

eDIO-100 Ethernet Serial/Digital IO Unit



The eDIO-100 is an Ethernet to Serial converter with two mains relay outputs and 2 digital inputs. The serial port can be either set as an RS232 port or an RS485 port. Serial data can be sent directly through a TCP/IP connection or via the supplied Virtual Serial Port software for use with legacy software with no Ethernet support. The 2 mains rated relay outputs can be controlled through a simple ASCII protocol. Digital input status is automatically reported on state change or can be obtained through a simple TCP port request.

- 1 x RS-232 via 9-way D male;
 - Speed 300-115.2kbps
 - Parity - None/Odd/Even
 - 7/8 data bits, 1/2 stop bits
 - RX,TX,RTS,CTS,DTR,DSR
- OR 1 x RS-422/RS-485 via removable screw terminal;
 - RX+, RX-, TX+, TX-
 - Speed 300-115.2kbps
- 2 x change-over Relays rated 240VAC at 7A
- 2 Digital Inputs
 - Wet contact : Logic level 0 : 0~1 V MAX , Logic level 1 : 3.3V ~ 30 V MAX
 - Dry contact : Logic level 0 : close to GND , Logic level 1 : open
- LED indication of LAN activity and digital IO status
- 100Mbps Ethernet speed, RJ45
- Metal Housing suitable for industrial applications with mounting tabs
- Supports TCP/IP, UDP, HTTP, DHCP, TELNET, ICRM, ARP
- Operating Temperature 0-70°C
- Dimensions 120 x 100 x 35 mm (WXDXH)

Device Management Utility

On the CD you will find the Device Management Utility named ETM.exe which is an executable program in Windows 32 bit environments. ETM 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 run the program, 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 3.1).

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

Broadcast packets aren't limited by subnet. Even if the IP address of the converters and the computer running ETM do not belong to the same subnet, it still works fine.

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



Menu "View"

View -> Refresh F5

Refresh the status. ETM will send another query to get updated information

Note: Always run the "View-> Refresh" after any data change.

Menu "Config"

Config -> IP Address

Press ENTER or select [IP Address] in the [Config] menu, a dialog will be shown

(Note : Because ETM uses broadcast UDP packets, for the sake of security, it allows configuration only when device's setup password is empty



Assign an IP Address with the same Subnet Mask of your computer, avoiding any IP conflict with other network devices.

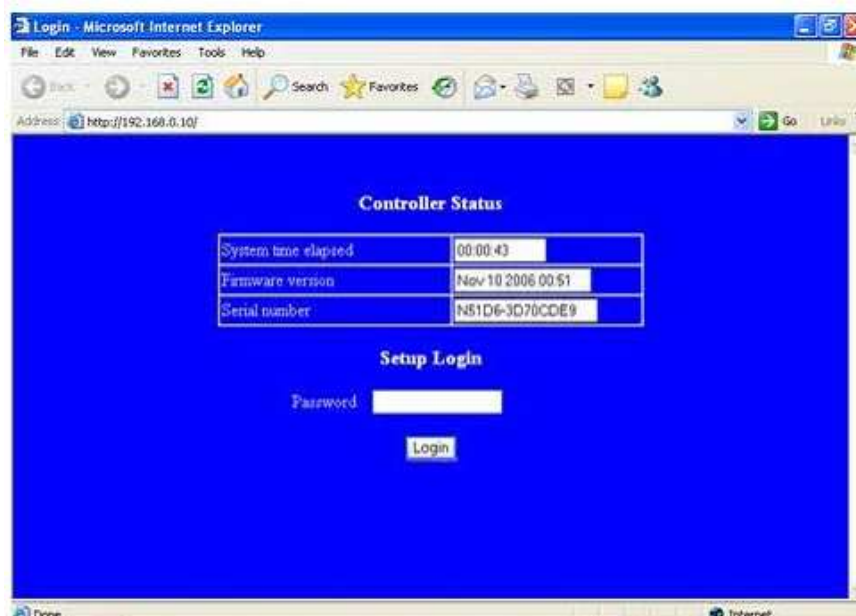
When you press [Ok] button, the IP address will be refreshed in 2~3 seconds.

