TRP-C24H

16 channels isolated digital output

(Open Collector) Modbus TCP module.

User's Manual

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Firmware Version: 610

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1. Introduction

The TRP-C24H is an Isolated open collector digital outputs Modbus TCP Module, It provides 16 channels output open collector signal (100mA) to driven your devices on network, It supports 3 communication Protocols, TRP-ASCII, Modbus RTU / ASCII, It can be easy and convenient to use application supports Modbus.

Software engineers can use the TRP-ASCII or Modbus RTU/ASCII command set quickly and easily integrated into the self-development program, such as Microsoft VB, VC...

The TRP-C24H built-in independent IP, WEB-browsing more convenient to rewrite the configuration and collect information through computers, tablet computers, smart phones, will be available!

The TRP-C24H built-in watchdog Hardware ensure the normal operation of the module, and a built-in voltage monitoring to ensure that the boot, excellent and advanced hardware for harsh environment.

The TRP-C24H can connect TRP-C26H, 16 remote control directly; it do not need to run the software and equipment.

When TRP-C24H and TRP-C26H are paired, they can support 16 channels remote control does not require any drivers and software support.

The TRP-C24H is also offers the maximum connection 16 host client to link the network server that is easy to operate in Modscan32 ,Modbus Poll,CAS Modbus Scanner and SCADA ...application uses TCP mode and Virtual-COM mode.

The TRP-C24H which can supports the mono stable circuit at each channel under modbus protocol. User can easy to write the Function 0X06 save the timer period to EEPROM of TRP-C24H then use the Function 0x05 turn on single channel that meaning you can trigger that then keep on then auto off it depend on your setting timer period of Function0x06.

1-1 Features

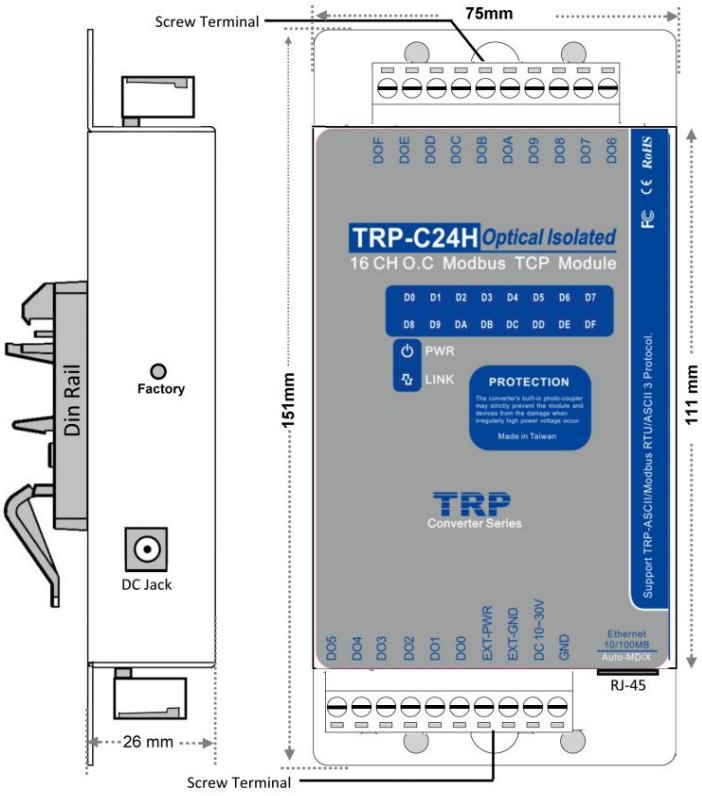
- Wide input range DC power supply.
- Automatically determine 3 TRP-ASCII and Modbus RTU/ASCII communication protocol.
- 16 TCP Port can be open at the same time.
- Heart Beat function ensures a reliable communicating connection.
- Maximum 8 sets host IP that limits network access.
- Each channel supports the mono stable circuit and auto save the time period to EEPROM.
- Support Virtual-COM mode.
- IO status can be set in the boot.
- WEB PAGE can be directly output and 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 output signal with 3750Vrms isolation protection.
- 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/16 CH DO LED indicator.
- DIN-Rail and panel mount support.
- Dual power input select from screw terminal or DC-Jack.

1-2Specification.

- Power Input Voltage DC +10V to +30V.
- Protocol: TRP-ASCII and Modbus RTU/ASCII.
- Digital output maximum voltage:+30V.
- Digital output maximum current: 100mA.
- Digital output isolation: 3750Vrms.
- Mono stable timer period unit:1~65535 (100MS/Unit).
- Communication interface: Ethernet RJ45.
- Configuration mode: Trycom Device Manager, WEB settings.
- Matching remote control: with TRP-C26H.
- 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 240mA/12V.
- Operating environment: 0 to 50℃.
- Storage temperature:. -10 to 70℃.
- 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!

2-2. Block Diagram

PWR LED: Blinking is ready.

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

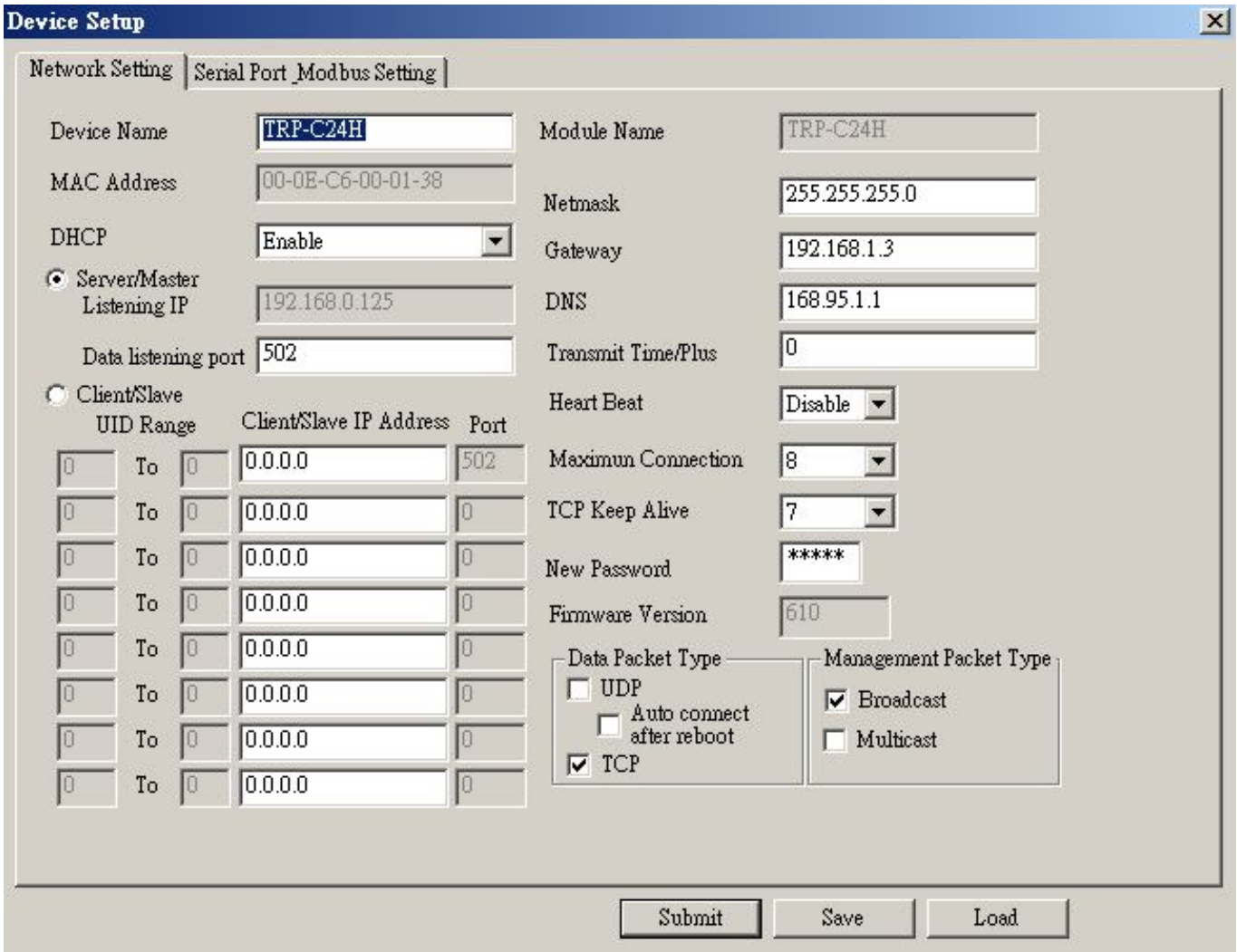
D0~DF LED: Each digital status indication.

