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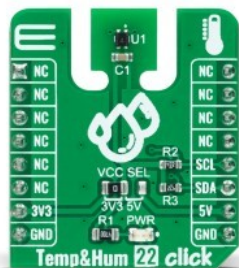www.mikroe.com

Temp&Hum 22 Click

PID: MIKROE-5310

Temp&Hum 22 Click is a compact add-on board representing temperature and humidity sensing solution. This board features the SHT41A, a 4th generation automotive-grade relative humidity and temperature sensor from Sensirion. The SHT41A is characterized by its high accuracy (±2% RH and ±0.3°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 automotive and other temperature and humidity-related applications.

Temp&Hum 22 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 22 Click as its foundation uses the SHT41A, high-accuracy automotive-grade 16-bit relative humidity and temperature sensor from Sensirion. The SHT41A builds on a wholly new and optimized CMOS chip offering reduced power consumption, 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 ±0.3°C. The SHT41A's integrated heater allows advanced on-board-diagnostics alongside a reliable operation in harsh conditions such as condensing environments.

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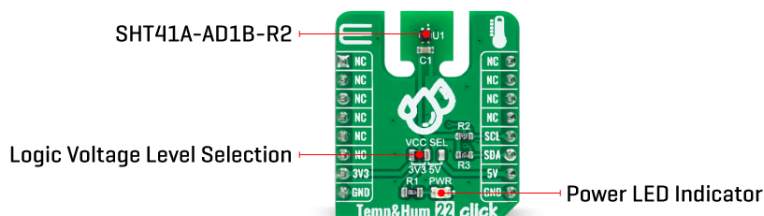Committed to excellency, we are dedicated to helping engineers bring the project development up to speed and achieve outstanding results.

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 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 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 by itself.

Also, to maximize the over-temperature when using the heater, reduced heat conduction and heat capacity of the mounted sensor is desired. For this reason, the sensor is placed on this Click board™ in a particular position, a piece of a standard PCB with a cutout around the sensor area, increasing the decontamination yield and avoiding excess energy consumption. The PCB layout like this is optimized for minimal thermal heat sink influence.

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.

Specifications

Type	Temperature & humidity
Applications	Can be used for automotive and other temperature and humidity-related applications
On-board modules	SHT41A - relative humidity and temperature sensor from Sensirion
Key Features	Low power consumption, high accuracy, automotive-grade, covers extended operating humidity and temperature ranges, internal heater, fully functional in condensing environment, fast data transfer, and more
Interface	I2C
Feature	No ClickID
Compatibility	mikroBUS™
Click board size	S (28.6 x 25.4 mm)
Input Voltage	3.3V or 5V

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Pinout diagram

This table shows how the pinout on Temp&Hum 22 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin				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	**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	Logic Level Voltage Selection 3V3/5V: Left position 3V3, Right position 5V

Temp&Hum 22 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Temperature Accuracy	-	±0.3	-	°C
Relative Humidity Accuracy	-	±2	-	%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 22 Click as well as a demo application (example), developed using MikroElektronika compilers. The demo can run on all the main MikroElektronika development boards.

Package can be downloaded/installed directly from NECTO Studio Package Manager(recommended way), downloaded from our LibStock™ or found on Mikroe github account.

Library Description

This library contains API for Temp&Hum 22 Click driver.

Key functions

- temphum22_soft_reset This function performs the software reset by sending the soft

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reset command.

- temphum22_read_serial_num This function reads the 4-bytes unique serial number by using I2C serial interface.

- temphum22_read_measurement_high_precision This function reads the temperature and humidity measurements with high precision.

Example Description

This example demonstrates the use of Temp&Hum 22 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.TempHum22

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 22 click example on Libstock

SHT41A datasheet

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[Temp&Hum 22 click 2D and 3D files](#)

[Temp&Hum 22 click schematic](#)