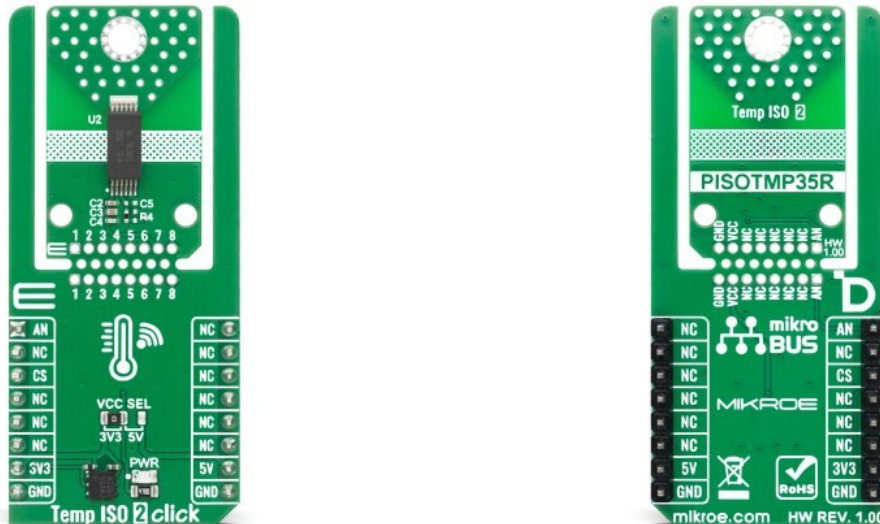


Temp ISO 2 Click



PID: MIKROE-6999

Temp ISO 2 Click is a compact add-on board designed for reinforced isolated temperature measurement in high-voltage and power electronics systems where safe thermal feedback is required. This board is based on the [ISOTMP35R](#), a $\pm 1.5^{\circ}\text{C}$ 5kVRMS reinforced isolated temperature sensor with analog output from [Texas Instruments](#). It combines an integrated reinforced isolation barrier with an analog temperature sensor, supporting a -40°C to 150°C measurement range, $10\text{mV}/^{\circ}\text{C}$ linear output slope, 100mV to 2V output range, 500mV offset, factory calibration, and UL 1577 compliant 5kVRMS isolation. Temp ISO 2 Click also features Click Snap support, allowing the sensor area to be separated and mounted near the heat source using direct pins 1-8 and a fixed screw hole. It is suitable for AC charging stations, DC fast charging stations, server PSUs, DC/DC converters, telecom rectifiers, battery backup units, DIN rail power supplies, and isolated industrial power systems.

For more information about **Temp ISO 2 Click** visit the official [product page](#).

How does it work?

Temp ISO 2 Click is based on the ISOTMP35R, a $\pm 1.5^{\circ}\text{C}$ 5kVRMS reinforced isolated temperature sensor with analog output from Texas Instruments. The ISOTMP35R combines an integrated reinforced isolation barrier with an analog temperature sensor, allowing the sensing element to be placed directly near high-voltage components such as HV FETs, IGBTs, contactors, power stages, and other heat-generating devices without requiring additional isolation circuitry. The sensor supports a temperature measurement range from -40°C to 150°C and provides a linear analog output with a $10\text{mV}/^{\circ}\text{C}$ slope. Temp ISO 2 Click is well suited for AC charging stations, DC fast charging stations, rack and server PSUs with 48V or 12V outputs, merchant DC/DC converters, telecom rectifiers, battery backup units, DIN rail power supplies,

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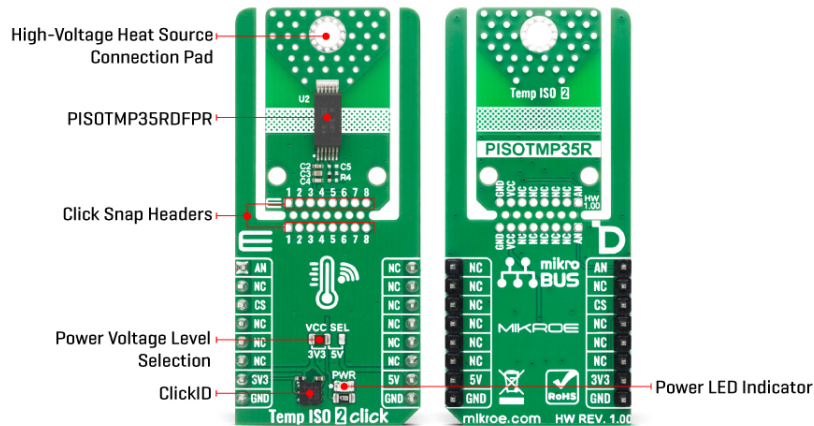


ISO 27001: 2013 certification of informational security management system.
ISO 14001: 2015 certification of environmental management system.
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ISO 9001: 2015 certification of quality management system (QMS).