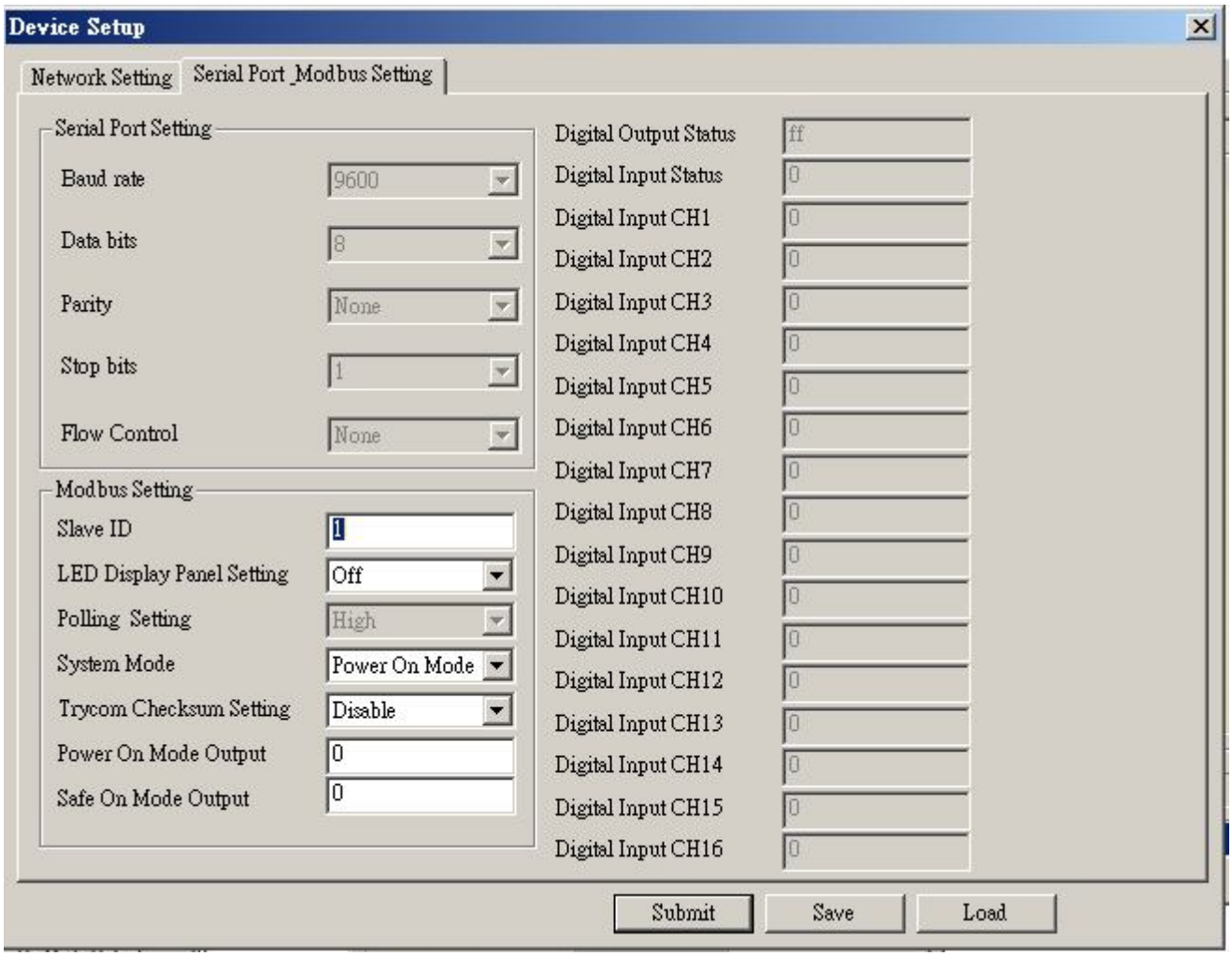
DC Jack: Power Input DC +10V to +30V, Please use the 5.5*2.1mm DC JACK.

2-3. Factory Button

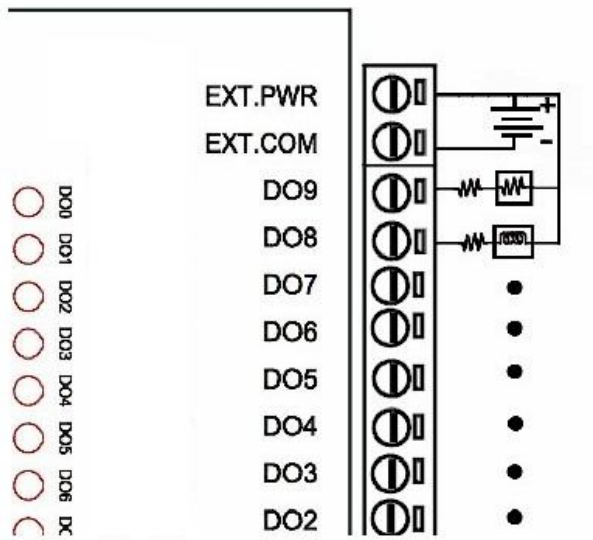
Hold down the button, and then power on, until the power light flashes, Release the button.

2-4. Factory parameter values

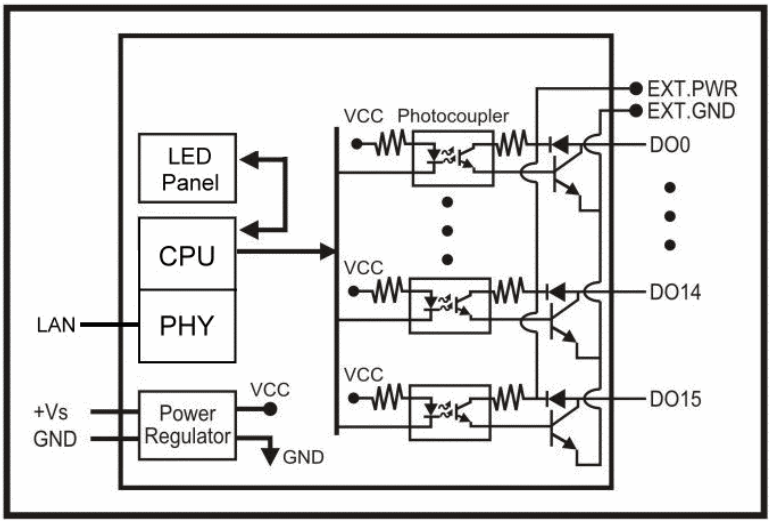




2-5. Screw Terminal Pin assignment Description



2-6. Block Diagram



2-7. Pin Description

DO5	Digital output Channel 5	DOF	Digital output Channel F
DO4	Digital output Channel 4	DOE	Digital output Channel E
DO3	Digital output Channel 3	DOD	Digital output Channel D
DO2	Digital output Channel 2	DOC	Digital output Channel C
DO1	Digital output Channel 1	DOB	Digital output Channel B
DO0	Digital output Channel 0	DOA	Digital output Channel A
EXT.PWR	The isolated side power input MAX.30V	DO9	Digital output Channel 9
EXT.GND	The isolated side ground	DO8	Digital output Channel 8
DC 10~30V	Input DC 10~30V	DO7	Digital output Channel 7
GND	Power Ground	DO6	Digital output Channel 6

3. Install TRP-C24H Hardware

STEP1: Connect power source with TRP-C24H, the PWR LED will blinking.

STEP2: Connect TRP-C24H with Netwotk by RJ45 cable.

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

*The TRP-C24H 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-C24H screw terminal wiring, such as 2-5 picture description.

4. How to configure TRP-C24H

**Please note that the computer's IP segment adjusted with TRP-C24H same section, modify the parameter values in order to effectively store!*

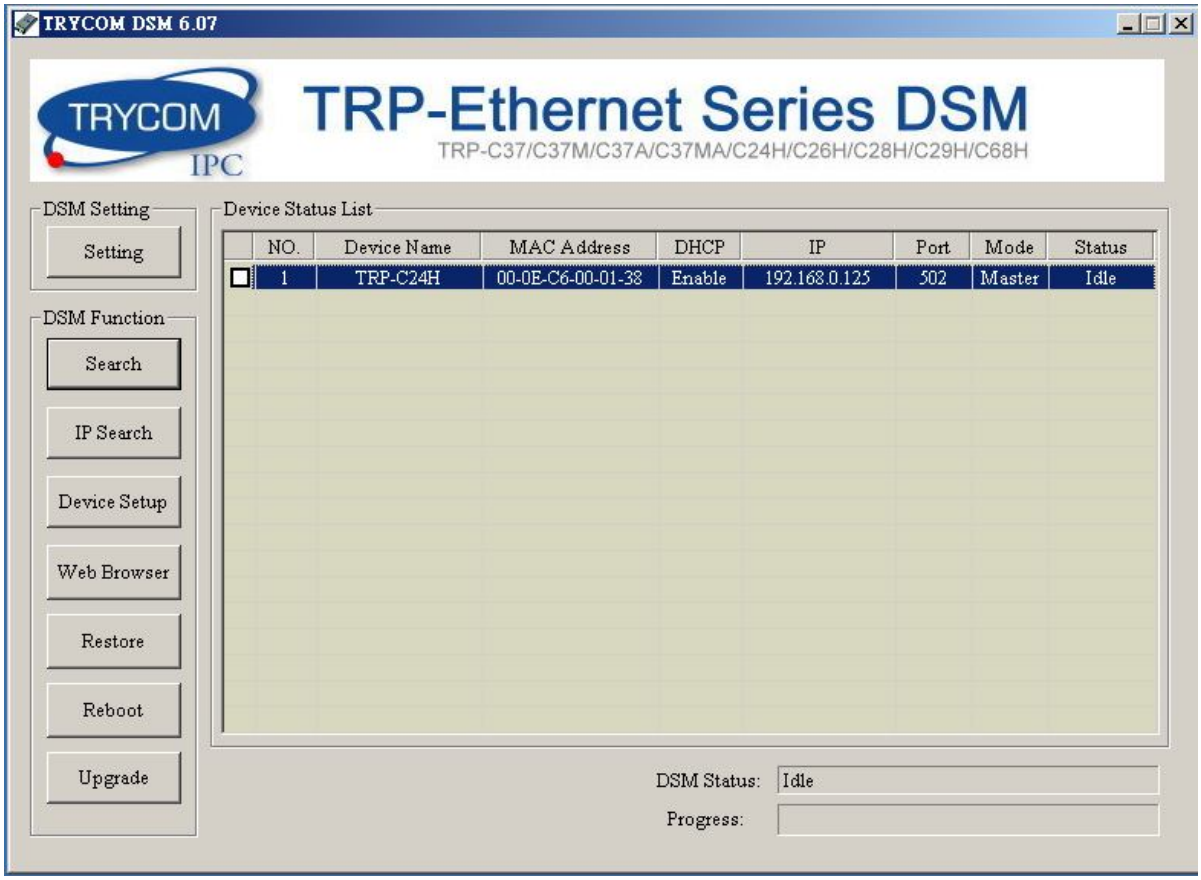
For example:

Computer IP is 192.168.1.xx

TRP-C24H 192.168.1.1

There are 2 ways can change the module parameter values.

A.DSM Software



B. WEB Server

4-1. Using DSM Utility

The DSM utility software performs several functions:

A: Searching for TRP-C24H connected to the network.

