TTL TO RS485 (B)

From Waveshare Wiki
Jump to: navigation, search

Overview

Half-Duplex RS485



(https://www.waveshare.com/ttl-to-rs485-b.htm)

Full-Duplex RS422



(https://www.waveshare.com/ttl-to-rs422-b.htm)

RS485, TTL

TTL TO RS485 (B) is an industrial-grade rail-mounted electrically isolated TTL-to-RS485 serial converter.

Feature

- Compatible with TTL/RS422 standard, converting the TTL signal into a balanced differential RS485 signal, supporting half-duplex communication
- Compatible with 3.3V ~ 5V TTL signal level, with anti-reverse connection and anti-over-voltage circuit on the power supply side
- 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, and anti-electrostatic
- Onboard resettable fuse and protection diodes, ensures the current/voltage stable outputs, provide over-current/over-voltage protection, improve shock resistance
- On-board RS485 input and output 120R resistors with built-in jumper caps for switching enable

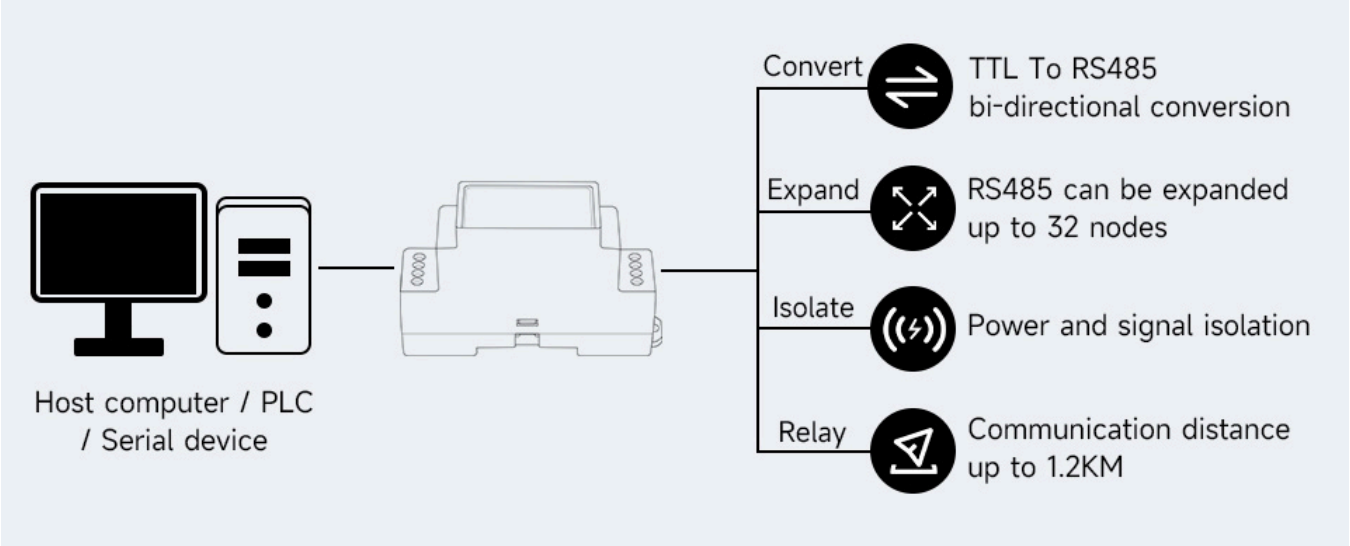
- Industrial rail-mount ABS case design, small in size, easy to install, and cost-effective

Parameters

Model	Galvanic isolated TTL To RS485 converter	
Power Port	Power supply	3.3V ~ 5V
	Interface Protection	anti-over-discharge, reverse-proof
Device interface	Compatible with TTL / RS485 standard	
TTL Interface	Interface type	Screw terminal
	Transmission distance	About 10m
	Transmission model	Point to point
RS485 Interface	Interface type	Screw terminal
	Interface Protection	Provide 600W lightningproof, surge-suppress and 15KV ESD protection
	Terminal Resistance	120R, enabled/disabled via switch
	Transmission Distance	About 1200m
	Transmission Mode	point-to-multipoint (up to 32 nodes, it is recommended to use repeaters for 16 nodes or more)
Product Appearance	Case	Rail-mount ABS case, suitable for 35mm DIN rail
	Dimensions	91.6 × 58.7 × 23.3mm

Primary Function

Convert the TTL signal into a balanced differential RS485 signal, which can be used for interface conversion and node expansion, and can also be used to extend the communication distance.



