# TRP-C37M User's Manual

# **MODBUS TCP to RTU/ASCII Gateway**



# **User's Manual**

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# 1. Introduction

The TRP-C37M which is able to analyzes the protocols between Modbus TCP and Modbus RTU / ASCII. It able to assign the UID of Modbus TCP slave from Modbus Serial Master.

The TRP-C37M which is suitable industrial environment Ethernet serial server, wide range power input and serial communicate protection, It Built-in surge, over current, over voltage ensure RS422 / 485 serial communication quality; if user lost password that can fast back to default by external switch.

The TRP-C37M can as serial server that support 3 operates mode, "Direct IP Mode", "Virtual COM Mode", and "Paired Mode", these modes are supported Modbus RTU / ASCII protocols.

The TRP-C37M offers maximum connection 16 host clients to link the one serial server, it is easy to operate in Modscan32 and Modbus Poll many application uses Virtual-COM mode and Pair Mode.

In network security, the TRP-C37M is able to set up 8 sets host IP, only these host IP can access the TRP-C37M.

The TRP-C37M provides a watchdog timer function, The Watchdog timer allows the system to automatically recover from a system crash. When the TRP-C37M MCU stop working correctly, the watchdog timer waits for a preset period of time, and performs a hardware reset .

When The TRP-C37M working at unstable voltage industrial environment, the power detection circuit can prevent the power fail cause of the boot fail then auto re-boot.

The TRP-C37M will be auto detects function which will be auto connect when the LAN disconnect then re-connect or power off then power on.

# 1-1 Features

- Wide input range DC power supply.
- Built-In watchdog function prevents system boot fail.
- Support Auto-MDIX twisted pair crossover detection and Auto-Correction.
- Modbus Type support TCP Master to Serial Slave and TCP Slave to Serial Master.
- Support 1 serial master to 8 TCP slave ,each TCP slave can free set up UID from 1~64.
- Compatible with Modscan32 ,Modbus Poll,CAS Modbus Scanner and SCADA .. Application.
- Support virtual com maximum connection 16 client.
- Maximum 8 sets host IP that limits network access.
- Surge protection and over current and over voltage on RS-422/485 data lines.
- Support baud rate from1200~921600Kbps.

- Auto switching RS-232/422/485 signal interface.
- Fully compatible with Ethernet and TCP/IP protocol.
- Supports 10/100 Mbps Ethernet.
- Power/Link/UART RX/UART TX mode LED indicator.
- Heart Beat function ensures a reliable communicating connection.
- Auto reconnection when power or Ethernet fail.
- Back to factory configuration by external switch.
- Support configuration by serial console.
- Update the firmware from LAN.
- Dual power input select from screw terminal or DC-Jack.

#### 1-2 Specification

- Power Input Voltage: DC +10V to +30V.
- LAN: Auto-MDIX, 10/100 Mbps Auto-detecting.
- RS-232: TX, RX, RTS, CTS, DTR, DSR, DCD, GND.
- RS485 signal: differential 2 half-duplex wires (DATA+, DATA-).
- RS422 signal: differential 4 full-duplex wires.(TX+,RX+,TX-,RX-)
- Baud Rate: 1200,2400,4800,9600,19200,38400,57600,115200,921600 K bps.
- Parity: none, even, odd.
- Data Bits: 5, 6, 7 or 8.
- Stop Bits: 1, 1.5 or 2.
- Modbus TCP Type: TCP Master to Serial Slave, TCP Slave to Serial Master.
- TCP Slave to Serial Master Mode: Maximum 8 TCP Port. UID Range:1~64.
- Virtual COM drivers for WIN 98/2000/XP/VISTA/2003/7/8/8.1 and WIN10.
- Virtual-Com mode support RS232 TXD,RXD,GND/RS422 TX+,TX-,RX+,RX-/RS485 D+,D-.
- Power supply: Screw terminal, or DC jack.
- Serial interface: +/-15 KV ESD.
- RS422/485 interface: Surge, over current, over voltage protection.
- RS422/485 interface: Industrial plug-in screw terminal.
- Plug-in screw terminal wiring: Accepts AWG #12 ~30 wires.
- Power consumption: 12V/140mA.
- Operating Temperature: -10 to 65 °C.
- Humidity: 0~90% Non-Condensing.
- Dimensions: 151(L)\*75(W)\*26(H) mm.
- Weight: 395g with packing.

# 2. Hardware Description

The following information is provided to give the user an understanding of how to connect the TRP-C37M to the LAN and serial device. A review of the switch settings and the functionality of the LED's are also provided.

#### 2-1. Panel layout



#### 2-2. LED indicator

**PWR LED**: System is ready.(Blinking)

LINK LED: Ethernet cable connection and data active.

**TX/RX LED**: UART Transiting/Receiving Indicator.

### 2-3. Power Input

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

There are two types power input.

a. Use the plug of power adaptor than plug in the DC jack on the side.

This approach also allows the user to provide additional power to other devices using the terminal from EU regulation.

b .Wiring terminals on the EU regulation

# 2-4. Reset Button

Push the reset button will Re-Boot.

