



Technical Data	Sensor Board
Power supply	24Vdc reverse-polarity protected
Power consumption (24 Vdc)	Max. 60 mA (1.5 VA)
Sensor MC2	Max. 85 mA (2.1 VA)
horn / warning light	Max. 40 mA (1.0 VA)
Alarm relays (3)	250 Vac, 5 A, potential-free, contacts (SPDT)
Transistor output (2)	24 Vdc/ 0.1 A (switching to plus)
Digital input (2)	Potential-free
Analog input (2)	4 – 20 mA overload and short-circuit proof, input resistance 200 Ω
Analog output signal (1)	Proportional, overload and short-circuit proof, load ≤ 500 Ω 4-20 mA or 2-10V = meas. range 3.0 < 4 mA = underrange >20- 21.2 mA = overrange 2.0 mA = fault
Output for local bus	5 Vdc, 250 mA max. Overload, short-circuit and reverse-polarity protected
Temperature range	-10 °C to +50 °C (-13 °F to +122 °F)
Humidity range	15 - 95 % r.H not-condensing
Storage temperature	+5 °C to +30 °C (+41 °F to +86 °F)
Storage time	6 months
GCD bus	1-wire / 19200 Baud
Field bus	RS 485 / 19200 Baud
Tool bus	2-wire / 19200 Baud
Housing	Polycarbonate
Combustion	UL 94 V2
Housing colour	RAL 7032 (light grey)
Dimension housing (W x H x D)	130 x 130 x 75 mm (5.12 x 5.12 x 2.95 in.)
Weight	ca. 0.6 kg (1.32 lb.)
Protection class	IP 65
Installation	Wall mounting
Cable entry	Standard 6 x M20/25

Features

- Internal function monitoring with integrated hardware watchdog
- Hardware and software according to SIL2 compliant development process
- Easy maintenance / calibration by replacing the sensor cartridge or via comfortable on-site calibration
- Serial RS 485 interface with protocol for CGD06, or Modbus protocol as an option
- LCD display (option)
- Status LED for alarm, fault, operation and service (option)
- Warning buzzer (option)
- Reset button (option)
- Operating voltage 230Vac with wide range input 90 to 240Vac (option)
- UPS (option)

Application

This detector is used as a stand-alone unit with its relay outputs or alternatively with its analog output signal or ModBus.

It is also used as a two-wire connection and contact anywhere in the building network.

The SO2 is designed for detection and warning of nitrogen gases in many commercial and industrial applications.

Design Features

Gas measuring, monitoring and warning detector based on state-of-the-art micro-technology for continuous monitoring of the ambient air to detect Oxygen.

The detector monitors the measured values and activates the alarm relays if the set alarm thresholds for pre-alarm and main alert are exceeded.

In addition, the values are provided for direct connection to the BMS via an RS-485 interface and also as 4-20 mA output.

The SIL 2 compliant self-monitoring function in the SO2 and in the connected sensor activates the fault message in case of an internal error as well as in case of a fault in the local bus communication and/or at the 4-20 mA input / output current signals.

Other options such as LCD display, three-color status LED, buzzer, digital input for acknowledgment or test function, various communication protocols ensure proper adaptation to the wide range of applications in gas detection technology.

For convenient commissioning the SO2 can be pre-configured and parametrised with factory-set defaults.

Ordering Codes on next page



Oxygen Stand-Alone Detector - Analog, ModBus

SO2 025

Jun. 16

Wire connection:

- **Local bus (SC2)** 3-pin connector
- **Digital input, analog output** Screw-type terminal min. 0.25 mm², max. 1.3 mm²
- **Power supply, relays** Screw-type terminal min. 0.25 mm², max. 2.5 mm²

Mounting height

Depends on displacing gas
Heavy gas = 0.4m above floor
Light gas = 0.4m below ceiling

Pre-programmed alarm output

Alarm 1 = 19% (standard)
Alarm 2 = 17%
Alarm 3 = 15%

Directives

EMC directives 2014/30/EU
Low voltage directive 2014/35/EU
CE
Conformity to:
EN 50271 / IEC 61508
60079-29-1
EN 61010-1:2010
ANSI/UL 61010-1
CAN/CSA-C22.2 No. 61010-1
1 year on material

