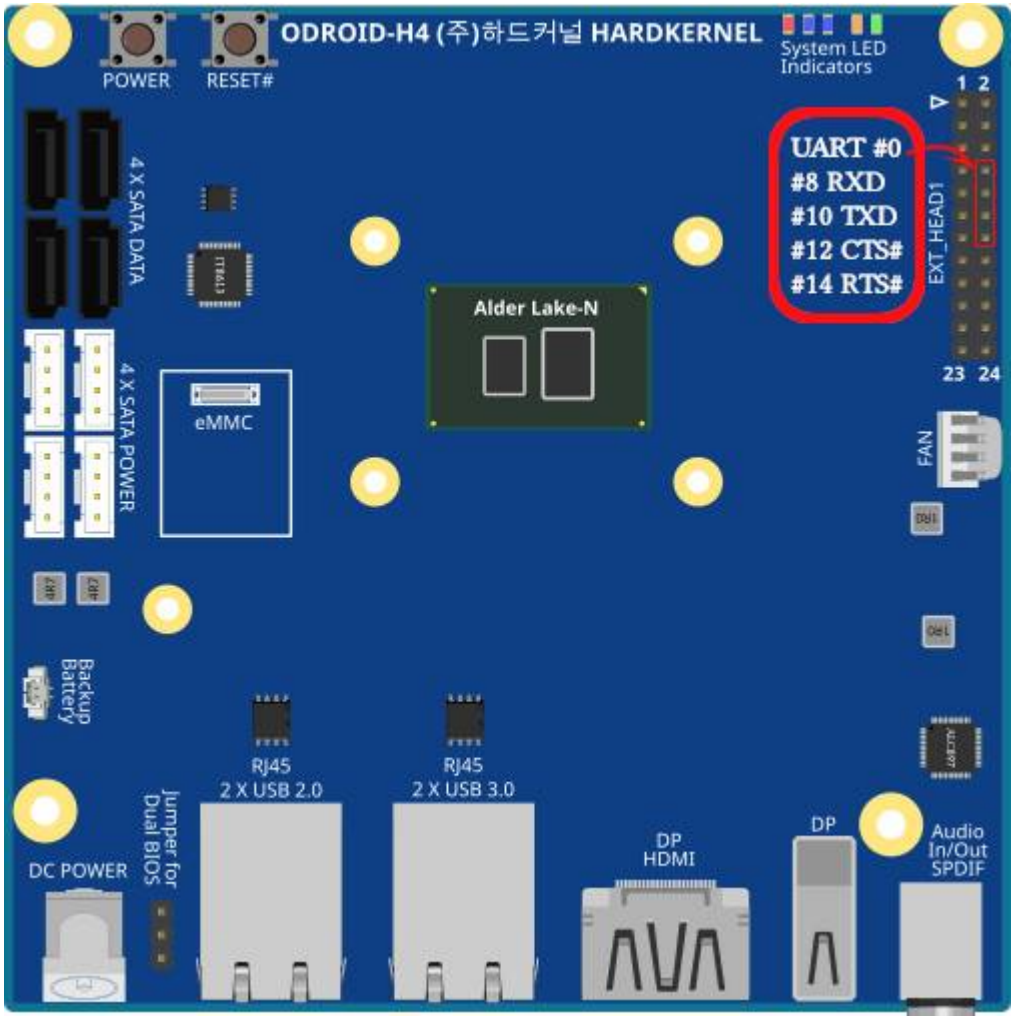
UART

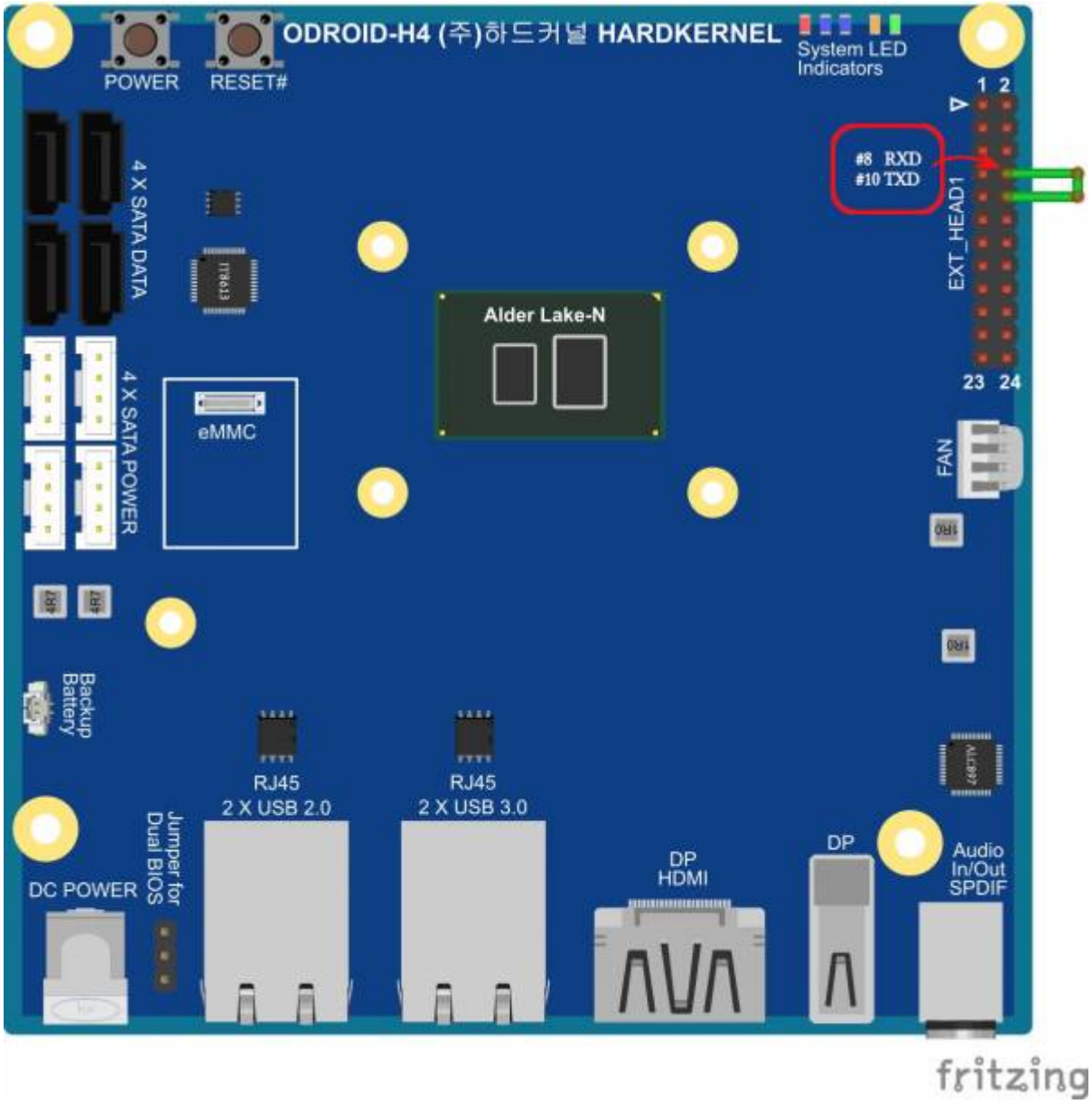


Pin#	Pin Label	dev node
8	UART0_RXD	/dev/ttyS0
10	UART0_TXD	
12	UART0_CTS#	
14	UART0_RTS#	

Loopback test

This examples have written based on under the Ubuntu 22.04 and Linux kernel 6.5.0-18-generic

Wire by crossing RX and TX pins.



Wire pin #10(UART0_TXD) with pin #8(UART0_RXD).

