

Digital VOC Gas Sensor

Datasheet

PID-VOC







Product Description

The DS4-PID is an intelligent digital output gas sensor developed by EC Sense, Germany. It utilizes photoionization technology to measure the concentration of volatile organic compounds (VOCs) in the environment.

The DS4-PID Digital VOC Gas Sensor is an intelligent industrial-grade gas sensor with a small and compact design. It employs high-performance microprocessors and high-precision analog-to-digital converters, together with an intelligent algorithm design. It can be easily integrated into instruments, IoT systems, and other monitoring systems. It is widely used in industrial, commercial, civil, and medical fields.

Product Features

Digitized

The sensor outputs the gas concentration with a digital signal and comes pre-calibrated from the factory for quick installation and use.

Long lifetime

It is characterized by long service life, high performance, strong long-term stability, robust environmental adaptability and outstanding resistance to toxic gases.

Fast response

It features a rapid response time and real-time monitoring of sensor malfunctions.

Wide measurement range

Products are offered with different measurement ranges from 0 to 20000 ppm.

High stability

It is equipped with an integrated temperature and humidity sensor. Combined with EC Sense's advanced compensation algorithms, the accuracy of the measured values is guaranteed both indoors and outdoors.

Wide Applicability

They are widely used in environmental monitoring, petrochemical industry, industrial hygiene, and other application fields.

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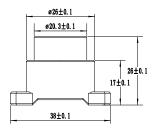


Product Structure Diagram (unit: mm)

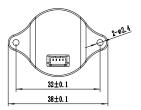
• Product Diagram



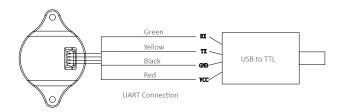
Front View

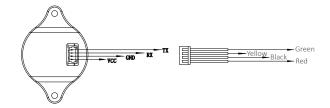


· Bottom View



Lead-Out Wiring Diagram





Sensor Technical Specifications

Measurement

Measurement Principle	Photoionization technology
Target Gases	TVOC
Measuring Range	See model selection table
Linearity	Linear
Response Time (T90)*	≤ 30 s

Environmental Parameters

Temperature Range	-20 °C to +55 °C
Humidity Range	15 to 95% RH. non-condensing
Pressure Range	800 to 1200 hPa
Recommended Storage Conditions	Stored in original packaging under 0 °C to 30 °C (0 to 30% RH)

Electrical Parameters

Electrical Farameters	
Communication Interface	UART Communication
Communication Protocol	Mobus-RTU Protocol
Supply Voltage	3.2 V - 5.2 V
Current	55 mA (Supply Voltage: 5 V)
Output Signal	0.1 V - 3.0 V
Offset Voltage	100 ± 50 mV

Lifetime Parameters

Ideal Lifetime	1 year in the air	
Storage Duration	12 months from the date of delivery	
Warranty	12 months from the date of delivery	
Weight	Typical value: 13.8 g (19.67 g with housing)	
Housing Material	SUS304 & ABS	

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Model Selection Table

Product Name	Order Number	Measuring Range	Reading Resolution
Digital VOC Gas Sensor	04-DS4-PID-VOC-10-01	0 - 10 ppm	1 ppb
	04-DS4-PID-VOC-20-01	0 - 20 ppm	2 ppb
	04-DS4-PID-VOC-50-01	0 - 50 ppm	5 ppb
	04-DS4-PID-VOC-100B-01	0 - 100 ppm	0.01 ppm
	04-DS4-PID-VOC-100C-01	0 - 100 ppm	0.01 ppm
	04-DS4-PID-VOC-200-01	0 - 200 ppm	< 0.02 ppm
	04-DS4-PID-VOC-500-01	0 - 500 ppm	0.05 ppm
	04-DS4-PID-VOC-1000-01	0 - 1000 ppm	0.1 ppm
	04-DS4-PID-VOC-2000-01	0 - 2000 ppm	0.2 ppm
	04-DS4-PID-VOC-5000-01	0 - 5000 ppm	0.5 ppm
	04-DS4-PID-VOC-10000-01	0 - 10000 ppm	1 ppm
	04-DS4-PID-VOC-20000-01	0 - 20000 ppm	2 ppm

Caution:

- 1. For the first time use of the sensor, it must be preheated for at least half an hour.
- 2. When calibrating, wait for the sensor to stabilize completely before operating. The zero point calibration should be carried out in dry and clean air.
- 3. It is recommended to use isobutylene gas at around 50% of the measurement range as the calibration gas.
- 4. It is prohibited to hot-plug or unplug the sensor while it is powered.
- 5. Do not install the sensor in areas with strong air convection to avoid fluctuations in readings or sensor damage caused by changes in air pressure.
- 6. Do not use or store the sensor for long periods of time in environments exceeding its measurement range.

Disclaimer

The above EC Sense performance data is based on data obtained using EC Sense gas distribution systems and AQS testing software. In order to continuously improve products, EC Sense reserves the right to change design features and specifications without prior notice. We are not responsible for any loss, injury, or damage caused thereby. EC Sense shall not be liable for any indirect loss, injury, or damage caused by the incorrect use of this document, the information contained therein, or any omissions or errors. This document does not constitute an offer for sale. The data contained herein is for reference purposes only and should not be construed as a guarantee. The use of any given data must be evaluated and determined by the user to comply with federal, state, and local laws and regulations. All specifications outlined are subject to change without notice.



Warning

EC Sense sensors are designed for use in various environmental conditions. However, due to the principles and characteristics of sensors, it is essential for users to strictly adhere to the instructions provided in this document during the storage, assembly, and operation of the modules to ensure proper use. Avoid cleaning the sensor with alcohol, acetone, or other strong solvents. Damage caused by the illegal application and modification of PCB circuit boards will not be covered under warranty. While our products are highly reliable, we recommend checking the module's response to target gases before use to ensure on-site usability. When the product reaches the end of its service life, please do not dispose of any product components as household waste. Instead, adhere to local government regulations for electronic waste recycling.

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