# Hardware setup

## Debug probe [pass]

* flash RP2040 chip with “debugprobe\_on\_pico.uf2” firmware file.
* install 2 jumpers on J10 to connect Pico GPIO0,1 with USB-UART converter Rx/Tx lines.

## OLED SSD1306 [pass]

* Resolution is 128x32.
* Connect SCL and SDA wires.
* Avoid leaving OLED turned on for long periods of time.
* Reduce screen brightness to extend display life.

## microSD [pass]

* The naming of signals for SD-mode and MMC-mode is different.
* It’s important to use standard wiring, so it is easier to port example code. Moreover, some libraries don’t allow you to remap pins.
* Only 4 signals are necessary: DAT0: GPIO12, CLK: GPIO10, CMD: GPIO11, DAT3: GPIO13

## MIC [pass]

* “silent” (no audio signal) voltage offset is nearly ½ Vdd, however, it's a good idea to measure it (an average value from 1000 samples is OK).
* use MIC VOL potentiometer to control MIC sensitivity.

## AUDIO [tbd]

* Probably a minor fix is required (JP6, JP7 reconfiguration) - L and R signals are shorted
* Use only one channel until problem is fixed
* There is no volume control on-board, be careful using earphones.
* Filters work OK.

## BTN 2, 1, 0 [pass]

* there is no external pull-up - remember to enable MCU pull-ups.

## LED 2, 1, 0 [pass]

## WS2812 LEDs [pass]

* DIN signal is inverted - example codes from the Internet will not work 🙂
* Trivial modifications are necessary
* Be careful - the maximum brightness is *extreme* and will be harmful for your eyes.

## KNOB (potentiometer) [pass]

## SONAR [tbd]

* Enable (ENA) signal turns on the DC-DC converter which boosts voltage from 3.3V to 5.0V. However, with ENA inactive, the supply voltage 3.3V is still present.
* No functional tests were performed yet.

## RS485 [pass]

* Remember to drive DE/nRE signal according to the direction of communication.

## T&RH sensor SHT30 [pass]

* The I2C address is 0x44

## ACC sensor LIS3DH [pass]

* The I2C address is 0x19

## TOF sensor VL53L0X [pass]

* The I2C address is 0x29

## EEPROM MB24256 [pass]

* The I2C address is 0x50

## NRF24 socket/LORA socket [tbd]

## EXPANSION connector [tbd]

## HAT header [tbd]