

SIDOR

SETTING NEW STANDARDS FOR EXTRACTIVE PHOTOMETERS

Extractive gas analyzers

SICK
Sensor Intelligence.

UNCOMPLICATED, SUPERIOR AND VERY GOOD VALUE FOR MONEY

Superior in its field: with never-before-seen long-time stability in measurements, the SIDOR extractive gas analyzer – depending on the measuring task – measures gas components CO, NO, SO₂, CO₂, CH₄ and O₂. It satisfies all requirements for emission measurements in accordance with 13 and 27 of the BImSchV (Federal Immission Control Act), is ideal for combustion optimization in small boilers and makes operational measurements in power plants.



With the innovative SIDOR gas analyzer, SICK is focusing on consistent standardization and optimization of measurement technology. This pays off at the latest with the savings in running operating costs. The SIDOR is a extractive gas analyzer for the measurement of one or two gas components. Additionally, oxygen can be measured by an electrochemical or paramagnetic measuring cell (optional). A variety of freely-configurable digital inputs and outputs greatly simplifies the arrangement of a measurement system.

The shallow installation depth allows for installation even when space is tight or when the replacement of old analog equipment is necessary. The fully-automatic and low-maintenance operation with control functions for the operational measurement technology characterizes the SIDOR, as does easy readjustment, self-monitoring and fault diagnosis. The easy-to-understand displays on a large LC screen and help texts in various languages round out the convenient operation of the device.

Innovative device concept

Thanks to the shallow installation depth, the 19" rack housing with 3 height units (HU) can be used anywhere space is tight or old equipment has to be replaced. The basic device contains a keyboard and display in the front view, electronics and gas connections (6 mm PVDF) with integrated measuring gas pressure correction as well as an analyzer module for measuring an IR component.

Options for expansion are:

- An additional SIDOR module for measuring a second gas component
- O₂ sensor OXOR-E (electro-chemical) or OXOR-P (paramagnetic)
- Measuring gas pump
- Humidity monitor
- Flow monitor
- Gas connections: 6 mm SWAGELOK
- Gas connections: ¼" SWAGELOK

Proven measurement technology

A microprocessor controls the fully-automatic and low-maintenance operation, readjustment of the SIDOR as well as self-monitoring and fault diagnosis. The measured values are automatically standardized using the ultra-modern signal evaluation system, which also considerably reduces the influence of interference.

The chopper wheel unit can supply a second SIDOR module with a second emitter so that two IR active gases can be simultaneously measured completely independently of each other.

Long-term stability

The intelligent signal processing and highly stable detectors make long-term sensitivity stability possible. It is therefore only necessary to readjust the zero point with measuring-gas-free ambient air once a week and the sensitivity with test gas every six months.

On-site repair options

The innovative concept makes uncomplicated on-site repairs possible. For example, cells can be exchanged on-site without complex alignment work. This is made possible due to the symmetrical structure of the cell which always locks into the correct position of the guide. The exchange of other device components is as easy as it is quick. The high precision in the production of devices enables on-site repairs without elaborate temperature compensation in the factory. The SIDOR is designed for quick and easy exchange of old analyzers. The compact and extremely short 19" housing can be installed into existing systems even if space is very tight.



Cell with locking function for simple mounting

SIDOR E – completely configured analyzer devices

for the measurement of the most common components and measuring ranges with defined product variants.

- **Flexible use:** Within the specified ranges, the desired measuring range can be conveniently set for the application in question.
- **Flexible adaptation:** The devices are delivered with the setting "mg/m³". They can be converted to ppm with ease at any time.
- **Easy and efficient ordering:**
 - Via part number
 - Via regional sales organization
 - Direct online via www.sick.com/SIDOR
- **Short delivery time:** The devices are fully configured stock items and are delivered within a few days once the order has been received.

For details refer to "Ordering information" on page 7.

WE SET STANDARDS FOR EXTRACTIVE PHOTOMETERS



Product description

The SIDOR is a gas analyzer for measurement of up to 2 infrared components. Additionally oxygen can be measured by integration of an electrochemical or paramagnetic measuring cell. A significant characteristic is a half-yearly maintenance interval with test gases.

The stability of the measuring cells allows an adjustment with only inert gas or ambient air within this half-year period. Sample gas pressure compensation is included as a standard. The SIDOR was type approved for large combustion plants and crematories.

At a glance

- Detector with high long-term stability
- Paramagnetic or electrochemical O₂ measurement
- Automated adjustment with component-free ambient air
- Immune to contamination

Your benefits

- Automated readjustment, self-monitoring, and fault diagnosis
- Test gas only needs to be checked every 6 months
- Long maintenance intervals
- TÜV suitability testing and MCERTS certification according to EN 15267
- Can be repaired on-site in many cases
- Replacement of components without complicated factory temperature calibration



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→ www.sick.com/SIDOR

For more information, simply visit the above link to obtain direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

Fields of application

- Emission monitoring according to 13th (2001/80/EC) and 27th German Federal Emission Protection Directive (BImSchV).
- Combustion optimization of small boilers
- Monitoring of landfill gas and bio fermenters
- Operational measurements in power stations

Detailed technical data

The exact device specifications and performance data of the product may deviate from the information provided here, and depend on the application in which the product is being used and the relevant customer specifications.

SIDOR system

Gas flow rate	30 l/h ... 60 l/h
Sample gas temperature	0 °C ... +45 °C Temperature at analyzer inlet
Process pressure	–200 hPa ... 300 hPa
Process gas humidity	Non-condensing
Dust load	Free of dust and aerosols
Ambient temperature	+5 °C ... +45 °C
Storage temperature	–20 °C ... +70 °C
Ambient humidity	≤ 95 % Relative humidity; non-condensing
Conformities	Approved for plants requiring approval 2001/80/EC (13. BImSchV) 2000/76/EC (17. BImSchV) 27.BImSchV TA-Luft (Prevention of Air Pollution) EN 15267 EN 14181 MCERTS
Electrical safety	CE, cCSAus
Enclosure rating	IP 20
Analog outputs	4 outputs: 4 ... 20 mA, 500 Ω Electrically isolated
Digital outputs	8 relay contacts: 30 V AC, 500 mA / 48 V DC, 500 mA Three relay outputs preset for failure, service and maintenance 8 transistor outputs: 24 V DC, 500 mA Freely adjustable
Digital inputs	8 optical coupler inputs: 24 V DC Electrically isolated; freely programmable
Interfaces and bus protocols	RS-232c Modbus RTU
Indication	LC display
Operation	Menu-driven operation via LC-display and membrane keyboard
Menu languages	German, English, French, Italian, Dutch, Polish, Swedish, Spanish
Model	19" rack enclosure with 3 rack units, for integration in cabinets
Dimensions (W x H x D)	483 mm x 132.5 mm x 332 mm (for details see dimensional drawings)
Weight	9 kg ... 12 kg Depending on configuration

Power supply	Voltage	100 V / 115 V / 230 V
	Frequency	48 ... 62 Hz
	Power consumption	≤ 150 W
		Depending on system configuration
Sample gas connections		PVDF bulkhead fitting For hose 6 x 1 mm Option: Swagelok 6 mm Option: Swagelok 1/4"
Corrective functions		Manual or automatic single-point adjustment with ambient air Manual or automated adjustment with test gases
Options		Integrated sample gas pump Flow sensor Humidity sensor

SIDOR analyzer module

Description		Selective NDIR analyzer for continuous measurement of one gas component which absorbs in the infra-red spectral range
Measurement principles		NDIR spectroscopy
Measuring ranges		
	CH ₄	0 ... 5,000 ppm / 0 ... 100 Vol.-%
	CO	0 ... 60 ppm / 0 ... 100 Vol.-%
	CO ₂	0 ... 500 ppm / 0 ... 100 Vol.-%
	NO	0 ... 93 ppm / 0 ... 3 Vol.-%
	N ₂ O	0 ... 100 ppm / 0 ... 100 Vol.-%
	SO ₂	0 ... 35 ppm / 0 ... 3 Vol.-%
Certified measuring ranges		
	CO	0 ... 75 mg/m ³ / 0 ... 375 mg/m ³ / 0 ... 3,000 mg/m ³
	NO	0 ... 125 mg/m ³ / 0 ... 600 mg/m ³
	SO ₂	0 ... 100 mg/m ³ / 0 ... 200 mg/m ³ / 0 ... 500 mg/m ³
Response time (t₉₀)		3 s Typical at 60 l/h, depending on cell length and gas flow
Sensitivity drift		≤ 2 % per quarter with regular 1-point adjustment
Zero point drift		≤ 2 % per quarter with regular 1-point adjustment
Material in contact with media		Viton B, PVDF, glass, Aluminum, stainless steel 1.4571

OXOR-E analyzer module

Description		Determination of oxygen content using an electrochemical cell
Measurement principles		Electrochemical cell
Measuring ranges		
	O ₂	0 ... 10 Vol.-% / 0 ... 25 Vol.-%
Certified measuring ranges		
	O ₂	0 ... 25 Vol.-% / 0 ... 10 Vol.-%
Response time (t₉₀)		30 s Typical at 60 l/h, depending on gas flow
Sensitivity drift		≤ 1 % of measuring range full scale per week ≤ 2 % per quarter with regular 1-point adjustment
Zero point drift		≤ 2 % of the measuring range full scale value per month ≤ 0.2 % per quarter with regular 1-point adjustment
Material in contact with media		Viton B, PVDF, stainless steel 1.4571

OXOR-P analyzer module

Description	Accurate oxygen analyzer which operates according to the paramagnetic measurement principle
Measurement principles	Paramagnetic dumbbell principle
Measuring ranges	
	O ₂ 0 ... 3 Vol.-% / 0 ... 100 Vol.-%
Certified measuring ranges	
	O ₂ 0 ... 25 Vol.-% / 0 ... 10 Vol.-%
Response time (t₉₀)	≤ 4 s At a gas flow of 60 l/h
Sensitivity drift	≤ 1 % of measuring range full scale per week ≤ 2 % per quarter with regular 1-point adjustment
Zero point drift	≤ 1 % of smallest measuring range per week Measuring ranges smaller 5 vol%: ≤ 0.05 Vol.-% per week ≤ 0.2 % per quarter with regular 1-point adjustment
Material in contact with media	Viton B, PVDF, glass, stainless steel 1.4571, platinum, nickel, Aluminum

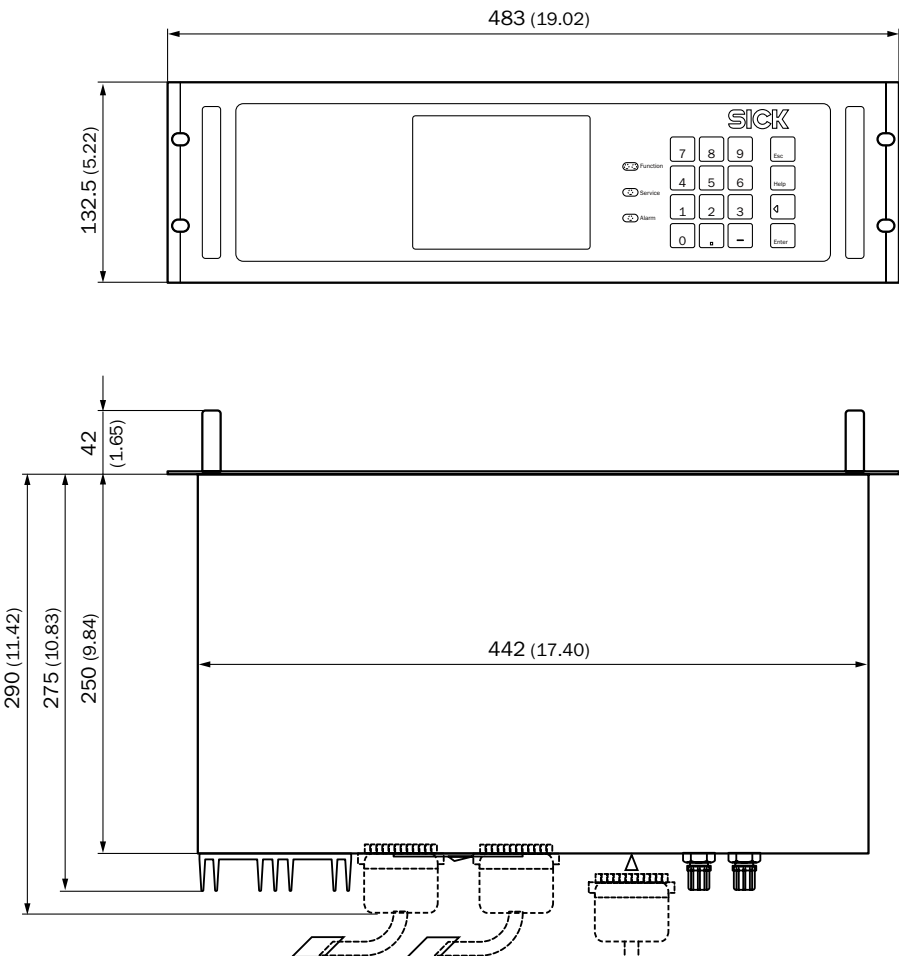
Ordering information

The analyzer devices listed below are completely configured and available with a short delivery time. Furthermore, a large number of device configurations – also customized – are available on request. Our regional sales organization will help you to select the optimum device configuration. → www.sick.com/SIDOR

