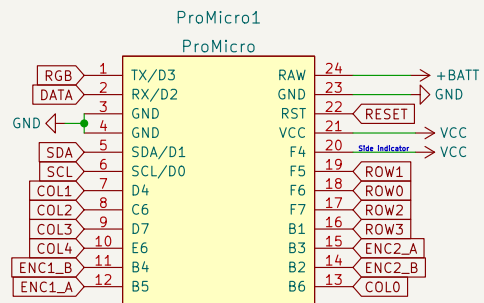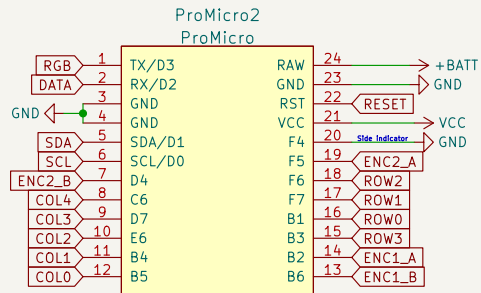# Microcontroller

The Pro Micros form the hearts of each half of the keyboard.
The left and right halves each have a different pinout.

You may of course also use Pro Micro compatible controllers,
such as the Liatris, Elite-C, or nice!nano.

ProMicro1
ProMicro

RGB	1 TX/D3	RAW 24	+BATT
DATA	2 RX/D2	GND 23	GND
	3 GND	RST 22	RESET
GND	4 GND	VCC 21	VCC
SDA	5 SDA/D1	F4 20	Side Indicator	VCC
SCL	6 SCL/D0	F5 19	ROW1
COL1	7 D4	F6 18	ROW0
COL2	8 C6	F7 17	ROW2
COL3	9 D7	B1 16	ROW3
COL4	10 E6	B3 15	ENC2_A
ENC1_B	11 B4	B2 14	ENC2_B
ENC1_A	12 B5	B6 13	COL0

Left

ProMicro2
ProMicro

|			
RGB	1 TX/D3	RAW 24	+BATT
DATA	2 RX/D2	GND 23	GND
	3 GND	RST 22	RESET
GND	4 GND	VCC 21	VCC
SDA	5 SDA/D1	F4 20	Side Indicator	GND
ENC2_B	6 SCL/D0	F5 19	ENC2_A
COL4	7 D4	F6 18	ROW2
COL3	8 C6	F7 17	ROW0
COL2	9 D7	B1 16	ROW1
COL1	10 E6	B3 15	ROW3
COL0	11 B4	B2 14	ENC1_A
	12 B5	B6 13	ENC1_B

Right

The two resistors R1 and R2 should
normally be soldered on both halves.
If you choose to use I2C across halves,
R1 and R2 only need to be soldered on one half.

They are required for proper I2C operation.

VCC

R1 R2
4k7 4k7

SCL SDA
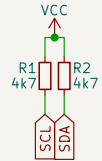
The reset button allows you to flash new
firmware to the keyboard. For most changes,
it's only necessary to flash the side you use
as master. Some changes, like those to
underglow and the OLED display, do need to be
flashed to both sides

S1
MJTP1117

RESET

GND
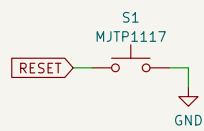
Header for SSD1306 (or compatible) OLED display

J2
SSD1306
| SDA | 4 SDA |
SCL	3 SCL
VCC	2 VCC
GND	1 GND
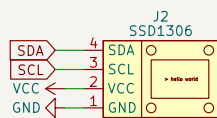
A TRS or TRRS cable connects both halves of the
keyboard. Do not unplug when turned on.

By default, serial is used across halves. This
enables the use of one OLED screen per key-
board half. If you require I2C across halves
(and thus give up using two OLED displays),
you may cut the JP1 jumper and solder wires
from the SDA and SCL pins of the Pro Micro
or I2C breakout to the R1 and R1 pins
respectively – marked RA and RB on the PCB.

