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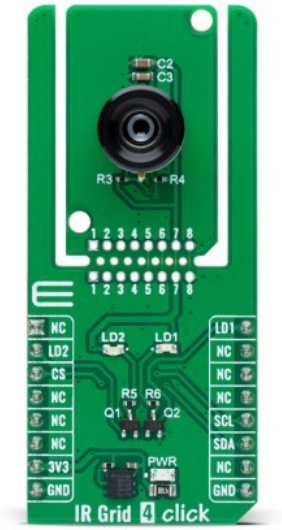
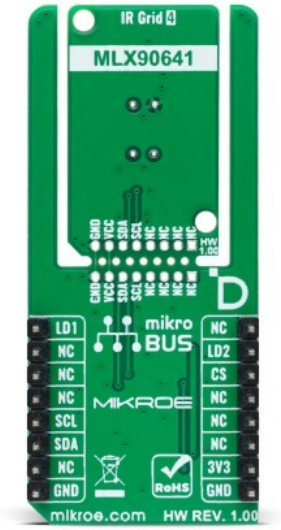
IR Grid 4 Click





PID: MIKROE-6306

IR Grid 4 Click is a compact add-on board for high-precision, non-contact temperature measurement and thermal imaging. This board is based on the MLX90641, a fully calibrated thermal IR array from Melexis. It captures temperature data across a 16x12 matrix (192 pixels) and accurately measures temperatures from -40°C to +300°C with a typical accuracy of 1°C. The board supports the innovative "Click Snap" feature, allowing the sensor area to be detached for flexible positioning. This Click board™ is ideal for applications such as intrusion detection, industrial temperature control, visual IR thermometers, and many more.

How does it work?

IR Grid 4 Click is based on the MLX90641, a fully calibrated thermal IR array from Melexis in an industry-standard 4-lead TO39 package with a digital interface and a 55° viewing angle. It captures temperature data across a two-dimensional 16x12 matrix (192 pixels) and provides this information as a digital output. It can accurately measure temperatures from -40°C to +300°C and ensures an accuracy of 1°C in typical measurement conditions. With its ability to accurately measure contactless thermal or thermal imaging, IR Grid 4 Click is ideal for high-precision non-contact temperature measurements, intrusion/movement detection, industrial temperature control of moving parts, a visual IR thermometer, and more.

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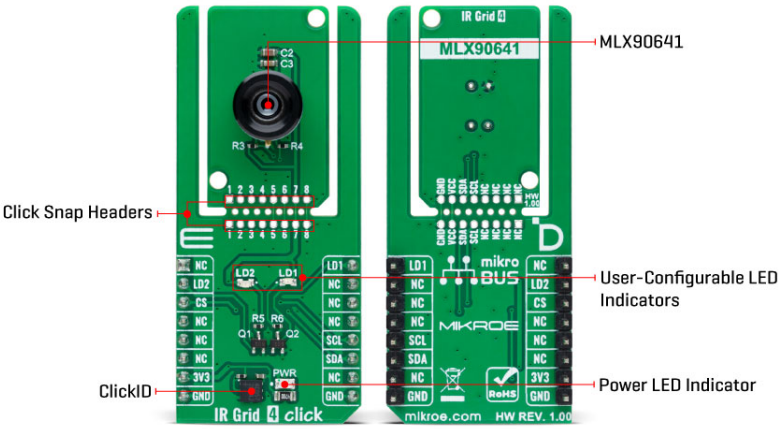

This Click board™ is designed in a unique format supporting the newly introduced MIKROE feature called "Click Snap." Unlike the standardized version of Click boards, this feature allows the main sensor area to become movable by breaking the PCB, opening up many new possibilities for implementation. Thanks to the Snap feature, the MLX90641 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.

IR Grid 4 Click uses a standard 2-wire I2C interface to communicate with the host MCU, supporting Standard mode with up to 1MHz of frequency clock. In addition to the I2C interface pins, this board also uses two user-configurable pins, LD1 and LD2, paired with corresponding red LED indicators. These LEDs serve as customizable visual signals, allowing the user to indicate specific operational states of the main sensor, the MLX90641. The LEDs can be programmed to light up under certain conditions, such as when the sensor detects specific temperature thresholds or when it enters a particular mode, providing immediate visual feedback during operation.

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. Also, it comes equipped with a library containing 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, introducing a new level of flexibility and ease of use. This feature allows for easy detachment of the main sensor area by simply snapping the PCB along designated lines, enabling various implementation possibilities. For detailed information about Click Snap, please visit the official page dedicated to this feature.

Specifications

Type	IR sensors,Temperature & humidity
Applications	Ideal for intrusion detection, industrial temperature control, visual IR thermometers, and many more

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On-board modules	MLX90641 - fully calibrated thermal IR array from Melexis
Key Features	16x12 pixel matrix (192 pixels) infrared sensor, 55° viewing angle, wide temperature range, high resolution, Click Snap feature, low power consumption, 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 IR Grid 4 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	**LD1**	LD1 Indicator Control
LD2 Indicator Control	**LD2**	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	NC	
Ground	**GND**	8	GND	GND	9	**GND**	Ground

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
LD2-LD3	LD2-LD1	-	User-Configurable LED Indicators

IR Grid 4 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Image Resolution	-	-	192	px
Temperature Operating Range	-40	-	+300	°C
Temperature Accuracy	-	1	-	°C

Software Support

We provide a library for the IR Grid 4 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

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(recommended), downloaded from our LibStock™ or found on MIKROE github account.

Library Description

This library contains API for IR Grid 4 Click driver.

Key functions

- irgrid4_get_measurement This function reads the RAM frame data and calculates ambient temperature and a 16x12 IR grid object temperature.
- irgrid4_set_refresh_rate This function sets the IR data refresh rate.
- irgrid4_enable_led1 This function enables the LED1.

Example Description

This example demonstrates the use of IR Grid 4 Click by reading and displaying the ambient and object temperature measurements in a 16x12 pixels grid format.

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.IRGrid4

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

mikroBUS™

mikroSDK

Click board™ Catalog

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Click boards™

ClickID

Downloads

IR Grid 4 click example on Libstock

IR Grid 4 click 2D and 3D files v100

IR Grid 4 click schematic v100

MLX90641 datasheet

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

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MIKROE-6306