Ordering Codes

Supply Voltage	12 - 24Vdc
SO2 025C	CGD bus 0-25 Vol%
SO2 025M	ModBus 0-25 Vol% 16-29Vdc
XO2 025	Sensor Head 0-25 Vol% for exchange (2-years)
SPS 12	Power Supply 12Vdc
USV 90240	Battery Power Supply 90 - 240V/24V 0.8Ah
SPS 230	Power Supply 90 - 240Vac/15VA
SSTOP	Reset button with external input, incorporated in detector
SBUZ LED	Buzzer with built-in LED indication in three colours, incorporated in detector
SDUCT	Duct Kit
DR 24/30	Power supply 24Vdc
CSTAIN	Option, stainless housing
REG	Pressure regulator, flow adjustment to 0.5 l/min
GAS	Calibration Gas 17 liters
GKIT	Calibration Kit
SP 600	Impact protection

Technical Data

Sensor

Electrical

Power supply	5 Vdc from sensor board, reverse polarity protected
Power consumption:	50 mA, max. (1.0 VA)
Serial interface local bus	1-wire / 19200 Baud

Sensor element	Electrochemical
Measuring range	0 – 25 Vol%
Accuracy	± 0.5
Resolution	0.05%
Response time t₉₀	≤1.5 sec.
Zero Gain	< 0.3 % signal / month
Pressure range	Atmospheric ± 20 %
Sensor life time	2 years / normal ambient conditions
Calibration interval¹	12 months
Storage temperature range	+ 5 to + 30 °C (41 to 86 °F)
Warranty	1 year on material (without sensor element)

¹ Manufacturer-recommended calibration interval for normal environmental conditions.

Alarm Units

AAW 24	Warning Horn 24Vdc 98dB
AAW 230	Warning Horn 230Vac 98dB
OA 24	Flashlight 24Vdc, red
OAW 24	Combined Warning Horn/Flashlight, 24Vdc 98dB
OAW 230	Combined Warning Horn/Flashlight, 230Vac 98dB
OAW 24T	Combined Warning Horn/Flashlight with reset button, 24Vdc 98dB

Warning Plate

Gas Alarm	Flashing gas alarm plate "GASALARM" 24Vac/dc
SP 600	Impact protection

LCD display	Options
LCD	Two lines, 16 characters each, background highlighted in two colours
Operation	Menu driven via six push-buttons
Power consumption	5V, 60 mA, 0.3 VA
Status LED	
Colour / mode	Red / yellow / green (alarm – fault – operation - service)
Protection class	IP 65
Warning buzzer	
Acoustic pressure	> 90 dB (A)
Frequency	2300 Hz
Protection class	IP 65
Power supply 230Vac	
Wide range input	90 -240Vac - 50/60 Hz
Output rating type 5	5 VA
Output rating type 7	15 VA
UPS	
Power unit with wide range input	90 -240Vac - 50/60 Hz
Output rating	15 VA
Rechargeable battery	12V, 0.8 Ah
Operating time	> 60 min
Power supply 12Vdc	12Vdc reverse-polarity protected
"Power consumption (12 Vdc)	"Max. 120 mA (1.5 VA)
- sensor	Max. 170 mA (2.1 VA)
- horn / warning light"	Max. 80 mA (1.0 VA)"

SHORT DESCRIPTION OF THE FUNCTION: DIGITAL OUTPUTS WITH THREE RELAYS

Action	Reaction Relay 1 (Alarm1)	Reaction Relay 2 (Alarm2)	Reaction Warning light (Alarm 2)	Reaction Horn (Alarm 2)	"Reaction Relay 3 (Alarm2 + fault)"	Reaction LED
Gas signal < alarm threshold 1	OFF	OFF	OFF	OFF	ON	GREEN
Gas signal > alarm threshold 1	ON	OFF	OFF	OFF	OFF	RED
Gas signal > alarm threshold 2	ON	ON	ON	ON	ON	RED
Gas signal < alarm threshold 2, but button Horn OFF activated	OFF		ON	OFF after delay ON		RED
Gas signal < (alarm threshold 2 - hysteresis) but >= alarm threshold 1	ON	OFF	OFF	OFF	OFF	RED
No alarm, no fault	OFF	OFF	OFF	OFF	ON	GREEN
No fault, but maintenance due	OFF	OFF	OFF	OFF	ON	GREEN flashing
Internal error	OFF	OFF	ON	OFF	OFF	YELLOW

Note 1: Status OFF = Relay is configured "Alarm ON = Relay" or the SO₂ is free from voltage.

Note 2: Alarm thresholds can have the same value, therefore the relays and/or the horn and flashlight can be triggered together.

Electrical Connection

