

UART

Protocols / Asynchronous serial

Cross TX and RX, share ground and agree on the serial format.

01 Three-wire link

Crossed data

Device A TX -> device B RX; device A RX <- device B TX.

Ground

Join GND unless using a purpose-built isolated interface.

Voltage

Use compatible logic levels or level shifting in each required direction.

02 Serial settings

Format

Both ends must match baud, data bits, parity and stop bits; 9600 8N1 is a common starting point.

Arduino

```
Serial.begin(9600); Serial.println("ready");
```

Pico

```
UART(0, baudrate=9600, tx=Pin(0), rx=Pin(1)).
```

03 Debug

No text

Check crossed wiring, ground and the selected serial port.

Garbled

Check baud/format, voltage levels and clock accuracy.

USB conflict

Uno/Nano D0/D1 and typical ESP32 UART0 are shared with USB programming/debug.

Before you power on

TTL/CMOS UART is not RS-232. Never connect RS-232 voltage levels directly to MCU pins.

UART / continued

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Datasheets & further reading

Arduino Serial reference

<https://docs.arduino.cc/language-reference/en/functions/communication/serial/>

MicroPython RP2 reference

<https://docs.micropython.org/en/latest/rp2/quickref.html>