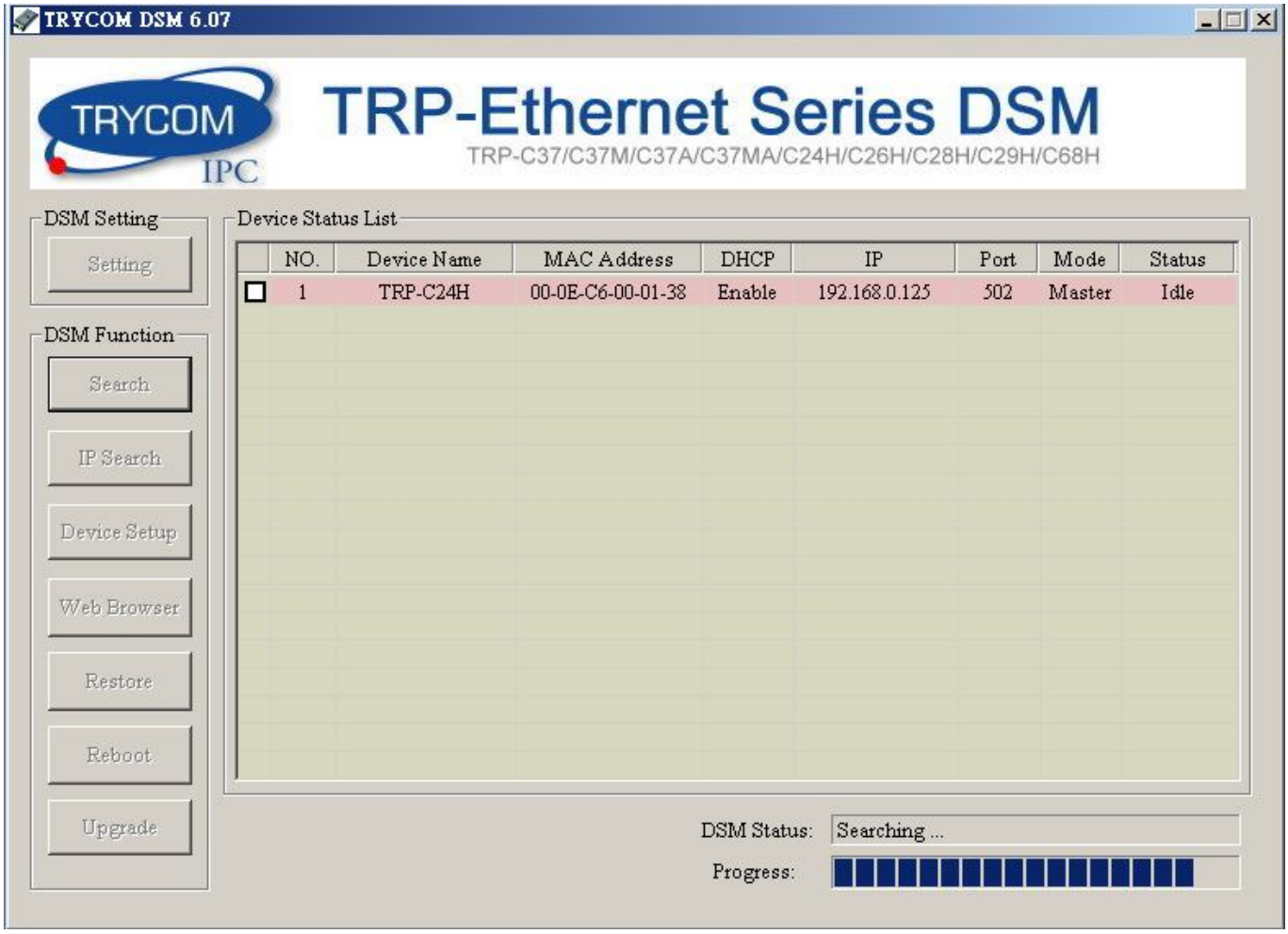
B: Displaying and changing the configuration.

C: Upgrading the TRP-C24H firmware, Refer the Firmware upgrade help file.

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

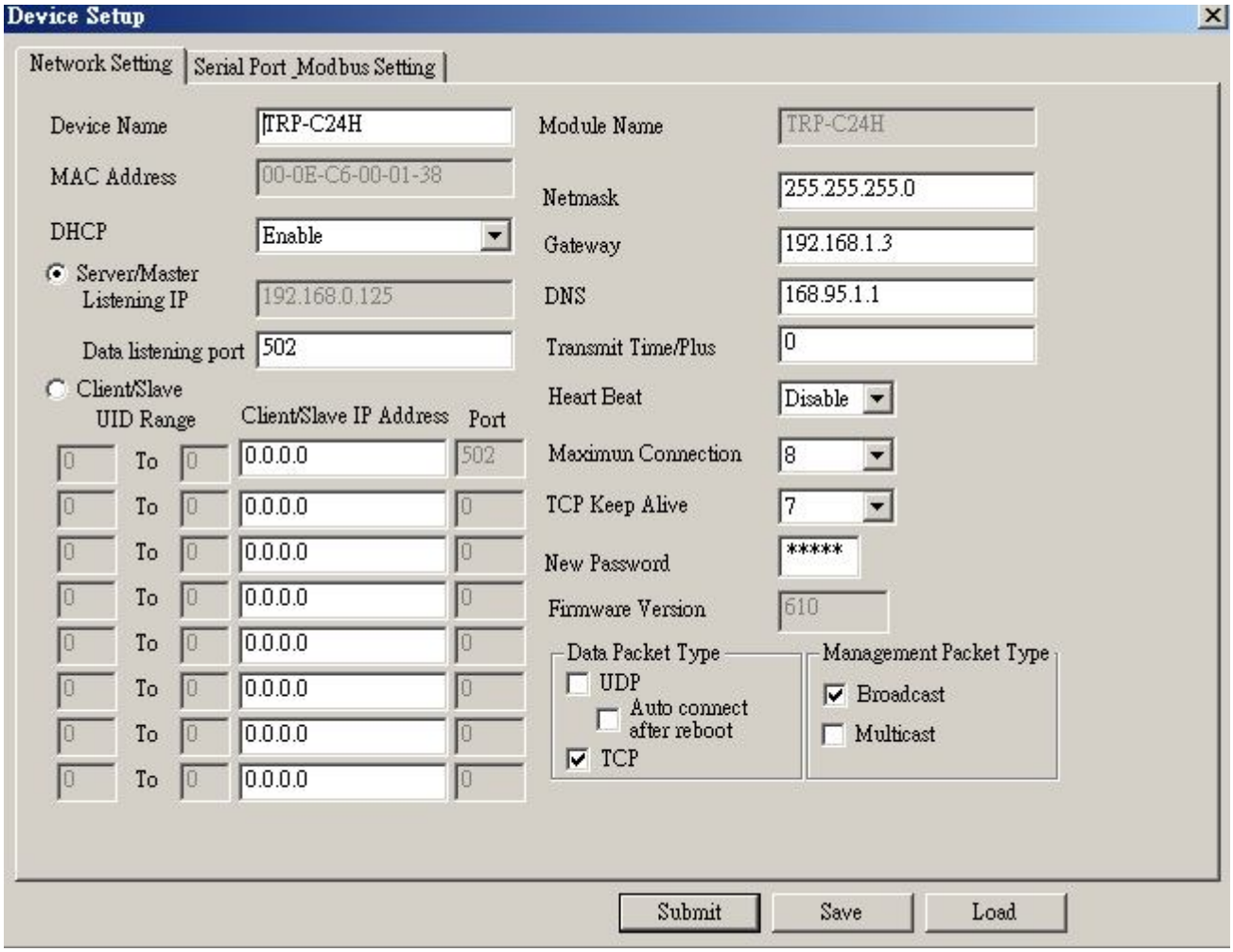
4-2. Searching TRP-C24H

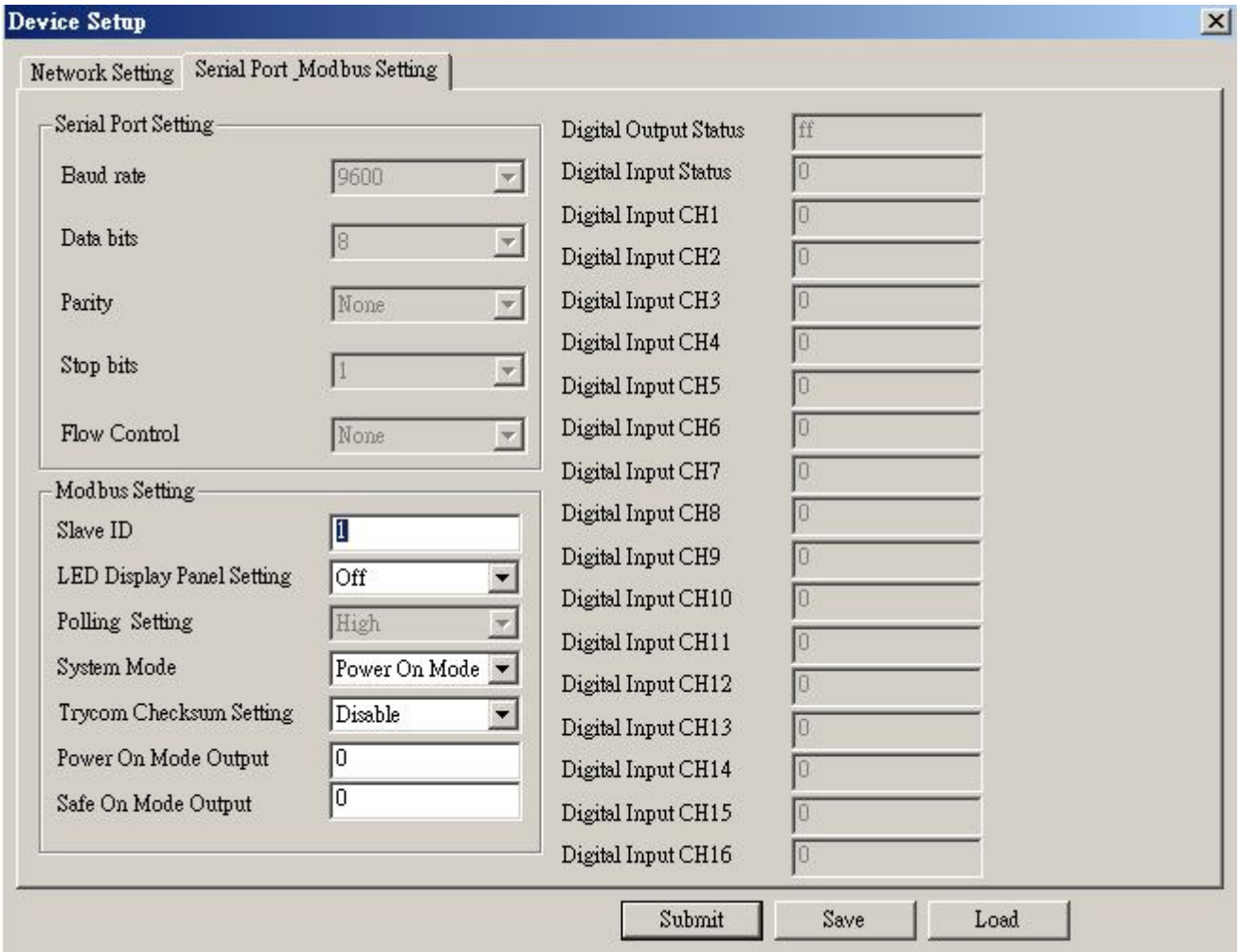
Once TRP-C24H is connected to the network the **DSM** software will search it and display it in a window by name, IP address, Mac….Information.



