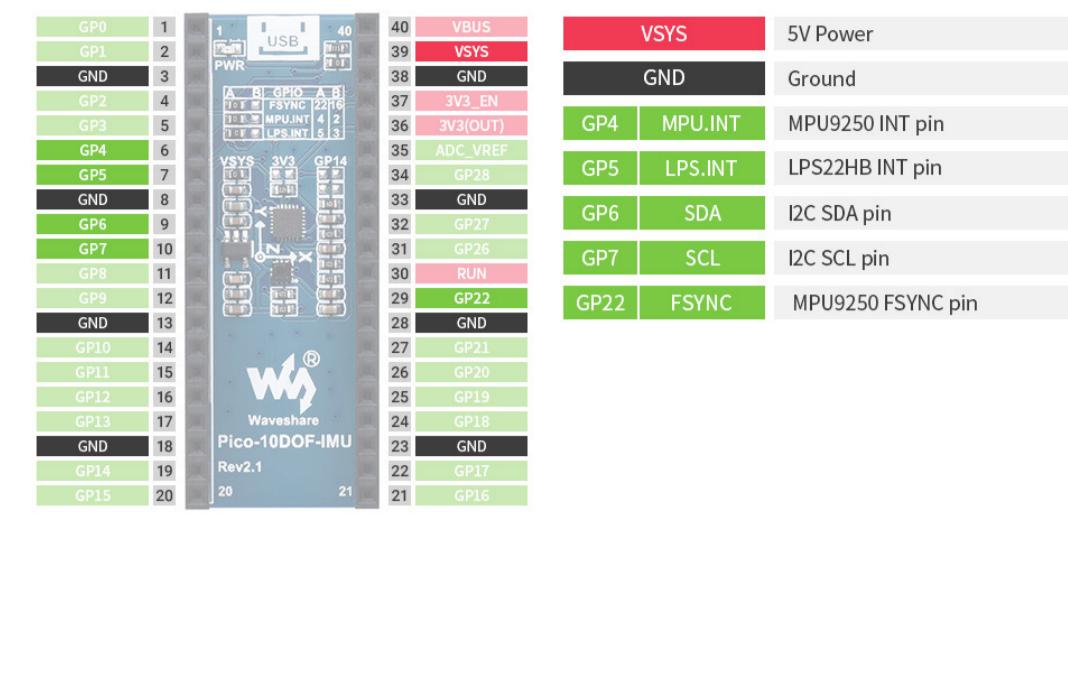


# Master Thesis Project Circuit

16/07/2024 22:49

## • IMU 1 (Waveshare - Pico 10DOF IMU)

IMU:	PICO:
I2C SDA	→ GPG
I2C SCL	→ GP7
ICM20948 INT	→ GP4
LPS22HB INT	→ GP5
ICM20948 FSYNC	→ GP22
5V	→ VSYS (5V)
GND	→ GND



## • IMU 2 (Adafruit - STEMMA QT LSM6DSOX + LIS3MDL 9 DoF)

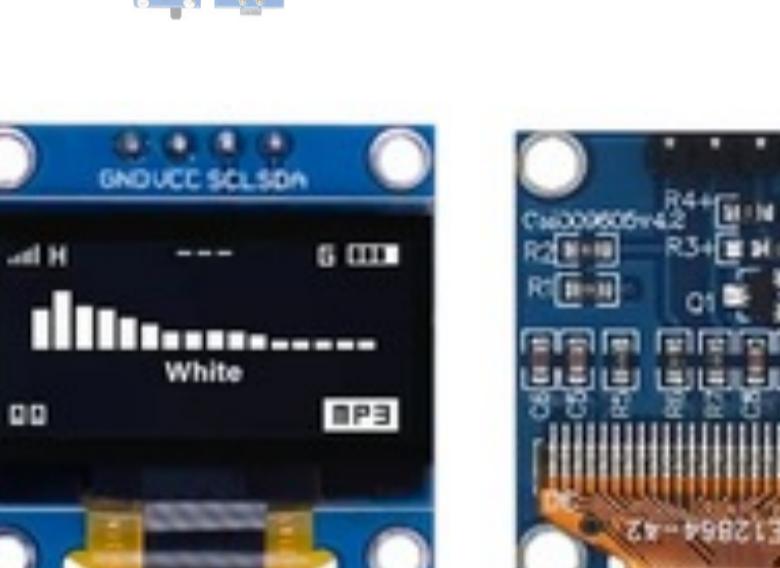
IMU:	PICO:
VIN	→ 3V3(OUT)
GND	→ GND
SCL	→ GP7
SDA	→ GP6



