



ICO-100 Series
Remote Field Controller
User's Manual

Disclaimers

This manual has been carefully checked and believed to contain accurate information. AXIOMTEK Co., Ltd. assumes no responsibility for any infringements of patents or any third party's rights, and any liability arising from such use.

AXIOMTEK does not warrant or assume any legal liability or responsibility for the accuracy, completeness or usefulness of any information in this document. AXIOMTEK does not make any commitment to update the information in this manual.

AXIOMTEK reserves the right to change or revise this document and/or product at any time without notice.

No part of this document may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of AXIOMTEK Co., Ltd.

**©Copyright 2008 AXIOMTEK Co., Ltd.
All Rights Reserved
January, Version A1
Printed in Taiwan**

Safety Approvals

- ◆ CE Marking
- ◆ FCC Class A

This equipment has been tested and complies with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. If not installed and used in accordance with proper instructions, this equipment might generate or radiate radio frequency energy and cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

Shielded interface cables must be used in order to comply with emission limits.

Safety Precautions

Before getting started, read the following important cautions.

1. The **ICO-100 Series** does not come equipped with an operating system. An operating system must be loaded first before installing any software into the computer.
2. Be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and place all electronic components in any static-shielded devices. Most electronic components are sensitive to static electrical charge.
3. Disconnect the power cord from the **ICO-100 Series** before making any installation. Be sure both the system and the external devices are turned OFF. Sudden surge of power could ruin sensitive components. Make sure the **ICO-100 Series** is properly grounded.

Trademarks Acknowledgments

AXIOMTEK is a trademark of AXIOMTEK Co., Ltd.

IBM, PC/AT, PS/2, VGA are trademarks of International Business Machines Corporation.

Intel[®] and Pentium[®] are trademarks of Intel Corporation.

MS-DOS, Microsoft C and Quick BASIC are trademarks of Microsoft Corporation.

VIA is a trademark of VIA Technologies, Inc.

SST is a trademark of Silicon Storage Technology, Inc.

UMC is a trademark of United Microelectronics Corporation.

Other brand names and trademarks are the properties of their respective owners.

Table of Contents

Disclaimers	ii
Safety Approvals	iii
FCC Compliance.....	iii
Safety Precautions	iv
Chapter 1 Introduction	1
1.1 General Description.....	1
1.2 Specifications	2
1.2.1 Main CPU board	2
1.2.2 I/O System	2
1.2.3 System Specification.....	3
1.3 Dimensions.....	3
1.4 I/O Outlets	8
1.5 Package list	9
Chapter 2 Hardware Installation	11
2.1 Installing the CompactFlash Card	11
2.2 Installing the Hard Drive	12
2.3 Installing PC/I04	22
2.4 Serial Port Interface.....	25
2.5 Ethernet.....	26
2.6 Mounting Way: Wall Mount	26
2.7 Mini-PCI WLAN Module (optional)	27
Chapter 3 Driver Installation.....	31
3.1 Network Controller.....	32
3.2 AES Driver Installation	35
3.3 VGA Driver Installation	39
3.4 PCI Bridge Driver Installation	43
3.5 Audio Driver Installation	47
3.6 WLAN Driver Installation	51
Chapter 4 Remote Monitoring Tool.....	53
4.1 Remote Tool Installation.....	54
4.2 Monitoring Setting	55
4.3 Alarm Setting.....	57
4.4 Notification Setting	60
4.5 Security Setting	61
4.6 Logging Setting	62
4.7 Watchdog Setting.....	63
4.8 Version	64

MEMO

Chapter 1

Introduction



This chapter contains general information and detailed specifications about the **ICO-100 Series**. Chapter 1 includes the following sections:

- General Description
- Specification
- Dimensions
- I/O Outlets
- Package List

1.1 General Description

The **ICO-100 Series** is a compact field controller designed for remote management application. Equipped with AMD LX800 processor, the **ICO-100 Series** features high reliability and expansion capability.

Besides, the **ICO-100 Series** offers remote management tools of "Remote Monitoring", "Remote Alarm", "Remote Diagnosis" and "Security" that can enable easy and efficient management over a wired/wireless network in remote environments, anytime and anywhere.

Moreover, **ICO-100 Series** supports the stacking design for capacity expansion through PC/104 slot and 2.5" HDD easily.

The **ICO-100 Series** is an ideal application in unmanned rooms,

transportation, industrial machines, and more.

1.2 Specifications

1.2.1 Main CPU board

- **CPU**
 - AMD LX800 500MHz
- **System Chipset**
 - AMD LX + CS5536AD
- **BIOS**
 - Phoenix-Award 4Mbit with RPL/PXE LAN Boot ROM, SmartView and Customer CMOS Backup
- **System Memory**
 - One 184-pin DDR DIMM, maximum up to 1 GB

1.2.2 I/O System

- **Standard I/O**
 - Two serial ports (1 x RS-232, 1 x RS-232/422/485)
 - One VGA port
- **Ethernet**
 - Equipped with 1 x RJ-45 for 10/100 base-T
- **Audio**
 - Realtek AC'97 codec audio (Line-out)
- **Expansion**
 - Equipped with 1 x Mini-PCI & 1 x PC/104
- **CompactFlash Socket**
 - One CompactFlash Type II Socket

1.2.3 System Specification

- **Disk Drive Housing**
 - One CompactFlash Type II Socket
 - One 2.5" Hard Drive
- **DC 24V power supply**
- **Heat dispensing design**
- **Weight**
 - 2.0 Kgs
- **Dimension (main body size)**
 - 208.5 x 167.3 x 66.5 mm
- **Operating temperature**
 - 0° to 45°C ; Relative umidity:50%
- **Relative humidity**
 - 10% to 85% @ 40° C, non-condensing
- **Altitude**
 - 10,000 ft. (3,000 meters)
- **Vibration (operating)**
 - 5 to 500 Hz, 1 G random
- **Shock (operating)**
 - 10 G peak acceleration (11 msec. duration)

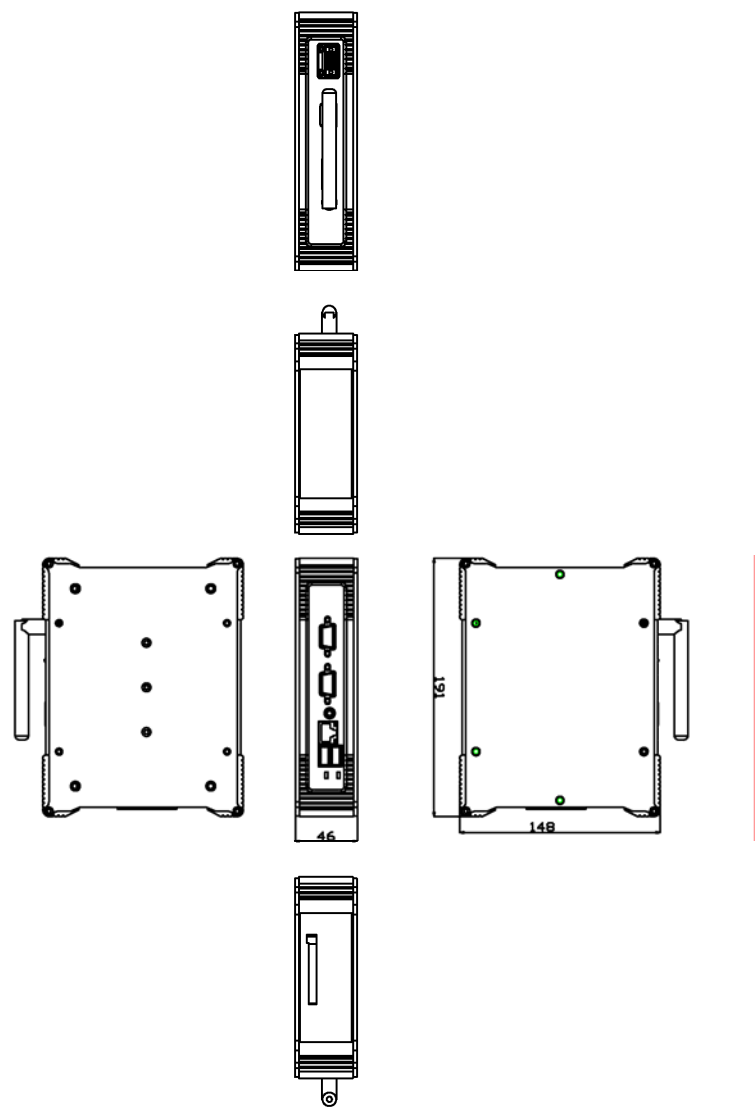


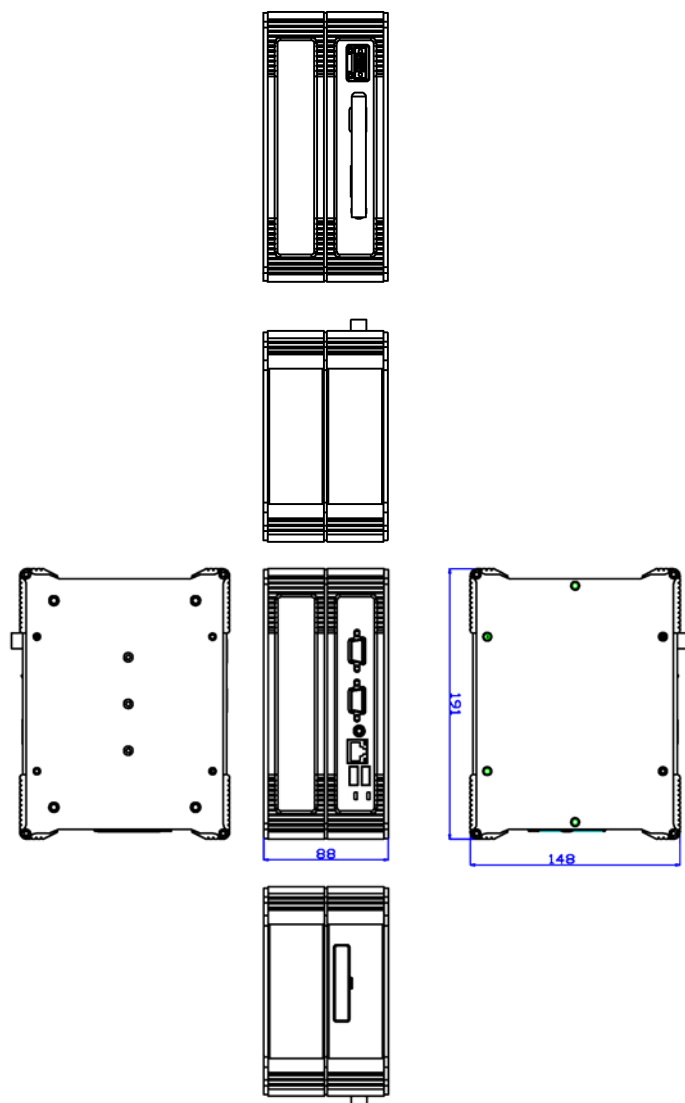
NOTE All specifications and images are subject to change without notice.

