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I2C Isolator 6 Click

PID: MIKROE-5603

I2C Isolator 6 Click is a compact add-on board that offers completely isolated bidirectional communication. This board features the ADUM2250, a two-channel, 5kVRMS I2C digital isolator from Analog Devices. The ADUM2250 provides two bidirectional channels, supporting a completely isolated I2C interface that eliminates the need for splitting I2C signals into separate transmit and receive signals for use with standalone optocouplers. It supports data rates from DC up to 1MHz and has a hot swap circuitry to prevent data glitches. This Click board™ is suitable for transferring digital signals between circuits with different power domains at ambient temperatures.

How does it work?

I2C Isolator 6 Click is based on the ADUM2250, a two-channel, 5kVRMS I2C digital isolator from Analog Devices, suitable for hot-swap applications. The ADUM2250 bidirectionally buffers the two I2C signals across the isolation barrier while providing 5kVRMS of galvanic isolation. It transfers digital signals with data rates up to 1MHz between circuits with different power domains at ambient temperatures. It offers the glitch-free operation, excellent reliability, and very long operational life. The wide temperature range and high isolation voltage make the device ideal for harsh industrial environments.

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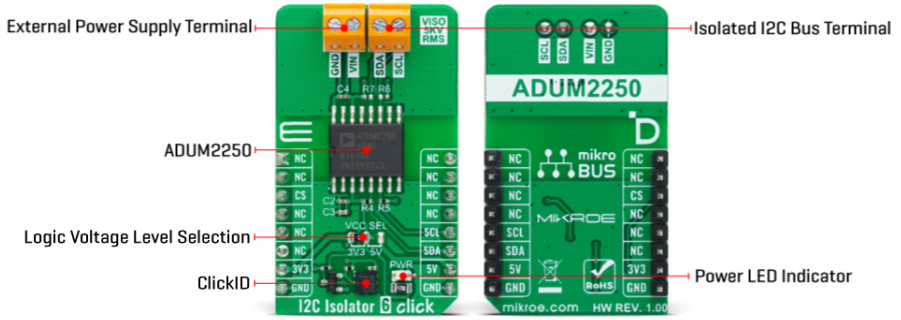

This Click board™ also possesses two terminals labeled as VIN and SDA/SCL at the top of the Click board™, where VIN represents the isolated-side power supply of the isolator, while the other corresponds to the isolated bidirectional logic-bus terminal.

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	I2C,Isolators
Applications	Can be used for transferring digital signals between circuits with different power domains
On-board modules	ADUM2250 - two-channel I2C digital isolator from Analog Devices
Key Features	Robust galvanic isolation of digital signals, withstands 5kVRMS for 60s, low power consumption, supports hot swap application, glitch-free operation, excellent reliability, long operational life, and more
Interface	I2C
Feature	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 I2C Isolator 6 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin		Pin	Notes

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		mikro™ BUS					
	NC	1	AN	PWM	16	NC	
	NC	2	RST	INT	15	NC	
ID COMM	**CS**	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

I2C Isolator 6 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Maximum Withstand Isolation Voltage	-	-	5000	V_{RMS}
Data Rate	-	-	1	Mbps

Software Support

We provide a library for the I2C Isolator 6 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 I2C Isolator 6 Click driver.

Key functions

- i2cisolator6_write I2C Isolator 6 I2C writing function.
- i2cisolator6_read I2C Isolator 6 I2C reading function.
- i2cisolator6_write_then_read I2C Isolator 6 I2C write then read function.

Example Description

This library contains API for the I2C Isolator 6 Click driver. This demo application shows an

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example of an I2C Isolator 6 Click wired to the Accel 21 Click for reading device ID. The library also includes an I2C writing and reading functions.

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.I2CIsolator6

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, which 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.

For more information about mikroSDK, visit the official page.

Resources

mikroBUS™

mikroSDK

Click board™ Catalog

Click boards™

ClickID

Downloads

I2C Isolator 6 click example on Libstock

ADUM2250 datasheet

I2C Isolator 6 click 2D and 3D files v100

I2C Isolator 6 click schematic v100

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