

USB TO 4CH Serial Converter

From Waveshare Wiki

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Overview

Introduction

The USB TO 4CH Serial Converter is an industrial-grade USB to RS232/485/422 isolated converter and USB to TTL/RS485 converter. It features an original FT4232HL chip, built-in power isolation, ADI magnetic coupling isolation, TVS protection circuits, and an aluminum alloy case design. The USB TO 4CH Serial Converter is user-friendly with zero-delay automatic receive and transmit conversion. It is known for its fast, stable, reliable, and secure communication capabilities, making it suitable for various industrial control devices or applications with high communication requirements.

USB TO 4CH Serial Converter



(<https://www.waveshare.com/usb-to-4ch-serial-converter.htm>)

FT4232HL RS232 RS485 RS422 TTL
RS232 RS422 RS485

Feature

- Adopts original FT4232HL chip, fast communicating, stable and reliable, better compatibility.
- Supports USB to a 4-ch multi-functional serial port, convenient for expanding or debugging various industrial serial port devices.
- Supports USB to 1-ch TTL + 1-ch TTL/RS485 + 1-ch isolated RS485/422 + 1-ch isolated RS232/485.
- Onboard unibody power supply isolation, provides stable isolated voltage and needs no extra power supply for the isolated terminal.
- Onboard unibody digital isolation, allows signal isolation, high reliability, strong anti-interference, and low power consumption.
- Onboard TVS (Transient Voltage Suppressor), effectively suppresses surge voltage and transient spike voltage in the circuit, lightningproof & ESD protection.
- Onboard self-recovery fuse and protection diodes, ensures the current/voltage stable outputs, provide over-current/over-voltage proof, and improve shockproof performance.
- Fully automatic transceiver circuit with no delay, ensures fast and stable communication between the USB port and different interfaces, without interfering with each other.
- Onboard TTL serial 3.3V/5V voltage translator, config the TTL level via a switch.
- 9 LEDs for indicating the power and transceiver status.
- High-quality USB-B connectors, smoothly plug/pull.

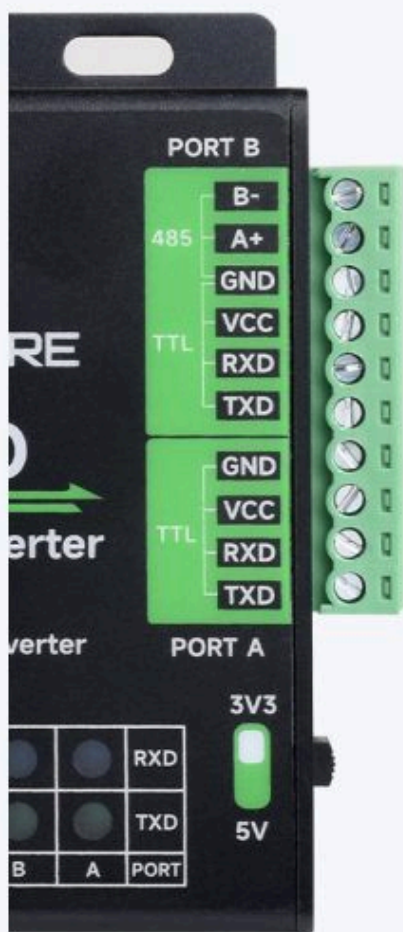
- Industrial grade metal case, supports wall-mount installation, solid and beautiful, easy to install.

Parameters

Product Type		Industrial USB to 4-channel multi-functional serial converter	
USB		Operating voltage	5V
		Connector	USB-B
		Protection	200mA self-recovery fuse, isolated output
PORT A (TTL only)	TTL(UART)	Operating voltage	3.3V / 5V
		Connector	Screw terminal
		Protection	Clamp protection diode, over-voltage/negative-voltage proof, shockproof
		Transmission mode	Point-to-point
		Baud Rate	300 bps ~ 12Mbps
PORT B (TTL/RS485)	TTL(UART)	Operating voltage	3.3V / 5V
		Connector	Screw terminal
		Protection	Clamp protection diode, over-voltage/negative-voltage proof, shockproof
		Transmission Mode	Point-to-Point
		Baud Rate	300 bps ~ 12Mbps
	RS485	Connector	Screw Terminal
		Direction Control	Hardware automatic control
		Protection	TVS diode, surge protection & ESD protection
		Matching Resistor	NC by default, reserve 120R resistors that can be enabled by jumper caps
		Transmission Mode	Point-to-Point (485 mode: up to 32 nodes, it is recommended to use repeaters for 16 nodes or more)
		Baud Rate	300 bps ~ 921600bps

PORT C (RS485/422)	Isolated RS485/422	Connector	Screw Terminal
		Protection	TVS diode, surge protection & ESD protection, power and signal isolation
		Matching Resistor	NC by default, reserve 120R resistors that can be enabled by jumper caps.
		Transmission Mode	Point-to-point (485 mode: up to 32 nodes, it is recommended to use repeaters for 16 nodes or more; 422 mode: up to 256 nodes, it is recommended to use repeaters for 16 nodes or more.)
		Baud Rate	300 bps ~ 921600bps
PORT D (RS232/485)	Isolated RS232	Connector	Screw Terminal
		Protection	TVS diode, surge protection & ESD protection, power & signal isolation
		Transmission Mode	Point-to-Point
		Baud Rate	300 bps ~ 921600bps
	Isolated RS485	Connector	Screw Terminal
		Direction Control	Hardware automatic control
		Protection	TVS diode, surge protection & ESD protection, power & signal isolation
		Matching Resistor	NC by default, reserve 120R resistors that can be enabled by jumper caps.
		Transmission Mode	Point-to-Point (485 mode: up to 32 nodes, it is recommended to use repeaters for 16 nodes or more)
		Baudrate	300 bps ~ 921600bps
	Indicator	PWR	Red power indicator, light up when there is a USB connection and voltage is detected.
		TXD	Green TX indicator, lights up when the USB port sends data.
		RXD	Blue RX indicator, light up when the device ports send data back.
Environment Requirements		Temperature Range	-15 ~ 70°C
		Operating System	Mac, Linux, Android, Windows 11 / 10 / 8.1 / 8 / 7

Interface Introduction

**PORT B-RS485/TTL Pinout**

PIN	Description
B-	RS485 differential signal negative (B-)
A+	RS485 differential signal positive (A+)
GND	RS485/TTL signal ground
VCC	5V / 3.3V power supply output, configurable via 5V/3.3V level switch
RXD	TTL receive data pin, connect to MCU.TXD
TXD	TTL transmit data pin, connect to MCU.RXD

PORT A- TTL (UART) Pinout

PIN	Description
GND	Connect to GND
VCC	5V / 3.3V power supply output, configurable via 5V/3.3V level switch
RXD	TTL receive data pin, connect to MCU.TXD
TXD	TTL transmit data pin, connect to MCU.RXD

* TTL working level is configurable via 5V/3.3V level switch

(/wiki/File:USB_TO_4CH_Serial_Converter_05.jpg)

PORT C-RS485/422 Pinout	
PIN	Description
GND	485/422 signal ground
TA	RS422 send differential signal positive RS485 differential signal positive (A+)
TB	RS422 send differential signal negative RS485 differential signal negative (B-)
RA	RS422 receive differential signal positive
RB	RS422 receive differential signal negative

PORT D-RS232/485 Pinout	
PIN	Description
RXD	RS232 receive data
TXD	RS232 transmit data
GND	RS232/485 signal ground
B-	RS485 differential signal negative (B-)
A+	RS485 differential signal positive (A+)



(/wiki/File:USB_TO_4CH_Serial_Converter_06.jpg)

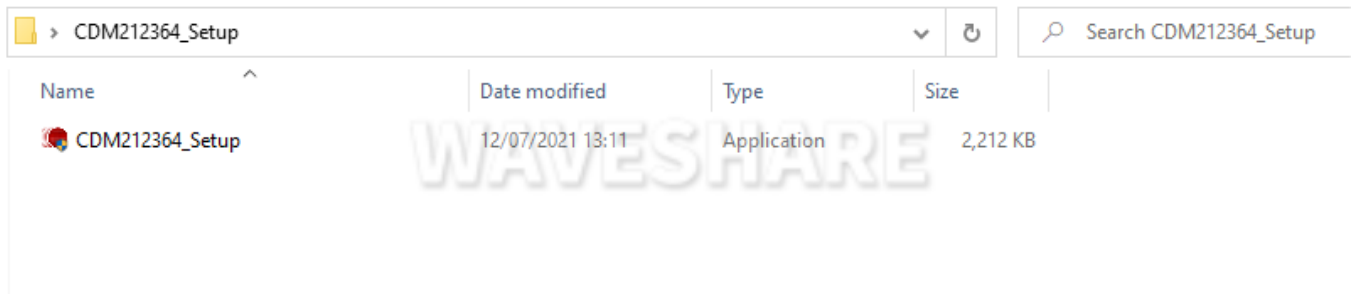
Dimensions



(/wiki/File:USB_TO_4CH_Serial_Converter-02.png)