Smallest measuring range	Largest measuring range	Integrated components	Type	Part no.
CO: 0 ... 75 mg/m ³ O ₂ : 0 ... 10 Vol.-% SO ₂ : 0 ... 100 mg/m ³	0 ... 750 mg/m ³ 0 ... 25 Vol.-% 0 ... 1,000 mg/m ³	2 SIDOR analyzer modules OXOR-E analyzer module PVDF bulkhead fitting	SIDOR E 1217519	1217519
CO: 0 ... 600 mg/m ³ O ₂ : 0 ... 10 Vol.-% SO ₂ : 0 ... 800 mg/m ³	0 ... 3,000 mg/m ³ 0 ... 25 Vol.-% 0 ... 8,000 mg/m ³	2 SIDOR analyzer modules OXOR-E analyzer module PVDF bulkhead fitting	SIDOR E 1217520	1217520
NO: 0 ... 125 mg/m ³ O ₂ : 0 ... 10 Vol.-% SO ₂ : 0 ... 100 mg/m ³	0 ... 1,250 mg/m ³ 0 ... 25 Vol.-% 0 ... 1,000 mg/m ³	2 SIDOR analyzer modules OXOR-E analyzer module PVDF bulkhead fitting	SIDOR E 1217521	1217521
NO: 0 ... 1,000 mg/m ³ O ₂ : 0 ... 10 Vol.-% SO ₂ : 0 ... 800 mg/m ³	0 ... 5,000 mg/m ³ 0 ... 25 Vol.-% 0 ... 8,000 mg/m ³	2 SIDOR analyzer modules OXOR-E analyzer module PVDF bulkhead fitting	SIDOR E 1217522	1217522
CO: 0 ... 75 mg/m ³ NO: 0 ... 125 mg/m ³ O ₂ : 0 ... 10 Vol.-%	0 ... 750 mg/m ³ 0 ... 1,250 mg/m ³ 0 ... 25 Vol.-%	2 SIDOR analyzer modules OXOR-E analyzer module PVDF bulkhead fitting	SIDOR E 1217523	1217523
CO: 0 ... 600 mg/m ³ NO: 0 ... 125 mg/m ³ O ₂ : 0 ... 10 Vol.-%	0 ... 3,000 mg/m ³ 0 ... 1,250 mg/m ³ 0 ... 25 Vol.-%	2 SIDOR analyzer modules OXOR-E analyzer module PVDF bulkhead fitting	SIDOR E 1217524	1217524
CO: 0 ... 600 mg/m ³ NO: 0 ... 1,000 mg/m ³ O ₂ : 0 ... 10 Vol.-%	0 ... 3,000 mg/m ³ 0 ... 5,000 mg/m ³ 0 ... 25 Vol.-%	2 SIDOR analyzer modules OXOR-E analyzer module PVDF bulkhead fitting	SIDOR E 1217525	1217525
CO: 0 ... 100 mg/m ³ O ₂ : 0 ... 10 Vol.-%	0 ... 1,000 mg/m ³ 0 ... 25 Vol.-%	1 SIDOR analyzer module OXOR-E analyzer module PVDF bulkhead fitting	SIDOR E 1217526	1217526

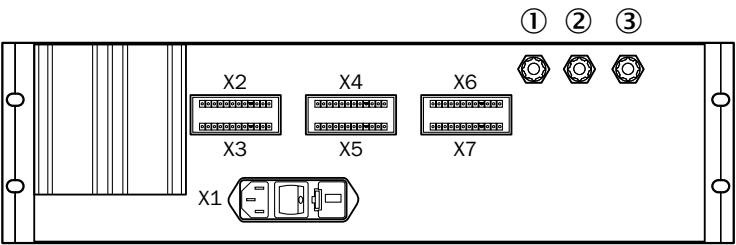
Dimensional drawings (Dimensions in mm (inch))

Analyzer



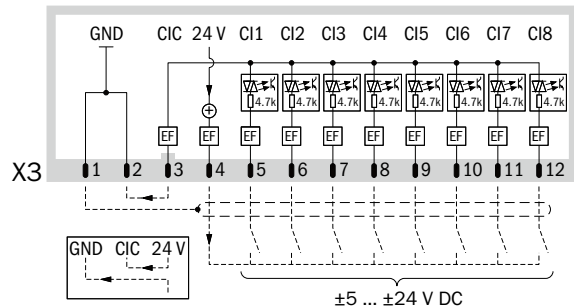
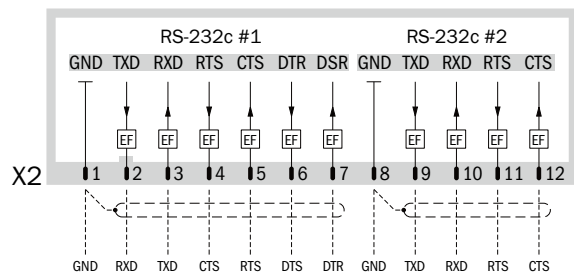
Connection types

Gas connections



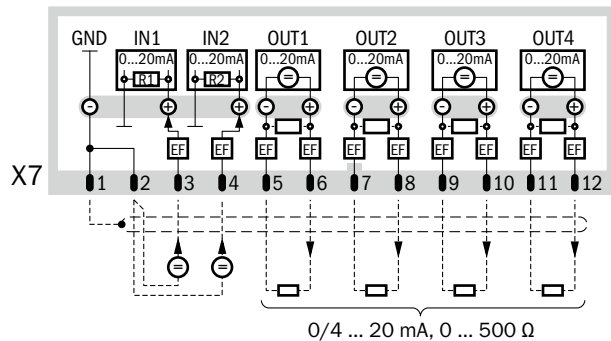
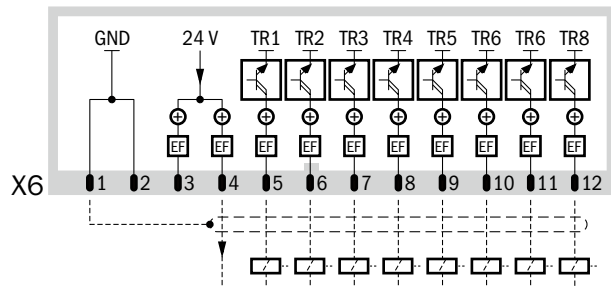
- ① Sample gas inlet
- ② Exhaust gas outlet
- ③ Zero gas

Plug connectors X2 (interfaces) and X3 (control inputs)



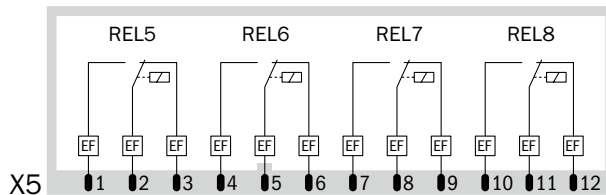
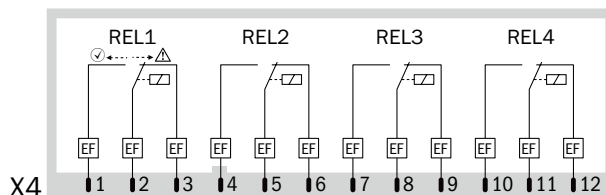
Keep away from external voltages!

X6 (transistor switching outputs) and X7 (measured value outputs) male connectors



Only use internal voltage sources (24 V DC), max. 500 mA single, max. 1000 mA total (TR1 ... TR8). Inductive loads must be equipped with discharging diodes.

X4 and X5 male connectors (relay switching outputs)



Max. 48 V peak voltage (34 V AC / 48 V DC), max. 500 mA. Inductive loads must be equipped with discharging diodes.

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Safe and regularly inspected



Upgrade and retrofits
Easy, safe and economical



Training and education
Practical, focused and professional

SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 7,400 employees and over 50 subsidiaries and equity investments as well as numerous agencies worldwide, we are always close to our customers. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in various industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services round out our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

Worldwide presence:

Australia, Austria, Belgium, Brazil, Canada, Chile, China, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Hungary, India, Israel, Italy, Japan, Malaysia, Mexico, Netherlands, New Zealand, Norway, Poland, Romania, Russia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Arab Emirates, USA, Vietnam.

Detailed addresses and further locations → www.sick.com



S700

MODULAR GAS ANALYZER

TAILOR-MADE GAS ANALYSIS FOR PROCESS
AND EMISSION MONITORING

Extractive gas analyzers

SICK
Sensor Intelligence.



With the modular gas analyzer S700, a customer-specific and tailor-made measuring device can be put together for almost every application. 6 analyzer modules for the measurement of many more than 60 gases and 3 housing variants offer comprehensive and individually custom combination options.

Application and principle of operation

The modular gas analyzer S700 is used according to the 13th, 17th and 27th Federal Control of Pollution Regulation [Bundes-Immissionsschutzverordnung (BImSchV)] both for pure emission measurements as well as for applications in the Biogas area and for process gas measurements. For this there are 6 different analyzer modules with 5 different measurement principles available – and this in 3 different housing variants.


In each housing up to 3 analyzer modules can be installed and an optional 2 more measured values can be processed by external measured value sensors via analog inputs. Thus maximum 5 measured values can be taken into account, calculated together, displayed and output via a serial interface. From these, 4 measured values are brought out on analog outputs. All 5 measured values are available with data output via a serial interface and additional data, time and status information.

Optionally from the calculation of actual measured values, a virtual measured value can be generated, which is displayed and can be brought out on an analog output. All measured values can additionally be provided with alarm-limit values. The intelligent microprocessor control enables an automated and low maintenance operation with control functions for the industrial measuring devices including all important device functions, such as fully-automated calibration with test gas or calibrated cuvette (optional).

Also self-monitoring and fault diagnosis are integrated. Operation is done with menu guides with texts on large LCD displayed.

Product versions and combination options

Different housing variants are available depending on the location of use and ambient conditions:

<p>S700</p>  <p>19" rack housing with 3 rack units for standard applications</p> <ul style="list-style-type: none"> The custom shape S711 with smaller installation depth can be used everywhere that analog old devices should be replaced with new ones 	<p>S715</p>  <p>Wall housings for use in harsh industrial environments and Ex Zone 2 (ATEX) and Class I, Division 2, Groups A, B, C and D (NEC/CEC (US/CA))</p>	<p>S720 Ex</p>  <p>In pressurized encapsulation EEx-d for Ex-Zone 1 (ATEX)</p> <ul style="list-style-type: none"> The custom shape S721 Ex has a larger analyzer housing, in order to utilize the max. analyzer combination options
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A housing can accept up to 3 analyzer modules.

The table shows you the selection options of the analyzer modules, that are differentiated using the following measurement principles:

- NDIR spectroscopy (UNOR and MULTOR)
- Electrochemical cell (OXOR-E)
- Paramagnetic dumbbell principle (OXOR-P)
- Interference filter correlation (FINOR)
- Thermal conductivity measurement (THERMOR)

Simply combine the modules with each other from the different groups. The combination options apply for most housing types. Depending on the scope of equipping and application limitations with the combinations are however possible.

Descriptions of the analyzer modules and their measured values are found on the following product detail pages.

Analyzer modules Group 1	Analyzer modules Group 2	Analyzer modules Group 3
UNOR MULTOR OXOR-E OXOR-P FINOR No module	UNOR ¹⁾ OXOR-E OXOR-P No module	THERMOR OXOR-E OXOR-P No module

¹⁾ Not possible if selected in Group 1 FINOR.

S710 E – completely configured analyzer devices

for the measurement of the most common components and measuring ranges with defined product variants.

- **Flexible use:** Within the specified ranges, the desired measuring range can be conveniently set for the application in question.
- **Flexible adaptation:** The devices are delivered with the setting “mg/m³”. They can be converted to ppm with ease at any time.
- **Easy and efficient ordering:**
 - Via part number
 - Via regional sales organization
 - Direct online via www.sick.com/S700
- **Short delivery time:** The devices are fully configured stock items and are delivered within a few days once the order has been received.

For details refer to „Ordering information“ on page 10.

TAILOR-MADE GAS ANALYSIS FOR PROCESS AND EMISSION MONITORING



Product description

The S700 modular system is very easy to configure to provide a tailor-made application. An S700 housing can be equipped with up to 3 analyzer modules for compact and cost-effective system solutions. A total of 6 different analyzer modules are available for analyzing more than 60 gas components. Depending on the measuring task, installation

site, and ambient conditions, the following housing types are available:
S710 19" rack for analyzer cabinets and standard applications
S715 wall-mounting enclosure for harsh application conditions and zone 2 explosive environment (ATEX)
S720 flame-proof housing for zone 1 explosive environment (ATEX)

At a glance

- 5 different measurement principles available
- More than 60 measuring components to choose from
- 3 different housing variants for different fields of application
- Up to 3 analyzer modules in a single housing

Your benefits

- Easy application-specific adaptation due to modular design
- Also suitable for zone 1 and zone 2 explosive environments (ATEX)
- Automatic adjustment with test gas or calibration cell
- Integrated self-monitoring and fault diagnosis



Additional information

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→ www.sick.com/S700
For more information, simply visit the above link to obtain direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

Fields of application

- Emission measurement according to 13th (2001/80/EC), 17th (2000/76/EC), and 27th German Federal Emission Protection Directive (BImSchV).
- Cooling gas monitoring of turbo generators
- Measurement of CO for coal mill monitoring
- Purity measurement of H₂ in pressure swing adsorption plants
- Monitoring of CO₂ in natural gas in natural gas conditioning plants

Detailed technical data

The exact device specifications and performance data of the product may deviate from the information provided here, and depend on the application in which the product is being used and the relevant customer specifications.

