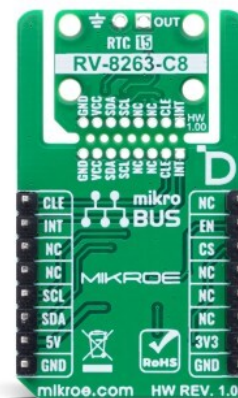
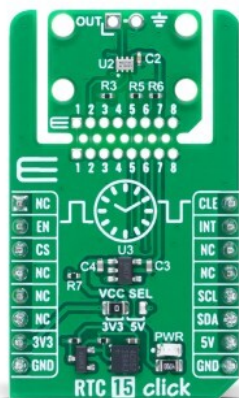


RTC 15 Click



PID: MIKROE-6602

RTC 15 Click is a compact add-on board designed for tracking real-time data in embedded applications. This board features the [RV-8263-C8](#), a low-power, high-precision CMOS real-time clock/calendar module from [Micro Crystal](#). The RV-8263-C8 features I2C communication, full calendar support with automatic leap year correction, and integrated alarm and timer functions. It supports output of selectable clock frequencies and includes an interrupt pin for event-based triggering. Thanks to MIKROE's innovative [Click Snap](#) format, the board allows flexible implementation and standalone operation. It is well-suited for use in IoT, industrial automation, automotive systems, metering equipment, healthcare devices, as well as portable and wearable electronics.

For more information about **RTC 15 Click** visit the official [product page](#).

How does it work?

RTC 15 Click is based on the RV-8263-C8, a standard commercial-grade real-time clock/calendar module from Micro Crystal, known for its low power consumption and high precision. This CMOS-based device operates with a 32.768kHz clock and includes an offset register that enables fine-tuning of frequency deviations, ensuring reliable timekeeping in long-term applications. Communication with the host MCU is handled via an I2C interface, with automatic register address incrementing after each data transfer for efficient access. Despite its ultra-small and lightweight design, the module offers full calendar functionality, including tracking of year, month, date, weekday, hours, minutes, and seconds, along with support for automatic leap year correction from 2000 to 2099. Additionally, it features built-in timer and alarm capabilities. The RTC 15 Click is ideal for use in IoT systems, industrial and automotive applications, metering solutions, healthcare devices, as well as wearable and portable

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.

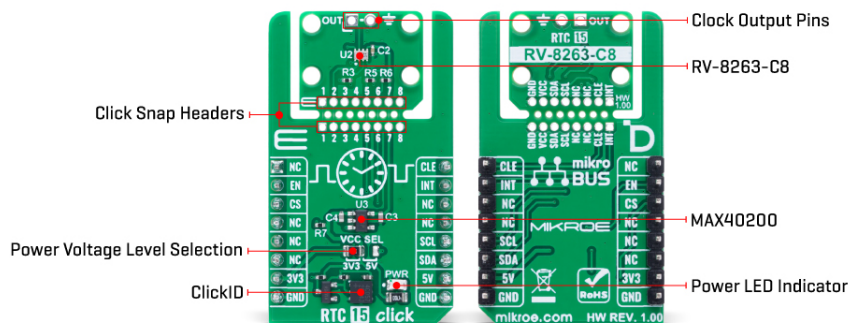


ISO 27001: 2013 certification of informational security management system.
 ISO 14001: 2015 certification of environmental management system.
 OHSAS 18001: 2008 certification of occupational health and safety management system.



ISO 9001: 2015 certification of quality management system (QMS).

electronics.



RTC 15 Click is designed in a unique format supporting the newly introduced MIKROE feature called "Click Snap." Unlike the standardized version of Click boards, this feature allows the main sensor area to become movable by breaking the PCB, opening up many new possibilities for implementation. Thanks to the Snap feature, the RV-8263-C8 can operate autonomously by accessing their signals directly on the pins marked 1-8. Additionally, the Snap part includes a specified and fixed screw hole position, enabling users to secure the Snap board in their desired location.

This Click board™ uses an I2C interface with clock speeds of up to 400kHz, ensuring fast communication with the host MCU. In addition to the I2C interface pins, RTC 15 Click features an EN pin used to control the [MAX40200](#) ideal diode, which in this design acts as a power switch, and INT pin as interrupt used to output alarm, minute, half minute, countdown timer and compensation Interrupt signals. When the EN pin is activated, it enables the MAX40200 to supply power to sensor on the board. This setup allows power management by enabling or disabling the sensor as needed, making it especially useful for low-power and battery-operated applications.

