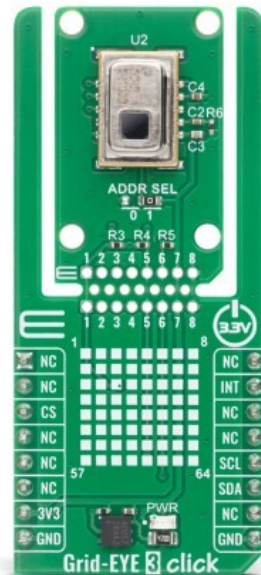


Grid-EYE 3 Click



PID: MIKROE-6821

Grid-EYE 3 Click is a compact add-on board that provides thermal imaging by detecting temperature distribution across a two-dimensional area, enabling recognition of heat sources, moving objects, and environmental temperature variations. It is based on the [AMG883642](#), a narrow-type infrared array sensor from [Panasonic](#) built using advanced MEMS technology. This sensor features an 8×8 (64-pixel) thermal detection array with a typical field of view of 35.6° horizontally and vertically, a temperature range from -20°C to 80°C , accuracy of $\pm 3.0^{\circ}\text{C}$, and a temperature output resolution of 0.25°C . It communicates with the host MCU via the I2C interface, supports an interrupt function for event-based detection, and includes MIKROE's unique Click Snap feature, allowing the sensor section to be detached and positioned independently for flexible implementation. This Click board™ is ideal for applications such as home and building automation, people detection, air-conditioning control, fault prevention, and heat source localization.

For more information about **Grid-EYE 3 Click** visit the official [product page](#).

How does it work?

Grid-EYE 3 Click is based on the AMG883642, a narrow-type infrared array sensor from Panasonic built using advanced MEMS technology that provides precise thermal imaging capability by detecting temperature distribution over a two-dimensional area. This sensor is called Grid-EYE because it divides its field of view into a grid of 64 pixels (8×8), functioning as a low-resolution thermal camera capable of capturing temperature patterns rather than single-point measurements. Each of the 64 pixels continuously detects the surface temperature of its corresponding area, enabling reliable recognition of heat sources, moving objects, and

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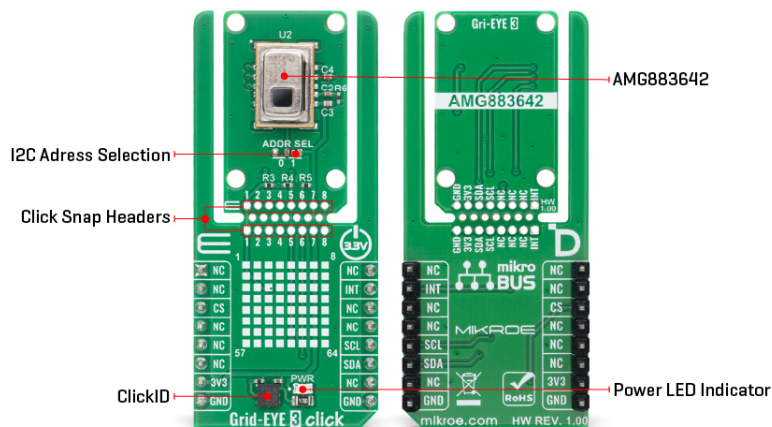


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environmental temperature changes. With a typical field of view of 35.6° both horizontally and vertically, the sensor covers a wide area suitable for room-scale monitoring.



The AMG883642 operates within a temperature range of -20°C to 80°C , offers a typical temperature accuracy of $\pm 3.0^{\circ}\text{C}$, and provides a temperature output resolution of 0.25°C , ensuring fine detail in thermal gradients. The digital output interface enables direct transmission of temperature values to the host MCU for further processing and visualization. Designed for intelligent applications such as home appliances, building and home automation, and factory monitoring, Grid-EYE 3 Click enables functions like people detection, air-conditioning control, fault prevention, and heat source localization, providing a compact solution for thermal sensing in embedded systems.

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/IC/module area to become movable by breaking the PCB, opening many new possibilities for implementation. Thanks to the Snap feature, the AMG883642 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.

This Click board™ uses an I2C interface ensuring fast communication with the host MCU. The I2C address of the AMG883642 can be easily configured via onboard jumper marked ADDR SEL in the Snap area, allowing multiple devices to coexist on the same bus. Beyond communication pins, this board is also equipped with an interrupt pin that signals the host MCU when a specific condition is met, such as when the temperature in any of the sensor's pixels exceeds a predefined threshold. This allows the system to respond immediately to changes in temperature without constantly polling the sensor, thereby saving processing power and energy.

This Click board™ can be operated only with a 3.3V logic voltage level. The board must perform appropriate logic voltage level conversion before using MCUs with different logic levels. It also comes equipped with a library containing functions and 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

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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 home and building automation, people detection, air-conditioning control, fault prevention, and heat source localization
On-board modules	AMG883642 - narrow-type infrared array sensor based on advanced MEMS technology from Panasonic
Key Features	Narrow-type infrared array sensor, 8x8 (64-pixel) thermal detection array, typical field of view of 35.6° horizontally and vertically, digital temperature data output, I2C communication interface, configurable I2C address, interrupt output for event-based detection, Click Snap feature, and more
Interface	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 Grid-EYE 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	NC	
	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	NC	
Ground	GND	8	GND	GND	9	GND	Ground

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
JP1	ADDR SEL	Right	I2C Address Selection

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			0/1: Left position 0, Right position 1
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Grid-EYE 3 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Operating Temperature Range	-20	-	+80	°C
Temperature Accuracy	-	±3	-	°C
Temperature Output Resolution	-	0.25	-	°C
Field of View (FoV)	-	35.6	-	deg
Number of Pixels	8×8 (64)			px

Software Support

[Grid-EYE 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 Grid-EYE 3 Click by reading and displaying the temperature measurements as an 8x8 pixels grid.

Key Functions

- `grideye3_cfg_setup` This function initializes Click configuration structure to initial values.
- `grideye3_init` This function initializes all necessary pins and peripherals used for this Click board.
- `grideye3_default_cfg` This function executes a default configuration of Grid-EYE 3 Click board.
- `grideye3_get_int_pin` This function returns the INT pin logic state.
- `grideye3_read_grid` This function reads the temperature measurement of an 8x8 pixels grid and stores it in the `ctx->grid_temp` array.
- `grideye3_clear_status` This function clears the interrupt status flags.

Application Init

Initializes the driver and performs the Click default configuration which enables the data ready interrupt and sets data measurement to 10 frames per second.

Application Task

Waits for a data ready interrupt and then reads the grid temperature measurements and displays the results on the USB UART in a form of an 8x8 pixels grid.

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](#).

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- 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

[Grid-EYE 3 click example package](#)

[Grid-EYE 3 click 2D and 3D files v100](#)

[AMG883642 datasheet](#)

[Grid-EYE 3 click schematic v100](#)

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