S700 system

Gas flow rate	No integrated sample gas pump: 5 l/h ... 100 l/h With integrated sample gas pump: 30 l/h ... 60 l/h
Sample gas temperature	0 °C ... +45 °C Temperature at analyzer inlet
Process pressure	Tubed gas lines: -200 hPa ... 1,000 hPa Hosed gas lines: -200 hPa ... 300 hPa
Process gas humidity	Non-condensing
Dust load	Free of dust and aerosols
Ambient temperature	+5 °C ... +45 °C
Storage temperature	-20 °C ... +70 °C
Ambient pressure	700 hPa ... 1,200 hPa
Geographical altitude	≤ 2,000 m (above mean sea level)
Ambient humidity	≤ 95 % Relative humidity; non-condensing
Electrical safety	CE, cCSAus
Analog outputs	4 outputs: 0/4 ... 20 mA, 500 Ω 0 ... 10 V Electrically isolated
Analog inputs	2 inputs: 0/2/4 ... 20 mA Option: 0 ... 10 V DC
Digital outputs	8 relay contacts: Three relay outputs preset for failure, service and maintenance 8 Open collector outputs: Freely adjustable
Digital inputs	8 optical coupler inputs: Electrically isolated; freely programmable
Interfaces and bus protocols	RS-232c Modbus RTU
Indication	LC display
Operation	Menu-driven operation via LC-display and membrane keyboard
Menu languages	German, English, French, Italian, Dutch, Polish, Swedish, Spanish
Power supply	Voltage 100 V AC / 115 V AC / 230 V AC Frequency 48 ... 62 Hz Power consumption ≤ 150 W Depending on system configuration

Corrective functions	Automatic testing and adjustment with test gases Manual adjustment with test gases
Options	Integrated sample gas pump (only with hoses gas lines) Tubed gas lines Up to three separate gas lines Flow sensor Humidity sensor Barometric pressure correction Sample gas pressure correction Sample point switching (max. 8 sample points)

S710 design

Description	19" rack enclosure with 3 rack units, for integration in cabinets
Enclosure rating	IP 20
Dimensions (W x H x D)	483 mm x 132.5 mm x 390 mm (for details see dimensional drawings)
Weight	10 kg ... 20 kg Depending on configuration
Sample gas connections	PVDF bulkhead fitting For hose 6 x 1 mm Option: Swagelok 6 mm Option: Swagelok 1/4"

S711 design

Description	19" rack enclosure with 3 rack units and reduced depth, for integration in cabinets
Enclosure rating	IP 20
Dimensions (W x H x D)	483 mm x 132.5 mm x 290 mm (for details see dimensional drawings)
Weight	9 kg ... 19 kg Depending on configuration
Sample gas connections	PVDF bulkhead fitting For hose 6 x 1 mm Option: Swagelok 6 mm Option: Swagelok 1/4"

S715 design

Description	Wall-mounting enclosure with gas-tight separated analyzing and electronic units, purgable separately
Ex-approvals	ATEX II 3G Ex nR P II T6 II 3G Ex nR II T6 NEC/CEC (US/CA) Class I, Division 2, Groups A, B, C, D
Enclosure rating	IP 65 / NEMA 4x
Dimensions (W x H x D)	555 mm x 470 mm x 288 mm (for details see dimensional drawings)
Weight	20 kg ... 30 kg Depending on configuration
Sample gas connections	Inside thread G1/4" For screw-in fittings Option: PVDF compression fitting For hose 6 x 1 mm Option: Swagelok 6 mm Option: Swagelok 1/4"
Auxiliary gas connections	Purge gas: Inside thread G1/4" For screw-in fittings Option: Swagelok 8 mm Option: Swagelok 10 mm Option: Swagelok 3/8"
Options	Intrinsically safe outputs for measured values

S720 Ex design

Description	Flame-proof enclosure for use in Ex-zone 1 areas
Ex-approvals	ATEX II 2G EEx d ia IIC T6 II 2G EEx d ia [ia] IIC T6
Enclosure rating	IP 65 / NEMA 7
Dimensions (W x H x D)	For details see dimensional drawings
Weight	60 kg ... 70 kg Depending on configuration
Sample gas connections	Inside thread G1/4" For screw-in fittings Option: PVDF compression fitting For hose 6 x 1 mm Option: Swagelok 6 mm Option: Swagelok 1/4"
Auxiliary gas connections	Purge gas: Inside thread G1/4" For screw-in fittings
Options	Intrinsically safe outputs for measured values

S721 Ex design

Description	Flame-proof enclosure for use in Ex-zone 1 areas with large analyzer unit for maximum system configuration
Ex-approvals	ATEX II 2G EEx d ia IIC T6 II 2G EEx d ia [ia] IIC T6
Enclosure rating	IP 65 / NEMA 7
Dimensions (W x H x D)	For details see dimensional drawings
Weight	90 kg ... 100 kg Depending on configuration
Sample gas connections	Inside thread G1/4" For screw-in fittings Option: PVDF compression fitting For hose 6 x 1 mm Option: Swagelok 6 mm Option: Swagelok 1/4"
Auxiliary gas connections	Purge gas: Inside thread G1/4" For screw-in fittings
Options	Intrinsically safe outputs for measured values

UNOR analyzer module

Description	Highly selective NDIR analyzer for continuous measurement of almost any gas component which absorbs in the infra-red spectral range																		
Measurement principles	NDIR spectroscopy																		
Measuring ranges	<table> <tr><td>CH₄</td><td>0 ... 100 ppm / 0 ... 100 Vol.-%</td></tr> <tr><td>C₂H₂</td><td>0 ... 300 ppm / 0 ... 100 Vol.-%</td></tr> <tr><td>C₂H₄</td><td>0 ... 300 ppm / 0 ... 100 Vol.-%</td></tr> <tr><td>C₂H₆</td><td>0 ... 100 ppm / 0 ... 100 Vol.-%</td></tr> <tr><td>C₂H₂Cl₂</td><td>0 ... 500 ppm / 0 ... 30 Vol.-%</td></tr> <tr><td>C₃H₆</td><td>0 ... 300 ppm / 0 ... 100 Vol.-%</td></tr> <tr><td>C₃H₈</td><td>0 ... 100 ppm / 0 ... 100 Vol.-%</td></tr> <tr><td>C₄H₁₀</td><td>0 ... 100 ppm / 0 ... 100 Vol.-%</td></tr> <tr><td>C₅H₁₂</td><td>0 ... 300 ppm / 0 ... 100 Vol.-%</td></tr> </table>	CH ₄	0 ... 100 ppm / 0 ... 100 Vol.-%	C ₂ H ₂	0 ... 300 ppm / 0 ... 100 Vol.-%	C ₂ H ₄	0 ... 300 ppm / 0 ... 100 Vol.-%	C ₂ H ₆	0 ... 100 ppm / 0 ... 100 Vol.-%	C ₂ H ₂ Cl ₂	0 ... 500 ppm / 0 ... 30 Vol.-%	C ₃ H ₆	0 ... 300 ppm / 0 ... 100 Vol.-%	C ₃ H ₈	0 ... 100 ppm / 0 ... 100 Vol.-%	C ₄ H ₁₀	0 ... 100 ppm / 0 ... 100 Vol.-%	C ₅ H ₁₂	0 ... 300 ppm / 0 ... 100 Vol.-%
CH ₄	0 ... 100 ppm / 0 ... 100 Vol.-%																		
C ₂ H ₂	0 ... 300 ppm / 0 ... 100 Vol.-%																		
C ₂ H ₄	0 ... 300 ppm / 0 ... 100 Vol.-%																		
C ₂ H ₆	0 ... 100 ppm / 0 ... 100 Vol.-%																		
C ₂ H ₂ Cl ₂	0 ... 500 ppm / 0 ... 30 Vol.-%																		
C ₃ H ₆	0 ... 300 ppm / 0 ... 100 Vol.-%																		
C ₃ H ₈	0 ... 100 ppm / 0 ... 100 Vol.-%																		
C ₄ H ₁₀	0 ... 100 ppm / 0 ... 100 Vol.-%																		
C ₅ H ₁₂	0 ... 300 ppm / 0 ... 100 Vol.-%																		

	C ₆ H ₁₄	0 ... 300 ppm / 0 ... 10 Vol.-%
	CO	0 ... 20 ppm / 0 ... 100 Vol.-%
	CO ₂	0 ... 10 ppm / 0 ... 100 Vol.-%
	Frigen 11, CCl ₃ F	0 ... 500 ppm / 0 ... 50 Vol.-%
	Frigen 134a, C ₂ H ₂ F ₄	0 ... 100 ppm / 0 ... 100 Vol.-%
	Frigen 22, CHClF ₂	0 ... 100 ppm / 0 ... 100 Vol.-%
	NH ₃	0 ... 300 ppm / 0 ... 100 Vol.-%
	NO	0 ... 75 ppm / 0 ... 100 Vol.-%
	N ₂ O	0 ... 50 ppm / 0 ... 100 Vol.-%
	SF ₆	0 ... 50 ppm / 0 ... 100 Vol.-%
	SO ₂	0 ... 75 ppm / 0 ... 100 Vol.-%
	More than 60 measuring components available	
Certified measuring ranges		
	CO	0 ... 100 mg/m ³
	NO	0 ... 100 mg/m ³
	SO ₂	0 ... 100 mg/m ³
Response time (t ₉₀)		3 s Typical at 60 l/h, depending on cell length and gas flow
Sensitivity drift		≤ 1 % of measuring range full scale per week
Zero point drift		≤ 1 % of smallest measuring range per week
Conformities		2001/80/EC (13. BImSchV) 2000/76/EC (17. BImSchV) 27.BImSchV TA-Luft (Prevention of Air Pollution) EN 14181
Material in contact with media		Viton B, PVDF, CaF ₂ , BaF ₂ , stainless steel 1.4571, gold, Aluminum
Corrective functions		Manual or automatic adjustment with test gases or adjustment cell

MULTOR analyzer module

Description		Multi-component NDIR analyzer for continuous measurement of up to 3 IR-absorbing gases and H ₂ O for internal interference sensitivity correction
Measurement principles		NDIR spectroscopy
Measuring ranges		
	CH ₄	0 ... 470 ppm / 0 ... 100 Vol.-%
	CO	0 ... 160 ppm / 0 ... 100 Vol.-%
	CO ₂	0 ... 100 ppm / 0 ... 100 Vol.-%
	NO	0 ... 190 ppm / 0 ... 100 Vol.-%
	SO ₂	0 ... 85 ppm / 0 ... 100 Vol.-%
Certified measuring ranges		
	CO	0 ... 200 mg/m ³
	NO	0 ... 250 mg/m ³
	SO ₂	0 ... 250 mg/m ³
Response time (t₉₀)		≤ 25 s At 60 l/h, depending on cuvette length, gas flow and number of measuring components
Sensitivity drift		≤ 1 % of measuring range full scale per week
Zero point drift		≤ 1 % of smallest measuring range per week
Conformities		2001/80/EC (13. BImSchV) TA-Luft (Prevention of Air Pollution) EN 14181

Material in contact with media	Viton B, PVDF, CaF ₂ , BaF ₂ , stainless steel 1.4571, gold, Aluminum
Corrective functions	Manual or automatic adjustment with test gases or adjustment cell

OXOR-E analyzer module

Description	Determination of oxygen content using an electrochemical cell
Measurement principles	Electrochemical cell
Measuring ranges	O ₂ 0 ... 10 Vol.-% / 0 ... 25 Vol.-%
Certified measuring ranges	O ₂ 0 ... 25 Vol.-%
Response time (t₉₀)	20 s Typical at 60 l/h, depending on gas flow
Sensitivity drift	≤ 1 % of measuring range full scale per week
Zero point drift	≤ 2 % of smallest measuring range per month
Conformities	2001/80/EC (13. BImSchV) 2000/76/EC (17. BImSchV) 27.BImSchV TA-Luft (Prevention of Air Pollution) EN 14181
Material in contact with media	Viton B, PVDF, stainless steel 1.4571
Corrective functions	Manual or automated adjustment with test gases

OXOR-P analyzer module

Description	Accurate oxygen analyzer which operates according to the paramagnetic measurement principle
Measurement principles	Paramagnetic dumbbell principle
Measuring ranges	O ₂ 0 ... 1 Vol.-% / 0 ... 100 Vol.-% Optional: suppressed measuring ranges up to 95 ... 100 vol.-%
Certified measuring ranges	O ₂ 0 ... 25 Vol.-%
Response time (t₉₀)	≤ 4 s At a gas flow of 60 l/h
Sensitivity drift	≤ 1 % of measuring range full scale per week
Zero point drift	≤ 1 % of smallest measuring range per week Measuring ranges smaller 5 vol%: ≤ 0.05 Vol.-% per week
Conformities	2001/80/EC (13. BImSchV) 2000/76/EC (17. BImSchV) 27.BImSchV TA-Luft (Prevention of Air Pollution) EN 14181
Material in contact with media	Viton B, PVDF, glass, stainless steel 1.4571, platinum, nickel
Corrective functions	Manual or automated adjustment with test gases
Remark	Special versions with highly solvent-resistant or highly corrosion-resistant measuring cells available

THERMOR analyzer module

Description	Heat conductivity analyzer for the determination of concentrations in binary or quasi-binary gas mixtures
Measurement principles	Thermal conductivity measurement
Measuring ranges	<div> <div>H₂ in Ar</div> <div>H₂ in CH₄</div> <div>H₂ in CO₂</div> <div>H₂ in blast furnace gas</div> <div>H₂ in N₂</div> <div>H₂ in O₂</div> </div> <div> <div>0 ... 1 Vol.-% / 0 ... 100 Vol.-%</div> <div>0 ... 1 Vol.-% / 0 ... 100 Vol.-%</div> <div>0 ... 1 Vol.-% / 0 ... 100 Vol.-%</div> <div>0 ... 1 Vol.-% / 0 ... 100 Vol.-%</div> <div>0 ... 1 Vol.-% / 0 ... 100 Vol.-%</div> <div>0 ... 1 Vol.-% / 0 ... 100 Vol.-%</div> </div> <div>Other measuring ranges and components on request</div>
Response time (t₉₀)	<div>≤ 20 s</div> <div>At a gas flow of 60 l/h</div>
Sensitivity drift	≤ 1 % of measuring range full scale per week
Zero point drift	≤ 1 % of smallest measuring range per week
Material in contact with media	Glass, stainless steel 1.4571, PVDF (HCl resistant version)
Corrective functions	Manual or automated adjustment with test gases