(/wiki/File:TTL_TO_RS485_(B)_012.jpg)

Interface Introduction



(/wiki/File:TTL_TO_RS485_(B)101.jpg)

TOP SIDE SCREW TERMINAL		BOTTOM SIDE SCREW TERMINAL	
VCC	Power Input DC 3.3V~5V power supply	DIP SWITCH	120R enable switch
GND	Ground	SGND	RS485 signal ground
TXD	TTL transmit data pin	A+	RS485 differential signal positive
RXD	TTL receive data pin	B-	RS485 differential signal negative

(/wiki/File:TTL_TO_RS485_(B)121.png)

Communication Connection Diagram

TTL convert to RS485, point to point, half-duplex communication, suitable for interface conversion

(/wiki/File:TTL_TO_RS485_(B)017.jpg)

TTL convert to RS485, point-to-multipoint, half-duplex communication,

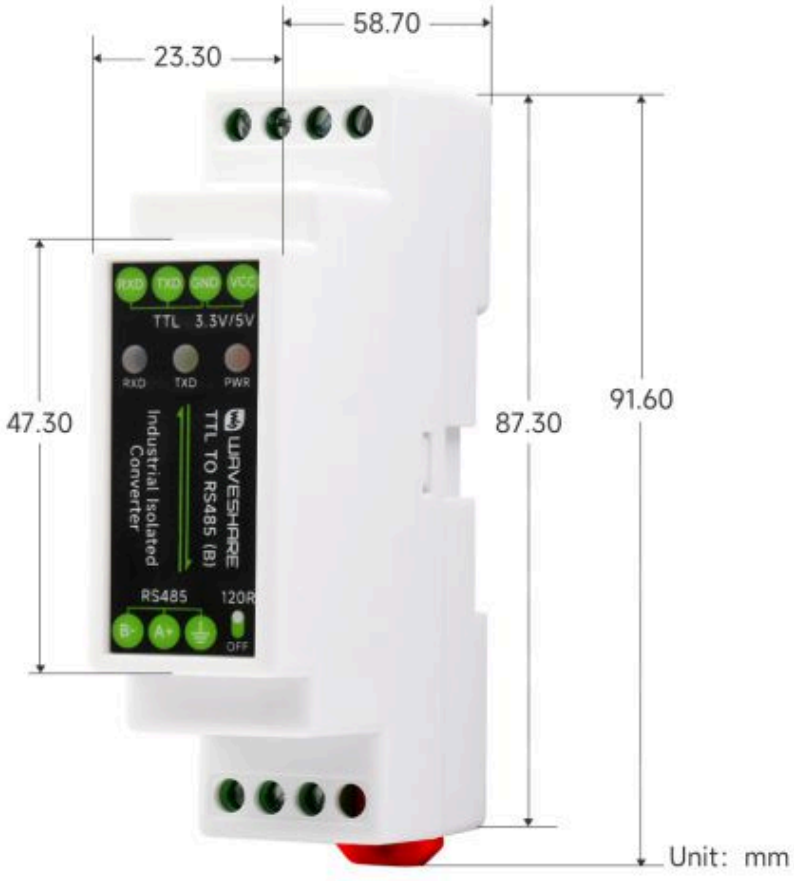
suitable for expanding nodes

(/wiki/File:TTL_TO_RS485_(B)018.jpg)

Two groups TTL To RS485 conversion, point-to-point, half-duplex communication, suitable for extending the communication distance of TTL

(/wiki/File:TTL_TO_RS485_(B)019.jpg)

Dimensions



(/wiki/File:TTL_TO_RS485_01.jpg)

Hardware Test

Test Note

Test Environment: PC (Windows).

