

MultiGas ULTRAVIOLET NDUV/UVRAS

- NON-DISPERSIVE ULTRAVIOLET SENSOR /RESONANCE SPECTROSCOPY (NDUV/H2S), SENSORS
- H2S



Overview

- Overview
- Electrochemical sensor
- Measuring ranges:
 - Standard version 0 – 25 % or 0 – 100 %
 - H2S resistant version 0.5 – 35 %
- Measurement accuracy: ± 2 % of span (full scale)
- Resolution: < 0.5 % of span (full scale)
- Response time (t_{90}): 5 – 10 s; automotive version < 3.5 s
- Lifetime: approx. 5 years

The oxygen sensor is a sensor module available as option in addition to a RITTER MultiGas NDIR or NDUV sensor. The measured oxygen concentration is displayed in the provided software. The sensor is built into the casing of the RITTER MultiGas sensors.

The following versions are available:

Standard version suitable for non-aggressive gases

version **Applications**

- Biogas analysis
- Environmental and Process Measurement
- Leakage detection
- Industrial gas analysis
- Renewable Gas Monitoring

General Features	
Measurement technology	Innovative NDUV Sensor (non-dispersive ultraviolet sensor) Dual beam
Detectable gases:	SO ₂ H ₂ S
Number of simultaneously detectable gases:	max. 2
Measurement ranges:	See Table of Measurement Ranges
Flow rate range:	5 ~ 300 ltr/h For higher flow rates the sensor can be operated in bypass
Max. gas inlet pressure:	300 mbar
Pressure loss (without additional optional sensors):	10 @ 100 / 35 @ 200 / 70 @ 300 (mbar @ ltr/h)
Temperature compensation:	Yes
Data acquisition software:	Yes
Lifetime of UV radiation source:	> 8 000 h
Measurement cuvette:	Stainless steel with silicone coating inside
Cuvette sealing:	Viton O-ring
Internal tubing:	FKM / Viton (fluorinated rubber)
Casing:	High-quality table-top casing, aluminium
Dimensions: (W x H x L):	300 x 100 x 81 mm
Weight:	approx. 1670 g
Gas connections:	PVDF screw-type tube connection for tube Ø 4 mm, Ø 6 mm
Measuring response	
Linearity error:	< ± 1% F.S.
Repeatability:	± 0.5% F.S.
Long term stability zero:	< ± 1% F.S. / 24 h
Long term stability span:	< ± 1 % F.S. / month
Temperature influence of zero point	< 1% F.S. / 10K



Temperature influence of span:	< 2% F.S. / 10K
Cross sensitivity:	< 2% F.S.
Pressure influence:	< 1.5% / 10hPa of reading
Warm-up time:	1 min (initial), < 15 min for full specification
Response time (t):	1.5 ~ 15 sec
Sampling frequency by software:	≤ 10 Hz
Detection limit:	See table of measurement ranges
Resolution:	0.5 x detection limit

Electrical features

Power Supply:	24 VDC incl. power plug 100 ~ 240 VAC 50/60 Hz: 24 VDC
Supply current (peak):	< 0.4 A
Average Power consumption:	< 7.5 W
Interface:	USB (standard), RS232 / CANbus / CANopen (options) incl. data transmission cable 1 m
Analogue voltage output (option):	0 – 2 V / 0 – 5 V / 0 – 10 V

Climatic conditions

Operating temperature:	+5 ~ +45 °C
Storage temperature:	–20 ~ +60 °C
Operating pressure:	800 ~ 1200 hPa (mbar)
Ambient humidity:	0 ~ 95% rel. humidity
Condensing inside of sensor must be prevented!	

List of standard measurement ranges *1 (and detection limits *2)

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Standard Measuring Ranges with respective Detection Limits (% of F.S. *3)																
	100 Vol.%	50 Vol.%	30 Vol.%	20 Vol.%	10 Vol.%	5 Vol.%	1 Vol.%	5,000 ppm	2,000 ppm	1,000 ppm	500 ppm	300 ppm	100 ppm	50 ppm	10 ppm	1 ppm
SO ₂					✓ (< 0.1%)	✓ (< 0.1%)	✓ (< 0.1%)	✓ (< 0.1%)	✓ (< 0.1%)	✓ (< 0.1%)	✓ (< 0.1%)	✓ (< 0.1%)	✓ (< 0.5%)	✓ (< 0.5%)	✓ (< 0.5%)	
H ₂ S							✓ (< 0.1%)	✓ (< 0.1%)	✓ (< 0.1%)	✓ (< 0.1%)	✓ (< 0.2%)	✓	✓ (< 0.5%)			

*1 A standard measurement range is defined by ✓ / *2 (= 3 σ) in Percent of Full Scale / *3 F.S. = Full Scale / *4 Calibration with Propane

Infrared module NDIR Ultraviolet module NDUV

Definition of Detection Limit

The Detection Limit is the smallest measurement value which can be obtained with a specific uncertainty. This uncertainty includes the resolution, noise, and stability of the gas sensor for a specific gas and specific measurement range. For evaluation of the detection limit value, several single measurements are taken at the identical measurement conditions. With the obtained single measurement results the standard deviation “Sigma” (σ) is calculated. The values given in the table equal the triple amount of Sigma.

Recalibrations

The following recalibration intervals are recommended for UV sensors:

- Zero-point:
 - Concentrations < 300 ppm: Every 48 hours with inert gas, e.g. Nitrogen
 - Concentrations \geq 300 ppm: Every 24 hours with inert gas, e.g. Nitrogen

The recalibration of the zero point is described in the software manual.

- Endpoint (full scale): Every 3 months with suitable calibration gas