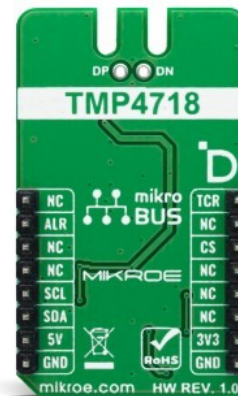


Temp Alarm Click



PID: MIKROE-5872

Temp Alarm Click is a compact add-on board that adds temperature alarm functionalities to your project. This board features the PTMP4718, a high-accuracy remote and local temperature sensor from Texas Instruments. This temperature sensor has pin-programmable alert thresholds, with a fault queue for debounce. It integrates a local temperature sensor and a remote temperature sensor input. This Click board™ makes the perfect solution for the development of rack server motherboards, smart network interface cards, small cell base stations, standard notebook PCs, software-defined radios, and more.

How does it work?

Temp Alert Click is based on the PTMP4718, a high-accuracy remote and local temperature sensor from Texas Instruments. It has 1°C accuracy for both the local and the remote channels. The resolution is better for the remote channel (0.125°C compared to the local 1°C). The sensor has a remote diode fault detection, low power consumption, programmable alert limits, and series resistance cancellation. Depending on the application, it can work in an interrupt or comparator mode. In both modes, the alert is asserted at the end of a conversion cycle if the measured temperature exceeds a High Alert Limit or goes below a Low Alert Limit defined in the limit thresholds. It can also work in a shutdown and a continuous conversion mode.

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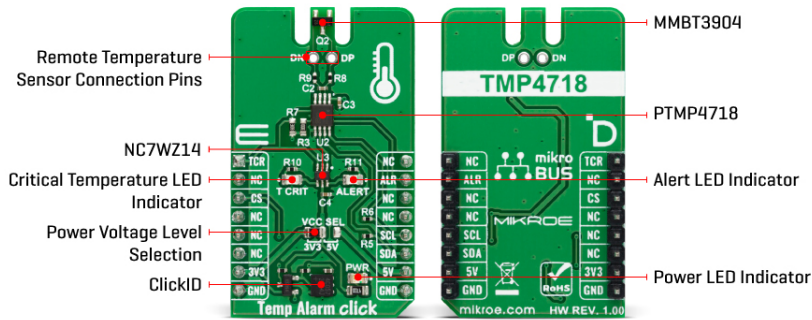
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The local temperature resolution is 8-bit in a -40 to 125°C range. The remote temperature accuracy is 11-bit at -55 to 125°C and optimized for a diode-connected [MMBT3904](#) transistor. Temp Alert Click is equipped with this NPN switching transistor from NXP Semiconductor that acts as a remote temperature sensor. There are DN and DP connectors as positive and negative connections for remote sensors. If you do not intend to use the remote temperature sensors at all, you should connect those DP and DN. In case of noise, you can add a 470pF capacitor between DP and DN pins.

Temp Alert Click uses a standard 2-Wire U2C interface to communicate with the host MCU, supporting clock frequencies of up to 1MHz. The critical TCR pin will alert the critical temperature, with a threshold set by two 2K resistors to 77°C. According to a datasheet table, you can set this value by replacing the resistors to up to 125°C. The critical temperature is considered when the temperature exceeds the high or low alert limits. The alert ALR pin is asserted when those temperatures reach the limits. The visual presentation of those two conditions is presented over the [NC7WZ14](#), a Schmitt trigger from ON Semiconductor, which turns ON the T CRIT and ALERT red LEDs.

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	Temperature & humidity
Applications	Can be used for the development of rack server motherboards, smart network interface cards, small cell base stations, standard notebook PCs, software-defined radios, and more
On-board modules	PTMP4718 - high-accuracy remote and local temperature sensor from Texas Instruments
Key Features	Wide temperature operating range, remote and local temperature channels, low power consumption, remote diode fault detection, programmable alert, and temperature critical

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	limits, onboard NPN transistor for remote temperature channel, positive, and negative connectors for remote temperature sensor, and more
Interface	I2C
Feature	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 Temp Alarm Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin					Pin	Notes
Temperature Output	TCR	1	AN	PWM	16	NC	
	NC	2	RST	INT	15	ALT	Alert 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
LD2	T CRIT	-	Critical Temperature LED Indicator
LD3	ALERT	-	Alert LED Indicator
JP1	VCC SEL	Left	Power/Logic Voltage Level Selection 3V3/5V: Left position 3V3, Right position 5V

Temp Alarm Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Operating Remote Temperature	-55	-	150	°C
High Temperature Limits	-	-	77	°C
Temperature Accuracy	-	1	-	°C
Temperature Resolution	8	-	11	bit

Software Support

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We provide a library for the Temp Alarm 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 Temp Alarm Click driver.

Key functions

- tempalarm_write_reg Temp Alarm register writing function.
- tempalarm_read_remote_temperature Temp Alarm remote sensor read temperature function.
- tempalarm_set_alarm_high_limit Temp Alarm remote sensor set limit high temperature function.

Example Description

This example demonstrates the use of Temp Alarm Click board™ by reading and displaying the temperature measurements and monitoring it.

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.TempAlarm

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

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[mikroBUS™](#)

[mikroSDK](#)

[Click board™ Catalog](#)

[Click boards™](#)

[ClickID](#)

Downloads

[Temp Alarm click example on Libstock](#)

[PTMP4718 datasheet](#)

[NC7WZ14 datasheet](#)

[Temp Alarm click 2D and 3D files](#)

[Temp Alarm click schematic](#)

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