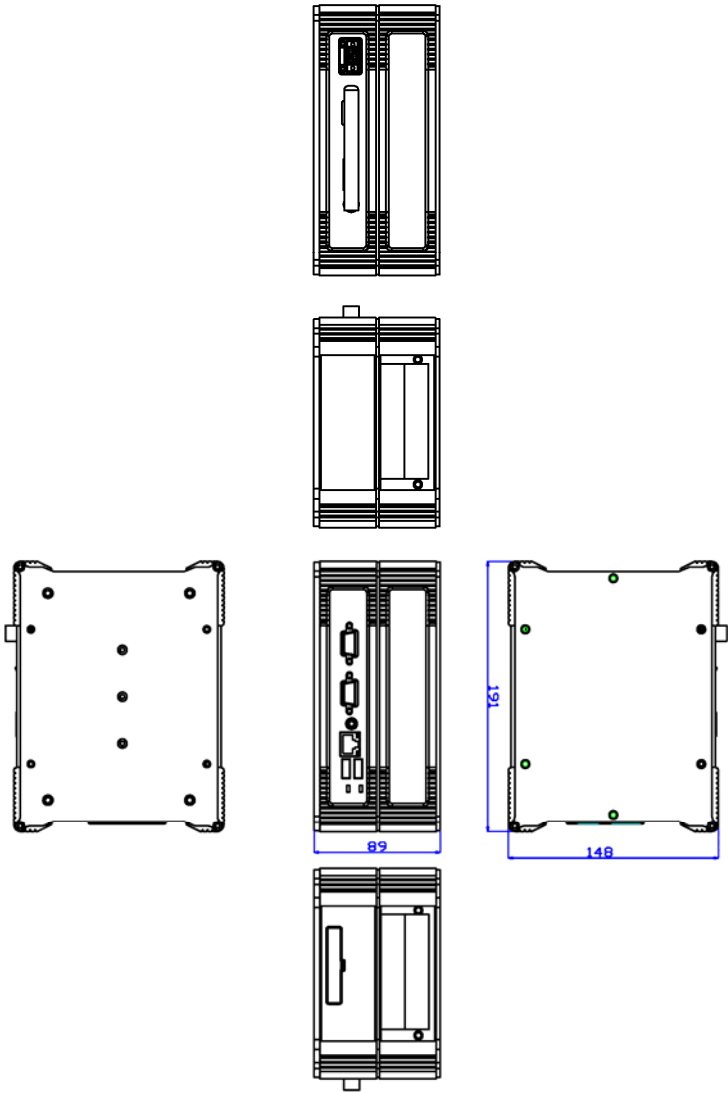
1.3 Dimensions

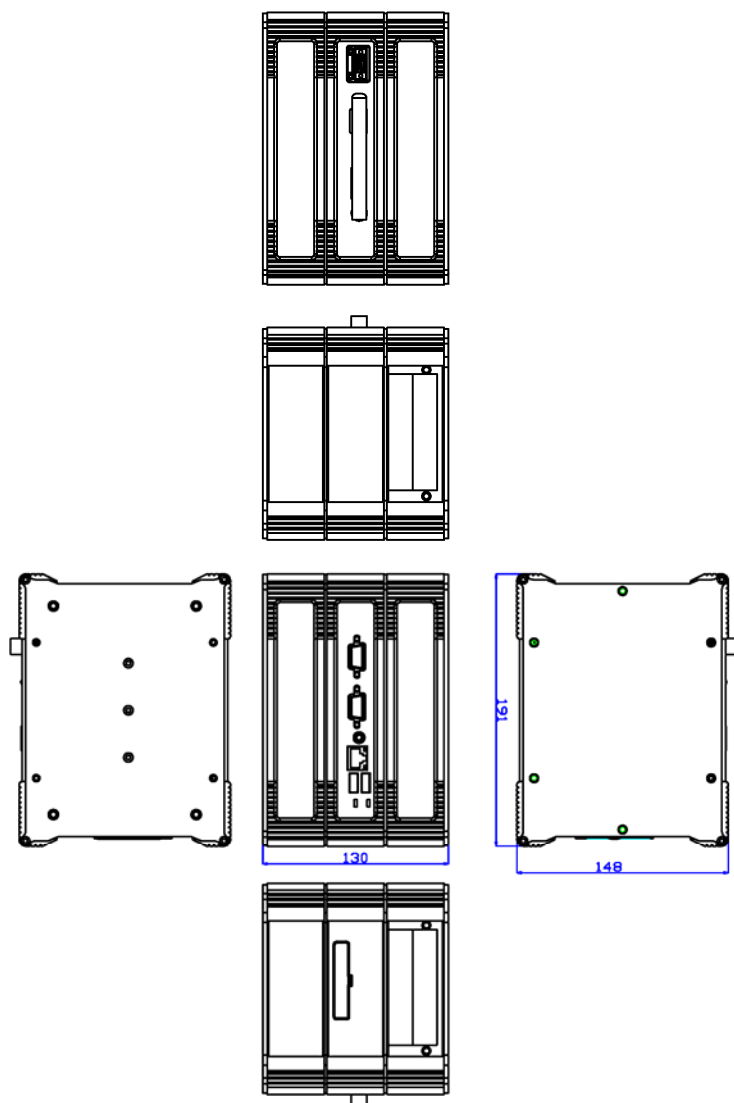
The ICO-100 Series dimensions and outlines are shown as the following diagrams:

1. CPU board layer
2. CPU board layer with HDD expansion
3. CPU board layer with PC/104 expansion
4. CPU board layer with HDD & PC/104 expansions



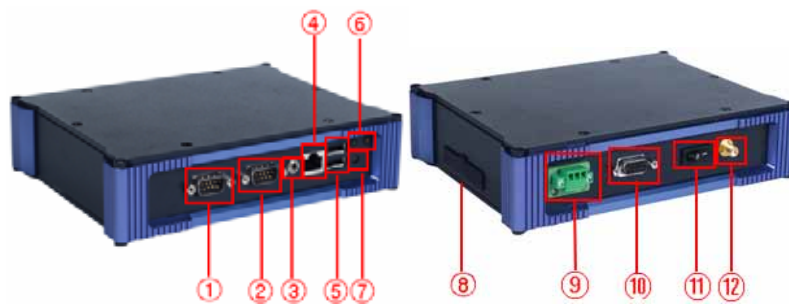






1.4 I/O Outlets

The following figure helps you locate each I/O connector of the ICO-100 Series.



No.	Connector	No.	Connector
1	COM 2 (RS-232)	7	Reset button
2	COM 1 (RS-232/422/485)	8	CompactFlash slot
3	Line-out	9	DC power connector
4	LAN	10	VGA
5	USB 2.0 x 2	11	Power Switch
6	LED light	12	WLAN antenna connector

1.5 Package list

Other than the ICO-100 system, the following items should be bundled in the package:

1. ICO-100 x 1
2. Panel mount kit x 6
3. Driver CD x1

If you can not find this package or any items are missing, please contact AXIOMTEK distributors immediately.

MEMO

Chapter 2

Hardware Installation

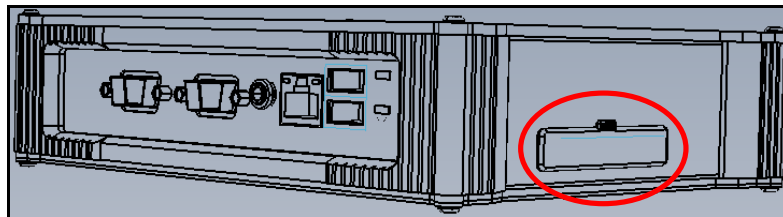
The ICO-100 provides you with multiple I/O ports and flexible expansions to meet different demands for PCMCIA, WLAN modules, and so on. This chapter will show you how to install the hardware. They are:

- CompactFlash Card
- Hard Drive
- PC/104 Expansion
- Serial Port
- Ethernet
- Mounting Way
- Mini-PCI WLAN module

2.1 Installing the CompactFlash Card

The system offers one CF slot for users to install CompactFlash card. Please follow these instructions and illustrations to install the CompactFlash card:

Step 1 On the right side of the chassis, you can find out a rubber cover. Please remove this cover.



Step 2 You can insert a CompactFlash card in the slot inside.

2.2 Installing the Hard Drive

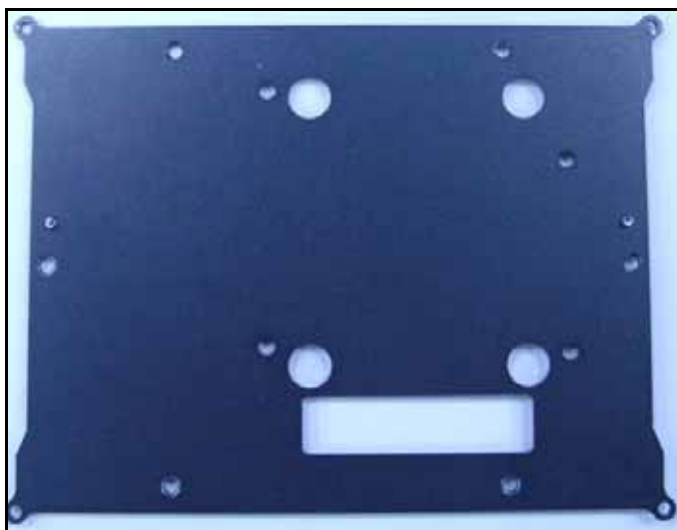
The **ICO-100 Series** offers users a lower layer to install a 2.5" hard drive. Please follow these steps:

- Step 1** Fix the Hard Disk to the HDD bracket with four screws and four anti-vibration rubber cushions.