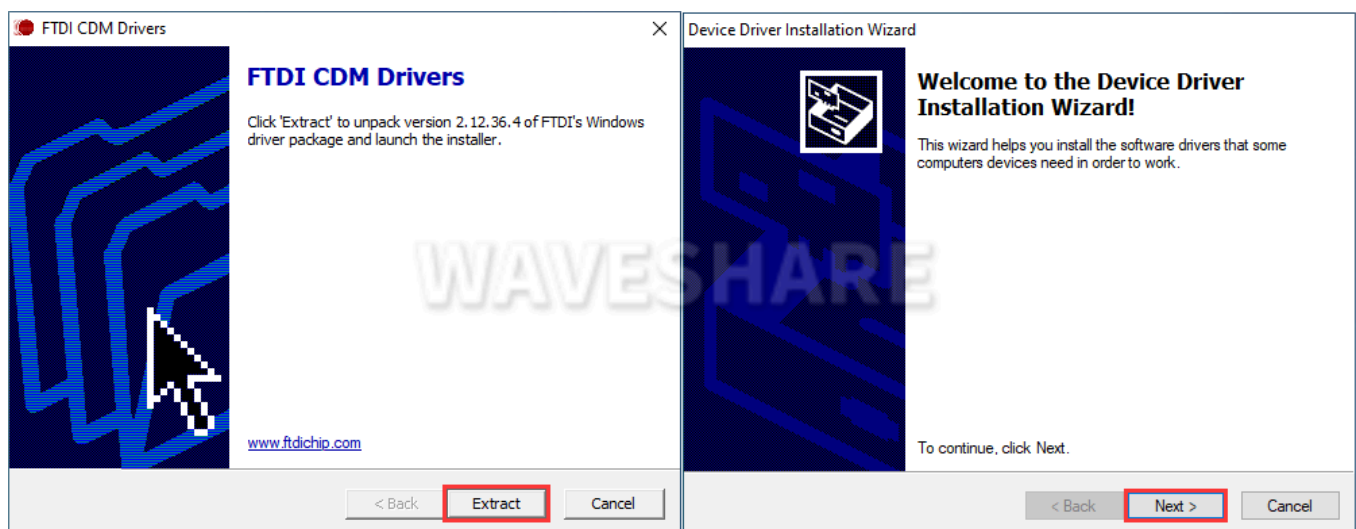
Driver Installation

- Download the VCP Driver (https://files.waveshare.com/wiki/USB-TO-4CH-Serial-Converter/CDM212364_Setup.zip):



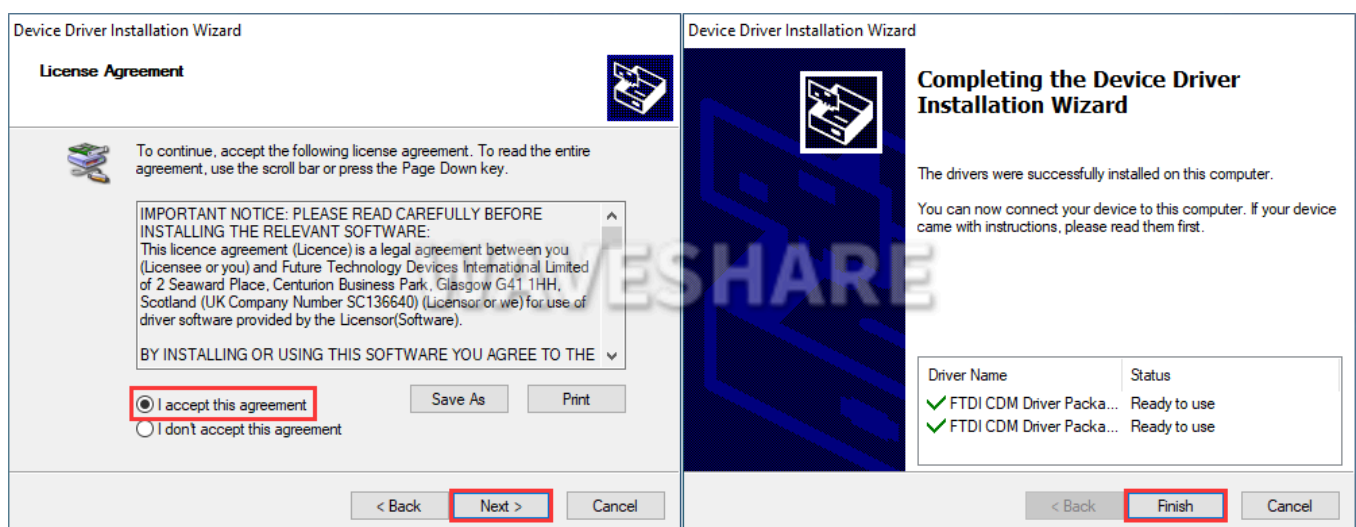
(/wiki/File:USB_TO_4CH_Serial_Converter_-02.png)

- Double-click **CDM212364_Setup.exe** to install by steps.



(/wiki/File:USB_TO_4CH_Serial_Converter_-03.png)

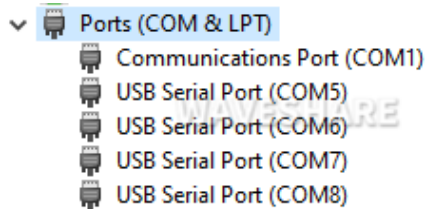
- Accept the agreement and keep clicking on "Next".



(/wiki/File:USB_TO_4CH_Serial_Converter_-04.png)

- Connect the computer and device, and you can find the new 4 COM ports in the Device Manager (If there is only one COM port after a while and cannot show more COM ports

after trying, you can operate it according to FAQ).



(/wiki/File:USB_TO_4CH_Serial_Converter-05.png)

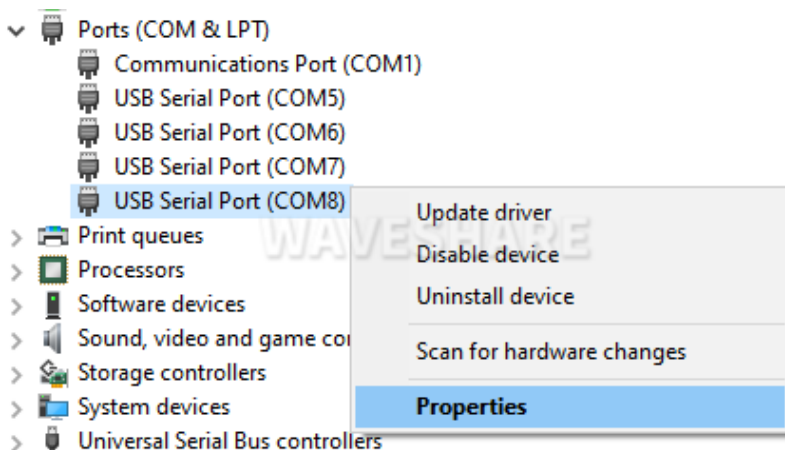
SSCOM Usage

Preparation

- Open SSCOM (<https://files.waveshare.com/wiki/USB-TO-4CH-Serial-Converter/Cktszsss32.zip>).
- Select the corresponding COM port based on the desired functionality. In most cases, the identified four COM port numbers are recognized from small to big, and labeled as Port A through Port D.

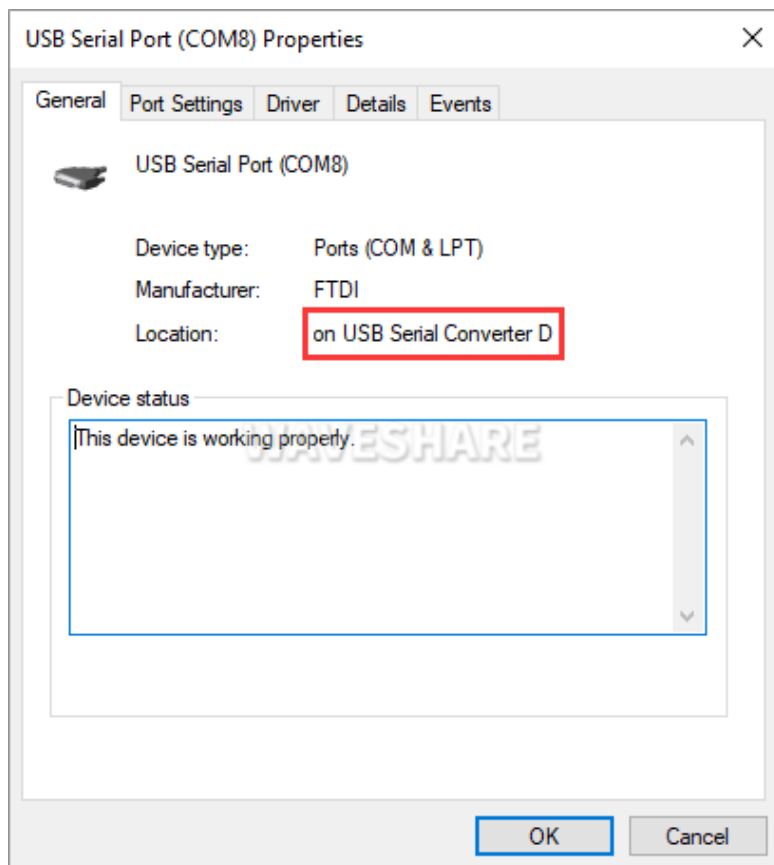
USB TO 4CH Serial Converter - PORT	Communication Mode
Port A	TTL
Port B	RS485
	TTL
Port C	RS485
	RS422
Port D	RS485
	RS232

- You can check which Port corresponds to the COM port using Device Manager.
- Check which Port corresponds to COM8.



