

TRP-C28H

**Isolated 4 Channel Digital Input with counter and 4 channel AC Relay
Modbus TCP Module Support TRP-ASCII, Modbus RTU/ASCII protocol**



User's Manual

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Firmversion: 608

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1. Introduction

The TRP-C28H is a 4-ch digital Input and 4-ch relay Ethernet I/O module with isolation.

It allows the user to connect the signals from 4V to 30V, and the Relay can connect AC voltage directly.

Each contact of relays we built-in safety surge protection to prevent a spark.

It has a normal I/O except the counter function.

There are 3 protocols we supports that, it includes ASCII and Modbus TCP RTU / ASCII.

The watchdog function ensures running stable under harsh environment.

It allows to connect 1~8 sets of host IP in the network security..

1-1.Features

- Wide input range DC power supply.
- Automatically determine 3 TRP-ASCII and Modbus RTU/ASCII communication protocol.
- 16 TCP Port can be open at the same time.
- Heart Beat function ensures a reliable communicating connection.
- Maximum 8 sets host IP that limits network access.
- Support Virtual-COM mode.
- WEB PAGE can be directly read IO status.
- Easily update the firmware using the Internet.
- Back to factory configuration by external touch Button.
- Auto reconnection when power or Ethernet fail.
- Digital input signal from +/- 0 to 30V DC.
- Built-in surge absorbers in each relay N.C and N.O.
- Built-In watchdog function prevents system boot fail.
- LED for each I/O channels working status.
- Support Auto-MDIX twisted pair crossover detection and Auto-Correction.
- Power/Link/8 CH D I/O LED indicator.
- DIN-Rail and panel mount support.
- Dual power input select from screw terminal or DC-Jack..

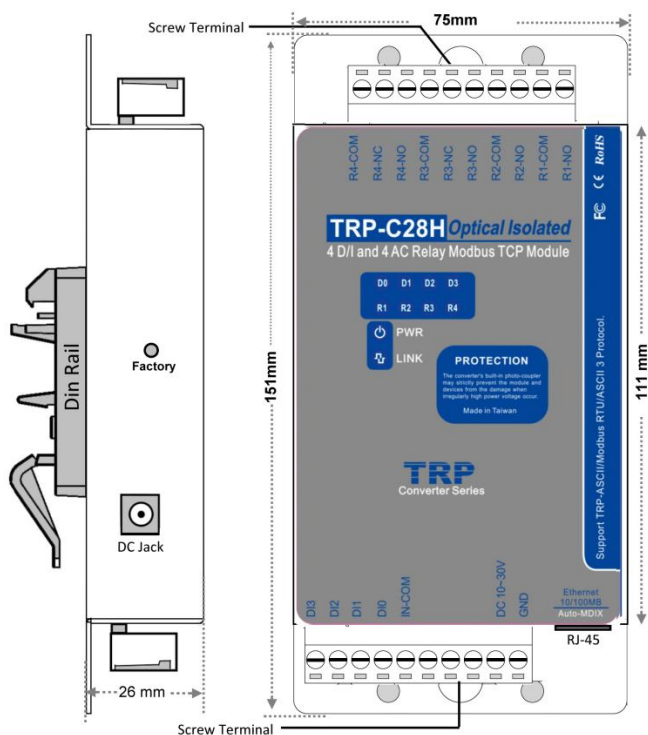
1-2.Specification

- Power Input Voltage DC +10V to +30V.
- Protocol: TRP-ASCII and Modbus RTU/ASCII.
- Input channel: 16 digital input channels with counter.
- Input digital input counter: 0~65535.
- Input optical isolation: 3750 Vrms.
- Input logical level 0 +1V (max).
- Input logical level 1 +4.0V ~ +30V.
- Output channel: 4 channel power reply outputs.
- Relay type: 2 Form A (RL1,RL2) , 2 Form C (RL3,RL4).
- Contact rating: 5A /30V DC , 5A /120V AC , 5A /250V AC.
- Relay surge strength: 4000V.
- Relay operating time: 3mS.
- Relay operating life: 2 X 10⁷.
- Communication interface: Ethernet RJ45.
- Configuration mode: Device Manager, WEB settings.
- Matching remote control: with another TRP-C28H.
- Heart Beat: TCP Port sent string every 5 seconds.

- TCP Maximum Connection:1~16.
- Module ID :1~255.
- Connection type: Screw terminal for maximum AWG 12 wire.
- Power supply: Screw terminal, or external DC adapter.
- Power consumption 320mA/12V.
- Operating environment: 0 to 50°C.
- Storage temperature:.. -10 to 70°C.
- Humidity: 10~90% Non-condensing.
- Dimension: 151mm X 75mm X 26mm .
- Weight: 395g.

2. Hardware Description

2-1. Panel layout



Notice: The Module provides two type power inputs, optional DC-JACK or Screw Terminal input, not to two used together!

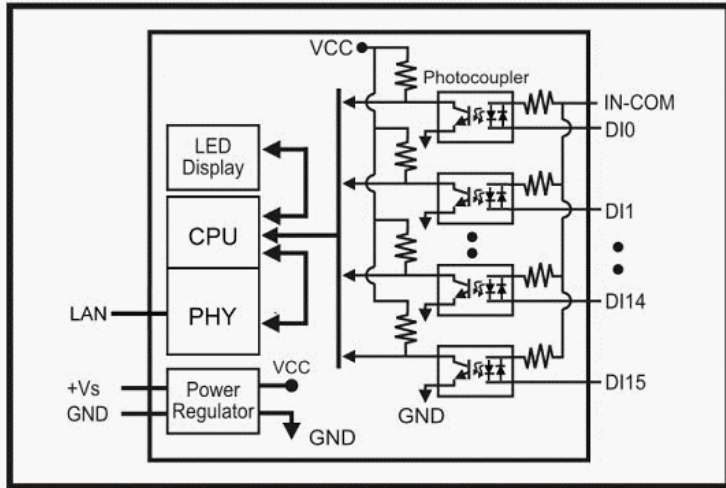
PWR LED: Blinking is ready.

LINK LED: RJ-45 cable connection and data active.

D0~D3/R1~R4 LED: Each digital status indication.

DC Jack: Power Input DC +10V to +30V, Please use the 5.5*2.1mm DC JACK.

2-2. Block Diagram



2-3. Factory Button

Hold down the button, and then power on, until the power light flashes, Release the button.

2-4. Factory parameter values

Device Setup

Network Setting | **Serial Port Modbus Setting**

| | | | |
|--|---|----------------------------------|--|
| Device Name | <input type="text" value="TRP-C28H"/> | Module Name | <input type="text" value="TRP-C28H"/> |
| MAC Address | <input type="text" value="00-0E-C6-00-00-9D"/> | Netmask | <input type="text" value="255.255.255.0"/> |
| DHCP | <input type="text" value="Enable"/> | Gateway | <input type="text" value="192.168.1.3"/> |
| <input checked="" type="radio"/> Server/Master | Listening IP <input type="text" value="192.168.0.127"/> | DNS | <input type="text" value="168.95.1.1"/> |
| | Data listening port <input type="text" value="502"/> | Transmit Time/Plus | <input type="text" value="10"/> |
| <input type="radio"/> Client/Slave | | Heart Beat | <input type="text" value="Disable"/> |
| UID Range | Client/Slave IP Address | Port | Maximum Connection |
| <input type="text" value="0"/> To <input type="text" value="0"/> | <input type="text" value="0.0.0.0"/> | <input type="text" value="502"/> | <input type="text" value="8"/> |
| <input type="text" value="0"/> To <input type="text" value="0"/> | <input type="text" value="0.0.0.0"/> | <input type="text" value="0"/> | TCP Keep Alive |
| <input type="text" value="0"/> To <input type="text" value="0"/> | <input type="text" value="0.0.0.0"/> | <input type="text" value="0"/> | <input type="text" value="7"/> |
| <input type="text" value="0"/> To <input type="text" value="0"/> | <input type="text" value="0.0.0.0"/> | <input type="text" value="0"/> | New Password |
| <input type="text" value="0"/> To <input type="text" value="0"/> | <input type="text" value="0.0.0.0"/> | <input type="text" value="0"/> | <input type="text" value="*****"/> |
| <input type="text" value="0"/> To <input type="text" value="0"/> | <input type="text" value="0.0.0.0"/> | <input type="text" value="0"/> | Firmware Version |
| <input type="text" value="0"/> To <input type="text" value="0"/> | <input type="text" value="0.0.0.0"/> | <input type="text" value="0"/> | <input type="text" value="608"/> |
| <input type="text" value="0"/> To <input type="text" value="0"/> | <input type="text" value="0.0.0.0"/> | <input type="text" value="0"/> | |
| <input type="text" value="0"/> To <input type="text" value="0"/> | <input type="text" value="0.0.0.0"/> | <input type="text" value="0"/> | |
| <input type="text" value="0"/> To <input type="text" value="0"/> | <input type="text" value="0.0.0.0"/> | <input type="text" value="0"/> | |
| <input type="text" value="0"/> To <input type="text" value="0"/> | <input type="text" value="0.0.0.0"/> | <input type="text" value="0"/> | |