# 2-5. DIP Switches



OFF OFF :Modbus RTU/Direct IP ON OFF :Paired Mode/Virtual COM OFF ON :Modbus ASCII ON ON :Back to Factory

# 2-6. How to back factory by external DIP Switches 1,2

Power off then adjusts the SW 1, 2 to ON ON position then power on until the PWR LED blinking. Adjusts the SW 1,2 to OFF,OFF.

2-7.Factory Setting

Device Setup			×
Network Setting Seria	I Port Setting		
Device Name	TRP-C37M	Module Name	TRP-C37M
MAC Address	00-0E-C6-00-02-04	Netmask	255.255.255.0
DHCP	Enable	Gateway	192.168.1.3
<ul> <li>Server/Master Listening IP</li> </ul>	192.168.1.1	DNS Server	168.95.1.1
Data listening po	ort 502	Transmit Timer (ms)	10
C Client/Slave UID Range	Client/Slave IP Address Port	Heart Beat	Disable 💌
1 To 8	0.0.0.0 502	Maximun Connection	1 💌
9 <b>To</b> 16	0.0.0.0 502	TCP Keep Alive Timer	7 💌
17 To 24	0.0.0.0 502	– New Password	Juliciak
25 <b>To</b> 32	0.0.0.0 502	- Firmware Version	352
33 <b>To</b> 40	0.0.0.0 502	– <sub>–</sub> Data Packet Type ––––	Management Packet Type
41 To 48	0.0.0.0 502	UDP	✓ Broadcast
49 <b>To</b> 56	0.0.0.0	after reboot	Multicast
57 <b>To</b> 64	0.0.0.0 502		
		Submit Sevo	
Network Setting Serial	Port Setting		
Baud rate	9600		
Data bits	3		
Parity 1	None		

2-6. DB-9 Pin male p	in assignment
----------------------	---------------

None

•

•

1

Stop bits

Flow Control



# 3. Install TRP-C37M Hardware

STEP1: Connect power source with TRP-C37M, the PWR LED will blinking.

STEP2: Connect TRP-C37M with internet port by RJ45 LAN cable.
 If the cable is properly connected the "LINK" LED will light up.
 \*The TRP-C37M Support Auto-MDIX, A straight-through or crossover Ethernet cable can be used to make a connection directly to the HUB/Router/PC.
 STEP3: Connect TRP-C37M with RS232 or RS422/485 RTU/ASCII of serial device.

The TRP-C37M has one DB-9 male connectors for RS232 connection and a screw terminal connector for RS422/485 connection.

The DB-9 serial port is DTE interface. A null modem cable is required to make a connection between the COM port on a PC and the TRP-C37M serial port. A straight through cable is required to connect the TRP-C37M serial port to a DCE device. The screw terminal connector accepts AWG #12 ~30 wires.

#### 3-1. RS485 Wiring



#### 3-2. RS422 Wiring



## 3-3. RS232 Wiring

The RS-232 supports 8 channels plus Signal Ground and is configured as DTE like a computer. Signals are single ended and referenced to Ground. To use handshaking, Flow Control must be set to RTS/CTS during Configuration. Refer to the Pin out table for connections.



# 4. How to configure TRP-C37M

There are 3 ways to access the Server Properties and program the TRP-C37M. **a.TRP-C37X DSM utility.** 

TRYCOM DSM 6.02	TRP-Etherne	■IX et Series DSM 37/C37M/C24H/C26H/C28H/C29H/C68H
DSM Setting Setting DSM Function	Device Status List NO. Device Name MAC Address ☑ 1 TRP-C37M 00-0E-C6-00-02-54 Device Setup	DHCP IP Port Mode Status A Disable 192.168.0.123 502 Master Idle
Search IP Search	Network Setting Serial Port Modbus Setting Device Name TRP-C37M MAC Address 00-0E-C6-00-02-5A	Module Name TRP-C37M Netmask 255.255.255.0
Device Setup Web Browser	DHCP Disable	Gateway         192.168.1.3           DNS         168.95.1.1           Transmit Time/Plus         3
Restore	UID Range         Client/Slave IP Address         Port           0         To         0         0.0.0         502           0         To         0         0.0.0         502	Heart Beat Disable Maximun Connection 16 TCP Keep Alive 7 TCP Keep Alive
Upgrade	0         To         0         00000         0           0         To         0         00000         0	New Password (0~65535) Firmware Version 601 Data Packet Type Management Packet Type UDP Minor Broadcast Auto connect after reboot V TCP Multicast
		Submit Save Load

http://www.trycom.com.tw

	WDT-inside	Serv	a
Serial Set	tinas		
Data Baud	l Rate	9600 🔻	
Data Bits		8 🔻	
Data Pariti	iy	None 🔻	
Stop Bits		1 🔻	
Flow Contr	rol	None 🔹	
Network S	Settings		
		Enable DHCP	
Static IP A	ddress	192.168.0.123	
Static Sub	net Mask	255.255.255.0	
Static Defa	ault Gateway	192.168.1.3	
Static DNS	S Server	168.95.1.1	
Connection	n Type	TCP 🔹	
Transmit T	ïmer	3	
Maximum	Connection	16	
Master/Sla	ave	Master 🔹	
Master:			
Master Lis	tening Port	502	
Slave:			
Slave IP A	ddress	0.0.0.0	
Slave Port		502	
New Pass	sword	••••• (0~65535) Enable Reboot Apply Reset	

