



ET-6000 series

Ethernet Remote I/O Module

User's Manual



Warranty

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Manual Revisions

Title: ET-6000 User's Manual

Manual Number: 6PH-002-10

Revision	Date	Effective Pages	Description
1.00	07-02-27	All	Original Issue

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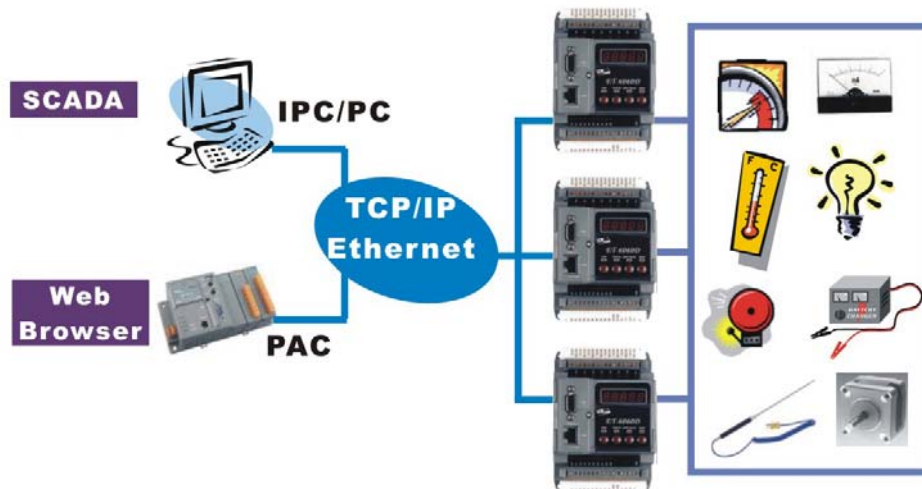
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1. Introduction

The ET-6000 is a web-based Ethernet I/O module. It has a built-in web server that used for all configuration and I/O data monitoring and controlling using a regular web browser dynamically. No extra programming tools or HTML editor are needed. Thus users can easily and safely access the ET-6000 from anywhere at and any time all over the world.

In addition, the ET-6000 also supports various Modbus functions. For example, Modbus/TCP slave, Modbus/TCP to Modbus/RTU gateway, Modbus/RTU master, Modbus/RTU slave, and etc, meaning the ET-6000 can easily be integrated into any SCADA software environment using the Modbus protocol.



The ET-6000 module is designed to be used in industrial monitoring and measurement applications, so the hardware has been manufactured to survive in harsh and noisy environment. As a result, the module contains 3-way isolation against noise and surge signals, has a wide range power input (10~30VDC) and can operate at temperature ranging from -25~+75 C.

Package Checklist

In addition to this manual, the package includes the following items:

- One ET-6000 hardware module
- One Quick Start Manual
- One software utility CD
- One CA0910F download cable
- 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.

Release Notes:

It is recommended that the **release notes** and **README.TXT** file are read before using the controller. The release notes are included in the shipping package and the README.TXT file can be found in the root directory of the enclosed CD. Some important information is provided in the release note and README.TXT file.

1.1 Features

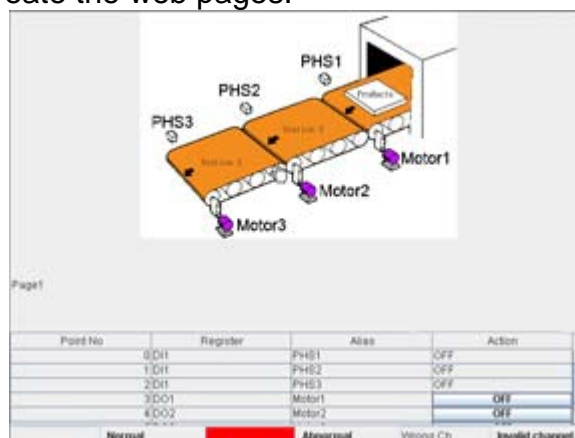
Built-in web server

Each ET-6000 module has a built-in web server that allows the user to easily configure, monitor and control the module from a remote location using 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.



Communication Security

An Account and password is needed when logging into the ET-6000 web server. An IP address filter is also included, which can be used to allow or deny connections from specific IP addresses.

Modbus protocol

- The Modbus/TCP slave function on the Ethernet port can be used to provide data to remote SCADA software.
- The Modbus/RTU slave function on the RS-232 port can be used to connect to a local HMI.
- The Modbus /TCP to Modbus/RTU gateway function through the Ethernet port to the RS-232 port can be used to upgrade a serial device with Ethernet communication ability.

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 16-bit low speed (100Hz) counters.

An LED indicator is used for each DI or DO channel.

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.

3-way isolated noise/surge protection

To protect the hardware from damage caused by noise and surge, the ET-6000 module is designed with isolation circuits for Ethernet, I/O and Power.

Portable Configuration

All configuration settings can be saved to the EEPROM on the ET-6000, which is mounted on a daughter board (called the “portable” board), meaning that the settings can stored and easily backed up and moved.

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

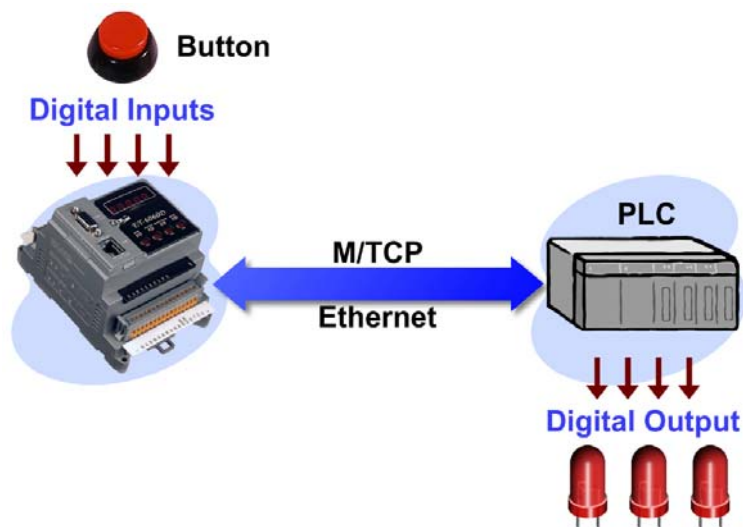
The RJ-45 port support automatic MDI/MDI-x that can automatically detect the type of connection to the Ethernet device without requiring special straight or crossover cables.

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

The ET-6000 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 ET-6000 to operate at temperatures ranging from -25°C and +75°C.

I/O Pair Connection

This function is used to create a DI to DO pair through the Ethernet. Once the configuration is complete, the ET-6000 module can poll the status of local DI channels and then use the Modbus/TCP protocol to continuously write to a remote DO device in the background.



1.2 Specifications

System

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

Communication

- Ethernet Port:
10/100MBaseT, RJ-45 Port
- COM Port
COM1: RS232 (RXD, TXD, GND)

Built-in WatchDog Timer (0.8 seconds)

SMMI (Small Man Machine Interface) (for ET-6000D series only)

- 7-segment LED: 5-digit
- 4 system LED indicators
- 4 push buttons

LED indicators

- Indication for Digital Output
- Indication for Digital Input
- Ethernet (Link/Active)

Isolation

- I/O Isolation: 3000V DC
- Power Isolation: 1000V DC
- Ethernet Isolation: 1500V DC

Power

- Power requirements: +10 to +30 V DC (non-regulated)
- Power consumption: 3.0W

General environment

- Operating temperature: -25°C to +75°C
- Storage temperature: -30°C to +75°C
- Relative humidity: 10%~95% RH, non-condensing

Mechanical

- Dimensions (W × H × D): Dependent on the type of ET-6000 module. Please refer to “**Appendix A Dimensions**” for more detailed information
- Installation: DIN-Rail Mounting

I/O Components

- Dependent on the type of ET-6000 module, please refer to the next chapter for more detailed I/O specifications.

1.3 Module Selection

ET-6000 classification

ETU-6XYZ

ET: Ethernet communication interface

U: Number of units

U: '2' denotes 2 units

U: '3' denotes 3 units

U: Blank means 1 unit

X: Number of the variance

Y: Function code

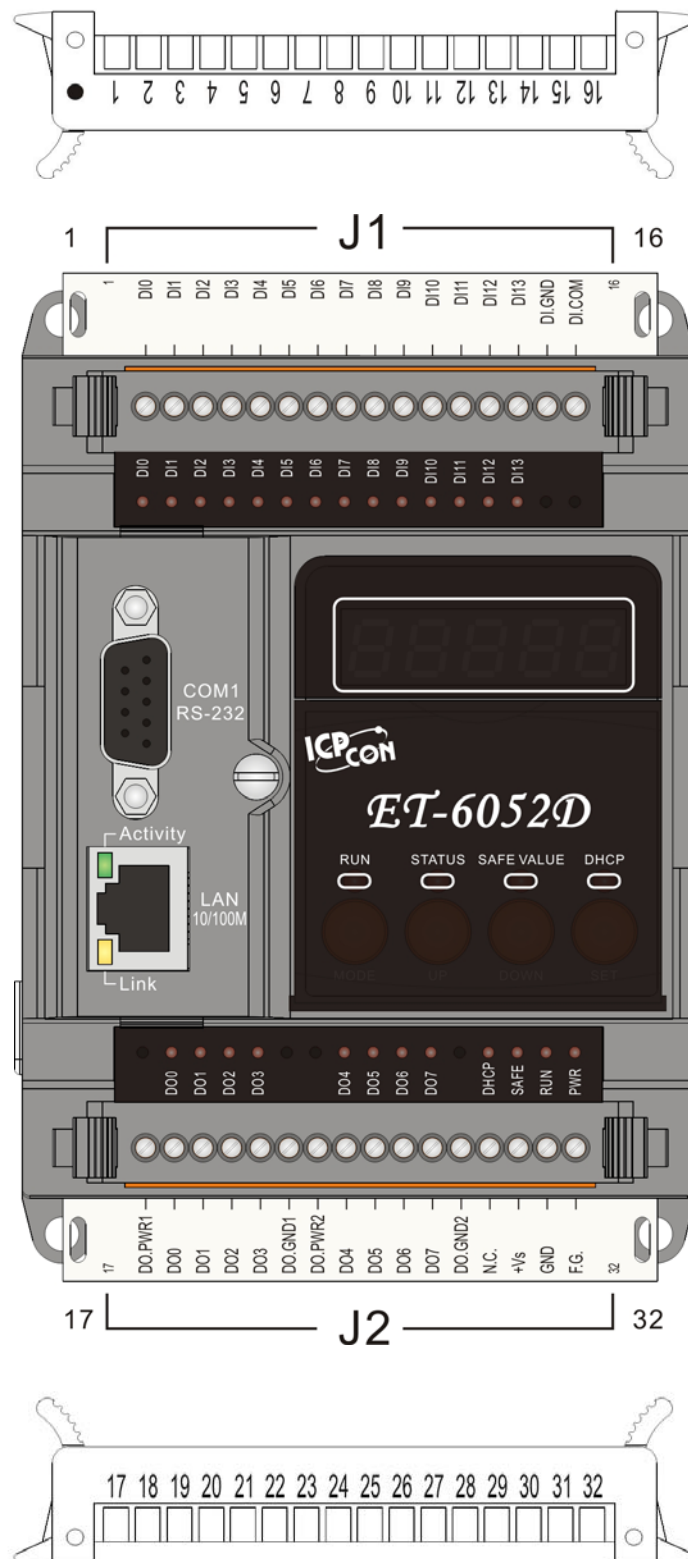
Z: Extension function code

Table 1-1 ET-6000 classification




















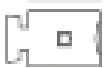
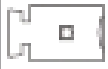
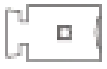








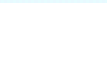
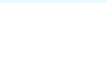
X	Y	Z
Number of variance	1. AI module	3. RTD 4. Transmitter 5. Thermistor 6. Strain Gauge 7. Analog Input 8. Thermocouple
	2. AO module	1. Voltage output 2. Current Output
	3. Reserved	
	4. DIO module	Number of variance
	5. DIO module	Number of variance
	6. DIO module with relay	Number of variance
	7.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

ET-6052D

Layout



ET-6052 Pin Assignment:

J1	Pin Assignment Name	J2	Pin Assignment Name
 01	DI0	 17	DO.PWR1
 02	DI1	 18	DO0
 03	DI2	 19	DO1
 04	DI3	 20	DO2
 05	DI4	 21	DO3
 06	DI5	 22	DO.GND1
 07	DI6	 23	DO.PWR2
 08	DI7	 24	DO4
 09	DI8	 25	DO5
 10	DI9	 26	DO6
 11	DI10	 27	DO7
 12	DI11	 28	DO.GND2
 13	DI12	 29	N.C.
 14	DI13	 30	+Vs
 15	DI.GND	 31	GND
 16	DI.COM	 32	F.G.

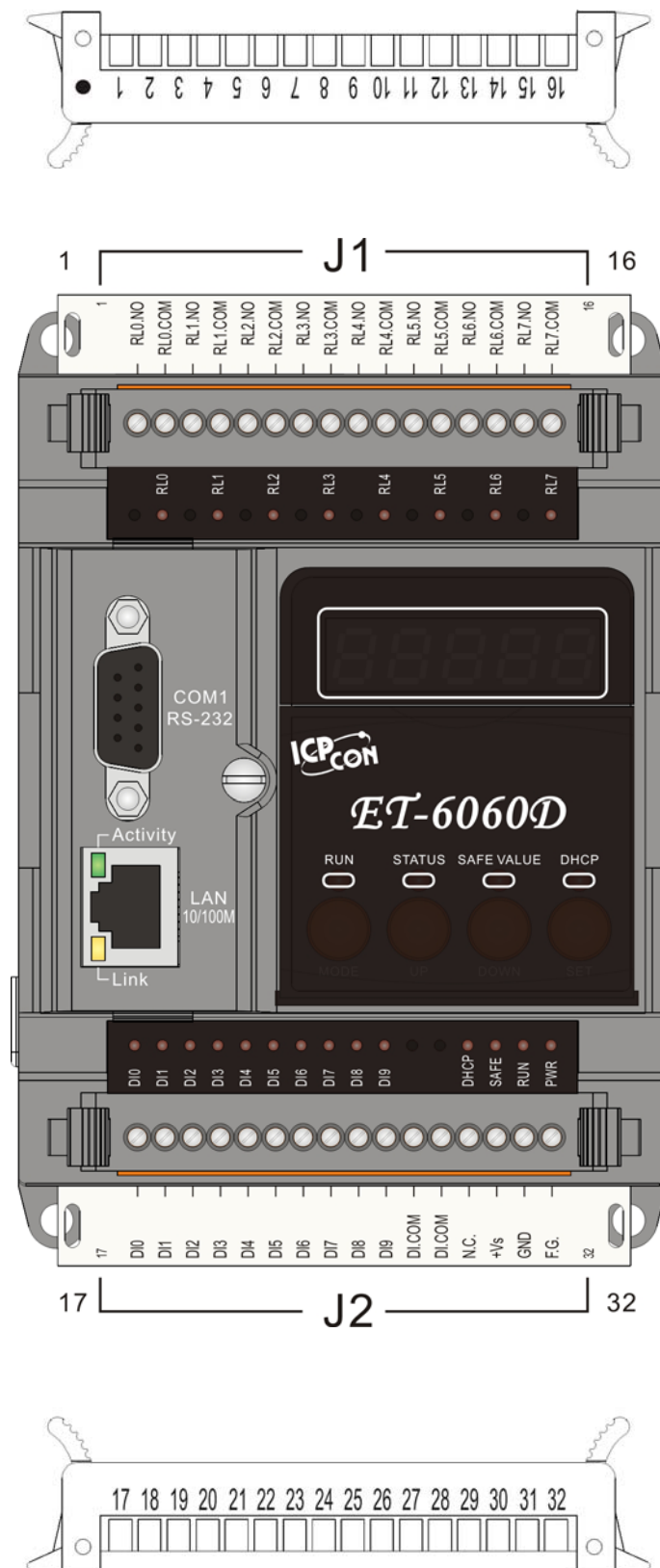


ET6052 (D) I/O Specifications:











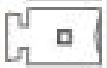

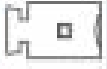







Digital Output	
Output Channels	8 (Source)
LED Indicator	Yes
Output Type	Isolated (N-MOSFET, Open Source)
Max Load Current	1.4A/ channel
Load Operating Voltage	10Vdc to 40Vdc
External Power Voltage Range	12Vdc to 45Vdc
Over-Voltage Protection	+48 VDC
Direct Drive Power Relay Module	Yes
Short Circuit Protection and Current Limitation	Yes
Switching Inductive Loads	Yes
Intra-module Isolation, Field to Logic	3750V rms
Digital Input	
Input Channels	14 (Sink/Source)
LED Indicator	Yes
Input Type	Isolation, One Common/Ground for All Digital Inputs
Input Impedance	10K Ohms, 0.5W (For Wet Contact)
Dry Contact (Source)	On Voltage Level: Close to GND
	Off Voltage Level: Open
Wet Contact (Sink/Source)	On Voltage Level: +10 to 50Vdc
	Off Voltage Level: +3V (Max.)
Each Channel Can Be To Dry Contact or Wet Contact	Yes
Counters	Channels: 14
	Max. Input Frequency: 100Hz
	Min. Pulse Width: 5ms
Intra-module Isolation, Field to Logic	3750V rms

ET-6060D

Layout



ET-6060 Pin Assignment:

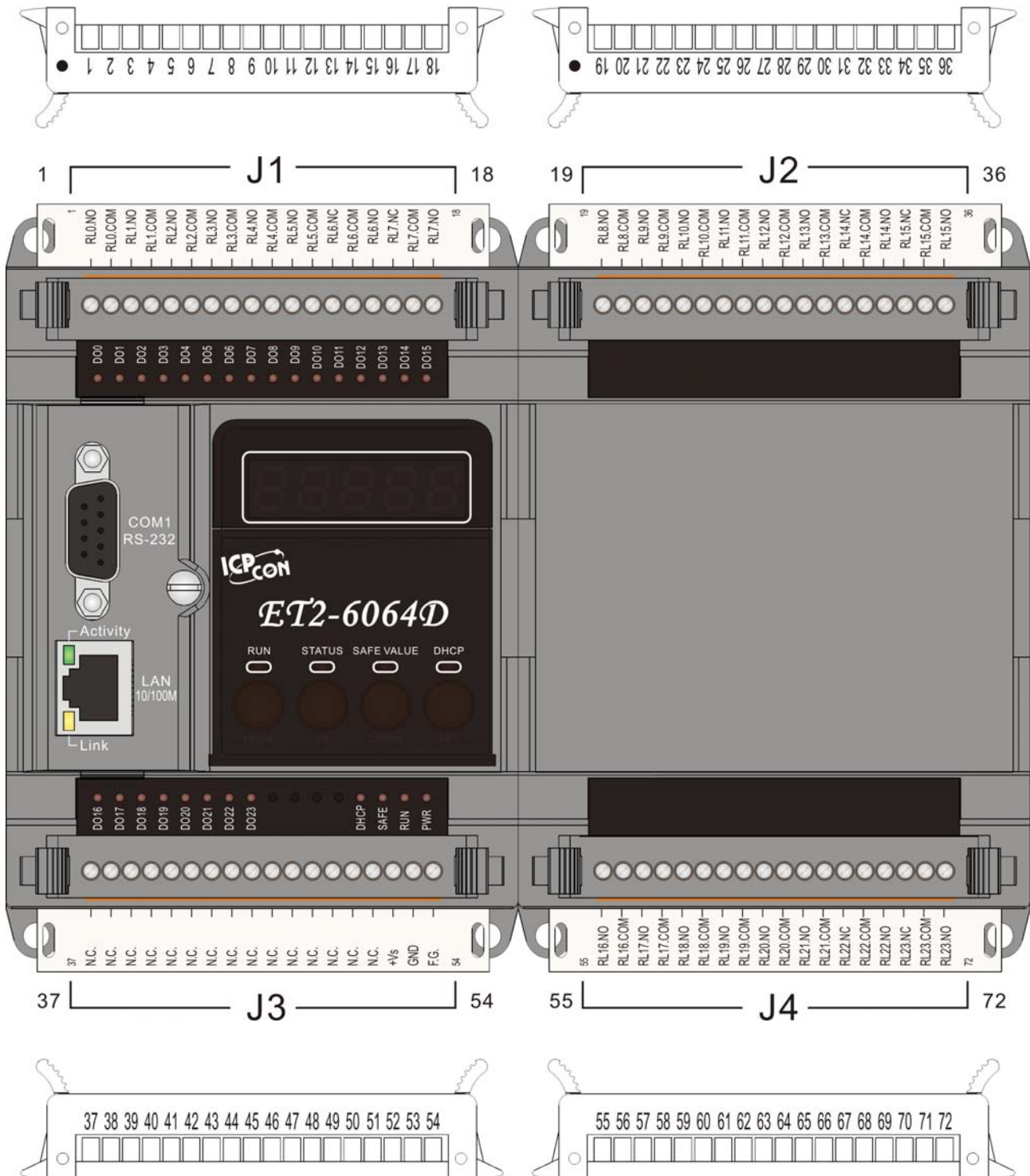
J1	Pin Assignment Name	J2	Pin Assignment Name
 01	RL0.NO	 17	DI0
 02	RL0.COM	 18	DI1
 03	RL1.NO	 19	DI2
 04	RL1.COM	 20	DI3
 05	RL2.NO	 21	DI4
 06	RL2.COM	 22	DI5
 07	RL3.NO	 23	DI6
 08	RL3.COM	 24	DI7
 09	RL4.NO	 25	DI8
 10	RL4.COM	 26	DI9
 11	RL5.NO	 27	DI.COM
 12	RL5.COM	 28	DI.COM
 13	RL6.NO	 29	N.C.
 14	RL6.COM	 30	+Vs
 15	RL7.NO	 31	GND
 16	RL7.COM	 32	F.G.

ET6060 (D) I/O Specifications:





































Digital Output	
Output Channels	8
LED Indicator	Yes
Output Type	Power Relay, Form A (Normal Open)
Operating Voltage Range	5 ~ 240VAC (47~63Hz)
	5 ~ 24VDC
Relay Contact Voltage Range	0~ 250VAC (47~63Hz)
	0~ 28VDC
Max. Load Current	3.0 A/Channel
Max. Operate Time	15 milliseconds Max.
Max. Release Time	3 milliseconds Max.
Insulation Resistance	Min. 1,000 MOhms, at 500VDC
Dielectric Strength	Between Open Contacts: 750VAC 50/60Hz (at 1 Minute)
	Between Coil and Contacts: 4,000VAC 50/60Hz (at 1 Minute)
Surge Strength	10,000V (at 1.2*50us)
Relay Life	Mechanical: 10 million operations at no Load Condition
	Electrical: 100, 000, 28VDC@5A min. , Resistive
Digital Input	
Input Channels	10 (Sink/ source)
LED Indicator	Yes
Input Type	Isolation, Two Common for All Digital Inputs
On Voltage Level	+10V ~ 50V
Off Voltage Level	+3V max
Input Impedance	10K Ohms, 0.66W
Counters	Channels: 10
	Max. Input Frequency: 100Hz
	Min. Pulse Width: 5ms
Intra-module Isolation, Field to Logic	3750V rms





































ET2-6064 (D)

Layout



ET2-6064(D) Pin Assignment:

J1	Pin Assignment Name	J2	Pin Assignment Name
	01 RL0.NO		19 RL8.NO
	02 RL0.COM		20 RL8.COM
	03 RL1.NO		21 RL9.NO
	04 RL1.COM		22 RL9.COM
	05 RL2.NO		23 RL10.NO
	06 RL2.COM		24 RL10.COM
	07 RL3.NO		25 RL11.NO
	08 RL3.COM		26 RL11.COM
	09 RL4.NO		27 RL12.NO
	10 RL4.COM		28 RL12.COM
	11 RL5.NO		29 RL13.NO
	12 RL5.COM		30 RL13.COM
	13 RL6.NC		31 RL14.NC.
	14 RL6.COM		32 RL14.COM
	15 RL6.NO		33 RL14.NO
	16 RL7.NC		34 RL15.NC
	17 RL7.COM		35 RL15.COM
	18 RL7.NO		36 RL15.NO

J3		Pin Assignment Name	J4		Pin Assignment Name
	37	N.C.		55	RL16.NO
	38	N.C.		56	RL16.COM
	39	N.C.		57	RL17.NO
	40	N.C.		58	RL17.COM
	41	N.C.		59	RL18.NO
	42	N.C.		60	RL18.COM
	43	N.C.		61	RL19.NO
	44	N.C.		62	RL19.COM
	45	N.C.		63	RL20.NO
	46	N.C.		64	RL20.COM
	47	N.C.		65	RL21.NO
	48	N.C.		66	RL21.COM
	49	N.C.		67	RL22.NC
	50	N.C.		68	RL22.COM
	51	N.C.		69	RL22.NO
	52	+Vs		70	RL23.NC
	53	GND		71	RL23.COM
	54	F.G.		72	RL23.NO



ET2-6064 (D) I/O Specifications:

Digital Output	
Output Channels	18
LED Indicator	Yes
Output Type	Power Relay, Form A (Normal Open)
Operating Voltage Range	5 ~ 240VAC (47~63Hz)
	5 ~ 24VDC
Relay Contact Voltage Range	0~ 250VAC (47~63Hz)
	0~ 28VDC
Max. Load Current	3.0 A/Channel
Max. Operate Time	15 milliseconds Max.
Max. Release Time	3 milliseconds Max.
Insulation Resistance	Min. 1,000 MOhms, at 500VDC
Dielectric Strength	Between Open Contacts: 750VAC 50/60Hz (at 1 Minute)
	Between Coil and Contacts: 4,000VAC 50/60Hz (at 1 Minute)
Surge Strength	10,000V (at 1.2*50us)
Relay Life	Mechanical: 10 million operations at no Load Condition
	Electrical: 100, 000, 28VDC@5A min. , Resistive
Output Channels	6
LED Indicator	Yes
Output Type	Power Relay, Form C (Normal Open and Close)
Operating Voltage Range	5 ~ 240VAC (47~63Hz)
	5 ~ 24VDC
Relay Contact Voltage Range	0~ 250VAC (47~63Hz)
	0~ 30VDC
Max. Load Current	2.0 A/Channel
Max. Operate Time	5 milliseconds Max.
Max. Release Time	5 milliseconds Max.
Insulation Resistance	Min. 1,000 MOhms, at 500VDC
Dielectric Strength	Between Open Contacts: 1,000Vrms (at 1 Minute)
	Between Coil and Contacts: 1,500Vrms (at 1 Minute)
Surge Strength	2,500V (at 1.2*50us)



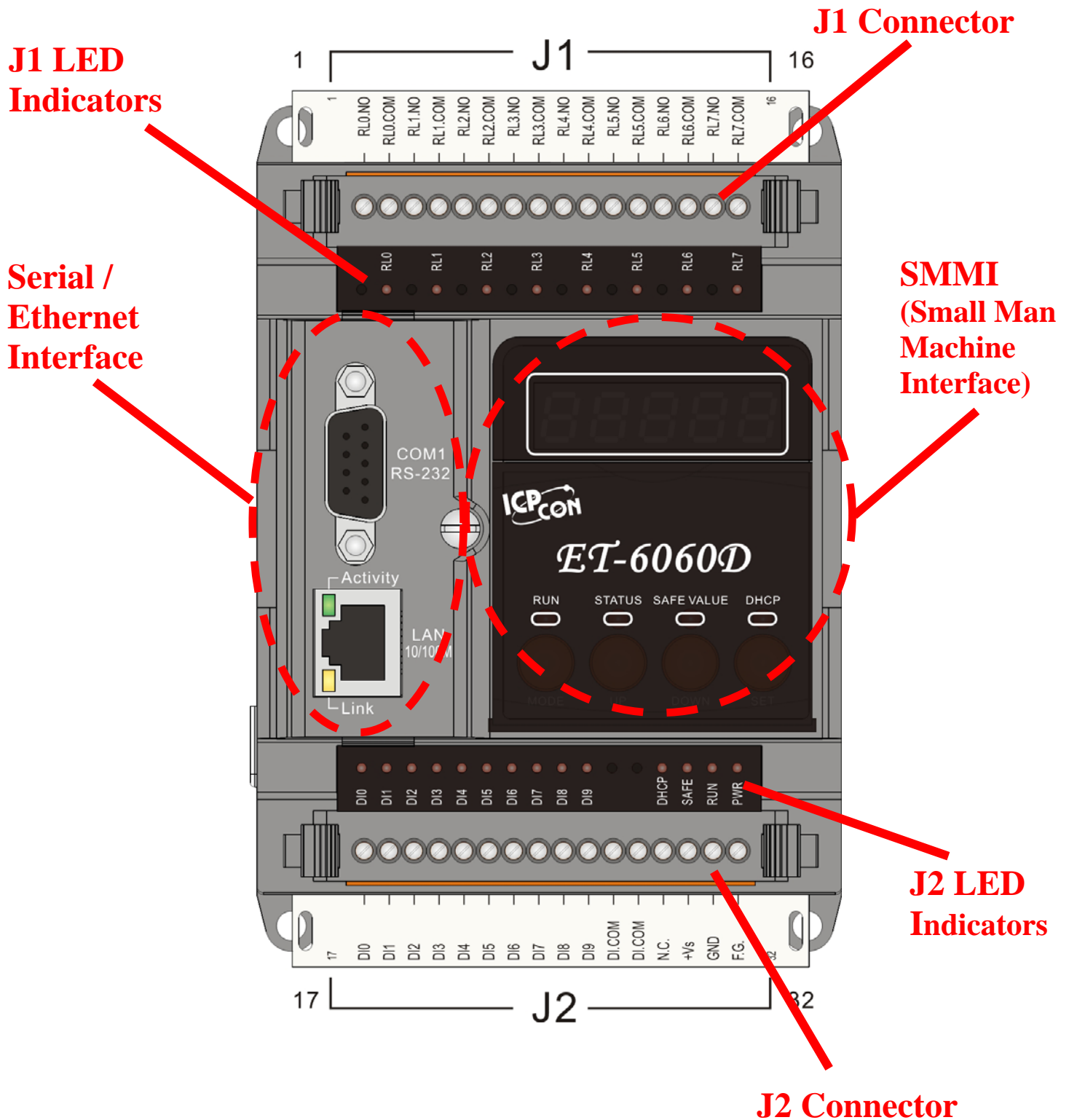
Chapter 1 Introduction

Relay Life	Mechanical: 100 million operations at no Load Condition
	Electrical: 100, 000, 30VDC@2A min. Resistive

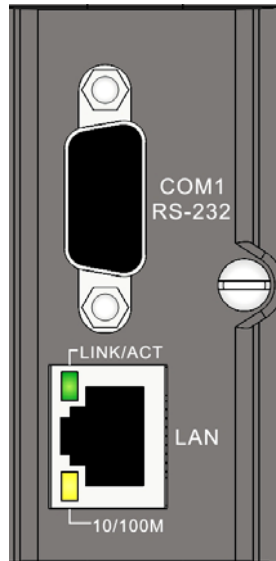
1.4 View of the ET-6000

1.4.1 Front Panel Description

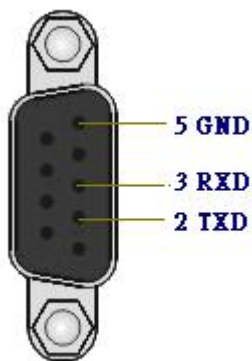
Single Unit (ET-6XXX)



Serial/Ethernet Interface



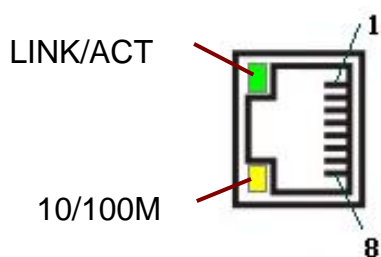
RS-232 Port



Female 9-Pin D-Sub (DTE)

Pin	Description
1	N/A
2	TX (Transmit Data)
3	RX (Receive Data)
4	N/A
5	GND (Signal Ground)
6	N/A
7	N/A
8	N/A
9	N/A

Ethernet Port



RJ45 Port Pin Assignments

Pin	Description
1	TX+
2	TX-
3	RX+
4	<No connection>
5	<No connection>
6	RX-
7	<No connection>
8	<No connection>

Table 1-2 RJ45 LED

Name	LED Action	Function
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

J1 Connector

Refer to **Sec.1.3 Module Selection** for more details regarding the pin assignment of the J1 Connector for all types of single unit ET-6000 series modules.

J1 LED Indicators

Refer to **Sec.1.3 Module Selection** for more details regarding the J1 LED Indicators for all types of single unit ET-6000 series modules.

J2 Connector

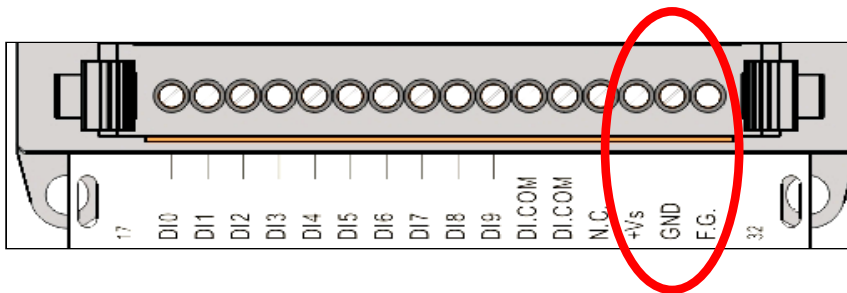


Table 1-3 J2 Connector

Pin number	Name	Function
30	+VS	The ET-6000 series can be powered using a 10-30V DC supply
31	GND	Ground connection
32	F.G.	Frame Ground

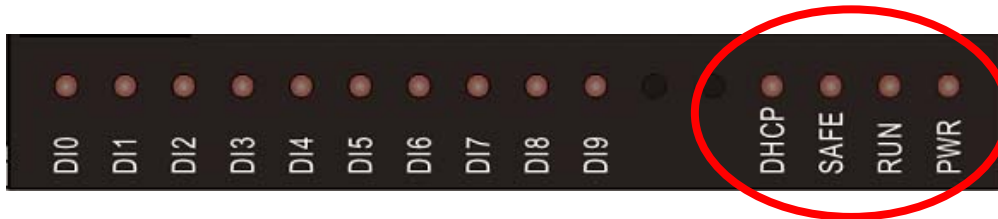
The definition of the 3 pins above is applicable to all types of the single unit ET-6000 series modules (Single unit). The definition of the other pins is dependent on the different type of ET-6000 series module.



Note:

Appendix G describes how to connect the Frame Ground to the ET-6000 series module.

J2 LED Indicators

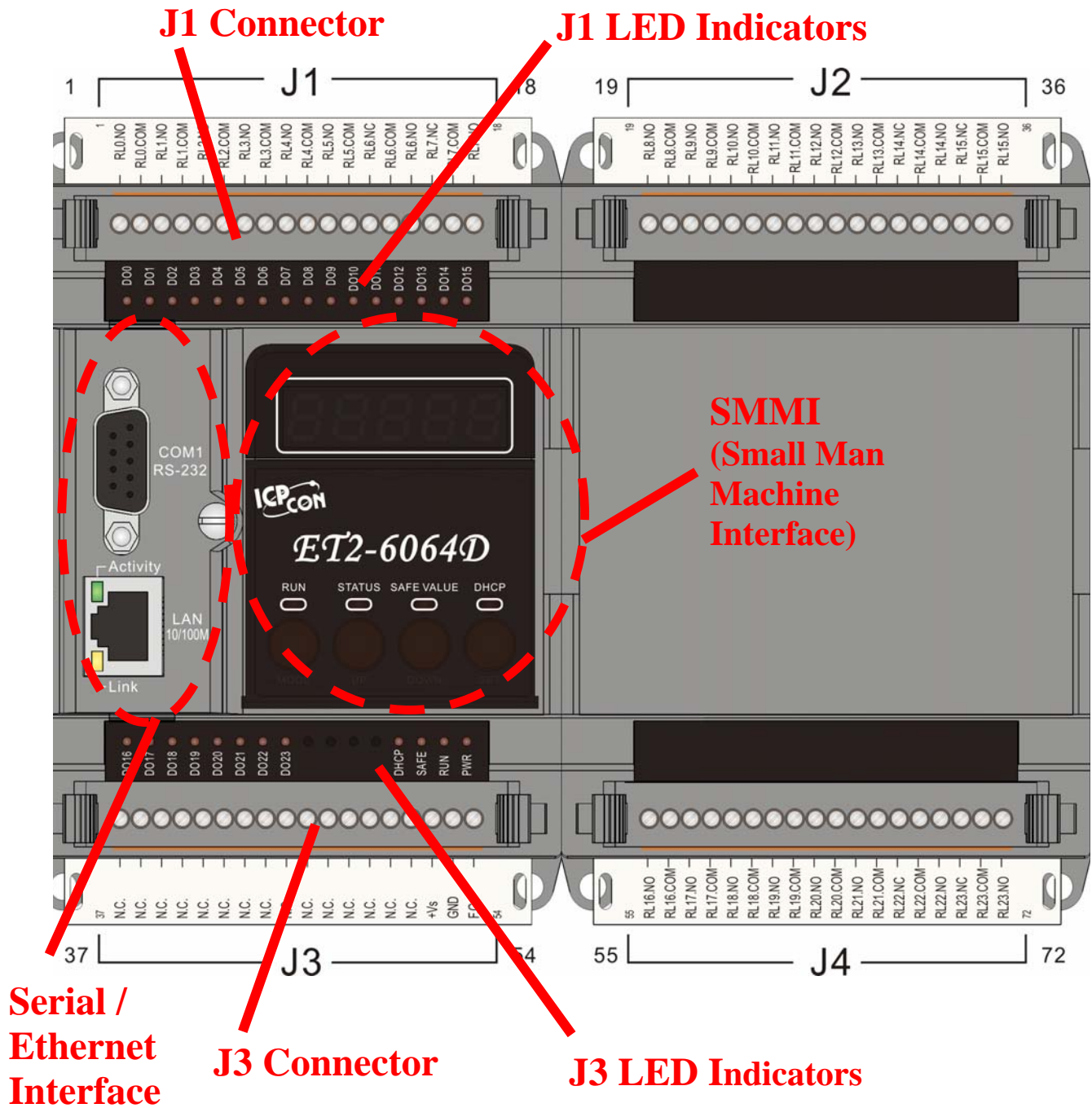


The 4 LED Indicators at the far right is applicable for all types of single unit ET-6000 series modules.

Name	LED Action	Function
PWR	ON/OFF	Power ON/ Power OFF
RUN	Flashing	Firmware is running
SAFE	ON/OFF	Safe value triggered/Un-triggered
DHCP	ON/OFF	DHCP enabled/ DHCP disabled

All other LED indicators are dependent on the different type of single unit ET-6000 series module.

Two Units (ET2-6XXX)



Serial/Ethernet Interface

The definition of the two interfaces is same as for a single unit ET-6000 series module.

J1 Connector

Refer to **Sec.1.3 Module Selection** for more details regarding the pin assignment of the J1 Connector for all types of two- unit ET-6000 series modules.

J1 LED Indicators

Refer to **Sec.1.3 Module Selection** for more details regarding the J1 LED Indicators for all types of two-unit ET-6000 series modules.

J3 Connector (Two Units)

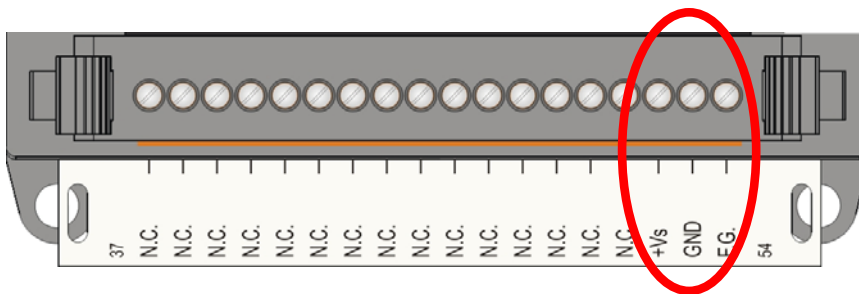


Table 1-4 J3 Connector

Pin number	Name	Function
52	+VS	The ET-6000 series can be powered using a 10-30V DC supply
53	GND	Ground connection
54	F.G.	Frame Ground

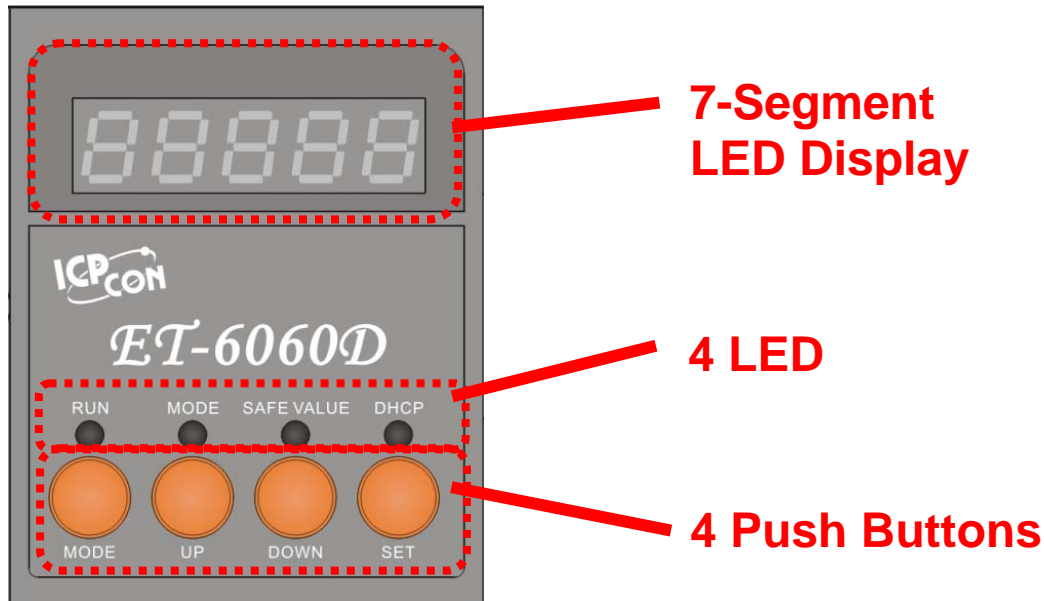
The definition of the 3 pins above is applicable to all types of the two units ET-6000 series modules (Two units). The definition of the other pins is dependent on the different types of the two units ET-6000 series module.

J3 LED Indicators



The definition of 4 LED Indicators at the far right is same as for a single unit ET-6000 series module. All other LED indicators are dependent on the different type of two-unit ET-6000 series modules.

1.4.2 SMMI



All types of ET-6000D series module have the same SMMI format (7-Segment LED Display, 4 LED Indicators and 4 Push Buttons).

7-Segment LED Display

This display consists of five 7-Segment LEDs. The most important information related to the ET-6000D series can be classified as follows:

Group-ID **11111**: Indicates the IP information and DHCP status of the ET-6000D module.

Group-IP **22222**: Indicates the Baud Rate of the ET-6000D module COM port.

Group-IP **33333**: Indicates the Data format and operation mode of the ET-6000D module COM port

Group-IP **44444**: Indicates the number of clients connected to the ET-6000D module.

1. The format of the IP-information is as follows:

5-digit LED Group-ID:**11111**

LED-1: Indicator, which can be either 1,2,3,4, or 5

LED-2~LED-5: the IP address, which can be 0~9.

A "1." shown on LED-1 denotes the first number of the IP address.

A "2." shown on LED-1 denotes the second number of the IP address.

A "3." shown on LED-1 denotes the third number of the IP address.

A "4." shown on LED-1 denotes the fourth number of the IP address.

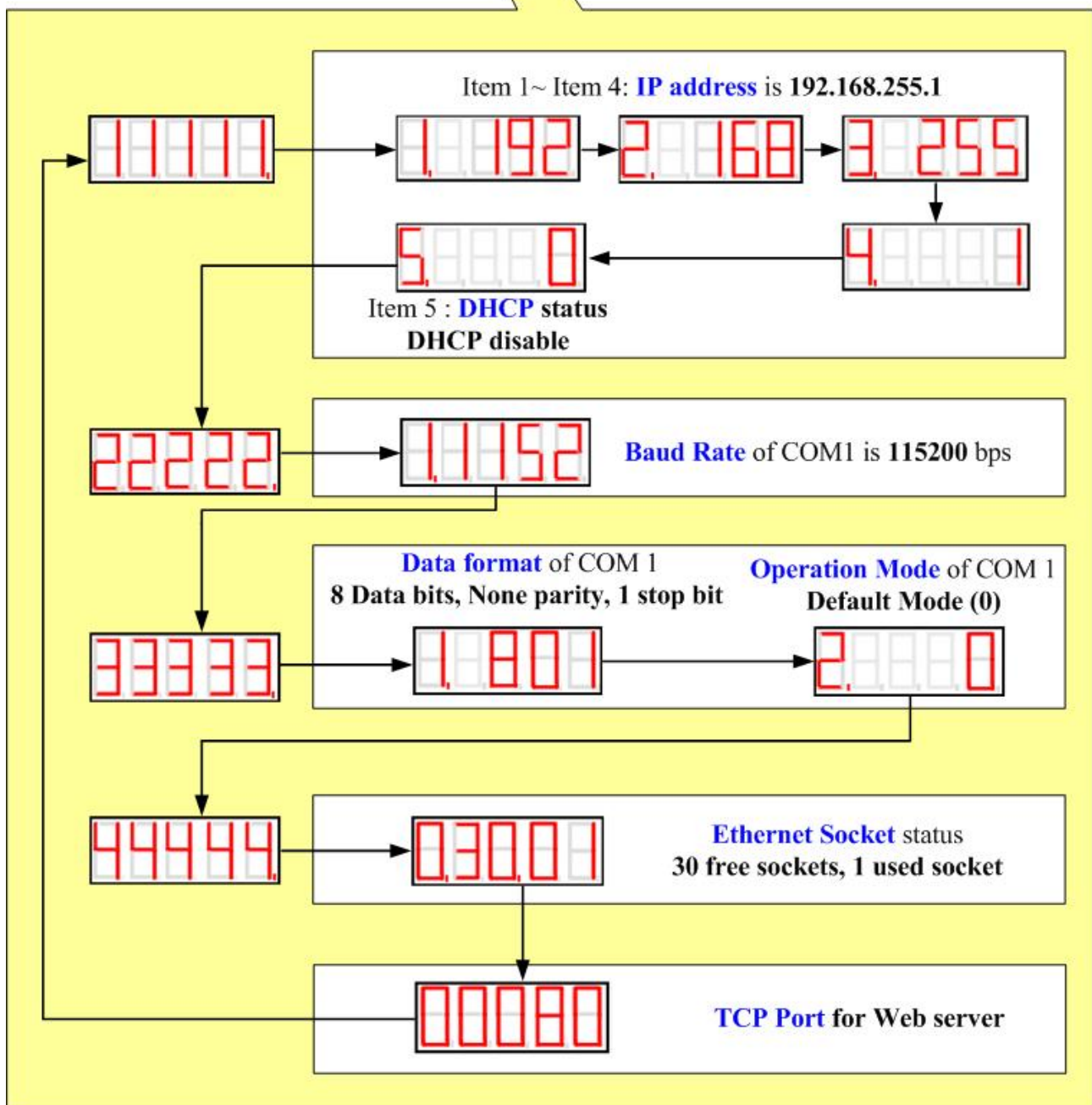
A "5." shown on LED-1 denotes the DHCP status.

Eg. "5.____0", 0 (Disabled) and "5.____1", 1(Enabled)

The LED will initially show the Group-ID, and then show the IP address as indicated in the diagram below. If the IP address is changed, the value displayed will change immediately.

The default shipping IP = **192.168.255.1**.

The LED-display sequence is shown in the diagram below.





Note:

Only the display version modules (**ET-6000D** series) include a 5-digit 7-segment LED. The **ET-6000** series is the non-display version.

2. The format of COM Port Baud Rate is as follows:

5-digit LED Group-ID:**22222**

LED-1: COM Port number

LED-2~LED-5: Displays the Baud Rate and is determined as (Baud Rate/100)

Therefore, a displayed value of 1.1152 means that the Baud Rate of COM1= 115200 bps.

3. The format of the COM port is Data as follows:

5-digit LED Group-ID:**33333**

LED-1: COM port number

LED-3: Data bit: 5, 6, 7 or 8

LED-4: Parity bit, 0=No parity, 1=Odd parity, 2=Even parity

LED-5: Stop bit, 1 or 2

The default operation mode of the COM port is 5 (Console mode)

Refer to **Appendix C** for more details regarding the operation modes of the COM port.

4. The format of the Ethernet socket information is as follows:

5-digit LED Group-ID:**44444**

LED-1: Indicator, which is 0.

LED-2~LED-3: The number of free sockets available. (Default is 30 for the ET-6000)

LED-4~LED-5: The number of sockets currently being used by clients. (Default is 0)

If a client connects to the ET-6000, the number of free-sockets will be decreased and the number of used-sockets will be increased. If the number of free-sockets is reduced to 0, then no extra clients can connect to the ET-6000. The default number of free-socket for the ET-6000 is 30. Therefore, the server allows up to 30 clients to connect to a single ET-6000.

