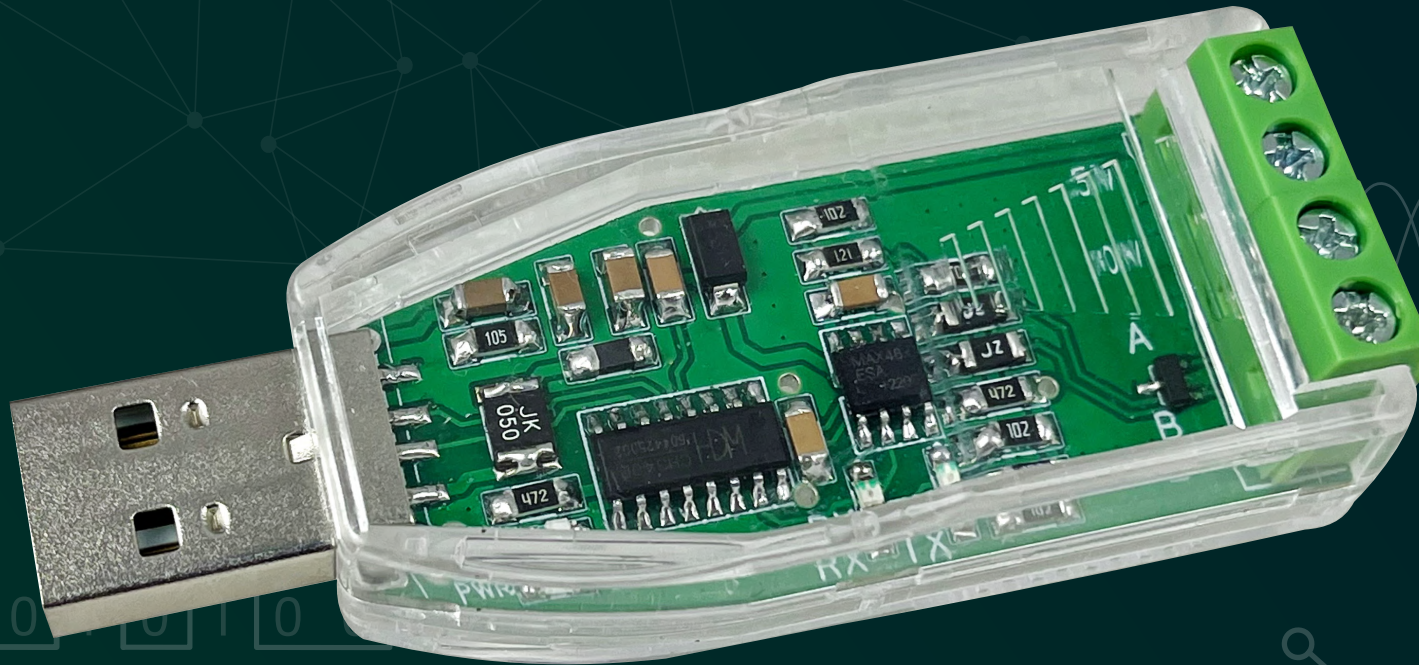




RS485/USB-A Serial Converter Module

General Description

The **RS485/USB-A Serial Converter Module** is an industrial-grade USB-to-RS485 interface designed to provide reliable serial communication between a host computer and RS485-compatible devices. Built around the **CH340B USB-to-UART bridge** and MAX487 RS485 transceiver, the module offers a compact and reliable solution for industrial automation, embedded systems, instrumentation, and other industrial communication applications.

Designed for dependable operation in demanding environments, the module incorporates industrial-grade protection circuitry and an optimized PCB layout to improve reliability and noise immunity. A **USB Type-A** connector enables convenient plug-and-play operation, while onboard **Power**, **TX**, and **RX** LEDs provide communication status indication. Field connections are made through a four-position screw terminal exposing **5 V**, **GND**, **RS485 A**, and **RS485 B** signals. The module is supplied in a **semi-transparent protective enclosure** that enhances mechanical durability while allowing easy visual inspection of the PCB and status indicators.

Features

- CH340B USB-to-UART bridge.
- MAX487 Half-Duplex RS485 transceiver:
 1. Compliant with TIA/EIA-485 standard.
 2. Maximum data rate: 250 kbps.
 3. Multi-Drop bus network topology.
 4. Supports up to 128 nodes.
- USB Type-A male connector:
 1. USB powered (5V).
 2. UART baud rate up to 2 Mbps.
- On-board 120 Ω bus termination resistor.
- Supports windows 7, 8, 10, and 11 (32-bit & 64-bit).
- Industrial protection circuitry:
 1. Resettable PTC fuse.
 2. Ferrite bead for EMI/ESD suppression.
 3. Reverse-Polarity protection.

