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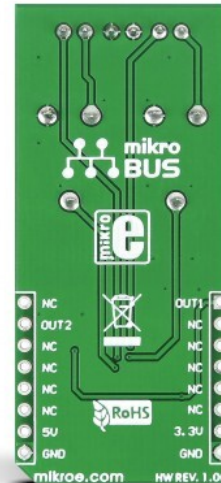www.mikroe.com

Comparator Click

PID: MIKROE-1915

Comparator Click is a compact add-on board that contains two independent precision voltage comparators. This board features the LM2903, a dual differential comparator from onsemi. It provides two pair of screw terminals that allows you to connect separate inputs with additional ground connections, which let you use either a single (range of 2 to 36VDC) or dual power supply (from ±1 to ±18VDC). Two potentiometers are here to set threshold values for comparison. This Click board™ makes the perfect solution for A/D converters, wide-range VCOs, MOS clock generators, and more.

Comparator 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?

Comparator Click is based on the LM2903, a dual differential comparator from onsemi. These two independent voltage comparators allow the comparison of voltages near ground potential and are compatible with all forms of logic. The LM2903 has a low current drain with low input bias current, low input offset current, and low offset voltage with ±1mV. Two potentiometers have high shafts allowing easy usage, but they can also be used with a flat screwdriver. The potentiometers can be used in correlation with the VR (voltage reference) screw terminals to set the threshold values for comparison with the obtained values over the IN (input) screw terminals with the common ground (GND) screw terminals.

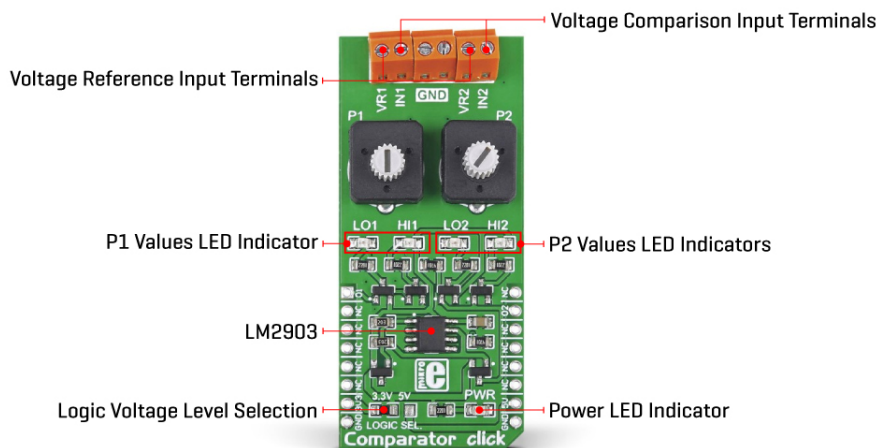Mikroe produces entire development toolchains for all major microcontroller architectures.
Committed to excellency, we are dedicated to helping engineers bring the project development up to speed and achieve outstanding results.

ISO 27001: 2013 certification of informational security management system.
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Comparator Click communicates with the host microcontroller with each output using its own interrupt pin on the mikroBUS™ socket labeled O1 and O2. In addition, every independent output has its own red HIGH and green LOW LEDs for visual presentation, labeled LO1, HI1, LO2, and HI2.

This Click board™ can operate with either 3.3V or 5V logic voltage levels selected via the LOGIC 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	ADC
Applications	Can be used for A/D converters, wide range VCOs, MOS clock generator, and more
On-board modules	LM2903 - dual differential comparator from onsemi
Key Features	Dual differential comparator, two pairs of input screw terminals, two voltage reference threshold potentiometers, working with single or dual power supply, allow the comparison of voltages near ground potential, low power consumption, and more
Interface	GPIO
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 Comparator 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
Comparator Output 1	**O1**	1	AN	PWM	16	NC	
	NC	2	RST	INT	15	**O2**	Interrupt
	NC	3	CS	RX	14	NC	
	NC	4	SCK	TX	13	NC	
	NC	5	MISO	SCL	12	NC	
	NC	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
-	PWR	-	Power LED Indicator
-	LO1	-	Low Output 1 LED Indicator
-	HI1	-	High Output 1 LED Indicator
-	LO2	-	Low Output 2 LED Indicator
-	HI2	-	High Output 2 LED Indicator
J1	LOGIC SEL	Left	Logic Level Voltage Selection 3V3/5V: Left position 3V3, Right position 5V

Comparator Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Single Power Supply	2	-	36	VDC
Dual Power Supply	±1	-	±18	VDC

Software Support

We provide a library for the Comparator 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 Comparator Click driver.

Key functions

- This function check and return state of the o1 (AN) pin of Comparator Click Board.

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- This function check and return state of the o2 (INT) pin of Comparator Click Board.

Example Description

This is an example which demonstrates the usage of Comparator Click 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.Comparator

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

Comparator click example on Libstock

Comparator click - User Manual

LM2903 datasheet

Comparator click schematic

Comparator click 2D and 3D files