# TRP-C08H

# USB to 2 RS232 and 2 RS422/485 Isolated Converter



# **User's Manual**

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## 1. Introduction

The TRP-C08H allows you to connect 4 serial devices simultaneously by using a USB interface. With auto configuration in data format, baud rate and RS485 data flow direction control TRP-C08H is able to automatically configure RS-232, RS-422 and RS-485 signals, data format and baud rate without outer switch setting. TRP-C08H is equipped with 3000V DC of isolation and internal surge protection on each data line to protect the computer and converter against high voltage spikes, as well as ground potential differences. TRP-C08H also features a high-speed 256 Kbps transmission rate and supports various O.S. The industry DIN rail and panel mounting design enable user a fast and professional installation.

## 1-1. Features

- ➤ USB-2.0 device controller.
- > On-Chip 512-Byte FIFO for upstream and downstream data transfers for serial Port.
- > System gets four serial port when the converter plug in.
- Auto switching RS422/485 detecting.
- > Auto direction flow control on RS485.
- > Auto baud rate switching from 300bps to 256 Kbps.
- > Direct power from USB port , no need external power supply.
- > 3000 VDC isolation protection on RS422/485.
- Surge protection on RS422/485 data line.
- Power and TXA/RXA/TXB/RXB communication LED indicator
- > Din-Rail (option)or panel mount Driver support:
- Driver Support: Android/Win8.1/Vista64/32, Windows 98/ME/2000/XP/WIN 7/CE5.0~7.0, and Linux, and Mac OS.

## 1-2. Specification.

- > Input: USB 2.0 protocol.
- > RS232 output: Standard 9 pin DTE full-duplex.
- > RS422 output: Differential 4 full-duplex wires (TX+, RX+, TX-, RX-)
- > RS485 output: Differential 2 half-duplex wires (D+, D-).
- Data Format: Asynchronous data with all common combination of bits, parity, stop Parity type: None, odd, even mark, space. Data bit: 5, 6, 7, 8 Stop bits: 1, 1.5, 2.
- > Cable: USB 2.0 type A to type B cable.
- > Communication speed: form 300bps to 256Kbps.
- > RS-422/485 line protection: Against surge, short circuit,+/- 15KV ESD and voltage peak.
- > RS-232 line protection: +/- 15KV ESD.
- > Distance: RS-422/485 Up to 4000ft (1250M).
- > Connection type: Screw terminal for maximum AWG #12~30 wire.
- > DIN rail and panel mount support.
- > Power consumption: 260mA by USB power.
- RS422/485 Optical Isolation: 3000V DC.
- > Operating environment: 0 to  $65^{\circ}$ C.
- > Storage temperature: -20 to  $65^{\circ}$ C.
- > Dimension: 151mm X 75mm X 26mm.
- ➤ Weight: 395g.

- ➤ Humidity: 10-90% non-condensing.
- 2. Hardware Description
- 2-1. Panel layout



**2-2. LED Indictor PWR LED**: System is ready.

**RXA LED:** COMA-RS422/485 Receiving. **TXA LED:** COMA-RS422/485 Transmitting. **RXB LED:** COMB-RS232 Receiving. **TXB LED:** COMB-RS232 Transmitting.

#### 2-3. Block Diagram



#### 2-4. Serial Connection

The TRP-C08H has two DB-9 male connector and dual 4-PIN RS422/485 connector. The serial port is configured as a DTE (data terminal equipment) device. All PC COM ports are DTE ports. A null modem cable is required to make a connection between the PC COM port and the TRP-C08H serial port.

#### 2-5. Power Connection

A power selection dip switch allows the TRP-C08H USB power source enable or disable. User may select the power source by power select switch. The method is as below.



- 1. Find the power select switch which is located at the right side of USB port.
- 2. Move the switch to "USB PWR" position to enable USB power input, and disable screw terminal and external DC adapter. User may input power from USB port by USB A/B cable.

3. Move the switch to "EXT PWR" position to disable USB power input, and enable screw terminal and external DC adapter, user may input power from either screw terminal block or DC adapter.

#### 2-6. USB Connection

The TRP-C08H has a USB B-Type connector which is fully compliant with USB 2.0, the full rate speed up to 256Kbps.

\*Please using the USB 2.0 cable ensures the TRP-C08H working ok!

#### 2-7. RS485 Wiring

The RS-485 mode supports the Transmit and Receive channels using 2-wire half-duplex operation.

\*Please attention to the wiring for RS422/485, do not try to pull the ground wire from the GND pin of TRP-C08H, because both sides of the electric potential voltage are different, long-term use will be cause damage!