Web Console Configuration

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

Press [Alt]+[Enter] or select [Device Settings] in the [Config] menu, will open a new window in browser 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 browser.

The Login 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 in looking for technical support

Serial number

Converter is consisted "Type Number (5 digits) and an unique MAC (Media Access Control) address used by Ethernet in hex format, 8 digits.

Password (Setup Login)

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 turn off the power and then use any point tip to press "Reset" button and hold it to turn on the power. The password will be reset to the factory default as "empty".

The converter 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, if you supply correct password, login will not proceed. This prevents intruders from finding the password by computer generated program.

Controller Setup

The Setup Page

Type the correct password in the "Password" field and click the [Login] button in the "Controller Status" page, then the "Controller Setup" page will appear.

Field Description

IP Address

The IP address of E-P132-X TCP/IP converter, 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.

Controller Setup

IP address	192.168.0.10
Subnet mask	255.255.0.0
Gateway address	0.0.0.0
Network link speed	Auto
DHCP client	Disable
Socket port of HTTP setup	80
Destination IP address / socket port (TCP client and UDP)	0.0.0.0 0
Connection	Auto
TCP socket inactive timeout (minutes)	10
Packet mode of serial input	Disable
Device ID	1
Report device ID when connected	Disable
Setup password	
Serial Port 1	
Socket port	100 TCP Server
Interface	RS 232
Baud rate, parity, data and stop bits	9600 None 8 1
Serial Port 2	
Socket port	101 TCP Server
Interface	RS 485 (Half Duplex)
Baud rate, parity, data and stop bits	9600 None 8 1
Digital I/O Port	
Socket port	102 TCP Server
Configuration	IO1 Input IO2 Input IO3 Input IO4 Input IO5 Input IO6 Input IO7 Input IO8 Input

Subnet mask

Subnet mask of the network E-P132-X TCP/IP converter 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.

Network link speed

Ethernet physical link speed. "Auto" means the speed is automatically selected by the converter. You can also specify "10Mbps" or "100Mbps" to match the speed of the HUB.

DHCP client

DHCP client mode could be enabled/disabled statuses. 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.

Socket port of HTTP setup

The socket port used to conduct the browser setup. Normally, HTTP protocol use TCP port "80" for communication. If the field is changed to "81", the port "80" will be reserved for user's own Web.

To enter the browser setup page, "http://x.x.x.x:81" should be typed for socket port "81" and "http://x.x.x.x" for socket port "80", where "x.x.x.x" is the converter's IP address..

Destination IP address

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

Destination socket port

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

Connection

The connection can be selected in 2 modes.

"Auto function for connect Automatic of converter"

"Manual function for program control of converter "

TCP socket inactive timeout input

We add a mechanism - "inactive timeout" to identify whether the socket is active

or dead. If there is no any data transferred (send / receive) within the defined timeout period (1 to 99 minutes), then it is probably a dead socket, and the socket will be closed automatically, thus a new connection can be accepted again. The timeout period can be set by users to fit different kinds of application.

Packet mode of serial input

Packet mode could be in enabled/disabled mode. If packet mode is enabled, the data input from UART will be deferred until the input buffer is full, or the converter detects a 10-character packet gap and no more character arrived. The block waiting time is extended to avoid the splitting of the complete packet.

Device ID

User assigned ID number for the converter. Available ID is “0 ~ 65535”.

Report device ID when connected

In TCP mode, if this parameter is enabled, every time when the socket is connected, E-P132-X TCP/IP converter will immediately report its device ID in the following formats:

```
Serial #1  nnnnnA[LF][CR]
Serial #2  nnnnnB[LF][CR]
Digital I/O  nnnnnC[LF][CR]
```

The total length is 8 bytes, where “nnnnn” is a 5-digit device ID assigned by the user; [LF] is decimal 10; [CR] is decimal 13

Setup password

Administration password used to login the “Controller Setup” page. It may be empty or up to 15 characters long.

Serial Port 1

The first serial port of E-P132-X series is RS-232.