TRP-C37M

c. Serial Console

▲ D:\C37M_0~2\C-37M~1.E	XE Trycom Technology TRP-C37M Consolo	y Co.,Ltd e Ver 1.01	
	Firmware Verson	: 1706	
Device Name	· TRP-C37M	Netmask	· 255 255 255 0
MAC Address	00-0E-C6-00-01-E3	Gatwau	: 192.168.1.3
DHCP	Enable	DNS	: 168.95.1.1
Master/Server	: Enable	Transmit Timer	: 10
Listening IP	: 192.168.1.1	Heart Beat	: Disable
Listening Port	: 502	Maximun Connecti	on: 1
Slave/Client	: Disable	TCP Keep Alive	: 7
Destination IP	. 0.0.0.0	New Password	: XXXX
Destination Port	: 502	Serial Port S	etting
UDP	: Disable	Baud Rate	: 9600
Auto Connect	: Disable	Data Bits	: 8
TCP	: Enable	Parity	: NONE
Broadcast	: Enable	Stop Bits	: 1
Muticast	: Disable	Flow Control	: NONE
ote :	+ Pack E2 Saue E2	Slave Setting (ESC	) For Frit

95 D:`	\C37M	_0~:	2\C-37	M~1.EXE				_	
				Tr T	ycom Tech RP-C37M C	nology Console	Co.,Ltd Ver 1.01		
				F	irmware U	lerson :	1706		
	UID	Ra	nge	Slave IP	Address	Port			
1	1	То	8	0.0.0.0		502			
2	9	То	16	0.0.0.0		502			
3	17	То	24	0.0.0.0		502			
4	25	То	32	0.0.0.0		502			
5	33	То	40	0.0.0.0		502			
6	41	То	48	0.0.0.0		502			
7	49	То	56	0.0.0.0		502			
8	57	То	64	0.0.0.0		502			
Note									
(1)	Move	, (	∟) Se	lect,+ Bac	k,(ESC) F	or Main	Settinging,(E	SC) For Exit	

#### 4-1. Using TRP-C37X DSM Utility.

The "TRP-C37X DSM" software performs several functions:

- A: Searching for TRP-C37M connected to the network.
- B: Displaying and changing the configuration of TRP-C37M.
- C: Upgrading the TRP-C37M firmware.

\*Refer the Firmware upgrade help file.

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

# 4-2. Searching LAN for TRP-C37M

Once TRP-C37M is connected to the LAN the **TRP-C37X DSM** software will search it and display it in a window by name , IP address, Mac....Information.

			114 000/00	11031101/024	H/C20H/C20	H/C29F	1/C68H	
SM Setting	Device Stat	us List ———						
Setting	NO.	Device Name	MAC Address	DHCP	IP	Port	Mode	Status
SM Function Search								
IP Search								
Device Setup								
Web Browser								
Restore								
13								

## 4-3.Configuring Server Properties

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

Device Setup			×
Network Setting Serial Port_Modbus Set	ting		
Device Name	ŀ	Module Name	TRP-C37M
MAC Address 00-0E-C6-00-02	2-5A	Netmask	255.255.255.0
DHCP Disable	<b>•</b>	Gateway	192.168.1.3
Server/Master Listening IP 192.168.0.123		DNS	168.95.1.1
Data listening port 502		Transmit Time/Plus	3
C Client/Slave UID Range Client/Slave IP Ad	dress Port	Heart Beat	Disable 💌
0 To 0 0.0.0.0	502	Maximun Connection	16 💌
0 To 0 0.0.0.0	502	TCP Keep Alive	7 -
0 To 0 0.0.0.0	0	New Password	***** (0~65535)
0 To 0 0.0.0.0	0	Firmware Version	601
0 To 0 0.0.0.0	0	_ Data Packet Type ——	Management Packet Type
0 To 0 0.0.0.0	0	UDP	✓ Broadcast
0 To 0 0.0.0.0	0	after reboot	🗖 Multicast
0 To 0 0.0.0.0	0	lor ₪	
		Submit	Save Load

#### **Device Name**

Device server name, Maximum 10 chars.

#### MAC Address

The Device server 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-C37M will timeout then back to factory setting IP=192.168.1.1.

#### Master mode:

Listening IP: The Gateway IP address.

Listening port:RS232/422/485 port address.

#### Slave Mode:

**UID Range(1~64)** Using UID range to map a query from Modbus serial master with an UID within this range to an IP and port.

#### Slave IP Address and TCP port

The TRP-C37M maps a message from MODBUS serial master to a serial slave.

## 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 gatway 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:0~500 mS/Unit

Time interval to send out serial data char staring packet.

# \*The function main support serial data input to TRP-C37M RS232/422/485 port, if serial data is a mass of serial data over 1K Byte ,Trying to adjust the Timer to 200ms.

#### Hear Beat: Disable /Enable

When Hear Beat enable, it allows open a 5300 port, 5 sec interval to send out data char packet that provides a easy way to ensure the LAN communications between Host PC Client and gateway devices.

#### Maximum Connection: 1~16

The function allows the user to configure the TRP-C37M Serial Gateway to have up to 16 TCP client connections.

