Operation Manual of EX-9132CST-DIO(V2.0)

Serial to TCP/IP Converter

Version 2.0.1   1

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Introduction

We provide new ways of connecting legacy serial devices to a Local Area Network (LAN) or Wide Area Network (WAN). TCP/IP converters are designed to operate serial ports over 100M bps Ethernet networks. The data is transmitted via TCP/IP protocol. Therefore, control is available via Ethernet, Intranet and Internet. EX9132CST-DIO(V2.0) converter is packaged in a PVC material case well suited for industrial environments. It provides two serial ports with DIO, one is RS-232 and another one is RS422/485(Auto-Detect) . The serial ports operate in common industrial configuration.

EX9132CST-DIO(V2.0) converter is a low-cost, high performance design. By carefully selecting high quality with competitive prices components in the world, the products made network connectivity possible with affordable cost for virtually all kinds of devices. EX9132CST-DIO(V2.0) is a full set converter device with DIO, one serial ports RS-232 port and another is a RS-422/485(Auto-Detect) and it provides one socket connection port. This operation manual will guide you step by step to learn the various functions of the EX9132CST-DIO(V2.0) converter.

The following topics are covered in this chapter:

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- **Overview**
- **Block Diagram**
- **Product Features**
- **Product Specifications**

Overview

EX-9132CST-DIO(V2.0) converter is designed to make your industrial serial devices Internet ready instantly. ARM Cortex-M4 CPU of EX-9132CST-DIO(V2.0) converters makes them the ideal choice for connecting your RS-232 and RS-422 or RS-485 serial device—such as PLCs, meters, and sensors—to an IP-based Ethernet LAN, making it possible for your software to access serial devices anywhere and anytime over a local LAN or the Internet.

ARM Cortex-M4 CPU Series converters ensure the compatibility of network software that uses a standard network API (Winsock or BSD Sockets) by providing TCP Server Mode, TCP Client Mode, and UDP Mode. Model EX-9132CST-DIO(V2.0) provides 1 socket connection for remote management. ARM Cortex-M4 CPU Series' Virtual COM driver and software that works with COM port can be set up to work over a TCP/IP network in no time. This excellent feature preserves your software investment and let you enjoy the benefit of networking your serial devices instantly.

ARM-Cortex-M4 CPU series converter supports manual configuration via the handy web browser console and many protocols including TCP, IP, UDP, HTTP, DHCP, ICMP, and ARP. They are the best solution to network your serial devices.

Package Checklist

ARM-Cortex-M4 CPU products are shipped with the following items:

- 1 unit of EX-9132CST-DIO(V2.0) converter
- 1 unit of Power Adaptor/Supply(9V/12V/24VDC, 500mA) : Optional
- Din Rail Mounting Kit : Optional
- Quick Installation Guide in Documentation & Software CD

NOTE: Please notify your sales representative if any of the above items is missing or damaged.

Block Diagram
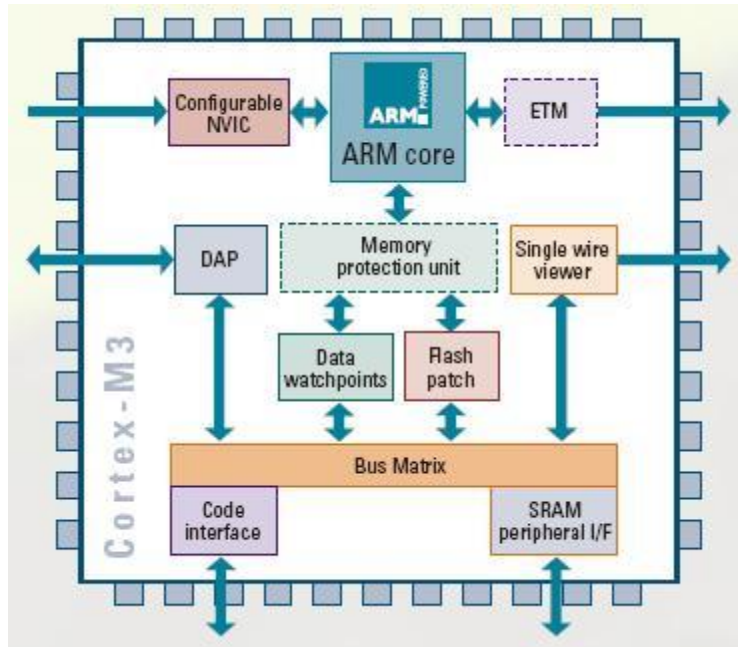
Low-cost devices usually are equipped with low speed processors and limited memories. In reality, they have neither the capability nor practicality to manage complicated network TCP/IP protocols. The ARM Cortex™-M4 32-bit processor has been specifically developed to provide a high-performance, low-cost platform for a broad range of applications including microcontrollers, automotive body systems, and industrial control systems, networking by converting data stream between network TCP/IP and popular serial port signals.

Instead of processing TCP/IP packets directly, devices need only deal with those interface signals, which greatly simplifies the complexity of TCP/IP network in linkage. The ARM Cortex-M4 processor provides outstanding computational performance and exceptional system response to interrupt while meeting low cost requirements through small core footprint, industry leading code density enabling smaller memories, reducing pin count, and low power consumption.

The central core of ARM Cortex-M4 processor, based on a 3-stage pipeline Harvard bus architecture, incorporates advanced features including single cycle multiply and hardware divide to deliver an outstanding efficiency of 1.25 DMIPS/MHz. The ARM Cortex-M4 processor also implements the new Thumb® -2 instruction set architecture, which combined with features such as unaligned data storage and atomic bit manipulation delivers 32-bit performance at a cost equivalent to modern 8- and 16-bit devices.
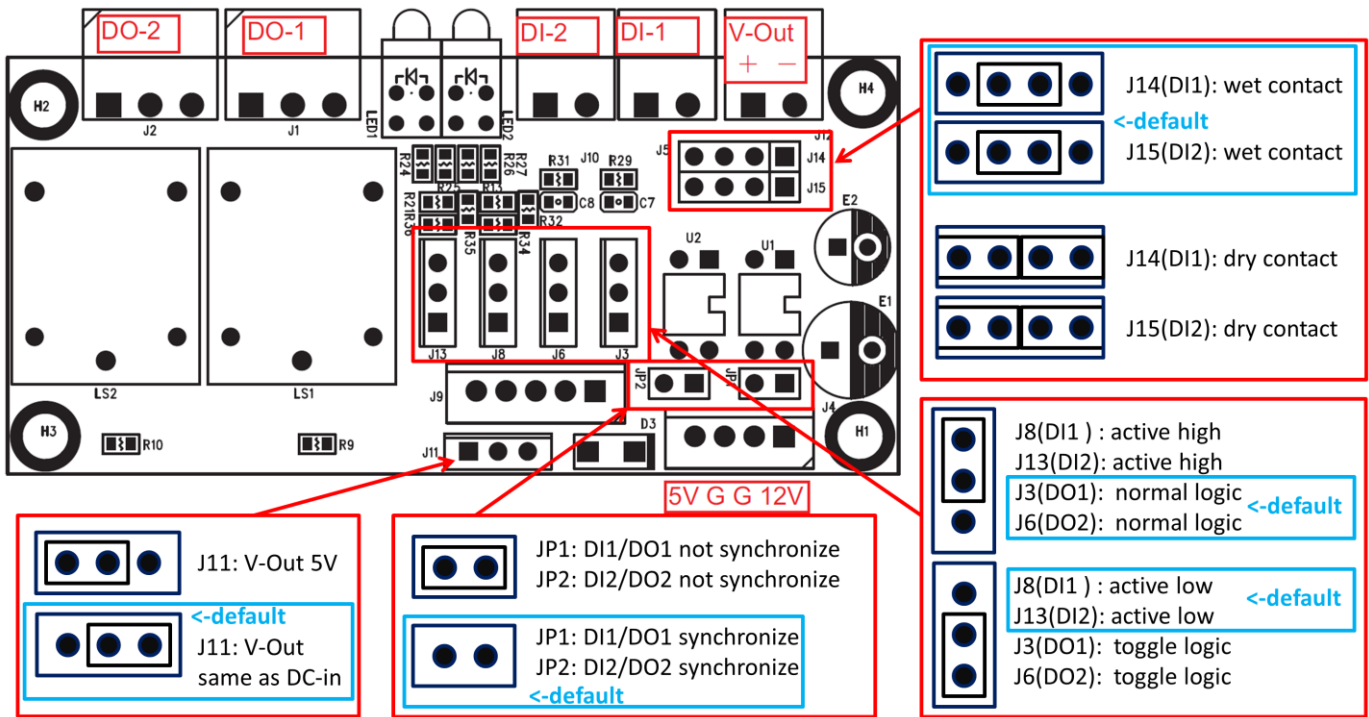
Product Features

☐ **Data Conversion between RS-232 and RS-422/485 and Ethernet**
EX-9132CST-DIO(V2.0) converter device (RS-232＊1 port，RS-422∕485＊1 port）data/signal into the TCP/IP package data/signal and send them out with the Ethernet Data Stream; or convert the TCP/IP package data/signal into serial device data/signal.

☐ **Socket Communication**
EX-9132CST-DIO(V2.0) is provided one socket connection.

☐ **Digital I/O Activating (Optional)**
EX-9132CST-DIO(V2.0) provides eight TTL of digital I/O.
Convert the sensors' statuses (the sensors are connected to the converter) into the TCP/IP package data and send them out with the Ethernet Data Stream; or use the TCP/IP package data to activate/deactivate the specified digital outputs.

☐ **Dynamic IP Configuration**
Support DHCP client mode, simplifying network address configuration and management.

☐ **Dual LAN Speed**
Support 10/100 Mbps Ethernet, auto-detected.

☐ **Server / Client Dual Modes**
EX-9132CST-DIO(V2.0) converter device can be configured as network server or network client. In the client mode, it can be installed in network which is protected by NAT router or firewall without a real IP address.

☐ **Web-based Setup**
Parameters setup is based on HTTP protocol by using standard browsers (IE and Netscape). No special software would be required.

☐ **Built-in Security Control**
Security protect by login password to prevent intruders.

