



PET-7000 series

Power over Ethernet Remote I/O Module

User Manual

(For Digital I/O Modules)

Warranty

All products manufactured by ICP DAS are under warranty regarding defective materials for a period of one year, starting from the date of delivery to the original purchaser.

Warning

ICP DAS assumes no liability for damages resulting from the use of this product. ICP DAS reserves the right to change this manual at any time without notice. The information furnished by ICP DAS is believed to be accurate and reliable. However, no responsibility is assumed by ICP DAS for its use, not for any infringements of patents or other rights of third parties resulting from its use.

Copyright

Copyright 2008 by ICP DAS. All rights are reserved.

Trademark

The names used in this document are for identification only and may be registered trademarks of their respective companies.

Manual Revisions

Title: PET-7000 DIO User Manual

Manual Number: EMH-013-10

Revision	Date	Effective Pages	Description
1.00	May 2009	All	Original Issue

PET-7000 Support List

This manual is for the following modules:

Module	Description
PET-7060	6-channel Power Relay DO and 6-channel Isolated DI Module
PET-7067	8-channel Power Relay DO Module

Table of Contents

1. INTRODUCTION.....	7
1.1. FEATURES	8
1.2. SPECIFICATIONS	11
1.3. MODULE SELECTION	12
1.4. VIEW OF THE PET-7000	18
1.5. PET-7000 INSTALLATION.....	22
1.5.1. Mounting the PET-7000.....	22
1.5.2. Connecting the Hardware.....	26
1.5.3. Ethernet cable wiring.....	27
1.6. I/O WIRING CONNECTION.....	29
1.7. SOFTWARE & DOCUMENT INFORMATION	30
1.8. UPDATE INFORMATION.....	31
2. CONFIGURING THE PET-7000.....	32
2.1. CONFIGURING THE NETWORK SETTINGS	32
2.2. LOAD FACTORY DEFAULT.....	36
3. WEB CONFIGURATION PAGE.....	37
3.1. OVERVIEW	40
3.2. CONFIGURATION	42
3.2.1. Ethernet Settings.....	42
3.2.2. Basic Settings.....	44
3.2.3. Module I/O settings.....	50
3.3. AUTHENTICATION	54
3.3.1. Account management.....	54
3.3.2. IP filter Settings	55
3.4. WEB HMI.....	57
3.4.1. Web Editing	57
3.4.2. Web HMI.....	62
3.5. I/O PAIR CONNECTION	75
3.6. MORE INFORMATION.....	77
4. HOW TO ACCESS THE PET-7000?	78
4.1. VIA AN ETHERNET NETWORK	78
4.2. USING THE MODBUS PROTOCOL	79
4.2.1. Introduction	79
4.2.2. Function Codes Supported.....	80
4.2.3. Modbus Register address table.....	80

5. I/O PAIR CONNECTION.....	81
6. SOFTWARE DEVELOPMENT APPLICATION.....	82
6.1. LOCATION OF DOCUMENTS AND SOFTWARE	82
6.2. LABVIEW.....	84
7. OPC SERVER.....	85
7.1. INTRODUCTION.....	85
7.2. PROCEDURE FOR USING THE OPC SERVER.....	86
7.3. OPC SERVER EXAMPLE USING MODBUS PROTOCOL.....	86
8. SCADA.....	90
8.1. INDUSOFT.....	91
8.2. CITECT	92
8.3. iFIX	93
9. TROUBLESHOOTING AND TECHNICAL SUPPORT	94
APPENDIX A: DIMENSIONS.....	96
APPENDIX B: MINIOS7 UTILITY.....	98
APPENDIX C: MODBUS REGISTER TABLES.....	105
APPENDIX E: JAVA INSTALLATION.....	149
APPENDIX F: FRAME GROUND.....	154
APPENDIX G: NODE INFORMATION AREA.....	155
APPENDIX H: TECHNICAL SUPPORT.....	156

TABLES

Table 1-1 ET-7000 classification	12
Table 1-2 LED Indicators	19
Table 1-3 J2 Connector	19
Table 1-4 RJ-45 Wiring Standards.....	28
Table 3-1 TCP/IP network settings	42
Table 3-2 Basic Settings.....	48
Table 3-3 Load All Setup Default Table	49
Table 3-4 Input or Holding Data Types	60
Table 3-5 Main Web HMI Page - Table1	62
Table 3-6 Main Web HMI Page - Table 2	63
Table 3-7 I/O Pair Connection Settings.....	75
Table 4-1 ET-7000 Modbus Function Code	80
Table 9-1 Troubleshooting	94

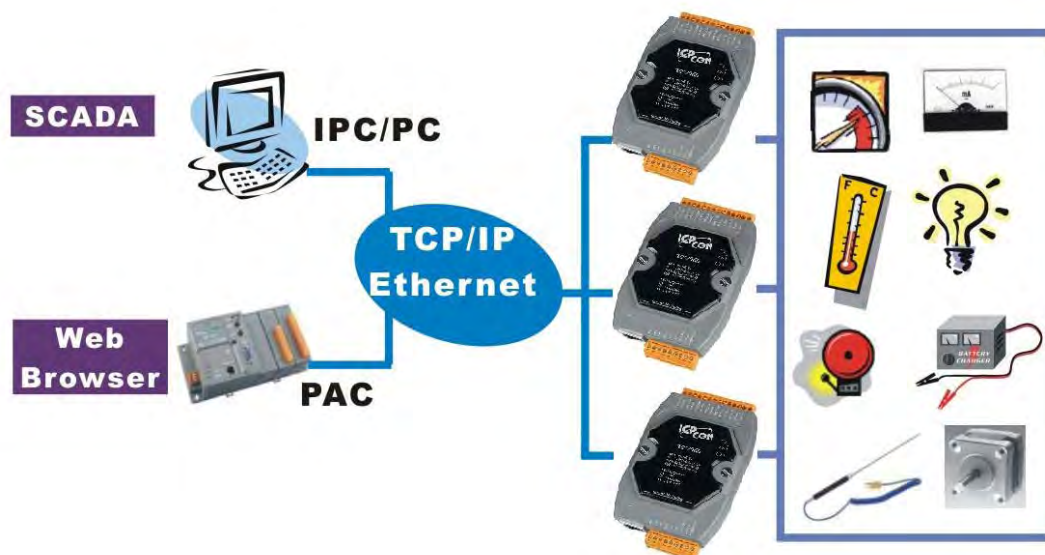
1. Introduction

The PET-7000 features “PoE” technology, not only data but power is carried through an Ethernet cable. This feature makes installation of the PET-7000 a piece of cake. Imagine that no more unnecessary wires, only an Ethernet cable takes care of everything in the field.

The PET-7000 also features a built-in web server and the web HMI function. A built-in web server allows basic setting configuration, I/O monitoring and I/O control by simply using a regular web browser. Remote control is as easy as you surf the internet.

As to the web HMI function, no programming or HTML skills are required; creating dynamic and attractive web pages for I/O monitoring and I/O control would be fun for engineers ever after.

The PET-7000 also supports Modbus/TCP protocol that makes the PET-7000 be perfect integrated into SCADA software.



The PET-7000 module is designed for industrial monitoring and measurement applications, so the hardware could survive in harsh and noisy environment. As a result, the module contains 2-way isolation against noise and surge signals, has a wide range power input (10 ~ 30 VDC) and can operate at temperature ranging from -25 ~+75 °C

Package Checklist

The package includes the following items:

- One PET-7000 hardware module
- One Quick Start Manual
- One software utility CD
- One screw driver

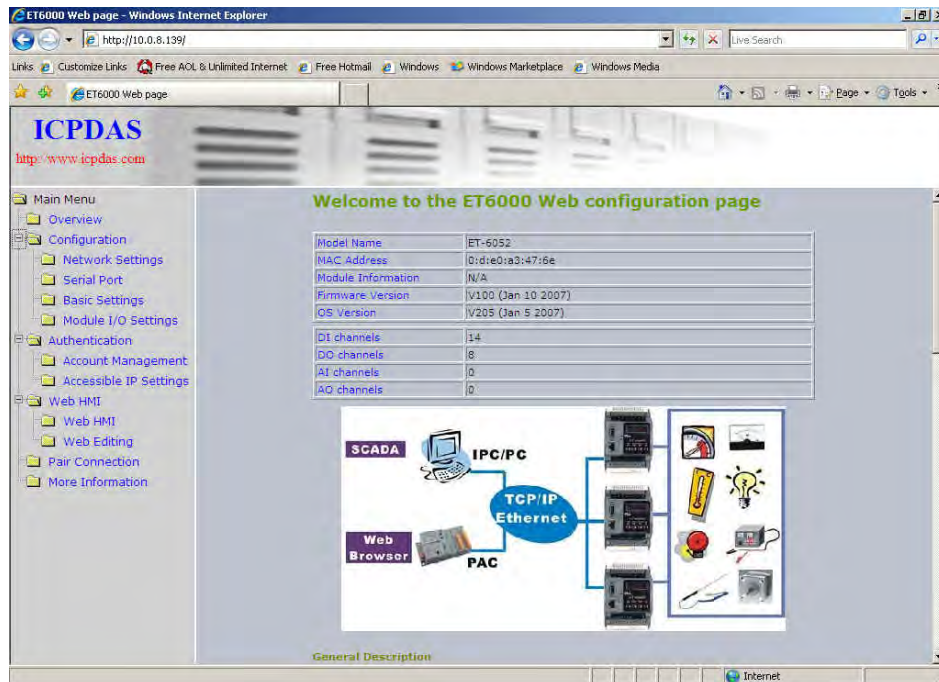
Note:

If any of these items are missing or damaged, contact the local distributors for more information. Save the shipping materials and cartons in case you need to ship the module/product in the future.

1.1. Features

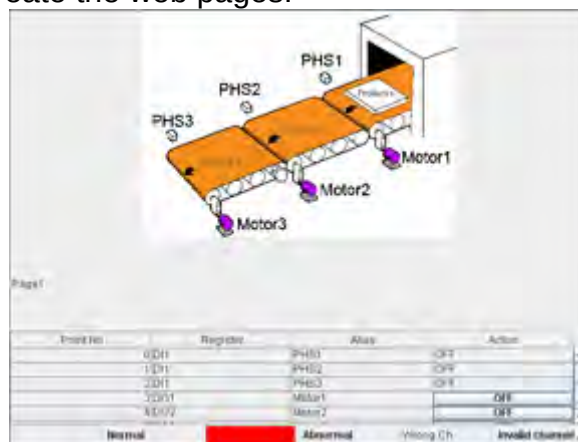
Built-in web server

Each PET-7000 module has a built-in web server that allows the user to easily configure, monitor and control the module from a remote location with a regular web browser.



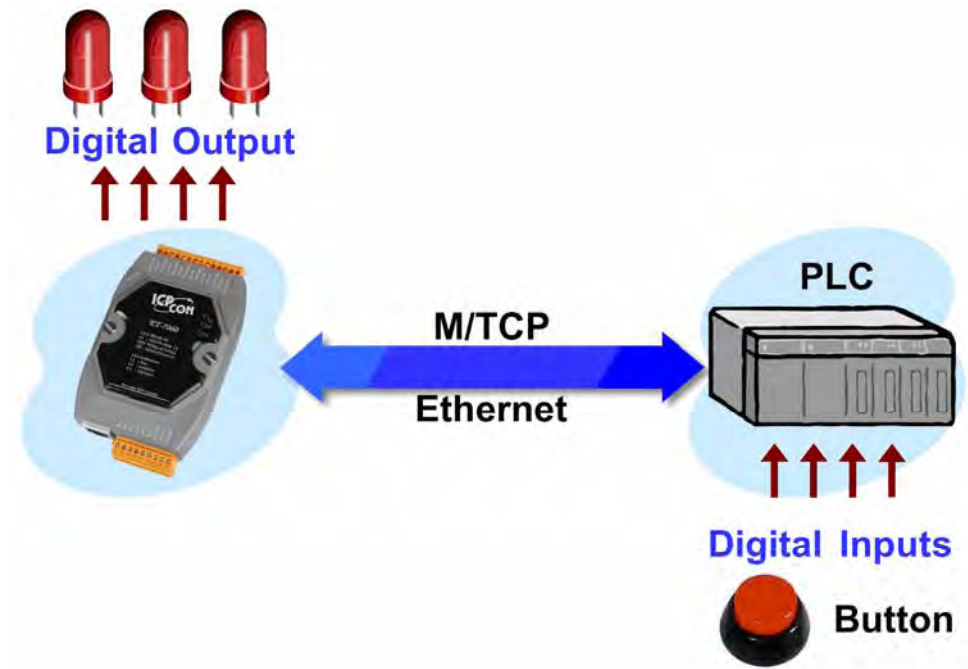
Web HMI

The Web HMI function allows the user to create dynamic and attractive web pages to monitor and control the I/O points. The user can upload specific I/O layout pictures (bmp, jpg, gif format) and define a description for each I/O point. No HTML or Java skills are needed to create the web pages.



I/O Pair Connection

This function is used to create a DI to DO pair through the Ethernet. Once the configuration is complete, the PET-7000 module can poll the status of remote DI status with the Modbus/TCP protocol and continuously write to the paired local DO channels in the background.



Communication Security

An account and a password for the account are needed when logging into the PET-7000 web server. An IP address filter is also included for limiting authority of connecting with the PET-7000.

Modbus protocol

- The Modbus/TCP slave function can be used to provide data to remote SCADA software through the Ethernet port.

Built-in Multi-function I/O

All Digital Output modules provide:

- Power on value (On boot up, the DO status is set to the Power-on value)
- Safe value (If Modbus/TCP communication is lost for a specified period, the DO status is set to the safe value)

All Digital Input modules provide:

- High/Low latched status
- DI channels can also be used as DI status and 32-bit low speed (500 Hz) counters.

Chapter 1 Introduction

All-in-one module

The various I/O components are mixed with multiple channels in a single module, which provides the most cost effective I/O usage and enhances performance of the I/O operations.

2-way isolated noise/surge protection

To protect the hardware from damage caused by noise and surge, the PET-7000 module is designed with isolation circuits for Ethernet, and I/O.

Built-in Dual Watchdog

The Dual Watchdog consists of the/a Module Watchdog and the/a Host Watchdog.

- The Module Watchdog is a built-in hardware circuit that can be used to monitor the operation of the module and will reset the CPU module if a failure occurs in either the hardware or the software.
- The Host Watchdog is a software function that can be used to monitor the operating status of the host, and is used to prevent network communication problems or host failures.

Automatic MDI / MDI-X crossover for plug-and-play

The RJ-45 port support automatic MDI/MDI-x that can automatically detect the type of connection to the Ethernet device without requiring special straight or crossover cables.

Auxiliary power input

The PET-7000 can receive power from an auxiliary power sources like AC adapters or battery in addition to the PoE enabled network. This is a desirable feature when the total system power requirements exceed the PSE's load capacity. Furthermore, with the auxiliary power option, the PET-7000 can be used in a standard Ethernet (non-PoE) system.

Ventilated housing designed to operate between -25 °C ~ +75 °C

The PET-7000 is housed in a plastic-based shell/case with a column-like ventilator that helps to cool the working environment inside the shell/case and allows the PET-7000 to operate at temperatures ranging from -25 °C to +75 °C.

1.2. Specifications

System

- CPU: 80186-80 or compatible
- EEPROM: 16 KB
- SRAM: 512 KB
- FLASH ROM: 512 KB

Communication

- Ethernet Port:
(10/100MBaseT, RJ-45 Port)

Built-in WatchDog Timer (0.8 seconds)

LED indicators

- PoE On
- L1: Run
- L2: Ethernet (Link/Active)
- L3: 10/100M

Isolation

- I/O Isolation: Dependent on the type of the PET-7000 module.
(Please refer to “**Sec 1.3 Module Selection**” for more detailed information)
- Ethernet Isolation: 1500 VDC

Power

- IEEE 802.3af, Class 1
- Power requirements: Powered by Power over Ethernet (PoE) or
an auxiliary power input from +12 VDC to +48 VDC
- Power consumption: Dependent on the type of the PET-7000 module.
(Please refer to “**Sec 1.3 Module Selection**” for more detailed information)

General environment

- Operating temperature: -25 °C ~ +75 °C
- Storage temperature: -30 °C ~ +80 °C
- Relative humidity: 5% ~ 90% RH, non-condensing

Mechanical

- Dimensions (W × L × D): 72 mm x 123 mm x 35 mm
- Installation: DIN-Rail Mounting

I/O Components

- Dependent on the type of of the PET-7000 module, please refer to the next chapter for more detailed I/O specifications.

1.3. Module Selection

PET-7000 classification

PET-7XYZ

ET: Ethernet communication interface

X: Number of the variance

Y: Function code

Z: Extension function code

Table 1-1 PET-7000 classification

X	Y	Z
Number of variance	1. AI module	3. RTD 4. Transmitter 5. Thermistor 6. Strain Gauge 7. Analog Input 8. Thermocouple
	2. AO module	1. Voltage output 2. Current output
	3. Reserved	
	4. DIO module	Number of variance
	5. DIO module	Number of variance
	6. DIO module with relay	Number of variance
	7. Multi-function	1. General purpose
	8. Counter / Frequency	Number of variance
	9. Motion	N: Number of axes

Released Module

Type	Module	Description
Power Relay Output	PET-7060	6-channel Power Relay Output 6-channel Isolation DI Module
	PET-7067	8-Channel Power Relay Output Module

PET-7060

Layout and Pin Assignments



PET-7060 I/O Specifications:

Digital Output	
Channels	6
Output Type	Power Relay, Form A (SPST N.O.)
Operating Voltage Range	250 VAC /30 VDC
Max. Load Current	5.0 A/channel at 25 °C
Operating Time	6 ms
Release Time	3 ms
Electrical Life (Resistive load)	VDE 5 A 250 VAC 30,000 ops (10 ops/minute) at 75°C
	5 A 30 VDC 70,000 ops (10 ops/minute) at 75 °C
	UL 5 A 250 VAC/30 VDC 6,000 ops.
	3 A 250 VAC/30 VDC 100,000 ops.
Mechanical Life	20,000,000 ops. at no load (300 ops./minute).
Relay Output Isolation	3000 Vrms
Digital Input	
Channels	6
Input Type	Wet Contact (Sink, Source)
On Voltage Level	+10 VDC ~ +50 VDC
Off Voltage Level	+4 VDC max.
Input Impedance	10 kOhm
Intra-module Isolation	3750 Vrms
Counters	Max. Count: 4,294,967,285 (32 bits)
	Max. Input Frequency: 500 Hz
	Min. Pulse Width: 1 ms
Over-Voltage Protect	+70 VDC
Power	
Power consumption	0.12 A @ 24 VDC max.

PET-7067

Layout and Pin Assignments



PET-7067 I/O Specifications:

Digital Output		
Channels	8	
Output Type	Power Relay, Form A (SPST N.O.)	
Operating Voltage Range	250 VAC / 30 VDC	
Max. Load Current	5.0 A/channel at 25 °C	
Operating Time	6 ms	
Release Time	3 ms	
Electrical Life (Resistive load)	VDE	5A 250 VAC 30,000 ops (10 ops/minute) at 75 °C
		5A 30 VDC 70,000 ops (10 ops/minute) at 75 °C
	UL	5A 250 VAC/30 VDC 6,000 ops.
		3A 250 VAC/30 VDC 100,000 ops.
Mechanical Life	20,000,000 ops. at no load (300 ops./minute).	
Relay Output Isolation	3000 Vrms	
Power		
Power consumption	0.14 A @ 24 VDC max.	

1.4. View of the PET-7000

Front Panel Description

J1 Connector



LED Indicators

J2 Connector

Table 1-2 LED Indicators

Name	LED Action	Function
Run	Flashing	Firmware is running
LINK/ACT	ON	Ethernet link detected
	OFF	No Ethernet link detected
	Flashing Green	Ethernet packet received
10/100M	OFF	Speed 10 Mbps
	Orange	Speed 100 Mbps



Note:

If the Run LED does not display the information as above, the following steps should be taken:

- Power-off the module
- Check that the Init/Normal switch is in the **Normal** position.
(Refer to **Back Panel Description**)
- Re-power-on the module and double check the LED indicators.

J1 Connector

Refer to **Sec.1.3 Module Selection** for more details regarding the pin assignment of the J1 Connector for all types of PET-7000 series modules.

J2 Connector

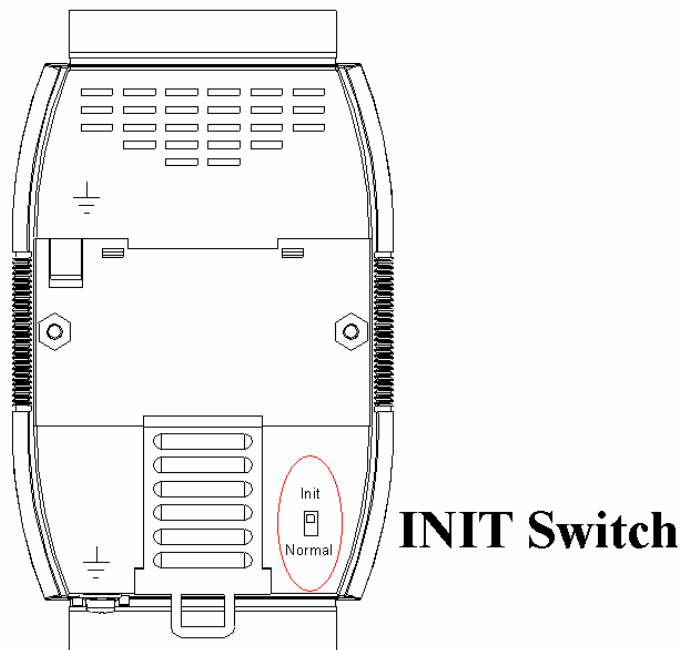


Table 1-3 J2 Connector

Pin number	Name	Function
8	+VS	The PET-7000 series can be powered using an auxiliary power +12 VDC ~ +48 VDC (non-regulated)
9	GND	Ground connection

The definition of pin8 and pin9 applies to all types of the PET-7000 series modules. The definition of the other pins is dependent on the type of the PET-7000 series module.

Back Panel Description



INIT Switch

Init/Normal switch

Init mode: MiniOS7 configuration mode

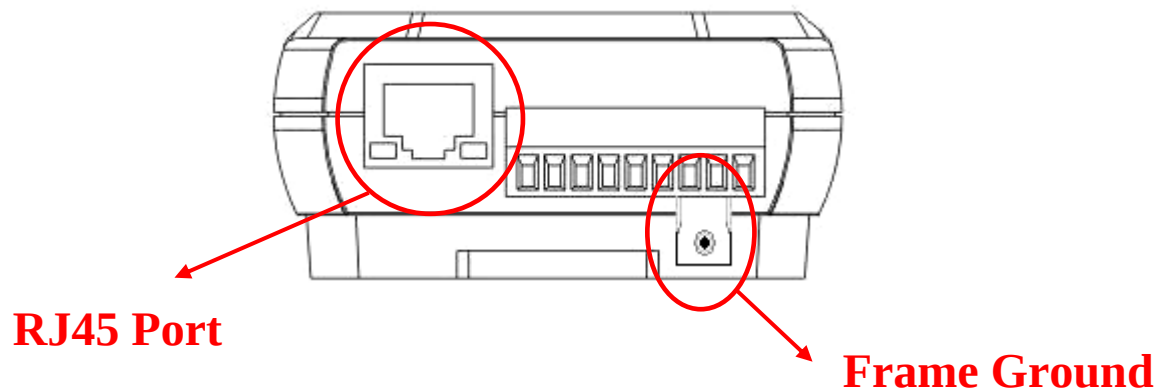
Normal mode: Firmware running mode



During the PET-7000 working time, the Switch is ALWAYS in the Normal position. Only when updating the PET-7000 firmware or OS, the switch can be moved from the Normal position to the Init position.

Move the Switch to the Normal position after the update is complete.

Bottom Panel Description



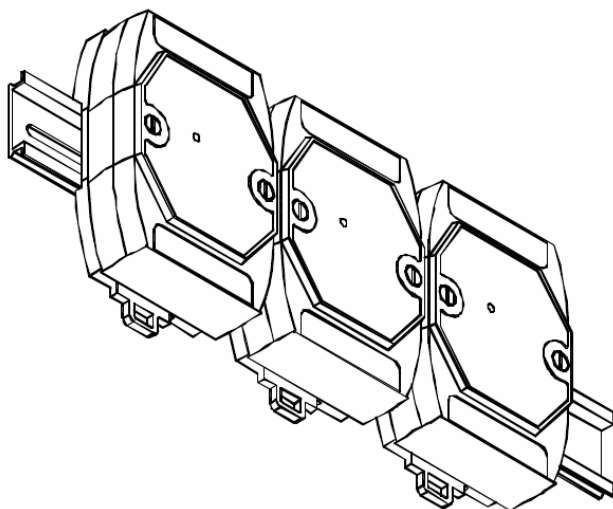
Note:

Appendix F describes how to connect the Frame Ground to the PET-7000 series

1.5. PET-7000 installation

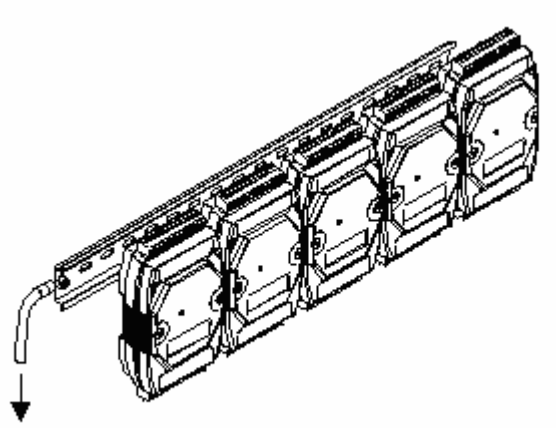
1.5.1. Mounting the PET-7000

DIN Rail Mounting



There are three new DIN rail models available. Each is made of stainless steel, which is stronger than those made of aluminum. There is a screw at one end and a ring terminal is included so that it can be easily connected to the earth ground. The three new DIN rail models are as follows.

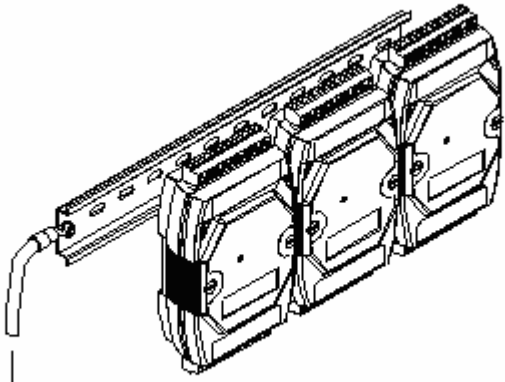
Part number	Max number of modules	Dimensions
DRS-360	5	360 mm x 35 mm



to earth ground

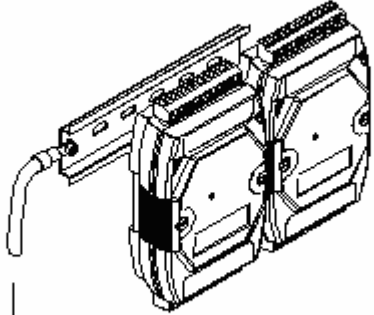
Chapter 1 Introduction

Part number	Max number of modules	Dimensions
DRS-240	3	240 mm x 35 mm



The diagram shows three DRS-240 modules connected in a daisy-chain configuration. A cable is connected to the first module, and an arrow points from the cable to the text "to earth ground".

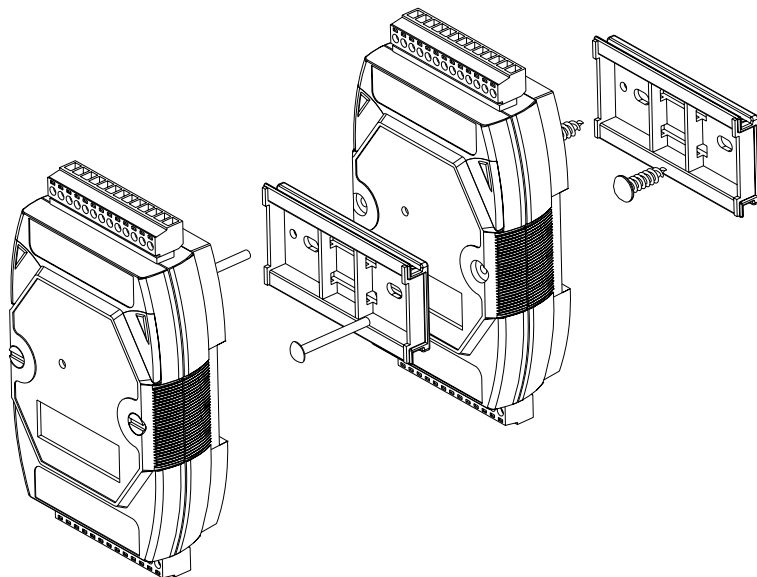
Part number	Max number of modules	Dimensions
DRS-125	2	125 mm x 35 mm



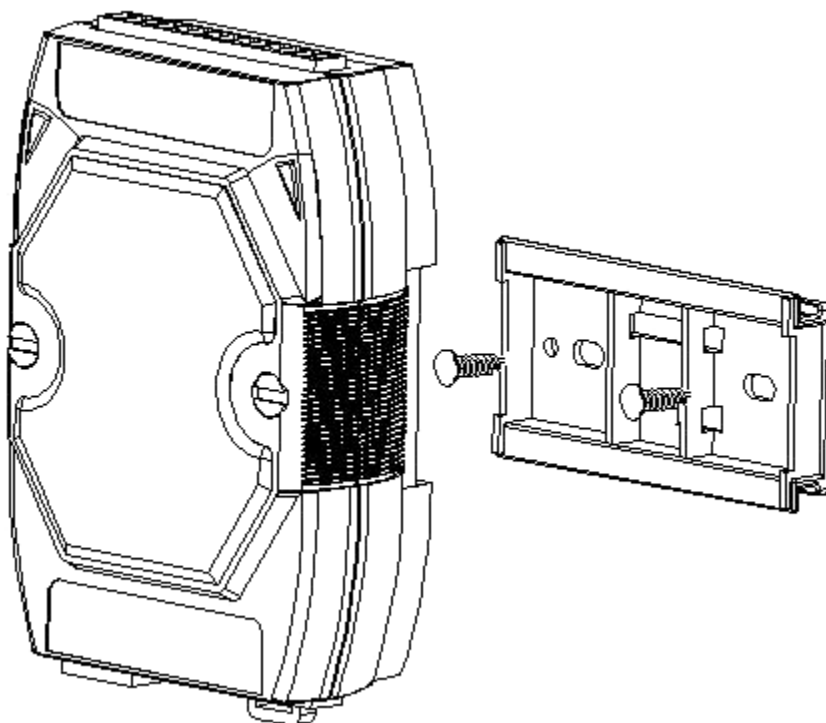
The diagram shows two DRS-125 modules connected in a daisy-chain configuration. A cable is connected to the first module, and an arrow points from the cable to the text "to earth ground".

Note: The recommended wire to connect to the earth ground is 16 – 14 AWG wire.

Piggyback Mounting



Wall Mounting

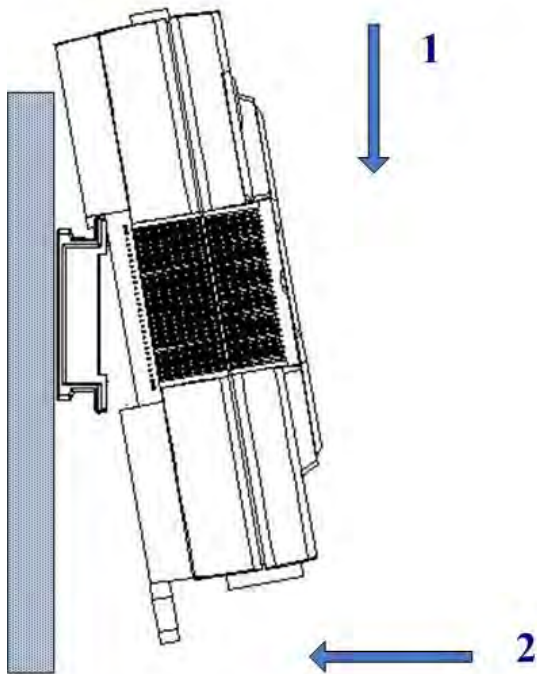


Chapter 1 Introduction

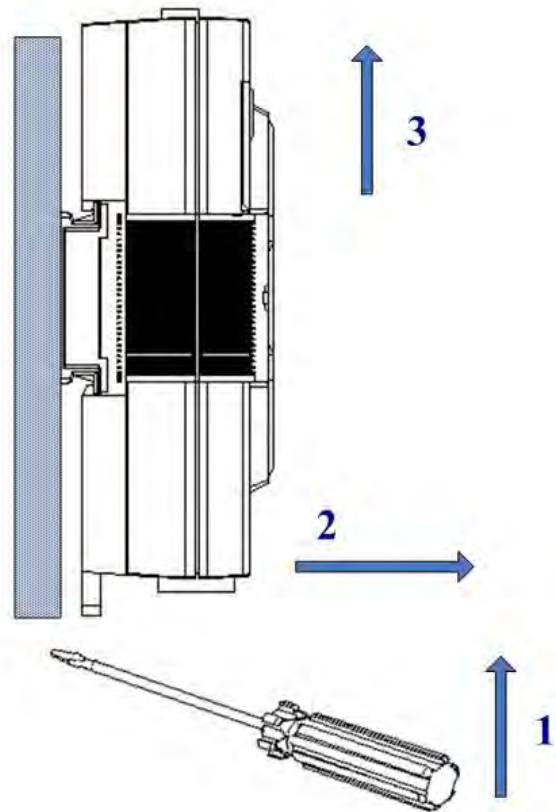
Snap the PET-7000 onto the DIN-rail (refer to the Snap On picture below)

Snap the PET-7000 off from the DIN-rail (refer to the Snap Off picture below)

Snap On

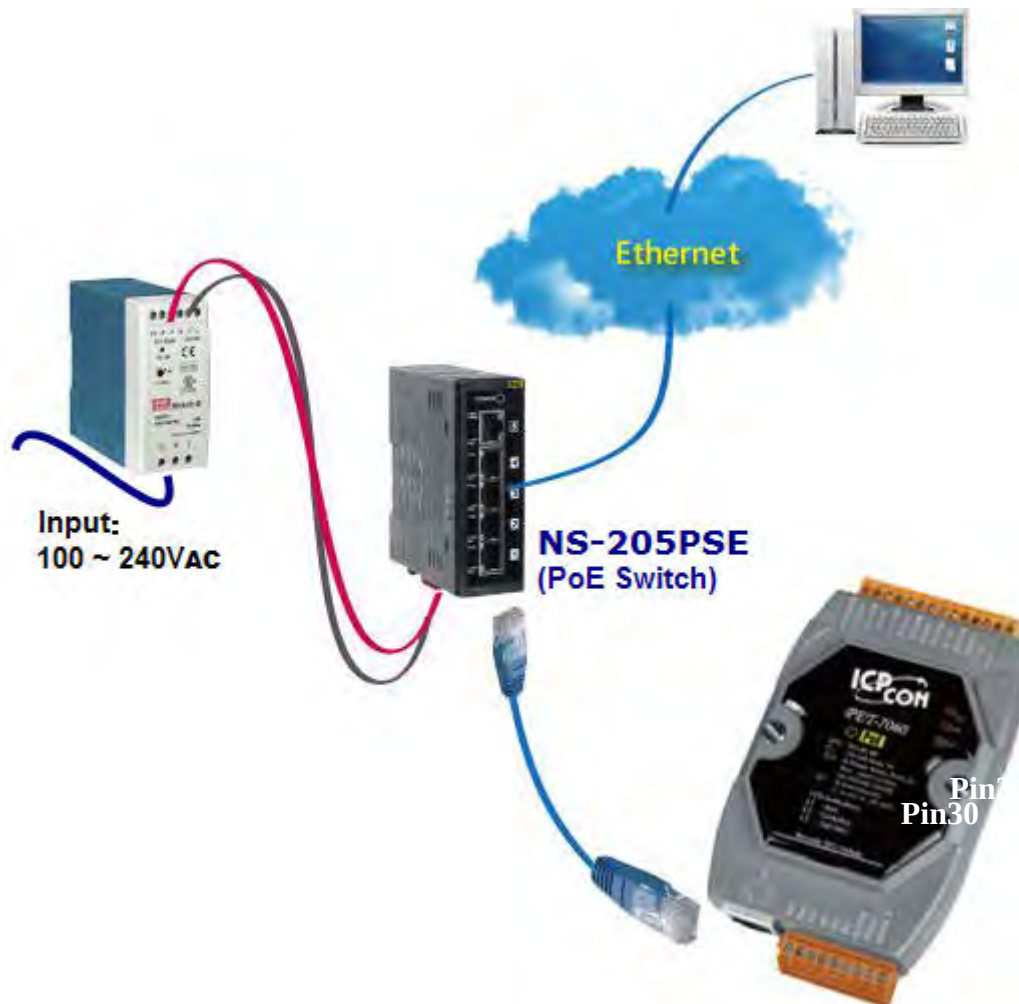


Snap Off



1.5.2. Connecting the Hardware

Step 1: Connect the Ethernet cable between the PET-7000 and the PoE switch.



Step 2: Check that the “RUN” LED (L1) on the PET-7000 is periodically ON for 0.5 seconds and then OFF for 0.5 seconds.