#### TCP Keep Alive: 1~7 /Minute

When TRP-C37M in Server mode, the TRP-C37M without data over the 1~7 Min setting value, The TRP-C37M will be disconnecting TCP.

When TRP-C37M in Client mode, the TRP-C37M without data over the 1~7 Min setting value, The TRP-C37M will be reconnecting TCP.

#### New Password: 12345

It only accepts value from0~65535 integer, if input the wrong password over 5 times, the WEB-Page will lock until the TRP-C37M re-boot.

#### **Firmware Version**

Firmware Version.

#### Serial Port setting

Baud Rate: UART Speed from 1200,2400,4800,9600,19200,38400,57600,115200,921600 k bps Data Bit: 5,6,7,8

Parity: Odd, Even, None

Stop Bits: 1, 1.5,2

Flow Control: Xon/Xoff, Hardware, None

#### Submit

Save the setting value to EEPROM.

Save

Save the setting value to external log file.

## Load

Load the setting value to external log file.

#### Upgrade

Upgrade the firmware

#### 4-4 using the WEB Server mode

The Web Server can be used to configure the TRP-C37M Serial Gateway from any web browser software (such as I.E).

In Internet Explorer type the IP Address of the Serial Gateway into the address field and press the **Enter** key. The following window will appear:

Example:

If TRP-C37M IP is 192.168.1.1 Please Input the 192.168.1.1 then enters at web address, the web-page will appear..... See diagram below.

🏄 TRP-Serial Ethernet to RS232/422/485 Serial Server - Microsoft Inte	ernet Explorer	<u>_ 문 X</u>
File Edit View Favorites Tools Help		A
🕝 Back 👻 🔊 👻 📓 🏠 🔎 Search   Favorites   🐼	🖕 🔁	
Address 🕘 http://192.168.1.1/		💌 🄁 Go 🛛 Links 🎽
	http://www.trycom.com.tw	<u> </u>
TRP-C37M WDT-inside	Ethernet to RS232/422/485 Serial Server	
Serial Settings		
Data Baud Rate	9600 💌	
Data Bits	8 💌	
Data Paritiy	None 💌	
Stop Bits	1 💌	
Flow Control	None 💌	
Network Settings		
a	□ 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 🔽	
Transmit Timer	10	
Mandan (Clark		
ê		🌍 Internet

#### 4-5 using the serial console mode

The serial console can be used to configure the TRP-C37M Serial Server from DB-9 connector link the HOST PC by null modem cable.

COM PORT		RS232 Port
	Null-MODEM CABLE	
	PIN2PIN3	1
Host PC	PIN5PIN5	

Insert the TRP-Serial CD then find the CONSOLE.exe, The CONSOLE file support all windows O.S include MS-DOS, Run the CONSOLE file and **Re-boot** the TRP-C37M then select correct host COM port number and data format.

••• D:\C37M_0~2\C-37M~1.	EX	E		
		Trycom Technology TRP-C37M Consol	y Co.,Ltd e Ver 1.01	
		Firmware Verson	: 1706	]
Device Name	:	TRP-C37M	Netmask	: 255.255.255.0
MAC Address	:	00-0E-C6-00-01-E3	Gatway	: 192.168.1.3
DHCP		Enable	DNS	: 168.95.1.1
Master/Server		Enable	Transmit Timer	: 10
Listening IP		192.168.1.1	Heart Beat	: Disable
Listening Port		502	Maximun Connect:	ion: 1
Slave/Client		Disable	TCP Keep Alive	: 7
Destination IP		0.0.0.0	New Password	: XXXX
Destination Por	t:	502	Serial Port	Setting
UDP		Disable	Baud Rate	: 9600
Auto Connect		Disable	Data Bits	: 8
TCP		Enable	Parity	: NONE
Broadcast		Enable	Stop Bits	: 1
Muticast		Disable	Flow Control	: NONE
Note : (↑↓) Move, (∟) Selec		+ Back,F2 Save ,F3 :	Slave Setting,(ES	C) For Exit

es D	0:\C37M_0~2\C-3	7M~1.EXE	
		Trycom Technology Co.,Ltd TRP-C37M Console Ver 1.01	
		Firmware Verson : 1706	
	UID Range	Slave IP Address Port	
1	1 To 8	0.0.0.0 502	
2	9 To 16	0.0.0.0 502	
3	17 To 24	0.0.0.0 502	
4	25 To 32	0.0.0.0 502	
5	33 To 40	0.0.0.0 502	
6	41 To 48	0.0.0 502	
7	49 <b>To</b> 56	0.0.0.0 502	
8	57 To 64	0.0.0.0 502	
Not	e ·		
100			
(11)	) Move (-) 3	Select + Back (ESC) For Main Settinging (ESC)	For Exit

#### 4-6 How to setup the network security

In network security, the TRP-C37M is able to setup 1~ 8 sets host IP, only these host IP can access the TRP-C37M.

The TRP-C37M actually can make connections with any Host IP,

Once the user has filled in the Host IP, these IP are valid, the TRP-C37M will be pass with them. Other host IP will not pass.

Refer to the following example illustrates.

\*Please make sure the firmware version is 601 above,

and the DSM utility version 6.02 above.

