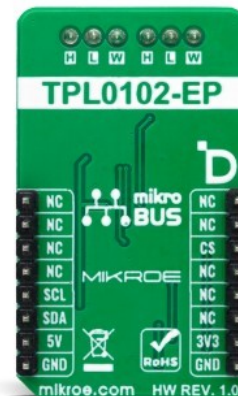# DIGI POT 14 Click

PID: MIKROE-5814

DIGI POT 14 Click is a compact add-on board that contains a digitally controlled potentiometer. This board features the TPL0102, a dual-channel digital potentiometer with non-volatile memory from Texas Instruments. It is a 100K resistance end-to-end potentiometer with a 256-position resolution, where the wiper position can be stored in EEPROM. It can operate from both 3.3V and 5V power supplies and provides a typical 92ppm/ºC end-to-end nominal resistance temperature coefficient and only 4ppm/ºC ratiometric. This Click board™ makes the perfect solution for developing adjustable gain amplifiers and offset timing, adjustable power supplies, precision calibration of set point thresholds, sensor timing and calibration, and more.

How does it work?

DIGI POT 14 Click is based on the TPL0102, a dual-channel digital potentiometer with non-volatile memory from Texas Instruments. It is a two-channel linear-taper digital potentiometer. Each potentiometer can be used as a three-terminal potentiometer or a two-terminal rheostat. When the TPL0102 is powered down, it saves the last values of wipers in EEPROM, and when the power is restored, the positions of wipers are loaded to their initial position. The TPL0102 features a fast power-up response time to wiper settings under 100µs, single-supply, and dual-supply operation ranges.

MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com
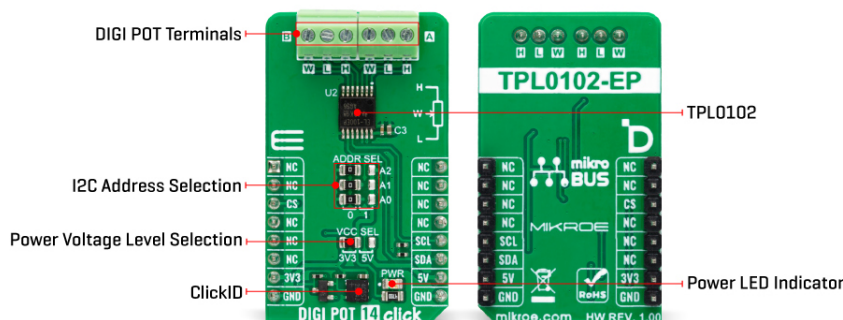
DIGI POT 14 Click uses a standard 2-Wire I2C interface to communicate with the host MCU and supports Standard and Fast mode with up to 400kHz of clock frequency. The I2C address can be set over the ADDR SEL jumpers, where 0 is set by default. Both potentiometers' high, low, and wiper pins are tied to screw terminals, properly labeled as A and B sides.

This Click board™ can operate with either 3.3V or 5V logic voltage levels selected via the VCC SEL jumper. This way, both 3.3V and 5V capable MCUs can use the communication lines properly. Also, this Click board™ comes equipped with a library containing easy-to-use functions and an example code that can be used as a reference for further development.

Specifications

Type	Digital potentiometer
Applications	Can be used for developing adjustable gain amplifiers and offset timing, adjustable power supplies, precision calibration of set point thresholds, sensor timing and calibration, and more
On-board modules	TPL0102 - dual-channel digital potentiometer with non-volatile memory from Texas Instruments
Key Features	Dual-channel, linear-taper digital potentiometer, can be used as a three-terminal potentiometer, or a two-terminal rheostat, non-volatile memory for storing wiper position, 256-position resolution, single-supply, fast power-up response time to wiper settings, 100K end-to-end resistance, and more
Interface	I2C
Feature	ClickID
Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)
Input Voltage	3.3V or 5V

Pinout diagram

This table shows how the pinout on DIGI POT 14 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin		mikro™ BUS		Pin	Notes
	NC	1	AN	PWM	16	NC	
	NC	2	RST	INT	15	NC	
ID COMM	**CS**	3	CS	RX	14	NC	
	NC	4	SCK	TX	13	NC	
	NC	5	MISO	SCL	12	**SCL**	I2C Clock
	NC	6	MOSI	SDA	11	**SDA**	I2C Data
Power Supply	**3.3V**	7	3.3V	5V	10	**5V**	Power Supply
Ground	**GND**	8	GND	GND	9	**GND**	Ground

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
JP1	VCC SEL	Left	Power/Logic Voltage Level Selection 3V3/5V: Left position 3V3, Right position 5V
JP2-JP4	ADDR SEL	Left	I2C Address Selection 0/1: Left position 0, Right position 1

Software Support

We provide a library for the DIGI POT 14 Click as well as a demo application (example), developed using MIKROE compilers. The demo can run on all the main MIKROE development boards.

Package can be downloaded/installed directly from NECTO Studio Package Manager (recommended), downloaded from our LibStock™ or found on Mikroe github account.

Library Description

This library contains API for DIGI POT 14 Click driver.

Key functions

- digipot14_reg_write DIGI POT 14 register write function.

- digipot14_set_pot_a_wiper DIGI POT 14 set the wiper position of potentiometer A function.

- digipot14_set_pot_b_wiper DIGI POT 14 set the wiper position of potentiometer B function.

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VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com

Example Description

This library contains API for DIGI POT 14 Click driver. The demo application uses a digital potentiometer to change the resistance values.

The full application code, and ready to use projects can be installed directly from NECTO Studio Package Manager (recommended), downloaded from our LibStock™ or found on Mikroe github account.

Other Mikroe Libraries used in the example:

- MikroSDK.Board
- MikroSDK.Log
- Click.DIGIPOT14

Additional notes and informations

Depending on the development board you are using, you may need USB UART click, USB UART 2 Click or RS232 Click to connect to your PC, for development systems with no UART to USB interface available on the board. UART terminal is available in all MIKROE compilers.

mikroSDK

This Click board™ is supported with mikroSDK - MIKROE Software Development Kit. To ensure proper operation of mikroSDK compliant Click board™ demo applications, mikroSDK should be downloaded from the LibStock and installed for the compiler you are using.

For more information about mikroSDK, visit the official page.

Resources

mikroBUS™

mikroSDK

Click board™ Catalog

Click Boards™

ClickID

Downloads

DIGI POT 14 click example on Libstock

TPL0102-EP datasheet

DIGI POT 14 click 2D and 3D files

DIGI POT 14 click schematic

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