

CH9114 Evaluation Board Reference

Version: 1

<https://wch-ic.com>

1. Overview

These evaluation boards are used to demonstrate the functions of the USB2.0 to 4 serial ports chip CH9114. These example evaluation boards are TTL level, which can be used to test the full serial port function and other functions of the CH9114 series chip. The I/O of CH9114 chip supports independent power supply, and the TTL level evaluation board supports power supply voltages such as 3.3V, 2.5V, 1.8V, etc. The TTL serial ports are led out by pin headers.

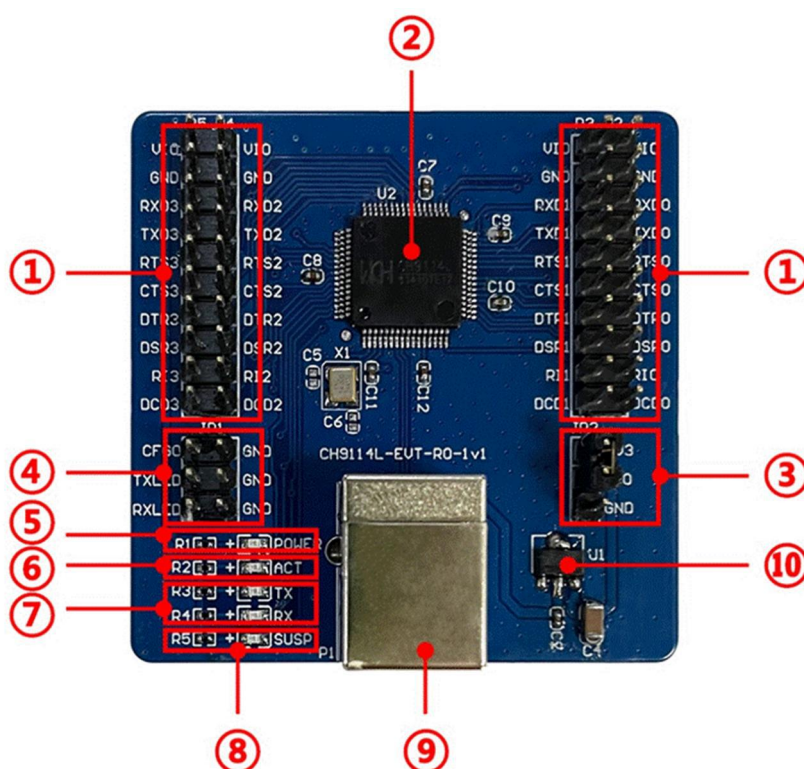
CH9114 has a built-in EEPROM, the parameters of the chip can be configured through the dedicated configuration software CH34xSerCfg.exe, such as VID, PID, vendor information and product information strings.

2. Evaluation Board Hardware

2.1. CH9114L to 4-channel TTL UART

Refer to CH9114SCH.pdf document for evaluation board design.

The picture of the evaluation board is shown below:



Function description of each unit:

1: TTL UART 0/1/2/3, let out by pin headers

2: Main control chip CH9114L

3: VIO power supply selection interface, the UART IO voltage is 3.3V when VIO is shorted to 3V3

4: Functional configuration pin interfaces, configuration instructions are as follows:

| Configuration Function Pins | Configuration Description |
|-----------------------------|---|
| CFG0 | During power-on, if it is detected that this pin is connected to an external pull-down resistor, all serial ports will automatically enable the hardware flow control function. |
| TXLED(CFG1) | During power-on, if it is detected that the pin is connected to an external pull-down resistor, all R1x/TNOWx pins will be configured as TNOW functions. Otherwise, the RI function and TNOW function are configured by detecting the level of the R1x/TNOWx pins during power-on. The high level enables the RI function, and the low level enables the TNOW function. |

5: LED1-POWER power indicator LED, indicates whether the VIO is connected

6: LED2-ACT pin indicator LED, indicates USB configuration completion status

7: LED3/LED4- UART transmit/receive indicator LED, any UART with data communication will indicate

8: LED5-SUSP- USB suspend state output pin, low level is active, outputs high level in normal working state, outputs low level after suspending

9: P1-USB interface, connects to USB host via USB cable

10: U1-3.3V voltage conversion chip, converts VBUS of USB interface to 3.3V for the main control chip power supply, it can also be designed to use an external 3.3V power supply directly to power CH9114L and serial port peripherals

