



## VOLATILE ORGANIC COMPOUNDS (VOC), TEMPERATURE & HUMIDITY USB SENSOR

**VOC100**



### DESCRIPTION

The VOC100 is designed using a specialized integrated metal oxide (MOX) gas sensor for Indoor Air Quality (IAQ) monitoring. Its responsiveness and algorithms allow for rapid detection of VOCs for output equivalent total eTVOC and equivalent eCO2 values. Among detected compounds are a wide range of biologically and chemically generated VOCs like paint, coating, fuel, alcohol, benzene, refrigerant, and more. It also includes a cutting-edge precision temperature/humidity sensor. The compact sensor's tip allows for easy integration even in space-constrained locations.

### APPLICATIONS

- Indoor Air Quality (IAQ) in homes
- Offices
- Laboratories
- Warehouses
- Building automation
- Manufacturing
- Environmental chamber
- Engineering and R&D
- Education

### INSTALLATION TIME

Less than 10 minutes

### UNIQUE SERIAL NUMBER

Each unit is assigned a unique serial number allowing for traceability and certification

### FREE DAQ SOFTWARE

Real-time data visualization and logging

### DATA INTEGRATION

Command-line tools for direct data access and integration

### OPTIONS

- Virtual COM Port (VCP) communication protocol
- 3-point user calibration mechanism<sup>[6]</sup>

### ALSO AVAILABLE

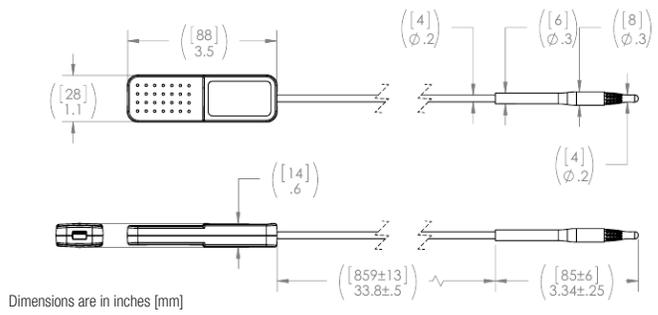
Traceability certificates<sup>[6]</sup>

SPECIFICATIONS			
Parameter	Condition	Value	Units
<b>Total volatile organic compound (Tvoc)</b>			
eTVOC* range	—	0 to 29206	ppb
eCO2** range	—	400 to 32768	ppm
Accuracy <sup>[1] [6]</sup>	VOC type dependents	Qualitative	—
Auto-baseline correction <sup>[3]</sup>	Periodical	24	hrs
VOCs detected <sup>[4]</sup>	Other VOCs types may be detected	Alcohols, Aldehydes, Ketones, Organic Acids Amines, Aliphatic and Aromatic Hydrocarbons and more.	
VOC sensitivity <sup>[5]</sup>	see note	—	
<b>Temperature</b>			
Accuracy	Typ., 0 to 70°C	±0.2	°C
Accuracy	-40 to 0°C	±0.5	°C
Resolution	Typ.	0.015	°C
Repeatability	Typ.	0.06	°C
Response time	t63%	8	s
Factory calibrated	Individually <sup>[2]</sup>	Yes	—
<b>Relative humidity</b>			
Accuracy	Typ., 25°C, 0 to 100 %RH	±2	%RH
Accuracy	Max., 25°C, 0 to 90 %RH	±2.5	%RH
Accuracy	Max., 25°C, 90 to 100 %RH	±3.5	%RH
Resolution	Typ.	0.01	%RH
Repeatability	—	0.15	%RH
Factory calibrated	Individually <sup>[2]</sup>	Yes	—

SPECIFICATIONS			
Parameter	Condition	Value	Units
<b>Sensor probe</b>			
Temperature operating range	—	-20 to 70	°C
Humidity operating range	Non-condensing	10 to 95	%RH
Cable material	PVC	—	—
Cable length	—	1	m
<b>Power supply</b>			
Voltage	Powered through USB	5	V
Current Consumption	At 5V	35	mA
<b>Mechanical</b>			
Dimensions	See drawing below	—	—
Colour	—	Cyan	—
Weight	Without USB cable	56	g
<b>Filter - Layer 1</b>			
Material	Polyethylene terephthalate (PET) mesh		
<b>Filter—Layer 2</b>			
Material	PTFE membrane		
Efficiency	Particle size ≥200 nm	99.99	%
<b>Housing</b>			
Material	ABS plastic	—	—
Waterproof	No	—	—
System galvanic isolation	None	—	—
Temperature operating range	—	-20 to 70	°C
Humidity operating range	Non-condensing	10 to 95	%RH
IP rating <sup>[7]</sup>	51	—	—
USB cable length	—	1	m
<b>Miscellaneous</b>			
Communication protocol	USB	2.0	—
Product lifetime	At typical value, 25°C, 50 RH%	5	years
ROHS compliant	Yes	—	—