Data Packet Type

UDP

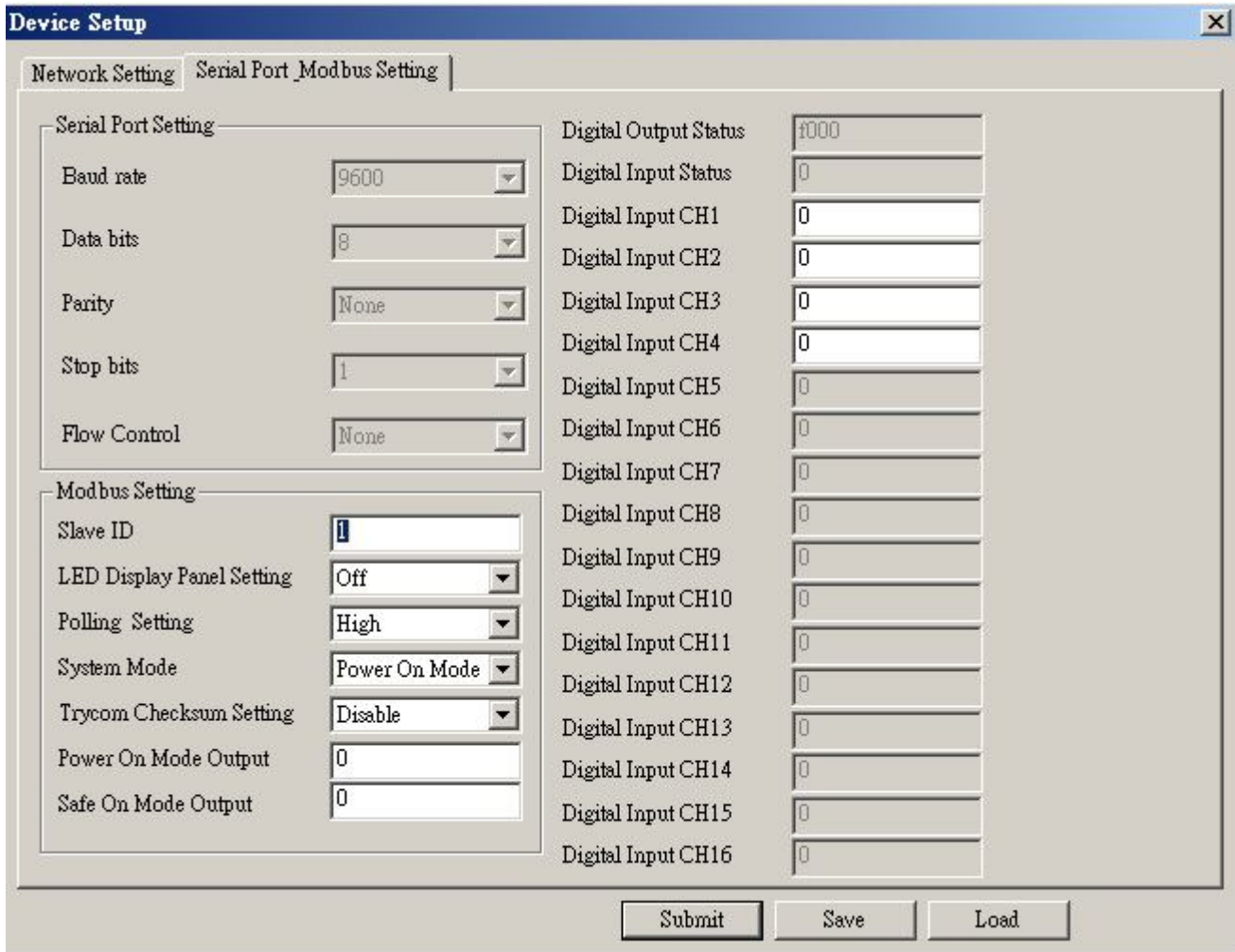
Auto connect after reboot

TCP

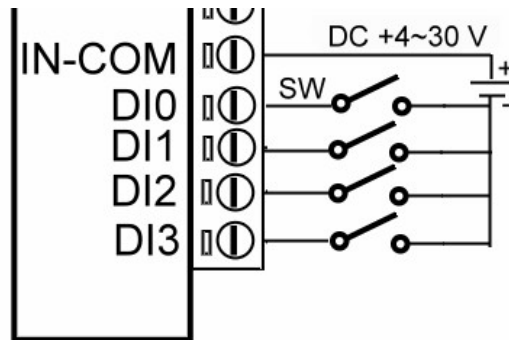
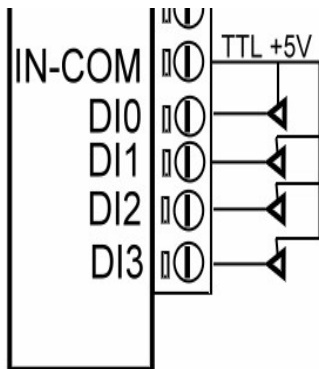
Management Packet Type

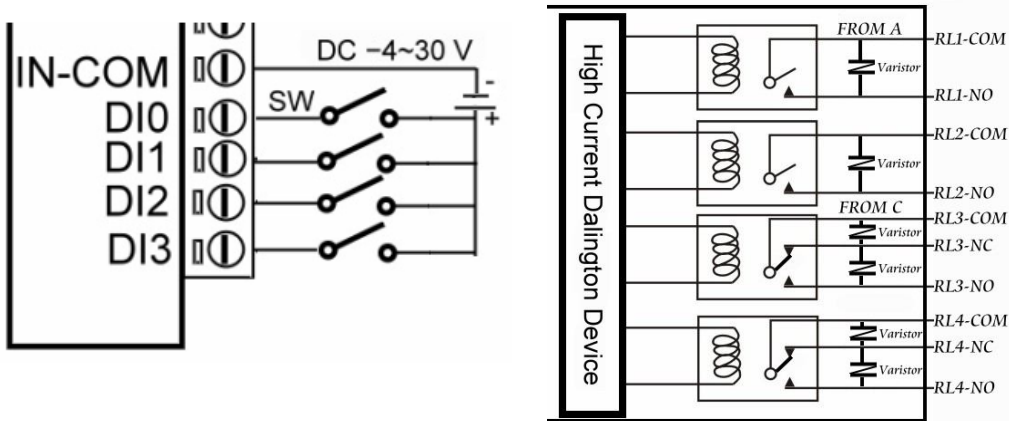
Broadcast

Multicast



2-5. Screw Terminal Pin assignment Description





2-6. Pin Description

| | | | |
|-----------|---------------------------------------|--------|---------------------|
| DI3 | Digital input Channel 3 | R4-COM | Relay 4 common |
| DI2 | Digital input Channel 2 | R4-NC | Relay4 Normal Close |
| DI1 | Digital input Channel 1 | R4-NO | Relay4 Normal Open |
| DI0 | Digital input Channel 0 | R3-COM | Relay 3 common |
| IN-COM | The isolated side power input MAX.30V | R3-NC | Relay3 Normal Close |
| N.C | Not connected | R3-NO | Relay3 Normal Open |
| N.C | Not connected | R2-COM | Relay 2 common |
| N.C | The isolated side ground | R2-NO | Relay2 Normal Open |
| DC 10~30V | Input DC 10~30V | R1-COM | Relay 1 common |
| GND | Power Ground | R1-NO | Relay1 Normal Open |

3. Install TRP-C28H Hardware

STEP1: Connect power source with TRP-C28H, the PWR LED will blinking.

STEP2: Connect TRP-C28H with network by RJ45 cable.

If the cable is properly connected the "LINK" LED will light up.

*The TRP-C28H Support Auto-MDIX, A straight-through or crossover RJ45 cable can be used to make a connection directly to the HUB/Router/PC LAN port.

STEP3: Connect TRP-C28H screw terminal wiring, such as 2-5 picture description.

4. How to configure TRP-C28H

**Please note that the computer's IP segment adjusted with TRP-C28H same section, modify the parameter values in order to effectively store!*

For example:

Computer IP is 192.168.1.xx

TRP-C28H 192.168.1.1

There are 2 ways can change the module parameter values.

A. DSM Software

TRYCOM DSM 6.07

TRYCOM
IPC

TRP-Ethernet Series DSM

TRP-C37/C37M/C37A/C37MA/C24H/C26H/C28H/C29H/C68H

DSM Setting

Setting

DSM Function

Search

IP Search

Device Setup

Web Browser

Restore

Reboot

Upgrade

Device Status List

| NO. | Device Name | MAC Address | DHCP | IP | Port | Mode | Status | |
|--------------------------|-------------|-------------|-------------------|--------|---------------|------|--------|------|
| <input type="checkbox"/> | 1 | TRP-C28H | 00-0E-C6-00-00-9D | Enable | 192.168.0.127 | 502 | Master | Idle |

DSM Status: Idle

Progress:

B. WEB Server

TRP-C28H

WDT-inside

Isolated 4 DI and 4 AC Relay
Modbus TCP Module;@

TRP-C28H Setting

| | |
|---------------------------|-----------------------------------|
| Slave ID (1~255) | <input type="text" value="1"/> |
| LED Display Panel Setting | OFF ▼ |
| Polling Setting | High ▼ |
| System Mode | Power On Mo ▼ |
| Trycom Checksum | Disable ▼ |
| Power On Mode Output | <input type="text" value="0000"/> |
| Safe Mode Output | <input type="text" value="0000"/> |
| Relay Current Status | <input type="text" value="0000"/> |
| Input Current Status | <input type="text" value="0000"/> |
| Digital Input CH1 | <input type="text" value="0"/> |
| Digital Input CH2 | <input type="text" value="0"/> |
| Digital Input CH3 | <input type="text" value="0"/> |
| Digital Input CH4 | <input type="text" value="0"/> |

Network Settings

| | |
|------------------------|---|
| | <input checked="" type="checkbox"/> Enable DHCP |
| Static IP Address | <input type="text" value="192.168.1.1"/> |
| Static Subnet Mask | <input type="text" value="255.255.255.0"/> |
| Static Default Gateway | <input type="text" value="192.168.1.3"/> |
| Static DNS Server | <input type="text" value="168.95.1.1"/> |
| Connection Type | TCP ▼ |
| Max Connection(1~16) | <input type="text" value="8"/> |

Master/Slave ▼

Master:

Master Listening Port

Slave:

Slave IP Address

Slave Port

New Password (10000~65535)

Enable Reboot

4-1. Using DSM Utility

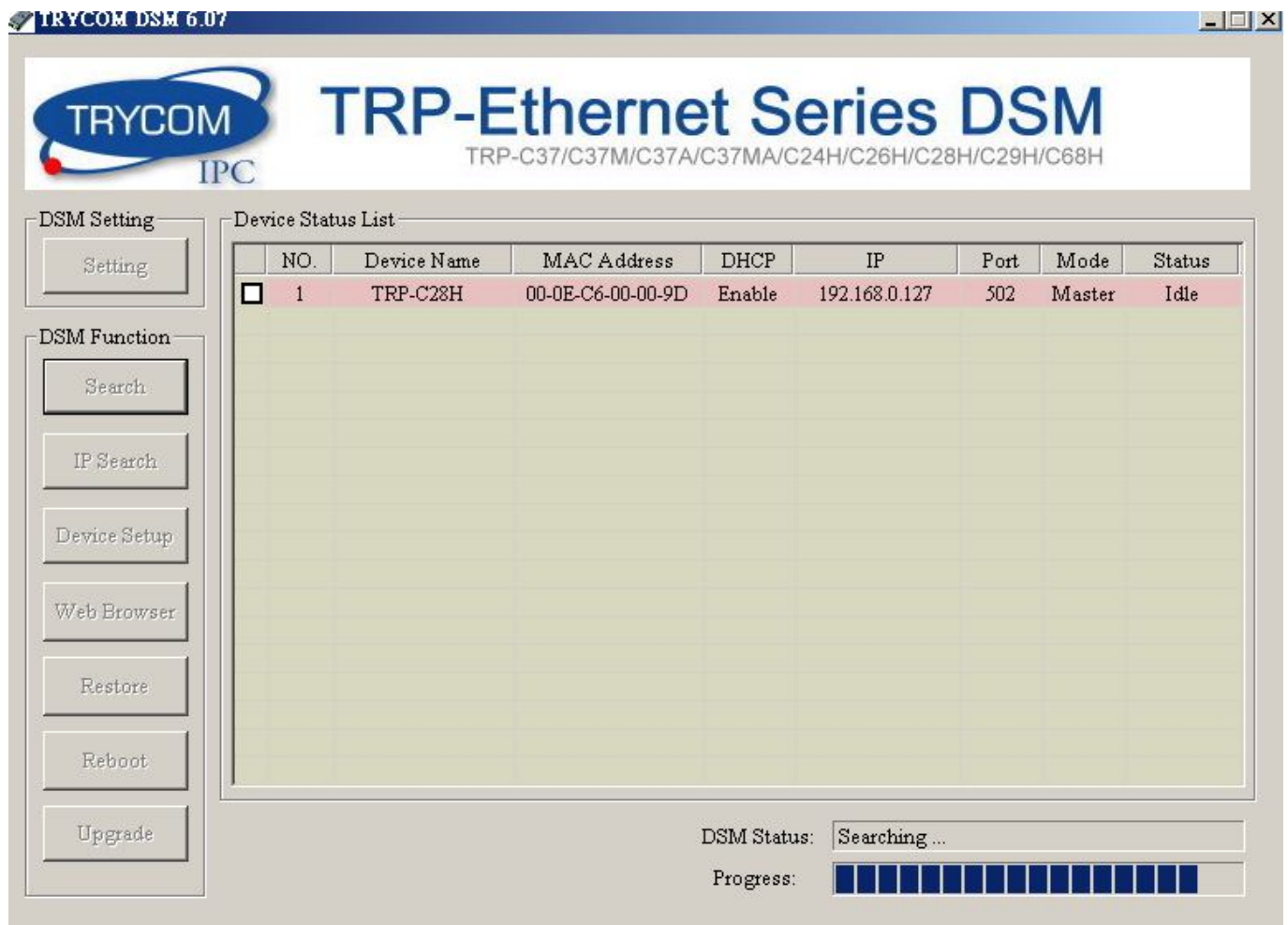
The DSM utility software performs several functions:

