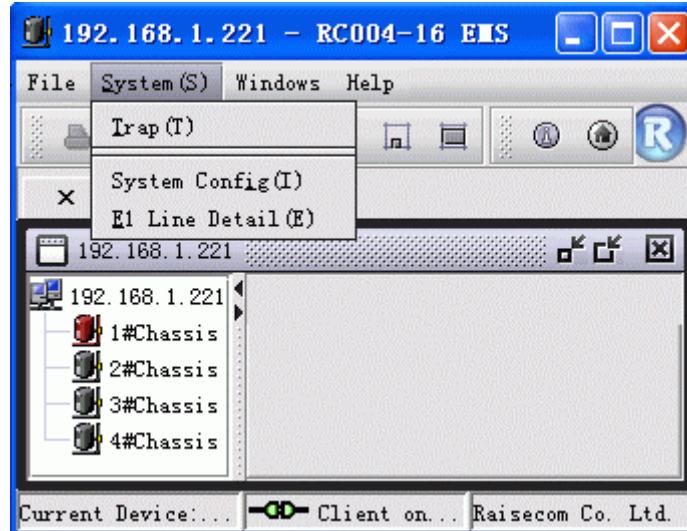


Figure 4-1 The System Menu

#### 4.1.1 Trap Receipt Configuration

Select [System] in menu bar on top of the EMS window, and select the [Trap] item, a configuration dialog box similar to following figure will popup.

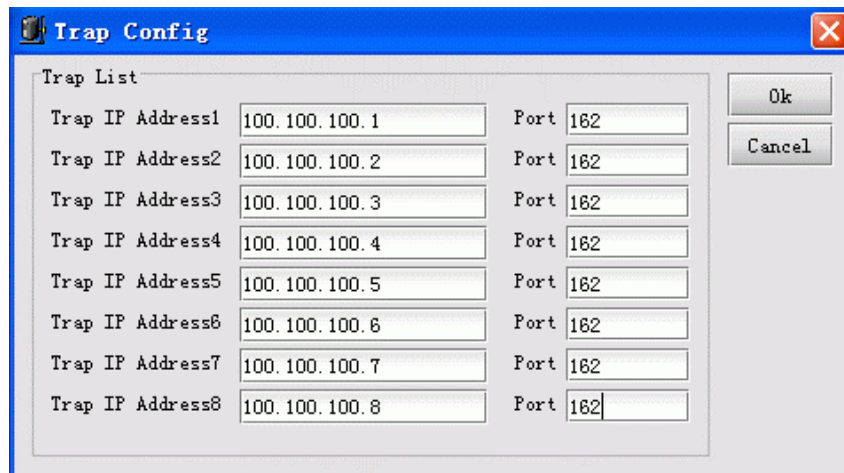


Figure 4-2 The Trap Config dialog box

From this interface, you can view and modify target address and port number configured for device proxy software when sending alarm notification. Generally, the port number is set to 162. You have to set the IP address of the host where network management software runs as Trap IP Address at least, otherwise the network management software could not receive alarms from devices managed by the proxy software appropriately. The system now allows you configuring up to 8 alarm receipt targets.

The information available on this interface are as follows:

Object	Description
Trap IP Address	The target address to which alarms within current proxy send.
Port	The port number of the alarm target within current proxy.

After you finish modification, click the [OK] button to accept these changes, or click [Cancel] to exit this interface without any modification.

### 4.1.2 System Information Configuration

Select [System] in menu bar on top of the EMS window, and select [System Config] item, a configuration dialog box similar to following figure will popup.

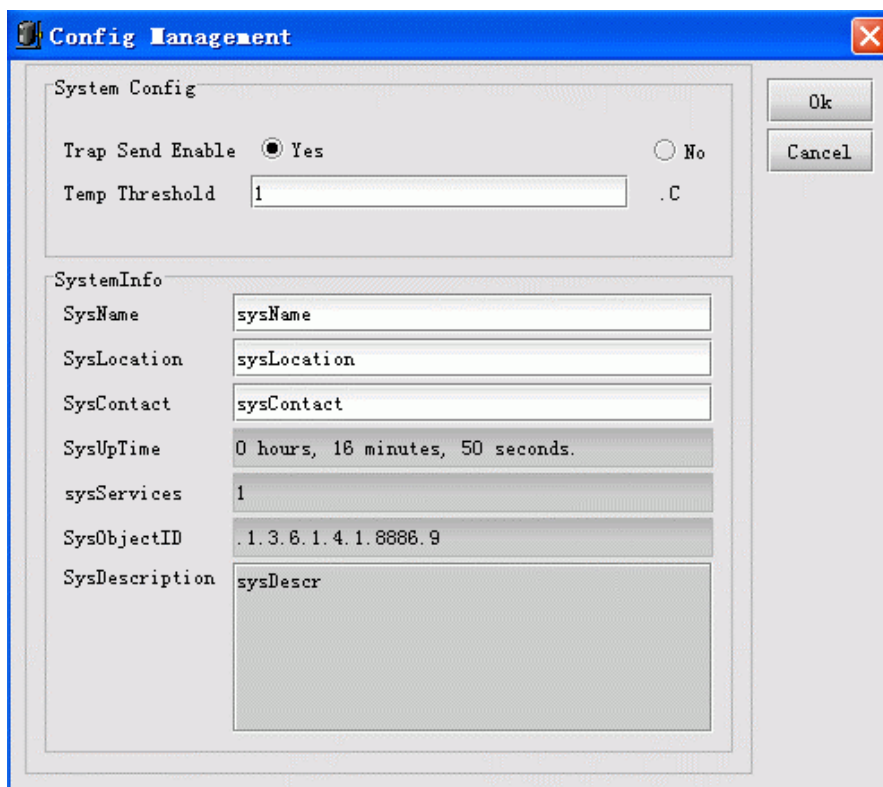


Figure 4-3 The Config Management dialog box

The operation buttons available on this interface are as follows:

Object	Description
OK	Click this button to accept modification and close this window.
Cancel	Click this button to cancel operations and close this window.

### 4.1.3 E1 Line Information

Function: Display the line information of E1 Line at local or remote side that user has configured, including user information, line state and so forth in concerns.

To configure the line information, do the following:

Step 1. Select [System] menu in menu bar on top of the EMS window, and select [E1 Line Detail] item, a configuration dialog box similar to following figure will popup.

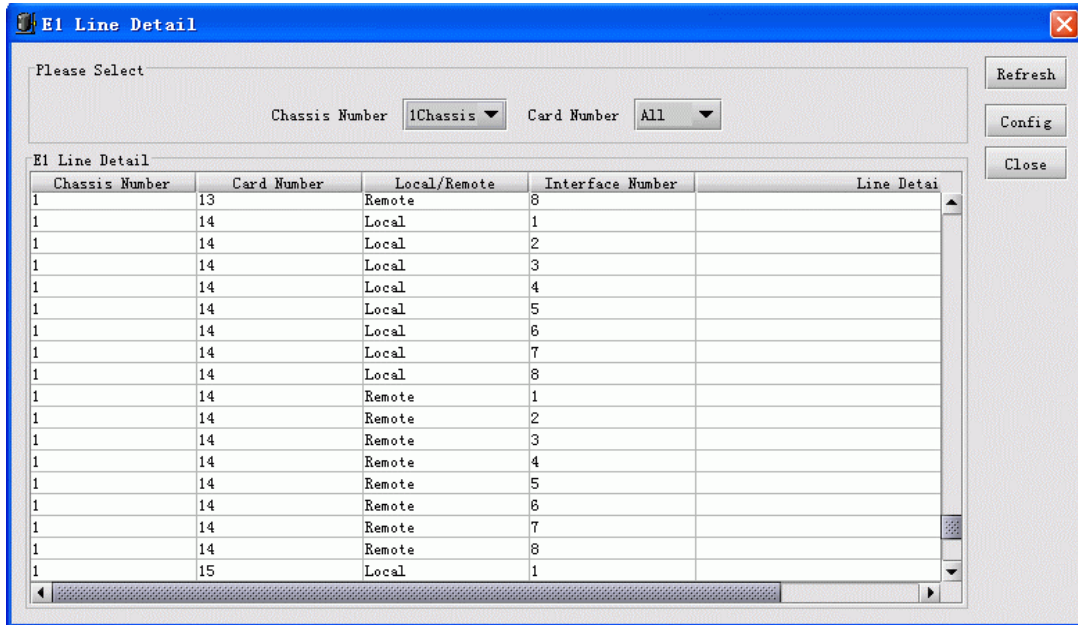


Figure 4-4 The E1 Line Detail dialog box

Step 2. Select chassis number and card number.

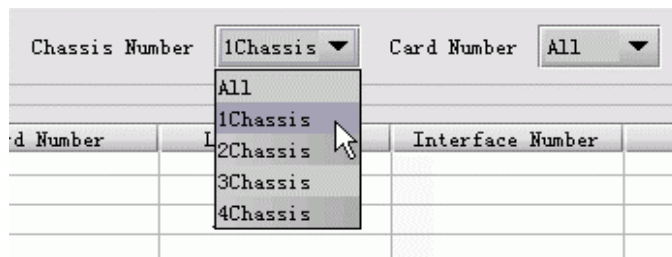


Figure 4-5 The operations on E1 Line Detail interface

Step 3. Select the local/remote E1 line to be configured, which can be accessible by clicking the [Config] button on right.

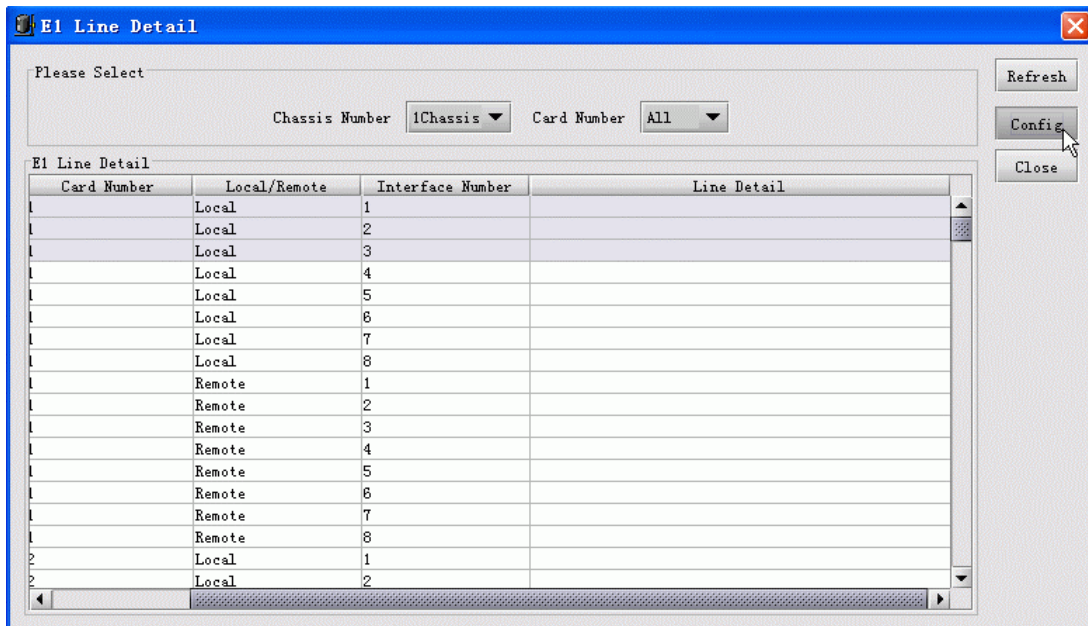


Figure 4-6 The E1 Line Detail dialog box

Step 4. Move your cursor into the text box for inputting information on the popup dialog box, a prompt message will appear providing you with the information of E1 Lines that need to be configured.

