

Serial Protocols

<https://learn.sparkfun.com/tutorials/serial-communication> - Good Introduction

UART

Details

UART is a serial protocol used for interacting with the system. May return a shell and/or access to the file system. In the screen command, 115200 is the baud rate of the serial communications.

Enumerate Pinout [Multimeter]

TX - Voltage fluctuates at boot¹ from 0 to 3.3/5.5v

RX - Constant low value below VCC and above GND

GND - Voltage is constant 0, has 4 traces in a cross shape²

VCC - Normally not used to if device already powered,

¹ Fluctuation is caused from the debug messages being sent.

² Testing continuity of GND to other pins, shows other pins that may be grounded

Square outlined pin, normally is "pin 1"

JTAG

Details

Used for on-chip debugging, generally allows for access to a GNU Debugger (GDB) for the JTAG host. Pinout tware.

Accessing Serial Consoles

BASH

```
sudo dmesg | grep -iC 5 usb
```

```
sudo screen -L /dev/ttyUSB0 115200
```

Alternatively, use the **Arduino IDE** serial console.

The baud rate can be determined using -

<https://github.com/devttys0/ baudrate.git>

Hardware Physical Tools

JTAGulator Identifies JTAG & UART pinouts.

JTAGenum¹ Identifies JTAG pinouts

Bus Pirate² FT232RL - USB to Serial, Use SOIC8 Clip to dump firmwares

Shikra³ FT232H(Q) - USB to Serial

RS-232 Generic Adapter⁴ USB to Serial

¹ JTAGenum Setup Tutorial:

<https://github.com/risnrc/ blog/jtag-ulator-vs-jtagenum-to-ols-for-identification>

² Bus Pirate Pinout Information

http://dangrouspirotypes.com/docs/Common_Bus_Pirate_cable_pinouts

³ Shikra Pinout [UART] D0 - TX, D1 - RX

See also, Adafruit FT232H Breakout -

<https://cdn-learn.adafruit.com/downloads/pdf/s/p df/ adafruit- ft232h -breakout.pdf>

⁴ Male DB9: GND - Pin 5, TX - Pin 3, RX - Pin 2



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