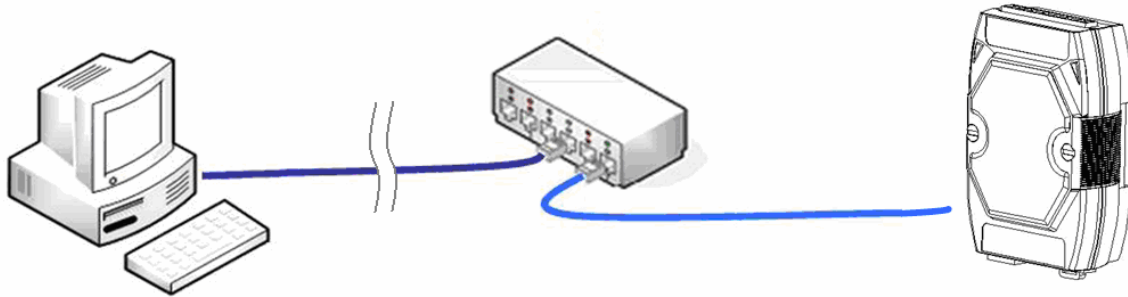


Notes:

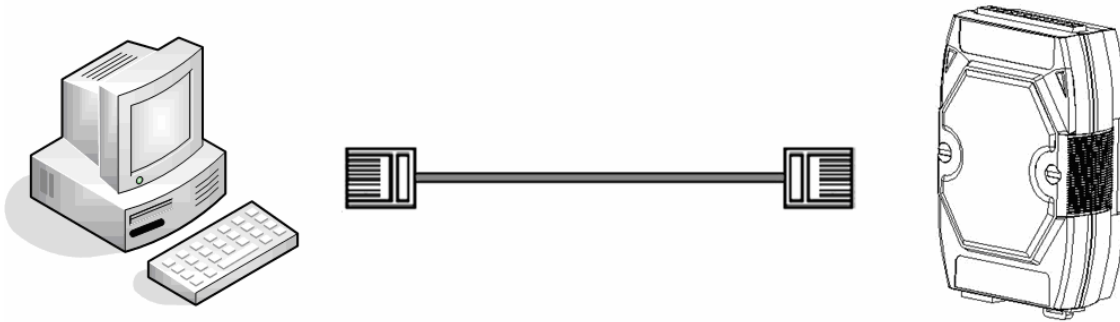
- Pin 8 and Pin 9 on the J2 connector are designed as VS+ and GND for the auxiliary power input (+12 ~ +48 VDC) if the PoE switch is lacked or the total system power requirements exceed the load capacity of user's PoE switch.
- NE-205PSE web page:
<http://www.icpdas.com/products/Switch/industrial/ns-205pse.htm>
- Power of NS-205PSE web page:
http://www.icpdas.com/products/Accessories/power_supply/mdr-60-48.htm

1.5.3. Ethernet cable wiring

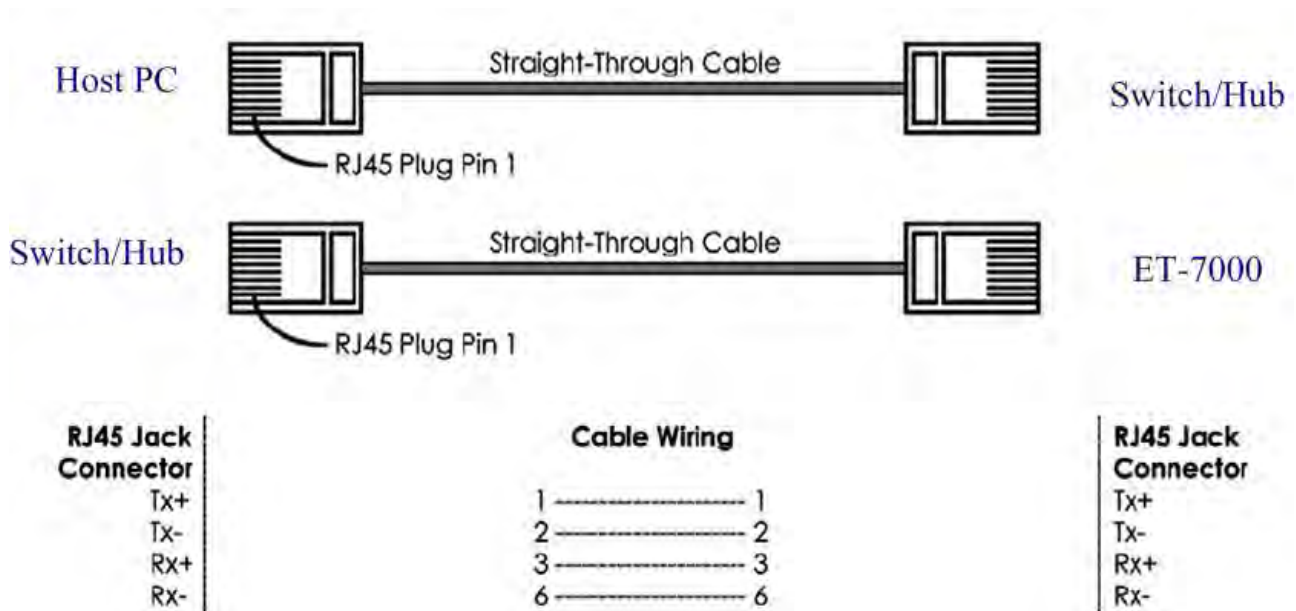
Connecting the PET-7000 to Switch or Hub



Connecting the PET-7000 to a Host PC



As a result of the automatic MDI / MDI-X crossover for plug-and-play on the PET-7000 RJ45 port, there is no need to a crossover cable to connect the PET-7000 to the Host PC. The user just uses a general straight-through cable to make the connection. The straight-through cable is shown as follows:



RJ-45 Cables Wiring Standard

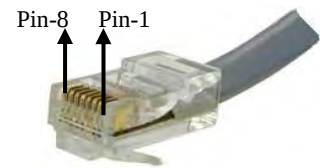


Table 1-4 RJ-45 Wiring Standards

Pin Number	Signal	Function
1	Tx+	Transmit Data +
2	Tx-	Transmit Data -
3	Rx+	Receive Data +
4	N/A	Not Used
5	N/A	Not Used
6	Rx-	Receive Data -
7	N/A	Not Used
8	N/A	Not Used

1.6. I/O wiring connection

PET-7060

Digital Output	Readback as 1	Readback as 0
Relay Output	Relay ON	Relay Off
Digital Input	Readback as 0	Readback as 1
Sink	+10 ~ +50 VDC	OPEN or <4 VDC
Source	+10 ~ +50 VDC	OPEN or <4 VDC

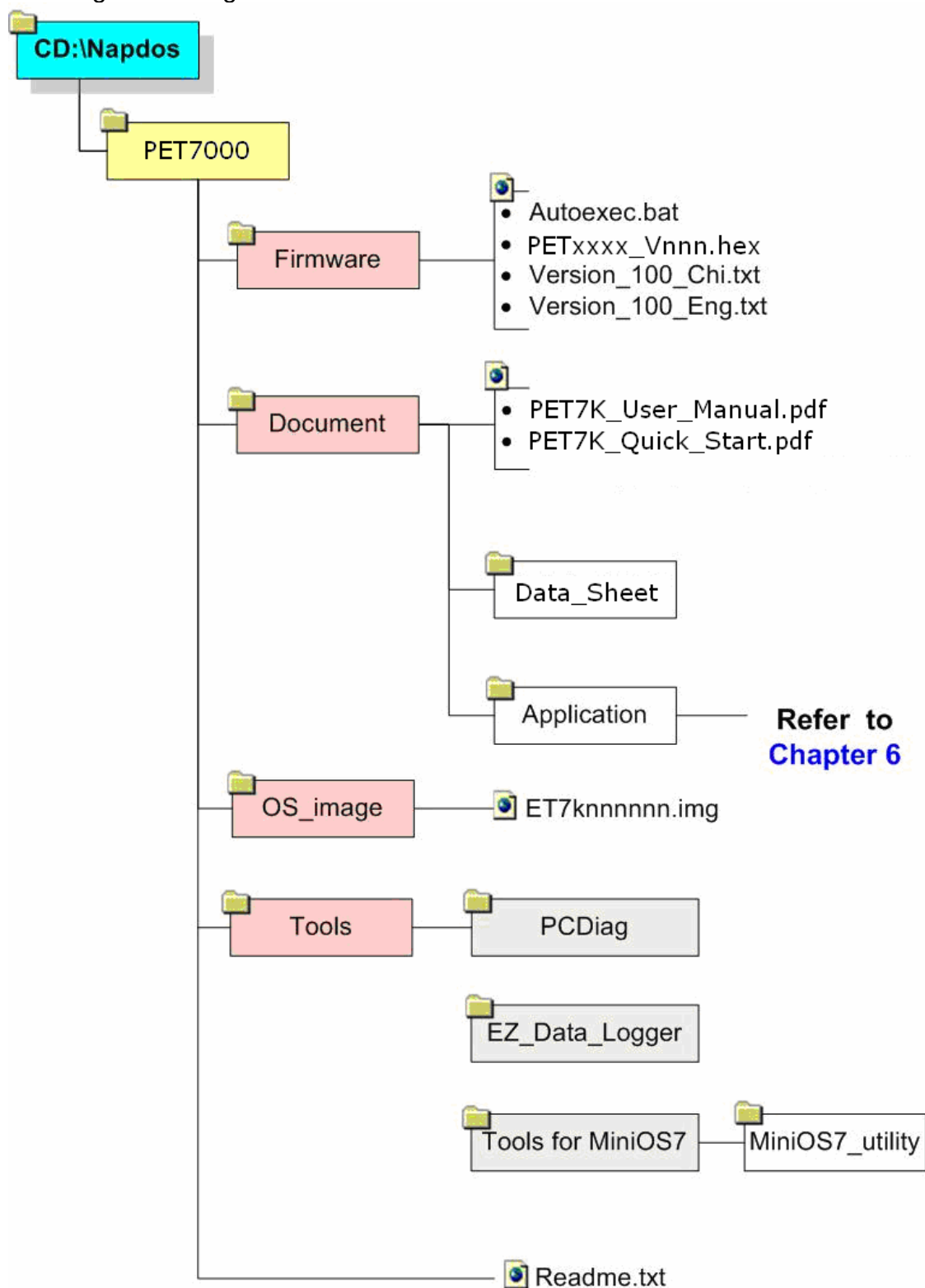
Note: Source type is provided with hardware PCB version 1.3 and later

PET-7067

Digital Output	Readback as 1	Readback as 0
Relay Output	Relay ON	Relay Off

1.7. Software & Document information

The location of all documents and software related to the PET-7000 module is shown in the following directory structure diagram. The relevant file can quickly be located by referring to the diagram.



For details of the revision information, please refer to
CD:\NAPDOS\PET7000\Firmware\Version_nnn_Eng.txt or Version_nnn_Chi.txt

1.8. Update Information

Refer to http://www.icpdas.com/products/Remote_IO/et-7000/pet7k_manual_software.htm

2. Configuring the PET-7000

The following settings need be set correct before the PET-7000 working. Network settings need meet the Network demand of Host PC; username and password settings are for the security issue.

- **Network settings:**

Item	Default
IP Address	192.168.255.1
Subnet Mask	255.255.0.0
Gateway	192.168.0.1

- **Web page Configuration**

Item	Default
Username	Admin (Case sensitive)
Password	Admin (Case sensitive)

2.1. Configuring the network settings

MiniOS7 utility is used to set the Ethernet address settings via the Ethernet. It can also download files to the PET-7000 module and update the OS image.

Follows are the steps of configuring the network settings.

Step 1: Refer to **Sec. 1.5.2** for details regarding wiring connections for PET-7000 series modules.



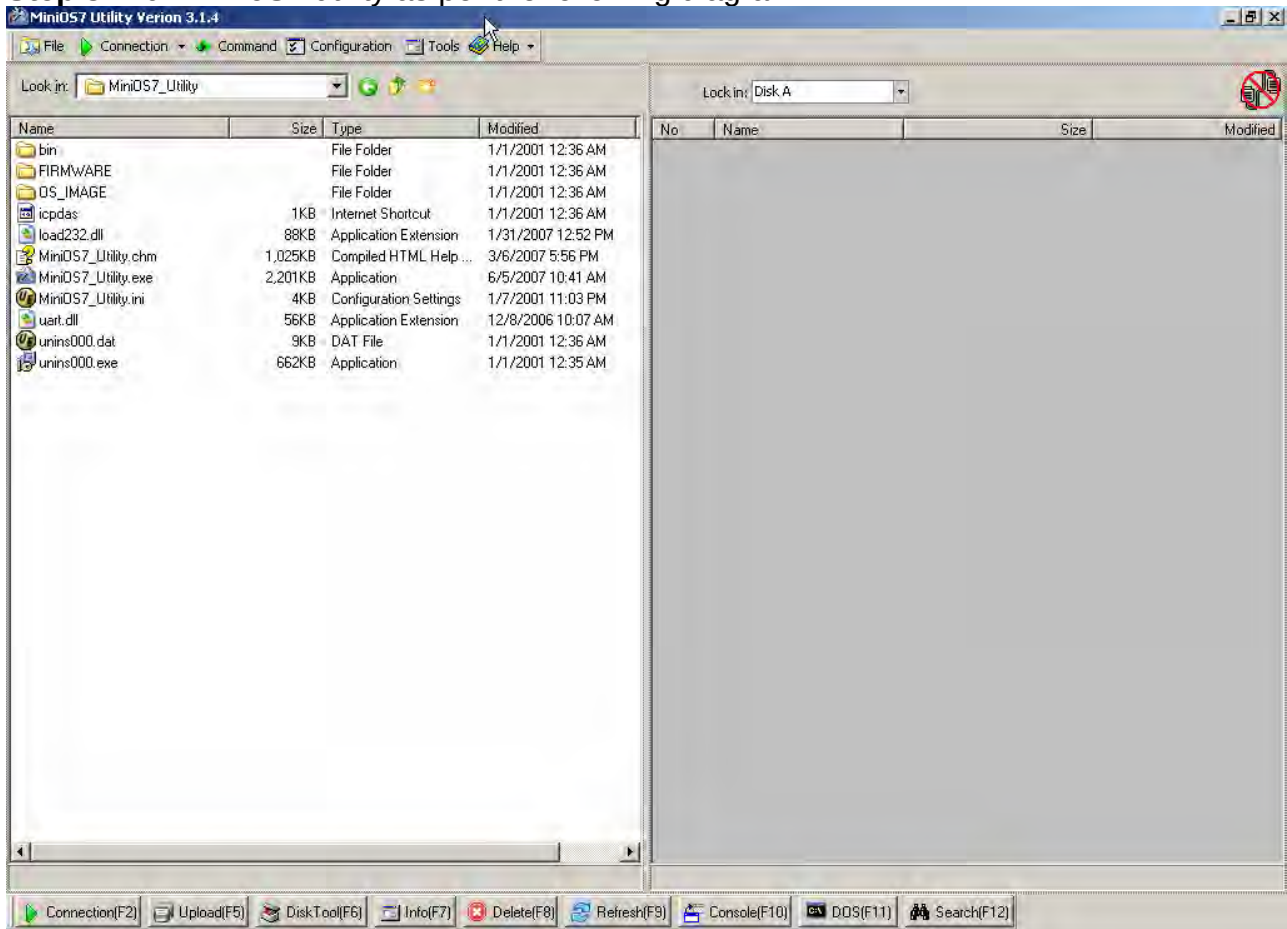
Note:

- The **Init/Normal** switch is always placed in the **Normal** position.

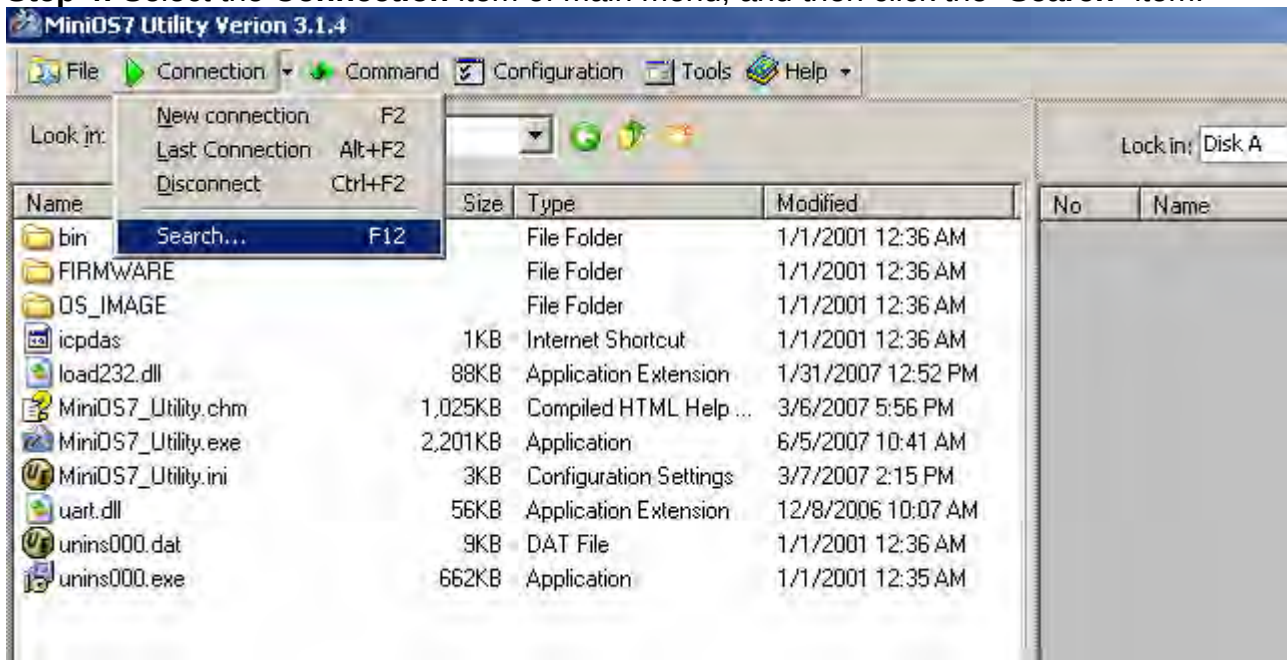
Step 2: Install MiniOS7 Utility on the host PC by executing
CD:\NAPDOS\ET7000\Tools\Tools for MiniOS7\MiniOS7_utility\MiniOS7_Utility.exe and follow the on-screen instructions

Chapter 2 Configuring the ET-7000

Step 3: Run MinioS7 utility as per the following diagram.

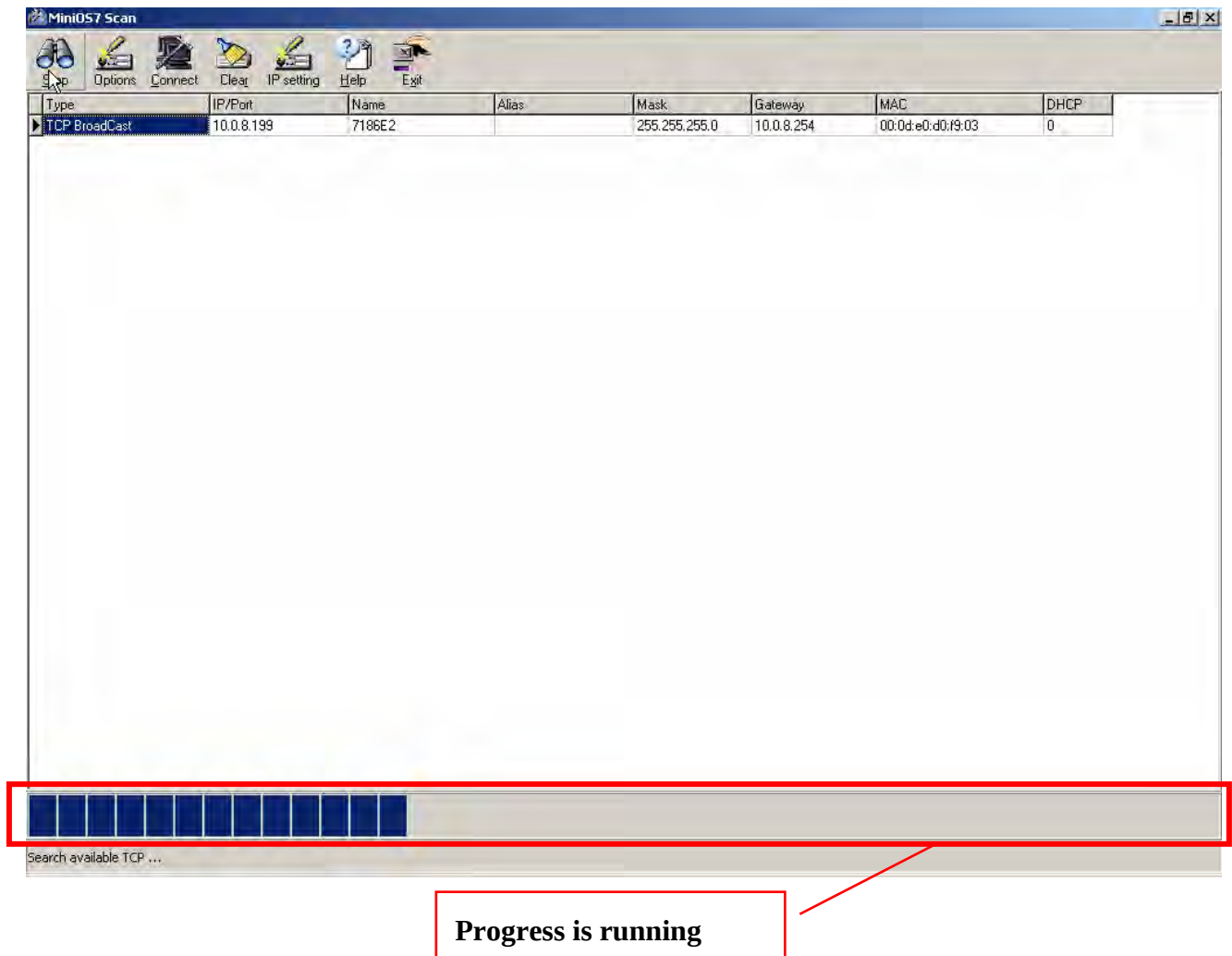


Step 4: Select the **Connection** item of main menu, and then click the **“Search”** item.

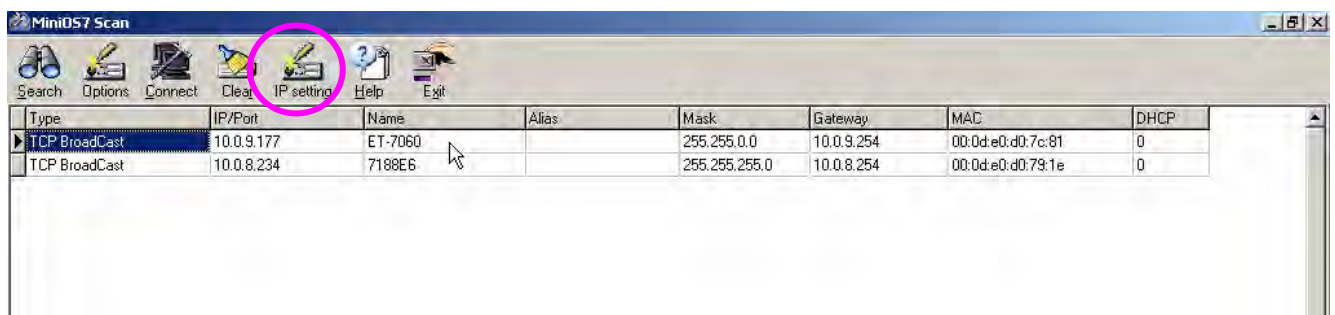


Chapter 2 Configuring the ET-7000

Step 5: The “MiniOS7 Scan” window appears, and starts to search the modules on this Ethernet network.

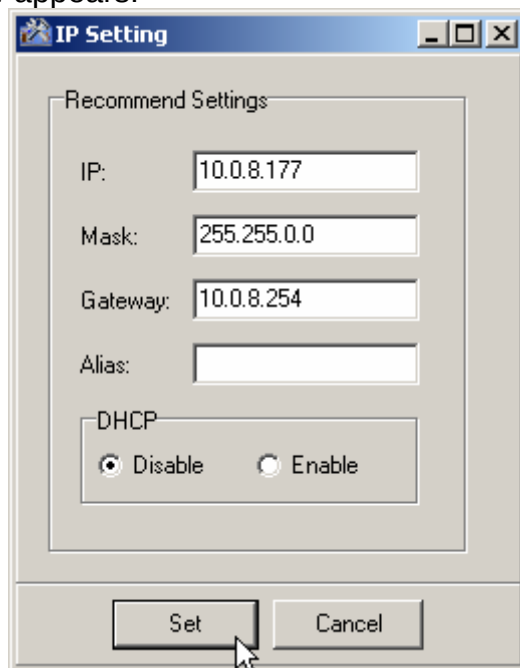


Step 6: When the search is finished, click the PET-7000 module which you want to configure and then click the “IP setting” button.



Chapter 2 Configuring the ET-7000

Step 6: IP Setting window appears.



Step 6.1: Check that valid IP, Mask, Gateway, Alias, DHCP values have been inserted into the “Recommend Settings” fields.

Step 6.2: If these values are modified, click the “Set” button to set the new values.

Step 7: When “Set” button is clicked, the PET-7000 will restart to make the new settings take effect. Search the module again to make sure the new settings are valid.



Note:

Please refer to **Appendix B** for more details regarding the MiniOS7 Utility installation procedure.

2.2. Load Factory Default

Refer to “Load All Setup Default” in **Sec 3.2.2 Basic Setting** for more details regarding loading the factory default using the Web configuration.

3. Web Configuration Page

The PET-7000 series modules have a built-in Web configuration page with a friendly user interface; it is simple to configure the PET-7000 with using a regular web browser. The web configuration page is optimized for Microsoft Internet Explorer 6.0 and Mozilla Firefox, and the other browsers can work well, but the Web might appear differently. No extra tools or utilities are needed to configure and control the PET-7000.

Opening the browser to connect with the PET-7000

- 1 Start up the Internet Explorer or Mozilla Firefox, and click the URL block at the top of the screen.
- 2 Input the URL address of the PET-7000 (Such as `http://192.168.255.1`) into the URL block and press the “Enter” button to enter the login page.



Note:

- The Factory default IP address is **192.168.255.1**
- The default user name and password are Admin and Admin (Case sensitive)
- If you forget the user name or password, the ONLY way to start configuring the PET-7000 is to load factory default by using the web/console configuration

- 3 Input the User Name and password on the dialog, and then click the “OK” button. (See the dialog box below)



Chapter 3 Web Configuration Page

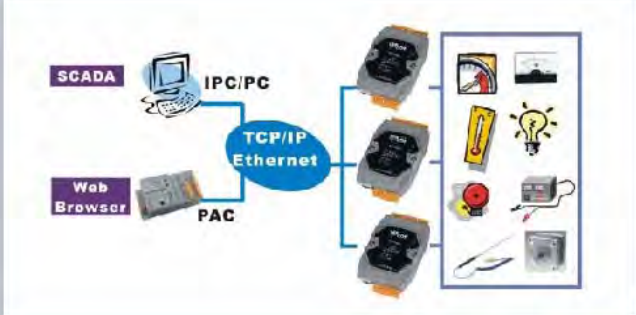
After the user name and password are accepted, the PET-7000 home page will be displayed.

ICPDAS
<http://www.icpdas.com>

- Main Menu
 - Overview
 - Configuration
 - Network Settings
 - Basic Settings
 - Module I/O Settings
 - Authentication
 - Account Management
 - Accessible IP Settings
 - Web HMI
 - Web HMI
 - Web Editing
 - Pair Connection
 - More Information

Welcome to the ET7000 Web configuration page

Model Name	ET-7060
MAC Address	0:d:e0:d0:6d:47
Module Information	
Firmware Version	V100 (May 25 2007)
OS Version	V226 (May 23 2007)
DI channels	6
DO channels	6
AI channels	0
AO channels	0

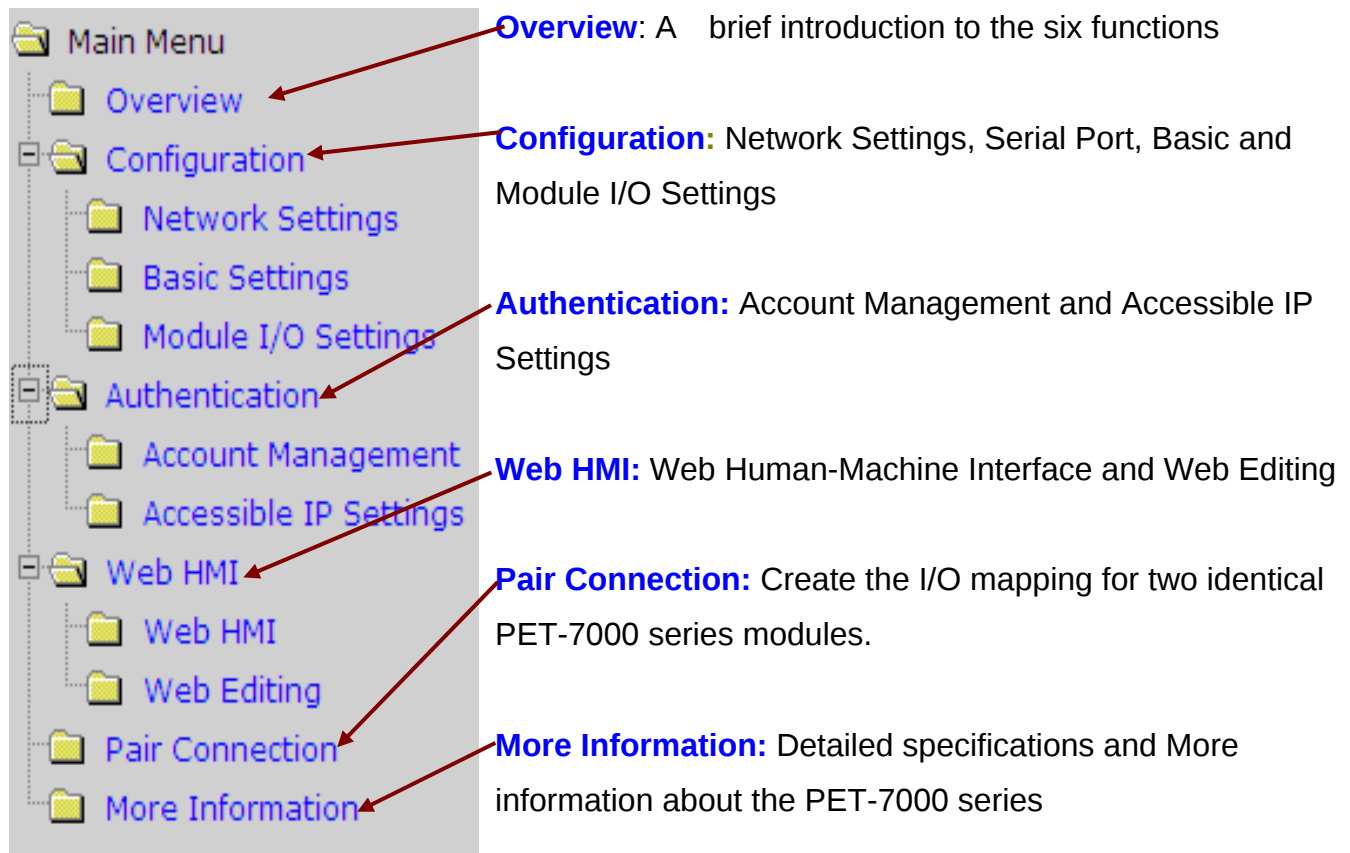




Note:

If either the user name or the password is incorrect or is left blank, the main home page and all other pages will not be accessible, so ensure that the input data is correct and rectify it if and as necessary.

The brief description of the Web page configuration function is listed on six main functions of the tree structure.



3.1. Overview

The Welcome page for the PET-7000 contains information related to the currently accessed PET-7000 series module, as shown below:

Model Name: PET-7000 series module name (The default is the PET-7000 series name. The maximum length is **8** characters)

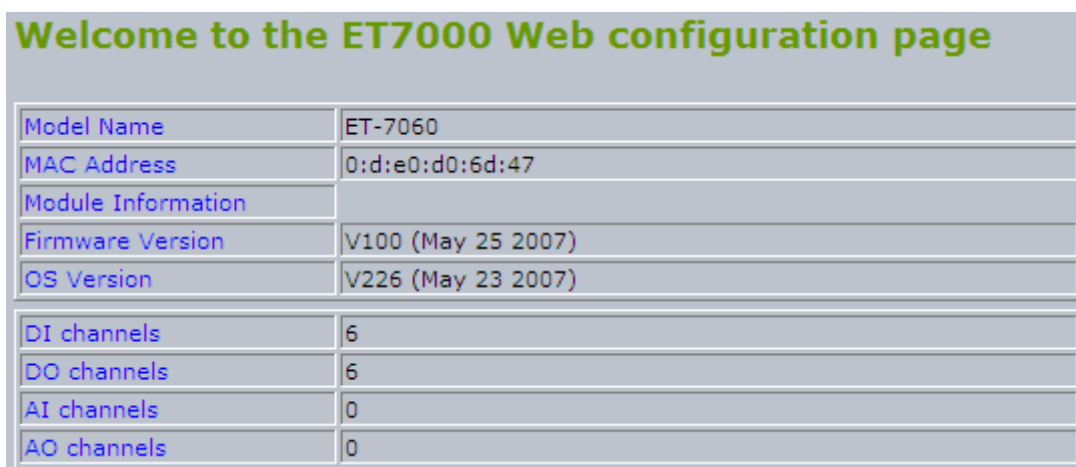
MAC address: The MAC address of the PET-7000 series module

Module Information: The alias name of the PET-7000 series module

Firmware Version: The version number and date of the default firmware

OS Version: The version number and date of the operating system

DI/DO/AI/AO channel: The number of DI/DO/AI/AO channels on the PET-7000 module.



The screenshot displays the 'Welcome to the ET7000 Web configuration page'. It features a table with the following data:

Welcome to the ET7000 Web configuration page	
Model Name	ET-7060
MAC Address	0:d:e0:d0:6d:47
Module Information	
Firmware Version	V100 (May 25 2007)
OS Version	V226 (May 23 2007)
DI channels	6
DO channels	6
AI channels	0
AO channels	0

General Description

The ET-7000 series is a selection of cost effective, high performance 10/100 Mbps I/O modules designed for remote data collection and remote Ethernet application control. Each ET-7000 module includes its own internal Ethernet configuration, Modbus TCP/IP port and web port, with a built-in simple HMI that makes configuration and access easy, together with an I/O LED display to indicate the current transmission status.

The ET-7000 supports Modbus/TCP without the need for any extra programming. It can be easily connected to most SCADA software such as Indusoft, iFix and Labview. The ET-7000 also supports Web server access allowing the user to monitor and access the remote I/O from a Web browser. Users can also download their own custom defined pages into the ET-7000 via our Windows Utility. ICPDAS also provides a Java Applet application for the ET-7000 as a reference allowing design their own Web interface.□@

Configuration

- [Network Settings](#)

IP address, Net mask, default gateway, DHCP, Static or Dynamic IP, Firmware and OS version information...

- [Basic Settings](#)

Module name, Module information, Real Time Clock, Time Server IP address, Web HMI and Telnet console Enable, Disable functions.
Load the factory default settings

- [Module I/O Settings](#)

Module I/O configuration including DI latch, Digital Counter Enabled/Disabled functions
Settings for Watchdog Timer, DO Power-On value and Safe values, AI High/Low alarm...

Authentication

- [Account Management](#)

3.2. Configuration

3.2.1. Ethernet Settings

Ethernet Settings		
Items	Current Value	New Value
IP	10.0.8.149	10.0.8.149
Gateway	10.0.8.254	10.0.8.254
Mask	255.255.255.0	255.255.255.0
DHCP	☐ Enable ☒ Disable	
Web Server Lib Ver.	Version 108 (Dec 29 2006)	
MiniOS7 Ver.	Version 2.00.2	
MODIFY_SETTING		

Please access the new IP Address after modifying the configuration

The Ethernet settings page can be used to check and change the TCP/IP network settings of the PET-7000 module.

Table 3-1 TCP/IP network settings

Settings	Description	Range	Factory default
IP	4-byte IP address. Each PET-7000 module needs an IP address so that it can be identified on the network	X.X.X.1 To X.X.X.254	192.168.255.1
Gateway	4-byte Gateway. A gateway is a network address that acts as an entrance to another network. Usually, computers that control the traffic within the network or at the local Internet Service Provider (ISP) are gateway nodes.	X.X.X.0 To X.X.X.254	192.168.0.1
Mask	4-byte subnet Mask. A subnet mask represents all the network hosts at one geographic location on the same local area network. When an Ethernet packet is sent across the network, the ET-7000 will use the subnet Mask to check whether the TCP/IP host specified in the packet is on local network segment.	X.X.X.0 To X.X.X.255	255.255.0.0

DHCP	Select this option If there is a DHCP server on the network, the IP address can be assigned automatically by the server.	0 (Disable) 1(Enable)	0 (Disable)
Firmware Ver.	Firmware Version and Date	N/A	Varies depending on the Module
MiniOS7 Ver.	MiniOS7 Version and Date	N/A	Varies depending on the Module

DHCP function

DHCP (Dynamic Host Configuration Protocol) is a method used to dynamically assign temporary numeric IP addresses as required.

If the DHCP function is enabled and the PET-7000 cannot get a dynamic IP address from the DHCP server on boot up, the PET-7000 module will automatically load the IP/Mask/Gateway address saved in the EEPROM. It may occur if the DHCP server is unavailable or if the Ethernet cable/device between the module and the Host PC is damaged.

In this situation, the PET-7000 will not continue to make requests to the DHCP server until the next reboot, even if the DHCP function is enabled.



Notes:

- For correct IP/Mask/Gateway address information, please consult the network administrator.
- If you don't have a DHCP server available on the network, it is recommended to set the DHCP disabled.

3.2.2. Basic Settings

The screenshot shows a web configuration interface titled "Basic Settings" in orange text. The interface contains several form fields for configuring the module. The fields are as follows:

Module Name	PET-7060 (Maximum 8 characters)
Module Information	aass (Maximum 16 characters) (The content cannot include " or " character)
Top page Information (First line)	ICP DAS (Maximum 20 characters) Color: Red (dropdown) Font: 0 (dropdown)
Top page Information (Second line)	http://www.icpdas.com (Maximum 50 characters) Color: Red (dropdown) Font: 0 (dropdown)
More Information URL	http://www.icpdas.com/products/Switch/industZ (Maximum 100 characters)
Web Server TCP Port	80
Console	
Telnet console	☒ Disable ☐ Enable

Below the form fields is a "Submit" button. Underneath the "Submit" button is a section titled "Load All Setup Defaults" in a pink header. This section contains five checkboxes:

- ☐ Configuration
- ☐ Authentication
- ☐ Web HMI
- ☐ Pair Connection
- ☐ All

At the bottom of this section is another "Submit" button.

Module Name:

The column shows the module name. The name can be modified by the user, and the maximum length of new name is 8 characters.

Module Information:

Indicates the alias name given to the module and can be modified by the user. The name can be a maximum of 16 characters, but cannot include single or double quotes (' or " character).

Chapter 3 Web Configuration Page

After the new values are submitted and the PET-7000 is rebooted, the **Module Name** and **Module Information** will be updated. You can refresh the web browser to verify the new values.

Example:

Click the Basic Setting in the Configuration section of the Main Menu tree.

Enter a string into the Module Information text field, for example, Module1.

Click to change the settings and reboot the PET-7000.