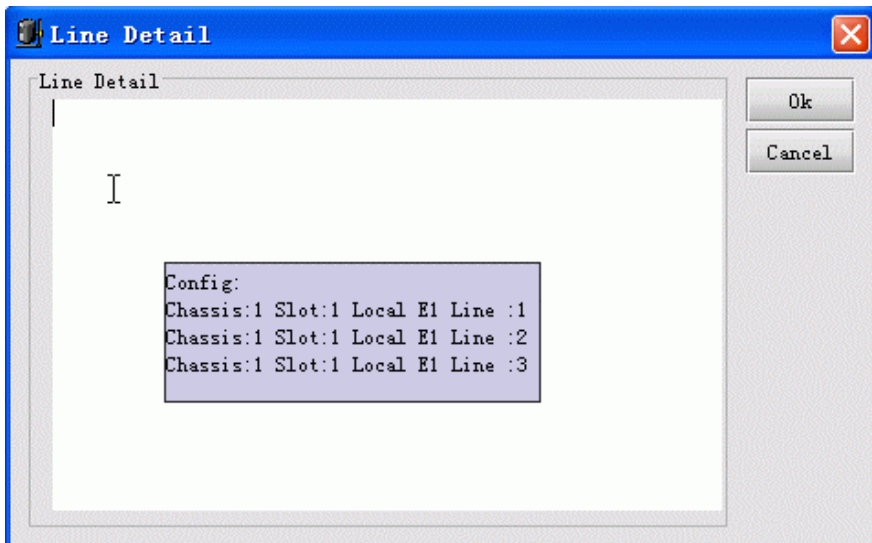


Figure 4-7 The Line Detail dialog box

Step 5. Input appropriate information into this box. For example, the characters of “E1 Line” we entered.

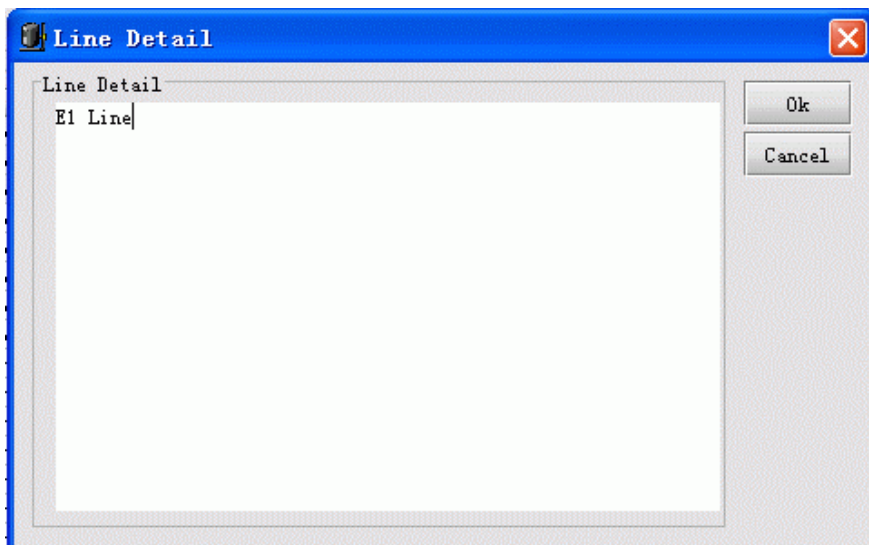


Figure 4-8 The Line Detail dialog box

Step 6. After you finish the operation, click [OK] button to save information into database.

Step 7. When complete successfully, a Hint message will appear informing you with this success.

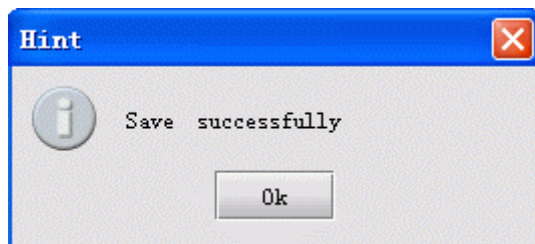


Figure 4-9 The Prompt Message

Step 8. Click [OK] button on this message box, the information table will be refreshed.



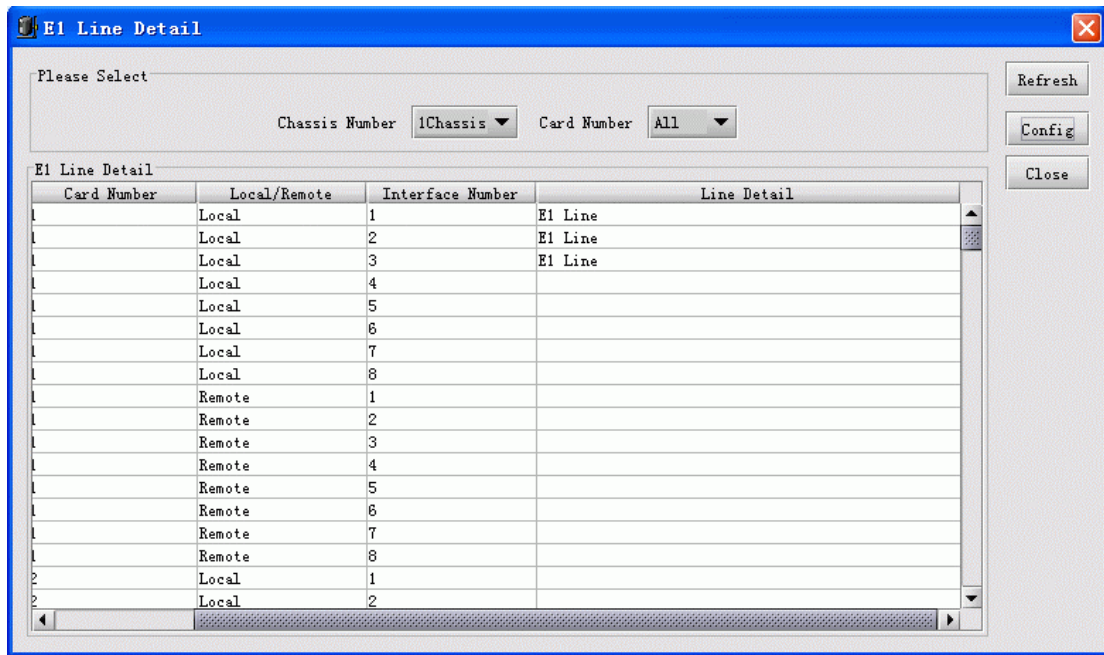


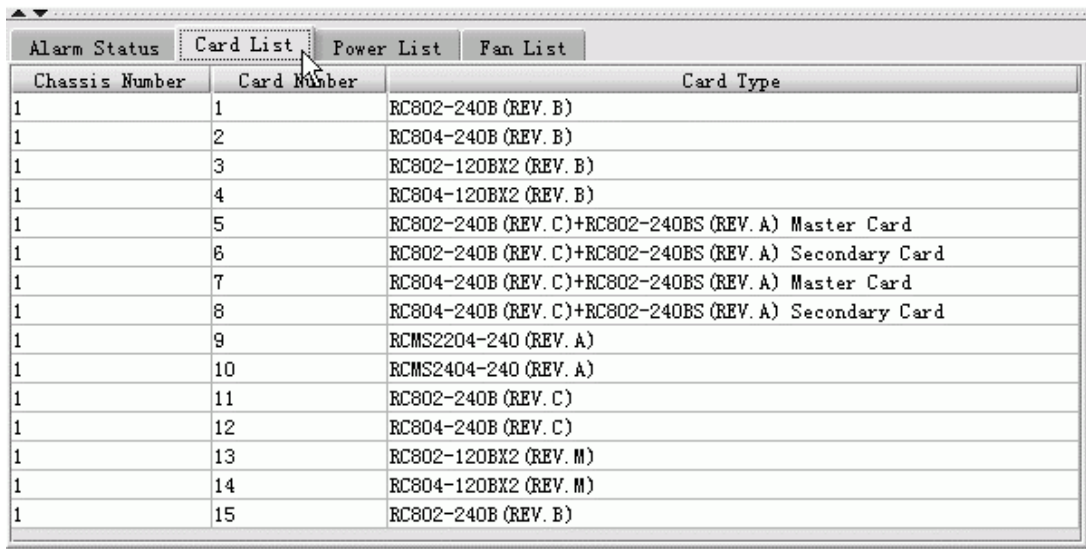
Figure 4-10 The E1 Line Detail dialog box

#### 4.1.4 Power Supply And Fan Status

Object	Icon	Implication
Power		Power is working normally.
		Power is working abnormally.
Fan		Fan is working normally.
		Fan is working abnormally.
Thermometer		The temperature is within acceptable range.

#### 4.1.5 Data List

You can view list for each object simply by clicking its relevant tab.

