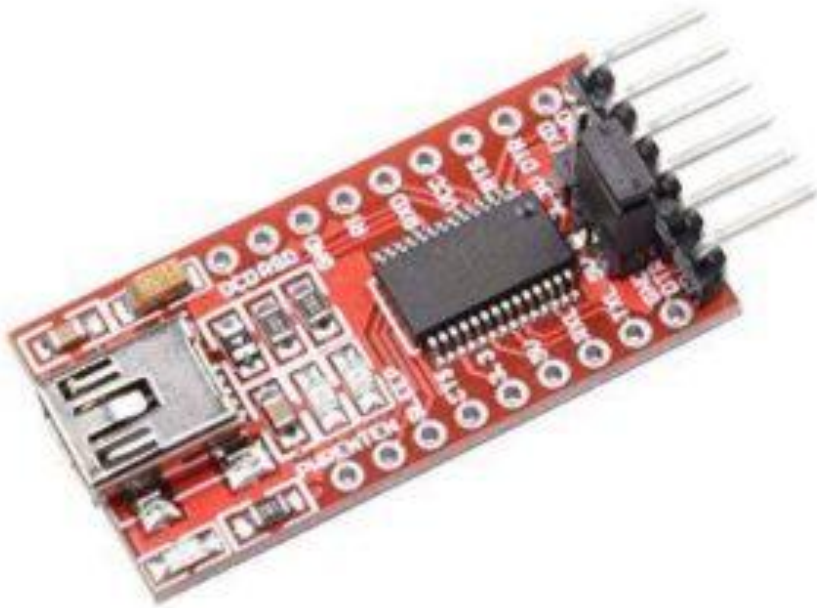


FT232RL USB to TTL FTDI Module – Switchable 3.3V/5V

The **FT232RL USB to TTL FTDI Module** is a reliable and versatile USB-to-serial communication adapter that provides a simple solution for interfacing microcontrollers, development boards, and embedded systems with a computer. Equipped with the **FTDI FT232RL chipset**, this module ensures stable, high-speed, and accurate data transmission. Its standout feature is the ability to switch between **3.3V and 5V logic levels**, making it compatible with a wide variety of microcontrollers and devices.

Whether you are programming an **Arduino Pro Mini, ESP8266, ESP32, STM32, or any other TTL-based device**, this FTDI module is an essential tool for developers, students, and electronics enthusiasts.



Key Features of FT232RL USB to TTL FTDI Module

- **High-Quality FTDI Chipset:** Built with the genuine **FT232RL chip** for reliable communication.
- **Switchable Voltage Levels:** Supports **3.3V and 5V logic levels**, making it flexible for multiple applications.
- **USB Standard:** Complies with **USB 2.0 full-speed (12 Mbps)** communication.
- **Easy Programming:** Ideal for uploading sketches to **Arduino Pro Mini** and other microcontrollers that don't have onboard USB interfaces.
- **Stable Drivers:** FTDI provides drivers for **Windows, Linux, and macOS**, ensuring compatibility across platforms.
- **Pinout Access:** Provides **TXD, RXD, GND, VCC, DTR, and CTS** pins for full communication support.
- **Compact & Lightweight:** Small form factor makes it portable and easy to use in development labs or classrooms.