- A: Searching for TRP-C28H connected to the network.
- B: Displaying and changing the configuration.
- C: Upgrading the TRP-C28H firmware, Refer the Firmware upgrade help file.

D: Saving and Loading Configuration from external log File or memory.

4-2. Searching TRP-C28H

Once TRP-C28H is connected to the network the **DSM** software will search it and display it in a window by name, IP address, Mac....Information.



The screenshot shows the TRYCOM DSM 6.07 software interface. The main window is titled "TRP-Ethernet Series DSM" and lists supported models: TRP-C37/C37M/C37A/C37MA/C24H/C26H/C28H/C29H/C68H. The interface is divided into several sections:

- DSM Setting:** Contains a "Setting" button.
- DSM Function:** Contains buttons for "Search", "IP Search", "Device Setup", "Web Browser", "Restore", "Reboot", and "Upgrade".
- Device Status List:** A table displaying the status of connected devices.
- DSM Status:** A text field showing "Searching ...".
- Progress:** A progress bar consisting of 15 blue segments.

| NO. | Device Name | MAC Address | DHCP | IP | Port | Mode | Status | |
|--------------------------|-------------|-------------|-------------------|--------|---------------|------|--------|------|
| <input type="checkbox"/> | 1 | TRP-C28H | 00-0E-C6-00-00-9D | Enable | 192.168.0.127 | 502 | Master | Idle |

4-3. Configuring Server Properties

Select the "NO." item and Double click to open the module configuration, after setting then click "Submit" will save the configuration to memory.

Device Setup [X]

Network Setting | Serial Port_Modbus Setting

Device Name: TRP-C28H Module Name: TRP-C28H

MAC Address: 00-0E-C6-00-00-9D Netmask: 255.255.255.0

DHCP: Enable Gateway: 192.168.1.3

Server/Master Listening IP: 192.168.0.127 DNS: 168.95.1.1

Data listening port: 502 Transmit Time/Plus: 10

Client/Slave Heart Beat: Disable

| UID Range | Client/Slave IP Address | Port |
|-----------|-------------------------|------|
| 0 To 0 | 0.0.0.0 | 502 |
| 0 To 0 | 0.0.0.0 | 0 |
| 0 To 0 | 0.0.0.0 | 0 |
| 0 To 0 | 0.0.0.0 | 0 |
| 0 To 0 | 0.0.0.0 | 0 |
| 0 To 0 | 0.0.0.0 | 0 |
| 0 To 0 | 0.0.0.0 | 0 |
| 0 To 0 | 0.0.0.0 | 0 |

Maximum Connection: 8

TCP Keep Alive: 7

New Password: *****

Firmware Version: 608

Data Packet Type: UDP, Auto connect after reboot, TCP

Management Packet Type: Broadcast, Multicast

Submit Save Load

Device Setup [X]

Network Setting | Serial Port_Modbus Setting

Serial Port Setting

Baud rate: 9600

Data bits: 8

Parity: None

Stop bits: 1

Flow Control: None

Modbus Setting

Slave ID: 1

LED Display Panel Setting: Off

Polling Setting: High

System Mode: Power On Mode

Trycom Checksum Setting: Disable

Power On Mode Output: 0

Safe On Mode Output: 0

Digital Output Status: #000

Digital Input Status: 0

Digital Input CH1: 0

Digital Input CH2: 0

Digital Input CH3: 0

Digital Input CH4: 0

Digital Input CH5: 0

Digital Input CH6: 0

Digital Input CH7: 0

Digital Input CH8: 0

Digital Input CH9: 0

Digital Input CH10: 0

Digital Input CH11: 0

Digital Input CH12: 0

Digital Input CH13: 0

Digital Input CH14: 0

Digital Input CH15: 0

Digital Input CH16: 0

Submit Save Load

◆ **Device Name:**

Device server name, Maximum 10 chars.

◆ **Model Name:**

TRP-C28H.

◆ **MAC Address**

The TRP-C28H MAC address.

◆ **DHCP**

If DHCP is disabled, it allows user setting the IP address, Subnet mask, Gateway.

If DHCP is enabled, the IP address, Subnet mask, Gateway address will be dynamically configuration by DHCP server such router.

When DHCP is enabled, but the DHCP server is not available on the network, the TRP-C28H will timeout then back to factory setting IP=192.168.1.1.

◆ **Server Listening IP**

The TRP-C28H IP address.

◆ **Server Data listening port**

TRP-C28H port address.

◆ **Client Destination IP**

When user using the pair mode, the client setting need to input module IP and port which one need to connect.

◆ **Client Destination port**

Client port address.

Port: 16 bit number. (1 ~ 65535)

◆ **Netmask**

The default LAN Netmask is configured for a Class C address. This maybe reconfigured by the user.

◆ **Gateway**

Input the gateway IP address that can be allows users to access the serial server from internet.

◆ **DNS**

Short for Domain Name System, an Internet service that translates domain names into IP addresses. Because domain names are alphabetic, they're easier to remember. The Internet however, is really based on IP addresses. Every time you use a domain name, therefore, a DNS service must translate the name into the corresponding IP address.

◆ **Transmit Timer:** This feature is only available to Serial Server TRP-C37 and TRP-C37M.

◆ **Maximum Connection: 1~16**

The function allows the user to configure the TRP-C28H in Server mode, adjust 1~16 TCP client host connections.

◆ **TCP Keep Alive: 1~7 /Minute**

When TRP-C28H in Server or Client mode, the TRP-C28H without data over the 1~7 Min setting value, The TRP-C28H will be disconnecting TCP port.

◆ **New Password: 1234**

It only accepts value from 1000~9999 integer, if input the wrong password over 5 times, the WEB-Page will lock until the TRP-C28H re-boot.

◆ **Firmware Version: ABC**

◆ **Slave ID:1~255.**

ID performs MODBUS RTU / ASCII and TRP-ASCII will use to address.

◆ **LED Display Panel Setting :ON/OFF**

The setting will turn on all panels LED or Turn off panel LED.

◆ **Polling Setting: High/Low.**

Digital High / Low potential settings, Applies only TRP-C26H/C28H

◆ **System Mode**

Power ON Mode: Digital output state when the TRP-C28H Power On.

Save ON Mode: The digital output state when the TRP-C28H is working, Once this mode is set, the digital output state cannot be rewritten.

Pair Mode: It can be used as a remote manual remote control, when the TRP-C24H 16 DO 和 TRP-C26H 16 CH DI, TRP-C28H 4 D I/O with TRP-C28H 4 D I / O. Without any driver.

◆ **Trycom Checksum setting: Disable/Enable.**

TRP-ASCII command used bit checksum.

◆ **Power On Mode Output: 0000~FFFF.**

Digital output state when TRP-C28H Boot!

◆ **Save ON Mode Output:0000~FFFF.**

Digital output state when watchdog enable!

◆ **Digital Output Status**

Display last stored in the memory of the digital output state.

◆ **Digital Input Status**

This feature is only available to TRP-C26H and TRP-C28H,

Display last stored in the memory of the digital input state.

◆ **Digital Input CH1~CH16**

Display last stored in the memory of the digital input counter value.

This feature is only available to TRP-C26H and TRP-C28H.

◆ **Submit**

Save the setting value to memory.

◆ **Save**

Save the setting value to external log file.

◆ **Load**

Load the setting value to external log file.

◆ **Upgrade**

Upgrade the TRP-C28H firmware.

4-4.Using the WEB Server mode

The Web Server can be used to configure the TRP-C28H from any web browser software (such as I.E).

In Internet Explorer type the IP Address of the TRP-C28H into the address field and press the Enter key. The following window will appear:

Example:


If TRP-C28H's IP is 192.168.1.1 ,Please Input the 192.168.1.1 then enters at web address, the web-page will appear.

File Edit View Favorites Tools Help

Back Search Favorites

Address <http://192.168.1.1/>

<http://www.trycom.com.tw>



TRP-C28H

WDT-inside

Isolated 4 DI and 4 AC Relay

Modbus TCP Module

TRP-C28H Setting

| | |
|---------------------------|--|
| Slave ID (1~255) | <input type="text" value="1"/> |
| LED Display Panel Setting | <input type="text" value="ON"/> |
| Polling Setting | <input type="text" value="High"/> |
| System Mode | <input type="text" value="Power On Mode"/> |
| Trycom Checksum | <input type="text" value="Disable"/> |
| Power On Mode Output | <input type="text" value="0000"/> |
| Safe Mode Output | <input type="text" value="0000"/> |
| Relay Current Status | <input type="text" value="0000"/> |
| Input Current Status | <input type="text" value="0000"/> |
| Digital Input CH1 | <input type="text" value="0"/> |
| Digital Input CH2 | <input type="text" value="0"/> |
| Digital Input CH3 | <input type="text" value="0"/> |
| Digital Input CH4 | <input type="text" value="0"/> |

4-5. TRPCOM Test Utility

The TRPCOM test utility may help to use the debugging program development phase, the user can find this software in our CD internal directory copied to the hard disk, and then directly execute TRPCOM.exe.

TRPCOM utility can automatically detect the model, it will list the corresponding function key,

It helps developers to understand and control the digital state.

4-6 How to setup the network security

In network security, the TRP-C28H is able to setup 1~ 8 sets host IP, only these host IP can access the TRP-C28H.