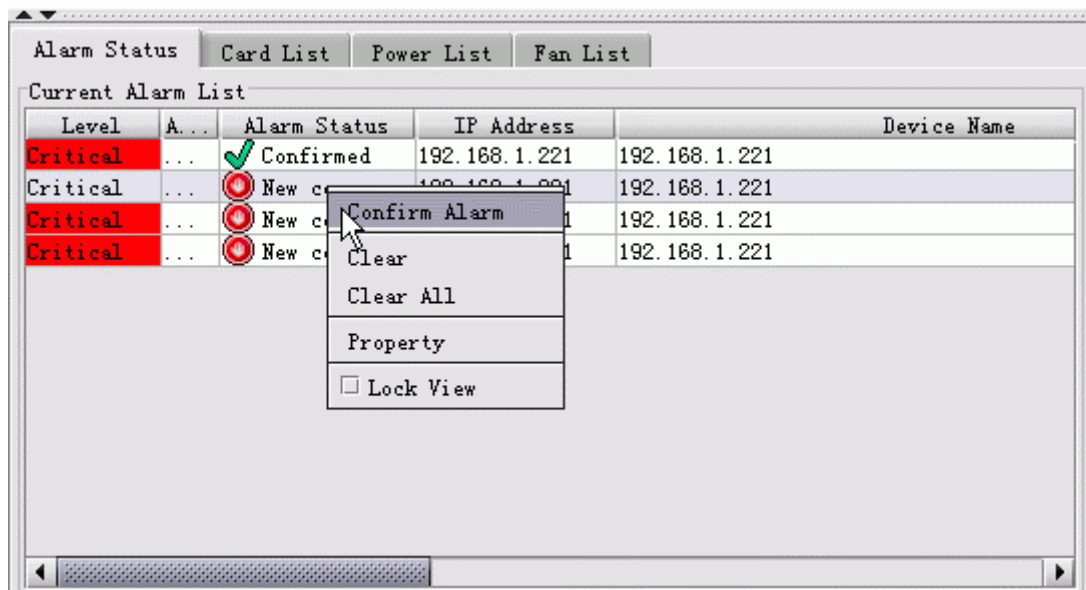


Chassis Number	Card Number	Card Type
1	1	RC802-240B (REV. B)
1	2	RC804-240B (REV. B)
1	3	RC802-120BX2 (REV. B)
1	4	RC804-120BX2 (REV. B)
1	5	RC802-240B (REV. C)+RC802-240BS (REV. A) Master Card
1	6	RC802-240B (REV. C)+RC802-240BS (REV. A) Secondary Card
1	7	RC804-240B (REV. C)+RC802-240BS (REV. A) Master Card
1	8	RC804-240B (REV. C)+RC802-240BS (REV. A) Secondary Card
1	9	RCMS2204-240 (REV. A)
1	10	RCMS2404-240 (REV. A)
1	11	RC802-240B (REV. C)
1	12	RC804-240B (REV. C)
1	13	RC802-120BX2 (REV. M)
1	14	RC804-120BX2 (REV. M)
1	15	RC802-240B (REV. B)

Figure 4-11 The Card List tab

### 4.1.5.1 Alarm List

The Alarm List displays alarms that are generated recently, yet haven't been confirmed or cleared. The following graph is an example of this tab.

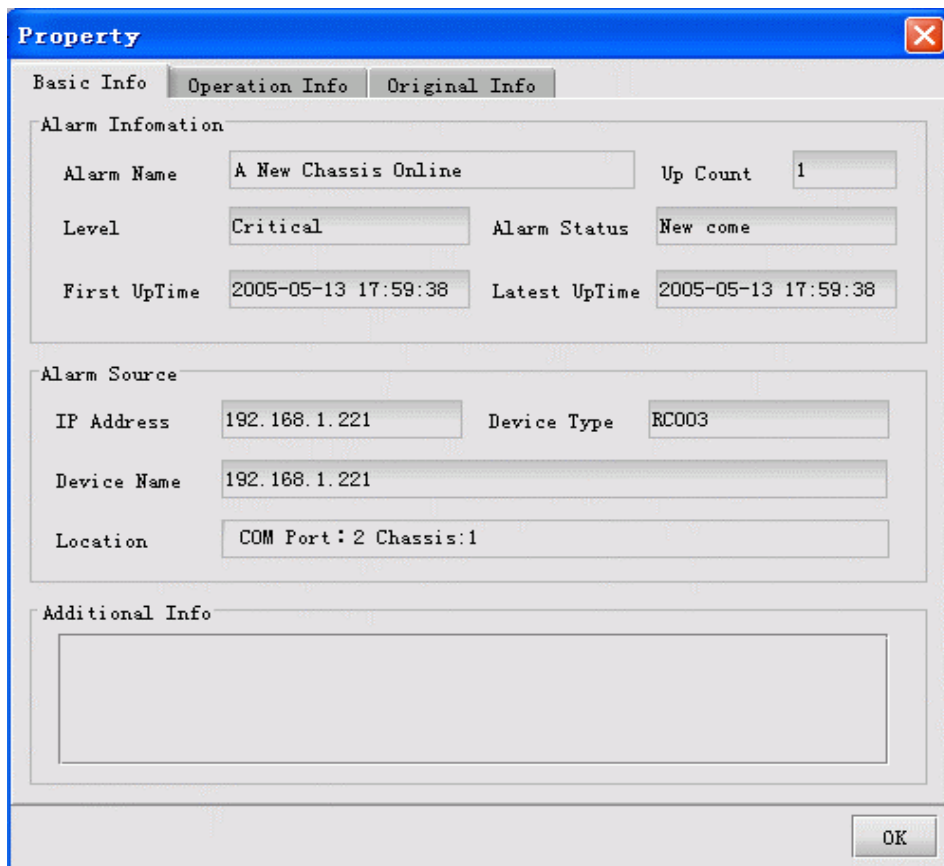


Level	A...	Alarm Status	IP Address	Device Name
Critical	...	Confirmed	192.168.1.221	192.168.1.221
Critical	...	New c...	192.168.1.221	192.168.1.221
Critical	...	New c...	192.168.1.221	192.168.1.221
Critical	...	New c...	192.168.1.221	192.168.1.221

Figure 4-12 The Alarm Status tab

Select one or more lines of alarm and right click, a menu will popup. Part of the items available on this menu are listed as follows:

Object	Description
Confirm Alarm	The alarms that have been acknowledged will not display in the Alarm List.
Property	Provides details for current selected alarm. It can be accessible by right clicking the [Property] item.
Lock View	When the view is locked, the newly generated alarms will not display in the Alarm List.



The image shows a 'Property' dialog box with three tabs: 'Basic Info', 'Operation Info', and 'Original Info'. The 'Operation Info' tab is selected. The dialog is divided into three sections: 'Alarm Information', 'Alarm Source', and 'Additional Info'. The 'Alarm Information' section contains fields for Alarm Name (A New Chassis Online), Up Count (1), Level (Critical), Alarm Status (New come), First UpTime (2005-05-13 17:59:38), and Latest UpTime (2005-05-13 17:59:38). The 'Alarm Source' section contains fields for IP Address (192.168.1.221), Device Type (RC003), Device Name (192.168.1.221), and Location (COM Port: 2 Chassis:1). The 'Additional Info' section is empty. An 'OK' button is located at the bottom right of the dialog.

Alarm Information	
Alarm Name	A New Chassis Online
Up Count	1
Level	Critical
Alarm Status	New come
First UpTime	2005-05-13 17:59:38
Latest UpTime	2005-05-13 17:59:38

Alarm Source	
IP Address	192.168.1.221
Device Type	RC003
Device Name	192.168.1.221
Location	COM Port: 2 Chassis:1

Additional Info	

Figure 4-13 The Property dialog box

#### 4.1.5.2 Card List

The Card List displays all cards plugged in current device as applicable. It covers the information such as Chassis Number (where a particular card is mounted), Card Number (the slot number where the particular card is mounted), Card Type and so on. Click a card on the device view, and its corresponding row in the Card List will be selected as well.

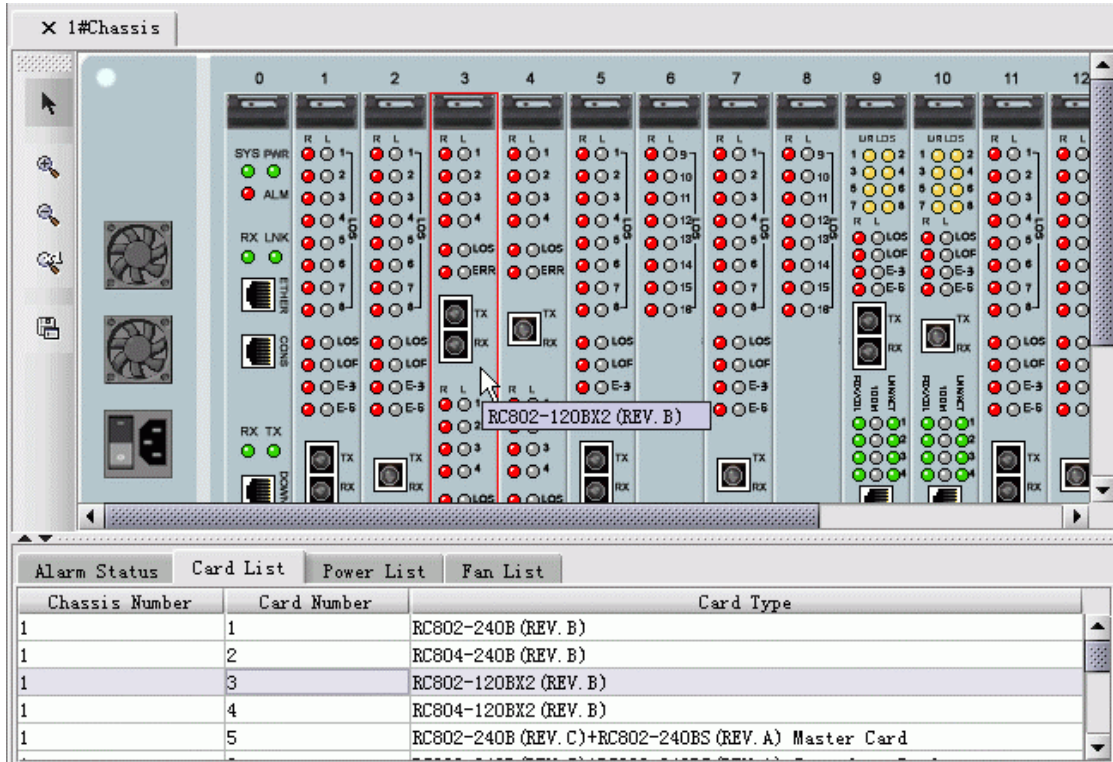


Figure 4-14 The Card List tab

### 4.1.5.3 Power List

The Power List displays all powers integrated in the current device as applicable. It provides information like Chassis Number, Power Status (Alarm, Normal) and so on.