0

0

Maximum 8 sets host IP that limits network access. Pr Acces pass Network Host IP 192.168.0.101~192.168.0.108 TRP-C37M Gateway **Device** Setup Network Setting | Serial Port\_Modbus Setting | TRP-C37M TRP-C37M Module Name Device Name 00-0E-C6-00-02-5A MAC Address 255.255.255.0 Netmask DHCP Disable 192.168.1.3 Gateway Server/Master 192.168.0.123 DNS 168.95.1.1 Listening IP 3 Data listening port 502 Transmit Time/Plus ..... C Client/Slave Heart Beat Disable 💌 Client/Slave IF Address Port UID Range Maximun Connection 192.168.0.101 16 -To 192.168.0.102 TCP Keep Alive 7 0 To -\*\*\* 192.168.0.103 10 To New Password (0~65535) 192.168.0.104 To 601

Firmware Version 192.168.0.105 To Data Packet Type Management Packet Type UDP To 192.168.0.106 0 ✓ Broadcast Auto connect after reboot Multicast To 192.168.0.107 TCP 192.168.0.108 To Submit Save Load

×

# 5. Install the Virtual-COM

The Virtual-COM utility support TCP/IP \ UDP data mapping to the HOST PC virtual-com, it can creative Maximum 512~1024 virtual-com port, Support Server \ Client \ UDP mode, Support all Windows O.S include Win98/Win2000/WinXP/Vista/Win2003/WIN7,Support Multi-virtual com at different PC to one Serial Gateway; Support Ethernet and Internet , If TRP-C37M off line or power fail, The Virtual-Com utility will try to Reconnection.

Step 1. Adjust the switch position to "ON, OFF".

Step 2. Insert the TRP-Serial CD and find the TRP-C37M folder.

Step 3.Click "Vcomm.exe" icon then install Virtual-COM utility.

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



Step4. Click "OK" button and select "VSP run as Client support Server Device".



Step5. Select "Create virtual serial by device scanner", then press "OK"



#### Step6. Run VCOMM.exe then click right button select "New Virtual COM"

🦚 Virtual Se	rialVSPM run as Client,suppor	rt Server Devic	e Ver3.16		
Manager C	onfig Minimize VSPM About	t Exit			
Virtual COM	Remote Server IP and PORT	State	CON	1->Network(Byte)	NetWork->COM(Byte)
			Scan and Append New Virtual COM	d Device	
•			Edit Virtual COM Delete Virtual COI Minimize VSPM	м	▶ ■
	1994 1996 - 199		Manager Device	Id	ndard Mode
			UpdateState	F5	
			Exit		

Step7. Select "Select Serial Port" and input TRP-C37M IP and port then press "OK".

temote Server IP and PORT	State	COM->Network(Byte	) NetWork->COM(By
Virtual Serial Info			×
TCP/IP virtual serial param			
	Serial: COM5		
	100.00	o t d	
	Remote Server IP: 192.16	8.1.1	
Ren	note Server PORT: 4000	<u>+</u>	
	Map mode: Client		
	Note:		
	14016.		

**Step8.** If Virtual-Com setting success, the display will appear bellow.

Step9. Run TRPCOM utility then select virtual-com port make a TRP-C37M loop test.

S Virtual Seria	ilVSPM run as	Client,support	Server Device V	er3,16				<u> </u>
Virtual COM COM5	Remote Server IP 192.168.1.1:4000	and PORT	Exit State Open,9600,N,8,1		COM->Net	work(Byte)	NetWorl 986	k->COM(Byte)
<b>•</b>		est Utility		ASCII/Mo	odbus RTU	Support		∢ ] <u>_  </u> [
	Setting Terminal C Send Co 123458 Respons 123458 123458 Description Send the configue	Command Input mmand 3789ABCDEFG ie 56789ABCDEI 56789ABCDEI a module's con tion setting is e	=G =G mmand and get r enable, the comm	eal time resp nand checks	P He	Instruction-	Send 80 Clear + Checks checksum end comm	mS um

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

Setup	×
Baseconfig Networkconfig Workconfig	
Boot with windows	
Init VSP when Start	
Clear VSP when Start	
Ignore used VSP when exit	
Eanbled Device Scaner	
Process priority: Normal	
Thread priority: Normal	
GUI default mode: Normal 💌	
Data refresh interval: 2	

# 6. Application

#### 6-1 Modbus TCP Master to Modbus RTU/ASCII Serial Slave Mode

\*Notice: If TRP-C37M is MODBUS RTU protocol, Please turn the switch 1,2 to OFF,OFF. OR if TRP-C37M device is MODBUS ASCII, Please turn the switch1,2 to OFF,ON.



#### Example:

Step1: Connect PC-----Ethernet-----TRP-C37M-----RS232/422/485---MODBUS RTU/ASCII device.

Step2.Run Modscan32 utility and input IP/Port, click "OK" button, then Select function code, the response will appear below.

\*The Modscan32 utility copyright belong the Win-TECH Software Design, user can find it from the <u>www.win-tech.com</u>.

