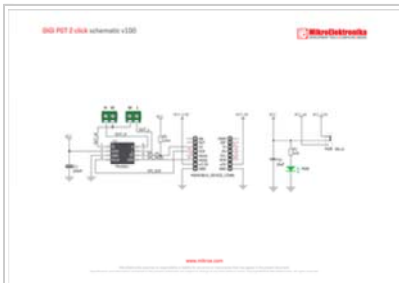# DIGI POT 2 click

From MikroElektonika Documentation

DIGI POT 2 click is a mikroBUS™ add-on board with a single channel digital potentiometer TPL0501 with 256 wiper positions. The IC has 100 kilo Ohms end-to-end resistance, with ±20% tolerance. The board features two pairs of screw terminals for interfacing with the IC DIGI POT 2 click communicates with the target MCU through the mikroBUS™ SPI pins (MISO, MOSI, SCK, CS). The board is designed to use either a 3.3 or a 5V power supply.

Features and usage notes

Schematic also available in PDF (http://cdn-docs.mikroe.com/images/e/ea/DIGI_POT_2_click_sc

-
  -
  - Rheostat mode B

Digital potentiometers are mixed signal devices intended as replacements for mechanical potentiometers. They can be used for consumer electronics, adjustable power supplies, precision calibration and sensor trimming.

The device has three terminals: High termianl, low terminal and a wiper terminal which is in-between. The wiper terminal is adjusted through SPI, moving through the specified 256 steps.

DIGI POT click can operate in several configurations:

Voltage Divider mode
Rheostat mode A

More details on each one can be found in the TPL0501 data sheet.

Digital potentiomenters can be have any kind of interface. Not just knobs like mechanical potentiometers, but also buttons, capacitive inputs etc).

Another advantage of digital potentiometers is that you can create any desirable sweep profile (linear, digital or any other function).

The operating temperature of TPL0501 is between -40ºC to 125ºC. ESD performance is tested per JESD 22 requirements (human body model).

DIGI POT 2 click can be used both with a 3.3V or a 5V power supply, as determined by the position of the onboard jumper (soldered to 3.3V position by default).

DIGI POT 2 click

DIGI POT 2 click

IC/Module	Texas Instruments TPL0501 (http://www.ti.com/lit/ds/symlink/tpl0501-100.pdf)
Interface	SPI (MISO, MOSI, SCK, CS)
Power supply	3.3V, 5V
Website	www.mikroe.com/click/digipot-2 (http://www.mikroe.com/click/digipot-2)

Programming

The following code snippet shows a larger part of the DIGI POT 2 click example we supply:

```
1  void main() {
2
3    Delay_ms(100);
4
5    while (1) {                        // Endless loop
6
7      DigPot_CS = 0;                   // Select PotentioMeter chip
8      SPI1_Write(0);
9      SPI1_Write(counter);
10
11     SPI1_Write(0x20);
12     SPI1_Write(counter);
13     DigPot_CS = 1;                   // Deselect PotentioMeter chip
14
15     adc_value = ADC_Read(1);         // Get 10-bit results of AD conversion
16     PORTD = (unsigned char)(adc_value >> 2);
17
18     if (PINB2_bit)                   // Press PB2 to decrease resistance between W and L
19       counter ++;
20     if (PINB3_bit)                   // Press PB3 to increase resistance between W and L
21       counter --;
22
23     Delay_ms(50);                    // Delay for debouncing
24
25   }
26 }
```

Code examples that demonstrate the usage of DIGI POT 2 click with MikroElektronika hardware, written for mikroC for are available on Libstock (http://libstock.mikroe.com/projects/view/1825/digi-pot-2-click).

Resources

- Texas Instruments TPL0501 (http://www.ti.com/lit/ds/symlink/tpl0501-100.pdf) Vendor's data sheet]

- DIGI POT 2 click (http://libstock.mikroe.com/projects/view/1825/digi-pot-2-click)

- mikroBUS™ standard specifications (http://www.mikroe.com/downloads/get/1737/mikrobus_specification.pdf)

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