Rotary encoders with push button (Pico)

SW5 RotaryEncoder_Switch — J5
Pin A → GP0
Pin B → GP1
Pin SW → GP2
Pin +5V → +3.3V
Pin C → GND

SW6 RotaryEncoder_Switch — J6
Pin A → GP3
Pin B → GP4
Pin SW → GP5
Pin +5V → +3.3V
Pin C → GND

SW7 RotaryEncoder_Switch — J7
Pin A → GP6
Pin B → GP7
Pin SW → GP8
Pin +5V → +3.3V
Pin C → GND

SW8 RotaryEncoder_Switch — J8
Pin A → GP9
Pin B → GP10
Pin SW → GP11
Pin +5V → +3.3V
Pin C → GND

* Sliding noise resistors are NOT represented, check ALPS EC11 rotary encoders documentation

Push buttons, switches (Pico)

SW9 SW_Push — J15 → +3.3V / GP12
SW10 SW_Push — J16 → +3.3V / GP13
SW11 SW_Push — J17 → +3.3V / GP14
SW12 SW_Push — J18 → +3.3V / GP15
SW13 SW_SPST — J19 → +3.3V / GP16
SW14 SW_SPST — J20 → +3.3V / GP17
SW15 SW_SPST — J21 → +3.3V / GP18
SW16 SW_SPST — J22 → +3.3V / GP19

Toggle switches (MCP)

SW1 SW_SPDT_MSM — J1 — R1 330 — GPB0 / GPB1
SW2 SW_SPDT_MSM — J2 — R2 330 — GPB2 / GPB3
SW3 SW_SPDT_MSM — J3 — R3 330 — GPB4 / GPB5
SW4 SW_SPDT_MSM — J4 — R4 330 — GPB6 / GPA0

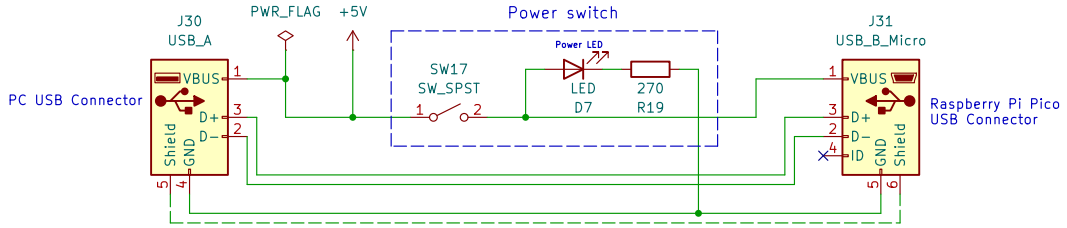
* R1 -> R4 are for protecting the MCP

LEDs (MCP)

D1 LED — J9 — R5 270 — GPA1
D2 LED — J10 — R6 270 — GPA2
D3 LED — J11 — R7 270 — GPA3
D4 LED — J12 — R8 270 — GPA4
D5 LED — J13 — R9 270 — GPA5
D6 LED — J14 — R10 270 — GPA6

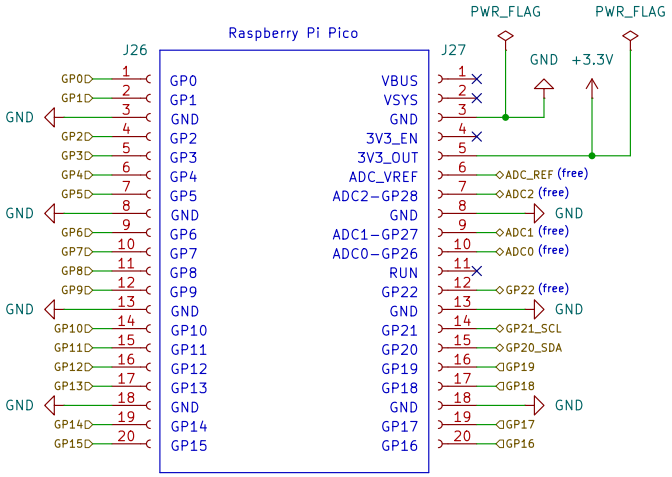
GND

Power cable for Raspberry Pi Pico (optional, not in the BOM)



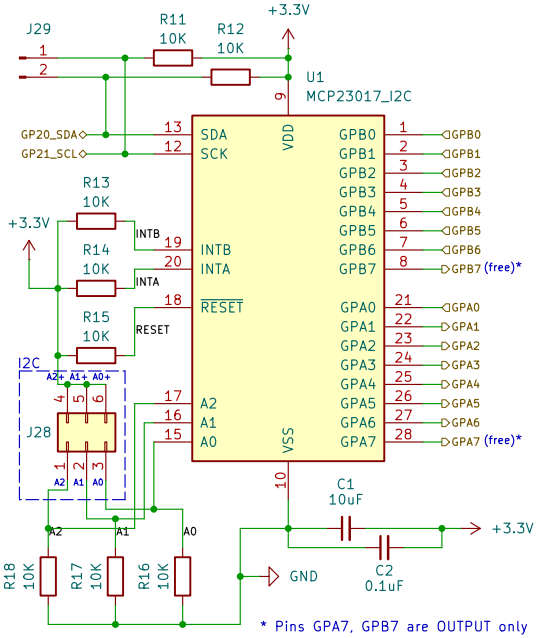
Raspberry Pi Pico

MCU RP2040 limitations :
Maximum current sourced per GPIO pin : < 12mA
Maximum total current output by ALL pins combined : < 250mA



GPIO expander MCP23017

MCP23017 limitations :
Maximum current sourced per GPIO pin : < 25mA
Maximum total current output (VSS) by ALL pins combined : < 150mA
! Less than 10mA per pin if ALL 16 pins out combined !
Default I2C address is '0x20'



* Pins GPA7, GPB7 are OUTPUT only

Free connectors (not in the BOM)

J23 (Pico): ADC_REF, ADC2, ADC1, ADC0
J24: GPA7, GPB7 — GPA7, GPB7 are OUTPUT only (MCP)
J25 (Pico): GP22

For Raspberry Pi Pico only

Main project : https://github.com/Mick3DIY/MultiPicoBox

Sheet: /
File: MultiPicoBox.kicad_sch

Title: MultiPicoBox V2

Size: A4	Date: 2026-02-09	Rev:
KiCad E.D.A. 8.0.9		Id: 1/1