#### 2-8. RS422 Wiring

The RS-422 mode supports 4 channels with full duplex operation for Receive, Transmit, the data lines are in differential pairs.

\*Please attention to the wiring for RS422/485, do not try to pull the ground wire from the GND pin of TRP-C08H, because both sides of the electric potential voltage are different, long-term use will be cause damage!



#### 2-9. 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.



#### 2-10. USB Cable Wiring

TRP-C08H is true USB 2.0 specification; it also supports USB V1.0, V1.1 standard. It is strongly to recommend user use the standard A to B type USB 2.0 cable if USB1.0 cable can not work properly.

# 3. TRP-C08H Software Installation.

- 1. Power on your computer and boot to Windows.
- 2. Put the driver CD in the CD-ROM then select the driver of O.S you want (See figure1)



Fig.1

## 3-1 .Install Vista32/64 driver

Find "MSSetup.exe" utility which in the Vista64 folder. Double click on MSSetup.exe to start the installation process. Make sure that the User installing the driver must be a member of the Administrator group on the system

You will get a "User Account Control" window saying "An unidentified program wants access to your computer". Click on Allow to continue installing the Driver.

You will get an installation window as below, press "Install" button to install the drivers for High-Speed USB Multi Serial Device.



During the installation process, a "Windows Security" warning message pops up informing that "Windows cannot verify the publisher of this driver software". Ignore the warning message by clicking on the option *"install this driver software anyway"*.



You will get the above message two times and you have to select *"install this driver software anyway"*. The utility displays a message stating "Installation completed". Use "Exit" button to

complete the driver installation.



## 3-1-1.TRP-C08H Device Installation & Detection:

Connect TRP-C08H to the USB Host controller of the PC using a USB cable. The first time you plug-in the cable into the USB port, Windows will start installing the device driver software. You can see the installation status at the pop-up message of system tray. After installation, the pop-up message says *"Your devices are ready to use"*, *Device driver software installed successfully*.

TRP-C08H device detection can be confirmed by checking at the Device manager. Check for *"High-Speed USB MultiSerial Compound Device"* under *Universal Serial Bus controllers* and you will find *"High-Speed USB Serial Port (ComX)"* under the category *Ports (COM & LPT)*. Here 'X' in 'ComX' represents the serial port number. You can see the same in the figure below.

💂 Device Manager	<u>_     ×  </u>
File Action View Help	
🗄 💩 Keyboards	
🗄 🐌 Mice and other pointing devices	
📄 🚊 Monitors	
🕀 🔁 Multi-port serial adapters	
🕀 🎬 Network adapters	
Ports (COM & LPT)	
Communications Port (COM1)	
Communications Port (COM2)	
Communications Port (COM3)	
Communications Port (COM4)	
High-Speed USB Serial Port (COM11)	
High-speed USB Serial Port (COM12)	
High Speed USB Serial Port (COMB)	
Printer Ponti Ponti	
Processors	-

# 3-2 .Install XP driver

Find MSSetup.exe and MSUninst.exe which in the folders for Win XP/2K and Win98/ME operation system.



Use "MSSetup.exe" utility to install the driver. Double click on the utility to start the installation process. Press "Install" button to install the drivers for High-Speed USB Multi serial Device.



During the installation process, a warning message will popup informing the user that the software being used has not passed the Windows Logo testing. You can ignore the warning message by clicking on the option "**Continue Anyway**".

this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the software vendor for software that has passed Windows Logo testing.

The utility will display a message stating "Installation completed". Use "**Exit**" button to complete the driver installation.



Connect TRP-C08H to the USB Host controller of the PC by using a USB cable. The first time you plug the adapter into the USB port, Windows will bring up the **"Found New Hardware Wizard"** window to guide you through the initial configuration process. Select the option **"No, not this time"** and click on **"Next"** button to continue.

The following wizard helps you install the software for "High-Speed USB Multi Serial Compound device". Select the option "**Install the software automatically**" and click on "**Next**" to proceed further.



As specified in earlier section, a warning message will popup informing the user that the software being used has not passed the Windows Logo testing. You can ignore the warning message by

clicking on the option "Continue Anyway".



Found New I	Hardware Wizard			
Please wa	it while the wizard	installs the softwar	e	Ð
»()	High Speed USB Mu	ultiScrial Compound Do	wice	
		Ø	D	
		< Ba	ack Vext >	Carcel

The following window conveys that the OS had finished the software installation for "High-Speed USB Multi Serial Compound Device". Click on **"Finish"** to complete found new hardware wizard.



