Chengdu Ebyte Electronic Technology Co.,Ltd

Wireless Modem

User Manual

E810-T1X
USB to TTL Serial Converter Module

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1 Product Overview

1.1 Module Introduction

The E810-T1x series is a high-performance, multifunctional USB to TTL serial converter module designed by Chengdu Ebyte Electronic Technology Co., Ltd. for engineers, developers, and electronics enthusiasts . Based on three industry-leading high-performance chips: the CH343G , FT232RL , and FT232HL , this series offers a variety of options, ranging from cost-effective to high-speed and low-latency.

To adapt to different application scenarios, the E810-T1x series also provides:

Two USB interfaces: the traditional Type-A interface and the Type-C interface that is mainstream in modern devices.

Two working versions: standard non-isolated version and isolated version suitable for complex industrial environments.

Multiple level support: Onboard level conversion circuit supports 1.8V , 2.5V , 3.3V and 5V TTL level switching, with excellent compatibility.

E810-T1x series has exquisite design, stable performance and easy use. It is an ideal tool for your microcontroller debugging, serial communication, project development and electronic DIY .

1.2 Main Features

- Multi-chip solution: covers CH343G , FT232RL , and FT232HL to meet different performance and cost requirements.
- Wide voltage compatibility: supports four TTL levels of 1.8V/2.5V/3.3V/5V , which can be easily switched through jumper caps or dip switches.
- Dual interface optional: Provides two physical interfaces , USB Type-A and Type-C , to keep up with technological trends.
- Isolation / non-isolation optional: The isolated version provides 2500V RMS electrical isolation, effectively protecting the equipment and enhancing the anti-interference ability in complex electromagnetic environments.
- High-speed communication: supports communication baud rates up to 12Mbps (depending on the specific model), meeting the needs of high-speed data transmission.
- Multi-system support: fully compatible with mainstream operating systems such as Windows , Linux , and macOS .
- three LED indicators for power (PWR), transmit (TXD), and receive (RXD) are onboard to monitor the module's working status in real time.
- Industrial-grade design: The isolated version adopts industrial-grade standard design with an operating temperature range of -40℃ to +85℃ .

1.3 Model Description

The E810-T1x series follows the following naming conventions to help users quickly identify product specifications:

E810-T1 XYPZ

- E810-T1: represents the basic product series number, a USB to TTL module.
- X (rate): 3 represents 3M, 6 represents 6M, A represents 12M .
- Y (Level): 5 represents the level.
- P (Isolated): P stands for isolated version. Without this letter, it is a non-isolated version.
- Z (Interface): A represents Type-A interface , C represents Type-C interface.

For example, E810-T1A5PC indicates that the module has a maximum rate of 12 Mbps , is an isolated version, and uses a Type-C interface.

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2 Technical Specifications

2.1 General technical parameters

Parameter items	Parameter value	Remark
Power supply mode	Direct power supply from USB port	DC 5V ± 5%
Support TTL level	1.8V / 2.5V / 3.3V / 5V	Setting by DIP switch
Default factory level	1.8V	
Communication Protocol	USB 2.0 (Full Speed)	
Operating temperature	-40 ℃ ～ +85 ℃	Industrial grade
Interface form	2.54mm pitch pin header	
Indicator light	PWR (blue), TXD (red), RXD (green)	Power, send, receive
Isolation voltage	1.5kV	Isolate version only
System Support	Windows, Linux, macOS	

2.2 Model Specification Comparison

Model	Chip Solutions	Interface Type	Isolation method	Maximum baud rate	Key Features
E810-T165A	CH343G	Type-A	Non-isolated	6Mbps	High cost-effectiveness, driver-free (Win10/11)
E810-T165PA	CH343G	Type-A	Isolation	6Mbps	Industrial-grade isolation, high cost performance
E810-T165C	CH343G	Type-C	Non-isolated	6Mbps	Type-C interface, cost-effective
E810-T165PC	CH343G	Type-C	Isolation	6Mbps	Type-C interface, industrial-grade isolation
E810-T135A	FT232RL	Type-A	Non-isolated	3Mbps	Classic, stable, and good compatibility
E810-T135PA	FT232RL	Type-A	Isolation	3Mbps	Industrial-grade isolation, classic stability
E810-T135C	FT232RL	Type-C	Non-isolated	3Mbps	Type-C interface, classic and stable
E810-T135PC	FT232RL	Type-C	Isolation	3Mbps	Type-C interface, industrial-grade isolation
E810-T1A5A	FT232HL	Type-A	Non-isolated	12Mbps	High speed, low latency
E810-T1A5PA	FT232HL	Type-A	Isolation	12Mbps	Industrial-grade isolation, high speed