Refresh the web browser to verify that the changes have been applied.

Top page Information (First line) and Top page Information (second line):

The top page information is displayed at the top of the web page, as shown below, and can be modified to custom information.



After submitting the new details, refresh your browser and the new **Top page Information** will be displayed at the top of the web configuration page.

Chapter 3 Web Configuration Page

Example:

Click “Basic Settings” in the Configuration Section of the Main Menu tree.

Enter a string in the Top page Information (First line) and Top page Information (second line) text fields, for example “ICPDAS” and “http://www.icpdas.com”. The font size and color can be modified by selecting an option from the color drop down box and entering a value in the font text field.

Click button to enable the new settings.

Refresh your browser.

The screenshot shows the ICPDAS Web Configuration interface. On the left is a 'Main Menu' tree with categories: Overview, Configuration, Network Settings, Basic Settings (highlighted), Module I/O Settings, Authentication, Web HMI, Pair Connection, and More Information. The 'Basic Settings' section is active, displaying various configuration fields. Red arrows and circles highlight the following fields: 'Top page Information (First line)' with value 'ICPDAS', 'Top page Information (Second line)' with value 'http://www.icpdas.com', and 'More Information URL' with value 'http://www.w3.org/'. The 'Color' dropdown is set to 'Red' and the 'Font' field is set to '0'. Other fields include 'Module Name' (T-7060), 'Module Information' (Module1), 'Web Server TCP Port' (80), 'Time Zone' ((GMT0:00)Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London), 'Current Module time' (2165 / -91 / -91 / -91 / 85), 'Time server', 'Web Configuration' (checked), and 'Telnet console' (checked). A 'Submit' button is at the bottom right.

More Information URL:

It is helpful to provide users with additional information while browsing the Web Configuration page.

After submitting the new details, the **More Information** link in the Main menu tree will be updated.

Example:

Click the “Basic Settings” if the Configuration Section of the Main Menu tree

Enter a URL in the “More Information URL” text field, for example “http://www.w3.org”. (The URL may be either an external site or a link to a page on your intranet)

Click to enable the settings to take effect.

Chapter 3 Web Configuration Page

Basic Settings	
Module Name	ET-7060 (Maximum 6 characters)
Module Information	Module1 (Maximum 16 characters) (The content cannot include ' or " character)
Top page Information (First line)	ICPDAS (Maximum 20 characters) Color: Red Font: 0
Top page Information (Second line)	http://www.icpdas.com (Maximum 50 characters) Color: Red Font: 0
More Information URL	http://www.w3.org/ (Maximum 100 characters)

Clicking the “More Information” in the Main Menu tree will automatically open the web page defined in the More Information URL.



The default URL for “More information” is “http://www.icpdas.com/products/Remote_IO/ET-7000/ET-7000_introduction.htm”

Web Server TCP Port:

The default well known port which is used in TCP to name the ends of logical connections for Web server of PET-7000 is 80.

Chapter 3 Web Configuration Page

It allows the user to change the port to other port. (0~65535)

More Information URL	(Maximum 100 characters)
Web Server TCP Port	80
Time	
Time Zone	(GMT0:00)Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London ▼
Current Module time	2000 / 4 / 1 6 : 5 : 45 Check Set Now
Time server	

Table 3-2 Basic Settings

Function Name	Description	Range	Factory default
Module Name	The name of the PET-7000 series module	Maximum of 8 characters	Depends on the type of the PET-7000 Module
Module Information	Alias or nickname assigned to the Module	Maximum of 16 characters	None
Top page Information (First line)	User-defined Information	Maximum of 20 characters	None
Top page Information (Second line)	User-defined Information	Maximum of 50 characters	None
More Information URL	The URL can be linked to a user specified Web page.	Maximum of 100 characters	None
Web Configuration	Web configuration via a Web browser	Enable/Disable	Enable
Telnet console	Console mode via an Ethernet (Telnet).	Enable/Disable	Enable



Notes:

- The contents of “Top page Information (First line)”, “Top page Information (Second line)” and “More Information URL” will not return to default when running “loading the factory default”. Users can only change the contents from the “Basic Settings” page of the PET-7000

Load All Setup Default

Load All Setup Defaults
☐ Configuration
☐ Authentication
☐ Web HMI
☐ Pair Connection
☐ All

Table 3-3 Load All Setup Default Table

Function Name	Details	Factory default
Configuration	All of the Ethernet settings	Refer to Table 3-1
	All of the Module I/O settings	Refer to Sec. 3.2.3
Authentication	Account management	The default account is “ Admin ” and the password is “ Admin ”
	IP filter settings	Allow all of the IP connections
Web HMI	Web Page editing function	0 pages
Pair Connection	I/O Pair connection	Disabled
All	Set the factory default value for the 4 main functions above. (Configuration, Authentication, Web HMI, Pair Connection)	Refer to the function details above.

: Press this button to allow the settings to take effect.



Note:

Be aware that after modifying the settings and submitting the new information, all previous settings for the module will be lost.

3.2.3. Module I/O settings

Different Modbus setting functions will be displayed on this page depending on the type of PET-7000 module. All settings can be divided into either common, DI, DO, AI and AO settings. Please refer to **Appendix C** for more details regarding PET-7000 Modbus register table. The illustration below shows the Modbus settings for the PET-7060 module

Modbus Settings (Common Functions)

Modbus Address	Function	Action
126	Recover all I/O default settings	☐ 1=recover
129	Web Enable/Disable	☒ 0=disable/1=enable (default=1)
133	Reboot ET-7000	☐ 1=reboot
40255	CPU reset status	1 1= power on/2= 0.8 second WDT/3= Reset command
40256	CPU reset events	18071 reset count
40257	Set host watch dog timer	33023 5:Disable 5~65535:Enable (unit:second) (default=0)
40258	Host WDT events	0 WDT count

Modbus Settings (DI Latch)

Modbus Address	Function	Action
32	Clear all DI latched Status (High)	0 ☐ 1=clear
33	Clear all DI latched status (Low)	0 ☐ 1=clear
150	Enable all DI latched status(High/Low)	☒ 0=disable/1=enable (default=0)

Chapter 3 Web Configuration Page

Modbus Settings (DO Power/Safe Value)

Modbus Address	Function	Action
235	Power on value for DO	0 OFF ☒ ☐ 1 OFF ☐ ☒ 2 OFF ☒ ☐ 3 OFF ☒ ☐ 4 OFF ☒ ☐ 5 OFF ☒ ☐ 0=off/1=on (default=0)
267	Safe value for DO	0 OFF ☐ ☒ 1 OFF ☒ ☐ 2 OFF ☐ ☒ 3 OFF ☒ ☐ 4 OFF ☐ ☒ 5 OFF ☐ ☒ 0=off/1=on (default=0)

Submit

Chapter 3 Web Configuration Page

Modbus Settings (DI Counter)

Modbus Address	Function	Action
151	Enable low speed(100Hz) Digital counter	0 OFF ☒ ☐ 1 OFF ☒ ☐ 2 OFF ☒ ☐ 3 OFF ☐ ☒ 4 OFF ☐ ☒ 5 OFF ☒ ☐ 0=disable/1=enable (default=0)
34	Clear low Speed(100Hz) digital Counter	0 ☐ 3 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
40050	Preset value for low speed (100Hz) digital counter	0 1277 1 55157 2 18057 3 65270 4 59845 5 65378 0~65535 (default=0)

Submit

Chapter 3 Web Configuration Page

Modbus Registers and Factory Defaults

Common Functions

Modbus Address	Points	Description	Range	Factory default
40257	1	Set host watch dog timer (Second)	5~65535 (Enable) (<5: Disable)	0 (Disable)

DI Module Functions

Modbus Address	Points (Max.)	Description	Range	Factory default
00150	1	Enable all DI latched status (high/low)	0 (Disable) 1(Enable)	0 (Disable)
00151~ 00166	16	Enable low speed (100Hz) digital counter	0 (Disable) 1(Enable)	0 (Disable)
40050~ 40081	16	Preset value for low speed (100Hz) digital counter	0~4294967296	0

DO Module Functions

Modbus Address	Points (Max.)	Description	Range	Factory default
00235~ 00266	32	Power on value for DO	0=off 1=on	0
00267~ 00298	32	Safe value for DO	0=off 1=on	0

3.3. Authentication

3.3.1. Account management

Privilege management

No.	Account	Password	Verify	Authority	Enable
1	Admin			Admin	On
2	123			Admin	☒
3	abc			User	☒
4				Admin	☐
5				Admin	☐

Account: (Maximum 8 characters)
Password: (Maximum 8 characters)

☐ Load Setup Default

Each PET-7000 series module provides access privilege for up to five user accounts including a default **Admin** account and four general user-defined accounts. Each of the user-defined accounts can be assigned either Admin or general user privilege. Assigning Admin privilege allows the account to read and write configuration settings but the general user account is restricted to read only access. The maximum number of characters that can be used for an account name is 8.

Each of the account requires password authentication. The maximum number of characters allowed for the password is 8.

Load Setup Defaults: Load the factory default Account management settings. All current accounts will be deleted, except the Admin account, and the password of Admin account will revert to "Admin".

: Press this button to enable the settings to take effect.



Notes:

- The default account is "Admin" and the password is also "Admin". The password and the Admin account can be changed, but the account name cannot be changed or deleted.
- If you forget the password for the Admin account, the ONLY way to configure the ET-7000 is by using the "Reset to Factory default" option. (Please refer to Load All Setup Default on Sec. 3.2.3 for more information)

3.3.2. IP filter Settings

IP filter Settings

☐ Enable the IP filter table. ("Disable" will allow connection requests from all IPs.)

IP address at the browser PC: 10.0.8.12

No.	Active the rule	From (IP Address)	To (IP Address)
1	☐		
2	☐		
3	☐		
4	☐		
5	☐		
6	☐		
7	☐		
8	☐		
9	☐		
10	☐		

Each PET-7000 series module contains an IP filter that can be used to control access to the module, thereby preventing unauthorized access from unknown IP addresses.

The IP filter can be granted across a range of IPv4 addresses, such as from 10.0.8.1 to 10.0.9.22 or to a single IP address, with a maximum of ten permission rules.

Once the IP addresses that have been granted access permission have been entered, and the rule activated, the PET-7000 module IP filter will guard the TCP/IP connection by restricting access to any unauthorized IP addresses.

Chapter 3 Web Configuration Page

There are three methods of restricting or granting access permissions.

- **Allow one specific IP address only**

Enter the same IP address in both the “From IP address” and “TO IP address” text fields

Active the rule	From IP Address	To IP Address
☒	192.168.255.1	192.168.255.1

- **Allow Hosts within a specific IP address range**

Enter the first IP address in the From IP address text field, and enter the last IP address in the permitted range in the To IP address text field.

Active the rule	From IP Address	To IP Address
☒	10.0.8.1	10.0.9.22

- **Allow access from any IP address**

Disable IP filter function to allow access to the ET-7000 module from any address.

☐	Enable the IP filter table. ("Disable" will allow connection requests from all IPs.)
--------------------------	--

The “Enable the IP filter table” checkbox must be checked when granting permissions to either a single IP address or a range of IP address.

☒	Enable the IP filter table. ("Disable" will allow connection requests from all IPs.)
-------------------------------------	--

: Press this button to enable the settings to take effect.



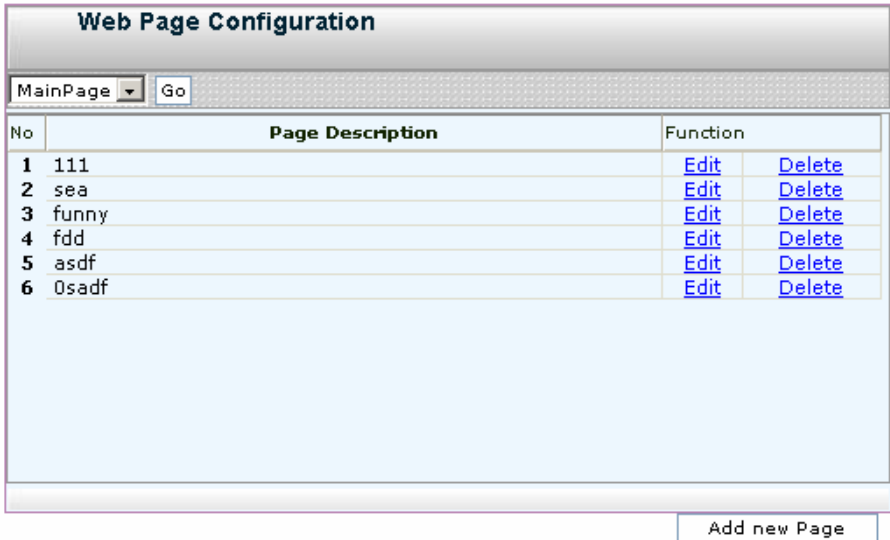
Note:

The IP filter is set to “disabled” as default; it means that access to the PET-7000 module is allowed from any IP address.

3.4. Web HMI

3.4.1. Web Editing

The Web page configuration can be used to create a user-defined Web page.



No	Page Description	Function
1	111	Edit Delete
2	sea	Edit Delete
3	funny	Edit Delete
4	fdd	Edit Delete
5	asdf	Edit Delete
6	0sadf	Edit Delete

Click “Web Editing” in the “Web HMI” section of the Main menu tree and the window above will be displayed.

Click the “Add new Page” button to create a new page.

Click the “Edit” link to edit the selected page.

Click the “Delete” link to remove the selected page.

The list box on the left hand side of the “Web Page Configuration” window lists all existing pages including the main page, pair connection page.

A maximum of 10 pages can be created.

: Browses the Web HMI with the name listed on the list box.



Notes:

- By default, no existing pages will be listed in the Web Page Configuration window.
- The “Main page” shown in the HMI list box located on the left hand side of the “Web Page Configuration” window is a standard default Web HMI page and cannot be deleted.
- The Pair Connection Page can be enabled by enabling the I/O pair connection function in the “Pair connection” section of the Main menu tree. Please refer to **Sec 3.5** for more details.

Chapter 3 Web Configuration Page

Page properties

Web Page Configuration



Picture:

The total spaces for saving picture only is 64KB, the picture must be less than 64k

 **ET6K.jpg** : 06/30/2126 17:46:9, size=17427

Free space=48045 bytes

Page Name: Picture: ☐ Set as Start page

Group							
	Register	Alias	Scaling	Type	Data type		
1	1	Voltage1	1	Holding	Signed 16	Edit	Clear
2	1	Voltage1	0	Coil	Boolean	Edit	Clear
3						Edit	Clear
4	0	DO0	0	Coil	Boolean	Edit	Clear
5						Edit	Clear
6						Edit	Clear
7						Edit	Clear
8						Edit	Clear
9						Edit	Clear
10						Edit	Clear

All properties can be configured on this page.

Web Page Configuration



Picture:

The total spaces for saving picture only is 64KB, the picture must be less than 64k

 **ET6K.jpg** : 04/06/2006 15:40:29, size=17427

 **conveyer.gif** : 08/14/2126 17:46:32, size=14251

Free space=51221 bytes

Picture Preview

The free space for picture

File tree: The files exist on the ET-7000 module

Chapter 3 Web Configuration Page

A maximum of 10 items in each group can be configured.

Picture:

: The image file name selected by clicking the “Browse” button.

The image file type can be either of **.jpg**, **.gif** or **.bmp**. The recommended resolution for the image to be displayed on the Editing Web page is 340 * 250 pixels.

Each PET-7000 series module has a maximum storage space of 64KB.

Browse...

: Browse a directory on the local disk to select an image file to be uploaded to the PET-7000 module.

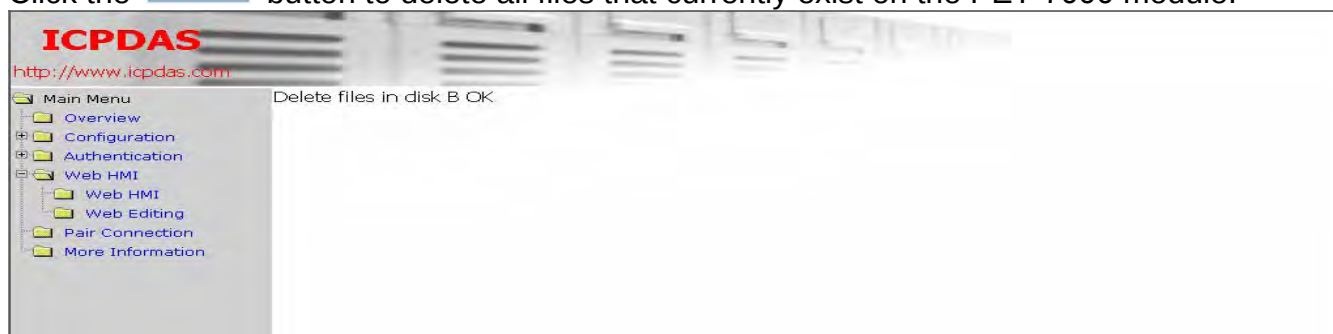
Upload

: Upload the selected image file to the PET-7000 module.

Del All

: Delete all files that are currently stored on the PET-7000 module.

Click the button to delete all files that currently exist on the PET-7000 module.



Notes:

- The “Del All” action will delete all files currently stored on the PET-7000 module, and it cannot be used to delete individual files.
- The PET-7000 will reboot after deleting the files.

Page Name:

Picture:

☐

Set as Start page

Page Name: This field can be used to give the page a more descriptive name. The maximum number of characters that can be used for a page name is **10**.

Image: Use the list box to choose the image to be displayed in the preview window.

Save: The information displayed on this page will be saved after clicking this button.

Set as the Start Page: Clicking the checkbox to make the current page to be displayed when clicking the Web HMI link in the Web HMI section of the Main Menu tree.

: Clicking this button will link to the “Edit Group Register” page to allow the point information to be edited.

: Click the “Clear” button to delete the point information.

Refer to next Section for more details regarding the definition of the field if the “**Group**” Table.

Editing the Group Register

MainPage Go

Edit Group Register

Modbus Register	1
Alias	Voltage1
Scaling	Enabled 0
Register Type	Holding Read
Data type	Signed 16

Save

Modbus Register: The Modbus Register number for the PET-7000 module

Alias: A string that describes the Modbus register. It can be a reference to a tag in the image of the Web editing page which is selected from the “Page properties” section. (If the tag of the Modbus register has defined on the image)

Scaling: The Modbus register value will be divided by the scale value before being displayed on the web page, or multiplied before value is written to the PET-7000 module.

This function is only used for Input or Holding register types.

- **Enable:** Enable the Scaling function
- **Disable:** Disable the Scaling function.

Example:

1. Modbus register value= 620, Scale value=10 → 62.0 will be shown on the Web page.
2. Modbus register value=7325, Scale value=1000 → 7.325 will be shown on the Web page.
3. Web page input= 32.20, Scale value=100 → 3220 will be written to the Modbus register.

Register Type: Defines the Modbus register type.

Bit format: **Coil** (Digital Output), **Discrete input** (Digital Input).

Byte format: **Input** (Analog Input), **Holding** (Analog Output).

Data Type: Defines the data type of the Modbus register and must be either Input or Holding. The data type can be one of the following:

Table 3-4 Input or Holding Data Types

Data Type	Definition
Unsigned 16	A 16-bit positive value
Signed 16	A16-bit value with a sign
Unsigned 32	A 32-bit positive value. The Most significant word (register) is on the low address.
Signed 32	A 32-bit value with sign. The Most significant word (register) is on the low address.

Chapter 3 Web Configuration Page

Unsigned 32 (swapped)	A 32-bit positive value. The Most significant word (register) is on the high address.
Signed 32 (Swapped)	A 32-bit value with sign. The Most significant word (register) is on the high address.
Float	A 32-bit floating point. (IEEE754).The Most significant word (register) is on low address.
Float (swapped)	A 32-bit floating point. (IEEE754). The Most significant word (register) is on high address.

- : Click this button to save all settings.

The diagram below shows an example of how to select a Coil register type with a Modbus Register Address of 1 and Alias name of Voltage 1.

Other text fields that aren't related to the Coil register type will be disabled.

The Modbus Register and Alias text fields are only related to the Coil and Discrete Input register types, but the other fields aren't related.

The screenshot shows a web browser window with a 'MainPage' dropdown and a 'Go' button. The main content area displays the 'Edit Group Register' form. The form has the following fields and values:

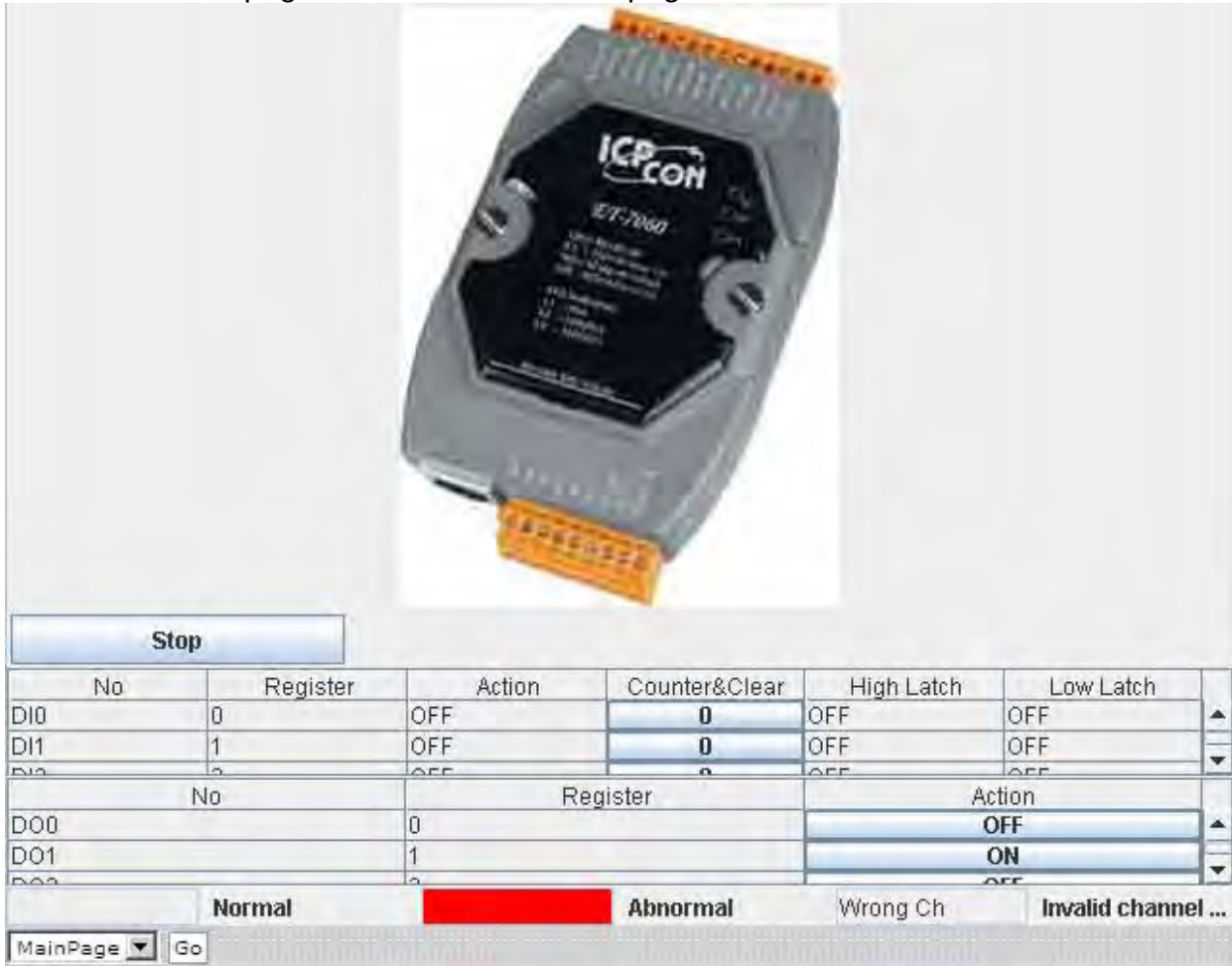
Edit Group Register	
Modbus Register	1
Alias	Voltage1
Scaling	Disabled 0
Register Type	Coil Write
Data type	Signed 16

A 'Save' button is located at the bottom right of the form.

3.4.2. Web HMI

The first page displayed when clicking “Web HMI” item in the Main Menu tree is defined by checking “Set as Start Page” checkbox on the “Web page configuration” page in the “Web Editing” section of the Main Menu tree.

The default start page is the Main Web HMI page shown as follow.



The Main Web HMI page shows all the components of the PET-7000.

For example, the Main Web HMI page for a PET-7060 module will display the 6 DO and 6 DI components.

Table 3-5 Main Web HMI Page - Table1

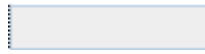
Title Name	Description	Notes
No.	The Component type and address	
Register	The Register address	
Action	DI: ON (1), OFF (0)	
Counter & Clear	DI Low Speed Counter, 0~65535	Press the button to clear the counter
High Latch	DI High Latch Status: Unlatched (0), latched(1)	
Low Latch	DI Low Latch Status: Unlatched (0), latched(1)	

Table 3-6 Main Web HMI Page - Table 2

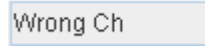
Title Name	Description	Notes
No.	The Component type and address	
Register	The Register address	
Action	DO: ON (1), OFF (0) AO: A numeral of Integer or float	

Connection Status:

The status indicates the connection status of the IO component on PET-7000 module defined on the cell of IO channel and Modbus register mapping table.

 **Normal** : When the “Normal” status is highlighted on the each cell, it indicates that the connection is active, meaning that a connection has been established between the browser and the IO component on the ET-7000 module and that the component can be accessed.

 **Abnormal** When the “Abnormal” status is highlighted on the each cell, It indicates that the connection has been lost or a communication timeout has occurred.

 **Invalid channel ...** Indicates that the defined channel is invalid, and is only applicable to the “Web Editing” or “Pair connection” pages.

Chapter 3 Web Configuration Page

The color of the cells in the table shown on the Web page below have turned red, indicating that the connection to the module has failed.



The image shows a grey ICP CON ET-7000 module with orange connectors. Below the image is a web configuration interface. At the top left is a 'Stop' button. Below it is a table with columns: No, Register, Action, Counter&Clear, High Latch, and Low Latch. The table contains three rows of data. Below the table is a section with a 'No' column and an 'Action' column. The first two rows in this section are highlighted in red. At the bottom of the interface are buttons for 'Normal', 'Abnormal', 'Wrong Ch', and 'Invalid channel ...'. There is also a 'MainPage' dropdown menu and a 'Go' button.

No	Register	Action	Counter&Clear	High Latch	Low Latch
DI0	0	OFF	0	OFF	OFF
DI1	1	OFF	0	OFF	OFF
DI2	2	OFF	0	OFF	OFF

No	Register	Action
DI0	0	OFF
DI1	1	ON
DI2	2	OFF

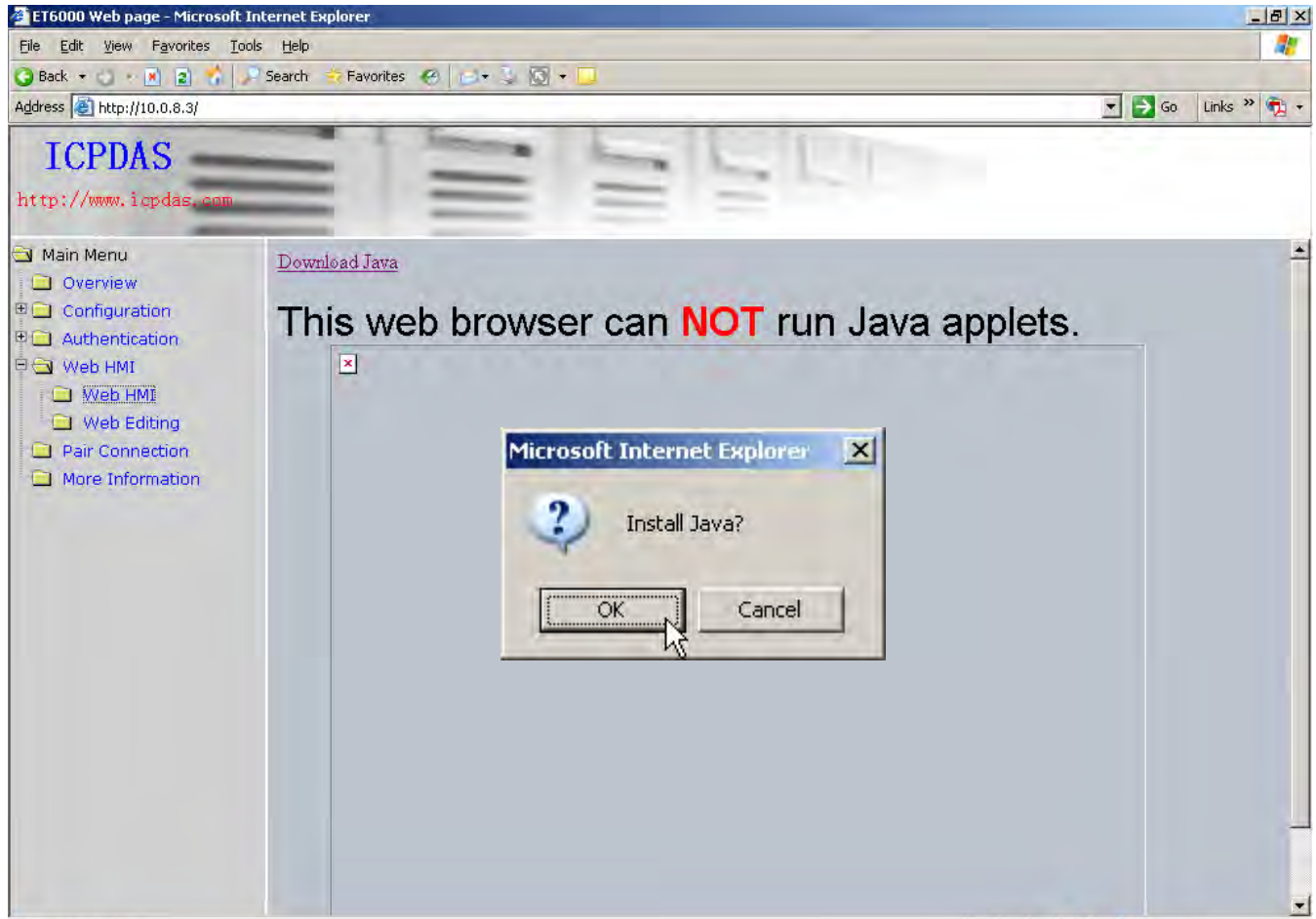
Normal Abnormal Wrong Ch Invalid channel ...

MainPage Go

Chapter 3 Web Configuration Page

Java Web page cannot be RUN

If your Web browser isn't JAVA enabled, a message notifying you that your Web browser can NOT run Java applets" message will be displayed on the Web HMI page.

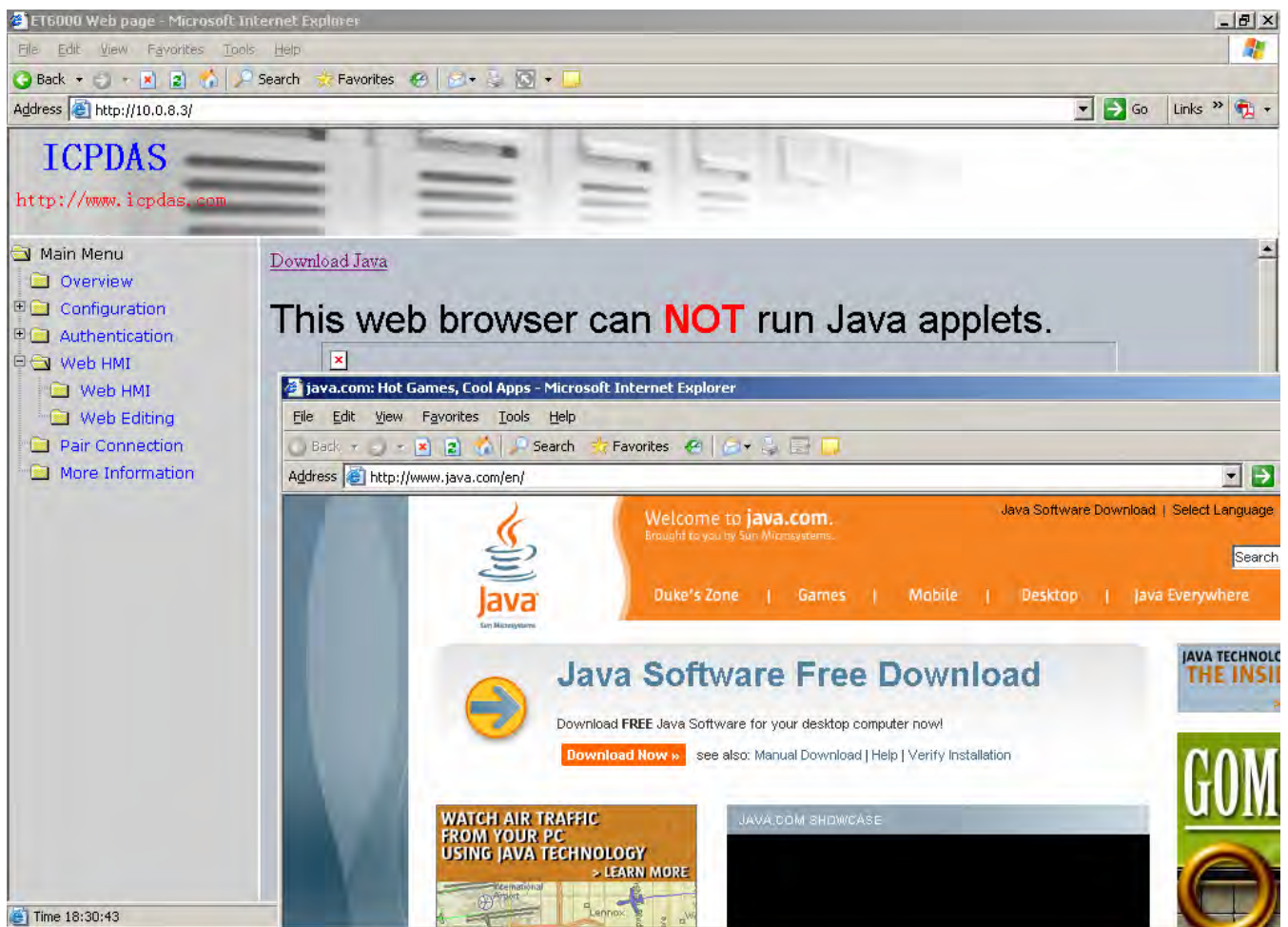


Depending on the type of Web browser, a dialog box will appear asking whether you wish to install Java or not. (Refer to the figure below)



If you click "OK", a new browser window will be opened linking to the <http://www.java.com> web site to enable you to install Java.

Chapter 3 Web Configuration Page

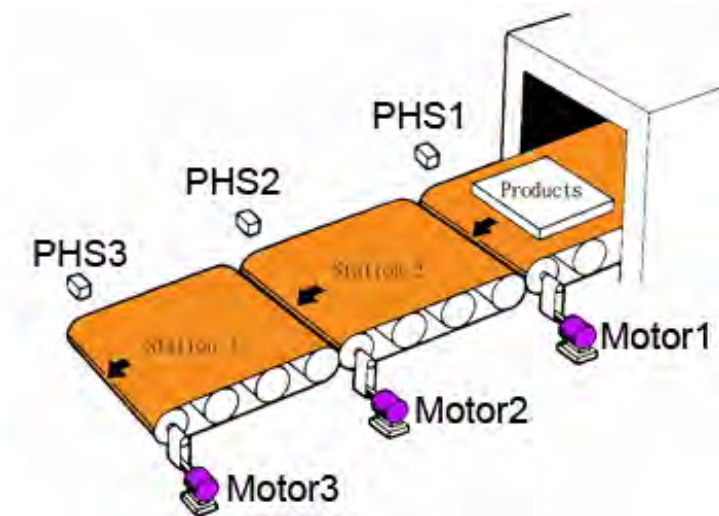


To test whether Java is installed or not, visit <http://java.com/en/download/installed.jsp>. Please refer to **Appendix E** for more details regarding JAVA installation.

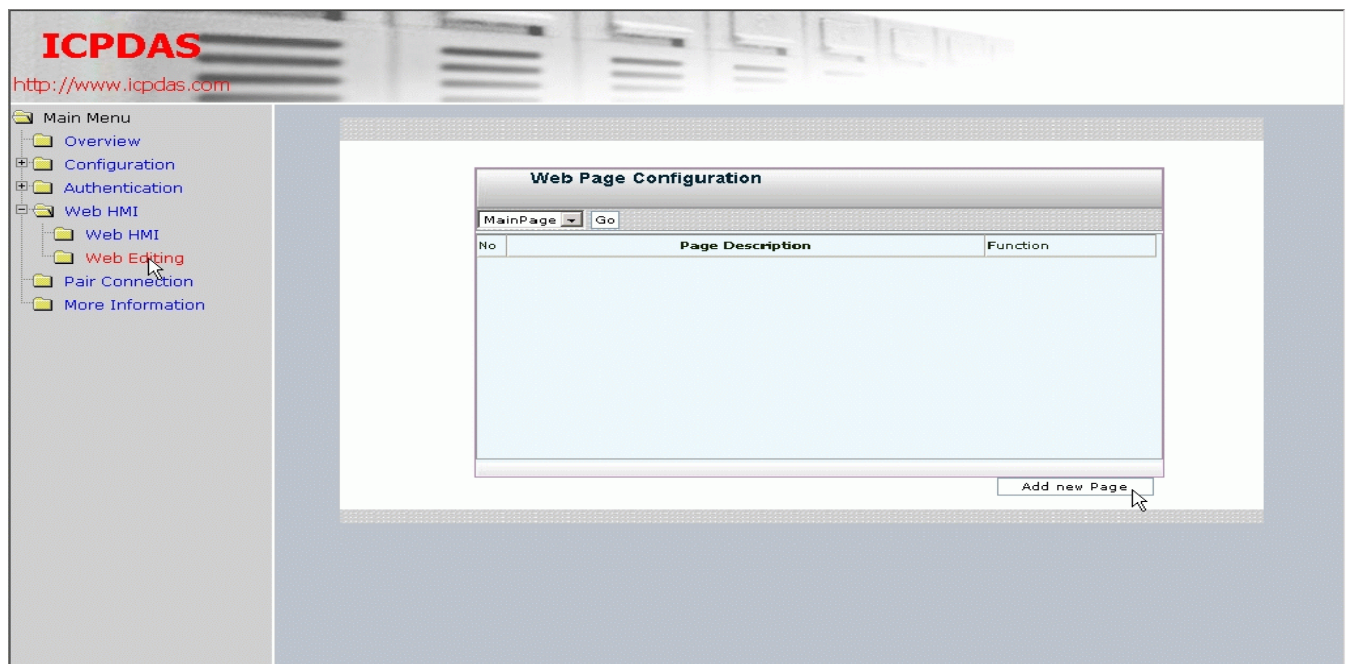
Chapter 3 Web Configuration Page

An example of how to create a Web Editing Page

Create a Web page to monitor the I/O of the conveyor system shown below. The I/O system contains 3 photo sensors that are used to detect the products, and 3 switches that are used to turn the conveyor motor on and off.