Follow the same steps as explained for "High-Speed USB Multi Serial Compound Device" for the second port installation . Select the option "**Install the software automatically**".....

Found New Hardware W	izard
	Welcome to the Found New Hardware Wizard This wizard helps you install software for: High-Speed USB MultiSerial Compound Device
	If your hardware came with an installation CD or floppy disk, insert it now.
	What do you want the wizard to do? Install the software automaticaly (Recommended) Install from a list or specific location (Advanced)
	Click Next to continue.
	< Back Next > Carcel

"Continue Anyway"... ...

Har dwar	e Installation
<u>.</u>	The software you are installing for this hardware: High-Speed USB MultiSerial Compound Device has not passed Windows Logo testing to verify its compatibility with Windows XP (Tell me why this testing is important) Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
	Continue Anyway

The following wizard indicates that the OS has completed installing the software for the first serial port. Continue the same process for installing the rest of the serial ports.

Found New Hardware Wizard		
	Completing the Found New Hardware Wizard The wizard has finished installing the software for: High-Speed USB MultiSerial Compound Device	
	Click Finish to close the wizard.	
	K Back Finish Cancel	

TRP-C08H device detection can be confirmed by checking the Device manager. Check for "High-Speed USB Multi Serial Compound Device" under Universal Serial Bus Controllers and "High-Speed USB Serial Port (Com X)" under the category Ports (COM & LPT)

🚇 Device Manager	
File Action View Help	
🗄 💩 Keyboards	
🗄 🝈 Mice and other pointing devices	
🗄 😼 Monitors	
🗄 🔊 Multi-port serial adapters	
🗄 🕮 Network adapters	
🖻 🖉 Ports (COM & LPT)	
Communications Port (COM1)	
Communications Port (COM2)	
Communications Port (COM3)	
Communications Port (COM4)	
High-Speed USB Serial Port (COM11)	
High-Speed USB Serial Port (COM12)	
High-Speed USB Serial Port (COM6)	
High-Speed USB Serial Port (COMB)	
Printer Port (LPTI)	
TRP-C3X (COM5)	-
Fi- Recessors	

#### Now the TRP-C08H Device is ready to use.

**3-3 .Uninstall XP driver** Use **"MSUninst.exe"** to uninstall the TRP-C08H device driver from your PC. Double click on the utility to run the Uninstaller. Click on **OK** to proceed further.

<b>Z</b>	This program will UnInstall the High-Speed USB Multiseri Adapter Drivers and all of its components on this system
-	
1	OK Exit

Use the **"Exit"** button to complete the Uninstaller utility. No need to restart the PC, unless prompted by the OS. The driver can also be uninstalled from **Control panel – Add / Remove Programs**. Select the "High-Speed Multi Serial Compound Device" from the Add / Remove panel and click on **"Remove"** option. This will remove the MCSTRP-C08H device driver from the PC.

🐻 Add or Rei	move Programs			
5	Currently installed programs:	Show updates	Sort by: Name	~
C <u>h</u> ange or Remove	Si 3Deep		Size	4.33MB
Programs	📳 High-Speed USB MultiSerial Compound	Device		
<b>%</b>	To change this program or remove it from you	ur computer, click Change/Remove.	Chang	e/Remove
Add New	👸 Microsoft Visual Studio 6.0 Enterprise Edition		Size	301.00MB
Programs	Microsoft Web Publishing Wizard 1.53		Size	0.14MB
B	碍 PL-2303 USB-to-Serial		Size	1.04MB
Add/Remove	📳 Realtek AC'97 Audio		Size	1.31MB
<u>Windows</u> Components	15 661FX			
~	🛃 5iS 900 PCI Fast Ethernet Adapter Driver		Size	0.04MB
Set Program Access and Defaults	TRPCOM (C:\Program Files\Project1\)		Size	426.00MB

The TRP-C08H device driver can be un-loaded through "**Device Manager**" as well. Go to Device Manager, Select High-Speed USB Multi Serial Compound Device from the Universal serial Bus controllers, Right Click on it, Select "**Uninstall**" as shown below.

