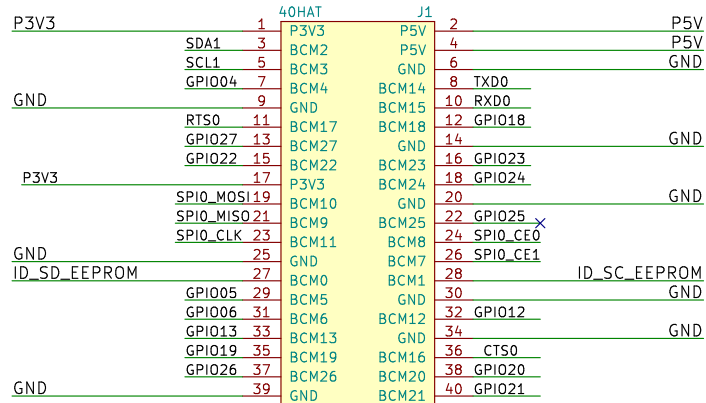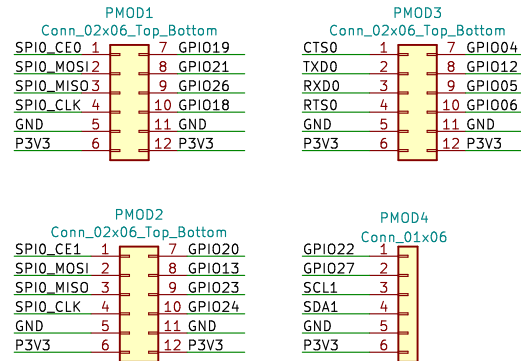# Raspberry Pi / Seeeduino XIAO PMOD Interface Board

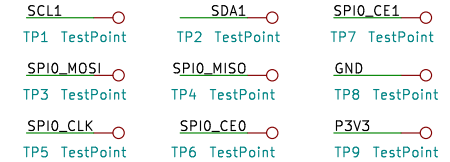This is a unpowered PMOD adapter, designed for the Raspberry Pi SBC. The hat is based on the Raspberry Pi template, which in turn used the Raspberry Pi foundation specs at https://github.com/raspberrypi/hats/blob/master/designguide.md
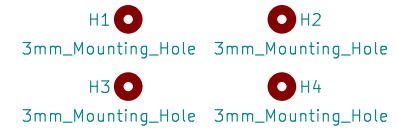
40-Pin RPi HAT Connector

40HAT J1

P3V3	1 P3V3	P5V 2	P5V
SDA1	3 BCM2	P5V 4	
SCL1	5 BCM3	GND 6	GND
GPIO04	7 BCM4	TXD0 8	TXD0
GND	9 GND	RXD0 10	RXD0
RTS0	11 BCM17	BCM18 12	GPIO18
GPIO27	13 BCM27	GND 14	GND
GPIO22	15 BCM22	BCM23 16	GPIO23
P3V3	17 P3V3	BCM24 18	GPIO24
SPIO_MOSI	19 BCM10	GND 20	GND
SPIO_MISO	21 BCM9	BCM25 22	GPIO25
SPIO_CLK	23 BCM11	BCM8 24	SPIO_CE0
GND	25 GND	BCM7 26	SPIO_CE1
ID_SD_EEPROM	27 BCM0	BCM1 28	ID_SC_EEPROM
GPIO05	29 BCM5	GND 30	GND
GPIO06	31 BCM6	BCM12 32	GPIO12
GPIO13	33 BCM13	GND 34	GND
GPIO19	35 BCM19	BCM16 36	CTS0
GPIO26	37 BCM26	BCM20 38	GPIO20
GND	39 GND	BCM21 40	GPIO21

PMOD Connectors

PMOD1
Conn_02x06_Top_Bottom

SPIO_CE0	1	7	GPIO19
SPIO_MOSI	2	8	GPIO21
SPIO_MISO	3	9	GPIO26
SPIO_CLK	4	10	GPIO18
GND	5	11	GND
P3V3	6	12	P3V3

PMOD3
Conn_02x06_Top_Bottom

CTS0	1	7	GPIO04
TXD0	2	8	GPIO12
RXD0	3	9	GPIO05
RTS0	4	10	GPIO06
GND	5	11	GND
P3V3	6	12	P3V3

PMOD2
Conn_02x06_Top_Bottom

SPIO_CE1	1	7	GPIO20
SPIO_MOSI	2	8	GPIO13
SPIO_MISO	3	9	GPIO23
SPIO_CLK	4	10	GPIO24
GND	5	11	GND
P3V3	6	12	P3V3

PMOD4
Conn_01x06

GPIO22	1
GPIO27	2
SCL1	3
SDA1	4
GND	5
P3V3	6

Test Pins

Optionally populated with test pins for connecting a multimeter, logic analyzer or oscilloscope.