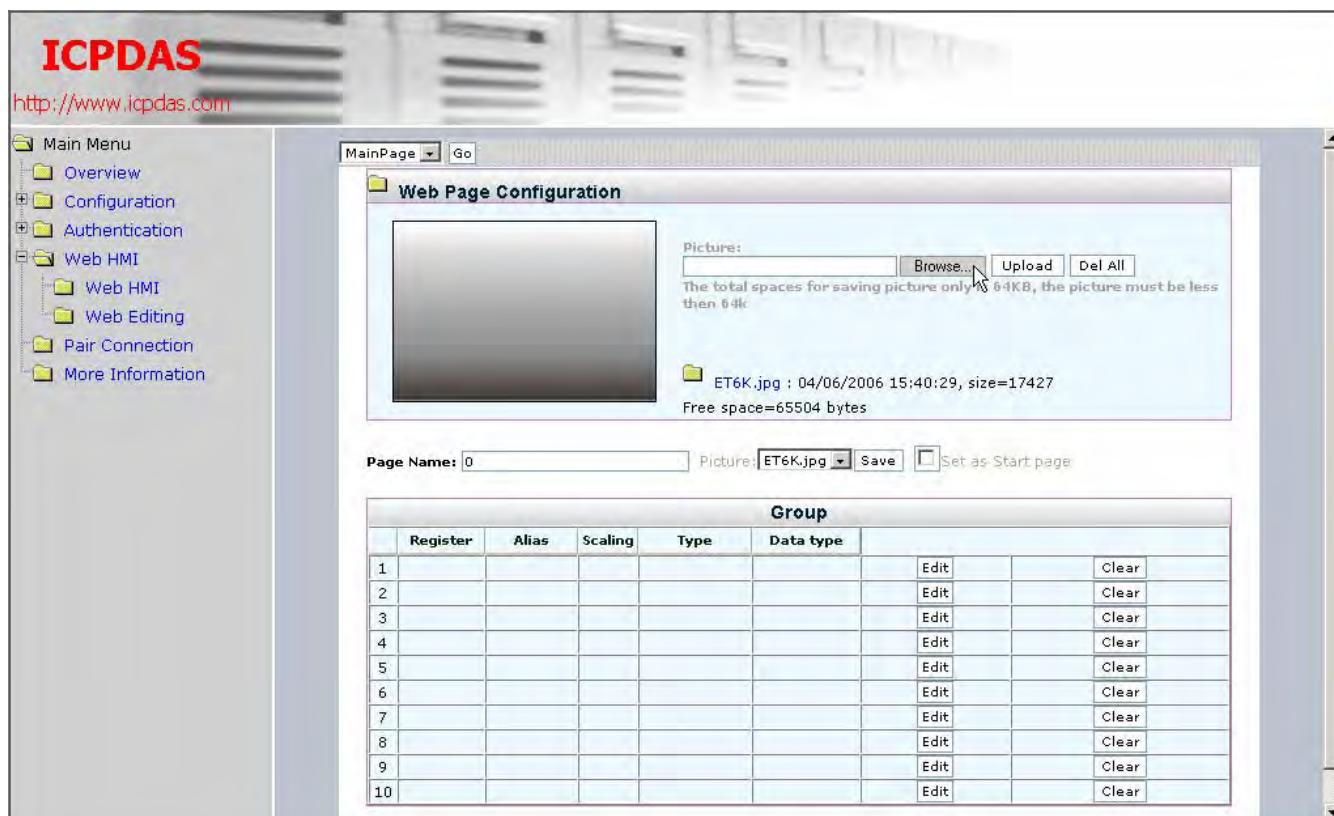


Click the “Web Editing” link in the “Web HMI” section of the Main Menu tree and the “Web page Configuration” window will be displayed on the right hand of the browser windows. Click the “Add new Page” button to create a new editing page.



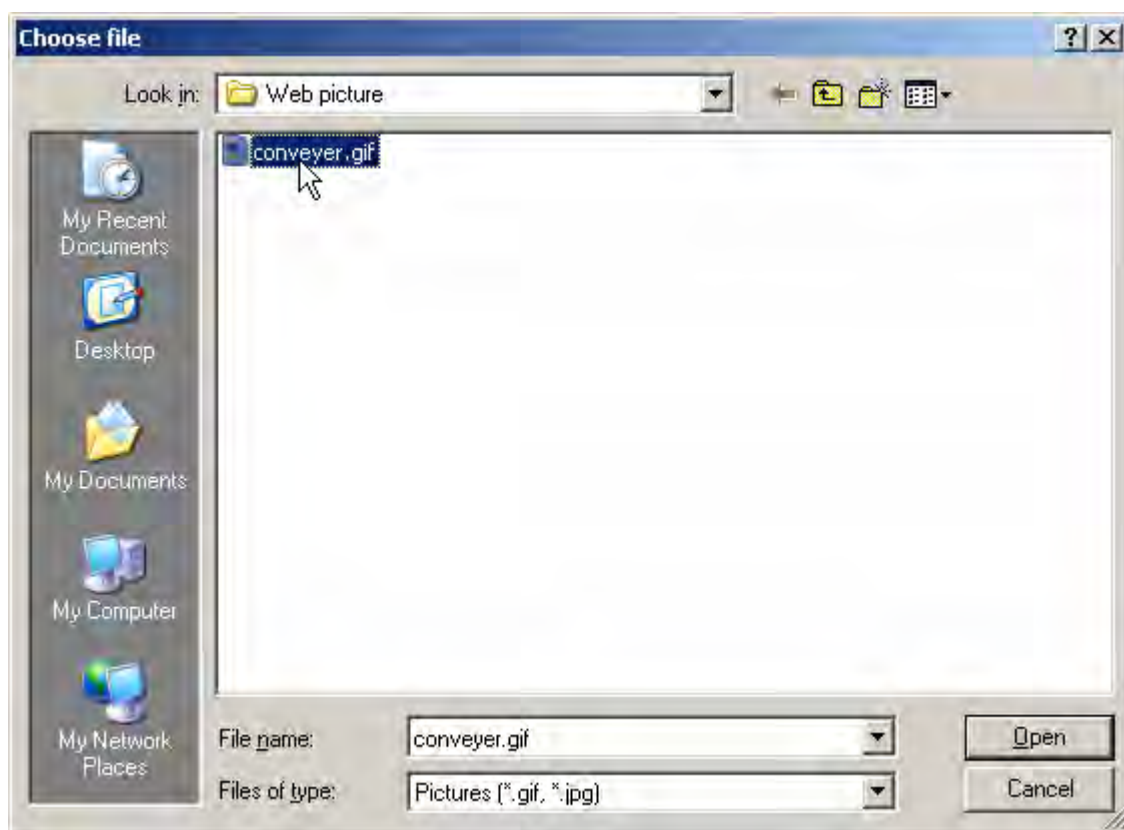
First, you can upload an image file for your new web page. Click the “Browse” button to locate the file (.jpg, .gif, .bmp) on your system.

Chapter 3 Web Configuration Page



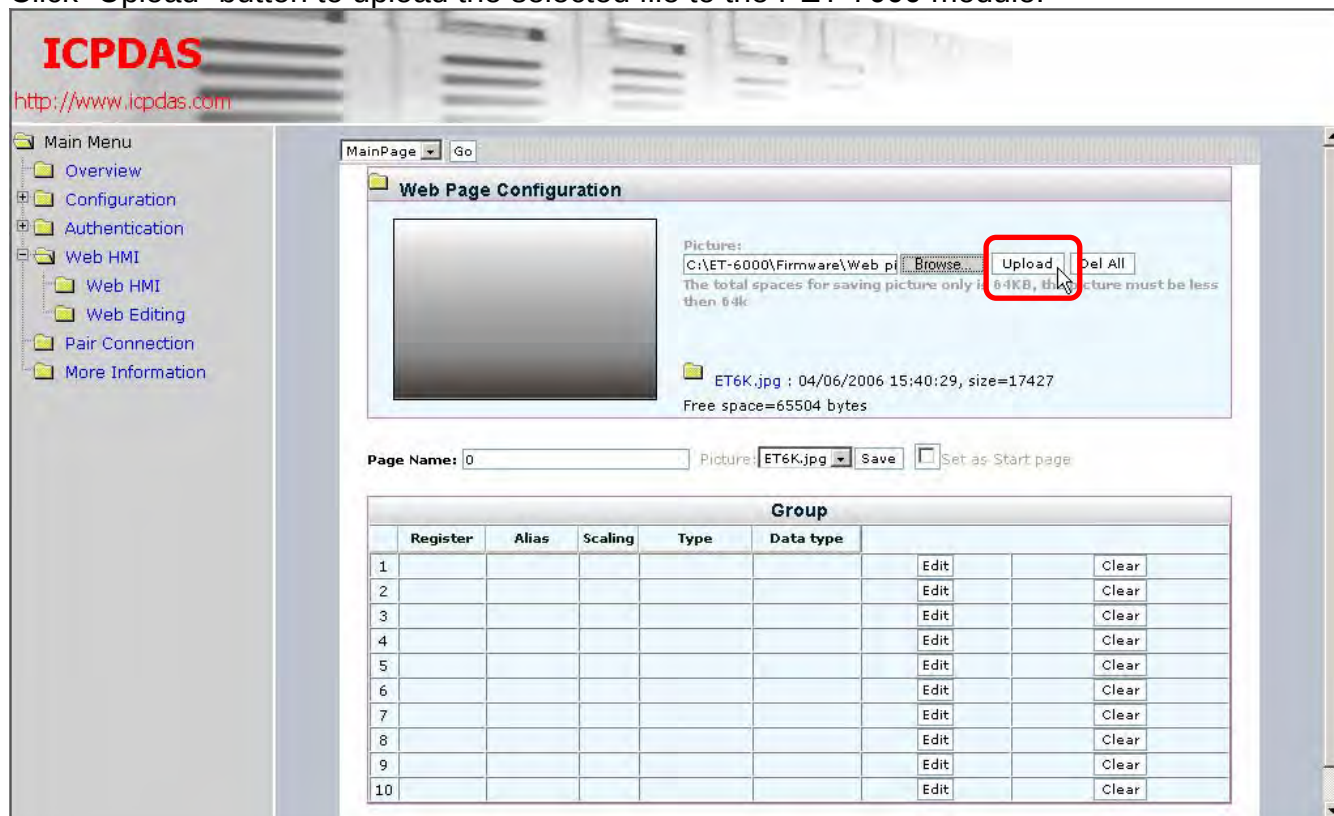
Navigate to the required directory and select the appropriate image file. "conveyer.gif" is selected in this example.

Highlight the file name and Click the "Open" button to make your selection.



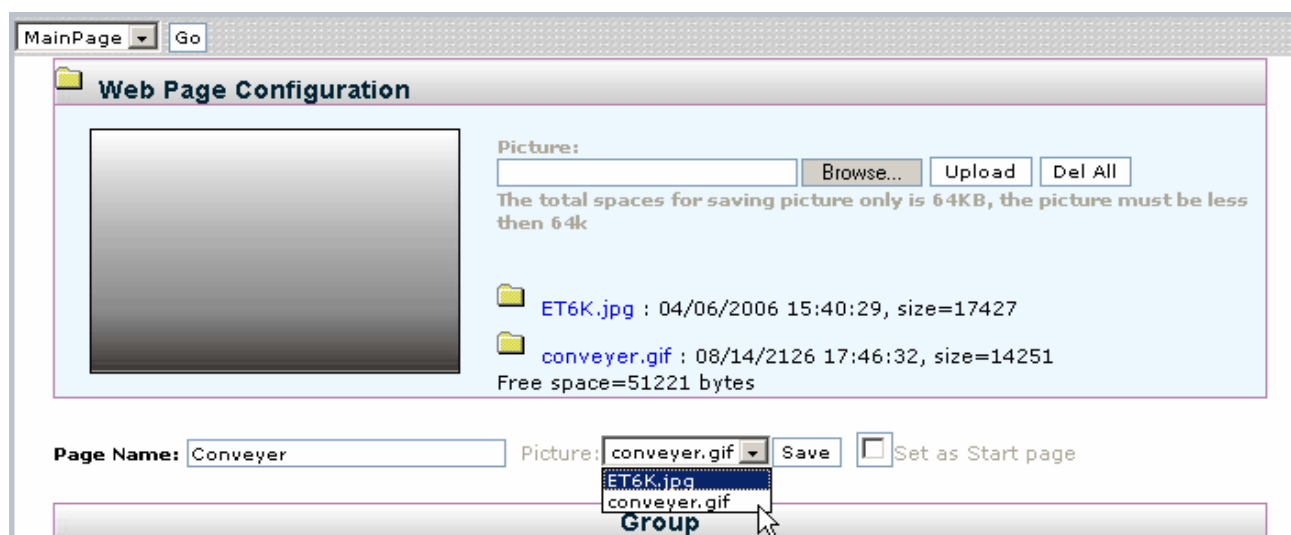
Chapter 3 Web Configuration Page

Click "Upload" button to upload the selected file to the PET-7000 module.



After the upload is completed, the "conveyer.gif" file should now be listed in the file tree and also in the image list box.

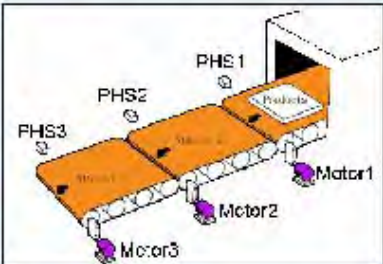
1. Enter the page name "Conveyer" to the "Page Name" text field.
2. Select the "conveyer.gif" file from the image list box (the image will be shown in the Preview window)



Chapter 3 Web Configuration Page

MainPage Go

Web Page Configuration



Picture: Browse... Upload Del All

The total spaces for saving picture only is 64KB, the picture must be less than 64k

ET6K.jpg : 04/06/2006 15:40:29, size=17427

conveyer.gif : 08/14/2126 17:46:32, size=14251

Free space=51221 bytes

Page Name: Picture: Save ☐ Set as Start page

Group									
	Register	Alias	Scaling	Type	Data type				
1						Edit			Clear
2						Edit			Clear
3						Edit			Clear
4						Edit			Clear
5						Edit			Clear
6						Edit			Clear
7						Edit			Clear
8						Edit			Clear
9						Edit			Clear
10						Edit			Clear

To add a register item, click the **Edit** button in the first row of the “Group” table and the “Edit Group Register” window will be displayed.

Add a new DI item using the Register Address 1, then select Discrete Input as the register type and enter “PHS1” as the alias. Refer to the following two diagrams as an example, then Press **Save** button to save the information on this page.

MainPage Go

Edit Group Register

Modbus Register	1
Alias	Voltage1
Scaling	Disabled 0
Register Type	Discrete Input Read
Data type	Coil

Save

Chapter 3 Web Configuration Page

MainPage Go

Edit Group Register

Modbus Register	1
Alias	PHS1
Scaling	Disabled 0
Register Type	Discrete Input Read
Data type	Signed 16

Save

The new register item will now be displayed in the “Group” table.

Group							
	Register	Alias	Scaling	Type	Data type		
1	1	PHS1	0	Discrete Input	Boolean	Edit	Clear
2						Edit	Clear
3						Edit	Clear
4						Edit	Clear
5						Edit	Clear
6						Edit	Clear
7						Edit	Clear
8						Edit	Clear
9						Edit	Clear
10						Edit	Clear

Add a DO register item by clicking on the Edit button on the second row of the “group” table then selecting the Register Address 1, select “Coil” as the Register type and enter the alias name “Motor 1”, as shown below..

MainPage Go

Edit Group Register

Modbus Register	1
Alias	Motor1
Scaling	Disabled 0
Register Type	Coil Write
Data type	Signed 16

Save

Repeat the steps above to add the other items, in this example, there are 3 DI items and 3 DO items.

After all required register items have been added, Press **Save** button to save this editing page.

Chapter 3 Web Configuration Page

MainPage
Go

Web Page Configuration

Picture:
Browse...
Upload
Del All

The total spaces for saving picture only is 64KB, the picture must be less than 64k

ET6K.jpg : 04/06/2006 15:40:29, size=17427
 conveyer.gif : 08/14/2126 17:46:32, size=14251

Free space=51221 bytes

Page Name:
Picture:
Save
☐ Set as Start page

Group

	Register	Alias	Scaling	Type	Data type					
1	1	PHS1	0	Discrete Input	Boolean		Edit		Clear	
2	2	PHS2	0	Discrete Input	Boolean		Edit		Clear	
3	3	PHS3	0	Discrete Input	Boolean		Edit		Clear	
4	1	Motor1	0	Coil	Boolean		Edit		Clear	
5	2	Motor2	0	Coil	Boolean		Edit		Clear	
6	3	Motor3	0	Coil	Boolean		Edit		Clear	
7							Edit		Clear	
8							Edit		Clear	
9							Edit		Clear	
10							Edit		Clear	

Web Page Configuration

MainPage
Go

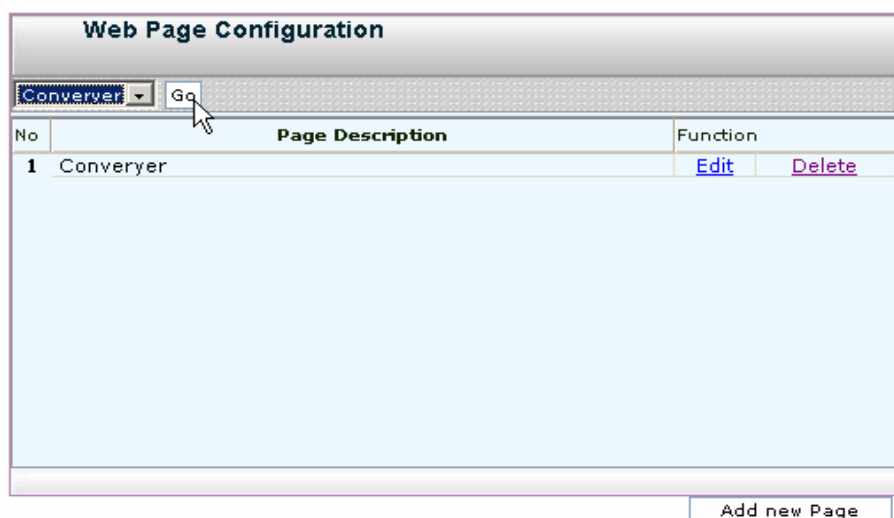
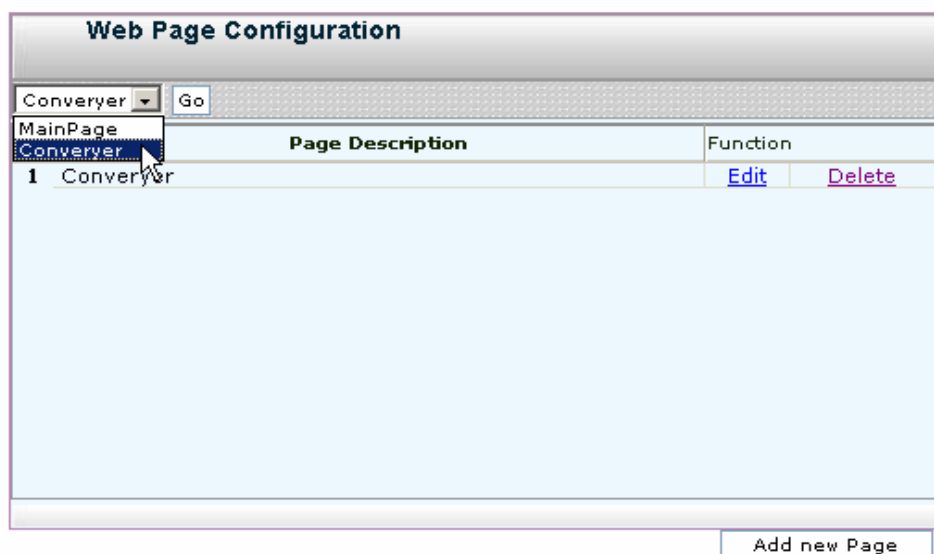
No	Page Description	Function
1	Conveyer	Edit Delete

Add new Page

Chapter 3 Web Configuration Page

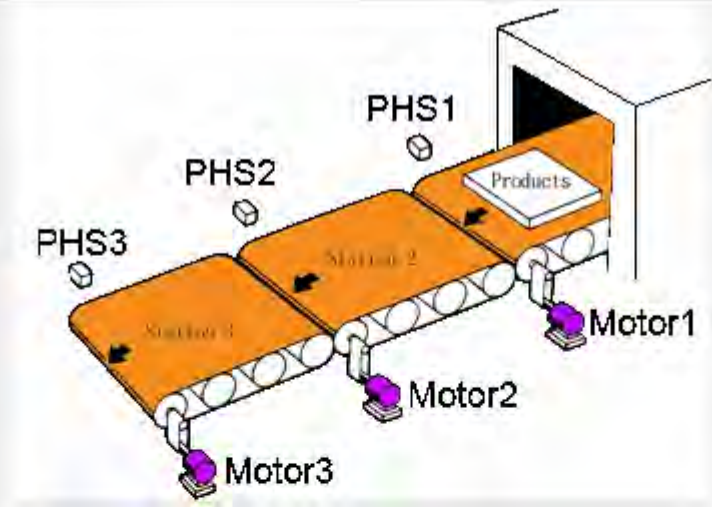
An editing page named as “Conveyer” has added to the list box on the top left-hand side of the “Web Page Configuration” window.

Select the “Conveyer” item and click  button to browse to the “Conveyer” Web HMI page.



Chapter 3 Web Configuration Page

The “conveyer.gif” image file and all register items will be displayed on the “Conveyer” Web HMI page.



Page1

Point No	Register	Alias	Action
0 DI1		PHS1	OFF
1 DI2		PHS2	OFF
2 DI3		PHS3	OFF
3 DO1		Motor1	OFF
4 DO2		Motor2	OFF
5 DO3		Motor3	OFF

Normal Abnormal Wrong Ch Invalid channel ...

MainPage Go



Note:

It is recommended that you check whether the browser is JAVA enabled before browsing the Web HMI. If Java is not installed, please refer to **Appendix E** for details of how to install JAVA.

3.5. I/O Pair Connection

The function makes a DI to DO pair through the Ethernet based on Modbus/TCP. Once the configuration is done, the PET-7000 can poll Remote DI status and then write to the paired local DO constantly in the background.

Modbus Settings

Modbus port 502

☐ **I/O Pair connection**

Remote IP address

Remote Port 0

Connection Timeout 0 ms

Re-Connection Time 0 ms

Net ID 0

Scan Time 0 ms

Access Type DO ☐

Controller Memory 0

Device Memory 0

Count 0

Receive Timeout 0 ms

Access Type AO ☐

Controller Memory 0

Device Memory 0

Count 0

Receive Timeout 0 ms

Submit

Table 3-7 I/O Pair Connection Settings

Settings	Description	Range	Default
I/O Pair connection	Enable/Disable I/O pair connection	Enable, Disable	Disable
Remote IP	IP address of remote device		0
Remote TCP port	port number of remote device	0~65535	502
Remote Net ID	Modbus Net ID of remote device	0~255	1
Connection timeout	Timeout to build a connection.	0~ 42949672965 ms	5000 ms
Reconnect interval	Continue to attempt to reconnect to the remote module once the connection is lost until the reconnection time has expired.	0~ 42949672965 ms	10000 ms
Scan time	Time period to establish the communication	0~ 42949672965 ms	1000 ms
Communication timeout	Timeout for Modbus/TCP communication.	0~ 42949672965 ms	500 ms
Remote DI base address	DI base address of Remote DI device that will be mapped to local DO register.	Depend on the ET-7000	0
Remote DO base address	DO base address of local DO register that will be mapped to remote DI device.	Depend on remote device	0
I/O count	I/O count mapped from the base address	1~255	0

Chapter 3 Web Configuration Page

When the configuration is done, you can click “Pair” from “web page configuration” to open another page to view the pair connection again.

ICPDAS
http://www.icpdas.com

Main Menu

- Overview
- Configuration
- Authentication
- Web HMI
- Web HMI
- Web Editing
- Pair Connection
- More Information

Web Page Configuration

Pair Go

Page Description Function

Edit Delete

10.0.8.193

No	Local Register	Remote Register	Action
1	10	0	OFF
2	11	1	OFF
3	12	2	OFF
4	13	3	OFF
5	14	4	OFF
6	15	5	OFF

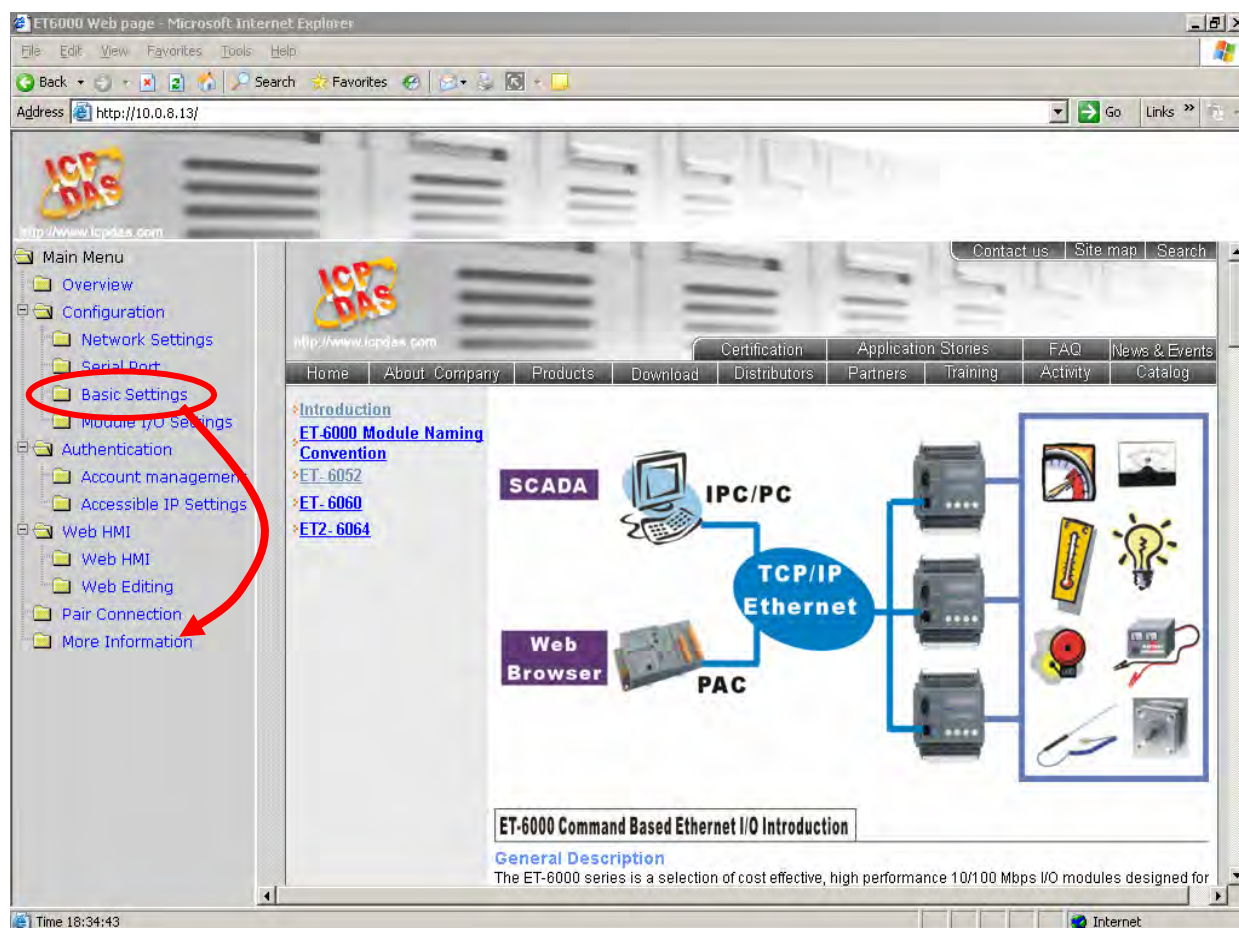
OK Normal NG Abnormal Wrong Ch Invalid channel ...

MainPage Go

3.6. More Information

The More Information menu item is a Web page URL, and can be used to provide a link to a web site containing additional information about the product maker, detailed specs etc. The Default More Information URL is: http://www.icpdas.com/products/Remote_IO/et-7000/et-7000_introduction.htm

Please refer to **Sec. 3.2.2 Basic Settings** for details of how to modify the URL.



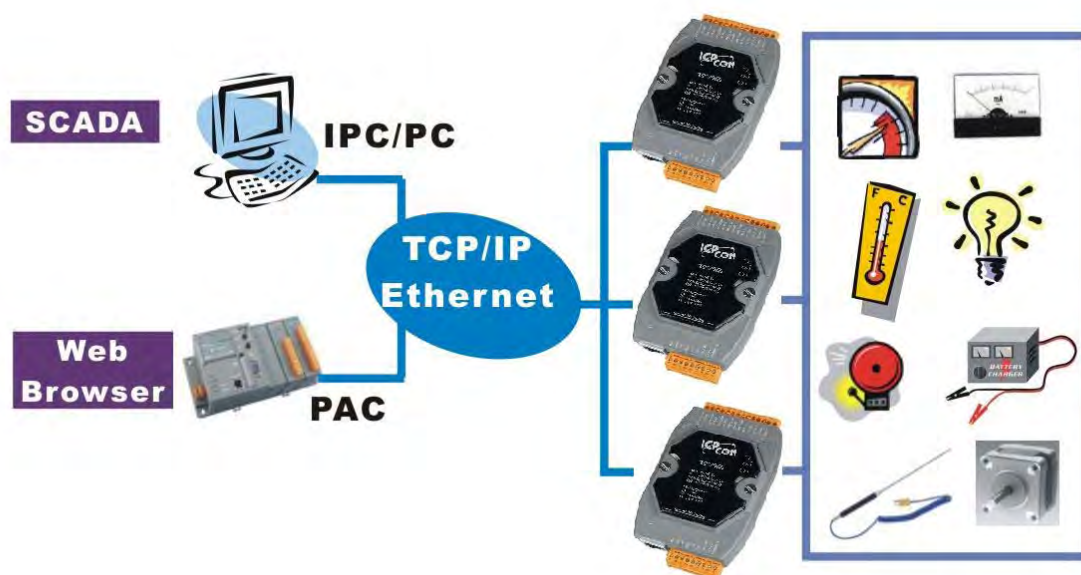
4. How to access the PET-7000?

The PET-7000 series is designed as remote I/O module that can be accessed via either an Ethernet or Serial interface.

4.1. Via an Ethernet Network

Ethernet is an extremely popular networking format that already exists for most applications, either for use with local networks or for connecting to the Internet. A host PC or other devices on the LAN or WAN can be connected to access the PET-7000 module.

The Host PC is able to access the PET-7000 module using the Modbus/TCP.



Modbus/TCP Protocol:

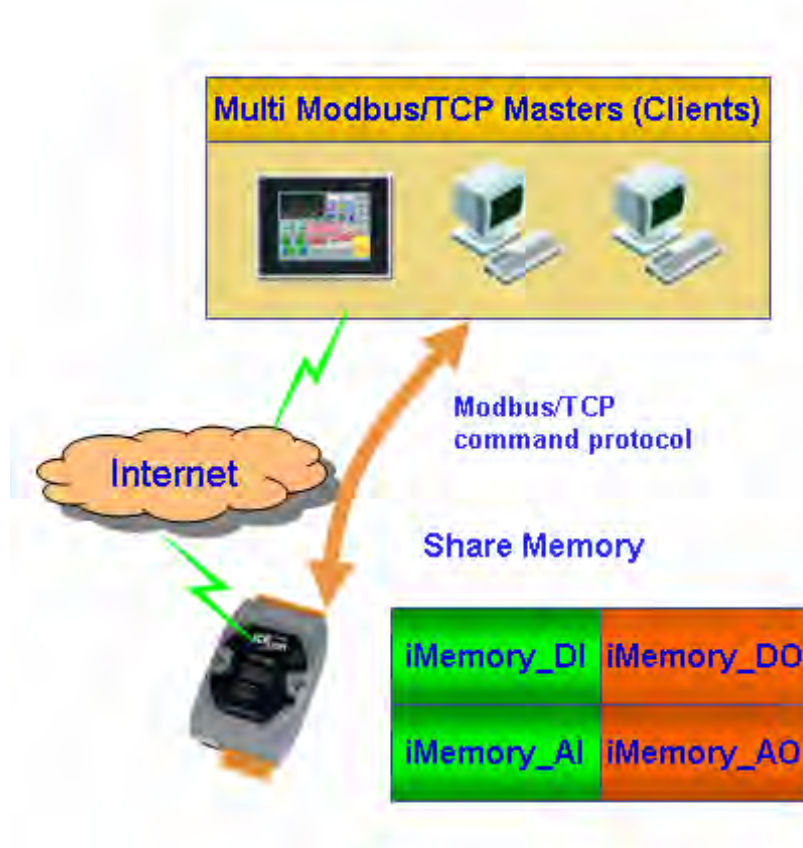
The Modbus/TCP protocol is a variant of the standard Modbus protocol. It was developed in 1999 to allow access to Ethernet devices by Internet community.

4.2. Using the Modbus protocol

4.2.1. Introduction

MODBUS is a master-slave bus system in which only one device (the master) actively starts a transaction (query). The passive device (the slave) then sends a response. Most SCADA Supervisor Control And Data Acquisition and HMI software can easily integrate serial devices via the Modbus protocol, such as Citect, ICONICS, iFIX, InduSoft, Intouch, Entivity Studio, Entivity Live, Entivity VLC, Trace Mode, Wizcon, Wonderware, etc. The **PET-7000** controller includes the Modbus/TCP protocol, which is a variation of the Modbus protocol that was developed in 1999 to allow the Internet community to access Ethernet devices.

Modbus address for Modbus/TCP client access.



4.2.2. Function Codes Supported

Modbus function codes are different both the analog and digital types.

Table 4-1 PET-7000 Modbus Function Code

Modbus Command (Hex)	Protocol Description
01	Read multiple coils status for DO
02	Read multiple input discrete for DI
03	Read multiple registers for AO
04	Read multiple input registers for AI
05	Write single coil for DO
06	Write single register for AO
0F	Force multiple coils for DO
10	Write multiple registers for AO

4.2.3. Modbus Register address table

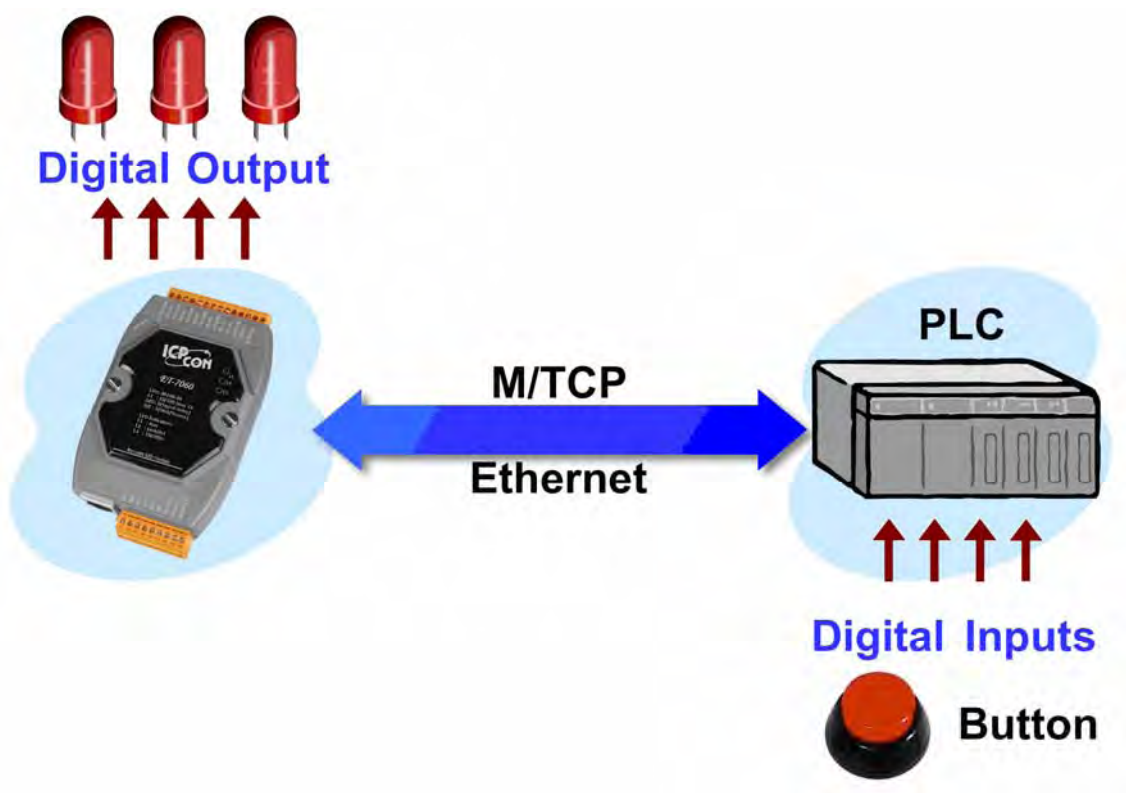
In addition to the Web Configuration Page, the custom's software that supports Modbus protocol can be used to issue Modbus command to the PET-7000 module.

For more details regarding the Modbus address of the PET-7000 module, please refer to Appendix C: Modbus Register Table.

5. I/O Pair Connection

The function is used to make a DI to DO pair through the Ethernet. The communication is based on Modbus/TCP. Once the configuration is done, the PET-7000 can poll remote DI status and then write to paired local DO constantly in the background.

Using the pair connection function, remote DI status can be transmitted to local DO over the Ethernet without any programming skill.

