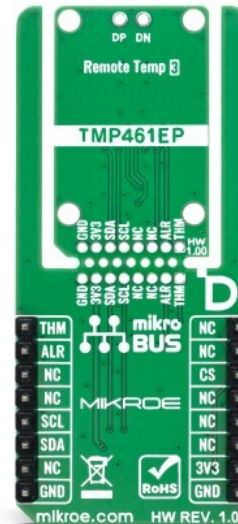
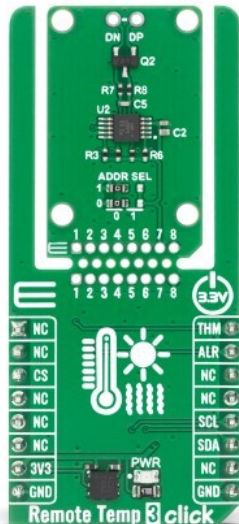


Remote Temp 3 Click



PID: MIKROE-6997

Remote Temp 3 Click is a compact add-on board for local and remote temperature monitoring in embedded systems. It is based on the [TMP461MD](#), a high-accuracy, low-power sensor that measures onboard temperature and an external diode-connected transistor or thermal diode, from [Texas Instruments](#). The Click supports I2C and SMBus communication, programmable limits, series resistance cancellation, eta-factor correction, offset adjustment, digital filtering, and diode fault detection for reliable thermal supervision. With THERM and ALERT outputs, address selection jumpers, ClickID, Click Snap, and DN/DP sensing access, it suits processor monitoring, servers, telecom equipment, smart batteries, precision instruments, and LED thermal control applications.

For more information about **Remote Temp 3 Click** visit the official [product page](#).

How does it work?

Remote Temp 3 Click is a compact add-on board for local and remote temperature monitoring in embedded systems. This board is based on the TMP461MD from Texas Instruments, a high-accuracy, low-power remote and local temperature sensor designed to measure its own die temperature and the temperature of an external diode-connected transistor or thermal diode. The remote sensing input is especially useful for monitoring temperature at critical points inside processors, FPGAs, ASICs, power stages, battery-powered systems, LED lighting designs, test equipment, and other applications where the heat source is not located directly on the host board. By combining local and remote temperature data, Remote Temp 3 Click provides a practical thermal-management solution for systems that require continuous supervision, alert generation, and protection against overheating.

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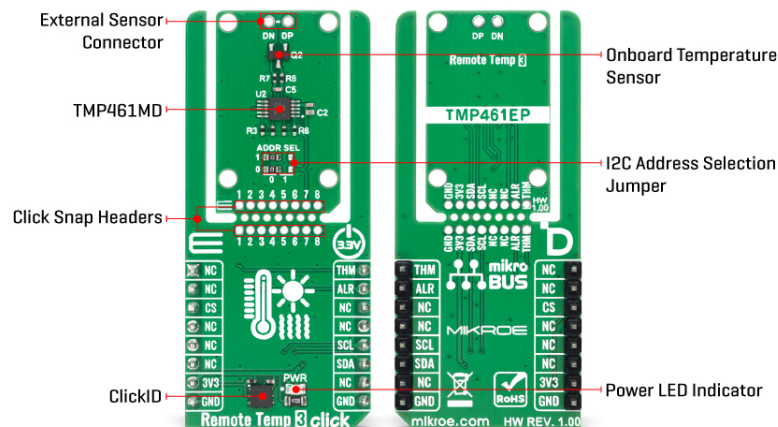
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The TMP461MD represents both local and remote temperature measurements as digital data with 0.0625°C resolution, allowing tracking of small temperature changes. The device includes advanced functions such as series resistance cancellation, η -factor correction, programmable offset adjustment, programmable conversion rates, programmable temperature limits, and a programmable digital filter to improve measurement stability in electrically noisy environments. It also supports diode fault detection, helping the host system detect incorrect remote sensor connections or open-circuit conditions. These features make the Click suitable for processor temperature monitoring, telecommunication equipment, servers, personal computers, precision instruments, smart batteries, embedded control systems, and LED lighting thermal control.