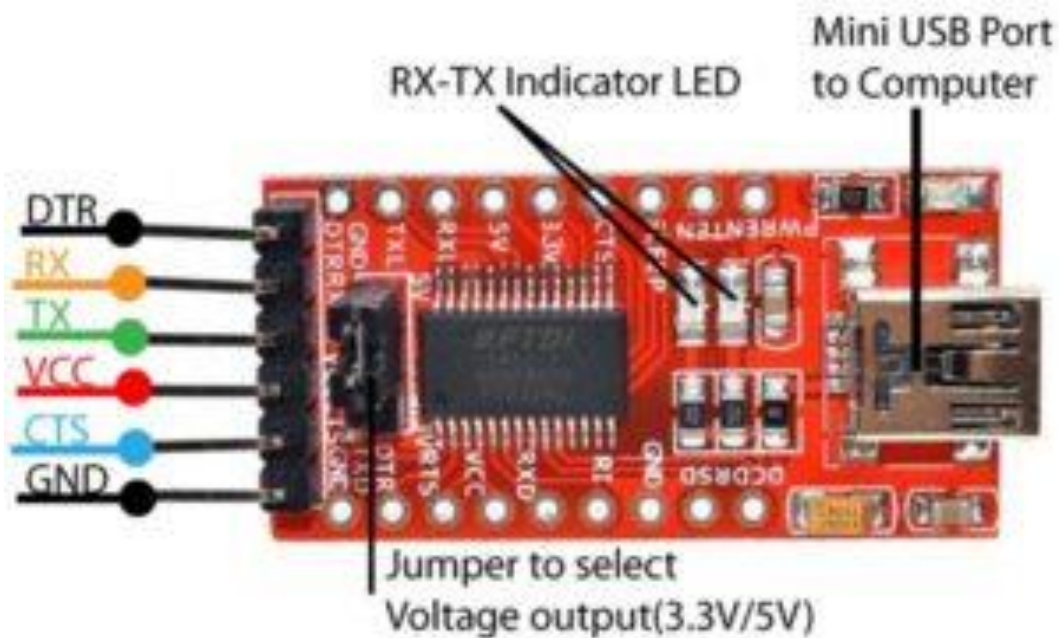
Why Choose the FT232RL USB to TTL Converter?

1. **Versatile Voltage Support** – Unlike fixed-level converters, this module has a **switchable jumper** that allows you to set logic levels to **3.3V or 5V**, ensuring compatibility with different microcontrollers.
2. **Perfect for Arduino Pro Mini** – The Arduino Pro Mini lacks a USB interface. With the **FT232RL module**, you can easily upload code and communicate via the serial monitor.
3. **Trusted Chipset** – FTDI is one of the most reputable USB-to-serial interface chip manufacturers, known for stable drivers and long-term reliability.
4. **Auto-Reset Function** – The module supports the **DTR (Data Terminal Ready)** pin, which enables automatic reset during programming for Arduino boards.
5. **Plug-and-Play** – Once drivers are installed, the FTDI adapter is detected as a **COM port** on your PC, making it simple to use with Arduino IDE or other serial communication tools.

