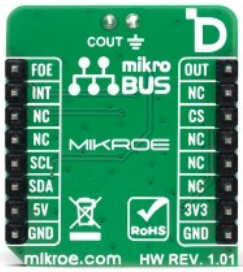
MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com

RTC 26 Click



PID: MIKROE-6920

RTC 26 Click is a compact add-on board designed for accurate real-time clock and calendar functionality, time-based control, alarm event generation, and configurable clock output in embedded applications. This board is based on the AB-RTC-TC-32.768kHz-2, a real-time clock module with an I2C bus from Abracon. Key features include an integrated factory-adjusted 32.768kHz crystal unit, I2C configuration interface, alarm function, leap year autocorrection, adjustable timer function, built-in temperature sensor, low current consumption, and FOE-controlled clock output. RTC 26 Click is suitable for IoT and wireless communication systems, medical instrumentation, utility meters, data loggers, appliances, consumer electronics, and other low-power applications that require precise timekeeping and event-based timing control.

For more information about **RTC 26 Click** visit the official product page.

How does it work?

RTC 26 Click is based on the AB-RTC-TC-32.768kHz-2, a real-time clock module with an I2C bus from Abracon. The main component integrates a factory-adjusted 32.768kHz crystal unit, allowing the board to provide stable timing without requiring an external crystal. RTC 26 Click communicates with the host MCU through the standard I2C interface, enabling configuration of its timekeeping, alarm, timer, and output control features. The module supports an alarm function that can be used to trigger scheduled events, a leap year autocorrection function for maintaining calendar accuracy, and a timer function with an adjustable period, making it suitable for applications that require reliable time-based control.

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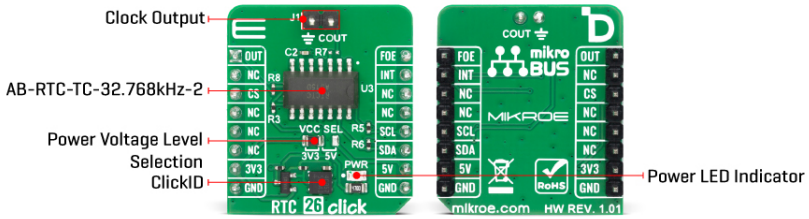

In addition, the AB-RTC-TC-32.768kHz-2 includes a built-in temperature sensor, which can support temperature-related compensation or monitoring functions depending on the application requirements. One of the key advantages of this RTC module is its low current consumption, making RTC 26 Click well suited for battery-powered, always-on, and low-power embedded systems. Besides the I2C communication pins, the board also uses additional control and output signals. The FOE pin is used as a clock output control input, where a HIGH logic level enables the clock output and a LOW logic level disables it.

The OUT pin provides the clock output signal controlled by the FOE pin, with the output frequency configurable through the FSEL bits. RTC 26 Click also includes the possibility of routing the clock output to the COUT pin by adding the R7 resistor, allowing this feature to be enabled when required by the target application. The INT pin serves as an interrupt output and can be used for alarm, timer, or event-based signaling toward the host MCU. RTC 26 Click is suitable for IoT and wireless communication systems, medical instrumentation, utility meters, data loggers, appliances, consumer electronics, and other applications that require timekeeping, low-power operation, configurable clock output, and interrupt-based time event management.

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	RTC
Applications	Ideal for IoT and wireless communication systems, medical instrumentation, utility meters, data loggers, appliances, consumer electronics, and other low-power applications that require precise timekeeping and event-based timing control
On-board modules	AB-RTC-TC-32.768kHz-2 - real time clock module with I2C bus from Abracon
Key Features	Integrated factory-adjusted 32.768kHz crystal unit, I2C communication interface, real-time

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	clock and calendar functionality, alarm function, leap year autocorrection, adjustable timer function, built-in temperature sensor, low current consumption, FOE-controlled clock output, configurable clock output frequency through FSEL bits, and more
Interface	I2C
Feature	ClickID
Compatibility	mikroBUS™
Click board size	S (28.6 x 25.4 mm)
Input Voltage	3.3V or 5V

Pinout diagram

This table shows how the pinout on RTC 26 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikroBUS				Pin	Notes
Frequency Output	**OUT**	1	AN	PWM	16	**FOE**	Frequency Output Enable
	NC	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 26 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V

Software Support

RTC 26 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.

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Example Description

This example demonstrates the use of the RTC 26 Click board by initializing the device and setting up the current time and date and alarm time. It continuously reads and displays the updated time, date and temperature every second using the FOUT pin and checks if the alarm condition is met.

Key Functions

- rtc26_cfg_setup This function initializes Click configuration structure to initial values.
- rtc26_init This function initializes all necessary pins and peripherals used for this Click board.
- rtc26_default_cfg This function executes a default configuration of RTC 26 Click board.
- rtc26_set_time This function sets the desired time (hours, minutes, seconds) in the RTC.
- rtc26_set_date This function sets the desired date (day, day of week, month, year) in the RTC.
- rtc26_set_alarm This function sets the desired alarm time (hours, minutes, day/week) in the RTC.

Application Init

Initializes the logger and the RTC 26 Click driver, applies the default configuration, and sets the starting time and date and alarm.

Application Task

Waits for a 1 Hz square wave signal and then reads and displays the current time, date and temperature and checks if the alarm condition is met.

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

mikroBUS™

mikroSDK

Click board™ Catalog

Click boards™

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ClickID

Downloads

RTC 26 click example package

RTC 26 click 2D and 3D files v101

RTC 26 click schematic v101

AB-RTC-TC-32.768kHz-2 datasheet