USB TO RS485 (C)



The USB TO RS485 (C) is an industrial-grade, isolated USB-to-RS485 bidirectional converter based on the FT232RNL chip. It converts a host USB interface into an RS485 differential bus interface, suitable for industrial control, device debugging, Modbus device communication, long-distance serial communication, and similar applications.

The module features an isolated transceiver, TVS, ESD protection, a resettable fuse, and protection diodes, enhancing noise immunity in harsh industrial environments and reducing the impact of surges, ESD, ground potential differences, and incorrect wiring on the host and bus devices.

SKU	Product
34620	USB TO RS485 (C)

Features

- USB-to-RS485 communication with hardware-automatic data direction control
- FT232RNL chip for good compatibility, stable, and reliable communication
- Onboard isolated transceiver integrating electrical isolation and ESD protection
- RS485 interface with surge, lightning, and ESD protection
- Onboard resettable fuse and protection diodes for enhanced overcurrent, overvoltage, and transient protection
- Onboard PWR, TXD, RXD LEDs for easy monitoring of power and data status
- Supports Windows, Linux, Mac, Android, WinCE, and other operating systems

Specifications

Parameter	Description
Product Type	Industrial-grade isolated USB to RS485 converter
Host Interface	USB
Device Interface	RS485
USB Connector Type	USB-A
USB Operating Voltage	5 V
Communication Chip	FT232RNL
Data Rate	300 bps ~ 512000 bps
RS485 Pins	A+, B-, GND
RS485 Connector Type	Screw terminal
Direction Control	Hardware automatically controls data direction

Parameter	Description
RS485 Nodes	Point-to-multipoint, up to 32 nodes; more than 16 nodes recommend using a repeater
RS485 Transmission Distance	Approximately 1200 m at low baud rates
USB Transmission Distance	Approximately 5 m
RS485 Termination	Onboard 120 Ω balancing resistor
Interface Protection	600 W surge/lightning protection, 15 kV ESD protection
Isolation Method	Optical isolation
Isolation Voltage	Up to 2.5 kV
Operating Temperature	-40℃ ~ 85℃
Operating Humidity	5%RH ~ 95%RH
Supported Operating Systems	Windows 11 / 10 / 8.1 / 8 / 7 / XP, Mac, Linux, Android, WinCE

LED Indicator Descriptions

LED Indicator	Status Description
PWR	Power indicator, lights when USB is connected and voltage is detected
TXD	Transmit indicator, lights when data is being sent from the USB port
RXD	Receive indicator, lights when data is returned from the RS485 device side

Interface Description

Interface	Description
USB-A	Connects to host devices such as PC, industrial computer, Raspberry Pi, Jetson
A+	RS485 differential signal A
B-	RS485 differential signal B
GND	RS485 side reference ground; recommended for long-distance or multi-node communication

> **ISOLATION NOTES**
>
> The USB TO RS485 (C) employs an isolated design. The isolation circuitry reduces ground loops and common-mode interference between the USB host side and the RS485 bus side. The GND on the RS485 side is used as a bus reference ground and for noise immunity; it is not equivalent to directly shorting the field device ground to the computer USB ground.

Isolation and Protection

Isolated RS485 converters are suitable for scenarios where there are significant ground potential differences, many interference sources, long transmission distances, or many bus nodes. The isolation and protection design of the USB TO RS485 (C) includes:

- Optical isolation: reduces interference coupling between the USB host side and the RS485 field side
- TVS protection: suppresses surge voltages and transient spikes
- ESD protection: improves electrostatic discharge immunity during plugging/unplugging, wiring, and on-site operation
- Resettable fuse: automatically recovers after an overcurrent fault, reducing maintenance costs compared to one-time fuses
- 120 Ω termination: helps reduce signal reflections in long-distance or high-speed communication

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