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
Network Setting
Serial Port _Modbus Setting
Device Name
TRP-C24H
MAC Address
00-0E-C6-00-01-38
DHCP
Enable
Server/Master Listening IP
192.168.0.125
Data listening port
502
Client/Slave
UID Range
Client/Slave IP Address
Port
To
0.0.0.0
Module Name
TRP-C24H
Netmask
255.255.255.0
Gateway
192.168.1.3
DNS
168.95.1.1
Transmit Time/Plus
0
Heart Beat
Disable
Maximun Connection
8
TCP Keep Alive
7
New Password
*****
Firmware Version
610
Data Packet Type
UDP
Auto connect after reboot
TCP
Management Packet Type
Broadcast
Multicast
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
Power On Mode
Trycom Checksum Setting
Disable
Power On Mode Output
0
Safe On Mode Output
0
Digital Output Status
ff
Digital Input Status
Digital Input CH1
Digital Input CH2
Digital Input CH3
Digital Input CH4
Digital Input CH5
Digital Input CH6
Digital Input CH7
Digital Input CH8
Digital Input CH9
Digital Input CH10
Digital Input CH11
Digital Input CH12
Digital Input CH13
Digital Input CH14
Digital Input CH15
Digital Input CH16
Submit
Save
Load

- **Device Name:**

Device server name, Maximum 10 chars.

- **Model Name:**

TRP-C24H.

- **MAC Address**

The TRP-C24H 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-C24H will timeout then back to factory setting IP=192.168.1.1.

- **Server Listening IP**

The TRP-C24H IP address.

- **Server Data listening port**

TRP-C24H 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/Pulse:** Fill in the value 24 that will enable the mono stable function.
- **Maximum Connection: 1~16**

The function allows the user to configure the TRP-C24H in Server mode, adjust 1~16 TCP client host connections.

- **TCP Keep Alive: 1~7 /Minute**

When TRP-C24H in Server or Client mode, the TRP-C24H without data over the 1~7 Min setting value,

The TRP-C24H will be disconnecting TCP port.

- **New Password: 1234**

It only accepts value from1000~9999 integer, if input the wrong password over 5 times, the WEB-Page will lock until the TRP-C24H 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-C24H Power On.

Save ON Mode: The digital output state when the TRP-C24H 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 and 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-C24H 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-C24H firmware.

4-4.Using the WEB Server mode

The Web Server can be used to configure the TRP-C24H from any web browser software (such as I.E).

In Internet Explorer type the IP Address of the TRP-C24H into the address field and press the Enter key. The following window will appear:

Example:

If TRP-C24H IP is 192.168.1.1 Please Input the 192.168.1.1 then enters at web address, the web-page will appear.

http://www.trycom.com.tw

TRP-C24H

WDT-inside

Isolated 16 CH. O.C Modbus TCP Module

TRP-C24H Setting

Slave ID (1~255)	1
LED Display Panel Setting	OFF
Polling Setting	High
System Mode	Power On Mo
Trycom Checksum	Disable
Power On Mode Output	0000
Safe Mode Output	0000
Digital Output Status	0000

Network Settings

	Enable DHCP
Static IP Address	192.168.1.1
Static Subnet Mask	255.255.255.0
Static Default Gateway	192.168.1.3
Static DNS Server	168.95.1.1
Connection Type	TCP
Max Connection(1~16)	8
Plus(24 Enable)	0
Master/Slave	Master
Master:	
Master Listening Port	502
Slave:	
Slave IP Address	0.0.0.0
Slave Port	502

New Password (10000~65535) .....

Enable Reboot

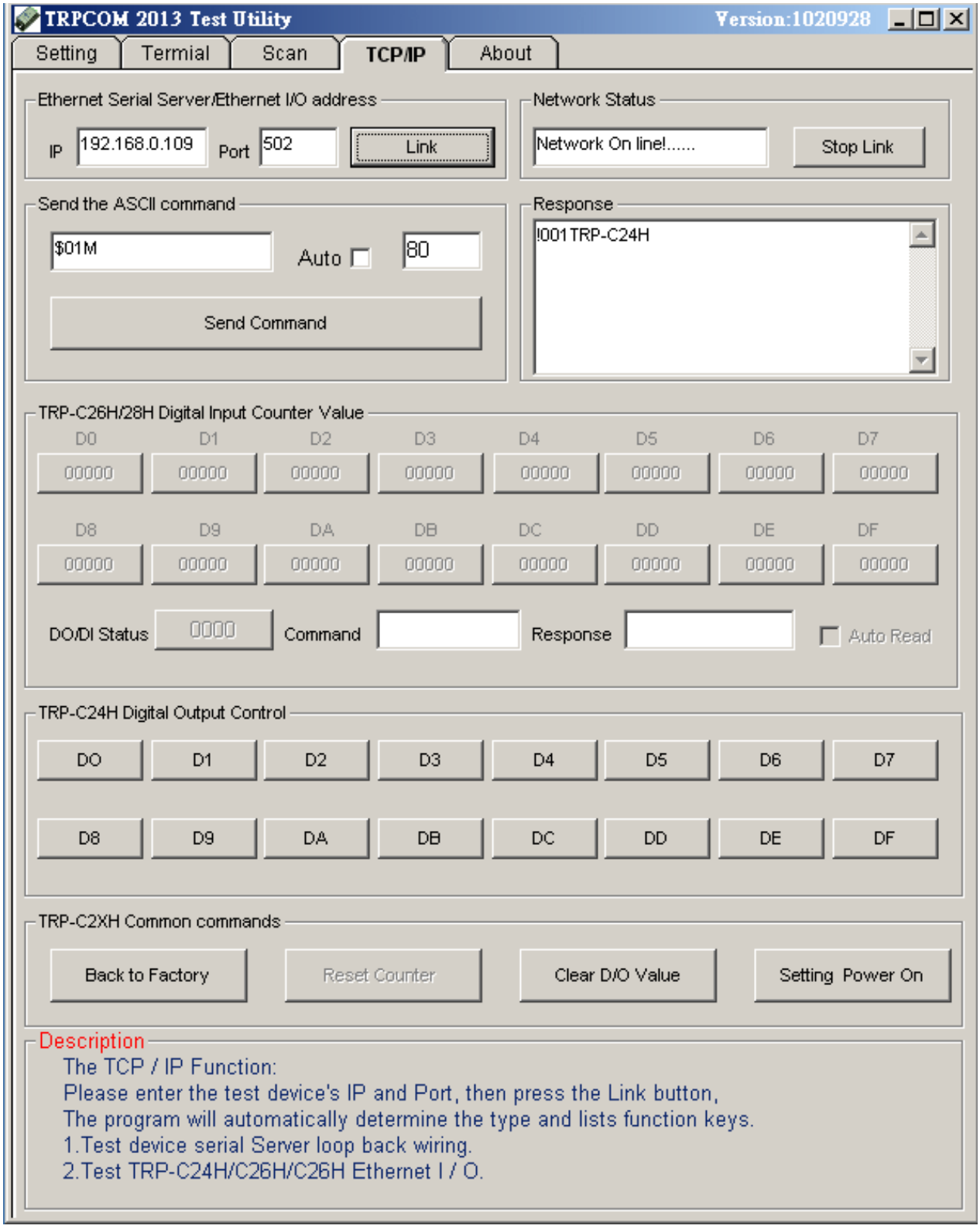
Apply Reset

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-C24H is able to setup 1~ 8 sets host IP, only these host IP can access the TRP-C24H.

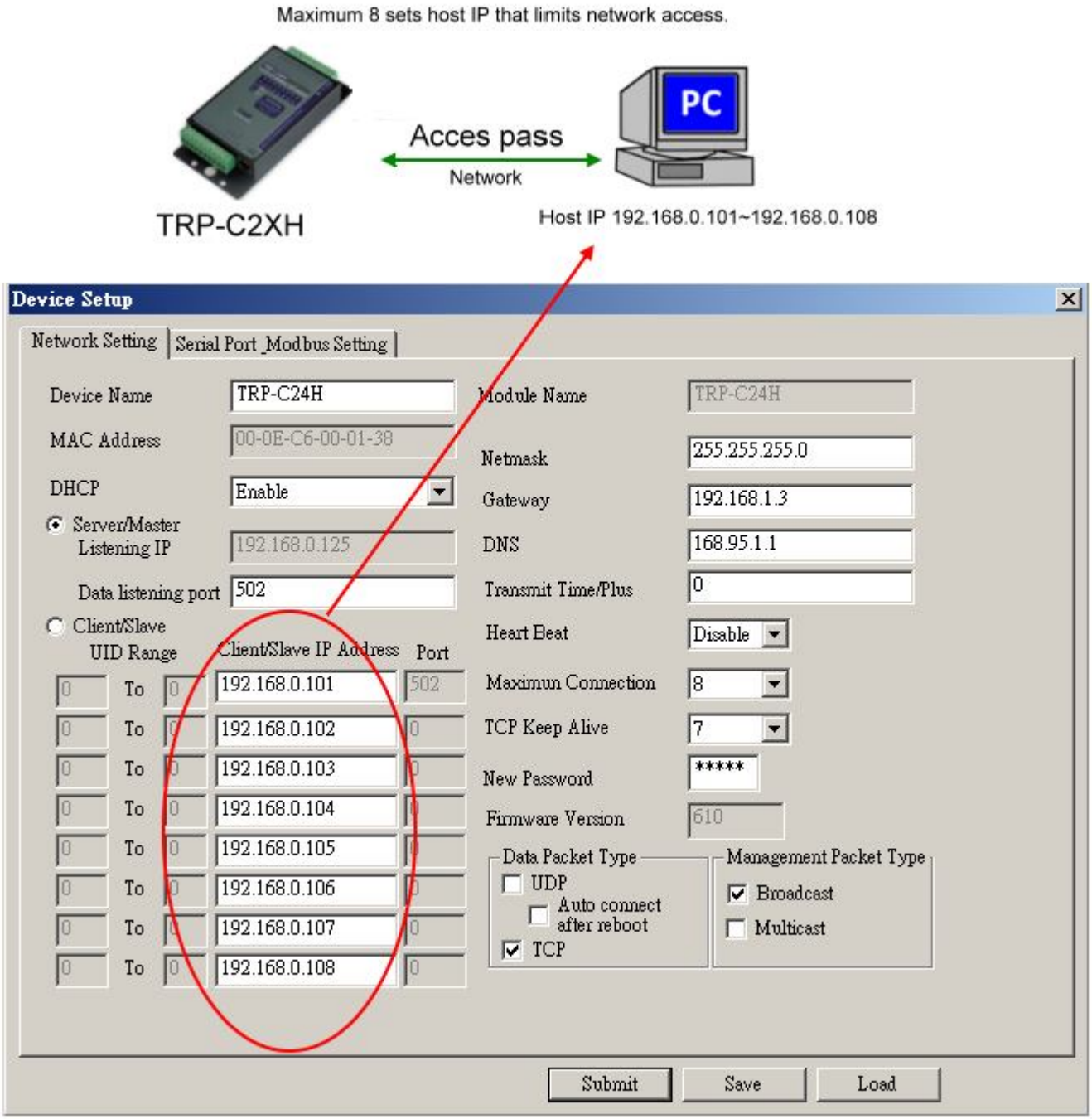
The TRP-C24H actually can make connections with any Host IP,

Once the user has filled in the Host IP, these IP are valid, the TRP-C24H will be pass with them. Other host IP will not pass.

