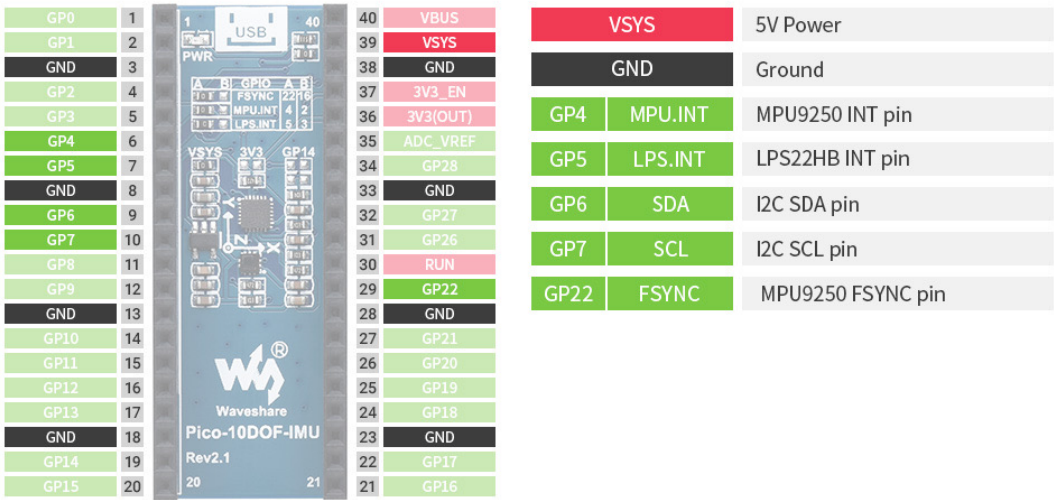


Master Thesis Project Circuit

16/07/2024 22:49

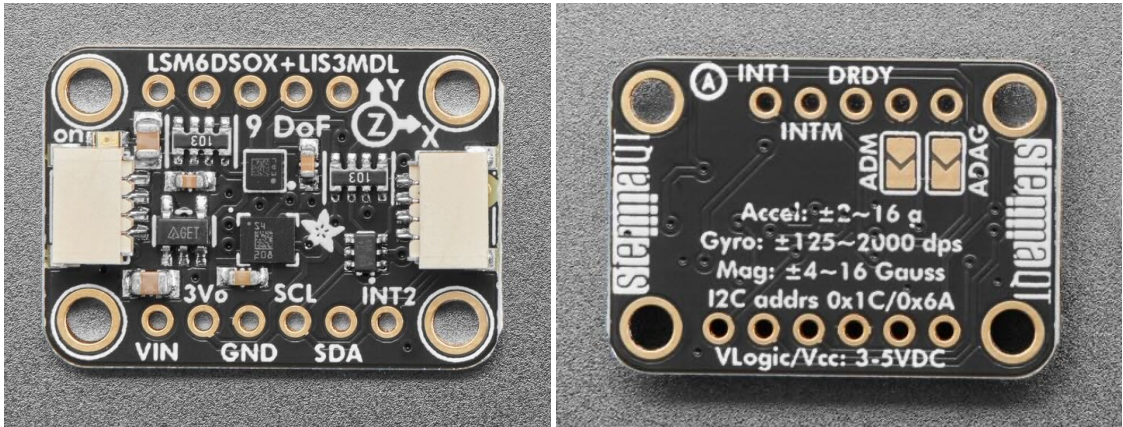
• IMU 1 (Waveshare - Pico 10DOF IMU)

IMU:		PICO:
I2C SDA	→	GP6
I2C SCL	→	GP7
ICM20948 INT	→	GP4
LPS22HB INT	→	GP5
ICM20948 FSYNC	→	GP22
5V	→	VSYS (5V)
GND	→	GND



• IMU 2 (Adafruit - STEMMa QT LSM6DSOX + LIS3MDL 3 DoF ADAFRUIT 4517)

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



Breakout Power 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 like Arduino, use 5V
- 3Vo** - 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

I2C Address Pins

- ADM / Mag Addr** - LIS3MDL Magnetometer I2C address pin. Pulling this pin high or bridging the solder jumper on the back will change the I2C address from **0x1C** to **0x1E**.
- ADAG / A/G Addr** - LSM6DSOX or LSM303DHCX 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**.