RTC 15 Click also includes unsoldered OUT pins that can be used for clock signal output, controlled by the CLE pin. When the CLE pin is set HIGH, the OUT pin generates a selectable square wave output with available frequencies of 32.768kHz (default), 16.384kHz, 8.192kHz, 4.096kHz, 2.048kHz, 1.024kHz, or 1Hz, offering flexibility for various timing requirements. If the CLE pin is held LOW, the OUT pin remains LOW, effectively disabling the clock output.

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.

Click Snap

Click Snap is an innovative feature of our standardized Click add-on boards, designed to bring greater flexibility and optimize your prototypes. By simply snapping the PCB along predefined lines, you can easily detach the main sensor/IC/module area, reducing the overall size, weight, and power consumption - ideal for the final phase of prototyping. For more details about Click Snap, visit the [official page](#) dedicated to this feature.

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.
ISO 14001: 2015 certification of environmental management system.
OHSAS 18001: 2008 certification of occupational health and safety management system.



ISO 9001: 2015 certification of quality management system (QMS).

Specifications

Type	RTC
Applications	Ideal for use in IoT, industrial automation, automotive systems, metering equipment, healthcare devices, portable and wearable electronics
On-board modules	RV-8263-C8 - CMOS real-time clock/calendar module from Micro Crystal
Key Features	Low-power CMOS real-time clock/calendar, I2C interface, full calendar with automatic leap year correction (2000-2099), built-in timer and alarm functions, selectable clock output frequencies from 32.768kHz default down to 1Hz, interrupt output for alarms and timers, Click Snap, and more
Interface	I2C
Feature	Click Snap, ClickID
Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)
Input Voltage	3.3V or 5V

Pinout diagram

This table shows how the pinout on RTC 15 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	CLE	Clock Output Enable
Device Enable	EN	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
JP1	VCC SEL	Left	Power Voltage Level Selection 3V3/5V: Left position 3V3, Right position 5V

RTC 15 Click electrical specifications

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.
 ISO 14001: 2015 certification of environmental management system.
 OHSAS 18001: 2008 certification of occupational health and safety management system.



ISO 9001: 2015 certification of quality management system (QMS).

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V

Software Support

[RTC 15 Click](#) demo application is developed using the [NECTO Studio](#), ensuring compatibility with [mikroSDK](#)'s open-source libraries and tools. Designed for plug-and-play implementation and testing, the demo is fully compatible with all development, starter, and mikromedia boards featuring a [mikroBUS™](#) socket.

Example Description

This example demonstrates the use of the RTC 15 Click board by initializing the device and setting up the current time and date. It continuously reads and displays the updated time and date every second using the timer countdown interrupt pin.

Key Functions

- `rtc15_cfg_setup` This function initializes Click configuration structure to initial values.
- `rtc15_init` This function initializes all necessary pins and peripherals used for this Click board.
- `rtc15_default_cfg` This function executes a default configuration of RTC 15 Click board.
- `rtc15_set_time` This function sets the current time (hours, minutes, seconds) in the RTC.
- `rtc15_read_time` This function reads the current time (hours, minutes, seconds) from the RTC.
- `rtc15_read_date` This function reads the current date (day, day of week, month, year) from the RTC.

Application Init

Initializes the logger and the RTC 15 Click driver, applies the default configuration, and sets the starting time and date.

Application Task

Waits for a 1 Hz interrupt signal and then reads and displays the current time and date.

Application Output

This Click board can be interfaced and monitored in two ways:

- Application Output - Use the "Application Output" window in Debug mode for real-time data monitoring. Set it up properly by following [this tutorial](#).
- UART Terminal - Monitor data via the UART Terminal using a [USB to UART converter](#). For detailed instructions, check out [this tutorial](#).

Additional Notes and Information

The complete application code and a ready-to-use project are available through the NECTO Studio Package Manager for direct installation in the [NECTO Studio](#). The application code can also be found on the MIKROE [GitHub](#) account.

Resources

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.
 ISO 14001: 2015 certification of environmental management system.
 OHSAS 18001: 2008 certification of occupational health and safety management system.



ISO 9001: 2015 certification of quality management system (QMS).

[mikroBUS™](#)

[mikroSDK](#)

[Click board™ Catalog](#)

[Click boards™](#)

[ClickID](#)

Downloads

[RTC 15 click example package](#)

[RTC 15 click 2D and 3D files v100](#)

[RTC 15 click schematic v100](#)

[RV-8263-C8 datasheet](#)

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.
ISO 14001: 2015 certification of environmental management system.
OHSAS 18001: 2008 certification of occupational health and safety management system.



ISO 9001: 2015 certification of quality management system (QMS).