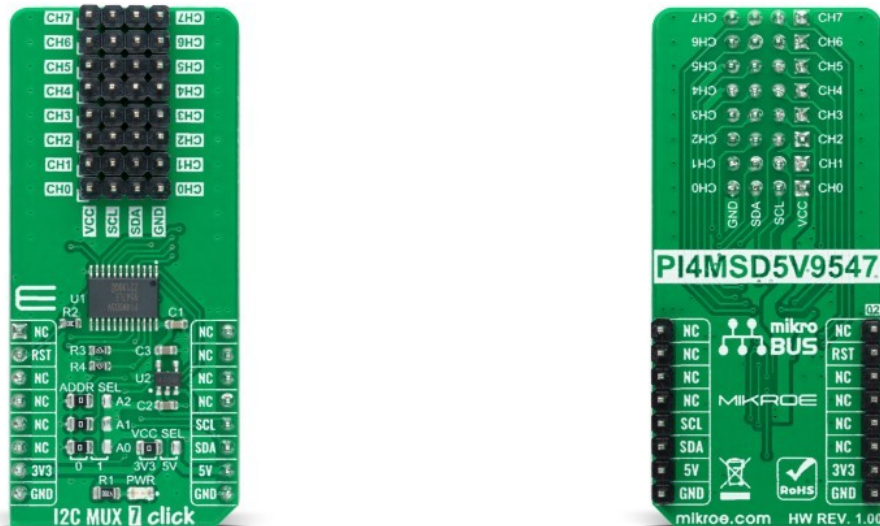


I2C MUX 7 Click



PID: MIKROE-5069

I2C MUX 7 Click is a compact add-on board representing a bidirectional selector dedicated to applications with I2C slave address conflicts. This board features the PI4MSD5V9547, an octal bidirectional translating multiplexer controlled by the I2C-bus from Texas Instruments. Only one SCL/SDA channel can be selected at a time, determined by the contents of the programmable control register. The board powers up with Channel 0 connected, allowing immediate communication between the Master and downstream devices on that channel. The PI4MSD5V9547 also supports hot insertion, has a low Stand-by current, and has no glitch during the Power-Up sequence. This Click board™ is suitable for a wide range of applications from industrial to medical, communications, and automotive systems.

I2C MUX 7 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?

I2C MUX 7 Click as its foundation uses the PI4MSD5V9547, a low voltage octal bidirectional translating multiplexer with an active-low reset input controlled through the I2C serial interface from Texas Instruments. The master SCL/SDA signal pair is directed to eight channels CH0-CH7, where only one SCL/SDA channel can be selected at a time, determined by the contents of the programmable control register. The board powers up with Channel 0 connected, allowing immediate communication between the Master and downstream devices on that channel.

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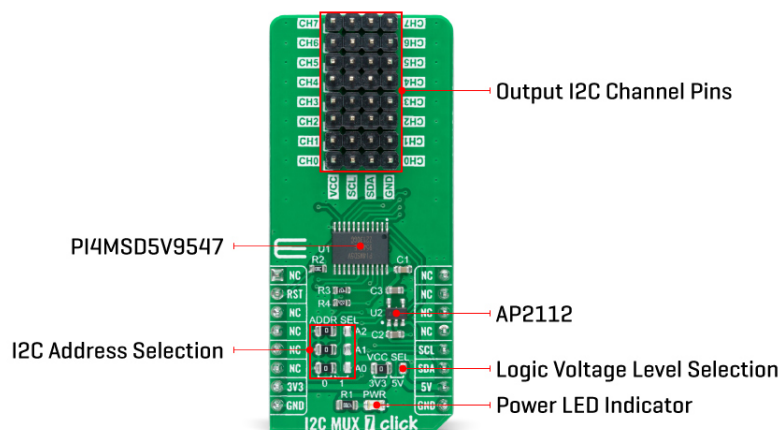
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This Click board™ includes a low dropout linear regulator [AP2112](#) from [Diodes Incorporated](#) to provide the 1.8V supply voltage for the PI4MSD5V9547. When power is applied to IC, an internal Power-On Reset (POR) holds the PI4MSD5V9547 in a reset condition until the power supply reaches the POR voltage level. At this point, the reset condition is released, and the PI4MSD5V9547 registers and I2C-bus state machine are initialized to their default states (all zeroes), causing deselection of all channels.

I2C MUX 7 Click communicates with MCU using the standard I2C 2-Wire interface that supports Standard-Mode (100 kHz) and Fast-Mode (400 kHz) operation. The PI4MSD5V9547 has a 7-bit slave address with the first five MSBs fixed to 1110. The address pins A0, A1, and A2, are programmed by the user and determine the value of the last three LSBs of the slave address, which can be selected by onboard SMD jumpers labeled as ADDR SEL, allowing selection of the slave address LSBs. Alongside the internal Power-On Reset (POR) function, this board also has an active-low reset signal routed on the RST pin of the mikroBUS™ socket used to recover from a bus-fault condition. When this signal is asserted low, the PI4MSD5V9547 resets its registers alongside with I2C state machine and deselects all channels.

This Click board™ can operate with both 3.3V and 5V logic voltage levels selected via the VCC SEL jumper. This way, it is allowed for 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	I2C
Applications	Can be used for a wide range of applications from industrial to medical, communications, and automotive systems
On-board modules	PI4MSD5V9547 - octal bidirectional translating multiplexer controlled by the I2C-bus from Texas Instruments
Key Features	Low power consumption, reset feature, channel selection via I2C bus, Power-Up with one channel ON, no glitch on Power-On, support hot insertion, and more

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Interface	I2C
ClickID	No
Compatibility	mikroBUS™
Click board size	L (57.15 x 25.4 mm)
Input Voltage	3.3V or 5V

Pinout diagram

This table shows how the pinout on I2C MUX 7 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	
Reset	RST	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-JP4	ADDR SEL	Left	I2C Address Selection 0/1: Left position 0, Right position 1
J1-J8	CH0-CH7	Populated	Output I2C Channel Pins

I2C MUX 7 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
ON Resistance	-	-	70	Ω
Operating Temperature Range	-40	+25	+85	°C

Software Support

We provide a library for the I2C MUX 7 Click as well as a demo application (example), developed using MikroElektronika [compilers](#). The demo can run on all the main MikroElektronika [development boards](#).

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

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Library Description

This library contains API for I2C MUX 7 Click driver.

Key functions

- `i2cmux7_set_channel` This function sets the desired channel active and configures its slave address.
- `i2cmux7_read_channel` This function reads the currently selected channel value.
- `i2cmux7_generic_read` This function reads a desired number of data bytes starting from the selected register by using I2C serial interface.

Example Description

This example demonstrates the use of I2C MUX 7 Click board™ by reading the device ID of a 6DOF IMU 11 and Compass 3 click boards connected to the channels 0 and 7 respectfully.

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.I2CMUX7

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 MikroElektronika [compilers](#).

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

[I2C MUX 7 click example on Libstock](#)

[PI4MSD5V9547 datasheet](#)

[AP2112 datasheet](#)

[I2C MUX 7 click 2D and 3D files](#)

[I2C MUX 7 click schematic](#)

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