Applications of FT232RL USB to TTL FTDI Module

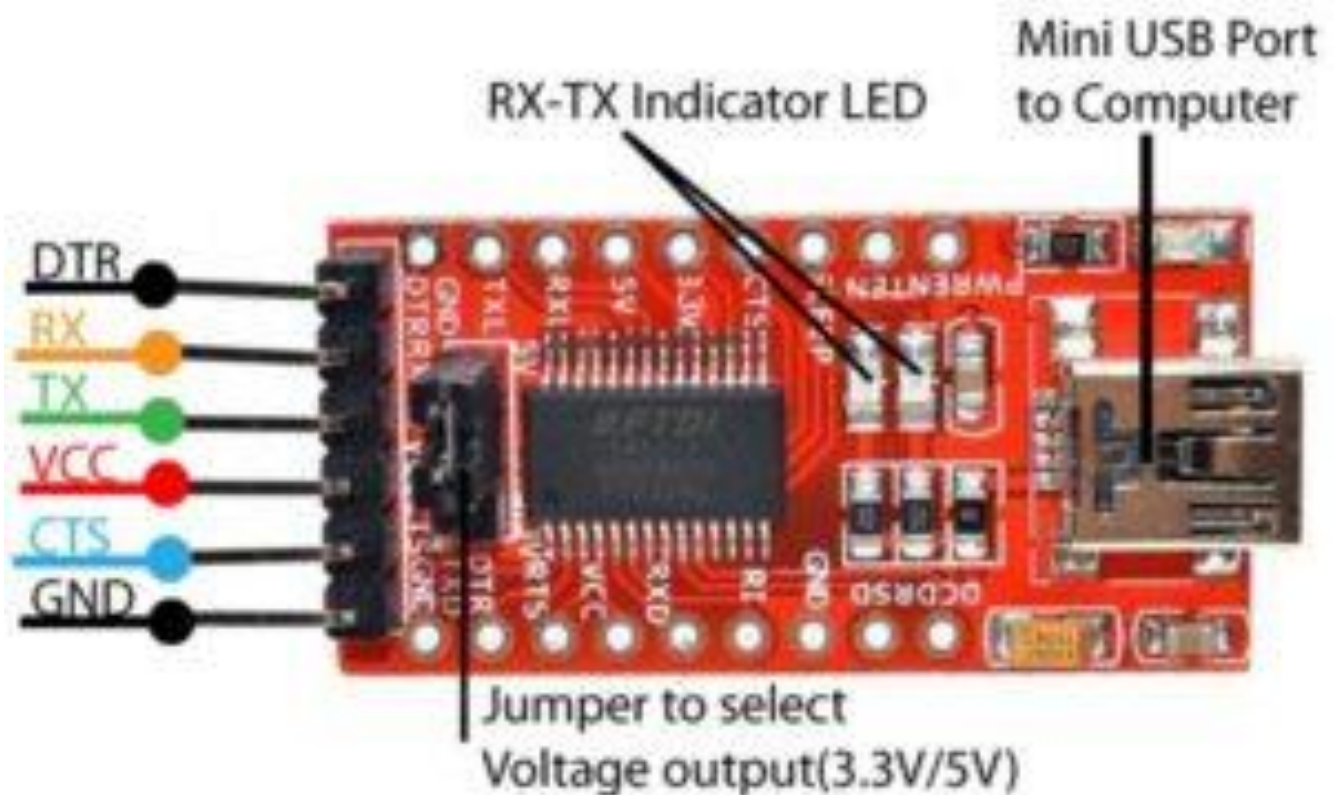
- **Arduino Programming:** Especially for **Arduino Pro Mini** and other boards without built-in USB interfaces.
- **ESP Modules:** Program and debug **ESP8266 and ESP32** boards easily.
- **Serial Debugging:** Monitor sensor outputs, IoT devices, or any microcontroller UART communication.
- **Embedded Development:** A must-have tool for developers working on **STM32, PIC, or ARM-based microcontrollers**.

- **Prototyping & Testing:** Quickly establish serial connections between your PC and project hardware.
- **Educational Projects:** Widely used in classrooms and labs for teaching microcontroller programming and serial communication.



Technical Specifications

- **Chipset:** Genuine FTDI FT232RL
- **USB Standard:** USB 2.0 Full-Speed (12 Mbps)
- **Logic Levels:** Switchable between **3.3V** and **5V**
- **Baud Rate:** Up to **3 Mbps**
- **Pins Available:** **TXD, RXD, VCC, GND, DTR, CTS**
- **Power Output:** Selectable **3.3V** or **5V** for powering external circuits
- **Driver Support:** Windows, Linux, macOS
- **Operating Temperature:** -40°C to $+85^{\circ}\text{C}$
- **Dimensions:** Compact design for easy integration



Package Includes

- 1 × FT232RL USB to TTL FTDI Module – Switchable 3.3V/5V

How to Use the FT232RL USB to TTL Module

1. **Install Drivers** – Download and install the latest FTDI drivers for your operating system from the official FTDI website.
2. **Connect to PC** – Plug the module into your computer via a USB port.
3. **Wire to Microcontroller** – Connect the pins (TXD ↔ RXD, RXD ↔ TXD, GND ↔ GND, and DTR if required).
4. **Set Voltage Level** – Use the jumper to choose **3.3V** or **5V** depending on your target board.
5. **Upload Code/Debug** – Open Arduino IDE or your preferred terminal software and begin programming or serial monitoring.