(/wiki/File:USB_TO_4CH_Serial_Converter_Environment_1.png)

- You can find that the COM8 corresponds to Port D.



(/wiki/File:USB_TO_4CH_Serial_Converter_Environment_2.png)

TTL (UART) Communication

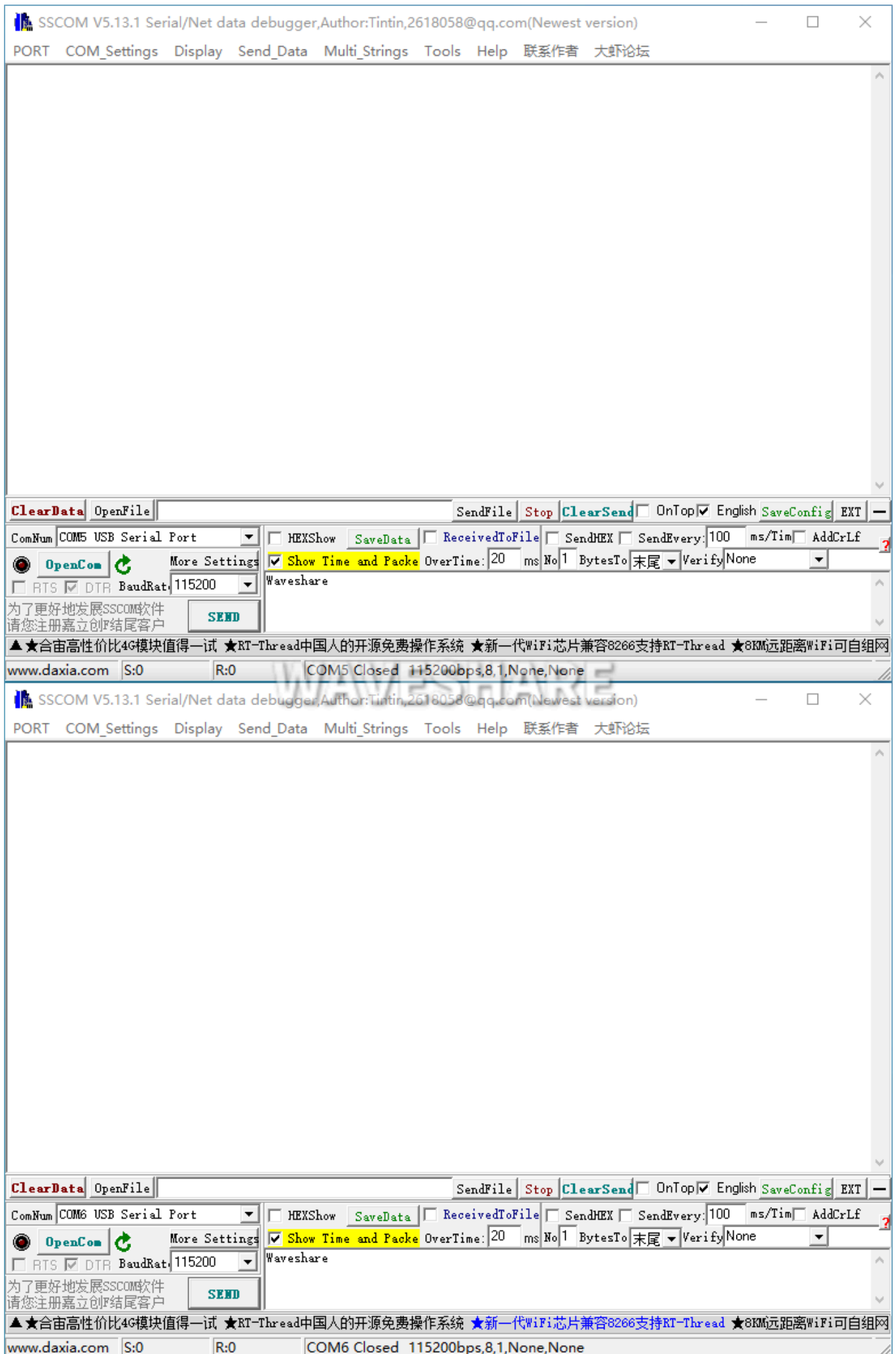
The following introduces how to use the TTL of Port A to communicate with the TTL of Port B.

Hardware Connection

USB TO 4CH Serial Converter - PORT A	USB TO 4CH Serial Converter - PORT B
Port A - G N D	Port B - G N D
Port A - TX	Port B - RX
Port A - RX	Port B - TX

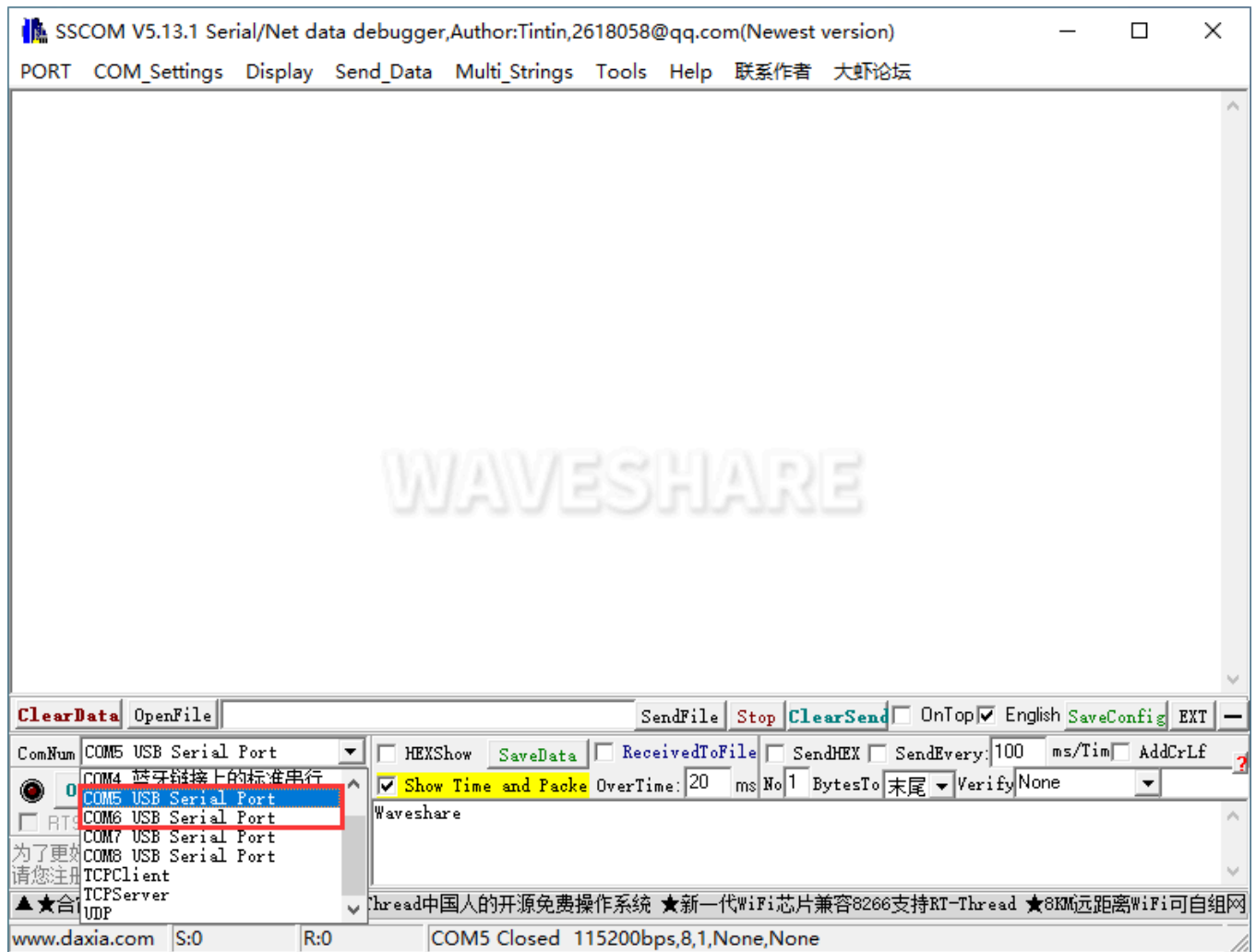
Software Operation

- Enable two SSCOMs:



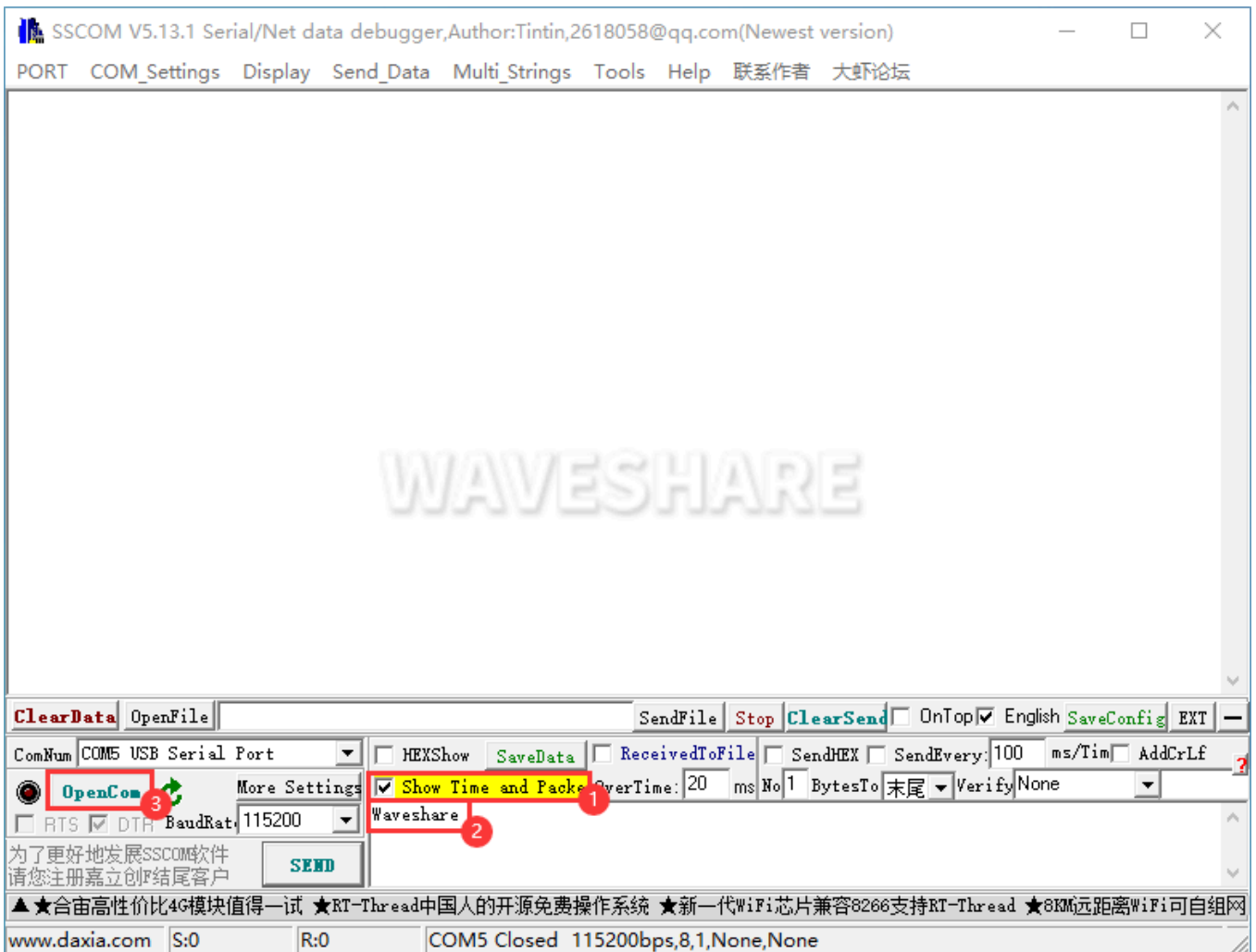
(/wiki/File:USB_TO_4CH_Serial_Converter_07.png)

- Respectively select the corresponding COM ports for Port A and Port B.



(/wiki/File:USB_TO_4CH_Serial_Converter_09.png)

- Input the characters to be transmitted, check **Show Time and Packet**, and then click on **OpenCOM**.



(/wiki/File:USB_TO_4CH_Serial_Converter_10.png)

- Both SSCOMs are set to transmit at **100ms** intervals, and you can observe the phenomenon of mutual sending and receiving.

SSCOM V5.13.1 Serial/Net data debugger, Author: Tintin, 2618058@qq.com (Newest version)

PORT COM Settings Display Send_Data Multi_Strings Tools Help 联系作者 大虾论坛

[10:35:29.983] IN←◆Waveshare
[10:35:30.047] OUT→◇Waveshare□
[10:35:30.096] IN←◆Waveshare
[10:35:30.152] OUT→◇Waveshare□
[10:35:30.207] IN←◆Waveshare
[10:35:30.257] OUT→◇Waveshare□
[10:35:30.303] IN←◆Waveshare
[10:35:30.362] OUT→◇Waveshare□
[10:35:30.431] IN←◆Waveshare
[10:35:30.482] OUT→◇Waveshare□
[10:35:30.543] IN←◆Waveshare
[10:35:30.588] OUT→◇Waveshare□
[10:35:30.640] IN←◆Waveshare
[10:35:30.693] OUT→◇Waveshare□
[10:35:30.751] IN←◆Waveshare
[10:35:30.813] OUT→◇Waveshare□
[10:35:30.863] IN←◆Waveshare
[10:35:30.918] OUT→◇Waveshare□
[10:35:30.975] IN←◆Waveshare
[10:35:31.023] OUT→◇Waveshare□
[10:35:31.071] IN←◆Waveshare
[10:35:31.128] OUT→◇Waveshare□
[10:35:31.199] IN←◆Waveshare
[10:35:31.250] OUT→◇Waveshare□
[10:35:31.295] IN←◆Waveshare
[10:35:31.354] OUT→◇Waveshare□
[10:35:31.407] IN←◆Waveshare
[10:35:31.459] OUT→◇Waveshare□
[10:35:31.520] IN←◆Waveshare
[10:35:31.565] OUT→◇Waveshare□
[10:35:31.631] IN←◆Waveshare

ClearData OpenFile SendFile Stop ClearSend OnTop English SaveConfig EXT

ComNum COM5 USB Serial Port HEXShow SaveData ReceivedToFile SendHEX SendEvery: 100 ms/Tim AddCrLf

CloseCom More Settings Show Time and Packe OverTime: 20 ms No 1 BytesTo 末尾 Verify None

RTS DTR BaudRate: 115200 Waveshare

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www.daxia.com S:360 R:225 COM5 Opened 115200bps,8,1,None,None

SSCOM V5.13.1 Serial/Net data debugger, Author: Tintin, 2618058@qq.com (Newest version)

PORT COM Settings Display Send_Data Multi_Strings Tools Help 联系作者 大虾论坛

[10:35:29.971] OUT→◇Waveshare□
[10:35:30.048] IN←◆Waveshare
[10:35:30.092] OUT→◇Waveshare□
[10:35:30.159] IN←◆Waveshare
[10:35:30.197] OUT→◇Waveshare□
[10:35:30.271] IN←◆Waveshare
[10:35:30.303] OUT→◇Waveshare□
[10:35:30.367] IN←◆Waveshare
[10:35:30.422] OUT→◇Waveshare□
[10:35:30.495] IN←◆Waveshare
[10:35:30.527] OUT→◇Waveshare□
[10:35:30.592] IN←◆Waveshare
[10:35:30.633] OUT→◇Waveshare□
[10:35:30.703] IN←◆Waveshare
[10:35:30.738] OUT→◇Waveshare□
[10:35:30.815] IN←◆Waveshare
[10:35:30.858] OUT→◇Waveshare□
[10:35:30.927] IN←◆Waveshare
[10:35:30.963] OUT→◇Waveshare□
[10:35:31.040] IN←◆Waveshare
[10:35:31.068] OUT→◇Waveshare□
[10:35:31.135] IN←◆Waveshare
[10:35:31.189] OUT→◇Waveshare□
[10:35:31.263] IN←◆Waveshare
[10:35:31.294] OUT→◇Waveshare□
[10:35:31.359] IN←◆Waveshare
[10:35:31.399] OUT→◇Waveshare□
[10:35:31.471] IN←◆Waveshare
[10:35:31.506] OUT→◇Waveshare□
[10:35:31.568] IN←◆Waveshare
[10:35:31.626] OUT→◇Waveshare□

ClearData OpenFile SendFile Stop ClearSend OnTop English SaveConfig EXT

ComNum COM6 USB Serial Port HEXShow SaveData ReceivedToFile SendHEX SendEvery: 100 ms/Tim AddCrLf

CloseCom More Settings Show Time and Packe OverTime: 20 ms No 1 BytesTo 末尾 Verify None

RTS DTR BaudRate: 115200 Waveshare

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www.daxia.com S:216 R:360 COM6 Opened 115200bps,8,1,None,None

(/wiki/File:USB_TO_4CH_Serial_Converter_11.png)