The TCP port for the Web server is a well-known port used for TCP/IP communication, and the default is 80.



Note:

If the 5-digit LED does not display the information as above, the following steps should be taken:

- Switch the Power off
- Check that the Init/Normal switch is in the Normal position. (Refer to **Sec 1.4.3** Left Panel Description)
- Switch the Power on and double check the displayed data.

Four LED Indicators

Table 1-5 Four LED Indicators

Name	LED Action	Function
RUN	Flashing	Firmware is running
MODE	ON/OFF	SMMI mode/Normal mode
SAFE VALUE	ON/OFF	Safe value triggered / Un-triggered
DHCP	ON/OFF	DHCP enabled/ DHCP disabled

Four Push Buttons



Close the Cover

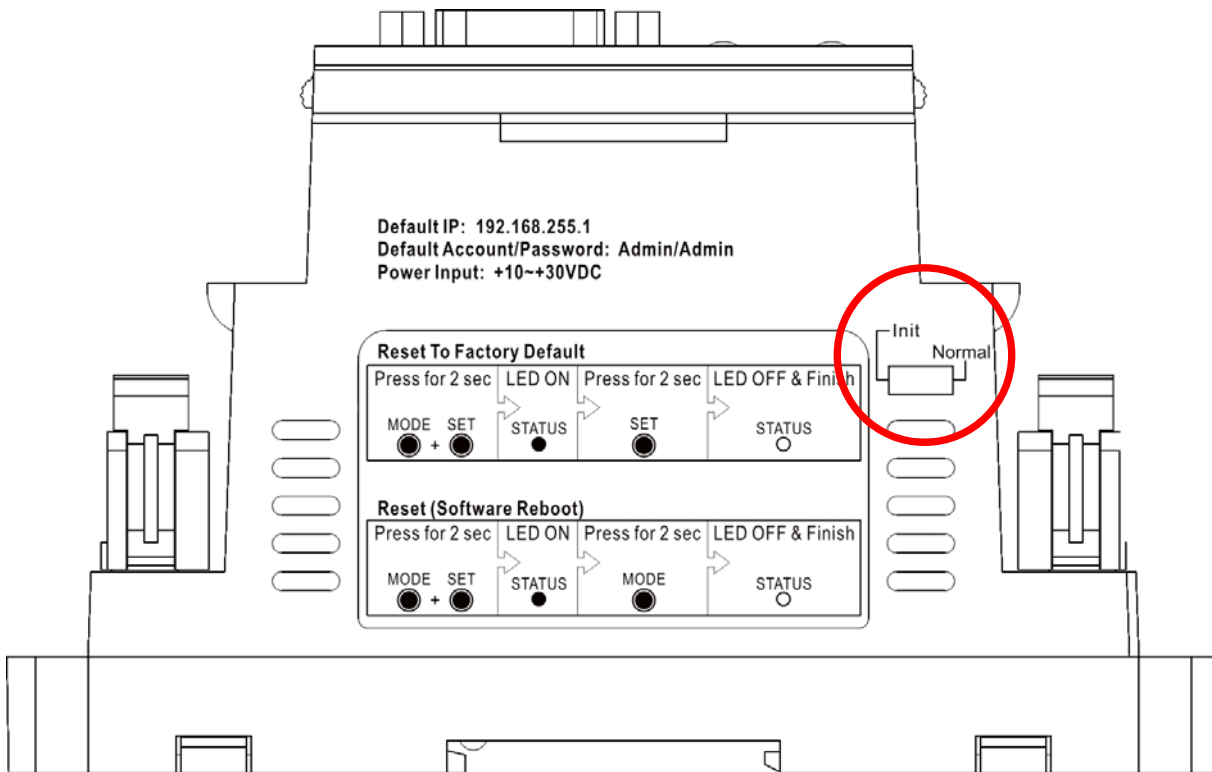


Lift the Cover

Refer to **Section 2.2** for more details regarding how use four SMMI Menu buttons to set Network configuration. Refer to **Section 2.3.2** for more information about setting the factory defaults for the ET-6000.

You must left the acrylic cover of the ET-6000 before pressing the 4 push buttons.

1.4.3 Left Panel Description



Init/Normal switch

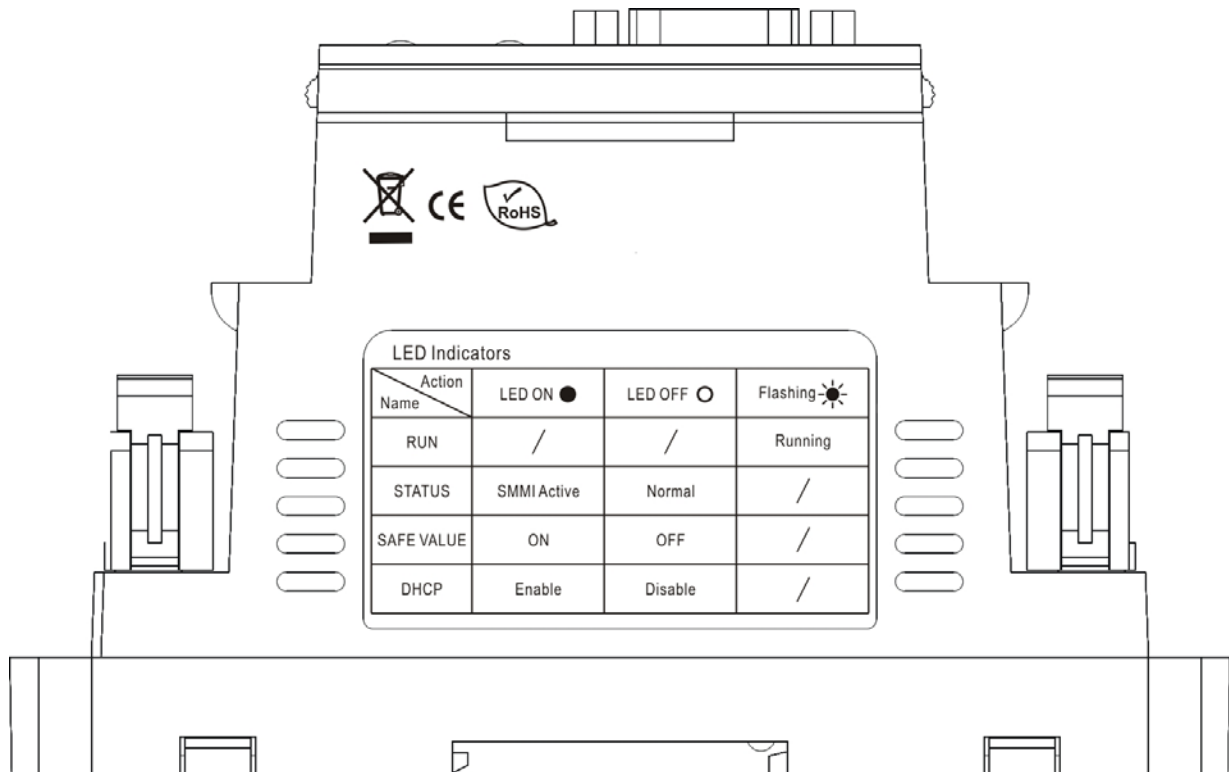
Init mode: MiniOS7 configuration mode

Normal mode: Firmware running mode

In the ET-6000 series, the Switch is ALWAYS in the Normal position. Only when updating the ET-6000 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.

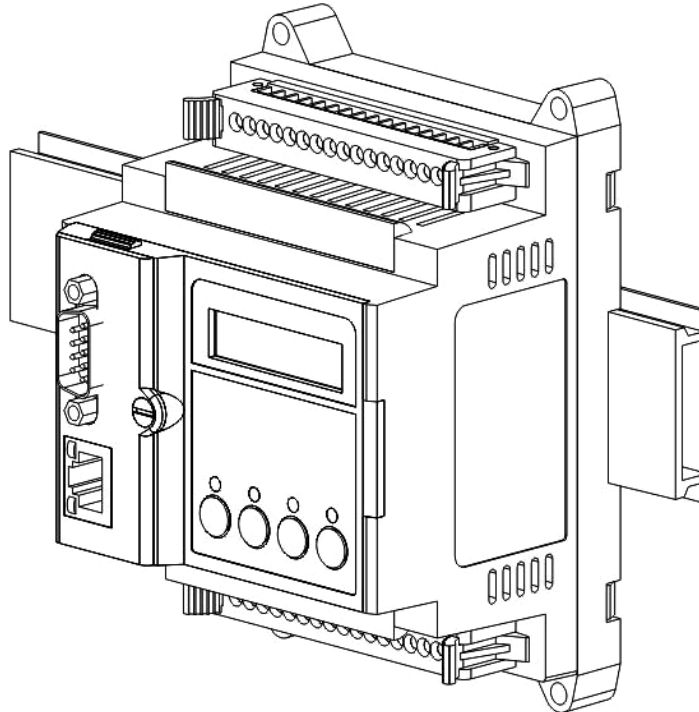
1.4.4 Right Panel Description



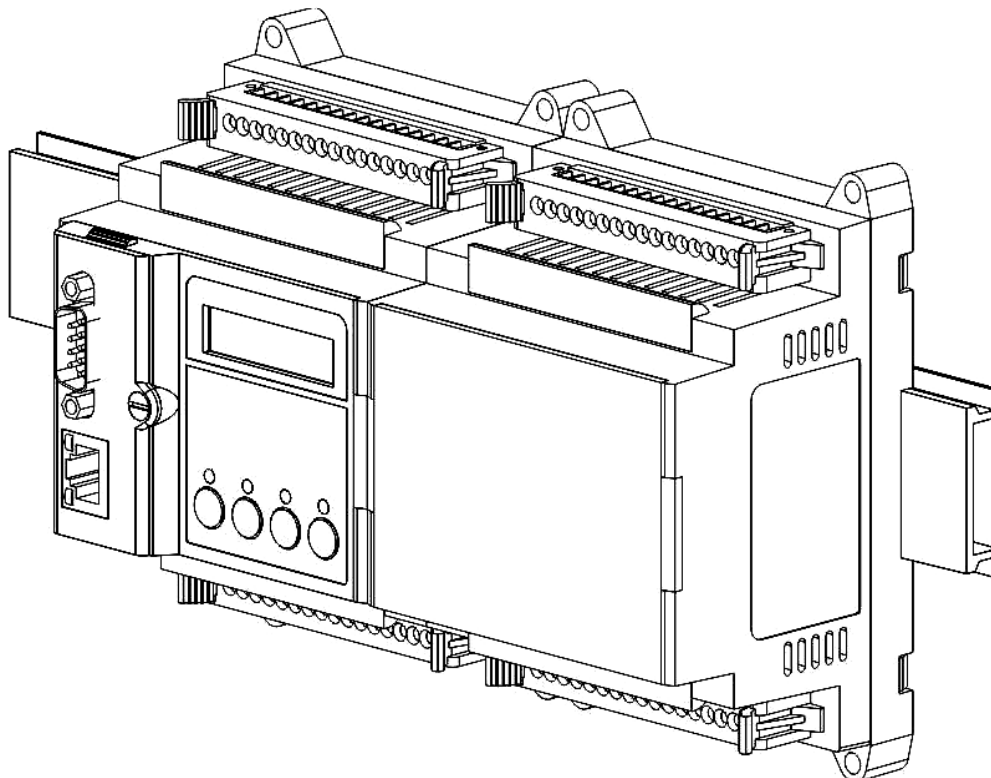
1.5 ET-6000 installation

1.5.1 Mounting the ET-6000

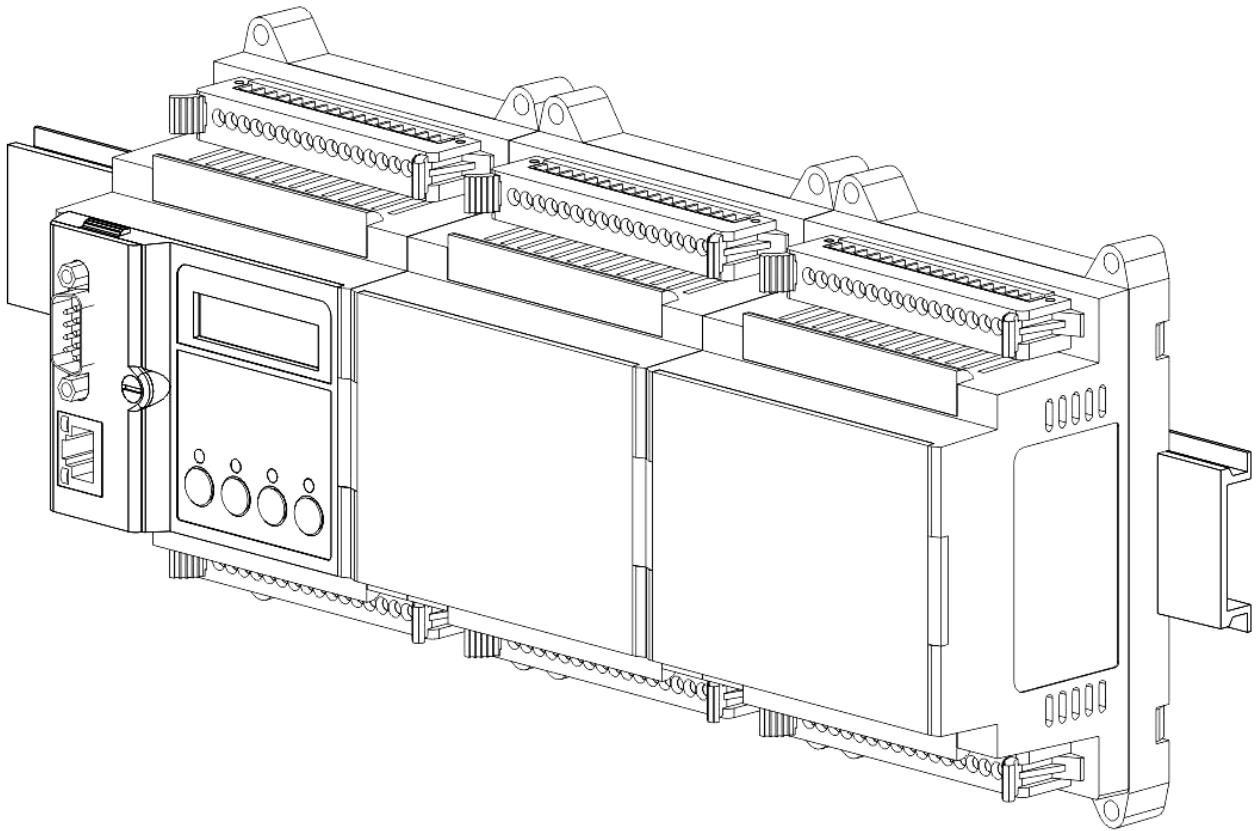
Din-Rail Mounting (Single Unit)



Din-Rail Mounting (Two Units)

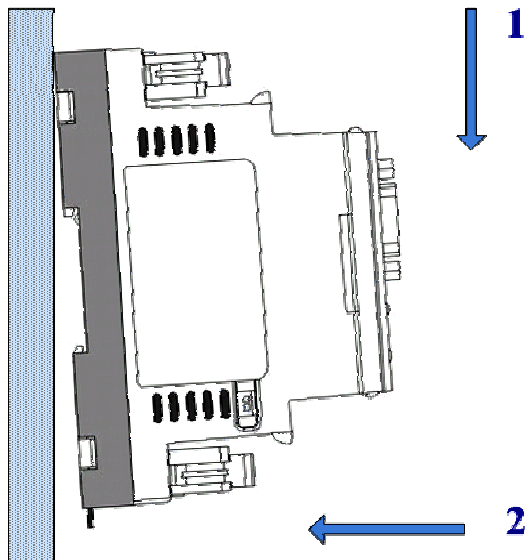


Din-Rail Mounting (Three Units)

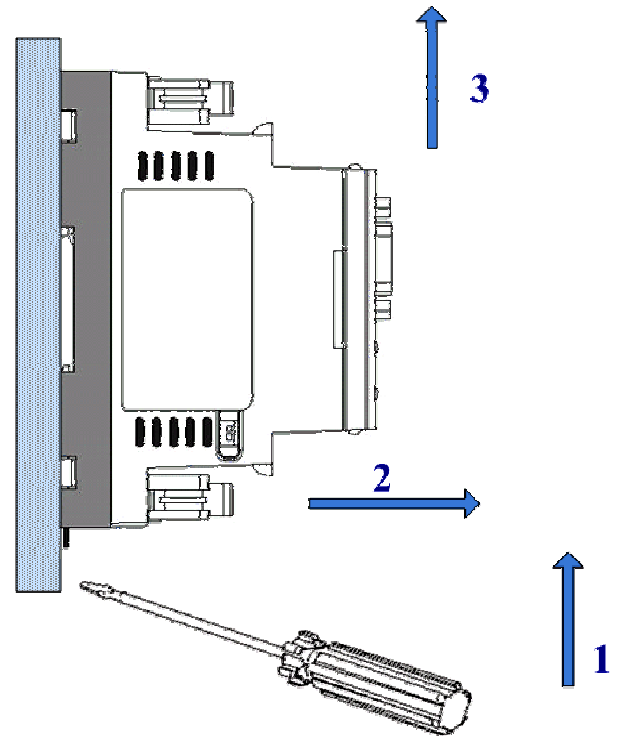


- Snap the ET-6000 onto the DIN-rail (refer to the Snap On picture below)
 - Snap the ET-6000 off from the DIN-rail (refer to the Snap Off picture below)

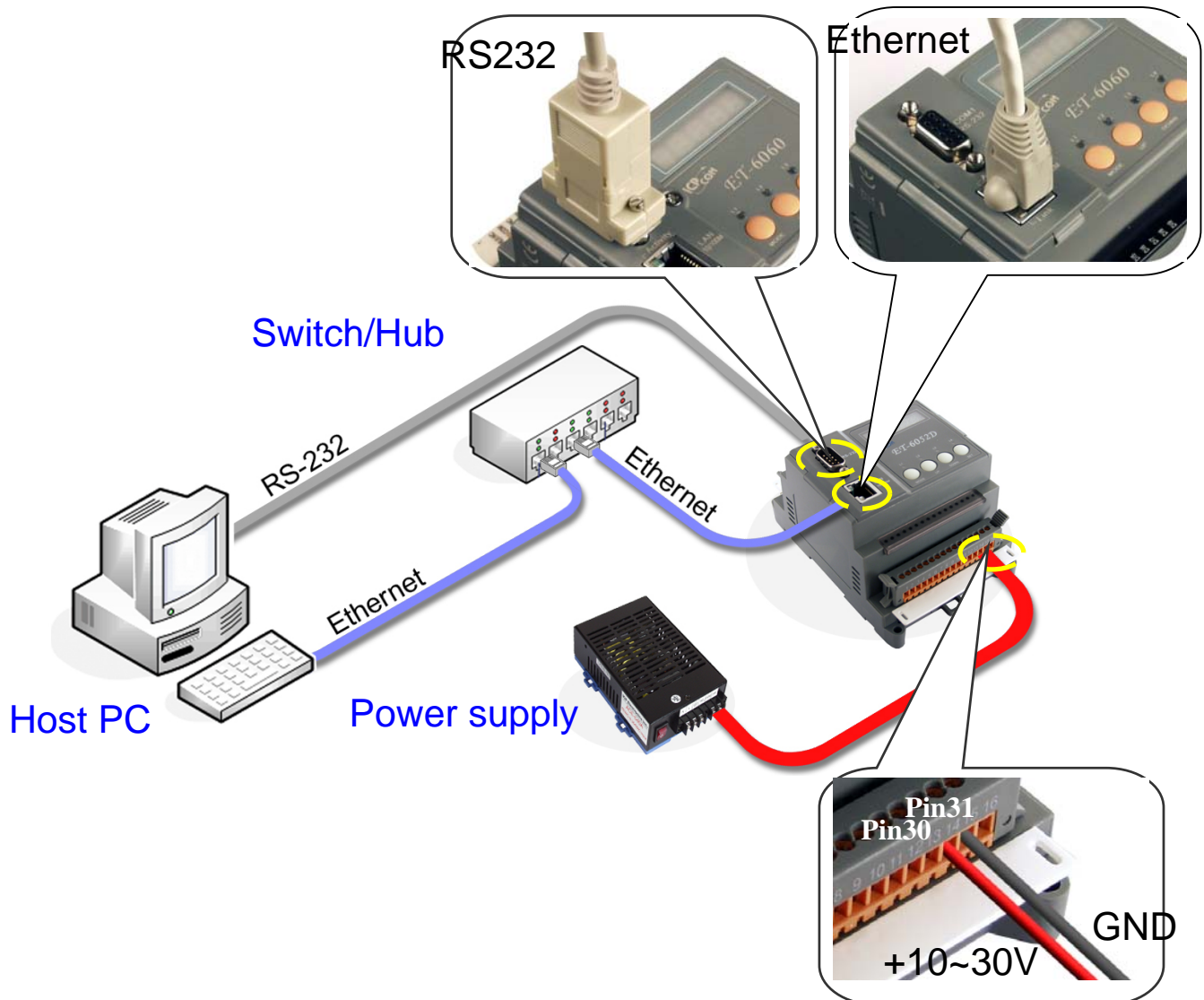
Snap On



Snap Off



1.5.2 Connecting the Hardware



Step 1: Connect the RS-232 download-cable (CA0910F) between the ET-6000 and COM Port the Host PC, as shown in the diagram above

Step 2: Apply the power (+Vs, GND) to the ET-6000. +Vs can be in a range from +10 to +30V DC.



Notes:

- In single unit ET-6000 series modules, V+ is connected to **Pin 30** of the J2 connector, and GND is connected to **Pin 31** of the J2 connector.
- In a two-unit, V+ is connected to **Pin 52** of the J3 connector, and GND is connected to **Pin 53** of the J3 connector.
- Refer to **Sec. 1.4.1 Front Panel Description** for more details regarding pin assignments.

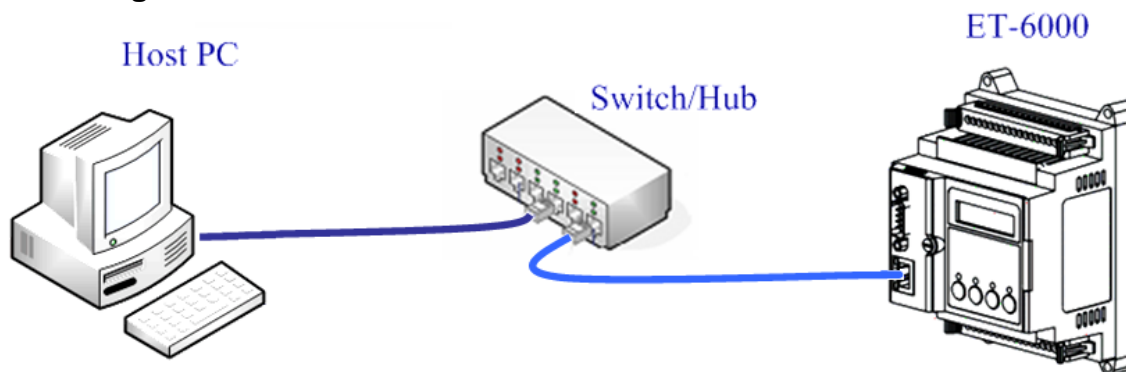
- Step 3: Check that the 5-digit 7-SEG LED continuously shows the group ID information from 11111 to 44444. (If the Module is an ET-6000 series module without a 7-SEG LED Display, ignore this step)
- Step 4: Check that the “RUN” LED on the ET-6000 is periodically ON for 0.5 seconds and then OFF for 0.5 seconds.

**Note:**

Only display versions of the module will include a 5-digit 7-SEG LED Display. A detailed description of the 7-SEG LED Display can be found in **Sec. 1.4.2**.

1.5.3 Ethernet cable wiring

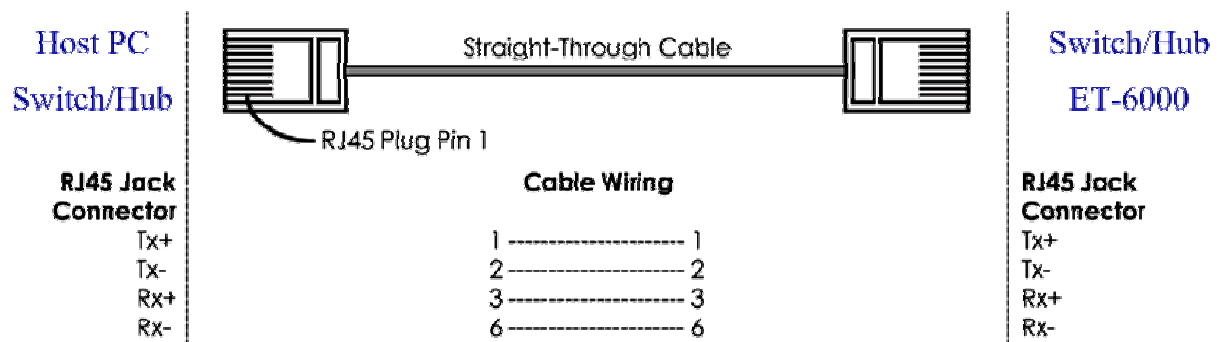
Connecting the ET-6000 to Switch or Hub



Connecting the ET-6000 to a Host PC



As a result of the automatic MDI / MDI-X crossover for plug-and-play on the ET-6000 RJ45 port, there is no need to a crossover cable to connect the ET-6000 to the Host PC, and only a general straight-through cable is needed to make the connection. The straight-through cable is shown as follows:



RJ-45 Cables Wiring Standard

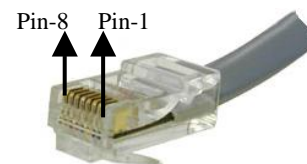
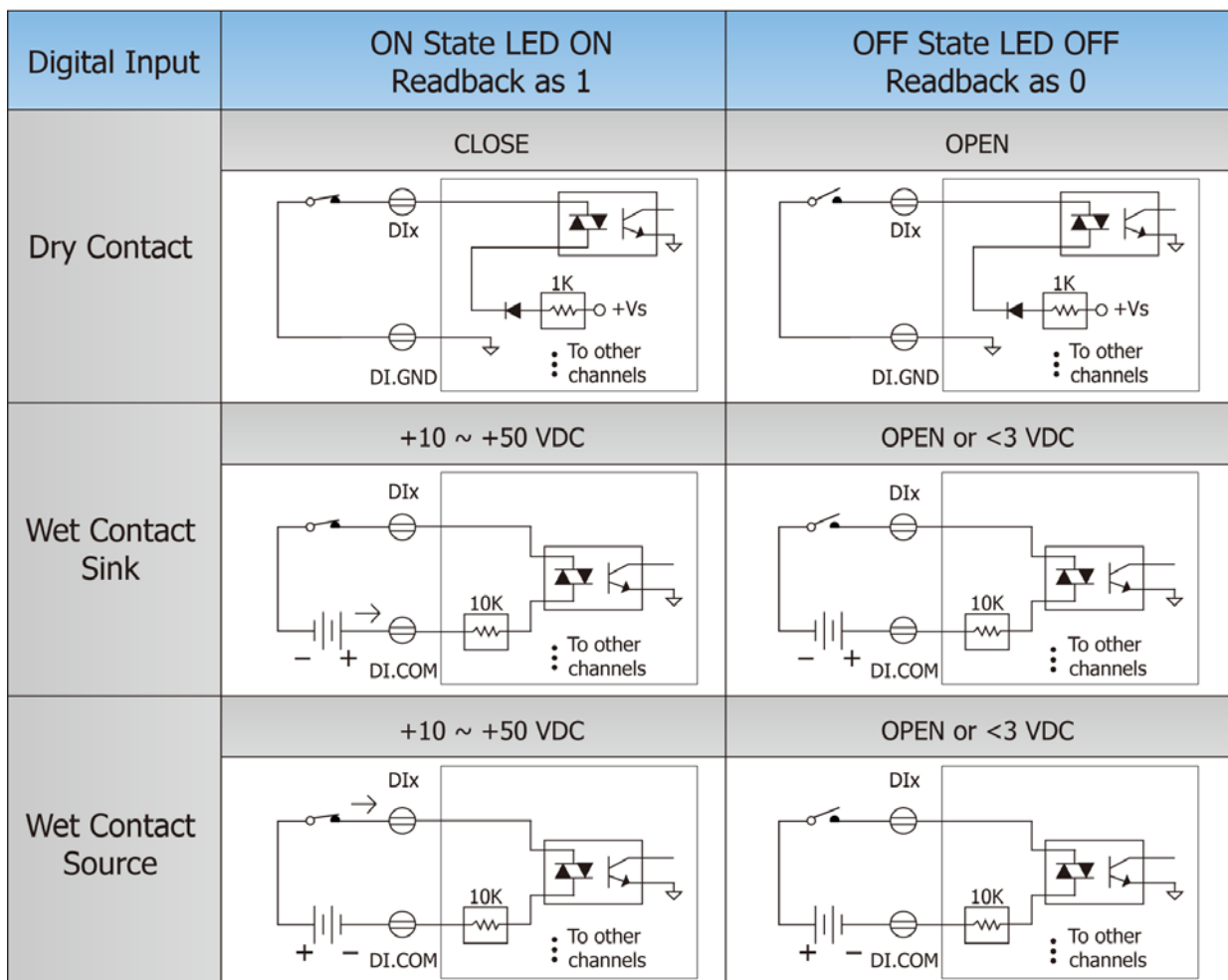
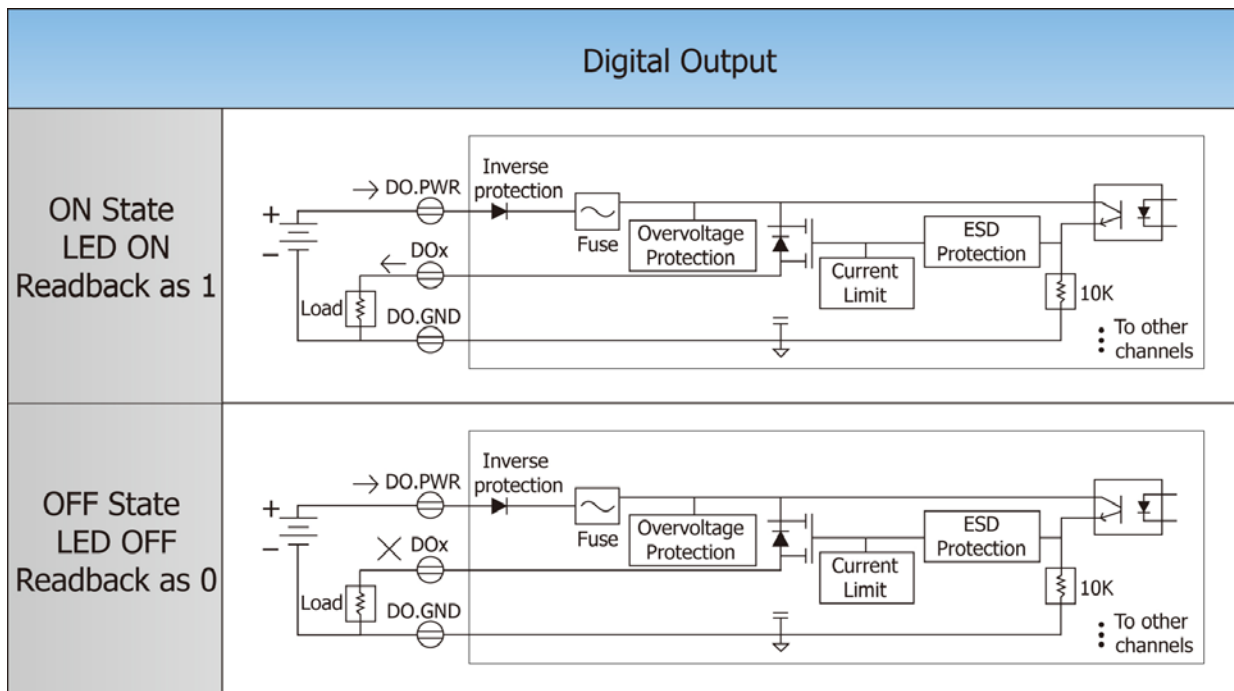


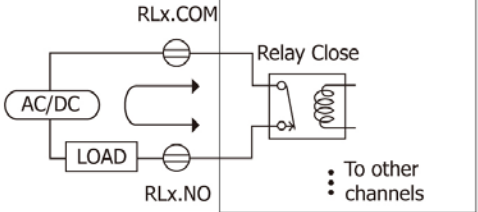
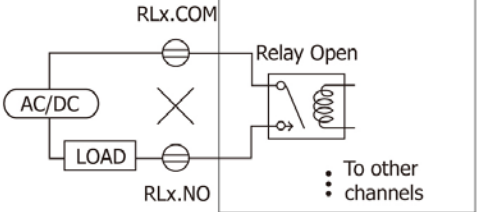
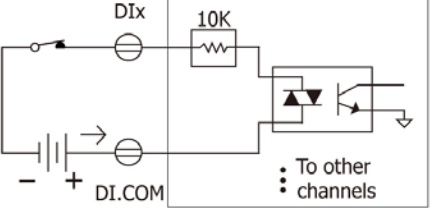
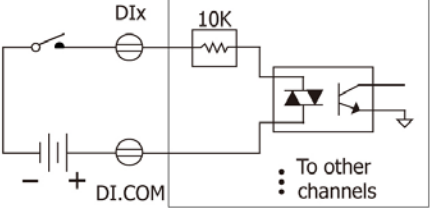
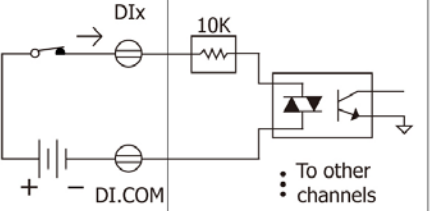
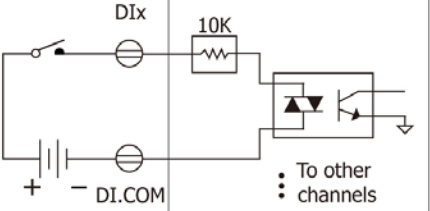
Table 1-6 RJ-45 Wiring Standards

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

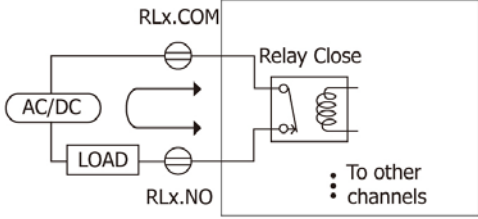
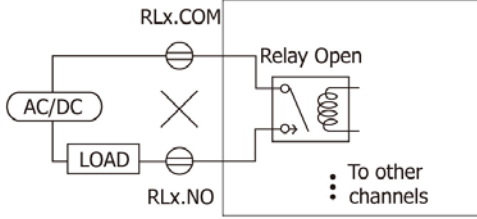
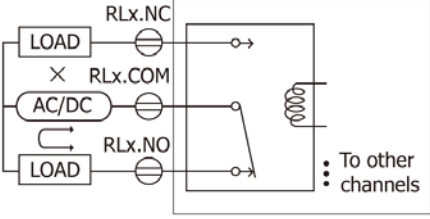
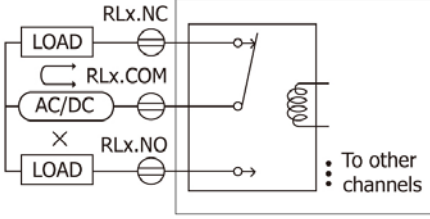
1.6 I/O wiring connection ET-6052(D)



ET-6060(D)

Digital Output	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
Relay Output	Relay ON	Relay Off
		
Digital Input	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
Sink	+10 ~ +50 VDC	OPEN or <3 VDC
		
Source	+10 ~ +50 VDC	OPEN or <3 VDC
		

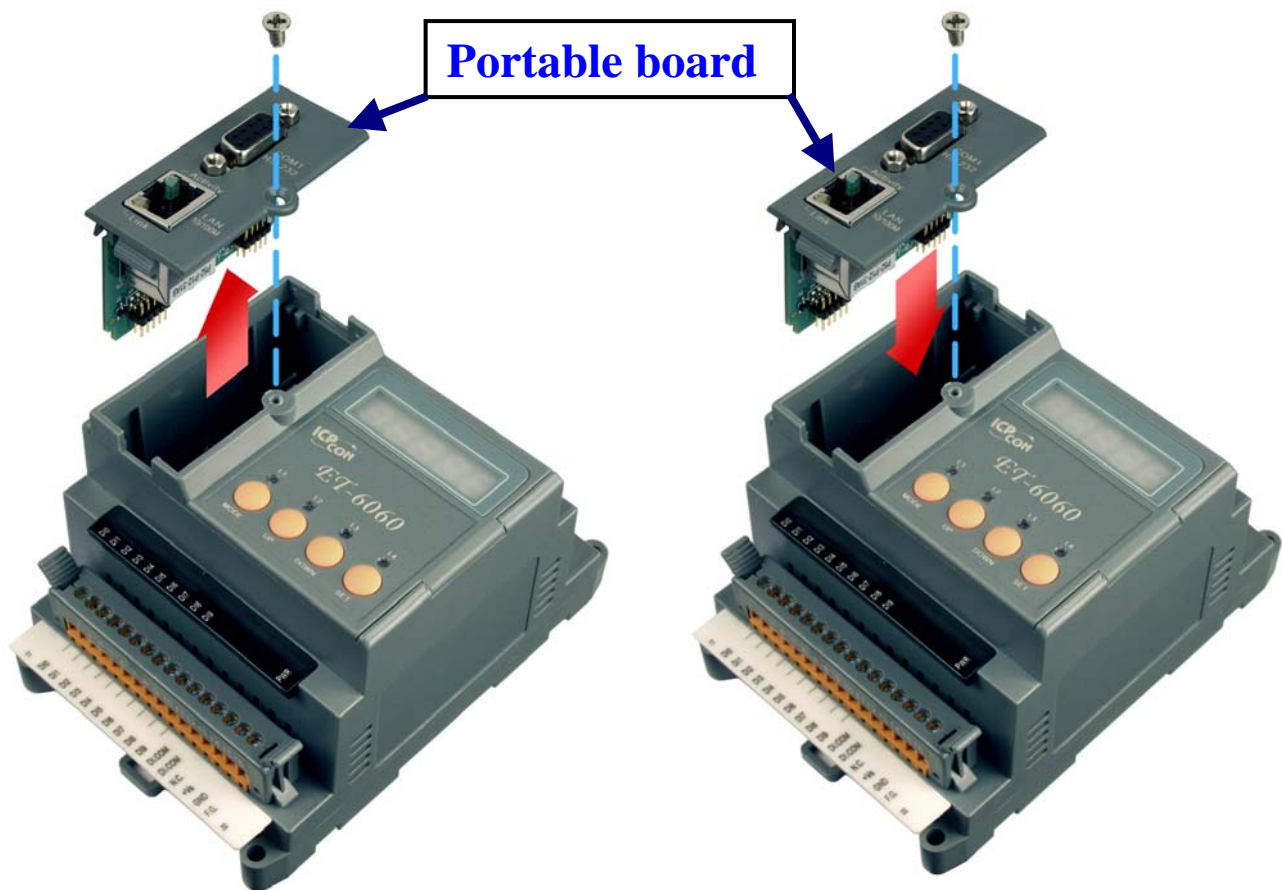
ET2-6064(D)

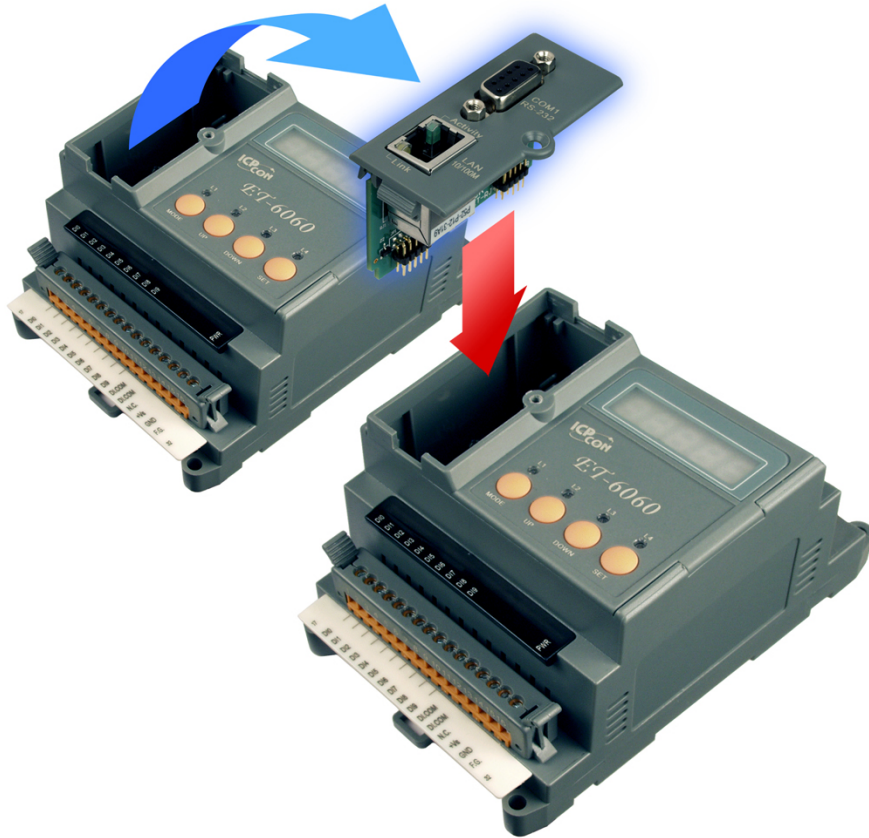
Relay Output	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
Relay Output (Form A)		
	Note: RL0~RL5, RL8~RL13, RL16~RL21	
Relay Output (Form C)		
	Note: RL6, RL7, RL14, RL15, RL22, RL23	

1.7 Portable Configuration

All configuration settings can be saved to the EEPROM of the ET-6000, which is mounted on a board (known as the “portable” board shown below). The Ethernet and Serial ports are also included on the portable board and can be plugged into the main board of the ET-6000, meaning that the stored settings can be easily backed up and moved.

Assembly and Disassembly

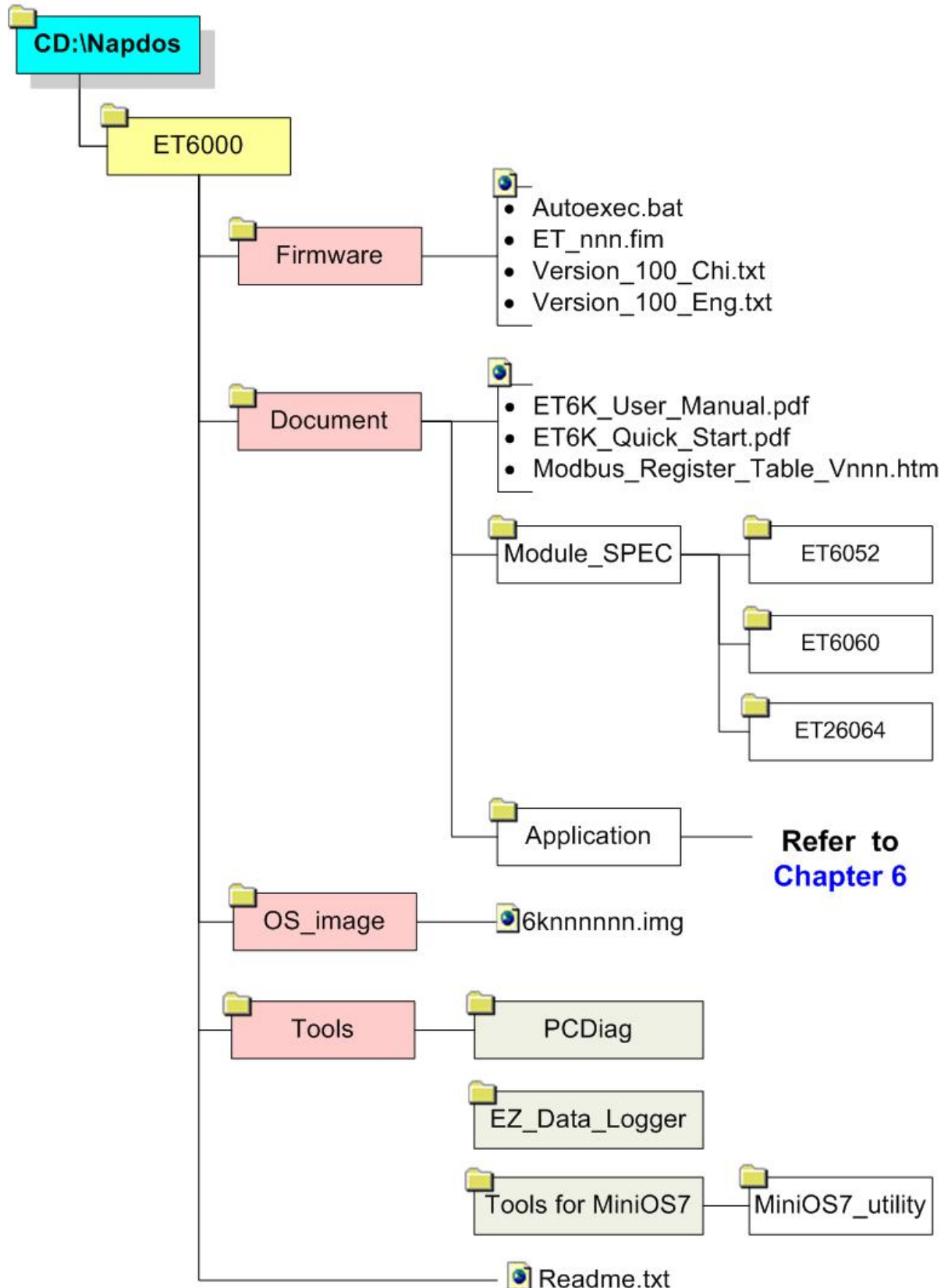


**Note:**

- Before inserting or removing the portable board to /from the ET-6000, the power supply must be switched off. It's recommend that the power cord can be completely disconnected from the module.)
- The ET-6000 series module will not work normally without the portable board.

1.8 Software & Document information

The location of all documents and software related to the ET-6000 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 6knnnnnn.exe revision information, please refer to
CD:\NAPDOS\ET6000\Firmware\Version_nnn_Eng.txt or Version_nnn_Chi.txt

1.9 Update Information

Refer to http://www.icpdas.com/products/Remote_IO/et-6000/et6k_manual_software.htm

2. Configuring the ET-6000

Before using the ET-6000, the following settings must be configured:

The factory default settings are as follows:

- **Networking settings:** IP, Mask, and Gateway of ET-6000.

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)

The most important procedure to be completed prior to using the controller is to correctly configure the network settings.

2.1 Configuring the network settings

Network settings can only be configured via the Ethernet port (UDP search) or RS-232 COM Port.

PC Diagnostic tool include the Configuration Wizard that is used to make the Ethernet address and COM port settings through Serial interface, Search Configuration used to make the Ethernet address settings via the Ethernet and the other Diagnostic tools used for testing the Ethernet module.

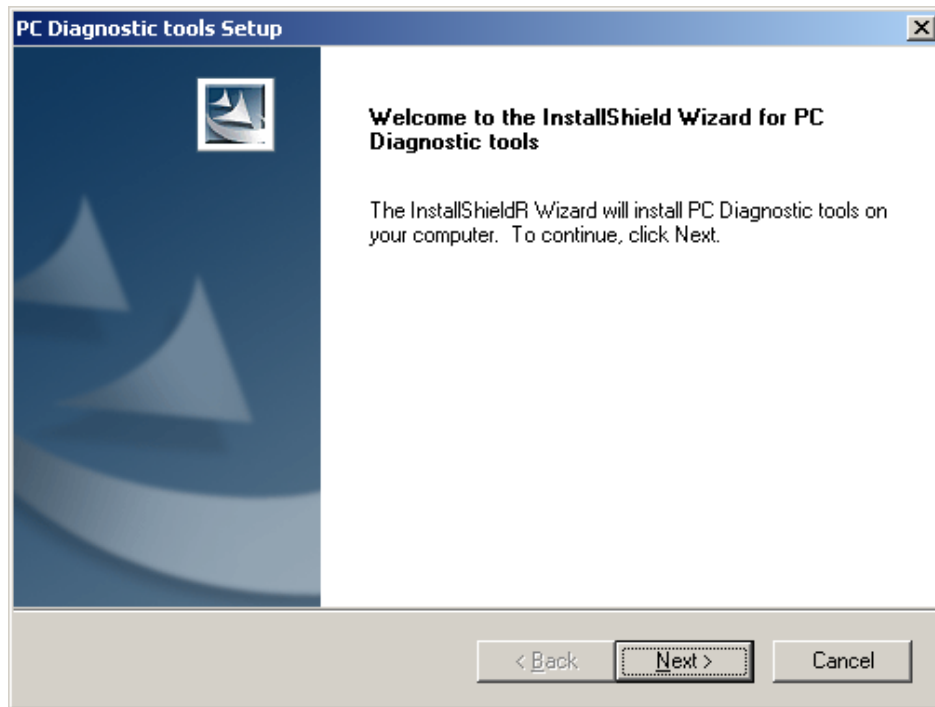
The two tools below are included in the PC Diagnostic tool and can be used to configure the ET-6000 network settings.