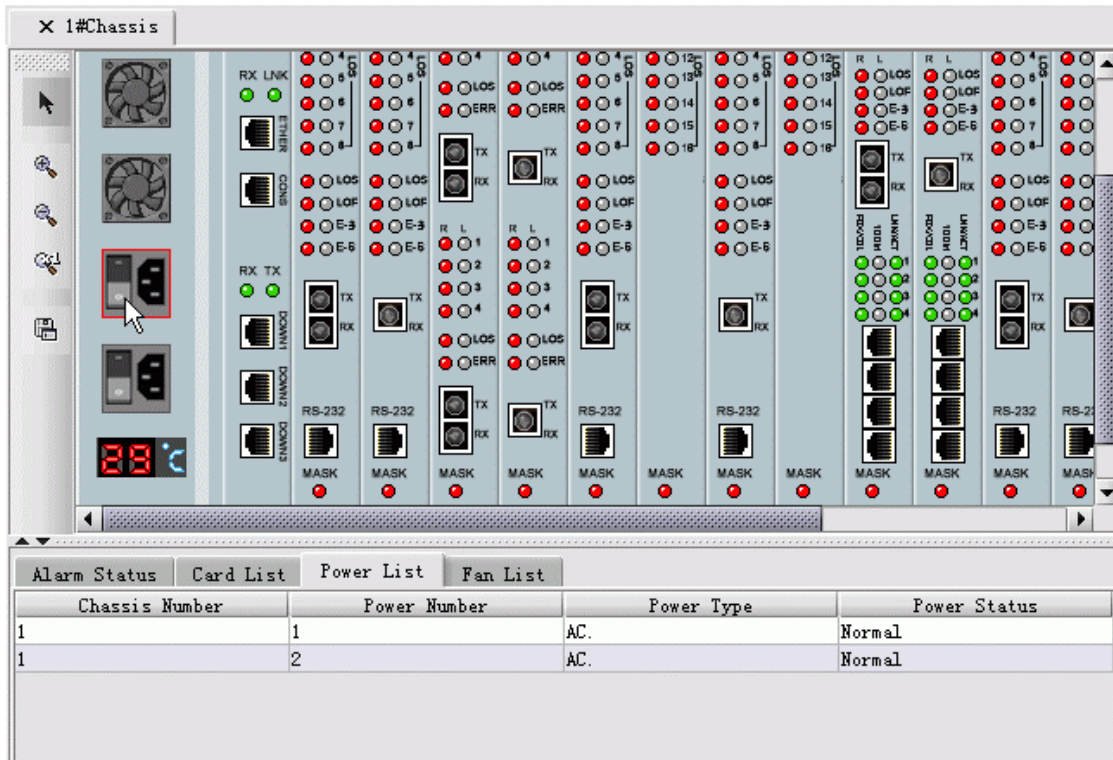


Figure 4-15 The Power List tab



### 4.1.5.4 Fan List

The Fan List displays all fans mounted on the current device as applicable. It covers the information like Chassis Number (where a particular fan is mounted), Fan Status (Alarm, Normal) and so on. Click a fan on the device view, and its corresponding row in the Fan List will be selected as well. See following figure for reference.

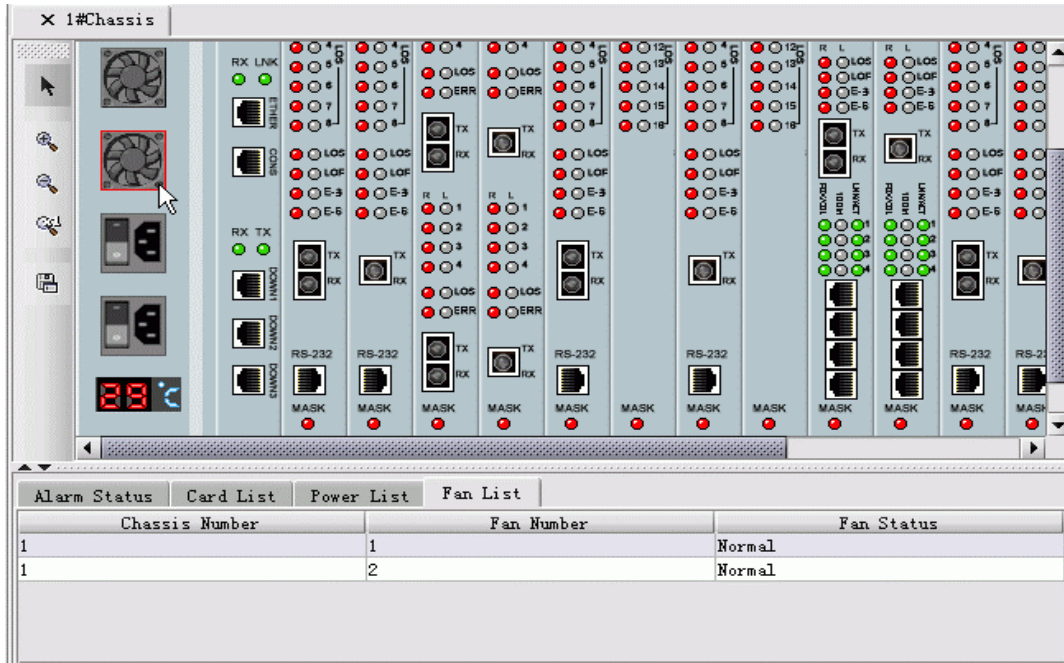


Figure 4-16 The Fan List tab

## 4.2 PC COM Port Management Mode

The main view of EMS under PC COM port management mode will be displayed as follows:

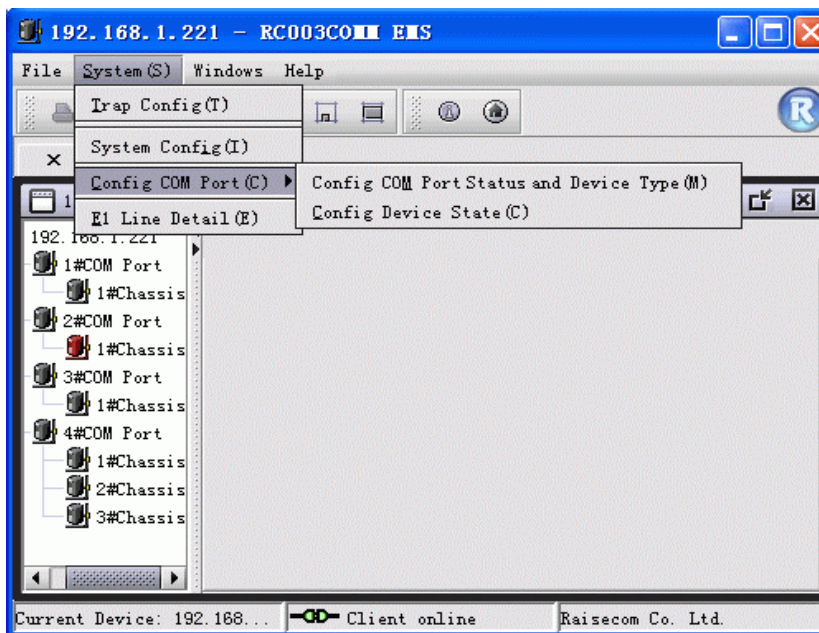


Figure 4-17 The COM Port menu

### 4.2.1 Trap Configuration

See description in section 4.1.1. Its specific function and operation are the same as described in that section, so we don't make more description here.

### 4.2.2 System Configuration

See description in section 4.1.2. Its specific function and operation are the same as described in that section, so we don't make more description here.

### 4.2.3 E1 Line Details

See description in section 4.1.3. Its specific function and operation are the same as described in that section, so we don't make more description here.

### 4.2.4 COM Port Configuration

#### 4.2.4.1 Device Type Configuration

When connect a device to specific port, you need to make configuration for this device for management. To do so, you need to configure device type for the COM port firstly.

Here's procedure for performing this operation:

Step 1. Select [System] menu on the EMS window, and select [Config COM Port] -> [Config COM Port Status and Device Type] item, a configuration interface similar to following figure will popup.

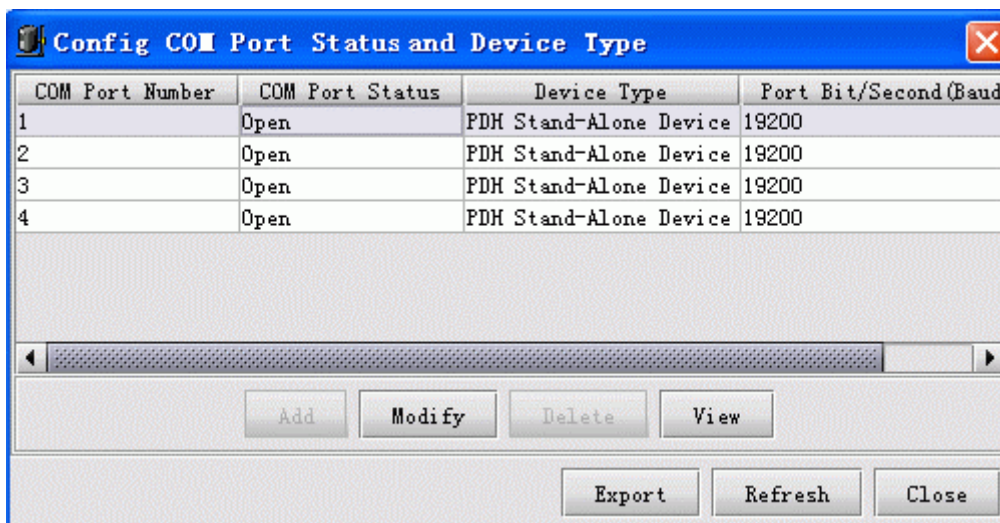


Figure 4-18 The Device Type Configuration dialog box

Step 2. Select the row of information pertaining to the COM Port to be modified, and click the [Modify] button, a configuration window similar to the following will popup.

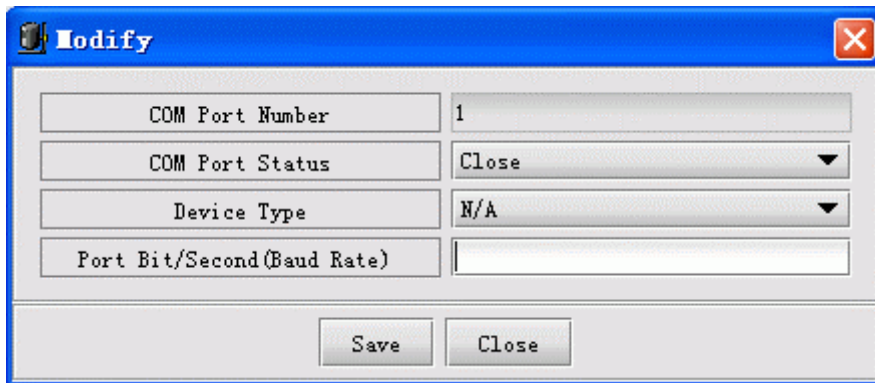


Figure 4-19 The Modify dialog box

The description of information available on this interface are listed as follows:

Object	Description
COM Port Number	The value of COM Port Number provided at present is from 1 to 16.
COM Port Status	Supports two status, open and close.
Device Type	The device type managed under current COM Port.
Port Bit/Second (Baud Rate)	The default value is 19200. It may be varying depending on the configuration of devices, see "Hardware User Manual" for details. The port bit can be configured properly only when this COMM Port is in close state, so it is required to keep the COMM Port in close when configuring this item.