RS485 Communication

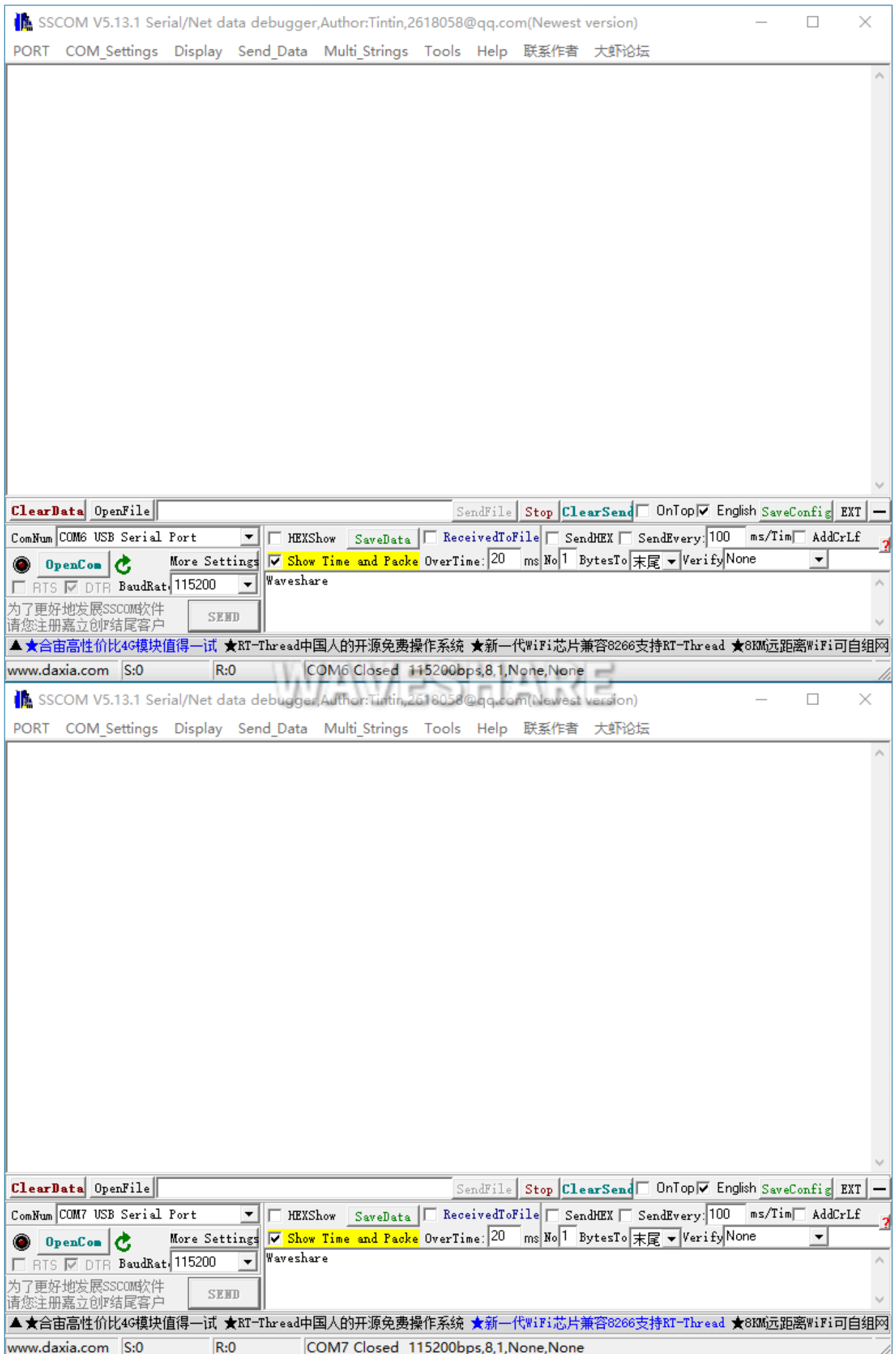
The following demonstration involves using the RS485 of Port B to communicate with the RS485 of Port C.

Hardware Connection

USB TO 4CH Serial Converter - PORT B	USB TO 4CH Serial Converter - PORT C
Port B - GND	Port C - GND
Port B - A+	Port C - A+
Port B - B-	Port C - B-

Software Operation

- Enable two SSCOMs.
- Respectively select the corresponding COM ports for Port A and Port B.



(/wiki/File:USB_TO_4CH_Serial_Converter_15.png)

- Select the baud rate as **115200**, enter the characters you want to send and check **Show Time and Packet** for a more intuitive view. Now, click on **OpenCOM**.



(/wiki/File:USB_TO_4CH_Serial_Converter_16.png)

- Select one SSCOM to transmit at **100ms** intervals, and you can observe the phenomenon of mutual sending and receiving.

SSCOM V5.13.1 Serial/Net data debugger, Author: Tintin, 2618058@qq.com (Newest version)

PORT COM Settings Display Send_Data Multi_Strings Tools Help 联系作者 大虾论坛

[10:57:33.565] IN←◆Waveshare
[10:57:33.677] IN←◆Waveshare
[10:57:33.773] IN←◆Waveshare
[10:57:33.901] IN←◆Waveshare
[10:57:33.997] IN←◆Waveshare
[10:57:34.109] IN←◆Waveshare
[10:57:34.221] IN←◆Waveshare
[10:57:34.333] IN←◆Waveshare
[10:57:34.446] IN←◆Waveshare
[10:57:34.541] IN←◆Waveshare
[10:57:34.653] IN←◆Waveshare
[10:57:34.765] IN←◆Waveshare
[10:57:34.877] IN←◆Waveshare
[10:57:34.989] IN←◆Waveshare
[10:57:35.101] IN←◆Waveshare
[10:57:35.213] IN←◆Waveshare
[10:57:35.309] IN←◆Waveshare
[10:57:35.421] IN←◆Waveshare
[10:57:35.533] IN←◆Waveshare
[10:57:35.645] IN←◆Waveshare
[10:57:35.741] IN←◆Waveshare
[10:57:35.869] IN←◆Waveshare
[10:57:35.964] IN←◆Waveshare
[10:57:36.076] IN←◆Waveshare
[10:57:36.188] IN←◆Waveshare
[10:57:36.301] IN←◆Waveshare
[10:57:36.413] IN←◆Waveshare
[10:57:36.509] IN←◆Waveshare
[10:57:36.637] IN←◆Waveshare
[10:57:36.733] IN←◆Waveshare
[10:57:36.844] IN←◆Waveshare

ClearData OpenFile SendFile Stop ClearSend OnTop English SaveConfig EXT

ComNum COM6 USB Serial Port HEXShow SaveData ReceivedToFile SendHEX SendEvery: 100 ms/Tim AddCrLf

CloseCom More Settings Show Time and Pack OverTime: 20 ms No 1 BytesTo 末尾 Verify None

RTS DTR BaudRate: 115200 Waveshare

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www.daxia.com S:0 R:2358 COM6 Opened 115200bps,8,1,None,None

SSCOM V5.13.1 Serial/Net data debugger, Author: Tintin, 2618058@qq.com (Newest version)

PORT COM Settings Display Send_Data Multi_Strings Tools Help 联系作者 大虾论坛

[10:57:33.562] OUT→◇Waveshare
[10:57:33.667] OUT→◇Waveshare
[10:57:33.772] OUT→◇Waveshare
[10:57:33.892] OUT→◇Waveshare
[10:57:33.997] OUT→◇Waveshare
[10:57:34.102] OUT→◇Waveshare
[10:57:34.207] OUT→◇Waveshare
[10:57:34.327] OUT→◇Waveshare
[10:57:34.433] OUT→◇Waveshare
[10:57:34.538] OUT→◇Waveshare
[10:57:34.643] OUT→◇Waveshare
[10:57:34.763] OUT→◇Waveshare
[10:57:34.868] OUT→◇Waveshare
[10:57:34.974] OUT→◇Waveshare
[10:57:35.094] OUT→◇Waveshare
[10:57:35.199] OUT→◇Waveshare
[10:57:35.304] OUT→◇Waveshare
[10:57:35.409] OUT→◇Waveshare
[10:57:35.529] OUT→◇Waveshare
[10:57:35.634] OUT→◇Waveshare
[10:57:35.739] OUT→◇Waveshare
[10:57:35.859] OUT→◇Waveshare
[10:57:35.964] OUT→◇Waveshare
[10:57:36.069] OUT→◇Waveshare
[10:57:36.174] OUT→◇Waveshare
[10:57:36.295] OUT→◇Waveshare
[10:57:36.400] OUT→◇Waveshare
[10:57:36.505] OUT→◇Waveshare
[10:57:36.625] OUT→◇Waveshare
[10:57:36.730] OUT→◇Waveshare
[10:57:36.835] OUT→◇Waveshare

ClearData OpenFile SendFile Stop ClearSend OnTop English SaveConfig EXT

ComNum COM7 USB Serial Port HEXShow SaveData ReceivedToFile SendHEX SendEvery: 100 ms/Tim AddCrLf

CloseCom More Settings Show Time and Pack OverTime: 20 ms No 1 BytesTo 末尾 Verify None

RTS DTR BaudRate: 115200 Waveshare

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www.daxia.com S:2358 R:0 COM7 Opened 115200bps,8,1,None,None

(/wiki/File:USB_TO_4CH_Serial_Converter_17.png)

