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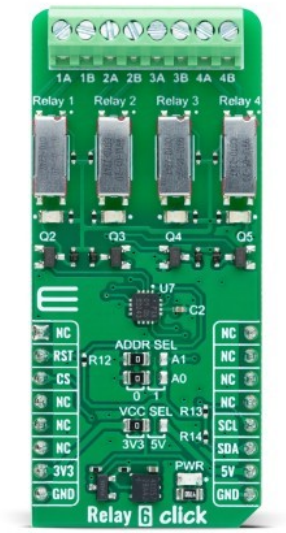
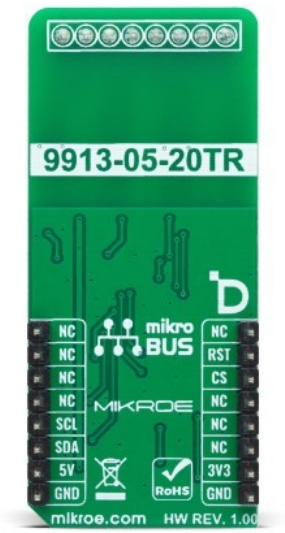
Relay 6 Click





PID: MIKROE-6001

Relay 6 Click is a compact add-on board for precise load control and monitoring applications. This board features four 9913-05-20TRs, a reed relay from Coto Technology, well-known for its ultra-miniature SMD design, which offers the smallest footprint in the market. These four relays each have four load connection terminals and blue LED indicators that signal the operational status, ensuring clear and immediate feedback. The relays offer high reliability, with hermetically sealed contacts, over 1011Ω insulation resistance, and an external magnetic shield. They support a coil voltage of 5VDC and switching capabilities up to 100VDC. It is ideally suited for automated test equipment, instrumentation, and telecommunications.

Relay 6 Click is fully compatible with the mikroBUS™ socket and can be used on any host system supporting the mikroBUS™ standard. It comes with the mikroSDK open-source libraries, offering unparalleled flexibility for evaluation and customization. What sets this Click board™ apart is the groundbreaking ClickID feature, enabling your host system to seamlessly and automatically detect and identify this add-on board.

How does it work?

Relay 6 Click is based on the 9913-05-20TR, a reed relay from Coto Technology, a component known for its ultra-miniature SMD design, standing for the smallest footprint in the market. This Click board™ features four relays, each equipped with four terminals for load connections that are controlled via these relays. Beneath each relay is a blue LED indicator that illuminates to signal when the relay is active, serving as an operational status indicator. This setup provides clear and immediate feedback on the status of each relay, enhancing user control and system monitoring. This Click board™ is ideal for automated test equipment, instrumentation, and telecommunications applications, highlighting high reliability and long life due to relays

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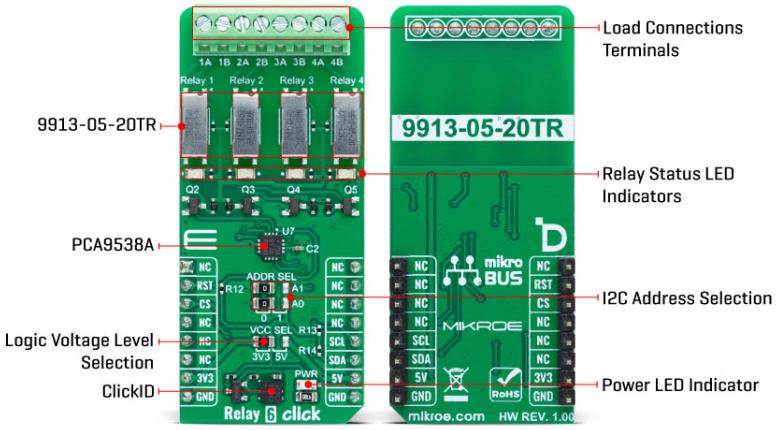
hermetically sealed contacts.



The 9913-05-20TRs also feature a high insulation resistance of a minimum of 1011Ω and an external magnetic shield. Its electrical specifications include a coil voltage of 5VDC, a coil resistance of 200Ω, a single-pole single-throw normally open (SPST-NO, 1 Form A) contact form, with the contact current rating capped at 250mA and the switching voltage limited to 100VAC and 100VDC.

Control and communication between the relays and the host MCU are managed via the PCA9538A port expander, which uses an I2C communication interface. This device supports both Standard and Fast modes, with frequencies up to 400kHz. The PCA9538A's I2C address can be configured through the ADDR SEL jumpers, allowing flexible integration with various MCU systems.

The PCA9538A also uses an RST pin that ensures the registers and I2C-bus state machine remain in their default settings until this pin is set to a HIGH logic state, where the device returns to normal operational status.

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. Also, this 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	Relay
Applications	Ideal for automated test equipment, instrumentation, and telecommunications
On-board modules	9913-05-20TR - reed relay from Coto Technology
Key Features	Ultra-miniature SMD reed relay,high reliability, high insulation resistance, external magnetic shield, switching voltage up to 100VAC/VDC, I2C interface with selectable address, reset feature, blue LED indicators for relay operational status, and more

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Interface	I2C
Feature	ClickID
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 Relay 6 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	
Reset	**RST**	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
LD2-LD5	PWR	-	Relay Status LED Indicators
JP1	VCC SEL	Left	Logic Voltage Level Selection 3V3/5V: Left position 3V3, Right position 5V
JP2-JP3	ADDR SEL	Left	I2C Address Selection 0/1: Left position 0, Right position 1

Relay 6 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Switching Voltage	-	-	100	VDC/AC
Contact Current	-	-	250	mA

Software Support

We provide a library for the Relay 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

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Manager(recommended), downloaded from our LibStock™ or found on Mikroe github account.

Library Description

This library contains API for Relay 6 Click driver.

Key functions

- relay6_reset_port_expander Relay 6 reset port expander function.
- relay6_port_expander_write Relay 6 port expander write register function.
- relay6_set_relay Relay 6 set relay state function.

Example Description

This example demonstrates the use of Relay 6 click board by toggling the relays state.

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.Relay6

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™

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Downloads

PCA9538A datasheet

Relay 6 click example on Libstock

Relay 6 click 2D and 3D files v100

Relay 6 click schematic v100

9913-05-20TR datasheet