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Temp&Hum 23 Click





PID: MIKROE-5301

Temp&Hum 23 Click is a compact add-on board representing temperature and humidity sensing solution. This board features the SHT45, a 4th generation ultra-low-power relative humidity and temperature sensor from Sensirion. The SHT45 is characterized by its high accuracy (±1% RH and ±0.1°C over a wide operating temperature range) and high resolution providing 16-bit data to the host controller with a configurable I2C interface. Also, it is designed for reliable operation in harsh conditions such as condensing environments. This Click board™ is perfectly suitable for high-volume applications.

Temp&Hum 23 Click is supported by a mikroSDK compliant library, which includes functions that simplify software development. This Click board™ comes as a fully tested product, ready to be used on a system equipped with the mikroBUS™ socket.

How does it work?

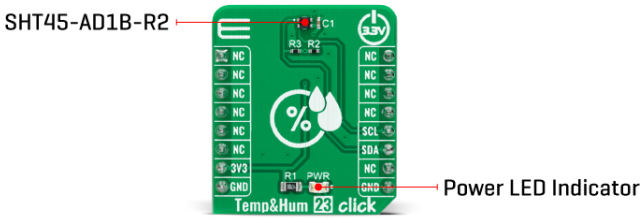
Temp&Hum 23 Click is based on the SHT45, a digital sensor platform for measuring relative humidity and temperature at different accuracy classes from Sensirion. The SHT45 builds on a wholly new and optimized CMOS chip offering reduced power consumption, high accuracy, and a digital I2C interface for the fastest data transfer. It covers extended operating humidity, and temperature ranges from 0 to 100%RH and from -40°C to 125°C with accuracies of ±1%RH and ±0.1°C.

Mikroe produces entire development toolchains for all major microcontroller architectures.
Committed to excellency, we are dedicated to helping engineers bring the project development up to speed and achieve outstanding results.

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).

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The SHT45 communicates with MCU using the standard I2C 2-wire interface. The sensor performs best when operated within the recommended average temperature and humidity range of 5-60°C and 20-80% RH. Long-term exposure to conditions outside the recommended normal range, especially at high relative humidity, may temporarily offset the RH signal. After returning to the recommended average temperature and humidity range, the sensor will recover to within specifications.

This Click board™ can only be operated with a 3.3V logic voltage level. The board must perform appropriate logic voltage level conversion before using MCUs with different logic levels. However, the Click board™ 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 high-volume applications
On-board modules	SHT45 - relative humidity and temperature sensor from Sensirion
Key Features	Low power consumption, high accuracy, covers extended operating humidity and temperature ranges, internal heater, fully functional in condensing environment, fast data transfer, and more
Interface	I2C
ClickID	No
Compatibility	mikroBUS™
Click board size	S (28.6 x 25.4 mm)
Input Voltage	3.3V

Pinout diagram

This table shows how the pinout on Temp&Hum 23 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

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Notes	Pin	mikro BUS				Pin	Notes
	NC	1	AN	PWM	16	NC	
	NC	2	RST	INT	15	NC	
	NC	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

Temp&Hum 23 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Temperature Accuracy	-	±0.1	-	°C
Relative Humidity Accuracy	-	±1	-	%RH
Resolution	-	16	-	bit
Operating Humidity Range	0	-	100	%RH
Operating Temperature Range	-40	+25	+125	°C

Software Support

We provide a library for the Temp&Hum 23 Click as well as a demo application (example), developed using MikroElektronika compilers. The demo can run on all the main MikroElektronika development boards.

The 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 Temp&Hum 23 Click driver.

Key functions

- temphum23_soft_reset This function performs the software reset by sending the soft reset command.
- temphum23_read_serial_num This function reads the 4-bytes unique serial number by using I2C serial interface.
- temphum23_read_measurement_high_precision This function reads the temperature and humidity measurements with high precision.

Example Description

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This example demonstrates the use of Temp&Hum 23 click board by reading the temperature and humidity data.

The full application code, and ready to use projects can be installed directly from NECTO Studio Package Manager(recommended way), downloaded from our LibStock™ or found on Mikroe github account.

Other Mikroe Libraries used in the example:

- MikroSDK.Board
- MikroSDK.Log
- Click.TempHum23

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 MikroElektronika compilers.

mikroSDK

This Click board™ is supported with mikroSDK - MikroElektronika 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

Temp&Hum 23 click example on Libstock

SHT45-AD1B-R2 datasheet

Temp&Hum 23 click 2D and 3D files

Temp&Hum 23 click schematic

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