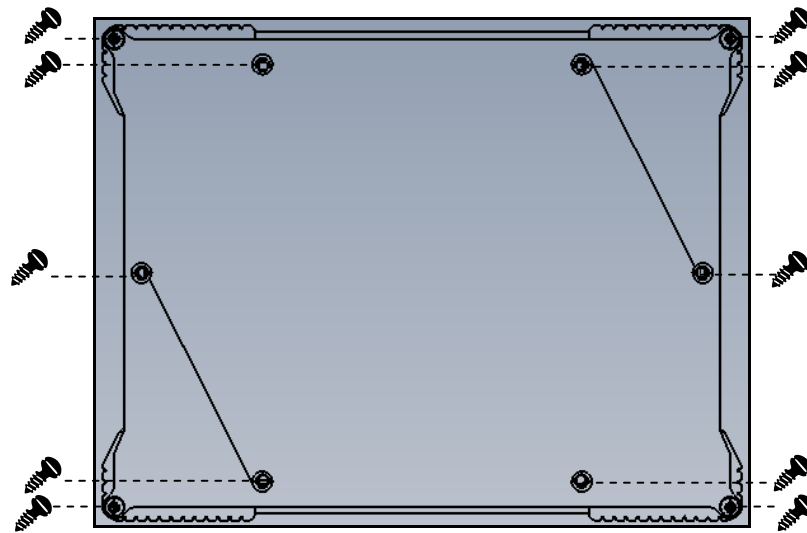


- Step 2** Prepare these components CPU layer, HDD cover and HDD partition ready for installation.





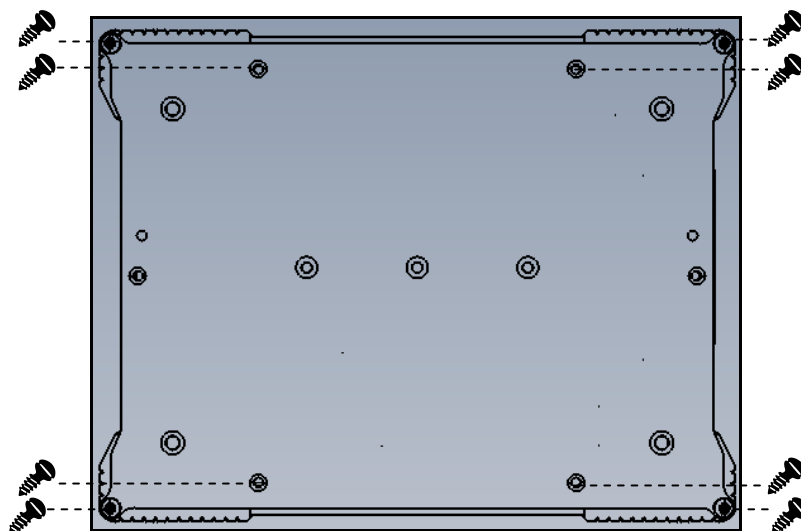
Step 3 Loosen ten screws on the top bracket of CPU layer.



Step 4 Remove the top bracket of CPU layer.



Step 5 Loosen eight screws on the bottom bracket of CPU layer.



Step 6 Remove the bottom bracket of CPU layer.



Step 7 Locate the IDE slot inside the chassis.



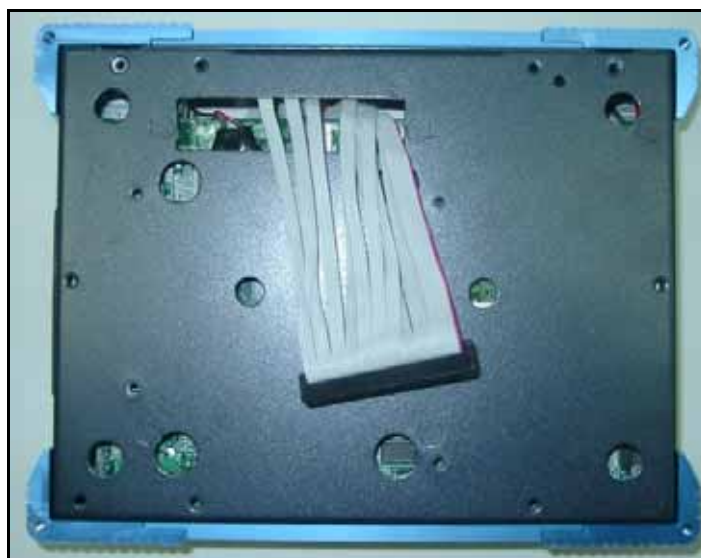
Step 8 Plug the IDE cable into the IDE slot.



Step 9 Make the IDE ribbon through the slit of bracket.



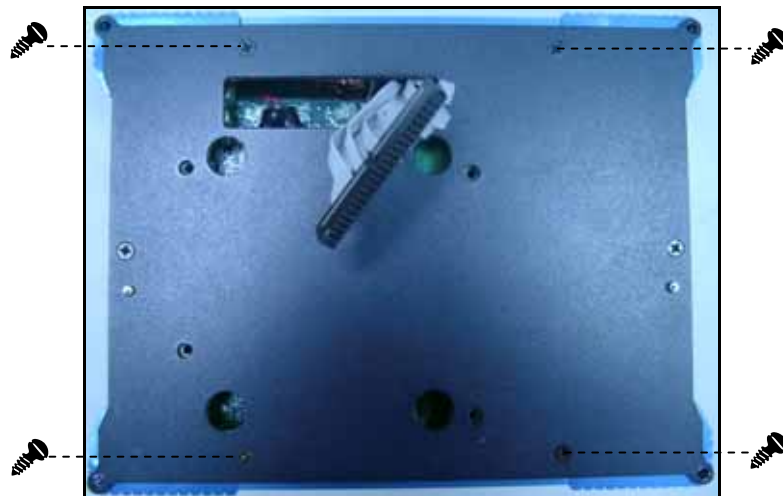
Step 10 Make the IDE cable through the slit, and leave it outside the bracket.



Step 11 Place the HDD partition on the system.



Step 12 Fasten four screws to fix the HDD partition.





Step 14 Place the back cover on the system, the assembled HDD module inside.



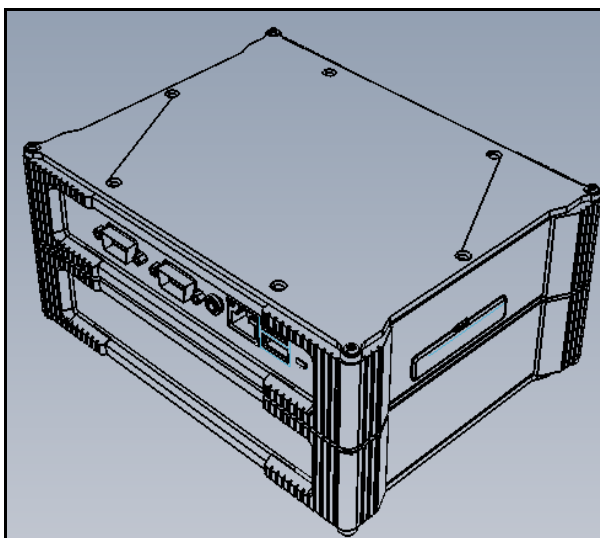
Step 15 Fix the back cover with two types of screws, M3*6 and M3*50, four pcs each type.



Step 16 Have the back cover firmly nailed on the system.



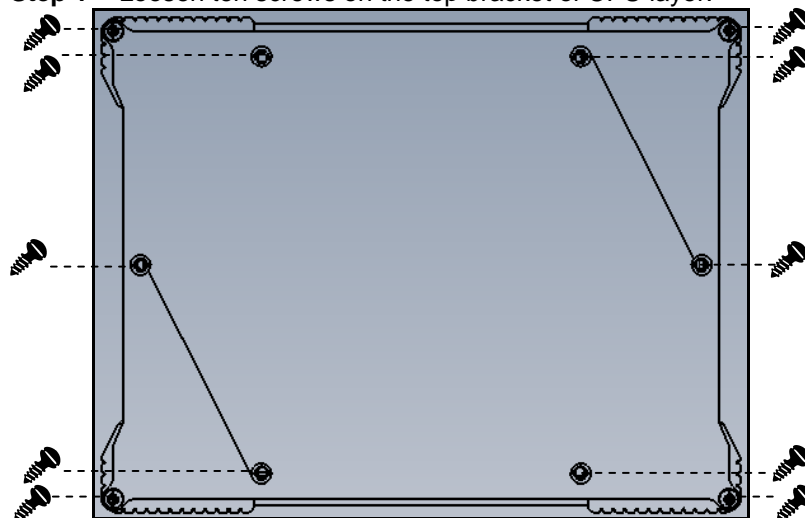
Step 17 The complete installation is finished.