Refer to the following example illustrates.

*Please make sure the firmware version is 610 above,

and the DSM utility version is 6.07 above.



5. TRP-ASCII Communication Protocol

TRP-C24H 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
%IDNNPP00DD(CHK)(cr)	Setting module configuration	See 5-1
#IDPPDD (CHK)(cr)	Digital Output Data	See 5-2
$ID6 (CHK)(cr)	Read digital input/output status	See 5-3
$IDF (CHK)(cr)	Read the module's firmware version	See 5-4
$IDM (CHK)(cr)	Read the module's name	See 5-5
$01RS(CHK)(cr)	Reset Module	See 5-6
~IDONN (CHK)(cr)	Change the module's name	See 5-7
~IDLEDA(CHK)(cr)	Set the module's LED operating mode	See 5-8
~IDWE (CHK)(cr)	Enable watchdog	See 5-9
~IDWD (CHK)(cr)	Disable watchdog	See 5-10
~IDWR (CHK)(cr)	Read watchdog status	See 5-11
~ID4V (CHK)(cr)	Read power on/Safe on mode	See 5-12
~ID5V (CHK)(cr)	Store Power on/ Save on mode	See 5-13
~**(CHK)(cr)	Read Module ID and mode name	See 5-14
#**(CHK)(cr)	Back to factory	See 5-15

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	*Checksum 0:Disable 1:Enable*	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.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~DO7 low byte data (Multi-Channel) :0B high byte data D8-D15(Multi-Channel) :1L/ AL: DO0~DO7 low byte data (Single-Channel) L=0~7 :BL : high byte dataD8-D15(Single-Channel) L=0~7
	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 :"#010A12"…..Data="12":DO0~DO7="10000100"…1=Output Enable.

Response:">"……. Command valid.

EX: Send command:"#010B34"…..Data="34":DO8~DO15="110000010" …1=Output Enable.

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"….. Data="01":DO0="1"….1=Output Enable.

Response:">"……. Command valid.

Send command:"#011201"….. Data="01":DO2="1". ..1=Output Enable.

Response:">"……. Command valid.

Send command:#01B301……Data="00":DO11="1"... 1=Output Enable.

Response:">"……..Command valid.

5-3.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	!IDLLHH(CHK)(cr)	LL=DO0~DO7 status, HH=DO8~DO15 status.
	?ID(CHK) (cr)	Command Invalid

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

Response:”!011234”…….DO1,DO5,DO8,DO9 Output Enable.

5-4. Read 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-C24H’s version.

Response:”!01C24H090113”……. The TRP-C24H’s version date is “01/09/2013”.

5-5. 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-C24H's name.

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

5-6. 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!

5-7. Change 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-C24H’s name.

Response:”!01123456789”……. The module’s name is “TRPC24H”.

5-8. 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.

5-9 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.

5-10 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!

5-11 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.

5-12 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	!IDLLHH (CHK)(cr)	HH:DO15~DO8 LL:DO7~DO0
	?ID(CHK)(cr)	Command Invalid

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

.. Response:" !011234"……. . Command valid.

5-13 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:"#010A33"…Digital output DO0~DO7= "11001100"

Send Command:"#010B17"… Digital output DO8~DOF= "10001110"

Send Command: "~015P"…….Save Power on.

Send Command:"~014P" …….Read Power on

Response:"!013317".

5-14 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".

5-15 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!

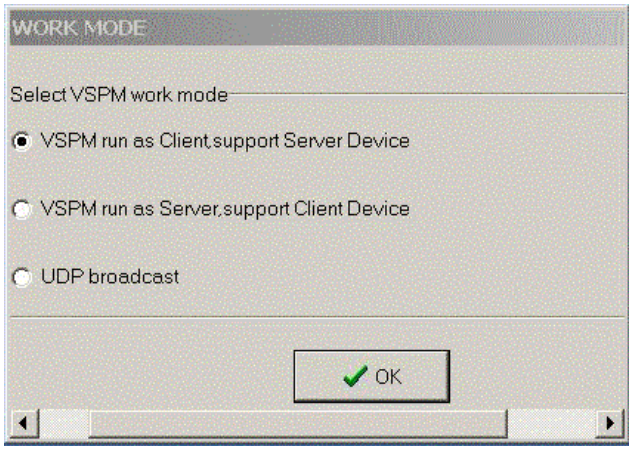
Install the Virtual-COM

Step 1. Insert the TRP-Serial CD and find the TRP-C24H folder.

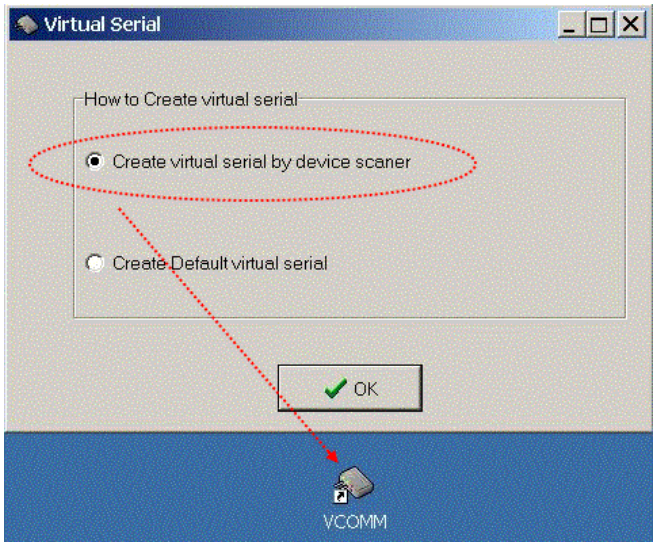
Step 2.Click “Vcomm.exe” icon then install Virtual-COM utility.

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

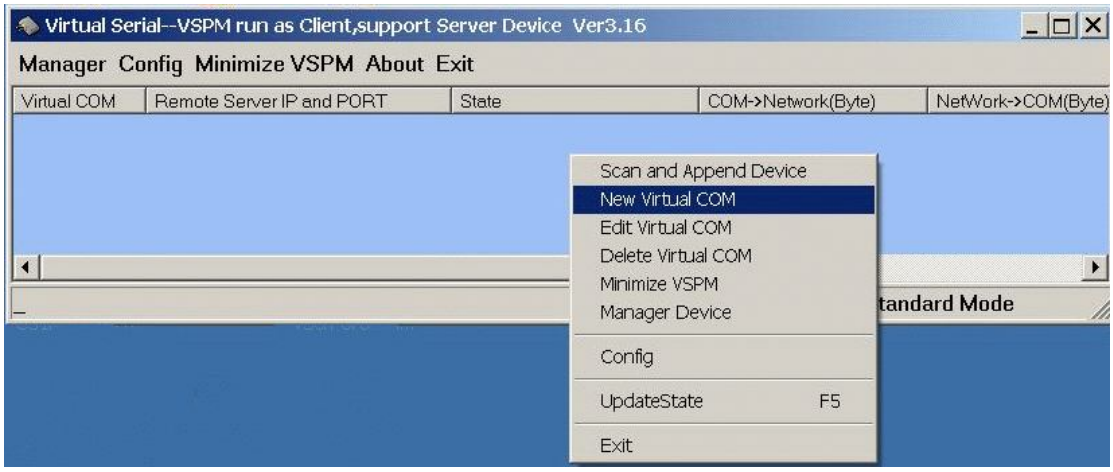
Step3. Click “OK” button and select “VSP run as Client support Server Device”.



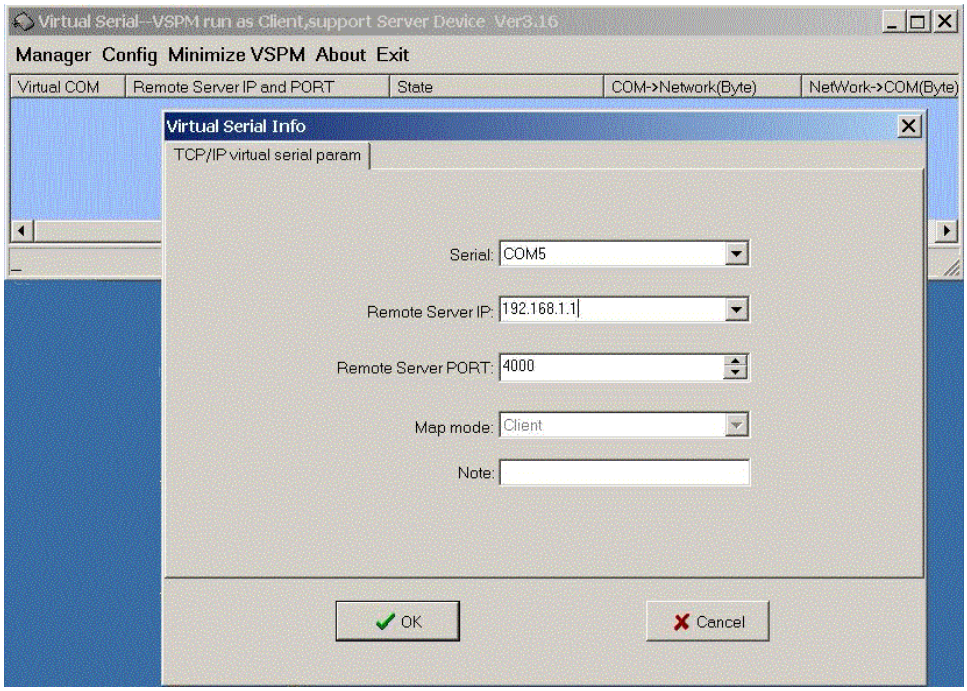
Step4. Select “Create virtual serial by device scanner”, then press “OK”