🚇 Device Manager		
File Action View Help		
	. 🗷 💩	
<ul> <li>Display adapters</li> <li>DVD/CD-ROM drives</li> <li>Floppy disk controllers</li> <li>Floppy disk drives</li> <li>Human Interface Devices</li> <li>Human Interface Devices</li> <li>IDE ATA/ATAPI controllers</li> <li>Keyboards</li> <li>Mice and other pointing devices</li> <li>Monitors</li> <li>Multi-port serial adapters</li> <li>Multi-port serial adapters</li> <li>Network adapters</li> <li>Other devices</li> <li>Jecan &amp; Lexmark 6200 Series</li> <li>Scan</li> <li>Ports (COM &amp; LPT)</li> <li>Communications Port (COM1)</li> </ul>		
High-Speed USB Serial Port → → → High-Speed USB Serial Port ⊕ → → Processors ⊕ → → Sound, video and game contro	Update Driver Disable Uninstall	~
Uninstalls the driver for the selected device	Scan for hardware changes	

The OS will prompt the user whether to uninstall the device from the system. Click on "OK" to uninstall or "Cancel" to terminate the un-installation.

The Win2K software Installation, Detection and Un-Installation procedures are same as Win XP OS process. The only difference being, there is no need of user intervention during the detection of MCSTRP-C08H. When you connect MCSTRP-C08H to the USB, Win 2000 OS will automatically detect the device without interference of the user.

## 6. How to test TRP-C08H

Trycom Technology Co.,Ltd offers test utility, this is utilities may help user to demo and test TRP-C08H fast and easily. User may find the utilities in Trycom support CD or download from Trycom web <u>www.trycom.com.tw</u>, direct to perform TRPCOM.exe from the directory.

#### 6-1 RS422 Loop Back Test

Hardware wiring connection for RS422 loop test.



#### 6-2 RS232 Loop Back Test

Hardware wiring connection for RS232 Loop Test.



6-3.Loop Back Test SoftwareSTEP1: Run the "TRPCOM.EXE" utility.STEP2: Click the "Setting" to set the com port and baud rate then press OK .

TRPCOM Test Utility	Version:2013 Q3	<u>- 🗆 ×</u>
Setting Termial Scan TCP/IP Abo	out	
Communication Configuration	0K	
Communication Protocal • ASCII • Modbus RTU	Default	
ASCII Checksum Enable	Exit	
Description TRPCOM utility is designed to test TRP-Series In the settings menu, be sure to select the AS from the drop down menus and selecting your before continuing.	s modules. CII / Modbus protocal, com port param "Checksum Selects" Enable or Disabl	ieters e

\*Please note: "COM2" is an example of COM port number; the real COM number is assigned by user PC.

**STEP3:**. Click the "Terminal" then select Loop back enable, the counter value and pass value will be synchronized counts.

TRPCOM Test Utility	🛛 🗐 🗐 🖉 🖉 🖉 🖉
Setting Termial Scan TCP/IP About	
Terminal Command Input Send Command	Instruction
ABCDEFGHIJKLMNOPQRSTUWXXYZ1234567890	Send
Response	
ABCDEFGHIJKLMNOPQRSTUVWXYZ1234567890	🗖 Auto 🛛 🗖 mS
	Clear
-Loon Back Test	Checksum
PASS ■ Enable 825 825	Command + Checksum
Description The Termial Function: 1.Test RS485:Send the command and get RS485 device r 2.Test RS232/422:RS232(with hardware control) or RS422	response. loop back wiring.

#### 6-4. RS485 test

RS485 test mode, it can be connected to RS485 Device, such as connecting TRP-C28, send "\$01M" instruction from the client side, when the TRP-C28 received command that will response "!01TRPC28" indicates execution completed.



Step1. Run TRPCOM.exe utility.

Step2. Click the "Setting" to set the com port and baud rate then press OK.

🜮 TRPCOL	4 Test Utility	¥ersion:2013 Q3	IX
Setting	Termial Scan TCP/IP About		
Comm Comm CC 8 C	nunication Configuration   I Setting   0M2   9600   N   1   RTS/CTS   Ommunication Protocal Ommunication Protocal Ommunication Protocal	OK Default	
r	ASCII Checksum Enable	Exit	
Descr TRP( In the from befor	iption COM utility is designed to test TRP-Series module e settings menu, be sure to select the ASCII / Mo the drop down menus and selecting your "Checks re continuing.	es. dbus protocal, com port parameters sum Selects" Enable or Disable	

Step3.Send command "\$01M" and press "Send" button.

Step4. TRP-C28 response received.

TRPCOM Test Utility	Version:2013 Q3		
Setting Termial Scan TCP/IP About			
Terminal Command Input Send Command \$01M	Instruction		
Response	Send		
101TRPC28	Auto 80 mS		
<b></b>	Clear		
Loop Back Test			
Enable	Command + Checksum		
Description The Termial Function: 1.Test RS485:Send the command and get RS485 device 2.Test RS232/422:RS232(with hardware control) or RS422	response. ! loop back wiring.		

# 7. TRP-C08H Application.