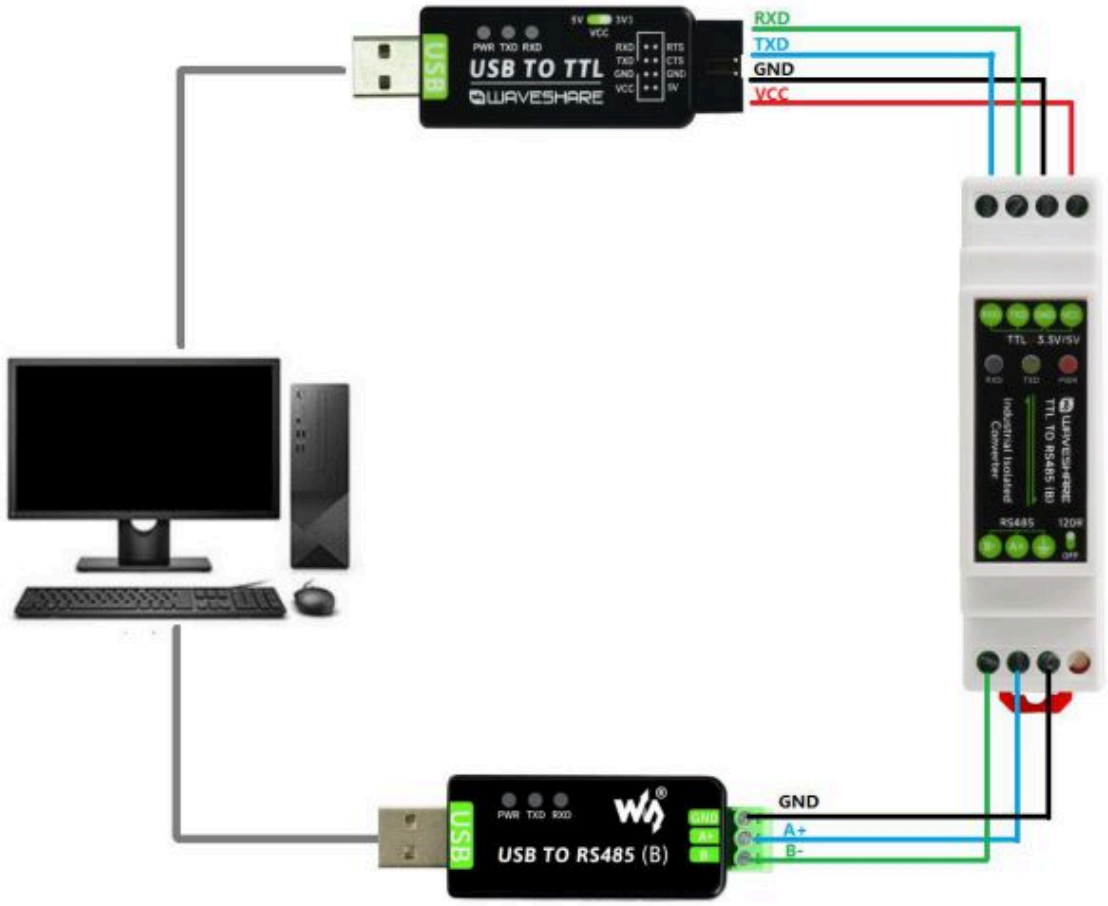
Accessories required for testing:

- TTL TO RS485 (B) —— This product
- USB TO TTL (https://www.waveshare.com/usb-to-ttl-b.htm) - not included
- USB TO RS485 (https://www.waveshare.com/usb-to-rs485.htm) - not included

Test Hardware Connection

Connect the RS485 interface of TTL TO RS485 (B) to the PC through the USB to RS485 cable. Connect the TTL interface of TTL TO RS485 (B) to the TTL interface of USB TO TTL, and then connect the USB port of USB TO TTL to the same PC for the self-transmission test. The

