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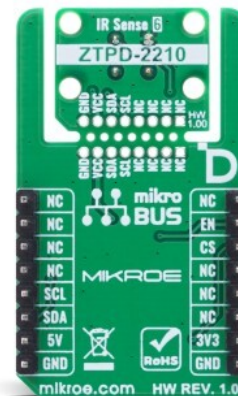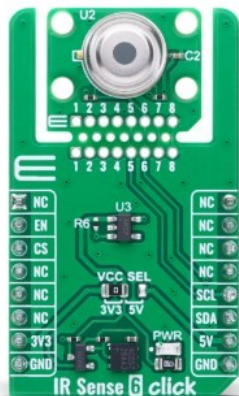www.mikroe.com

# IR Sense 6 Click

PID: MIKROE-6570

**IR Sense 6 Click** is a compact add-on board designed for precise non-contact temperature detection. This board features the ZTPD-2210 thermopile sensor from Amphenol, which provides a fully calibrated digital output. The sensor supports a temperature measurement range from -20°C to 100°C and features ambient temperature compensation for reliable readings across various environments. It also includes a configurable Sleep mode for low-power applications and offers a 90° field of view for wide-area coverage. Thanks to MIKROE's innovative Click Snap format, the board allows flexible implementation and standalone operation. IR Sense 6 Click is an excellent choice for non-contact thermometers, automotive cabin monitoring, HVAC systems, smart home appliances, and human body temperature detection in healthcare settings.

For more information about **IR Sense 6 Click** visit the official product page.

## How does it work?

IR Sense 6 Click is based on the ZTPD-2210, a thermopile sensor from Amphenol, designed for precise non-contact temperature detection. This sensor provides a fully calibrated digital output and covers a measurement range from -20°C to 100°C, making it suitable for a wide variety of temperature monitoring applications. Thanks to its built-in ambient temperature compensation, the sensor ensures accurate readings even in fluctuating environmental conditions. Additionally, it features a configurable Sleep mode via register settings, allowing for reduced power consumption in energy-sensitive designs. The optical field of view spans approximately 90 degrees at 50% of maximum output, enabling broad area coverage. IR Sense 6 Click is an ideal choice for applications such as non-contact thermometers, automotive cabin temperature control, building HVAC systems, and smart home appliances including microwave

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ovens and refrigerators. It also finds valuable use in healthcare settings, particularly for monitoring human body temperature without physical contact.
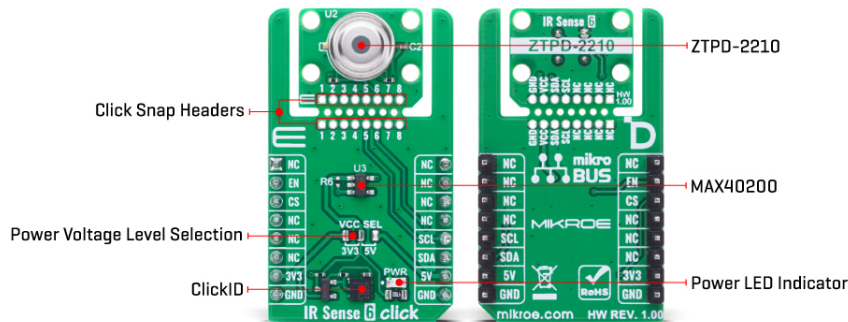


IR Sense 6 Click is designed in a unique format supporting the newly introduced MIKROE feature called "Click Snap." Unlike the standardized version of Click boards, this feature allows the main sensor area to become movable by breaking the PCB, opening up many new possibilities for implementation. Thanks to the Snap feature, the ZTPD-2210 can operate autonomously by accessing their 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.

This Click board™ uses an I2C interface with clock speeds of up to 3.4MHz, ensuring fast communication with the host MCU. In addition to the I2C interface pins, IR Sense 6 Click features an EN pin used to control the MAX40200 ideal diode, which in this design acts as a power switch. When the EN pin is activated, it enables the MAX40200 to supply power to sensor on the board. This setup allows power management by enabling or disabling the sensor as needed, making it especially useful for low-power and battery-operated applications.

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.

## Specifications

| Type | Temperature & humidity,Infrared |
|---|---|
| Applications | Ideal for non-contact thermometers, automotive cabin monitoring, HVAC systems, |

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| | |
|---|---|
| | smart home appliances, and human body temperature detection in healthcare settings |
| On-board modules | ZTPD-2210 - Infrared Thermopile detector with digital calibrated output from Amphenol |
| Key Features | Infrared thermopile sensor for non-contact temperature detection, fully calibrated digital output, ambient temperature compensation, configurable Sleep mode for power saving, 90-degree field of view, I2C communication interface, Click Snap feature for detachable sensor section with direct signal access and fixed screw hole for mounting, and more |
| Interface | I2C |
| Feature | Click Snap,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 IR Sense 6 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

| Notes | Pin | mikro™ BUS | | | Pin | Notes |
|---|---|---|---|---|---|---|
| | NC | 1 | AN | PWM | 16 | NC | |
| Device Enable | **EN** | 2 | RST | INT | 15 | NC | |
| 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 |

## IR Sense 6 Click electrical specifications

| Description | Min | Typ | Max | Unit |
|---|---|---|---|---|
| Supply Voltage | 3.3 | - | 5 | V |
| Temperature Range | -20 | - | 100 | °C |
| Field of View (FoV) | - | 90 | - | deg |

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## Software Support

IR Sense 6 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 functionality of the IR Sense 6 Click board, which measures ambient and object temperatures using an infrared sensor. The example initializes the device and continuously logs temperature readings.

Key Functions

- irsense6_cfg_setup This function initializes Click configuration structure to initial values.
- irsense6_init This function initializes all necessary pins and peripherals used for this Click board.
- irsense6_enable_device This function enables the IR Sense 6 device by setting the EN pin high.
- irsense6_disable_device This function disables the IR Sense 6 device by setting the EN pin low.
- irsense6_read_data This function reads the object and ambient temperature data from the IR Sense 6 sensor.

Application Init

Initializes the driver and enables the device.

Application Task

Continuously reads and logs ambient and object temperatures. The readings are displayed in degrees Celsius.

### 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™

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mikroSDK

Click board™ Catalog

Click boards™

ClickID

## Downloads

IR Sense 6 click example package

IR Sense 6 click 2D and 3D files v100

IR Sense 6 click schematic v100

ZTPD-2210 datasheet