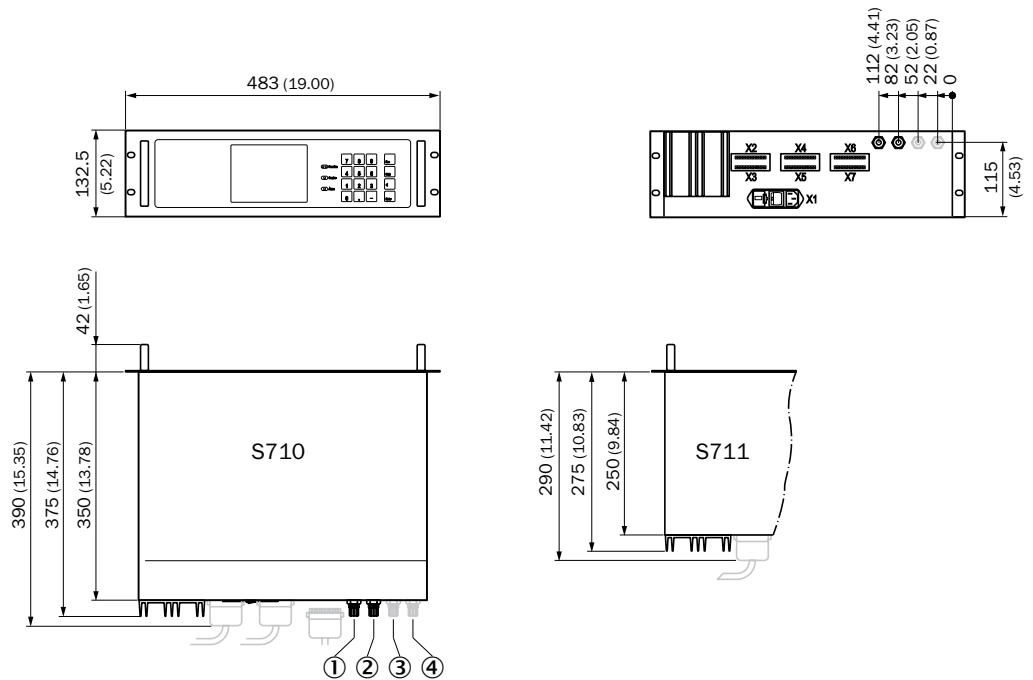
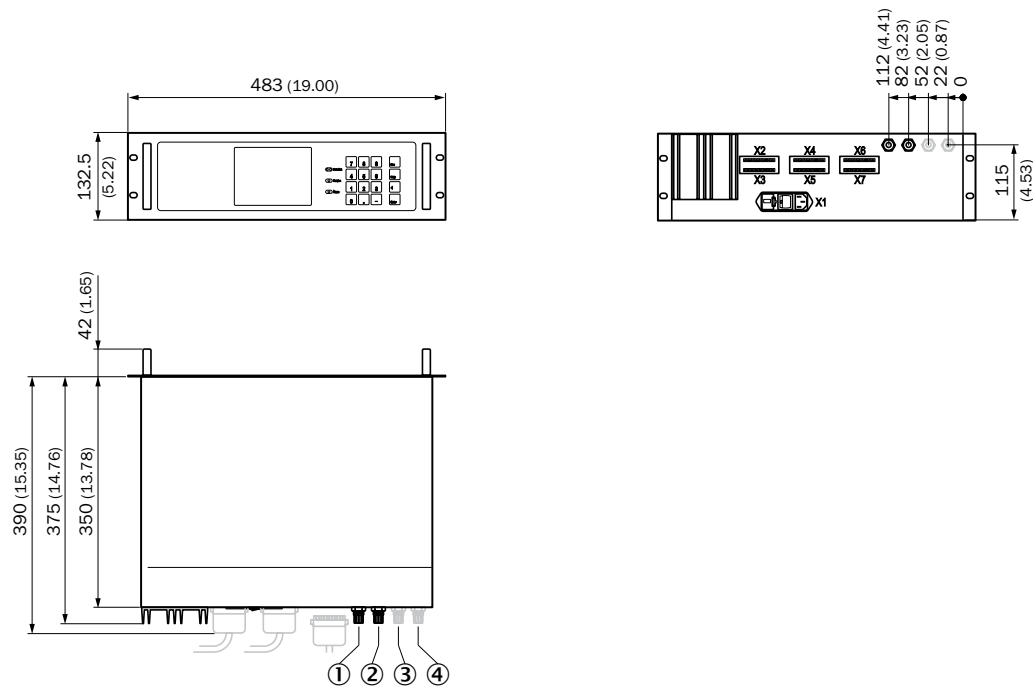
FINOR analyzer module

Description	Rugged IR analyzer with no moving parts for measuring gases in vol. % range
Measurement principles	Interference filter correlation
Measuring ranges	<div> <div>CH₄</div> <div>CO</div> <div>CO₂</div> <div>SF₆</div> </div> <div> <div>0 ... 2 Vol.-%</div> <div>0 ... 0.5 Vol.-%</div> <div>0 ... 0.1 Vol.-%</div> <div>0 ... 10 Vol.-%</div> </div> <div>Other measuring ranges and components on request</div>
Response time (t₉₀)	<div>≤ 25 s</div> <div>At 60 l/h, depending on cuvette length, gas flow and number of measuring components</div>
Sensitivity drift	≤ 1 % per week
Zero point drift	≤ 1.5 % of smallest measuring range per week
Material in contact with media	Viton B, PVDF, stainless steel 1.4571, Aluminum, CaF ₂

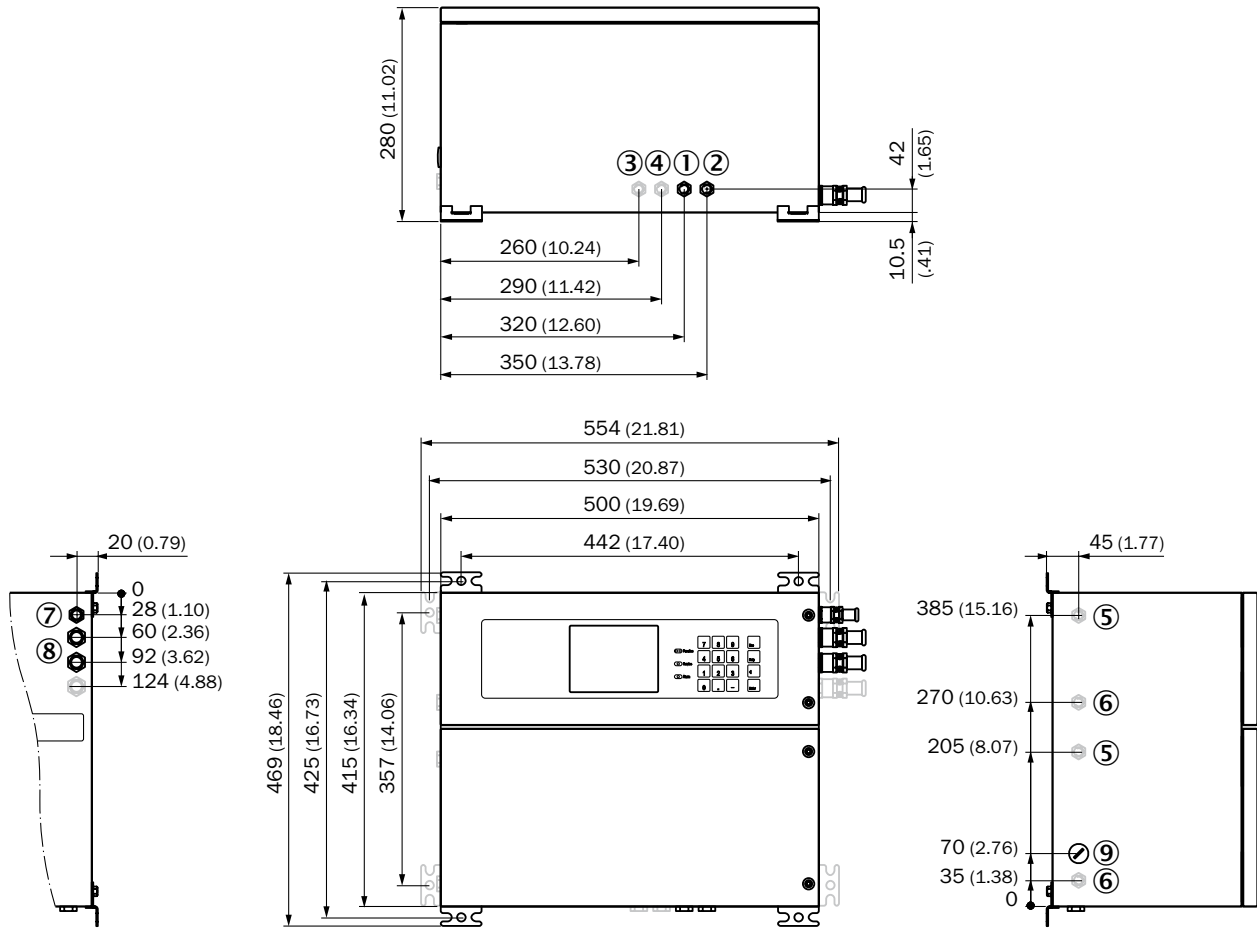
Ordering information

The analyzer devices listed below are completely configured and available with a short delivery time. Furthermore, a large number of device configurations – also customized – are available on request. Our regional sales organization will help you to select the optimum device configuration. → www.sick.com/S700

Min. measuring range	Max. measuring range	Integrated components	Type	Part no.
CO: 0 ... 200 mg/m ³	0 ... 2,000 mg/m ³	MULTOR analyzer module OXOR-E analyzer module PVDF bulkhead fitting	S710 E 1217512	1217512
NO: 0 ... 250 mg/m ³	0 ... 2,500 mg/m ³			
O ₂ : 0 ... 10 Vol.-%	0 ... 25 Vol.-%			
SO ₂ : 0 ... 250 mg/m ³	0 ... 2,500 mg/m ³			
CO: 0 ... 1,200 mg/m ³	0 ... 6,000 mg/m ³	MULTOR analyzer module OXOR-E analyzer module PVDF bulkhead fitting	S710 E 1217513	1217513
NO: 0 ... 1,000 mg/m ³	0 ... 8,000 mg/m ³			
O ₂ : 0 ... 10 Vol.-%	0 ... 25 Vol.-%			
SO ₂ : 0 ... 1,000 mg/m ³	0 ... 7,000 mg/m ³			

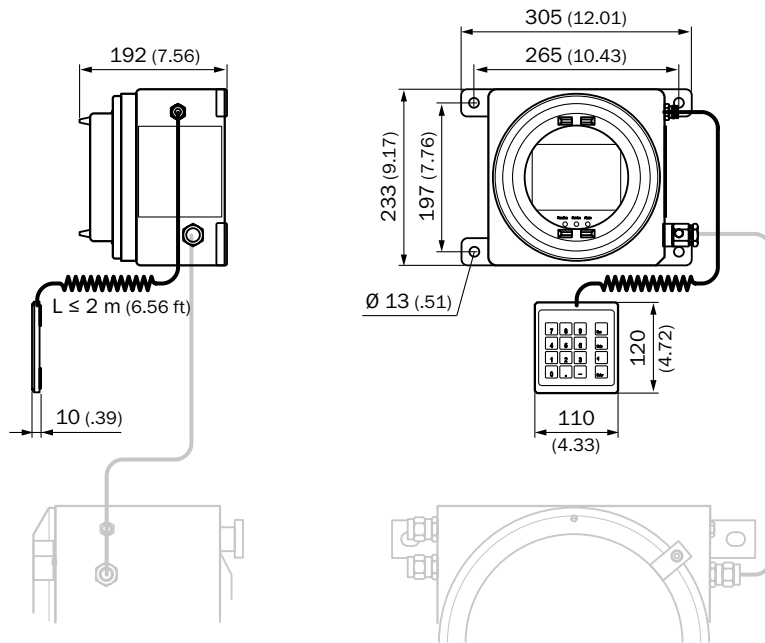
Dimensional drawings (Dimensions in mm (inch))**S710 and S711 design****S710 E 1217140****S710 E 1217141**

S715 design

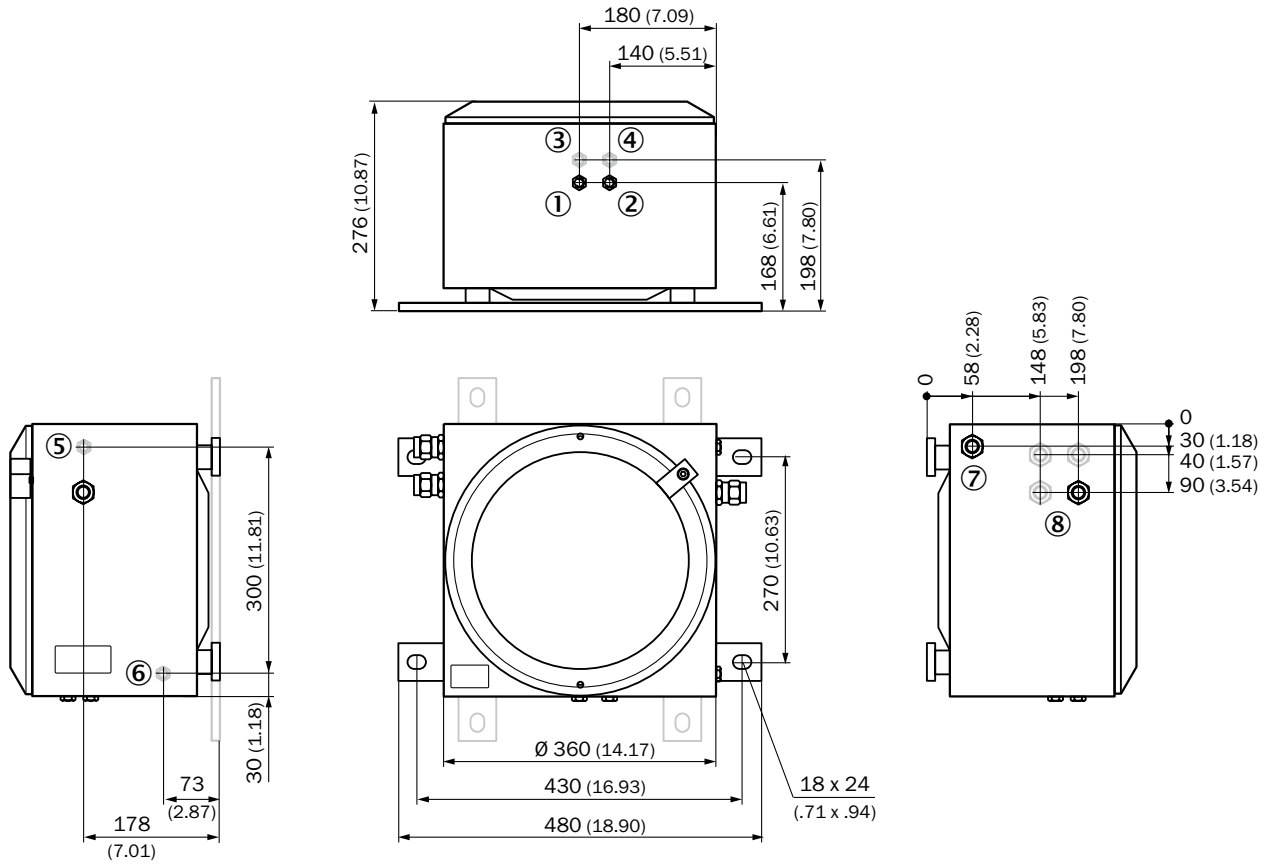


- ① 1. sample gas inlet
- ② Exhaust gas outlet
- ③ 2. sample gas inlet
- ④ 3. sample gas inlet
- ⑤ Purge gas inlet
- ⑥ Purge gas outlet