The TRP-C28H actually can make connections with any Host IP,

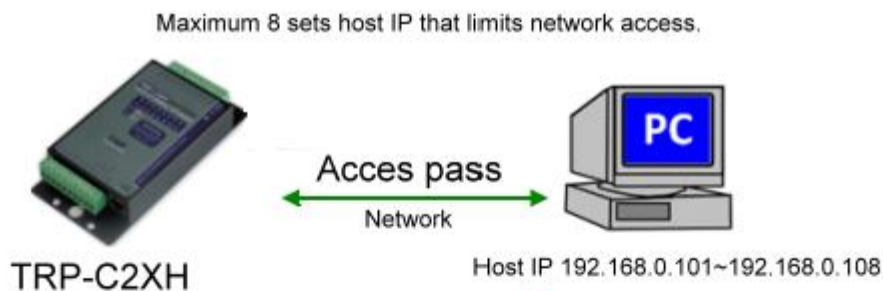
Once the user has filled in the Host IP, these IP are valid, the TRP-C28H will be pass with them.

Other host IP will not pass.

Refer to the following example illustrates.

*Please make sure the firmware version is 608 above,

and the DSM utility version is 6.07 above.



Device Setup

Network Setting | Serial Port | Modbus Setting

Device Name: TRP-C24H | Module Name: TRP-C24H

MAC Address: 00-0E-C6-00-01-38 | Netmask: 255.255.255.0

DHCP: Enable | Gateway: 192.168.1.3

Server/Master | Listening IP: 192.168.0.125 | DNS: 168.95.1.1

Data listening port: 502 | Transmit Time/Plus: 0

Client/Slave | Heart Beat: Disable

| UID | Range | Client/Slave IP Address | Port | Maximum Connection |
|-----|-------|-------------------------|------|---|
| 0 | To 0 | 192.168.0.101 | 502 | 8 |
| 0 | To 0 | 192.168.0.102 | 0 | TCP Keep Alive: 7 |
| 0 | To 0 | 192.168.0.103 | 0 | New Password: ***** |
| 0 | To 0 | 192.168.0.104 | 0 | Firmware Version: 610 |
| 0 | To 0 | 192.168.0.105 | 0 | Data Packet Type: <input type="checkbox"/> UDP, <input checked="" type="checkbox"/> TCP |
| 0 | To 0 | 192.168.0.106 | 0 | Management Packet Type: <input checked="" type="checkbox"/> Broadcast, <input type="checkbox"/> Multicast |
| 0 | To 0 | 192.168.0.107 | 0 | |
| 0 | To 0 | 192.168.0.108 | 0 | |

Submit | Save | Load

5. TRP-ASCII Communication Protocol

TRP-C28H supports three modes of communication Protocol TRP-ASCII, Modbus RTU, Modbus ASCII.

TRP-ASCII Command Protocol Description

Command Format :”Leading Code”+”ID Address”+”Command”+”CHK”+(cr) .

at :”Leading Code”+”ID Address”+”Data”+”CHK”+(cr) .

How to calculate the checksum

1. Calculate all characters of the command string to get the ASCII sum, except the character return.
2. Mask the sum of string with 0FFH.

Example:

Send the command is “\$06M”.

Sum of string is “\$”+”0”+”6”+”M”=“24H”+”30H”+” 4D”=“A1H”.....The checksum and [CHK]=“A1”.

Response string with checksum is :” A1”.

TRP-ASCII: ease of use TRP-ASCII integration to develop their own software, such as VB, VC .

| Command List | Function Description | Paragraph index |
|---------------------|---|-----------------|
| %IDNPP00DD(CHK)(cr) | Setting module configuration | See 5-1 |
| #IDN (CHK)(cr) | Read digital input channel counter value | See 5-2 |
| #IDCN(CHK)(cr) | Clear digital input N channel counter value | See 5-3 |
| #IDCW(CHK)(cr) | Clear all digital input counters value | See 5-4 |
| #IDCS(CHK)(cr) | Save all digital input counters value | See 5-5 |
| \$IDLS(CHK)(cr) | Read digital input latched | See 5-6 |
| \$IDC(CHK)(cr) | Clear digital input latched | See 5-7 |
| #IDPPDD (CHK)(cr) | Digital Output Data | See 5-8 |
| \$ID6 (CHK)(cr) | Read digital input/output status | See 5-9 |
| \$IDF (CHK)(cr) | Read the module's firmware version | See 5-10 |
| \$IDM (CHK)(cr) | Read the module's name | See 5-11 |
| \$01RS(CHK)(cr) | Reset Module | See 5-12 |
| ~IDONN (CHK)(cr) | Change the module's name | See 5-13 |
| ~IDLEDA(CHK)(cr) | Set the module's LED operating mode | See 5-14 |
| ~IDWE (CHK)(cr) | Enable watchdog | See 5-15 |
| ~IDWD (CHK)(cr) | Disable watchdog | See 5-16 |
| ~IDWR (CHK)(cr) | Read watchdog status | See 5-17 |

| | | |
|-----------------|---|----------|
| ~ID4V (CHK)(cr) | Read power on/Safe on mode | See 5-18 |
| ~ID5V (CHK)(cr) | Set the digital output status Power on/Save Mode status | See 5-19 |
| ~**(CHK)(cr) | Read Module ID and mode name | See 5-20 |
| #**(CHK)(cr) | Back to factory | See 5-21 |

5-1. Setting module configuration

| | | |
|-----------------------|----------------------|--|
| Command | %IDNNPP00DD(CHK)(cr) | |
| Syntax Description | % | First leading code |
| | ID | Address of setting module 00-FF(HEX) |
| | NN | New address of setting from 00-FF(HEX) |
| | PP | The Digital I/O module type define to 40 |
| | 00 | 00 |
| | DD | Data format |
| | CHK | Checksum |
| | (cr) | Carriage return |
| Response | !ID(CHK) (cr) | Command valid |
| | ?ID (CHK)(cr) | Command Invalid |

DD: Data Format

| | | | | | | | | |
|----------|---|--|---|---|---|---|---|---|
| Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Function | 0 | <i>Checksum</i> <i>0:Disable</i> <i>1:Enable</i> | 0 | 0 | 0 | 0 | 0 | 0 |

EX: Send command:"%0103400000".

New ID is "03",D I/O type is "40" ,Checksum setting disable is "00", Response:"!01".

5-2. Read digital input channel counter value

| | | |
|--------------------|-------------------|--------------------------------------|
| Command | #IDN(CHK)(cr) | |
| Syntax description | # | First leading code |
| | ID | Address of setting module 00-FF(HEX) |
| | N | Digital Input channel 0~3 |
| | CHK | Checksum |
| | (cr) | Carriage return |
| Response | !IDCCCC(CHK) (cr) | Command valid CCCCC from 0~65535 |
| | ?ID (CHK)(cr) | Command Invalid |

Ex:Send command:"#012" Read the TRP-C26H channel 2 counter value

Response: "!0100023".....The digital input have been trigger 23 times.

5-3. Clear digital input N channel counter value

| | | |
|--------------------|----------------|--------------------------------------|
| Command | #IDCN(CHK)(cr) | |
| Syntax description | # | First leading code |
| | ID | Address of setting module 00-FF(HEX) |
| | CN | Digital Input channel N=0~F |
| | CHK | Checksum |
| | (cr) | Carriage return |
| Response | !ID(CHK) (cr) | Command valid |
| | ?ID (CHK)(cr) | Command Invalid |

Ex:Send command:"#01C0"...Clear channel 0 counter value.

Response: "!01"..... Command valid.

5-4. Clear all digital input counters value

| | | |
|--------------------|----------------|--------------------------------------|
| Command | #IDCW(CHK)(cr) | |
| Syntax description | # | First leading code |
| | ID | Address of setting module 00-FF(HEX) |
| | CW | Clear all channels counter values |
| | CHK | Checksum |
| | (cr) | Carriage return |
| Response | !ID(CHK) (cr) | Command valid |
| | ?ID (CHK)(cr) | Command Invalid |

Ex:Send command:"#01CW"...Clear all channels counter value.

Response: "!01"..... Command valid

5-5. Save all digital input counters value

| | | |
|--------------------|----------------|--------------------------------------|
| Command | #IDCS(CHK)(cr) | |
| Syntax description | # | First leading code |
| | ID | Address of setting module 00-FF(HEX) |
| | CS | save all channels counter values |
| | CHK | Checksum |
| | (cr) | Carriage return |
| Response | !ID(CHK) (cr) | Command valid |
| | ?ID (CHK)(cr) | Command Invalid |

Ex:Send command:"#01CS"...Clear all channels counter value.

Response: "!01"..... Command valid

5-6. Read digital input latched

| | | |
|--------------------|------------------|--|
| Command | \$IDLS(CHK)(cr) | |
| Syntax description | \$ | First leading code |
| | ID | Address of setting module 00-FF(HEX) |
| | LS | S=0 Latch logic 0, S=1 No use. |
| | CHK | Checksum |
| | (cr) | Carriage return |
| Response | !IDLLHH(CHK)(cr) | LL=DI0~DI7 status, HH=DI8~DI15 status. |
| | ?ID(CHK) (cr) | Command Invalid |

Ex:Send command:"#01L0"...Read all channels latch value.

Response: "!01000F"..... All channels have been trigger.

5-7. Clear digital input latched

| | | |
|--------------------|----------------|--------------------------------------|
| Command | \$IDC(CHK)(cr) | |
| Syntax description | \$ | First leading code |
| | ID | Address of setting module 00-FF(HEX) |
| | C | Clear CH0~CHF Lactch. |
| | CHK | Checksum |
| | (cr) | Carriage return |
| Response | !ID(CHK)(cr) | Command vaild |
| | ?ID(CHK) (cr) | Command Invalid |

Send command:"\$01C".....Clear digital input latch .

Response:"!01 "..... Latch have been clear.

5-8.Digital Output Data

| Command | #IDPPDD(CHK)(cr) | |
|--------------------|------------------|---|
| Syntax description | # | First leading code |
| | ID | Address of setting module 00-FF(HEX) |
| | PP | D I/O type :0A/ 00 DO0~DO3 low byte data (Multi-Channel) :1L/ AL: DO0~DO3 low byte data (Single-Channel) L=0~3 |
| | DD | DD:00~FF (Milti-Channel) DD:00 or 01 (Single-Channel) |
| | CHK | Checksum |
| | (cr) | Carriage return |
| Response | >(CHK)(cr) | Command valid |
| | !ID(CHK) (cr) | Parameter invalid (*Command data error!) |
| | ?ID (CHK)(cr) | Command Invalid |

**Multi-Channel mode (Output control for one BYTE)*

EX: Send command:”#010A02”.....CH 1 Relay 1 ON.

Response:”>” Command valid.

EX: Send command:”#01000A”.....CH1 nad CH3 Relay ON.

Response:”>” Command valid.

EX: Send command:”#01000G”...Data=“0G”.....Data error!.

Response:”?0”.....Parameter error! .

