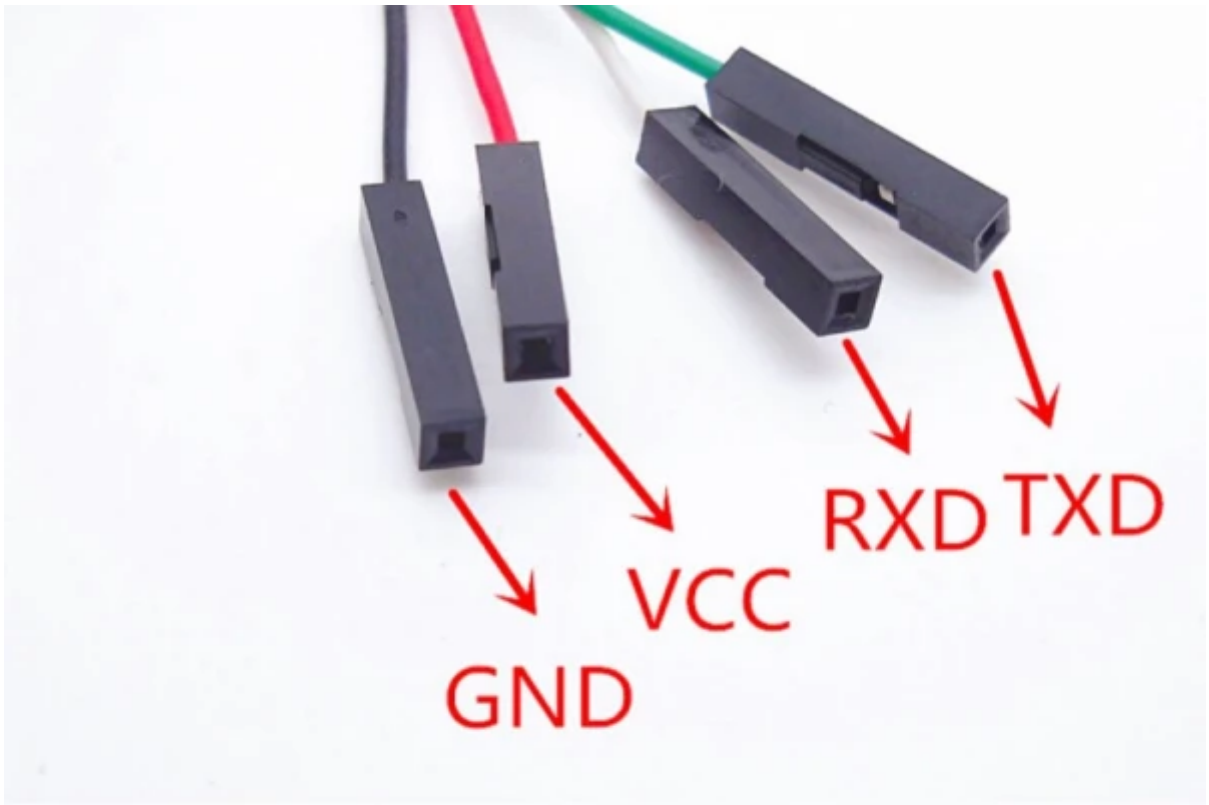
# UART Serial Console

Most of radxa's products define pins 8 (TX) and 10 (RX) on the GPIO pins as UART serial communication interfaces to make it easier to troubleshoot problems in the early startup phase of the system.

## Preparation

- Radxa product with GPIO, compatible power supply
- PC
- USB to TTL Serial Cable




**TIP**

For Radxa products based on Rockchip chips, the default UART configuration is 1500000n8 without flow control.

Please check if your USB to TTL serial cable supports 1.5M baud rate:

