

# DIGI POT 8 Click



PID: MIKROE-4596

**DIGI POT 8 Click** is a compact add-on board used as a digitally controlled potentiometer. This board features the [AD5206](#), 6-channel 256-position digitally controlled variable resistor device from [Analog Devices](#). Each channel of the AD5206 contains a fixed resistor with a wiper contact that taps the fixed resistor value of 100kΩ at a point determined by a digital code loaded into the SPI-compatible serial-input register. This Click board™ can be used as mechanical potentiometer replacements, voltage-to-current conversions, gain and offset adjustment, and many other applications.

DIGI POT 8 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 8 Click as its foundation uses the AD5206, 6-channel 256-position digitally controlled device that performs the same electronic adjustment function as a potentiometer or variable resistor from Analog Devices. Each channel of the AD5206 contains a fixed resistor with a wiper contact that taps the fixed resistor value of 100kΩ at a point determined by a digital code loaded into the SPI-compatible serial-input register. The resistance between the wiper and either endpoint of the fixed resistor varies linearly concerning the digital code transferred into the variable resistor (VR) latch. The AD5206 also has an internal Power-On preset that places the wiper in a preset midscale condition at the Power-On state.

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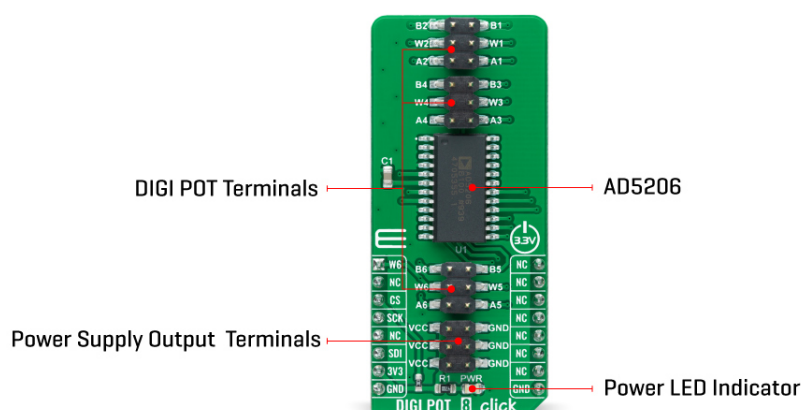
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The AD5206 communicates with MCU through the 3-Wire SPI serial interface with a maximum frequency of 10MHz. Each VR has its VR latch that holds its programmed resistance value. These VR latches are updated from an internal serial-to-parallel shift register loaded from a standard 3-wire SPI serial-input digital interface. Eleven data bits make up the data-word clocked into the serial input register. The first three bits are decoded to determine which VR latch is loaded with the last eight bits of the data word when the CS pin of the SPI serial interface returns to a logic high state.

In addition to the AD5206 present on the DIGI POT 8, this Click board™ also has four 2x3 male headers. Three of them under the labels of A W and B, with also the appropriate number, represent the corresponding DIGI POT terminal of the AD5206, while the fourth header with the label VCC and GND represents an additional power supply output. Wiper terminal number 6, labeled as W6, also can be used as an auxiliary wiper output, routed to the AN pin of the mikroBUS™ socket if the wiper back to the mikroBUS™ is required.

This Click board™ can be operated only with a 3.3V logic voltage level. The board must perform appropriate logic voltage level conversion before use with MCUs with different logic levels. However, the Click board™ comes equipped with a library containing functions and an example code that can be used, as a reference, for further development.

## Specifications

Type	Digital potentiometer
Applications	Can be used as mechanical potentiometer replacements, voltage-to-current conversions, gain and offset adjustment, and many other applications
On-board modules	AD5206 - 6-channel 256-position digitally controlled device that performs the same electronic adjustment function as a potentiometer or variable resistor from Analog Devices
Key Features	256 positions, 6 independently programmable channels, potentiometer replacement, terminal resistance of 100kΩ, SPI compatible, and more

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Interface	Analog
Feature	No ClickID
Compatibility	mikroBUS™
Click board size	L (57.15 x 25.4 mm)
Input Voltage	3.3V

## Pinout diagram

This table shows how the pinout on DIGI POT 8 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin					Pin	Notes
Wiper OUT	<b>AN</b>	1	AN	PWM	16	NC	
	NC	2	RST	INT	15	NC	
SPI Chip Select	<b>CS</b>	3	CS	RX	14	NC	
SPI Clock	<b>SCK</b>	4	SCK	TX	13	NC	
	NC	5	MISO	SCL	12	NC	
SPI Data IN	<b>SDI</b>	6	MOSI	SDA	11	NC	
Power Supply	<b>3.3V</b>	7	3.3V	5V	10	NC	
Ground	<b>GND</b>	8	GND	GND	9	<b>GND</b>	Ground

## Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
J1-J3	-	Populated	DIGI POT Channel Headers
J4	-	Populated	Power Supply Output Header

## DIGI POT 8 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Resistance	-	-	100	kΩ
Number of Taps	-	-	256	
Operating Temperature Range	-40	+25	+85	°C

## Software Support

We provide a library for the DIGI POT 8 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

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This library contains API for DIGI POT 8 Click driver.

Key functions

- digipot8\_write\_data DIGI POT 8 write data function.
- digipot8\_set\_wiper\_1 DIGI POT 8 set wiper 2 function.
- digipot8\_set\_wiper\_2 DIGI POT 8 set wiper 3 function.

## Example Description

This example demonstrates the use of DIGI POT 8 Click.

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.DIGIPOT8

## 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™](#)

## Downloads

[DIGI POT 8 click 2D and 3D files](#)

[DIGI POT 8 click schematic](#)

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[DIGI POT 8 click example on Libstock](#)

[AD5206 datasheet](#)

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