2.3 Installing PC/I04

The **ICO-100 Series** provides users with a convenient expansion to install two PC/104 modules, PCMCIA, WLAN, COM port card, and so on. Please follow these steps:

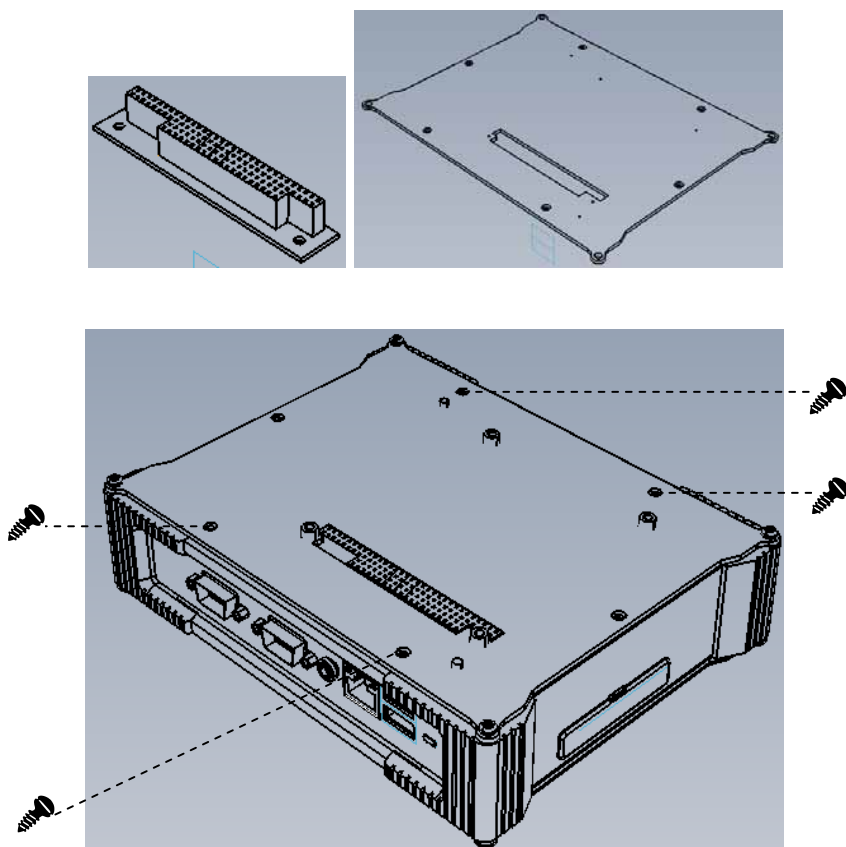
Step 1 Loosen ten screws on the top bracket of CPU layer.



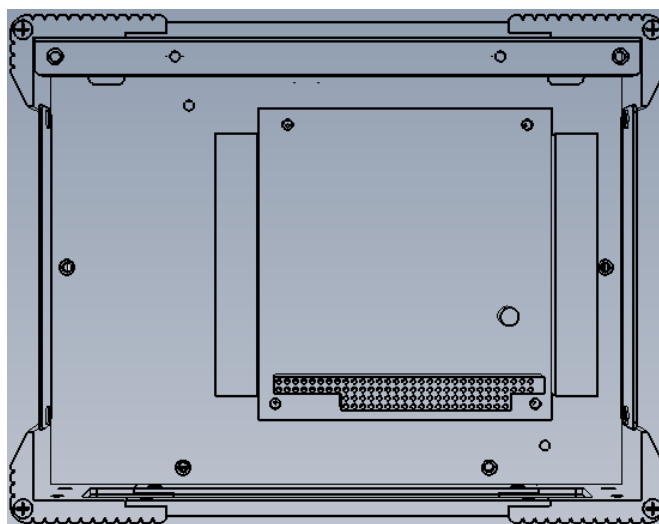
Step 2 Remove the top bracket of CPU layer.



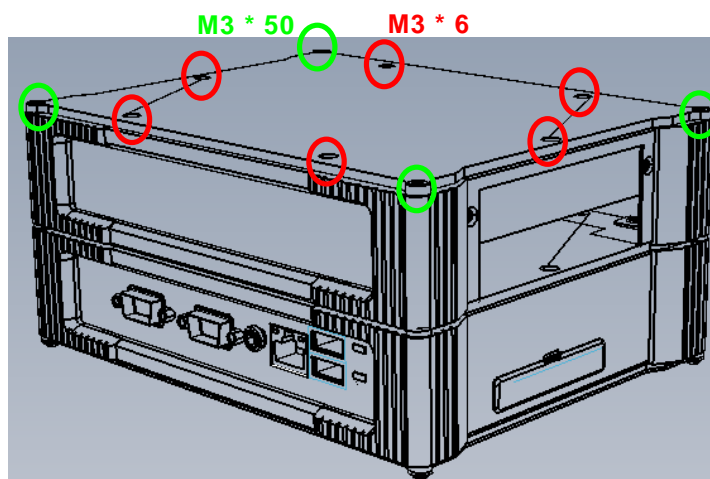
- Step 3** Plug the PC/104 extension, and then screw the PC/104 partition tightly on.



- Step 4** Assemble PC/104 modules and fix PC/104 bracket to the system.



- Step 5** Fix the upper cover with two types of screws, six pcs of M3*6 and four pcs of M3*50. You got these screws when disassembling the CPU layer.

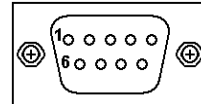


2.4 Serial Port Interface

The ICO-100 has two onboard serial ports, COM1 (RS-232/422/485) and COM2 (RS-232).

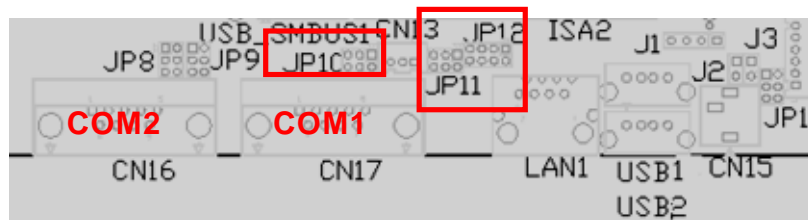
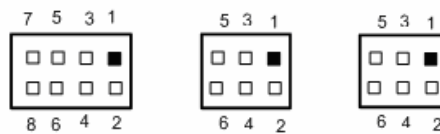
The pin assignments are listed below:

Pin	Description
1	Data Carrier Detect (DCD)
2	Receive Data (RXD)
3	Transmit Data (TXD)
4	Data Terminal Ready (DTR)
5	Ground (GND)
6	Data Set Ready (DSR)
7	Request to Send (RTS)
8	Clear to Send (CTS)
9	Ring Indicator (RI)



In addition, COM1 can be set for RS-232/422/485 by jumper. The jump setting is listed as below:

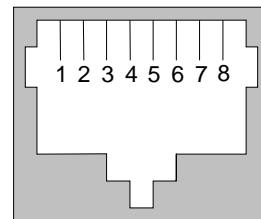
COM1	JP12	JP10	JP11
RS-232 (default)	1-2	3-5, 4-6	3-5, 4-6
RS-422	3-4, 7-8	1-3, 2-4	1-3, 2-4
RS-485	5-6, 7-8	1-3, 2-4	1-3, 2-4



2.5 Ethernet

The ICO-100 supports the NE2000 compatible Ethernet (RJ-45) interface. For network connection, just plug in one cable end of the ICO-100 10/100 Base-T Hub into the standard RJ-45 connector. The pin assignment of the RJ-45 is listed below:

Pin	Signal
1	TX+ (Data transmission positive)
2	TX- (Data transmission negative)
3	Rx+ (Data reception positive)
4	RJ45 termination
5	RJ45 termination
6	Rx- (Data reception negative)
7	RJ45 termination
8	RJ45 termination



RJ-45

2.6 Mounting Way: Wall Mount

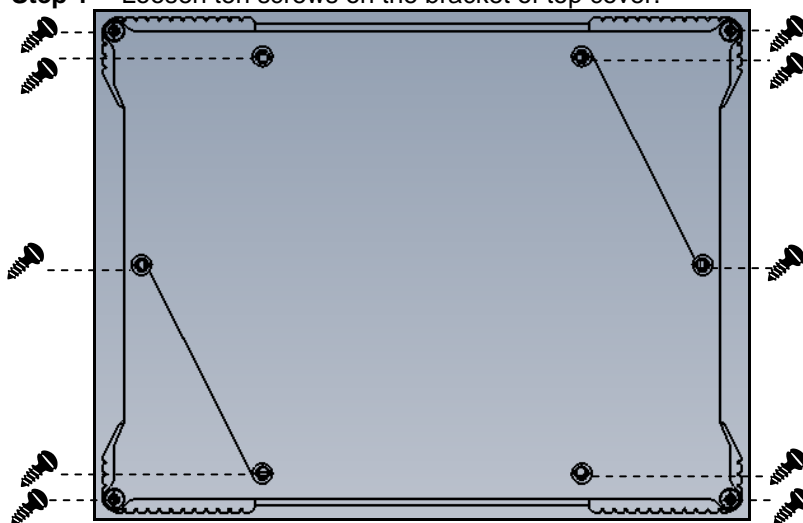
The ICO-100 is designed for wall mount application. There are three layers for you to load the mounting, CPU board layer, HDD layer and PC/104 layer.



2.7 Mini-PCI WLAN Module (optional)

ICO-100 offers one mini-PCI slot to install a mini-PCI card. Please refer to the following instructions and illustrations for installation:

Step 1 Loosen ten screws on the bracket of top cover.



Step 2 Remove the bracket from the system.



Step 3 Insert the WLAN module in Mini-PCI slot.



Step 4 Connect the wireless cable to the WLAN module.



Step 5 Set up the wireless antenna.



Step 6 Place the top cover back, and fix it to the system.

MEMO

Chapter 3

Driver Installation

The **ICO-100 Series** supports Windows XP/2000. To facilitate the installation of system drivers, you need to carefully read the Chapter 3 for detailed instructions before installing.