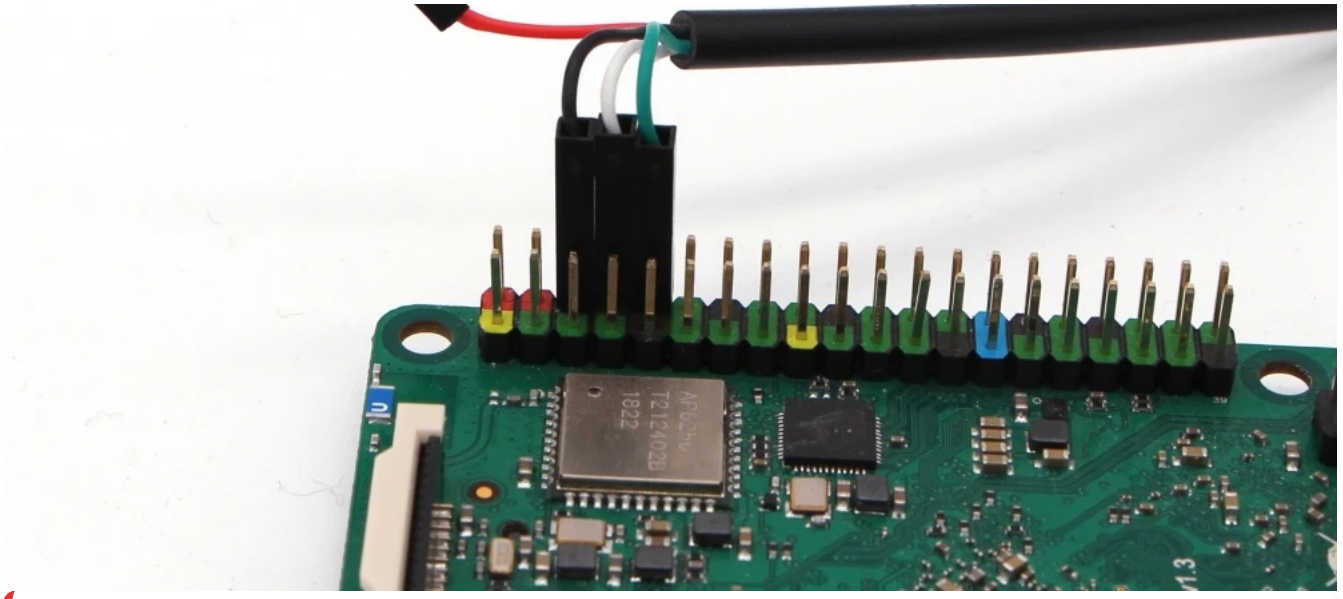
- Based on CP210X and PL2303x some products have baud rate limitations.
- Based on FT232RL, some products have power issues.

The Flowing text uses a serial cable based on CH340.

# Serial Connection

As shown below, connect the USB to TTL serial cable:

| Radxa SBC | Connection | Serial Cable |
|---|---|---|
| **GND** (pin 6) | <---> | Black line |
| **TX** (pin 8) | <---> | White line |
| **RX** (pin 10) | <---> | Green line |



**DANGER**

Please do not connect the red power line!

# Using Serial Tools

For Radxa products based on Rockchip chips, the default UART configuration is as follows:

```
baudrate: 1500000
data bit: 8
stop bit: 1
parity  : none
flow control: none
```

**Windows** **Linux** **Mac**

## Linux

Minicom is a serial tool that supports multiple baud rates on Linux. Here's how to use Minicom to connect to the serial port.

1. Plug the USB end of the serial cable into the host PC, then find the serial device:

On the terminal, type `dmesg | tail` to get a printout similar to the following:

```
[10.654076] usb 1-6.4.3: new full-speed USB device number 103 using
xhci_hcd
```

```
[10.755730] usb 1-6.4.3: New USB device found, idVendor=0403,
idProduct=6001
[10.755732] usb 1-6.4.3: New USB device strings: Mfr=1, Product=2,
SerialNumber=0
[10.755733] usb 1-6.4.3: Product: USB <-> Serial
[10.755734] usb 1-6.4.3: Manufacturer: FTDI
[10.756728] ftdi_sio 1-6.4.3:1.0: FTDI USB Serial Device converter
detected
[10.756750] usb 1-6.4.3: Detected FT232BM
[10.757195] usb 1-6.4.3: FTDI USB Serial Device converter now attached to
ttyUSB0
```

As shown in the last line, **/dev/ttyUSB0** is the newly inserted serial device.

> **TIP**
>
> Maybe there is no permission to read and write the serial port.
>
> **Temporary solution: Change the permission with the chmod command**
>
> ```
> sudo chmod 777 /dev/ttyUSB0
> ```
>
> **Permanent solution: Add the current user to the dialout group**
>
> ```
> sudo usermod -aG dialout $USER
> ```

2. Install minicom:

```
sudo apt-get update
sudo apt-get install minicom
```

3. Set up minicom:

Please add the current non-root or non-sudo user to the plugdev group first.

```
sudo usermod -aG plugdev $USER
```

Edit ~/.bashrc and add the following parameters. After reopening a new terminal, it will take effect.

```
alias minicom='minicom -w -t xterm -l -R UTF-8'
```

```
pu port             /dev/ttyUSB0
pu baudrate         1500000
pu bits             8
pu parity           N
pu stopbits         1
pu rtscts           No
```

4. Run the following command to connect to the device, specifying the parameter 1500000-usb0 to use the above configuration.

```
minicom 1500000-usb0
```

# FAQs

1. When using the debug console, the system startup information is displayed on the screen, but I cannot enter text using the keyboard? It may be that `Hardware Flow Control` is enabled by default. After turning off `Hardware Flow Control`, it should return to normal.

Report Issue

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