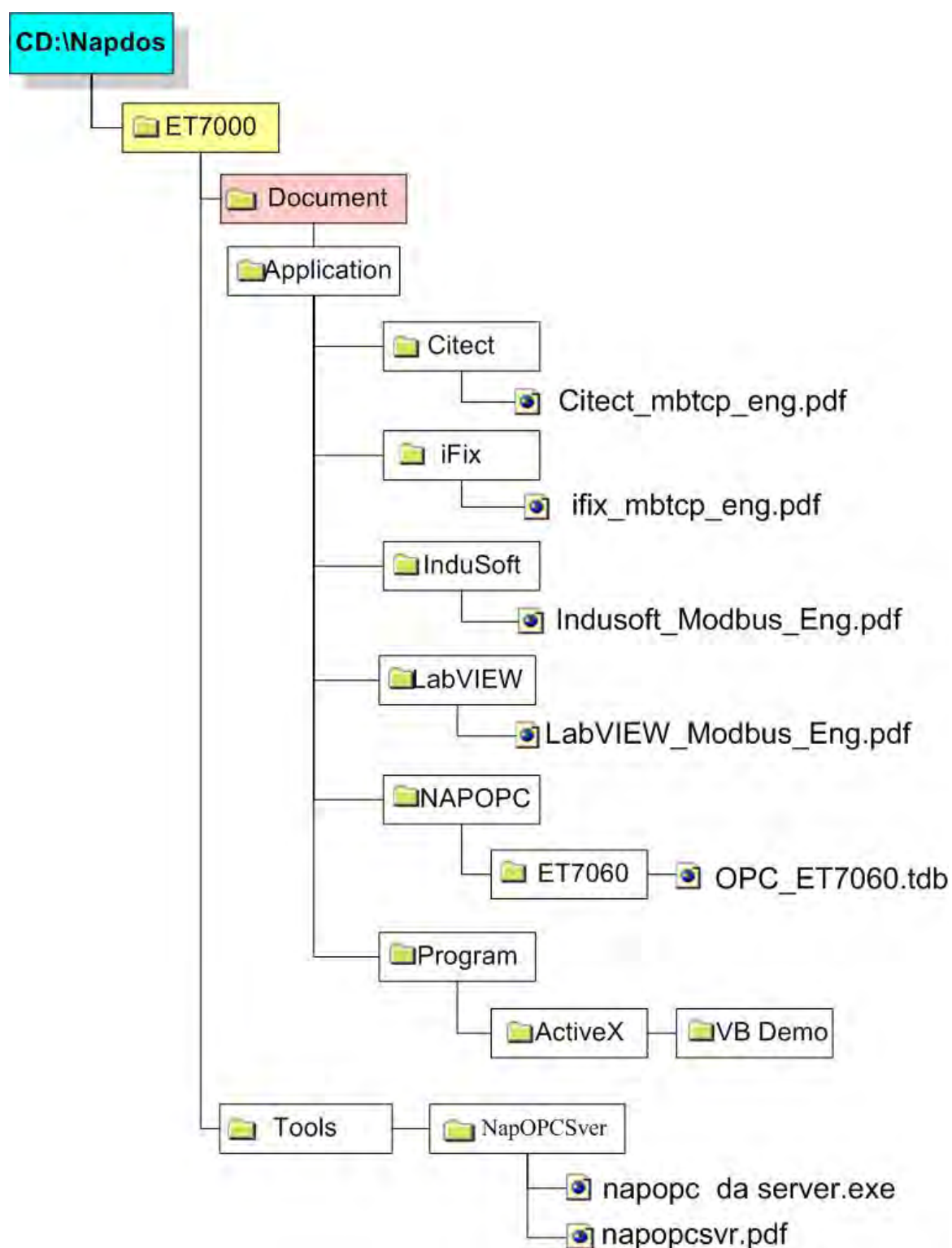


Please refer to **Sec. 3.5 Pair Connection** for more details regarding the configuration of the I/O pair connection.

6. Software Development Application

6.1. Location of documents and software

The following diagram illustrates the location of all documents and software related to Modbus applications for PET-7000 series modules. The relevant file can quickly be located by referring to the diagram.

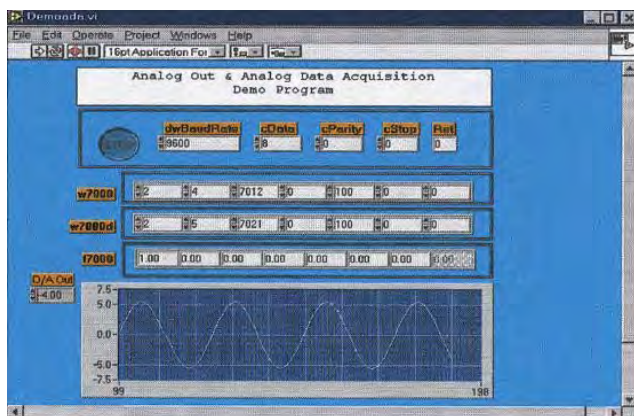


Chapter 6 Software Development Application

There are a variety of applications that conform to the Modbus protocol, such as ActiveX, LabVIEW, InduSoft, OPC Server, etc. are available for use on the/a Host PC. These applications can be used to access the PET-7000 series module from the Host PC and contain a number of helpful free demo programs and documents, which can be found on the CD included in the shipping package, or can be downloaded from the ICP DAS web site or FTP site.

When planning the development of a system, appropriate software solutions should be chosen to suit different situations. The diagram (previous page) shows the relation between the software solutions. Refer to the diagram to determine a solution that meets your requirements.

6.2. LabVIEW



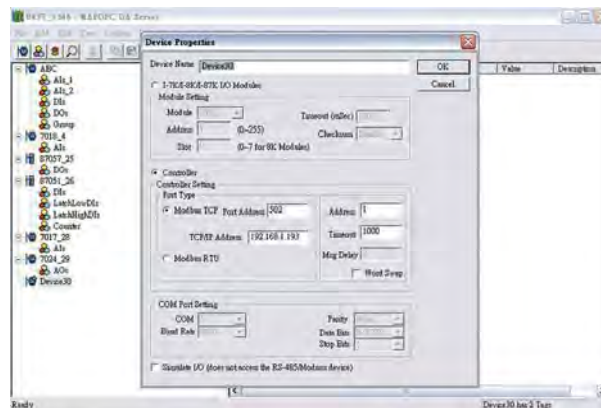
LabVIEW is the best way to acquire, analyze, and present data. LabVIEW delivers a graphical development environment that can be used to quickly build data acquisition quickly, instrumentation and control systems, boosting productivity and saving development time. With LabVIEW, it is possible to quickly create user interfaces that enable interactive control of software systems. To specify your system functionality, simply assemble block diagram – a natural design notation for scientists and engineers.

The document containing the detailed instructions for linking to the PET-7000 using the Modbus protocol is located on the shipped CD:

[\NAPDOS\ET7000\Document\Application\LabVIEW](#) or

<ftp://ftp.icpdas.com/pub/cd/6000cd/napdos/et7000/document/application/labview>

7. OPC Server



7.1. Introduction

OPC (OLE for Process Control) is the first standard resulting from the collaboration of a number of leading worldwide automation suppliers working in cooperation with Microsoft. Originally based on Microsoft's OLE COM (Component Object Model) and DCOM (Distributed Component Object Model) technologies, the specification defines a standard set of objects, interfaces and methods for use in process control and manufacturing automation applications to facilitate interoperability.

There are many different mechanisms provided by various vendors that allow access to a variety of devices via specific applications. However, if an OPC server is provided for the device, other applications will be able to access the OPC Server via the OPC interface.

7.2. Procedure for using the OPC server

Step 1: Read the following documents

Readme.txt: contains the latest important information, including:

- A list of files contained on the shipped CD

Reversion.txt: contains the revision history information, including

- Bugs
- New modules supported

Step 2: Install the OPC server by executing:

CD:\NAPDOS\ET7000\Tools\Napotpcsvr\NapOPCServer.exe

Note: If there is an older version of the Nap OPC Server installed on the PC, and must be uninstalled before installing the new version.

Step 3: Read the manuals describing how to begin.

The [NapOPCSvr.pdf](#) is the user's manual describing how to use the OPC server

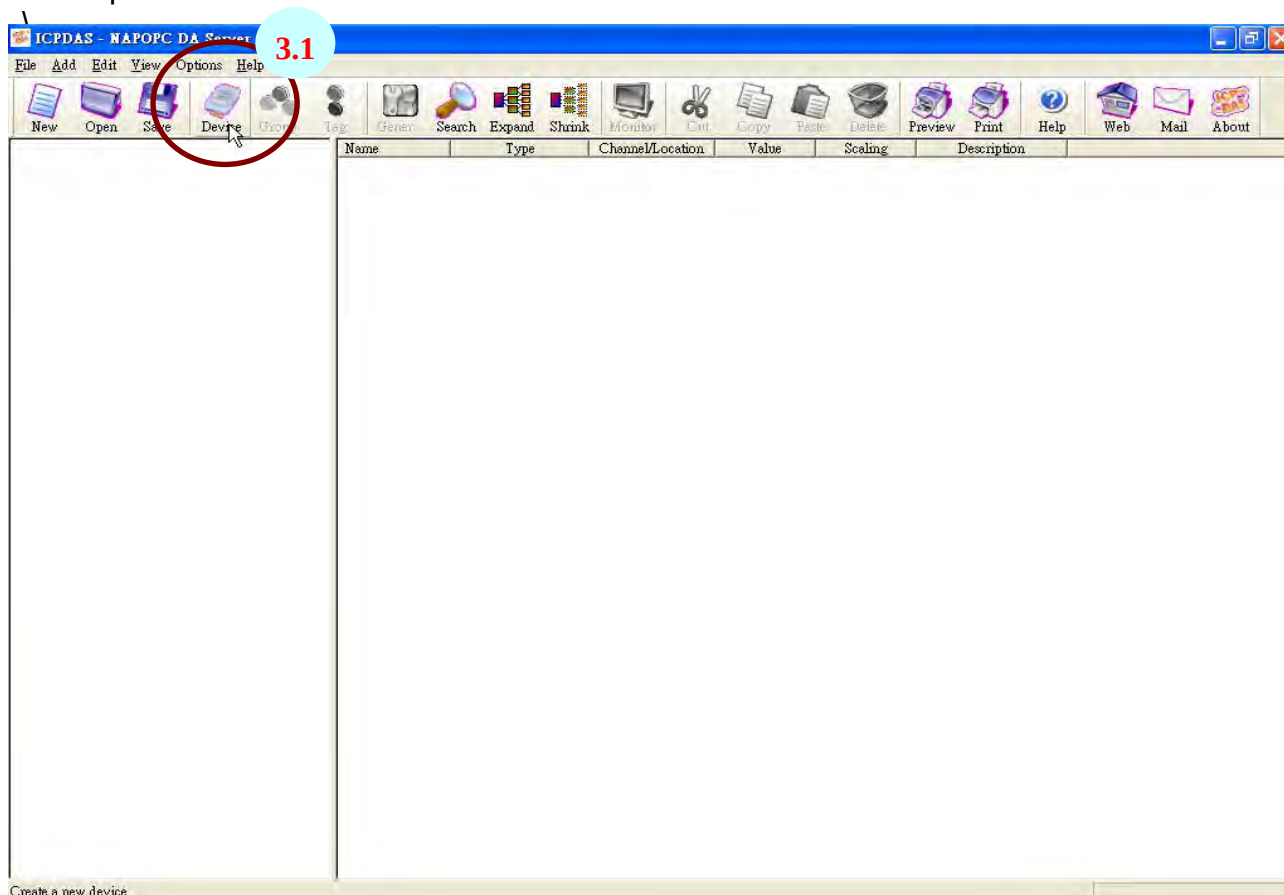
7.3. OPC Server Example using MODBUS protocol

The following is an example of accessing Digital input and output values from an ET-7000

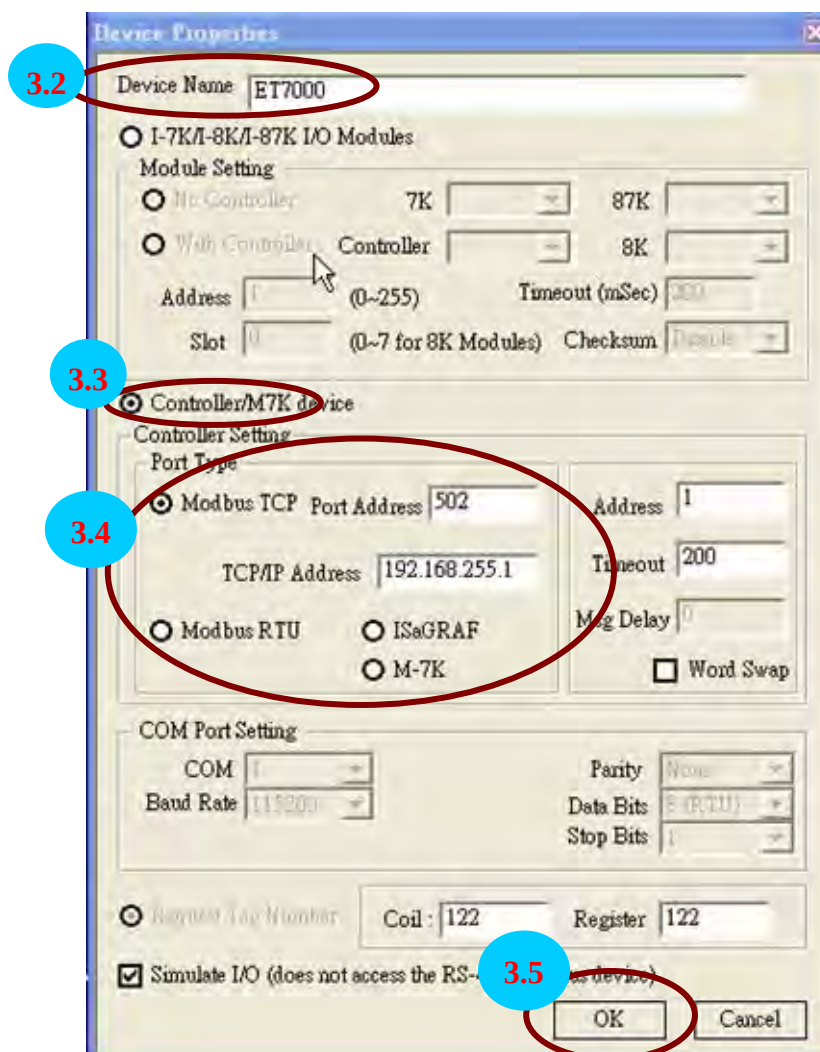
Step 1: Connect the ET-7000 controller (refer to **Sec. 1.5.2**) and configure its network settings (IP, Mask and Gateway - refer to **Sec. 2.1**)

Step 2: Run the OPC server

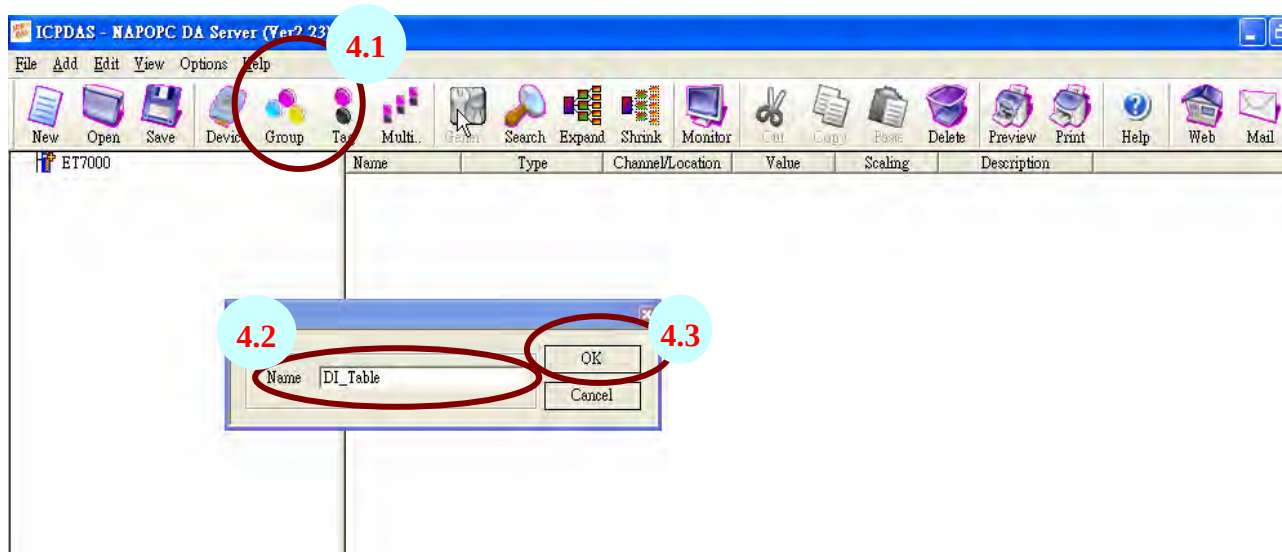
Step 3: Add/Create a new device and to search for I/O modules using Modbus /TCP protocol

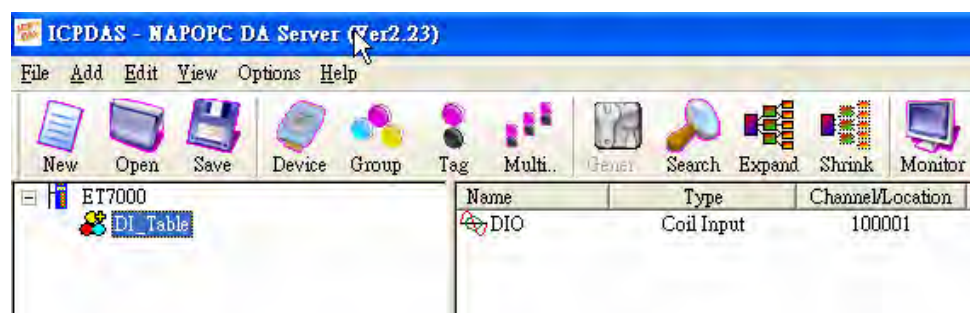
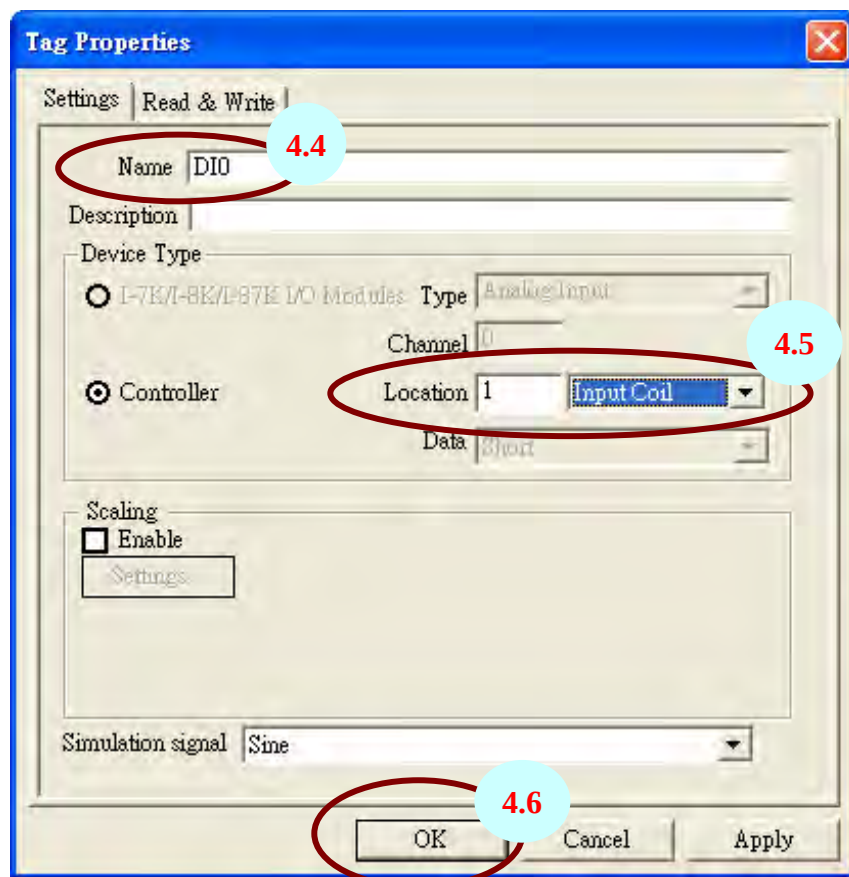


Chapter 7 OPC Server

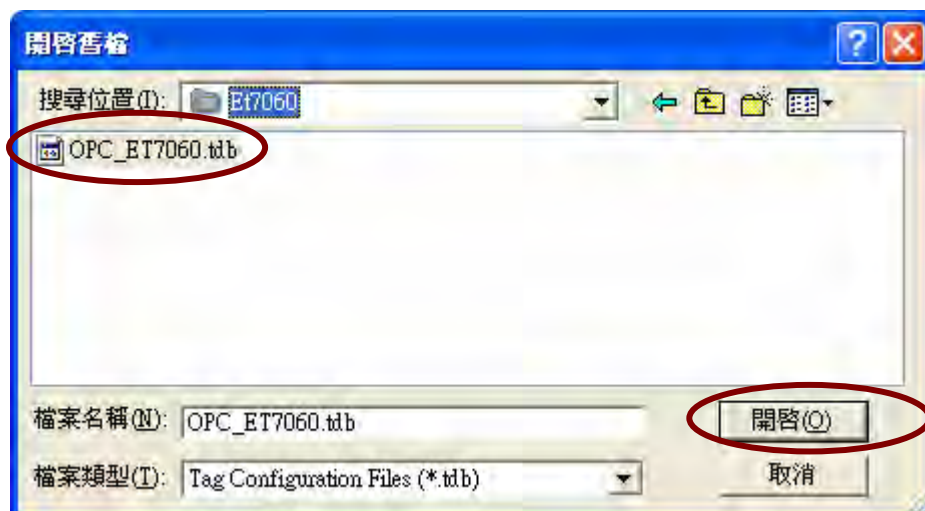


Step 4: New a Group and Tag

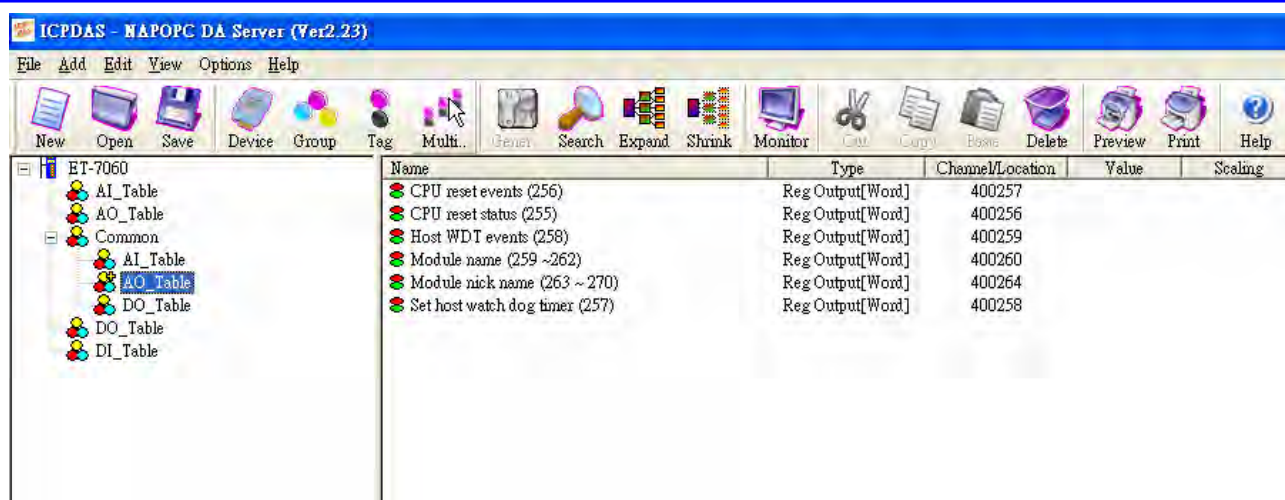




Step 5: Load a finished OPC project file for ET-7060



Chapter 7 OPC Server



Note:

1. The OPC file for the ET-7060 is located at:
CD:\NAPDOS\ET7000\Document\Application\NAPOPC\ET-7060

8. SCADA

SCADA stands for **S**upervisor **C**ontrol **A**nd **D**ata **A**cquisition. It is a production automation and control system based on PCs

SCADA is widely used in many fields e.g. power generation, water systems, the oil industry, chemistry, the automobile industry. Different fields require different functions, but they all have the common features:

- Graphic interface
- Process mimicking
- Real time and historic trend data
- Alarm system
- Data acquisition and recording
- Data analysis
- Report generator

Accessing PET-7000 devices using SCADA software

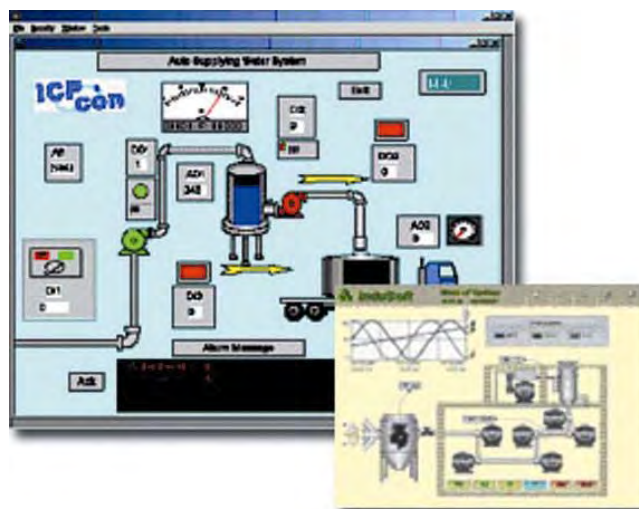
SCADA software is able to access PET-7000 devices using Modbus communication protocols, and can communicate without the need for other software drivers.

Famous SCADA software:

Citect, ICONICS, iFIX, InduSoft, Intouch, Entivity Studio, Entivity Live, Entivity VLC, Trace Mode, Wizcon, Wonderware ... etc

In the following sections 3 popular brands of SCADA software are introduced together with the detailed instructions in how use them to communicate with the PET-7000 series module using the Modbus/TCP protocol.

8.1. InduSoft



InduSoft Web Studio is a powerful, integrated collection of automation tools that includes all the building blocks needed to develop modern Human Machine Interfaces (HMI), Supervisory Control and Data Acquisition (SCADA) systems, and embedded instrumentation and control applications. InduSoft Web Studio's application runs in native Windows NT, 2000, XP, CE and CE .NET environments and conforms to industry standards such as Microsoft .NET, OPC, DDE, ODBC, XML, and ActiveX.

The document containing detailed instructions for linking to the PET-7000 module using the Modbus protocol is located on the shipped CD:

[\NAPDOS\ET7000\Document\Application\InduSoft](#) or

<ftp://ftp.icpdas.com/pub/cd/6000cd/napdos/et7000/document/application/indusoft/>

8.2. Citect



CitectSCADA is a fully integrated Human Machine Interface (HMI) / SCADA solution that enables users to increase return on assets by delivering a highly scalable, reliable control and monitoring system. Easy-to-use configuration tools and powerful features enable rapid development and deployment of solutions for any size application.

The document containing detailed instructions for linking to the PET-7000 module using the Modbus protocol is located on the shipped CD:

<\\NAPDOS\ET7000\Document\Application\Citect> or

<ftp://ftp.icpdas.com/pub/cd/6000cd/napdos/et7000/document/application/citect/>

8.3. iFix



The document containing detailed instructions for linking to the PET-7000 module using the Modbus protocol is located on the shipped CD:

[\NAPDOS\ET7000\Document\Application\iFix](#) or

<ftp://ftp.icpdas.com/pub/cd/6000cd/napdos/et7000/document/application/ifix/>

9. Troubleshooting and Technical Support

This chapter discusses methods of quickly diagnosing and fixing problems or errors without having to contact ICP DAS.

When troubleshooting the following problems, please make sure that the module is switched on, and confirm that the physical connections are correct (power cable, network cable and serial cable)

Note that some unexplained errors might be caused by duplicate IP addresses on the Network. Make sure that the IP address of your module is unique.

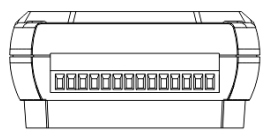
Table 9-1 Troubleshooting

Symptom/Problem	Possible cause	Solution
The RUN LED doesn't light	Internal power has failed	Return the module for repair.
The RUN LED indicator is ON (light), but not flashing.	The module has possibly crashed.	Reboot the module
Cannot communicate via the Ethernet port, but the ET-7000 is still operating.	The IP/Mask/Gateway address isn't within the IP address range of the LAN.	Change the IP/Mask/Gateway address to match the LAN, or ask the MIS administrator for assistance.
	The IP address has restricted by the IP filter settings	Check the IP filter setting using the Web configuration.
	There are more than 30 TCP/IP connections.	Reboot the module.
Able to explore the web page through port 80 using a web browser, but the Web HMI and Modbus/TCP program cannot access the module through port 502.	Port 502 has been restricted by the firewall.	Consult your MIS administrator for assistance.
The Web HMI and Modbus/TCP program can	The Port 502 has restricted by the firewall.	Consult your MIS administrator for assistance.

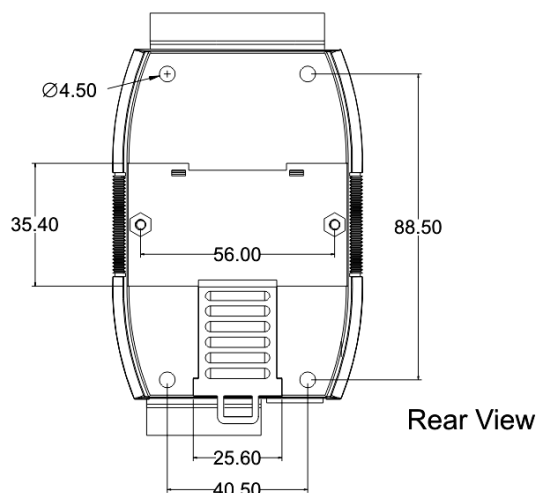
Chapter 9 Troubleshooting and Technical Support

	The Web Configuration function has been disabled. (Shown on the Basic Settings page)	Enable the Web Configuration function using either the SMMI or the console.
	The Web server TCP port has been changed from port 80 (Shown on the Basic Settings page)	Change the TCP port to 80 or reconnect the ET-7000 using the specific TCP port.

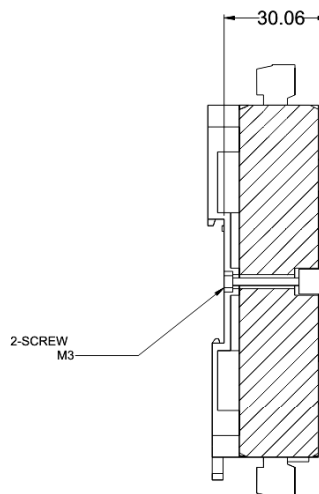
Appendix A: Dimensions



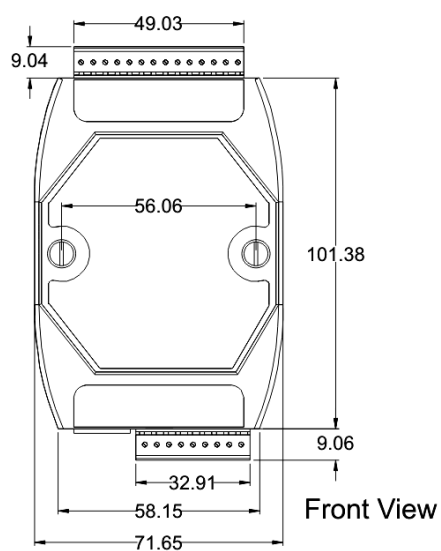
Top View



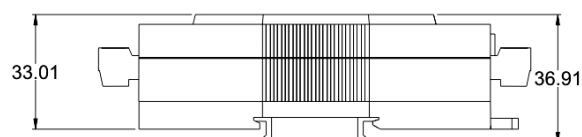
Rear View



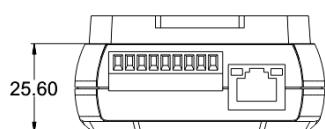
Unit: mm



Front View



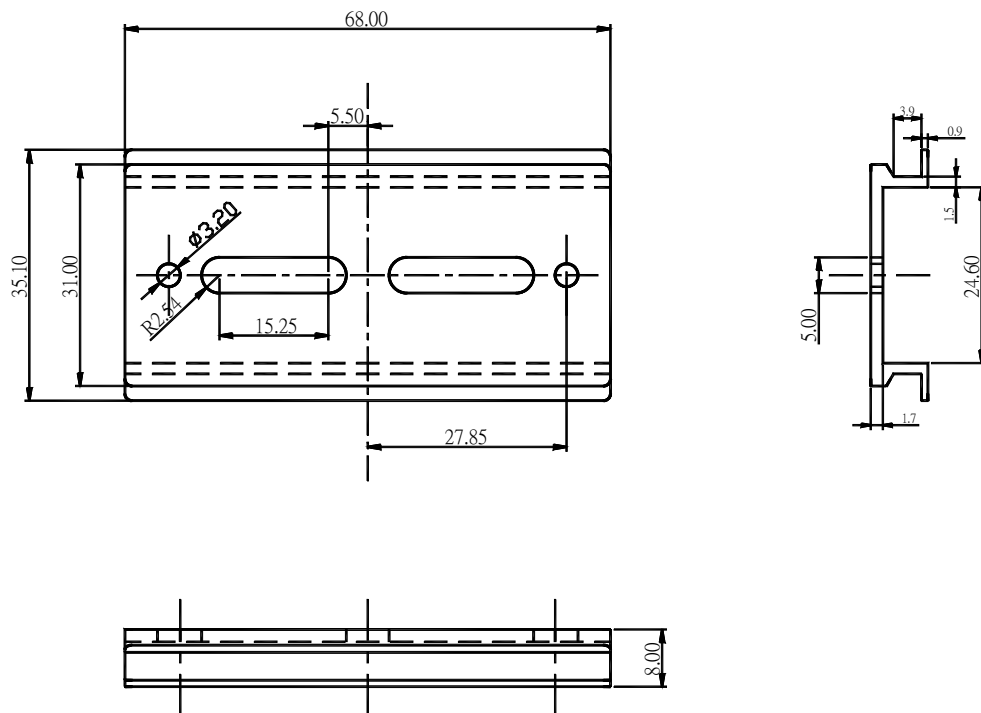
DIN-RAIL MOUNTING
BRACKET



Top View

Appendix A: Dimensions

Wall Mount Bracket



Appendix B: MiniOS7 utility

On occasions, ICP DAS will offer an update to the PET-7000 firmware or MiniOS7. The MiniOS7 utility is used to easily update your software to the latest version. The **MiniOS7 Utility** is used for both essential configuration and for downloading programs into the PET-7000 controller embedded in the ICPDAS MiniOS7 environment.

The **MiniOS7 Utility** program provides 3 main functions:

- Update the MiniOS7 image
- Download firmware to Flash memory
- Configure Ethernet and COM port settings

MiniOS7 utility location

The MiniOS7 utility is located in the

- CD:\NAPDOS\ET7000\Tools\Tools for MiniOS7\MiniOS7_utility folder on the enclosed CD or from
- [ftp://ftp.icpdas.com/pub/cd/6000cd/napdos/et7000/tools/tools for minios7/minios7_utility/](ftp://ftp.icpdas.com/pub/cd/6000cd/napdos/et7000/tools/tools%20for%20minios7/minios7_utility/)

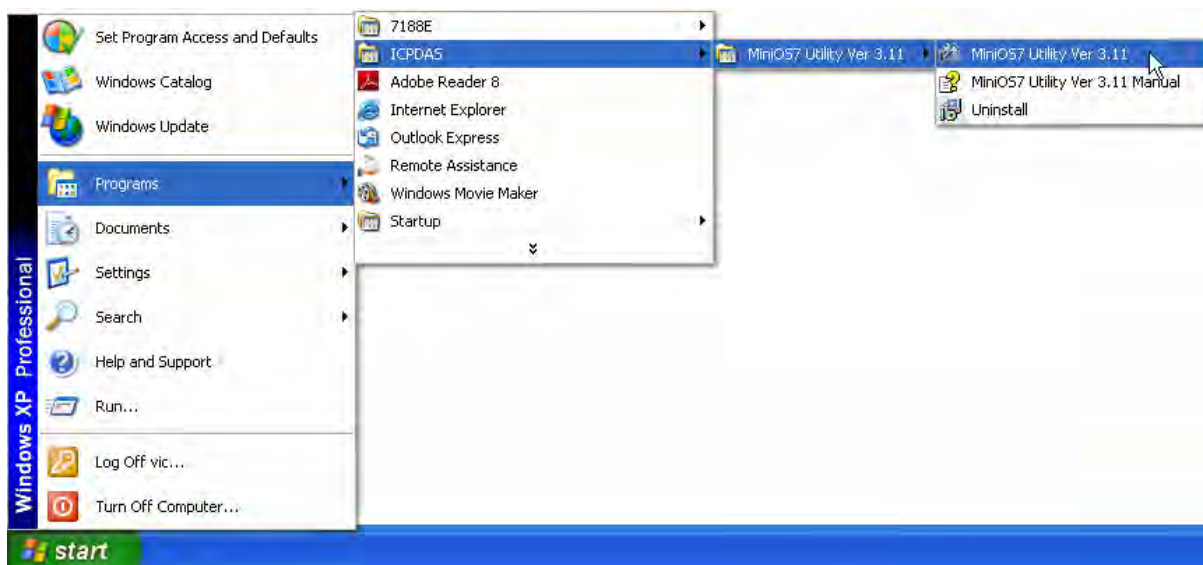
Appendix B: MiniOS7 utility

Installation procedure

Step 1: Locate and run MiniOS7 utility.exe from the CD:
\\NAPDOS\ET7000\Tools\Tools for MiniOS7\MiniOS7_utility directory.

Step 2:

After completing the installation, a new "ICPDAS" folder will be added to the "programs" section of the start menu. The MiniOS7_utility files can be accessed by clicking on this folder and then the '**MiniOS7 utility**' folder. See the diagram below for details.