Socket port

Port number

A socket port assigned for the serial port. It's a 16-bit number, 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

Interface

RS232: TxD, RxD for data stream, no flow control

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

RS232 (RTS/CTS, DTR/DSR): TxD, RxD for data stream, RTS/CTS for flow control. DTR for socket status, DSR for socket open/close control

Baud rate, parity, data bits, stop bits

Baud Rate: 300 ~ 230400 bps

Parity: None, Even, Odd

Data Bits: 5, 6, 7, 8

Stop Bit: 1 or 2

Serial Port 2

The second serial port is RS-422/485.

Socket port

Port number

A socket port assigned for the serial port. It's a 16-bit number, 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

Interface

RS485 (Half duplex): Half duplex RS-485 interface, RTS for driver enable/disable

RS422 (Full duplex): Full duplex RS-422 interface

Baud rate, parity, data bits, stop bits

Baud Rate: 300 ~ 230400 bps

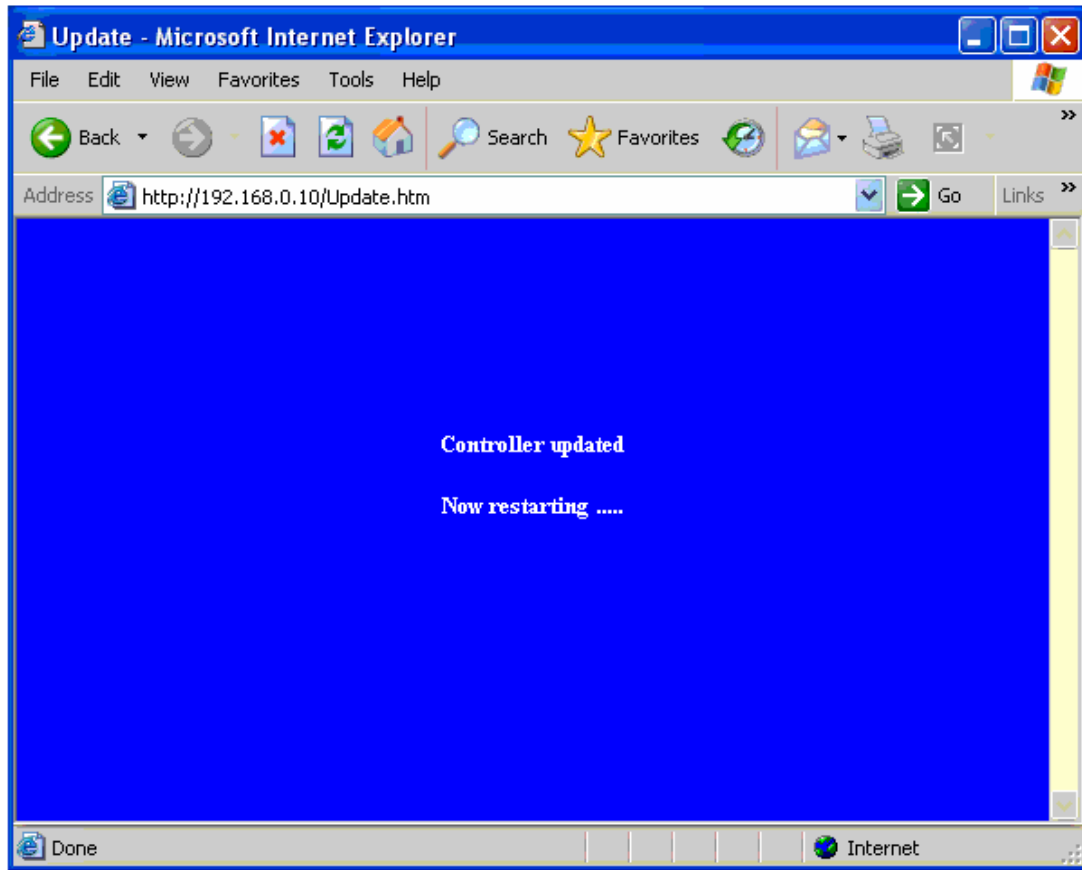
Parity: None, Even, Odd

Data Bits: 5, 6, 7, 8

Stop Bit: 1 or 2

Controller Updated

Press “Update” Button After you finish the detailed parameter setting. The converter will save all parameters into internal non-volatile memory and then reboot (see Figure 3.8). It takes about 5 seconds to complete the whole process, and a new login page will be presented



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 by chance, 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:

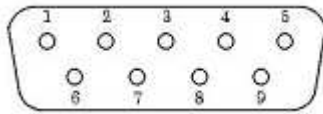
1. Turn off the power of the converter.
2. Press the reset button of the converter.
3. Turn on the power of the converter and wait for 3 seconds.
4. The password will reset to the factory default. (empty).

