Air quality 2 Click

PID: MIKROE-2529

Air Quality 2 Click is a compact add-on board that measures VOC levels and provides CO2 and TVOC predictions. This board features the iAQ-Core, an indoor air quality sensor module from ScioSense. It has a fast response and high sensitivity in a sensing range of 450 up to 2000 ppm CO2 equivalents and 125 to 600 ppb TVOC equivalents. The iAQ-Core offers a reliable indoor air quality evaluation with a relative output of equivalents. This Click board™ makes the perfect solution for the development of smart home applications, Internet of Things devices, HVAC, thermostats, and more.

Air Quality 2 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?

Air Quality 2 Click is based on the iAQ-Core, an indoor air quality sensor module from Scio Sense. It uses MEMS metal oxide sensing technology and can be used in a 5 to 95% relative humidity range. The sensor itself is protected by a plastic cap and a filter membrane, which shouldn't be removed. The first functional reading after start-up appears after 5 minutes. The sensor has Automatic Baseline Correctio (ABC), meaning you don't need to do further calibration.

The term CO2 equivalent, or CO2e, represents a unit of measurement for the amount of carbon dioxide gas present in some "greenhouse gases". The "greenhouse gas" is any gas in the atmosphere that absorbs and re-emits heat, thus making a planet warmer than it otherwise would be. Volatile organic compounds (VOC) are organic chemicals with very high vapor

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pressure at room temperature, and some can harm human health. These chemicals are carbon-based (formaldehyde, toluene, benzene, and more) and are called "volatile" because they become gases at room temperature. They are emitted from various products, like hairspray, household cleaning products, paint, or air freshener, that we use daily.

Air Quality 2 Click uses a standard 2-Wire I2C interface to communicate with the host MCU, supporting clock speeds up to 100KHz. As the sensor is a 3.3V-only device, this Click board™ features the PCA9306, a dual bidirectional I2C Bus and SMBus voltage level translator from Texas Instruments.

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	Air Quality,Gas
Applications	Can be used for the development of smart home applications, Internet of Things devices, HVAC, thermostats, and more
On-board modules	iAQ-Core - indoor air quality sensor module from ScioSense
Key Features	Low power consumption, measures VOC levels and provides CO2 equivalent, and TVOC equivalent predictions, sensor protected by a plastic cap and a filter, MEMS metal oxide sensor technology, I2C interface voltage level translator, and more
Interface	I2C
Feature	No ClickID
Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)
Input Voltage	3.3V or 5V

Pinout diagram

This table shows how the pinout on Air quality 2 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	
	NC	2	RST	INT	15	NC	
	NC	3	CS	TX	14	NC	
	NC	4	SCK	RX	13	NC	
	NC	5	MISO	SCL	12	**SCL**	I2C clock

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ISO 27001: 2013 certification of informational security management system.
ISO 14001: 2015 certification of environmental management system.
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ISO 9001: 2015 certification of quality management system (QMS).

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

Air quality 2 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
CO2e Sensing Range	450	-	2000	ppm
TVOCe Sensing Range	125	-	600	ppb

Software Support

We provide a library for the Air quality 2 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 Air quality 2 Click driver.

Key functions

- This function reads data.

- Reads all data information about the indoor air quality.

Example Description

This app measure indoor air quality.

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.Airquality2

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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

iAQ-Core sensor datasheet

Air quality 2 click example on Libstock

Air quality 2 click schematic v100

Air quality 2 click 2D and 3D files v100

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