☐ **Remote Update**
Firmware can be updated directly via Ethernet network to keep up with latest network standards.
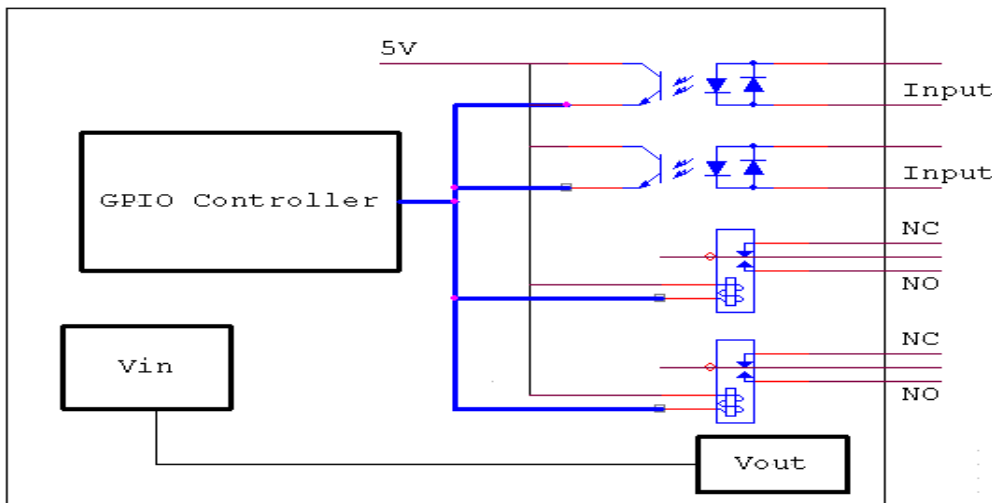
Product Specifications

- CPU : ARM Cortex™-M4 32-bit processor , 120MHz

- RAM : 128K Bytes SRAM

- ROM : 512K Bytes Flash ROM

- Ethernet

  - Port Type : RJ-45 Connector

  - Speed : 10 /100 M bps (Auto Detect)

  - Protocol : ARP, IP, ICMP, UDP, TCP, HTTP, DHCP, ICMP

  - Mode : TCP Server／TCP Client／UDP Client / Virtual COM / Pairing

  - Setup : HTTP Browser Setup (IE & Netscape)

  - Security : Login Password

  - Protection : Built-in 1.5KV Magnetic Isolation

- Serial Port

  - No. of Ports : RS-232*1 Port and RS-422/485(Auto-Detect) * 1 Port

  - Port Type：DB9 male * 1 and Terminal Block(4pin) * 1

  - Speed：300 bps～115.2K bps

  - Parity：None , Odd , Even, Mark, Space

  - Data Bit：5, 6, 7, 8

  - Stop Bit：1 , 2

  - Port 1：

    - One RS-232 Signals Port：Rx , Tx , GND , RTS , CTS , DTR , DSR , DCD

  - Port 2：

    - One RS-422 /485 Port (Auto-Detect)

    - RS-422 Signals：Rx+ , Rx- , Tx+ , Tx- (Surge & Over Current Protect)

    - RS-485 Signals : Data+ , Data- (Surge & Over Current Protection)

- Built-in RS422/RS485 Pull High-Low Resistor

➢ Digital I/O Port :   Output Screw Terminal Voltage 5V/ 12V**(same as DC-in)** Seletable

- Digital Relay Output : Channel * 2

    ➢ Relay Coil Voltage: 5V

    ➢ Contact Rating :24V@10A/ 120VAC@10A/240VAC@7A

    ➢ LED Lamp : DO-1 ; DO-2

- Digital Input : Channel * 2

    ➢ Active High/ Low Selectable

    ➢ Isolation Voltage : 3750Vrms

    ➢ Status Indictor : 2 Input LED display

    ➢ Wet Contact : Logic 0 : 0~1V Max , Logic 1 : 3.3V ~ 30V Max.

    ➢ LED Lamp : DI-1 ; DI-2

- Socket Port Connection：1 Connection

- 15KV ESD for all signal

- Watch Dog Function

- Virtual Support Windows 2000 /2003 / XP / Vista / 7 / 8 / 10

- Firmware On-line Updated Via Ethernet

- Power：DC 9 – 24V , 500mA (Terminal Block: Optional/ DC Jack: Default)

- Environment：

    Operating Temperature：0℃～70℃

    Storage Temperature：-10℃～80℃

- Dimensions：150 * 120 * 30 mm (W * D * H)

- WEIGHT：90 gm

- RoHS：Compliant with RoHS

- Regulatory Approvals：FCC, CE

- WARRANTY：1 year

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EX-9132CST-DIO(V2.0) Installation

DO-2 DO-1 DI-2 DI-1 V-Out + −

J14(DI1): wet contact
<-default
J15(DI2): wet contact

J14(DI1): dry contact

J15(DI2): dry contact

J8(DI1) : active high
J13(DI2): active high
J3(DO1): normal logic <-default
J6(DO2): normal logic

J8(DI1) : active low <-default
J13(DI2): active low
J3(DO1): toggle logic
J6(DO2): toggle logic

J11: V-Out 5V
<-default
J11: V-Out same as DC-in

JP1: DI1/DO1 not synchronize
JP2: DI2/DO2 not synchronize

JP1: DI1/DO1 synchronize
JP2: DI2/DO2 synchronize
<-default

5V G G 12V

Block Diagram

Top View

Down Side

Serial I/O Port of RS-232 & RS-422/485. Connect the serial data cable between the converter device and the serial devices. Follow the parameter setup procedures to configure the converter (see the following chapters).

Right Side(Digital I/O (DO * 2/ DI*2))

Through EX9132CST-DIO(V2.0) , D I/O(DO-1/DO-2/DI-1/DI-2) can transform the status of sensor into the TCP/IP package data and send out by Ethernet Data Stream (The EX9132CST-DIO(V2.0) must indicate the IP address and COM Port) or activate the indicated Digital output (Remote WinSock must indicate the EX9132CST-DIO(V2.0)). Connect the data wires between the EX9132CST-DIO(V2.0) and the RS-232/422/485 device. Follow the parameter setup procedures to configure the converter (see the following chapters).

Right Power Supply(Up Side)

EX9132CST-DIO(V2.0) TCP/IP converter device is powered by a single 9/12/24VDC (inner positive/outer negative) power supply and 500mA of current. A suitable power supply adapter is part of the packaging. Connect the power line to the power jack at the left side of EX9132CST-DIO(V2.0) TCP/IP converter device and put the adapter into the socket.

Ethernet LAN Port

The connector for network is the usual RJ45. Simply connect it to your network switch or Hub. When the connection is made, the LAN LED indicator will light up. When data traffic occurs on the network, red DATA LED indicator will blink during data transferring and receiving.

Reset Button

If by any chance, you forget the setup password, or have incorrect settings making EX-9132CST-DIO(V2.0)/ PoE converter inoperable. First, turn on the power. Second, use any point tip to push this button and hold it about 3 seconds All the parameters will be reset to the factory default. But do not over 5 seconds , it will enter update mode

LED Indicators

- SYS (Green):

  It is a device statues indicatord

- DI/DO (Red):

  Data input/output indicator (When data are input/output by the network, the LED will blink.)

- PORT-2 (Green):

  Port2 data transmitting indicator (When data are sending to the network, the LED will blink.)

- PORT-1 (Red):

  Port1 data transmitting indicator (When data are sending to the network, the LED will blink.)

- DI_1(Green): status of Digital input channel 1

- DI_2(Red): status of Digital input channel 2

- DO_1(Green): status of Digital output channel 1

Wiring Architecture

RS-232 Wiring Architecture

RS-422/485 Wiring Architecture
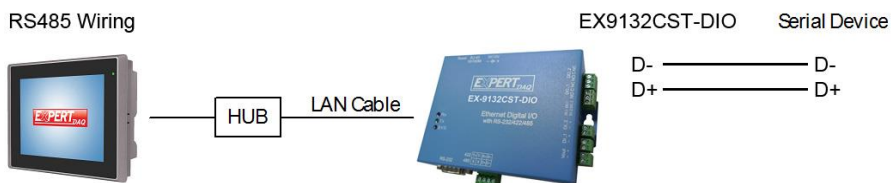
When you finish the steps mentioned above and the LED indicators are as shown in above diagram, the converter is installed correctly. You can use the Setup Tool "EXBrowser.exe" to setup the IP Address.

To proceed the advanced parameter setup, please use a web browser (IE or Netscape) to continue the detailed settings.

