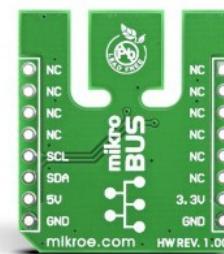


SHT1x click



PID: MIKROE-949

SHT1x Click is a compact add-on board for accuracy, high reliability, and long-term stability in humidity and temperature measurements. This board features the SHT11, a humidity and temperature sensor from Sensirion. The SHT11 sensor integrates sensors elements, an amplifier, ADC, OTP memory, and a digital interface in a single housing. It can measure the relative humidity in the range from 0 up to 100% with a typical accuracy of $\pm 3\%$ and temperature from -40 up to 123.8°C with a typical accuracy of $\pm 0.4^\circ\text{C}$. This Click board™ makes the perfect solution for developing humidity and thermal management of portable electronics and industrial, consumer, and environmental applications.

SHT1x 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?

SHT1x Click is based on the SHT11, a humidity and temperature sensor from Sensirion. The SHT11 is a robust and reliable sensor, and even when exposed to conditions outside its normal range, it can recalibrate itself once conditions stabilize. The sensor performs best when operated within a recommended normal temperature range of -20°C up to 100°C. Long-term exposure to conditions outside the normal range may temporarily offset the RH signal. After returning to the normal temperature range, the sensor will slowly return to a calibration state by itself. Also, note that prolonged exposure to extreme conditions may accelerate aging.

Although the typical relative humidity resolution is 12-bit and 14-bit for the temperature readings, both sensors on the SHT11 are seamlessly coupled to a 14-bit ADC. The relative

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humidity sensor uses a unique capacitive sensor element, while a band-gap sensor measures the temperature. The SHT11 is individually calibrated in a precision humidity chamber, and the calibration coefficients are stored in an onboard OTP memory. The SHT1x Click communicates with the host MCU using an I2C interface over the mikroBUS™ socket, with communication speeds of up to 1MHz. The SHT1x Click does not have a reset pin; if the communication with the sensor is lost, you can reset the sensor via the signal sequence.

While the SHT1x Click cannot measure the dew point directly, it is possible to calculate the dew point using humidity and temperature readings. This is possible because the same monolithic chip measures humidity and temperature. However, it is important to note that the sensor is not sensitive to light, and prolonged exposure to intense UV radiation can cause the housing to deteriorate over time.

This Click board™ can operate with either 3.3V or 5V logic voltage levels selected via the PWR SEL jumper. This way, both 3.3V and 5V capable MCUs can use the communication lines properly. However, the 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 developing humidity and thermal management of portable electronics and industrial, consumer, and environmental applications
On-board modules	SHT11 - humidity and temperature sensor from Sensirion
Key Features	Fully calibrated, linearized, and temperature-compensated digital output, high-speed I2C interface, high performance, very fast Start-up and measurement time, high accuracy and reliability, 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
Category	Click Boards

Pinout diagram

This table shows how the pinout on SHT1x click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikro™ BUS				Pin	Notes
	NC	1	AN	PWM	16	NC	

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	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	PWR SEL	Left	Power/Logic Level Voltage Selection 3V3/5V: Left position 3V3, Right position 5V

SHT1x click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Humidity Operating Range	0	-	100	%RH
Humidity Accuracy	-	± 0.3	-	%RH
Humidity Resolution	8	12	12	bit
Temperature Operating Range	-40	-	123.8	°C
Temperature Accuracy	-	± 4.0	-	°C
Temperature Resolution	12	14	14	bit

Software Support

We provide a library for the SHT 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 SHT Click driver.

Key functions

- Returns temperature measurement in single shot mode.
- Returns humidity measurement in single shot mode.
- Sets the heater state.

Example Description

This application enables usage of the temperature and humidity sensor.

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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.Sht

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

[SHT11 Click User Manual](#)

[SHT11 click example on Libstock](#)

[SHT1x click 2D and 3D files](#)

[DS1307 datasheet](#)

[SHT1x click schematic](#)

[SHT11 datasheet](#)

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