Display and keyboard for S720 Ex and S721 Ex design

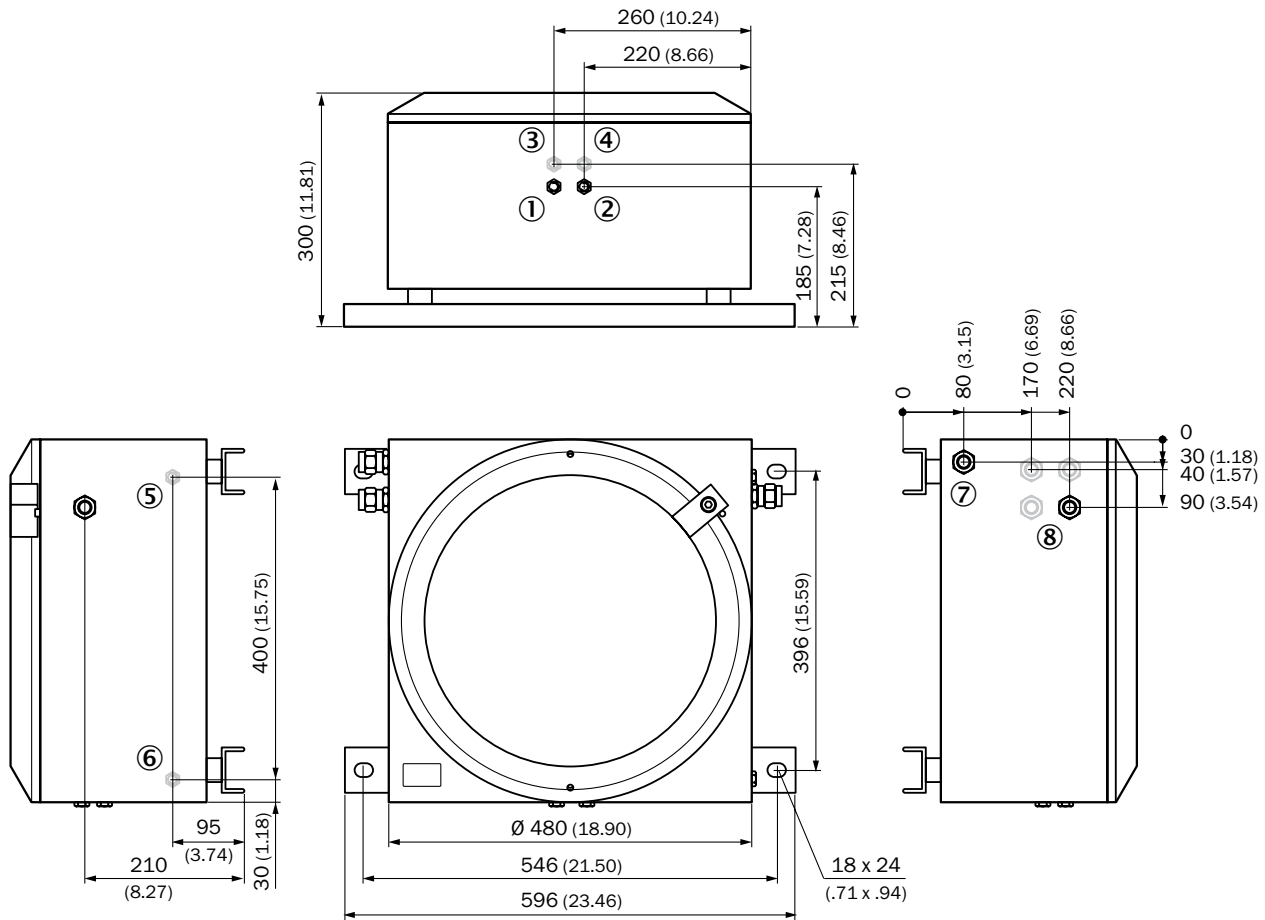


S720 Ex design



- ① 1. sample gas inlet
- ② Exhaust gas outlet
- ③ 2. sample gas inlet
- ④ 3. sample gas inlet
- ⑤ Purge gas inlet
- ⑥ Purge gas outlet

S721 Ex design



- ① 1. sample gas inlet
- ② Exhaust gas outlet
- ③ 2. sample gas inlet
- ④ 3. sample gas inlet
- ⑤ Purge gas inlet
- ⑥ Purge gas outlet

SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 7,400 employees and over 50 subsidiaries and equity investments as well as numerous agencies worldwide, we are always close to our customers. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in various industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services round out our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

Worldwide presence:

Australia, Austria, Belgium, Brazil, Canada, Chile, China, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Hungary, India, Israel, Italy, Japan, Malaysia, Mexico, Netherlands, New Zealand, Norway, Poland, Romania, Russia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Arab Emirates, USA, Vietnam.

Detailed addresses and further locations → www.sick.com



GMS800 MODULAR GAS ANALYZERS

TAILOR-MADE GAS ANALYSIS SOLUTIONS FOR
PROCESS AND EMISSION MONITORING

Extractive Gas Analyzers

SICK
Sensor Intelligence.

Modular analyzer system – flexible configuration, options tailored for almost any application



Emission monitoring according to EN 15267

- Emission measurements of very low concentrations, e.g. in power plants, cement plants or waste incineration plants and in the pulp and paper industry
- With the analysis module DEFOR, the specialist for gas turbines due to measurement of very low SO₂, NO and NO₂ concentrations
- Monitoring of NO_x in denitrification plants by direct measurement of NO and NO₂ as well as compiling to NO_x in the analyzer
- Efficient measurement in denitrification plants
- QAL1 certificate available for plants requiring approval

Process gas measurements for more than 60 components

- Efficient process gas analysis in applications of the chemical and petrochemical industry – also in ex areas
- High H₂S contents in reactive or sour gases
- Reliable CO monitoring for explosion protection in coal mills and coal bunkers
- Furnace gas measurement of blast furnaces or coke ovens
- Quality audits in air separation plants and purity measurement of gases (e.g. 5 ppm CO concentration in H₂ in hydrogen production)

4 types of enclosures for easy integration at the installation location**Type GMS810:**

19" rack housing with integrated control unit (BCU), 4 rack units, IP 40

**Type GMS815P:**

Wall enclosure, IP 65 for use in rough industrial environment, optionally usable in explosion zones 1 and 2

**Type GMS820P:**

Flame-proof enclosure, IP 65, for use in explosion zone 1

**Type GMS811:**

19" rack housing with 4 rack units, IP 40

**Type GMS840:**

Wall enclosure, IP 65 for use in rough industrial environment, optionally usable in explosion zone 2

6 Analyzer modules for more than 60 gases**DEFOR**

Modern UV gas analyzer for simultaneous measurement of up to 3 gas components. Specialist for extremely selective NO measurement with small measuring ranges and an all-rounder for many other UV-active gases, e.g. SO₂, NO₂, NO, CS₂ and COS. As an option calibration cells are available.

UNOR

Highly selective NDIR analyzer for continuous measurement of almost any gas component which absorbs in the infra-red spectral range. Especially insensitive to building vibrations due to the variably adjustable chopper frequency. As an option calibration cells are available.

MULTOR

Multicomponent NDIR analyzer for continuous measurement of up to 3 IR-absorbing gases and H₂O for internal interference sensitivity correction. As an option calibration cells are available.

THERMOR

Precise heat conductivity analyzer for the determination of concentrations in binary or quasi-binary gas mixtures, e.g. H₂, He, CO₂ and Ar.

OXOR-P

Precise oxygen analyzer which operates according to the paramagnetic measuring principle. Also available as special model as especially solvent-resistant or corrosion-resistant version

OXOR-E

Determination of oxygen contents using an electrochemical cell.

TAILOR-MADE GAS ANALYSIS SOLUTIONS FOR PROCESS AND EMISSION MONITORING



Product description

The GMS800 is an innovative product family of extractive analyzers which can measure more than 60 different gas compounds. The GMS800 is characterized by its modular design: 7 analyzing modules, one gas module, I/O modules and an operating unit. Standardized 19" racks as well as system enclosures optimized for installation in cabinets can be

used for economic system integration. Wall mounting enclosures with an ATEX approval for hazardous areas can be used in rough industrial environments. Equipped with modern software, the GMS800 comes with all required interfaces for remote control via networks through to the connection to a process control system.

At a glance

- 7 different analyzer modules: DEFOR (NDUV, UVRAS), MULTOR (NDIR), OXOR-E (electrochemical O₂), OXOR-P (paramagnetic O₂), THERMOR (TC) and UNOR (NDIR)
- 5 different types of enclosures
- Gas module with sample gas pump and/or control sensors
- New enclosure type for easy and quick integration in analyzer cabinets
- Remote diagnosis via Ethernet with software SOPAS ET

Your benefits

- Approved according to EN 15267-3 and EN 14181
- Installations in Non-Ex-areas and Ex-areas (Zone 1 and 2 according to ATEX) possible
- Minimum service and maintenance work as well as easy reconditioning of existing installations due to modular design
- Adjustment without test gases via optional adjustment unit
- Minimal influence of ambient temperature through thermostatic controlled modules
- System solutions with turn-key analyzer cabinets
- Reliable measuring results by proven measurement technology
- Easy maintenance and repair due to replacement of complete assemblies or modules



Additional information

Fields of application	5
Detailed technical data	5
Ordering information	12
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Connection types	16

→ www.mysick.com/en/GMS800

For more information, just enter the link and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

Fields of application

- Emission monitoring according to EN 15267 and process gas measurements
- Emission monitoring of very low concentrations
- Measurement of smallest concentrations of NO, NO₂ and SO₂
- NO_x monitoring by direct measurement of NO and NO₂
- Measurement of sulfur compounds in process gases
- CO monitoring for Ex protection
- Measurement of smallest concentrations in hydrogen or hydrocarbons
- VOC monitoring

Detailed technical data

The exact device specifications and performance data of the product may deviate from the information provided here, and depend on the application in which the product is being used and the relevant customer specifications.

GMS800 system

Gas flow rate	30 l/h ... 60 l/h
Sample gas temperature	Analyzer inlet: 0 °C ... +45 °C
Process pressure	Hosed gas lines: -200 hPa ... 300 hPa Tubed gas lines: -200 hPa ... 1,000 hPa
Process gas humidity	Non-condensing
Dust load	Free of dust and aerosols
Ambient temperature	+5 °C ... +45 °C
Storage temperature	-20 °C ... +70 °C
Ambient pressure	700 hPa ... 1,200 hPa
Geographical altitude	2,500 m (above mean sea level)
Ambient humidity	20 % ... 90 % Relative humidity; non-condensing
Electrical safety	CE

GMS810 design

Description	19" rack enclosure with 4 rack units, for integration in cabinets
Enclosure rating	IP 40
Dimensions (W x H x D)	483 mm x 178 mm x 388 mm
Weight	9 kg ... 20 kg Depending on configuration
Power supply	<div> <div>Voltage</div> <div>Frequency</div> <div>Power consumption</div> </div> <div> 93 ... 132 V AC / 186 ... 264 V AC / 210 ... 370 V AC 47 ... 63 Hz ≤ 300 W </div>
Sample gas connections	PVDF bulkhead fitting For hose 6 x 1 mm
Auxiliary gas connections	For purge gas or flowing reference gas Option
Options	Gas connections: Swagelok 6 mm or Swagelok 1/4"

GMS811 design

Description	19" rack enclosure with 4 rack units, for usage with separate control unit (BCU), for integration in cabinets
Enclosure rating	IP 40
Dimensions (W x H x D)	483 mm x 178 mm x 388 mm
Weight	9 kg ... 20 kg Depending on configuration
Power supply	
Voltage	93 ... 132 V AC / 186 ... 264 V AC / 210 ... 370 V AC
Frequency	47 ... 63 Hz
Power consumption	≤ 300 W
Sample gas connections	PVDF bulkhead fitting For hose 6 x 1 mm
Auxiliary gas connections	For purge gas or flowing reference gas Option
Options	Gas connections: Swagelok 6 mm or Swagelok 1/4"

GMS815P design

Description	Wall-mounting enclosure with gas-tight separated analyzing and electronic units, purgable separately
Ex-approvals	ATEX II 3G Ex nR II T6 II 3G Ex pz II T6 In combination with an external, approved monitoring unit (option) II 2G Ex px II T6 In combination with an external, approved monitoring unit (option)
Enclosure rating	IP 65 / NEMA 4x
Dimensions (W x H x D)	550 mm x 740 mm x 289 mm
Weight	20 kg ... 57 kg Depending on configuration
Power supply	
Voltage	93 ... 132 V AC / 186 ... 264 V Not for pressurized enclosure: 210 ... 370 V
Frequency	47 ... 63 Hz
Power consumption	≤ 300 W
Sample gas connections	PVDF bulkhead fitting For hose 6 x 1 mm
Auxiliary gas connections	For purge gas or flowing reference gas Option
Options	Gas connections: Swagelok 6 mm or Swagelok 1/4" Integrated flame arrestors for gas inlet and outlet Intrinsically safe outputs for measured values

