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Timer Relay click

PID: MIKROE-5562

Timer Relay Click is a compact add-on board that allows you to control the load with a timer. This board features the NE5555, a precision timer from Diodes Incorporated. It is a precision timing circuit capable of producing accurate time delays in a monostable mode of operation. The Timer Relay Click features the SRD-5VDC-SL-C, a relay from Ningbo, to control the connected load over the screw terminal. This Click board™ makes the perfect solution for developing and controlling high-power applications that require delayed timing.

Timer Relay 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?

Timer Relay Click is based on the NE5555, a precision timer from Diodes Incorporated. It works so that when the trigger is in a LOW logic state, it will start a delay regarding the threshold and then activate the relay. The TPL0501, a 256-tap single-channel digital potentiometer from Texas Instruments, determines the threshold. By setting a desired value on this digital potentiometer, you are setting a threshold on the NE5555 for the delay. When you hit the onboard trigger button, you activate the relay regarding the delay you set by the digital potentiometer.

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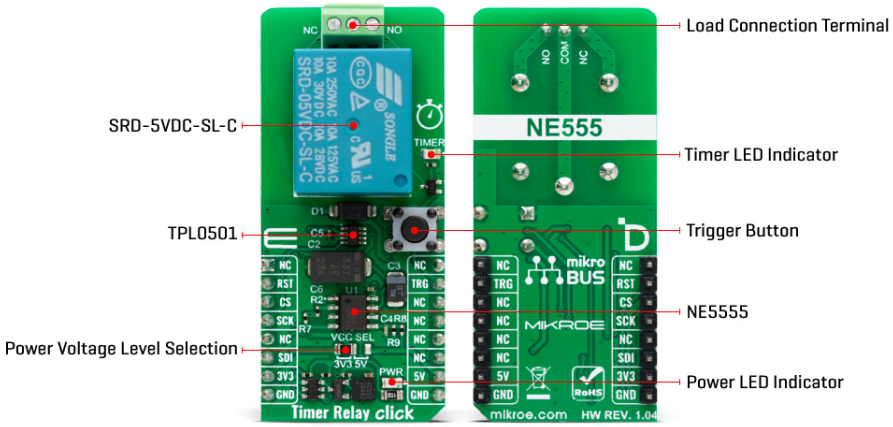

Timer Relay Click uses a 3-wire SPI serial interface of the TPL0501 to allow the host MCU to set the threshold. Besides the trigger button, you can trigger the NE5555 over the TRG pin of the mikroBUS™ socket. When the timer hits the threshold and after delay activates the relay, it will also turn the TIMER LED On. The relay itself can withstand up to 10A and 220VAC/28VDC.

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	Can be used for developing and controlling high-power applications that require delayed timing
On-board modules	NE5555 - precision timer from Diodes Incorporated
Key Features	Time-delayed operation, trigger control by the host MCU or over the button, digital potentiometer for setting the threshold, screw terminals for connecting the load, long mechanical life of the relay, and more
Interface	SPI
ClickID	Yes
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 Timer Relay Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

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Notes	Pin	mikro BUS				Pin	Notes
	NC	1	AN	PWM	16	NC	
Reset / ID SEL	**RST**	2	RST	INT	15	**TRG**	Timer Trigger
SPI Select / ID COMM	**CS**	3	CS	RX	14	NC	
SPI Clock	**SCK**	4	SCK	TX	13	NC	
	NC	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
LD1	PWR	-	Power LED Indicator
LD2	TIMER	-	Timer LED Indicator
JP1	VCC SEL	Left	Power/Logic Voltage Level Selection 3V3/5V: Left position 3V3, Right position 5V
T1	-	-	Trigger Button

Timer Relay Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Operational Current Voltage	-	-	10	A
Operational AC Voltage	-	-	220	V
Operational DC Voltage	-	-	28	V

Software Support

We provide a library for the Timer Relay 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 Timer Relay Click driver.

Key functions

- timerrelay_set_wiper_pos Timer Relay set wiper position function.
- timerrelay_activate_reset Timer Relay reset timer function.
- timerrelay_activate_trigger Timer Relay activate trigger function.

Example Description

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This example demonstrates the use of the Timer Relay Click board™ by setting the relay timer to 2 seconds ON time, then holding it OFF for 2 more seconds.

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.TimerRelay

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

Timer Relay click schematic

Timer Relay click 2D and 3D files

NE555 datasheet

SRD-5VDC-SL-C datasheet

TPL0501 datasheet

Timer Relay click example on Libstock

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