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E810-T1A5C	FT232HL	Type-C	Non-isolated	12Mbps	Type-C interface, high speed
E810-T1A5PC	FT232HL	Type-C	Isolation	12Mbps	Type-C interface, industrial-grade isolation

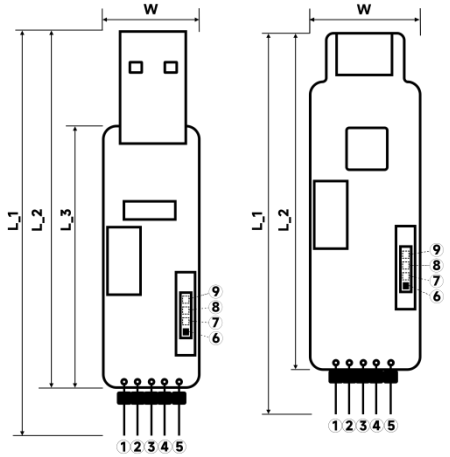
2.3 Chip Solution Comparison

Chip model	Manufacturer	Maximum baud rate	Main Features	Driver requirements
CH343G	Nanjing Qinheng Microelectronics(WCH)	6Mbps	Cost-effective, built-in clock, driver-free for Win10/11 and new Linux/macOS	Some old systems need to install the official VCP driver
FT232RL	FTDI	3Mbps	Industry benchmark, mature and stable, with excellent compatibility	Need to install FTDI official VCP driver
FT232HL	FTDI	12Mbps	High-speed USB to serial / parallel port, supports multiple modes, and has strong performance	Need to install FTDI official VCP driver

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3 Instructions

3.1 Product Dimensions and Pin Definition



Model specifications	L_1(mm) ± 0.2	L_2(mm) ± 0.2	L_3(mm) ± 0.2	W(mm) ± 0.2
E810-T135A	73.5	64.8	50	18.1
E810-T135PA				
E810-T165A	71.4	62.6	47.8	
E810-T165PA				
E810-T1A5A	77.2	68.8	54	
E810-T1A5PA				
E810-T135C	60.8	51.9		
E810-T135PC				
E810-T165C	58.3	50.0		
E810-T165PC				
E810-T1A5C	64.5	55.8		
E810-T1A5PC				

TTL serial port signal through a 5-pin bent pin header . The pin definitions are as follows:

SN	Silkscreen	Functional Description
1	RXD	Serial data receiving end, connected to the TXD of the target device
2	TXD	Serial data sending end, connected to the RXD of the target device

3	GND	Power ground
4	GND	Power ground (shared with pin 3)
5	VBB/VCC	Power output, the voltage value is determined by the level selection switch (1.8V/2.5V/3.3V/5V), which can power external devices

3.2 Level Switching

The module is equipped with a level selection dip switch for switching the VCC output voltage and TXD/RXD signal levels.
Operation method: According to the silk screen instructions on the board, turn the dip switch to the corresponding position to select the required level.
Warning: Please switch the level when the module is not connected to any device (including USB port and target device) to avoid damaging the device! Make sure the level is correct before connecting.

SN	Definition	Illustrate
6	Toggle switch position 1	1.8V level output mode
7	Toggle switch position 2	2.5V level output mode
8	Toggle switch position 3	3.3V level output mode
9	Toggle switch position 4	5V level output mode

3.3 Indicator light status description

Indicator light	Color	State	Describe
PWR	blue	Constantly on	The module is correctly connected to the USB port and the power supply is normal
TXD	red	Flash	sending data outward through the TXD pin
RXD	green	Flash	receiving external data through the RXD pin

3.4 Driver Installation

- CH343G Series (E810-T165xx) :
    1. On Windows 10/11 , new Linux kernel (V2.6+) , and macOS (Catalina and above), there is usually no need to manually install the driver, as the system will automatically recognize it.
    2. If the system fails to automatically recognize it, please go to the Qinheng official website to download and install the latest VCP (virtual serial port) driver.
- FT232RL/FT232HL Series (E810-T135xx / E810-T1A5xx) :
    3. All operating systems need to install the VCP driver officially provided by FTDI .
    4. Please visit the VCP Drivers page on the FTDI official website (https://ftdichip.com/drivers/vcp-drivers/) and download and install the corresponding driver based on your operating system type.