GMS820P design

Description	Flame-proof enclosure for use in Ex-zone 1 areas
Ex-approvals	<div>IECEX</div> <div>ATEX</div> <div>Ex db eb [ia] IIC T6</div> <div>II 2G Ex d II T6</div>
Enclosure rating	IP 65
Dimensions (W x H x D)	790 mm x 590 mm x 353 mm
Weight	140 kg ... 150 kg Depending on configuration
Power supply	<div>Voltage</div> <div>Frequency</div> <div>Power consumption</div> <div>93 ... 132 V AC / 186 ... 264 V AC / 210 ... 370 V AC</div> <div>47 ... 63 Hz</div> <div>≤ 300 W</div>
Sample gas connections	Inside thread G1/4"
Auxiliary gas connections	For purge gas or flowing reference gas Option
Options	Gas connections: Swagelok 6 mm or Swagelok 1/4"

GMS840 design

Ambient temperature	+5 °C ... +45 °C
Storage temperature	-10 °C ... +70 °C
Ambient humidity	10 % ... 95 % Non-condensing
Ex-approvals	<div>ATEX</div> <div>NEC/CEC (US/CA)</div> <div>GMS841: Ex nA nC IIC T4 Gc</div> <div>Ex nA nC [ia Ga] IIC T4 Gc</div> <div>GMS842: Class I, Division 2, Groups A, B, C, D</div> <div>Class I, Zone 2, AEx nA nC IIC T4 Gc</div> <div>Ex nA nC IIC</div>
Electrical safety	CE
Enclosure rating	IP 66 / NEMA 4x
Dimensions (W x H x D)	522 mm x 475 mm x 478 mm
Weight	≤ 30 kg Depending on configuration
Power supply	<div>Voltage</div> <div>Frequency</div> <div>Current consumption</div> <div>Power consumption</div> <div>GMS840: 85 ... 264 V AC</div> <div>GMS841: 85 ... 132 V AC / 187 ... 264 V AC</div> <div>GMS842: 85 ... 264 V AC</div> <div>47 ... 63 Hz</div> <div>≤ 10 A</div> <div>≤ 300 W</div> <div>Depending on configuration</div>
Sample gas connections	<div>Inside thread G1/4"</div> <div>For screw-in fittings</div> <div>Swagelok 6 mm</div> <div>Stainless steel, for metal tube</div> <div>Swagelok 1/4"</div> <div>Stainless steel, for metal tube</div> <div>PVDF compression fitting</div> <div>For hose 6 x 1 mm</div>

DEFOR analyzer module

Description	UV gas analyzer for simultaneous measurement of up to 3 gas components	
Measurement principles	NDUV spectroscopy, UVRA spectroscopy	
Measuring ranges		
	Cl ₂	0 ... 125 ppm / 0 ... 100 Vol.-%
	COS	0 ... 250 ppm / 0 ... 100 Vol.-%
	CS ₂	0 ... 50 ppm / 0 ... 30 Vol.-%
	H ₂ S	0 ... 25 ppm / 0 ... 100 Vol.-%
	NH ₃	0 ... 50 ppm / 0 ... 100 Vol.-%
	NO	0 ... 10 ppm / 0 ... 100 Vol.-%
	NO ₂	0 ... 50 ppm / 0 ... 100 Vol.-%
	NO ₂ ^(*)	0 ... 10 ppm / 0 ... 100 Vol.-%
	SO ₂	0 ... 25 ppm / 0 ... 100 Vol.-%
	SO ₂ ^(*)	0 ... 10 ppm / 0 ... 100 Vol.-%
	(*) NO ₂ , SO ₂ : smallest measuring range with daily adjustment of zero point and operation in air-conditioned ambience with a temperature stability of ±2 °C	
Certified measuring ranges		
	NO	0 ... 50 mg/m ³ / 0 ... 1,000 mg/m ³ / 0 ... 2,000 mg/m ³
	NO ₂	0 ... 50 mg/m ³ / 0 ... 500 mg/m ³
	SO ₂	0 ... 75 mg/m ³ / 0 ... 287 mg/m ³ / 0 ... 2,000 mg/m ³
Response time	4 s Typical at 60 l/h, depending on cell length and gas flow	
Sensitivity drift	≤ 1 % of measuring range full scale per week	
Zero point drift	≤ 1 % of measuring range full scale per week Measuring ranges smaller than 2 x smallest measuring range: ≤ 2 % of measuring range full scale per week NO, NO ₂ , SO ₂ : ≤ 1 % of smallest measuring range per day	
Conformities	Approved for plants requiring approval 2001/80/EC (13. BImSchV) 2000/76/EC (17. BImSchV) 27. BImSchV German Clean Air Regulations EN 15267 EN 14181 MCERTS	
Corrective functions	Manual or automatic adjustment with test gases or adjustment cuvette	
Test functions	Self test and fault diagnosis	

MULTOR analyzer module

Description	Multi-component NDIR analyzer for continuous measurement of up to 3 IR-absorbing gases and H ₂ O for internal interference sensitivity correction	
Measurement principles	NDIR spectroscopy	
Measuring ranges		
	CH ₄	0 ... 400 ppm / 0 ... 100 Vol.-%
	CO	0 ... 160 ppm / 0 ... 100 Vol.-%
	CO ₂	0 ... 100 ppm / 0 ... 100 Vol.-%
	NO	0 ... 190 ppm / 0 ... 100 Vol.-%
	SO ₂	0 ... 90 ppm / 0 ... 100 Vol.-%
Certified measuring ranges		
	CH ₄	0 ... 286 mg/m ³ / 0 ... 500 mg/m ³
	CO	0 ... 200 mg/m ³ / 0 ... 2,000 mg/m ³

	CO ₂	0 ... 25 Vol.-%
	NO	0 ... 250 mg/m ³ / 0 ... 2,500 mg/m ³
	SO ₂	0 ... 250 mg/m ³ / 0 ... 2,000 mg/m ³
Response time	≤ 25 s At 60 l/h, depending on cuvette length, gas flow and number of measuring components	
Sensitivity drift	≤ 1 % of measuring range full scale per week	
Zero point drift	≤ 1 % of smallest measuring range per week Measuring ranges smaller than 2 x smallest measuring range: ≤ 2 % of smallest measuring range per week	
Conformities	Approved for plants requiring approval 2001/80/EC (13. BImSchV) 2000/76/EC (17. BImSchV) 27. BImSchV German Clean Air Regulations EN 15267 EN 14181 MCERTS	
Corrective functions	Manual or automatic adjustment with test gases or adjustment cuvette	
Test functions	Self test and fault diagnosis	

OXOR-E analyzer module

Description	Determination of oxygen contents using an electrochemical cell	
Measurement principles	Electrochemical cell	
Measuring ranges	O ₂	0 ... 10 Vol.-% / 0 ... 25 Vol.-%
Certified measuring ranges	O ₂	0 ... 25 Vol.-%
Response time	20 s Typical at 60 l/h, depending on gas flow	
Sensitivity drift	≤ 2 % of measuring range full scale per week	
Zero point drift	≤ 2 % of smallest measuring range per month	
Conformities	Approved for plants requiring approval 2001/80/EC (13. BImSchV) 2000/76/EC (17. BImSchV) 27. BImSchV German Clean Air Regulations EN 15267 EN 14181 MCERTS	
Corrective functions	Manual or automatic adjustment with test gases	
Test functions	Self test and fault diagnosis	

OXOR-P analyzer module

Description	Accurate oxygen analyzer which operates according to the paramagnetic measuring principle	
Measurement principles	Paramagnetic dumbbell principle	
Measuring ranges	O ₂	0 ... 3 Vol.-% / 0 ... 100 Vol.-% Optional: smallest measuring range 0 ... 1 vol%
Certified measuring ranges	O ₂	0 ... 25 Vol.-%
Response time	≤ 4 s At a gas flow of 60 l/h	
Sensitivity drift	≤ 1 % of measuring range full scale per week	

Zero point drift	≤ 1 % of smallest measuring range per week Measuring ranges smaller 5 vol%: ≤ 0.05 Vol.-% per week
Conformities	Approved for plants requiring approval 2001/80/EC (13. BImSchV) 2000/76/EC (17. BImSchV) 27. BImSchV German Clean Air Regulations EN 15267 EN 14181 MCERTS
Corrective functions	Manual or automatic adjustment with test gases
Test functions	Self test and fault diagnosis
Remark	Special versions with highly solvent-resistant or highly corrosion-resistant measuring cells available

THERMOR analyzer module

Description	Heat conductivity analyzer for the determination of concentrations in binary or quasi-binary gas mixtures																								
Measurement principles	Thermal conductivity measurement																								
Measuring ranges	<table> <tr><td>Ar in N₂</td><td>0 ... 10 Vol.-% / 0 ... 100 Vol.-%</td></tr> <tr><td>Ar in O₂</td><td>0 ... 10 Vol.-% / 0 ... 100 Vol.-%</td></tr> <tr><td>CH₄ in biogas</td><td>0 ... 60 Vol.-% / 0 ... 100 Vol.-%</td></tr> <tr><td>CO₂ in air</td><td>0 ... 10 Vol.-% / 0 ... 100 Vol.-%</td></tr> <tr><td>H₂ in Ar</td><td>0 ... 1 Vol.-% / 0 ... 100 Vol.-%</td></tr> <tr><td>H₂ in CH₄</td><td>0 ... 1 Vol.-% / 0 ... 100 Vol.-%</td></tr> <tr><td>H₂ in CO₂</td><td>0 ... 1 Vol.-% / 0 ... 100 Vol.-%</td></tr> <tr><td>H₂ in blast furnace gas</td><td>0 ... 1 Vol.-% / 0 ... 100 Vol.-%</td></tr> <tr><td>H₂ in N₂</td><td>0 ... 1 Vol.-% / 0 ... 100 Vol.-%</td></tr> <tr><td>He in N₂</td><td>0 ... 2 Vol.-% / 0 ... 100 Vol.-%</td></tr> <tr><td>NH₃ in CO₂</td><td>0 ... 15 Vol.-% / 0 ... 100 Vol.-%</td></tr> <tr><td>NH₃ in air</td><td>0 ... 15 Vol.-% / 0 ... 100 Vol.-%</td></tr> </table>	Ar in N ₂	0 ... 10 Vol.-% / 0 ... 100 Vol.-%	Ar in O ₂	0 ... 10 Vol.-% / 0 ... 100 Vol.-%	CH ₄ in biogas	0 ... 60 Vol.-% / 0 ... 100 Vol.-%	CO ₂ in air	0 ... 10 Vol.-% / 0 ... 100 Vol.-%	H ₂ in Ar	0 ... 1 Vol.-% / 0 ... 100 Vol.-%	H ₂ in CH ₄	0 ... 1 Vol.-% / 0 ... 100 Vol.-%	H ₂ in CO ₂	0 ... 1 Vol.-% / 0 ... 100 Vol.-%	H ₂ in blast furnace gas	0 ... 1 Vol.-% / 0 ... 100 Vol.-%	H ₂ in N ₂	0 ... 1 Vol.-% / 0 ... 100 Vol.-%	He in N ₂	0 ... 2 Vol.-% / 0 ... 100 Vol.-%	NH ₃ in CO ₂	0 ... 15 Vol.-% / 0 ... 100 Vol.-%	NH ₃ in air	0 ... 15 Vol.-% / 0 ... 100 Vol.-%
Ar in N ₂	0 ... 10 Vol.-% / 0 ... 100 Vol.-%																								
Ar in O ₂	0 ... 10 Vol.-% / 0 ... 100 Vol.-%																								
CH ₄ in biogas	0 ... 60 Vol.-% / 0 ... 100 Vol.-%																								
CO ₂ in air	0 ... 10 Vol.-% / 0 ... 100 Vol.-%																								
H ₂ in Ar	0 ... 1 Vol.-% / 0 ... 100 Vol.-%																								
H ₂ in CH ₄	0 ... 1 Vol.-% / 0 ... 100 Vol.-%																								
H ₂ in CO ₂	0 ... 1 Vol.-% / 0 ... 100 Vol.-%																								
H ₂ in blast furnace gas	0 ... 1 Vol.-% / 0 ... 100 Vol.-%																								
H ₂ in N ₂	0 ... 1 Vol.-% / 0 ... 100 Vol.-%																								
He in N ₂	0 ... 2 Vol.-% / 0 ... 100 Vol.-%																								
NH ₃ in CO ₂	0 ... 15 Vol.-% / 0 ... 100 Vol.-%																								
NH ₃ in air	0 ... 15 Vol.-% / 0 ... 100 Vol.-%																								
Response time	≤ 20 s At a gas flow of 60 l/h																								
Sensitivity drift	≤ 1 % of measuring range full scale per week																								
Zero point drift	≤ 1 % of smallest measuring range per week Measuring ranges smaller than 2 x smallest measuring range: ≤ 2 % of smallest measuring range per week																								
Corrective functions	Manual or automatic adjustment with test gases																								
Test functions	Self test and fault diagnosis																								