SCL1 TP1 TestPoint	SDA1 TP2 TestPoint	SPIO_CE1 TP7 TestPoint
SPIO_MOSI TP3 TestPoint	SPIO_MISO TP4 TestPoint	GND TP8 TestPoint
SPIO_CLK TP5 TestPoint	SPIO_CE0 TP6 TestPoint	P3V3 TP9 TestPoint

Mounting Holes

H1 3mm_Mounting_Hole   H2 3mm_Mounting_Hole
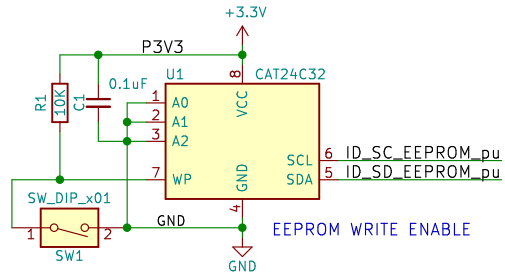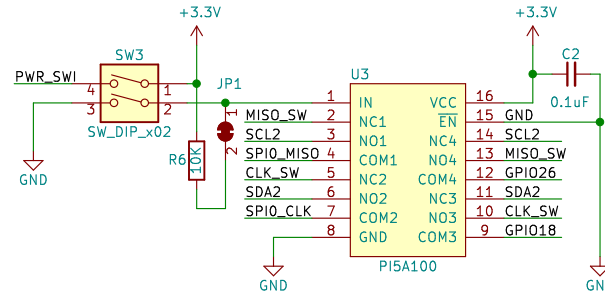H3 3mm_Mounting_Hole   H4 3mm_Mounting_Hole

HAT EEPROM

RPi hats require an EEPROM containing the hat information, and the EEPROM should be read-only (WP pin high). Switch SW1 enables writing, connecting WP pin to GND.
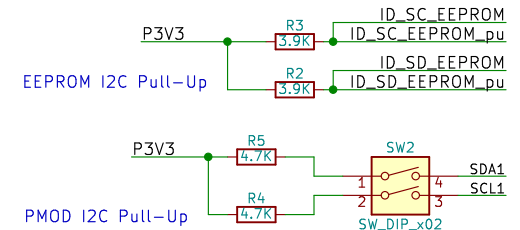
+3.3V
P3V3
R1 10K
C1 0.1uF
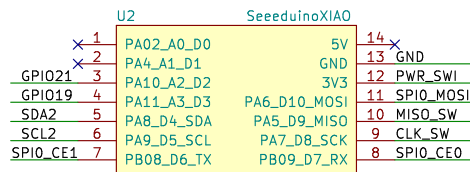U1 CAT24C32
VCC 8
1 A0
2 A1
3 A2
7 WP
GND 4
SCL 6 ID_SC_EEPROM_pu
SDA 5 ID_SD_EEPROM_pu
GND
SW_DIP_x01
SW1
GND

EEPROM WRITE ENABLE

SPI/I2C and XIAO Power Switch

This switch connects the Seeeduino I2C lines on PMOD1 either to pin 3/4 (PMOD v1.3 Type 6A), or to pin 9/10.

+3.3V
SW3
PWR_SWI
4
3
1
2
SW_DIP_x02
JP1
GND
R6 10K
+3.3V
C2 0.1uF
U3 PI5A100
1 IN   VCC 16
MISO_SW 2 NC1   EN 15 GND
SCL2 3 NO1   NC4 14 SCL2
SPIO_MISO 4 COM1 NO4 13 MISO_SW
CLK_SW 5 NC2   COM4 12 GPIO26
SDA2 6 NO2   NC3 11 SDA2
SPIO_CLK 7 COM2 NO3 10 CLK_SW
8 GND   COM3 9 GPIO18
GND   GND

I2C Pull-Up

P3V3
R3 3.9K   ID_SC_EEPROM / ID_SC_EEPROM_pu
R2 3.9K   ID_SD_EEPROM / ID_SD_EEPROM_pu

EEPROM I2C Pull-Up

P3V3
R5 4.7K
R4 4.7K
SW2 SW_DIP_x02
1
2
4
3
SDA1
SCL1

PMOD I2C Pull-Up

Seeeduino XIAO

U2 SeeeduinoXIAO
1 PA02_A0_D0   5V 14
2 PA4_A1_D1   GND 13 GND
GPIO21 3 PA10_A2_D2 3V3 12 PWR_SWI
GPIO19 4 PA11_A3_D3 PA6_D10_MOSI 11 SPIO_MOSI
SDA2 5 PA8_D4_SDA   PA5_D9_MISO 10 MISO_SW
SCL2 6 PA9_D5_SCL   PA7_D8_SCK 9 CLK_SW
SPIO_CE1 7 PB08_D6_TX PB09_D7_RX 8 SPIO_CE0

Board Labels

FM4DD:KiCad-Logo2_5mm_SilkScreen
FM4DD:RPI_Logo
FM4DD:RasPi_GPIO_Legend
FM4DD:GND_Label
FM4DD:3V3_Label

Title: PMOD Raspberry Pi HAT
Size: A4   Date: 2021-08-15   Rev: 1.0
KiCad E.D.A. kicad (5.1.10)-1   Id: 1/1