- Digital Output:
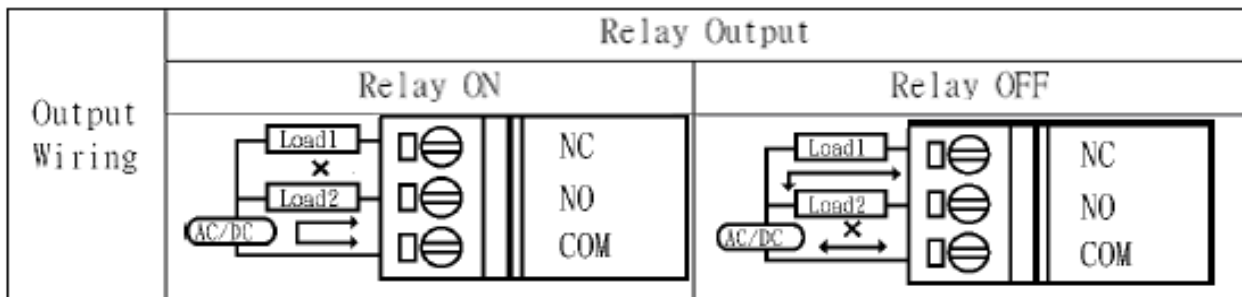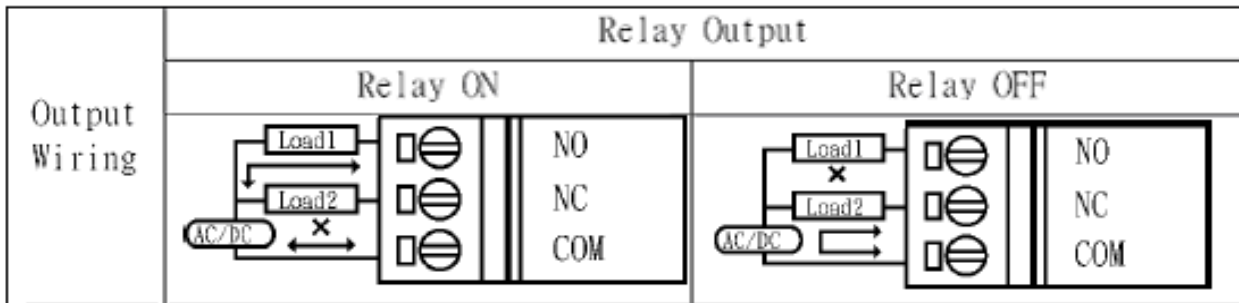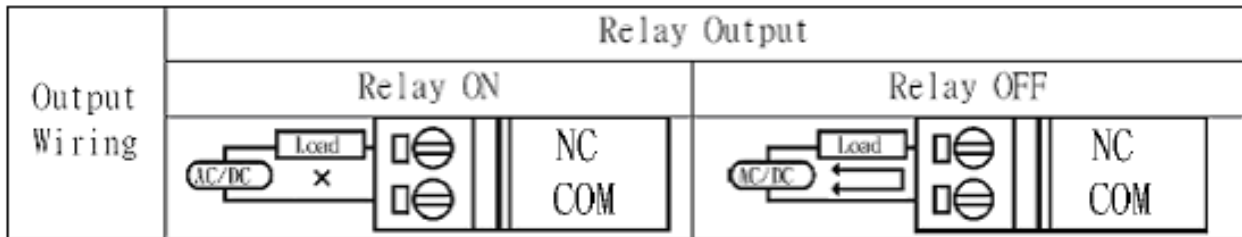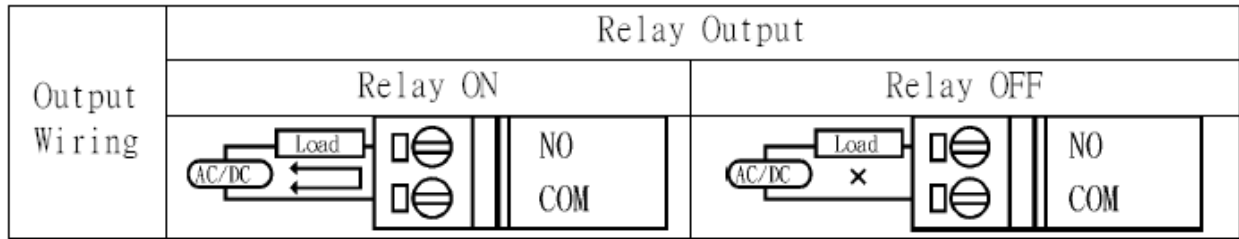
- Digital Input:
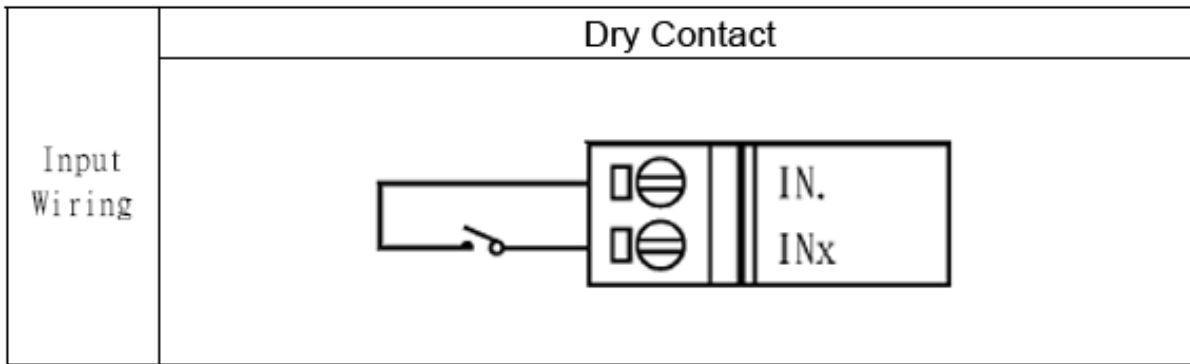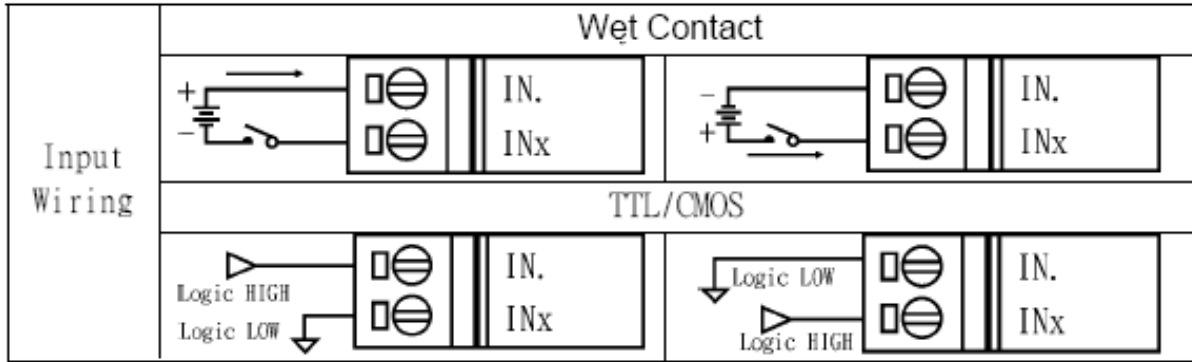
Note: Default of Digital input is Wet Contact

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EX-9132CST-DIO(V2.0) Converter Configuration

Initial IP Configuration

When sett up your converter for the first time, the first thing you should do is to configure the IP address. This chapter introduces the method to configure the device server's IP address.   For more details about network settings, please see the Network Settings section in Chapter 4, "Web Console Configuration".

The following topics are covered in this chapter:

   Device Management Utility of EXBrowser

   EXBrowser "View"

   EXBrowser "Modify IP"

   EXBrowser "Modify MAC"

Device Management Utility of EXBrowser

On PC we provide a Device Management Utility named **"EXBrowser.exe"** which is an executable program in Windows 32-bit environments. EXBrowser setup tool is used to detect and setup the installed converters.   It uses UDP broadcast packets to query and configure converters on the network.

When you activate the tool, it will detect the existence of the installed converters and depict the converters' status such as IP address, Subnet Mask, MAC Address, and Device ID (see Figure 4.1).   The Setup Tool only can setup one converter at a time.   Thus if there are more than one converter on the network, please shut down or disconnect other converters. Otherwise the EXBrowser.exe can not detect the converter.

Due to the nature of broadcast UDP packets, EXBrowser has following characteristics:

- Broadcast packets are not limited by subnet. Even if the IP address of the converters and the computer running EXBrowser that do not belong to the same subnet, it still works fine.

- Broadcast packets can not pass routers. EXBrowser can only be used to monitor devices with computer running EXBrowser in the same segment of local area network.

(Figure 4.1)

EXBrowser "View"

▣ View -> Refresh

There are two ways for refreshing the status of existing devices. You may select the item **"View"** to refresh the status of existing devices on LAN. Another is to click the icon as red color remark as below. EXBrowser will send another query to get updated information. (see Figure 4.2).

Note: Always run the **"Refresh"** after any data change.

(Figure 4.2)
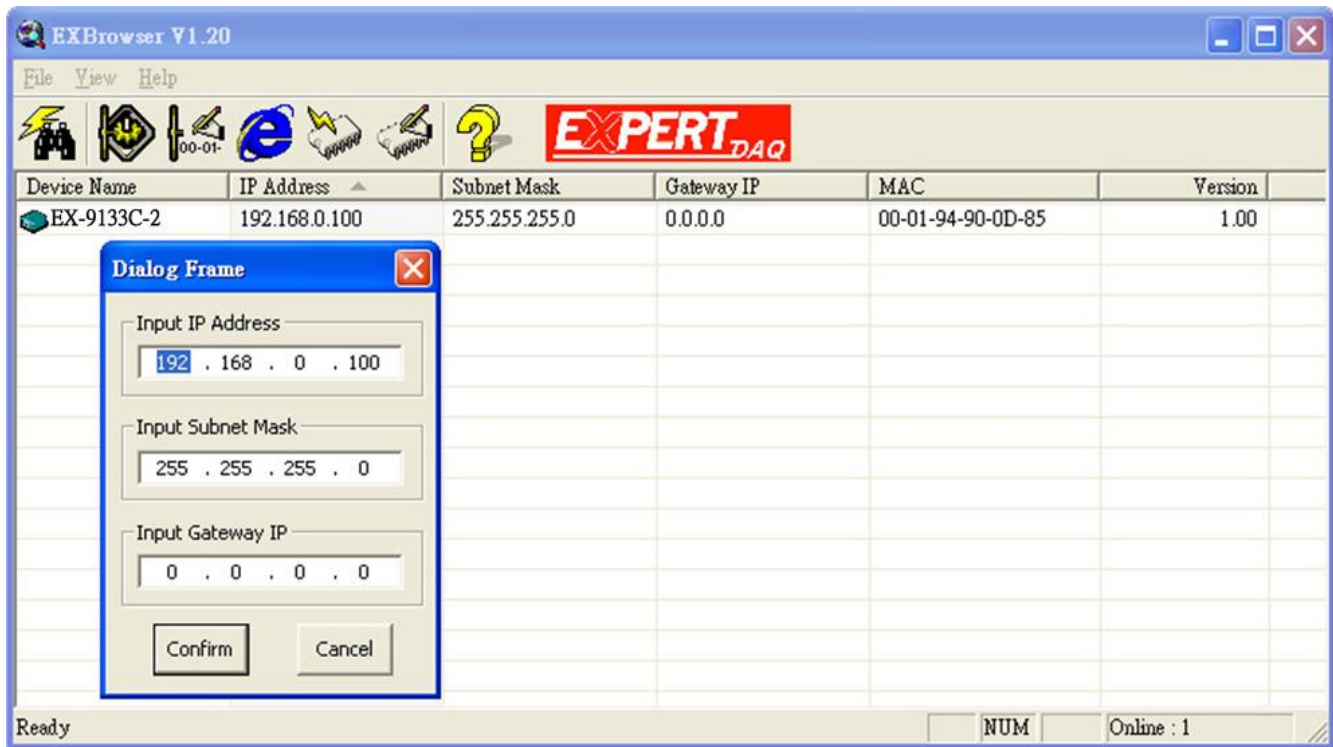
▣ File -> Exit   Alt+F4

Exit from the program (see Figure 4.3).

(Figure 4.3)

EXBrowser "Modify IP"

▢ Modify IP -> Dialog Frame
To click the device on the existing devices list in the EXBrowser table and then the function bar will be enable. To press second icon of **"Modify IP"** on function bar and a dialog frame table will be shown (see Figure 4.4).