B:

1. Log in the web page.
2. Press the reset button of the converter.
3. Select the update button.
4. After Tx & Rx light flashing then unclasp the reset button.
 5. The password will reset to the factory default. (empty)

RS-232 Pin Assignment

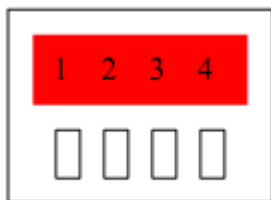
The pin assignment scheme for a 9-pin male connector on a DTE is given below.



PIN 1 : DCD PIN 2 : RXD PIN 3 : TXD PIN 4 : DTR
PIN 5 : GND PIN 6 : DSR PIN 7 : RTS PIN 8 : CTS
PIN 9 : X

RS-422 Pin Assignment

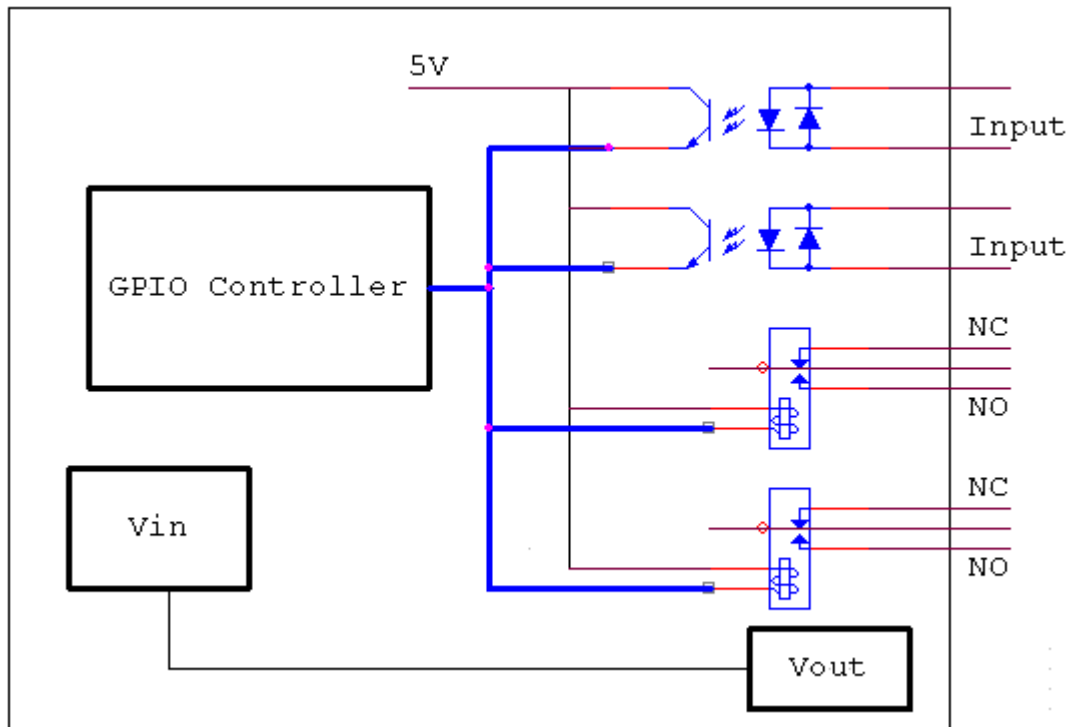
The pin assignment scheme for a 4-pin RS-422 is given below.