\\ICO series\\ICO-100\\Driver



Step 1. AES



Step 2. VGA



Step 3. PCI Bridge



Step 4. Audio



Step 5. WLAN (Optional)



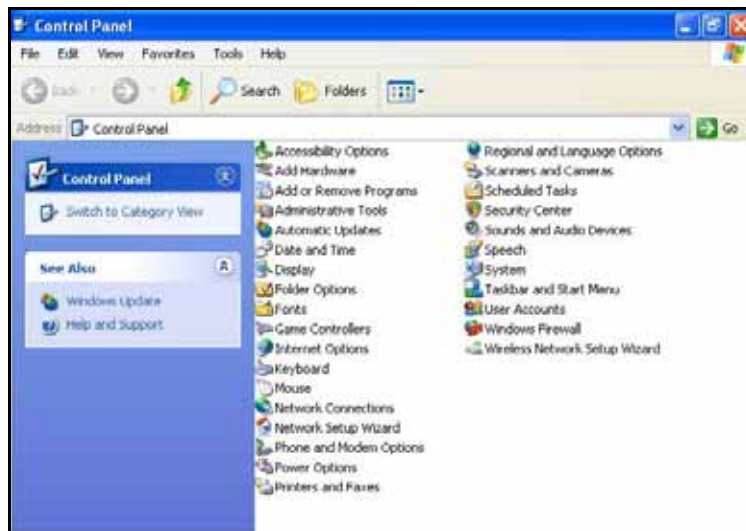
Step 6. R@Tools

3.1 Network Controller

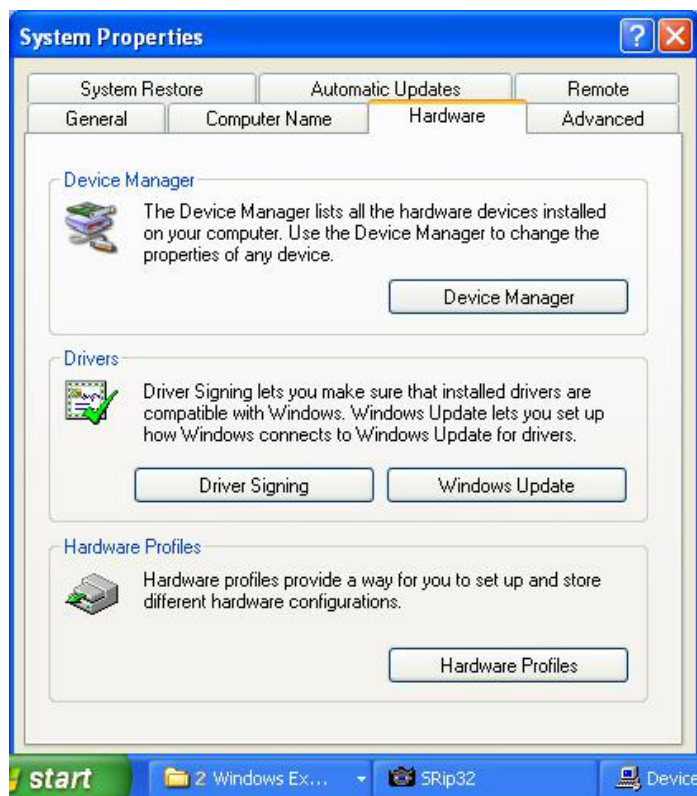
After you start Windows, a message “Found New Hardware – Network Controller” will automatically appear on the screen, and automatic installation will go on.

If it doesn't start the automatic installation, please follow the procedures below to manually install this new hardware:

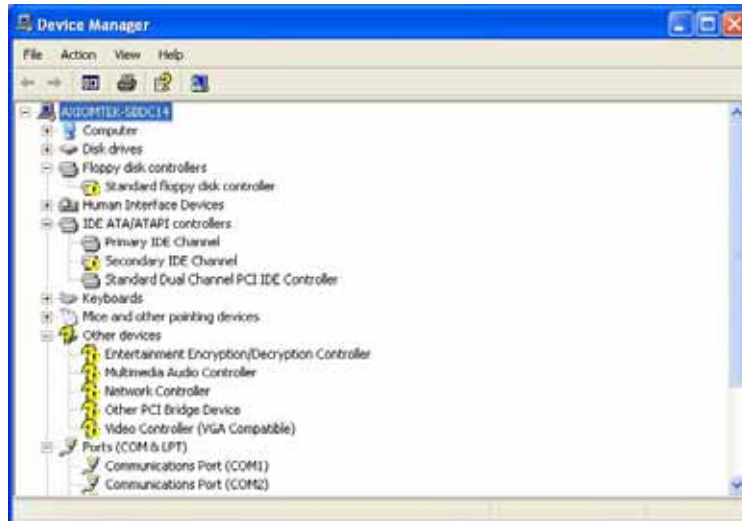
1. Access the “Control Panel”.



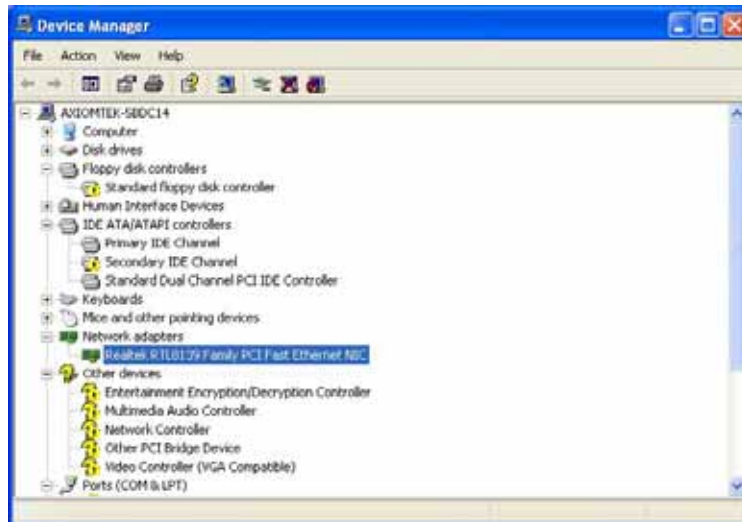
2. Click on the "System" icon, and a "System Properties" tag pops out. Please select the "Hardware" item, and click the "Device Manager" button.



3. The “Device Manager” window pops out. Execute the “Scan” function.



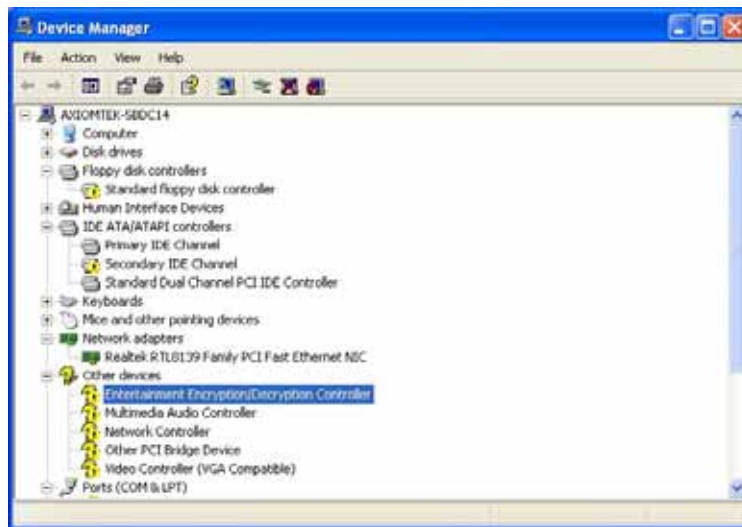
4. This hardware installation is finished.



3.2 AES Driver Installation

You can install a LX processor driver through the “Device Manager” by following these steps:

1. Select the icon “Entertainment Encryption/Decryption Controller”, and click the right mouse button to update the AES driver.



2. A Hardware Update Wizard screen pops out. Make your selection, and click “Next” to continue.



3. Click the item to install the software, and click “Next”.



- Click the "Browse" button and search for the location: "E:\ICO series\ICO-100\Driver\Step 1. AES"



- Please wait while the wizard is installing the software.



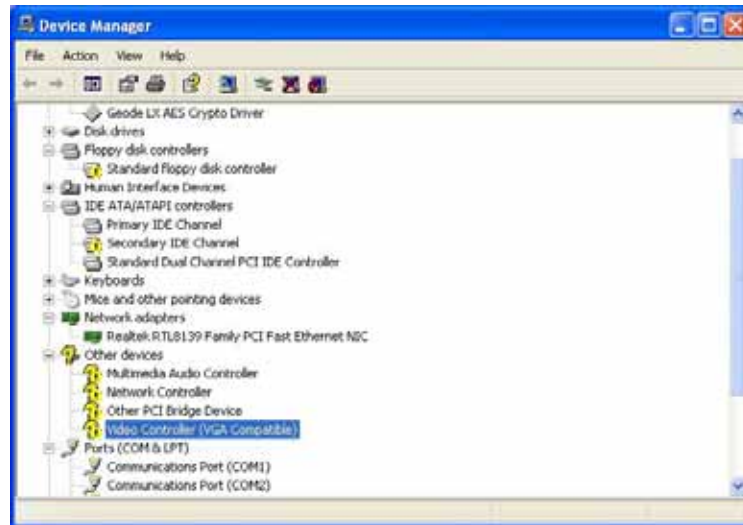
6. Click the “Finish” button to complete this software installation.



3.3 VGA Driver Installation

You can install a Graphic driver through the “Device Manager” by following these steps:

1. Select the icon “Video Controller (VGA Compatible)”, and click the right mouse button to update the VGA driver.



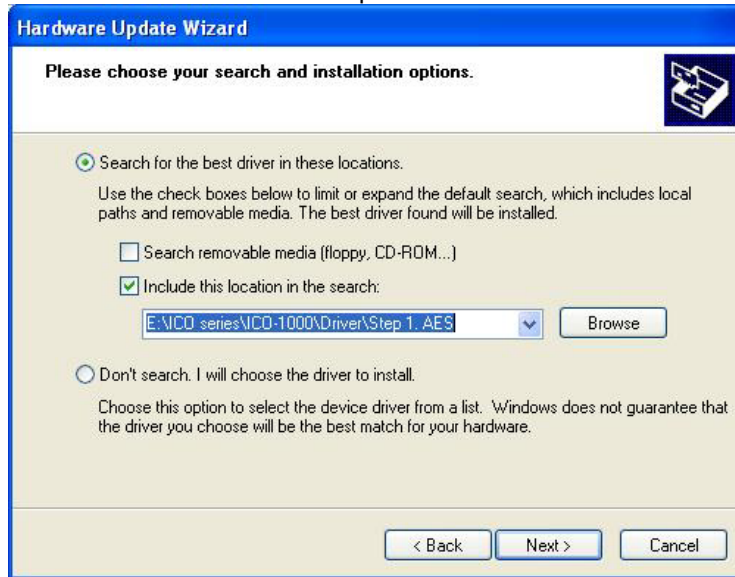
2. A Hardware Update Wizard screen pops out. Make your selection, and click “Next” to continue.



