



PHOTOACOUSTIC
SENSOR MODULE
FOR MEASURING
ETHYLENE C_2H_4

Innovative gas sensors

smartGAS.

Photoacoustic C_2H_4 -Sensor

Low-drift and high-precision: low maintenance sensor solution for monitoring the smallest ethylene concentrations

The sensor, which operates on the principle of photoacoustic spectroscopy, detects ethylene volumes in a range from 5–1000 ppm with even higher precision and reliability. Checking the C_2H_4 concentration is especially important in storage rooms, since ethylene – a minuscule plant hormone – controls physiological processes such as the ageing and ripening of fruits.

The new sensor now gives you even more assurance. The physical measuring principle allows a low-drift measurement with high accuracy and high resolution over a long period of time. As the module is designed for continuous operation, it has an optional adjustable automatic zero-calibration function, alternatively this can be externally triggered.

External control is not required

For the basic configuration, the module requires the addition of a power supply, a directly connected fan for any necessary cooling, a directly connected gas pump and a directly connected 2/3-way valve for switching from zero gas to sample gas.

All components can be controlled by the module itself. Additionally, there is the possibility to connect a PLC or similar. On request: the photoacoustic sensors can also be offered as a complete analytical instrument.

Low drift for long term stable performance

Low detection ranges with reduced signal noise

High accuracy for precise measurements

No cross sensitivity with CO_2

Active sampling via directly connected pump possible (available on request)

Zero-calibration (automatically or externally triggered) via directly connected 2/3-way
Automatic compensation of the water vapor cross-sensitivity

Optional galvanically isolated 4–20 mA / 0–10 V module available

Self-controlled or partially control via a connected PLC

Designed for 24/7 operation



Technical specifications

Dimensions:	Standard slide-in cassette 19 inch / 3 units high	Target gas:	C_2H_4 ethylene
Front panel height:	127 mm / 5.0 inch	Measurement range:	5 – 1000 ppm
Front panel width:	96.5 mm / 3.8 inch	Accuracy:	1% of value plus $\pm 1,5$ ppm
Depth without analog option:	approx. 200 mm	Resolution:	0,1 ppm
Weight:	ca. 1,4 kg	Detection limit (3 σ):	5 ppm
Supply voltage:	12V-DC $\pm 1\%$	Humidity influence:	automatically compensated, < 5 ppm
Power consumption:	Heat-up phase (10 Min) ca. 4 Ampere / 45 Watts Operation ca. 1,5 Ampere / 15 Watts (depending on configuration)	Zero drift:	< 1,5 ppm in 24 h (zero-calibration every 24 h is recommended)
Ambient Temperature:	+10 °C to +40 °C (with active cooling with 12 V fan connected)	Span drift:	< 1% of value +/- 3 ppm in 24 h
Humidity range:	0 to 95 %, not condensing	Cross sensitivity:	negligible for CO ₂
		Normalization:	0° C / 1013 mbar or as requested by customer
		Data communication:	TTL-UART data stream

About smartGAS

smartGAS Mikrosensorik GmbH is a dynamic company specialized in the development, the production and the marketing of innovative gas sensors and gas analyzing solutions. smartGAS develops, produces and sells both OEM and customized sensor systems. Most of the products are based on infrared absorption (NDIR) which allows selective detection of a gas and accurate determination of its concentration. Recent developments have seen not only significant reduction in size but also an increase in the number of detectable gases. The sensors are used in applications

such as fruit ripening and storage, high voltage, emission monitoring, process control, refrigeration analyzers and monitoring, analytical appliances and process control.

The goal of smartGAS is to simplify the handling of gases using innovative technologies to protect the environment and to advance the safety for humans and equipment. Therefore we offer our standard products and customized solutions and provide support and assistance for the design in.

Ambitioned to make earth a safer place.

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