(Figure 4.4)

Assign an IP Address with the same Subnet Mask of your computer, avoiding any IP conflict with other network devices.
When you press "**Confirm"** button, the IP address will be refreshed in 2~3 seconds.
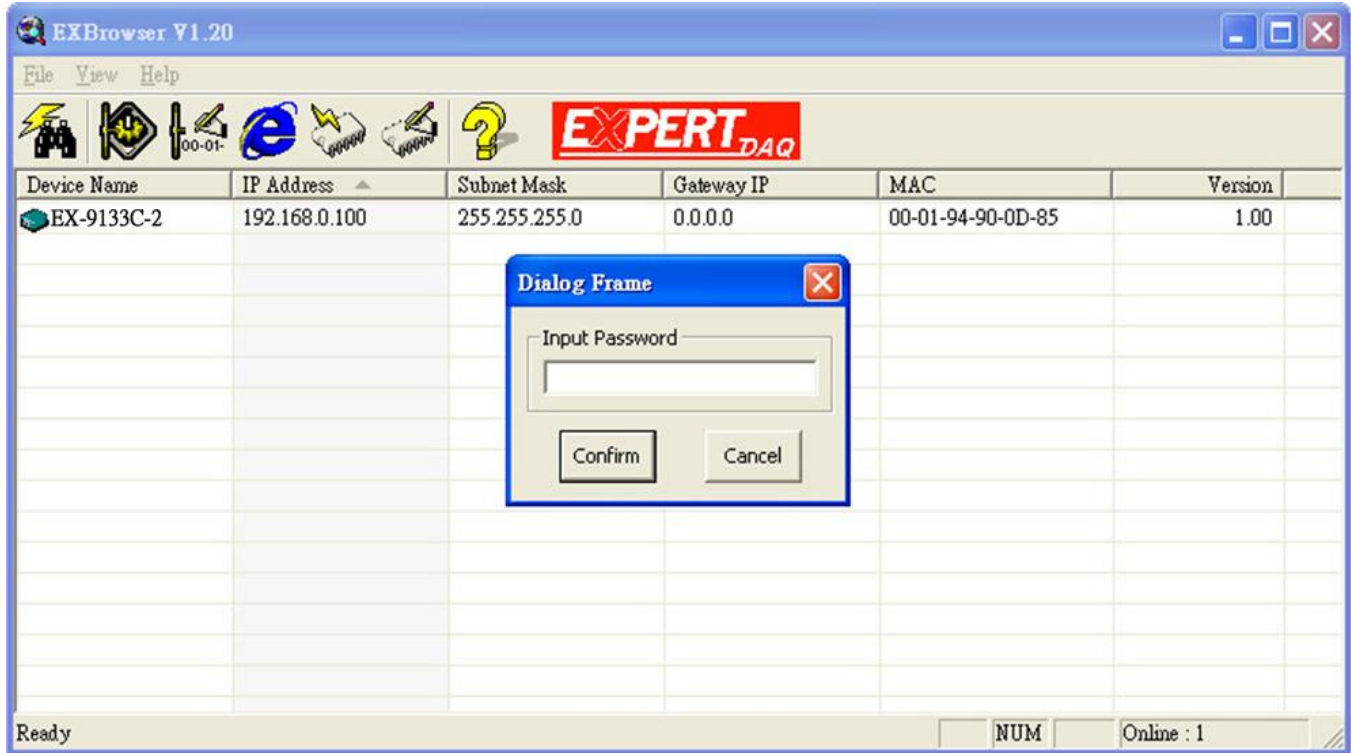
(Figure 4.5)

After click "Confirm" button and then **"Input Password"** request will be pop-up on screen (see Figure 4.5). Please simply press **"Confirm"** button and the new device's IP will be changed and save in table, if you changed it.
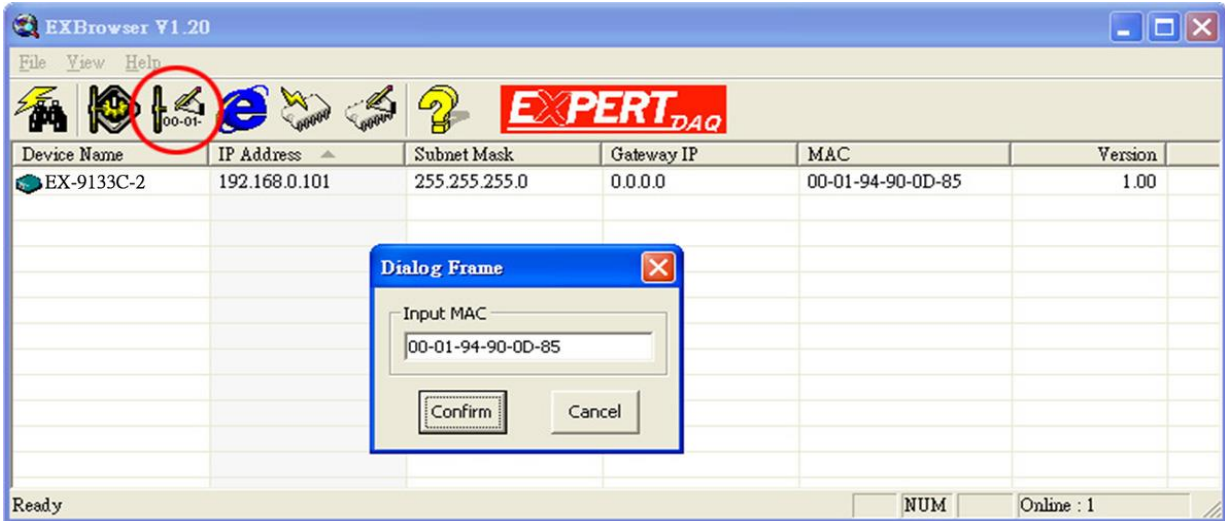

(Figure 4.6)

## EXBrowser "Modify MAC"

  ▢ Modify MAC -> Dialog Frame
      To click the device on the existing devices list in the EXBrowser table and then the
      function bar will be enabled. To press Third icon of **"Modify MAC"** on function bar and
      a dialog frame table will be shown (see Figure 4.7).

(Figure 4.7)

  ▢ Input Password -> Dialog Frame
      After click "Confirm" button and then **"Input Password"** request will be pop-up on
      screen (see Figure 4.8). Please simply press **"Confirm"** button and the new device's
      MAC will be changed and save in table, if you changed it.
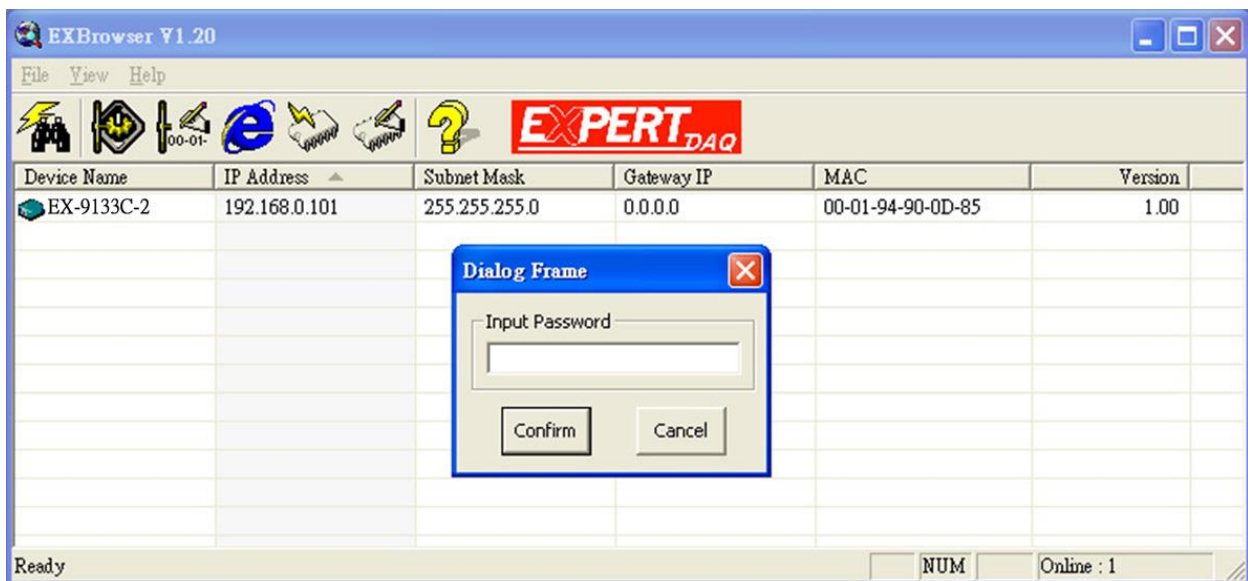
(Figure 4.8)

Web Browser Configuration

The following topics are covered in this chapter:

▣ **Serial To Ethernet Converter Setup**

- **Login Setting**

- **Login Setting Page Field Description**

- **Parameter Setting**

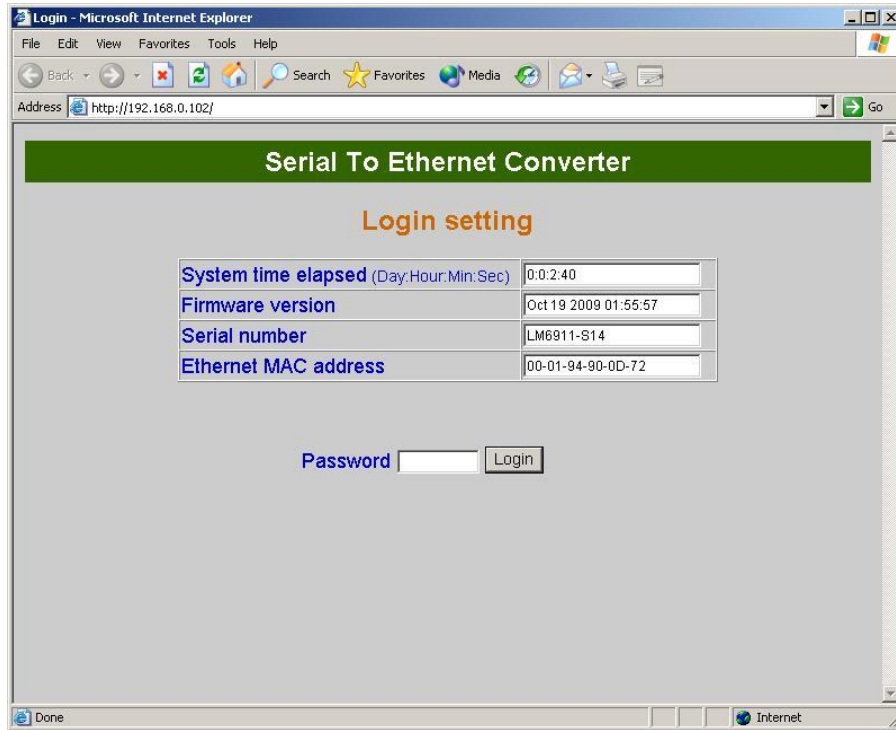- **Parameter Setting Page Field Description**

Login Setting

In addition to basic IP address and subnet mask, specific device settings can be set through HTTP protocol with popular browsers, e.g. Internet Explorer, Netscape, etc. Setup of the converters is as easy as surfing on WWW, no special software will be required.

