AMETEK®
PROCESS INSTRUMENTS

MEASURES: O_2

PRODUCT DATA SHEET

OXYvisor Optical Oxygen Analyzer

Rugged oxygen (O_2) analyzer for either parts per million (ppm) or percent level measurements in natural gas

Operators of natural gas processing plants and pipelines must maintain the quality of natural gas to protect mechanical infrastructure, to ensure reliable gas processing, and to deliver gas that meets end user specifications. O_2 in natural gas can promote corrosive acid formation, reduce the efficiency of the amine sweetening process, or create an explosive atmosphere. Any leak in production manifolds, compressor seals, pumps or process equipment allows O_2 to enter the natural gas stream, resulting in unplanned downtime, reduced process efficiency or a safety concern.

The OXYvisor utilizes optical quenched luminescence technology to measure the O_2 concentration in natural gas. Light from a light emitting diode (LED) is transmitted through a fiber-optic cable to the O_2 sensing luminophore at the sensor tip. In the presence of O_2, the resulting fluorescence is quenched at a rate proportional to the O_2 concentration.

Reliable measurement
The luminophore is unaffected by contaminants or flow rate. The OXYvisor has no cross-sensitivity to common contaminants in natural gas, including carbon dioxide (CO_2) and hydrogen sulfide (H_2S), and will deliver an accurate O_2 measurement every time.

User simplicity
OXYvisor features through-the-glass programming via an infrared keypad. Users can easily access the intuitive configuration and calibration menus in a hazardous area without the need for a hot work permit, saving time and minimizing additional risk planning procedures. The optical O_2 sensor is connected via a separate junction box, simplifying field sensor replacement while eliminating any exposure of the electronics to dust and humidity.

Remote operation
OXYvisor allows users to transmit data, initiate automatic calibration, or configure the software remotely via Modbus RS485. The built-in data logger stores calibration history and error messages, providing users with analyzer performance history.

KEY BENEFITS

- Rugged IP66, NEMA 4X enclosure
- Certified for harzardous areas: IEC & ATEX (Zone 1 & Zone 2) and cULus (Class I, Div 2 & Class I Zone 1)
- Local display HMI with through-the-glass programming
- Manual & auto-calibration capable
- Pressure compensation
- Modbus RS485 RTU serial communication
- USB data trend storage
- Field replaceable O_2 sensor
- Sensor immune to H_2S, CO_2, SO_2 & H_2 up to percent levels

APPLICATIONS

- Pipeline quality and custody transfer
- Inlet feed to gas plant
- Wellhead piping leading to production manifold
- Inlet and outlet on the amine absorber
- Blanket gas on amine storage tank
- Biomethane production

KEY MARKETS

NATURAL GAS

- Production manifolds
- Processing plants
- Underground storage sites
- Gathering lines
- Custody transfer
- Transmission pipelines

PERFORMANCE SPECIFICATIONS

Technology	Quench luminescence technology
Range*	BOS1: 0-4.2% O_2 BOS2: 0-100% O_2 BOS3: 0-300 parts per million by volume (ppmv) with over-range of 1000 ppmv
Accuracy*	BOS1: ±0.002% O_2 or ±3% of the measured value, whichever is greater BOS2: ±0.4% O_2 at 20.9% O_2, ±0.05% O_2 at 0.2% O_2 BOS3: ±2 ppm or ±5% of measured value, whichever is greater
Resolution*	BOS1: ±0.0007% O_2 at 0.002% O_2, ±0.0015% O_2 at 0.02% O_2 BOS2: ±0.01% O_2 at 0.21% O_2, ±0.1% O_2 at 20.9% O_2 BOS3: 10 ±0.5 ppm; 100 ±0.8 ppm; 200 ±1.5 ppm
Limit of detection*	BOS1: 0.002% O_2 BOS2: 0.03% O_2 BOS3: 0.5 ppm O_2
Response time (T_{90})*	BOS1: <6 sec. BOS2: <6 sec. BOS3: <3 sec. based on 0-300 ppm measurement range
User interface	Liquid crystal display with (four) proximity switches, infrared contacts for interactive user interface at HMI
Inputs	**Sensor inputs** Optical O_2: (one) O_2 optical input BOS1, BOS2 or BOS3 sensor (SMA connector) RTD: temp (one) Pt1000 4-wire RTD Inputs (isolated) Analog input: (one) 4-20 mA input (24 VDC active from OXYvisor) – user-configurable for temperature or pressure transmitter Pressure sensor: (one) onboard integrated pressure sensor measures and compensates for ambient pressure conditions **Digital inputs** (Two) optically isolated inputs 5 VDC powered, remote initiation of automatic calibration and live validation gas
Outputs	(Two) programmable current outputs with galvanic isolation, 4-20 mA (active), linear or bi-linear (Four) programmable relays, optically isolated, 24 VDC @ 0.05A pilot duty, 24 VDC @ 0.4A resistive load (One) Modbus RTU serial protocol RS485
Power	AC four-wire version: 85-264 VAC, 47-63 Hz, 6W DC four-wire version: 21.6-26.4 VDC, 5W
Operating temperature	OXYvisor: -20 to +55°C (-4 to 131°F) BOS1, BOS2, BOS3: 0 to 50°C (32 to 122°F)
Physical dimensions (W x H x D)	140 x 305 x 290 mm (5.5 x 12.0 x 11.0 in.)
Weight	6.2 kg (13.7 lb)
Environmental rating	IEC Installation Category II Pollution Degree 2 Maximum altitude: 2,000 meters (6,561 ft) Ingress rating: IP66 and NEMA 4X
Approvals and certifications	ATEX and IECEx: II 2 G Ex db op is IIC T4 Gb Class I Zone 1 AEx db op is IIC T4 Gb Class 1 Zone 1 Ex db op is IIC T4 Gb ATEX and IECEx: Ex ec [ic] op is IIC T4 Gc Class 1 Zone 2 AEx ec [ic] op is IIC T4 Gc Class 1 Zone 2 Ex ec [ic] op is IIC T4 Gc Class I Division 2 Group A, B, C, D T4a CE Compliance: Complies with all relevant European Directives

***Sensor dependent**

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