AC/DC adapter PSUs, and other isolated power systems that require safe and responsive temperature feedback.



Its output voltage spans approximately 100mV to 2V across the full operating temperature range, while the integrated 500mV offset simplifies single-supply operation and allows negative temperatures to be measured without additional signal conditioning. The ISOTMP35R is factory-calibrated and does not require external calibration or trimming, providing reliable temperature accuracy with $\pm 0.5^\circ\text{C}$ typical accuracy at room temperature and $\pm 2.5^\circ\text{C}$ worst-case accuracy across the full -40°C to 150°C range. The reinforced isolation barrier supports up to 5kVRMS withstand voltage and satisfies UL 1577 requirements.

This Click board™ 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 many new possibilities for implementation. Thanks to the Snap feature, the ISOTMP35R can operate autonomously by accessing its 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.

The ISOTMP35R outputs a linear analog voltage that is proportional to temperature, allowing easy integration with the host MCU through the AN pin of the mikroBUS™ socket. The high accuracy and fast response time of this Click board™ make it an excellent choice for monitoring high-voltage components, enabling improved safety in automotive and industrial systems.

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.

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Specifications

Type	Temperature & humidity
Applications	Ideal for AC charging stations, DC fast charging stations, server PSUs, DC/DC converters, telecom rectifiers, battery backup units, DIN rail power supplies, and isolated industrial power systems
On-board modules	ISOTMP35R - $\pm 1.5^{\circ}\text{C}$ 5kVRMS reinforced isolated temperature sensor with analog output from Texas Instruments
Key Features	5kVRMS reinforced isolated temperature sensing, wide temperature measurement range, 10mV/ $^{\circ}\text{C}$ linear analog output slope, wide output voltage range, integrated 500mV offset, factory-calibrated accuracy, $\pm 0.5^{\circ}\text{C}$ typical room temperature accuracy, UL 1577 compliant reinforced isolation barrier, analog output, and more
Interface	I2C
Feature	Click Snap, ClickID
Compatibility	mikroBUS™
Click board size	L (57.15 x 25.4 mm)
Input Voltage	3.3V or 5V

Pinout diagram

This table shows how the pinout on Temp ISO 2 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin					Pin	Notes
Analog Output	AN	1	AN	PWM	16	NC	
	NC	2	RST	INT	15	NC	
ID COMM	CS	3	CS	RX	14	NC	
	NC	4	SCK	TX	13	NC	
	NC	5	MISO	SCL	12	NC	
	NC	6	MOSI	SDA	11	NC	
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

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Temp ISO 2 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Temperature Measurement Range	-40	-	+150	°C
Analog Output Voltage Range	0.1	-	2	V
Output Voltage Slope	-	10	-	mV/°C
Output Voltage Offset	-	500	-	mV
Room Temperature Accuracy	-	±0.5	-	°C
Full-Range Temperature Accuracy	-	-	±2.5	°C
Isolation Withstand Voltage	-	5	-	kVrms

Software Support

[Temp ISO 2 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 Temp ISO Click board by reading and displaying the temperature measurements.

Key Functions

- `tempiso2_cfg_setup` This function initializes Click configuration structure to initial values.
- `tempiso2_init` This function initializes all necessary pins and peripherals used for this Click board.
- `tempiso2_read_voltage` This function reads raw ADC value and converts it to proportional voltage level.
- `tempiso2_read_voltage_avg` This function reads a desired number of ADC samples and calculates the average voltage level.
- `tempiso2_set_vref` This function sets the voltage reference for Temp ISO 2 Click driver.
- `tempiso2_read_temperature` This function reads the voltage level from AN pin and converts it to temperature in degrees Celsius.

Application Init

Initializes the driver and logger.

Application Task

Reads the temperature measurement in degrees Celsius and displays the results on the USB UART approximately once per second.

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

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- 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

[Temp ISO 2 click example package](#)

[Temp ISO 2 click 2D and 3D files v100](#)

[Temp ISO 2 click schematic v100](#)

[ISOTMP35R datasheet](#)

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