1. [UDP Searcher \(Ethernet interface\)](#)
2. [Configuration Wizard \(RS232 interface\)](#)

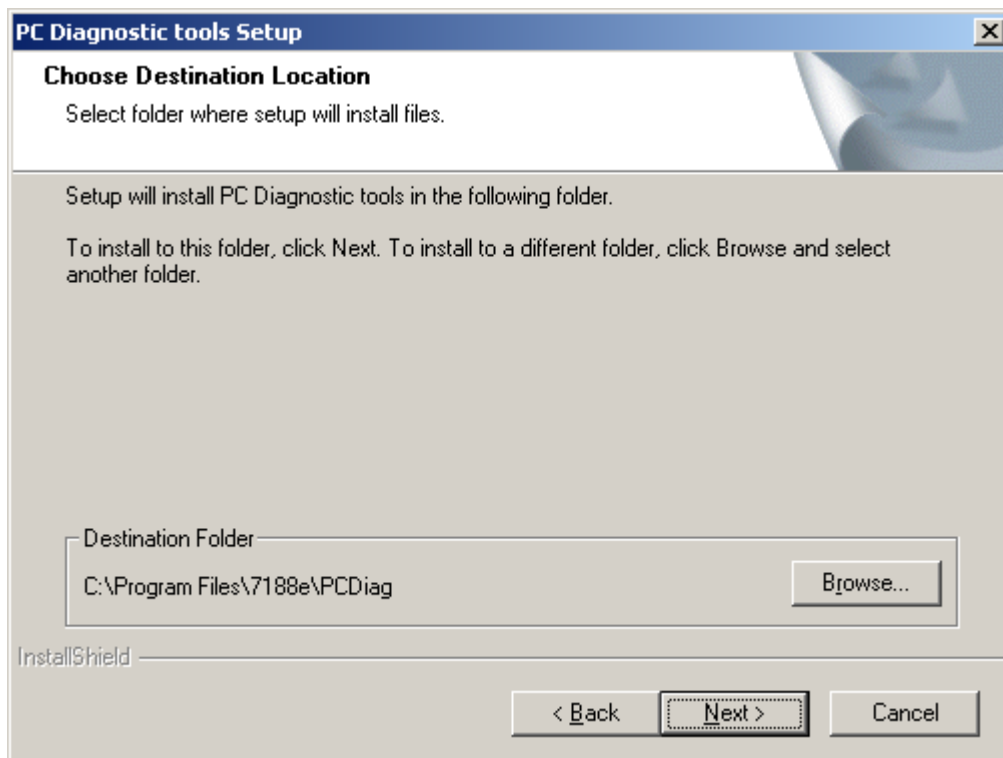
2.1.1 Installation

Installation Procedure

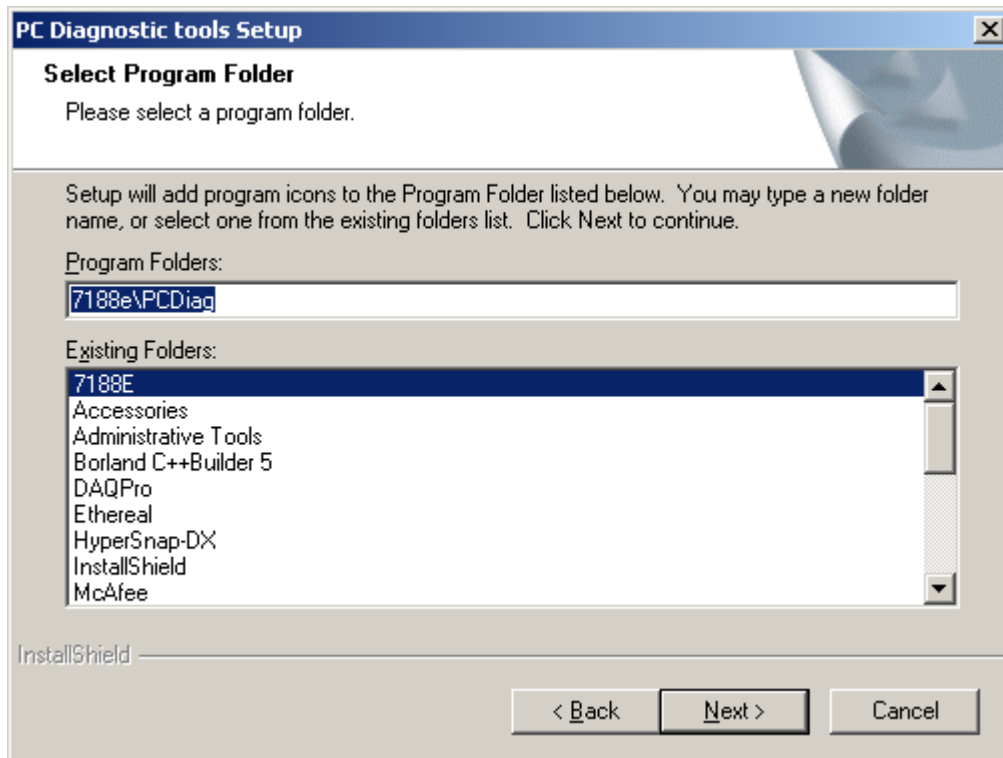
1. The PC Diagnostic tool is located on the shipment CD or is available via FTP. The paths are as follows
 - CD:\NAPDOS\ET6000\Tools\PCDiag\Setup_2.0.5
 - ftp://ftp.icpdas.com/pub/cd/6000cd/napdos/et6000/tools/pcdiag/setup_2.0.5/
1. Double click the Setup.exe file to begin installation.
2. When the Welcome window opens, click on Next to proceed with the installation.



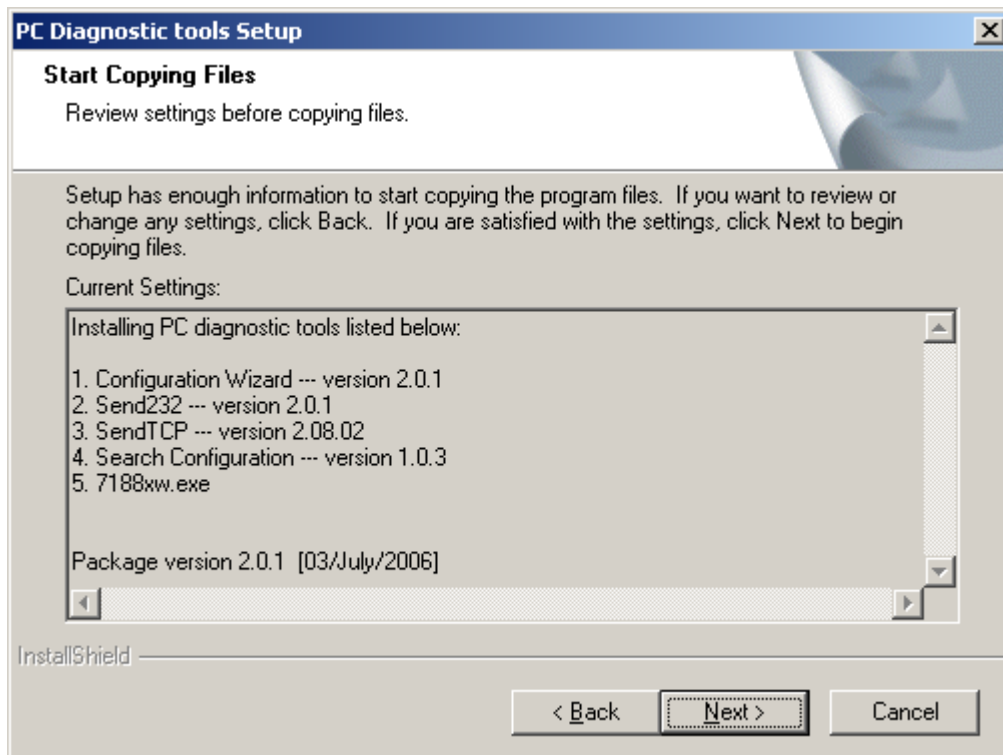
3. Click **Next** to install the program files in the default directory, or select an alternative location using the browse button.



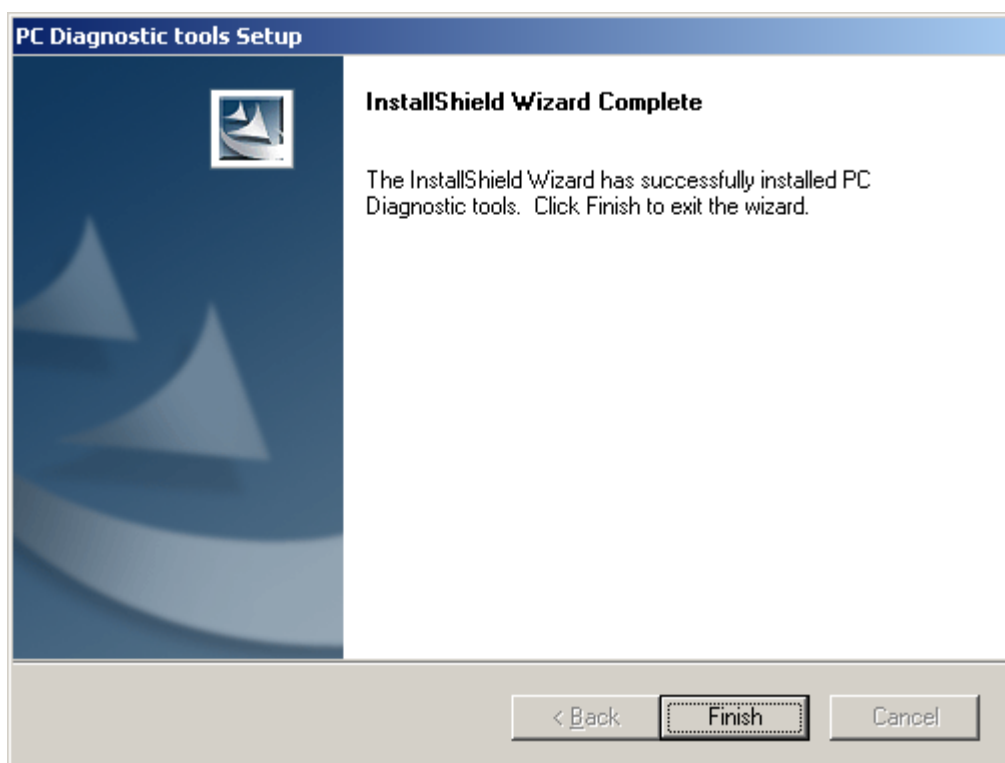
4. Select the program folder using the default folder or enter an alternative name, and then click **Next** to continue



5. Click on **Next** to proceed with the installation.



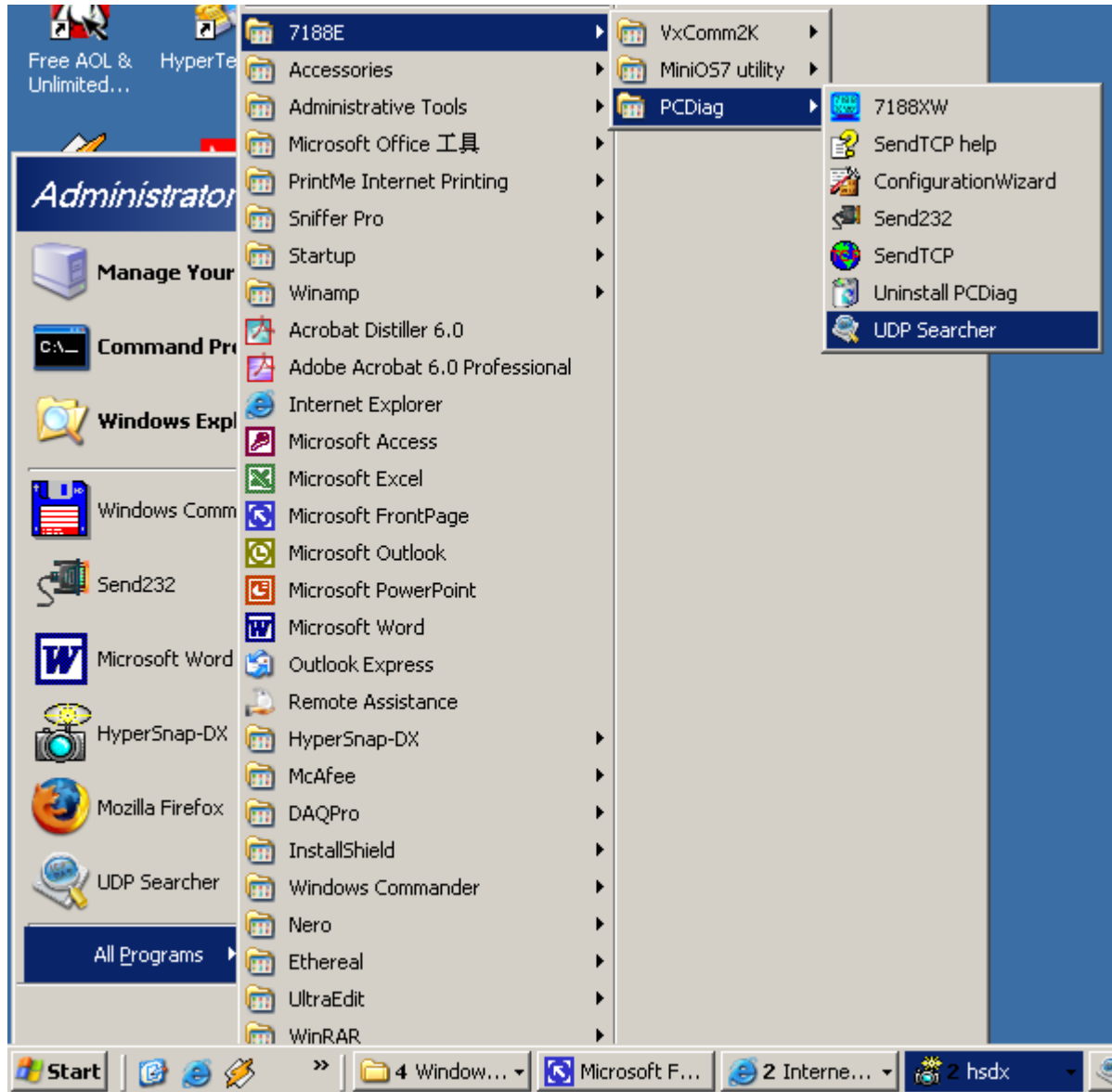
6. Click on **Finish** to complete the installation.



2.1.2 Using the “UDP Searcher”

Search the devices.

1. After installation is complete, click the **UDP Searcher** utility in the PCDiag folder. See the diagram below for details.



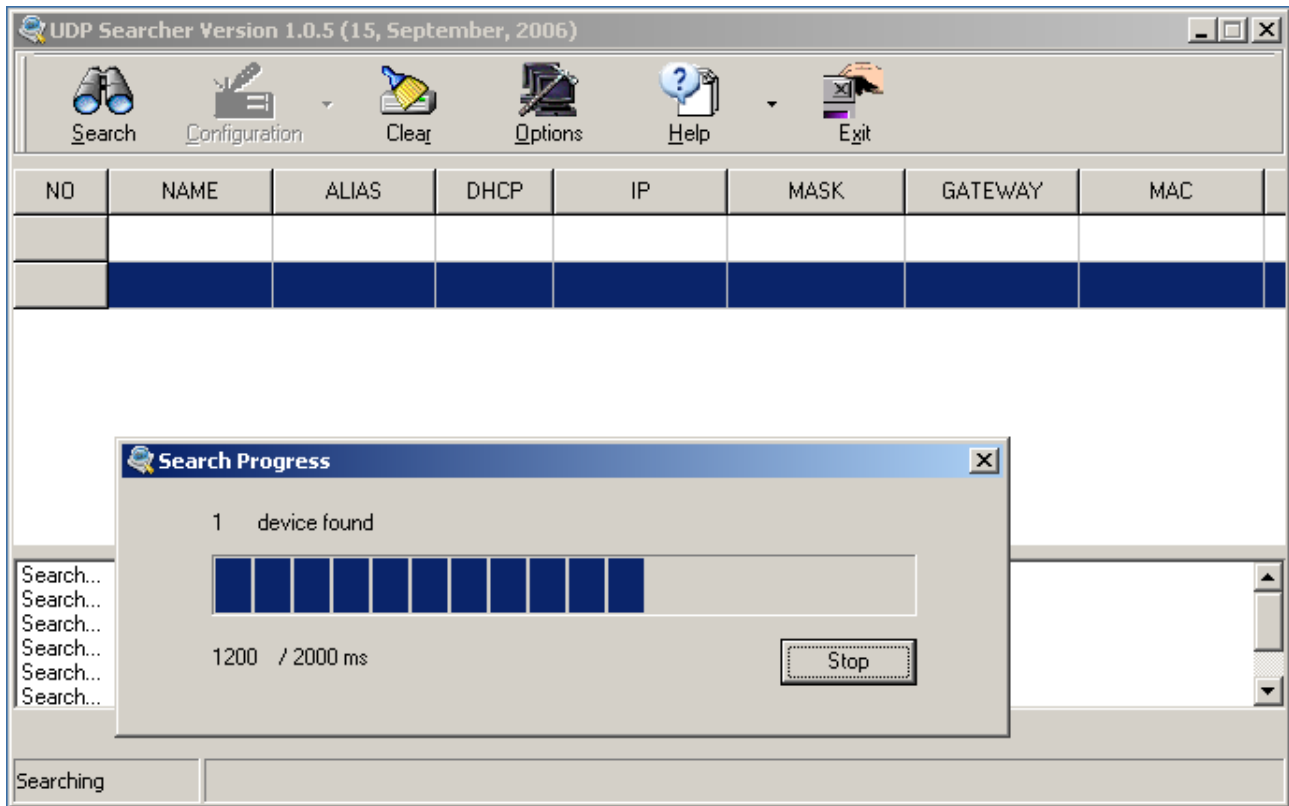
Note:

Before using this utility, ensure the ET-6000 units installed on the same Ethernet network as the PC.

3. Follows the instructions below to use the **UDP Searcher** utility to search for ET-6000 series modules from a local location.



After clicking the **Search** button, the **UDP Searcher** utility will scan the Ethernet network for ET-6000 series devices.



A Search Progress window will appear and shows how many devices have been found. Searching will continue until a timeout occurs or until the **Stop** button is pressed.

Each detected device will be presented in a list in the main **UDP Searcher** utility window. Details available related to the devices found include:

Name: The device name

Alias: The alias name of the device

DHCP: Indicates whether a dynamically assigned IP address has been Enabled or Disabled.

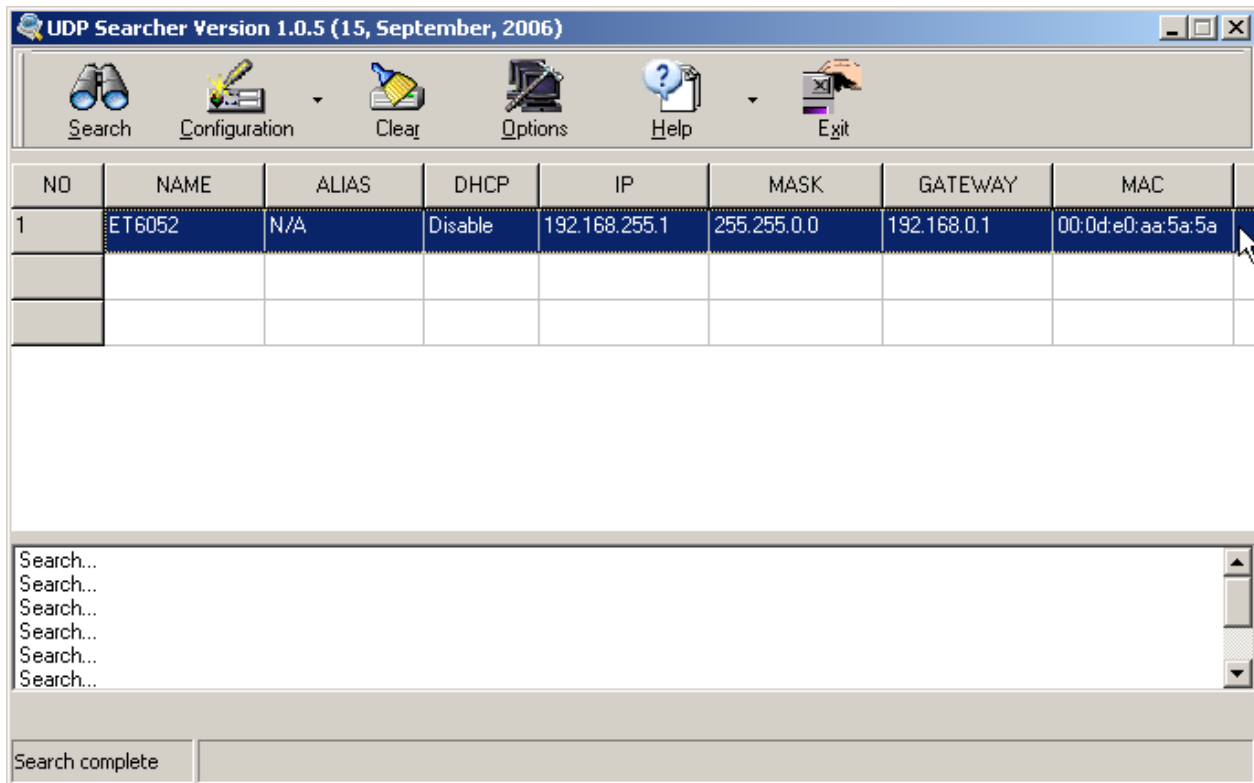
IP: The IP address of the device

Mask: The Mask address of the device

Gateway: The gateway address of the device.

MAC: The MAC address of the device.

After double-clicking the desired device in the list, a Modify settings dialog window will appear to enable the IP/Mask/Gateway address and Alias name to be changed manually, or allow the recommended value to be written to the ET-6000 series module.



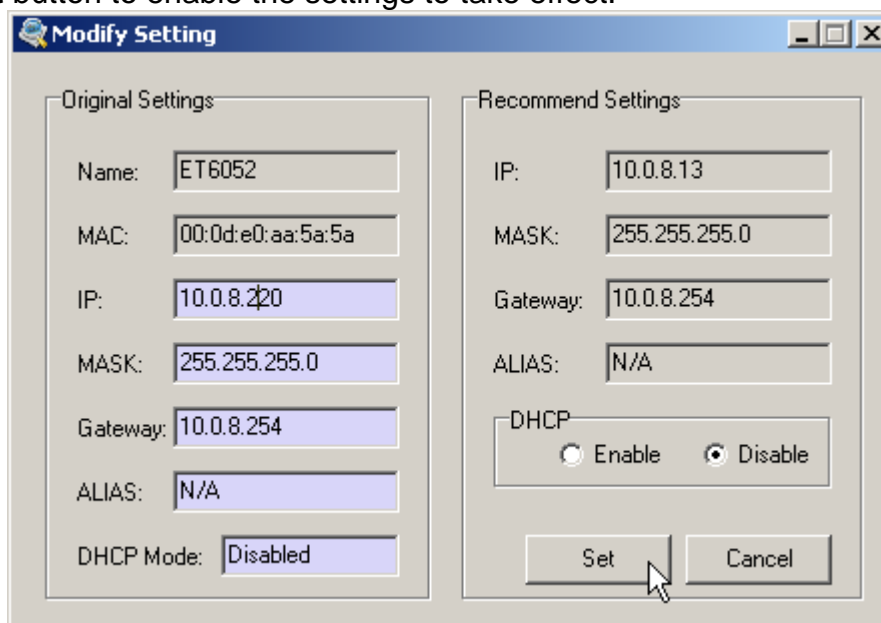
Manually modification

The left hand side of the dialog window is used to enable the IP/Mask/Gateway address and Alias name details to be changed manually. When all modifications are completed, press the **Set** button to enable the settings to take effect.

Recommend Settings

The right hand side of the dialog window indicates the recommended settings automatically detected by the software.

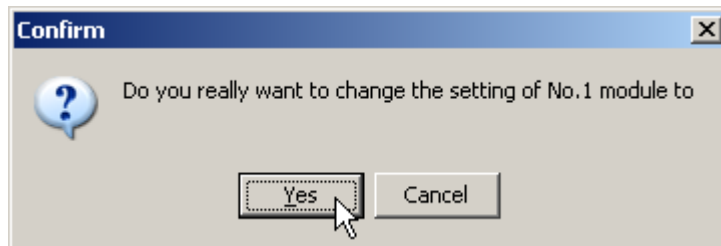
After clicking the **Write Recommend settings to Module** button, the left hand side of the dialog window will be updated with the recommended IP/MASK/Gateway addresses. Press the **Set** button to enable the settings to take effect.



After pressing the **Set** button, a **Confirmation** dialog box will ask you whether you really want to change the settings.

After clicking the **Yes** button, the settings will take effect.

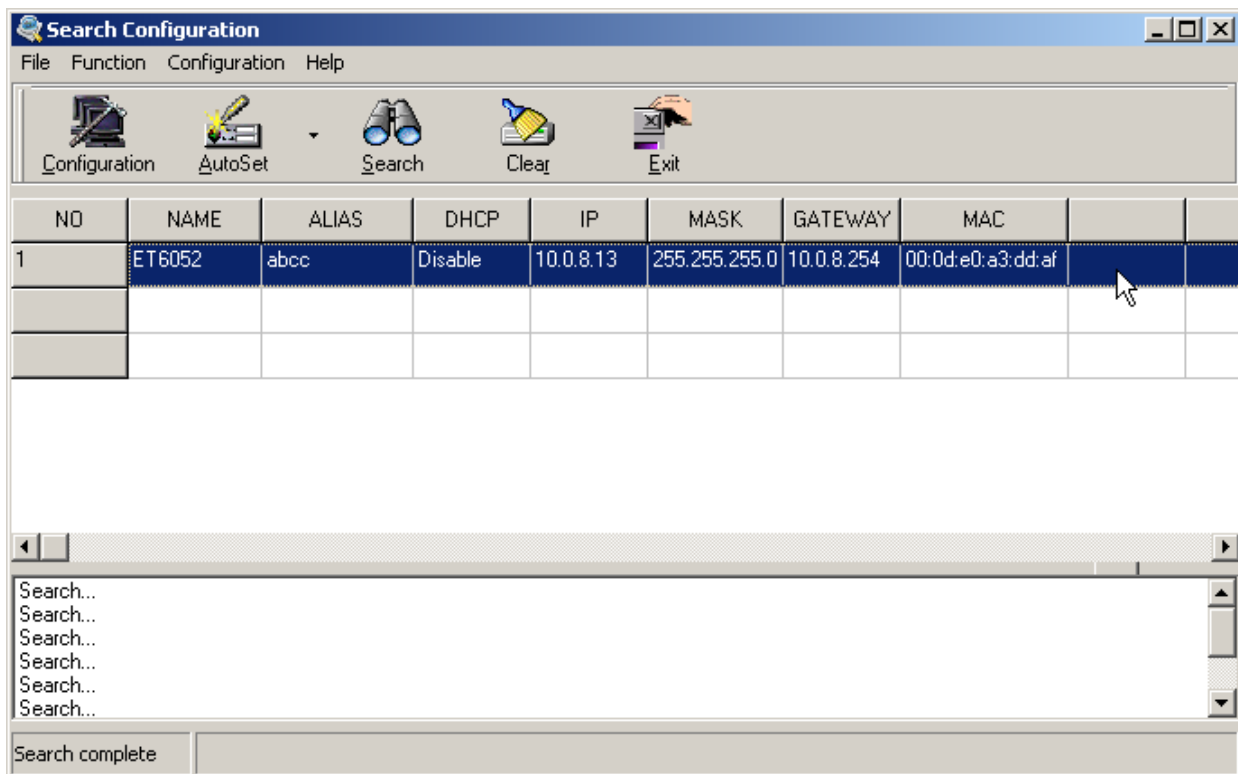
After clicking the **No** button, the modifications will be ignored.



Note:

Clicking the **Yes** button in the **Confirmation** dialog box will cause the ET-6000 module to reboot and the settings will take effect.

It is suggested that a Search for devices is performed again to check whether the settings have been modified or not.



2.1.3 Using the "Configuration Wizard"

The "Configuration Wizard" provides step-by-step instructions for configuring the network settings. The wizard is most useful for detecting the network settings of the host PC, and for searching the local network to locate a valid IP, Mask and Gateway address. Using the "Configuration Wizard" allows automatic detection of important settings and reduces the need to contact system administrators for support.

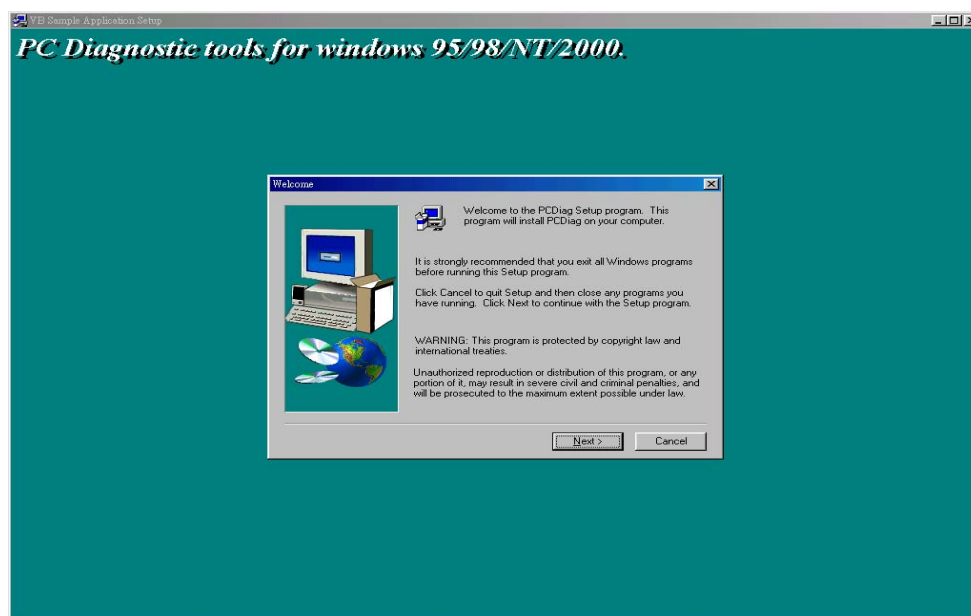
Step 1: Refer to **Sec.1.4.2** for details regarding the wiring connections for ET-6000 series modules.



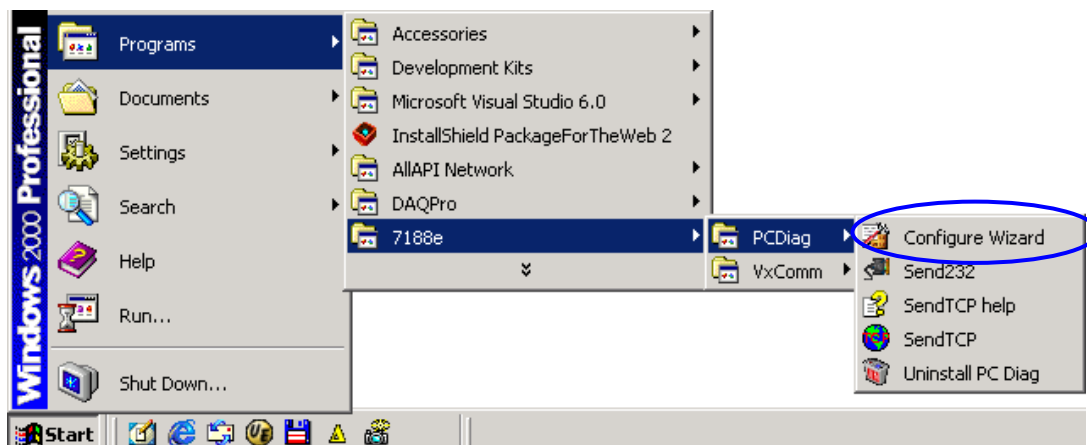
Note:

- During configuration, the **Init/Normal** switch is placed in the **Init** position.
- Return the Switch to the Normal position after updating the configuration.

Step 2: Install the PCDiag application on the host PC by executing CD:\NAPDOS\ET6000\Tools\PCDiag\Setup_2.0.5 \PCDiag.exe and follow the on-screen instructions.



Step 3: Run the Configuration Wizard as follows:

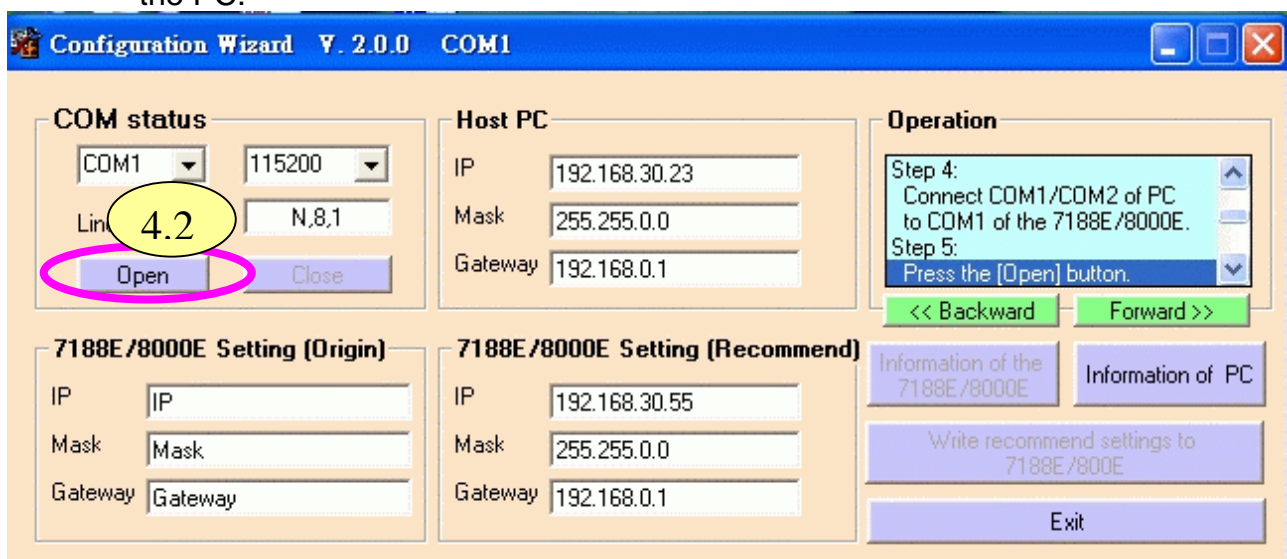


Step 4: Follow each step of the instructions provided in the “Configuration Wizard” dialog box until the following window appears.

Step 4.1: Click the “Custom” button to enter initial operation.

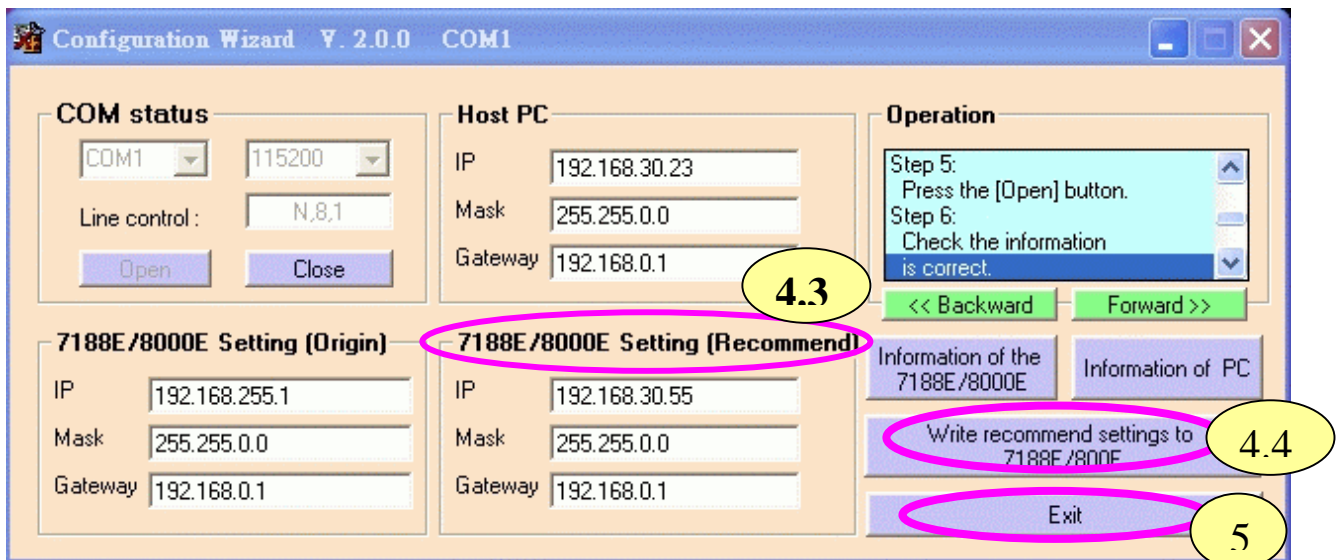


Step 4.2: Click the “Open” button in the COM status section to establish a connection to the PC.

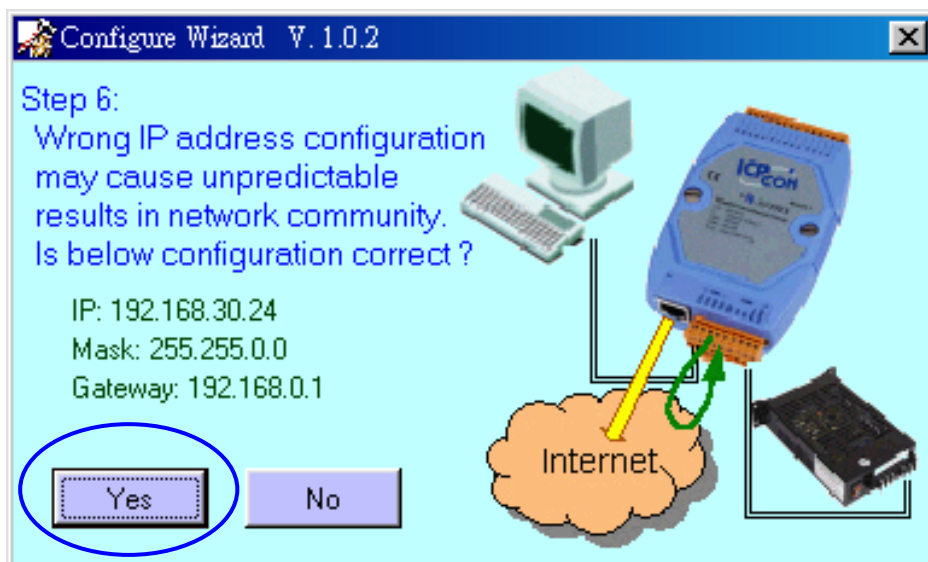


Step 4.3: Check that a valid IP, Mask and Gateway value has been inserted into the “7188E/8000E Settings (Recommended)” fields.

Step 4.4: Click the “Write recommend settings to 7188E/8000E” button to confirm the new settings. Click “YES” in the following dialog



Step 5: Exit the “Configuration Wizard” and then restart the ET-6000 to allow the new settings to take effect.



2.1.4 Using the " MiniOS7 utility"

The MiniOS7 Utility is used to download files to the ET-6000 module and update the OS image. It can also be used to configure the network and COM port settings. In contrast to the "Configuration Wizard", valid IP, Mask and Gateway information must be available and must be manually entered into the text box provided.

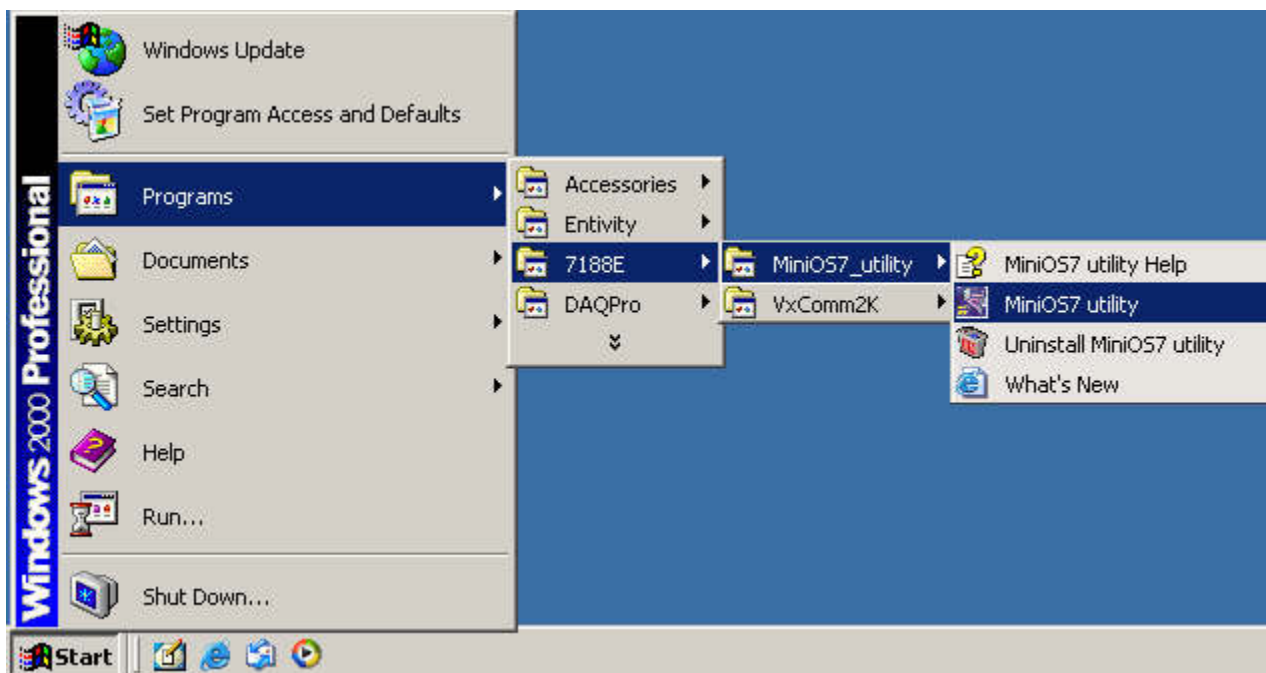
Step 1: Refer to **Sec. 1.4.2** for details regarding wiring connections for ET-6000 series modules.



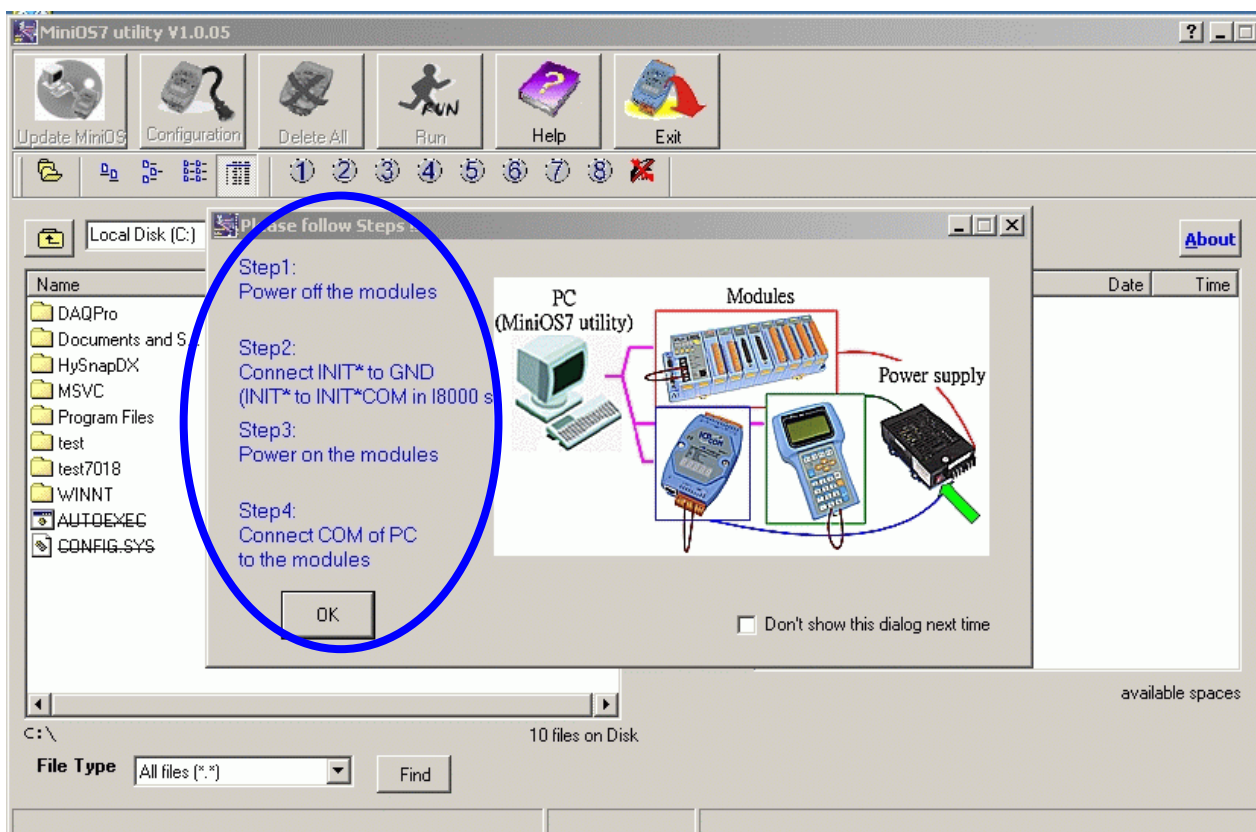
Note:

- During configuration, the **Init/Normal** switch is placed in the **Init** position.
- Return the Switch to the Normal position after updating the configuration.

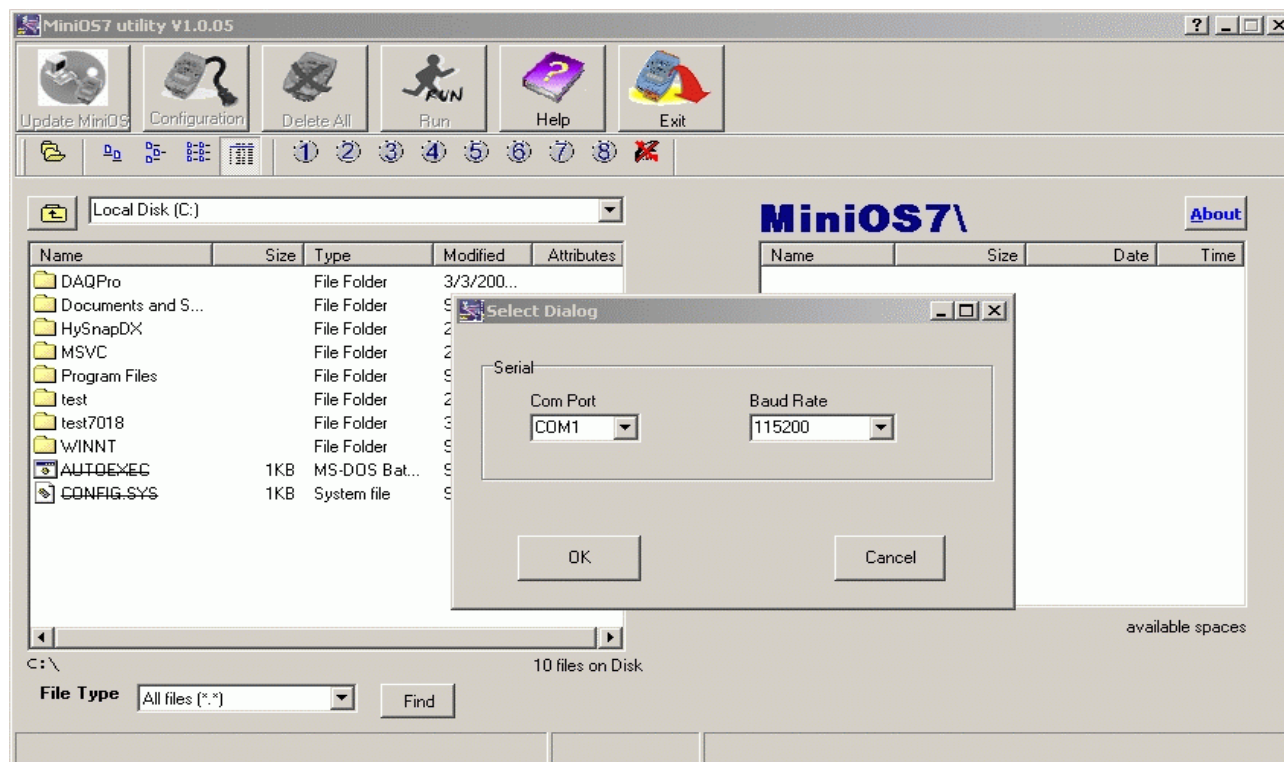
Step 2: Install the MiniOS7 Utility on the host PC by executing
CD:\Napdos\MiniOS7\Utility\MiniOS7_Utility\MiniOS7_Utility.exe and follow the on-screen instructions



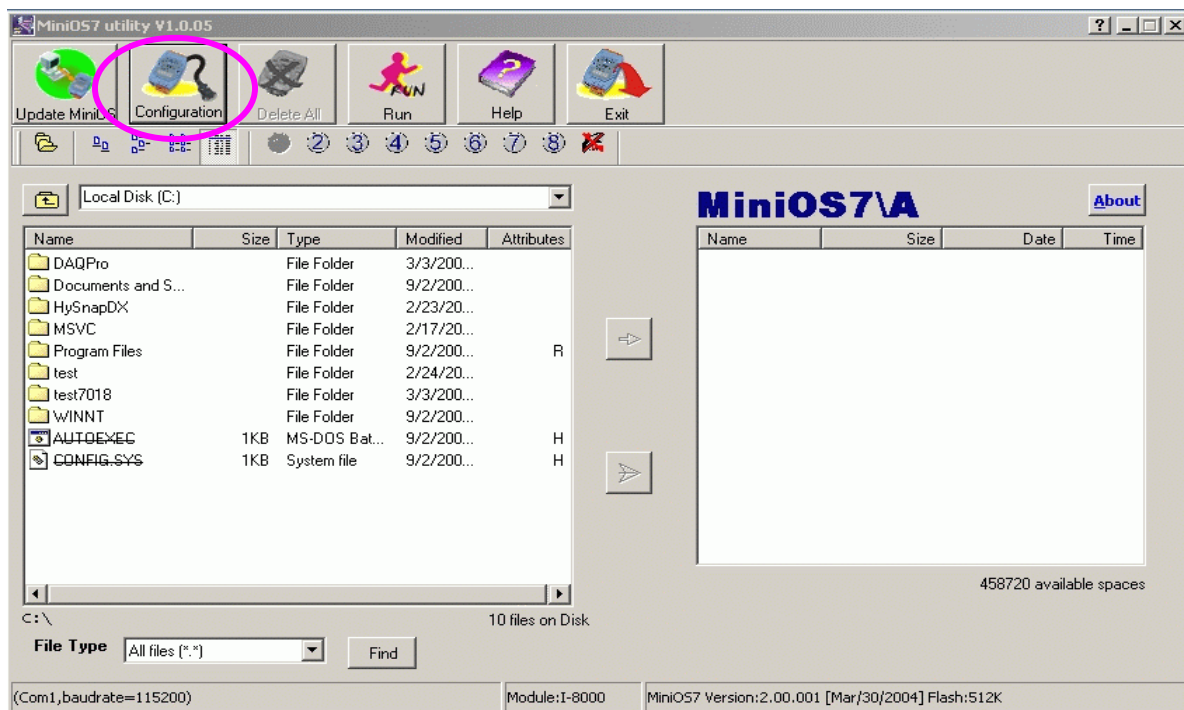
Step 3: Run the MinioS7 utility as per the following diagram.