Eile I	odScan32 - ModSca1	Window Help			
ōiı	10 🖬 🖬 🖬				
	lodSca1				
Ad	dress: 0001	Device Id: 1 MODBUS Point Type	Number of Polls: 0 Valid Slave Respons	es: 0	
Lei	ngth: 100	01: COIL STATUS	Res	et Ctrs	
	Connection Details			×	
	Connect Using:				
	Hemot	e modbusi CP Server	<u> </u>		
		IP Address: 192.168.1.1			
**	Configuration	Service Port: 502			
	0000	Hardware Flow C	ontrol		
	Baud Rate: 9600	V Vait fo	DSR from slave		
	Word Length: 8	DTR Contr	DISABLE		
	Parity: NON	IE RTS Contro	DISABLE 💌		
	Stop Bits: 1	▼ Delay 0	ms after RTS before transmitting first character		
		Delay 0	ms after last character before releasing RTS		Þ
		Protocol Selections			
		OK Cancel			

#### Step3.Select function code.

ModScan32 - ModSca1	
<u>File Connection Setup View Window H</u> elp	
DIFIE BEI ARRA SYN	
== ModSca1	
Address: 0001 Device Id: 1 MODBUS Point Type Length: 100 01: COIL STATUS 01: COIL STATUS 02: INPUT STATUS 03: HOLDING REGISTER 04: INPUT REGISTER	Number of Polls: 1 Valid Slave Responses: 0 Reset Ctrs
** Device NOT CONNECTED! **	

Step4.the modscan32 will be response below.

File Connection Setup View Window Help	_ <b>_</b> ×
=-ModSca1	
Address: 0001 Device Id: 1 MODBUS Point Type Valid Slave Responses: 1098	
Length: 8 03: HOLDING REGISTER  Reset Ctrs	
40001: < 5800> 40002: < 0>	
40003: < 0> 40004: < 5600>	
40005: < 5600> 40006: < 5600>	
For Help, press F1 Polls:	1098 Resps: 1098 //.

#### 6-2 Modbus TCP Slave to Serial Master

\*Notice: If TRP-C37M is MODBUS RTU protocol, Please turn the switch 1,2 to OFF,OFF. OR if TRP-C37M device is MODBUS ASCII, Please turn the switch1,2 to OFF,ON.



Example:

Step1: Connect Serial Master PC-----RS232-----TRP-C37M-----Ethernet---Multi TCP Slave PC. Step2: Run DSM Search the TRP-C37M and change the setting.

Device Setup			×		
Network Setting Serial P	Port Setting				
Device Name	TRP-C37M	Module Name	TRP-C37M		
MACAddress	00-0E-C6-00-02-04	Netmask	255.255.255.0		
DHCP	Enable	Gateway	192.168.1.3		
<ul> <li>Server/Master</li> <li>Listening IP</li> </ul>	192.168.1.1	DNS Server	168.95.1.1		
Data listening port	502	 Transmit Timer (ms)	10		
		Heart Beat t	Disable 💌		
1 To 8	192.168.1.8 502	Maximun Connection	1 💌		
9 To 16	0.0.0.0 502	TCP Keep Alive Timer	7 💌		
17 То 24	0.0.0.0 502	New Password	Joldek		
25 To 32	0.0.0.0 502	Firmware Version	352		
33 To 40	0.0.0.0 502	Data Packet Type	, Management Packet Type		
41 To 48	0.0.0.0 502		✓ Broadcast		
49 To 56	0.0.0.0 502	after reboot	Multicast		
57 To 64	0.0.0.0 502				
		Submit Save	Load		

Step3: Run Modbus Poll utility from serial master PC.

\*The Modbus Poll and Modbus Slave utility copyright belong the Witte Communications Company Design; user can find it from the <u>www.modbustools.com</u>.

웹 Modbus Poll - Mbpoll1					
File Connection Setup Functions Display View Window	Help				
🗋 🖻 🖨 🖨 🗙 🛅 🖳 🚊 🗔 05 06 15 16 22 23 101	8 K?				
Mbpoll1					
Tx = 18: Err = 0: ID = 1: F = 02: SR = 1	000m				
10 Connection	×				
10					
	ОК				
10 9600 Baud	Cancel				
10 Response Timeout					
10 8 Data bits 1000 [ms]					
10 None Parity  Delay Between Polls					
10 10 1 Stop Bit    [1000 [ms]	Advanced				
10 Remote Server					
Port 502					
For H					

Step4: Run Modbus Slave utility from TCP Slave PC and setting the function code as same as the Modbus poll.

🚔 Modbus Slave - Mbslav1		
File Connection Setup Display View	w Window Help	
□ 🛎 🖬 🚭 🔲 🗏 🏛 💡 🕺		
🗒 Mbslav1		
$\begin{array}{llllllllllllllllllllllllllllllllllll$	Connection	OK Cancel
	8 Data bits	
	None Parity     Flow Control       DSR     CTS       Stop Bit     RTS Toggle         I Stop Bit	ble delay

# 6-3 Virtual COM Mode \*Bridge Mode

\*Notice: Please turn the switch 1,2 to ON,OFF for Virtual-COM Mode.



#### Example:

Step1. Connect PC-----Ethernet-----TRP-C37M-----RS232/422/485---MODBUS RTU/ASCII device.

Step2. Run Virtual-COM utility and make a virtual-COM port, Run modscan32 utility and input com port number, press "OK".



Step3.Select function code which you need.