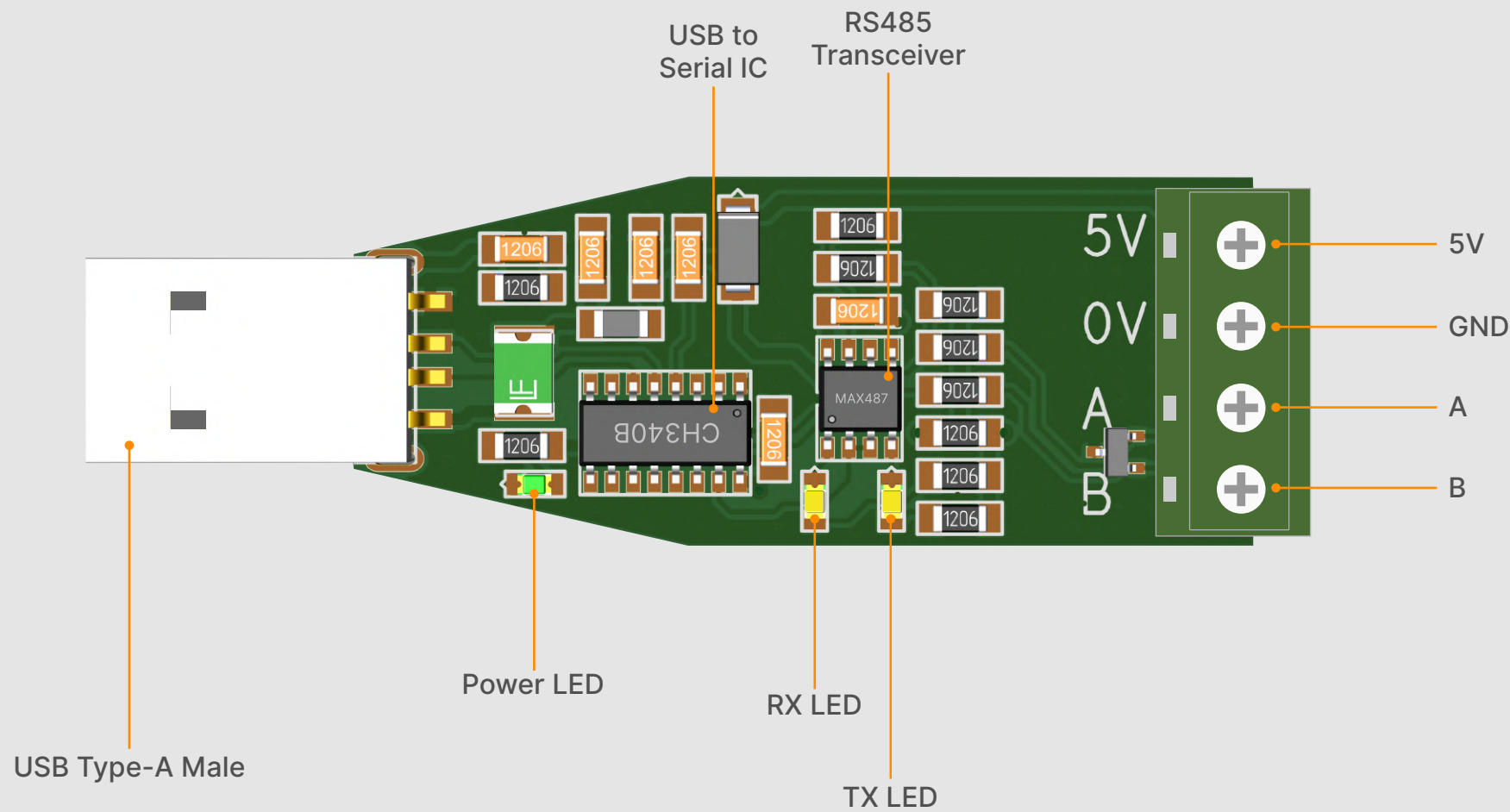
- Optimized PCB grounding for improved noise immunity.
- Isolated USB shield ground connection.
- Onboard status LEDs:
 1. Green: power indicator.
 2. Yellow: TX and RX activity indicator.
- Four-Pin screw terminal (5V, 0V, A, B).
- Compact, Plug-and-Play design.

Semi-Transparent Protective Enclosure.

Applications

- Industrial Automation.
- PLC Communication.
- Building Automation Systems.
- RS485 Sensor Networks.
- Data Acquisition Systems.
- Embedded Development.
- Smart Metering.
- SCADA Systems.
- Modbus RTU Communication.
- Long-Distance Serial Communication.