Setup converter device is as easy as surfing on WWW; no special software will be required. Popular Browsers, such as IE, or Netscape, can easily do the setup process. In the browser URL field, set the IP address of device directly, to enter the **"Login Setting"** page, please follow the steps below.

▣ Open your browser. This chapter will use IE as an example.

▣ In the browser URL field, type the IP address of the converter directly and press ENTER. (The IP address is what you set using the Device Management Utility as EXBrowser.)

▣ To press fourth icon of **"Web Browser"** on function bar and a "**Login Setting**" Screen will be shown (see Figure 4.9) to login into the device.

Alternatively, if the IP address of the converter is already known, you can connect

to the converter directly by providing its IP address in the URL field of browsers.

(Figure 4.9)

Login Setting Page Field Description

▢ **System time elapsed**

The time elapsed since start of this device in [Day Hour : Minute : Second] format. This information can be useful in identifying the reliability of system.

▢ **Firmware version**

Converter firmware is identified by date code. This information will be required looking for technical support.

❑ **Serial number**

It is a product serial number code in the converter device and has been provided by factory.

❑ **Ethernet MAC Address**

Converter is a unique MAC (Media Access Control) address used by Ethernet**.**

❑ **Password**

This field is the administration password for authentication. Factory default is "**empty**". However, it is not recommended to leave it empty in field operation. If you could not login, it means you have to key in the password. If you do not know the password you can "Reset" this converter(First, turn on the power. Second, use any point tip to push this button and hold it about 3 seconds All the parameters will be reset to the factory default. But do not over 5 seconds , it will enter update mode).

Converter device uses the same password protection mechanism commonly used in Windows NT or UNIX. If there are more than **"3 consecutive failures"** in password check during login, the login function will be disabled for **"15 minutes"**. During this 15 minutes period, even if you supply correct password, login will not proceed. This prevents intruders from finding the password by computer generated program.

Parameter Setting Page
❑ **The Parameter Setting Page**

Type the correct password in the **"Password"** field and click the **"Confirm"** button in the **"Login Setting"** page, then the **"Parameter Setting"** page will be shown (see Figure 4.10).
Note: If you forget the password or can't login successfully, please contact the manufacturer directly.

IP address	192.168.0.100
Subnet mask	255.255.255.0
Gateway IP	0.0.0.0
Link Modes	Auto detect ▼
DHCP Client	Disable ▼
Auto Reset (No data input)	30 (1 ~ 255 Minute)
Device Name	EX9133C-2
Login password	

Serial I/O Port 1 0

Local port,Socket mode	100 TCP Server ▼
Remote IP,Port (TCP Client/UDP)	0.0.0.0 0
Interface	RS232 ▼
Baudrate	9600 ▼
Parity,Data bit,Stop bit	None ▼ 8 ▼ 1 ▼
Force off-line time (No data input)	30 (1 ~ 255 Minute)
Packet collect time	Tx 0 Rx 0 (mSec)

Serial I/O Port 2 0

Local port,Socket mode	101 TCP Server ▼
Remote IP,Port (TCP Client/UDP)	0.0.0.0 0
Interface	RS485 ▼
Baudrate	9600 ▼
Parity,Data bit,Stop bit	None ▼ 8 ▼ 1 ▼
Force off-line time (No data input)	30 (1 ~ 255 Minute)
Packet collect time	Tx 0 Rx 100 (mSec)

Digital I/O Port 1 0

Local port,Socket mode	102 TCP Server ▼
Remote IP,Port (TCP Client/UDP)	0.0.0.0 0
I/O Direction(1 ~ 8)	11111111 (0:Output, 1:Input)
I/O Data(1 ~ 8)	11111111
Record Last Status	Disable ▼
Force off-line time (No data input)	30 (1 ~ 255 Minute)

Digital I/O Port 2 0

Local port,Socket mode	103 TCP Server ▼
Remote IP,Port (TCP Client/UDP)	0.0.0.0 0
I/O Direction(1 ~ 8)	00000000 (0:Output, 1:Input)
I/O Data(1 ~ 8)	00000000
Record Last Status	Disable ▼
Force off-line time (No data input)	30 (1 ~ 255 Minute)

(**Figure 4.10**)

□ **Parameter Setting Page Field Description**

□ **IP Address**
The IP address of converter device, 4 digits separated by '.'   Don't let it conflict with the other devices on the network.

If DHCP client mode is enabled and there's a DHCP server on the network, this field will be assigned by DHCP server automatically.

□ **Subnet mask**
Subnet mask of the converter device has connected to.   "255.255.255.0" is usually used for small network, "255.255.0.0" for larger network, 4 digits separated by '.'

If your IP address is provided by an ISP or the internal network administrator, please inquire of them that information and type it correctly.

If DHCP client mode is enabled and there's a DHCP server on the network, this field will be assigned by DHCP server automatically.

□ **Gateway address**
Gateway or Router IP address.   'Gateway' is a device which connects local network to external network.   If you need to communicate with other networks or your device owns a real IP address on the internet, please inquire of them that information and type it correctly.   If there's no gateway on the network, just leave it as "0.0.0.0".

If DHCP client mode is enabled and there's a DHCP server on the network, this field will be assigned by DHCP server automatically.

□ **DHCP client**
DHCP client mode could be enabled/disabled status. If DHCP is enabled, there should be a DHCP server on the network. If DHCP is disabled, [IP address], [Subnet mask], and [Gateway address] should be manually assigned.

❑   **Auto Reset(Reboot)**It is for resetting when the device has been disconnected or some reasons, the data stop transmitting for a while. You can prevent it and restart the device after waiting a while (1～255 Minute) as your settings.

❑   **Login Password**
For security and management issues, you may setup the "Login Password". This administration password uses to login converter parameter setting pages. It may be empty or up to 15 characters long.

❑   **SerialⅠ/ O Port 1 (RS-232)**
This converter device model provides one serial port as RS-232 interface for connecting the extension serial device.

❑   **Local Port／Socket Mode／Remote IP & Port**
This converter device provides one socket connection port.

❑   **Port number**
A socket port assigned for the serial port.   It's a 16-bit numbers, ranging from 1 to 65535. Because the numbers below 1000 are used for specific purposes (e.g. 80 is for HTTP protocol), we suggest you use the numbers larger than **1000**. Generally the port number 4660 is used for the serial communication. However you should specify different port number for each serial port.

❑   **Socket type**
- □   TCP Server: TCP protocol, passive open, to be connected from the TCP clients.
- □   TCP Client: TCP protocol, active open, connect to the TCP server
- □   UDP Client: UDP protocol, connectionless

❑   **Remote IP address**
The server IP address and socket port would be connected in TCP   Client and UDP Client mode for a certain serial port.

❑   **Remote socket port**
The server socket port would be connected in TCP Client and UDP Client mode for a certain serial port.

- **Interface of serial I/O**
  RS232：TxD, RxD for data stream, no flow control

  RS232 (RTS/CTS)：TxD, RxD for data stream, RTS/CTS for flow control.

- **Baudrate**
  Baud Rate: 300 ~ 115.2K bps

- **Parity, Data bits, Stop bit**
  Parity: None, Even, Odd, Space, Mark.
  Data Bits: 5, 6, 7, 8.
  Stop Bit: 1 or 2.

- **Force off-line time(Close the Socket)**
  It is for setting the off-line time period of device will be taken when there is no date input. The parameter can be from **"1 to 255"** and the time unit is **"Minute"**.

- **Packet Collect Time**
  It is for setting a packet collecting period of the device serial port's Tx and Rx. The parameter can be from **"0 to 999"** and the time unit is **"mSec"**.

- **Serial Ⅰ/O Port 2 (RS-422/485)**
  This converter device model is provided second serial port as RS-422/485 (Auto-Detect) interfaces for connecting the extension serial device.

  - **Local Port／Socket Mode／Remote IP & Port**
    This converter device provides one socket connection port.

  - **Port number**
    A socket port is assigned for the serial port.   It's a 16-bit numbers, ranging from 1 to 65535. Because the numbers below 1000 are used for specific purposes (e.g. 80 is for HTTP protocol), we suggest you use the numbers larger than **1000**. Generally the port number 4660 is used for the serial

communication. However you should specify different port number for each serial port.

- **Socket type**
  - TCP Server: TCP protocol, passive open, to be connected from the TCP clients.
  - TCP Client: TCP protocol, active open, connects to the TCP server.
  - UDP Client: UDP protocol, connectionless

- **Remote IP address**
  The server IP address and socket port would be connected in TCP Client and UDP Client mode for a certain serial port.

- **Remote socket port**
  The server socket port would be connected in TCP Client and UDP Client mode for a certain serial port.

- **Interface of serial I/O**
  It provides an **"Auto Detect"** function and just depends on the connected serial device's interface as RS-422 or RS-485.

- **Baudrate**
  Baud Rate: 300 ~ 115200 bps

- **Parity, Data bits, Stop bit**
  Parity: None, Even, Odd, Space, Mark.
  Data Bits: 5, 6, 7, 8.
  Stop Bit: 1 or 2.

- **Force off-line time(Close the Socket)**
  It is for setting the off-line time period of device will be taken when there is no date input. The parameter can be from **"1 to 255"** and the time unit is **"Minute"**.

- **Packet Collect Time**

It is for setting a packet collecting period of the device serial port's Tx and Rx. The parameter can be from **"0 to 999"** and the time unit is **"mSec"**.

Interface of serial I/O

- □ RS-485 (Half-duplex): Half-duplex RS-485 interface, RTS for driver enable/disable
- □ RS-422 (Full-duplex): Full-duplex RS-422 interface

Digital I/O port Setup: Please select Port No. and TCP mode.

You can get Digital Input/Output status from the response of the connect socket port
Digital Input / Digital Output pin assignment & default value setup
Digital I/O Port1: set as Digital Output
Digital I/O Port2: set as Digital Input

1. Use Hyper-Terminal to control DO & monitor DI status.

2. Digital I/O Port #2: set as Digital Input

Above point #6 set a to port number 103 (physical port #2)

Press Dial-up , Ethernet DI/O Converter will response Digital Input default status

"11111111" to Host
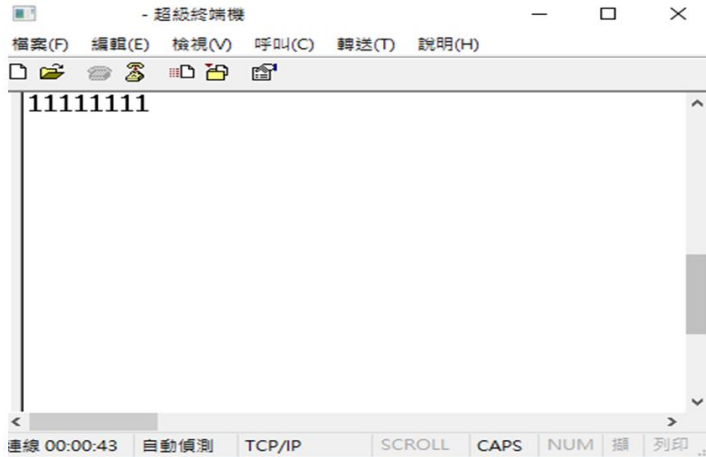
3. Digital I/O Port #2 set as Digital Input , it has 8 pins of Digital Input.

