CP2102 USB 2.0 to TTL UART Serial Converter Module with DTR Pin

The **CP2102 USB 2.0 to TTL UART Serial Converter Module with DTR Pin** is a highly reliable and easy-to-use interface solution for connecting microcontrollers, development boards, and embedded systems to computers via USB. This small yet powerful module enables seamless communication between your PC and serial devices, making it an essential tool for electronics hobbyists, IoT developers, and embedded system engineers.

Whether you are programming an **Arduino, ESP8266, ESP32, STM32, or other microcontroller**, this CP2102 USB to TTL converter simplifies the process by providing a stable and fast serial communication bridge. Unlike many standard USB-to-serial modules, this version comes with a **DTR (Data Terminal Ready) pin**, which is especially useful for auto-reset functionality during programming.

Key Features of CP2102 USB 2.0 to TTL UART Converter with DTR Pin

- **Chipset**: Uses the Silicon Labs **CP2102 chip**, known for stability and compatibility.
- **Interface**: Converts USB signals to **TTL UART signals** (3.3V and 5V compatible).
- **DTR Pin Support**: Allows automatic reset and uploading of firmware to microcontrollers like Arduino, ESP8266, and ESP32 without manual intervention.
- **Plug-and-Play**: Supports **USB 2.0 full-speed communication** and requires minimal setup.
- **Compatibility**: Works with Windows, Linux, and macOS operating systems.
- **Baud Rate Range**: Adjustable baud rate from **300 bps up to 1 Mbps**, making it suitable for multiple communication speeds.
- **Compact Design**: Lightweight and portable, making it perfect for fieldwork and lab testing.
- **5-Pin Header**: Provides easy access to **TXD, RXD, GND, VCC, and DTR** pins.
- **Power Output Options**: Offers selectable **3.3V and 5V outputs** for powering external circuits.

Why Choose CP2102 USB to TTL Module with DTR Pin?

1. **Seamless Programming for ESP Modules** – The integrated **DTR pin** allows automatic resetting of ESP8266, ESP32, and Arduino boards during sketch uploading, eliminating the need for manual button pressing.
2. **Stable and Reliable Communication** – The CP2102 chipset is well-known for providing reliable and consistent USB-to-serial conversion, reducing the risk of data loss or unstable connections.
3. **Cross-Platform Compatibility** – Fully supported on **Windows (XP to Windows 11), Linux distributions, and macOS**, making it a versatile choice for developers.
4. **Easy to Use** – Simply install the CP2102 driver (if not already available in your OS), connect the module to your PC, and start communicating with your microcontroller or embedded system.

5. **Cost-Effective Solution** – Provides all the essential features of premium USB-to-TTL modules at an affordable price.

Applications of CP2102 USB 2.0 to TTL Converter with DTR Pin

- **Programming Microcontrollers**: Upload sketches and firmware to **Arduino, ESP8266, ESP32, and STM32 boards**.
- **Serial Debugging**: Monitor and debug serial data from sensors, IoT devices, and embedded systems.
- **IoT Development**: Ideal for creating prototypes and testing Internet of Things (IoT) devices.
- **Data Logging**: Interface with serial devices such as GPS modules, GSM modules, and wireless transceivers.
- **Educational Use**: A must-have tool for students and educators in electronics and embedded system courses.

Technical Specifications

- **Chipset**: Silicon Labs CP2102
- **USB Standard**: USB 2.0 Full Speed (12 Mbps)
- **Voltage Levels**: Selectable **3.3V and 5V** logic levels
- **Pins Available**: **TXD, RXD, GND, VCC, DTR**
- **Baud Rate**: 300 bps to 1 Mbps
- **Driver Support**: Windows, Linux, macOS
- **Dimensions**: Compact PCB design for easy integration
- **Operating Temperature**: –40°C to +85°C

Package Includes

- **1 × CP2102 USB 2.0 to TTL UART Serial Converter Module with DTR Pin**

Conclusion

The **CP2102 USB 2.0 to TTL UART Serial Converter Module with DTR Pin** is the perfect solution for developers, students, and hobbyists who need a reliable, fast, and user-friendly USB-to-serial interface. Its **automatic reset functionality, wide compatibility, and selectable voltage levels** make it a go-to module for programming, debugging, and communication with microcontrollers. Whether you are working on a DIY Arduino project, building IoT devices, or developing embedded systems, this module ensures stable and efficient performance every time.

Bring simplicity and reliability to your projects with the **CP2102 USB to TTL UART Converter Module with DTR Pin** – a must-have tool in your electronics toolkit.