1 2 3 4

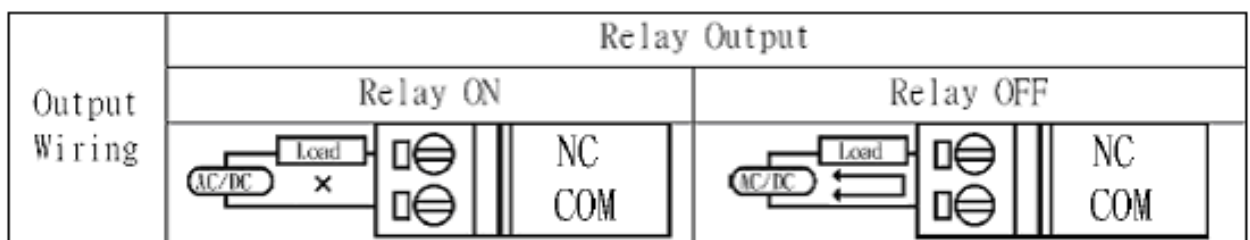
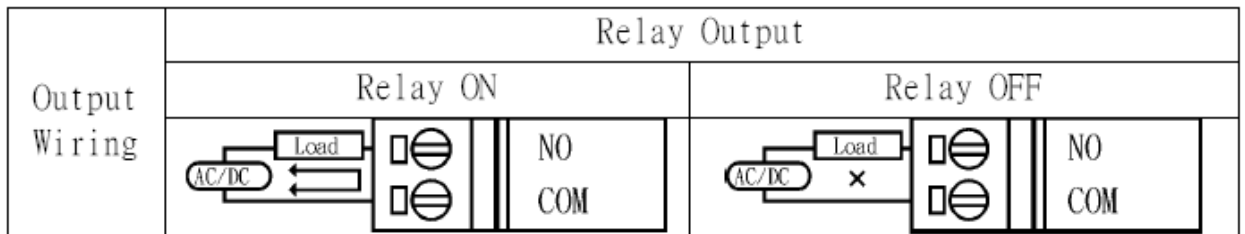
PIN 1 : R- PIN 2 : R+ PIN 3 : T- PIN 4 : T+

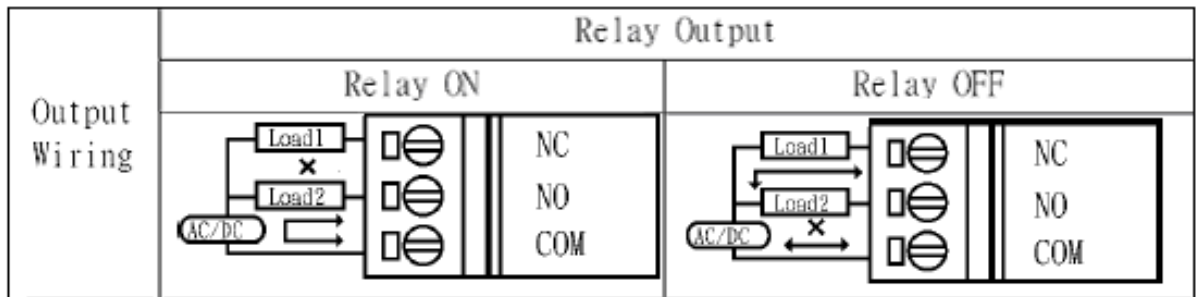
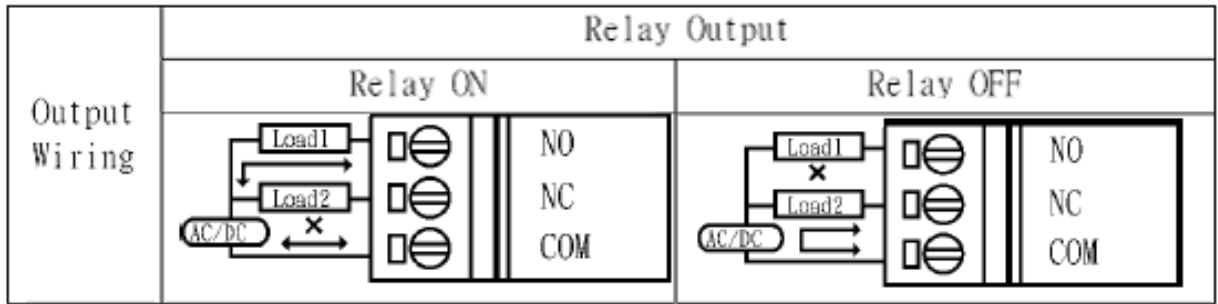
Digital IO:



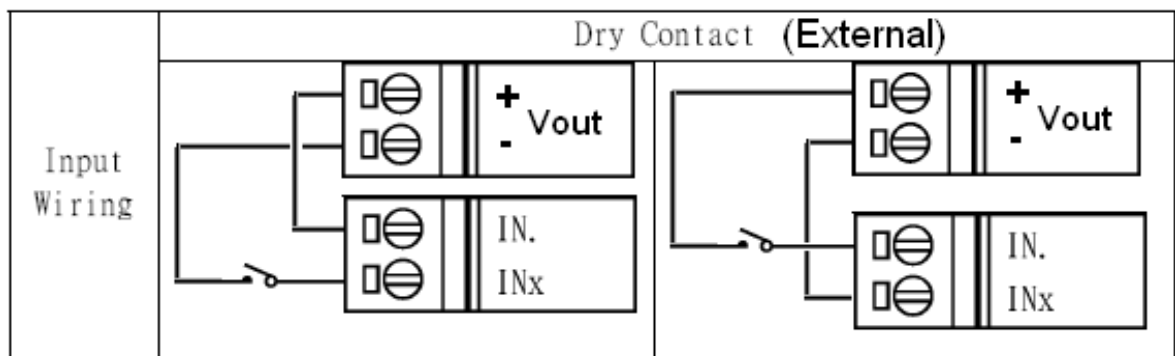
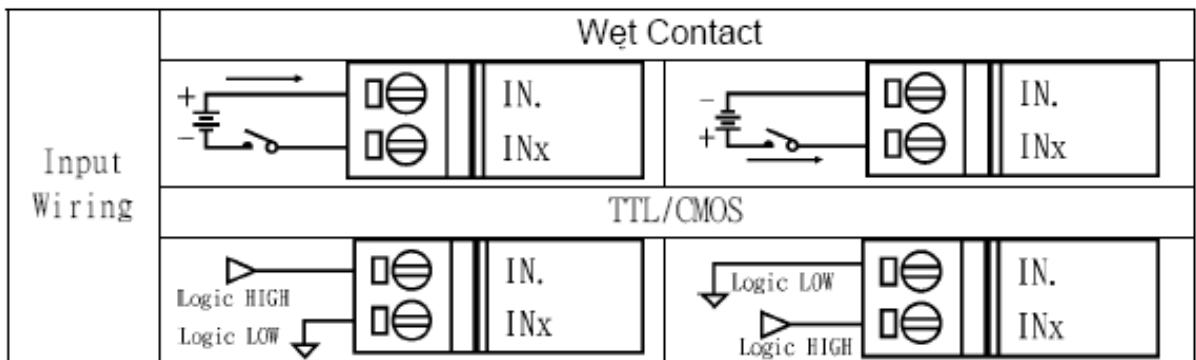
3.Wiring:

Digital Output





Digital Input



Relay Outputs

The eDIO-100 has 2 mains rated change-over relays. The Common, normally open (NO) and normally closed (NC) contacts are accessed via removable screw terminals. The relays are activated via simple ASCII commands sent either directly to the digital IO TCP port number or via the virtual serial port software.

Relay 1 - Command 07X where X is either 1 for relay on, or 0 for relay off

Relay 2 - Command 08X where X is either 1 for relay on, or 0 for relay off

For example, to switch relay 1 on, send "071" to the digital IO TCP Port

LED's will show relay output status

Digital Input

There are 2 digital inputs which can respond to volt-free contact or a voltage input: the voltage needs to be 3.3 to 30V to register a logic 1.

Data is automatically sent to the digital IO TCP port on digital input state change, or data can be requested by sending any character to the port

A 8-bit word is returned;

00001001

The first 4 bits are ignored

Bit 5 represents the state of digital input 1

Bit 6 represents the state of digital input 2

Bit 7 represents the state of relay 1

Bit 8 represents the state of relay 2