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## • UPS (Waveshare - Pico UPS-B)

SDA	→ GP6
SCL	→ GP7
VBUS	→ VBUS
VSYS	→ VSYS
3V3(OUT)	→ 3V3(OUT)



Breakout Power Pins  
I2C Address Pins  
I2C Logic Pins  
Other Pins

- **Vin** - this is the power pin. Since the sensor chip uses 3 VDC, we have included a voltage regulator on board that will take 3-5VDC and safely convert it down. To power the board, give it the same power as the logic level of your microcontroller, e.g. for a 5V microcontroller, just connect 5V, use 5V.
- **INT1** - this is the 3.3V output from the voltage regulator, you can grab up to 100mA from this if you like.
- **GND** - common ground for power and logic.
- **SCL** - I2C clock pin, connect to your microcontroller's I2C clock line. On the breakouts, this pin is level shifted so you can use 3.3V logic. On the FeatherWing, there is no level shifter. There's a **10K pullup** on this pin.
- **SDA** - I2C data pin, connect to your microcontroller's I2C data line.
- On the breakouts, this pin is level shifted so you can use 3.3V logic. On the FeatherWing, there is no level shifter. There's a **10K pullup** on this pin.
- **INT2** - This is the secondary interrupt pin for the Accel/Gyro. You can setup the LSM6DSOX or ISM330DHX to pull this low when certain conditions are met such as new measurement data being available. Consult the [datasheet](#) for usage.
- **ADIM / Mag Addr** - LIS3MDL Magnetometer I2C address pin. Pulling this pin high or bridging the solder jump on the back will change the I2C address from **0x1C** to **0x1E**.
- **ADAS / I2C Addr** - LSM6DSOX or ISM330DHX Accel/Gyro I2C address pin. Pulling this pin high or bridging the solder jumper on the back will change the I2C address from **0x6A** to **0x6B**.

## • Screen (0,96" I<sup>2</sup>C OLED)

GND	→ GND
VDD	→ 3V3(OUT)
SCK	→ GP9
SDA	→ GP8



## • Screen (Waveshare - 4inch TFT Touch Screen)

SCLK	→ GP10
MISO	→ GP12
MOSI	→ GP11
LCD_CS	→ GP9
LCD_BL	→ GP13
LCD_RST	→ GP15
LCD_DC	→ GP8
TP_CS	→ GP6
TP IRQ	→ GP7
5V	→ 5V
GND	→ GND



You can connect the display according to the table.

LCD	Pico	Description
VCC	VSYS	Power input
GND	GND	GND
SDIO_CLK	GP5	SCK pin of SDIO interface, clock input for slave device
LCD_DC	GP8	Data/Command control pin (High: data; Low: command)
LCD_CS	GP9	Chip select pin of LCD (Low active)
LCD_CLK	GP10	SPI CLK pin, clock input for slave device
MOSI	GP11	SPI MOSI pin, data input for slave device
MISO	GP12	SPI MISO pin, data output for slave device
LCD_BL	GP13	LCD backlight control
LCD_RST	GP15	LCD reset pin (Low active)
TP_CS	GP16	Touch controller chip select pin (Low active)
TP_IRQ	GP17	Touch controller interrupt pin (Low active)
SDIO_CMD	GP18	SDIO CMD pin
D0	GP19	SDIO D0 pin
D1	GP20	SDIO D1 pin
D2	GP21	SDIO D2 pin
SD_CS/D3	GP22	SDIO CS/D3 pin

## • Pico (Raspberry Pi Pico W / Pico 2 W)



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GPIO

