

MUX 4 Click



PID: MIKROE-4754

MUX 4 Click is a compact add-on board that contains a precise analog multiplexing IC. This board features the 74HC4851, 8-channel analog multiplexer/demultiplexer with injection-current effect control from [Nexperia USA Inc.](#) This Click board™ comes with three digital select inputs, active-LOW enable input, eight independent inputs/outputs, and a common input/output. It also features an injection-current effect control, which has excellent value in automotive applications where voltages above the supply voltage are common. This Click board™ is suitable for a wide range of analog or digital mux/demux applications, from industrial and instrumentation, consumer, communications, and automotive systems.

MUX 4 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?

MUX 4 Click as its foundation uses the 74HC4851, a precise 8-channel analog multiplexer/demultiplexer from Nexperia USA Inc. The 74HC4851 comes with eight independent input/output channels labeled from CH1 to CH8 that accept analog and digital signals of any voltage up to 5V. Compared to its predecessors, the 74HC4851 is better to use for the simple reason that it has a higher tolerance to a disturbance on channels that are not connected. Thanks to its characteristic of being both a multiplexer and a demultiplexer, the signals can travel in both directions.

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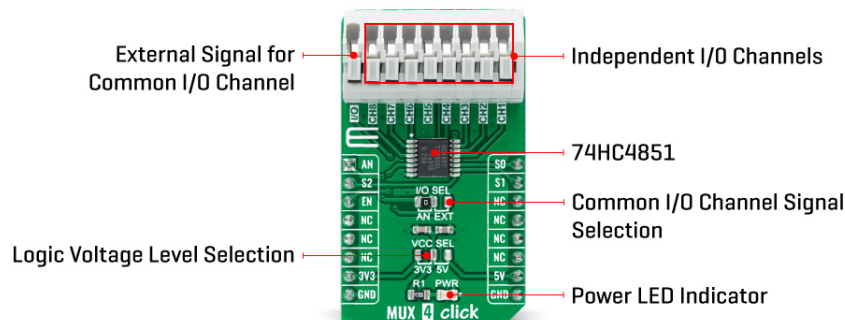
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The injection-current effect control, which is integrated inside the 74HC4851, allows signals at disabled analog input channels to exceed the supply voltage without affecting the signal of the enabled analog channel. This feature eliminates the need for external diode/resistor networks typically used to keep the analog channel signals within the supply-voltage range.

MUX 4 Click communicates with MCU using several GPIO pins. With EN pin, routed to the CS pin on the mikroBUS™ socket, is set to its low logic state, one of the eight switches is selected by three pins labeled as S0, S1, and S2 routed to the RST, PWM, and INT pins on the mikroBUS™ socket. With EN pin is set to its high logic state, all switches are in the high-impedance OFF-state, independent of S0 to S2 pins.

In addition to its eight independent input/output pins, the 74HC4851 also has a common input/output pin where it is possible to select the signal input to a given pin, more precisely, whether the signal will be brought externally from the terminal labeled as I/O or from mikroBUS™ socket AN pin. Selection can be performed by onboard SMD jumper labeled as I/O SEL to an appropriate position marked as AN and EXT. The MUX 4 Click comes equipped with one nine-position spring terminal for all input/output signals, making all wire connections reliable and straightforward.

This Click board™ can operate with both 3.3V and 5V logic voltage levels selected via the VCC SEL jumper. This way, it allows both 3.3V and 5V capable MCUs to 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	DAC
Applications	Can be used for a wide range of analog or digital mux/demux applications, from industrial and instrumentation, consumer, communications, and automotive systems
On-board modules	74HC4851 - precise 8-channel analog multiplexer/demultiplexer from Nexperia USA Inc
Key Features	Low power consumption, injection-current effect control, high speed, pin-controllable,

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	eight channels, common I/O channel signal selection, and more
Interface	Analog,GPIO
ClickID	No
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 MUX 4 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin					Pin	Notes
Analog Signal	AN	1	AN	PWM	16	S0	Channel Selection
Channel Selection	S2	2	RST	INT	15	S1	Channel Selection
Enable	EN	3	CS	RX	14	NC	
	NC	4	SCK	TX	13	NC	
	NC	5	MISO	SCL	12	NC	
	NC	6	MOSI	SDA	11	NC	
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	I/O SEL	Left	Common I/O Channel Signal Selection AN/EXT: Left position AN, Right position EXT

MUX 4 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage VCC	3.3	-	5	V
Input Voltage Range	0	-	VCC	V
ON Resistance (Peak)	-	-	200	Ω
Operating Temperature Range	-40	+25	+85	°C

Software Support

We provide a library for the MUX 4 Click as well as a demo application (example), developed using MikroElektronika [compilers](#). The demo can run on all the main MikroElektronika

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[development boards.](#)

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

Library Description

This library contains API for MUX 4 Click driver.

Key functions:

- mux4_cfg_setup - Config Object Initialization function.
- mux4_init - Initialization function.

Examples description

This example demonstrates the use of MUX 4 click board.

The demo application is composed of two sections :

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

Other Mikroe Libraries used in the example:

- MikroSDK.Board
- MikroSDK.Log
- Click.MUX4

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. The terminal available in all MikroElektronika [compilers](#), or any other terminal application of your choice, can be used to read the message.

mikroSDK

This Click board™ is supported with [mikroSDK](#) - MikroElektronika 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](#)

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[Click boards™](#)

Downloads

[74HC4851 datasheet](#)

[MUX 4 click 2D and 3D files](#)

[MUX 4 click schematic](#)

[MUX 4 click example on Libstock](#)

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