Conclusion

The **FT232RL USB to TTL FTDI Module – Switchable 3.3V/5V** is one of the most dependable and flexible USB-to-serial adapters available. With genuine FTDI drivers, selectable

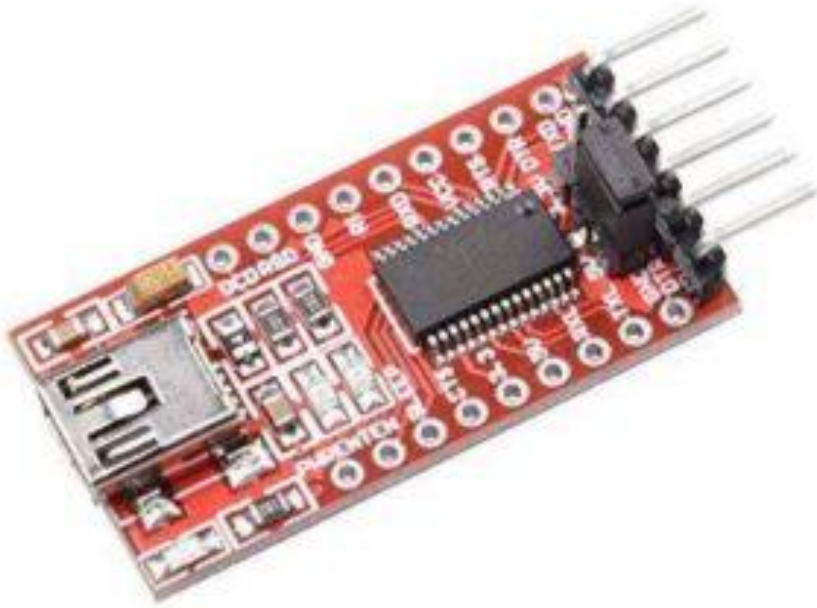
logic levels, and support for automatic reset, it is the perfect tool for **Arduino Pro Mini users, ESP developers, and embedded engineers**. Its small size, plug-and-play usability, and cross-platform compatibility make it a must-have in every electronics toolkit.

Whether you're a **student, hobbyist, or professional developer**, this FTDI module guarantees seamless communication between your PC and your microcontroller projects.