Step 4: Select the Com Port and Baud Rate, and then click the “OK” button.



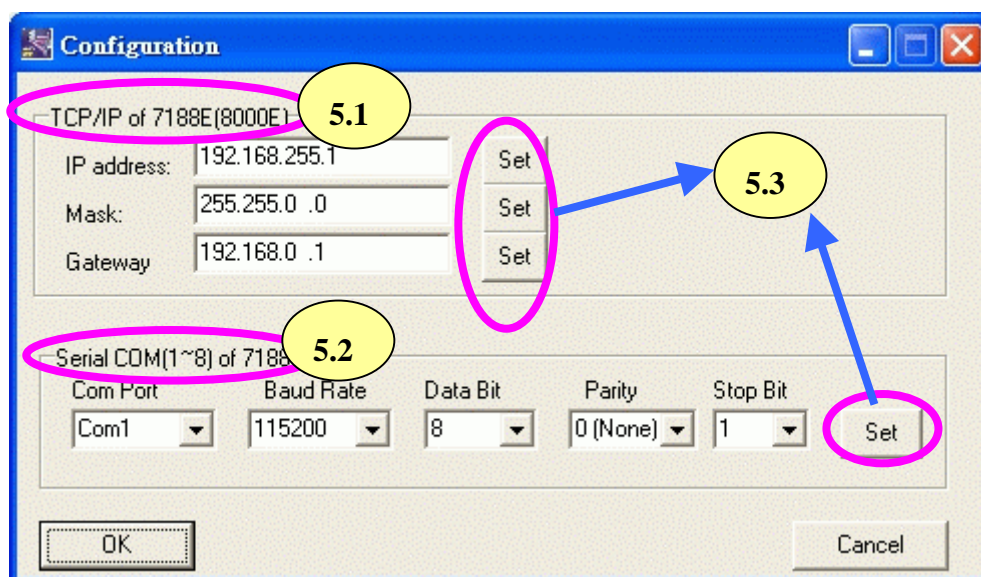
Step 5: Click the “Configuration” button to set the IP address and the COM Port Setting.



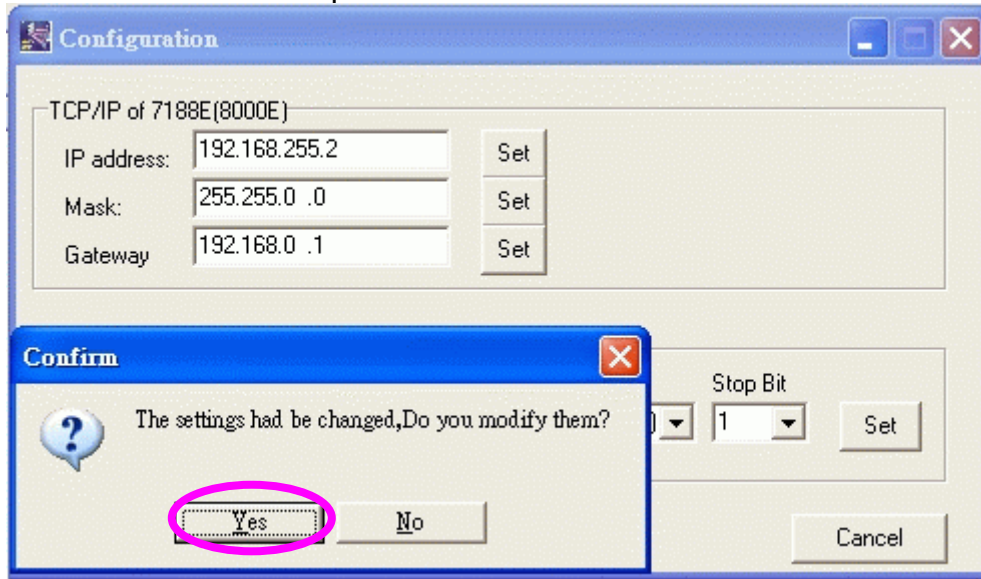
Step 5.1: Check that valid IP, Mask and Gateway values have been inserted into the “TCP/IP of 7188E [8000E]” fields.

Step 5.2: Check that valid Com Port, Baud Rate, Data bit, Parity and Stop Bit values have been inserted into the “Serial COM [1~8] of 7188” fields.

Step 5.3: If these values are modified, the “Set” button must be clicked in order to create the new values. Click the “OK” button.



Step 6: Click the “Yes” button to update new values.



Step 7: Exit the MiniOS7 Utility and restart the ET-6000 to enable the new settings to take effect.



Note:

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

2.2 Configuration using the SMMI Menu



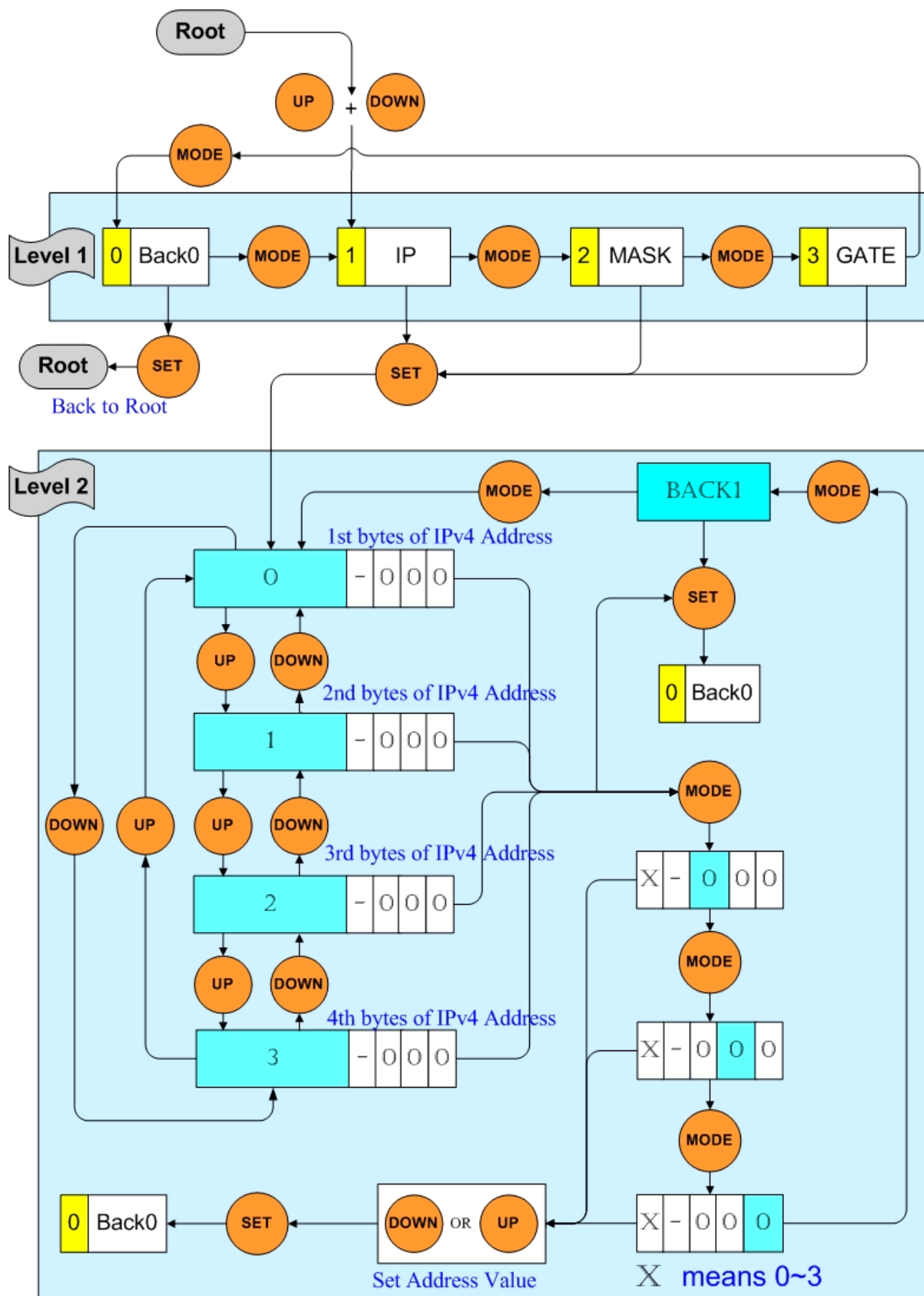
2.2.1 Accessing the SMMI menu for Network Configuration

The LEDs normally show system information. To access the SMMI menu, simultaneously press the “UP” and “DOWN” buttons for at least two seconds. The LED menu has 2 levels. By following the menu tree map shown in Sec. 2.2.2., the cursor position in the SMMI menu can be changed.

2.2.2 The SMMI menu tree

The SMMI menu is designed to allow users to set the network settings (IP, Mask, Gateway) without requiring a host PC.

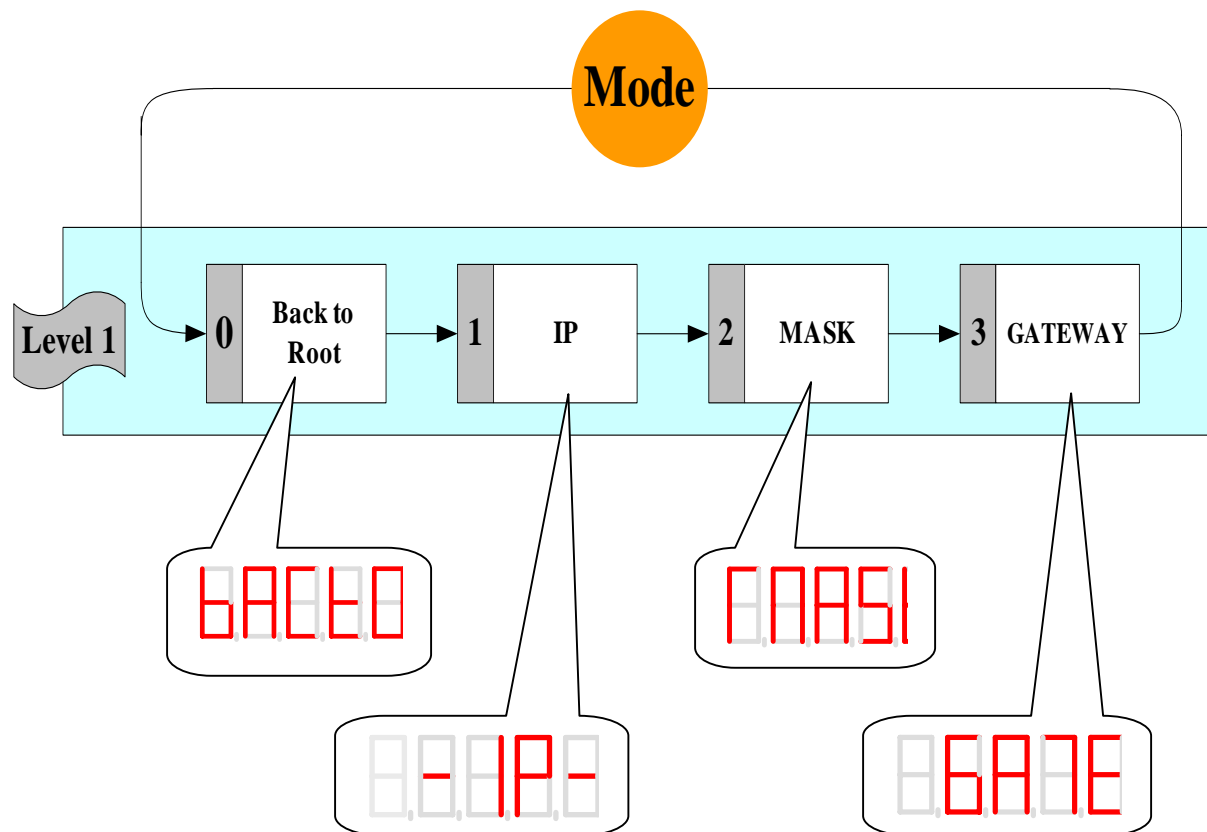
The Following diagram illustrates the SMMI menu tree.



Menu items that can be changed

There are four items in the menu, and three of which (IP, MASK and GATEWAY) can be changed. When first enter the LED menu, the initial status will be at level 1 and the cursor position will be at position 1 (IP).

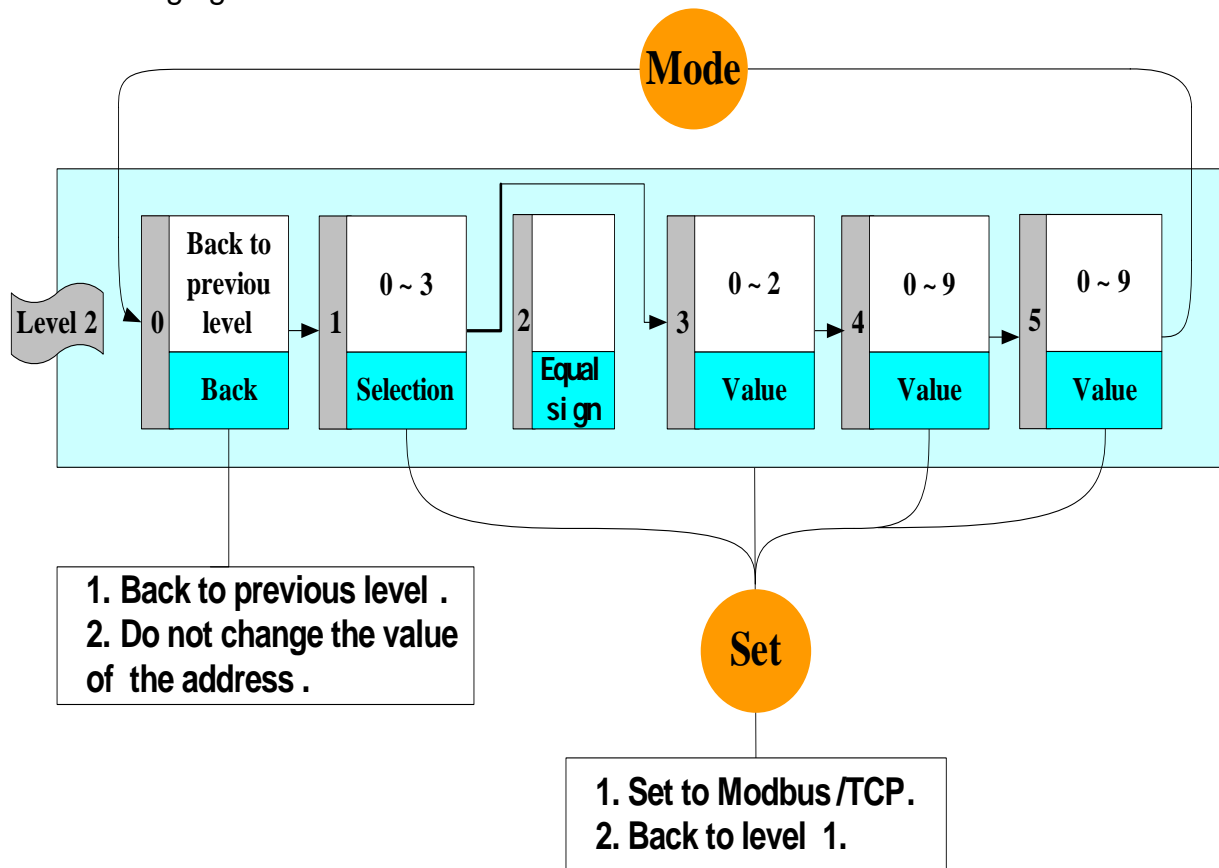
Only the “**MODE**” and “**SET**” buttons are available in this situation. By pressing the “**MODE**” button, the cursor can be moved with in the same level. By pressing the “**SET**” button, the position will be changed to another level in order to execute the selected action.



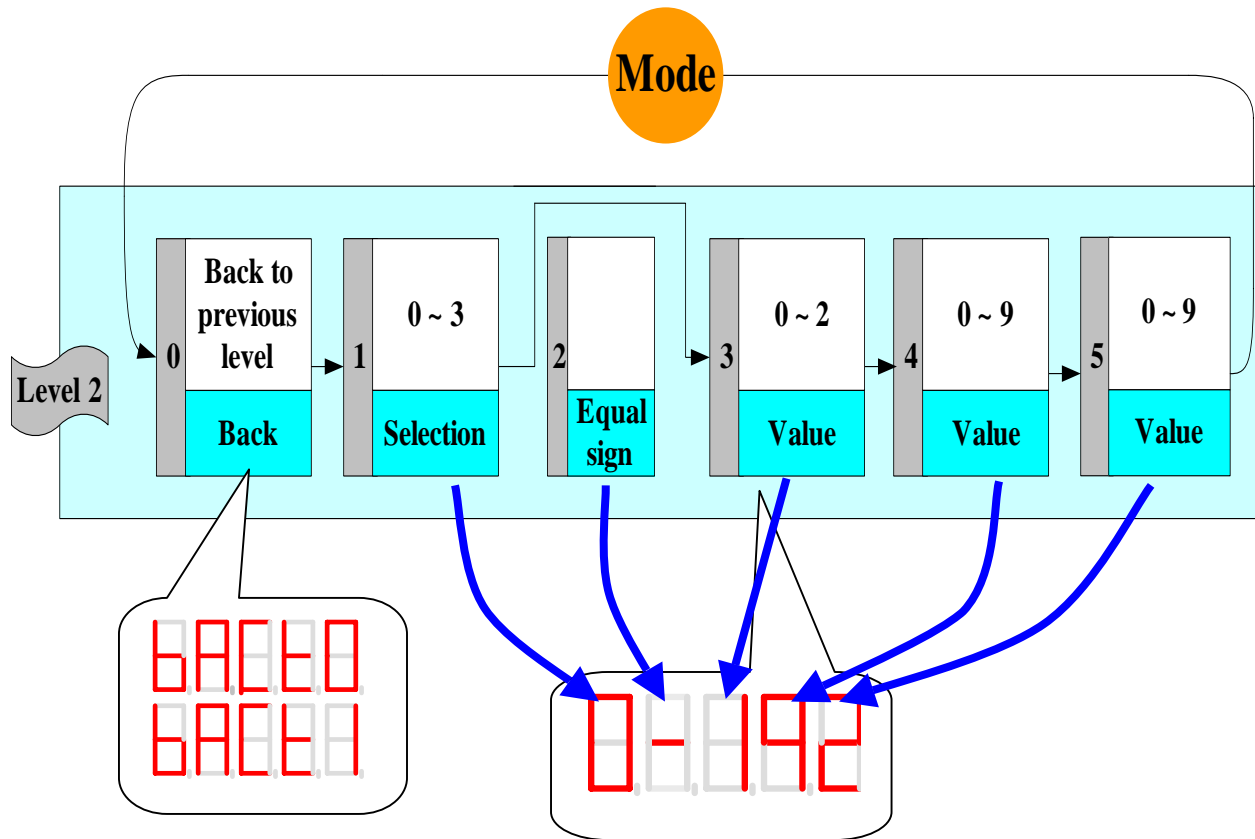
2.2.3 Set the address values

When enter the “**Sets the address values**” sub routine, the first LED is used for choosing which IPv4 values to change, and the last three LEDs display the current IPv4 values. Use the “**MODE**” button to select the cursor position. The “**UP**” and “**DOWN**” buttons are used to input the addresses, and the “**SET**” button establishes the addresses.

Refer to following figure:



When entering the “**Set values procedure**”, the LED shows the current value. The following example shows that the IP address is 192.168.255.1.



168 = 1-168

255 = 2-255

1 = 3-001

2.3 Load Factory Default

2.3.1 Web page configuration

Refer to “Load All Setup Default” in **Sec 3.2.3 Basic Setting** for more details regarding loading the factory default using the Web configuration.

2.3.2 SMMI

Accessing the SMMI menu to configure the Factory Default

The LEDs normally show system information. To access the SMMI menu, simultaneously press the “**MODE**” and “**SET**” buttons for at least two seconds. The LED menu has 2 levels. By following the menu tree map shown in Sec. 2.2.2, the cursor position in the SMMI menu can be changed.



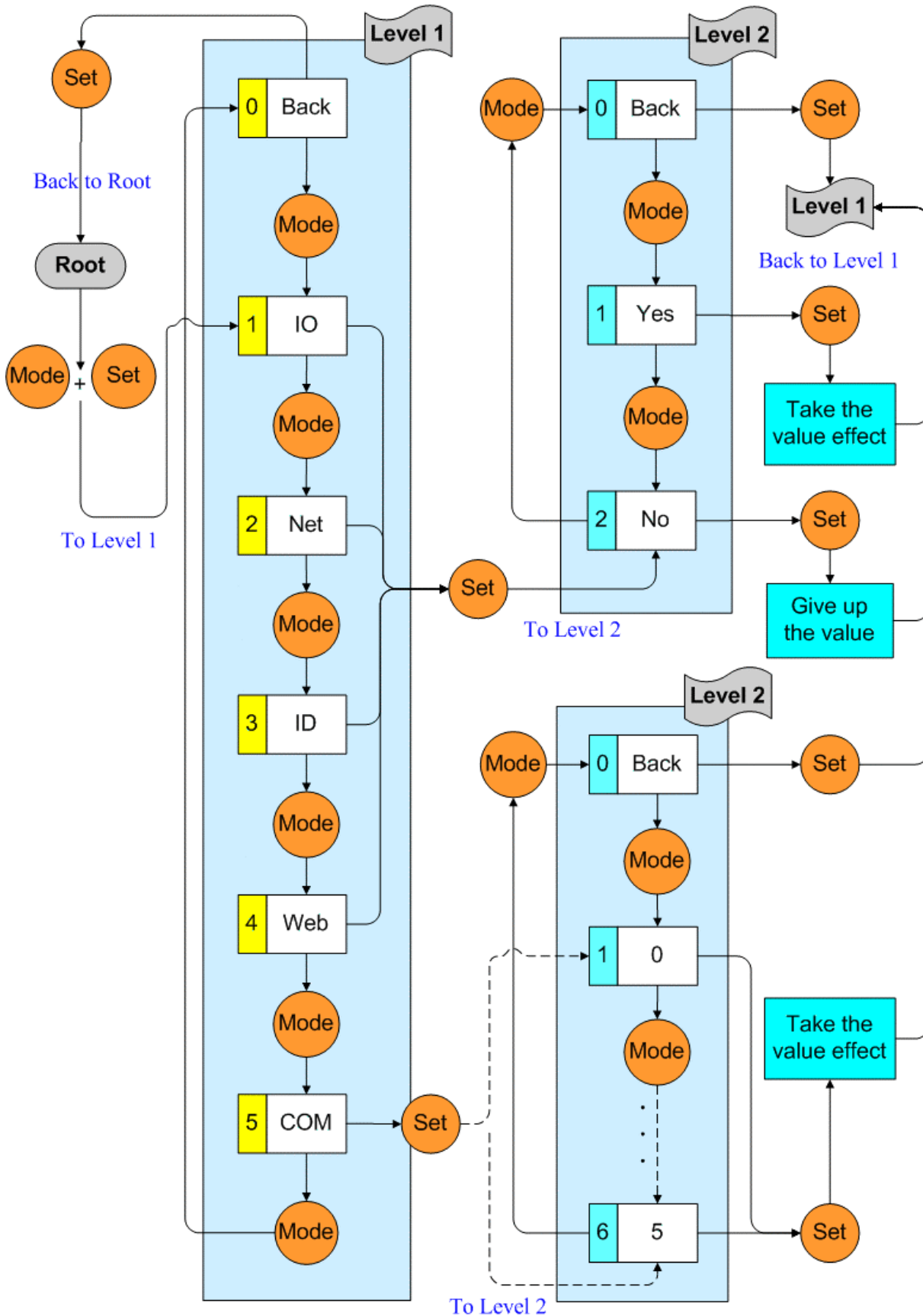
The SMMI menu tree

The SMMI menu is designed to allow users to load the factory default settings, including I/O, Web Server, and ID settings without requiring a host PC.

The following diagram illustrates the SMMI menu tree.

Menu items that can be changed






There are Six items in the menu, four of which (IO, Net, ID, Web and COM) that can be changed. When first entering the LED menu, the initial status will be at level 1 and the cursor position will be at position 1 (IO)








Only the “**Mode**” and “**Set**” buttons are available in this situation. By pressing the “**Mode**” button, the cursor can be moved within the same level. By pressing the “**Set**” button, the position will be changed to another level in order to execute the selected action.

7-Segment LED Display version

- Reset to Factory Defaults

Step 1	Step 2	Step 3	Step 4
<p>MODE SET</p>  +  <p>Press two buttons For 2 seconds</p>	<p>STATUS</p>  <p>STATUS Led ON</p>	<p>SET</p>  <p>Press SET for 2 seconds</p>	<p>STATUS</p>  <p>STATUS Led OFF</p>

- Reset (Software Reboot)

Step 1	Step 2	Step 3	Step 4
<p>MODE SET</p>  +  <p>Press two buttons For 2 seconds</p>	<p>STATUS</p>  <p>STATUS Led ON</p>	<p>MODE</p>  <p>Press MODE for 2 seconds</p>	<p>STATUS</p>  <p>STATUS Led OFF</p>

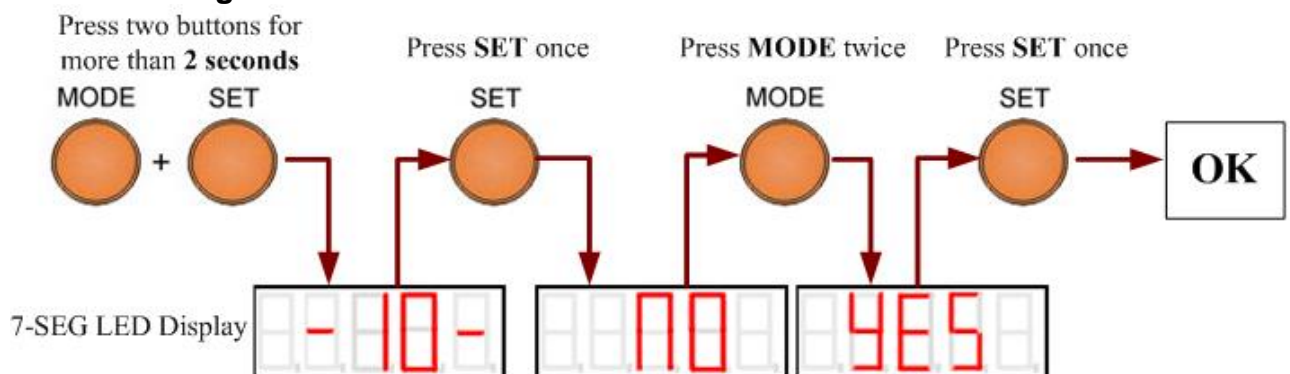


Note:

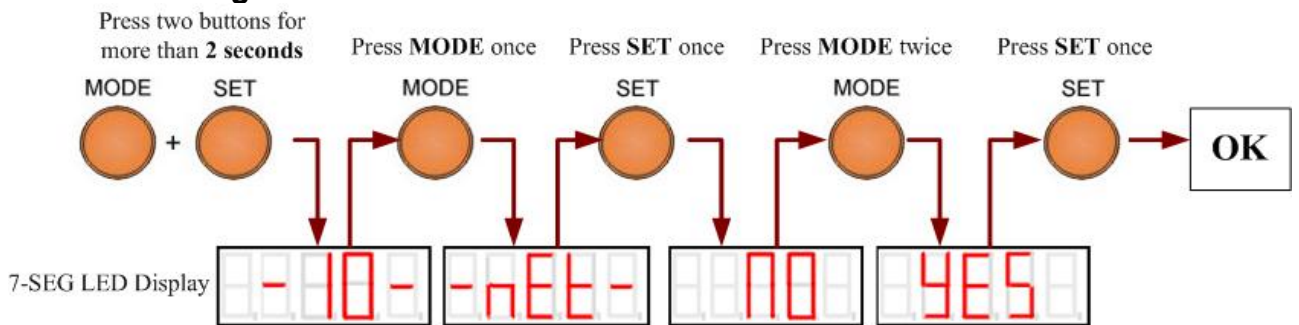
The reset function is a software reboot of the ET-6000 and doesn't reset or change the configuration of the ET-6000.

- Load the Factory Defaults for each item

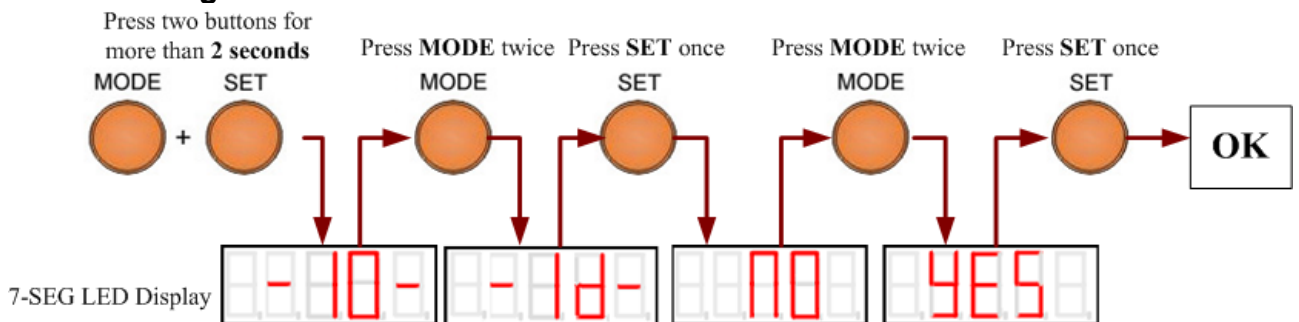
■ I/O Settings



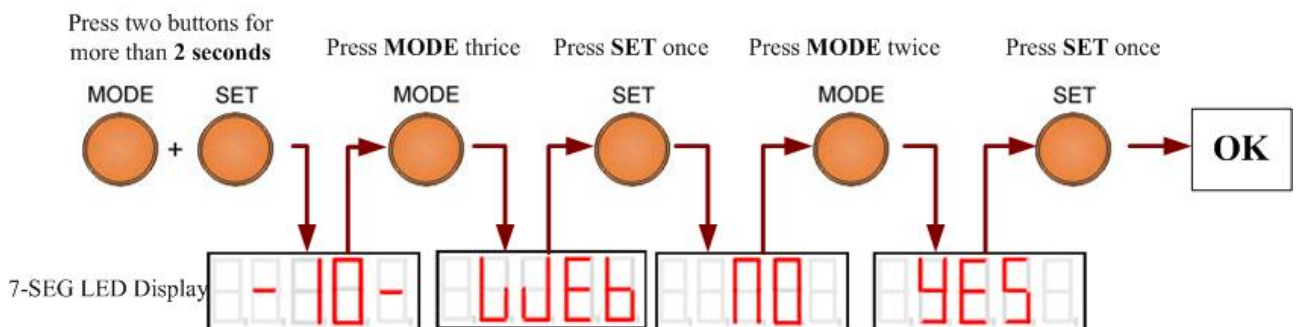
■ NET settings



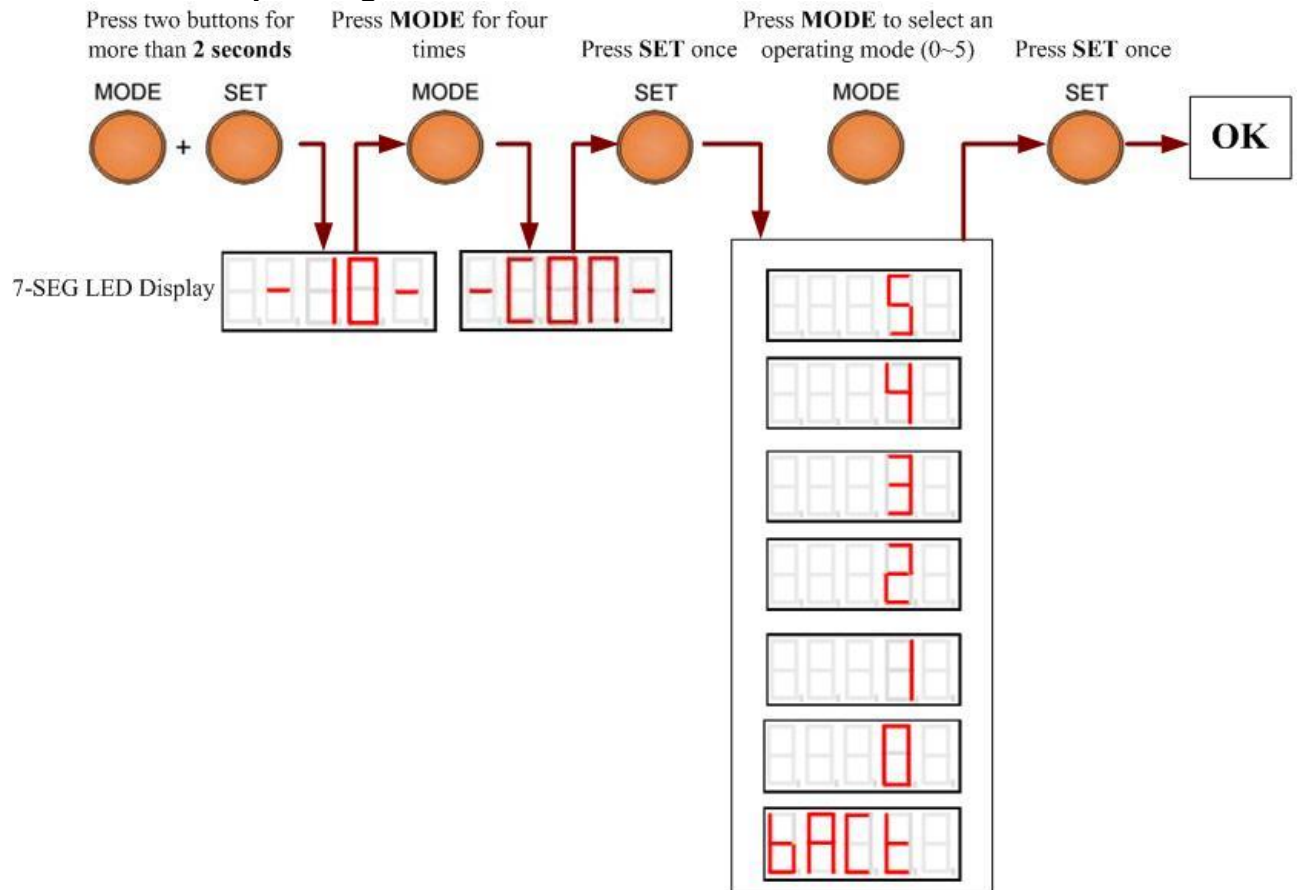
■ ID settings



■ Web Server Enabled/Disabled



■ COM Port operating mode



Non-LED Display version

The ET-6000 series with non-display version only has two functions Reset to Factory Defaults and Reset). The methods of Reset to Factory Defaults and Reset (Software Reboot) are same as the **7-Segment LED Display version**.

3. Web Configuration Page

ET-6000 series modules have a built-in Web configuration page with a friendly user interface making it simple to configure using the standard 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.

The all configuration of ET-60000 is constructed on web page and you can only click the web to do everything through the onboard web pages using a standard web browser via Ethernet. Don't need extra tools or utilities on Windows to configure and control the ET-6000.

Opening the browser to connect the ET-6000

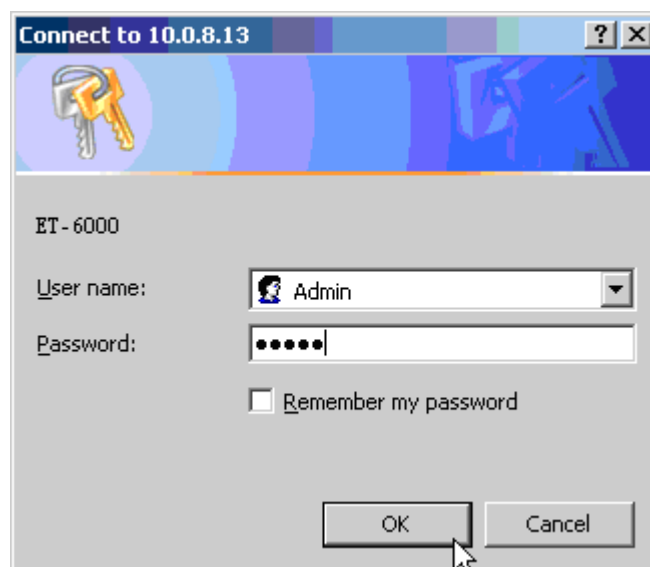
- 1 Start up the Internet Explorer or Mozilla Firefox, and click the URL block at the top of the screen.
- 2 Input the URL address of the ET-6000 (Such as <http://192.168.255.1>) into the URL block and press the "Enter" button to enter the login page.



Note:

- The Factory default IP address is **192.168.255.1**
- The default user name and password is Admin and Admin (Case sensitive)
- If you forget the user name or password, the ONLY way to start configuring ET-6000 is to load factory default by using the Reset button on SMMI menu (Refer to chapter xxx)

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

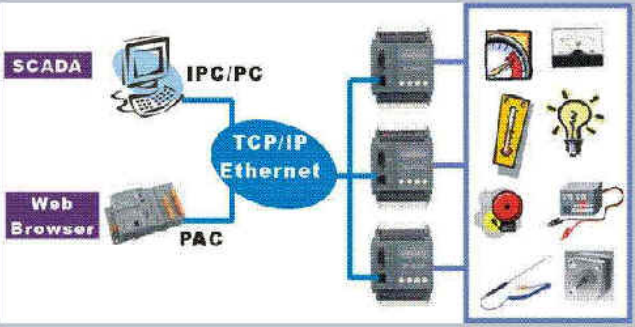


After the user name and password is accepted by the ET-6000, The ET-6000 home page will be displayed.

ICPDAS
http://www.icpdas.com

Welcome to the ET6000 Web configuration page

Model Name	ET-6060
MAC Address	0:d:e0:a3:dd:af
Module Information	N/A
Firmware Version	V100 (Dec 29 2006)
OS Version	V202 (Aug 8 2005)
DI channels	10
DO channels	8
AI channels	0
AO channels	0



General Description

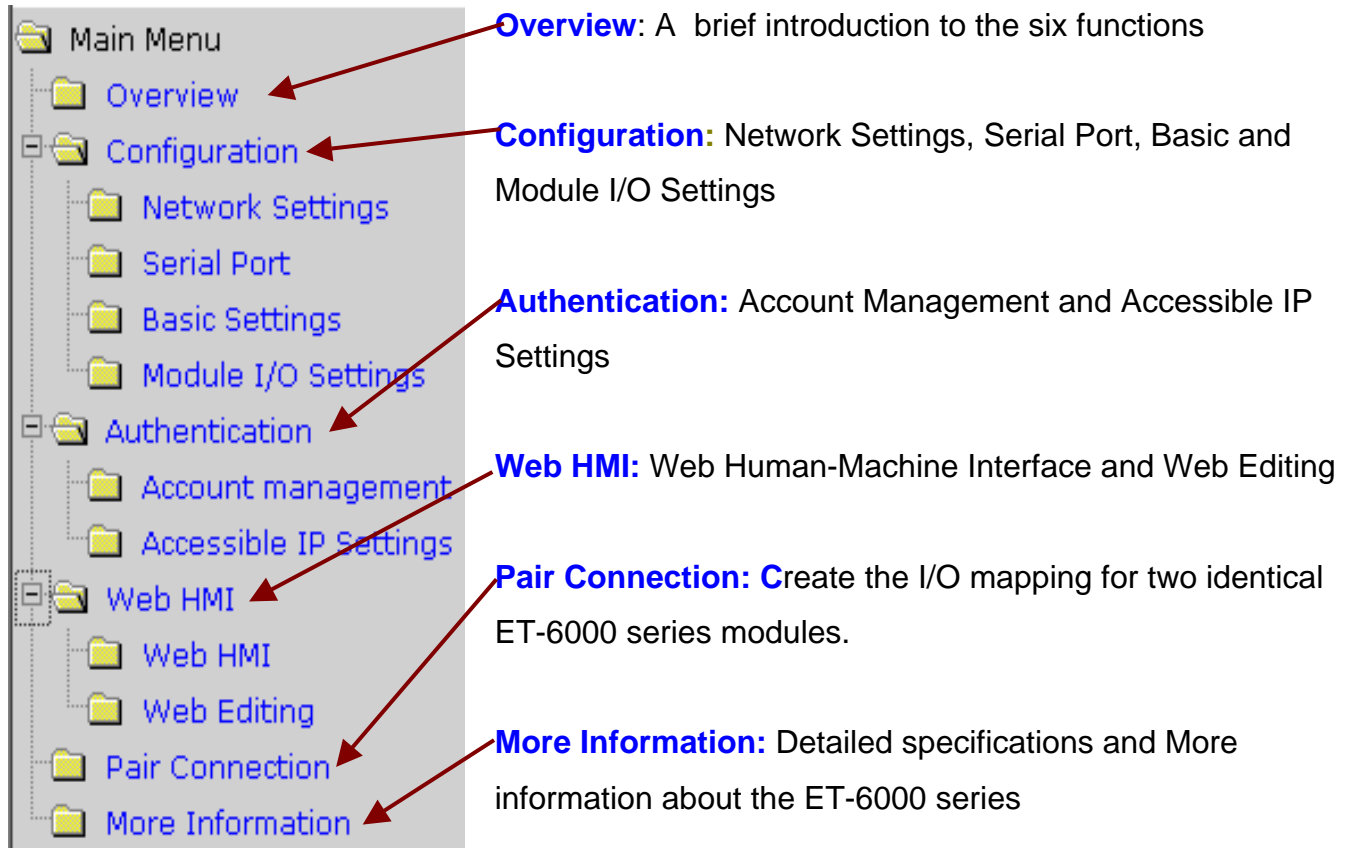
The ET-6000 series is a selection of cost effective, high performance 10/100 Mbps I/O modules



Note:

If either the user name or the password is incorrect or is left blank, the main home page and the 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 ET-6000 contains information related to the currently accessed ET-6000 series module, as shown below:

Model Name: ET-6000 series module name (The default is the ET-6000 series name. The maximum length is 8 characters)

MAC address: The MAC address of the currently accessed ET-6000 series module

Module Information: The alias name of the ET-6000 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 depends on the specifications of the ET-6000 module.

Welcome to the ET6000 Web configuration page	
Model Name	ET-6060
MAC Address	0:d:e0:a3:dd:af
Module Information	N/A
Firmware Version	V100 (Dec 29 2006)
OS Version	V202 (Aug 8 2005)
DI channels	10
DO channels	8
AI channels	0
AO channels	0

General Description

The ET-6000 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-6000 module includes its own internal Ethernet configuration, Modbus TCP/IP port and web port, with a build-in simple HMI that makes configuration and access easy, together with an I/O LED display to indicate the current transmission status.

The ET-6000 supports Modbus/TCP forout any extra programming. Us connecting to most SCADA software such as Indusoft, iFix and Labview. The built-in RS-232 serial port supports the Modbus RTU protocol making it easy to connect an HMI panel. ET-6000 also supports Web server access allowing the making user to monitor and access the remote I/O from a Web browser withers can also download their own custom defined pages into the ET-6000 via our Windows Utility. ICPDAS also provides a Java Applet application in ET-6000 as a reference for designing your own Web interface.

Configuration

- [Network Settings](#)

IP address, Net mask, default gateway, DHCP, static IP or dynamic IP , Firmware and OS version information...

- [Serial Port](#)

Baud rate, start bits, data bits, stop bits, operation mode.

- [Basic Settings](#)

Module name, Module information, real time clock, time server IP address, Web HMI and Telnet console Enable, Disable function.
Load the factory default settings

- [Module I/O Settings](#)

Module I/O configuration including DI latch, digital counter Enable, Disable function...
Settings for Watchdog Timer, DO Power on value and Safe value, AI High/Low

3.2 Configuration

3.2.1 Ethernet Settings

Ethernet Settings

Items	Current Value	New Value
IP	10.0.8.149	<input style="width: 100%;" type="text" value="10.0.8.149"/>
Gateway	10.0.8.254	<input style="width: 100%;" type="text" value="10.0.8.254"/>
Mask	255.255.255.0	<input style="width: 100%;" type="text" value="255.255.255.0"/>
DHCP	<input type="radio"/> Enable <input checked="" type="radio"/> Disable	
Web Server Lib Ver.	Version 108 (Dec 29 2006)	
MiniOS7 Ver.	Version 2.00.2	
<input type="button" value="MODIFY_SETTING"/>		

Please access the new IP Address after modifying the configuration

The Ethernet settings page can be used to view and change the TCP/IP network settings for the ET-6000 module.

Table3-1 TCP/IP network settings

Settings	Description	Range	Factory default
IP	4-byte IP address. Each ET-6000 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-6000 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.

When the DHCP function is enabled, the ET-6000 module will automatically load the IP/Mask/Gateway address saved in the EEPROM if the ET-6000 cannot get a dynamic IP address from the DHCP server on boot up. This 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 ET-6000 will not continue to make requests to the DHCP server until the next reboot, even if the DHCP function is enable.



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 that the DHCP function is disabled.
- No matter whether a static IP or a dynamic IP address is used, the IP address will be displayed on the 7-segment of SMMI LED (ET-6000D module only). Refer to Sec 1.4.1 "Front Panel Description" for more details.

3.2.2 Serial port settings

Serial port settings

Item	Parameters	Current setting
Com Port	COM1	1
Baudrate	115200 bps	115200
Data Bits	<input type="radio"/> 5 bits <input type="radio"/> 6 bits <input type="radio"/> 7 bits <input checked="" type="radio"/> 8 bits	8
Parity	<input checked="" type="radio"/> None <input type="radio"/> Even <input type="radio"/> Odd <input type="radio"/> Mark <input type="radio"/> Space	None
Stop Bits	<input checked="" type="radio"/> 1 bits <input type="radio"/> 2 bits	1
Check Sum	<input type="radio"/> True <input checked="" type="radio"/> False	1
Operation Mode	2 0 (VxComm), 1 (ModbusRTU), 2 (Programming), 3 (UpLink), 4 (Debug), 5 (Console)	2
Net ID	1 Modbus Station Number	1
Time Out	200 ms (5~32767)	200
Station per COM Port	10 Stations	10

Save
Reboot

The right hand column shows the current serial port settings.

The left hand column shows the serial port settings parameters that can be modified. The serial port settings page allows you to view and change the Serial port settings of the ET-6000 module.

COM port: The ET-6000 series only has one COM port (COM1)

Baud Rate: The Baud Rate can be set to either 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600 or 115200 bps

Data bit: The Data Bit can be set to either 7 or 8 bit.

Parity: The Parity can be set to None, Even Odd, Mark or Space.

Stop bit: The Stop Bit can be set to 1 or 2 bit.

Checksum: This value can be set to either enabled or disabled.