It you want to know Digital Input status anytime, you can Press "Enter" key.

Ethernet DI/O Converter will response Digital Input status to Host.

You can connect power output (+/-) to DI-1 (P/N) to try.

The Hyper-Terminal will return status of DI instantly.
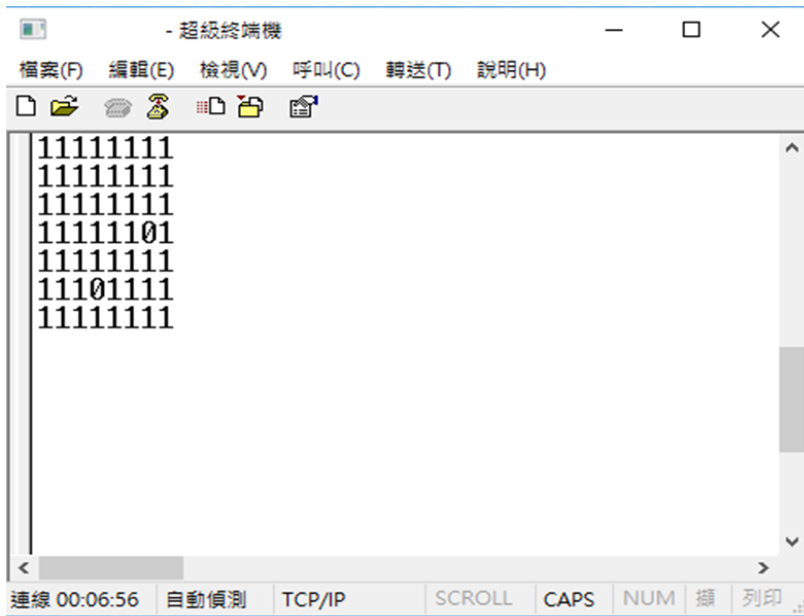
4. Digital I/O Port #1: set as Digital Output

Start a new link to port 102 as per description at point #6.

Press Dial-up , press "Enter" key ,Ethernet DI/O Converter will response Digital Output default status "00000000" to Host.
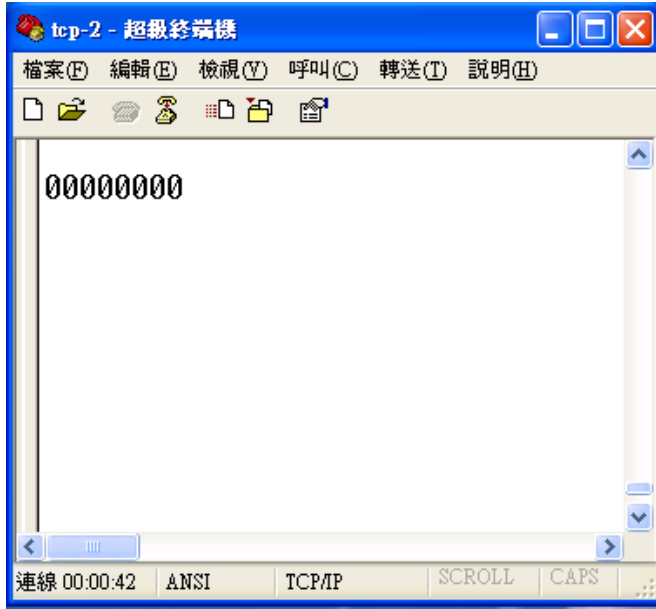
5. Digital I/O Port #1 set as Digital Output , it has 3 pins of Digital Output.

To test the Digital Output pins, it must be sent a string fulfill with 8 digits (1 byte) such as "11100000".

You will see the 3 pins of Output Relay all active.
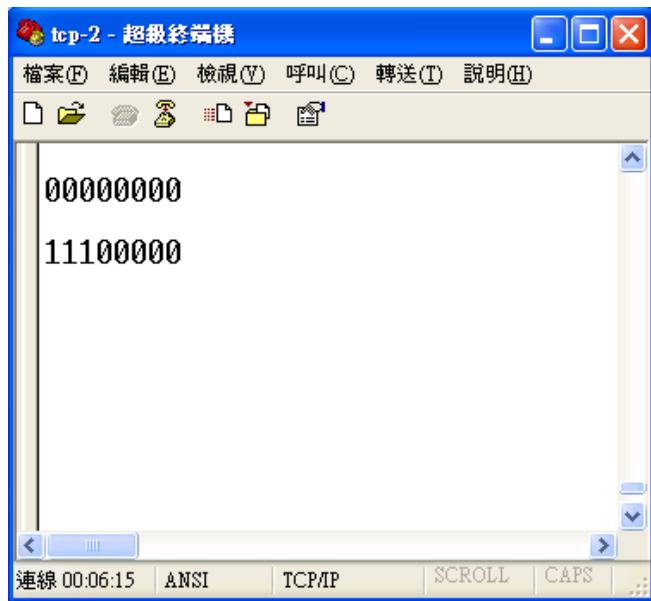
6. If you want to turn off the output-1 relay

Through the Digital Output socket port (102) Send " 01100000"

Hyper terminal will return the change status " 01100000"

If you want to turn off the output-2 relay

Through the Digital Output socket port (102) Send " 00100000"

Hyper terminal will return the change status " 00100000"
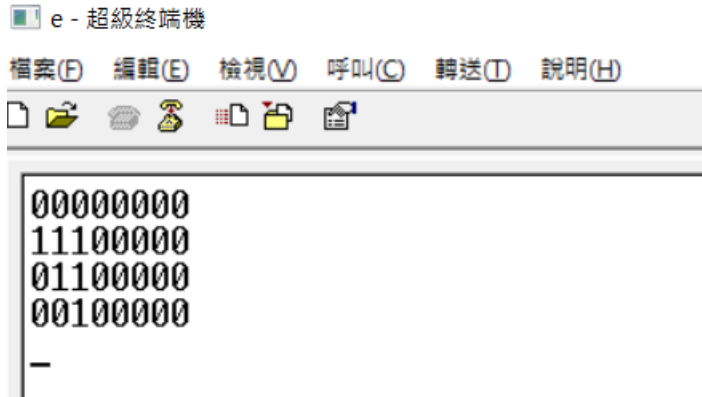
Controller Updated

Press "Update" Button after finish the detailed parameter setting. The converter will save all parameters into internal non-volatile memory and then reboot (see Figure 4.11). It takes about 5 seconds to complete the whole process, and a new login page will be presented (see Figure 4.9).

(Figure4.11)

You can re-login and check if all parameters have been correctly saved. If everything is ok, you can close the browser now.

Note : If the domain of the converter is different from that of the computer running the browser, the login page won't appear unless the converter's "Gateway Address" has been correctly set.

Factory Default Setting

If you forget the setup password or have incorrect settings making the converter inoperable, there are two ways to reset the setting and the following procedures can be used to reset all settings to factory default:

A:
1. Please turn on the power and then use any point tip to push "Reset" button for 5 seconds.   The password will be reset to the factory default as "empty".

1.

5

Setting Verification

After complete the wiring and parameter setting, we should verify if the setting is correct. This chapter will introduce how to use a single computer to test if the converter behaves well.

The operating system can be Windows 95, 98, ME, XP, 2000, Vista, 7. The "Hyper Terminal" utility should be installed on your PC (see Figure 5.1). It can be found in your Windows installation CD.

The wiring architecture is similar to "RS-232 Wiring" in chapter 3, and the "Serial Device" is replaced by the PC's COM 1. The same PC also plays the roll of the Remote Host.

The following topics are covered in this chapter:

- **Hyper Terminal for TCP/IP WinSock**
- **Hyper Terminal for COM Port**
- **Data Transmission**

