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DIGI POT 13 Click





PID: MIKROE-5683

DIGI POT 13 Click is a compact add-on board that contains a digitally controlled potentiometer. This board features the MAX5419, a 256-tap non-volatile digital potentiometer from Analog Devices. On this Click board™, one digitally I2C-controlled potentiometer is realized with typical end-to-end resistance values of 200kΩ. It can operate from both 3.3V and 5V power supplies and provides a low 35ppm/ºC end-to-end nominal resistance temperature coefficient and only 5ppm/ºC ratiometric. This Click board™ makes the perfect solution for the development of mechanical potentiometer replacement for the portable consumer market, volume control, LCD contrast control, and battery-backup industrial applications.

DIGI POT 13 Click is supported by a mikroSDK compliant library, which includes functions that simplify software development. This Click board™ comes as a fully tested product, ready to be used on a system equipped with the mikroBUS™ socket.

How does it work?

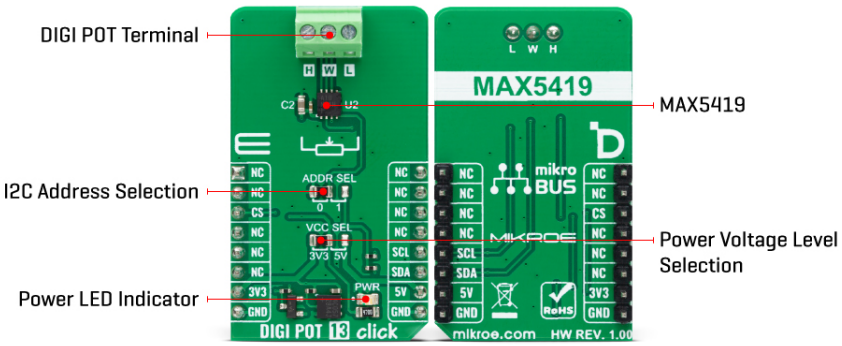
DIGI POT 13 Click is based on the MAX5419, a 256-tap non-volatile digital potentiometer from Analog Devices. It can perform as a discrete potentiometer or variable resistor. The potentiometers consist of a resistor array with 255 fixed resistor elements in series between appropriate H and L terminals. The potentiometer wiper (W) terminal is programmable to access any one of the 256 tap points on the resistor string, with typically 325 ohms of wiper resistance and 150-250kΩ of end-to-end resistance (200kΩ typical). It also features a power-on reset circuitry that loads the wiper position from non-volatile memory at power up. The memory is guaranteed for 50 years for wiper data retention and up to 200.000 wiper store cycles.

Mikroe produces entire development toolchains for all major microcontroller architectures.
Committed to excellency, we are dedicated to helping engineers bring the project development up to speed and achieve outstanding results.

ISO 27001: 2013 certification of informational security management system.
ISO 14001: 2015 certification of environmental management system.
OHSAS 18001: 2008 certification of occupational health and safety management system.

ISO 9001: 2015 certification of quality management system (QMS).

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DIGI POT 13 Click communicates with the host MCU using the standard I2C 2-Wire interface, with a maximum clock frequency in Fast data transfer of up to 400KHz (400kbps). The I2C address can be selected via the ADDR SEL jumper with 0 selected by default. Over the I2C interface, all data can be stored in an internal 8-bit EEPROM.

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. However, the 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 the development of mechanical potentiometer replacements for the portable consumer market, volume control, LCD contrast control, and battery-backup industrial applications
On-board modules	MAX5419 - digital potentiometer from Analog Devices
Key Features	Single channel, single supply operation, 256-position resolution, 200kΩ nominal resistance, I2C-compatible interface, nonvolatile memory stores wiper settings, 50 years of typical data retention, and more
Interface	I2C
ClickID	No
Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)
Input Voltage	3.3V or 5V

Pinout diagram

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This table shows how the pinout on DIGI POT 13 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikroBUS				Pin	Notes
	NC	1	AN	PWM	16	NC	
	NC	2	RST	INT	15	NC	
	NC	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	Logic Level Voltage Selection 3V3/5V: Left position 3V3, Right position 5V
JP2	ADDR SEL	Left	I2C Address Selection 0/1: Left position 0, Right position 1

DIGI POT 13 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Nominal Resistance	-	200	-	kΩ
Resolution	-	256	-	taps
Wiper Resistance	-	325	-	Ω

Software Support

We provide a library for the DIGI POT 13 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 13 Click driver.

Key functions

- digipot13_set_resistance DIGI POT 13 set the resistance function.
- digipot13_set_wiper_pos DIGI POT 13 set the wiper position function.

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- digipot13_write_data DIGI POT 13 write data function.

Example Description

This library contains API for DIGI POT 13 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.DIGIPOT13

Additional notes and informations

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

mikroSDK

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For more information about mikroSDK, visit the official page.

Resources

mikroBUS™

mikroSDK

Click board™ Catalog

Click Boards™

Downloads

DIGI POT 13 click example on Libstock

DIGI POT 13 click schematic

DIGI POT 13 click 2D and 3D files

MAX5419 datasheet

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