UNOR analyzer module

Description	Highly selective NDIR analyzer for continuous measurement of almost any gas component which absorbs in the infra-red spectral range	
Measurement principles	NDIR spectroscopy	
Measuring ranges		<p> C_2H_2 0 ... 300 ppm / 0 ... 100 Vol.-% $C_2H_2F_4$ 0 ... 100 ppm / 0 ... 100 Vol.-% C_2H_4 0 ... 300 ppm / 0 ... 100 Vol.-% C_3H_6 0 ... 300 ppm / 0 ... 100 Vol.-% C_3H_8 0 ... 100 ppm / 0 ... 100 Vol.-% C_4H_6 0 ... 5,000 ppm / 0 ... 20 Vol.-% CH_4 0 ... 70 ppm / 0 ... 100 Vol.-% CH_3OH 0 ... 150 ppm / 0 ... 10 Vol.-% CO 0 ... 20 ppm / 0 ... 100 Vol.-% $CO+CO_2$ 0 ... 50 ppm / 0 ... 100 Vol.-% CO_2 0 ... 10 ppm / 0 ... 100 Vol.-% $COCl_2$ 0 ... 200 ppm / 0 ... 10 Vol.-% N_2O 0 ... 25 ppm / 0 ... 100 Vol.-% NO 0 ... 75 ppm / 0 ... 100 Vol.-% NH_3 0 ... 300 ppm / 0 ... 100 Vol.-% SF_6 0 ... 50 ppm / 0 ... 100 Vol.-% SO_2 0 ... 26 ppm / 0 ... 100 Vol.-% More than 60 measuring components available </p>
Certified measuring ranges		<p> CO 0 ... 75 mg/m³ / 0 ... 750 mg/m³ / 0 ... 3,000 mg/m³ CO_2 0 ... 25 Vol.-% N_2O 0 ... 50 mg/m³ / 0 ... 500 mg/m³ NO 0 ... 100 mg/m³ / 0 ... 1,000 mg/m³ / 0 ... 2,000 mg/m³ SO_2 0 ... 75 mg/m³ / 0 ... 287 mg/m³ / 0 ... 2,000 mg/m³ NO_x 0 ... 100 mg/m³ / 0 ... 1,000 mg/m³ / 0 ... 2,000 mg/m³ CH_4 0 ... 50 mg/m³ / 0 ... 500 mg/m³ </p>
Response time	3 s Typical at 60 l/h, depending on cell length and gas flow	
Sensitivity drift	≤ 1 % of measuring range full scale per week	
Zero point drift	≤ 1 % of smallest measuring range per week Measuring ranges smaller than 2 x smallest measuring range: ≤ 2 % of smallest measuring range per week	
Conformities	Approved for plants requiring approval 2001/80/EC (13. BImSchV) 2000/76/EC (17. BImSchV) 27. BImSchV German Clean Air Regulations EN 15267 EN 14181 MCERTS	
Corrective functions	Manual or automatic adjustment with test gases or adjustment cuvette	
Test functions	Self test and fault diagnosis	

BCU control unit

Interfaces and bus protocols	Ethernet	Modbus TCP
	Ethernet	OPC
	Ethernet	SOPAS ET
	RS-485	Modbus RTU
Indication	Status LEDs: "Power", "Maintenance" and "Failure" LC display	
Operation	Via LC display and membrane keyboard	

I/O module

Description	Closed module with top-hat rail adapter or module for integration into enclosures
Analog outputs	4 outputs: 0/2/4 ... 20 mA, 500 Ω Electrically isolated
Analog inputs	2 inputs: 0/4 ... 20 mA Not electrically isolated
Digital outputs	8 outputs: 34 V AC, 500 mA / 48 V DC, 500 mA
Digital inputs	8 inputs: 42 V All inlets with common reference potential

Gas module

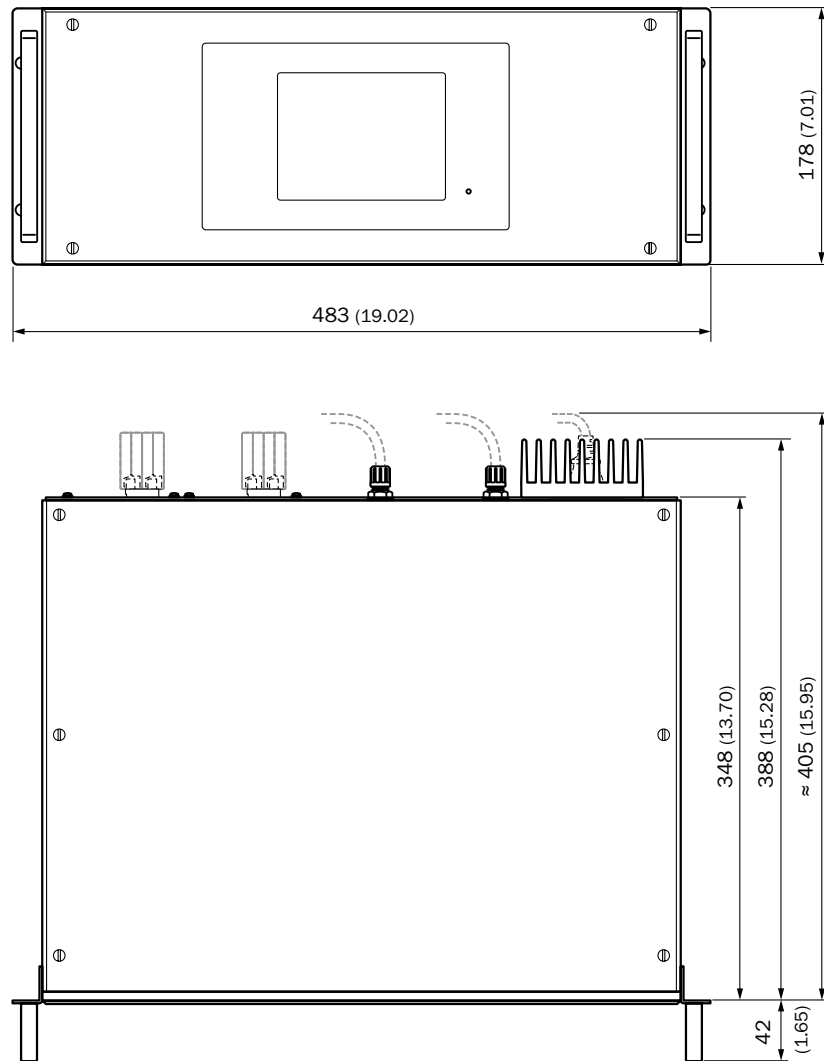
Sample gas connections	PVDF compression fitting For hose 6 x 1 mm Swagelok 6 mm Stainless steel, for metal tube Swagelok 1/4" Stainless steel, for metal tube
Options	Magnetic piston pump (0 ... 60 l/h at 100 hPa low pressure) Humidity sensor Pressure sensor (500 ... 1500 hPa) Flow sensor (0 ... 100 l/h, $\pm 20\%$)

Ordering information

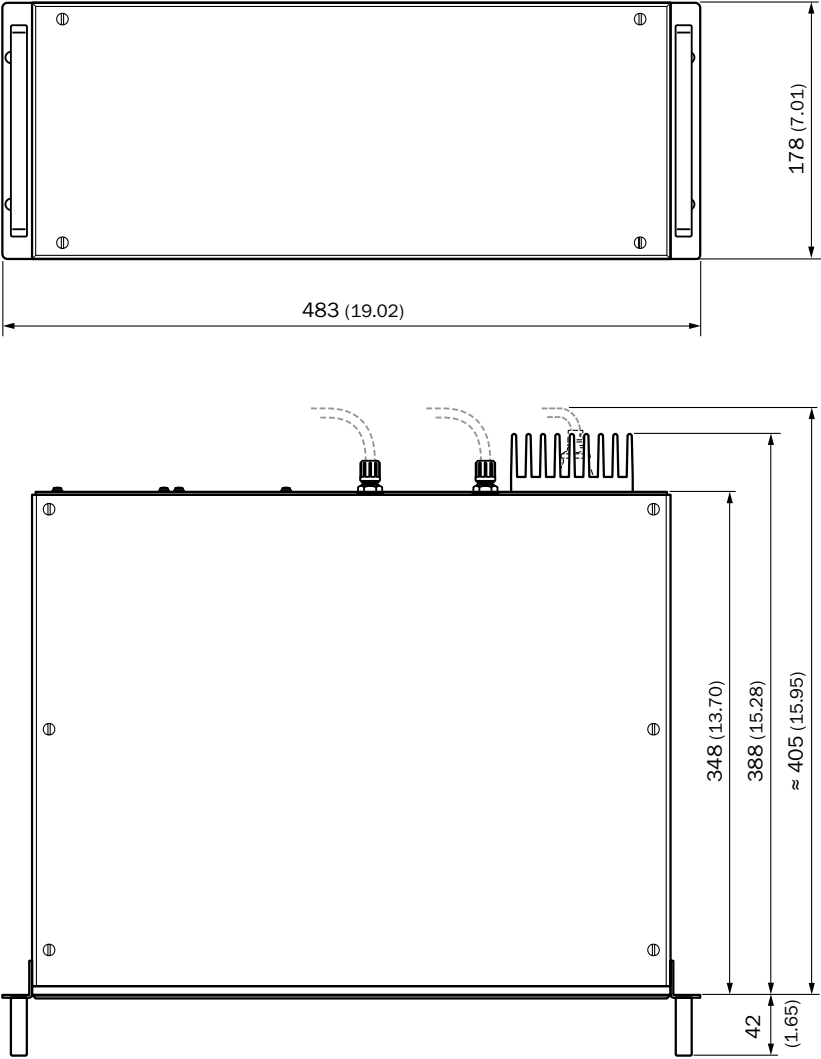
Our regional sales organization will help you to select the optimum device configuration.

Dimensional drawings (Dimensions in mm (inch))