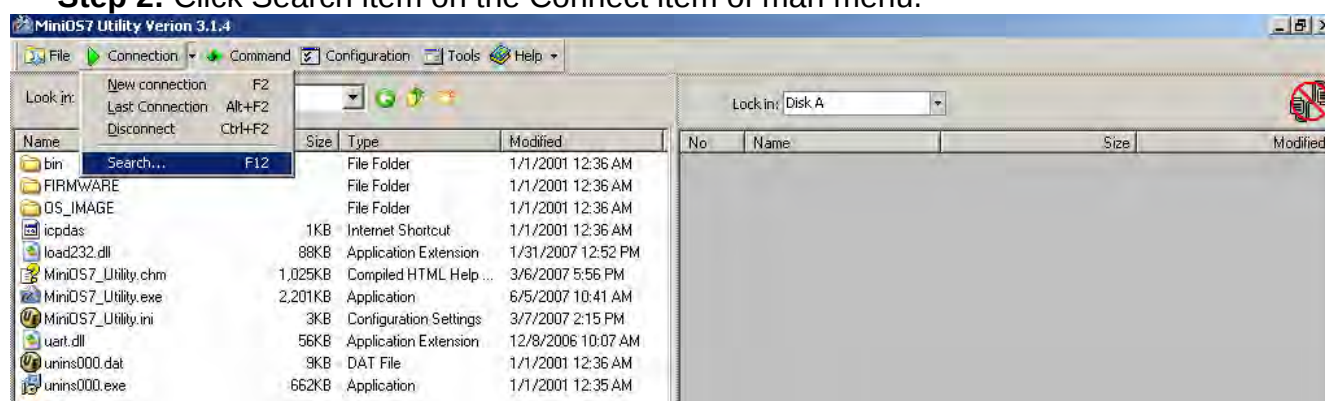


Downloading firmware to the PET-7000 controller

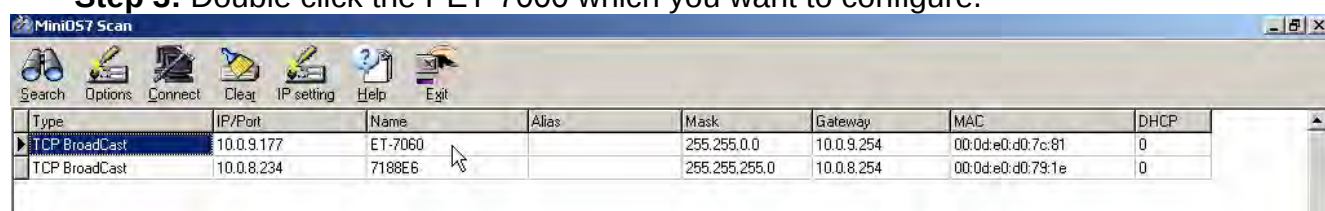
The download procedure is as follows:

Step 1: From the Windows START menu, navigate to programs/ICPDAS/MiniOS7 Utility and locate the **MiniOS7 utility** program.

Step 2: Click Search item on the Connect item of man menu.

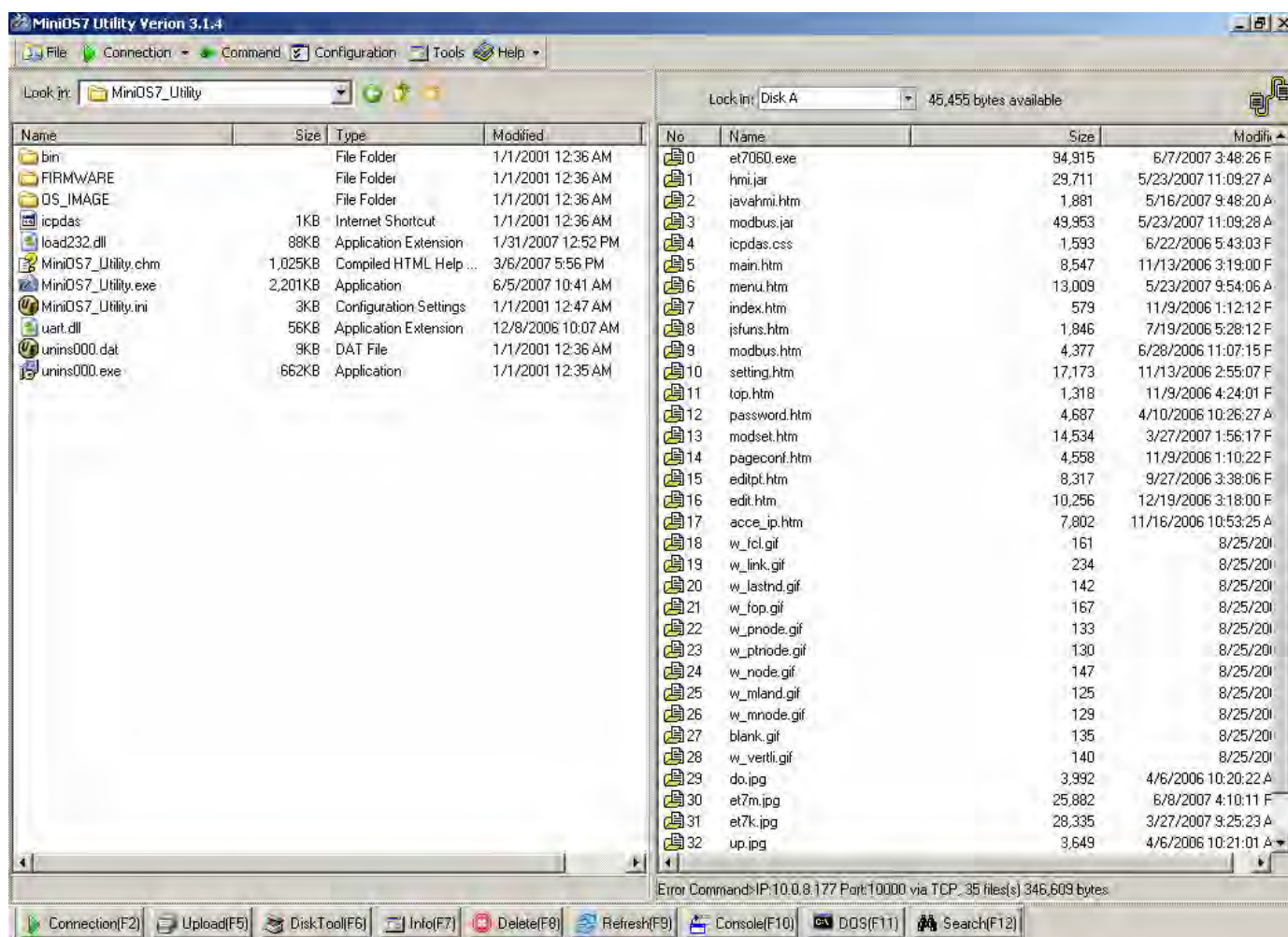


Step 3: Double click the PET-7000 which you want to configure.



Appendix B: MiniOS7 utility

Step 3: After a connection between the PET-7000 and PC has been successfully established, the following screen will be displayed. (The total files on the selected PET-7000 shows on the file list of right hand window)



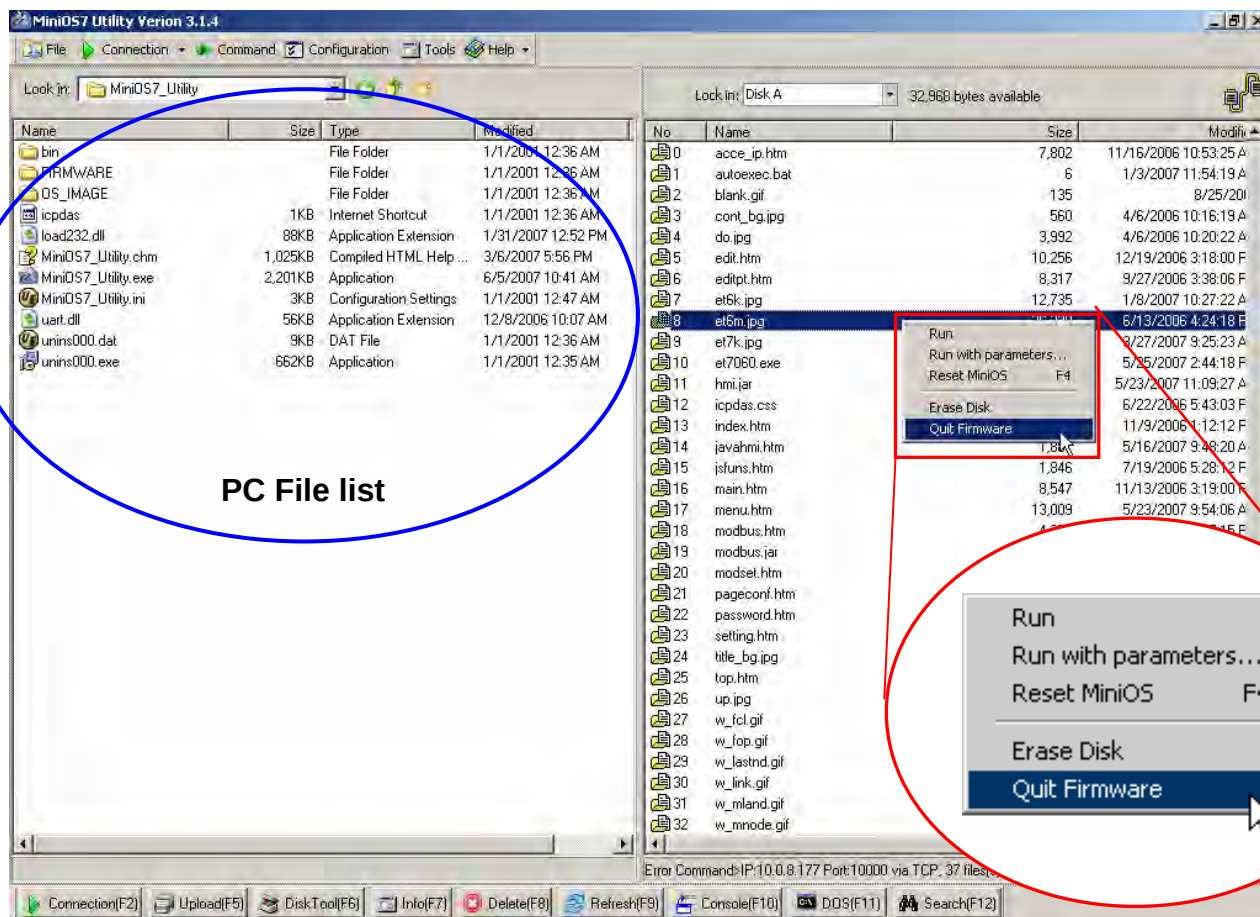
Step 4: Right Click the file list on the right hand window and then click **Quit Firmware** item from TCP/IP mode to UDP mode.



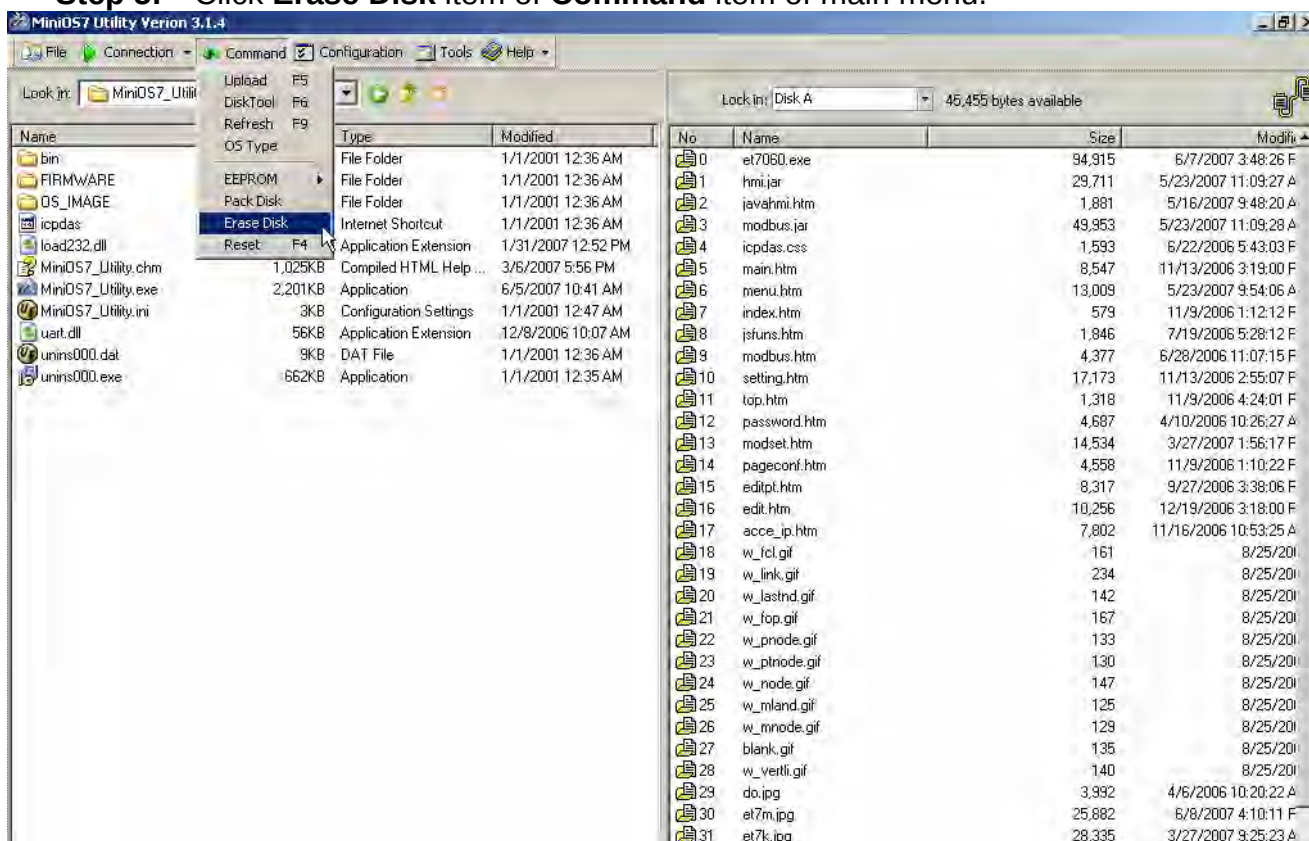
Notes:

- The default firmware of the PET-7000 series module is TCP/IP mode which uses the TCP/IP protocol for communication. The Modbus/TCP protocol or Web communication are constructed on this communication layer.
- The UDP mode is used to update the firmware and MiniOS7 image.

Appendix B: MiniOS7 utility



Step 5: Click Erase Disk item of Command item of main menu.

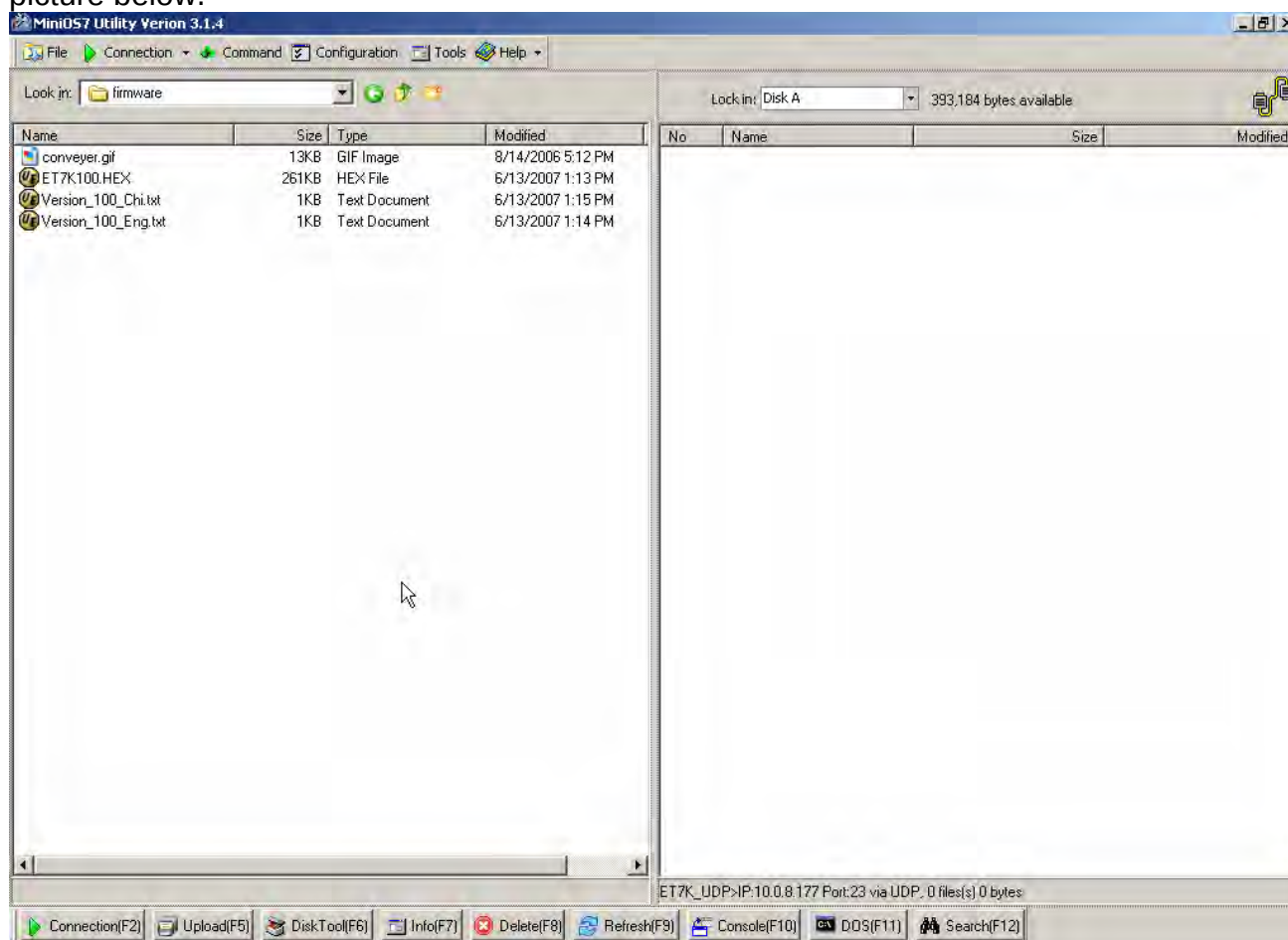


Appendix B: MiniOS7 utility

Step 6: A Confirm dialog notices whether all files will be deleted or not.



If Press **"Yes"** button, all files on the PET-7000 will be deleted. Please refer to the picture below.



Notes:

- Before updating the firmware, you must delete all files existed on the PET-7000.

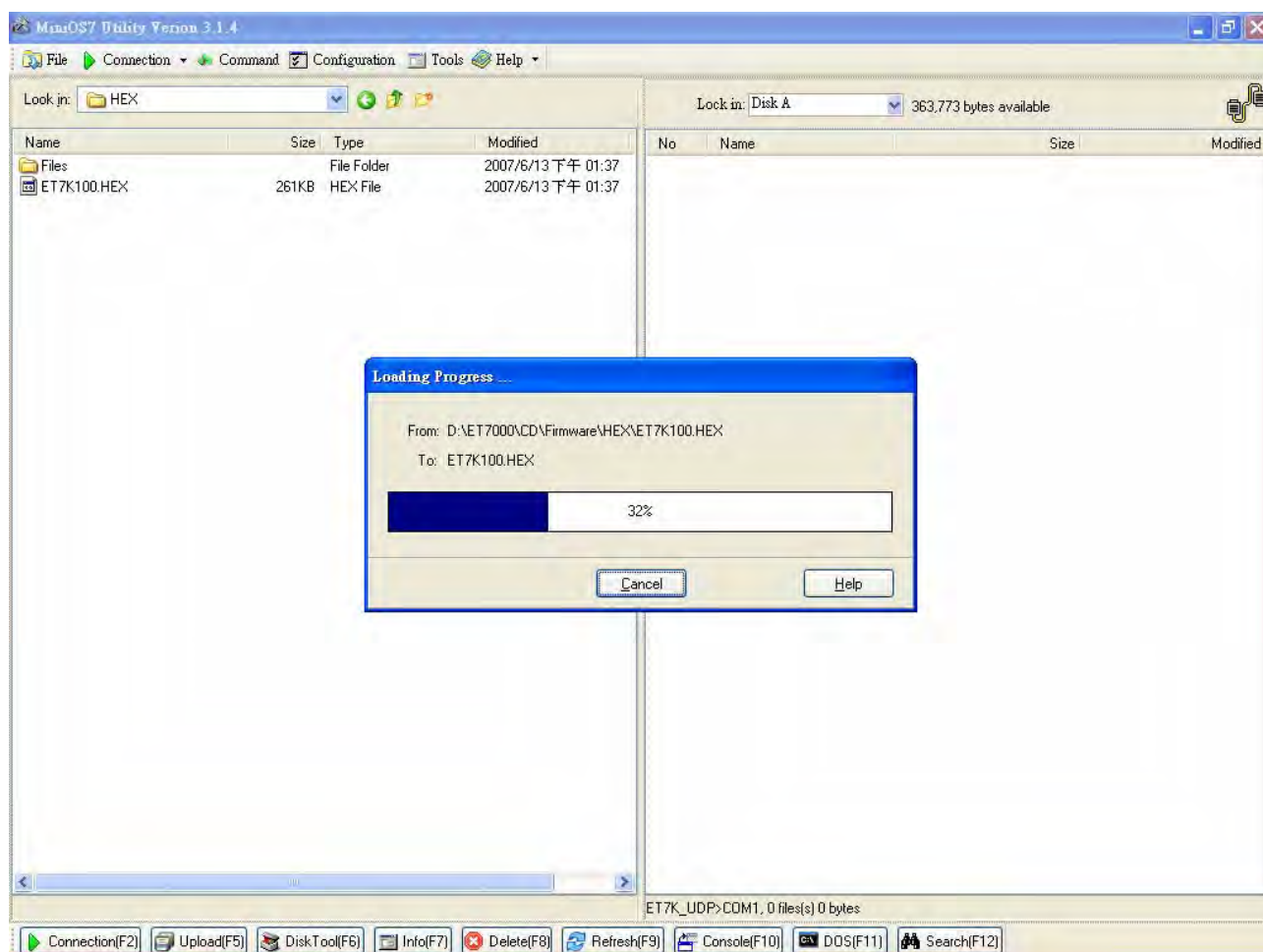
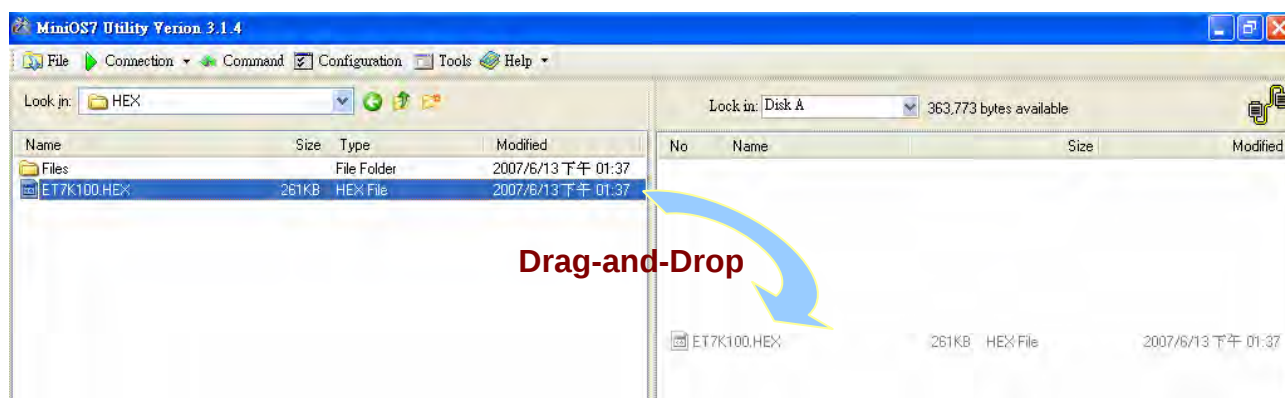
Step 5: Locate the required file in the left hand window, then drag and drop this file to the PET-7000. The figure below shows that the PET-7000 firmware has been downloaded to the PET-7000 module.

Appendix B: MiniOS7 utility



Notes:

- The PET-7000 firmware is a file named ET7Knnn.HEX, where 'nnn' is the version number.
- The MiniOS7 utility is only a tool for the PET-7000 series module to update its firmware, and the version of MiniOS7 utility must be V3.14 or later





Notes:

- To select multiple files, press and hold the CTRL or SHIFT keys while making your/a selection and drag them to simultaneously download the files to the PET-7000
- After completing the download, turn off the power to the PET-7000 and then turn it back ON. This will cause the program to begin running the autoexec.bat (the content of the autoexec.bat indicates which file in the PET-7000 will run after rebooting). Alternatively, click the button to execute it.
- Please refer to the MiniOS7 utility help file for more details regarding the use of MiniOS7 utility. This file is located in the ICPDAS MiniOS7_utility group in the 'Start' menu, or can be accessed by clicking the icon at the top of the MiniOS7 utility toolbar.

Appendix C: MODBUS Register Tables

Modules Supported (PET-7000 series)			
Name	Date	Firmware	Note
PET-7060	May 2009	V1.10	6 DO, 6 DI 6 Relay Output (Form A) 6 DI(Wet Contact (Sink, Source))
ET-7067	May 2009	V1.10	8 DO 8 Signal Relay, (Form A/Form C)

Appendix C: Modbus Register Tables

Common Functions for all PET-7000 series modules

(0xxxx) DO address					
Begin address	Points	Description	Registers per Point	Range	Access Type
126	1	Recover all I/O default settings	1	1=recover	W (Pulse)
127	1	Recover all web default settings	1	1=recover	W (Pulse)
128	1	ID default settings	1	1=recover	W (Pulse)
129	1	Web Enable/Disable	1	1=recover	W (Pulse)
133	1	Reboot the PET-7000	1	1=reboot	W (Pulse)

(3xxxx) AI address					
Begin address	Points	Description	Registers per Point	Range	Access Type
150	1	OS image version	1	123 means version=1.2.3	R
151	1	Total Firmware version	1	123 means version=1.2.3	R
158	1	Modbus communication status	1	0= No Error -1= CRC error -2= Timeout	R
160	1	Pair Connection	1	0=Normal 1=Timeout 2=Disconnected	R

Appendix C: Modbus Register Tables

(4xxxx) AO address					
Begin address	Points	Description	Registers per Point	Range	Access Type
255	1	CPU reset status	1	1= by power on 2= by 0.8 second WDT 3= by Reset command	R/W
256	1	CPU reset events	1	How many CPU reset events has happened? When CPU is reset by one of the situations described in register 555, the event increases one count.	R/W/E
257	1	Set host watch dog timer	1	<5: Disabled 5~65535: Enabled (unit: second) (default=0) When the PET-7000 loses communication with PC more than the WDT setting, DO and AO go to their safe values and host WDT events plus 1 count.	R/W/E
258	1	Host WDT events	1	How many host WDT events has happened after CPU reset?	R/W
259	1	Module name	4	8 ASCII characters	R
263	1	Module nick name	16	16 ASCII characters	R/W/E

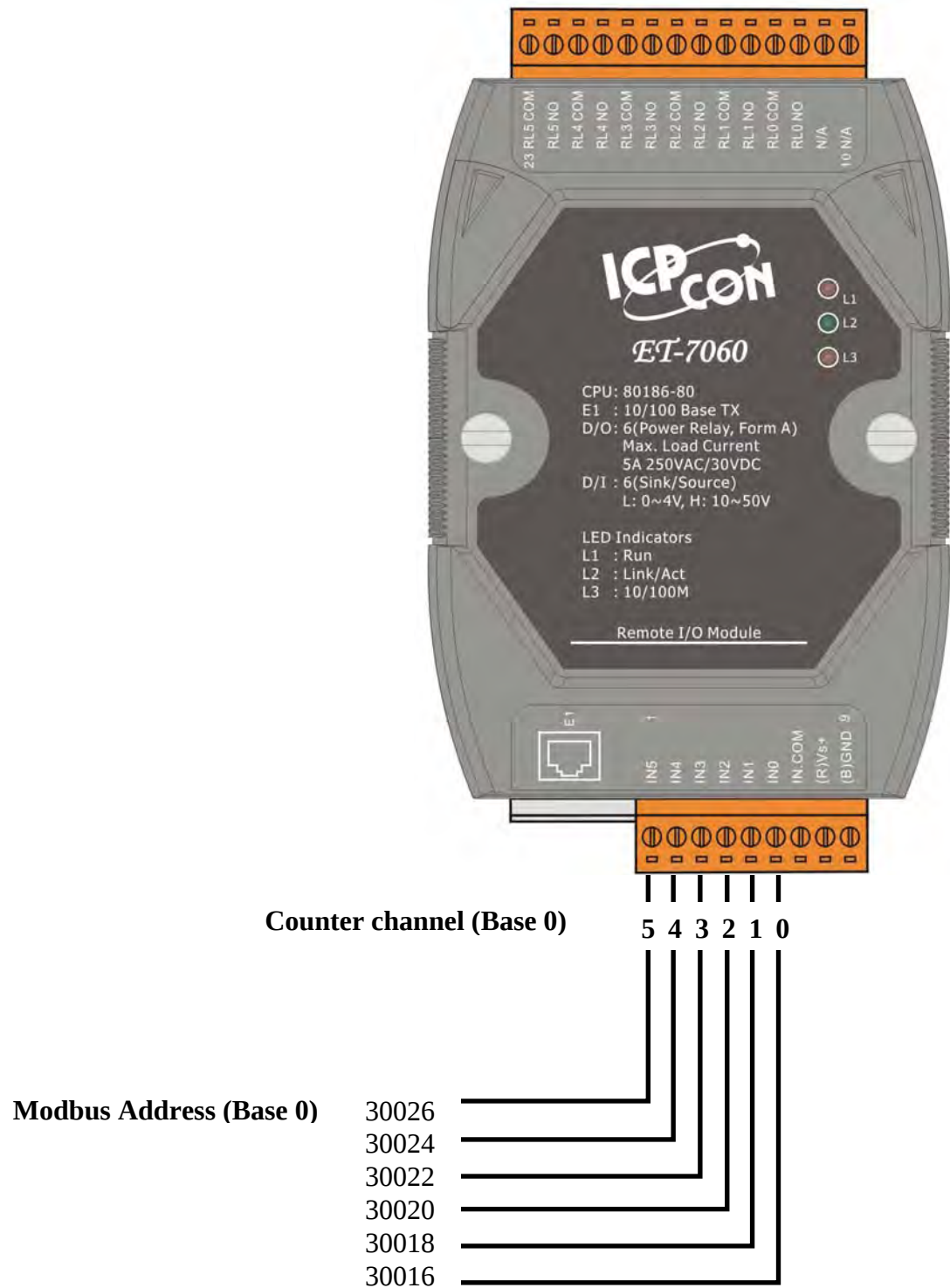
Appendix C: Modbus Register Tables

PET-7060 I/O Address Mapping



Appendix C: Modbus Register Tables

PET-7060 Counter Address Mapping



Appendix C: Modbus Register Tables

Detailed Modbus Address Table for PET-7060

(0xxxx) DO address					
Begin address	Points	Description	Registers per Point	Range	Access Type
0	0~5	Digital Output	1	0=off 1=on	R/W
32	1	Clear all DI latched status (high)	1	1=clear	W (Pulse)
33	1	Clear all DI latched status (low)	1	1=clear	W (Pulse)
34	0~5	Clear low speed (500Hz) digital counter	1	1=clear	W (Pulse)
150	1	Enable all DI latched status (high/low)	1	0=disable 1=enable (default=0)	R/W/E
151	0~5	Enable low speed (500Hz) digital counter	1	0=disable 1=enable (default=0)	R/W/E
231	1	Write DO Power on value to EEPROM	1	1=write	W (Pulse)
232	1	Write DO Safe value to EEPROM	1	1=write	W (Pulse)
235	0~5	Power on value for DO	1	0=off 1=on (default=0)	R/W/E
267	0~5	Safe value for DO	1	0=off 1=on (default=0)	R/W/E

(1xxxx) DI address					
Begin address	Points	Description	Registers per Point	Range	Access Type
0	0~5	Digital Input	1	0=off 1=on	R
32	0~5	Digital latched status (high)	1	0=no 1=latched	R
64	0~5	Digital latched status (low)	1	0=no 1=latched	R

Appendix C: Modbus Register Tables

(3xxxx) AI address					
Begin address	Points	Description	Registers per Point	Range	Access Type
16	0~5	Low speed (500Hz) digital counter	2	0~4294967296	R

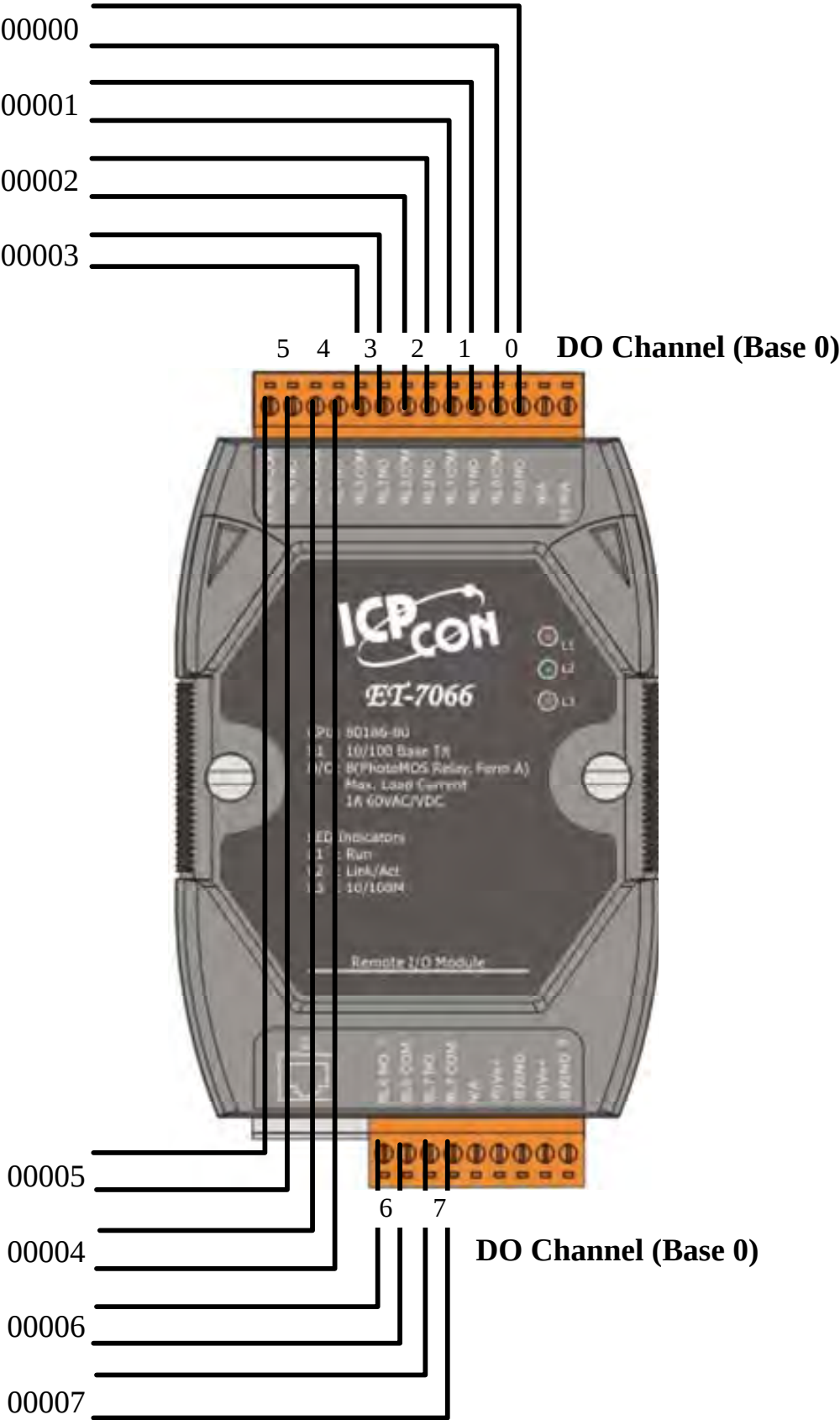
(3xxxx) AI address (Static Channel Number Value)					
Begin address	Points	Description	Registers per Point	Value	Access Type
100	1	DI (channel number)	1	6	R
101	1	DI high/low latch (channel number)	1	6	R
110	1	DO (channel number)	1	6	R
111	1	Power on value for DO (channel number)	1	6	R
112	1	Safe value for DO (channel number)	1	6	R
121	1	Low speed counter (500Hz) (channel number)	1	6	R

(4xxxx) AO address					
Begin address	Points	Description	Registers per Point	Range	Access Type
50	0~5	Preset value for low speed (500Hz) digital counter	2	0~4294967296 (default=0)	R/W/E

Appendix C: Modbus Register Tables

PET-7066 I/O Address Mapping

Modbus Address (Base 0)



Appendix C: Modbus Register Tables

Detailed Modbus Address Table for PET-7066

(0xxxx) DO address					
Begin address	Points	Description	Registers per Point	Range	Access Type
0	0~7	Digital Output	1	0=off 1=on	R/W
231	1	Write DO Power on value to EEPROM	1	1=write	W (Pulse)
232	1	Write DO Safe value to EEPROM	1	1=write	W (Pulse)
235	0~7	Power on value for DO	1	0=off 1=on (default=0)	R/W/E
267	0~7	Safe value for DO	1	0=off 1=on (default=0)	R/W/E

(3xxxx) AI address (Static Channel Number Value)					
Begin address	Points	Description	Registers per Point	Value	Access Type
110	1	DO (channel number)	1	8	R
111	1	Power on value for DO (channel number)	1	8	R
112	1	Safe value for DO (channel number)	1	8	R

