

IR Sense 4 Click



PID: MIKROE-5952

IR Sense 4 Click is a compact add-on board that can be used in short-range IR sensing applications. This board features the [STHS34PF80](#), a low-power high-sensitivity infrared (IR) sensor from [STMicroelectronics](#). It is a sensor for presence and motion detection and can reach up to 4m without a lens for object measuring. The sensor can detect stationary objects and distinguish them from moving objects. This Click board™ makes the perfect solution for the development of presence and proximity sensing applications, alarm and security systems, home automation, smart lighting, and more.

IR Sense 4 Click is fully compatible with the mikroBUS™ socket and can be used on any host system supporting the [mikroBUS™](#) standard. It comes with the [mikroSDK](#) open-source libraries, offering unparalleled flexibility for evaluation and customization. What sets this [Click board™](#) apart is the groundbreaking [ClickID](#) feature, enabling your host system to seamlessly and automatically detect and identify this add-on board.

How does it work?

IR Sense 4 Click is based on the STHS34PF80, a low-power, high-sensitivity infrared (IR) sensor from STMicroelectronics. The sensor has a high IR sensitivity and low RMS noise, and it is factory-calibrated and temperature-compensated. The sensor itself has an integrated IR filter, has an 80-degree field of view, and operates in a wavelength of 5μm to 20μm. It measures the object's radiation with unique TMOS technology to detect its presence or motion. When the object is inside the FoV, it is based on a matrix of floating vacuum thermal transistors connected together and acting as a single sensing element. The sensor is split into two parts, one exposed to IR radiation and the other shielded. Differential reading between the two parts

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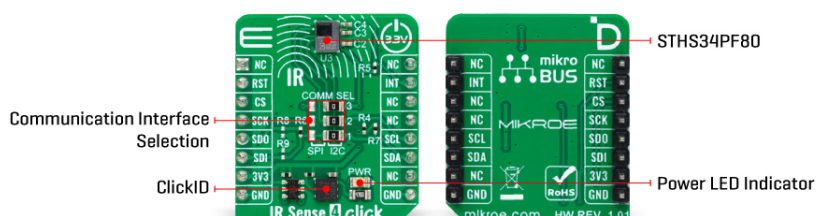


ISO 27001: 2013 certification of informational security management system.
ISO 14001: 2015 certification of environmental management system.
OHSAS 18001: 2008 certification of occupational health and safety management system.



ISO 9001: 2015 certification of quality management system (QMS).

is implemented to remove the effect of sensor self-heating.



IR Sense 4 Click can use a standard 2-wire I2C interface to communicate with the host MCU supporting clock frequency of up to 1MHz. It can also use a 3-wire SPI interface for the same purpose with a clock frequency of up to 10MHz. The selection can be made over the COMM SEL jumpers. The smart processing will detect or discriminate between stationary and moving objects and assert an interrupt INT pin.

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.

Specifications

Type	Temperature & humidity
Applications	Can be used for the development of presence and proximity sensing applications, alarm and security systems, home automation, smart lighting, and more
On-board modules	STHS34PF80 - low-power high-sensitivity infrared (IR) sensor from STMicroelectronics
Key Features	A high-sensitivity infrared presence and motion detection sensor, it can reach up to 4m, integrated silicone IR filter, is capable of detecting stationary objects, capable of distinguishing stationary and moving objects, is factory calibrated, has low power consumption, and more
Interface	I2C,SPI
ClickID	Yes
Compatibility	mikroBUS™
Click board size	S (28.6 x 25.4 mm)
Input Voltage	3.3V

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Pinout diagram

This table shows how the pinout on IR Sense 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	NC	
ID SEL	RST	2	RST	INT	15	INT	Interrupt
SPI Select / ID COMM	CS	3	CS	RX	14	NC	
SPI Clock	SCK	4	SCK	TX	13	NC	
SPI Data OUT	SDO	5	MISO	SCL	12	SCL	I2C Clock
SPI Data IN	SDI	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-JP3	COMM SEL	Right	Communication Interface Selection SPI/I2C: Left position SPI, Right position I2C

IR Sense 4 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
IR Sensing Range	-	-	4	m
Temperature Sensor Resolution	-	-	16	bit
Full Field of View	-	80	-	deg

Software Support

We provide a library for the IR Sense 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(recommended), downloaded from our [LibStock™](#) or found on [Mikroe github account](#).

Library Description

This library contains API for IR Sense 4 Click driver.

Key functions

- `irsense4_get_presence_data` IR Sense 4 get the presence detection data function.
- `irsense4_get_motion_data` IR Sense 4 get the motion detection data function.
- `irsense4_get_amb_temperature` IR Sense 4 get the ambient temperature function.

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Example Description

This example demonstrates the use of the IR Sense 4 Click board™, by showing parameters for detection of the presence and motion as well as ambient temperature.

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.IRSense4

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](#)

[Click Boards™](#)

Downloads

[IR Sense 4 click example on Libstock](#)

[IR Sense 4 click 2D and 3D files](#)

[STHS34PF80 datasheet](#)

[IR Sense 4 Click schematic](#)

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