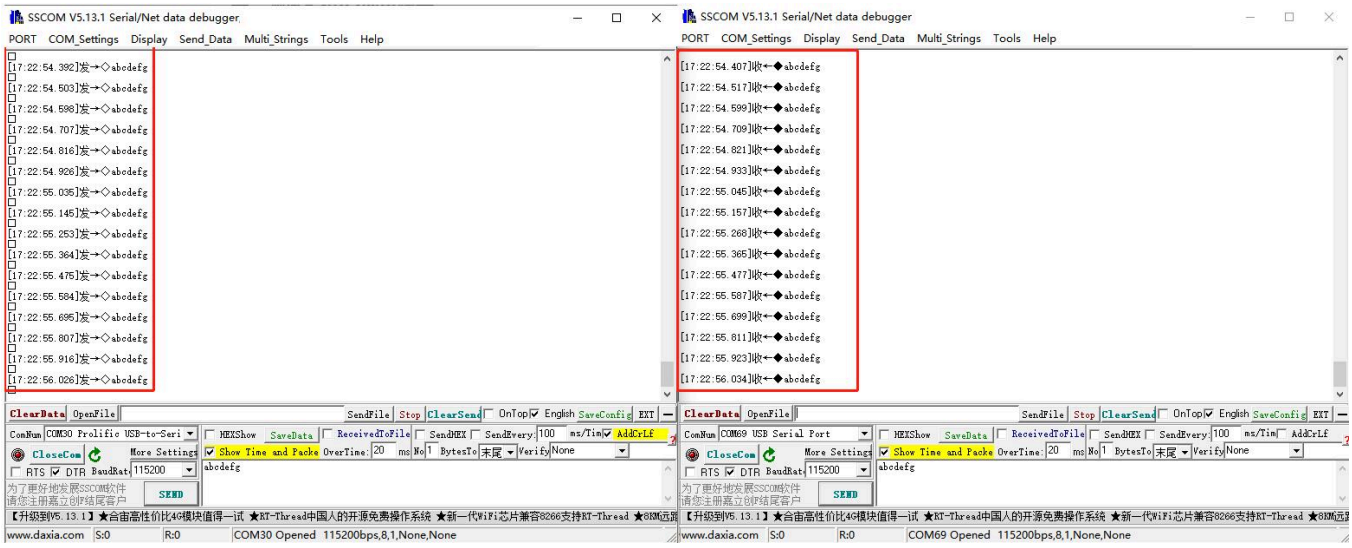
schematic diagram of the hardware connection is as follows:



(/wiki/File:TTL_TO_RS485_02.jpg)

Note: The RS485 interface of this product is also equipped with 120R Switch, the default is on, the user can set it according to the needs (set up to open, set down to NC), if signal isolation is required, you can set GND is also connected to ground.

On the PC, open two SSCOM serial port debugging assistants, open the corresponding port number, set the same baud rate, and click Send at regular intervals to send and receive normally. The screenshot of the software test is as follows:



(/wiki/File:RS232_TO_RS485_(B)_Spec07.jpg)

Note: RS485 is a half-duplex communication, and the sending and receiving test cannot be performed at the same time.

Resource

Software

- Sscom.7z (https://files.waveshare.com/upload/5/5f/Sscom.7z)

FAQ

Question: Does it support node configuration? Does it support Modbus?

Answer:

- Physically, the module only provides the voltage translator, no need to configure the parameters such as baud rate and node, and the Modbus communication needs to be achieved on the protocol layer.
- Support connecting to Modbus devices (Modbus sensor, instruments, etc.), when trying to understand the Modbus protocol, you need to learn the function code and data format of Modbus. There are various function codes, and each function code has the corresponding operation; for example, reading coil status, reading input status, reading the holding register, and so on.

Question: What is the maximum baud rate of TTL TO RS485 (B)?

Answer:

- Up to 2M baud rate (stable performance).
- The hardware solution will not limit the baud rate when using, it is mainly up to the connected TTL and RS485 devices, the communication environment and communication distance.

Question: What is the current consumption in mA of the Rail-mount TTL To RS485 Galvanic isolated Converter?

Answer:

The power consumption is very small, and the power consumption varies in different working states. Under 5V power supply, the average current is 0054ma and the power is 0.285W:

(/wiki/File:TTL_TO_RS485_B_FAQ(1).png)

Question: What should be done in case of communication failure?

Answer:

Please turn off the 120 ohm resistor by flipping the switch downwards.

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/)

Retrieved from "https://www.waveshare.com/w/index.php?title=TTL_TO_RS485_(B)&oldid=87643 (https://www.waveshare.com/w/index.php?title=TTL_TO_RS485_(B)&oldid=87643)"