Operation Mode:

- **Mode 0:** VxComm (Virtual COM)

Enable VxComm. The Remote application program can use a Virtual COM port (the VxComm Driver should be installed) or can connect to TCP/IP Port 10001 to access the COM port via the Ethernet. In VxComm mode, the COM port can connect to any serial device. (**Unavailable**)

- **Mode 1: Modbus/RTU**
Enable the protocol converter function to convert Modbus/TCP to Modbus/RTU. In Modbus/RTU mode, the COM port can only connect to Modbus/RTU slave devices.
- **Mode 2: System Reserved**
- **Mode 3: UpLink**
Enable the COM port as a Modbus/RTU slave port.
- **Mode 4: Debug port**
The Modbus kernel displays some messages while communicating with Modbus clients or masters.
- **Mode 5: Console**
This is a serial console port that can be used to configure the module via an RS232.

Net ID:

If the Modbus station number in a Modbus/TCP request (from PC or HMI) matches the Net ID, the request is passed to the Modbus kernel. Then Modbus kernel program will then respond and send the internal registers to the Modbus/TCP client (PC or HMI). The content of all other registers is zero.

Time out:

It's used for Modbus protocol communication via a RS232 interface. After completing data transmission, the system begins to count time, if timeout expires, the system stop receiving responses.

Stations per COM port:

This value is used to decide how many Modbus/RTU stations can add on one ET-6000 COM port for control.

Table3-2 Serial Port Settings

Settings	Range	Factory default
Baud Rate	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps	115200 bps
Data Bit	7, 8 bit	8
Parity	None, Even, Odd	None
Stop Bit	1, 2 bit	1
Checksum	True, False	False
Operation Mode	0~5	5 (Console mode)

Net ID	1~255	1
Time out	0~32767 milliseconds	200
Stations per COM port	1~255	10



Note:

When an ET-6000 module receives a Modbus/TCP request that is not directed to its internal registers, it first decides which COM port to use to send the request. Modbus/RTU must be enabled for this COM port otherwise the request will be discarded.

3.2.3 Basic Settings

Basic Settings	
Module Name	ET-6060 (Maximum 8 characters)
Module Information	N/A (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.icpdas.com/products/Remote_IO/et-6 (Maximum 100 characters)
Web Server TCP Port	80
Time	
Time Zone	(GMT0:00)Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London
Current Module time	2000 / 5 / 31 10 : 31 : 51 Check Set Now
Time server	
Console	
Web Configuration	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Telnet console	<input checked="" type="radio"/> Disable <input type="radio"/> Enable
Submit	

Module Name:

The initial value will be the default module name. The name can be modified by the user using a maximum of 8 characters. (**Unavailable**)

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).

After the new values are submitted, the **Module Name** and **Module Information** will be updated. The new details can be verified by viewing the main.htm (Overview of tree), while you submit the new value.

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 enable the settings to take effect.

Click the "Overview" in the Main Menu tree to verify that the changes have been applied.



Chapter 3 Web Configuration Page

Basic Setting	
Module Name	ET6052 (Maximum 8 characters)
Module Information	Module1 (Maximum 16 characters) (The content cannot include ' or " character)
Top page Information (First line)	ICPDAS (Maximum 20 characters)
	Color Blue Font 6
Top page Information (Second line)	http://www.icpdas.com (Maximum 50 characters)
	Color Red Font 3
More Information URL	http://www.w3.org/ (Maximum 100 characters)

Welcome to ET6000 WWW page !	
Model Name	ET6052
MAC Address	0:d:e0:a3:dd:af
Module Information	Module1
Firmware Version	V102
OS Version	V202
DI channel	14
DO channel	8
AI channel	0
AO channel	0

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 enable custom information to be displayed.



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

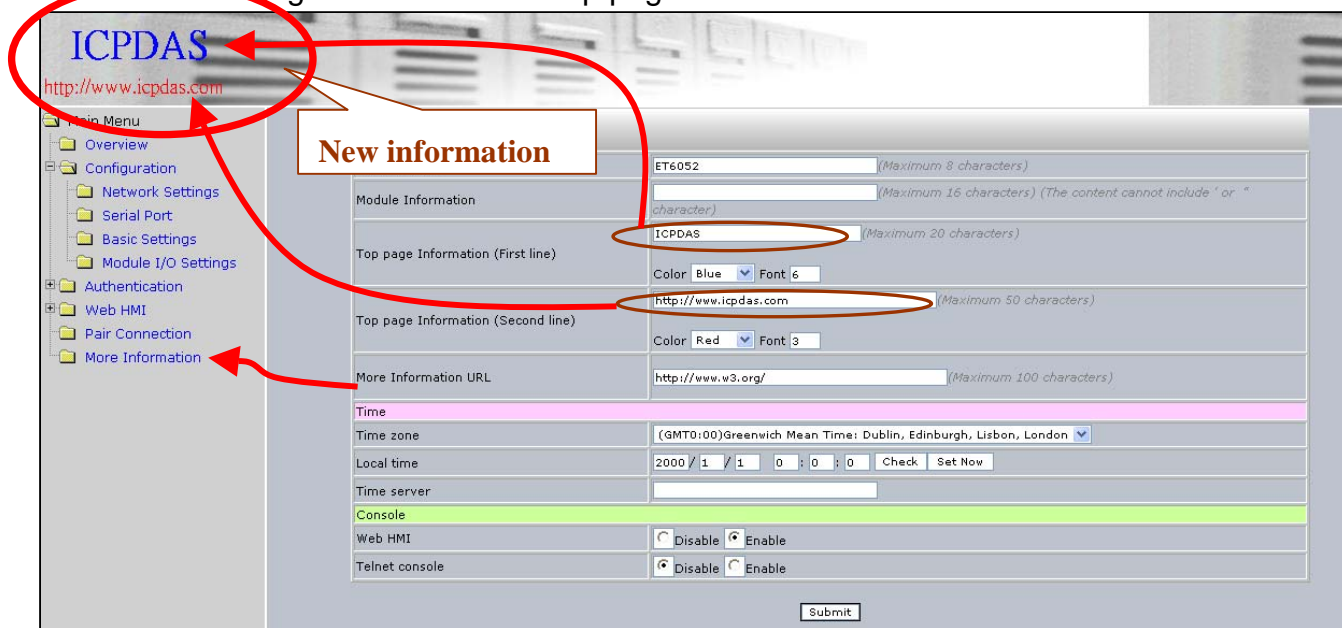
Example:

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 settings to take effect.

Link to index.htm again or refresh the top page.



More Information URL:

It may often be 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.

Basic Setting	
Module Name	ET6052 (Maximum 8 characters)
Module Information	(Maximum 15 characters) (The content cannot include ' ')
Top page Information (First line)	ICPDAS (Maximum 20 characters) Color: <input type="text" value="Blue"/> Font: <input type="text" value="6"/>
Top page Information (Second line)	http://www.icpdas.com (Maximum 50 characters) Color: <input type="text" value="Red"/> Font: <input type="text" value="3"/>
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 screenshot shows the ICPDAS web configuration interface on the left and the resulting W3C website on the right. In the ICPDAS interface, the 'More Information' link in the 'Main Menu' tree is highlighted. The W3C website displays the 'W3C WORLD WIDE WEB consortium' logo and a navigation bar with links: [Activities](#), [Technical Reports](#), [Site Index](#), [New Visitors](#), [About W3C](#), [Join W3C](#), and [Contact W3C](#). The main content area features a 'W3C Supporters Program' section, a 'Mobile Web Initiative' section, and a 'News' section titled 'W3C Thanks Systems Team on Appreciation Day' dated 2006-07-28. A search bar and 'Testimonials' section are also visible on the right side of the website.



Chapter 3 Web Configuration Page

The default URL for “More information” is “http://www.icpdas.com/products/Remote_IO/et-6000/et-6000_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 ET-6000 is 80.

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

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

Time

The ET-6000 module includes a built-in Real-time Clock that is used to perform time calibration functions.

Check:

Set Now: Synchronizes the current local time of the host computer to the ET-6000



Notes:

1. If the IP address of the “Timer Server” is valid, the ET-6000 will request time information from the “Time server” at one hour intervals.
2. If the IP address of the Time server is not present or incorrect, the synchronization with the SNTP server function will be disabled.

Time	
Time zone	(GMT0:00)Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London ▼
Current Module time	2006 / 8 / 3 17 : 12 : 9 <input type="button" value="Check"/> <input type="button" value="Set Now"/>
Time server	<input type="text"/>
Console	
Web HMI	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Telnet console	<input checked="" type="radio"/> Disable <input type="radio"/> Enable

Table 3-3 Basic Settings

Function Name	Description	Range	Factory default
Module Name	The name of the ET-6000 series module	Not available for modification	Depends on the type of ET-6000 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
Time Zone	User selectable time zone	24 Time Zones	GMT (Greenwich Mean Time)
Current module time	The current time stored	Year/Month/Day,	Module time

	on the ET-6000 module	Hour:Minute:Second	
Time server	The IP address of the SNTP server (Time Server)	IP address or Domain name	None
Web Configuration	Web configuration via a Web browser	Enable/Disable	Enable
Telnet console	Console mode via an Ethernet (Telnet).	Enable/Disable	Enable



Notes:

1. If both “Web Configuration” and “Telnet Console” are disabled, the Serial console can still be used to configure ET-6000 locally.
2. The setting value of “Top page Information (First line)”, “Top page Information (Second line)” and “More Information URL” function will retain in factory default while the settings have not be changed. If the settings have be modified by user, the setting value will be the user’s defined information even loading the factory default again.

Load All Setup Default

Load All Setup Defaults
<input type="checkbox"/> Configuration
<input type="checkbox"/> Authentication
<input type="checkbox"/> Web HMI
<input type="checkbox"/> Pair Connection
<input type="checkbox"/> All

Table 3-4 Load All Setup Default Table

Function Name	Details	Factory default
Configuration	All of the Ethernet settings	Refer to Table 3-1
	All of the Serial port settings	Refer to Table 3-2
	All of the Basic settings	Refer to Table 3-3
	All of the Module I/O settings	Refer to Sec. 3.2.4
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.

Submit

: 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.

3.2.4 Module I/O settings

Different Modbus setting functions will be displayed on this page depending on the type of ET-6000 module. All settings can be divided into either common, DI, DO, AI and AO settings.

Please refer to **Appendix D** for more details regarding ET-6000 Modbus register table.

The illustration below shows the Modbus settings for the ET-6060 module

Modbus Settings (Common Functions)

Modbus Address	Function	Action
226	Recover all I/O default settings	<input type="checkbox"/> 1=recover
229	Web Enable/Disable	<input checked="" type="checkbox"/> 0=disable/1=enable (default=1)
233	Reboot ET-6000	<input type="checkbox"/> 1=reboot
40555	CPU reset status	1 <input type="text"/> 1= power on/2= 0.8 second WDT/3= Reset command
40556	CPU reset events	48 <input type="text"/> reset count
40557	Set host watch dog timer	10 <input type="text"/> 5:Disable 5~65535:Enable (unit:second) (default=0)
40558	Host WDT events	1 <input type="text"/> WDT count

Modbus Settings (DI Latch)

Modbus Address	Function	Action
80	Clear all DI latched Status (High)	0 <input type="checkbox"/> 1=clear
81	Clear all DI latched status (Low)	0 <input type="checkbox"/> 1=clear
350	Enable all DI latched status(High/Low)	OFF <input checked="" type="radio"/> ON <input type="radio"/> 0=disable/1=enable (default=0)



Chapter 3 Web Configuration Page

82	Clear low Speed(100Hz) digital Counter	0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> <i>1=clear</i>
40200	Preset value for low speed (100Hz) digital counter	0 <input type="text"/> 1 <input type="text"/> 2 <input type="text"/> 3 <input type="text"/> 4 <input type="text"/> 5 <input type="text"/> 6 <input type="text"/> 7 <input type="text"/> 8 <input type="text"/> 9 <input type="text"/> <i>0~65535 (default=0)</i>
<input type="button" value="Submit"/>		
Modbus Address	Function	Action
40200	Preset value for low speed (100Hz) digital counter	0 <input type="text"/> 1 <input type="text"/> 2 <input type="text"/> 3 <input type="text"/> 4 <input type="text"/> 5 <input type="text"/> 6 <input type="text"/> 7 <input type="text"/> 8 <input type="text"/> 9 <input type="text"/> <i>0~65535 (default=0)</i>
40555	CPU reset status	1 <input type="text"/> <i>1= power on/2= 0.8 second WDT/3= Reset command</i>
40556	CPU reset events	6 <input type="text"/> <i>reset count</i>
40557	Set host watch dog timer	0 <input type="text"/> <i>5:Disable 5~65535:Enable (unit:second) (default=0)</i>
40558	Host WDT events	0 <input type="text"/> <i>WDT count</i>

Modbus Registers and Factory Defaults

Common Functions

Modbus Address	Points	Description	Range	Factory default
40557	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
00350	1	Enable all DI latched status (high/low)	0 (Disable) 1(Enable)	0 (Disable)
00351~ 00431	80	Enable low speed (100Hz) digital counter	0 (Disable) 1(Enable)	0 (Disable)
40200~ 40231	32	Preset value for low speed (100Hz) digital counter	0~65535	0

DO Module Functions

Modbus Address	Points (Max.)	Description	Range	Factory default
00435~ 00514	80	Power on value for DO	0=off 1=on	0
00515~ 00594	80	Safe value for DO	0=off 1=on	0

AI Module Functions

Modbus Address	Points (Max.)	Description	Range	Factory default
00595~00626	32	Enable/Disable AI channel	0=disabled 1=enabled	1
00627	1	Enable/Disable CJC	0=disabled 1=enabled	1
00628	1	Normal/Fast mode for AI	0=normal (16 bit) 1=fast (12 bit)	0
00629	1	50/60 Hz rejection for AI	0= 50 Hz 1=60 Hz	1
40296~40327	32	High alarm value for AI	-32768 ~ +32767	32767
40328~40359	32	Low alarm value for AI	-32768 ~ +32767	-32768
40360	1	Alarm mode for all AI	0= disabled 1= moment 2= latched	0
40427~40458	32	Range code for AI	Refer to range code table	Depends on the type of Module
40491~40522	32	CJC value for AI	-256~+255, unit = 0.1 °C	0

AO Module Functions

Modbus Address	Points (Max.)	Description	Range	Factory default
40361~40392	32	Power on value for AO	-32768 ~ +32767	0
40393~40424	32	Safe value for AO	-32768 ~ +32767	0
40459~40490	32	Range code for AO	-32768 ~ +32767	Depends on the type of Module
40523~40554	32	Slew Rate of AO	-32768 ~ +32767	Depends on the type of Module

3.3 Authentication

3.3.1 Account management

Privilege management

No.	Account	Password	Verify	Authority	Enable
1	Admin	Admin	On
2	<input type="text" value="123"/>	Admin ▾	<input checked="" type="checkbox"/>
3	<input type="text" value="abc"/>	User ▾	<input checked="" type="checkbox"/>
4	<input type="text"/>	<input type="text"/>	<input type="text"/>	Admin ▾	<input type="checkbox"/>
5	<input type="text"/>	<input type="text"/>	<input type="text"/>	Admin ▾	<input type="checkbox"/>

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

☐ Load Setup Default

Each ET-6000 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 called "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-6000 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	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
2	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
3	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
4	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
5	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
6	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
7	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
8	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
9	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
10	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>

Each ET-6000 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 ET-6000 module IP filter will guard the TCP/IP connection by restricting access to any unauthorized IP addresses.

There are three methods of restricting or granting access permissions.

- **Allow Only a specific IP address**

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

Active the rule	From IP Address	To IP Address
<input checked="" type="checkbox"/>	<input type="text" value="192.168.255.1"/>	<input type="text" value="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.



Chapter 3 Web Configuration Page

Active the rule	From IP Address	To IP Address
<input checked="" type="checkbox"/>	<input type="text" value="10.0.8.1"/>	<input type="text" value="10.0.9.22"/>

- **Allow access from any IP address**

Disable IP filter function to allow access to the ET-6000 module from any address.

<input type="checkbox"/>	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.

<input checked="" type="checkbox"/>	Enable the IP filter table. ("Disable" will allow connection requests from all IPs.)
-------------------------------------	--------------------------------------------------------------------------------------

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



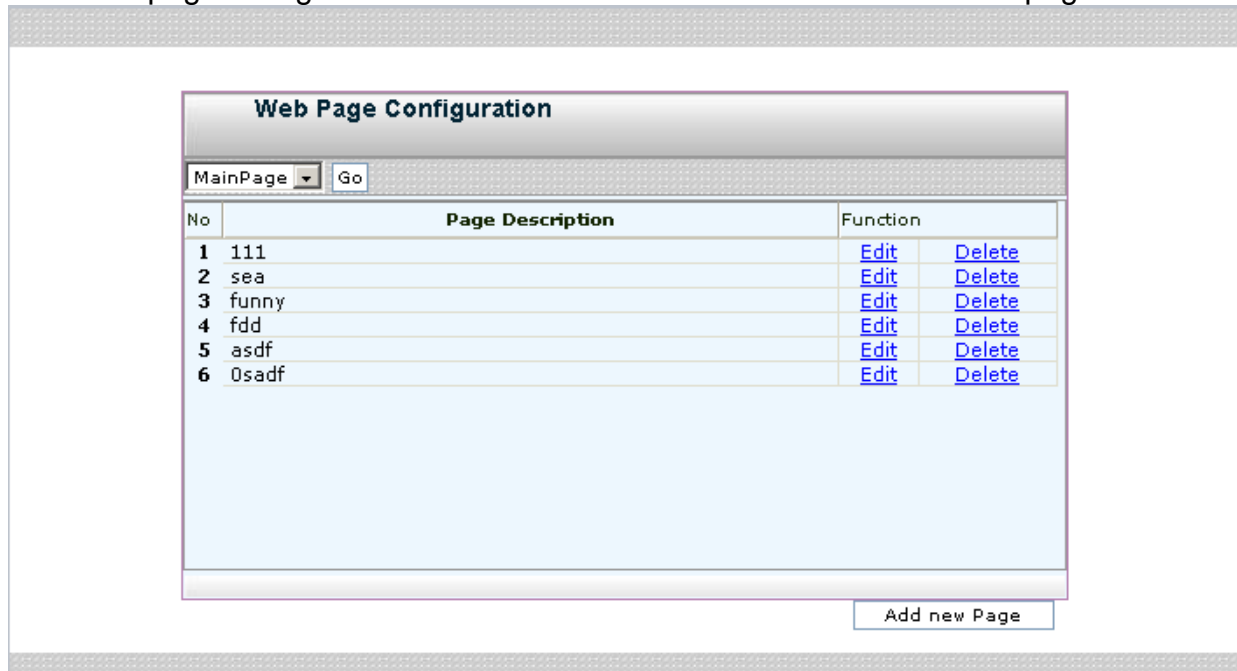
Note:

The IP filter is set to "disabled" by default, meaning that access to the ET-6000 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.



The screenshot shows a window titled "Web Page Configuration". At the top, there is a dropdown menu set to "MainPage" and a "Go" button. Below this is a table with three columns: "No", "Page Description", and "Function". The table contains six rows of data. Each row has a number in the "No" column, a text description in the "Page Description" column, and two links ("Edit" and "Delete") in the "Function" column. At the bottom right of the window, there is a button labeled "Add new 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

Add new Page

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.

Go: 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.

Page properties

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
2	1	Voltage1	0	Coil	Boolean
3					
4	0	DO0	0	Coil	Boolean
5					
6					
7					
8					
9					
10					

All properties can be configured on this page.

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 windows

The free space for picture storage

File tree: The files exist on the ET-6000

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 ET-6000 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 ET-6000 module.

Upload: Upload the selected image file to the ET-6000 module.

Del All: Delete all files that are currently stored on the ET-6000 module.

Click the **Del All** button to delete all files that currently exist on the ET-6000 module.



Notes:

- The “Del All” action will delete all files currently stored on the ET-6000 module, and it cannot be used to delete individual files.
- The ET-6000 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.

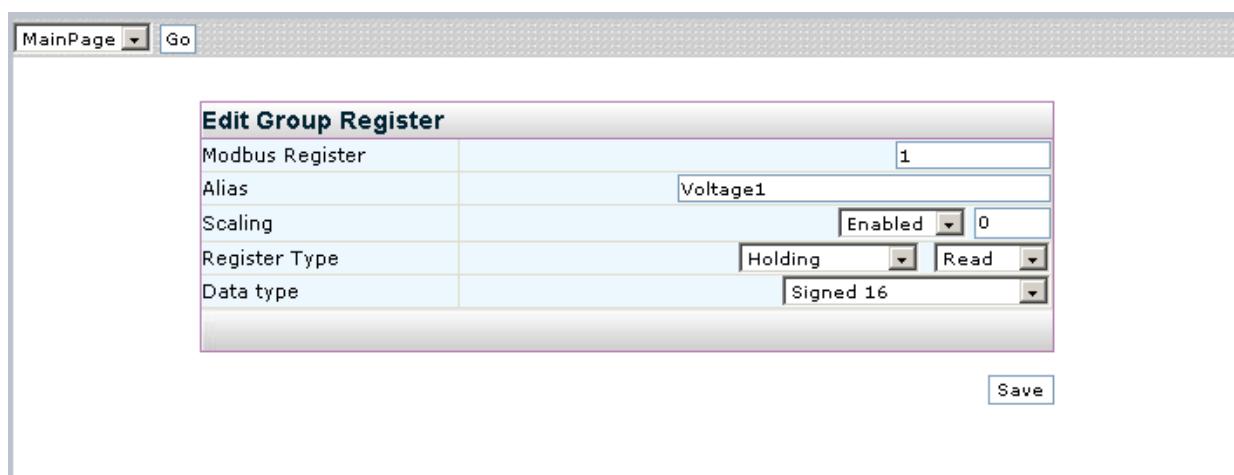
Set as the Start Page: Clicking the checkbox to make the current page to be displayed when clicking the Web HMI link in the Web HMI section of the Main Menu tree.

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

Clear: 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



Modbus Register: The Modbus Register number for the ET-6000 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 ET-6000 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:

Table3-5 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.

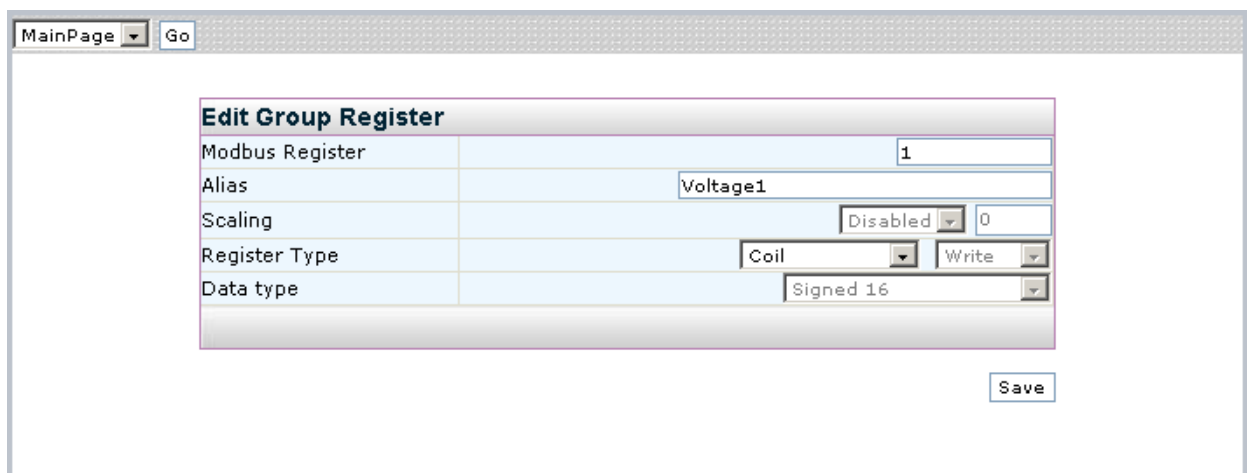
Unsigned 32 (swapped)	A 32-bit positive value. The Most significant word (register) is on the high address.
Signed 32 (Swapped)	A 32-bit value with sign. The Most significant word (register) is on the high address.
Float	A 32-bit floating point. (IEEE754). The Most significant word (register) is on low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



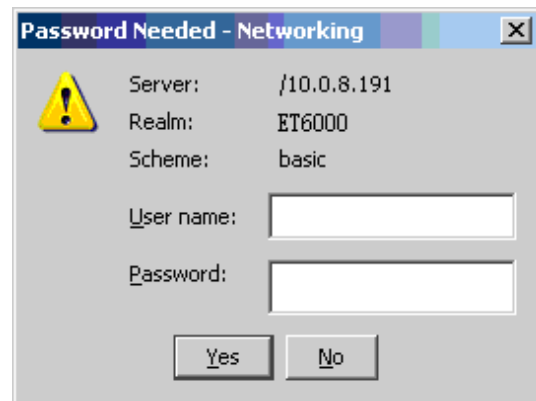
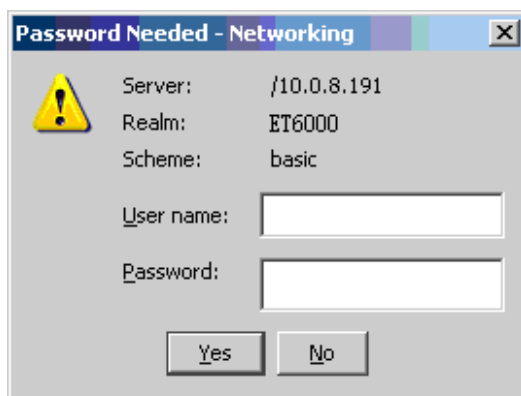
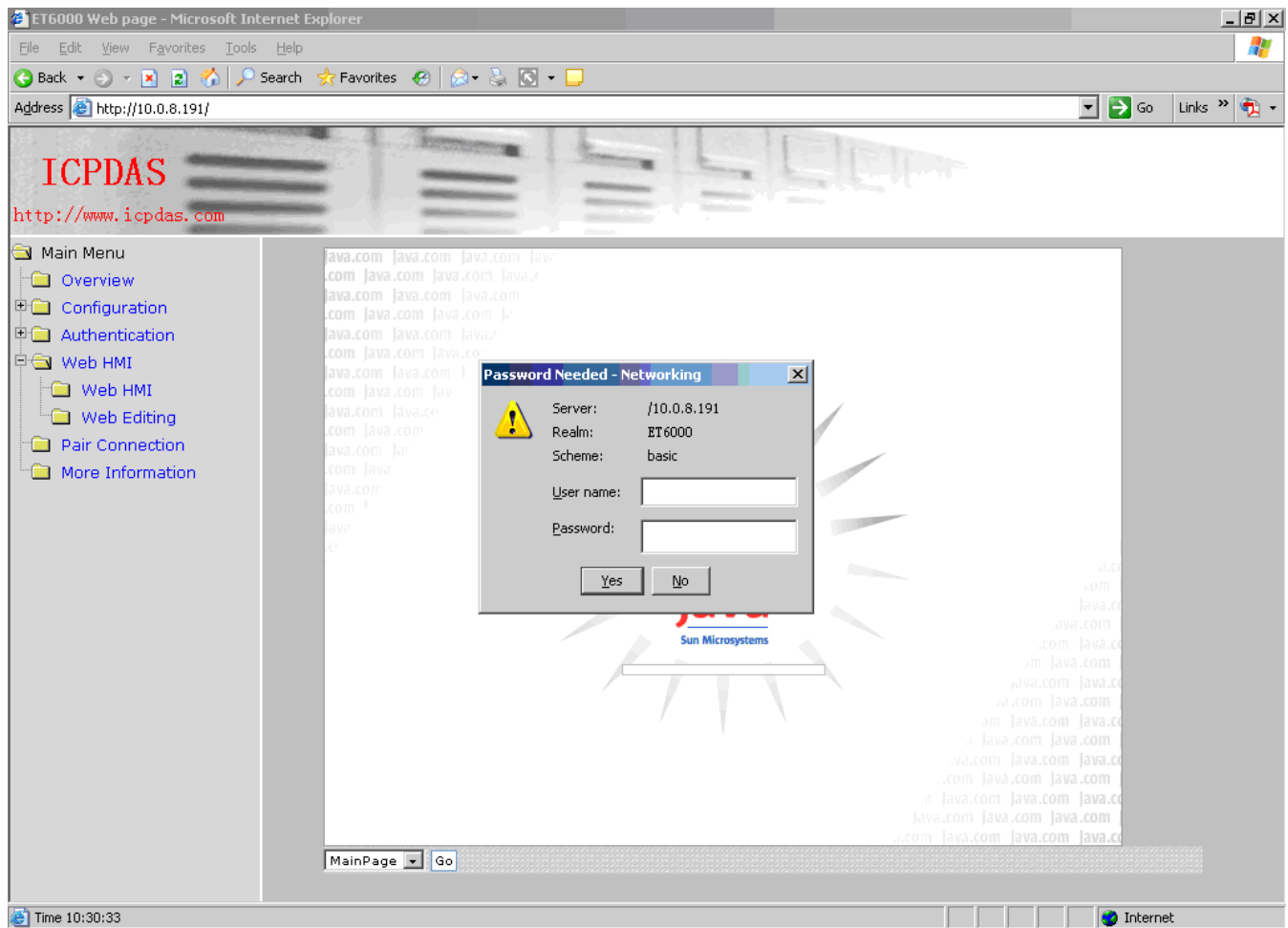
The screenshot shows a web browser window with a 'MainPage' dropdown and a 'Go' button. The main content area displays a form titled 'Edit Group Register'. The form has the following fields:

- Modbus Register:** A text input field containing the value '1'.
- Alias:** A text input field containing the value 'Voltage1'.
- Scaling:** A dropdown menu set to 'Disabled' and a numeric input field containing '0'.
- Register Type:** A dropdown menu set to 'Coil'.
- Data type:** A dropdown menu set to 'Signed 16'.
- Write:** A dropdown menu set to 'Write'.
- Save:** A button located at the bottom right of the form.

3.4.2 Web HMI

The first page displayed in the client Web browser will be the page that is defined by clicking the “Set as Start Page” checkbox on the “Page properties” area of the “Web page configuration” page in the “Web Editing” section of the Main Menu tree.

When the “Web HMI” link in the “Web HMI” section of the Main Menu tree is first clicked, a window will be displayed requesting you to input a valid user name and password, as shown below..



The account and its password is the same as that used when first opening the browser to connect to the ET-6000 module.

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



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

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

Normal

Abnormal
Wrong Ch
Invalid channel ...

The Main Web HMI page shows all the components of the ET-6000.

For example, the Main Web HMI page for an ET-6052 module will display the 8 DO and 14 DI components.

Table 3-6 Main Web HMI Page - Table1

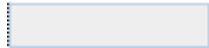
Title Name	Description	Notes
No.	The Component type and address	
Register	The Register address	
Action	DI: ON (1), OFF (0)	
Counter & Clear	DI Low Speed Counter, 0~65535	Press the button to clear the counter
High Latch	DI High Latch Status: Unlatched (0), latched(1)	
Low Latch	DI Low Latch Status: Unlatched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


Table 3-7 Main Web HMI Page – Table 2

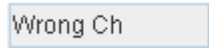
Title Name	Description	Notes
No.	The Component type and address	
Register	The Register address	
Action	DO: ON (1), OFF (0) AO: A numeral of Integer or float	

Connection Status:

The status indicates the connection status of the IO component on ET-6000 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-6000 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.

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.



Stop

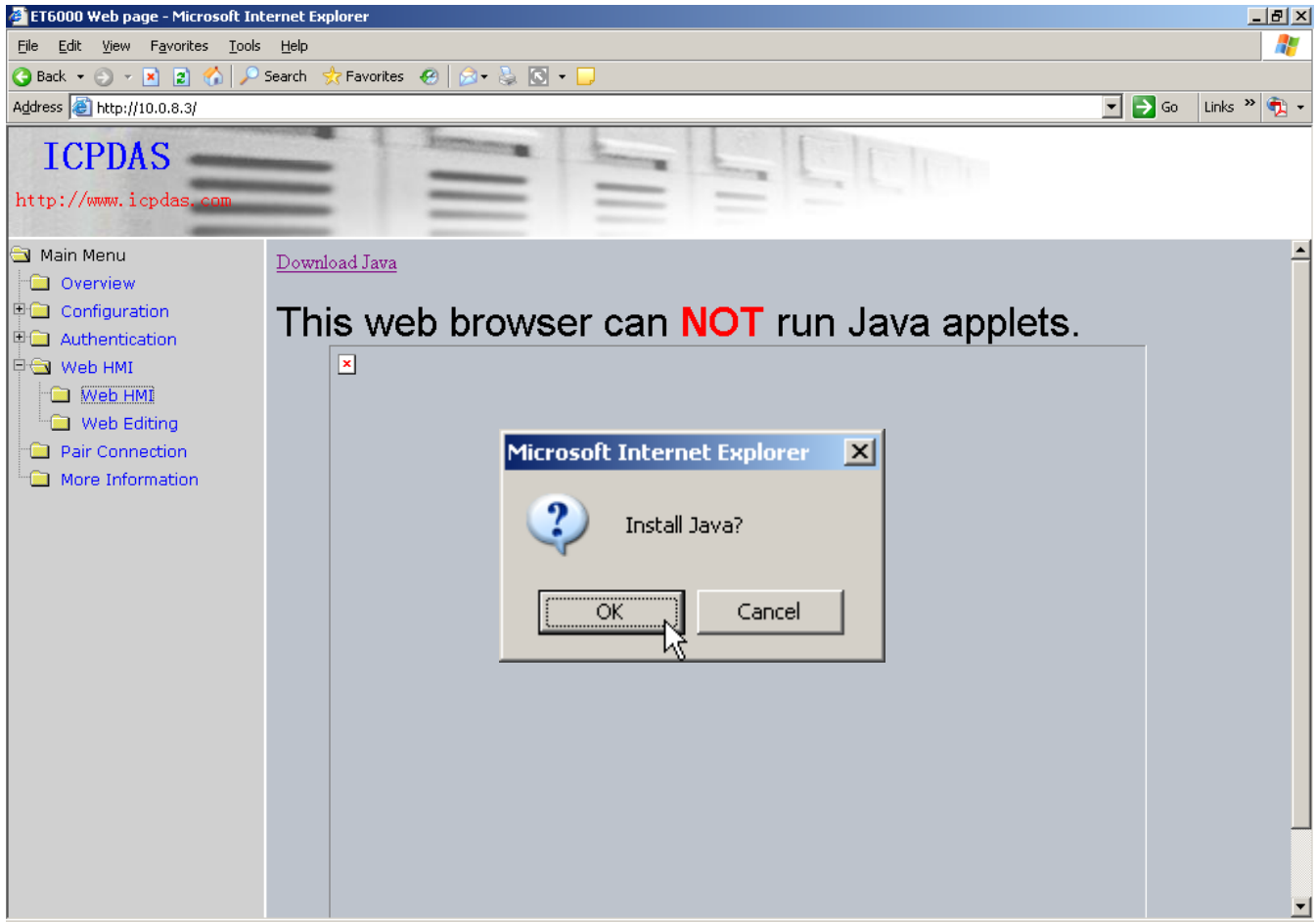
No	Register	Action	Counter&Clear	High Latch	Low Latch	
DI0	0	OFF	0	OFF	OFF	▲
DI1	1	OFF	0	OFF	OFF	≡
DI2	2	OFF	0	OFF	OFF	
DI3	3	OFF	0	OFF	OFF	
DI4	4	OFF	0	OFF	OFF	▼

No	Register	Action	
DI0	0	OFF	▲
DI1	1	ON	≡
DI2	2	ON	
DI3	3	ON	
DI4	4	ON	▼

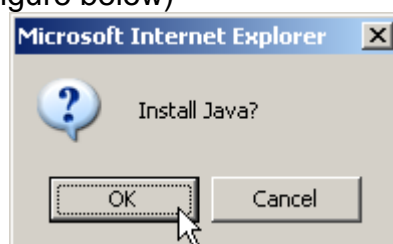
Normal
Abnormal
Wrong Ch.
Invalid channel ...

Java Web page cannot be RUN

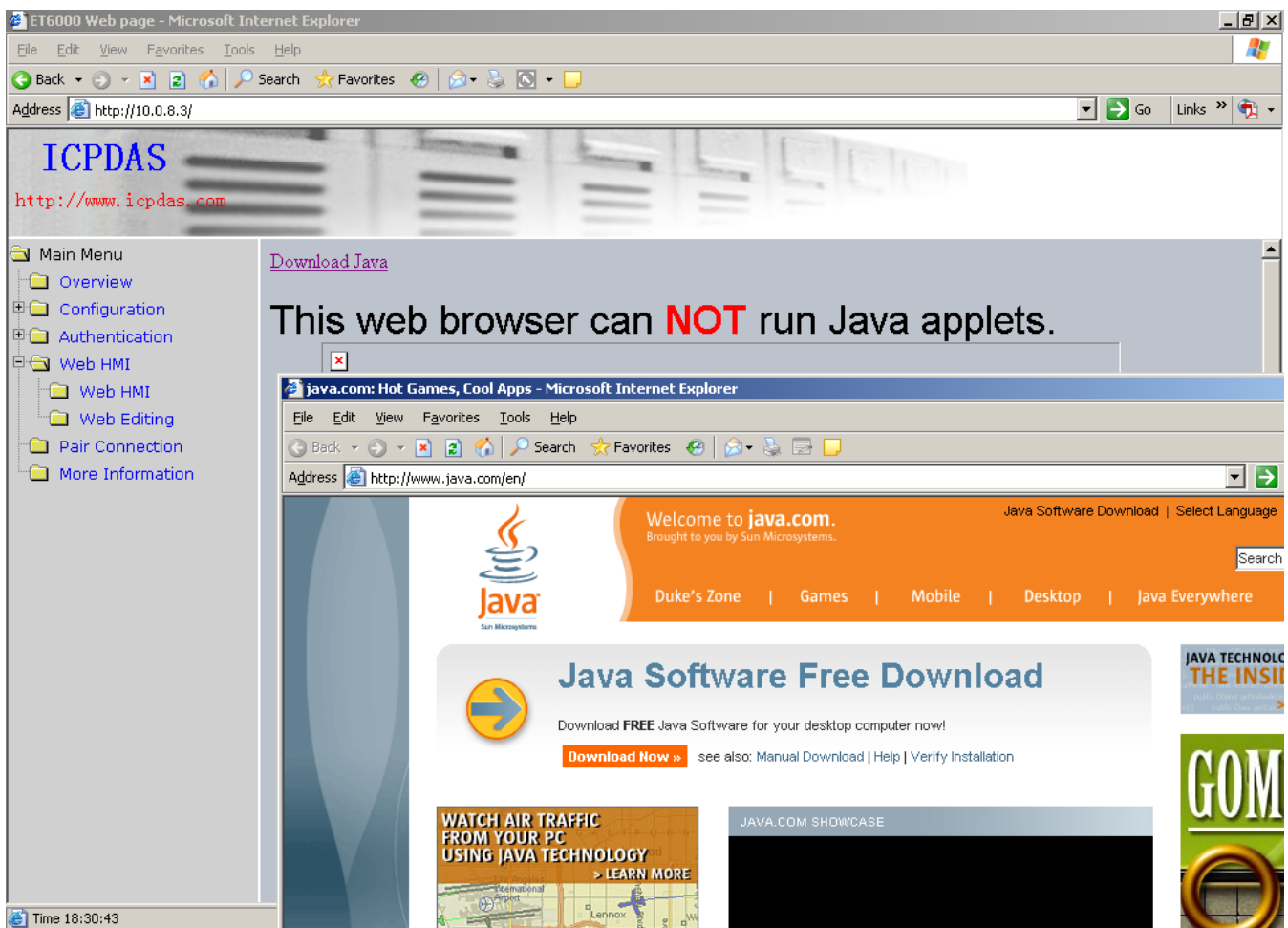
If your Web browser isn't JAVA enabled, a message notifying you that your Web browser can NOT run Java applets" message will be displayed on the Web HMI page.



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)



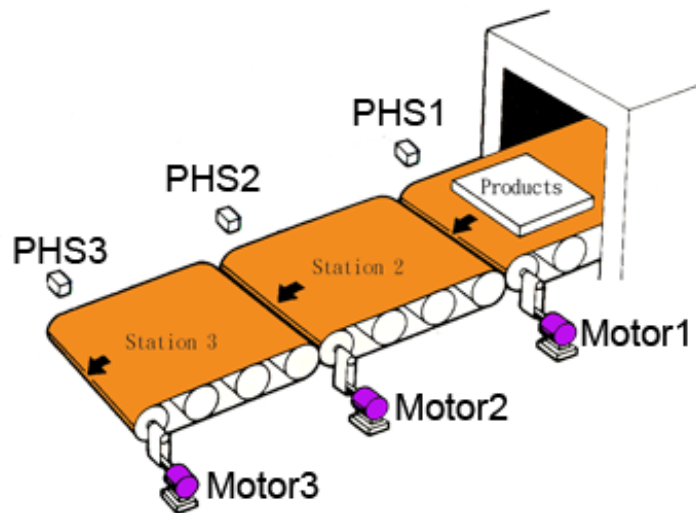
If you click "OK", a new browser window will be opened linking to the <http://www.java.com> web site to enable you to install Java.



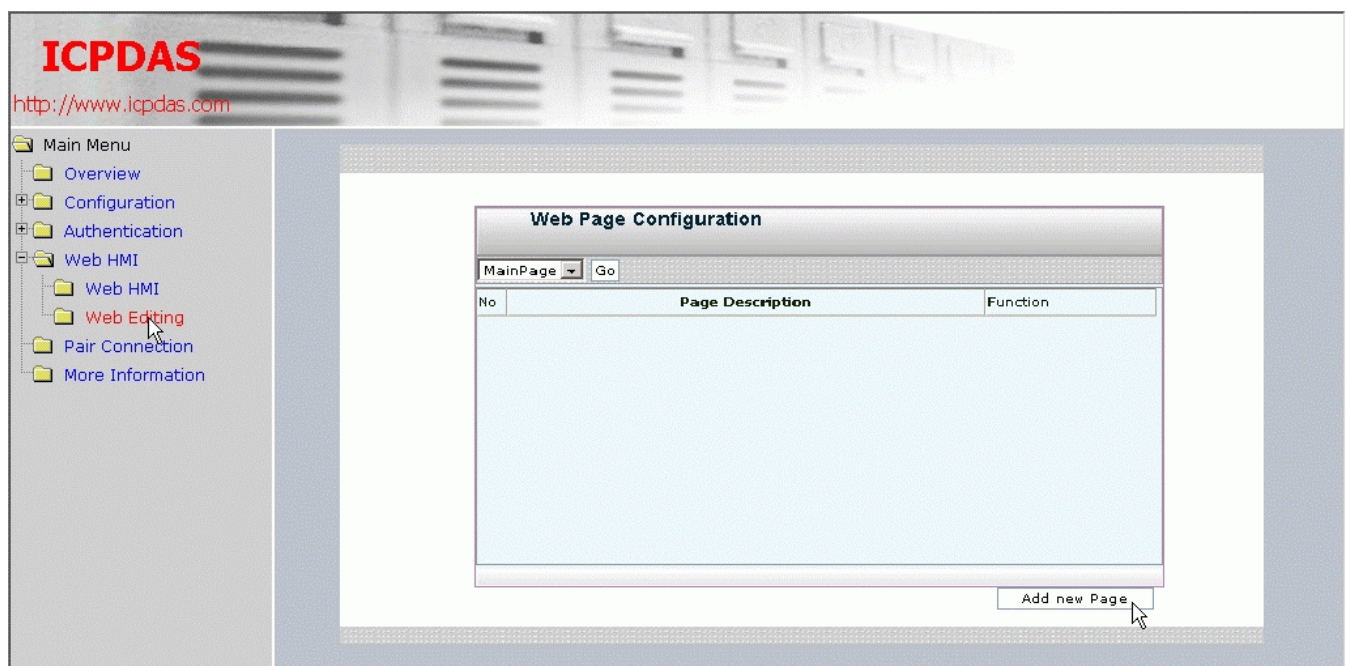
To test whether Java is installed or not, visit <http://java.com/en/download/installed.jsp>. Please refer to **Appendix F** for more details regarding JAVA installation.

An example of how to create a Web Editing Page

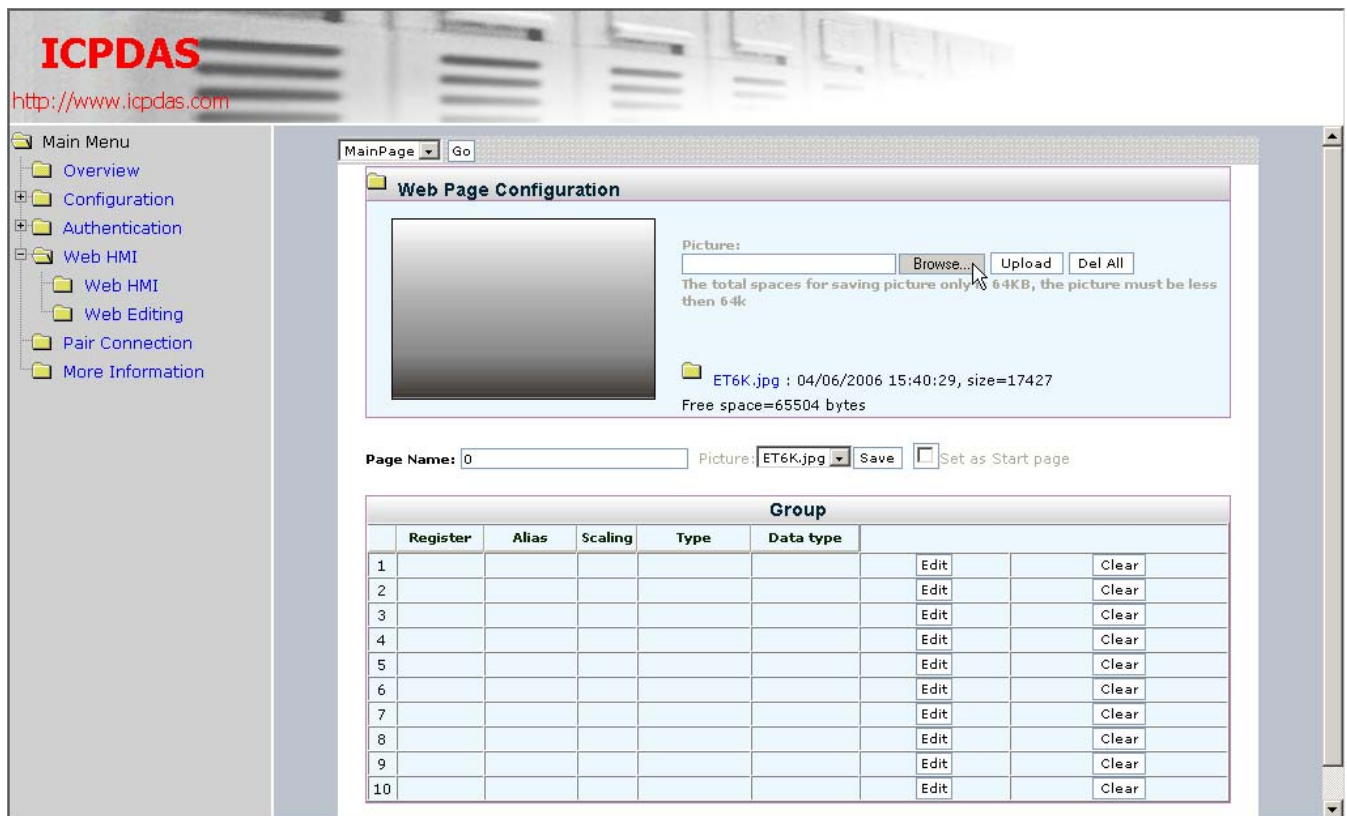
Create a Web page to monitor the I/O of the conveyor system shown below. The I/O system contains 3 photo sensors that are used to detect the products, and 3 switches that are used to turn the conveyor motor on and off.



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.