GPIO pins correspondence

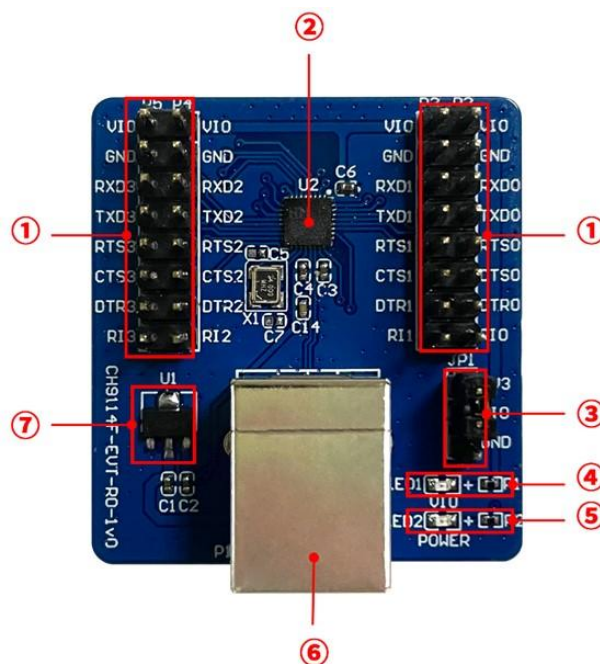
| MODEM Mode | GPIO Mode |
|------------|-----------|
| RTS0 | GPIO0 |
| CTS0 | GPIO1 |
| DTR0 | GPIO2 |
| DSR0 | GPIO3 |
| DCD0 | GPIO4 |
| RI0 | GPIO5 |
| RTS1 | GPIO6 |
| CTS1 | GPIO7 |
| DTR1 | GPIO8 |

| | |
|------|--------|
| DSR1 | GPIO9 |
| DCD1 | GPIO10 |
| RI1 | GPIO11 |
| RTS2 | GPIO12 |
| CTS2 | GPIO13 |
| DTR2 | GPIO14 |
| DSR2 | GPIO15 |
| DCD2 | GPIO16 |
| RI2 | GPIO17 |
| RTS3 | GPIO18 |
| CTS3 | GPIO19 |
| DTR3 | GPIO20 |
| DSR3 | GPIO21 |
| DCD3 | GPIO22 |
| RI3 | GPIO23 |

2.2. CH9114F to 4-channel TTL UART

Refer to CH9114SCH.pdf document for evaluation board design.

The picture of the evaluation board is shown below:



Function description of each unit:

- 1: TTL UART 0/1/2/3, let out by pin headers
- 2: Main control chip CH9114F
- 3: VIO power supply selection interface, the UART IO voltage is 3.3V when VIO is shorted to 3V3

- 4: LED1-VIO power indicator LED, indicates whether the VIO is connected to power
- 5: LED2-POWER power indicator LED, indicate whether power is connected
- 6: P1-USB interface, connect to USB host via USB cable
- 7: U1-3.3V voltage conversion chip, converts VBUS of USB interface to 3.3V for the main control chip power supply, it can also be designed to use an external 3.3V power supply directly to CH9114F and serial port peripherals

GPIO pins correspondence:

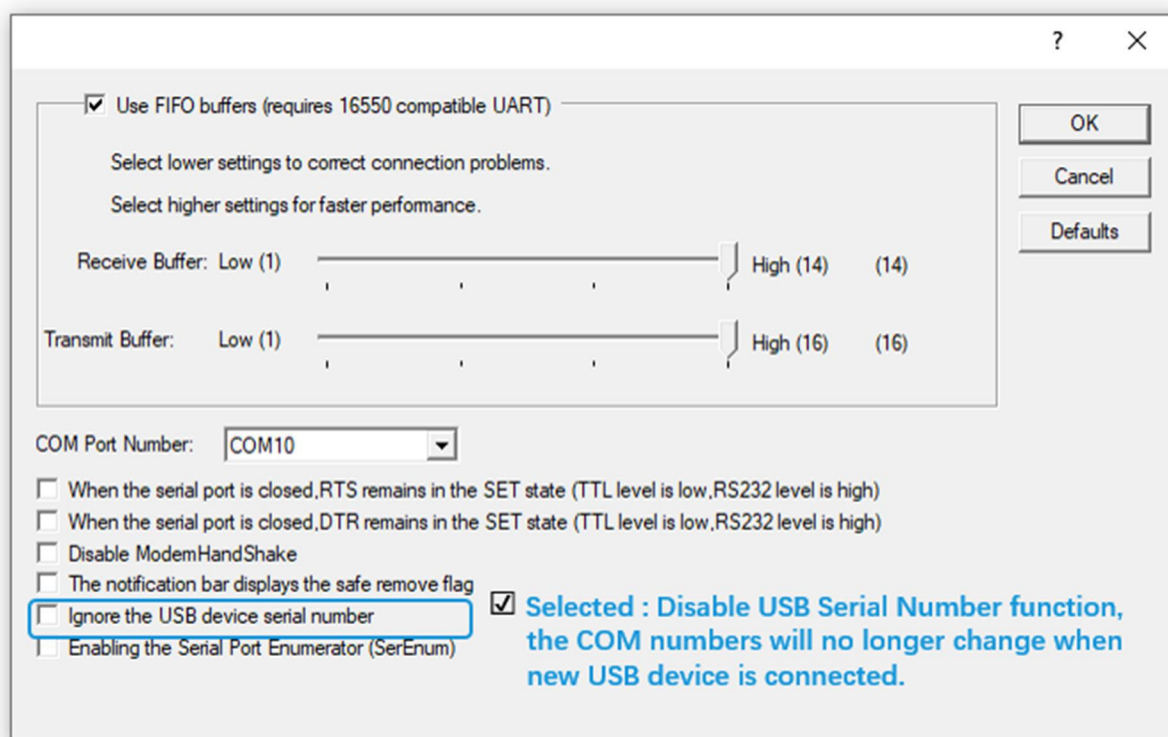
| MODEM Mode | GPIO Mode |
|------------|-----------|
| RTS0 | GPIO0 |
| CTS0 | GPIO1 |
| DTR0 | GPIO2 |
| RI0 | GPIO5 |
| RTS1 | GPIO6 |
| CTS1 | GPIO7 |
| DTR1 | GPIO8 |
| RI1 | GPIO11 |
| RTS2 | GPIO12 |
| CTS2 | GPIO13 |
| DTR2 | GPIO14 |
| RI2 | GPIO17 |
| RTS3 | GPIO18 |
| CTS3 | GPIO19 |
| DTR3 | GPIO20 |
| RI3 | GPIO23 |

3. USB Serial Number instruction

CH9114 integrates USB Serial Number, this function can assign fixed COM numbers for each device according to different serial number in Windows and other systems, it can achieve the effect of keeping COM numbers fixed when the same device is connected to different USB ports, and assign different COM numbers to multiple devices due to different serial numbers when using them.

During the factory testing phase, in order to improve efficiency, you can disable this feature by ☒ checking "Ignore the USB device serial number" to ensure that the COM numbers of the same computers do not accumulate as the new device is connected. This method is only supported in VCP vendor driver mode.

Setting method: Device Manager -- Ports (COM&LPT) -- Right click USB-Enhanced-SERIAL-A/B/C/D CH9114 -- Properties -- Port Settings -- Advanced:



4. Downloads

| No. | Resources | | File Name(Click to link) |
|-----|-----------|--|---|
| 1 | Datasheet | | CH9114DS1.PDF |
| 2 | Drivers | Windows VCP One-Key installation driver | CH343SER.EXE |
| 3 | | Windows VCP vendor driver | CH343SER.ZIP |
| 4 | | Windows CDC One-Key installation driver | CH343CDC.EXE |
| 5 | | Windows CDC driver | CH343CDC.ZIP |
| 6 | | Android driver-free library and demo | CH341SER_ANDROID.ZIP |
| 7 | | macOS VCP vendor driver | CH341SER_MAC.ZIP |
| 8 | | Linux driver | Please send email to tech@wch.cn |
| 9 | Tools | USB configuration tool | CH34xSerCfg.ZIP |
| 10 | | Serial port debug tool | COMTransmit.ZIP |
| 11 | | Serial port number batch management tool | ComPortManager.ZIP |

Note: CH9114 supports both CDC serial port drivers which integrated by system and VCP vendor drivers. VCP vendor driver has more complete functions, supports full serial port function, hardware flow control, GPIO function, USB parameter configuration, supports continuous and stable transmission at high baud rates. VCP driver is preferred.

For more USB to serial ports chip selection, please refer to: <https://special.wch.cn/en/produce>