The R2 pin may also be used to pass extra data
through to the other side. If R2 is used, you
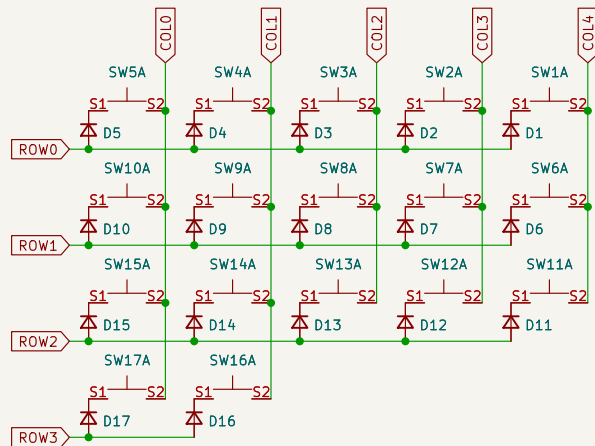must use a TRRS cable.

VCC
J3
PJ-320A
DATA   JP1
1   2
R1
R2

GND
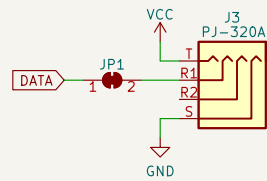
Battery header and power switch
for nice!nano users

J1
JST-PH

S2
MSK12C02
1   2   +BATT

GND
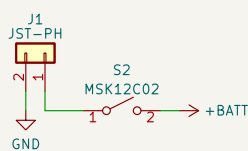
Switch matrix

The inner and outer thumb cluster keys can be replaced with a rotary encoder.
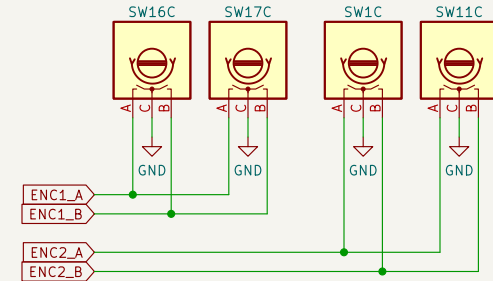If the encoder has a button, that button takes the place of SW19 / SW21 in the matrix.

COL0 COL1 COL2 COL3 COL4

SW5A SW4A SW3A SW2A SW1A
S1 S2 S1 S2 S1 S2 S1 S2 S1 S2
ROW0   D5   D4   D3   D2   D1

SW10A SW9A SW8A SW7A SW6A
S1 S2 S1 S2 S1 S2 S1 S2 S1 S2
ROW1   D10 D9   D8   D7   D6

SW15A SW14A SW13A SW12A SW11A
S1 S2 S1 S2 S1 S2 S1 S2 S1 S2
ROW2   D15 D14 D13 D12 D11

SW17A SW16A
S1 S2 S1 S2
ROW3   D17 D16

Encoders

The use of a rotary encoder is optional.
An EC11 encoder or compatible may
be used. When you don't use an encoder,
the encoder pins become available for
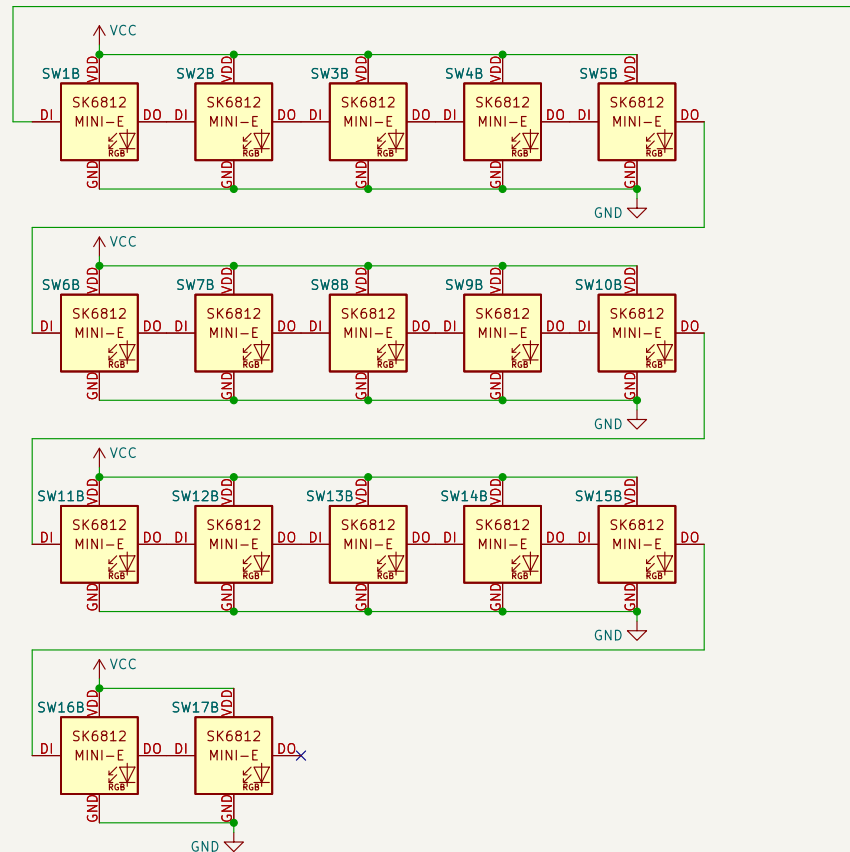use in modifications.