RS485/USB-A Serial Converter Module Overview



Terminal Description

Pin	Description
5V	USB Supply Output
0V	Ground
A	RS485 Non-Inverting Line
B	RS485 Inverting Line

Electrical Characteristics

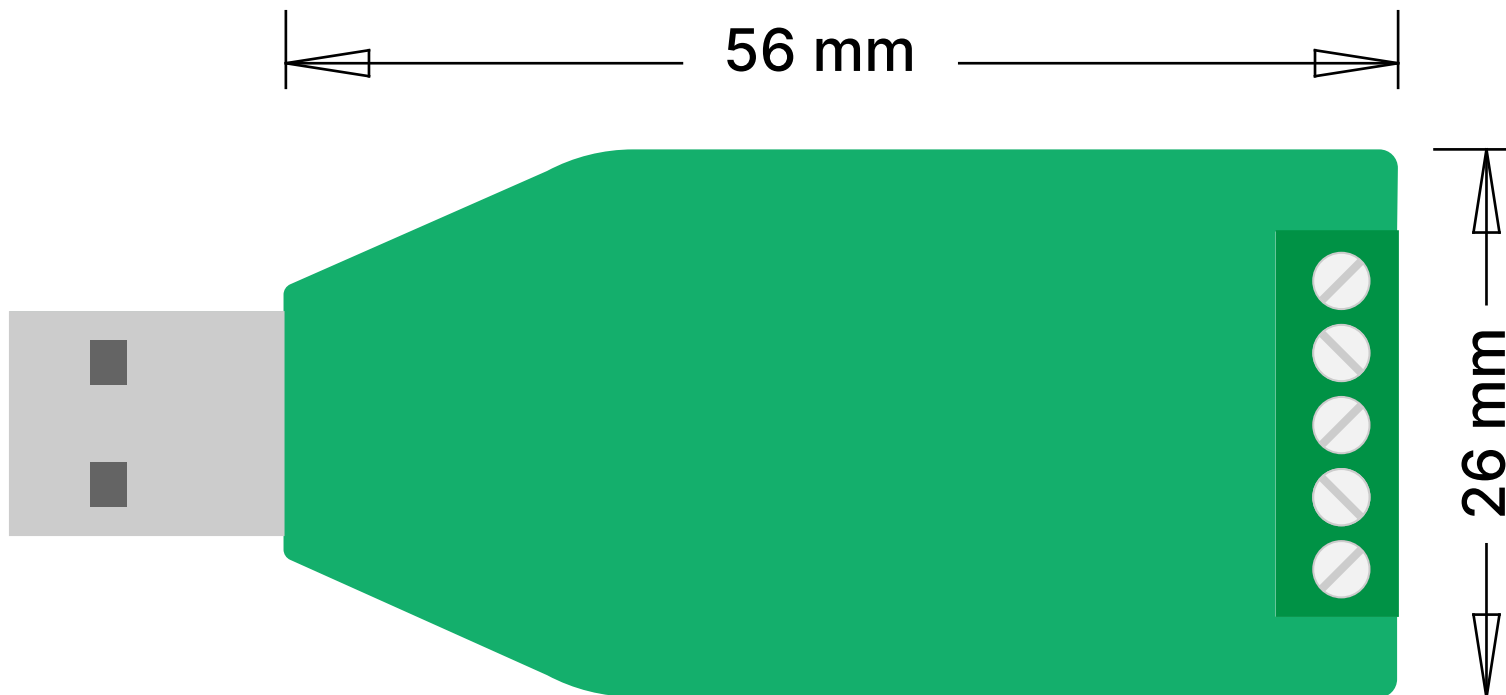
Parameter	Description
Supply Voltage	5 V (USB)
USB Standard	USB 2.0 Full-Speed
UART Baud Rate	Up to 2 Mbps (Limited to 250 Kbps by MAX487)
RS485 Data Rate	Up to 250 kbps
Communication Mode	Half-Duplex
Interface Standard	TIA/EIA-485

Protection Features

The module is designed for reliable operation in electrically noisy environments.

- **Resettable PTC Fuse** protects the USB power source and the RS485 A/B communication lines against excessive current conditions.
- **Ferrite Bead** suppresses high-frequency EMI and improves ESD immunity.
- **Reverse-Polarity Protection** prevents damage caused by accidental incorrect power connections.
- **Optimized Ground Plane** reduces ground impedance and improves signal integrity.
- **Isolated USB Shield Ground** helps reduce common-mode noise between the USB host and external RS485 network.

Mechanical Dimensions



For the latest product updates and documentation, visit: www.fares-pcb.com
For technical inquiries and customer service, contact: support@fares-pcb.com

***FARES*PCB (Head office)**

32 El-Falaky st, Bab El-Louq, Tahrir, Cairo, Egypt.

Tel: +20 2 27901841

Mob: +20 1022457902



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OUR Distributors



Address: 32 El Falaky St. Bab El Louk, Tahreer, Cairo, Egypt.

Tel: +20 2 27960551 / 27960558

Web: www.ram-e-shop.com

Email: sales@ram-electronics.com



Address: 158 Elhourya St. Elibrahymia, Alexandria, Egypt.

Tel: +20 1211981188 / +20 3 248813824

Web: makerselectronics.com

Email: info@makerselectronics.com