**Single-Channel mode(Output control for one BIT)*

EX: Send command:”#011001”..... CH0 Relay ON.

Response:”>” Command valid.

Send command:”#011201”..... CH2 Relay ON.

Response:”>” Command valid.

5-9. Read digital input/output status

| | | |
|--------------------|------------------|--------------------------------------|
| Command | \$ID6(CHK)(cr) | |
| Syntax description | \$ | First leading code |
| | ID | Address of setting module 00-FF(HEX) |
| | 6 | Read digital output status |
| | CHK | Checksum |
| | (cr) | Carriage return |
| Response | !ID0L0H(CHK)(cr) | L=DO0~DO3 status, H=DI0~DI3 status. |
| | ?ID(CHK) (cr) | Command Invalid |

EX: Send command:\$016.....Read digital output status .

Response:"!010308".....DO1,DO2,DI3...Enable.

5-10. Read the module's firmware version

| | | |
|--------------------|-----------------------|---|
| Command | \$IDF(CHK)(cr) | |
| Syntax description | \$ | First leading code |
| | ID | Address of setting module 00-FF(HEX) |
| | F | Command for reading module's version |
| | CHK | Checksum |
| | (cr) | Carriage return |
| Response | !IDMODDDMMYY(CHK)(cr) | MOD :The module's model DD: Date MM: Month YY : Year |
| | ?ID(CHK)(cr) | Command Invalid |

EX: Send command:\$01F...Read the TRP-C28H's version.

Response:"!01C24H090113"..... The TRP-C28H's version date is "01/09/2013".

5-11. Read the module's name

| | | |
|--------------------|-----------------------|--------------------------------------|
| Command | \$IDM(CHK)(cr) | |
| Syntax description | \$ | First leading code |
| | ID | Address of setting module 00-FF(HEX) |
| | M | Reading module's name |
| | CHK | Checksum |
| | (cr) | Carriage return |
| Response | !IDNNNNNNNNN(CHK)(cr) | NNNNNN :The chars from 1~9 chars |
| | ?ID(CHK)(cr) | Command Invalid |

EX: Send command:\$01M...Read the TRP-C28H's name.

Response:"!01TRPC24H"..... The module's name is "TRPC24H".

5-12. Reset Module

| | | |
|--------------------|-----------------|--------------------------------------|
| Command | \$IDRS(CHK)(cr) | |
| Syntax description | \$ | First leading code |
| | ID | Address of setting module 00-FF(HEX) |
| | RS | Reset Module |
| | (cr) | Carriage return |
| Response | !ID (CHK)(cr) | Command valid |
| | ?ID(CHK)(cr) | Command Invalid |

EX: Send Command:"\$01RS"

Response:" !01"..... . Command valid!

5-13. Change the Module 's name

| | | |
|--------------------|-----------------|--------------------------------------|
| Command | ~IDONN(CHK)(cr) | |
| Syntax description | ~ | First leading code |
| | ID | Address of setting module 00-FF(HEX) |
| | O | Change Module Name |
| | NN | NN : 1~9 characters char |
| | (cr) | Carriage return |
| Response | !ID (CHK)(cr) | Command valid |
| | ?ID(CHK)(cr) | Command Invalid |

EX: Send Command:"~01O123456789"...Change Name.

Response:"!01"..... . Command valid!

Send command:\$01M...Read the TRP-C28H's name.

Response:"!01123456789"..... The module's name is "TRPC24H".

5-14. Set LED operating mode

| | | |
|--------------------|------------------|--|
| Command | ~IDLEDA(CHK)(cr) | |
| Syntax description | ~ | First leading code |
| | ID | Address of setting module 00-FF(HEX) |
| | LED | Set the module's LED operating mode |
| | A | A=1 Turn off all LEDS, when Output Enable= ON. A=0 Turn on all LEDS, when Output Enable= OFF. |
| | CHK | Checksum |
| | (cr) | Carriage return |
| Response | !IDNN(CHK)(cr) | NN=ON or OFF Command valid |
| | ?ID(CHK)(cr) | Command Invalid |

EX: Send command:"~01LED1"..... Turn off all LED, when Channel Enable ON.

Response:"!01OFF"..... . Command valid.

5-15. Enable Watchdog

| | | |
|--------------------|----------------|--------------------------------------|
| Command | ~IDWE(CHK)(cr) | |
| Syntax description | ~ | First leading code |
| | ID | Address of setting module 00-FF(HEX) |
| | WE | Watchdog function |
| | CHK | Checksum |
| | (cr) | Carriage return |
| Response | !ID(CHK)(cr) | Command valid |
| | ?ID(CHK)(cr) | Command Invalid |

EX: Send Command:"~01WE".....Enable Watchdog .

.. Response:" !01"..... Command valid.

**The user can not change the digital output state when watchdog enable, this mode will keep until the watchdog disable.*

When the watchdog enable digital output into safe mode.

There are 3 ways you can set the safe mode, command / WEB / DSM.

5-16. Disable Watchdog

| | | |
|--------------------|----------------|--------------------------------------|
| Command | ~IDWD(CHK)(cr) | |
| Syntax description | ~ | First leading code |
| | ID | Address of setting module 00-FF(HEX) |
| | WD | Disable Watchdog |
| | (cr) | Carriage return |
| Response | !ID (CHK)(cr) | Command valid |
| | ?ID(CHK)(cr) | Command Invalid |

EX: Send Command:"~01WD"...Watchdog Disable.

Response:" !01"..... . Command valid!

5-17. Read Watchdog State

| | | |
|--------------------|-----------------|--------------------------------------|
| Command | ~IDWR(CHK)(cr) | |
| Syntax description | ~ | First leading code |
| | ID | Address of setting module 00-FF(HEX) |
| | WR | Read Watchdog State |
| | (cr) | Carriage return |
| Response | !IDWN (CHK)(cr) | N=E Enable N=D Disable |
| | ?ID(CHK)(cr) | Command Invalid |

EX: Send Command: "~01WR"...Read Watchdog state.

Response: "!01WE"..... Watchdog Enable.

5-18. Read Power on/Safe Mode

| | | |
|--------------------|-----------------|--------------------------------------|
| Command | ~ID4V(CHK)(cr) | |
| Syntax description | ~ | First leading code |
| | ID | Address of setting module 00-FF(HEX) |
| | 4 | Read power on/safe mode status |
| | V | V=P: Power on V=S: Safe mode |
| | CHK | Checksum |
| | (cr) | Carriage return |
| Response | !ID0L (CHK)(cr) | L:DO7~DO0 |
| | ?ID(CHK)(cr) | Command Invalid |

EX: Send Command: "~014P".....Read Power on output status.

Response: "!0107"..... Command valid.

EX: Send Command: "~014S".....Read save mode output status.

Response: "!0108"..... Command valid.

5-19. Set the digital output status Power on/Save Mode status

| | | |
|--------------------|----------------|--|
| Command | ~ID5V(CHK)(cr) | |
| Syntax description | ~ | First leading code |
| | ID | Address of setting module 00-FF(HEX) |
| | 5 | Save the current digital output is save or power on mode |
| | V | V=P Power on V=S Safe mode |
| | (cr) | Carriage return |
| Response | !ID (CHK)(cr) | Command valid |
| | ?ID(CHK)(cr) | Command Invalid |

EX: Send Command:"#010A07"... Digital output
 Send Command: "~015P"Save Power on.
 Send Command:"~014P"Read Power on
 Response:"!0107".

5-20. Read Module ID and Model Name

| | | |
|--------------------|-------------------|--|
| Command | ~**(CHK)(cr) | |
| Syntax description | ~ | First leading code |
| | ** | When TCP connected, get online module ID and Model Name. |
| | (cr) | Carriage return |
| Response | !IDName (CHK)(cr) | ID: Decimal Name: Model Name. |
| | ?ID(CHK)(cr) | Command Invalid |

EX: Send Command:"~**"... When TCP connected, get online module ID and model name.
 Response:"!001TRP-C24H".

5-21. Back to Factory

| | | |
|--------------------|---------------|--------------------|
| Command | #**(CHK)(cr) | |
| Syntax description | # | First leading code |
| | ** | Back to factory. |
| | (cr) | Carriage return |
| Response | !ID (CHK)(cr) | Command valid |
| | ?ID(CHK)(cr) | Command Invalid |

EX: Send Command:"~**" ... Back to factory.

Response:"!01".

6. Modbus RTU/ASCII Communication Protocol

* For more modbus RTU / ASCII protocol specification, please download from <http://www.modbus.org> website.
Obtain more modbus TCP instruction test, we recommend user can be downloaded from the following Web site
Modbus Poll Test utility <http://www.modbustools.com/>

ModbusScan Test utility <http://www.win-tech.com/html/modbus1.htm>.

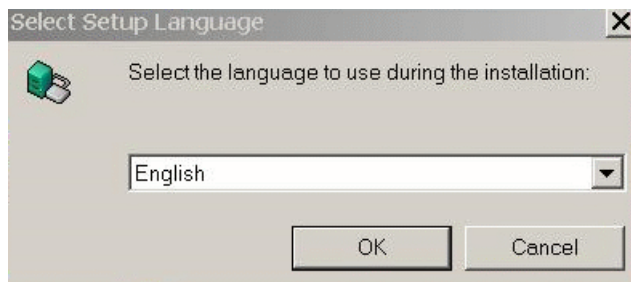
User can use the virtual-com program with TRPCOM.exe for Modbus RTU test; these programs can be found in our directory of the CD!

Install the Virtual-COM

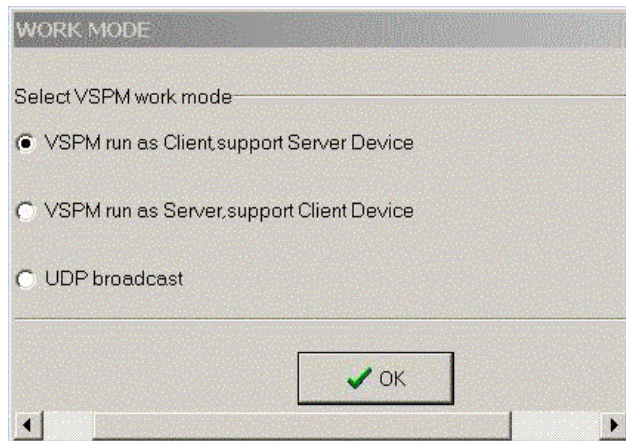
Step 1. Insert the TRP-Serial CD and find the TRP-C28H folder.

Step 2. Click "Vcomm.exe" icon then install Virtual-COM utility.