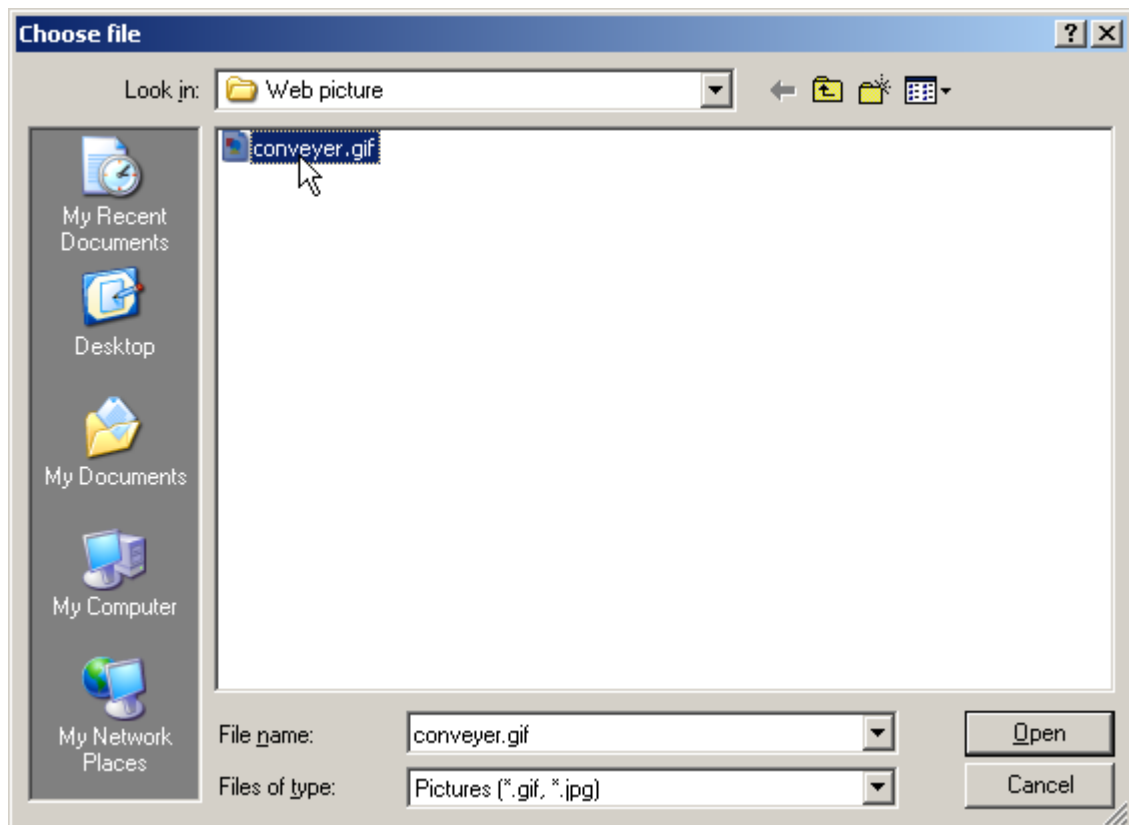


The first thing to do is to upload an image file to the ET-6000 module.. Click the “Browse” button to locate the file (.jpg, .gif, .bmp) on your system.

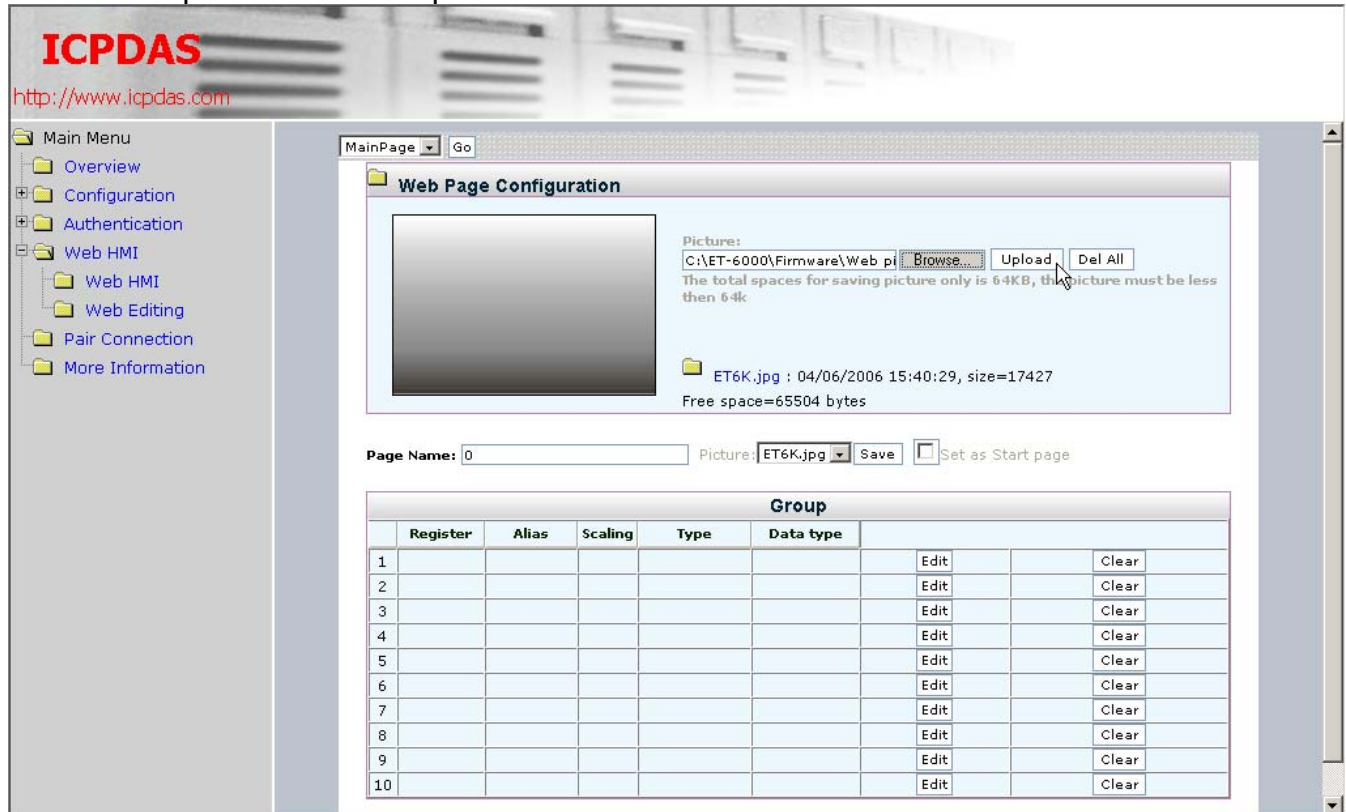


Navigate to the required directory and select the appropriate image file. "conveyer.gif" is selected in this example.

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

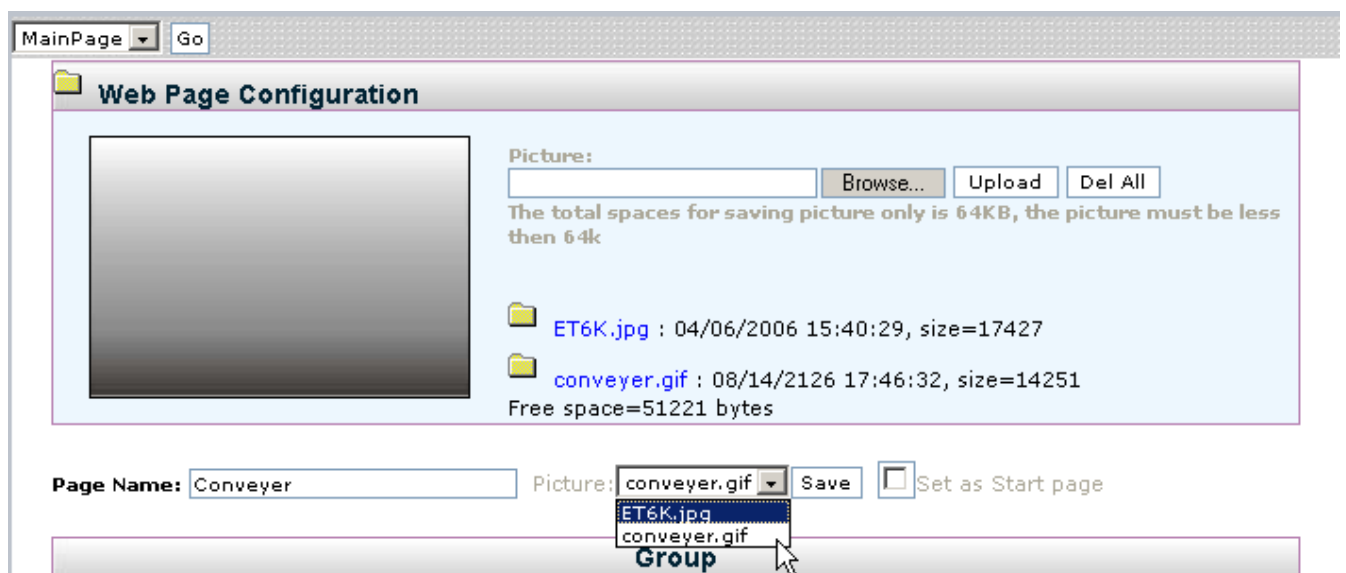


Click the "Upload" button to upload the selected file to the ET-6000 module.



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)



MainPage
Go

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

Page Name: **Picture:** ☐ Set as Start page

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

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

Alias

Scaling

Register Type

Data type

ET-6000 User's Manual, 2007, Feb., V1.0, 6PH-002-10-----115

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

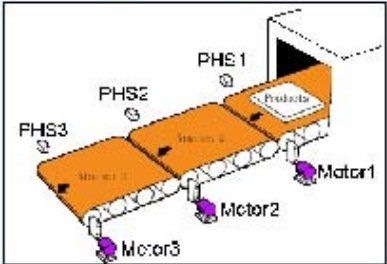
Save

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.



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

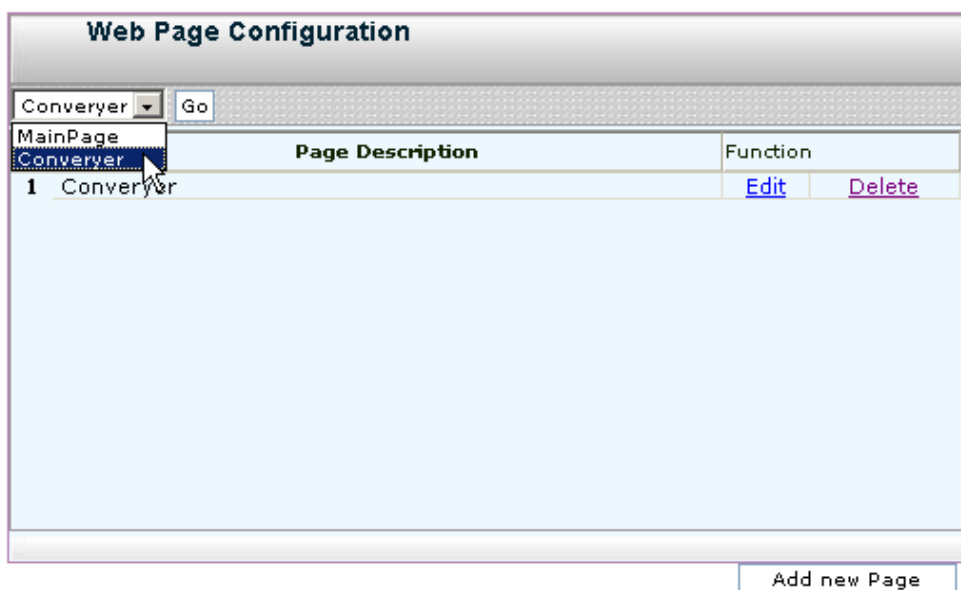
MainPage
Go

No	Page Description	Function
1	Conveyer	Edit Delete

Add new Page

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

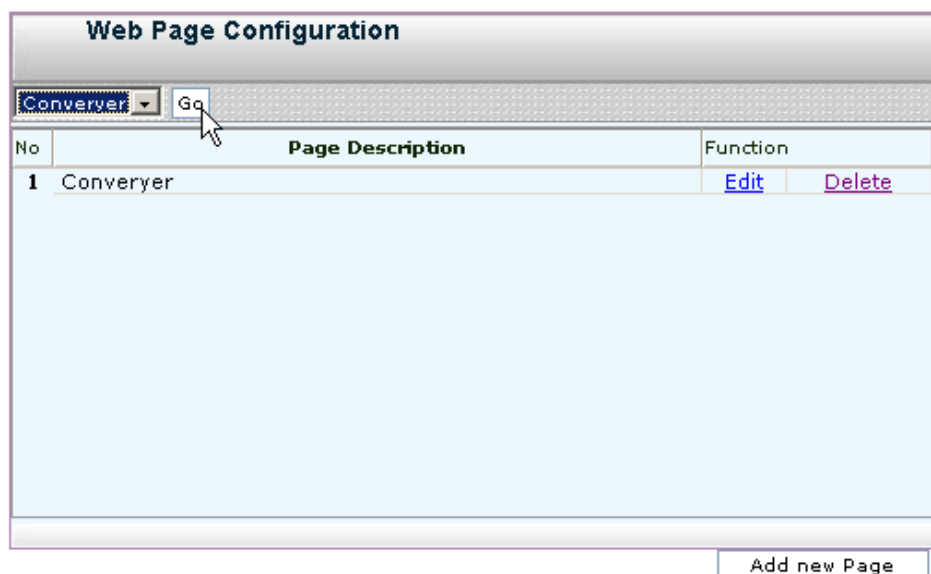
Select the “Conveyer” item and click  button to browse to the “Conveyer” Web HMI page.



The screenshot shows the 'Web Page Configuration' window. At the top, there is a dropdown menu with 'Conveyer' selected and a 'Go' button. Below this is a table with the following structure:

	Page Description	Function
1	Conveyer	Edit Delete

At the bottom right of the window is a button labeled 'Add new Page'.

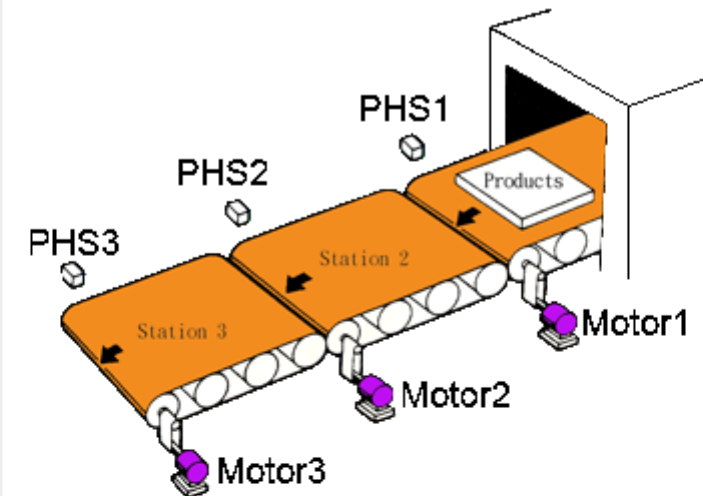


This screenshot is similar to the one above, but with a mouse cursor pointing at the 'Go' button. The table structure is identical:

No	Page Description	Function
1	Conveyer	Edit Delete

The 'Add new Page' button is also present at the bottom right.

The “conveyor.gif” image file and all register items should now 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 F** for details of how to install JAVA.

3.5 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 ET-6000 can poll Remote DI status and then write to a local DO device constantly in the background.

Modbus Settings

Modbus port

☐ **I/O Pair connection**

Remote IP address

Remote Port

Connection Timeout ms

Re-Connection Time ms

Net ID

Scan Time ms

Access Type DO ☐

Controller Memory

Device Memory

Count

Receive Timeout ms

Access Type AO ☐

Controller Memory

Device Memory

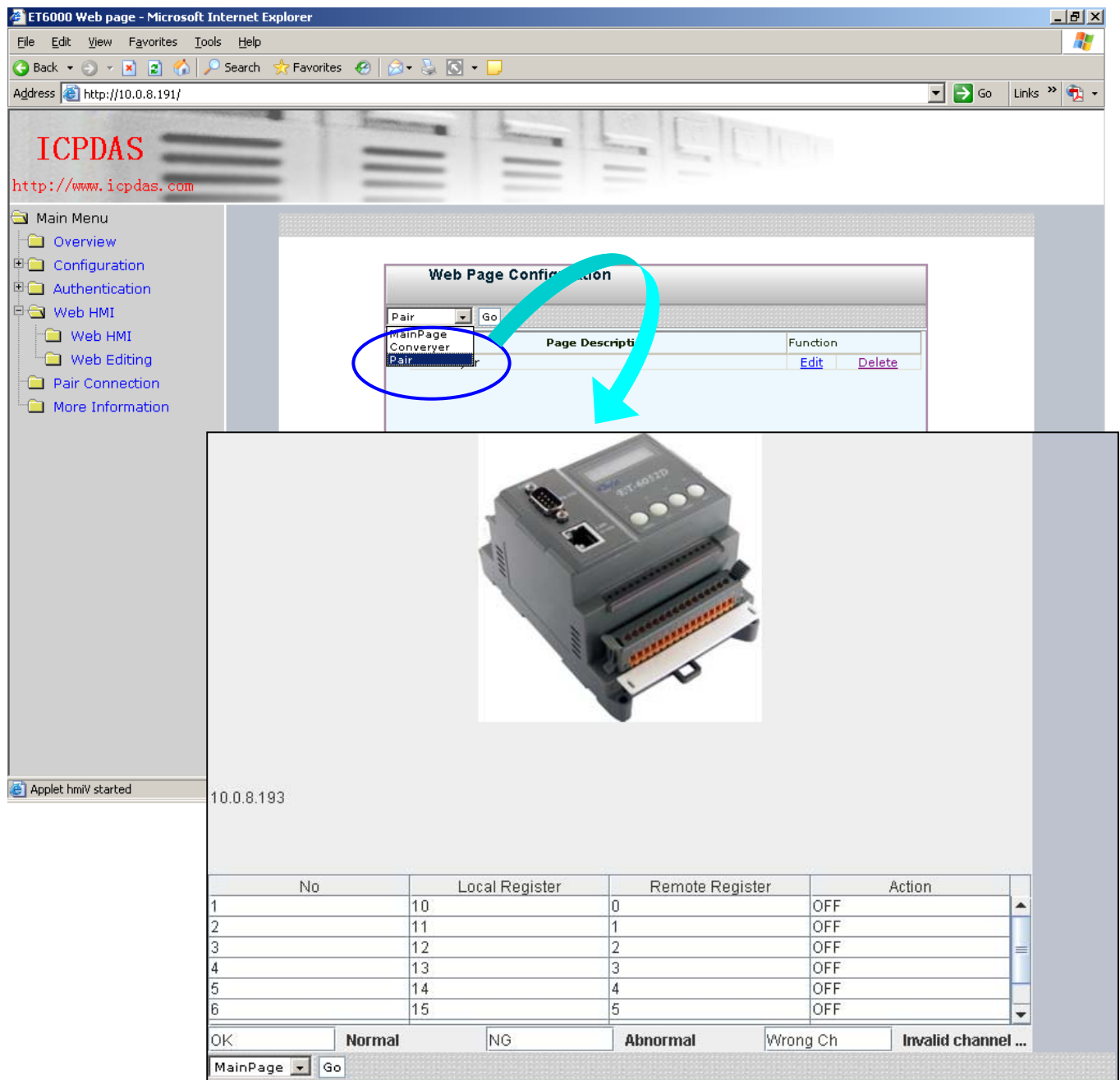
Count

Receive Timeout ms

Table 3-8 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~ 42949672965 ms	0
Remote TCP port	TCP listen port 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
Local DI base address	DI base address of local DI register that will be mapped to remote DO device.	Depend on the ET-6000	0
Remote DO base address	DO base address of remote DO device that will be mapped to local DI register.	Depend on remote device	0
I/O count	I/O count mapped from the base address	1~255	0

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 ...

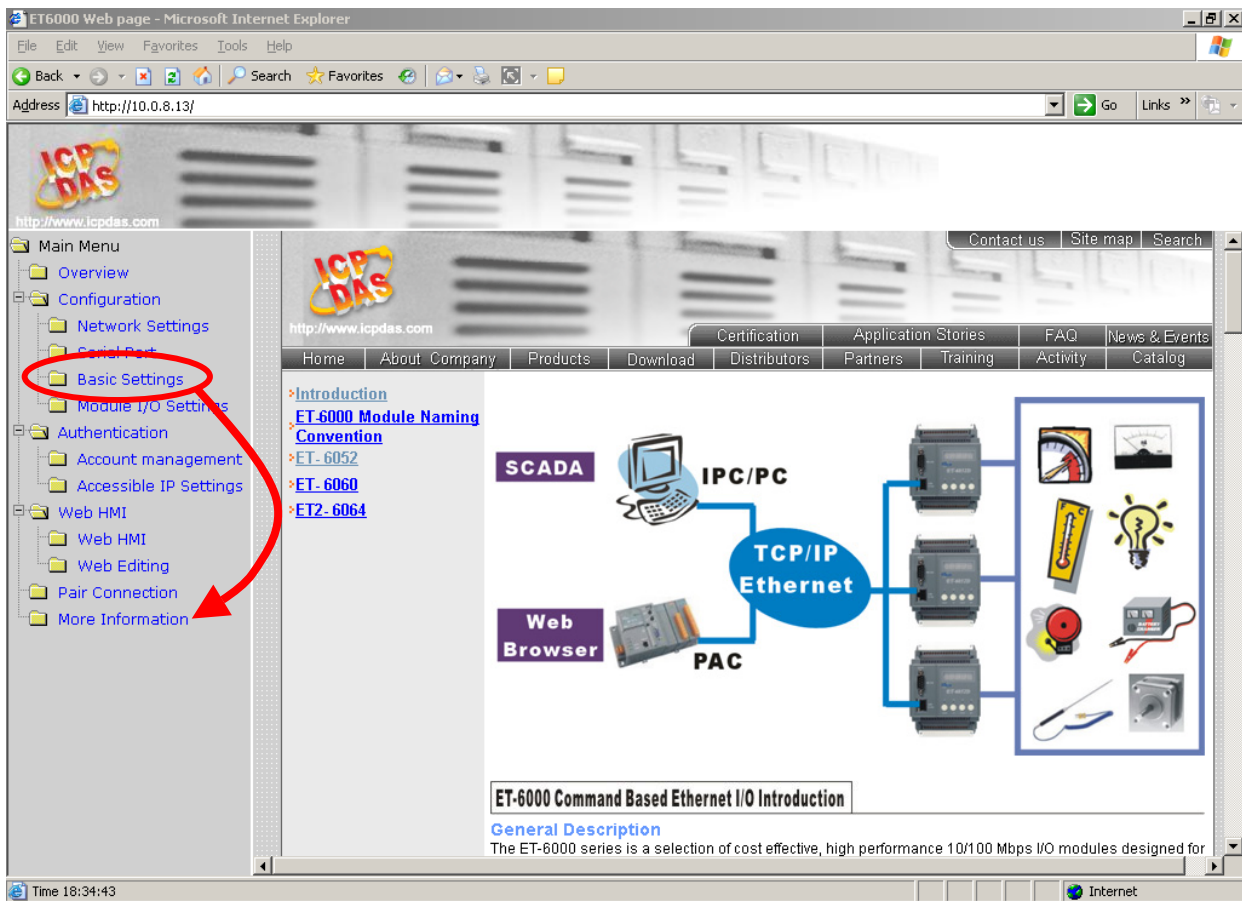
MainPage Go

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-6000/et-6000_introduction.htm

Please refer to **Sec. 3.2.3 Basic Settings** for details of how to modify the URL.



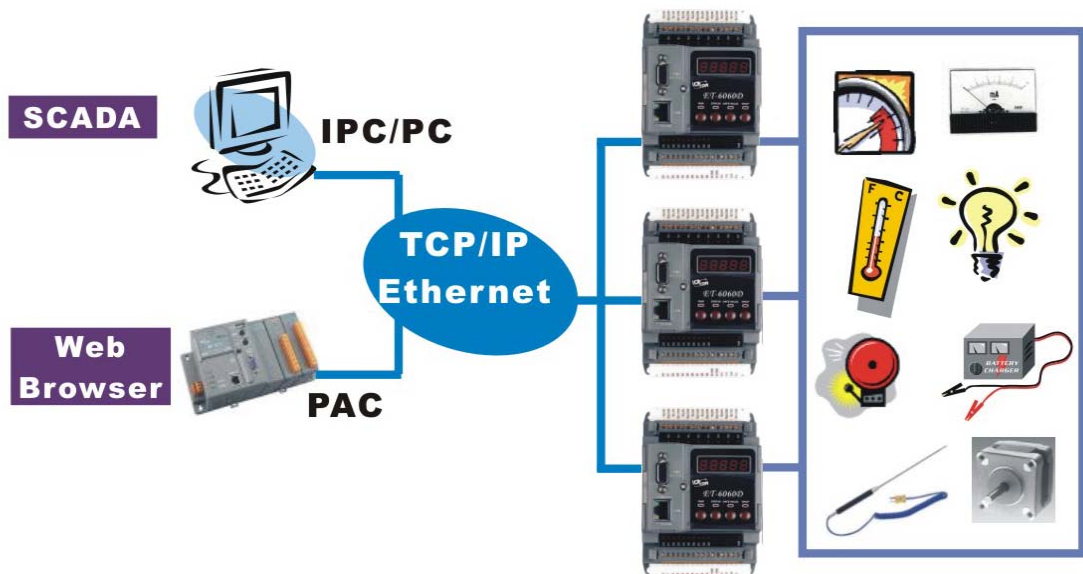
4. How to access ET-6000?

ET-6000 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 ET-6000 module or control the devices attached on the COM1 of the ET-6000 module.

The Host PC is able to access the ET-6000 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.

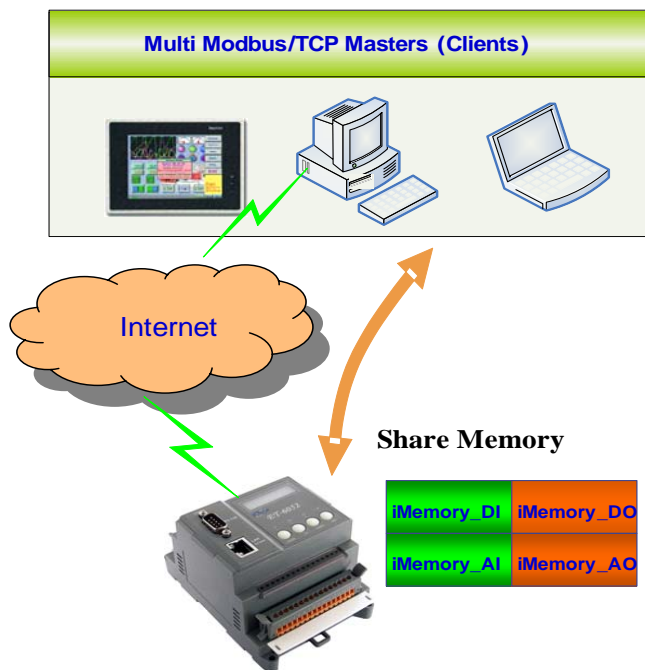
4.2 Using the Modbus protocol

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 ET-6000 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.



The ET-6000 series supports multi-operation modes related to the Modbus applications. Refer to **Appendix C: Modbus Protocol** to select the appropriate mode for your requirements.

4.2.2 Function Codes Supported

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

Table 4-1 ET-6000 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

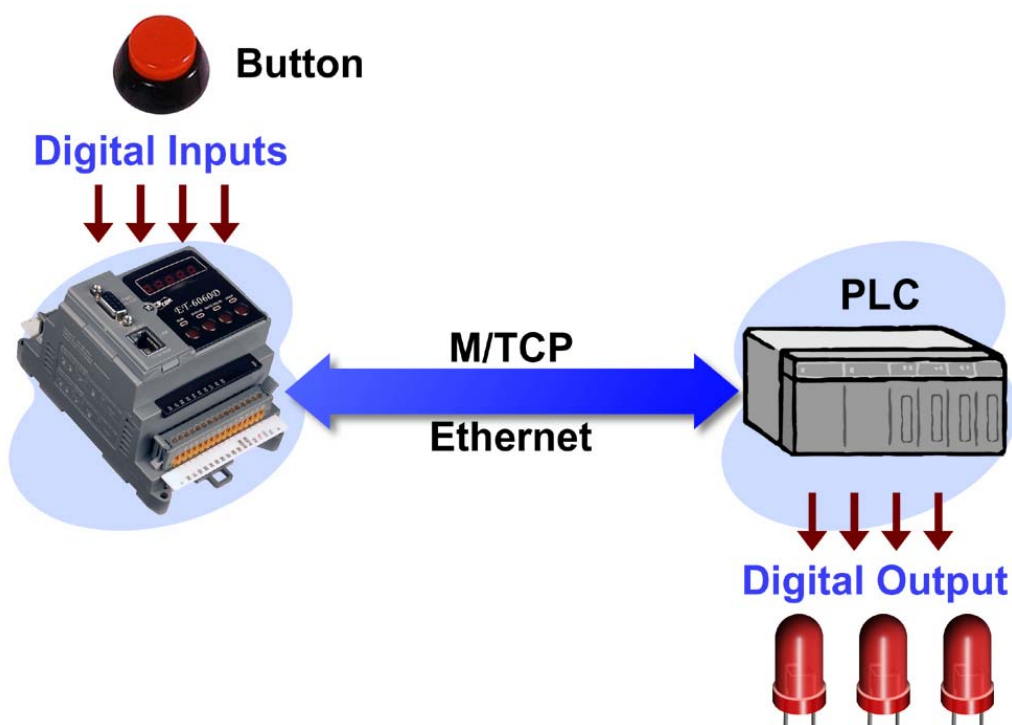
In addition to the Web Configuration Page, the custom's software that supports Modbus protocol can be used to issue Modbus command to the ET-6000 module.

For more details regarding the Modbus address of the ET-6000 module, please refer to **Appendix D: 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 ET-6000 can poll remote DI status and then write to a local DO device constantly in the background.

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

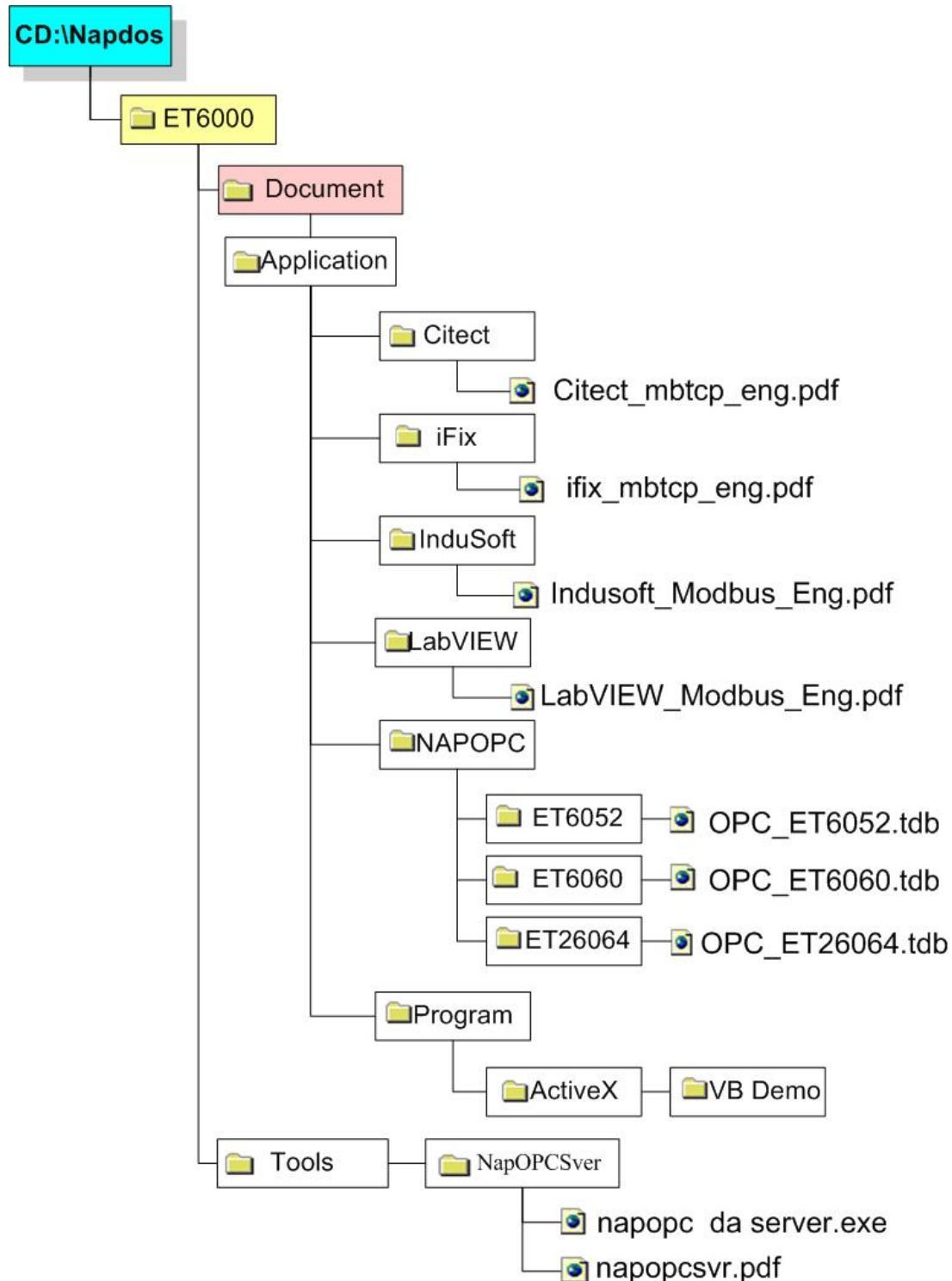


Please refer to **Sec. 3.5 Pair Connection** for more details regarding the configuration of the I/O pair connection.

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 ET-6000 series modules. The relevant file can quickly be located by referring to the diagram.



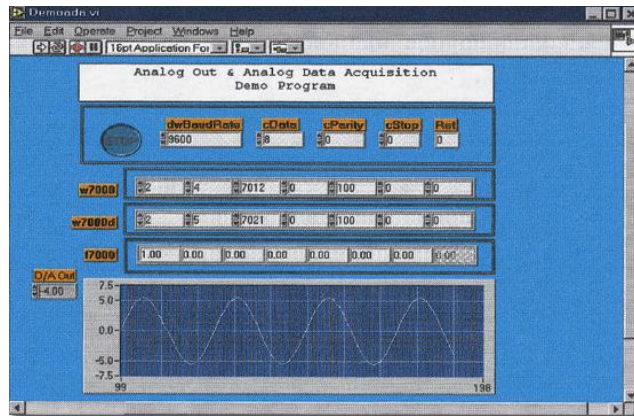


Chapter 6 Software Development Application

There are a variety of applications that conform to the 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 ET-6000 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



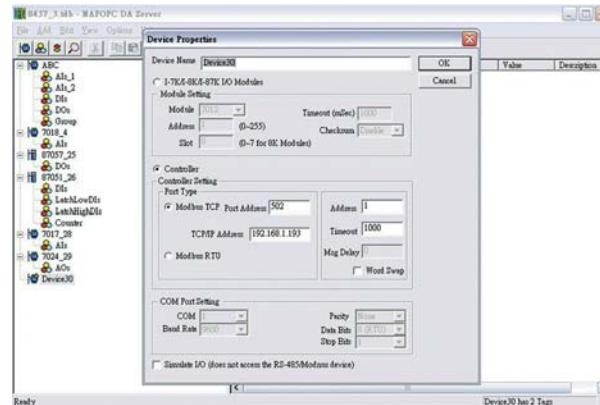
LabVIEW is the best way to acquire, analyze, and present data. LabVIEW delivers a graphical development environment that can be used to quickly build data acquisition quickly, instrumentation and control systems, boosting productivity and saving development time. With LabVIEW, it is possible to quickly 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 ET-6000 using the Modbus protocol is located on the shipped CD:

[\NAPDOS\ET6000\Document\Application\LabVIEW](#) or

<ftp://ftp.icpdas.com/pub/cd/6000cd/napdos/et6000/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\ET6000\Tools\Napopcsvr\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

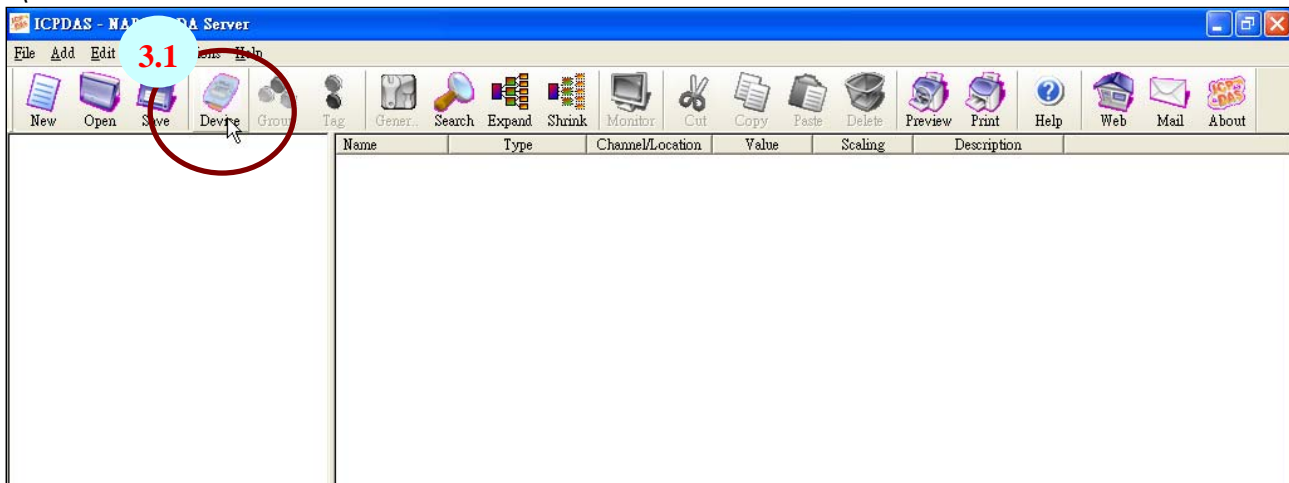
7.3 OPC Server Example using MODBUS protocol

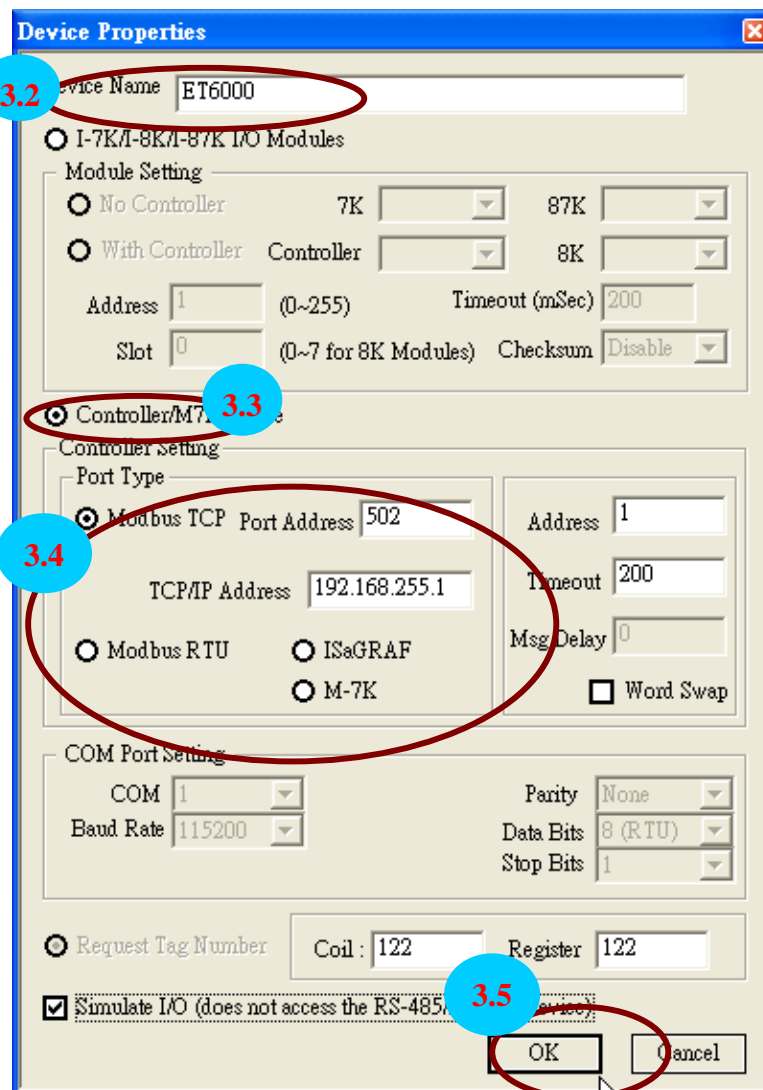
The following is an example of accessing Digital input and output values from an ET-6000

Step 1: Connect the ET-6000 controller (refer to **Sec. 1.4.2**) and configure its network settings (IP, Mask and Gateway - refer to **Sec. 2.1**)

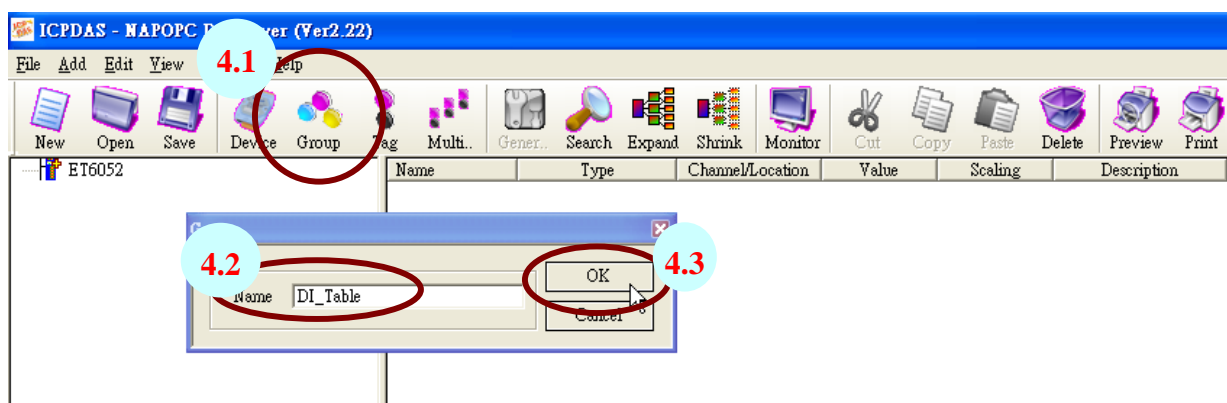
Step 2: Run the OPC server

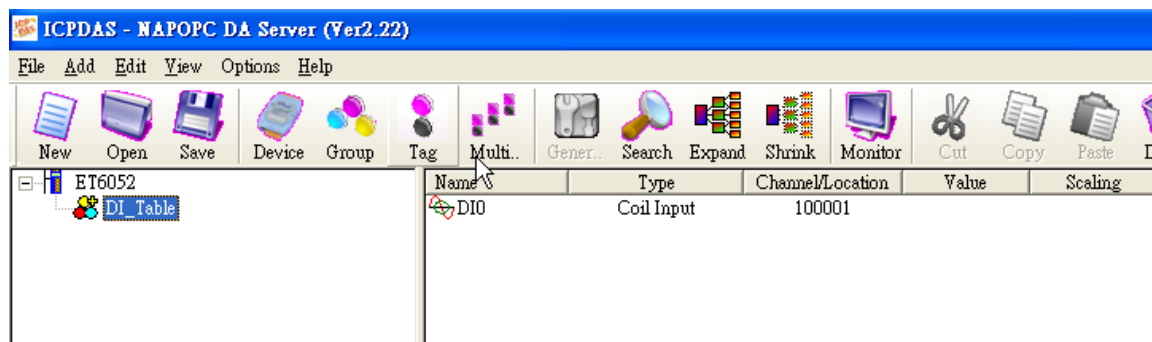
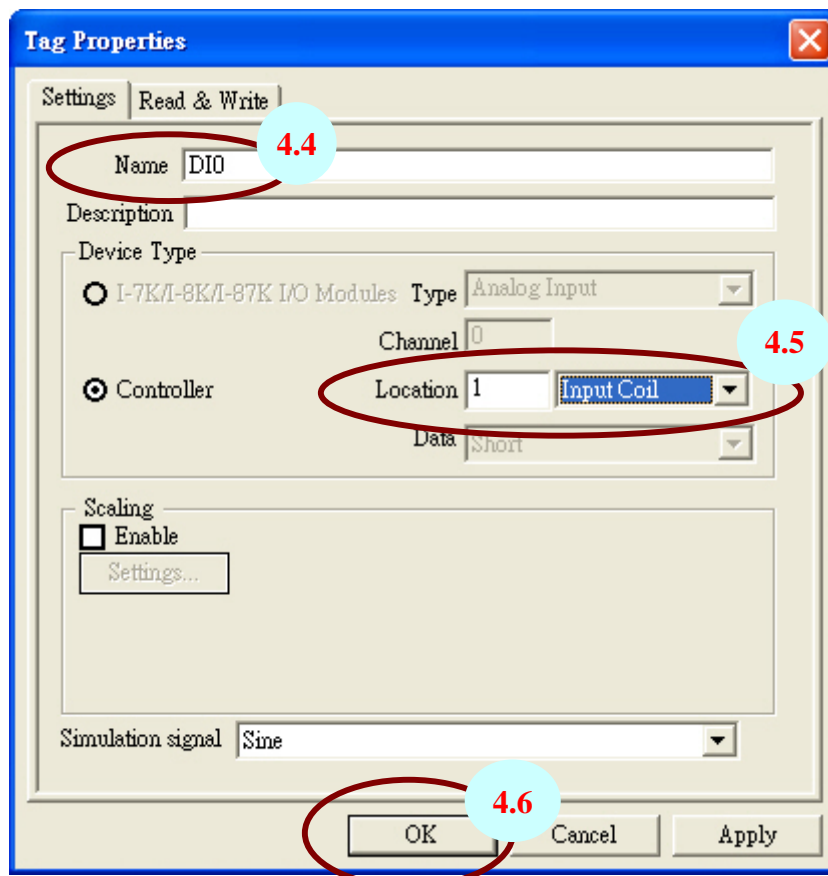
Step 3: Add/Create a new device and to search for I/O modules using Modbus /TCP protocol



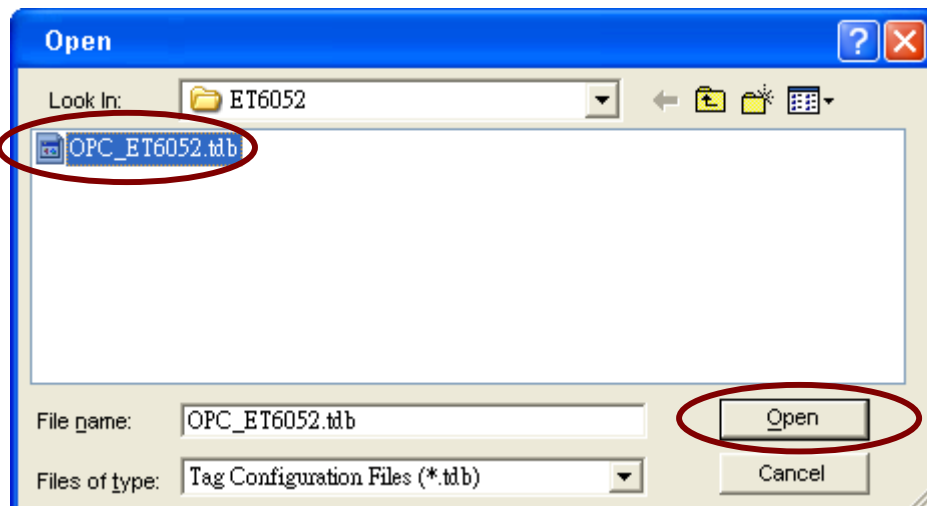


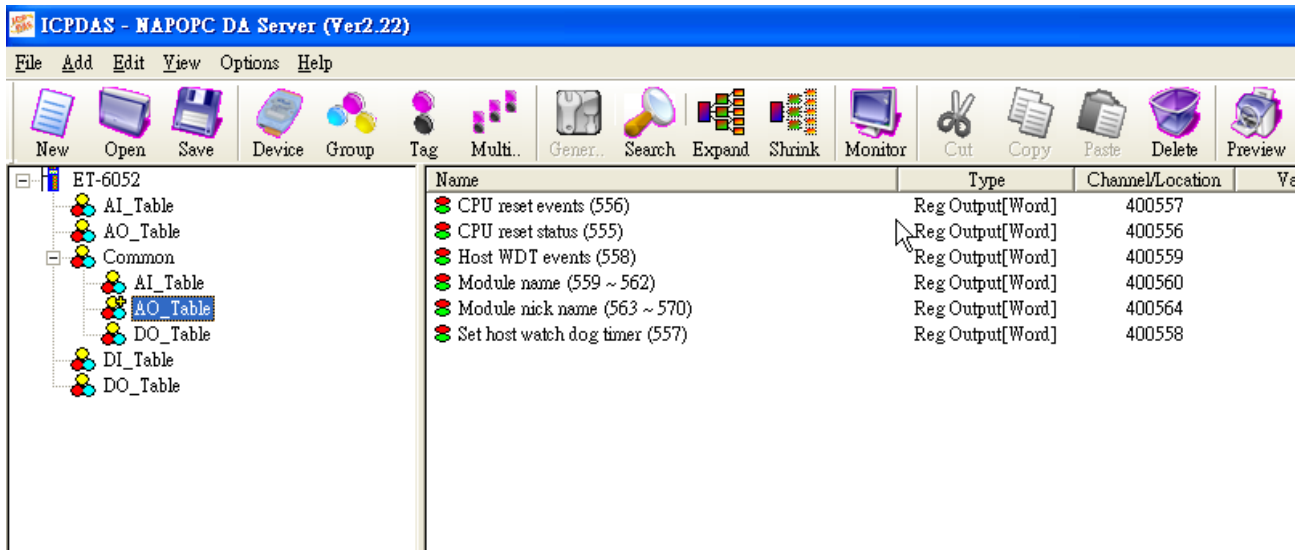
Step 4: New a Group and Tag





Step 5: Load a finished OPC project file for ET-6052





Note:

1. The OPC file for the ET-6052 is located at:
CD: NAPDOS\ET6000\Document\Application\NAOPC\ET-6052
The OPC file for ET-6060 is located at:
CD: NAPDOS\ET6000\Document\Application\NAOPC\ET-6060
2. The OPC file for ET2-6064 is located at:
CD: NAPDOS\ET6000\Document\Application\NAOPC\ET2-6064

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 mimicing
- Real time and historic trend data
- Alarm system
- Data acquisition and recording
- Data analysis
- Report generator

Accessing ET-6000 devices using SCADA software

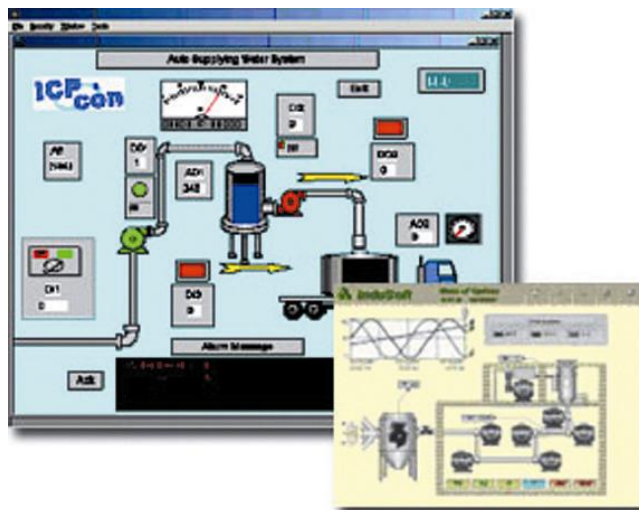
SCADA software is able to access ET-6000 devices using Modbus communication protocols, and can communicate without the need for other software drivers.