- <sup>[1]</sup> At power-up, accurate reading will be generated following a 20 minutes warming period.
  - <sup>[3]</sup> During this process, the baseline will be adjusted to the lowest-level read since the last 24 hours. The process is repeated every 24 hours. Therefore, the sensor must be located in a room where the VOC level reaches its minimum value (usually 0 ppb) within 24 hours.
  - <sup>[4]</sup> In doubt, test the unit with the targeted VOC to be detected.
  - <sup>[5]</sup> The sensitivity of the sensor vary with the type of VOC present. Furthermore, the sensor will output a total value of all VOC presents in the ambient air.
  - <sup>[6]</sup> Only available for the temperature and humidity sensor.
  - <sup>[7]</sup> If water condensation or splashing is possible, it is recommended to install the probe pointing down to reduce the risk of water build-up in the sensor. If water splashing is possible, protect the sensor and cable converter using extra precautions. Extra housing may be required depending on the application.
  - <sup>[8]</sup> For each VOC type, accuracy is related to the sensor sensitivity for this VOC.
- \* eTVOC: The equivalent Total Volatile Organic Compound  
 \*\* eCO2: The equivalent CO2.

## PRODUCT DIMENSIONS



### AVAILABLE CHANNEL(S) As displayed in our logging software

CHANNEL ID*	DESCRIPTION	TYPE	NATURE
00	CCS811 TVOC PPM	Gas PPM	Real
01	CCS811 eCO2 PPM	Gas PPM	Real
02	SHT31 Temperature	Temperature	Real
03	SHT31 Relative Humidity	Relative Humidity	Real
04	Dew point	Dew point	Virtual
05	Humidex	Humidex	Virtual
06	Heat index	Heat index	Virtual

\* Channel Id as it appears in QTenki. Virtual channel Id differ in QTenki and usbtkeniget.

- WARNING:** Keep in mind that electromagnetic interferences (EMI) may adversely reduce the precision of the converter. Avoid using this unit close to EMI sources such as motor, transformers, high voltage and fluorescent light.
- TIP:** For this unit to maintain optimal operation, keep the unit power-up permanently. Avoid frequent power-up and down.
- TIP:** Allow 2–3 days for the eVOC sensor to adapt to your environment.
- TIP:** The eVOC sensor will also react to changes in humidity and the presence of hydrogen.
- TIP:** You may optionally test the unit with the targeted VOC to be detected to evaluate the response level.
- TIP:** The sensitivity of the sensor varies with the type of VOC present. Furthermore, keep in mind that the sensor will output a total value of all VOC presents in the ambient air.
- Definition:** eTVOC: The Equivalent Total Volatile Organic Compound  
**Definition:** eCO2: The Equivalent CO2.

### ORDERING

PRODUCT(S)		
PART NUMBER	OPTION	DESCRIPTION
601016	USB-VOC100	USB VOC, Temperature and Relative Humidity sensor
608016	USB-VOC100-CAL	USB VOC, Temperature and Relative Humidity sensor — calibratable
603016	VCP-VOC100	USB VOC, Temperature and Relative Humidity sensor—with VCP mode

TRACEABILITY CERTIFICATE(S)	
NT1WT	1-point temperature certificate for one (1) unit
NT2WT	2-point temperature certificate for one (1) unit
NT3WT	3-point temperature certificate for one (1) unit
NT4WT	4-point temperature certificate for one (1) unit
NT1WH	1-point relative humidity certificate for one (1) unit
NT2WH	2-point relative humidity certificate for one (1) unit

- Warning:** This product is not designed for use in, and should not be used for, human applications.
- Note:** While every effort has been made to ensure accuracy in this publication, no responsibility can be accepted for errors or omissions.
- Note:** Data may change without notification, and you are strongly advised to obtain copies of the most recently issued datasheet.

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