The buttons available on this interface are listed as follows:

Object	Description
Save	Click this button to accept modification and close this window.
Close	Click this button to cancel operations and close this window.。

Step 3. Firstly, configure device type and baud rate for the device managed by this COM Port.

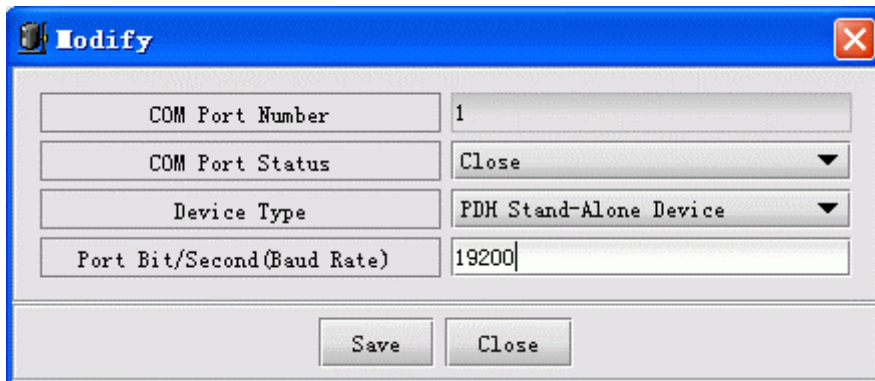


Figure 4-20 The Modify dialog box

**Note:** The Port Bit can be configured successfully only when this COM Port is in close state. So it is recommended you keep the COM Port in close as possible.

After you made modification to device type and port bit, click the [Save] button.

Step 4. After the successful save, change the COM Port Status to be Open, and click the [Save] button.

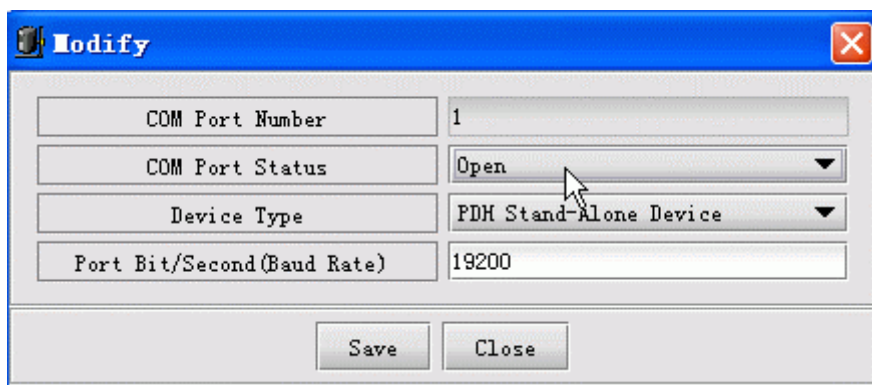


Figure 4-21 The Modify dialog box

#### 4.2.4.2 Chassis Online Configuration

The managed device could be discovered and managed by Network Management Software only if you have configured online state properly for it. This operation would take effective only after the preceding operation on “Device Type Configuration” is successful.

The procedure for this is:

Step 1. Select [**System**] menu on the EMS window, and select [**Config COM Port**] → [**Config Device State**] item, a configuration interface similar to the following will popup.

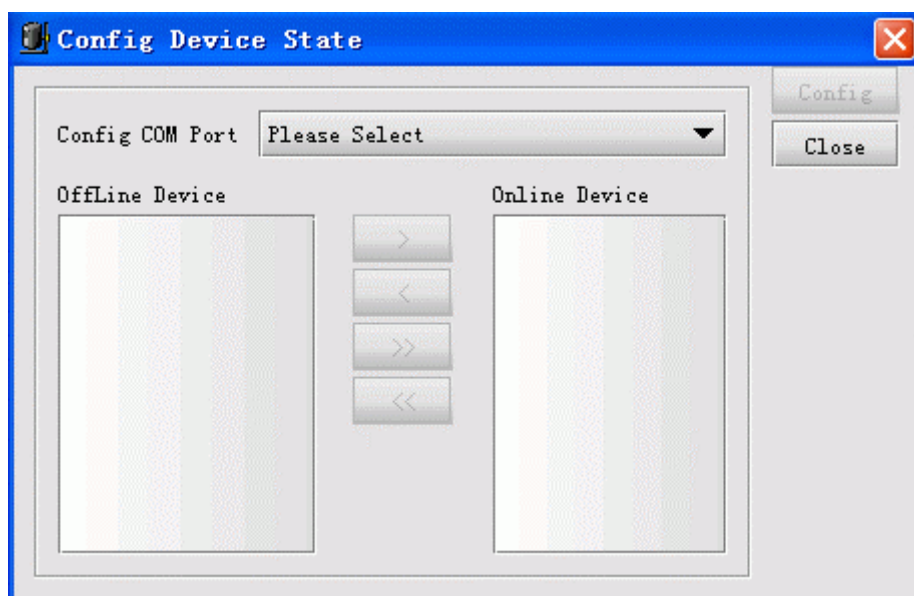


Figure 4-22 The Config Device State dialog box

Step 2. Select the [**Config COM Port**] item. If the COM Port you select has not been configured with relevant device type, a prompt message will appear as follows.



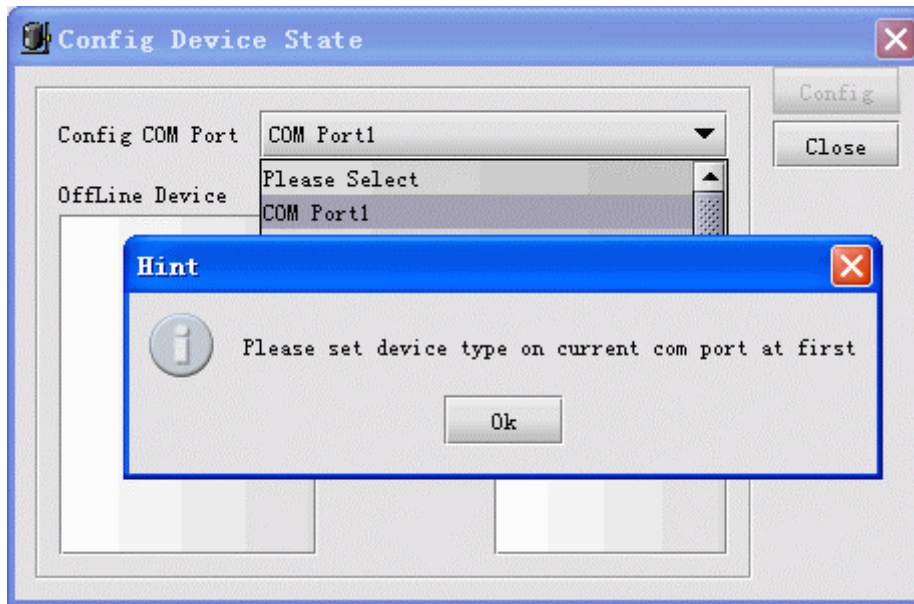


Figure 4-23 The Config Device State dialog box

If the COM Port you select has already been configured with relevant device type, the information of device type will be automatically attached after this COM Port.

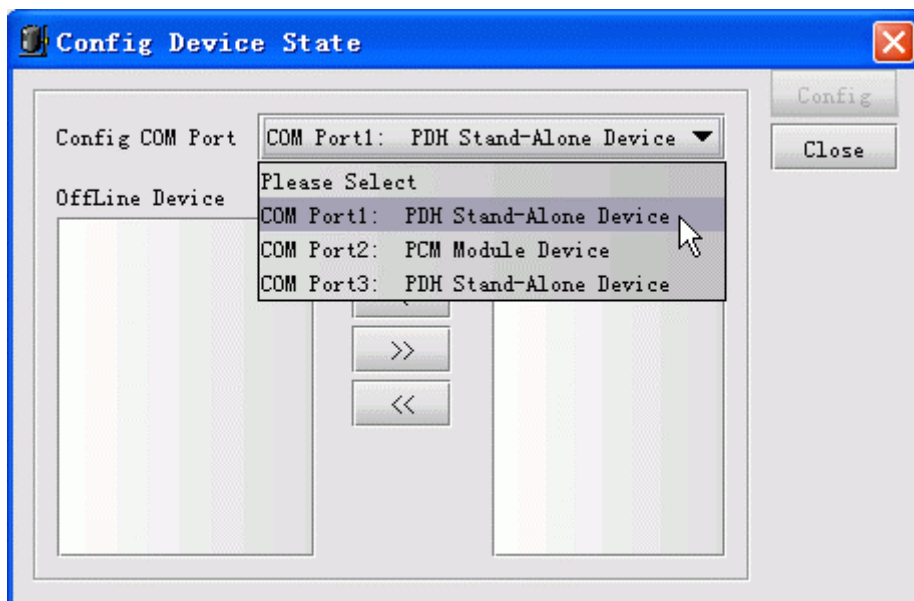


Figure 4-24 The Config Device State dialog box

After you have selected the relevant COM Port, the chassis list on right will display the online chassis that have been configured. And the left list displays all online chassis that haven't been configured.



Figure 4-25 The Config Device State dialog box

At this time, you can perform operations by using [>], [<], [>>] and [<<] button between the two lists.

Description for these buttons are as follows:

Item	Description
>	Move selected item(s) from Offline Device list to Online Device list
<	Move selected item(s) from Online Device list to Offline Device list
>>	Move all items from Offline Device list to Online Device list
<<	Move all items from Online Device list to Offline Device list

**Note:** Don't set all chassis presented within the list in Online state as possible, since this may reduce the polling efficiency of Agent proxy software. You'd better just set the chassis already connected with the current COM Port to be Online state.

Step 3. When you have configured online state, click the [**Config**] button.

### 4.3 Device Browser Tree Management

#### 4.3.1 Function Overview

Device browser tree is located on the left side of element management window. From it, user can easily browse through the devices beneath it and do relevant operations.

The Device Browser Tree uses different icons for indicating each chassis's current state. The icons used here include:

Object	Description
	Indicates current chassis is working normally, and has no alarm generated.
	Indicates current chassis has alarm(s) generated.
	It appears when some a chassis lost. In this case, double clicking this chassis will popup a message prompting <i>Chassis Loss</i> , and the device view could be opened no longer.

