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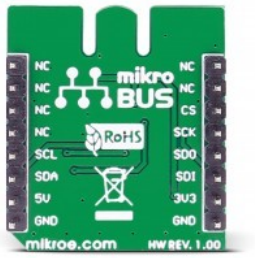
Weather Click





PID: MIKROE-1978

Weather Click is a compact add-on board that contains an integrated environmental sensor. This board features the BME280, a combined humidity and pressure sensor from Bosch Sensortec. Besides humidity and barometric pressure, the sensor can also measure the temperature. The altitude can be calculated using pressure value, but only if you know the hPa pressure at sea level for your location and day. This Click board™ makes the perfect solution for the development of hand-held devices, navigation systems, watches, home weather stations, home automation control units, and more.

Weather 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?

Weather Click is based on the BME280, a combined humidity and pressure sensor from Bosch Sensortec. The BME280 itself contains sensors from each of the environmental measurements. The humidity sensor has high overall accuracy and an extremely fast response time. The pressure sensor has extremely high accuracy and resolution as an absolute barometric sensor. The temperature sensor is basically used for temperature compensation, thus for accurate readings. Nevertheless, it has low noise, high resolution, and can be used for ambient temperature readings.

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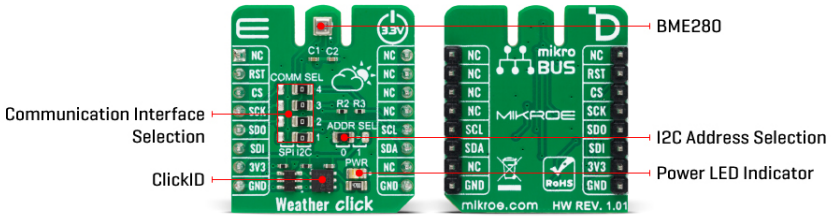

The Weather Click can work in one of three power modes. Sleep mode is the first mode the sensor enters after the Power-On reset, when no measurements are performed with its power consumption at the minimum. In Forced mode, the sensor performs a single measurement and returns to Sleep mode. For the next measurement, the Forced mode must be selected again. The Normal mode means the sensor will take measurements in automated perpetual cycling between measurement and inactive periods.

The sensors inside the BME280 have different output resolutions, with 16-bit ADC for humidity and up to 20-bit for pressure readings. An internal IIR filter helps suppress the disturbance of many shorter changes, such as a wind blowing into the sensor, slamming a door, and such. To achieve a high resolution and low noise of readings, the IIR filter must be enabled. Weather Click can use a standard 2-Wire I2C interface supporting standard, fast, and high speeds or an SPI serial interface to communicate with the host MCU. The communication interface can be selected via SPI I2C 4-jumper sets, with the I2C interface selected by default. All four jumpers must be set in place for the Weather Click to work properly. The I2C address can be selected via the ADDR jumper, with 0 set by default.

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	Environmental
Applications	Can be used for the development of hand-held devices, navigation systems, watches, home weather stations, home automation control units, and more
On-board modules	BME280 - combined humidity and pressure sensor from Bosch Sensortec
Key Features	Humidity sensor measuring relative humidity, barometric pressure and ambient temperature, low power consumption, high accuracy, long-term stability, fast response time, and more

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Interface	I2C,SPI
ClickID	Manifest,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 Weather 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	
SPI Chip Select	**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-JP5	SPI I2C	Right	Communication Interface Selection SPI/I2C: Left position SPI, Right position I2C
JP4	ADDR	Left	I2C Address Selection 0/1: Left position 0, Right position 1

Weather Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Temperature Range	-40	-	85	°C
Relative Humidity Range	0	-	100	%
Pressure Range	300	-	1100	hPa

Software Support

We provide a library for the Weather 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 way), downloaded from our LibStock™ or found on Mikroe github account.

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Library Description

This library contains API for Weather Click driver.

Key functions

- Weather data
- Measurement configuration
- Software reset function

Example Description

This demo-app shows the temperature, pressure and humidity measurement using Weather click.

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.Weather

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™

Click board™ Catalog

Click Boards™

Downloads

Weather click example on Libstock

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Weather click schematic

BME280 datasheet

Weather click 2D and 3D files

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