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
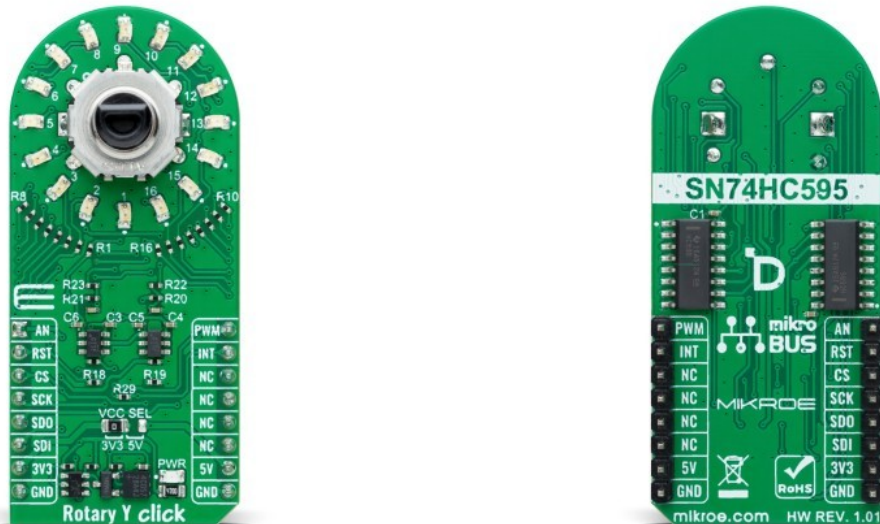www.mikroe.com

ROTARY Y Click

PID: MIKROE-1825

ROTARY Y Click is a compact add-on board that allows you to add a precision input knob to your design. This board features a combination of a high-quality rotary encoder, the EC12D1564402, and a LED ring composed of 16 individual yellow LEDs. The 16-segment LED ring is driven by two SN74HC595 SPI-configurable 8-bit shift registers from Texas Instruments, which can control each LED individually, allowing various lighting effects to be programmed. The encoder outputs A and B signals (out of phase to each other) on the two mikroBUS™ lines, alongside the knob push-button feature, which outputs through the interrupt line. This Click board™ can be used for various interesting visual effects to any application, such as flexible position, value indicator, or many others.

ROTARY Y 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?

Rotary Y Click is based on two SN74HC595 SPI-configurable 8-bit shift registers from Texas Instruments that, combined with a high-quality rotary encoder, the EC12D1564402, allows you to add a precision input knob to your design. The EC12D1564402 incremental rotary encoder is surrounded by a ring of 16 yellow LEDs where a single rotation is divided into 15 discrete steps (in contrast to a potentiometer, a rotary encoder can be spun around continuously). This Click board™ is an ideal solution for building various HMI applications where precise input is required, but also for some interesting visual effects to any application.

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
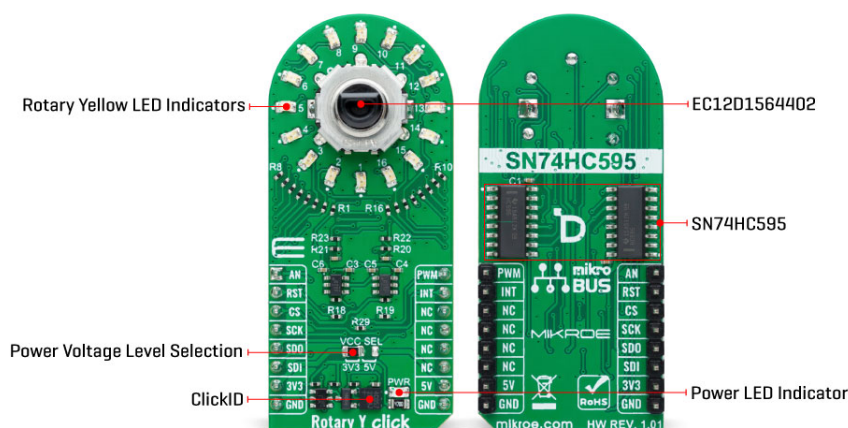
As mentioned before, this Click board™ uses the EC12D1564402, a 15-pulse incremental rotary encoder with a push-button, from ALPS. This encoder has unique mechanical specifications (debouncing time for its internal switches goes down to 2ms), and it can withstand a huge number of switching cycles, up to 30.000. The supporting debouncing circuitry allows contacts to settle before the output is triggered fully.

The SN74HC595 controls each LED individually positioned in a ring around the encoder through a standard SPI interface with a maximum frequency of 5MHz. Rotating the encoder, it outputs A and B signals (out of phase to each other) on the two mikroBUS™ lines, AN and PWM pins of the mikroBUS™ socket, alongside the push-button contact, which outputs through the interrupt line of the mikroBUS™ socket. The SN74HC595 also comes with a Reset feature used across RST mikroBUS™ line.

This Click board™ can operate with both 3.3V and 5V logic voltage levels selected via the PWR SEL jumper. This way, it is allowed for both 3.3V and 5V capable MCUs to 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	Rotary encoder
Applications	Can be used for various interesting visual effects to any application, such as flexible position, value indicator, or many others
On-board modules	SN74HC595 - SPI-configurable 8-bit shift registers from Texas Instruments EC12D1564402 - 15-pulse incremental rotary encoder with a push-button from ALPS
Key Features	High quality, SPI interface, various lighting effects, knob feature, low power consumption, flexibility, efficiency, precision, and more
Interface	Analog,SPI
Feature	No 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 Rotary Y Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikroBUS				Pin	Notes
Encoder Output B	AN	1	AN	PWM	16	PWM	Encoder Output A
Reset	RST	2	RST	INT	15	INT	Knob Detection
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
LD1	PWR	-	Power LED Indicator
LD2-LD17	1-16	-	Rotary Yellow LED Indicators
JP1	PWR SEL	Left	Logic Level Voltage Selection 3V3/5V: Left position 3V3, Right position 5V

Rotary Y Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Operating Life	-	-	30.000	cycles

Software Support

We provide a library for the Rotary Y 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 Rotary Y Click driver.

Key functions

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

- rotaryy_generic_transfer ROTARY B data transfer function.

- rotaryy_turn_on_led_by_position Function turn on led by position

- rotaryy_button_push Function return 1 if button is pushed and return 0 if not

Example Description

The demo application controls led on click with rotary on 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.RotaryY

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™

Downloads

Rotary Y click user manual

Rotary Y click example on Libstock

EC12D1564402 datasheet

SN74HC595 datasheet

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

[ROTARY Y click 2D and 3D files v100](#)

[ROTARY Y click schematic v100](#)

[ROTARY Y click 2D and 3D files v101](#)

[ROTARY Y click schematic v101](#)

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Mikroe](#):

[MIKROE-5920](#)