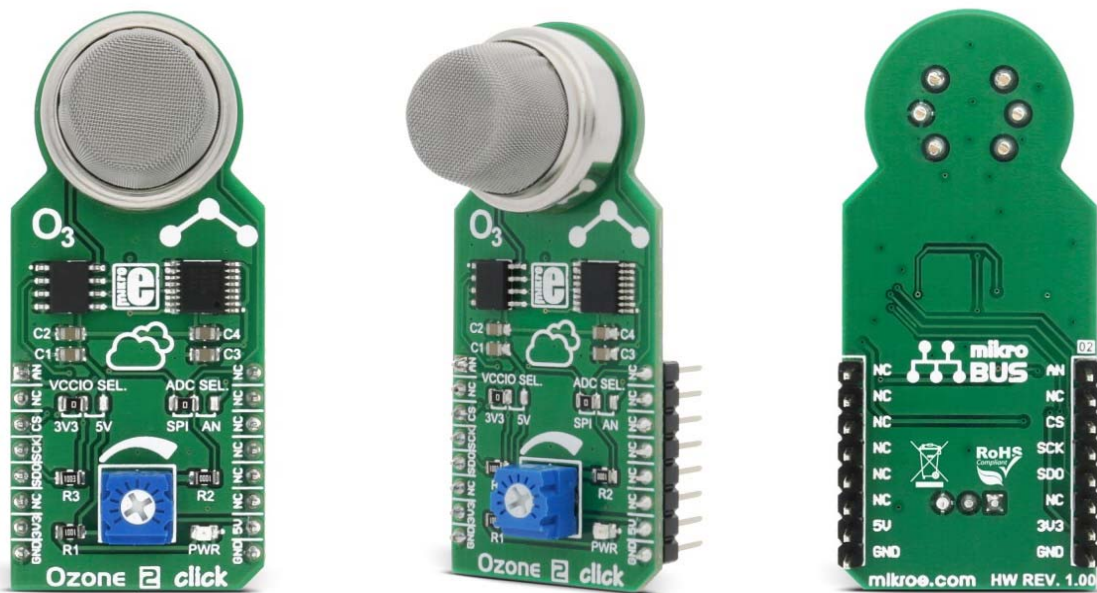# Ozone 2 click

PID: MIKROE-2767

Ozone 2 click carries an MQ131 sensor for Ozone (O_3). The sensor outputs an analog voltage, which is converted by the onboard MCP3551 22-bit ADC converter or it is sent to the microcontroller via AN pin on the mikroBUS™, depending on the position of ADC SEL. jumper. The click is designed to run on 5V power supply. It communicates with the target microcontroller over SPI interface or AN pin on the mikroBUS™ line.

Note: The click carries TXB0106 Voltage Translator. For selecting the interface voltage level, use the onboard jumper, and choose between the 3.3V and 5V. For more information, see the Jumpers and Settings table below.

MQ131 sensor features

MQ131 is a semiconductor sensor for Ozone (O_3). The gas sensing layer on the sensor unit is made of Tin dioxide, which has lower conductivity in clean air. The sensor's conductivity is higher with the rising of the gas concentration. The sensor consists of micro Al_2O_3 ceramic tube, Tin dioxide sensitive layer, measuring electrode and heater fixed into stainless steel net. The heater provides necessary conditions for the proper functioning of the sensitive components.
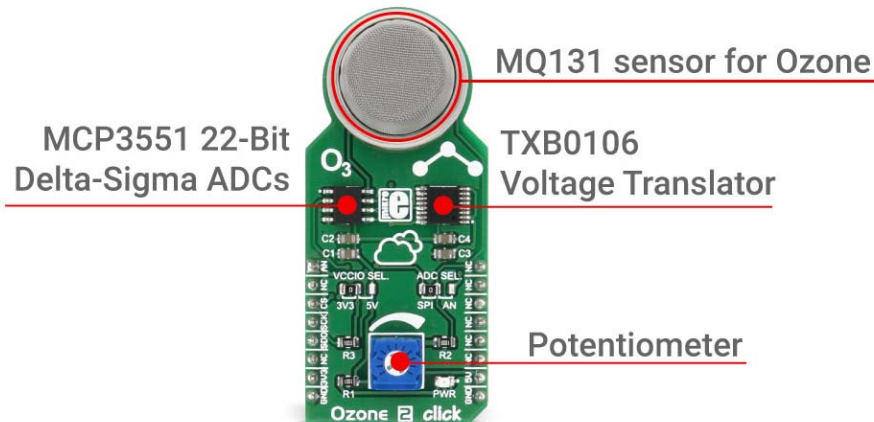
Calibrating the sensor

To calibrate the sensor for the environment you'll be using it in, Ozone 2 click has a small potentiometer that allows you to adjust the Load Resistance of the sensor circuit. For precise calibration, the sensor needs to preheat (once powered up, it takes 48h to reach the right temperature).

Specifications

Type	Gas
Applications	It can be used in different Ozone concentration detectors for air quality control, or for gas leak detection.
On-board modules	MQ131 sensor, MCP3551
Key Features	Ozone concentration 10-1000 ppm, communicates over the AN pin or ADC MCP3551, sensitivity Rs(in air)/Rs(in 50 ppm O3)≥3, onboard potentiometer for calibration
Interface	SPI

Input Voltage	3.3V or 5V
Compatibility	mikroBUS
Click board size	L (57.15 x 25.4 mm)

Pinout diagram

This table shows how the pinout on **Ozone 2 click** corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikroBUS				Pin	Notes
Analog pin	**AN**	1	AN	PWM	16	NC	
	NC	2	RST	INT	15	NC	
MCP3551 chip select	**CS**	3	CS	TX	14	NC	
SPI clock pin	**SCK**	4	SCK	RX	13	NC	
SPI slave data out pin	**SDO**	5	MISO	SCL	12	NC	
	NC	6	MOSI	SDA	11	NC	
Power supply	**+3.3V**	7	3.3V	5V	10	**+5V**	Power supply
Ground	**GND**	8	GND	GND	9	**GND**	Ground

Jumpers and settings

Designator	Name	Default Position	Default Option	Description
JP1	VCCIO SEL.	Left	3V3	Power Supply Voltage Selection 3V3/5V, left position 3V3, right position 5V
JP2	ADC SEL.	Left	EXT	Analog signal selection. Left position ADC located on the click board, right position AN pin of mikroBUS™

LEDs, Buttons, Switches, Connectors, etc.

Designator	Name	Type (LED, BUTTON...)	Description
LD1	PWR	LED	Power LED, lights green when power supply is established properly.

Programming

Code examples for Ozone 2 click, written for MikroElektronika hardware and compilers are available on Libstock.

Code snippet

The following code snippet outputs data from Ozone 2 click ADC reader via UART

```
01: void Ozone_2_Task()
02: {
03:     uint32_t readValue;
04:     uint8_t loggerTxt [40];
05:     readValue = OZONE2_Read();
06:     LongToStr(readValue, loggerTxt);
07:     UART1_write_text("rnRead value:");
08:     UART1_write_text(loggerTXT);
09:
10:   delay_ms(1000);
11: }
```