Open two terminal windows

Press Ctrl + Alt + T

Install minicom util

```
sudo apt install minicom
```

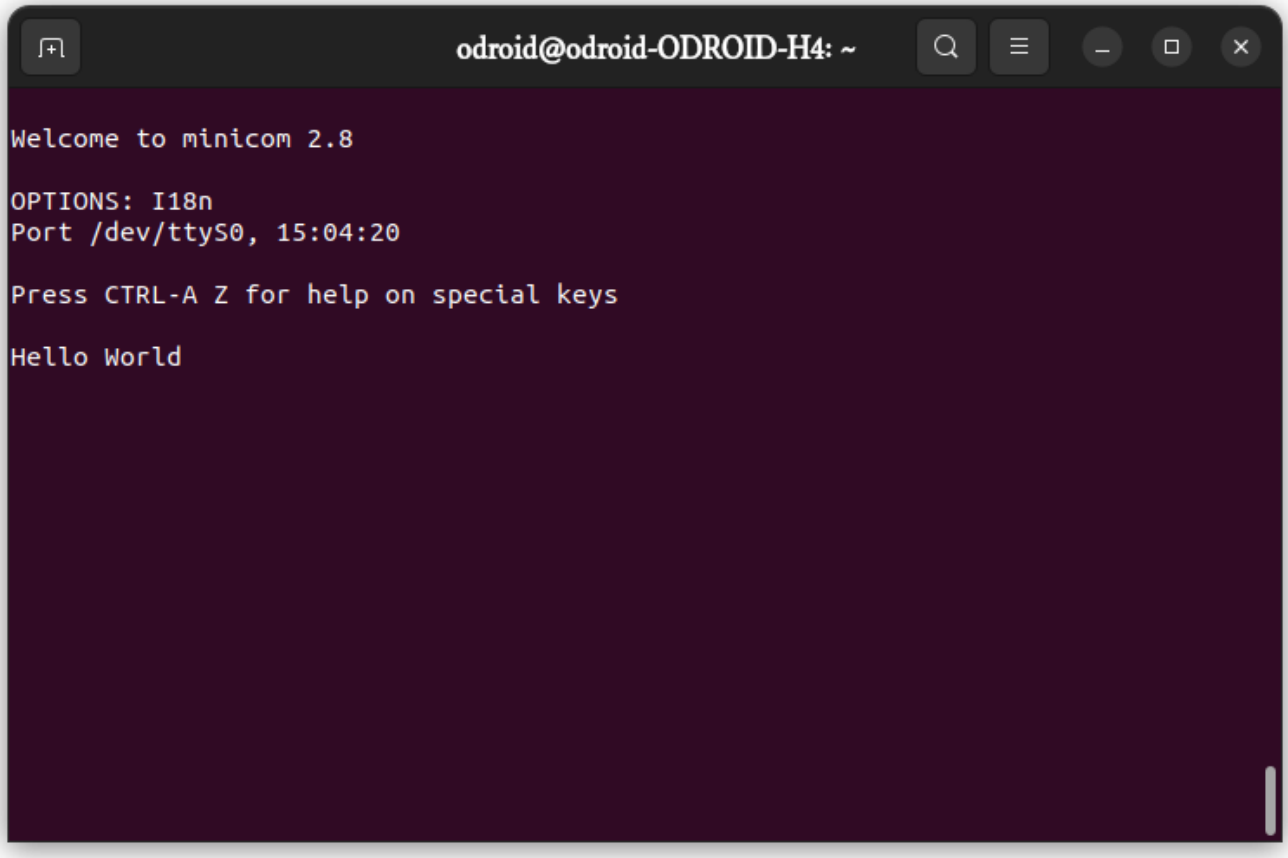
Read and write characters

In one terminal, read from the ttyS0 with this command.

```
sudo minicom -D /dev/ttyS0
```

In the other terminal, write to the ttyS0 with this command.

```
echo "Hello World" | sudo tee /dev/ttyS0
```



Usage RTS/CTS pin as GPIO with Python script

RTS (Request To Send): OUTPUT
CTS (Clear To Send): INPUT

Set the RTS pin High(0V) or Low(3.3V)

The RTS pins operate as active low. If you set the RTS to HIGH, it is 0V, if you set it to LOW, it is 3.3V.

```
import serial

# '/dev/ttyS0'
uart = '/dev/ttyS0'

ser = serial.Serial(uart, 9600)
```

```
ser.setRTS(1)
```

Get a value from the CTS pin

```
import serial

# '/dev/ttyS0'
uart = '/dev/ttyS0'

ser = serial.Serial(uart, 9600)

ser.getCTS()
```

RTS/CTS loopback test (Connect the RTS pin and CTS pin)

Required python package

```
root@ODROID-H4:/# apt install python3 python3-pip
root@ODROID-H4:/# pip install pyserial
```

```
import serial
import time

uart = '/dev/ttyS0'
ser = serial.Serial(uart, 115200)
level = True

while True:
    print ("----------------------")
    if level == True:
        level = False
    else:
        level = True

    ser.setRTS(level)
    print ("SET RTS =", level)
    time.sleep(1)

    cts = ser.getCTS()
    print ("GET CTS =", cts)
    time.sleep(1)
```

Terminal output message (RTS/CTS connect)

```
----------------------
Set RTS = True
```

```
Set CTS = True
-----------------------
Set RTS = False
Set CTS = False
```

Terminal output message (RTS/CTS disconnect)

```
-----------------------
Set RTS = True
Set CTS = False
-----------------------
Set RTS = False
Set CTS = False
```

The RTS Toggle Speed

The Oscilloscope shows the RTS toggling speed. Its toggling frequency is around 43.5kHz