Using serial port

1. Code path

RDK X3 enables UART3 on 40pin by default, physical pins 8 and 10, IO voltage 3.3V.

RDK Ultra enables UART2 on 40pin by default, physical pins 8 and 10, IO voltage 3.3V.

Please refer to `/app/40pin_samples/test_serial.py` for details on how to use the serial port.

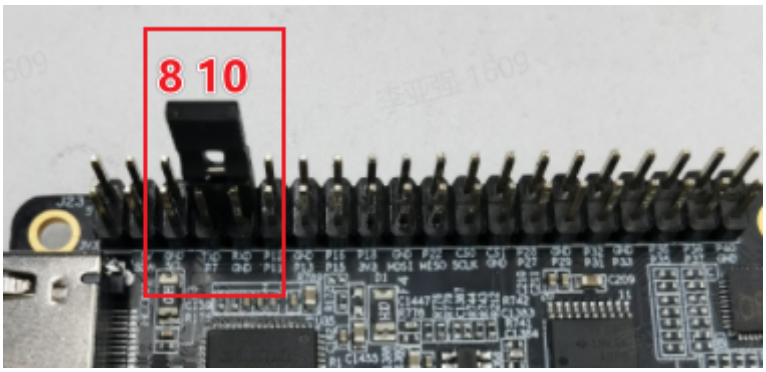
2. Loopback test

Connect TXD and RXD in hardware.

Then, run the test program to perform write and read operations. The expected result is that the read data is exactly the same as the written data.

- ### Hardware Hookup

Connect TXD and RXD together directly through the jumper cap.



- ### Test process

- Run `python3 /app/40pin_samples/test_serial.py`
- Select the bus number and chip select number from the printed serial port device (/dev/ttyS0 is the system debug port. It is not recommended to test it unless you fully understand its function).

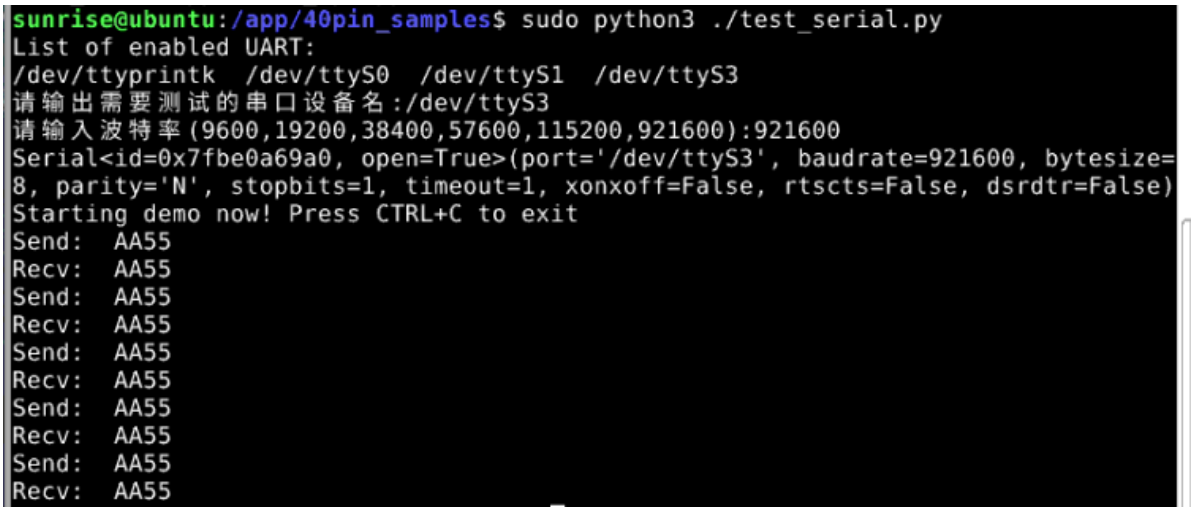
  For example, select test `/dev/ttyS3`, press Enter to confirm, and enter the baud rate parameter.

```
List of enabled UART:
/dev/ttyS0  /dev/ttyS1  /dev/ttyS3  /dev/ttyUSB0

Please input the serial port device name to be tested: /dev/ttyS3
Please input the baud rate(9600,19200,38400,57600,115200,921600):921600
Serial<id=0x7f819dcac0, open=True>(port='/dev/ttyS3', baudrate=921600,
bytesize=8, parity='N', stopbits=1, timeout=1, xonxoff=False, rtscts=False,
dsrdtr=False)
```

- When the program runs correctly, it will continue to print `Send: AA55` and `Recv: AA55`:

```
Starting demo now! Press CTRL+C to exit
Send:  AA55
Recv:  AA55
```



3. Test code

```python
#!/usr/bin/env python3

import sys
import os
import time

# Import Python serial port library
import serial
import serial.tools.list_ports

def serialTest():
    print("List of enabled UART:")
    os.system('ls /dev/tty[a-zA-Z]*')
    uart_dev= input("Please input the name of the serial port device to be
tested:")

    baudrate = input("Please enter the baud
rate(9600,19200,38400,57600,115200,921600):")
    try:
        ser = serial.Serial(uart_dev, int(baudrate), timeout=1) # 1s timeout
    except Exception as e:
        print("open serial failed!\n")
```

```
    print(ser)

    print("Starting demo now! Press CTRL+C to exit")

    while True:
        test_data = "AA55"
        write_num = ser.write(test_data.encode('UTF-8'))
        print("Send: ", test_data)

        received_data = ser.read(write_num).decode('UTF-8')
        print("Recv: ", received_data)

        time.sleep(1)

    ser.close()
    return 0


if __name__ == '__main__':
    if serialTest() != 0:
        print("Serial test failed!")
    else:
        print("Serial test success!")
```