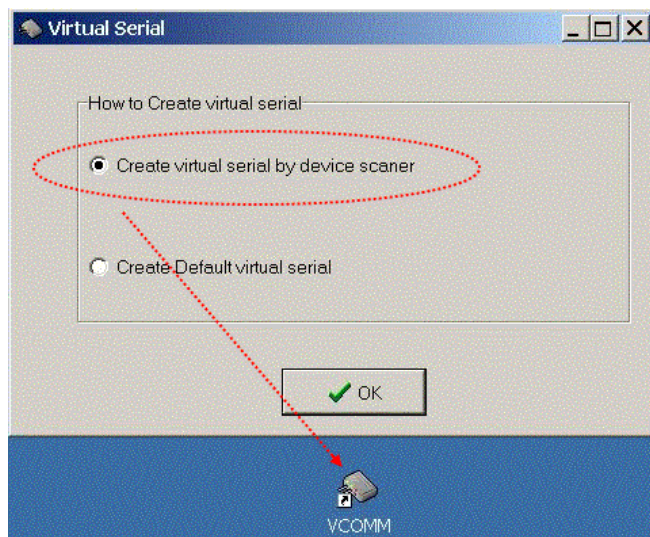
*The Virtual COM utility support multi-language, please select which language do you need.



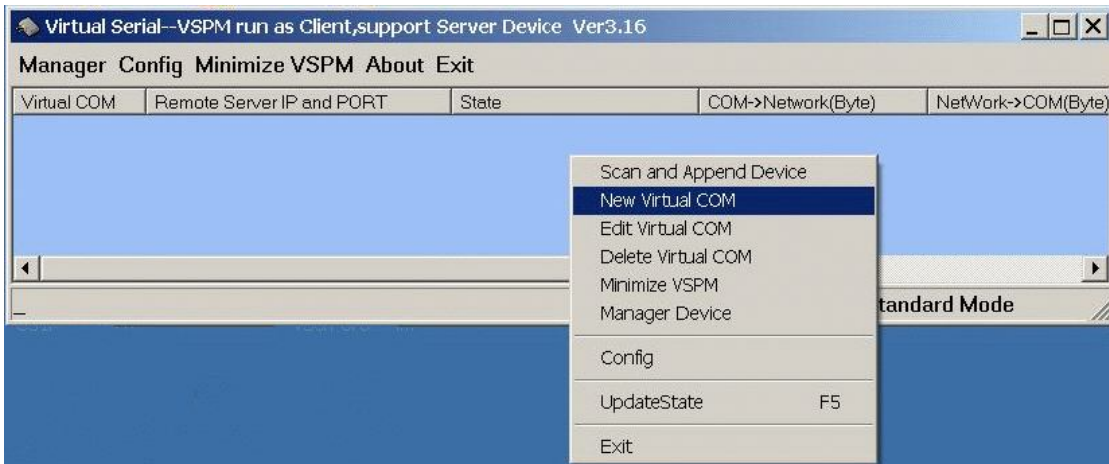
Step3. Click "OK" button and select "VSP run as Client support Server Device".



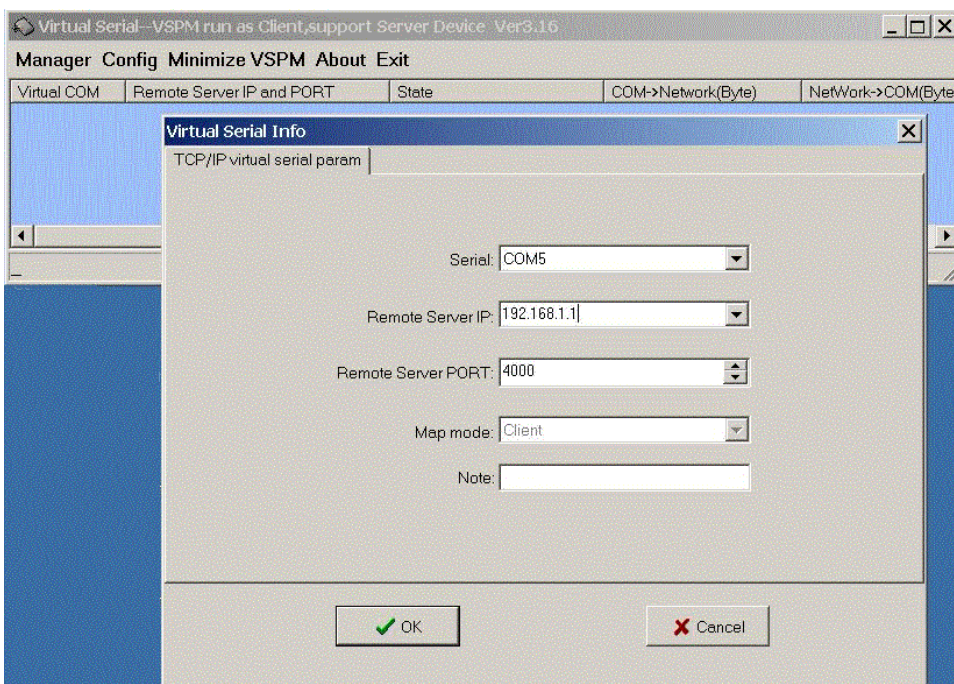
Step4. Select "Create virtual serial by device scanner", then press "OK"



Step5. Run VCOMM.exe then click right button select “New Virtual COM”



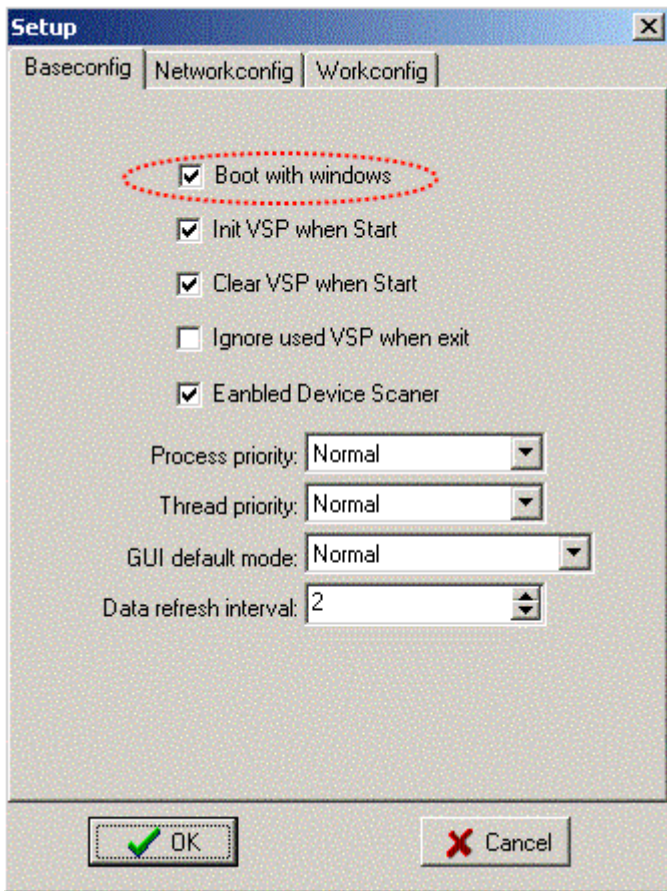
Step6. Select “Select Serial Port” and input TRP-C28H IP and port then press “OK”.



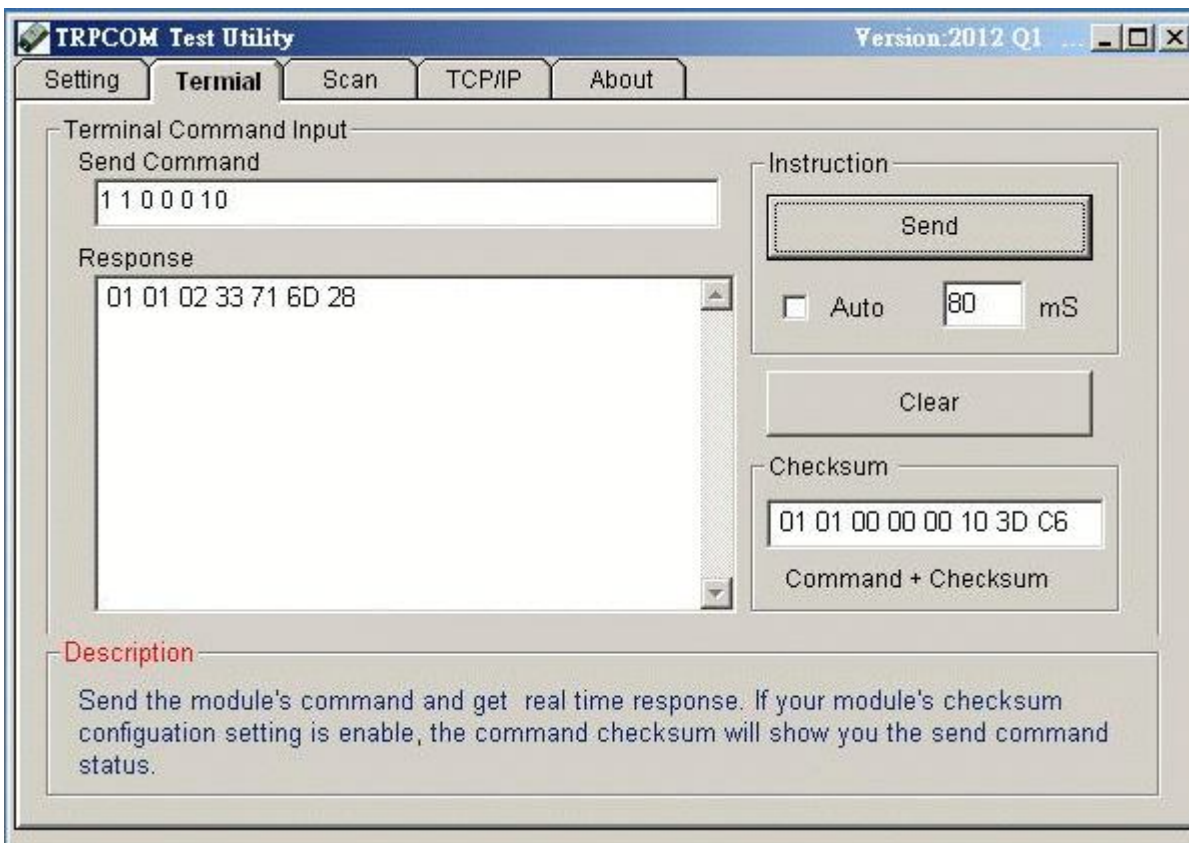
Step7. If Virtual-Com setting success, the display will appear bellow.

Step8.Run TRPCOM utility then select virtual-com port make a TRP-C28H command.

*If in VCOMM's configuration select “Boot with windows”, the virtual-com will Auto-connection when windows start.



* TRP-C28H in use the Virtual com mode, the default data format is 9600, N, 8,1, this mode is not allowed to change.