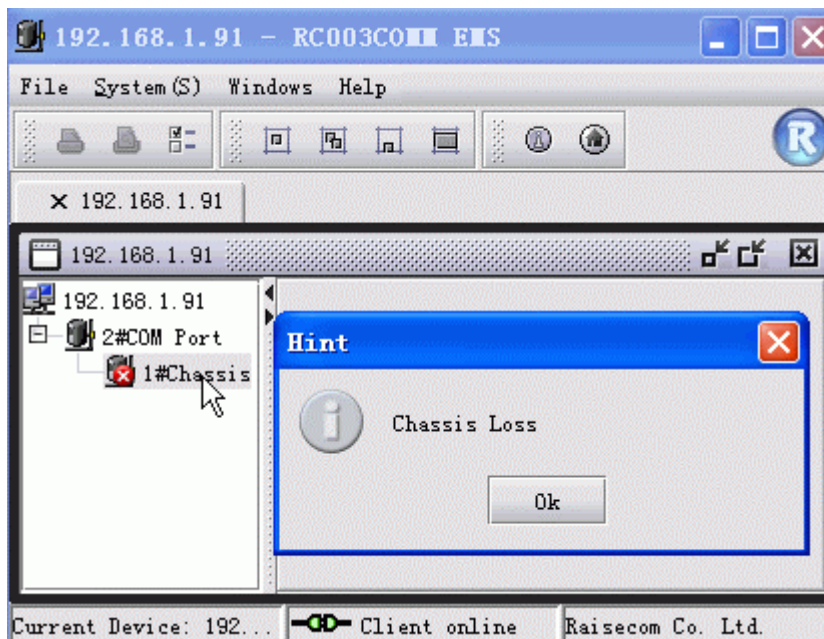


Figure 4-26 The prompt message which appears for Chassis Loss

### 4.3.2 Specific Operations

1. Right click menu available on the blank area around Chassis tree

Right click in the blank area around the Chassis tree, a menu similar to the following will popup.

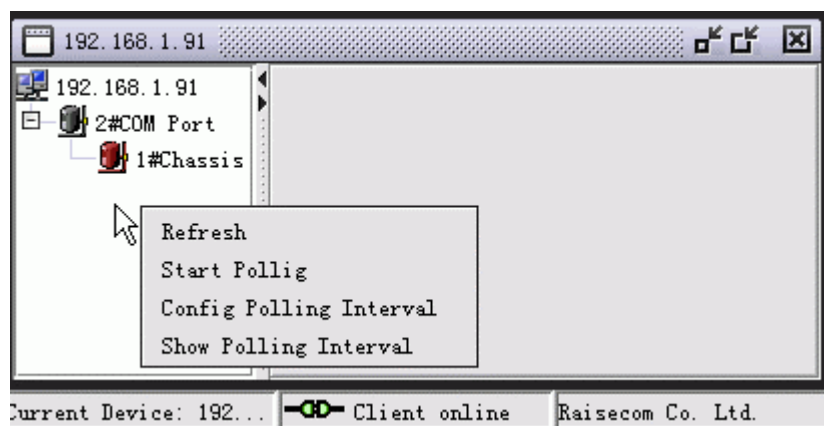


Figure 4-27 The right click menu available on the blank section of Chassis List

2. Right click menu available on root node of Chassis tree

Right click the root node of Chassis tree, a menu similar to the following will popup.

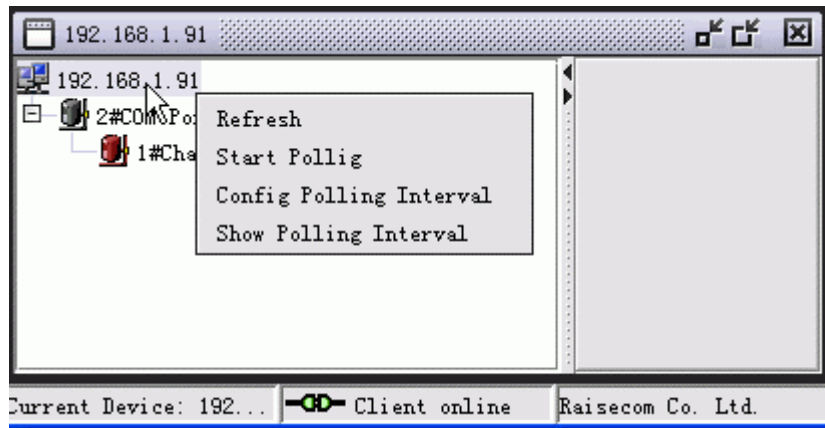


Figure 4-28 The right click menu available on the root node of Chassis List

3. Right click menu available on the node in loss state of Chassis tree

Right click the node that is in loss state on the Chassis tree, a menu similar to the following will popup.

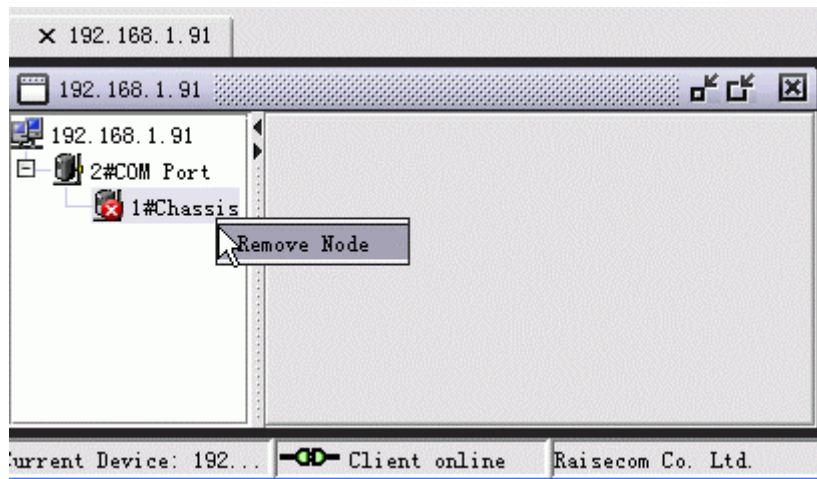


Figure 4-29 The right click menu available on the node in loss state of Chassis tree

As described above, the Device Browser Tree provides five kinds of operations in total. These are:

Object	Description
Refresh	Refresh Chassis List
Start/Stop Polling	Start or stop polling on Chassis List tree
Config Polling Interval	Configure polling interval for current Chassis tree
Show Polling Interval	View polling interval of current Chassis tree
Delete Node	Delete selected node from the Chassis Browse Tree. Only the nodes in Chassis Loss (🚫) state on the Chassis tree have this menu item

**Note:** The polling operation triggered by right click menu available on Device Browser Tree is performed for the Chassis Browser Tree itself. When the Chassis tree has experienced changes such as node adding, deleting and alarm generated, polling it will display the latest chassis state in view.








### 4.4 Control Tool Bar On The View



Figure 4-30 The Tool Bar on the View

The Chassis Management window is also configured with a tool bar which provides several functions including Mouse Interaction, Zoom In, Zoom Out, Restore and Save function. You can click these buttons on left side of the window directly to launch relevant operations. The description for these buttons are as follows:

GUI	Object	Description
	Mouse Interaction	Trigger mouse event when selected, such as launch right click menu while holding the cursor upon an object. With no operation when unselected.
	Zoom In	Zoom in the device view by proportion.
	Zoom Out	Zoom out the device view by proportion.
	Restore	Restore the device view into initial size.
	Save	Save the device view as a picture.

## Chapter 5. Alarm And Event Management

### 5.1 Viewing Current Alarm

- Open the Current Alarms Management window

Double click Nview platform function tree, and select [**Current Alarm Management**]

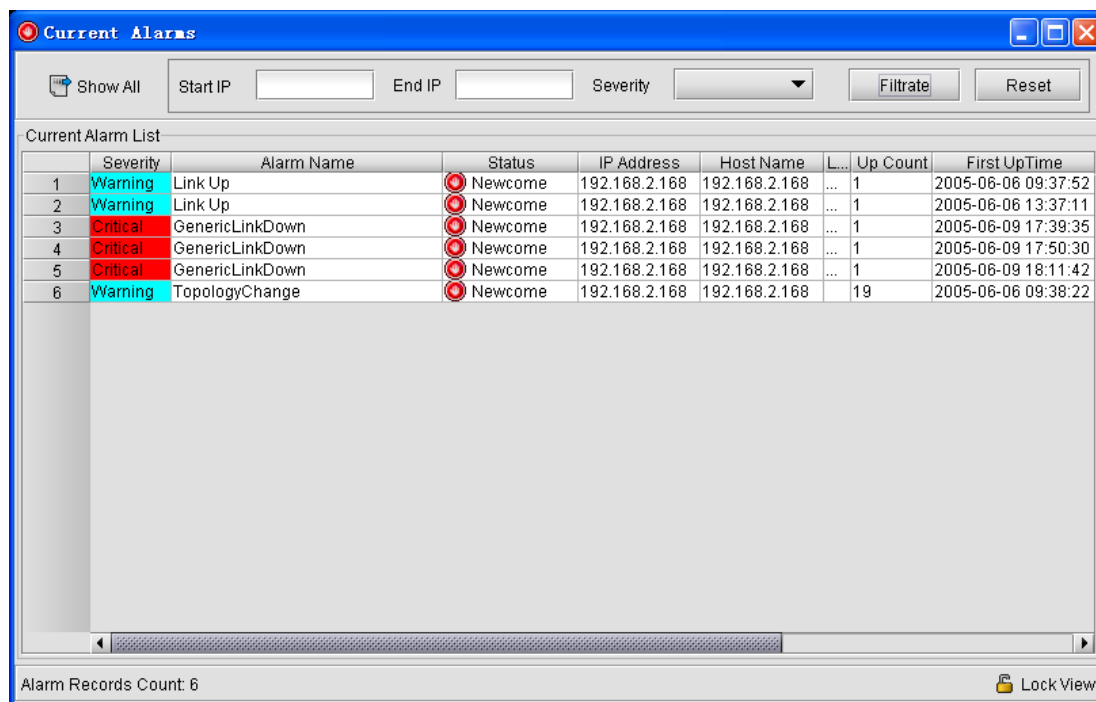


Figure 5-1 The Current Alarms window

- Acknowledge Alarm(s)

Select a row of records with “Newcome” state presented in the “Status” column from the Alarm List, and select [**Acknowledge**] from the right click menu.

- Clear Current Alarm(s)

Select one or more alarms from the Alarm List, and select [**Clear**] from the right click menu.

- Export Current Alarm(s)

Select [**Export**] from the right click menu to export a list of alarms into Text file or Excel file.

- Filtering Current Alarm(s)

Enter the filtration conditions including “IP Address Range” and Alarm Level, then click [**Filter**].

**Note:** The IP Address Range supports asterisk wildcard “\*”. For example, “192.168.1.\*”, the address range of asterisk wildcard here can be set as “Start IP Address”.

- View Alarm Details

Click a record in the Alarm List, and select [**Properties**] from the right click menu.