Remote Temp 3 Click communicates with the host MCU through the mikroBUS™ I2C interface, using the SCL pin as the serial clock line and the SDA pin as the serial data line. The TMP461MD is also compatible with SMBus communication and supports pin-programmable bus addressing, allowing the address to be configured through the onboard address selection jumpers. In addition to the I2C lines, the Click uses the PWM pin for the THM output, which is connected to the device's THERM function for hardware thermal shutdown or fan-control signaling. The INT pin is routed to the ALR output, used for programmable temperature alerts, while the CS pin is reserved for the onboard ClickID function.

The board includes an onboard MMBT3904 transistor that serves as the default remote temperature sensing element, allowing immediate evaluation of the remote measurement channel without additional hardware. A dedicated DN/DP connector is also available for connecting an external diode-connected temperature sensor, making it possible to monitor a remote hot spot elsewhere in the target system. Remote Temp 3 Click also features ADDR SEL jumpers for selecting the I2C address, a PWR LED indicator for visual power status, ClickID support for automatic board identification, and Click Snap support for easier prototyping and flexible hardware integration.

Remote Temp 3 Click operates from the 3.3V mikroBUS™ power rail and uses 3.3V logic levels, matching the operating range of the onboard TMP461MD and associated circuitry. It is designed for use with development systems that support 3.3V mikroBUS™ operation. Remote Temp 3 Click comes with a ready-to-use software library and a fully tested code example, which simplifies initialization, temperature reading, alert configuration, and further application development. The code example can be downloaded from the product page and used as a reference for integrating remote temperature monitoring into custom embedded designs.

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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.

Specifications

Type	Temperature & humidity
Applications	Ideal for applications such as processor temperature monitoring, telecommunication equipment, servers and personal computers, smart batteries, precision instruments, and LED lighting thermal control
On-board modules	TMP461MD - High-accuracy remote and local temperature sensor with 0.0625°C resolution from Texas Instruments
Key Features	High-accuracy local and remote temperature monitoring, 0.0625°C resolution, external diode-connected sensor support, I2C/SMBus communication, programmable temperature limits, THERM and ALERT outputs, series resistance cancellation, eta-factor correction, programmable offset adjustment, digital filtering, diode fault detection, address selection jumpers, and more
Interface	GPIO,I2C
Feature	Click Snap,ClickID
Compatibility	mikroBUS™
Click board size	L (57.15 x 25.4 mm)
Input Voltage	3.3V

Pinout diagram

This table shows how the pinout on Remote Temp 3 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	THM	Thermal Shutdown
	NC	2	RST	INT	15	ALR	Interrupt
ClickID One-Wire	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	NC	

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Ground	GND	8	GND	GND	9	GND	Ground
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Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
JP1	ADDR SEL	Left	I2C address select jumper
JP2	ADDR SEL	Left	I2C address select jumper
J1	DN/DP	-	External sensor connector

Remote Temp 3 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.2	3.3	3.4	V
Operating Temperature	-40	-	125	°C

Software Support

[Remote Temp 3 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 Remote Temp 3 Click board by reading and displaying the temperature measurements from the local sensor and the remote channel sensor, and monitoring the ALERT and THERM temperature alarm states.

Key Functions

- remotetemp3_cfg_setup This function initializes Click configuration structure to initial values.
- remotetemp3_init This function initializes all necessary pins and peripherals used for this Click board.
- remotetemp3_default_cfg This function executes a default configuration of Remote Temp 3 Click board.
- remotetemp3_read_local_temp This function reads the local sensor temperature in degrees Celsius.
- remotetemp3_read_remote_temp This function reads the remote sensor temperature in degrees Celsius.
- remotetemp3_set_thigh_local This function sets the local temperature high ALERT limit.

Application Init

Initializes the driver and performs the Click default configuration.

Application Task

Reads the temperature measurements in degrees Celsius from both the local sensor and the

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remote channel, and displays the results on the USB UART approximately once per second. Also monitors and reports the ALERT and THERM alarm states via the ALR and THM pins.

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™](#)

[ClickID](#)

Downloads

[Remote Temp 3 Click example package](#)

[Remote Temp 3 Click 2D and 3D files v100](#)

[Remote Temp 3 Click schematic v100](#)

[TMP461MD datasheet](#)

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