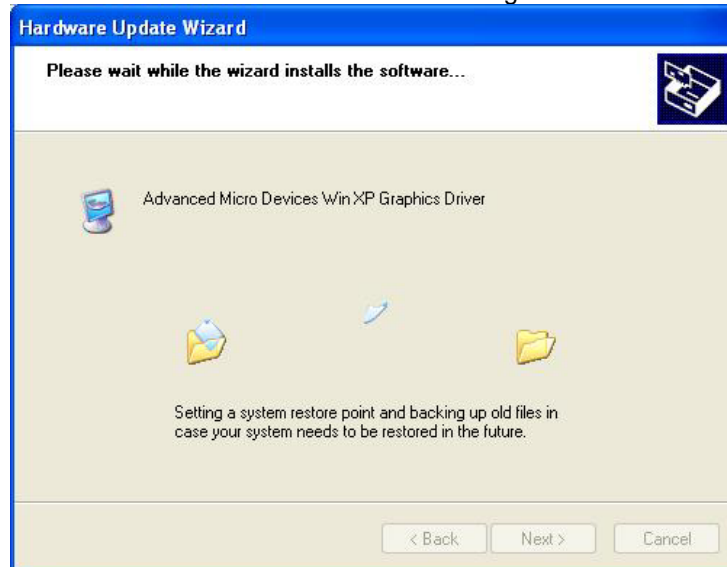
3. Click the item to install the software, and click “Next”.



4. Click the "Browse" button and search for the location: "E:\ICO series\ICO-100\Driver\Step 2. VGA



5. Please wait while the wizard is installing the software.



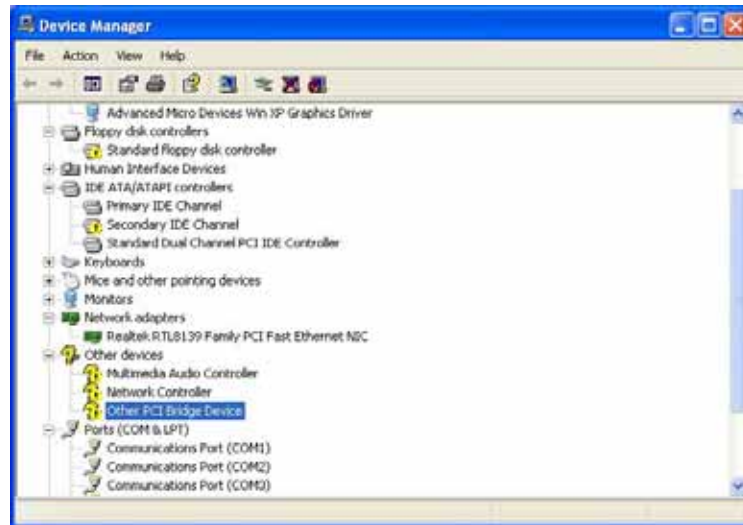
6. Click the “Finish” button to complete this software installation.



3.4 PCI Bridge Driver Installation

You can install a PCI Bridge driver through the “Device Manager” by following these steps:

1. Select the icon “Other PCI Bridge Device”, and click the right mouse button to update the PCI Bridge driver.



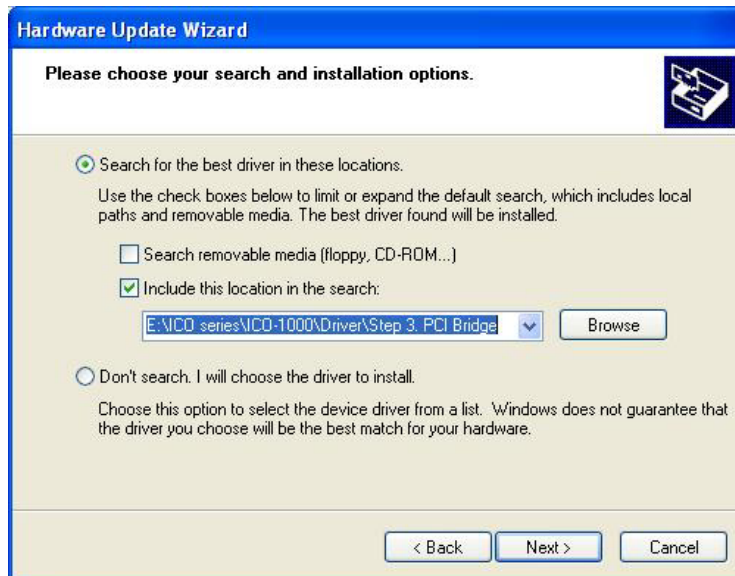
2. A Hardware Update Wizard screen pops out. Make your selection, and click “Next” to continue.



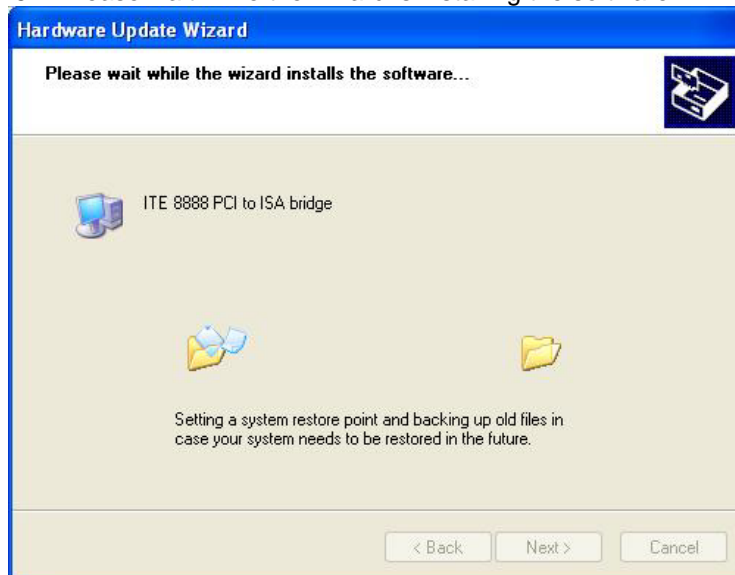
3. Click the item to install the software, and click “Next”.



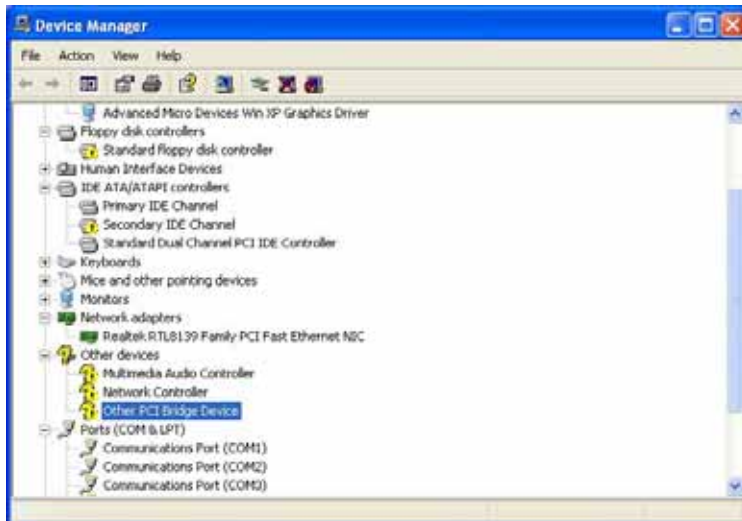
4. Click the "Browse" button and search for the location: "E:\ICO series\ICO-100\Driver\Step 3. PCI Bridge"



5. Please wait while the wizard is installing the software.



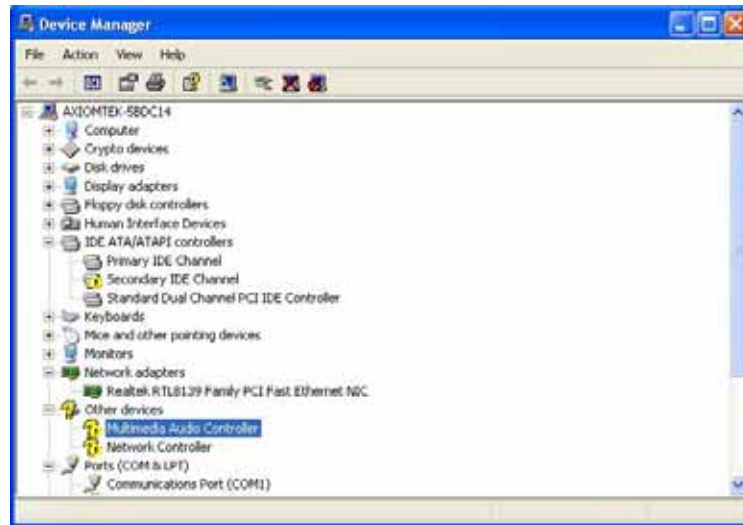
6. This software installation is finished.



3.5 Audio Driver Installation

You can install an Audio driver through the “Device Manager” by following these steps:

1. Select the icon “Multimedia Audio Controller”, and click the right mouse button to update the Audio driver.



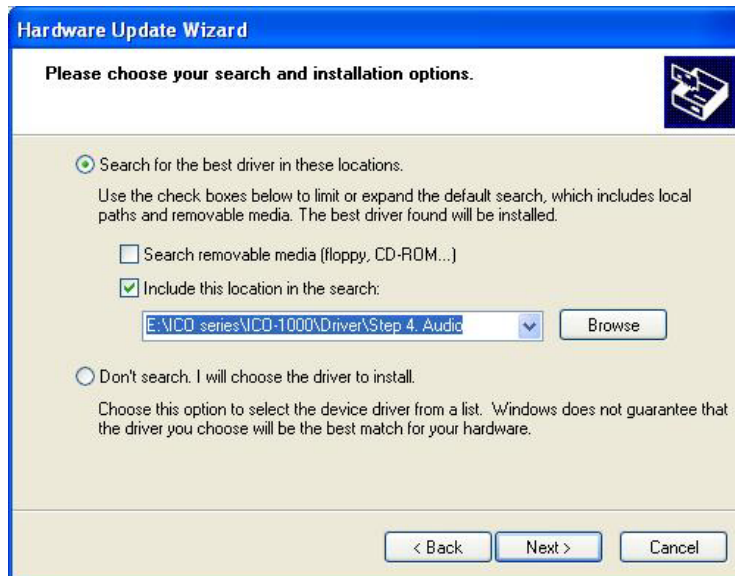
2. A Hardware Update Wizard screen pops out. Make your selection, and click “Next” to continue.