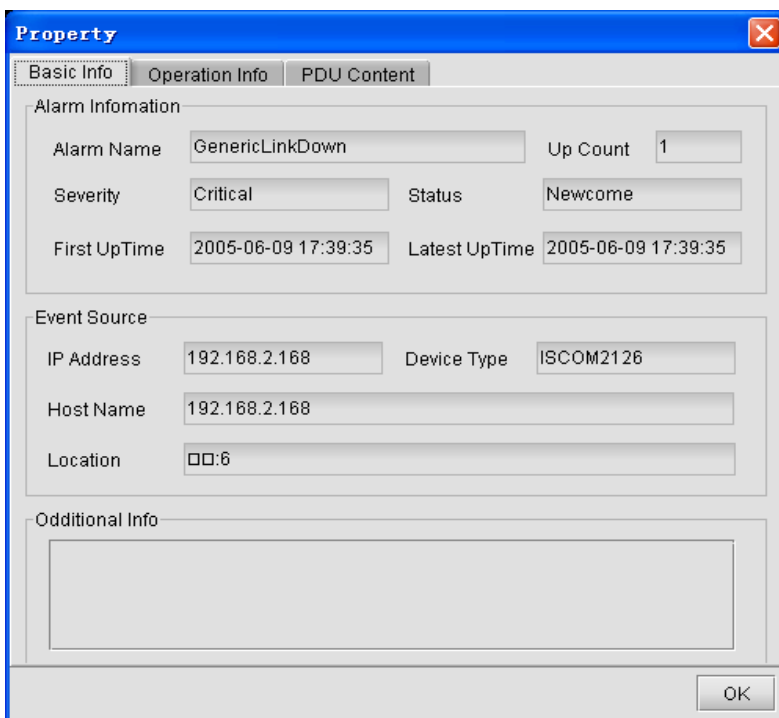


Figure 5-2 The Property dialog box

## 5.2 Viewing History Alarm

- Open the History Alarm Management window

Double click on the “Nview Platform Function Tree”, and select [History Alarm Management]

The History Alarms window displays a table with the following columns: Severity, Alarm Name, Status, IP Address, Host Name, Up Count, and First UpTime. The table contains 25 records, all with a severity of 'Critical' and an alarm name of 'GenericLinkDown'. The status for all records is 'Recovered'. The IP Address and Host Name for all records is '192.168.2.168'. The Up Count varies between 1 and 3. The First UpTime ranges from 2005-06-06 12:06:13 to 2005-06-10 09:19:43.

	Severity	Alarm Name	Status	IP Address	Host Name	Up Count	First UpTime
1	Critical	GenericLinkDown	Recovered	192.168.2.168	192.168.2.168	1	2005-06-10 09:19:43
2	Critical	GenericLinkDown	Recovered	192.168.2.168	192.168.2.168	1	2005-06-09 18:15:07
3	Critical	GenericLinkDown	Recovered	192.168.2.168	192.168.2.168	3	2005-06-07 17:30:54
4	Critical	GenericLinkDown	Recovered	192.168.2.168	192.168.2.168	1	2005-06-09 13:33:12
5	Critical	GenericLinkDown	Recovered	192.168.2.168	192.168.2.168	1	2005-06-09 13:24:51
6	Critical	GenericLinkDown	Recovered	192.168.2.168	192.168.2.168	1	2005-06-09 13:13:55
7	Critical	GenericLinkDown	Recovered	192.168.2.168	192.168.2.168	1	2005-06-09 13:13:24
8	Critical	GenericLinkDown	Recovered	192.168.2.168	192.168.2.168	1	2005-06-09 13:10:28
9	Critical	GenericLinkDown	Recovered	192.168.2.168	192.168.2.168	1	2005-06-09 12:26:06
10	Critical	GenericLinkDown	Recovered	192.168.2.168	192.168.2.168	1	2005-06-09 12:00:33
11	Critical	GenericLinkDown	Recovered	192.168.2.168	192.168.2.168	1	2005-06-09 09:21:16
12	Critical	GenericLinkDown	Recovered	192.168.2.168	192.168.2.168	1	2005-06-09 09:20:54
13	Critical	GenericLinkDown	Recovered	192.168.2.168	192.168.2.168	1	2005-06-09 09:20:24
14	Critical	GenericLinkDown	Recovered	192.168.2.168	192.168.2.168	2	2005-06-07 17:29:55
15	Critical	GenericLinkDown	Recovered	192.168.2.168	192.168.2.168	1	2005-06-08 17:00:32
16	Critical	GenericLinkDown	Recovered	192.168.2.168	192.168.2.168	2	2005-06-07 13:55:41
17	Critical	GenericLinkDown	Recovered	192.168.2.168	192.168.2.168	1	2005-06-07 17:34:04
18	Critical	GenericLinkDown	Recovered	192.168.2.168	192.168.2.168	1	2005-06-07 13:46:45
19	Critical	GenericLinkDown	Recovered	192.168.2.168	192.168.2.168	1	2005-06-07 13:46:17
20	Critical	GenericLinkDown	Recovered	192.168.2.168	192.168.2.168	1	2005-06-06 17:13:03
21	Critical	GenericLinkDown	Recovered	192.168.2.168	192.168.2.168	1	2005-06-06 14:25:48
22	Critical	GenericLinkDown	Recovered	192.168.2.168	192.168.2.168	1	2005-06-06 13:37:11
23	Critical	GenericLinkDown	Recovered	192.168.2.168	192.168.2.168	1	2005-06-06 13:23:21
24	Critical	GenericLinkDown	Recovered	192.168.2.168	192.168.2.168	1	2005-06-06 12:31:25
25	Critical	GenericLinkDown	Recovered	192.168.2.168	192.168.2.168	1	2005-06-06 12:06:13

Figure 5-3 The History Alarms window

- Delete history alarm(s)

Select one or more records in the Alarm List, and select [Delete] from the right click menu.

- Export history alarm(s)

Select [**Export**] from the right click menu to export the record(s) into a Text or Excel file.

- View alarm details

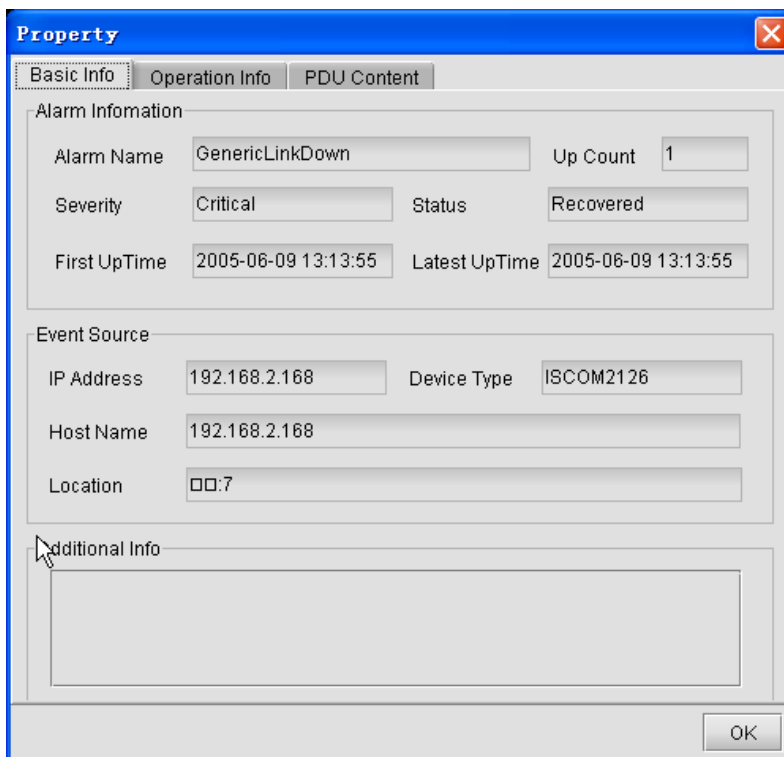


Figure 5-4 The Property dialog box

- Query history alarm(s)

Select [**Query**] from the right click menu, the Query Condition panel will appear. It enables query on history alarms by condition(s) of device node, time range, alarm type and alarm level.

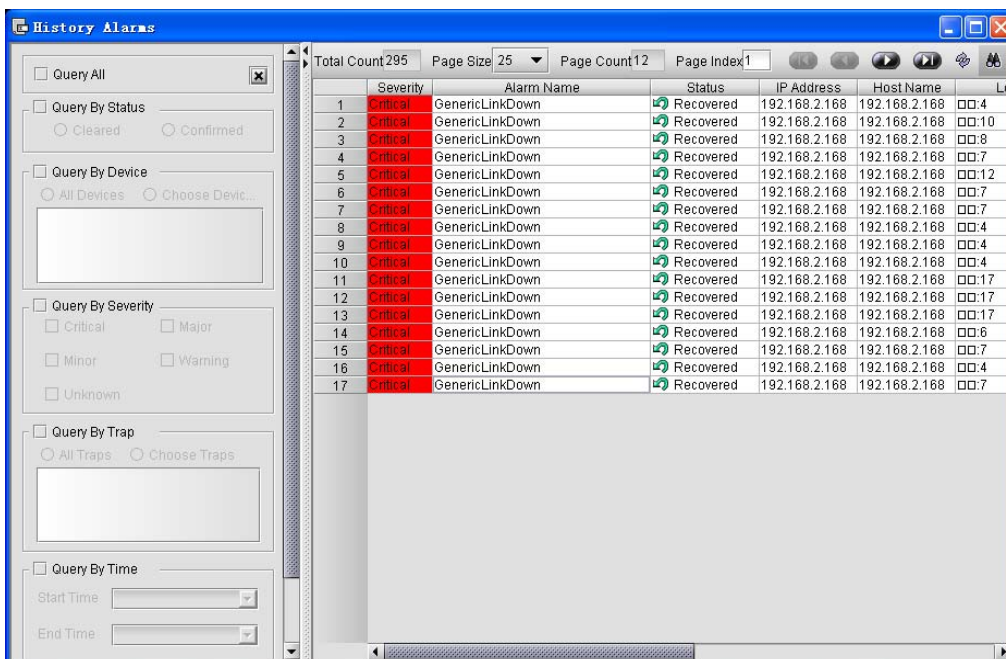


Figure 5-5 The History Alarms Query window

## Appendix A Alarm Type

### 1. The Alarm Typies Supported By Standalone PDH

Serial Number	Full Name	Source
0	Cold Start	1U
1	Optical Port Local LOS Alarm	1U
2	Optical Port Local LOS Alarm Recover	1U
3	Optical Port Remote LOS Alarm	1U
4	Optical Port Remote LOS Alarm Recover	1U
5	Optical Port Local LOF Alarm	1U
6	Optical Port Local LOF Alarm Recover	1U
7	Optical Port Remote LOF Alarm	1U
8	Optical Port Remote LOF Alarm Recover	1U
9	Optical Port Local Error Code Ratio More Than 10E-3 Alarm	1U
10	Optical Port Local Error Code Ratio More Than 10E-3 Alarm Recover	1U
11	Optical Port Local Error Code Ratio More Than 10E-6 Alarm	1U
12	Optical Port Local Error Code Ratio More Than 10E-6 Alarm Recover	1U
13	Optical Port Remote Error Code Ratio More Than 10E-3 Alarm	1U
14	Optical Port Remote Error Code Ratio More Than 10E-3 Alarm Recover	1U
15	Optical PortRemote Error Code Ratio More Than 10E-6 Alarm	1U
16	Optical PortRemote Error Code Ratio More Than 10E-6 Alarm Recover	1U
17	Local E1 Line LOS Alarm	1U
18	Local E1 Line LOS Alarm Recover	1U
19	Remote E1 Line LOS Alarm	1U
20	Remote E1 Line LOS Alarm Recover	1U
21	Chassis Loss Alarm	1U
22	A New Chassis Online	1U
23	Chassis Temperature Alarm	1U
24	Chassis Temperature Alarm Recover	1U
25	Chassis Power Alarm	1U
26	Chassis Power Alarm Recover	1U
27	Card Loss Alarm	1U
28	A New Device Online	1U
29	The First Extend Module Loss Alarm	1U
30	The First Extend Module Online	1U
31	The Second Extend Module Loss Alarm	1U
32	The Second Extend Module Online	1U
33	E1 AIS,Alarm	1U
34	E1 AID Alarm Recover	1U
35	E1 LOF Alarm	1U
36	E1 LOF Alarm Recover	1U
37	E1 CRC Alarm	1U