Appendix C: Modbus Register Tables

PET-7067 I/O Address Mapping



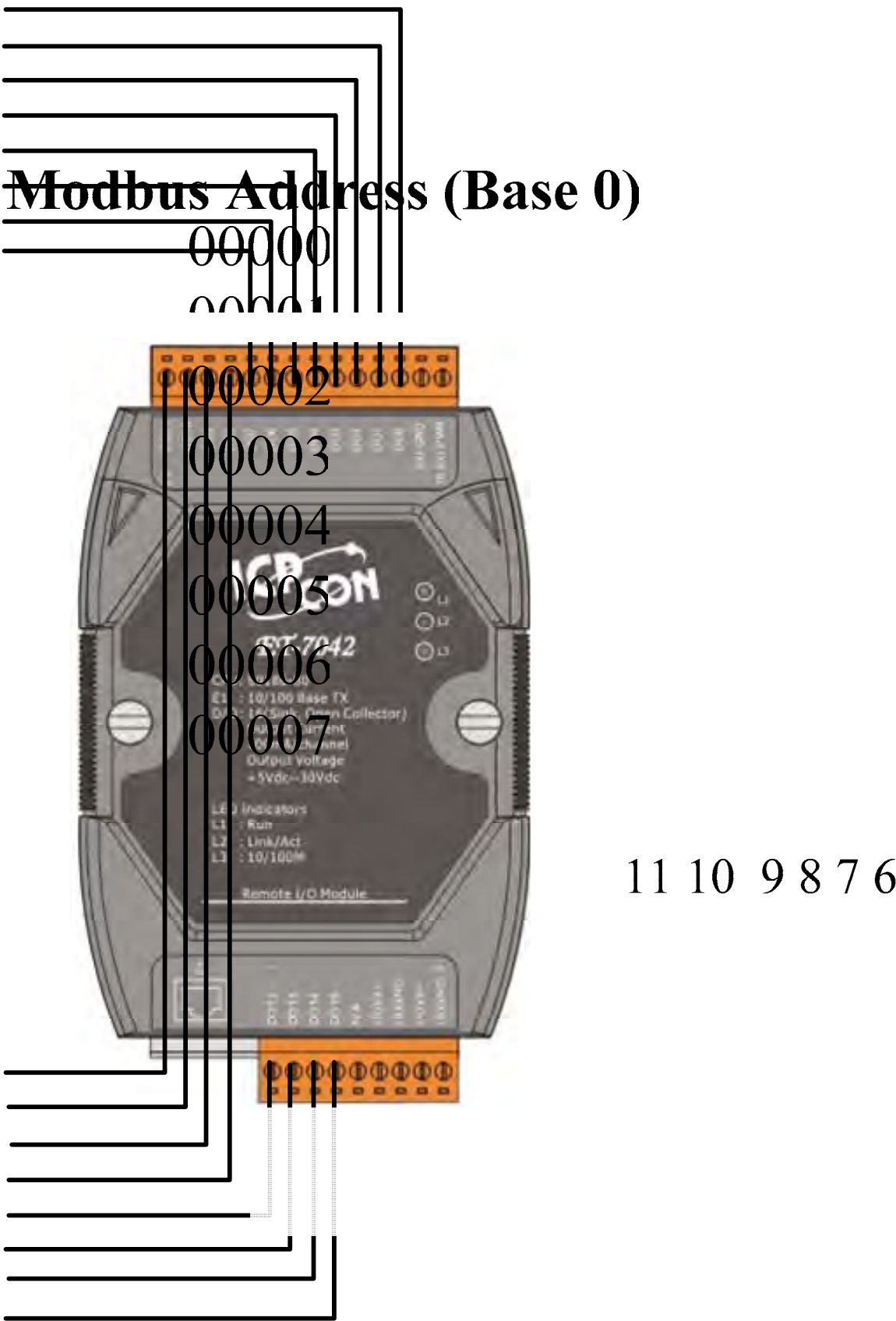
Appendix C: Modbus Register Tables

Detailed Modbus Address Table for PET-7067

(0xxxx) DO address					
Begin address	Points	Description	Registers per Point	Range	Access Type
0	0~7	Digital Output	1	0=off 1=on	R/W
231	1	Write DO Power on value to EEPROM	1	1=write	W (Pulse)
232	1	Write DO Safe value to EEPROM	1	1=write	W (Pulse)
235	0~7	Power on value for DO	1	0=off 1=on (default=0)	R/W/E
267	0~7	Safe value for DO	1	0=off 1=on (default=0)	R/W/E

(3xxxx) AI address (Static Channel Number Value)					
Begin address	Points	Description	Registers per Point	Value	Access Type
110	1	DO (channel number)	1	8	R
111	1	Power on value for DO (channel number)	1	8	R
112	1	Safe value for DO (channel number)	1	8	R

PET-7042 I/O Address Mapping



Appendix C: Modbus Register Tables

Detailed Modbus Address Table for PET-7042

(0xxxx) DO address					
Begin address	Points	Description	Registers per Point	Range	Access Type
0	0~15	Digital Output	1	0=off 1=on	R/W
231	1	Write DO Power on value to EEPROM	1	1=write	W (Pulse)
232	1	Write DO Safe value to EEPROM	1	1=write	W (Pulse)
235	0~15	Power on value for DO	1	0=off 1=on (default=0)	R/W/E
267	0~15	Safe value for DO	1	0=off 1=on (default=0)	R/W/E

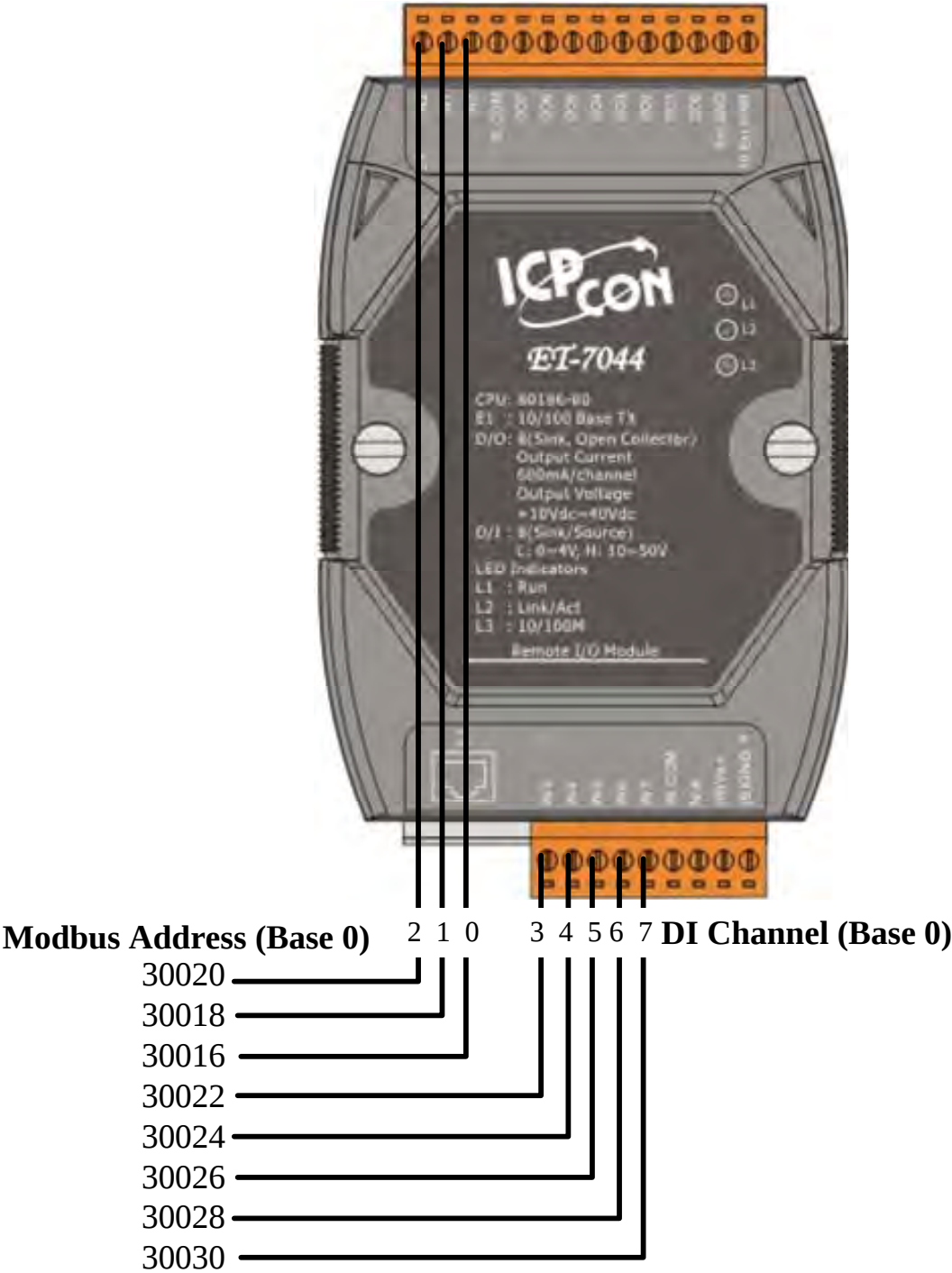
(3xxxx) AI address (Static Channel Number Value)					
Begin address	Points	Description	Registers per Point	Value	Access Type
110	1	DO (channel number)	1	16	R
111	1	Power on value for DO (channel number)	1	16	R
112	1	Safe value for DO (channel number)	1	16	R

PET-7044 I/O Address Mapping



Appendix C: Modbus Register Tables

PET-7044 Counter Address Mapping



Appendix C: Modbus Register Tables

Detailed Modbus Address Table for PET-7044

(0xxxx) DO address					
Begin address	Points	Description	Registers per Point	Range	Access Type
0	0~7	Digital Output	1	0=off 1=on	R/W
32	1	Clear all DI latched status (high)	1	1=clear	W (Pulse)
33	1	Clear all DI latched status (low)	1	1=clear	W (Pulse)
34	0~7	Clear low speed (500Hz) digital counter	1	1=clear	W (Pulse)
150	1	Enable all DI latched status (high/low)	1	0=disable 1=enable (default=0)	R/W/E
151	0~7	Enable low speed (500Hz) digital counter	1	0=disable 1=enable (default=0)	R/W/E
231	1	Write DO Power on value to EEPROM	1	1=write	W (Pulse)
232	1	Write DO Safe value to EEPROM	1	1=write	W (Pulse)
235	0~7	Power on value for DO	1	0=off 1=on (default=0)	R/W/E
267	0~7	Safe value for DO	1	0=off 1=on (default=0)	R/W/E

(1xxxx) DI address					
Begin address	Points	Description	Registers per Point	Range	Access Type
0	0~7	Digital Input	1	0=off 1=on	R
32	0~7	Digital latched status (high)	1	0=no 1=latched	R
64	0~7	Digital latched status (low)	1	0=no 1=latched	R

Appendix C: Modbus Register Tables

(3xxxx) AI address					
Begin address	Points	Description	Registers per Point	Range	Access Type
16	0~7	Low speed (500Hz) digital counter	2	0~4294967296	R

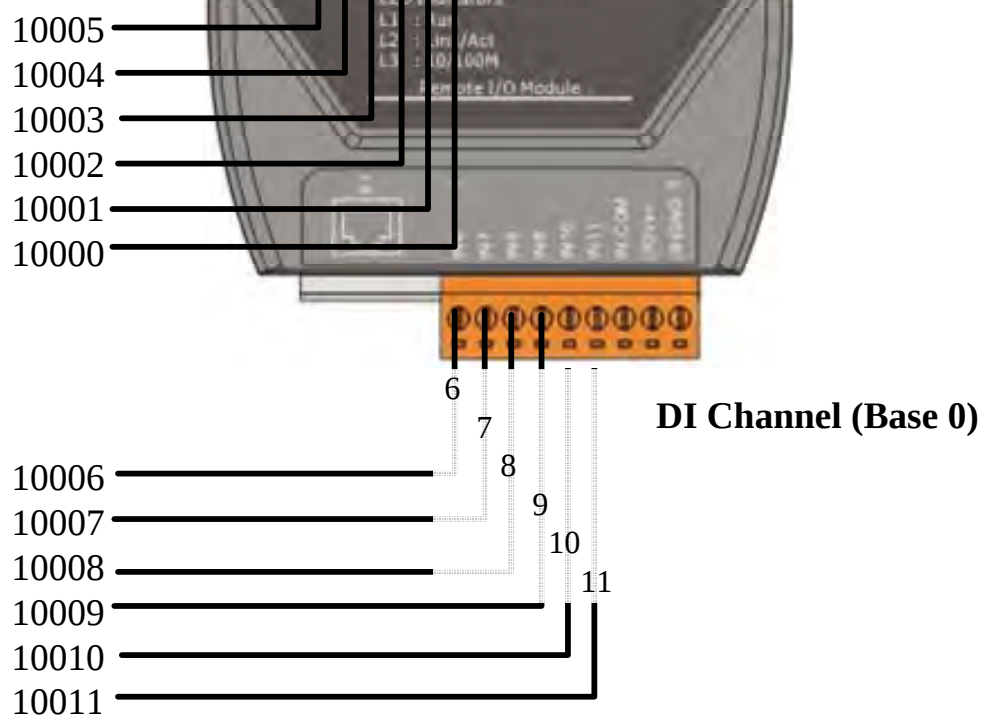
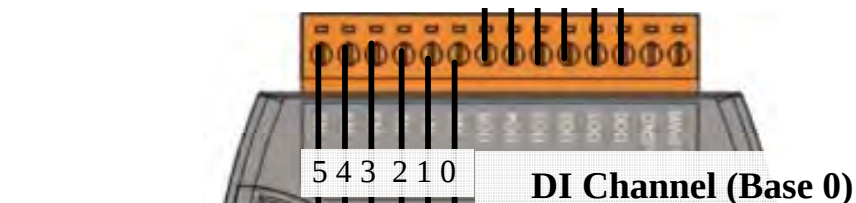
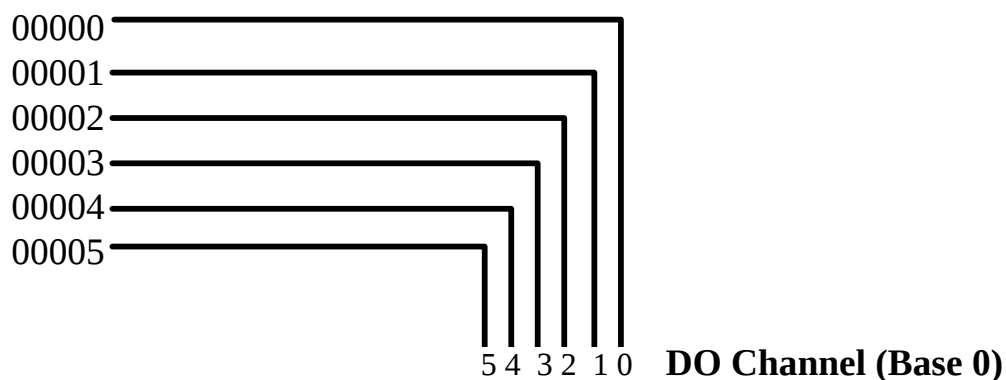
(3xxxx) AI address (Static Channel Number Value)					
Begin address	Points	Description	Registers per Point	Value	Access Type
100	1	DI (channel number)	1	8	R
101	1	DI high/low latch (channel number)	1	8	R
110	1	DO (channel number)	1	8	R
111	1	Power on value for DO (channel number)	1	8	R
112	1	Safe value for DO (channel number)	1	8	R
121	1	Low speed counter (500Hz) (channel number)	1	8	R

(4xxxx) AO address					
Begin address	Points	Description	Registers per Point	Range	Access Type
50	0~7	Preset value for low speed (500Hz) digital counter	2	0~4294967296 (default=0)	R/W/E

Appendix C: Modbus Register Tables

PET-7050 I/O Address Mapping

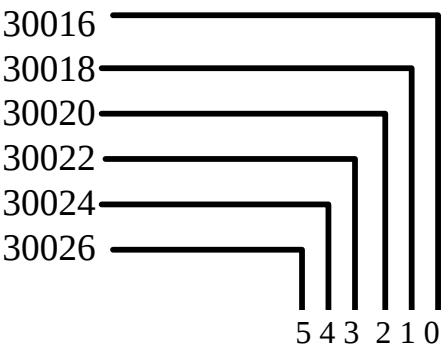
Modbus Address (Base 0)



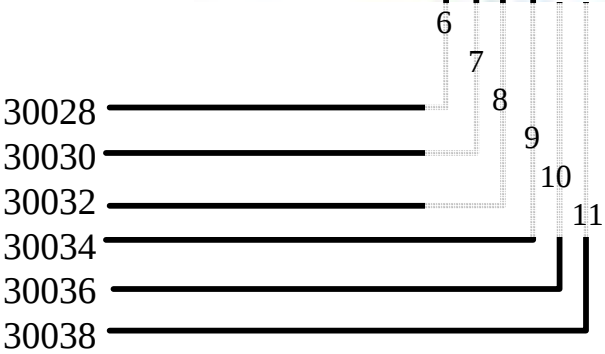
Appendix C: Modbus Register Tables

PET-7050 Counter Address Mapping

Modbus Address (Base 0)



DO Channel (Base 0)



DI Channel (Base 0)

Appendix C: Modbus Register Tables

Detailed Modbus Address Table for PET-7050

(0xxxx) DO address					
Begin address	Points	Description	Registers per Point	Range	Access Type
0	0~5	Digital Output	1	0=off 1=on	R/W
32	1	Clear all DI latched status (high)	1	1=clear	W (Pulse)
33	1	Clear all DI latched status (low)	1	1=clear	W (Pulse)
34	0~5	Clear low speed (500Hz) digital counter	1	1=clear	W (Pulse)
150	1	Enable all DI latched status (high/low)	1	0=disable 1=enable (default=0)	R/W/E
151	0~5	Enable low speed (500Hz) digital counter	1	0=disable 1=enable (default=0)	R/W/E
231	1	Write DO Power on value to EEPROM	1	1=write	W (Pulse)
232	1	Write DO Safe value to EEPROM	1	1=write	W (Pulse)
235	0~5	Power on value for DO	1	0=off 1=on (default=0)	R/W/E
267	0~5	Safe value for DO	1	0=off 1=on (default=0)	R/W/E

(1xxxx) DI address					
Begin address	Points	Description	Registers per Point	Range	Access Type
0	0~11	Digital Input	1	0=off 1=on	R
32	0~11	Digital latched status (high)	1	0=no 1=latched	R
64	0~11	Digital latched status (low)	1	0=no 1=latched	R

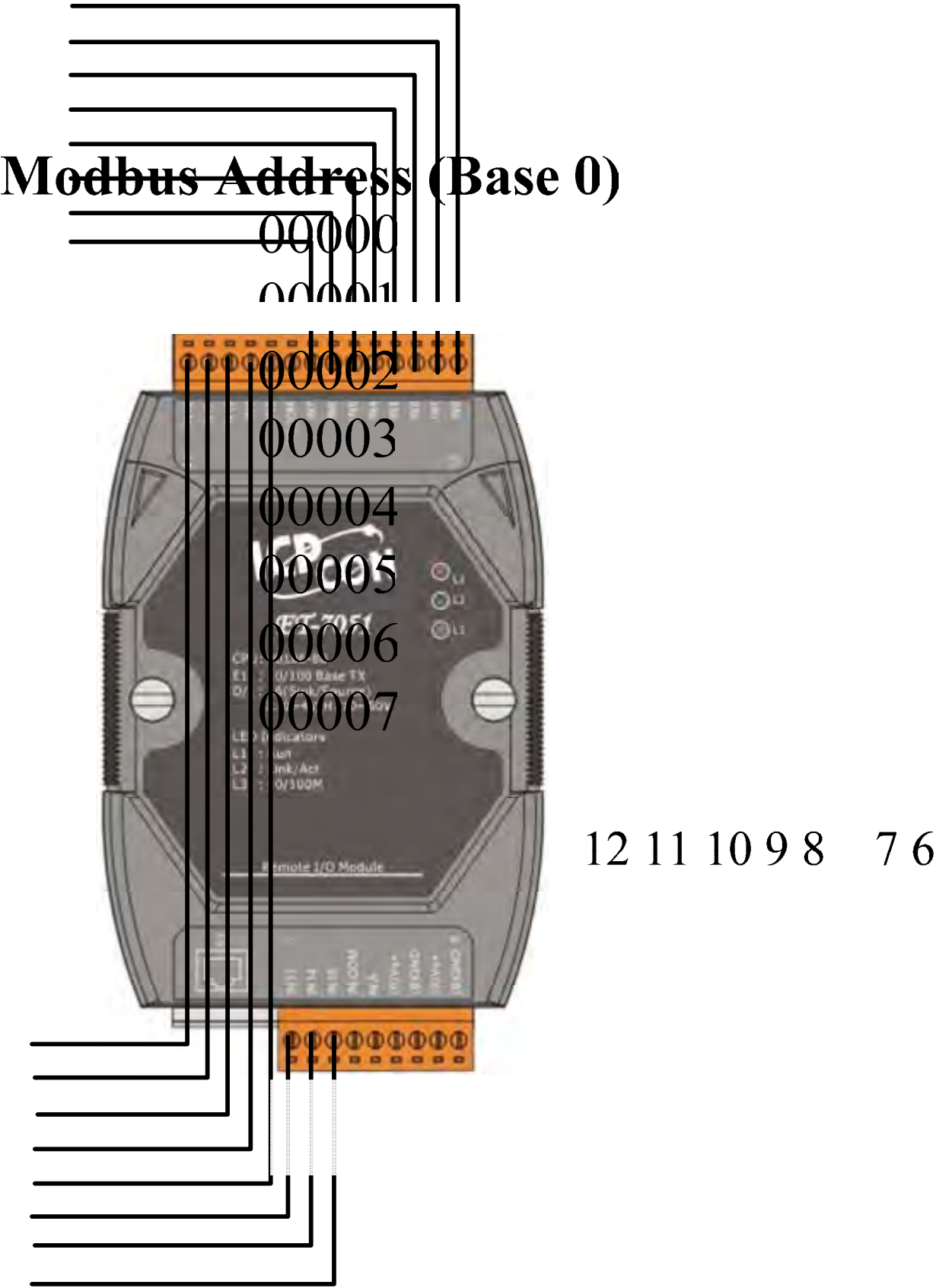
Appendix C: Modbus Register Tables

(3xxxx) AI address					
Begin address	Points	Description	Registers per Point	Range	Access Type
16	0~11	Low speed (500Hz) digital counter	2	0~4294967296	R

(3xxxx) AI address (Static Channel Number Value)					
Begin address	Points	Description	Registers per Point	Value	Access Type
100	1	DI (channel number)	1	12	R
101	1	DI high/low latch (channel number)	1	12	R
110	1	DO (channel number)	1	6	R
111	1	Power on value for DO (channel number)	1	6	R
112	1	Safe value for DO (channel number)	1	6	R
121	1	Low speed counter (500Hz) (channel number)	1	12	R

(4xxxx) AO address					
Begin address	Points	Description	Registers per Point	Range	Access Type
50	0~11	Preset value for low speed (500Hz) digital counter	2	0~4294967296 (default=0)	R/W/E

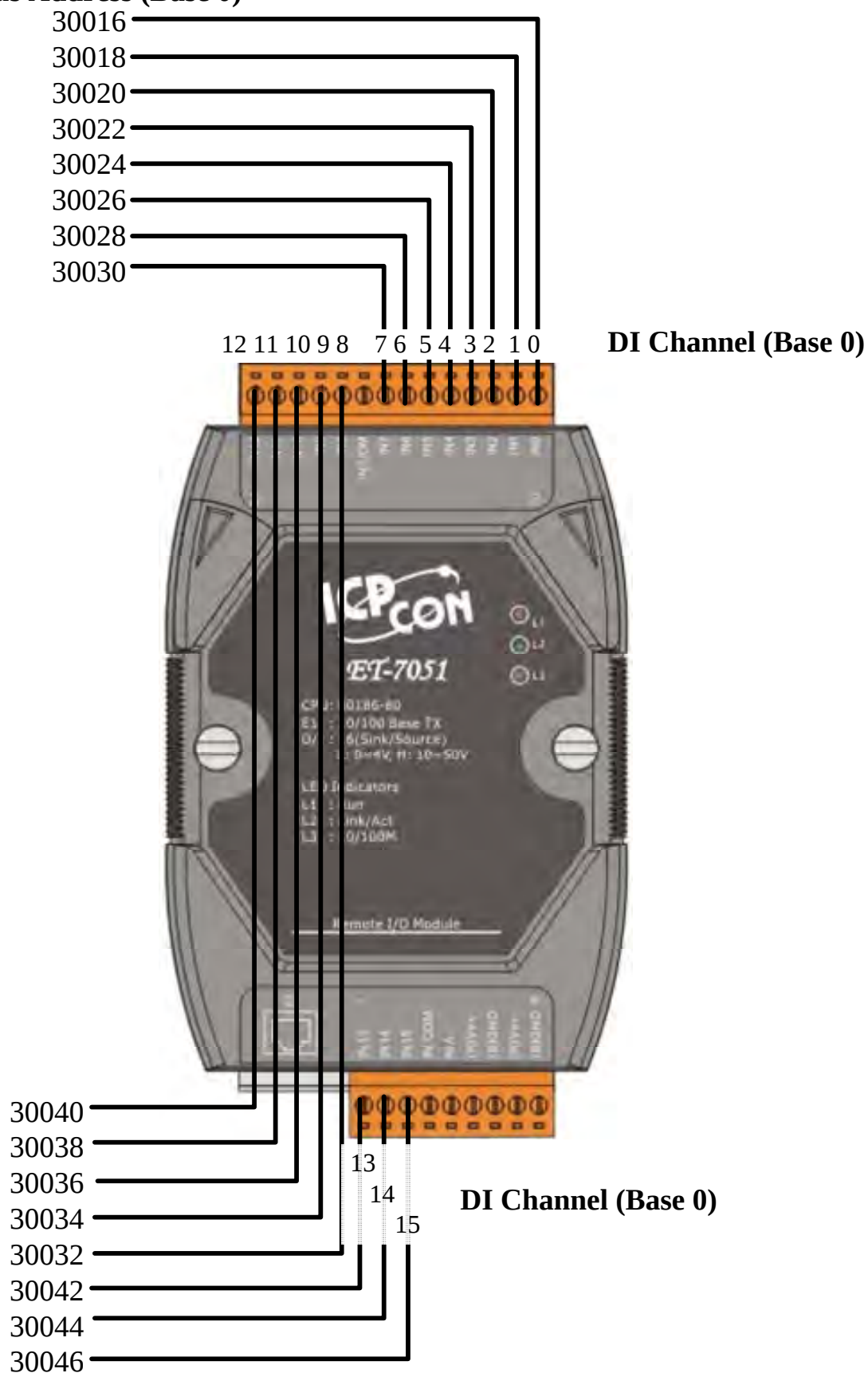
PET-7051 I/O Address Mapping



Appendix C: Modbus Register Tables

PET-7051 Counter Address Mapping

Modbus Address (Base 0)



Appendix C: Modbus Register Tables

Detailed Modbus Address Table for PET-7051

(0xxxx) DO address					
Begin address	Points	Description	Registers per Point	Range	Access Type
32	1	Clear all DI latched status (high)	1	1=clear	W (Pulse)
33	1	Clear all DI latched status (low)	1	1=clear	W (Pulse)
34	0~15	Clear low speed (500Hz) digital counter	1	1=clear	W (Pulse)
150	1	Enable all DI latched status (high/low)	1	0=disable 1=enable (default=0)	R/W/E
151	0~15	Enable low speed (500Hz) digital counter	1	0=disable 1=enable (default=0)	R/W/E

(1xxxx) DI address					
Begin address	Points	Description	Registers per Point	Range	Access Type
0	0~15	Digital Input	1	0=off 1=on	R
32	0~15	Digital latched status (high)	1	0=no 1=latched	R
64	0~15	Digital latched status (low)	1	0=no 1=latched	R

(3xxxx) AI address					
Begin address	Points	Description	Registers per Point	Range	Access Type
16	0~15	Low speed (500Hz) digital counter	2	0~4294967296	R

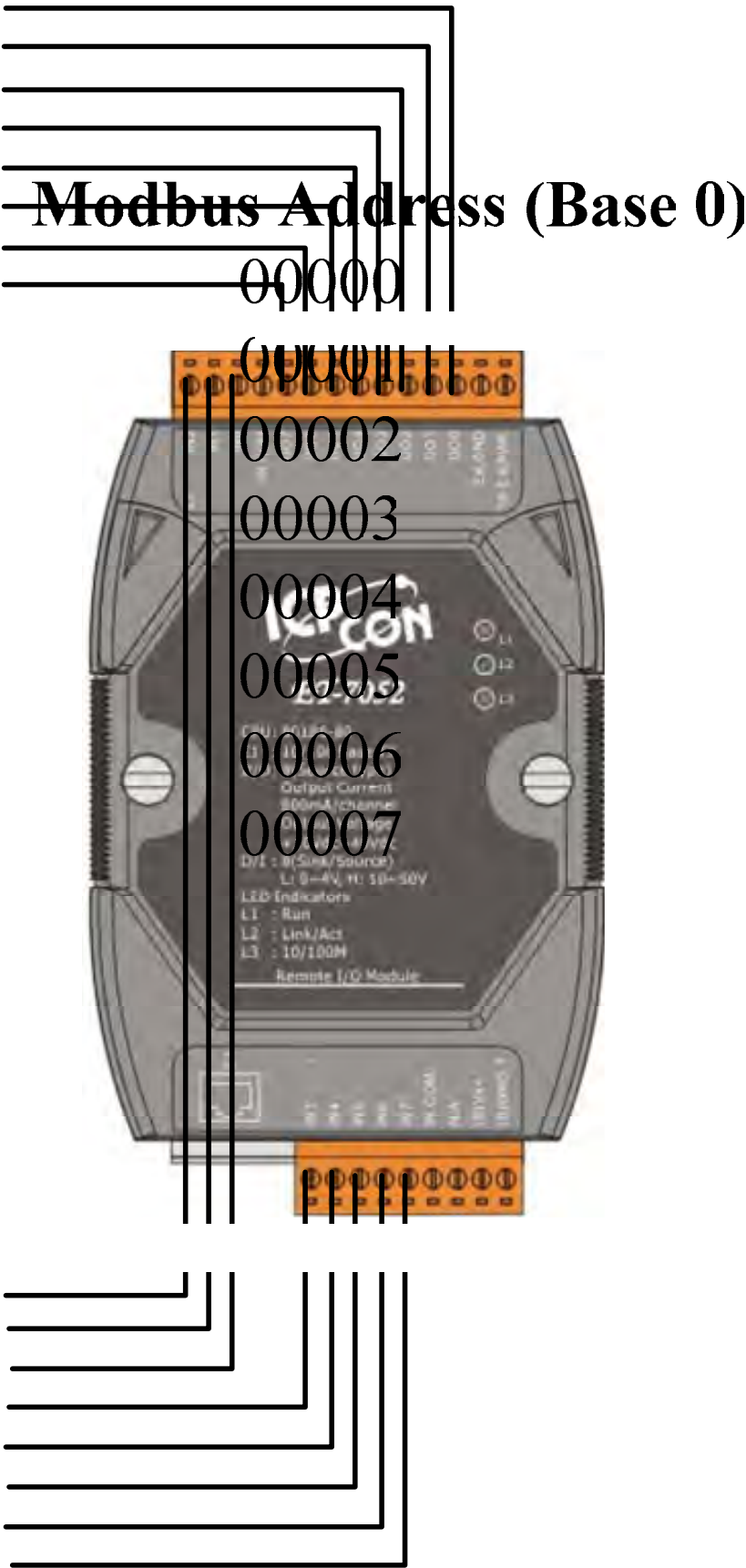
(3xxxx) AI address (Static Channel Number Value)					
Begin address	Points	Description	Registers per Point	Value	Access Type
100	1	DI (channel number)	1	16	R
101	1	DI high/low latch (channel number)	1	16	R
121	1	Low speed counter (500Hz) (channel number)	1	16	R

Appendix C: Modbus Register Tables

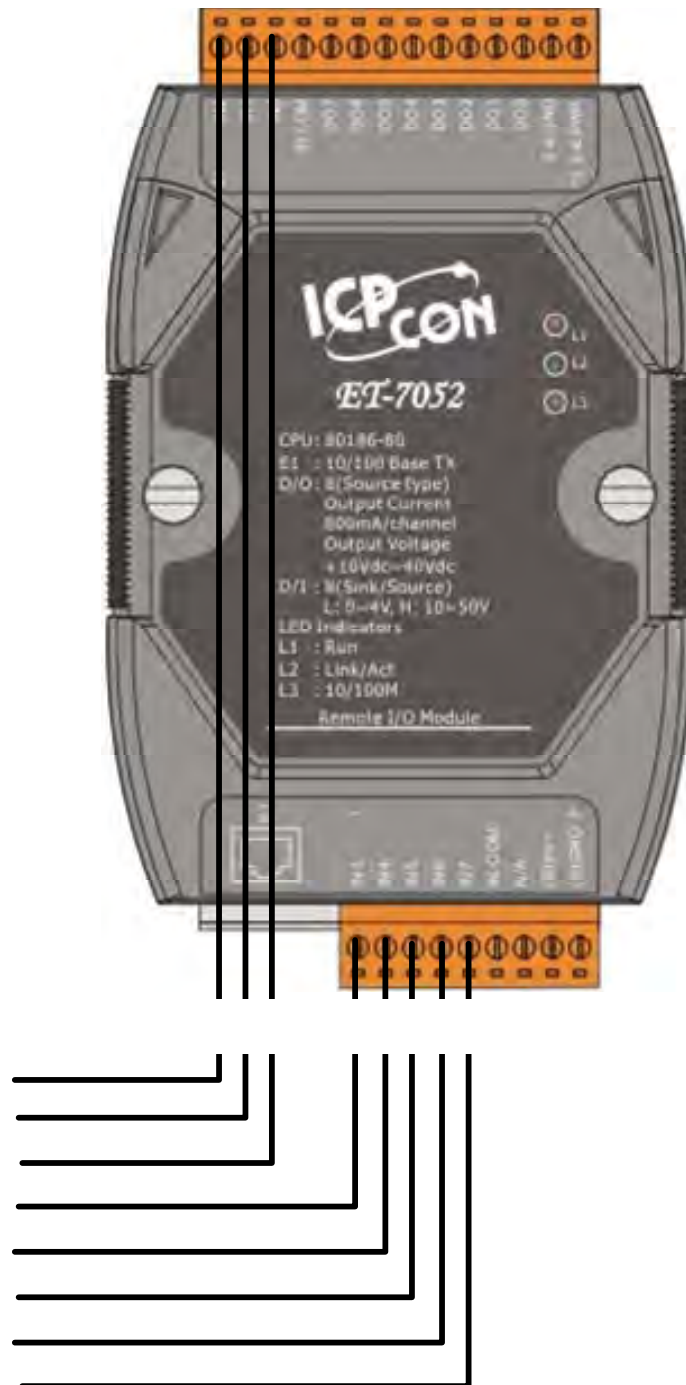
(4xxxx) AO address					
Begin address	Points	Description	Registers per Point	Range	Access Type
50	0~15	Preset value for low speed (500Hz) digital counter	2	0~4294967296 (default=0)	R/W/E

Appendix C: Modbus Register Tables

PET-7052 I/O Address Mapping



PET-7052 Counter Address Mapping



Appendix C: Modbus Register Tables

Detailed Modbus Address Table for PET-7052

(0xxxx) DO address					
Begin address	Points	Description	Registers per Point	Range	Access Type
0	0~7	Digital Output	1	0=off 1=on	R/W
32	1	Clear all DI latched status (high)	1	1=clear	W (Pulse)
33	1	Clear all DI latched status (low)	1	1=clear	W (Pulse)
34	0~7	Clear low speed (500Hz) digital counter	1	1=clear	W (Pulse)
150	1	Enable all DI latched status (high/low)	1	0=disable 1=enable (default=0)	R/W/E
151	0~7	Enable low speed (500Hz) digital counter	1	0=disable 1=enable (default=0)	R/W/E
231	1	Write DO Power on value to EEPROM	1	1=write	W (Pulse)
232	1	Write DO Safe value to EEPROM	1	1=write	W (Pulse)
235	0~7	Power on value for DO	1	0=off 1=on (default=0)	R/W/E
267	0~7	Safe value for DO	1	0=off 1=on (default=0)	R/W/E

(1xxxx) DI address					
Begin address	Points	Description	Registers per Point	Range	Access Type
0	0~7	Digital Input	1	0=off 1=on	R
32	0~7	Digital latched status (high)	1	0=no 1=latched	R
64	0~7	Digital latched status (low)	1	0=no 1=latched	R

Appendix C: Modbus Register Tables

(3xxxx) AI address					
Begin address	Points	Description	Registers per Point	Range	Access Type
16	0~7	Low speed (500Hz) digital counter	2	0~4294967296	R

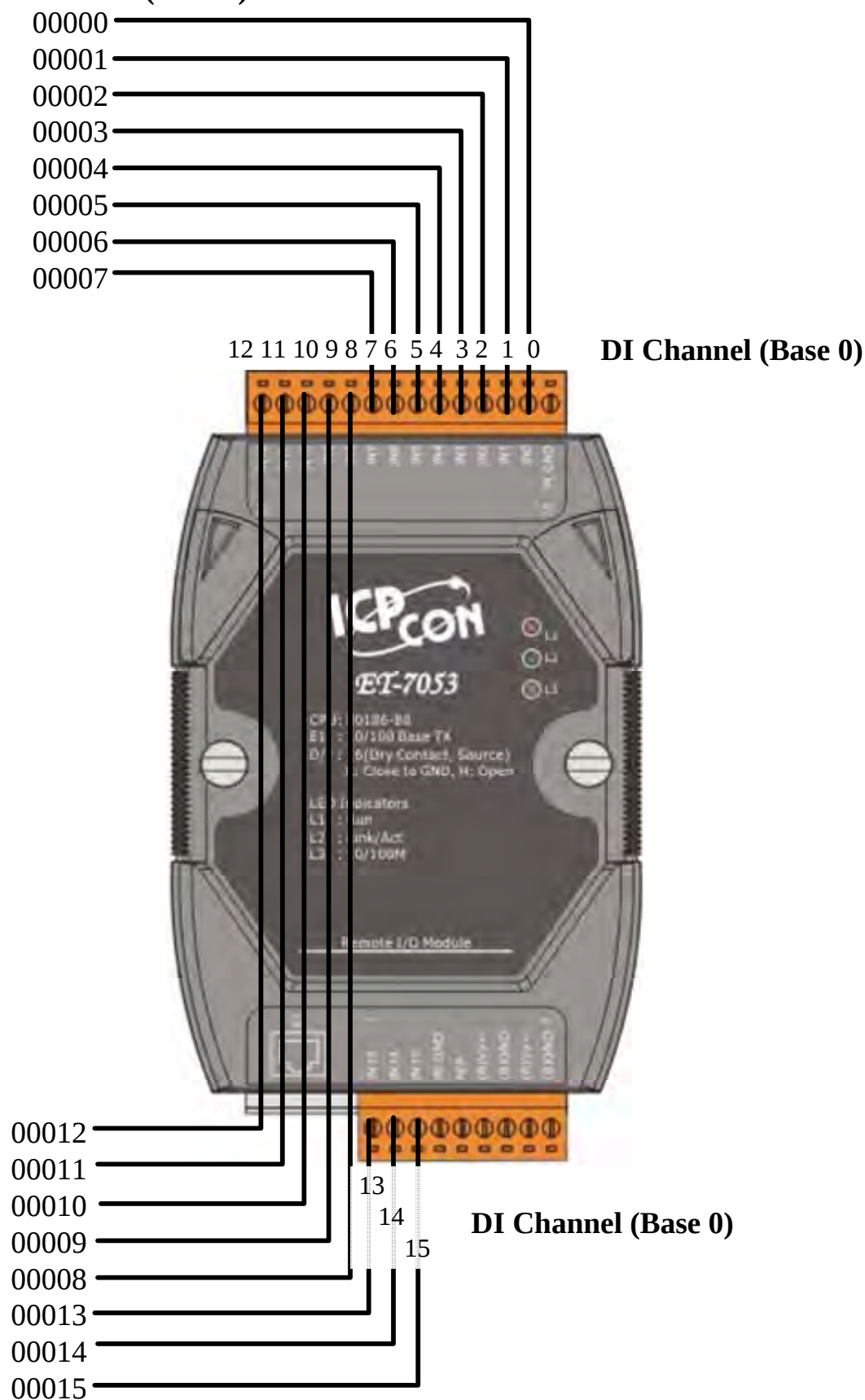
(3xxxx) AI address (Static Channel Number Value)					
Begin address	Points	Description	Registers per Point	Value	Access Type
100	1	DI (channel number)	1	8	R
101	1	DI high/low latch (channel number)	1	8	R
110	1	DO (channel number)	1	8	R
111	1	Power on value for DO (channel number)	1	8	R
112	1	Safe value for DO (channel number)	1	8	R
121	1	Low speed counter (500Hz) (channel number)	1	8	R