ModScan32 - ModSca1	
<u>File Connection Setup View Window Help</u>	
== ModSca1	
Address: 0001 Device Id: 1 MODBUS Point Type Length: 100 01: COIL STATUS 01: COIL STATUS 02: INPUT STATUS 03: HOLDING REGISTER 04: INPUT REGISTER	Number of Polls: 1 Valid Slave Responses: 0 Reset Ctrs
** Device NOT CONNECTED! **	

Step4.the modscan32 will be response below.

Ele connection Setup View Window Help D D D D D D D D D D D D D D D D D D D	
→ ModSca1     Device Id: 1     Number of Polls: 1098       Address:     0001     MODBUS Point Type     Valid Slave Responses       Length:     8     03: HOLDING REGISTER ▼     Reset	1098 Citrs
40001: < 5800> 40002: < 0> 40003: < 0> 40003: < 5600> 40005: < 5600> 40006: < 5600> 40006: < 5600> 40007: < 1> 40008: < 0>	

#### 6-4 Paired Mode \*Bridge Mode

\*Notice: Please turn the switch 1,2 to ON,OFF for Paired Mode.



#### Example:

Step1. Connect PC---RS232/422/485---TRP-C37M----Ethernet-----TRP-C37M----MODBUS RTU/ASCII slave device.

Step2.Run DSM set up TRP-C37M as Client, Input destination IP and Port.

👹 C37M_Client_s 🛙 🛷 TRYCOM TRI	etting - P P-C37M D	aint SM 1.0	)1					<u>- 8 ×</u>	
	evice Set	up Settina	Seria	Port Setting			X	-	
	Device Name					Netmask	255.255.255.0		
DSM Settin	MACA	ddress		00-0E-C6-00-01-E	.3	Gateway	192.168.1.3		
C Settin	DHCP			Disable	•	DNS Server	168.95.1.1		
DSM Funct	C Master Listening IP 192.168.1			192.168.1.1		Transmit Timer (ms)	10		
Searcl	Data listening port			rt 502		Heart Beat	Disable 💌		
IP Sear	UID Range		Slave IP Addres	s Port	Maximun Connection				
	9	То 16 0		0.0.0.0	502	TCP Keep Alive Timer			
Device S	17	То	24	0.0.0.0	502	New Password			
Web Prot	25	То	32	0.0.0.0	502	Firmware Version	1706		
	33	To	40	0.0.0.0	502	- Data Packot Typo			
Restor	41	To	48	0.0.0.0	502				
	49	To	56	0.0.0.0	502	Auto connect	Multicast		
Reboc	57	То	64	0.0.0.0	502	TCP			
Upgrac						Submit Save	Load		
or Help, click Help T	opics on th	ie Help	Menu.						

Step3.Run DSM set up *TRP-C37M as Server* and be sure the IP and port as same as client setting.

Network Setting Serial Port Setting											
Device MAC A	Name ddress		TRP-C37M 00-0E-C6-00-01-E3		Netmask Gateway	255.255.255.0 192.168.1.3					
DHCP	ter		Disable	•	DNS Server Transmit Timer (ms)	168.95.1.1 10					
	ening ii a listen	iing po	rt 502		Heart Beat	Disable 🔻					
U	UID Range		Slave IP Address	Port	Maximun Connection	1					
9	To To	8	0.0.0.0		TCP Keep Alive Timer	7					
17	То	24	0.0.0.0	502	New Password						
25	То	32	0.0.0.0	502	Firmware Version	1706					
33	То	40	0.0.0.0	502	Data Packet Type	Management Packet Type					
41	То	48	0.0.0.0	502	UDP	🔽 Broadcast					
49	To	56	0.0.0.0	502	└─ after reboot ✓ TCP	Multicast					
57	То	64	Ju.u.u.u	502							

Same step3 and step4 same refer above.

#### 6-5 Multi-Client to 1 TRP-C37M Server



Maximum Client Connection : 16 Host PC

#### Example:

#### \*Running at Multi-Direct IP Mode

Step1.Connect Multi-PC ---Ethernet----TRP-C37M Server----TRP-C28 (RS485 ID=1) Step2.Run DSM Set up **TRP-C37M** Maximum connection=16. L

Step3.All host PC run Modscan32.

#### \*Running in Multi-Virtual COM Mode

Step1. All PC run Virtual com utility and make a self virtual-COM port, Run TRPCOM utility and select com port number, and press "OK".

има С	192.168.1.1:4000 Open,9600,N,8,1	0 0 2010 Pro Version	TCP/IP Connected	
S	etting Termial Scan TCP/IP Help	0		
	Communication Configuration			
	Initial Setting	ОК		
	Communication Protocal		andard Mode	
	ASCII     Modbus RTU	Default		
	ASCII Checksum Enable			
		Exit		
	Description			
	In the settings menu, be sure to select the ASCI	I/Modbus protocal , com port nui na vour "Checksum Selecte " Et	mber and head and hea	and the second second

Step3.Select "Terminal" and send command, the response will appear TRP-C28 channel 2 counter value.

🔗 TRPCOM Test Utility	2010 Pro Version
Setting Termial Scan TCP/IP Help	
Terminal Command Input Send Command #012	Instruction
Response	- Send
10100000	Auto 80 mS
	Clear
	Checksum
	Command + Checksum
Description Send the module's command and get real time responsion configuation setting is enable, the command checksu status.	nse. If your module's checksum m will show you the send command

#### 6-6 Heart Beat

The heart Beat function help customer detection the TRP-C37M LAN on–line or off-line, User can open one 5300 port, if TRP-C37M on line, the 5300 port will send a char staring period of 5 sec.



