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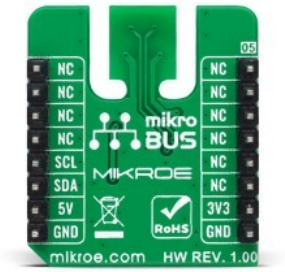
Temp&Hum 15 Click



PID: MIKROE-4496

Temp&Hum 15 Click is a compact add-on board that contains the 4th generation of best-in-class humidity sensing solution. This board features the SHT40, high-accuracy ultra-low-power 16-bit relative humidity and temperature sensor from Sensirion. It provides constant temperature accuracy, up to 0.1°C, and shows the best performance when operated within the recommended average temperature and humidity range of 5-60°C and 20-80%RH. The fully calibrated sensor offers linearized digital output, NIST traceability, and I2C Fast Mode Plus. It is reflow solderable and operational in condensing environments. This Click board™ is an ideal solution to be used in various temperature and humidity-related applications.

Temp&Hum 15 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 15 Click as its foundation uses the SHT40, high-accuracy ultra-low-power 16-bit relative humidity and temperature sensor from Sensirion. The SHT40 builds on a wholly new and optimized CMOS chip that offers reduced power consumption and improved accuracy specifications. It provides a fully calibrated digital I2C Fast Mode Plus 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 ±1.8%RH and ±0.2°C. The SHT40 also has a power-trimmed internal heater which can be used at three heating levels enabling sensor operation in demanding environments.

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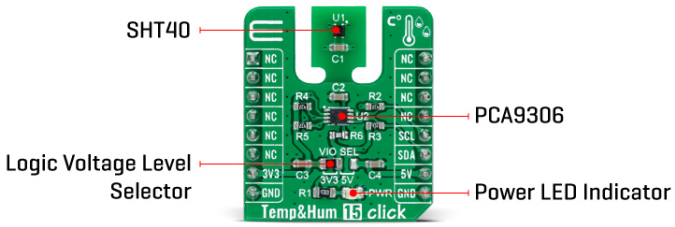

The sensor shows the best performance when operated within the recommended average temperature and humidity range of 5-60°C and 20-80%RH. Long-term exposure to conditions outside recommended normal range, especially at high relative humidity, may temporarily offset the RH signal. After returning to the recommended average temperature and humidity range, the sensor will recover to within specifications by itself.

Temp&Hum 15 Click communicates with MCU using standard I2C 2-Wire interface. Since the sensor for operation requires a 3.3V logic voltage level only, this Click board™ also features the PCA9306 voltage-level translator from Texas Instruments. The I2C interface bus lines are routed to the dual bidirectional voltage-level translator, allowing this Click board™ to work with both 3.3V and 5V MCUs properly.

This Click board™ can operate with both 3.3V and 5V logic voltage levels selected via the VIO SEL jumper. This way, it is allowed for both 3.3V and 5V capable MCUs to use the I2C communication lines properly. However, the Click board™ comes equipped with a library that contains 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 in various temperature and humidity-related applications
On-board modules	SHT40 - high-accuracy ultra-low-power 16-bit relative humidity and temperature sensor from Sensirion
Interface	I2C
ClickID	No
Compatibility	mikroBUS™
Click board size	S (28.6 x 25.4 mm)
Input Voltage	3.3V or 5V

Pinout diagram

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This table shows how the pinout on Temp&Hum 15 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	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	VIO SEL	Left	Logic Level Voltage Selection 3V3/5V: Left position 3V3, Right position 5V

Temp&Hum 15 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Temperature Accuracy	-	±0.2	-	°C
Relative Humidity Accuracy	-	±1.8	-	%RH
Resolution	-	0.01	-	%RH
Operating Humidity Range	0	-	100	%RH
Operating Temperature Range	-40	+25	+125	°C

Software Support

We provide a library for the Temp&Hum 15 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 15 Click driver.

Key functions:

- temphum15_cfg_setup - Config Object Initialization function.
- temphum15_init - Initialization function.
- temphum15_default_cfg - Click Default Configuration function.

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Examples description

This demo app represents the performance of the Temp&Hum 15 click board. The log displays the temperature and humidity obtained from the sensor.

The demo application is composed of two sections :

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.TempHum15

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. The terminal available in all MikroElektronika compilers, or any other terminal application of your choice, can be used to read the message.

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 15 click 2D and 3D files

SHT40 datasheet

Temp&Hum 15 click schematic

Temp&Hum 15 click example on Libstock