(4xxxx) AO address					
Begin address	Points	Description	Registers per Point	Range	Access Type
50	0~7	Preset value for low speed (500Hz) digital counter	2	0~4294967296 (default=0)	R/W/E

Appendix C: Modbus Register Tables

PET-7053 I/O Address Mapping

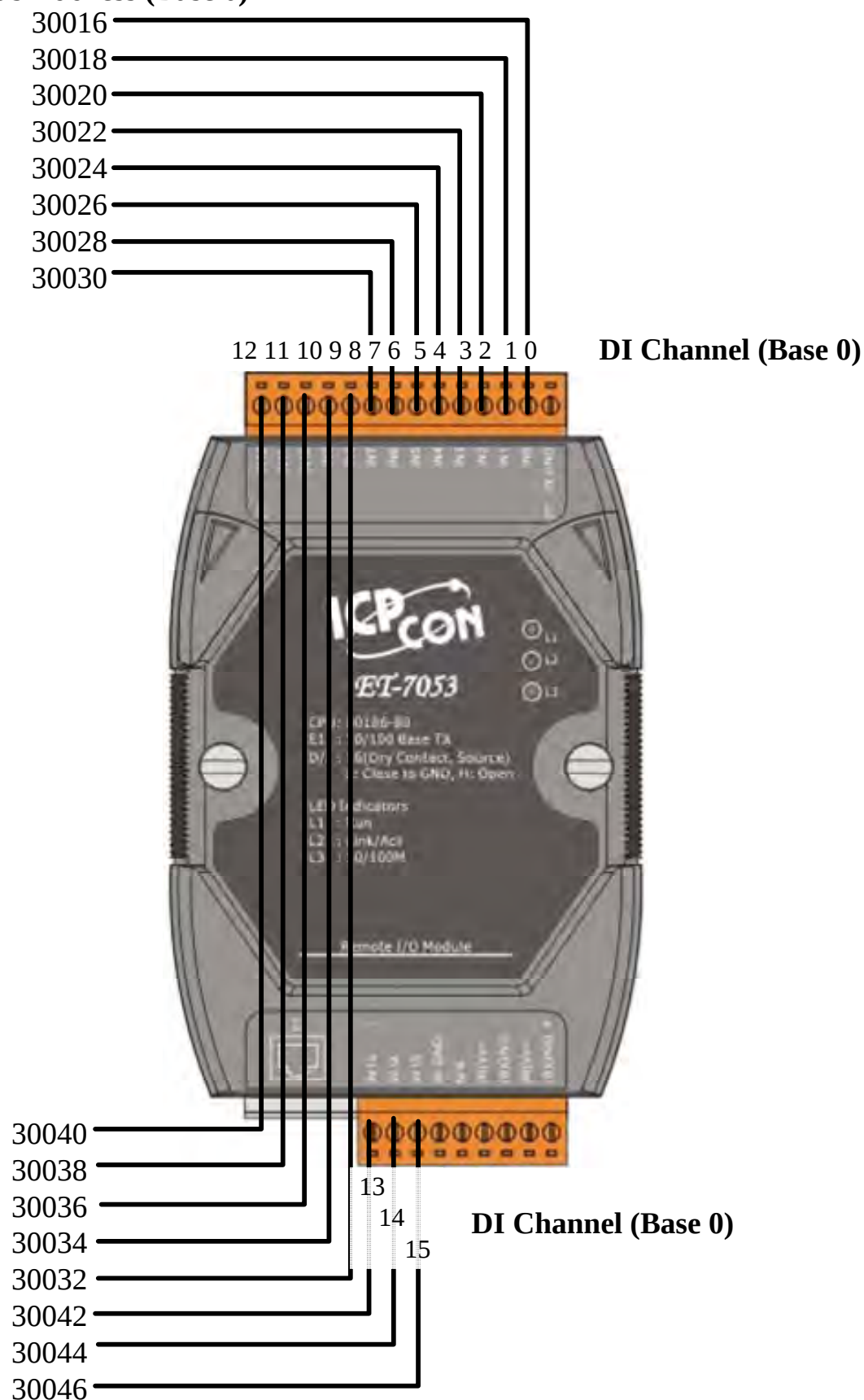
Modbus Address (Base 0)



Appendix C: Modbus Register Tables

PET-7053 Counter Address Mapping

Modbus Address (Base 0)



Appendix C: Modbus Register Tables

Detailed Modbus Address Table for PET-7053

(0xxxx) DO address					
Begin address	Points	Description	Registers per Point	Range	Access Type
32	1	Clear all DI latched status (high)	1	1=clear	W (Pulse)
33	1	Clear all DI latched status (low)	1	1=clear	W (Pulse)
34	0~15	Clear low speed (500Hz) digital counter	1	1=clear	W (Pulse)
150	1	Enable all DI latched status (high/low)	1	0=disable 1=enable (default=0)	R/W/E
151	0~15	Enable low speed (500Hz) digital counter	1	0=disable 1=enable (default=0)	R/W/E

(1xxxx) DI address					
Begin address	Points	Description	Registers per Point	Range	Access Type
0	0~15	Digital Input	1	0=off 1=on	R
32	0~15	Digital latched status (high)	1	0=no 1=latched	R
64	0~15	Digital latched status (low)	1	0=no 1=latched	R

(3xxxx) AI address					
Begin address	Points	Description	Registers per Point	Range	Access Type
16	0~15	Low speed (500Hz) digital counter	2	0~4294967296	R

(3xxxx) AI address (Static Channel Number Value)					
Begin address	Points	Description	Registers per Point	Value	Access Type
100	1	DI (channel number)	1	16	R
101	1	DI high/low latch (channel number)	1	16	R
121	1	Low speed counter (500Hz) (channel number)	1	16	R

Appendix C: Modbus Register Tables

(4xxxx) AO address					
Begin address	Points	Description	Registers per Point	Range	Access Type
50	0~15	Preset value for low speed (500Hz) digital counter	2	0~4294967296 (default=0)	R/W/E

Appendix C: Modbus Register Tables

PET-7065 I/O Address Mapping

Modbus Address (Base 0)

00000

00001

00002

00003

5

4

3

2

1

0

DO Channel (Base 0)



00005

00004

10005

10004

10003

10002

10001

10000

5

4

3

2

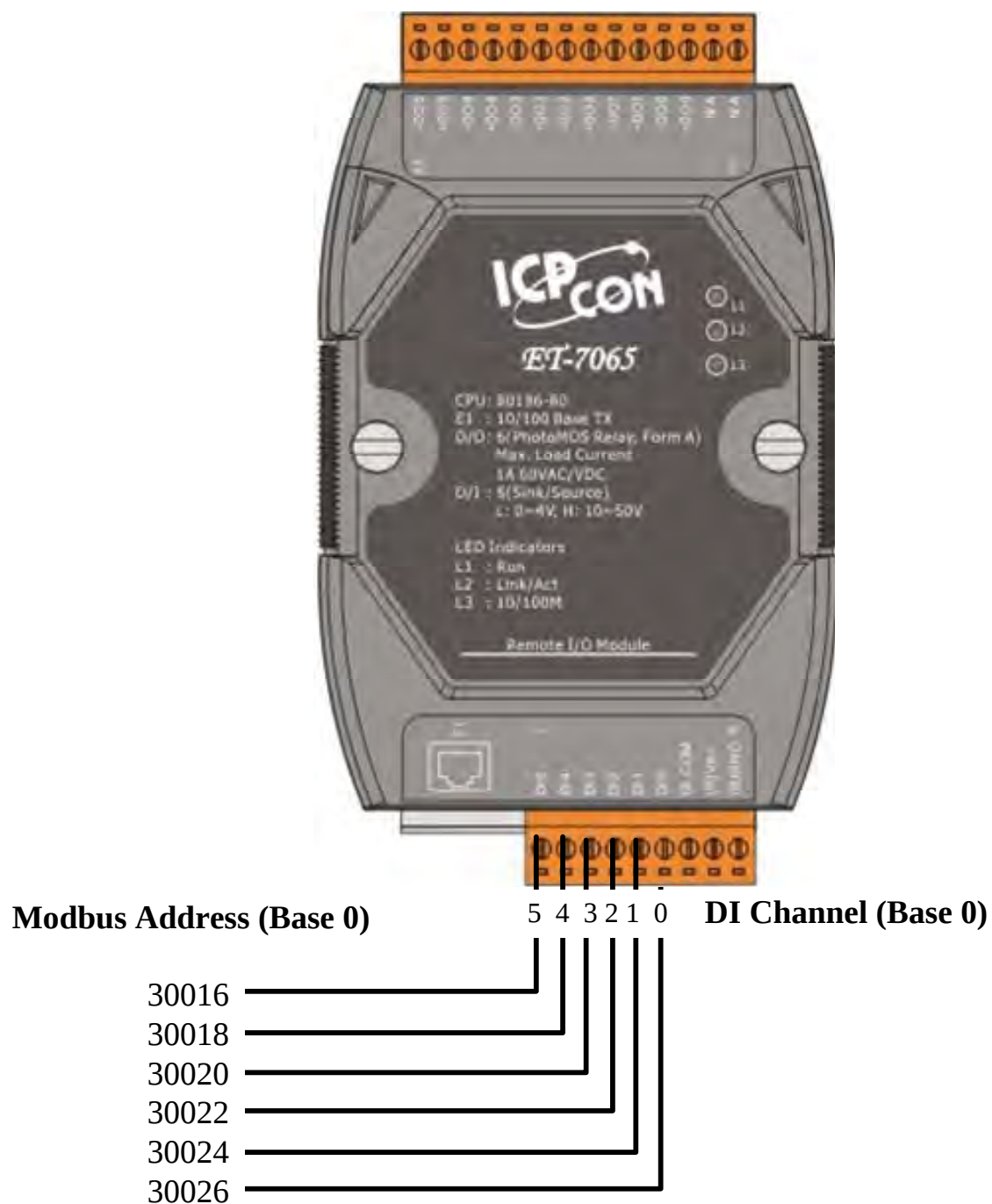
1

0

DI Channel (Base 0)

Appendix C: Modbus Register Tables

PET-7065 Counter Address Mapping



Appendix C: Modbus Register Tables

Detailed Modbus Address Table for PET-7065

(0xxxx) DO address					
Begin address	Points	Description	Registers per Point	Range	Access Type
0	0~5	Digital Output	1	0=off 1=on	R/W
32	1	Clear all DI latched status (high)	1	1=clear	W (Pulse)
33	1	Clear all DI latched status (low)	1	1=clear	W (Pulse)
34	0~5	Clear low speed (500Hz) digital counter	1	1=clear	W (Pulse)
150	1	Enable all DI latched status (high/low)	1	0=disable 1=enable (default=0)	R/W/E
151	0~5	Enable low speed (500Hz) digital counter	1	0=disable 1=enable (default=0)	R/W/E
231	1	Write DO Power on value to EEPROM	1	1=write	W (Pulse)
232	1	Write DO Safe value to EEPROM	1	1=write	W (Pulse)
235	0~5	Power on value for DO	1	0=off 1=on (default=0)	R/W/E
267	0~5	Safe value for DO	1	0=off 1=on (default=0)	R/W/E

(1xxxx) DI address					
Begin address	Points	Description	Registers per Point	Range	Access Type
0	0~5	Digital Input	1	0=off 1=on	R
32	0~5	Digital latched status (high)	1	0=no 1=latched	R
64	0~5	Digital latched status (low)	1	0=no 1=latched	R

Appendix C: Modbus Register Tables

(3xxxx) AI address					
Begin address	Points	Description	Registers per Point	Range	Access Type
16	0~5	Low speed (500Hz) digital counter	2	0~4294967296	R

(3xxxx) AI address (Static Channel Number Value)					
Begin address	Points	Description	Registers per Point	Value	Access Type
100	1	DI (channel number)	1	8	R
101	1	DI high/low latch (channel number)	1	8	R
110	1	DO (channel number)	1	8	R
111	1	Power on value for DO (channel number)	1	8	R
112	1	Safe value for DO (channel number)	1	8	R
121	1	Low speed counter (500Hz) (channel number)	1	8	R

(4xxxx) AO address					
Begin address	Points	Description	Registers per Point	Range	Access Type
50	0~5	Preset value for low speed (500Hz) digital counter	2	0~4294967296 (default=0)	R/W/E



Notes:

1. All address in the protocol definition is started from zero. (Base 0)

2. Definition of the Modbus Register table

Access Type:

R: means the value of the address is only readable.

W: means the value of the address can be written.

W (Pulse): means the value of the address can be written but the value will Reset at next loop scan.

E: means the value of the address will be saved into the EEPROM

Appendix D: Modbus Application Notes

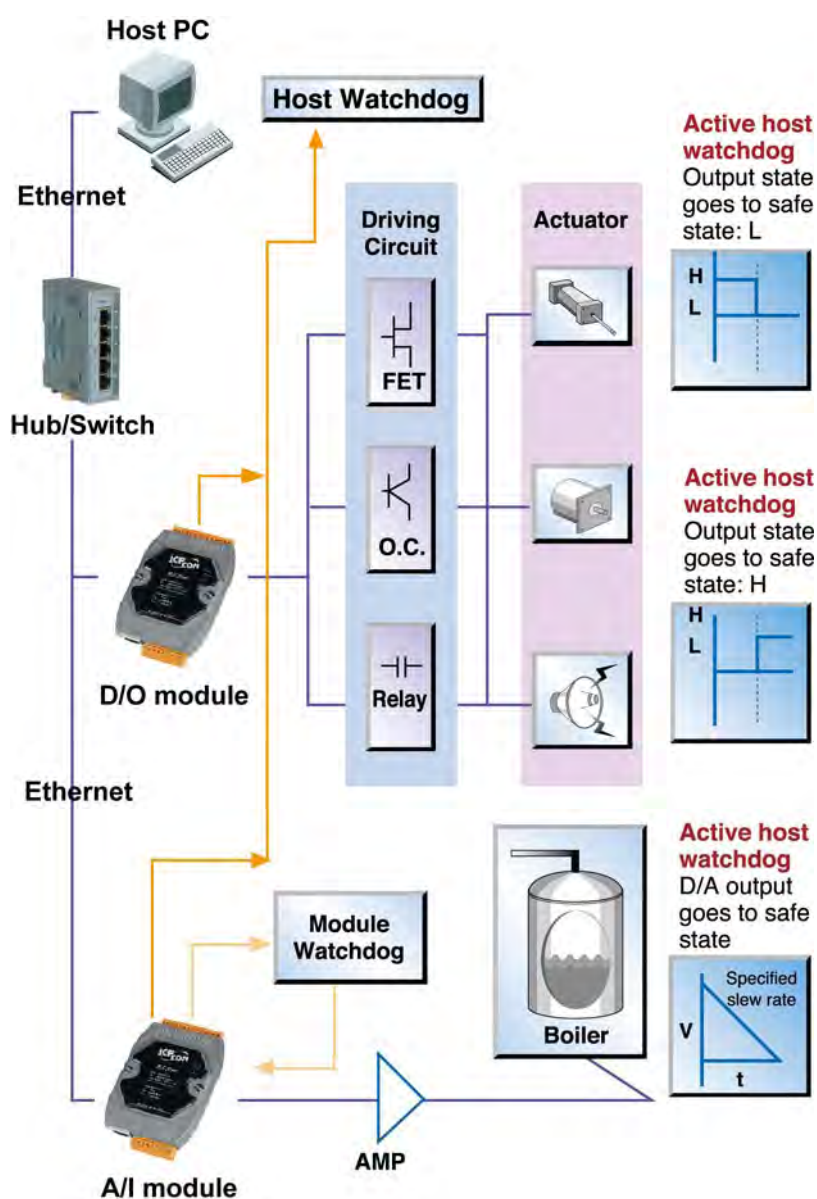
Appendix D: Modbus Application Notes

Dual Watchdog

Dual Watchdog consists of **Module Watchdog** and **Host Watchdog**.

The **Module Watchdog** is a built-in hardware circuit that will reset the CPU module if a failure occurs in either the hardware or the software. If the application does not refresh the watchdog timer within 0.8 seconds, the watchdog circuit will initiate a reset of the CPU.

The **Host Watchdog** is a software function that can be used to monitor the operating status of the host. Its purpose is to prevent network communication problems or a host failure. If the Watchdog timeout interval expires, the module will return all outputs to a predefined Safe value (Refer to the **Safe Value** application note), which can prevent the controlled target from unexpected situation.



AO address **40257** of the ET-7000 series Modbus register is the address of the **Host Watchdog** timer, and will be stored into EEPROM. The WDT function

Appendix D: Modbus Application Notes

will be disabled if the value is set to less than **5** seconds.

Power ON Value

If the ET-7000 series module is reset, the output of the module is set to the predefined Power ON Value for the DO and AO channels.

DO address **00235** of the ET-7000 series Modbus register is the first address of the Power ON value, and the total number of channels depend on the type of module.

For example:

Addresses **00235** to **00240** records the Power ON value for the 6-Channel ET-7060.

Be careful to set the ON value to DO address **00231** to write the DO Power ON value to the EEPROM of the ET-7000 DO module after using Modbus commands (05 or 15) to change the Power ON value.

Set the ON value to DO address, **00233** to write the AO Power ON value to the EEPROM of the ET-7000 AO module after using the Modbus commands (06 or 16) to change the Power ON value.

- **Configuration via Web page**

Browse to the homepage of the ET-7000, and click the “Modbus I/O Settings” link in the Configuration Section of the Main Menu tree.

Modbus Address	Function	Action
435	Power on value for DO	0 OFF ☐ ON ☐
		1 OFF ☐ ON ☐
		2 OFF ☐ ON ☐
		3 OFF ☐ ON ☐
		4 OFF ☐ ON ☐
		5 OFF ☐ ON ☐
		6 OFF ☐ ON ☐
		7 OFF ☐ ON ☐
0=off/1=on (default=0)		

Click the ON/OFF radio box to set the power ON/OFF value and then click the button to enable the settings to take effect.

Safe Value

If the time of the Host PC losing Modbus/TCP communication with the module is greater than the host WatchDog timer setting (called WDT timeout), the output of the Digital and Analog

Appendix D: Modbus Application Notes

channels is set to the Safe Value, and the count of the host WDT events is increased by one.

AO address **40258** is the address of the Host WDT events. The value of the WDT events will be not stored into EEPROM, and will return to 0 after the module is rebooted.

DO address **00267** is the first address of the Safe value and the total number of channels depends on the type of module.

For example:

Address **00267** to **00272** records the Safe value for the 6-Channel ET-7060.

Be careful to set the ON value to DO address **00232** to write the DO Safe value to the EEPROM of the ET-7000 DO module after using Modbus commands (05 or 15) to change the Power ON value.

Set the ON value to DO address **00234** to write the AO Safe value to the EEPROM of the ET-7000 AO module after using Modbus commands (06 or 16) to change the Power ON value.

While the WDT timeout is set, the module can also receive the Modbus/TCP commands (05, 06, 15 and 16) to change the DO or AO value without needing to clear the host watchdog timeout value.

● Configuration via the Web page

Browse to the homepage of the ET-7000, and click the “Modbus I/O Settings” link in the Configuration Section of the Main Menu tree.

515

Safe value for DO

0 OFF ☐ ON ☒

1 OFF ☐ ON ☒

2 OFF ☐ ON ☒

3 OFF ☐ ON ☒

4 OFF ☐ ON ☒

5 OFF ☒ ON ☐

6 OFF ☒ ON ☐

7 OFF ☒ ON ☐

0=off/1=on (default=0)

Submit

Click the ON/OFF radio box to set the Safe value and then click the button to enable the settings to take effect.

Appendix D: Modbus Application Notes

- **View the Power ON/Safe Value via the Web page**

Click the “Web HMI” link in the Web HMI Section of the Main Menu tree.

No	Register	Action
D00	0	ON
D01	1	ON
D02	2	ON
D03	3	ON
D04	4	ON

Normal

Abnormal

Wrong Ch

Invalid channel ...

Appendix D: Modbus Application Notes

Digital Input High/Low Latch

DI Latch Function	Enable Latch	Clear ALL Latch (High)	Clear ALL Latch (Low)	Latch Status (High)	Latch Status (Low)
Address	00150	00032	00033	10032~1XXXX	10064~1XXXX
XXXX: Depends on the type of ET-7000 series module					

For example: The user connects a key switch to the digital input channel of a digital input module and wants to read the keystrokes. The key input is a pulse digital input signal, and the user will miss the stroke. When reading the DI status for DI address **10000** by Modbus



command 02 in A and B position, the response will be that no keystroke has been made and the keystroke information will be lost. In contrast, reading the latched low digital input at DI address **10064** using Modbus command 02 will solve this problem. When issuing 02 command in A and B position, the response denotes that there has been a low pulse between the A and B position indicating a keystroke.

- Configuration via the Web page

Modbus Settings (DI Latch)

Modbus Address	Function	Action
80	Clear all DI latched Status (High)	0 ☐ 1=clear
81	Clear all DI latched status (Low)	0 ☐ 1=clear
350	Enable all DI latched status(High/Low)	OFF ☒ ON ☐ 0=disable/1=enable (default=0)

Submit

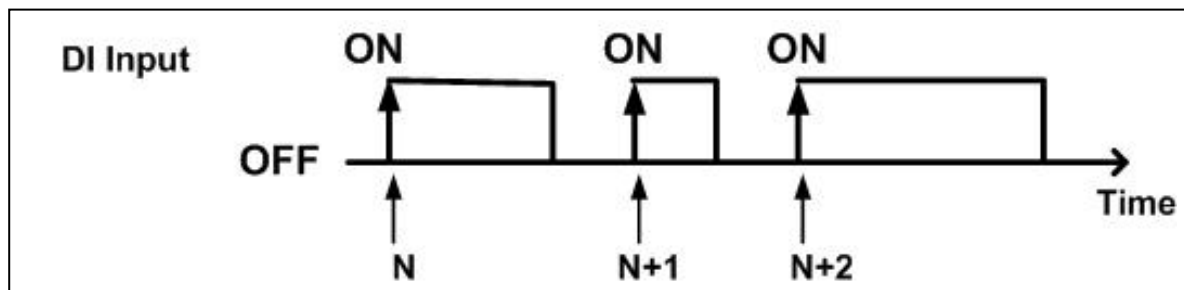
Appendix D: Modbus Application Notes

Digital Input Counter

Low Speed Counter: 500Hz

Valid Range: 0~4294967296 counters

DI status is changed from OFF to ON (rising edge).



DI Counter Functions	Enable Counter	Clear Counter	Counter Value	Preset value for Counter
Address	00151~0XXXX	00034~0XXXX	30016~3XXXX	40050~4XXXX
XXXX: Depends on the type of ET-7000 series module				

Be careful to set the ON value to DO address **00318** to save the Preset value for the DI counter to the EEPROM of the ET-7000 DI module after using Modbus commands (06 or 16) to change the Preset value.

● Configuration via the Web page



Appendix D: Modbus Application Notes

- **View the DI Counter and Latch status via the Web page**

Click the “Web HMI” link in the Web HMI Section of the Main Menu tree.

Stop						
No	Register	Action	Counter&Clear	High Latch	Low Latch	
DI0	0	OFF	0	OFF	OFF	▲
DI1	1	OFF	0	OFF	OFF	≡
DI2	2	OFF	0	OFF	OFF	▼
DI3	3	OFF	0	OFF	OFF	
DI4	4	OFF	0	OFF	OFF	

The DI Counter value is shown in each field of the “Counter & Clear” column, and the can be cleared by clicking the button on the page.

On clicking the button, the counter value will return to 0, such as →

(As long as a preset value for the DI Counter isn’t set).

If the preset value for the DI Counter is set to 2, when the button is clicked and the counter value will return to the preset value, such as → .

The DI latch status is shown in each field of the “High Latch/Low Latch” column.

The entire of DI/DI Counter/Latch status data on this page will be updated automatically for a period time.

Appendix E: JAVA Installation

Is Your Web Browser Java Enabled?

Link to the URLs below to check whether the Java is available on the Web Browser.

1. <http://www.javatester.org/enabled>
2. <http://www.java.com/en/download/help/testvm.xml>

If Java is installed, but not enabled, Sun has instructions to enable the JRE through your Web browser

(http://www.java.com/en/download/help/enable_browser.xml) and to Enable the JRE through the "Java?Plug-in Control Panel".

(http://www.java.com/en/download/help/enable_panel.xml)

Online Download and Installation for the JRE (Java Runtime Environment)- An Example for Windows XP platform

Download and Install

1. Go to Java.com
2. Click on the **Java Software Download** button.
3. Start the installation process:
 - a. Installing JRE on Windows XP with Service Pack 2 (SP2) using Internet Explorer

If you are using Internet Explorer on Windows XP with Service Pack 2 (SP2), you need to complete these steps:

1. An Information Bar dialog box pops up displaying this message:

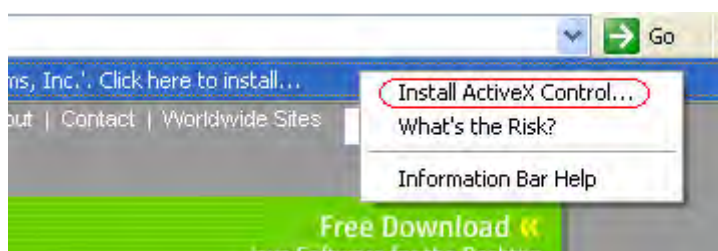


2. Click **OK**. A toolbar displays this message:

Appendix E: JAVA Installation



3. Click on the toolbar and choose: Install ActiveX Control....



A Security Warning dialog box appears.



4. Click Install to start the installation process.
4. The download process starts. During the download, a progress window lets you know the estimated time remaining for the download to finish. The download can take anywhere from a few seconds on a fast Internet connection to half an hour or more on a very slow connection. Once the download is over the installation process will start automatically.

Appendix E: JAVA Installation

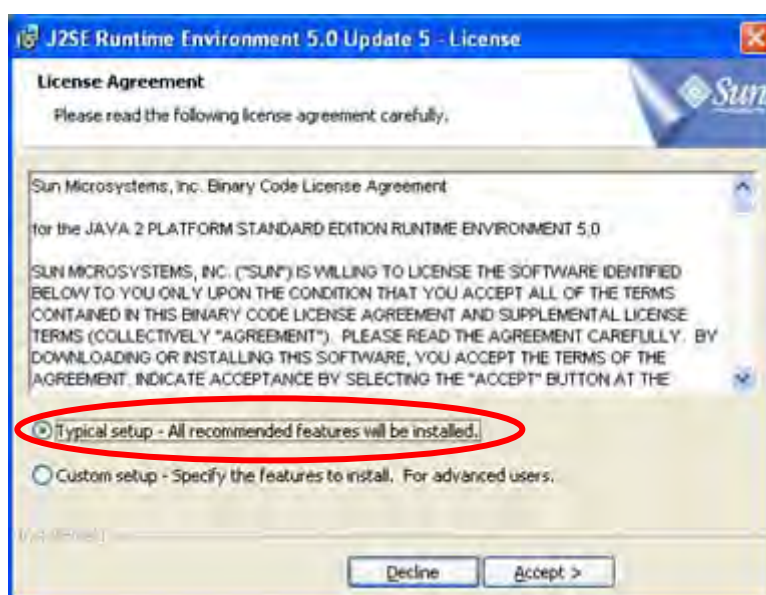


5. The JRE installation starts:

The installer "unpacks" the files needed to continue. A dialog box tracks this process, which takes less than a minute. After briefly displaying a Java logo splash screen, the installer presents the license agreement.

The installer displays a **Setup Type** screen that allows you to choose either a typical or custom setup. We recommend that you choose the **Typical** option (the default selection) unless you are an advanced user who wants more precise control over the components that will be installed.

After ensuring that the **Typical** setup is selected, click the **Next** button to continue with the installation.

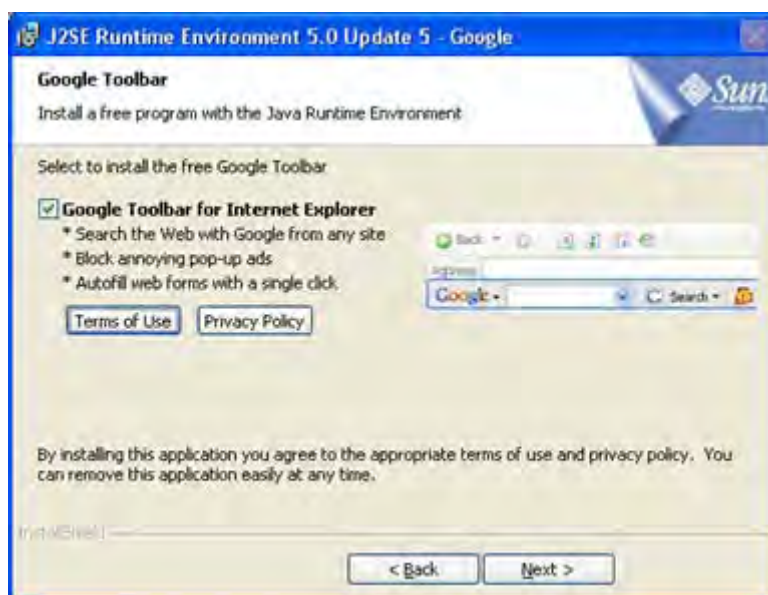


The **Java Runtime Environment 5.0 Update 5 – Google Programs** dialog box will appear. By default **Google Toolbar for Internet Explorer** is checked. Click **Next** button. This will start installing selected programs features including the JRE on your system.

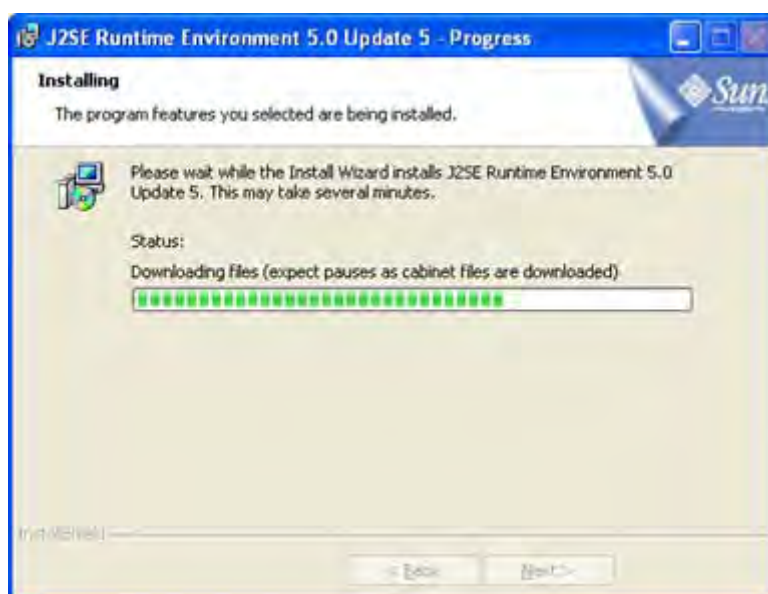
Note: You can choose to install or ignore this useful additional program by checking or

Appendix E: JAVA Installation

unchecking the check box.



Now that you have given the installer all of the information it needs to proceed, progress boxes track the installation process.



A few brief dialogs confirm the last steps of the installation process, and a concluding message appears with the confirmation **"Installation Completed OK."**

Enable and Configure

Once the installation is complete, ensure that the JRE is enabled and configured properly for applets and applications. For instructions to enable the JRE for the browser, such as Internet Explorer, Mozilla, or Netscape, go to:

Enable Java Runtime Environment 5.0 through the Control Panel
(<http://java.com/en/download/help/5000020200.xml>)

Appendix E: JAVA Installation

Enable Java Runtime Environment 5.0 through your Web browser
(<http://java.com/en/download/help/5000020500.xml>)

Configuring proxy settings for Java Runtime Environment 5.0
(<http://java.com/en/download/help/5000020600.xml>)

Test Installation

To test that the JRE is installed, enabled and working properly on your computer, run this test applet from our web site

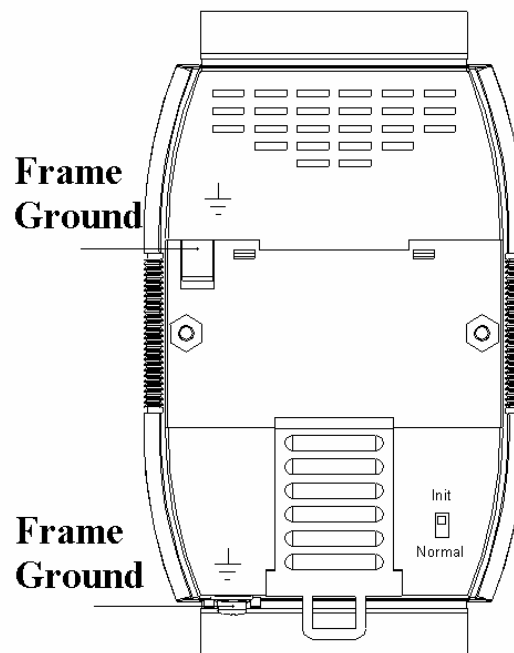
Test your Java Runtime Environment
(<http://java.com/en/download/installed.jsp>)

Appendix F: Frame Ground

Electronic circuits are constantly vulnerable to Electro-Static Discharge (ESD), which become worse in a continental climate area. PET-7000 series modules feature a new design for the frame ground, which provides a path for bypassing ESD, allowing enhanced static protection (ESD) capability and ensures that the module is more reliable.

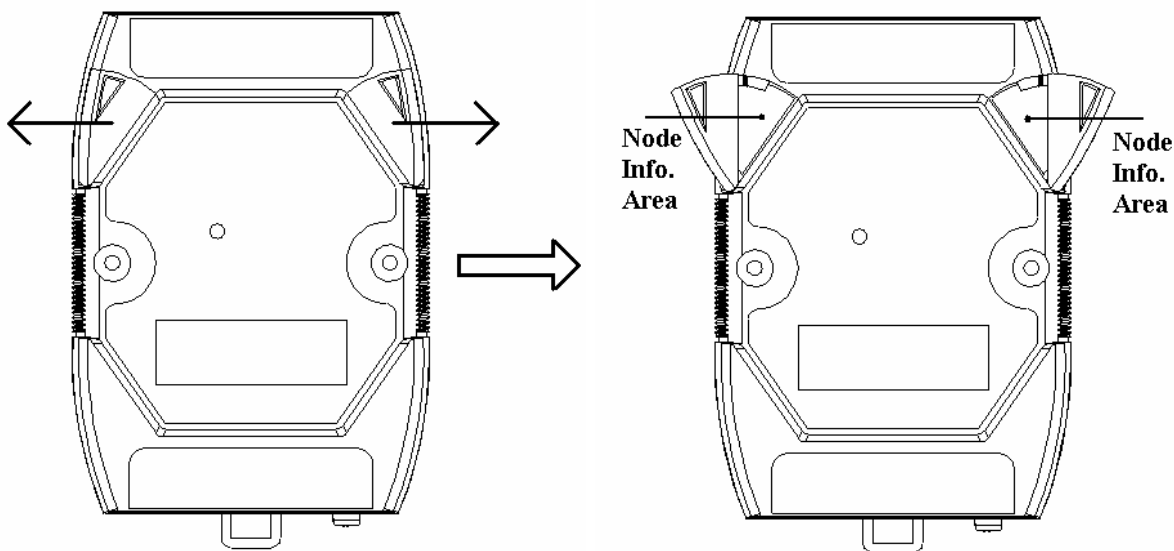
The following options will provide a better protection for the module:

The PET-7000 controller has a metallic board attached to the back of the plastic basket as shown in the Figure F-1 below. When mounted to the DIN rail, connect the DIN rail to the earth ground because the DIN rail is in contact with the upper frame ground as shown in the Figure F-2 below.



Appendix G: Node Information Area

Each PET-7000 module has a built-in EEPROM to store configuration information such as IP address, type code, etc. One minor drawback is that there are no visual indications of the configuration of the module. New PET-7000 modules include node information areas that are protected by a cover, as shown below, and can be used to make a written record of the node information, such as IP address, etc. To access the node information areas, first slide the covers outward, as shown in the figure below.



Appendix H: Technical Support

Should you encounter problems while using your EPT-7000 series module, and are unable to find the help you need in this manual or on our website, please contact ICP DAS Product Support.

Email: service@icpdas.com

Website: <http://www.icpdas.com/service/support.htm>

When requesting technical support, be prepared to provide the following information about your system:

1. Module name and serial number: The serial number can be found printed on the barcode label attached to the cover of the module.
2. Firmware and OS version: See **Section 3.1 Overview** for information regarding the command used to identify the firmware/OS version.
3. Host configuration: Host type and operating system (if needed).
4. If the problem is reproducible, please give full details describing the procedure used to reproduce the problem.
5. Specific error messages displayed. If a dialog box with an error message is displayed, please include the full text of the dialog box, including the text in the title bar.
6. If the problem involves other programs or hardware devices, please describe the details of the problem in full.
7. Any comments and suggestions related to the problem are welcome.

ICP DAS will reply to your request by email within three business days.