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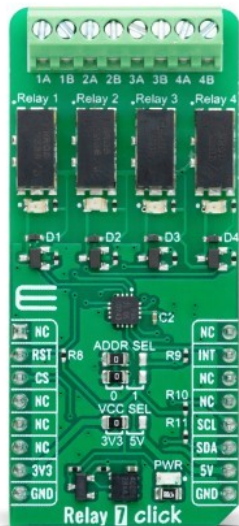www.mikroe.com

Relay 7 Click

PID: MIKROE-6000

Relay 7 Click is a compact add-on board for precise load control and monitoring applications. This board features four CRR05-1As, a CRR series reed relay from Standex Electronics, well-known for its ultra-miniature SMD design and high insulation resistance. These four relays each have four load connection terminals and orange LED indicators that signal the operational status, ensuring clear and immediate feedback. These relays are highly reliable and come in a rugged thermoset over-molded package with ceramic substrate and a typical 1013Ω insulation resistance. They support a coil voltage of 5VDC and switching capabilities up to 170VDC/0.5A/10W. It is ideally suited for test and measurement (ATE) equipment, instrumentation, and telecommunications.

How does it work?

Relay 7 Click is based on the CRR05-1A, a CRR series reed relay from Standex Electronics, a component known for its ultra-miniature SMD design and high insulation resistance. This Click board™ features four relays, each equipped with four terminals for load connections that are controlled via these relays. Beneath each relay is an orange 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 test and measurement (ATE) equipment, instrumentation, and telecommunications applications, highlighting high reliability and long life due to the relays' fully sealed contacts.

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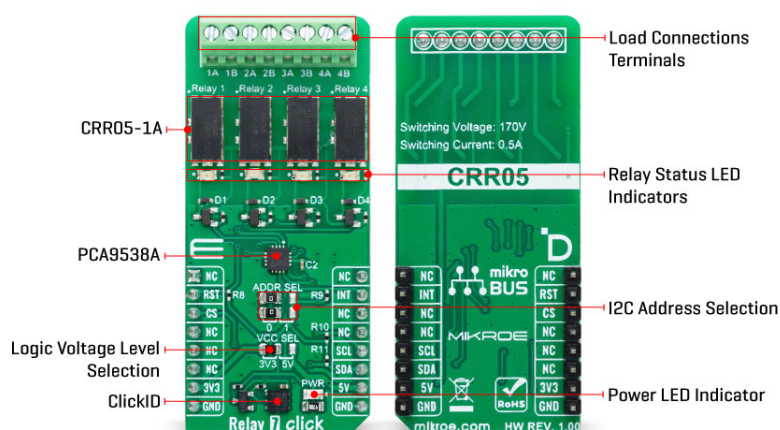
The CRR05-1As also feature a high insulation resistance of a typical 1013Ω. Its electrical specifications include a coil voltage of 5VDC, a coil resistance of 150Ω, a single-pole single-throw normally open (SPST-NO, 1 Form A) contact form, and maximum rated power of 10W/170VDC/0.5A.

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 and INT pins of the mikroBUS™ socket. The RST pin 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. The INT is an interrupt pin, enabling the host MCU to detect user-specified events through the I2C interface.

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 test and measurement (ATE) equipment, instrumentation, and telecommunications
On-board modules	CRR05-1A - CRR series reed relay from Standex Electronics
Key Features	Ultra-miniature SMD reed relay,high reliability, high insulation resistance, maximum rated power of 10W/170VDC/0.5A, I2C interface with selectable address, reset and interrupt features, orange LED indicators for relay operational status, and more
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 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	**INT**	Interrupt
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	-	-	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 7 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Switching Voltage	-	-	170	VDC
Switching Current	-	-	0.5	A
Contact Rating	-	-	10	W

Software Support

We provide a library for the Relay 7 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.

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Library Description

This library contains API for Relay 7 Click driver.

Key functions

- relay7_set_relay This function sets the desired state of the selected relay.

- relay7_reset_device This function performs a hardware reset of the device.

- relay7_get_interrupt This function returns the interrupt pin logic state.

Example Description

This example demonstrates the use of the Relay 7 Click board™ by toggling the relay 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.Relay7

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™

ClickID

Downloads

[PCA9538A datasheet](#)

[Relay 7 click example on Libstock](#)

[Relay 7 click 2D and 3D files v100](#)

[CRR05-1A Datasheet](#)

[Relay 7 click schematic v100](#)