Other Pins

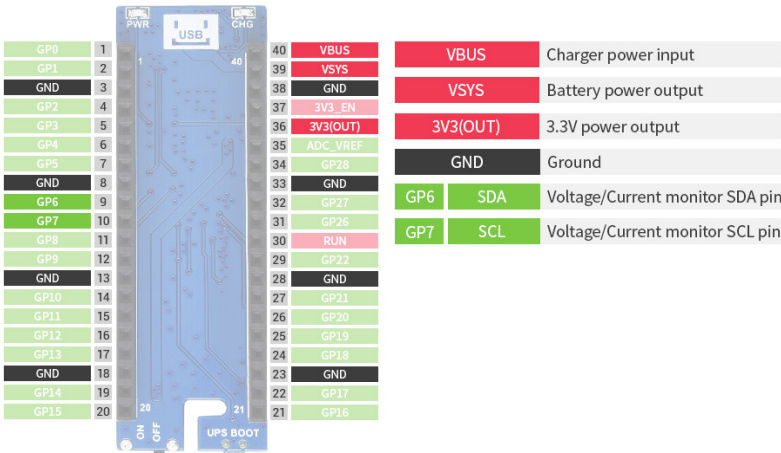
- INT1** - This is the primary interrupt pin for the Accel/Gyro. You can setup the LSM6DSOX or LSM303DHCX to pull this low when certain conditions are met such as new measurement data being available. Consult the [datasheet](#) for usage.
- INT2** - This is the secondary interrupt pin for the Accel/Gyro. You can setup the LSM6DSOX or LSM303DHCX to pull this low when certain conditions are met such as new measurement data being available. Consult the [datasheet](#) for usage.
- DRDY** - The data ready pin. When measurement data is available the sensor will pull this pin low.

I2C Logic Pins

- SCL** - I2C clock pin, connect to your microcontroller's I2C clock line. On the breakouts, this pin is level shifted so you can use 3-5V 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 3-5V logic. On the FeatherWing, there is no level shifter. There's a **10K pullup** on this pin.
- STEMMA QT** - These connectors allow you to make I2C connections to dev boards with [STEMMA QT](#) connectors or to other things with [various associated accessories](#).

• UPS (Waveshare - Pico UPS-B)

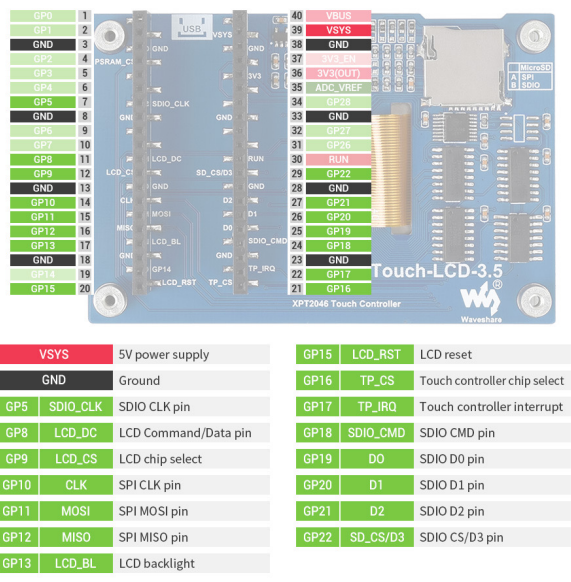
SDA	→	GP6
SCL	→	GP7
VBUS	→	VBUS
VSYS	→	VSYS
3V3(OUT)	→	3V3(OUT)



• 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	→	<del>GP6</del>
TP_IRQ	→	<del>GP7</del>
5V	→	5V
GND	→	GND

*Used for I2C => GP16, GP17*



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, 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)