Hyper Terminal for TCP/IP WinSock

Initiate a Hyper Terminal from the Start Menu in Windows (see Figure 5.1), give a terminal name, choose an icon, and press "OK" button (see Figure 5.2).
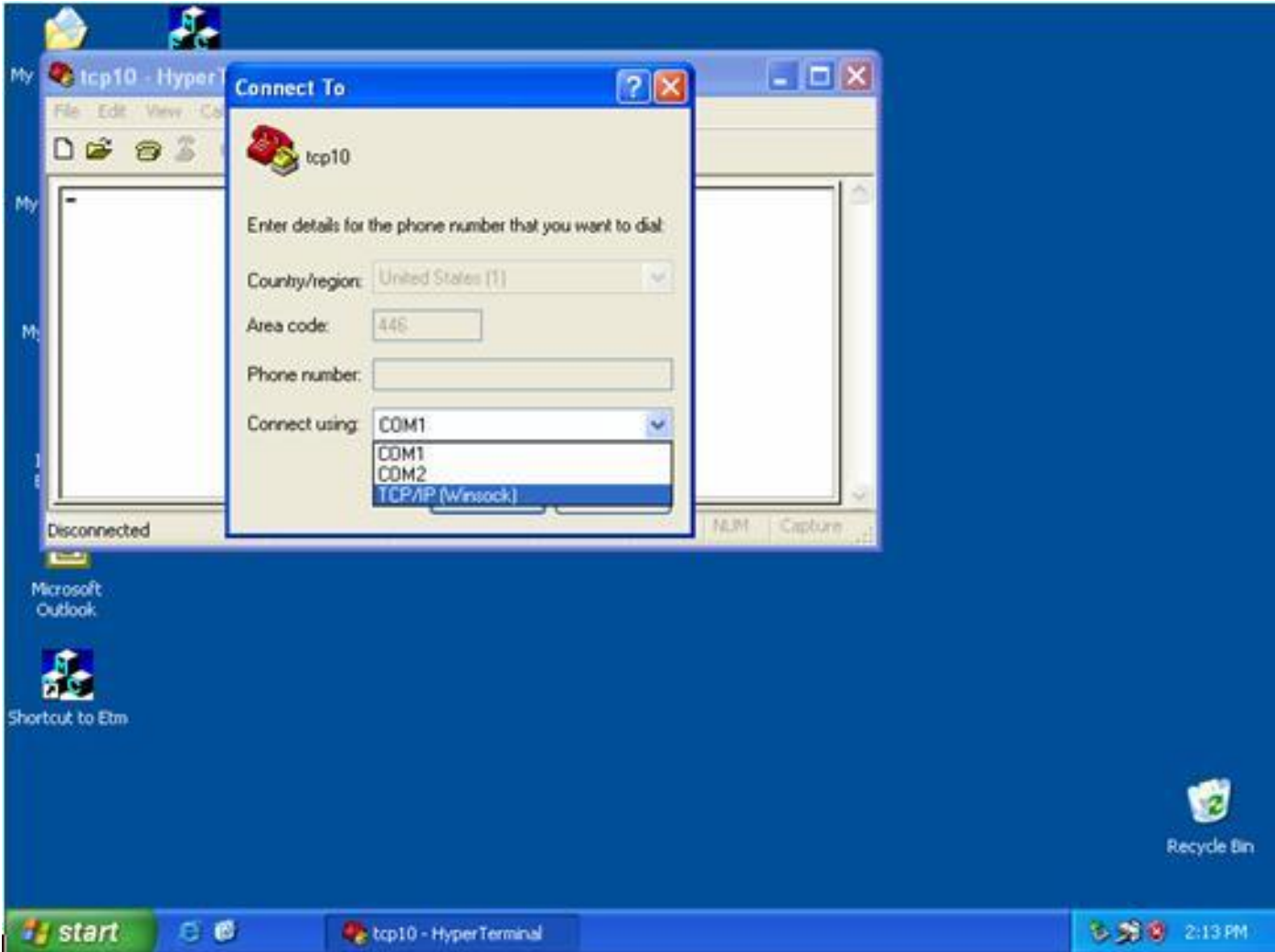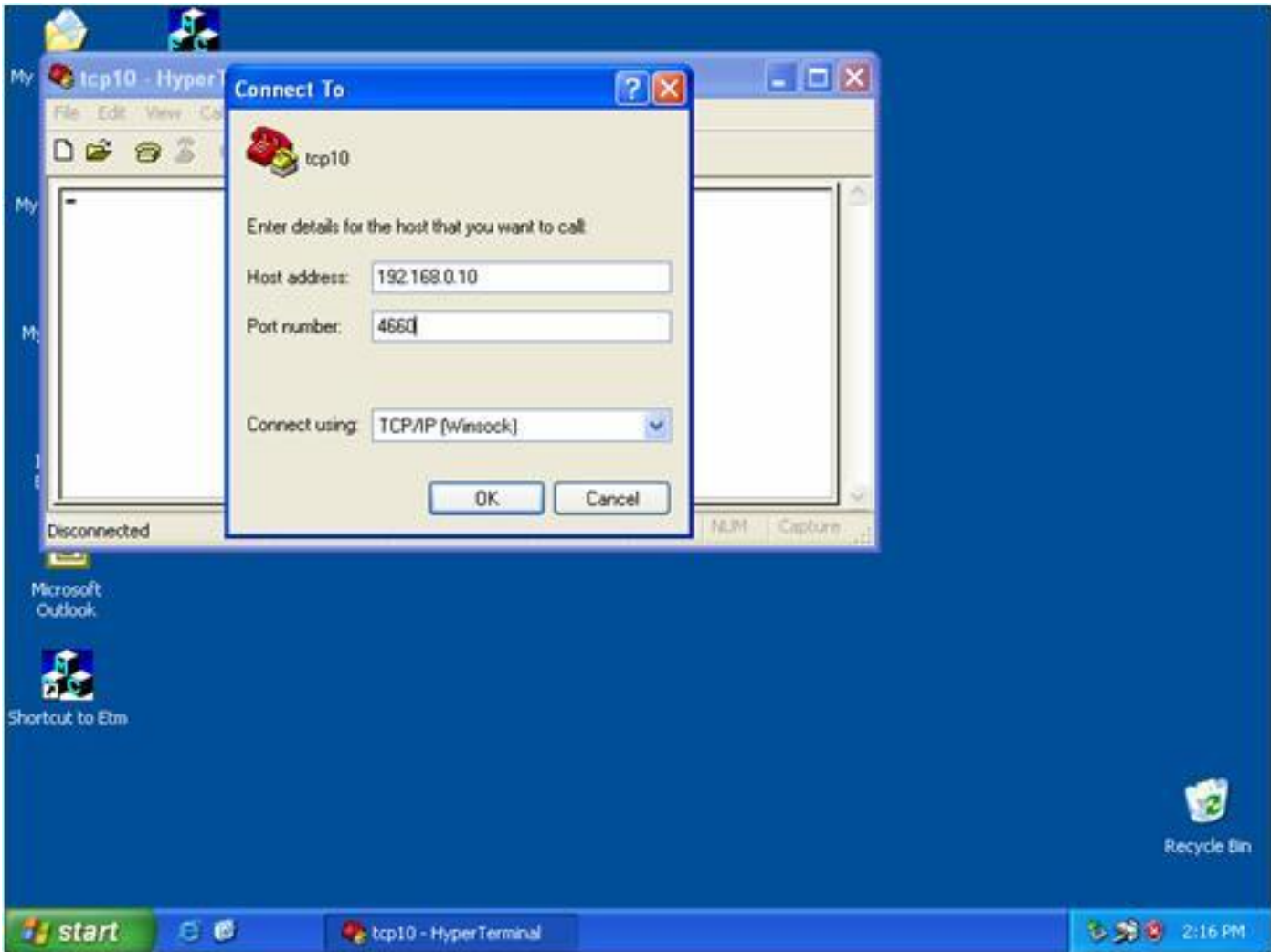

(Figure 5.1)
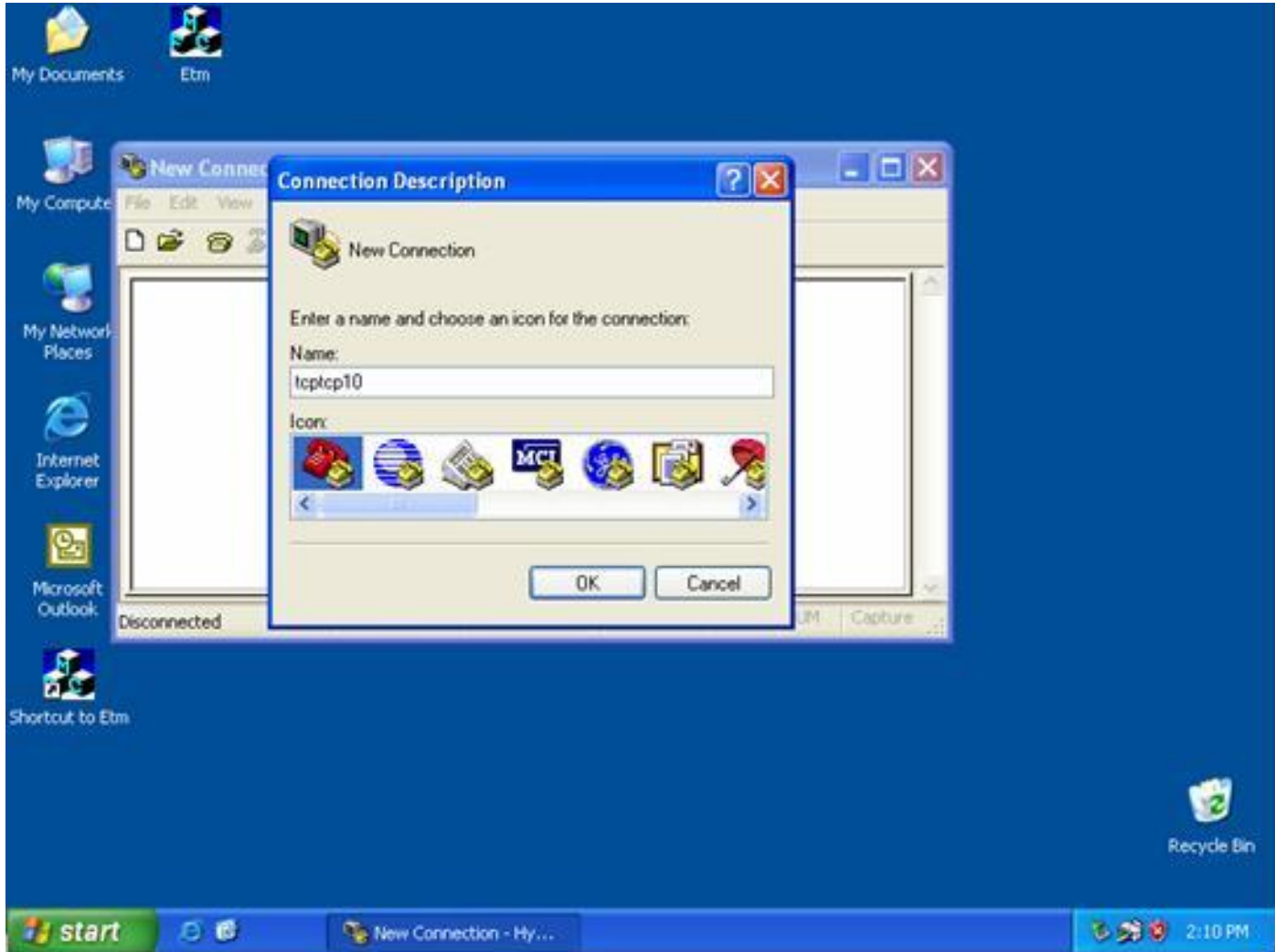
(Figure 5.2)

Select "TCP/IP (Winsock)" option at the "Connect using:" field (see Figure 5.3).

