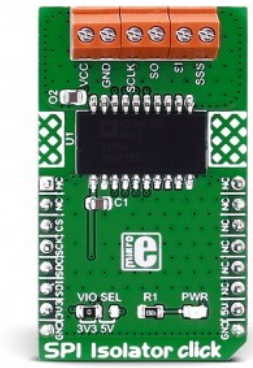
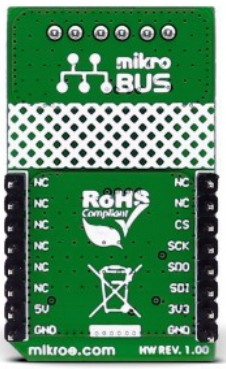
MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com

SPI Isolator Click





PID: MIKROE-2583

SPI Isolator Click is a compact add-on board with a digital isolator optimized for a serial peripheral interface. This board features the ADuM4154, a 5kV digital isolator optimized for a serial peripheral interface (SPI) from Analog Devices. Based on the iCoupler® chip scale transformer technology, the low propagation delay and jitter in the SCLK, SI, SO, and SSS SPI bus signals support SPI clock rates of up to 17MHz.It also provides a slave select multiplexing system that allows up to four slave devices to be serviced from one isolator. When a target slave is selected, the slave select signal propagates to the desired output with low propagation delay, allowing tight timing control. This Click board™ is suitable for general SPI-bus isolation, industrial automation systems, sensor isolation, and many other applications.

SPI Isolator 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?

SPI Isolator Click is based on the ADuM4154, a 5kV digital isolator from Analog Devices designed to enhance the serial peripheral interface (SPI) performance. It incorporates iCoupler® technology for chip scale transformer, ensuring minimal delay and jitter on the SPI bus signals like SCLK, SI, SO, and SSS. Additionally, it features a slave-select multiplexing mechanism that can accommodate up to four slave devices through a single isolator. This design enables precise timing control by ensuring the slave select signal reaches the intended slave device with minimal delay when activated. The board is ideal for applications requiring SPI-bus isolation, including industrial automation systems, sensor isolation, and various other uses.

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

SPI Isolator Click communicates with an MCU using the SPI serial interface with a maximum clock frequency of 17MHz. The isolated lines are provided on an onboard screw terminals. You can distinguish the power VCC and GND lines from the data lines, which are SCLK, SO, SI, and SSS. The isolator can work with external supply voltages from 3V up to 5.5V.

This Click board™ can operate with either 3.3V or 5V logic voltage levels selected via the VCC SEL switch. 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	SPI
Applications	Can be used for general SPI-bus isolation, industrial automation systems, sensor isolation, and many other applications
On-board modules	ADuM4154 - 5kV digital SPI isolator from Analog Devices
Key Features	Up to 17MHz SPI clock speed, high-speed, support up to 4 slave devices, safety and regulatory approvals, broad application cases, and more
Interface	SPI
Feature	No 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 SPI Isolator 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	
SPI Chip Select	**CS**	3	CS	RX	14	NC	
SPI Clock	**SCK**	4	SCK	TX	13	NC	
SPI Data OUT	**SDO**	5	MISO	SCL	12	NC	
SPI Data IN	**SDI**	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

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

LD1	PWR	-	Power LED Indicator
JP1	VIO SEL	Left	Logic Voltage Level Selection 3V3/5V: Left position 3V3, Right position 5V

SPI Isolator Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Isolated-Side Supply Voltage	3	-	5.5	V
Maximum Withstand Isolation Voltage	-	-	5	kVrms

Software Support

We provide a library for the SPI Isolator 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), downloaded from our LibStock™ or found on Mikroe github account.

Library Description

This library contains API for SPI Isolator Click driver.

Key functions

- Generic transfer function.
- Write the byte of data function.
- Read the byte of data function.

Example Description

TThe click is designed to run on either 3.3V or 5V power supply. It communicates with the target microcontroller over SPI interface. In this example we have used an 8x8 click board connected to a SPI Isolator click board.

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.Spiisolator

Additional notes and informations

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

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™

Click board™ Catalog

Click Boards™

Downloads

Learn: SPI Bus

SPI Isolator click schematic v100

ADuM4154 datasheet

SPI Isolator click 2D and 3D files v100