Serial Number	Full Name	Source
38	E1 CRC Alarm Recover	1U
39	Remote Module General Alarm	1U
40	Remote Module General Alarm Recover	1U
41	Local Ethernet Port Link Down	1U
42	Local Ethernet Port Link Up	1U
43	Local Ethernet Port Speed Change to 10M	1U
44	Local Ethernet Port Speed Change to 100M	1U
45	Local Ethernet Port Status Change to HDX	1U
46	Local Ethernet Port Status Change to FDX	1U
47	Voltage out of Upper Limit Alarm	None
48	Voltage out of Upper Limit Alarm Recover	None
49	Voltage out of Lower Limit Alarm	None
50	Voltage out of Lower Limit Alarm Recover	None
51	Fiber Channel Link Down	None
52	Fiber Channel Link Up	None
53	Multi Fiber Channel Receive Link Down	None
54	Multi Fiber Channel Receive Link Up	None
55	Multi Fiber Channel Send Link Down	None
56	Multi Fiber Channel Send Link Up	None
57	Remote Ethernet Port Link Down	1U
58	Remote Ethernet Port Link Up	1U
59	Remote Ethernet Port Speed Change to 10M	1U
60	Remote Ethernet Port Speed Change to 100M	1U
61	Remote Ethernet Port Status Change to HDX	1U
62	Remote Ethernet Port Status Change to FDX	1U
63	Remote Fiber Channel Link Down	None
64	Remote Fiber Channel Link Up	None
65	Fan Fault	None
66	Fan Fault Recover	None
67	Power Fault	None
68	Power Fault Recover	None
69	Local Total Alarm	1U
70	Local Total Alarm Recover	1U
71	Remote Total Alarm	1U
72	Remote Total Alarm Recover	1U
73	COM Port Closed	1U
74	COM Port Opened	1U

## 2. The Alarm Typies Supported By RC004-16 Modular PDH

Serial Number	Alarm Name	Source
0	Cold Start	10U
1	Optical Port Local LOS Alarm	10U, 1U
2	Optical Port Local LOS Alarm Recover	10U, 1U
3	Optical Port Remote LOS Alarm	10U, 1U
4	Optical Port Remote LOS Alarm Recover	10U, 1U
5	Optical Port Local LOF Alarm	10U, 1U
6	Optical Port Local LOF Alarm Recover	10U, 1U
7	Optical Port Remote LOF Alarm	10U, 1U
8	Optical Port Remote LOF Alarm Recover	10U, 1U
9	Optical Port Local Error Code Ratio More Than 10E-3 Alarm	10U, 1U
10	Optical Port Local Error Code Ratio More Than 10E-3 Alarm Recover	10U, 1U
11	Optical Port Local Error Code Ratio More Than 10E-6 Alarm	10U, 1U
12	Optical Port Local Error Code Ratio More Than 10E-6 Alarm Recover	10U, 1U
13	Optical Port Remote Error Code Ratio More Than 10E-3 Alarm	10U, 1U
14	Optical Port Remote Error Code Ratio More Than 10E-3 Alarm Recover	10U, 1U
15	Optical Port Remote Error Code Ratio More Than 10E-6 Alarm	10U, 1U
16	Optical Port Remote Error Code Ratio More Than 10E-6 Alarm Recover	10U, 1U
17	Local E1 Line LOS Alarm	10U, 1U
18	Local E1 Line LOS Alarm Recover	10U, 1U
19	Remote E1 Line LOS Alarm	10U, 1U
20	Remote E1 Line LOS Alarm Recover	10U, 1U
21	Chassis Loss Alarm	10U, 1U
22	A New Chassis Online	10U, 1U
23	Chassis Temperature Alarm	10U
24	Chassis Temperature Alarm Recover	10U
25	Chassis Power Alarm	10U
26	Chassis Power Alarm Recover	10U
27	Card Loss Alarm	10U, 1U
28	A New Card Online	10U, 1U
29	Fan Alarm	10U, 1U
30	Fan Alarm Recover	10U
31(32)	Card Type Changed	10U
33	E1 AIS Alarm	10U, 1U
34	E1 AIS Alarm Recover	10U, 1U
35	E1 LOF Alarm	10U, 1U
36	E1 LOF Alarm Recover	10U, 1U

Serial Number	Alarm Name	Source
37	E1 CRC Alarm	10U, 1U
38	E1 CRC Alarm Recover	10U, 1U
39	Remote Module General Alarm	10U, 1U
40	Remote Module General Alarm Recover	10U, 1U
41	Interface Link Down	10U, 1U
42	Interface Link Up	10U, 1U
43	Interface Speed Change to 10M	10U, 1U
44	Interface Speed Change to 100M	10U, 1U
45	Interface Status Change to HDX	10U, 1U
46	Interface Status Change to FDX	1U
47	The First Extend Module Loss Alarm	1U
48	The First Extend Module Online	1U
49	The Second Extend Module Loss Alarm	1U
50	The Second Extend Module Online	1U
51	Remote Chassis Temperature Alarm	1U
52	Remote Chassis Temperature Alarm Recover	1U
53	Local Total Alarm	1U
54	Local Total Alarm Recover	1U
55	Remote Total Alarm	1U
56	Remote Total Alarm Recover	1U

## Appendix B Abbreviation List

Abbreviation	Full Name
ADM	Add-Drop Multiplexer
AIS	Alarm Indication Signal
APS	Automatic Protection Switching
ASON	Automatic Switched Optical Network
ASTN	Automatic Switched Transport Network
ATM	Asynchronous Transfer Mode
AU	Administrative Unit
AU-n	Administration Unit, level n
AUG	Administration Unit Group
AU-PTR	Administration Unit Pointer
BA	Booster Amplifier
BBE	Background Block Error
BBER	Background Block Error Ratio
BER	Bit Error Ratio
BITS	Building Integrated Timing Supply
BML	Business Management Layer
CMI	Coded Mark Inversion
C-n	Container-n
CORBA	Common Object Request Broker Architecture
CV	Code Violation
DB	Data Base
DBMS	Data Base Management System
DCC	Data Communications Channel
DCE	Data Circuit-terminating Equipment
DCF	Data Communications Function
DCN	Data Communications Network
DDN	Digital Data Network
DLL	Dynamic Link Libraries
DNA	Distributed Network Architecture
DNI	Dual Node Interconnection
DQDB	Distributed Queue Double Bus
DTE	Data Terminal Equipment
DWDM	Dense Wavelength-division Multiplexing
DXC	Digital Cross Connect
ECC	Embedded Control Channel
EDFA	Erbium Doped Fiber Amplifier
EM	Element Management
EMC	ElectroMagnetic Compatibility
EMI	ElectroMagnetic Interference
EML	Element Management Layer
EMS	Element Management System
EOS	Ethernet Over SDH

ES	Error Second
ESD	Electronic Static Discharge
ESR	Error Second Ratio
ETSI	European Telecommunication Standards Institute
FDM	Frequency Division Multiplexing
FDDI	Fiber Distributed Data Interface
FEBBE	Far End Background Block Error
FEES	Far End Error Second
FESES	Far End Severely Error Second
GUI	Graphical User Interface
HDLC	High Digital Link Control
HPC	Higher order Path Connection
HW	High-Way
IP	Internet Protocol
ITU-T	International Telecommunication Union-Telecommunication Standardization Sector
L2	Layer 2
LAN	Local Area Network
LAPD	Link Access Procedure On D-channel
LCT	Local Craft Terminal
LOF	Loss Of Frame
LOP	Loss Of Pointer
LOS	Loss Of Signal
LPC	Lower order Path Connection
MAC	Medium Access Control
MAN	Metropolitan Area Network
MCU	Micro Control Unit
MD	Mediation Device
MF	Mediation Function
MII	Medium Independent Interface
MM	Multi Mode
MS	Multiplex Section
MS-AIS	Multiplex Sections -Alarm Indication Signal
MS-PSC	Multiplex Sections - Protection Switching Count
MS-PSD	Multiplex Sections - Protection Switching Duration
MS-SPRing	Multiplexer Section Shared Protection Ring
MSAP	Multiple Service Access Platform
MSOH	Multiplex Section OverHead
MSP	Multiplex Section Protection
MSTP	Multiple Service Transport Platform
MSSP	Multiple Service Switching Platform
MTIE	Maximum Time Interval Error
NE	Network Element
NEF	Network Element Function
NEL	Network element Layer



NML	Network Manager Layer
NMS	Network Management System
OAM	Operation, Administration and Maintenance
OFS	Out of Frame Second
OOF	Out of Frame
OS	Operation System
OSF	Operation System Function
OSI	Open System Interconnect
PCB	Printed Circuit Board
PCM	Pulse Code Modulation
PDH	Plesiochronous Digital Hierarchy
PGND	Protection GND
TDEV	Time Deviation
TDM	Time Division Multiplex
TIM	Trace Identifier Mismatch
TM	Terminal Multiplexer
TMN	Telecommunications Management Network
TU	Tributary Unit
UAS	Unavailable Second
VC	Virtual Container
VC-n	Virtual Container, level n
VDN	Virtual Data Network
VLAN	Virtual Local Area Network
WAN	Wide Area Network
WDM	Wavelength Division Multiplexing
WS	Work Station
WSF	Work Station Function