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		Processor Architecture							
Operating System	**Release Date**	**X86 (32-Bit)**	**X64 (64-Bit)**	**PPC**	**ARM**	**MIPSII**	**MIPSIV**	**SH4**	**Comments**
Windows (Desktop)*	2025-03-04	2.12.36.20	2.12.36.20	–	2.12.36.20A*** *	–	–	–	WHQL Certified. Includes VCP and D2XX. Available as a setup executable (non-ARM64). Please read the Release Notes and Installation Guides.
Windows (Universal)***	2025-03-04	2.12.36.20U	2.12.36.20U	–	2.12.36.20UA	–	–	–	WHQL Certified. Includes VCP and D2XX.
Linux	–	–	–	–	–	–	–	–	All FTDI devices now supported in Ubuntu 11.10, kernel 3.0.0-19 Refer to TN-101 if you need a custom VCP VID/PID in Linux VCP drivers are integrated into the kernel.
Mac OS X 10.3 to 10.8	2012-08-10	2.2.18	2.2.18	2.2.18	–	–	–	–	Refer to TN-105 if you need a custom VCP VID/PID in MAC OS
Mac OS X 10.9 to 10.13	2019-12-24	–	2.4.2	–	–	–	–	–	This driver is signed by Apple
Mac OS X 10.14	2019–12-24	–	2.4.4	–	–	–	–	–	This driver is signed by Apple
Mac OS X10.15 and macOS 11/12	2022-06-13		1.5.0 (zip) 1.5.0 (dmg)		1.5.0 (zip) 1.5.0 (dmg)				This is a Beta driver release and the installer should be run from the Applications folder on your machine

* Includes the following version of the Windows operating system: Windows 10, Windows 11, Windows Server 2022 and Windows server 2025.

you can see the newly added COM port in your computer's "Device Manager " , which means the module is ready.

3.5 Connection diagram

The following figure shows the connection method of the E810-T1x series module. Please note that RXD and TXD are cross-connected.

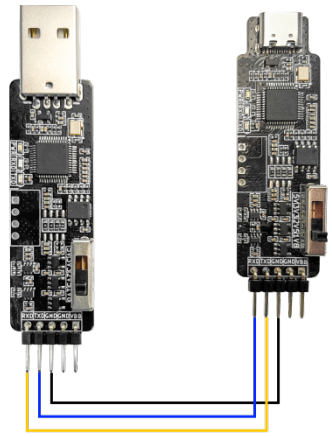


Figure 1 : E810-T1x Series Connection Diagram

4 Notes

1. Verify voltage levels: Before connecting to a target device, be sure to use a multimeter or other tool to confirm that the output voltage of the VCC pin matches the operating voltage of the target device. Incorrect voltages may permanently damage your device.
2. Correct wiring: Please ensure that the RXD , TXD , and GND pins are correctly connected to the target device. In particular, RXD and TXD need to be cross-connected.
3. Electrostatic protection: This product is an electrostatically sensitive device. Before touching the module, please release static electricity from your body (such as touching a metal object) and try to avoid directly touching the components on the board.
4. Hot plugging is prohibited: During data transmission, do not unplug the USB module directly. Stop data communication first and safely eject the USB device before unplugging it.
5. Driver problem: If the device cannot be recognized, please check whether the driver is installed correctly, or try changing the USB port or USB cable.
6. Power supply capability: The power supply capability of the VBB/VCC pin is limited (usually less than 500mA , depending on the USB port) and is not recommended for driving high-power devices.

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Revision History

Version	Revision Date	Revision Notes	Maintainer
1.0	2025-7-29	Initial version	LZH

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