RS422 Communication

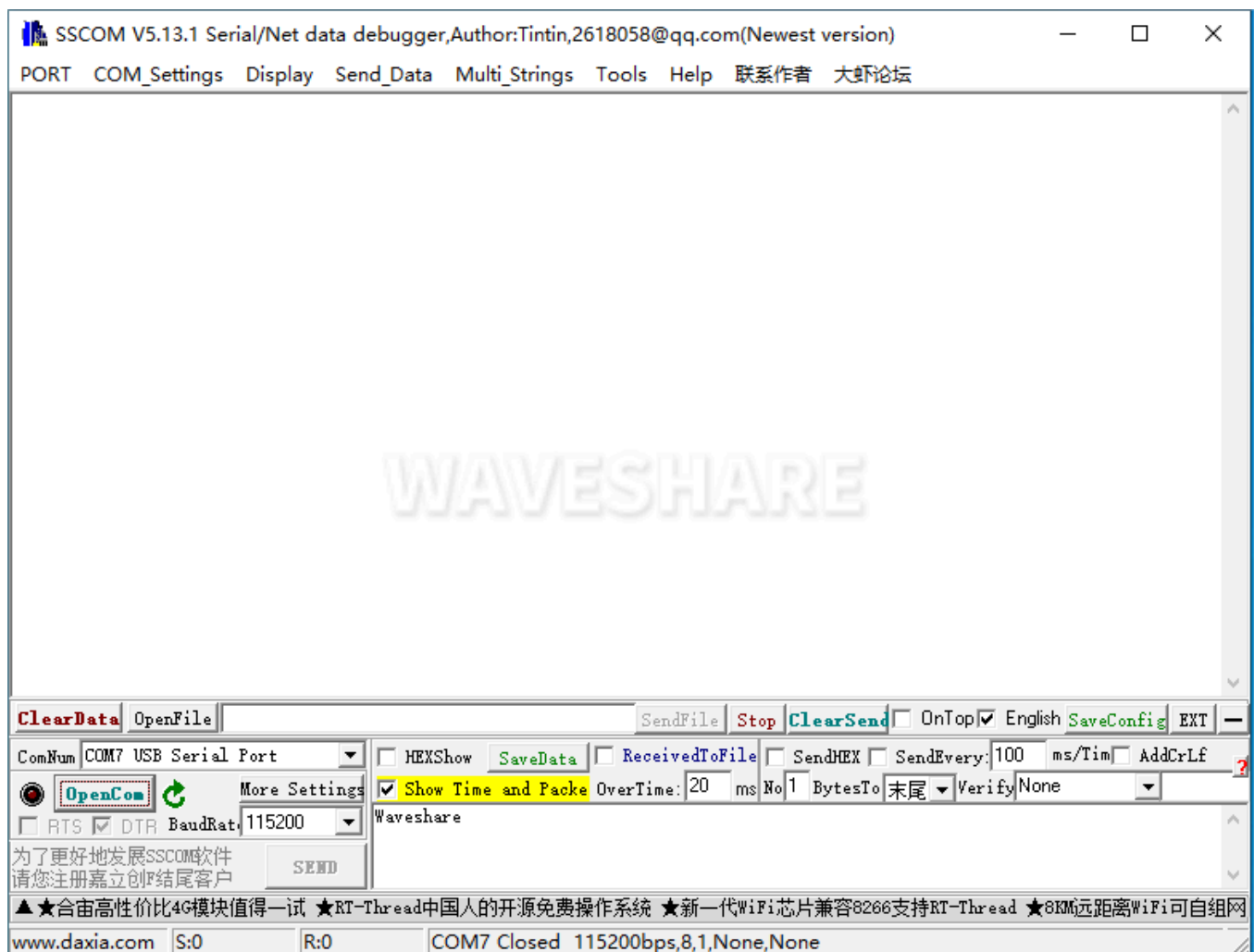
The following introduces the self-transmission on RS422 of Port C.

Hardware Connection

USB TO 4CH Serial Converter - PORT C	USB TO 4CH Serial Converter - PORT C
Port C - RA	Port C - TA
Port C - RB	Port C - TB

Software Operation

- Enable a SSCOM.
- Select the corresponding COM port to the Port C.



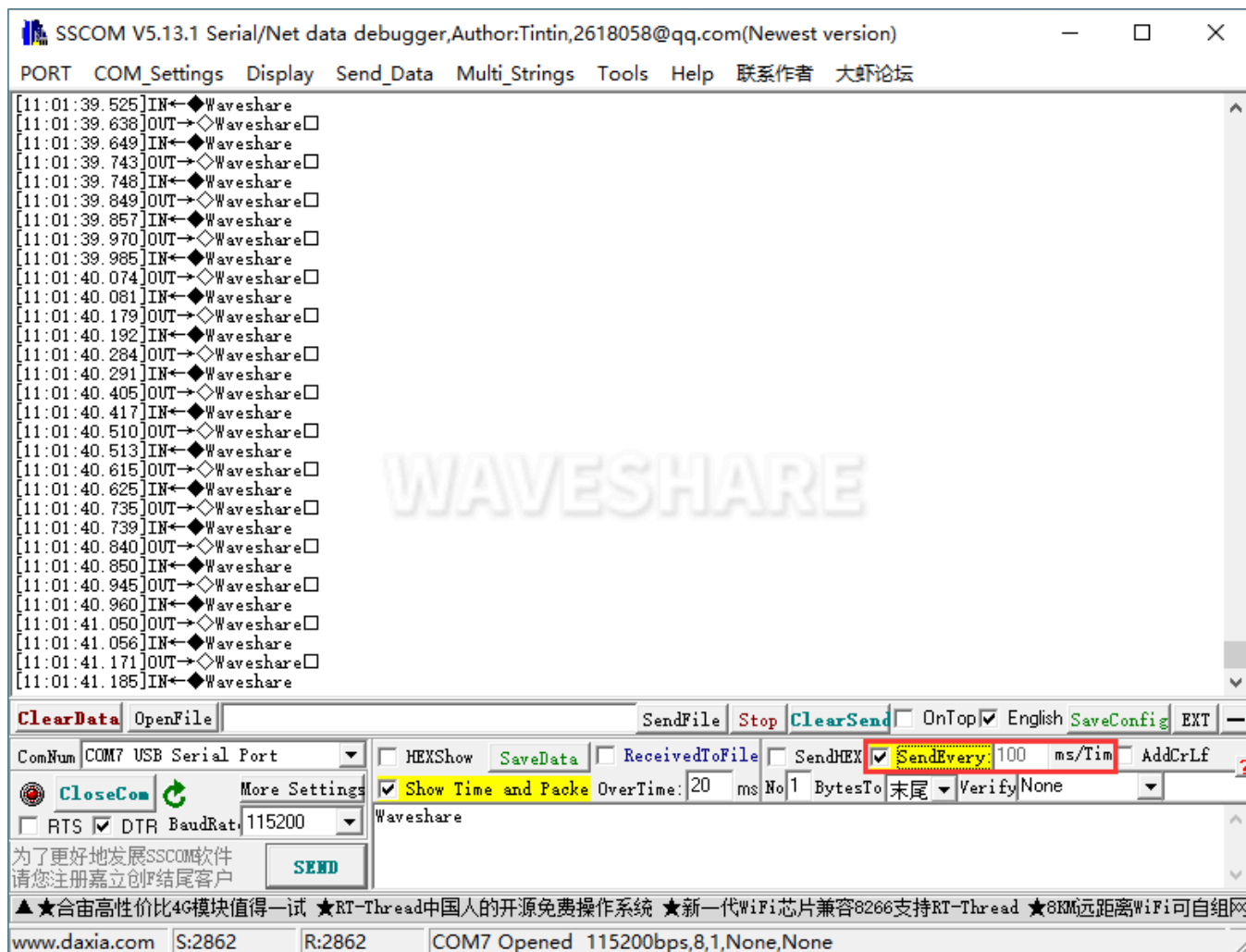
(/wiki/File:USB_TO_4CH_Serial_Converter_20.png)

- Select the baud rate as **115200**, input the characters to be sent, check "**Show Time and Packet**", and click on "**OpenCOM**".



(/wiki/File:USB_TO_4CH_Serial_Converter_21.png)

- Set the SSCOM to transmit at 100ms intervals, and you can observe the phenomenon of self-transmission.



(/wiki/File:USB_TO_4CH_Serial_Converter_22.png)

RS232 Communication

The following introduces the self-transmission of the RS232 of Port D.

Hardware Connection

USB TO 4CH Serial Converter - PORT D	USB TO 4CH Serial Converter - PORT D
Port D - RX	Port D - TX

Software Operation

- Enable a SSCOM.
- Respectively select the corresponding COM port for Port D.