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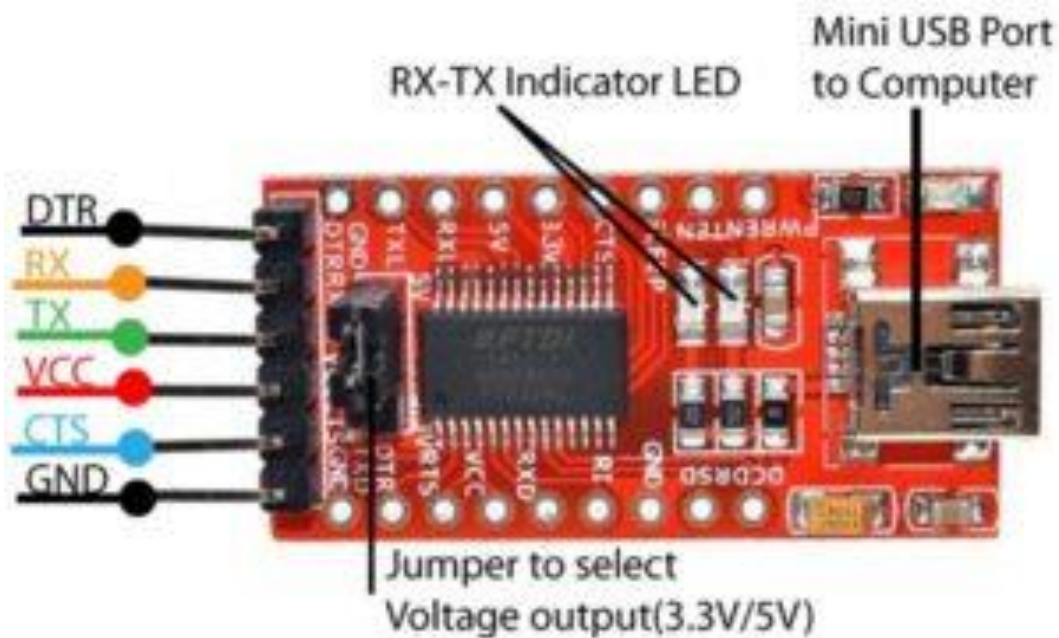
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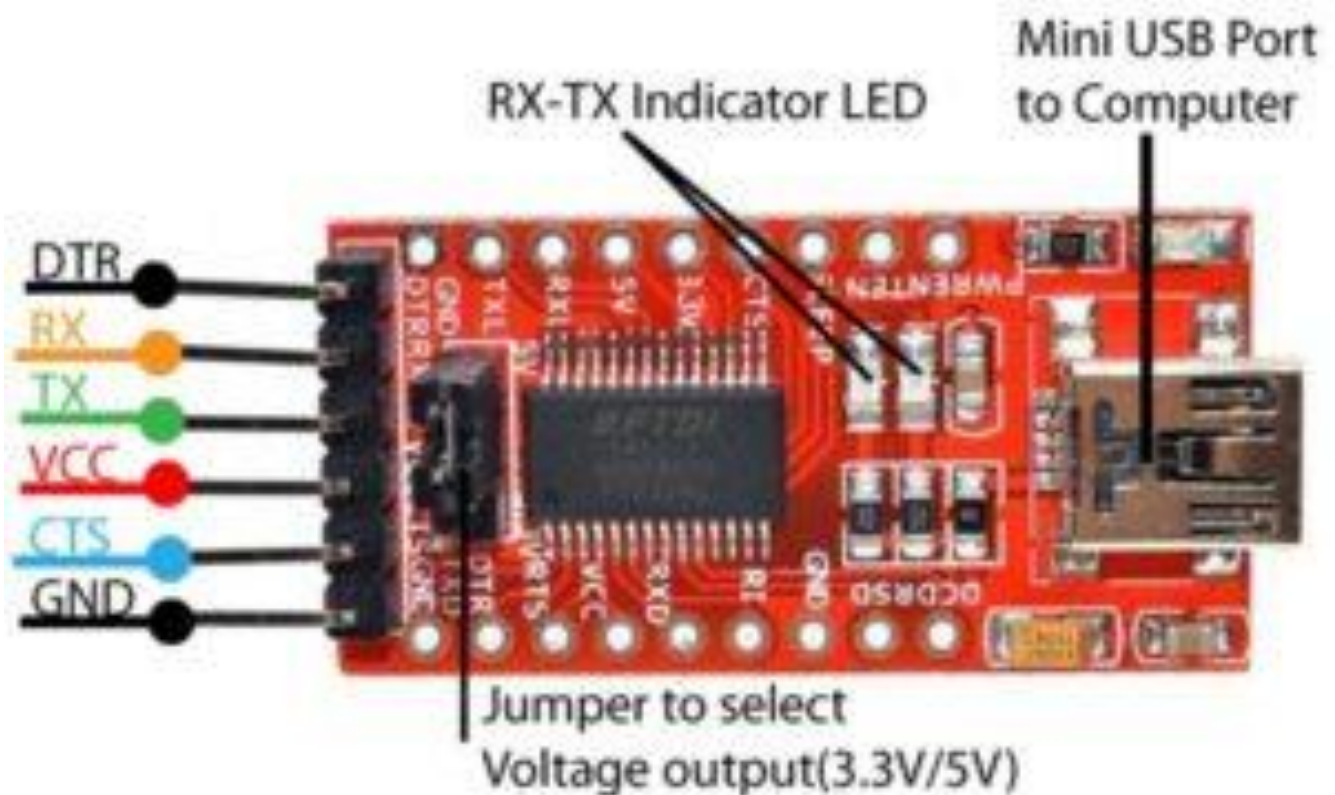
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