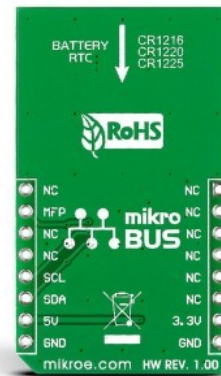
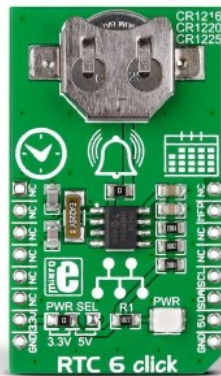


RTC 6 Click



PID: MIKROE-2063

RTC 6 Click is a compact add-on board that keeps track of time in various applications. This board features the MCP79410, a battery-backed I2C real-time clock/calendar with SRAM, and protected EEPROM from Microchip. The RTC 6 Click tracks hours, minutes, seconds, days, months, years, and weekdays, with leap year compensation until 2399. The clock frequency is derived from an onboard 32.768KHz crystal oscillator. A coin-cell Lithium battery supplies backup power. This Click board™ makes the perfect solution for developing the IoT, wearable and portable devices, logging devices, industrial and health-related time metering applications, and all the other applications that require an accurate time base for various purposes.

RTC 6 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?

RTC 6 Click is based on the MCP79410, a battery-backed I2C real-time clock/calendar with SRAM, and protected EEPROM from Microchip. The alarms on this RTC 6 Click can be configured on all counters up to and including months. The clock frequency is delivered from an onboard 32.768KHz crystal oscillator. On-chip digital trimming with ± 1 ppm resolution and ± 129 ppm range can be used to adjust for frequency variance caused by crystal tolerance and temperature. For backup power for the RTC, this Click board™ features the coin-cell Lithium battery holder that supports CR1216, CR1220, and CR1225 battery formats. By removing the 0ohm resistor, you can disable battery backup.

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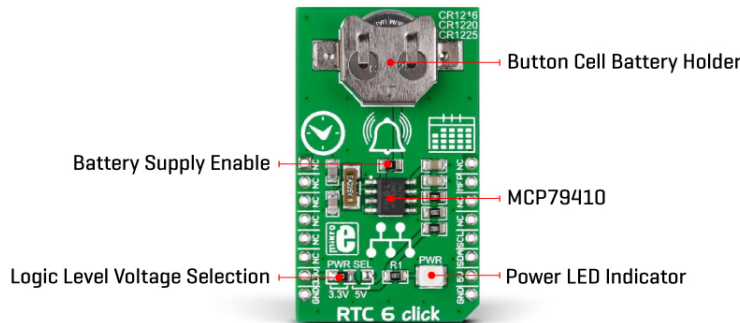
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ISO 9001: 2015 certification of quality management system (QMS).



For storing data, the MCP79411 has 64 bytes of battery-backed SRAM that correlate with the timekeeping circuit and allow the device to maintain accurate time and date when main power is lost. The time between power switches, from backup to primary power and vice versa, is restored is recorded by the power outage time stamp. The MCP79411 features 1Kbit of internal nonvolatile EEPROM with software write protectable regions. An additional 64 bits of protected nonvolatile memory is only writable after an unlock sequence, making it ideal for storing a unique ID or other critical information.

The RTC 6 Click uses an I2C interface for communication with the host MCU, with a clock rate of up to 400KHz. This Click board™ also features a multifunction pin, accessible over the MFP pin of the mikroBUS™ socket. The multifunctional output on this pin can be configured to assert an alarm match to output a selectable frequency square wave or as a general-purpose output. The MCP79411 features two independent alarms. Each alarm can be used to either generate an interrupt at a specific time in the future or to generate a periodic interrupt every minute, hour, day, day of week, or month.

This Click board™ can operate with either 3.3V or 5V logic voltage levels selected via the PWR 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	RTC
Applications	Can be used for the development of the IoT, wearable and portable devices, logging devices, industrial and health-related time metering applications, and all the other applications that require an accurate time base for various purposes
On-board modules	MCP79410 - battery-backed I2C real-time clock/calendar with SRAM, and protected EEPROM from Microchip
Key Features	Tracks hours, minutes, seconds, days, months, years, and weekdays, with leap year compensation until the year 2399, battery

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	backup support, 64 bytes of battery-backed SRAM and 1Kbit of EEPROM, and more
Interface	I2C
Feature	No 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 6 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin					Pin	Notes
	NC	1	AN	PWM	16	NC	
	NC	2	RST	INT	15	MFP	Multifunction Pin
	NC	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
-	PWR	-	Power LED Indicator
-	PWR SEL	Left	Logic Level Voltage Selection 3V3/5V: Left position 3V3, Right position 5V
R5	-	Populated	Battery Supply Enable Jumper

RTC 6 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Backup Voltage	-	3	-	V
Date Format	YY-MM-DD-dd			
Date Format	HH:MM:SS:hh			
Memory Size	-	-	64	byte

Software Support

We provide a [library](#) for the RTC 6 Click as well as a demo application (example), developed using MIKROE [compilers](#). The demo can run on all the main MIKROE [development boards](#).

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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 RTC 6 Click driver.

Key functions

- This function enables automatic switch to battery on VCC failure.
- This function gets current GMT time and sets it in the RTC.
- his function calculates current local time.

Example Description

This application enables usage of Real-Time clock and calendar with alarm on RTC 6 click.

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.Rtc6

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, that needs to be downloaded from the [LibStock](#) and installed for the compiler you are using to ensure proper operation of mikroSDK compliant Click board™ demo applications.

For more information about mikroSDK, visit the [official page](#).

Resources

[mikroBUS™](#)

[mikroSDK](#)

[Click board™ Catalog](#)

[Click Boards™](#)

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Downloads

[RTC6 click user manual](#)

[RTC6 click example on Libstock](#)

[RTC 6 click 2D and 3D files](#)

[RTC 6 click schematic](#)

[MCP79410 datasheet](#)

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