Modbus TCP Command List

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| ID 10 00 SS 00 CN BC DD DD .. | Write multiple registers | Write multi channel counter value | 6-8 |
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Additional modbus RTU command set

| Command List | Function Description | Index |
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| ID 46 04 IP 00 00 00 | Setting module new ID | 6-11 |
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| ID 46 0B WS 00 | Enable/Disable watchdog. | 6-13 |
| ID 46 0C 00 | Read watchdog status | 6-14 |
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6-1. Read Coils

Read relay output readback value

| | | | |
|--------------------|-------------------|---------|---|
| Command | ID 01 00 SS 00 NN | | |
| Syntax Description | ID | 1Byte | Address of setting module 1~247 |
| | 01 | 1 Byte | Function Code |
| | 00 SS | 2 Bytes | Start channel number, 0x0000~0x0004 |
| | 00 NN | 2 Bytes | Output channel number,0x0001~0x0004 |
| Response | ID 01 BC 0L | 4 Bytes | ID=1~247 01:Function Code BC: Byte counter 0L : Relay output read back value |
| Error Response | ID 81 ER | 3 Bytes | ID=1~247 81 :Function Code ER=00 Syntax error ER=01 Data Format error ER=02 Start channel error ER=03 I/O out of range |

Example:Send command :” 01 01 00 00 00 04”.....Read RL1~RL4 relay Output read back value.

Response:” 01 01 01 08”..... RL4 Enable.

6-2. Read Discrete Inputs

Read the current digital input value

| | | | |
|-----------------------|-------------------|---------|---|
| Command | ID 02 00 00 00 NN | | |
| Syntax Description | ID | 1Byte | Address of setting module 1~247 |
| | 02 | 1 Byte | Function Code |
| | 00 SS | 2 Bytes | Start channel number, 0x0000 |
| | 00 NN | 2 Bytes | Input channel number,0x0001~0x0004 |
| Response | ID 02 BC LL | 4 Bytes | ID=1~247 02:Function Code BC: Byte counter LL : Digital current input value |
| Error Response | ID 82 ER | 3 Bytes | ID=1~247 81 :Function Code ER=00 Syntax error ER=01 Data Format error ER=02 Start channel error ER=03 I/O out of range |

Example:

Send command :” 01 02 00 00 00 04”.....Read DI0~DI3 Digital Input readback value.

Response:” 01 02 01 08 ”..... DI3=Enable.

6-3. Read Holding Registers

Read the current relay output readback count value

| | | | |
|-----------------------|-------------------|---------|---|
| Command | ID 03 00 SS 00 NN | | |
| Syntax Description | ID | 1Byte | Address of setting module 1~247 |
| | 03 | 1 Byte | Function Code |
| | 00 SS | 2 Bytes | Start channel number, 0x0000~0x0004 |
| | 00 NN | 2 Bytes | Output channel number,0x0001~0x0004 |
| Response | ID 03 BC NN NN | 5 Bytes | ID=1~247 03:Function Code BC: Byte counter NN NN: Digital output read back value |
| Error Response | ID 83 ER | 3 Bytes | ID=1~247 83 :Function Code ER=00 Syntax error ER=01 Data Format error ER=02 Start channel error ER=03 I/O out of range |

Example:

Send command :” 01 03 00 00 00 04 ”.....Read digital RL11~RL4 readback counter value.

Response:” 01 03 08 00 03 00 12 00 37 00 12 ”.

6-4. Read Input Registers

Read the current digital input count value

| | | | |
|--------------------|-------------------|---------|---|
| Command | ID 04 00 SS 00 NN | | |
| Syntax Description | ID | 1Byte | Address of setting module 1~247 |
| | 04 | 1 Byte | Function Code |
| | 00 SS | 2 Bytes | Start channel number, 0x0000~0x0004 |
| | 00 NN | 2 Bytes | Output channel number,0x0001~0x0004 |
| Response | ID 0 BC NN NN | 5 Bytes | ID=1~247 04:Function Code BC: Byte counter NN NN: Digital output read back value |
| Error Response | ID 84 ER | 3 Bytes | ID=1~247 84 :Function Code ER=00 Syntax error ER=01 Data Format error ER=02 Start channel error ER=03 I/O out of range |

Example:

Send command :” 01 04 00 00 00 04 ”.....Read CH0~CH3 read back counter value.

Response:” 01 04 08 00 01 00 01 03 FC 00 1E ”..... Bytes Counter=8,DI0 =1, DI1=1,DI2=1020,DI3=30.

6-5. Write Single Coil

Write Single channel output data

| | | | |
|--------------------|-------------------|---------|---|
| Command | ID 05 00 SS DD 00 | | |
| Syntax Description | ID | 1Byte | Address of setting module 1~247 |
| | 05 | 1 Byte | Function Code |
| | 00 SS | 2 Bytes | Start channel number, 0x0000~0x0003 |
| | DD 00 | 2 Bytes | Write output data DD=FF.. Relay Enable DD=00 Relay Disable |
| Response | ID 05 00 SS DD 00 | 5 Bytes | Command Line |
| Error Response | ID 85 ER | 3 Bytes | ID=1~247 85 :Function Code ER=00 Syntax error ER=01 Data Format error ER=02 Start channel error ER=03 I/O out of range |

Example:

Send command :” 01 05 00 03 FF 00 ”.....RLY4 Output Enable.

Response:” 01 05 00 03 FF 00“...Command Valid.

6-6. Write Coils

Write multi channel output data

| | | | |
|--------------------|-------------------------|---------|---|
| Command | ID 0F 00 SS 00 NN BC 0L | | |
| Syntax Description | ID | 1Byte | Address of setting module 1~247 |
| | 0F | 1 Byte | Function Code |
| | 00 SS | 2 Bytes | Start channel number, 0x0000~0x0003 |
| | 00 NN | 2 Bytes | Output channel number=0x0001~0x0004 |
| | BC | 1 Bytes | Byte counter |
| | 0L | 1 Bytes | Write output data L=0~F |
| Response | ID 0F 00 SS 00 NN | 6 Bytes | Command Line |
| Error Response | ID 8F ER | 3 Bytes | ID=1~247 8F :Function Code ER=00 Syntax error ER=01 Data Format error ER=02 Start channel error ER=03 I/O out of range |

Example:

Send command:"01 0F 00 00 00 04 01 0B"...RL1,RL2,RL4 Enable.

Response:"01 0F 00 00 00 04"...Command Valid.

6-7. Write single register

Write single channel counter value

| | | | |
|--------------------|-------------------|---------|--|
| Command | ID 06 00 SS DD DD | | |
| Syntax Description | ID | 1Byte | Address of setting module 1~247 |
| | 06 | 1 Byte | Function Code |
| | 00 SS | 2 Bytes | Start channel number, 0x0000~0x0003 |
| | DD DD | 2 Bytes | Write Counter Vaile DDDD=0x0000~0xFFFF |
| Response | ID 06 00 SS DD DD | 6 Bytes | Command Line |
| | ID 86 ER (CRC) | 4 Bytes | ID 86 :Function Code ER=00 Syntax error ER=01 Data Format error ER=02 Start channel error ER=03 I/O out of range |

Example:Send command : " 01 06 00 03 00 63 ".....Write DI3 Counter Value=99.

Response:"01 06 00 03 00 63 "..... Command Valid.

6-8. Write multiple registers

Write multi channel counter value

| | | | |
|-----------------------|-------------------------------|-----------|--|
| Command | ID 10 00 SS 00 CN BC DD DD .. | | |
| Syntax Description | ID | 1Byte | Address of setting module 1~247 |
| | 10 | 1Byte | 10=Function Code |
| | 00 SS | 2 Bytes | Start channel number, 0x0000~0x0003 |
| | 00 CN | 2 Bytes | Counter Number =0x0001~0x0004 |
| | BC | 1 Byte | Byte Counter |
| | DD DD..... | 2~8 Bytes | Counter Vaile DDDD=0000~FFFF |
| Response | ID 10 00 SS 00 CN | 6 Bytes | Command Line |
| | ID 90 ER | 3 Bytes | ID 90 :Function Code ER=00 Syntax error ER=01 Data Format error ER=02 Start channel error ER=03 I/O out of range |

Send command:" 01 10 00 00 00 04 08 00 0A 00 14 00 1E 00 28 "... Write DI0~DI3 Counter Value.

Response:"01 10 00 00 00 04"..... Command Valid.

6-9.Save multiple registers

Save current multi channel counter value to memory

| | | | |
|-----------------------|----------------------------|---------|--|
| Command | ID 10 00 00 00 01 02 00 00 | | |
| Syntax Description | ID | 1Byte | Address of setting module 1~247 |
| | 10 | 1 Byte | 10=Function Code |
| | 00 00 | 2 Bytes | Start channel number, 0x0000 |
| | 00 01 | 2 Bytes | Counter Number =0x0001 |
| | 02 00 00 | 3 Bytes | Save all counters to memory |
| Response | ID 10 00 00 00 01 | 6 Bytes | Command valid |
| | ID 90 ER | 3 Bytes | ID 90 :Function Code ER=00 Syntax error ER=01 Data Format error ER=02 Start channel error ER=03 I/O out of range |

Send command:" 01 10 00 00 01 02 00 00"... Save all current counters Value to memory.

Response:"01 10 00 00 00 01"..... Command Valid.

6-10. Read the module's name

| | | |
|-----------------------|----------------------|--|
| Command | ID 46 00 00 | |
| Syntax Description | ID | Address of setting module 1~247 |
| | 46 | Function code |
| | 00 | Read module's name |
| | 00 | Reserved code |
| Response | ID 46 00 00 0C 28 00 | ID 46 00 00Module command Line 0C 28 :Module's Name is C28 |
| | ID C6 00 | ID C6 C6:Function Code 00: Reserved code |

EX: Send Command:"01 46 00 00".....Read the TRP-C28's name.

Response:"01 46 00 00 0C 28 00 "Module's name is C28.

Error Response: "01 C6 00".....Error code.

6-11. Setting module new ID

| | | |
|-----------------------|----------------------|--|
| Command | ID 46 04 IP 00 00 00 | |
| Syntax Description | ID | Address of setting module 1~247 |
| | 46 | Function Code |
| | 04 | Setting module ID |
| | IP | New module's ID |
| | 00 00 00 | Reserved code |
| Response | ID 46 04 00 00 | ID 46 04 00 00Command valid |
| | ID C6 00 | ID C6 C6:Function Code 00: Reserved code |

EX: Send Command:"01 46 04 08 00 00 00".....Set up the new ID is "03".

Response:"01 46 04 00 00 "New ID is 08.

Error Response: "01 C6 00".....Error code.

6-12. Read the module's Firmware

| | | |
|-----------------------|-----------------------------|---|
| Command | ID 46 07 00 | |
| Syntax Description | ID | Address of setting module 1~247 |
| | 46 | Function Code |
| | 07 | Read module's Firmware |
| | 00 | Reserved code |
| Response | ID 46 07 YY MM DD 00 | ID 46 07Module command Line YY :Year MM :Month DD :Date 00 : Reserved code |
| | ID C6 00 | ID C6 C6:Function Code 00: Reserved code |

Example:

Send Command:"01 46 07 00".....Read Firmware Version.