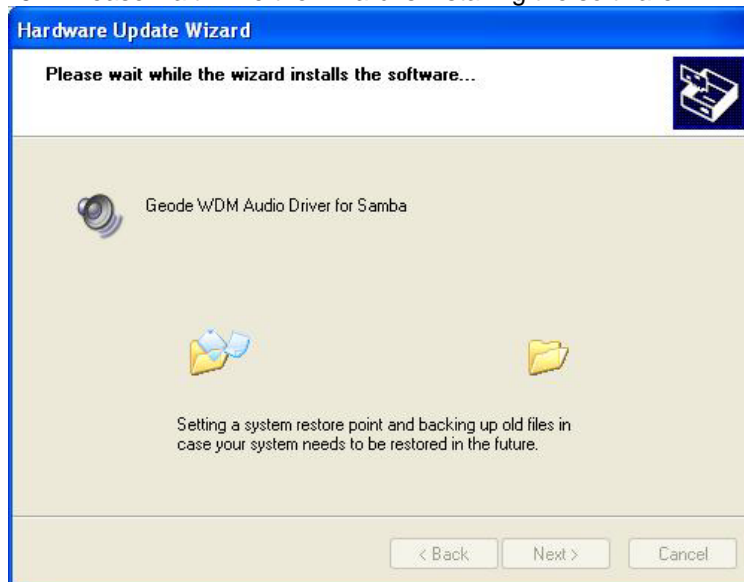
3. Click the item to install the software, and click “Next”.



- Click the "Browse" button and search for the location: "E:\ICO series\ICO-100\Driver\Step 4. Audio"



- Please wait while the wizard is installing the software.



6. Click the “Finish” button to complete this software installation.



3.6 WLAN Driver Installation

The **ICO-100 Series** can support the wireless function. Please install this driver as following instructions:

1. Open the WLAN folder.



Step 1. AES



Step 2. VGA



Step 3. PCI Bridge



Step 4. Audio



Step 5. WLAN (Optional)



Step 6. R@Tools

2. Click on the icon "WinSetup" to execute this installation.



LINUX



WiFiSet



winsetup



x64



Install-x64



NTUTIL.DLL



oemsetup



PCENUM



readme



Release1.2



vntwnet



VNWL



VNWL3



VNWL4



VNWL5A



VNWL5B



VNWLNDH



VNWLNDI...



vuins16.dll



vuins32.dll



WIN



WINNT



WinSetup

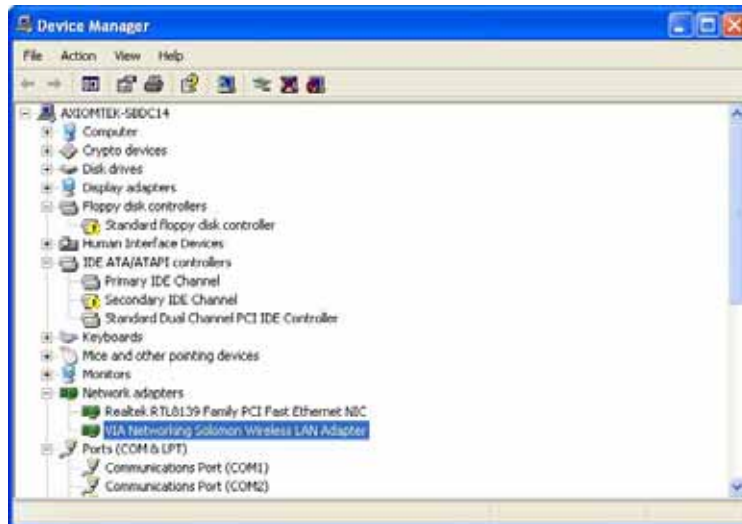


winsetup



WinUinst

3. This Wireless LAN Adapter driver installation is finished.



Chapter 4

Remote Monitoring Tool

The **ICO-100 Series** is equipped with a remote monitoring program, which has these remote functions, monitor, alarm, security, watchdog, and so on. To facilitate these functions, you need to carefully read the Chapter 4 for detailed instructions.

\\ICO series\\ICO-100\\Driver



Step 1. AES



Step 2. VGA



Step 3. PCI Bridge



Step 4. Audio



Step 5. WLAN (Optional)



Step 6. R@Tools

4.1 Remote Tool Installation

Please follow these procedures for this tool installation:

1. \ICO series\ICO-100\Driver\Step 6. R @Tools



Step 1. AES



Step 2. VGA



Step 3. PCI Bridge



Step 4. Audio



Step 5. WLAN (Optional)



Step 6. R@Tools

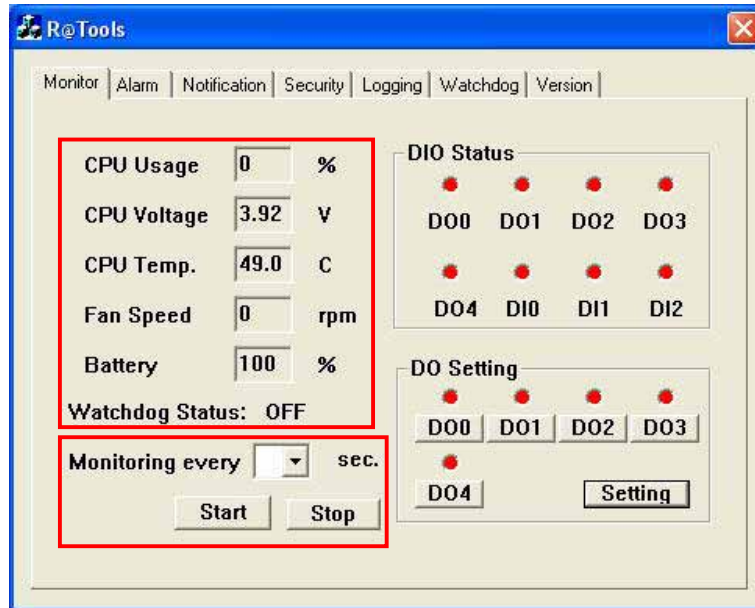
2. Execute "R@Tools.exe".



ICO1000.exe

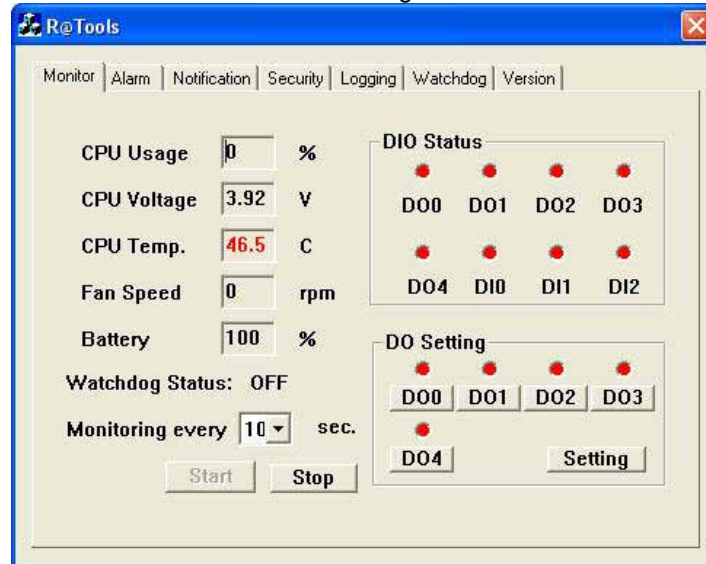
4.2 Monitoring Setting

The remote monitoring contains these functions illustrated as below:

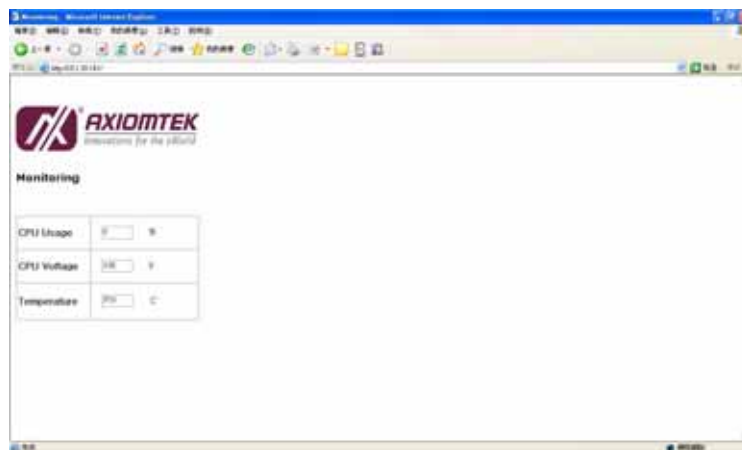


1. Users can obtain BIOS information such as CPU usage, CPU voltage, CPU temperature, fan speed, battery, and Watchdog status.
2. Users can set up how long this tool will retrieve the data from BIOS. Users can also start or stop this function.
3. R @Tool provides users with 3 * DI & 5 * DO to make the connection with the DIO module. Users can set up which DO status will be monitored.

4. The color of word can be changed if the status is abnormal.

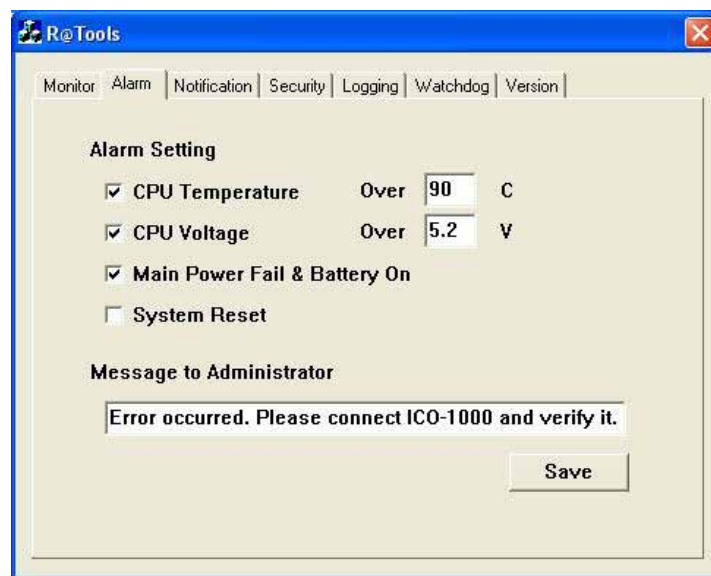


5. After the SMTP setting is done, users can type in the IP address of ICO-100 that can monitor the controller's status:



4.3 Alarm Setting

Users can make these settings to work a remote alarm that can identify each necessary situation for warning the operator, such as CPU overheating, CPU over-voltage, main power failure, battery on, system resetting, and so on. If anything abnormal happens, ICO-100 will alarm the operator by e-mail or soft modem.

