



Electro Optical Components, Inc.

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TDLAS Methane (CH₄) Detector PD-177

The TDLAS CH₄ gas sensor developed by Senovol utilizes Tunable Diode Laser Absorption Spectroscopy (TDLAS) to achieve accurate and reliable measurement of specific methane. Our product incorporates a laser, photodetector (PD), and gas cell in a miniaturized integrated package, ensuring high precision, stability, and reliability.

Features

- **Selective Measurement:** Highly selective measurements specifically target methane gas, minimizing false readings from other gases or environmental factors.
- **Enhanced Measuring Precision and Stability:** Offers exceptional precision and stability in measurements. Ensures accurate and reliable results.
- **Long Lifespan:** With a solid-state design and minimal maintenance requirements, this sensor offers a long lifespan, reducing the need for frequent replacements and associated costs.
- **Low Maintenance:** The solid-state design eliminates the need for frequent calibration, reducing maintenance requirements and saving time and resources.
- **Humidity Interference-Free:** This sensor is designed to operate without interference from humidity, ensuring accurate methane detection.
- **Optimal Optical Path Efficiency:** Achieves high absorption efficiency in the optical path. Maximizes the utilization of light for improved performance.

Product Dimensions



Performance

Principle	TDLAS
Target Gas	Methane (CH ₄)
Measurement range	0 ~ 5% (100%LEL)
Accuracy	± 3%LEL FS
Resolution	0.01%VOL
Response time	< 25s
Warm-up time	< 30s

Electrical

Supply voltage	3.3 ~ 5.0V DC
Power consumption	< 0.2 W
Output	3.3V TTL
Communication	UART

Mechanical

Enclosure	Stainless steel
Weight	200 grams

Environmental

Temperature range	-40°C ~ +60°C
Pressure range	1 atm ± 10%
Humidity range	0% ~ 98%RH non-condensing

Lifetime

Storage temp	-40°C~ 85°C
Operating lifetime	5 years
Storage life	5 years in original packaging
Warranty	24 months

Approvals

Pending
Explosion-proof, EMC, Waterproof and dustproof design

Installation

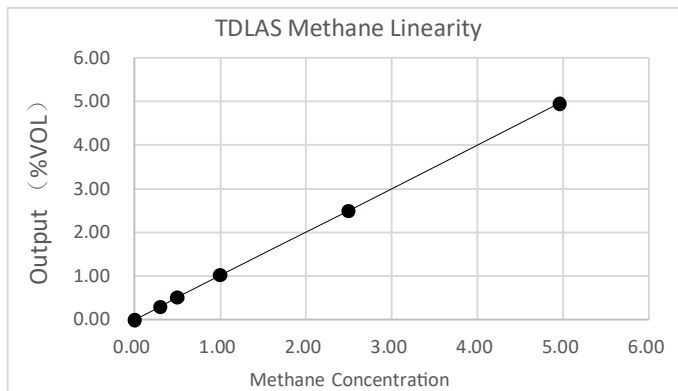
The output signals from the sensor pins are different. Inappropriate use of the pins in product design will affect the sensor's functionality. Exposure to high concentrations of solvent vapors should be avoided under any circumstances. If the sensor is used in extreme environmental conditions, please contact us for more details.

Pinout Details

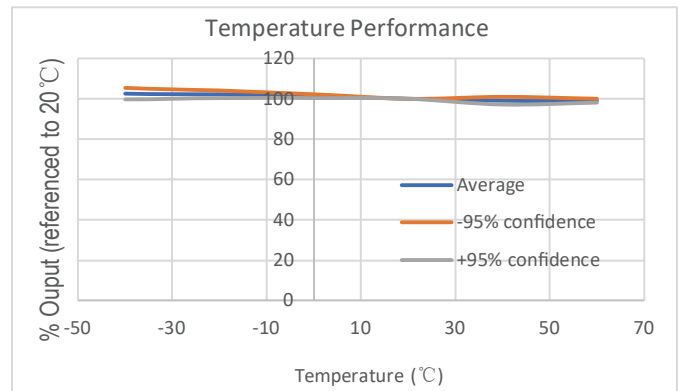
Red	Black	Yellow	Green
+5V	GND	Rx	Tx

Variability due to humidity $\pm 0.01\% \text{VOL}$ or 5% of readings (whichever is greater) @ 25°C

Linearity



Temperature Compensation



Application

- Oil and Gas Industry: Monitor methane emissions in production, refining, and distribution facilities to ensure compliance with environmental regulations.
- Landfill Management: Detect and quantify methane gas emissions from landfills, supporting effective emissions reduction strategies and regulatory compliance.
- Agriculture: Measure methane levels in livestock farms to assess environmental impact and optimize feeding and ventilation systems.
- Industrial Safety: Implement methane monitoring in confined spaces, power plants, and manufacturing facilities to ensure worker safety and prevent potential accidents.

Safety Note

If the sensor is used in certain instruments for life critical applications, it is required to read the instrument user's guide carefully and comply with the calibration procedures by using the certified target calibration gas before each use. Failure to do so may cause serious injury and/or death. It is highly recommended for customers to validate the sensor's performance using this document as a reference for their product designs or applications.