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



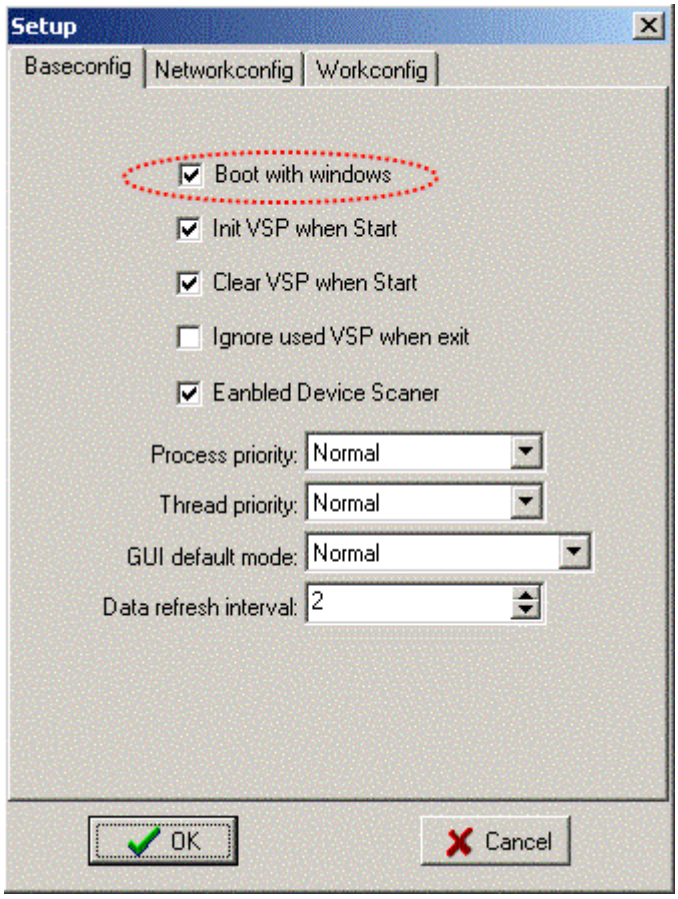
Step6. Select “Select Serial Port” and input TRP-C24H IP and port then press “OK”.



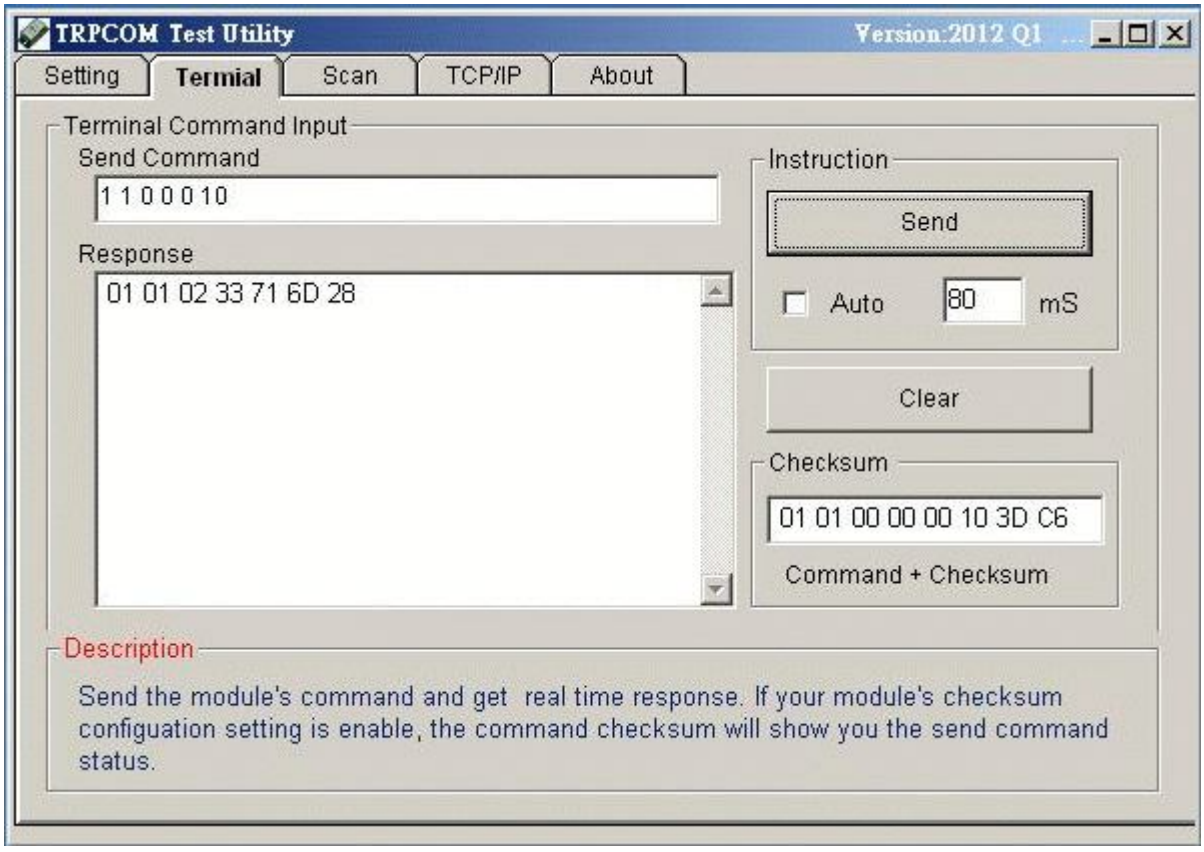
Step7. If Virtual-Com setting success, the display will appear bellow.

Step8. Run TRPCOM utility then select virtual-com port make a TRP-C24H command.

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



** TRP-C24H 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

Command List	Function Description	C24H Description	Index
ID 01 00 SS 00 NN	Read Coils	Read digital output readback value	6-1
ID 03 00 SS 00 NN	Read Holding Registers	Read the mono stable time period value	6-2
ID 05 00 NN DD 00	Write Single Coil	Write Single channel output data	6-3
ID 0F 00 SS 00 NN 01 XX	Write Coils	Write multi channel output data	6-4
ID 06 00 SS DD NN 01 XX	Write single register	Write the mono-stable time period value	6-5
ID 16 00 SS 00 NN 01	Write multiple registers	Write the multi mono-stable time period value	6-6

Additional Modbus TCP Command List

Command List	Function Description	Index
ID 46 00 00	Read the module's name	6-7
ID 46 04 IP 00 00 00	Setting module new ID	6-8
ID 46 07 00	Read the module's Firmware	6-9
ID 46 0B WS 00	Enable/Disable watchdog.	6-10
ID 46 0C 00	Read watchdog status	6-11
ID 46 0D 0S 00	Set up LED ON/OFF	6-12

6-1. Read Coils

Read digital 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, 0x0000~0x000F
	00 NN	2 Bytes	Output channel number,0x0001~0x0010
Response	ID 01 BC LL HH	5 Bytes	ID=1~247 01:Function Code BC: Byte counter LL HH: Digital 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 10"…..Read DO0~DOF Output read back value.

Response:" 01 01 02 21 43"….. 2bye,DO7~DO0=21,DOF~DO8=43.

6-2. Read Holding Registers

Read the mono stable time period value

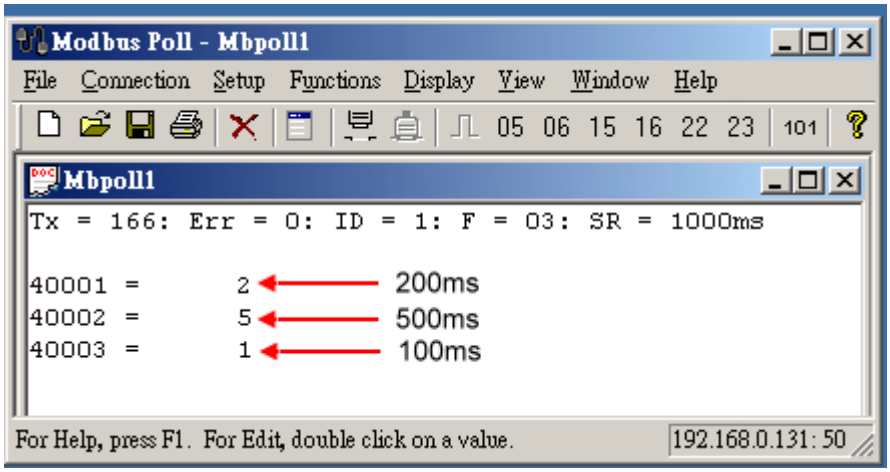
Command	ID 03 00 SS 00 NN		
Syntax Description	ID	1Byte	Address of setting module 1~247
	03	1 Byte	Function Code
	00 SS	2 Bytes	Start channel number, 0x0000~0x000F
	00 NN	2 Bytes	Output channel number,0x0001~0x0010
Response	ID 03 BC NN NN	5 Bytes	ID=1~247 03:Function Code BC: Byte counter NN NN: Unit:100ms
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 03 "…..Read DO0~DO3 read time period value .

Response:" 01 03 06 00 02 00 05 00 01 "….. Byes Counter=6.

DO0 =200ms,DO1=500ms,DO3=100ms.



6-3. 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, 0x0000~0x000F
	DD 00	2 Bytes	Write output data DD=00 Output Disable DD=FF Output Enable
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

Mono-Stable status:

Example:

Send command :" 01 05 00 06 FF 00 "…..DO6 Output Enable

Response:" 01 05 00 06 FF 00"…Command Valid.

*When the DO6 enable which will keep on until 600ms then off.