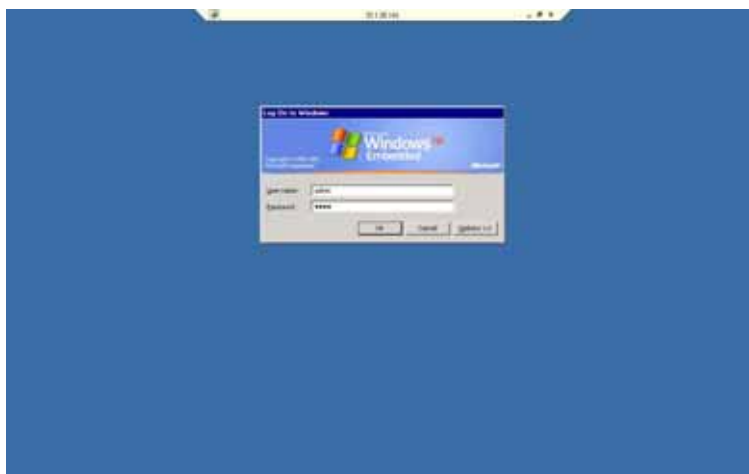


Users need to click the “Save” button to save any setting changes.

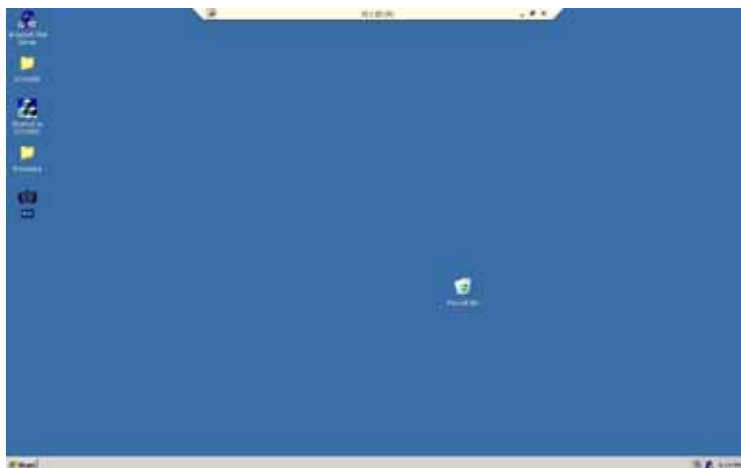
1. After the “Notification setting” is done, the operator will receive the alarming e-mail from ICO-100, if anything abnormal happens:



2. Open the attached file and execute it. The remote window pops out as below:

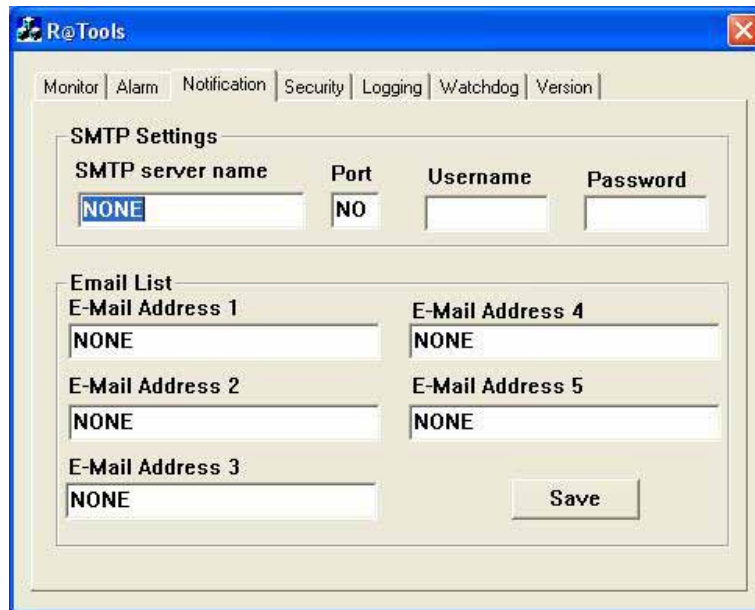


3. After passing the identity verification, the operator can take over ICO-100 as following.



4.4 Notification Setting

When the alarming occurs, ICO-100 will inform the operator by e-mail. Users need to set up a few of parameters for before initiating the Notification function.



1. Users need to set up the parameters for SMTP setting, such as server name, port, username and password.
2. Under the “SMTP setting”, users can decide who will receive the alarming message from ICO-100.
3. Users need to click the “Save” button to save any setting changes.

4.5 Security Setting

Users can go to the tag “Security Setting” to set up who is authorized to access ICO-100. Even authorized users’ IP addresses could be locked up.

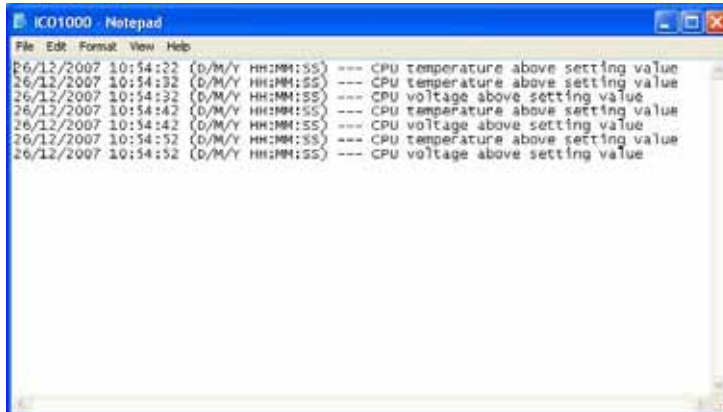
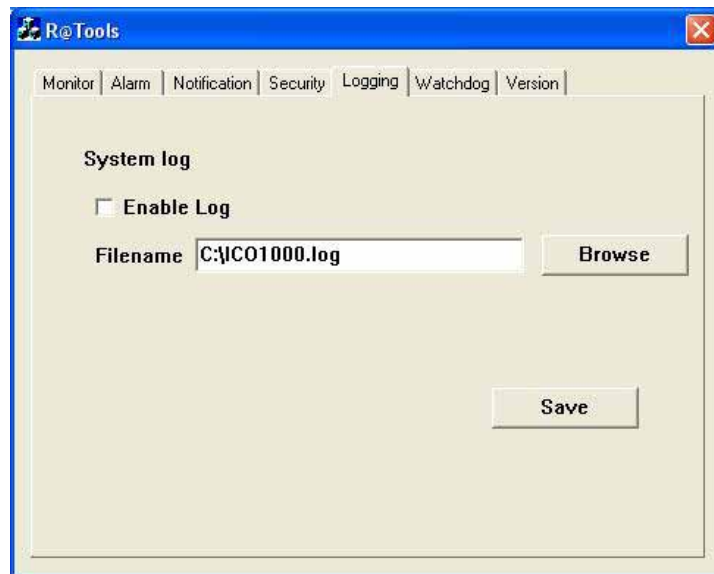
	Username	Password	<input type="checkbox"/> IP Address
1	NONE		0 . 0 . 0 . 0
2	NONE		0 . 0 . 0 . 0
3	NONE		0 . 0 . 0 . 0
4	NONE		0 . 0 . 0 . 0
5	NONE		0 . 0 . 0 . 0

Save

Users need to click the “Save” button to save any setting changes.

4.6 Logging Setting

Any abnormal issues of ICO-100 can be recorded. The operator can refer to this tag through the monitoring function.



Users need to click the “Save” button to save any setting changes.

4.7 Watchdog Setting

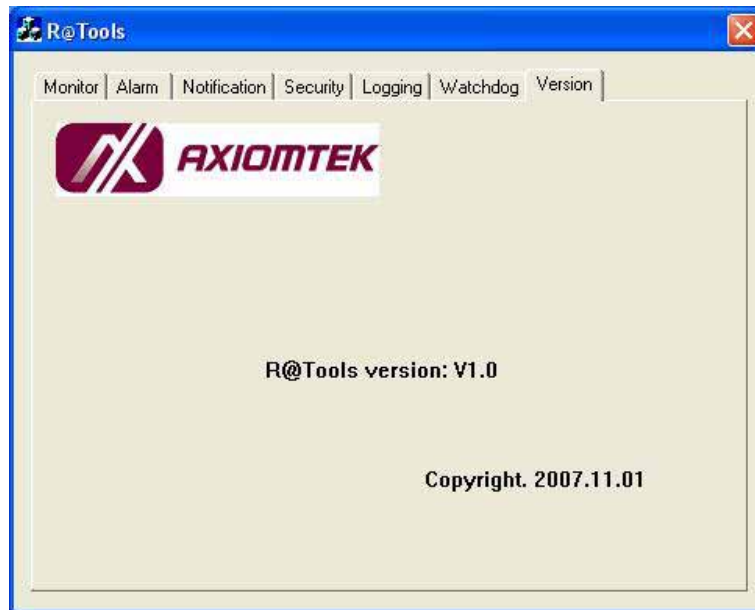
ICO-100 can not execute the alarming function if the system crashed. In order to avoid this problem, ICO-100 has been equipped with the Watchdog Timer. Users are able to shut down ICO-100 remotely.



ICO-100 will be automatically restarted after users have set up the Watchdog Timer.

4.8 Version

If you have any problems about this remote tool, you can have the program version number from this “Version” tag. Please contact us in reference to it.



MEMO