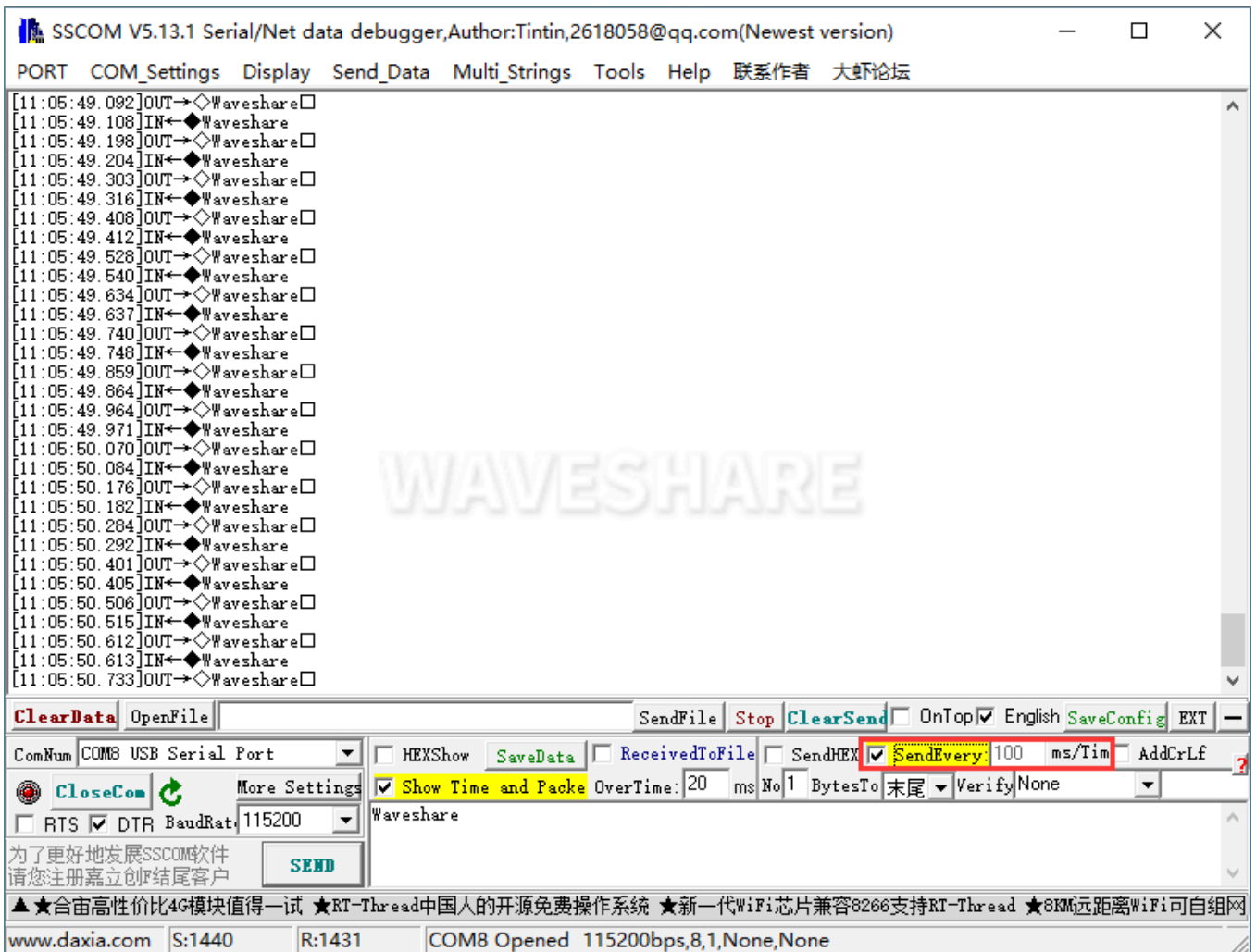
(/wiki/File:USB_TO_4CH_Serial_Converter_25.png)

- Select the baudrate as **115200**, input the characters to be sent, check "**Show Time and Packet**" for clear displaying, and then click on "**OpenCOM**".



(/wiki/File:USB_TO_4CH_Serial_Converter_26.png)

- Both SSCOMs are set to transmit at a **100ms** interval, and you can observe the phenomenon of mutual sending and receiving.



(/wiki/File:USB_TO_4CH_Serial_Converter_27.png)

Resource

Software

Driver

- VCP Driver (https://files.waveshare.com/wiki/USB-TO-4CH-Serial-Converter/CDM212364_Setup.zip) (Or you can download it from FTDI website (<https://ftdichip.com/drivers/vcp-drivers/>), and you can download the corresponding drivers for other systems on this website.)

- Support driver-free on Linux systems.

Software

- SSCOM (<https://files.waveshare.com/wiki/USB-TO-4CH-Serial-Converter/Cktszsss32.zip>)

Datasheet

- FT4232H Datasheet (https://files.waveshare.com/wiki/USB-TO-4CH-Serial-Converter/DS_FT4232H-Datasheet.pdf)

STP File

- STP file (https://files.waveshare.com/wiki/USB-TO-4CH-Serial-Converter/USB_TO_4CH_Serial_Converter-stp.zip)

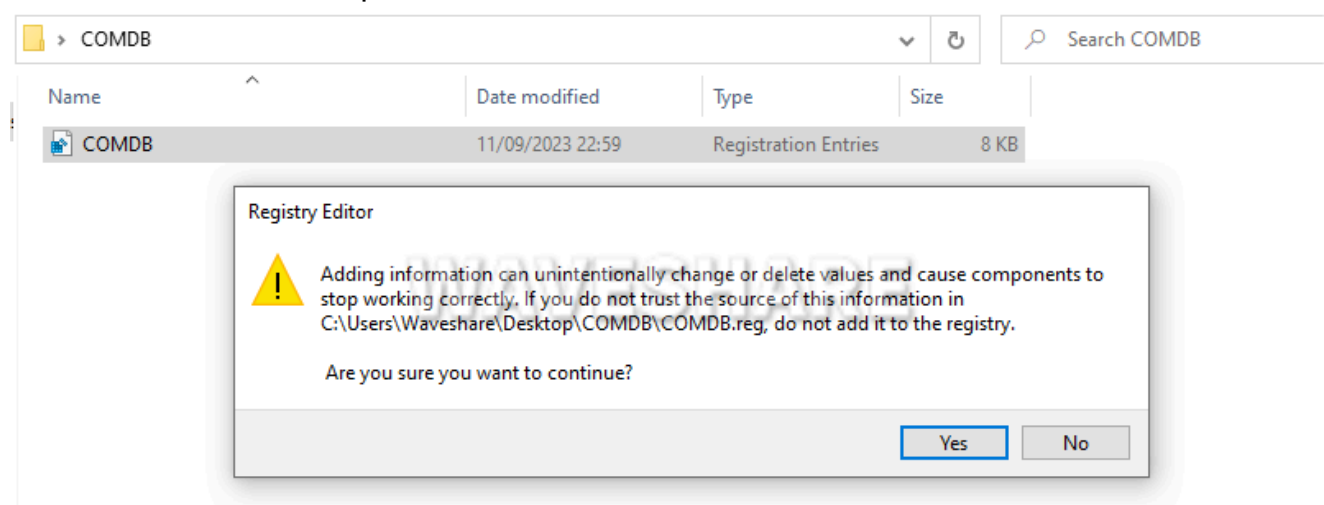
FAQ

Question: Only 1 COM port can be recognized when the device is connected to the computer (if the computer normally recognizes 4 COM ports, please do not do the following) or one Port fails to send or receive but the other Ports are normal.

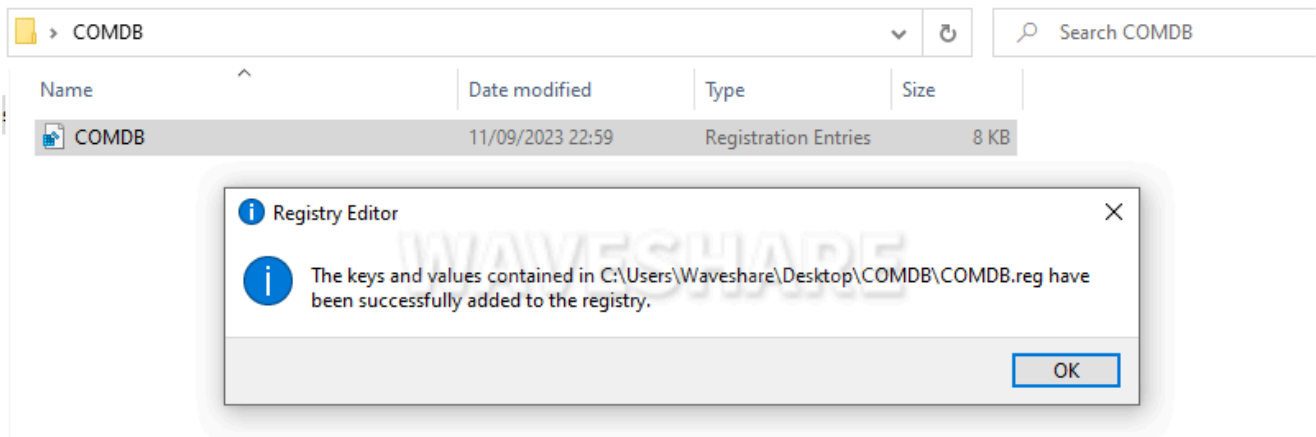
Answer:

- It may be caused by a corrupt registry, and you can address it by performing the following steps:

1. Download the registry-related demo (<https://files.waveshare.com/wiki/USB-TO-4CH-Serial-Converter/COMDB.zip>) and run it.