Step1: Run TRP-C37X DSM utility to set up the heart beat enable.

<u> </u>	DNP	1
	Transmit Timer	30
<	Heart Beat	Enable
	Maximun Connection	1 💌
	TCP Keep Alive	2
	New Password	****
	Firmware Version	1108

Step2: RUN TRPCOM then click "Link" button Wait until the Response screen appear the message

Setting	Termial	Scan	ТСРЛР	Help	]				
IRP-C3X E	thernet Serial S	erver Setting	3	-N	letwork Status				
IP 1	92.168.1.18				Network On line!				
Port 5	300	Lini	< [	F	Response				
Send the 7	ASCII command -			Trycom TechnologyTrycom TechnologyTrycom Technology					
l Send Ci	ommand		Clear		_oop Adjust				
Rele	ase IP	Ŀ	oop Test	F	Fast 1 Slow				
Descript	ion ———								
The fun test . o N,8,1 ;	ction allow TR r send comma please check	P-C3X to and to TRF TRP-C3X	connect wit <sup>p</sup> -DIO and A ethernet ser	h network IO to get ver's sett	, and RS232/422 wire connection for loop the response . Notic:TRP-AIO,DIO using ing  as same as that.				

Step3: Click windows start then select Accessories then click "Command Prompt", type dos command telnet 192.168.1.1 5300



Wait until the Response screen appear the char message

# 7. Using TRPCOM Utility test TRP-C37M.

We recommend use the virtual-com mode test all RS232/422/485 function.

# \*Please turn the switch 1,2 to ON,OFF

\*Support all ASCII and Binary code includes MODBUS RTU/ASCII Protocol in Virtual-com Mode. **TRPCOM Utility** is demo utility which may help to test TRP-C37M UART interface .User may

find the utility in the TRP-C37M support CD. Double click "TRPCOM Utility", the installShield Wizard will guide you complete installation.

User can directly link TRP-C37M to TRP-Serial Remote IO Modules by RS485, The basic wiring connect.

#### RS485 Test

DATA+ to DATA+, DATA- to DATA-

DATA+ to DATA+, DATA- to DATA-.



How to operator please see the diagram below.

#### **RS422** Loop back Test

Hardware connects wiring for RS422 loop test. TX+ to RX+, TX- to RX-



#### **RS232 Loop Back Test**

Hardware wiring connection for RS232 Loop Test.

TXD to RXD, RTS to CTS.



STEP1.RUN Virtual COM utility and set up the TRP-C37M IP and PORT. STEP2.RUN TRPCOM test utility then select virtual-com port number. STEP3.Select terminal and key-in some word at "send command" text filed. STEP4.Click "Send Command" and get response.

S S C C C	Virtua TEP1 Itual CC DM8 DM9	I Seria • Config ) <u>M B</u> 1: 1:	IVSPN Minimi emote S 32.168.1 32.168.1	1 run as C ze VSPM / erver IP and .1:502 .1:502	lient,supp About Exit JPORT	oort Server State Can't Create Can't Create	Device Ver COM8,Ma COM9,Ma	-3.16 COM- 0 0	->Netwo	ork(Byte) N C	letWork->CO	M(Byte)	Last State Can't Cre Can't Cre	e ate:COM8,May ate:COM9,May	be it
	Se		Terr munical al Settin OM8 Commu Commu Errnina Send C 0123 Respo 0123	nial since with the second sec	Scan guration Protocal Y Sca nd Input bcdefghijk bcdefghijk	TCP/IP		2010	2010	OK Pro Version Instruction Checksum Comman	Send Send Clear d + Checks			ndard Mode	
			)escript Send t configu status.	tion he modul Jation set	e's comm ting is en	nand and ge able, the co	et real time ommand ch	e respo necksu	onse. I ım will	f your modu Show you	ile's check the send ci	sum ommand			

# 7. Application1.

#### PLC Modbus TCP Modbus TCP Protocol Modbus RTU/ASCII Protocol 1222 Master Device Ethernet RS232/422/485 Photovoltaic Inverter Serial Device TRP-C37M Modbus TCP Application Modbus poll Modscan

# Modbus TCP Master to Modbus RTU/ASCII serial Device

# Modbus RTU/ASCII Serial Master to Modbus TCP Slave Device



# 7. Application 2.(As Bridge)



Maximum Client Connection : 8 Host PC

# 8. Appendix What is different between TRP-C37 and TRP-C37M

#### TRP-C37 RS232/422/485 Serial Device Server

The **TRP-C37** which is only to send the data between the TCP and Serial, it cannot process the data and perform operations.

This means that no matter what it received any data that can only be responsible for two-way Transmission.

#### TRP-C37M Modbus TCP to RTU/ASCII Gateway

The **TRP-C37M** which is able to analyzes the protocols between Modbus TCP and Modbus RTU / ASCII.

The TRP-C37M can assign the UID of Modbus TCP slave from Modbus Serial Master.

TRP-C37M has all the features of TRP-C37.