Note that the SW?B encoder shares the
same physical position as the SW?A switch.

Two encoders may be installed per half:
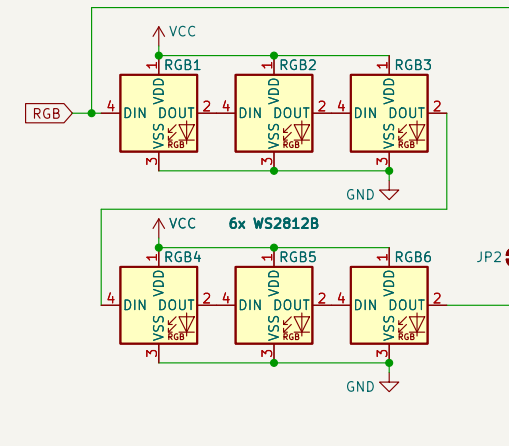SW16/SW17 and SW1/SW11

SW16C SW17C SW1C SW11C
A C B   A C B   A C B   A C B
GND GND GND GND

ENC1_A
ENC1_B

ENC2_A
ENC2_B

Per-key RGB

Per-key RGB LEDs are optional and may be
installed using SK6812MINI-E LEDs (or compatible).

VCC

SW1B SW2B SW3B SW4B SW5B
DI SK6812 DO DI SK6812 DO DI SK6812 DO DI SK6812 DO DI SK6812 DO
   MINI-E   MINI-E   MINI-E   MINI-E   MINI-E
GND GND GND GND GND
GND

VCC

SW6B SW7B SW8B SW9B SW10B
DI SK6812 DO DI SK6812 DO DI SK6812 DO DI SK6812 DO DI SK6812 DO
   MINI-E   MINI-E   MINI-E   MINI-E   MINI-E
GND GND GND GND GND
GND

VCC

SW11B SW12B SW13B SW14B SW15B
DI SK6812 DO DI SK6812 DO DI SK6812 DO DI SK6812 DO DI SK6812 DO
   MINI-E   MINI-E   MINI-E   MINI-E   MINI-E
GND GND GND GND GND
GND

VCC

SW16B SW17B
DI SK6812 DO DI SK6812 DO
   MINI-E   MINI-E
GND GND
GND

RGB Underglow

RGB underglow LEDs are optional and may be
installed using WS2812B LEDs (or compatible).

VCC

RGB1 RGB2 RGB3
4 DIN VDD 2   4 DIN VDD 2   4 DIN VDD 2
  DOUT   DOUT   DOUT
  VSS 3   VSS 3   VSS 3
GND

6x WS2812B

VCC

RGB4 RGB5 RGB6
4 DIN VDD 2   4 DIN VDD 2   4 DIN VDD 2
  DOUT   DOUT   DOUT
  VSS 3   VSS 3   VSS 3

RGB

JP2

Underglow bypass
Solder jumper JP2 closed
if you are using per-key rgb
without rgb underglow.

GND