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 ET-6000 series module using the Modbus/TCP protocol.

8.1 Indusoft



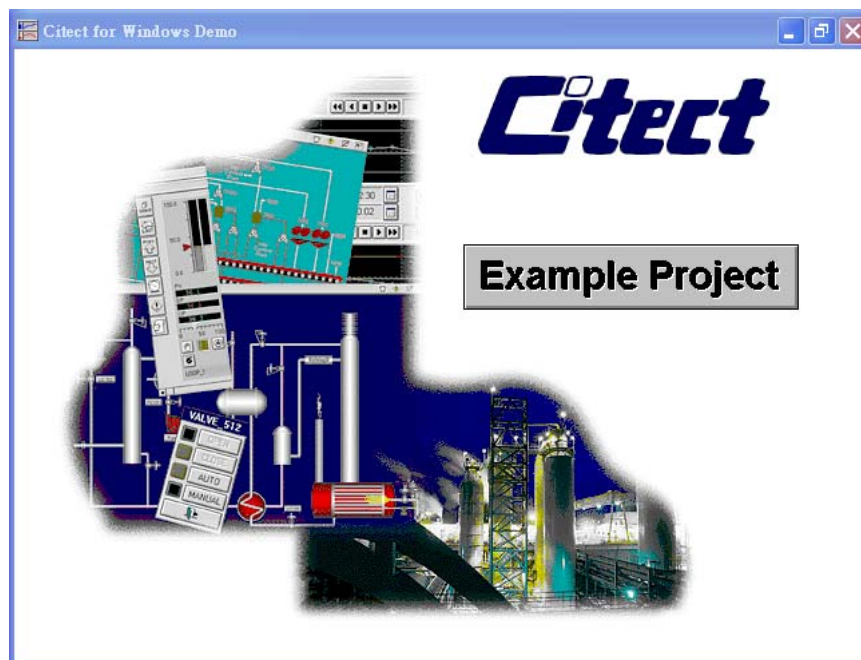
InduSoft Web Studio is a powerful, integrated collection of automation tools that includes all the building blocks needed to develop modern Human Machine Interfaces (HMI), Supervisory Control and Data Acquisition (SCADA) systems, and embedded instrumentation and control applications. InduSoft Web Studio's 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 ET-6000 module using the Modbus protocol is located on the shipped CD:

[\NAPDOS\ET6000\Document\Application\InduSoft](#) or

<ftp://ftp.icpdas.com/pub/cd/6000cd/napdos/et6000/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 ET-6000 module using the Modbus protocol is located on the shipped CD:

[\NAPDOS\ET6000\Document\Application\Citect](#) or

<ftp://ftp.icpdas.com/pub/cd/6000cd/napdos/et6000/document/application/citect/>

8.3 iFix



The document containing detailed instructions for linking to the ET-6000 module using the Modbus protocol is located on the shipped CD:

[\NAPDOS\ET6000\Document\Application\iFix](#) or

<ftp://ftp.icpdas.com/pub/cd/6000cd/napdos/et6000/document/application/ifix/>

9. Console Mode

Communication with the ET-6000 can be performed via either the Ethernet or COM1 using Hyper-terminal, Telnet or the 7188xw utility, etc.

● Console Commands

Valid commands in console mode are as follows:

1. Help
2. Reset
3. Default
4. Setip/lp
5. setmask/mask
6. setgateway/gateway
7. seteid/mac
8. com1
9. commode
10. web

All commands are NOT case sensitive.

1. Help

Use the Help command to access information related to the console commands.

If you enter the 'help' command without any parameters, the console will display all valid commands on the screen. Such as:

```
ET-6K>help
?,help [command]: Help
reset
default
ip,setip
mask,setmask
gateway,setgateway
mac,seteid
com1 [baudrate][databit][parity][stopbit]
.....
```

To access help for a specific command, enter help <command name>. Such as:

```
ET-6K>help ip
ip(MyIP) ip1.ip2.ip3.ip4
```



2. Reset

Use this command to reset the ET-6000.

3. Default

Use this command to restore the settings to the factory default

Format: default [mode]

mode:

0: All settings. Set all settings to the factory default.

1: Configuration. It includes Ethernet, Serial Port, Basic and Module I/O Settings.

2: Authentication. It includes Account and IP filter settings.

3: Web HMI. Set the Web HMI settings to the factory default.

4: Pair Connection. Set the Pair Connection settings to the factory default

Refer to “Load All Setup Default” in **Sec. 3.2.3 Basic Settings** for more details.

4. Setip/Ip

This function is used to change the IP address of the ET-6000.

Format: setip ip1.ip2.ip3.ip4

ip1.ip2.ip3.ip4: This is a 32-bit address, such as 192.168.255.1

5. setmask/mask

This function is used to change the Mask address of the ET-6000.

Format: mask m1.m2.m3.m4

m1.m2.m3.m4: This is a 32-bit address, such as 255.255.255.0

6. setgateway/gateway

This function is used to change the gateway address of the ET-6000.

Format: gateway ip1.ip2.ip3.ip4

ip1.ip2.ip3.ip4: This is a 32-bit address, such as 192.168.0.1

7. seteid/mac

This function is used to read the Mask address of the ET-6000, and isn't able to be changed.

Format: Seteid(mac)

Returns the MAC address, such as

MAC=00:0d:e0:a3:dd:af

8. com1

This command is used to configure the Baud Rate and Data format of COM1.

Format:

com1 [baud] [databit] [parity] [stopbit]

baud: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps

databit: 7, 8

parity: 0 (None), 1 (Even), 2 (Odd)

stopbit: 1, 2



9. **commode**

This function is used to change the operation mode of COM1.

Format: commode [mode]

mode:

0 (Vxcomm)

1 (ModbusRTU)

2 (Program)

3 (UPLink)

4 (Debug)

5 (Console)

Refer to **Sec. 3.2.2 Serial Port Settings** for details of how to change the settings, and refer to **Appendix C: Modbus Protocol** for more information.

10. **web**

This function is used to enable/disable the Web Server on the ET-6000.

Format: web [mode]

mode :

0 (Disable), Disables the Web server.

1 (Enable), Enables the Web server.

If you enter the command above without any other parameters the console will show the current settings the on screen. Such as

ET-6K>ip

IP=10.0.8.149

ET-6K>mask

Mask=255.255.255.0

ET-6K>gateway

Gateway=10.0.8.254

ET-6K>mac

MAC=0:d:e0:a3:dd:af

ET-6K>

● **Communication Interface**

1. RS232

Set the COM port operation mode to 5. Refer to **Sec 3.2.2 Serial port settings** for more details.

Serial port settings

Item	Parameters	Current setting
COM Port	COM1	1
BaudRate	9600 bps	9600
Data Bit	<input type="radio"/> 5 bits <input type="radio"/> 6 bits <input type="radio"/> 7 bits <input checked="" type="radio"/> 8 bits	8
Parity	<input checked="" type="radio"/> None <input type="radio"/> Even <input type="radio"/> Odd <input type="radio"/> Mark <input type="radio"/> Space	None
Stop Bit	<input checked="" type="radio"/> 1 bits <input type="radio"/> 2 bits	1
Checksum	<input type="radio"/> True <input checked="" type="radio"/> False	1
Operation Mode	2 (Vxcomm), 1 (ModbusRTU), 2 (Program), 3 (UPLink), 4 (Debug), 5 (Console)	2
Net ID	1 Modbus Station Number	1
Time Out	200 ms (5~32767)	200
Station per COM Port	10 Stations	10

Save Reboot

Run the “7188xw.exe” utility to connect to the ET-6000 to open the console windows.

```

C:\ 7188XW 1.26 [COM1:115200,N,8,1],FC=0,CTS=0, DIR=C:\Documents and Settings\sean

C:\Documents and Settings\sean>7188xw
7188x for WIN32 version 1.26 (10/19/2004)[By ICPDAS. Tim.]
[Begin Key Thread...]Current set: Use COM1 115200,N,8,1
AutoRun:
Autodownload files: None
Current work directory="C:\Documents and Settings\sean"
original baudrate = 115200!
now baudrate = 115200!

ET-6K>help

?,help [command]: Help
reset
default
ip,setip
mask,setmask
gateway,setgateway
mac,seteid
com1 [baudrate][databit][parity][stopbit]
commode
web

ET-6K>

```

The console will initially display the “ET-6K>” prompt in the Serial console mode. Enter the “help” command to view all commands.



Chapter 9 Console Mode

2. Ethernet : Telnet (**Unavailable**)

10. Troubleshooting and Technical Support

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

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.

Table10-1 Troubleshooting

Symptom/Problem	Possible cause	Solution
The Power LED and RUN LED doesn't light	Internal power has failed	Return the module for repair.
The DHCP LED indicator is flashing continuously. The RUN LED indicator doesn't light.	The Switch is placed in the Init position.	Move the switch to the Normal position.
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-6000 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. (Check the Group 44444 information on the SMMI)	Reboot the module.
Cannot communicate through RS232 port	Caused by either a cable problem, unmatched Baud Rate or data format, etc. (As shown on the Serial	Change the serial port settings to match the requests and check the operation mode of the COM

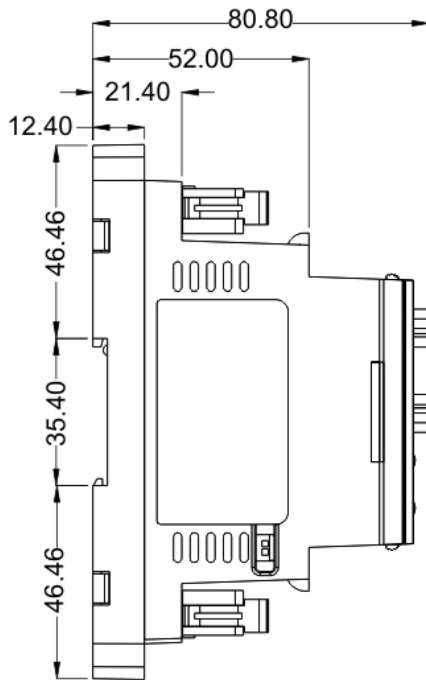


Chapter 10 Trouble Shooting and Technical

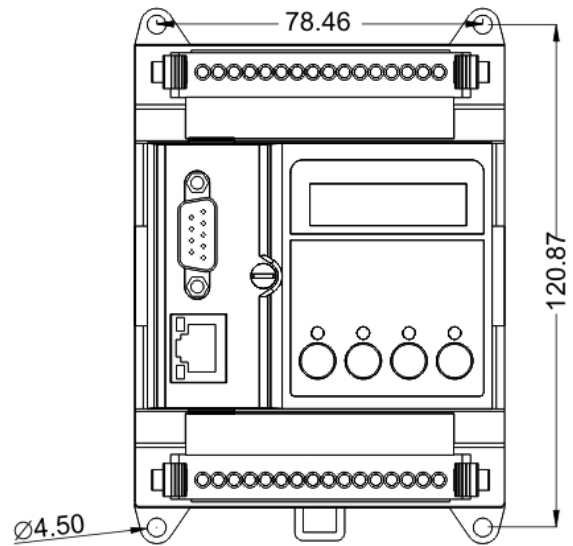
	Port page)	port.
Able to explore the web page through port 80 using a web browser, but the Web HMI and Modbus/TCP program cannot access the module through port 502.	Port 502 has been restricted by the firewall.	Consult your MIS administrator for assistance.
The Web HMI and Modbus/TCP program can access the module through port 502, but Web browse cannot explore the web page through port 80 using a web browser.	The Port 502 has restricted by the firewall.	Consult your MIS administrator for assistance.
	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-6000 using the specific TCP port.

Appendix A: Dimensions

Single Unit

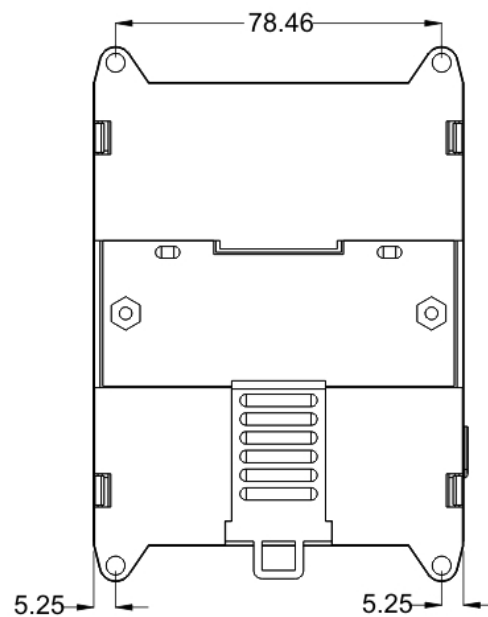


Left Side View



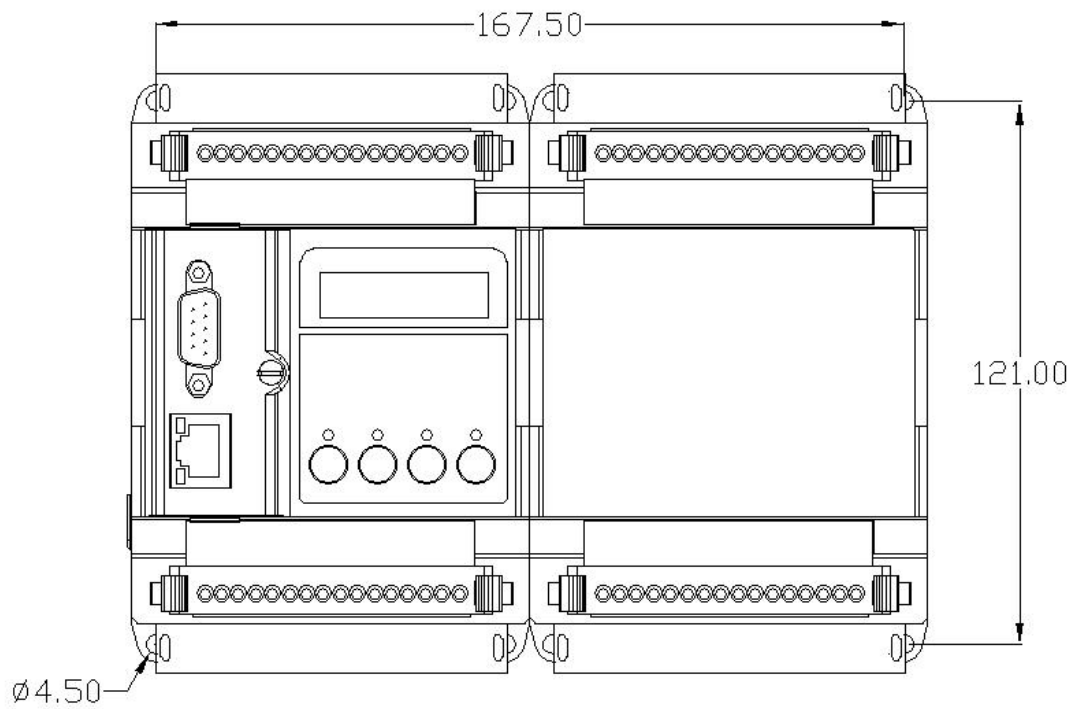
Front View

Unit : mm

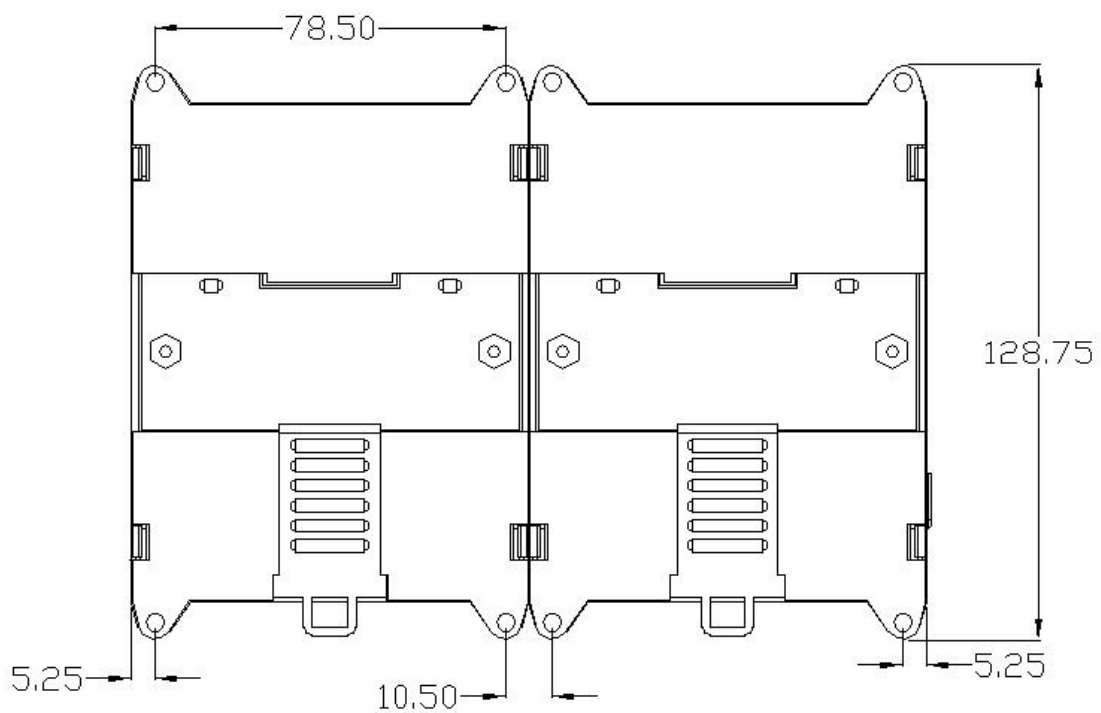


Back View

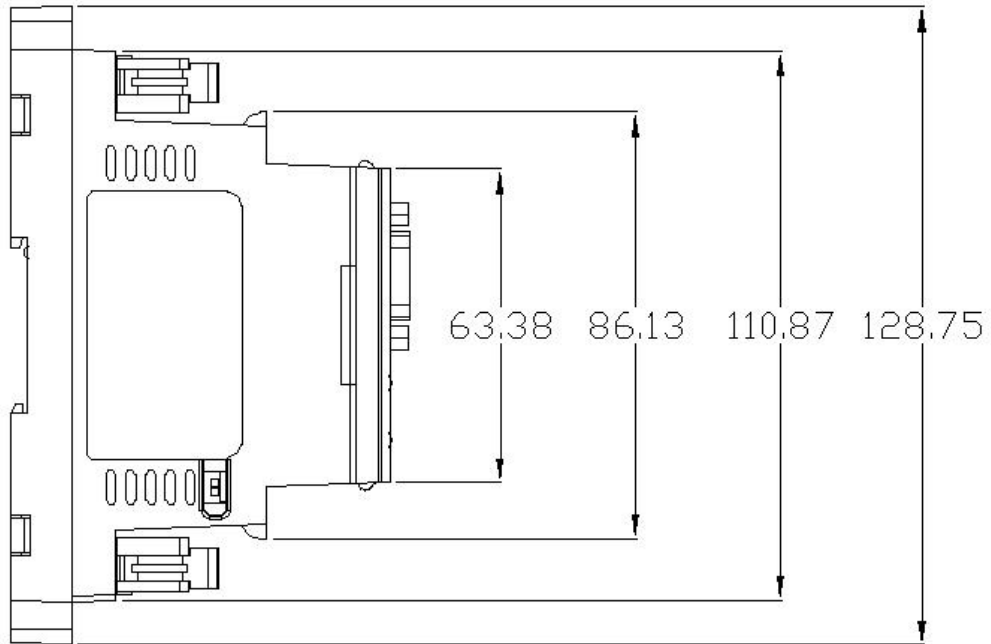
Two Units



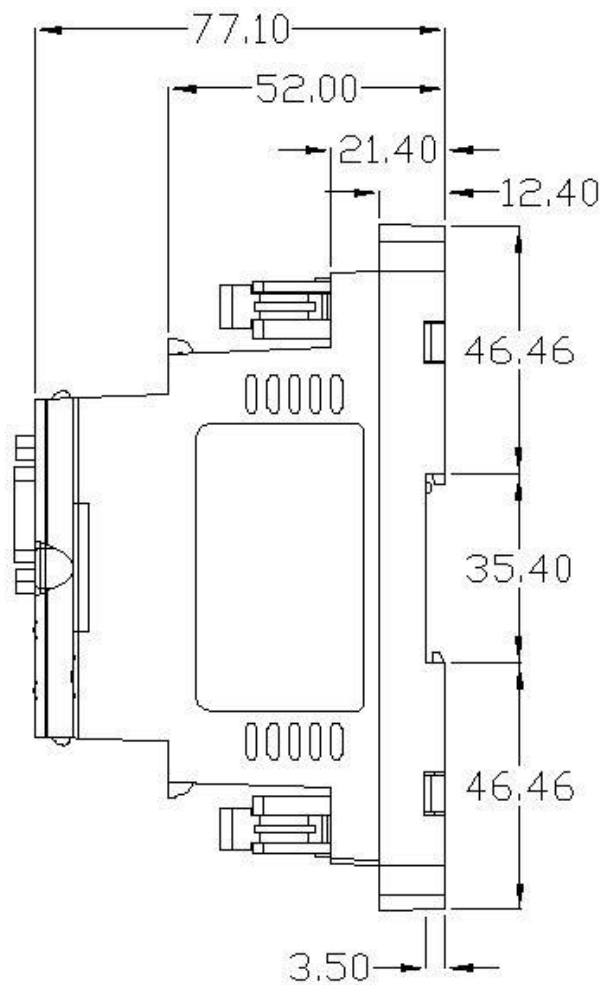
Front View



Back View

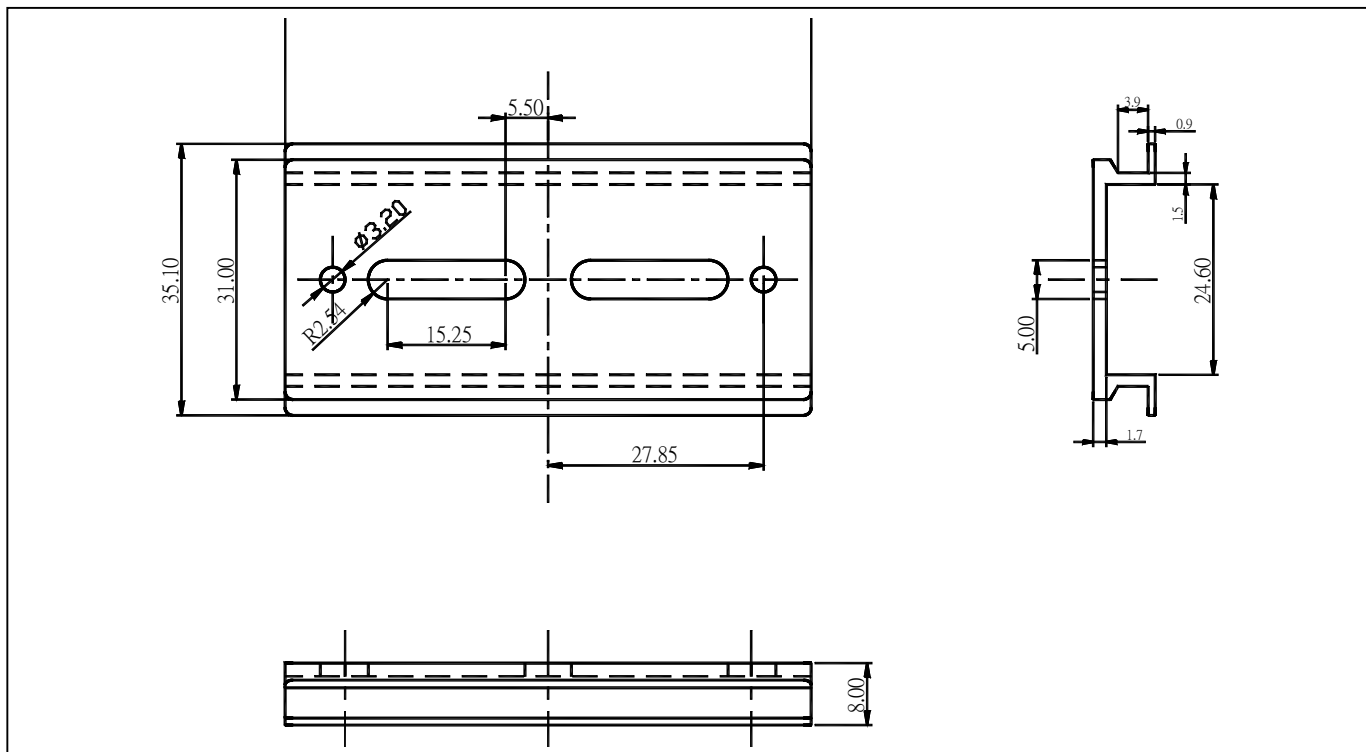


Left Side View



Right Side View

Wall Mount Bracket





Appendix B: MiniOS7 utility

On occasions, ICPDAS will offer an update to the ET-6000 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 ET-6000 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

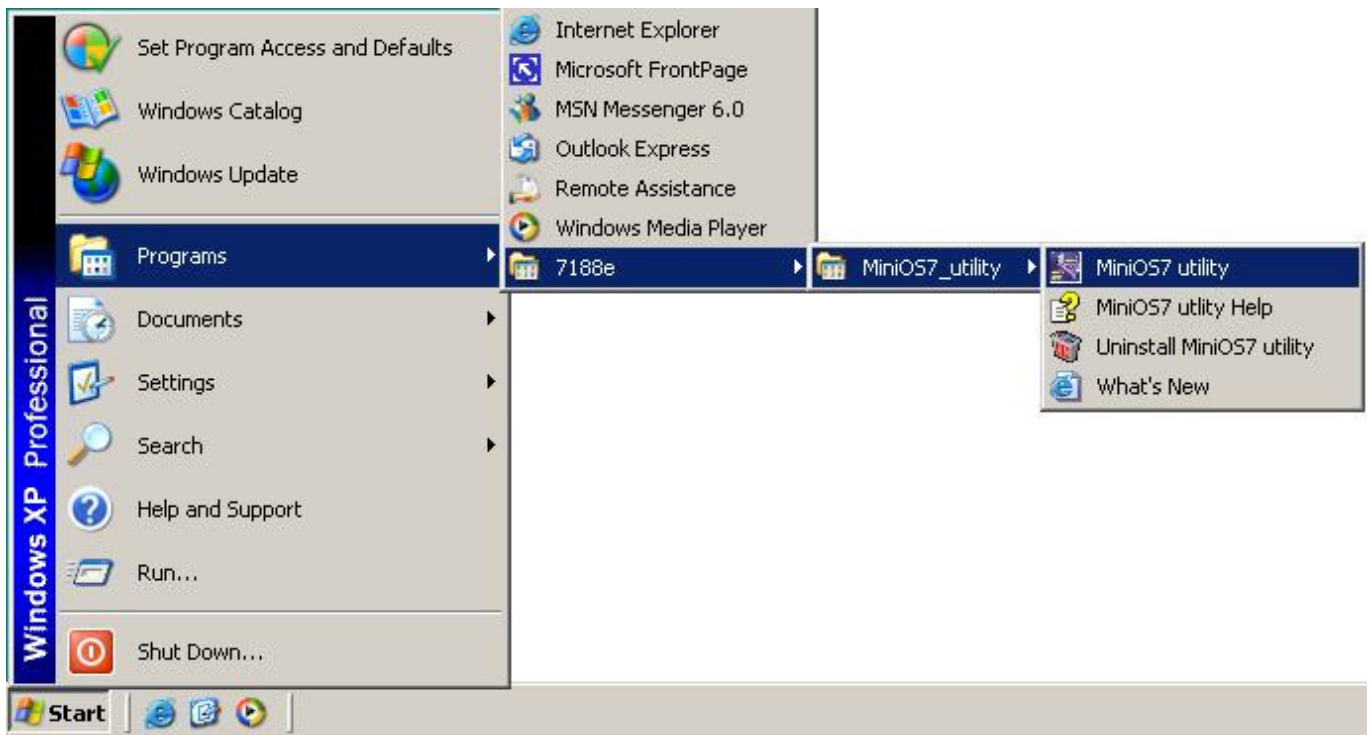
The MiniOS7 utility is located in the

- CD:\NAPDOS\ET6000\Tools\Tools for MiniOS7\MiniOS7_utility folder on the enclosed CD or from
- [ftp://ftp.icpdas.com/pub/cd/6000cd/napdos/et6000/tools/tools for minios7/minios7_utility/](ftp://ftp.icpdas.com/pub/cd/6000cd/napdos/et6000/tools/tools%20for%20minios7/minios7_utility/)

Installation procedure

Step 1: Locate and run MiniOS7utility.exe from the CD:
 \NAPDOS\ET6000\Tools\Tools for MiniOS7\MiniOS7_utility directory.

Step 2: After completing the installation, a new “7188E” 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 files to the ET-6000 controller

Before using this utility, ensure that the **Init/Normal** switch is placed on the **Init** position (MiniOS7 configuration mode).

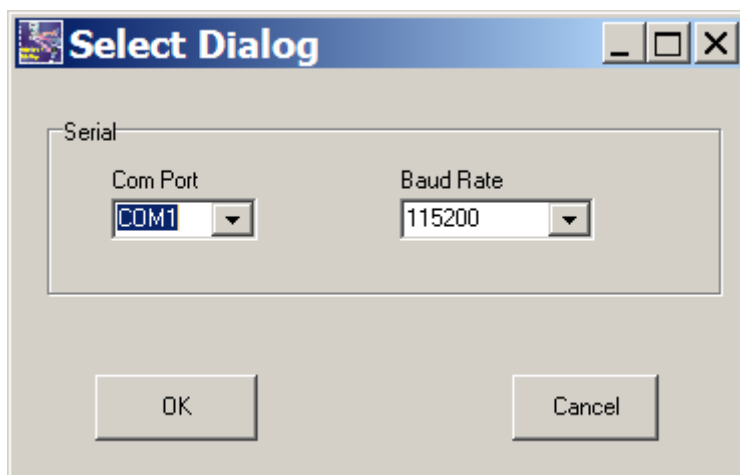
Note:

Be sure to move the switch back to the Normal position after completing the update.

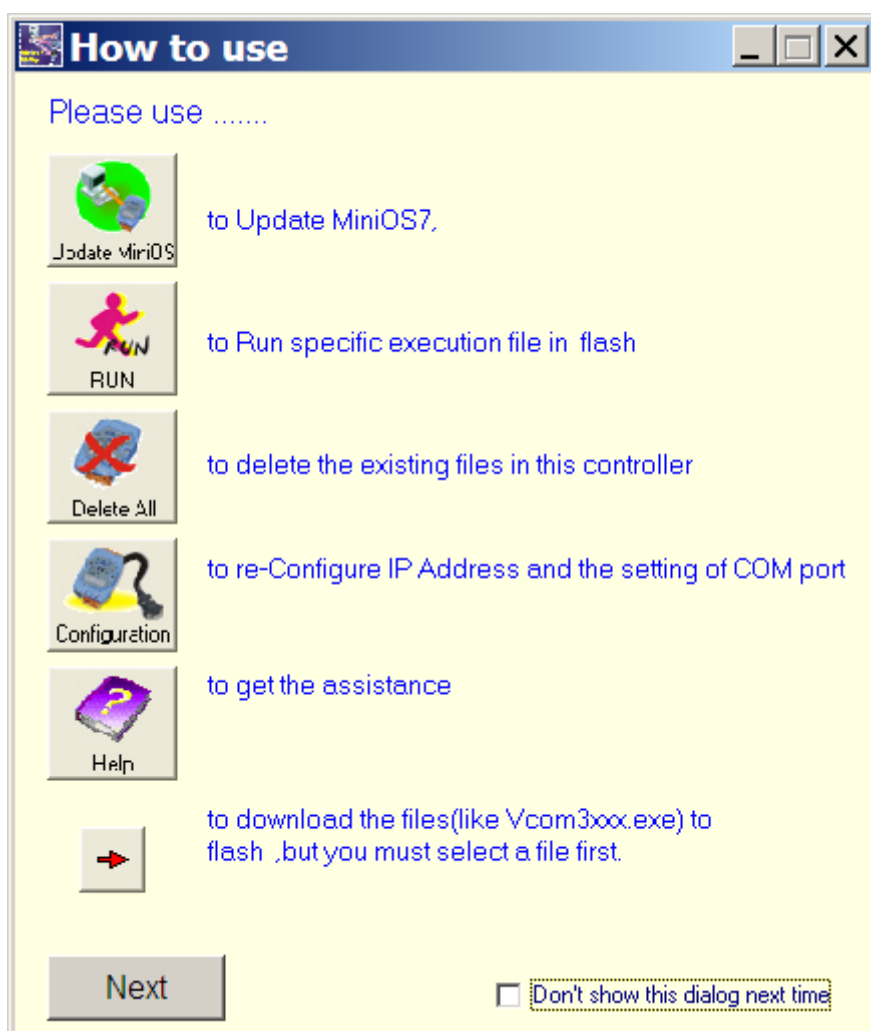
The download procedure is as follows:

Step 1: From the Windows START menu, navigate to programs/7188E/MiniOS7_utility and locate the **MiniOS7 utility** program.

Step 2: Select COM1 from the COM Port menu and 115200 bps from the Baud Rate menu.



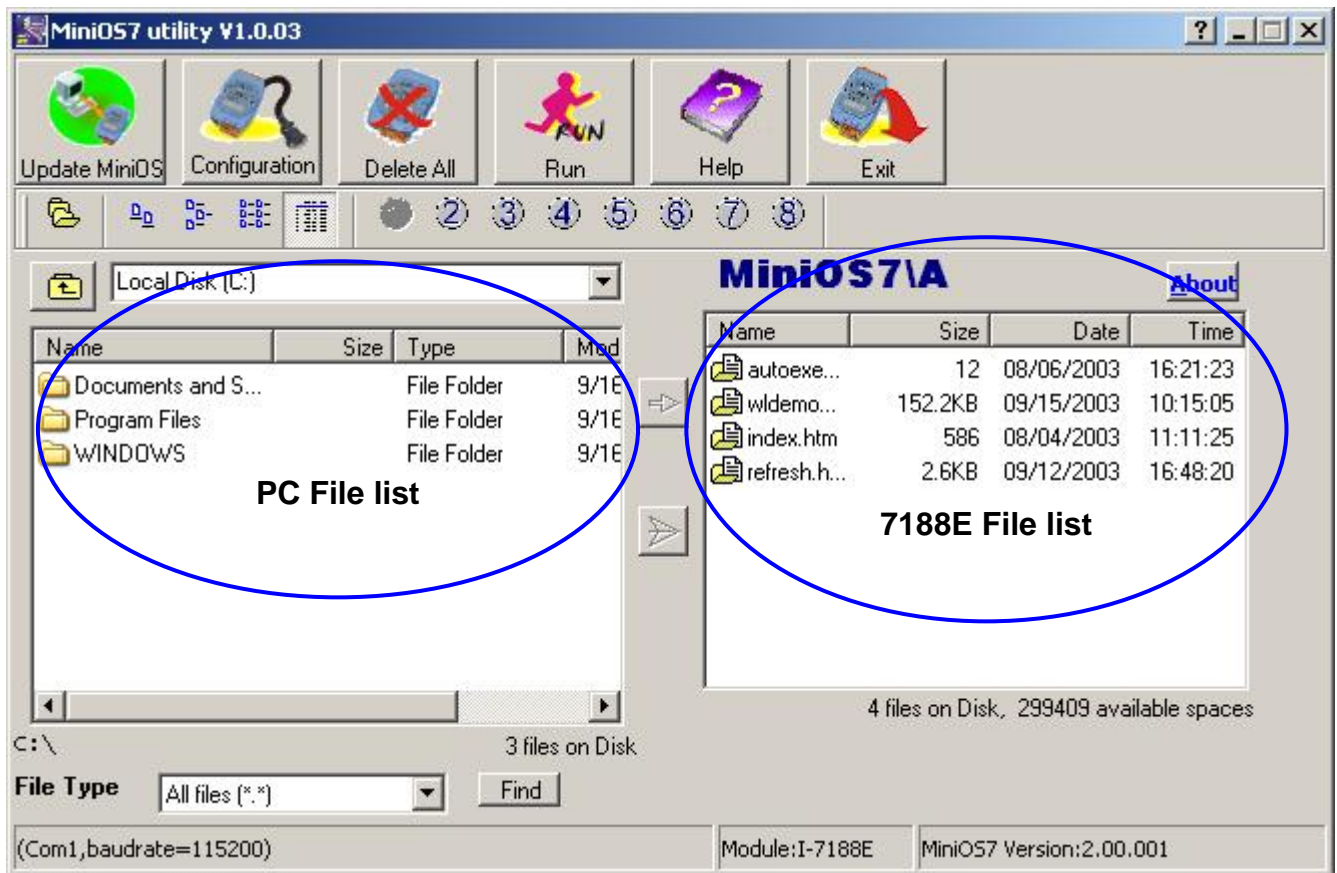
Step 3: After clicking the '**OK**' button, the 'How to use' dialog window will be displayed. Please read this information and then click 'Next'.




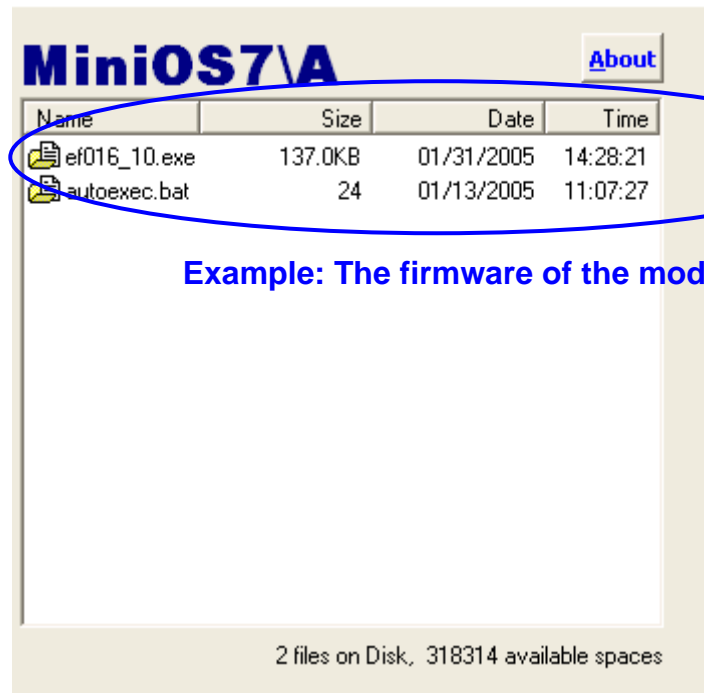
Note:

The above screen will be displayed each time you start the program. If you wish to disable this function, please check the 'Don't show this dialog next time' check box.

Step 4: After a connection between the ET-6000 and PC has been successfully established, the following screen will be displayed.





Step 5: Locate the required file in the left hand window (The CLI firmware is a file named CLInnnn.exe, where 'nnnn' is the version number), then click  icon to download the file to the ET-6000. The figure below shows that the CLI firmware and autoexec.bat has been downloaded to the ET-6000 controller.



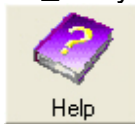
Example: The firmware of the module

Notes:

- To select multiple files, press and hold the CTRL or SHIFT keys while making your/a selection and click  button to simultaneously download the files to ET-6000.
- After completing the download, turn off the power to the ET-6000 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 ET-

6000 will run after rebooting). Alternatively, click the  button to execute it.

Please refer to the MiniOS7 utility help file (MiniOS7.chm) for more details regarding the use of the MiniOS7 utility. The MiniOS7.chm file is located in the 7188E MiniOS7_utility group in the 'Start' menu, or can be accessed by

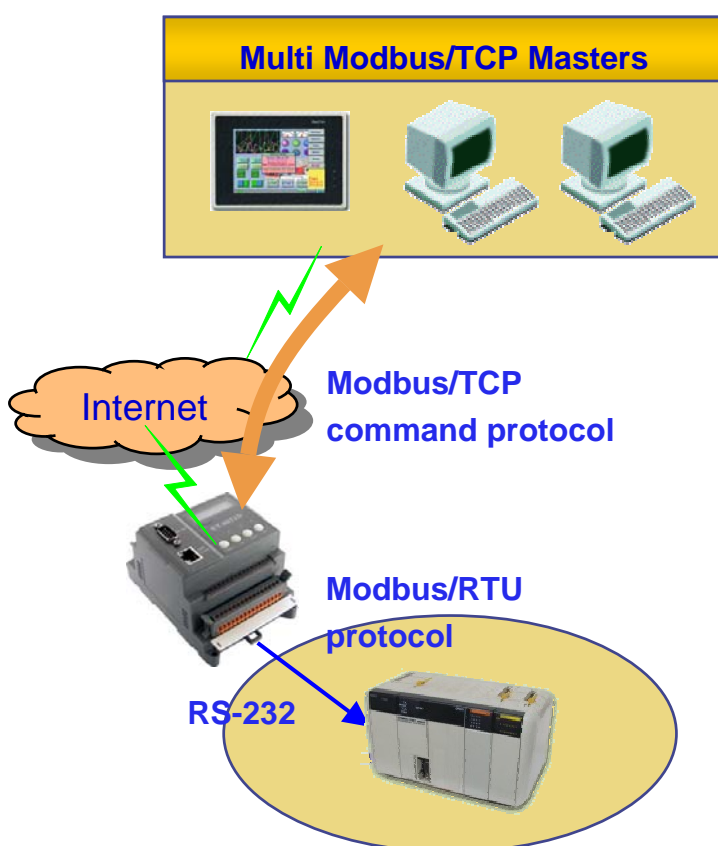
clicking the  icon at the top of the MiniOS7 utility toolbar.

Appendix C: Modbus Protocol

The Modbus Protocol provides client/server communication between devices connected on different types of buses or networks. Modbus is capable to run full-duplex RS232 lines, and Ethernet & TCP/IP solutions. The Internet community is able to access MODBUS at a reserved system port 502 on the TCP/IP stack.

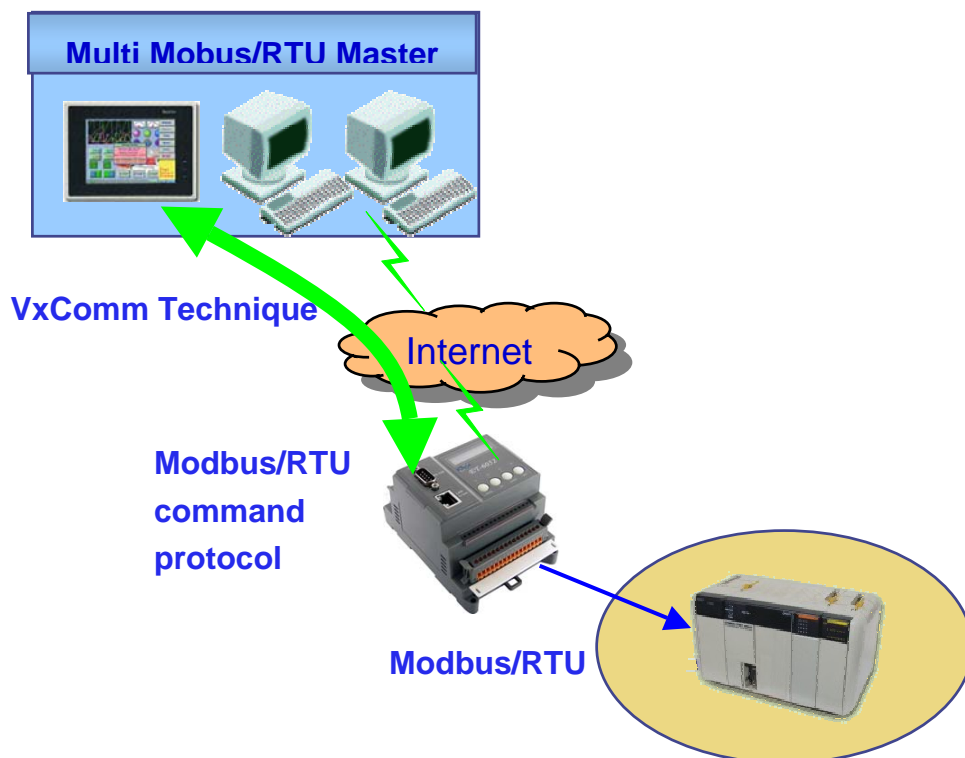
◆ Modbus/TCP to Modbus/RTU protocol converter

The ET-6000 controller can be used as a single Modbus/TCP to multi-Modbus/RTU converter simply by configuring the device and then setting connection between SCADA, HMI software and the ET-6000 module.



◆ Modbus/RTU protocol using the VxComm technique (**unavailable**)

In combination with the VxComm technique, the ET-6000 controller is also able to link to serial devices supported by the Modbus/RTU without changing the original Modbus/RTU program on the host PC.



Adjust system settings

The Modbus station number is a very important parameter for ET-6000. It is used to recognize different Modbus stations. But the ET-6000 does not have any hardware design such as dip-switch or jump allowing you to set the Modbus station number (or called NetID). You must set the parameters regarding to Modbus station number by Web page. System settings include the following:

Net ID (Default = 1):

If the Modbus station number in a Modbus/TCP request (from PC or HMI) matches the Net ID, the request is passed to the Modbus kernel. Then Modbus kernel program will then respond and send the internal registers to the Modbus/TCP client (PC or HMI). The content of all other registers is zero.

Stations per COM port (Default = 10):

This value is used to decide how many Modbus/RTU stations can add on one ET-6000 COM port for control. That also means the value can decide which COM the Modbus/TCP request will be passed to. The formula is as follows:

$$\text{COM} = \text{station number in Modbus/TCP request} / \text{Stations per COM port}$$

Example 1:

Stations per COM port = 10

Modbus/TCP requests for station 35

The requests will be passed to COM 3 ($35/10 = 3.5$)

Example 2:

Stations per COM port = 20

Modbus/TCP requests for station 35

The request will be passed to COM 1 ($35/20 = 1.75$)



Appendix C: Modbus Protocol

Adjust the COM port settings

Operation Mode (Default = Console mode):

ET-6000 COM ports can be configured as follows:

1. **VxComm** (Virtual COM) (**unavailable**):
Enable VxComm. Remote application program can use Virtual COM (need to install the VxComm Driver) or connect to TCP/IP port 10000 + n to access the COM port via Ethernet. At VxComm mode, the COM port has access to any serial device.
2. **Modbus/RTU**:
Enable the protocol converter function to convert from Modbus/TCP to Modbus/RTU. In Modbus/RTU mode, the COM Port can only has access Modbus/RTU slave devices.
3. **System Reserved**
4. **UpLink**
Enable the COM Port to as a Modbus/RTU slave port.
5. **Debug port**:
The Modbus kernel prints out some messages, while communicating with Modbus clients or masters.
The messages include:
(0) Receives a Modbus request response from Modbus client or master.
(1) By passes Modbus request to COM Port
(2) Send Modbus request to COM Port
(3) Check Modbus response from COM Port
(4) Send Modbus response to Modbus client or masters
6. **Console**:
The function disables the communication capabilities of the COM port. It's a serial console port that allows configuration to be performed via the RS232 Port. The commands related to the **serial** console are the same as the **Telnet** console.