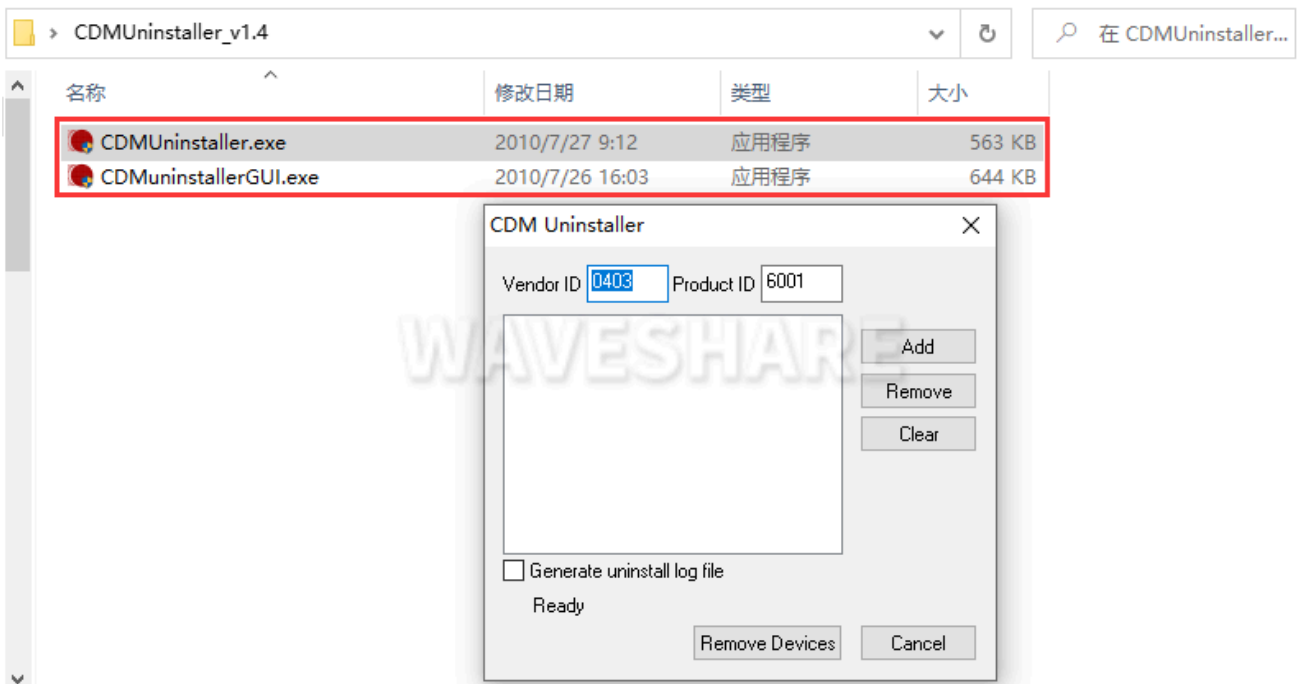
(/wiki/File:USB_TO_4CH_Serial_Converter_FAQ-01.png)



(/wiki/File:USB_TO_4CH_Serial_Converter_FAQ-00.png)

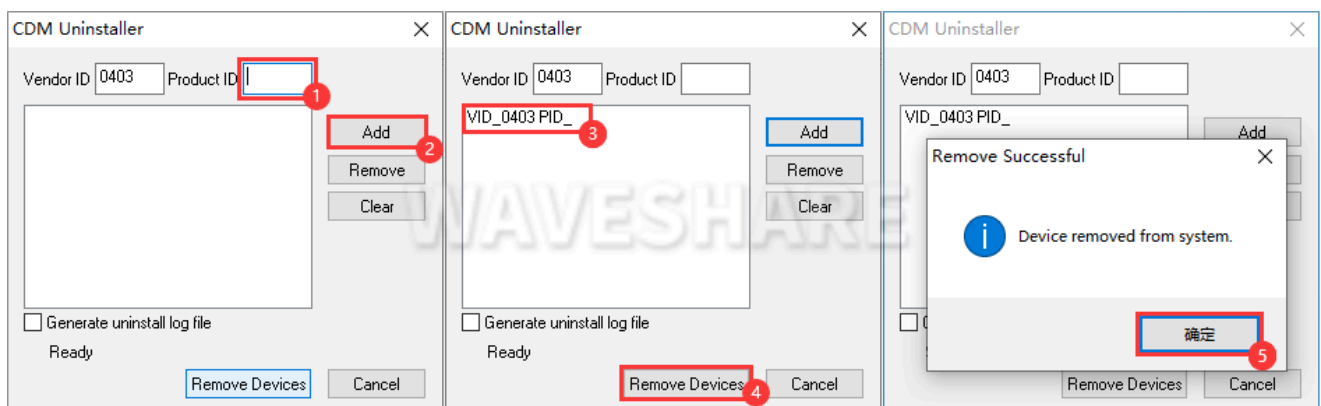
2. If there is a pop-up window, please allow the demo to run.

3. Download Configuration Software (https://files.waveshare.com/wiki/USB-TO-4CH-Serial-Converter/CDMUninstaller_v1.4.zip) to select **CDMUninstaller.exe** and open. (If **CDMUninstaller.exe** can not successfully run, please use **CDMuninstallerGUI.exe**.)



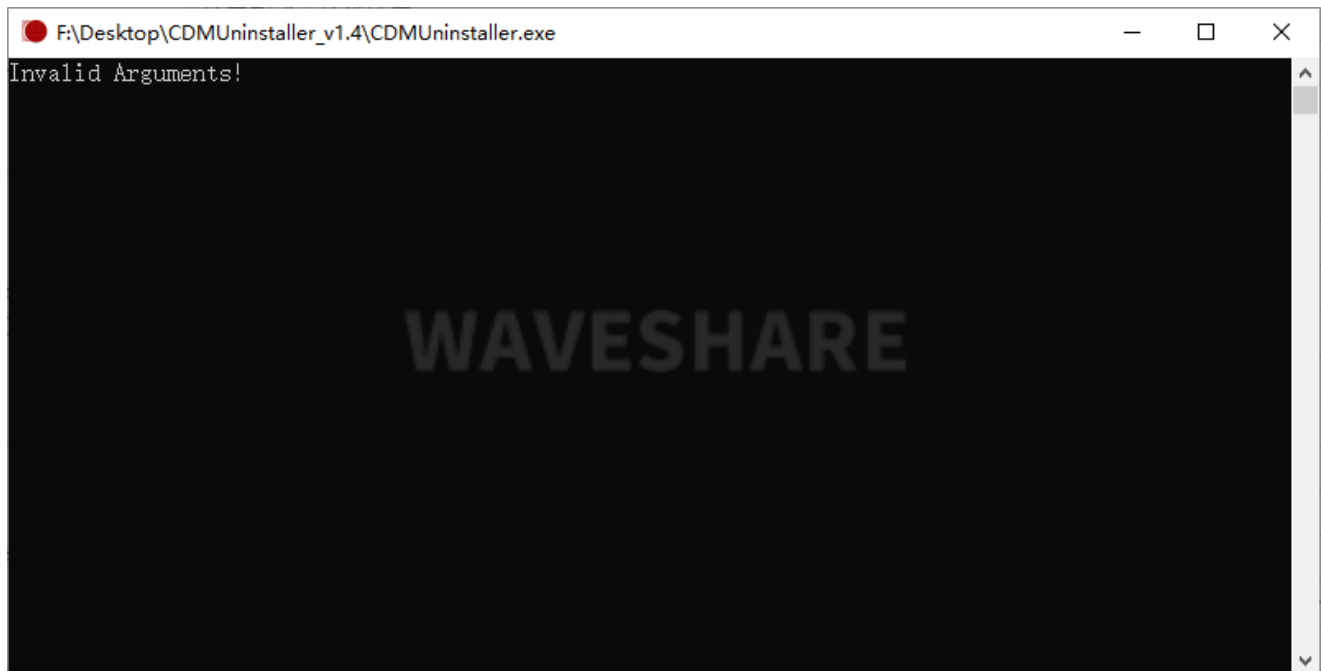
(/wiki/File:USB_TO_4CH_Serial_Converter_FAQ-02.png)

4. Configure and execute (please erase the value of "Product ID" -> Click "Add" -> ③ -> Click "Remove Devices" -> OK)



(/wiki/File:USB_TO_4CH_Serial_Converter_FAQ-03.png)

5. If the **CDMUninstaller.exe** can not successfully run (as the following shows), please use **CDMuninstallerGUI.exe**.



(/wiki/File:USB_TO_4CH_Serial_Converter_FAQ-04.png)

6. Reinstall the driver. (If the four **COM** ports cannot be recognized, perform this operation again.)

Support

Technical Support

If you need technical support or have any feedback/review, please click the **Submit Now** button to submit a ticket, Our support team will check and reply to you within 1 to 2 working days. Please be patient as we make every effort to help you to resolve the issue.

Working Time: 9 AM - 6 PM GMT+8
(Monday to Friday)

Submit Now (<https://service.waveshare.com/>)

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(https://www.waveshare.com/w/index.php?title=USB_TO_4CH_Serial_Converter&oldid=87360)"*