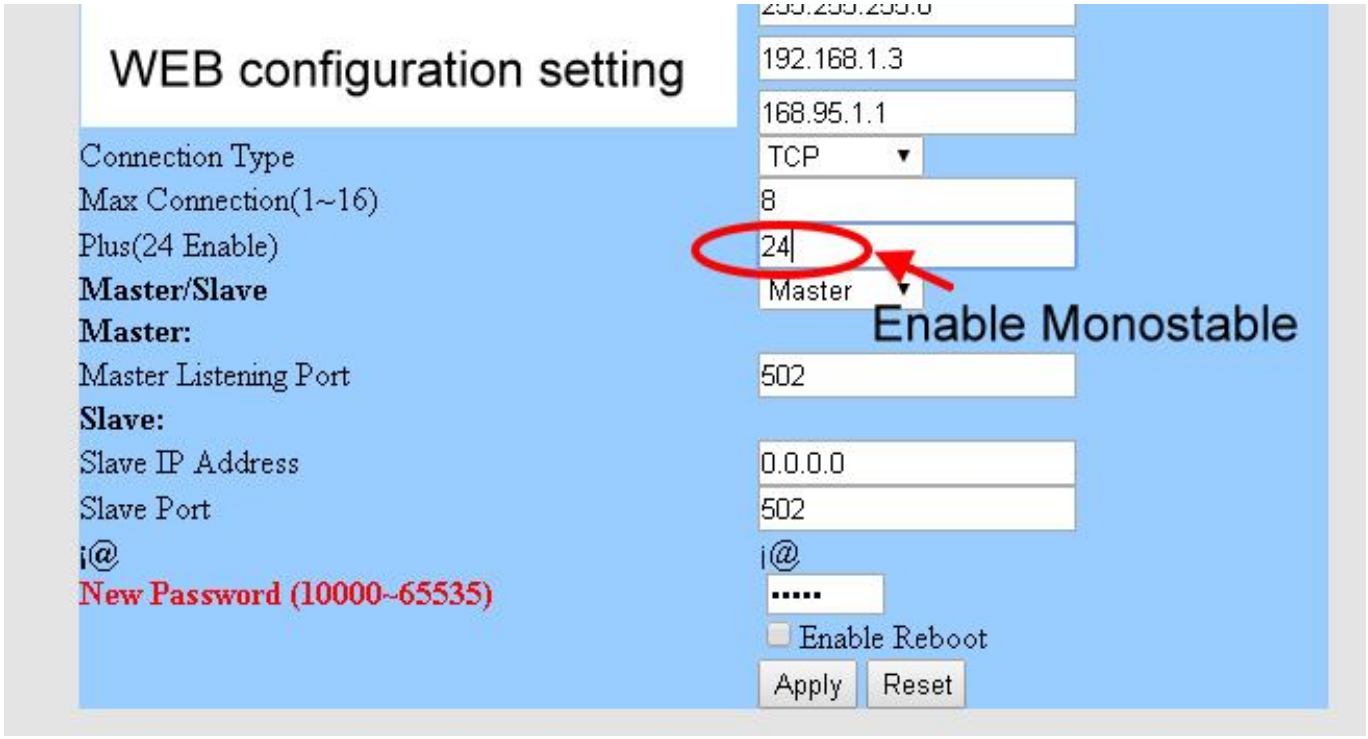
If the holding register =0 that is normal DO output.

If the holding register>0 and transmit time/pulse=24 that is mono-stable available.

How to configuration mono-stable

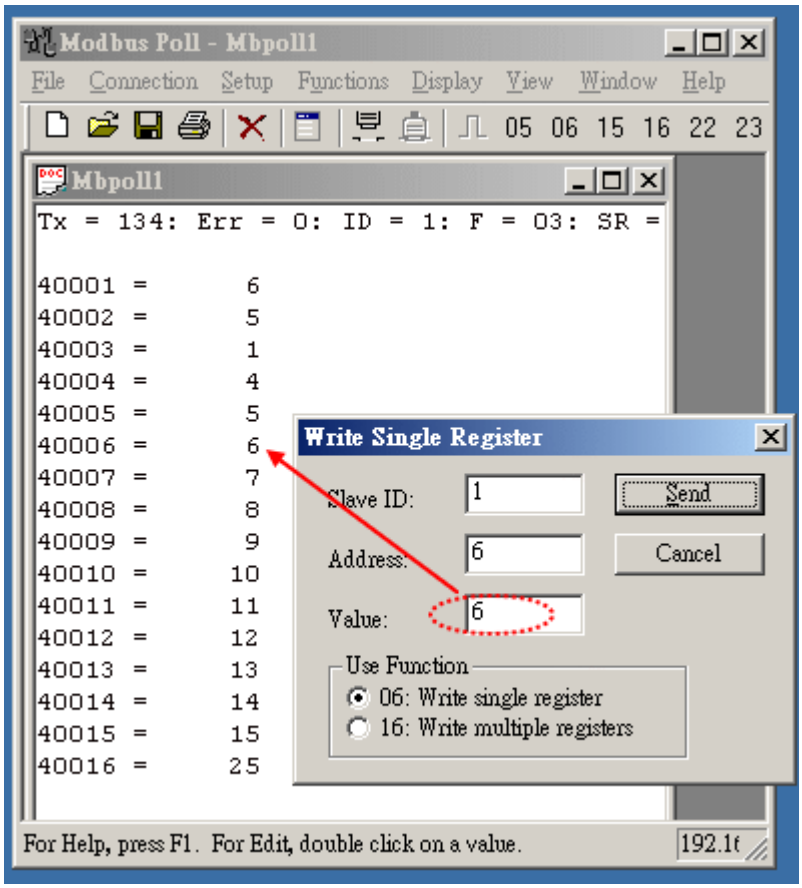
Step1:

Please find the item "Pulse" then fill in the value "24" from the DSM utility or web browser .

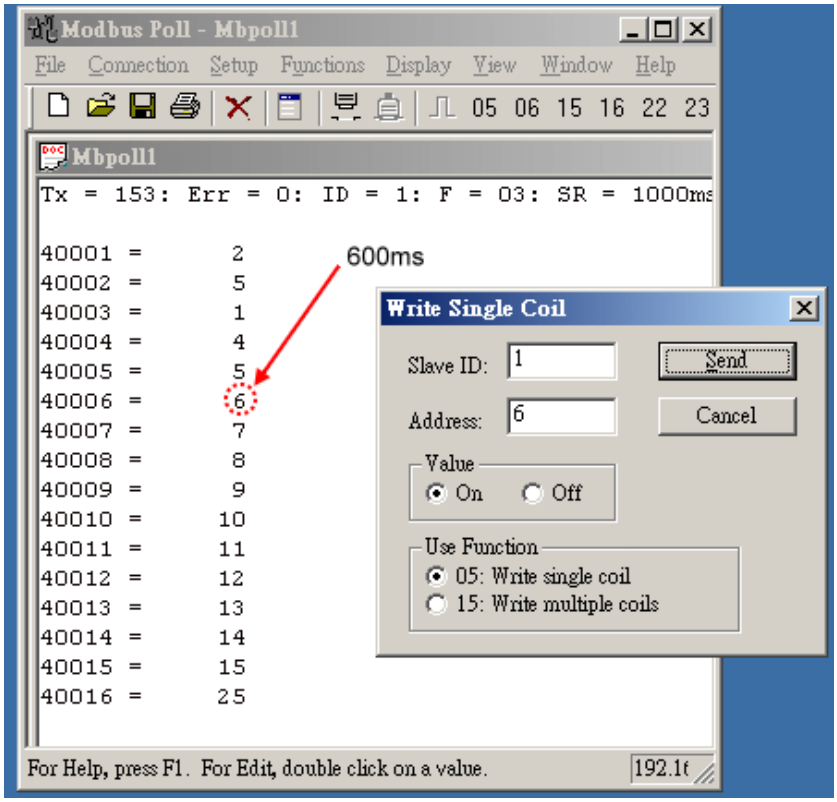


Step2: Using the function 3 then fill in the value.

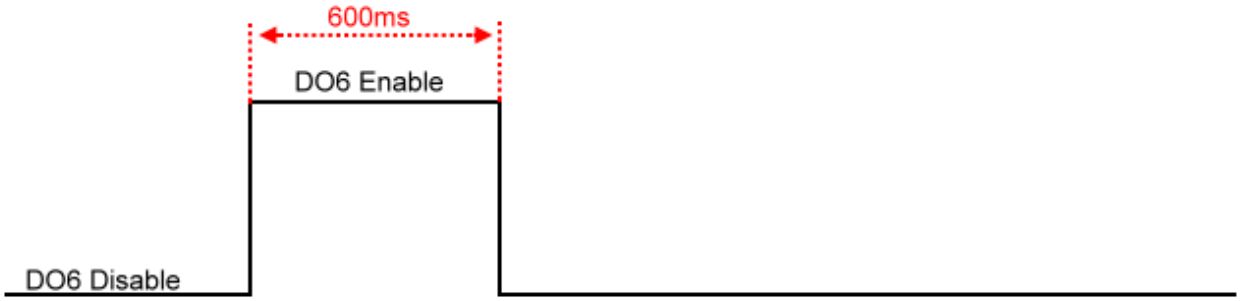
*The value will be auto save to the EEPRON of TRP-C24H.



Step3: Using the function 5 then click the “On” then “Send”.



Step4: The DO6 will be keep on until 600ms.



6-4. Write Coils

Write multi channel output data

Command	ID 0F 00 SS 00 NN BC LL HH		
Syntax Description	ID	1Byte	Address of setting module 1~247
	0F	1 Byte	Function Code
	00 SS	2 Bytes	Start channel number, 0x0000~0x000F
	00 NN	2 Bytes	Output channel number=0x0001~0x0010
	BC	1 Bytes	Byte counter
	LL HH	2 Bytes	Write output data LL=00~FF HH=00~FF
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 10 02 12 34"…Output DO Data DO0~DO7=21,DO8~DOF=43,Byte Counter=02

Response:"01 0F 00 00 00 10"…Command Valid.

6-5. Write single register

Write the mono-stable time period 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, 0x0000~0x000F
	DD DD	2 Bytes	Write Counter Vaile DDDD=0x0000~0xFFFF
Response	ID 06 00 SS DD 00	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 09 1A 37 "…..Write DO9 time period value=1A37.

Response:"01 06 00 09 1A 37 "….. Command Valid.

6-6. 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, 0x0000~0x000F
	00 CN	2 Bytes	Counter Number =0x0001~0x0010
	BC	1 Byte	Byte Counter
	DD DD…….	2~32 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 03 06 00 0A 00 14 00 1E "… Write DO 1~3 Counter Value.

Response:"01 10 00 00 00 03"….. Command Valid.

6-7.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 24 00	ID 46 00 00 ….Module command Line 0C 24 :Module's Name is C24
	ID C6 00	ID C6 C6:Function Code 00: Reserved code

EX: Send Command:"01 46 00 00"…….Read the TRP-C24's name.

Response:"01 46 00 00 0C 24 00 "……Module's name is C24.

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

6-8. 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 00 ….Command 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.

6-9.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 07 ……Module 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 01 10 00"…Firmware Version 01/10/2013.

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

6-10.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 00 ……Command 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.

6-11.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 0C ……Module command line WT=00 Watchdog Disable WT=01 Watchdog Enable
	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 01 ….Watchdog enable.

Error Response: “01 C6 00”…Error code.

6-12.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 0D ……Command 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.