Modbus/RTU Data format

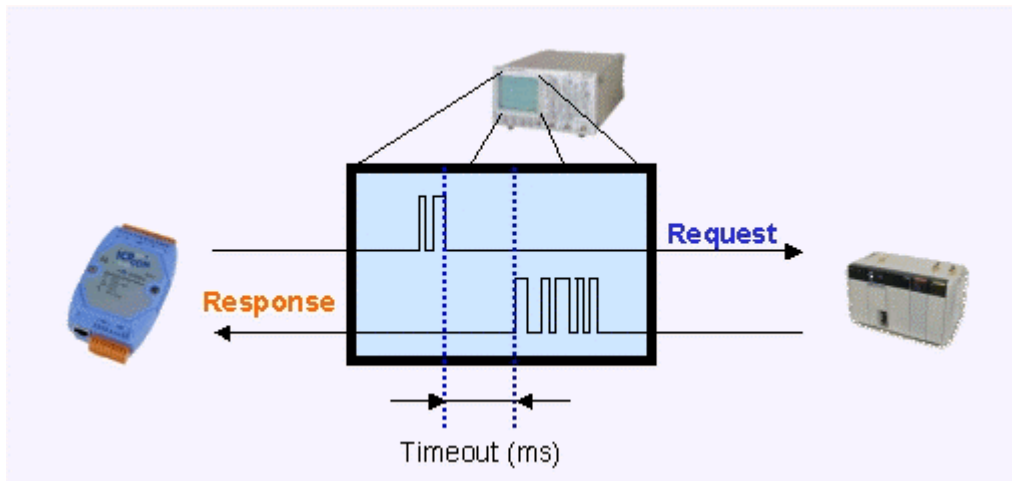
There are several kinds of data formats used in the Modbus/RTU protocol that must be changed to suit the specific Modbus/RTU devices that are connected to the COM Port.

- 8 data bits, none parity, 1 stop bits
- 8 data bits, none parity, 2 stop bits
- 8 data bits, odd parity, 1stop bits
- 8 data bits, even parity, 1stop bits (Default)

Note: When an ET-6000 module receives a Modbus/TCP request that not addressed to its internal registers, it first decides which COM Port to send the request. Modbus/RTU must be enabled for this COM Port, otherwise the request will be discarded.

Timeout (Default = 200 milliseconds)

After completing transmission of any data, the system begins to count time. If the timeout expires, the system will stop receiving responses.





Appendix D: MODBUS Register Tables

Modules Supported (ET-6000 series)			
Name	Date	Firmware	Note
ET-6052 (D)	1-Dec-2006	V1.00	8 DO, 14 DI
ET6060 (D)	1- Dec -2006	V1.00	8 DO, 10 DI 8 Relay Output (Form A), 10 DI
ET2-6064 (D)	1- Dec -2006	V1.00	24 DO 18 Relay Output (Form A), 6 Relay Output (Form C)

Common Functions for all ET-6000 series modules

(0xxxx) DO address					
Begin address	Points	Description	Registers per Point	Range	Access Type
226	1	Recover all I/O default settings	1	1=recover	W (Pulse)
227	1	Recover all web default settings	1	1=recover	W (Pulse)
228	1	ID default settings	1	1=recover	W (Pulse)
229	1	Web Enable/Disable	1	1=recover	W (Pulse)
233	1	Reboot ET-6000	1	1=reboot	W (Pulse)

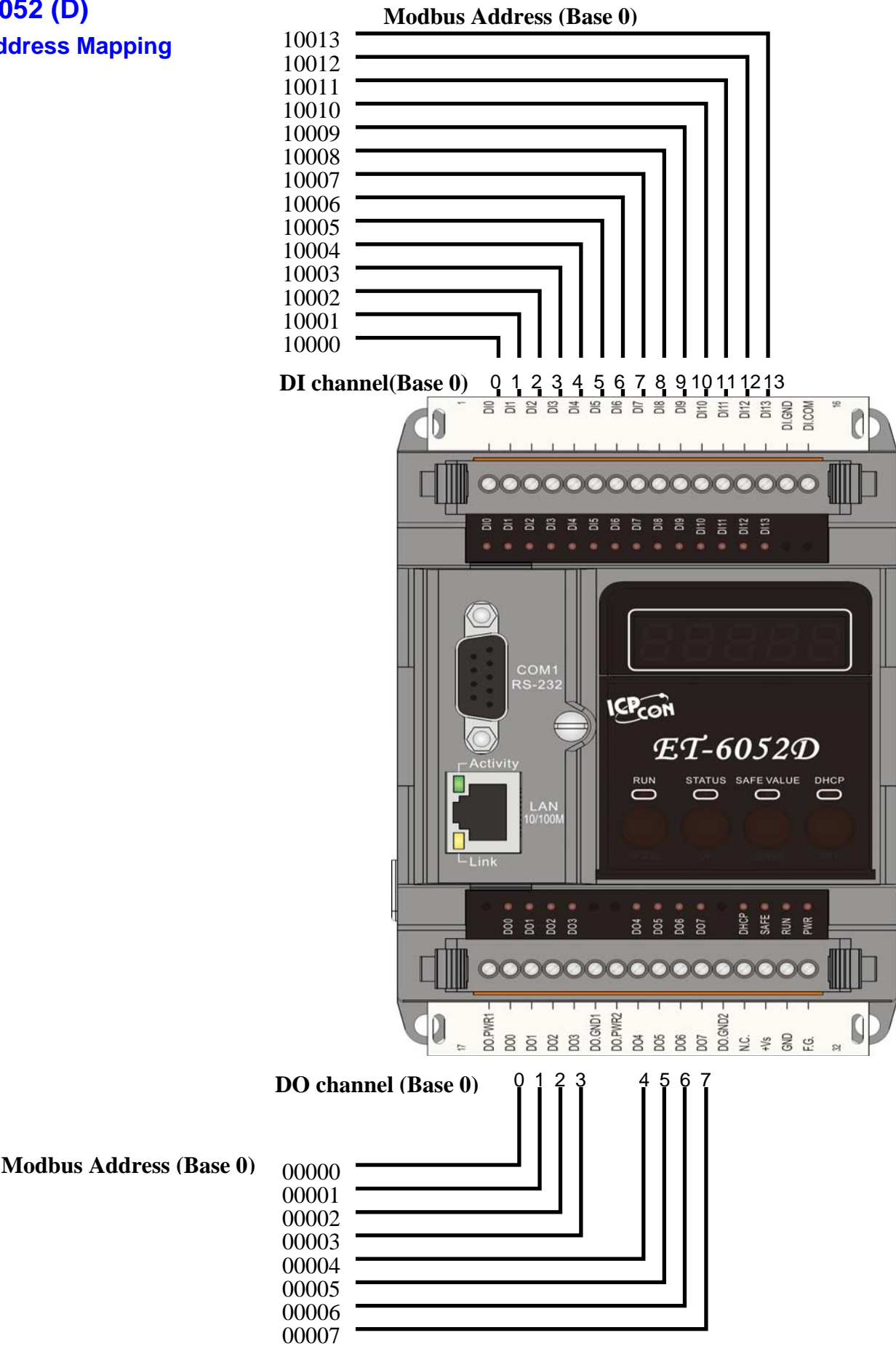
(3xxxx) AI address					
Begin address	Points	Description	Registers per Point	Range	Access Type
350	1	OS image version	1	123 means version=1.2.3	R
351	1	Total Firmware version	1	123 means version=1.2.3	R
358	1	Modbus communication status	1	0= No Error -1= CRC error -2= Timeout	R
351	1	Pair Connection	1	0=Normal 1=Timeout 2=Disconnected	R



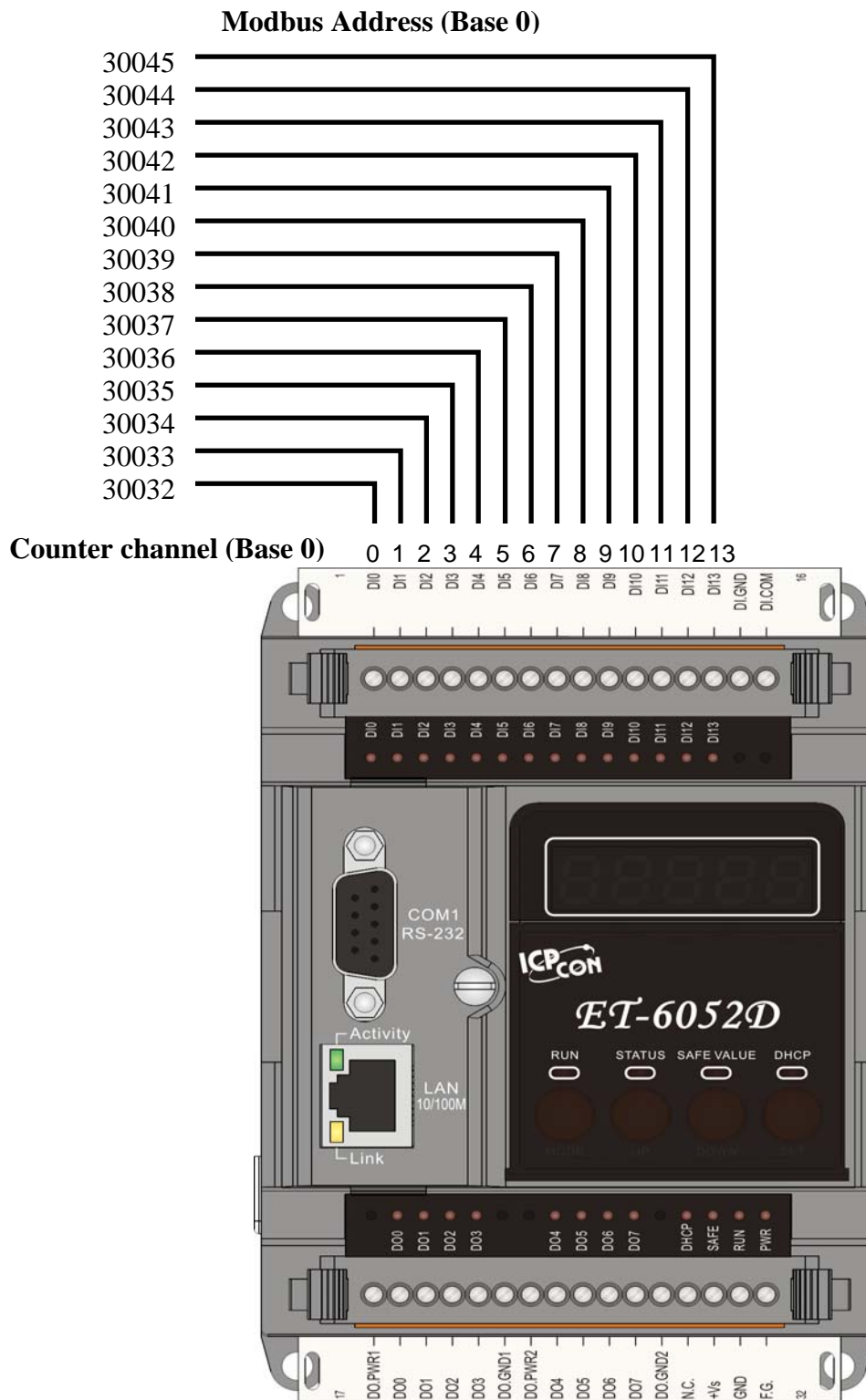
Appendix D: Modbus Register

(4xxxx) AO address					
Begin address	Points	Description	Registers per Point	Range	Access Type
555	1	CPU reset status	1	1= by power on 2= by 0.8 second WDT 3= by Reset command	R/W
556	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
557	1	Set host watch dog timer	1	<5: Disabled 5~65535: Enabled (unit: second) (default=0) When ET-6000 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
558	1	Host WDT events	1	How many host WDT events has happened after CPU reset?	R/W
559	1	Module name	4	16 ASCII characters	R
563	1	Module nick name	16	16 ASCII characters	R/W/E

ET-6052 (D) I/O Address Mapping



ET-6052 (D) Counter Address Mapping





Appendix D: Modbus Register

Detailed Modbus Address Table for ET-6052 (D)

(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
80	1	Clear all DI latched status (high)	1	1=clear	W (Pulse)
81	1	Clear all DI latched status (low)	1	1=clear	W (Pulse)
82	0~13	Clear low speed (100Hz) digital counter	1	1=clear	W (Pulse)
350	1	Enable all DI latched status (high/low)	1	0=disable 1=enable (default=0)	R/W/E
351	0~13	Enable low speed (100Hz) digital counter	1	0=disable 1=enable (default=0)	R/W/E
431	1	Write DO Power on value to EEPROM	1	1=write	W (Pulse)
432	1	Write DO Safe value to EEPROM	1	1=write	W (Pulse)
435	0~7	Power on value for DO	1	0=off 1=on (default=0)	R/W/E
515	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	0~13	Digital Input	1	0=off 1=on	R
80	0~13	Digital latched status (high)	1	0=no 1=latched	R
160	0~13	Digital latched status (low)	1	0=no 1=latched	R



Appendix D: Modbus Register

(3xxxx) AI address

Begin address	Points	Description	Registers per Point	Range	Access Type
32	0~13	Low speed (100Hz) digital counter	1	0~65535	R

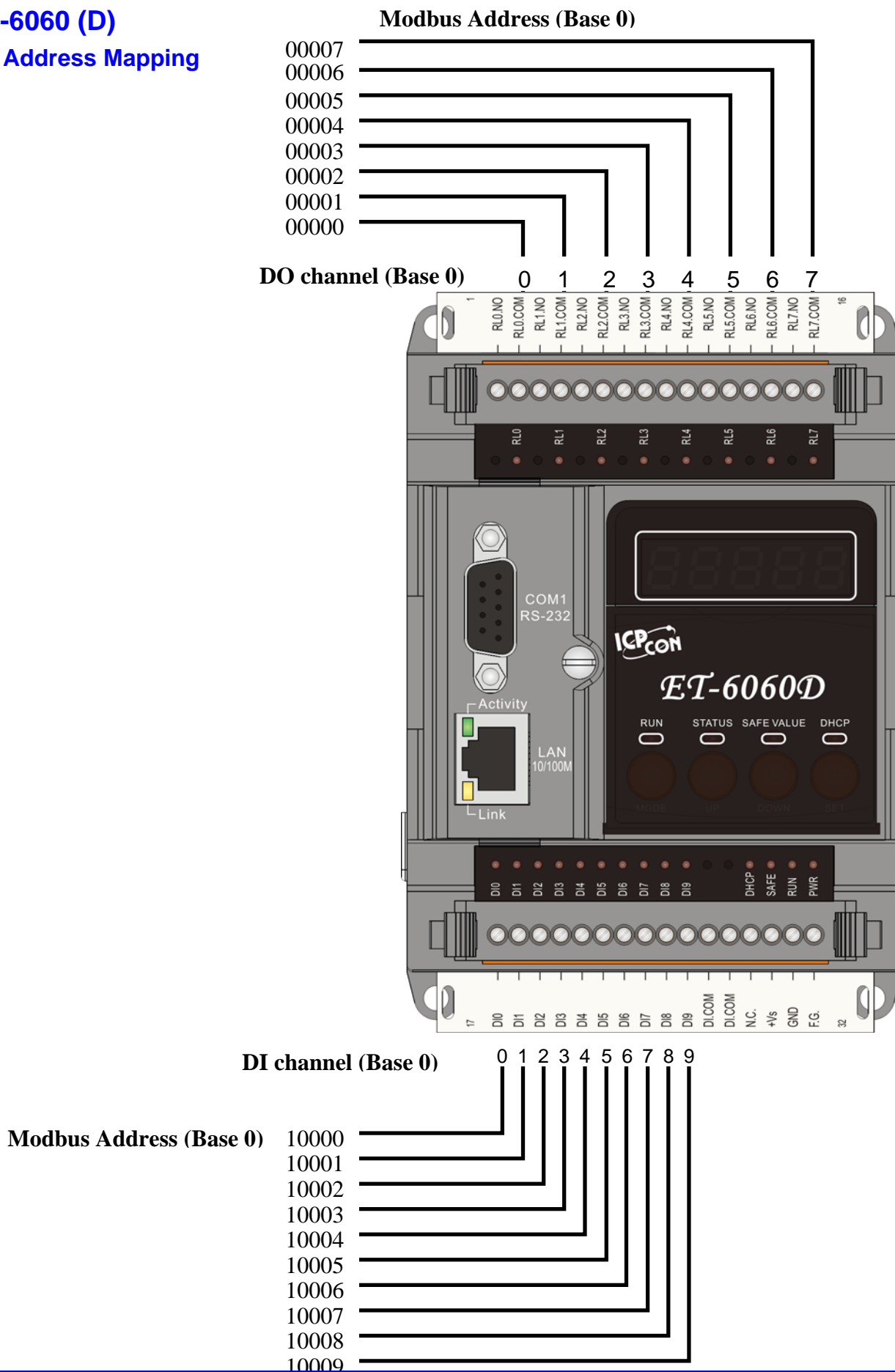
(3xxxx) AI address **(Static Channel Number Value)**

Begin address	Points	Description	Registers per Point	Value	Access Type
300	1	DI (channel number)	1	14	R
301	1	DI high/low latch (channel number)	1	14	R
310	1	DO (channel number)	1	8	R
311	1	Power on value for DO (channel number)	1	8	R
312	1	Safe value for DO (channel number)	1	8	R
321	1	Low speed counter (100Hz) (channel number)	1	14	R

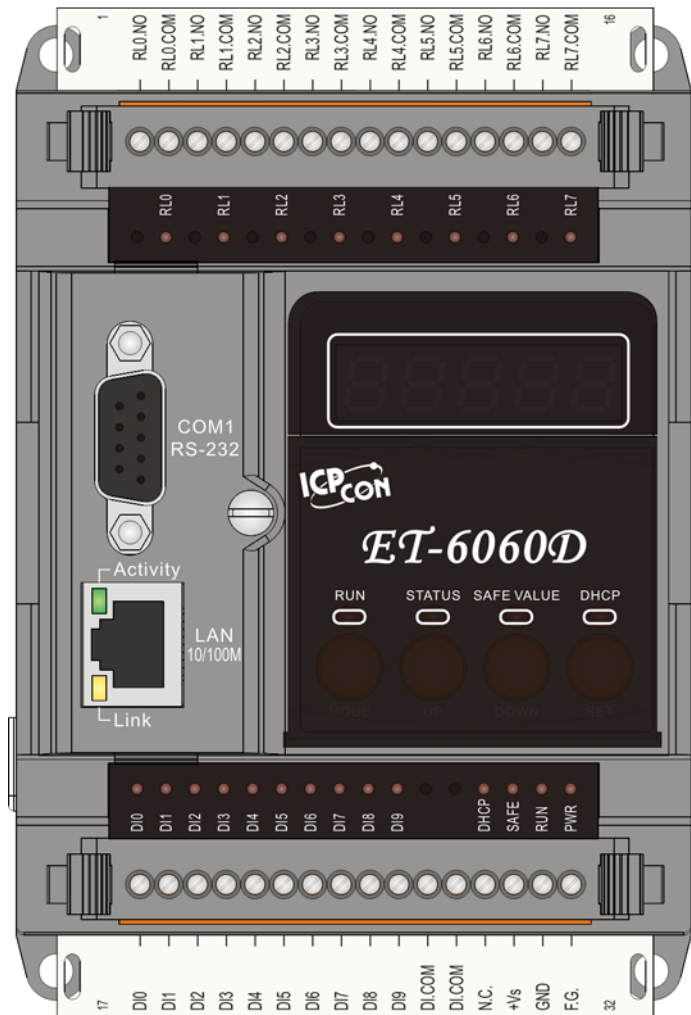
(4xxxx) AO address

Begin address	Points	Description	Registers per Point	Range	Access Type
200	0~13	Preset value for low speed (100Hz) digital counter	1	0~65535(default=0)	R/W/E

ET-6060 (D) I/O Address Mapping



ET-6060 (D) Counter Address Mapping

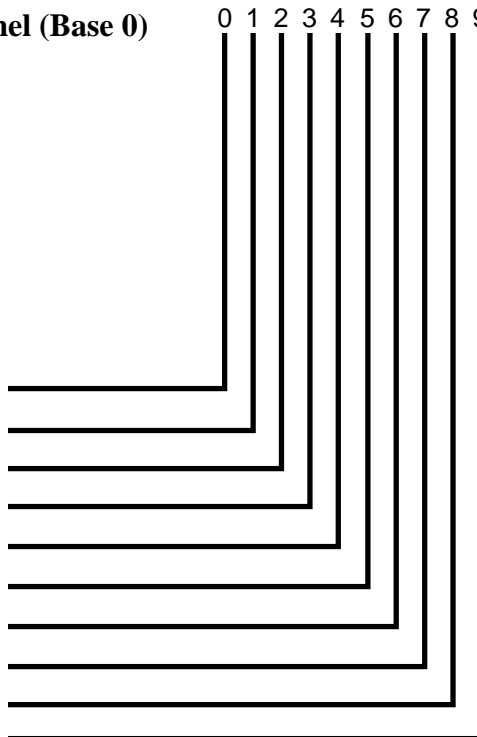


Counter channel (Base 0)

0 1 2 3 4 5 6 7 8 9

Modbus Address (Base 0)

30032
30033
30034
30035
30036
30037
30038
30039
30040
30041



Detailed Modbus Address Table for ET-6060 (D)

(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
80	1	Clear all DI latched status (high)	1	1=clear	W (Pulse)
81	1	Clear all DI latched status (low)	1	1=clear	W (Pulse)
82	0~9	Clear low speed (100Hz) digital counter	1	1=clear	W (Pulse)
350	1	Enable all DI latched status (high/low)	1	0=disable 1=enable (default=0)	R/W/E
351	0~9	Enable low speed (100Hz) digital counter	1	0=disable 1=enable (default=0)	R/W/E
431	1	Write DO Power on value to EEPROM	1	1=write	W (Pulse)
432	1	Write DO Safe value to EEPROM	1	1=write	W (Pulse)
435	0~7	Power on value for DO	1	0=off 1=on (default=0)	R/W/E
515	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	0~9	Digital Input	1	0=off 1=on	R
80	0~9	Digital latched status (high)	1	0=no 1=latched	R
160	0~9	Digital latched status (low)	1	0=no 1=latched	R



Appendix D: Modbus Register

(3xxxx) AI address

Begin address	Points	Description	Registers per Point	Range	Access Type
32	0~9	Low speed (100Hz) digital counter	1	0~65535	R

(3xxxx) AI address (Static Channel Number Value)

Begin address	Points	Description	Registers per Point	Value	Access Type
300	1	DI (channel number)	1	10	R
301	1	DI high/low latch (channel number)	1	10	R
310	1	DO (channel number)	1	8	R
311	1	Power on value for DO (channel number)	1	8	R
312	1	Safe value for DO (channel number)	1	8	R
321	1	Low speed counter (100Hz) (channel number)	1	10	R

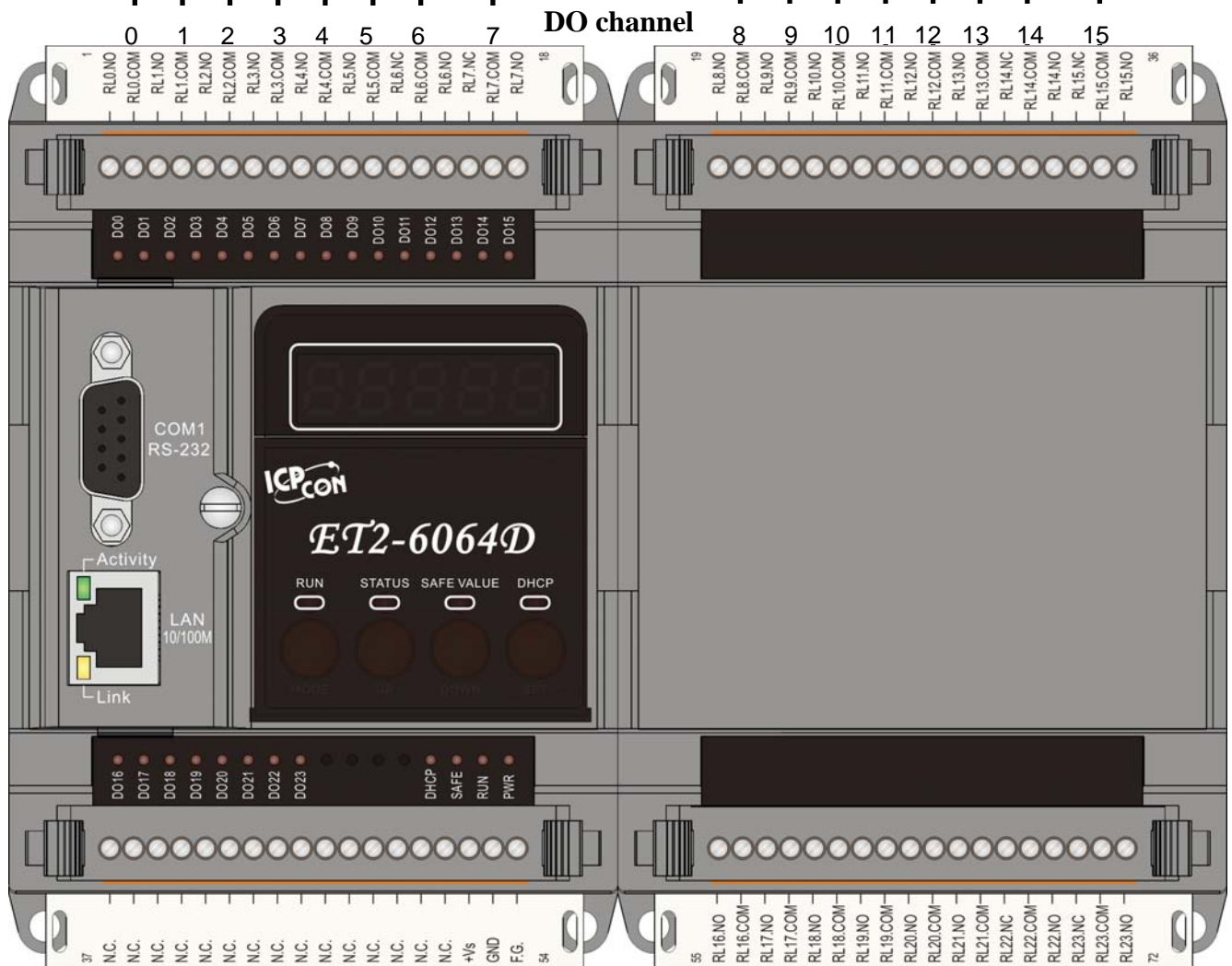
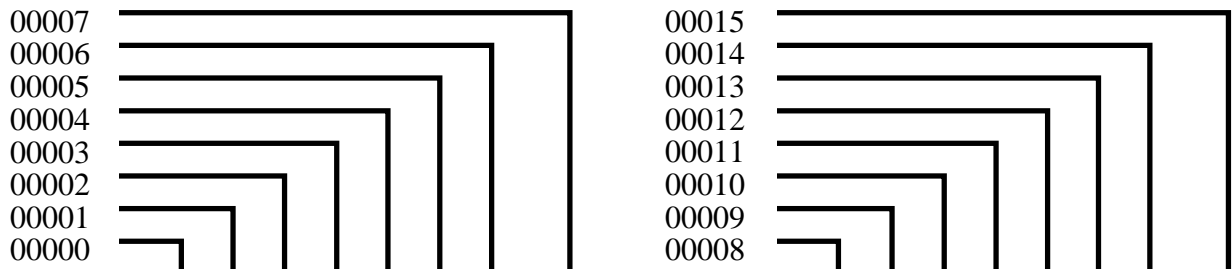
(4xxxx) AO address

Begin address	Points	Description	Registers per Point	Range	Access Type
200	0~9	Preset value for low speed (100Hz) digital counter	1	0~65535(default=0)	R/W/E

ET2-6064 (D)

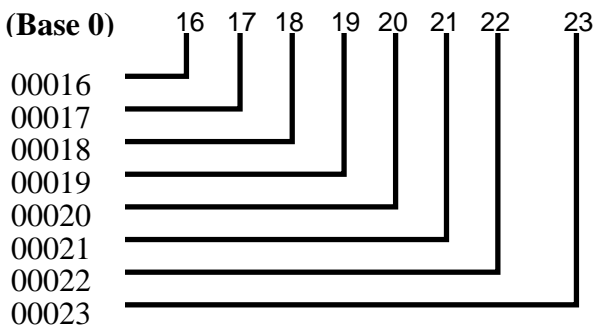
I/O Address Mapping

Modbus Address (Base 0)



DO channel (Base 0)

Modbus Address (Base 0)





Appendix D: Modbus Register

Detailed Modbus Address Table for ET2-6064 (D)

(0xxxx) DO address					
Begin address	Points	Description	Registers per Point	Range	Access Type
0	0~23	Digital Output	1	0=off 1=on	R/W
431	1	Write DO Power on value to EEPROM	1	1=write	W (Pulse)
432	1	Write DO Safe value to EEPROM	1	1=write	W (Pulse)
435	0~23	Power on value for DO	1	0=off 1=on (default=0)	R/W/E
515	0~23	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
310	1	DO (channel number)	1	24	R
311	1	Power on value for DO (channel number)	1	24	R
312	1	Safe value for DO (channel number)	1	24	R

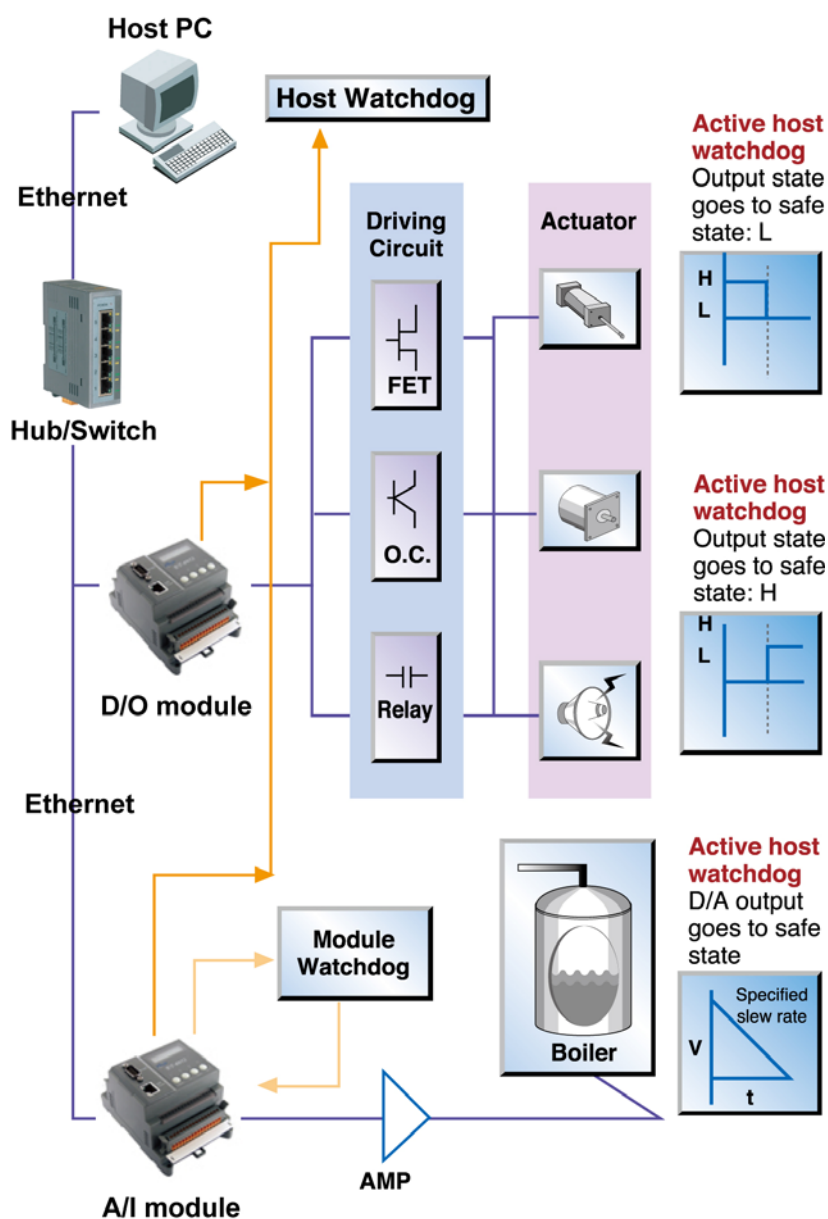
Appendix E: Modbus Application Notes

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 **40557** of the ET-6000 series Modbus register is the address of the **Host Watchdog** timer, and will be stored into EEPROM. The WDT function will be disabled if the value is set to less than **5** seconds.

Power ON Value

If the ET-6000 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 **00435** of the ET-6000 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:

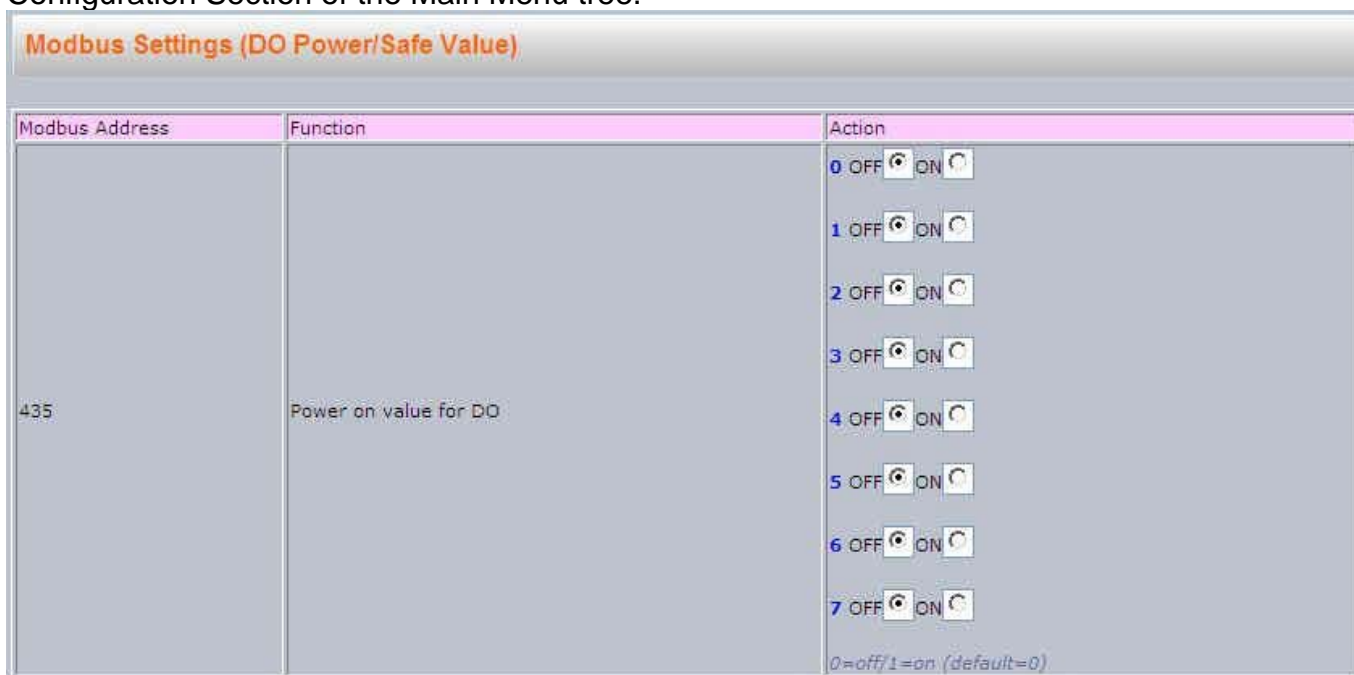
Addresses **00435** to **00442** records the Power ON value for the 8-Channel ET-6060.

Be careful to set the ON value to DO address **00431** to write the DO Power ON value to the EEPROM of the ET-6000 DO module after using Modbus commands (05 or 15) to change the Power ON value.

Set the ON value to DO address, **00433** to write the AO Power ON value to the EEPROM of the ET-6000 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-6000, 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 <input type="radio"/> ON <input type="radio"/>
		1 OFF <input type="radio"/> ON <input type="radio"/>
		2 OFF <input type="radio"/> ON <input type="radio"/>
		3 OFF <input type="radio"/> ON <input type="radio"/>
		4 OFF <input type="radio"/> ON <input type="radio"/>
		5 OFF <input type="radio"/> ON <input type="radio"/>
		6 OFF <input type="radio"/> ON <input type="radio"/>
		7 OFF <input type="radio"/> ON <input type="radio"/>
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 channels is set to the Safe Value, and the count of the host WDT events is increased by one.

AO address **40558** 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 **00515** is the first address of the Safe value and the total number of channels depends on the type of module.

For example:

Address **00515** to **00522** records the Safe value for the 8-Channel ET-6060.

Be careful to set the ON value to DO address **00432** to write the DO Safe value to the EEPROM of the ET-6000 DO module after using Modbus commands (05 or 15) to change the Power ON value.

Set the ON value to DO address **00434** to write the AO Safe value to the EEPROM of the ET-6000 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-6000, and click the “Modbus I/O Settings” link in the Configuration Section of the Main Menu tree.



Modbus Settings (DO Power/Safe Value)			
0	OFF	ON	<input type="radio"/>
1	OFF	ON	<input type="radio"/>
2	OFF	ON	<input type="radio"/>
3	OFF	ON	<input type="radio"/>
4	OFF	ON	<input type="radio"/>
5	OFF	ON	<input checked="" type="radio"/>
6	OFF	ON	<input checked="" type="radio"/>
7	OFF	ON	<input checked="" type="radio"/>

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

Submit



Appendix E: Application Notes

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

●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 ...

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	00350	00080	00081	10080~1XXXX	10160~1XXXX
XXXX: Depends on the type of ET-6000 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 **10160** 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 <input type="checkbox"/> 1=clear
81	Clear all DI latched status (Low)	0 <input type="checkbox"/> 1=clear
350	Enable all DI latched status(High/Low)	OFF <input checked="" type="radio"/> ON <input type="radio"/> 0=disable/1=enable (default=0)

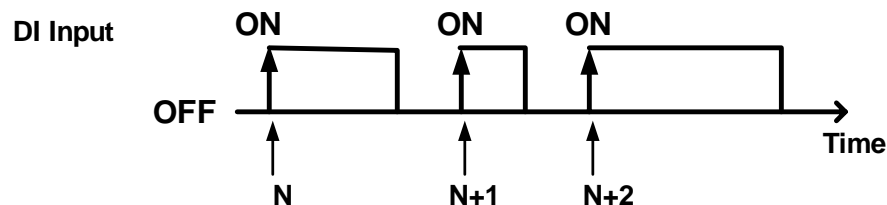
Submit

Digital Input Counter

Low Speed Counter: 100Hz

Valid Range: 0~65535 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	00351~0XXXX	00082~0XXXX	30032~3XXXX	40200~4XXXX
XXXX: Depends on the type of ET-6000 series module				

Be careful to set the ON value to DO address **00630** to save the Preset value for the DI counter to the EEPROM of the ET-6000 DI module after using Modbus commands (06 or 16) to change the Preset value.

● Configuration via the Web page

Modbus Settings (DI Counter)

Modbus Address	Function	Action
351	Enable low speed(100Hz) Digital counter	0 OFF <input checked="" type="radio"/> ON <input type="radio"/>
		1 OFF <input checked="" type="radio"/> ON <input type="radio"/>
		2 OFF <input checked="" type="radio"/> ON <input type="radio"/>
		3 OFF <input checked="" type="radio"/> ON <input type="radio"/>
		4 OFF <input checked="" type="radio"/> ON <input type="radio"/>
		5 OFF <input checked="" type="radio"/> ON <input type="radio"/>
		6 OFF <input checked="" type="radio"/> ON <input type="radio"/>
		7 OFF <input checked="" type="radio"/> ON <input type="radio"/>
		8 OFF <input checked="" type="radio"/> ON <input type="radio"/>
		9 OFF <input checked="" type="radio"/> ON <input type="radio"/>

0=disable/1=enable (default=0)

82
Clear low Speed(100Hz) digital Counter

0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐

40200

Preset value for low speed (100Hz) digital counter

1=clear
0
1
2
3
4
5
6
7
8
9
0~65535 (default=0)

● 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 in’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 F: 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

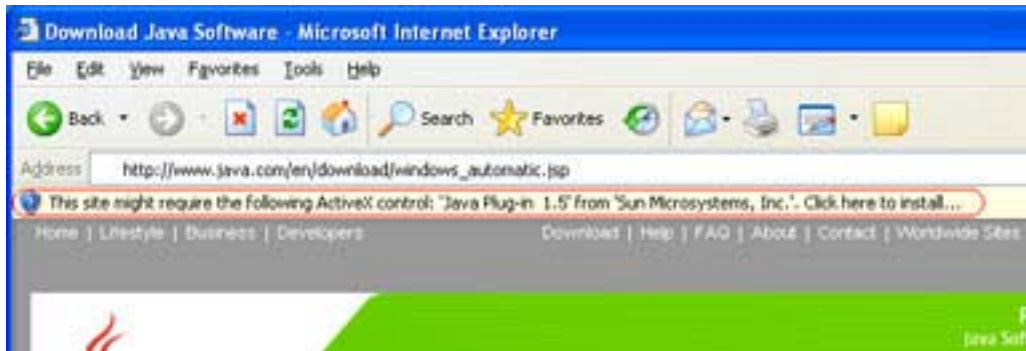
1. Go to [Java.com](http://java.com)
2. Click on the **Java Software Download** button.
3. Start the installation process:
 - a. Installing JRE on Windows XP with Service Pack 2 (SP2) using Internet Explorer

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

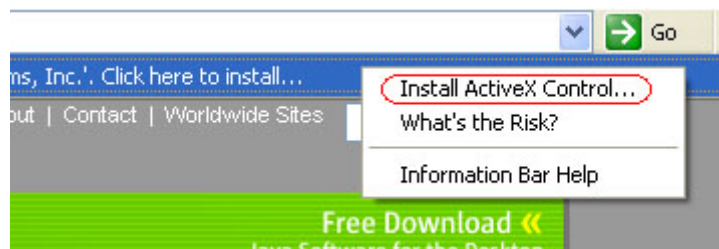
1. An Information Bar dialog box pops up displaying this message:



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



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.

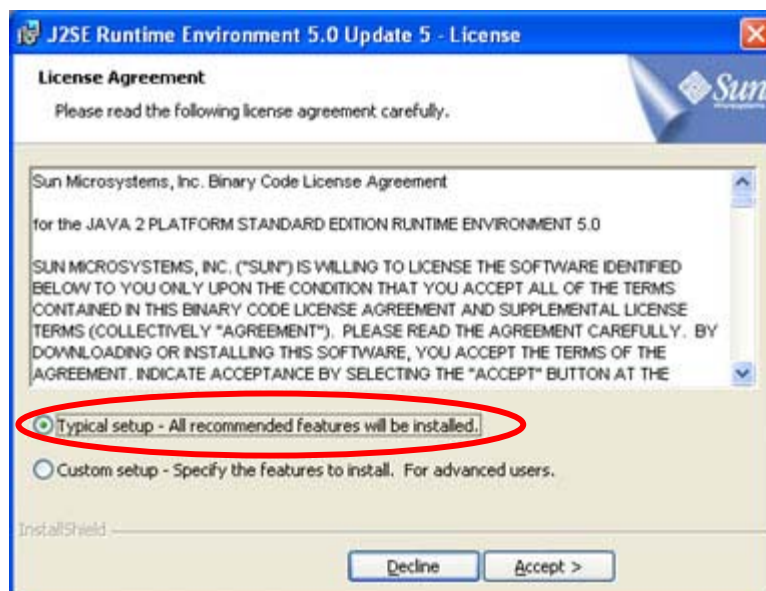


5. The JRE installation starts:

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.

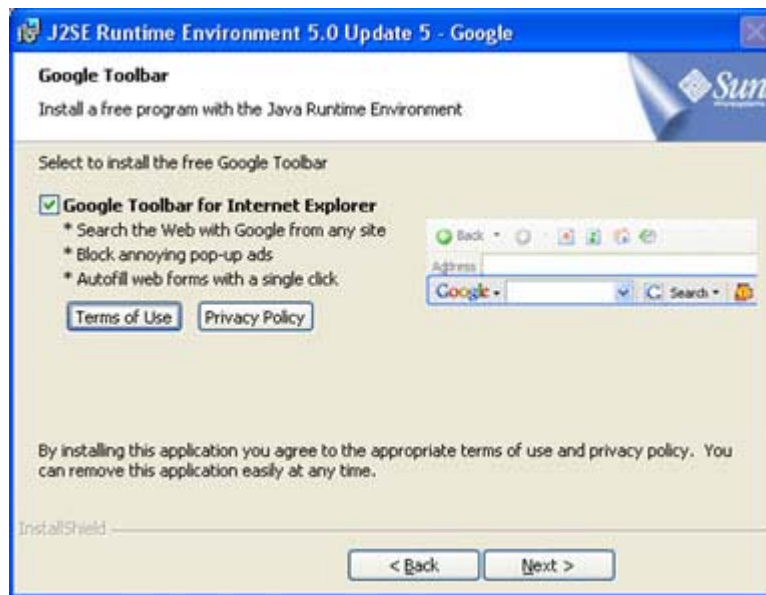
After ensuring that the **Typical** setup is selected, click the **Next** button to continue with the installation.



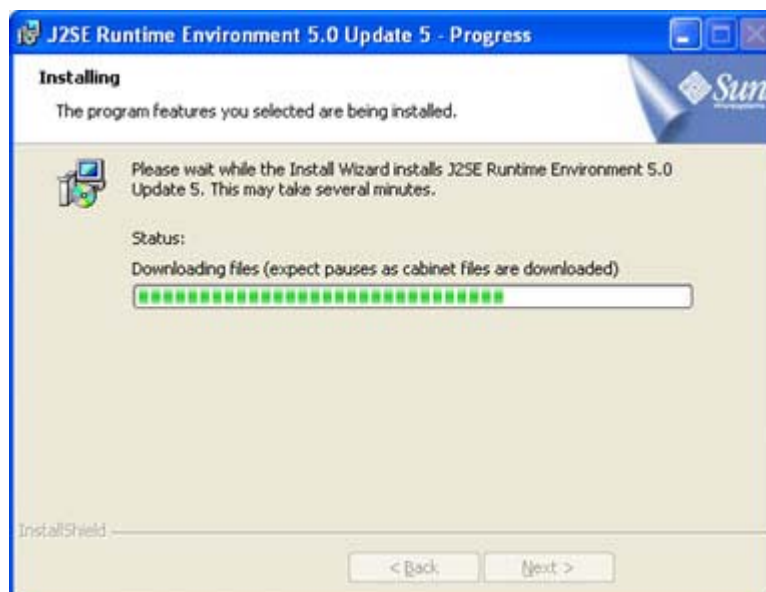
The **Java Runtime Environment 5.0 Update 5 – Google Programs** dialog box will appear. By default **Google Toolbar for Internet Explorer** is checked. Click **Next** button. This will start installing selected programs features including the JRE on your system.

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

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)

(<http://java.com/en/download/help/5000020200.xml>)



Appendix F: JAVA Installation

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

(<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)

(<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)

(<http://java.com/en/download/installed.jsp>)

Appendix G: Frame Ground

Electronic circuits are constantly vulnerable to Electro-Static Discharge (ESD), which become worse in a continental climate area. ET-6000 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 ET-6000 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.

Frame Ground

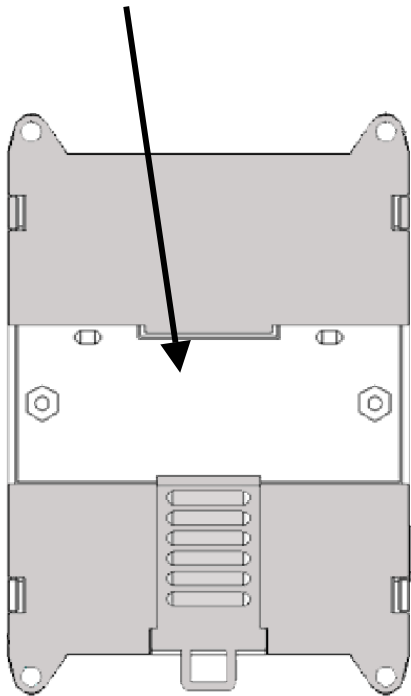
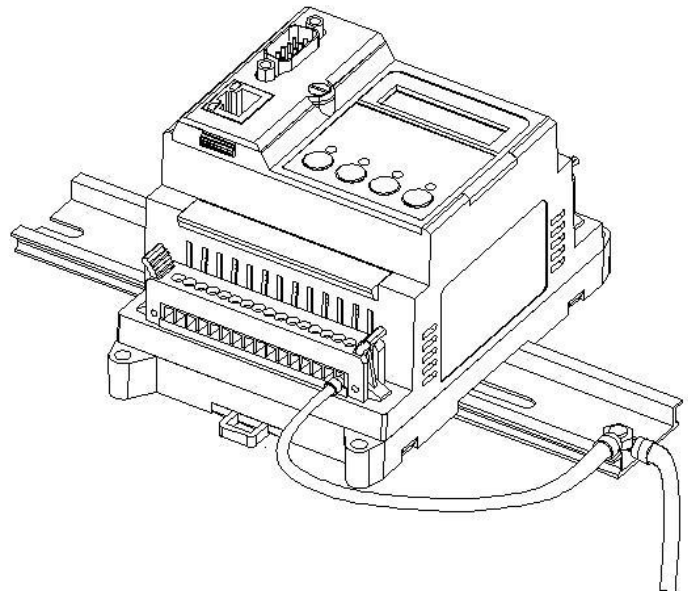


Figure F-1



**Connect to the
Earth Ground**

Figure F-2



Appendix H: Technical Support

Should you encounter problems while using your ET-6000 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.