Response:"01 46 07 13 02 28 00"...Firmware Version 02/28/2013.

Error Response: "01 C6 00".....Error code.

6-13. Enable/Disable watchdog

| | | |
|-----------------------|----------------|---|
| Command | ID 46 0B WS 00 | |
| Syntax Description | ID | Address of setting module 1~247 |
| | 46 | Function Code |
| | 0B | Setting Watchdog Status |
| | WS | WS=00 Watchdog Disable WS=01 Watchdog Enable |
| | 00 | Reserved code |
| Response | ID 46 0B 00 | 00 ID 46 0B 00Command valid |
| | ID C6 00 | ID C6 C6:Function Code 00: Reserved code |

Example:

Send Command:"01 46 0B 01 00".....Watchdog Enable.

Response:"01 46 0B 00"...Command valid.

Error Response: "01 C6 00".....Error code.

6-14. Read watchdog status

| | | |
|-----------------------|-------------|--|
| Command | ID 46 0C 00 | |
| Syntax Description | ID | Address of setting module 1~247 |
| | 46 | Function Code |
| | 0C | Read watchdog status |
| | 00 | Reserved code |
| Response | ID 46 0C WT | ID 46 0CModule command line WT=01 Watchdog enable WT=00 Watchdog Disable |
| | ID C6 00 | ID C6 C6:Function Code 00: Reserved code |

Example:

Send Command:"01 46 0C 00"...Read watchdog status.

Response:"01 46 0C 01Watchdog enable.

Error Response: "01 C6 00"...Error code.

6-15. Set up LED ON/OFF

| | | |
|-----------------------|----------------|--|
| Command | ID 46 0D 0S 00 | |
| Syntax Description | ID | Address of setting module 1~247 |
| | 46 | Function Code |
| | 0D | Set Up LED Status Value |
| | 0S | S = 0 Turn on all LED when DIO enable off S = 1 Turn off all LED when DIO enable on |
| | 00 | Reserved code |
| Response | ID 46 0D 00 | ID 46 0DCommand valid |
| | ID C6 00 | ID C6 C6:Function Code 00: Reserved code |

Example:

Send Command:"01 46 0D 01 00.

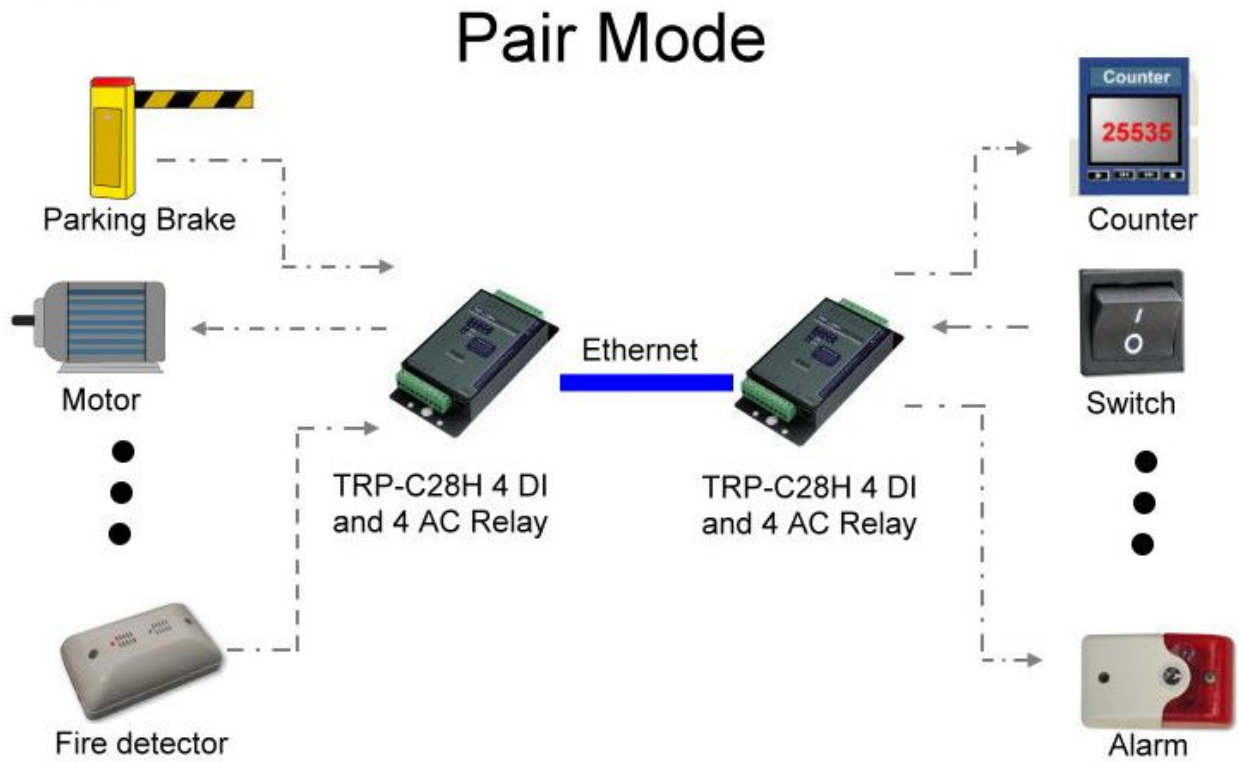
Response:"01 46 0D 00.

Error Response: "01 C6 00"...Error code.

7. Pair Mode

TRP-C28H support pairing mode with the TRP-C28H, Applied to 4 digital channels input and 4 AC relay output with over the network, without any driver with computer hardware.

All digital LED flashes in pairing mode until successfully paired will stop blinking; TRP-C28H sustained in connection automatically, regardless of any party the power to re-open or network disconnection to ensure normal transmission. product application are as follows:



7-1 Parameter setting example

Perform DSM utility to change the parameters

- TRP-C28H server parameter setting

The screenshot displays the TRYCOM DSM 4.7 interface for configuring a TRP Ethernet Series DSM (TRP-C37/C37M/C24H/C26H/C28H). The main window shows the 'Device Status List' and the 'Device Setup' configuration window.

Device Status List:

| NO. | Device Name | MAC Address | DHCP | IP | Port | Mode | Status |
|-----|-------------|-------------------|---------|-------------|------|--------|-----------|
| 1 | TRP-C28H | 00-0E-C6-00-00-9D | Disable | 192.168.1.1 | 502 | Master | Connected |

Device Setup - Network Setting:

- Device Name: TRP-C28H
- MAC Address: 00-0E-C6-00-00-9D
- DHCP: Disable
- Server/Master
- Listening IP: 192.168.1.1
- Data listening port: 502
- Module Name: TRP-C28H
- Netmask: 255.255.255.0
- Gateway: 192.168.1.3
- DNS: 168.95.1.1
- Transmit Timer: 10
- Heart Beat: Disable
- Maximum Connection: 8
- TCP Keep Alive: 7
- New Password: ****
- Firmware Version: 426
- Data Packet Type: TCP, UDP, Auto connect after reboot
- Management Packet Type: Broadcast, Multicast

Device Setup - Serial Port / Modbus Setting:

- Serial Port Setting: Baud rate (9600), Data bits (8), Parity (None), Stop bits (1), Flow Control (None)
- Modbus Setting: Slave ID (1), LED Display Panel Setting (Off), Polling Setting (High), System Mode (Pair Mode), Trycom Checksum Setting (Disable), Power On Mode Output (7000), Safe On Mode Output (8000)
- Digital Output Status: 0
- Digital Input Status: 0
- Digital Input CH1: 0
- Digital Input CH2: 0
- Digital Input CH3: 1010
- Digital Input CH4: 0
- Digital Input CH5: 0
- Digital Input CH6: 0
- Digital Input CH7: 0
- Digital Input CH8: 0
- Digital Input CH9: 0
- Digital Input CH10: 0
- Digital Input CH11: 0
- Digital Input CH12: 1
- Digital Input CH13: 0
- Digital Input CH14: 0
- Digital Input CH15: 0
- Digital Input CH16: 0

● TRP-C28H Client parameter setting

TRYCOM DSM 4.7

Trycom
IPC

TRP Ethernet Series DSM

TRP-C37/C37M/C24H/C26H/C28H

DSM Setting: Setting

DSM Function: Search, IP Search, Device Setup, Web Browser, Restore, Reboot, Upgrade

Device Status List

| NO. | Device Name | MAC Address | DHCP | IP | Port | Mode | Status |
|-----|-------------|-------------------|--------|-------------|------|-------|-----------|
| 1 | TRP-C28H | 00-0E-C6-00-00-A0 | Enable | 192.168.1.2 | 502 | Slave | Connected |

Device Setup

Network Setting | Serial Port | Modbus Setting

Device Name: TRP-C28H | Module Name: TRP-C28H

MAC Address: 00-0E-C6-00-00-A0 | Netmask: 255.255.255.0

DHCP: Enable | Gateway: 192.168.1.3

Server/Master Listening IP: 192.168.1.2 | DNS: 168.95.1.1

Data listening port: 502 | Transmit Timer: 10

Heart Beat: Disable

Client/Slave

| UID Range | Client/Slave IP Address | Port | Maximum Connection |
|-----------|-------------------------|------|--------------------|
| 0 To 0 | 192.168.1.1 | 502 | 8 |
| 0 To 0 | 0.0.0.0 | 0 | |
| 0 To 0 | 0.0.0.0 | 0 | |
| 0 To 0 | 0.0.0.0 | 0 | |
| 0 To 0 | 0.0.0.0 | 0 | |
| 0 To 0 | 0.0.0.0 | 0 | |
| 0 To 0 | 0.0.0.0 | 0 | |
| 0 To 0 | 0.0.0.0 | 0 | |

TCP Keep Alive: 7 | New Password: **** | Firmware Version: 426

Data Packet Type: UDP, TCP, Auto connect after reboot

Management Packet Type: Broadcast, Multicast

Buttons: Submit, Save, Load

Device Setup

Network Setting | Serial Port | Modbus Setting

Serial Port Setting

Baud rate: 9600 | Data bits: 8 | Parity: None | Stop bits: 1 | Flow Control: None

Modbus Setting

Slave ID: 1 | LED Display Panel Setting: Off | Polling Setting: High | System Mode: Pair Mode | Trycom Checksum Setting: Disable | Power On Mode Output: 0 | Safe On Mode Output: 0

Digital Output Status: 0

Digital Input Status: 1800

Digital Input CH1: 0 | Digital Input CH2: 0 | Digital Input CH3: 0 | Digital Input CH4: 0 | Digital Input CH5: 0 | Digital Input CH6: 0 | Digital Input CH7: 0 | Digital Input CH8: 0 | Digital Input CH9: 0 | Digital Input CH10: 0 | Digital Input CH11: 0 | Digital Input CH12: 0 | Digital Input CH13: 0 | Digital Input CH14: 0 | Digital Input CH15: 0 | Digital Input CH16: 0

Buttons: Submit, Save, Load

8. Application