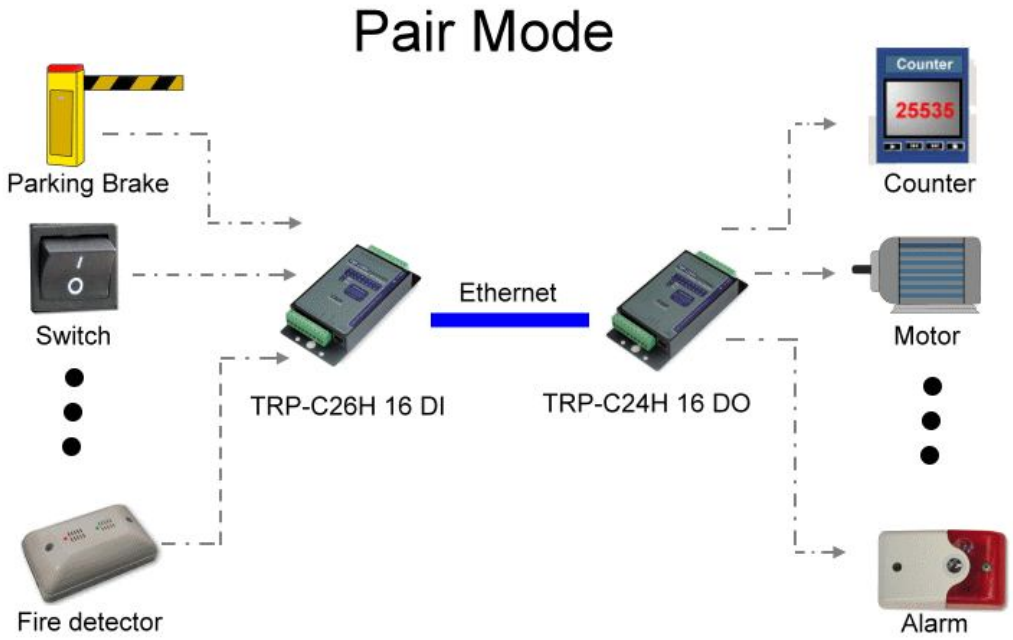
Error Response: “01 C6 00”…Error code.

7. Pair Mode

TRP-C24H support pairing mode with the TRP-C26H, Applied to 16 digital channels input and 16 digital 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-C24H sustained in connection automatically, regardless of any party the power to re-open or network disconnection to ensure normal transmission.

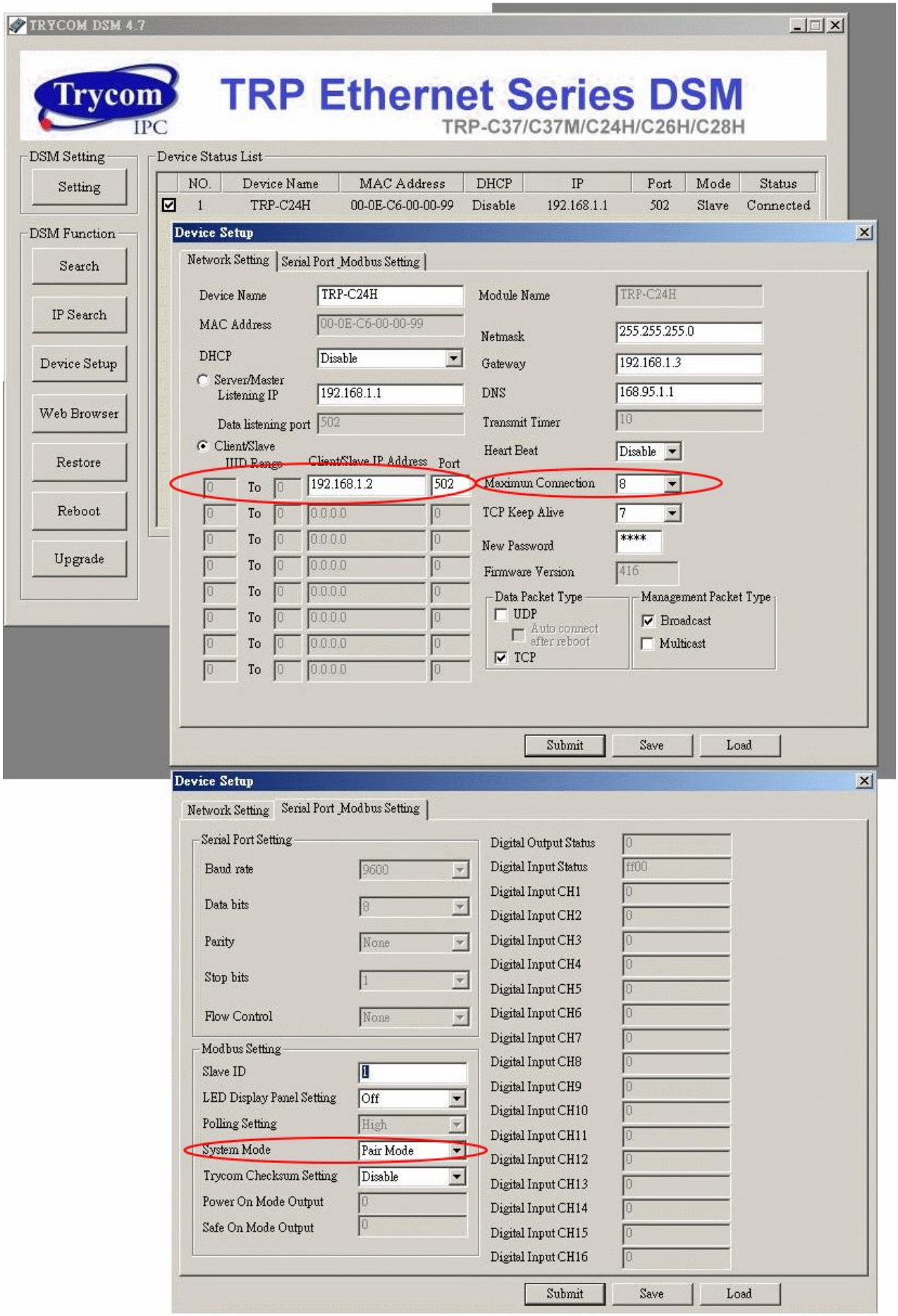
product application are as follows:



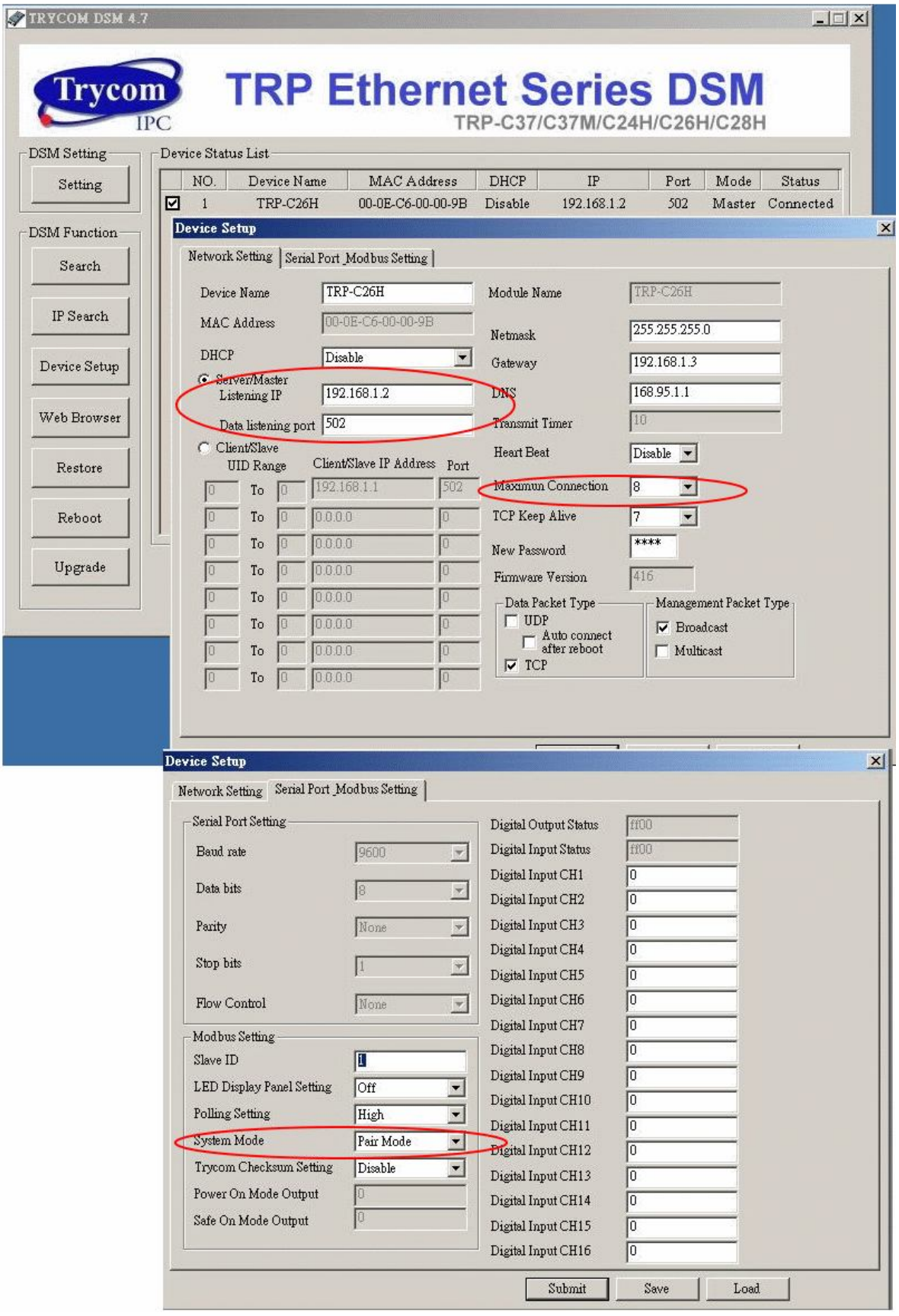
7-1 Parameter setting example

Perform DSM utility to change the parameters

- **TRP-C24H parameter setting**



- **TRP-C26H 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-C26H 00-0E-C6-00-00-9B Disable 192.168.1.2 502 Master Connected
Device Setup
Network Setting
Serial Port _Modbus Setting
Device Name TRP-C26H
MAC Address 00-0E-C6-00-00-9B
DHCP Disable
Server/Master
Listening IP 192.168.1.2
Data listening port 502
Client/Slave
UID Range
Client/Slave IP Address
Port
Module Name TRP-C26H
Netmask 255.255.255.0
Gateway 192.168.1.3
DNS 168.95.1.1
Transmit Timer 10
Heart Beat Disable
Maximun Connection 8
TCP Keep Alive 7
New Password ****
Firmware Version 416
Data Packet Type
UDP
Auto connect after reboot
TCP
Management Packet Type
Broadcast
Multicast
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 ff00
Digital Input Status ff00
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

8. Application