(Figure 5.3)

After "OK" button is pressed, Figure 5.4 appears.　Enter the converter's IP address (e.g. 192.168.123.10) at the "Host address:" field, and the Socket port number set for the Serial Port 1 at the "Port number:" field (e.g 4660).　(The Socket type of the Serial Port 1 should be "TCP Server".)
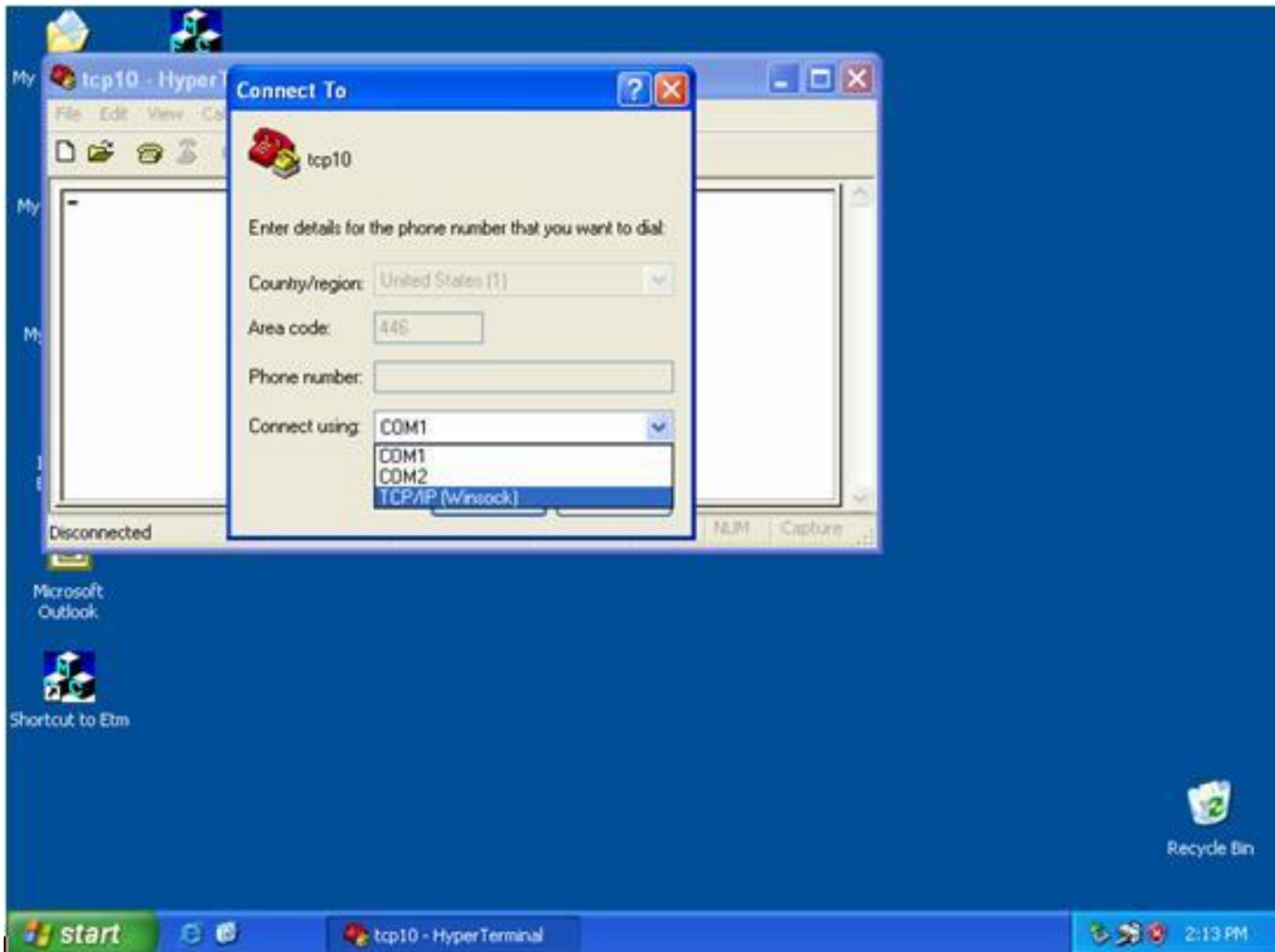
(Figure 5.4)

After "OK" button is pressed, Figure 5.5 appears. If the Hyper Terminal connects with the converter successfully, the time clock at the left lower corner "Connected hh:mm:ss" will start counting.
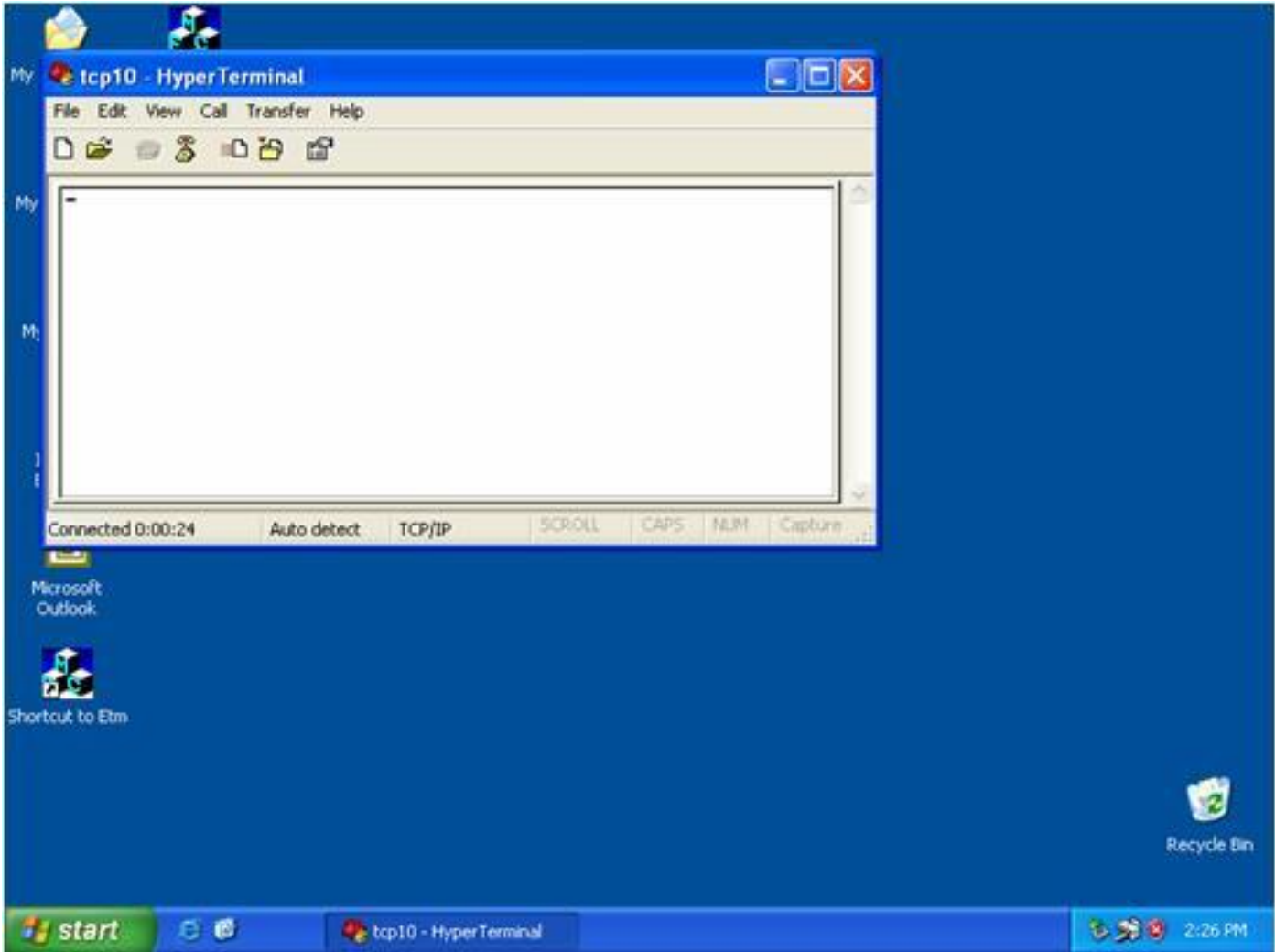
(Figure 5.5)

Hyper Terminal for COM Port

Initiate another Hyper Terminal as a COM Port Terminal (in Figure 5.3, select COM 1 or other COM port instead of "TCP/IP (Winsock)").   Set the COM port Properties to be the same as those set for the Serial Port 1 of the converter.

(Figure 5.3)

Data Transmission

When all steps described above are finished, type any texts on the COM Port Terminal and check if the texts are also displayed on the TCP/IP Winsock Terminal. Alternatively, check if the characters typed on the TCP/IP Winsock Terminal are also displayed on the COM Port Terminal.   If yes, then all settings are correct and the converter can operate properly.

Appendix A

FAQ

Q. Why can't the EXBrowser.exe detect the converter on the network?

A. Please check

- if the power is properly plugged to the converter.

- if the network cable is properly connected between the converter and the Hub.

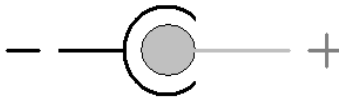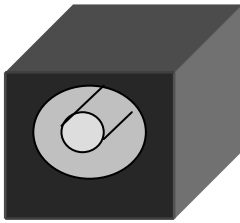Please refer to the "Hardware Installation" steps in Chapter 3.

Q. Why can't I use IE to setup the converter?

A. Please check if the network domain of your PC is the same as that of the converter.
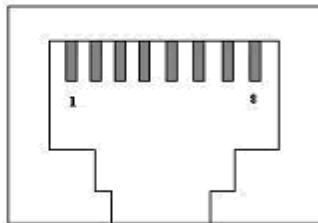
Appendix B

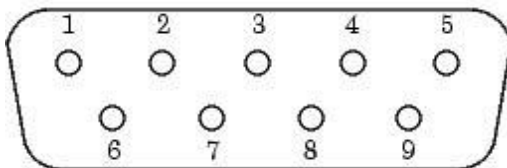## Pin outs and Cable Wiring

☐ **DC-In Jack**

☐ **RJ-45 Pin Assignment**

RJ45 Port

Pin	Signal
1	Tx+
2	Tx-
3	Rx+
6	Rx-

☐ **RS-232 Pin Assignment**

The pin assignment scheme for a 9-pin male connector on a DTE is given below.

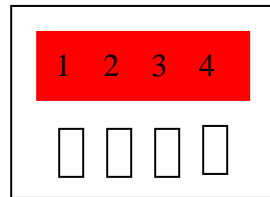PIN 1 : N/A   PIN 2 : RXD   PIN 3 : TXD   PIN 4 : DTR

PIN 5 : GND   PIN 6 : DSR   PIN 7 : RTS   PIN 8 : CTS

PIN 9 : N/A

❑ **RS-232 Wiring Diagram**

Serial Device   EX-9132CST-DIO(V2.0)/ PoE

2	RX		3	TX
3	TX		2	RX
5	GND		5	GND
7	RTS		8	CTS
8	CTS		7	RTS

❑ **RS-422 Pin Assignment**

The pin assignment scheme for a 4-pin RS-422 is given below.

```
┌─────────────────────┐
│   ┌───────────────┐  │
│   │ 1   2   3   4 │  │
│   └───────────────┘  │
│    □   □   □   □     │
└─────────────────────┘
```

PIN 1 : T+   PIN 2 : T-   PIN 3 : R+   PIN 4 : R-

❑ **RS-422 Wiring Diagram**

Serial Device   EX-9132CST-DIO(V2.0)/ PoE

R-		2	T-
R+		1	T+
T-		4	R-
T+		3	R+

❑ **RS-485 Wiring Diagram**

Serial Device   EX-9132CST-DIO(V2.0)/ PoE

D+		1	D+
D-		2	D-