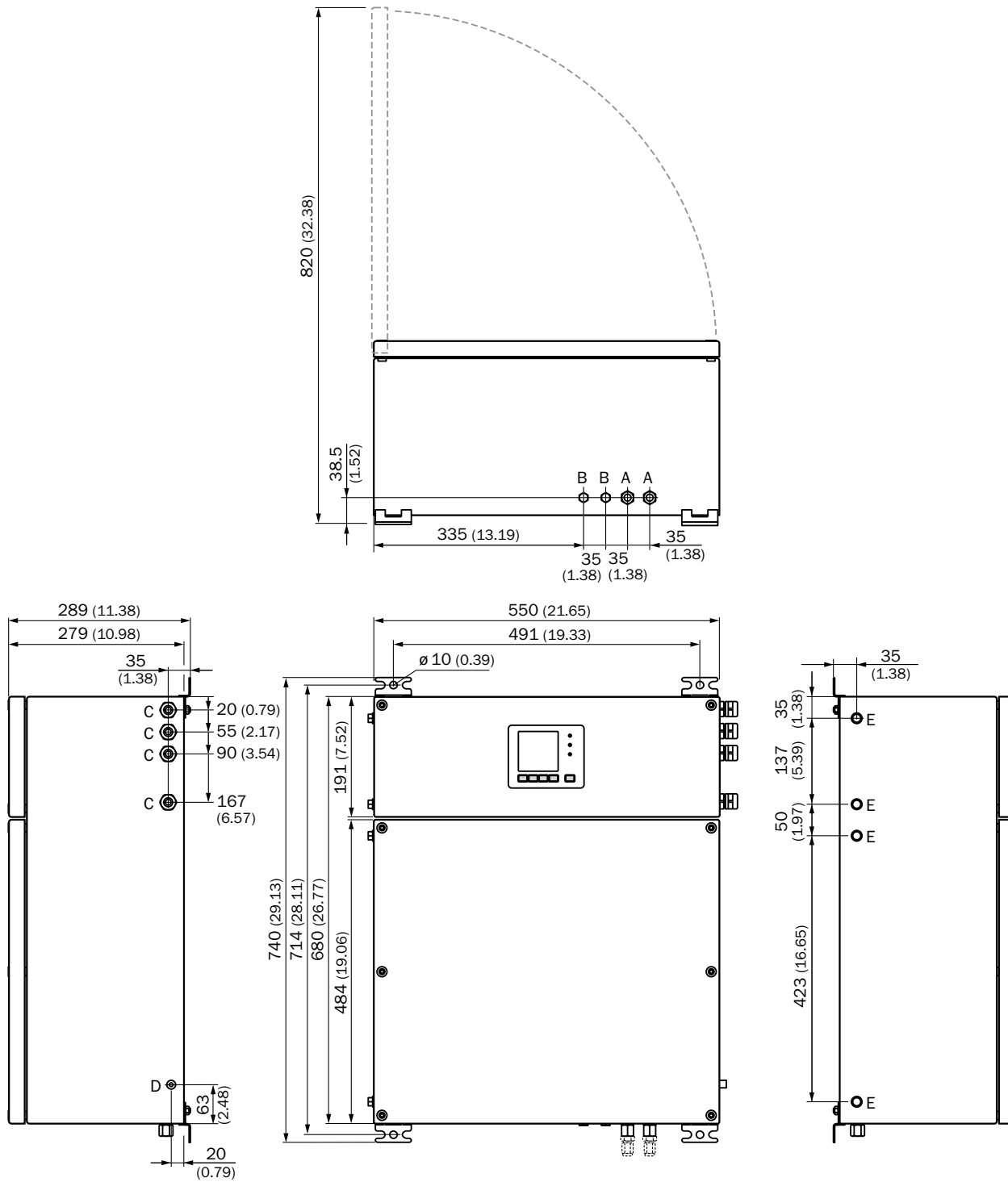
GMS810 design



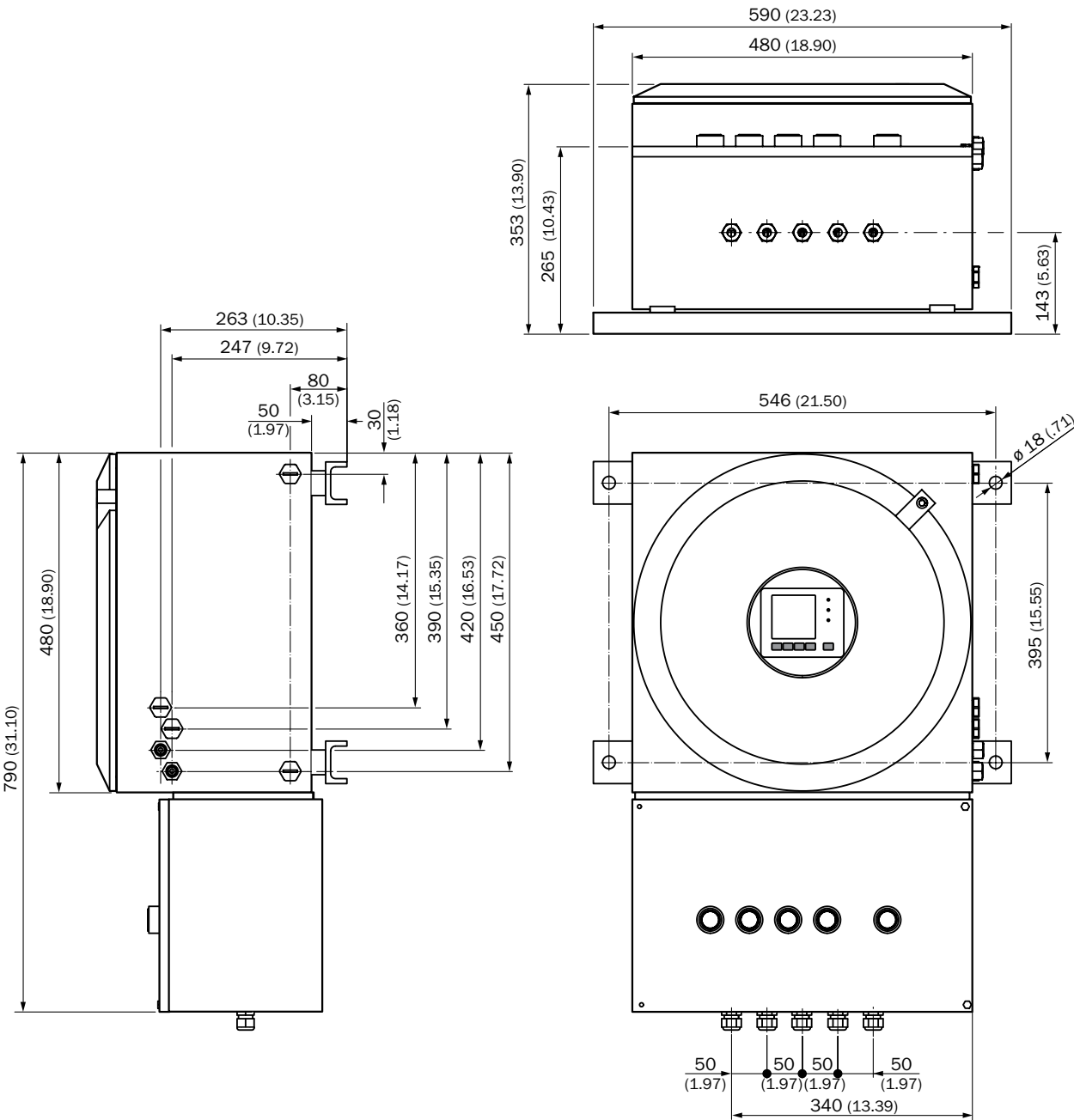
GMS811 design



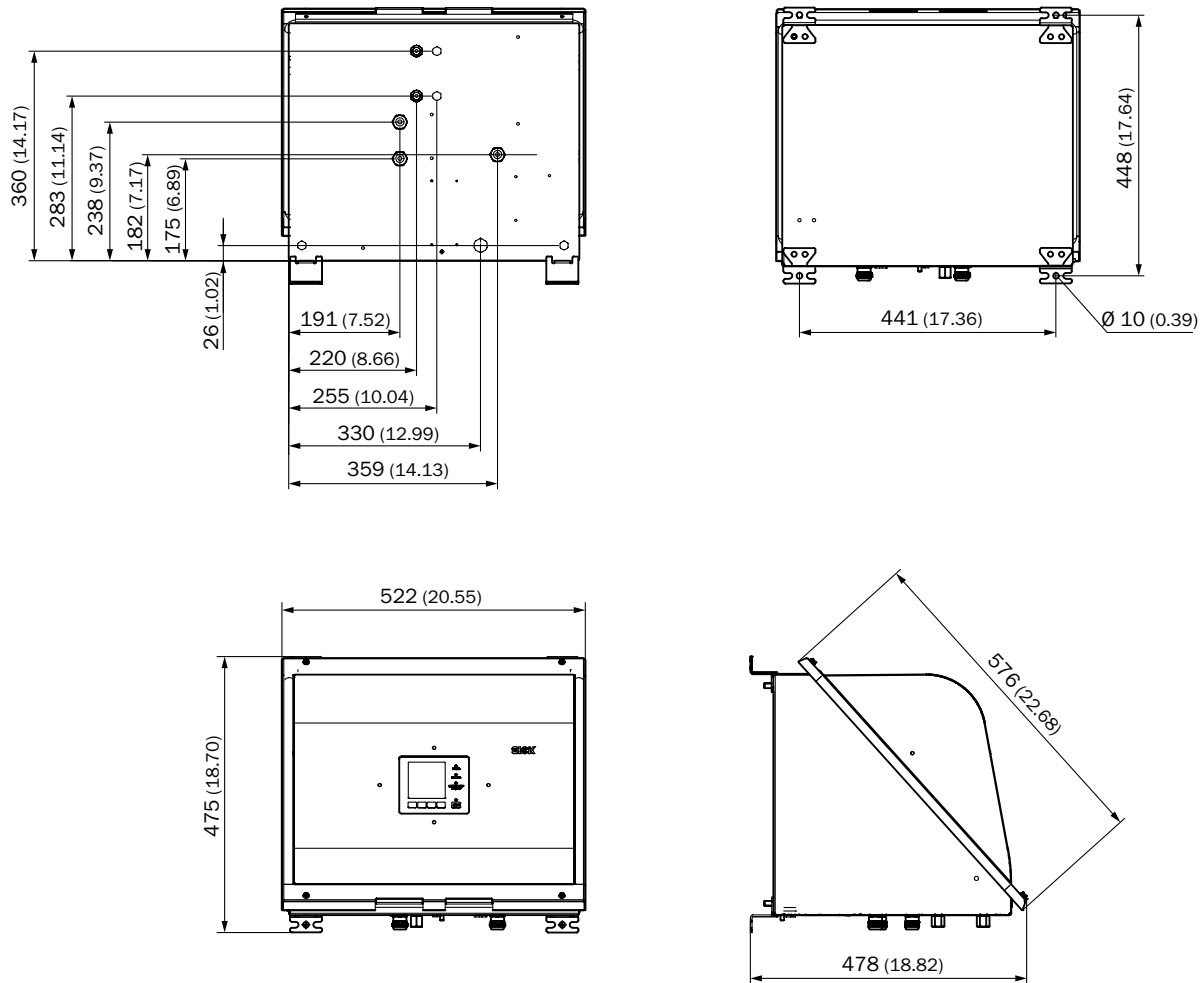
GMS815P design



GMS820P design

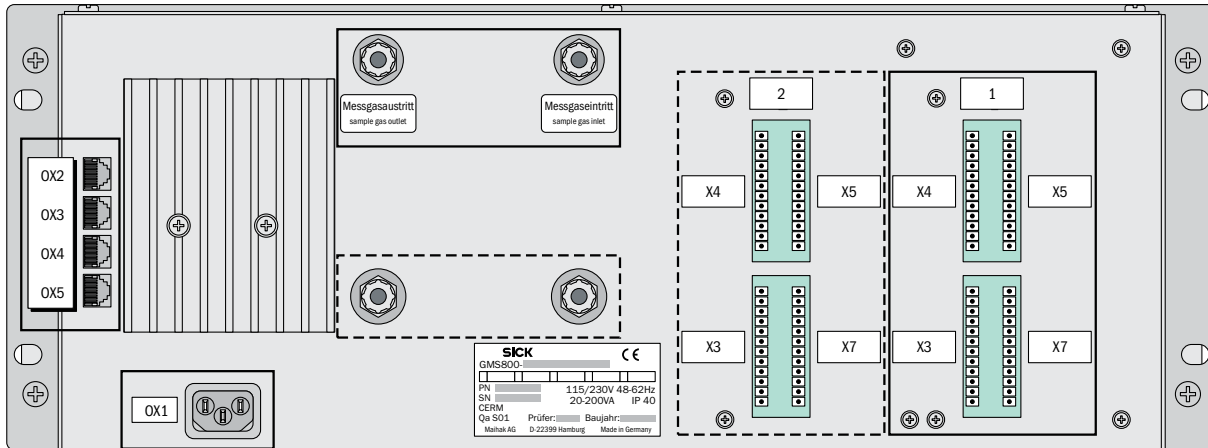


GMS840 design

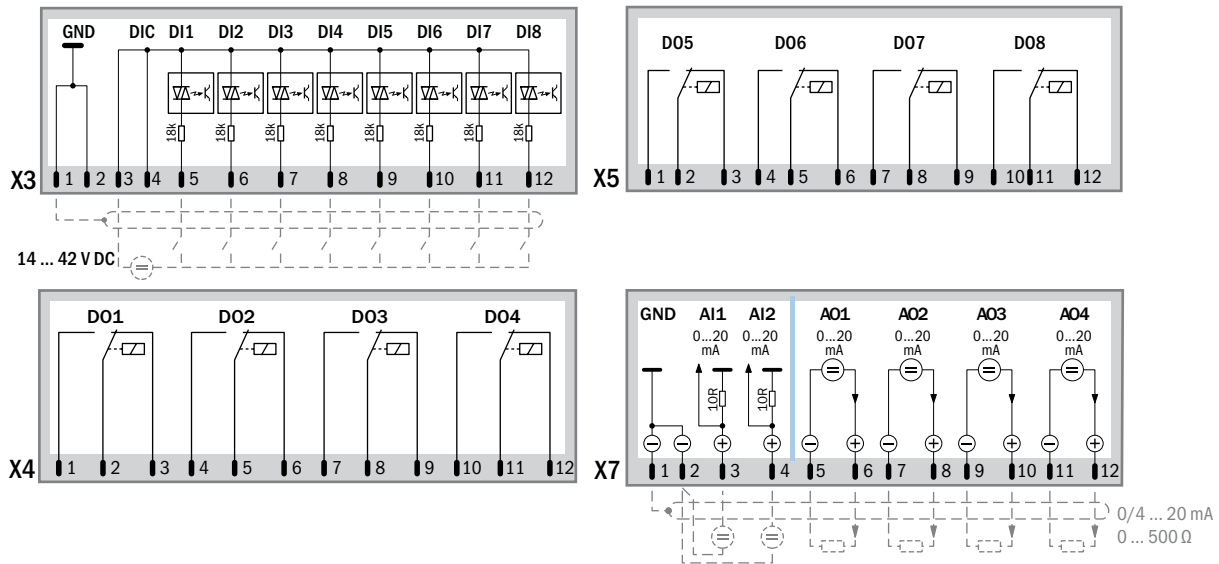


Connection types

GMS810 design



GMS800 I/O module



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Detailed addresses and additional representatives → www.sick.com

Trace Oxygen Analyser AMS 3110



The application:

The Trace Oxygen Analyser AMS 3110 is a portable, easy to operate system for the measurement of oxygen traces in Ex-applications Zone 2. Typical applications are the measurement of trace oxygen in noble gases, protective gases and gases with oxidising components.

The measuring principle:

The electrochemical sensors for the measurement of trace oxygen are mainly consisting of five components:

- Oxygen sensitive cathode
- Anode
- Electrolyte
- Diffusion membrane
- Housing with electrical connections

The measuring gas diffuses through a membrane to a thin layer of electrolyte. At the cathode the oxygen reduces. The free flowing electrons are drifting to the Anode. This generates a electrical current which is direct proportional to the oxygen concentration of the measuring gas. The use of electrochemical sensors allows in standard applications the measurement of trace oxygen in a number of complex and aggressive gas mixtures. The fitting sensor for a specific application has to be selected considering the different available electrolytes and electrodes. It is therefore essential to know the physical and chemical application parameters such as temperature, gas pressure, humidity content and the consistency of a specific measuring gas.

The Trace Oxygen Analysers Model AMS 3110, AMS 3126, AMS 3160, AMS 3175 and AMS 3186 are operating on electrochemical sensors which are adapted to a specific customer application. The sensors are mounted into specially developed measuring chambers. To compensate temperature fluctuations during a measurement the sensor signal is temperature monitored. The entire sensor assembly is potted gas tight to avoid leakage.

The operational life time of an electrochemical sensor is determined from the PPM-hours a sensor exposed to oxygen. Therefore the sensors have a shorter life expectancy in air than in low PPM-Oxygen concentrations. The life time in air is usually only a few months, but 3 years or longer in PPM-Oxygen concentrations.

The measuring system:

The Trace Oxygen Analyser AMS 3110 is consisting of the analyser electronics, the pneumatic components for gas extraction and flow control, a pressure reducer for a max. gas pressure of 10 bar (abs) and a purge valve to protect the trace oxygen sensor against high pressure and high oxygen concentrations.

Technical Data

Analyser	AMS 3110 Ex
Ex-classification	ATEX II 3G for Zone 2
Measuring principle	Electrochemical oxygen sensor
Application	Monitoring the purity of technical gases
Measuring range	0 ... 10, 0 ... 100, 0 ... 1000, 0 ... 10000 ppmv
Analogue Signal port	0 ... 1 V
Reproducibility	+/- 2 % of the measuring value
Resolution	0,01 ppm – C(O ₂) – 0,01 % depending on O ₂ concentration and application
T90-Time	ca. 40 seconds
Display	4 ½ digit digital display
Gas connection	inlet quick connect coupling outlet 6 mm compression fittings
Gas sampling	built-in inlet /outlet valve flow meter, pressure reducer
Sample flow	min. 10 NI/h, max. 60 NI/h
Sample pressure (inlet)	min. 1,01 bar abs., max. 10 bar abs.
Sample pressure (sensor)	internal pressure regulator at 50 mbar(g), the sample gas has to be vented at atmospheric pressure
Ambient operating temp.	- 5 °C up to + 45 °C
Relative humidity of the gas	0 ... 99 % not condensing
Power supply	Rechargeable lead acid battery, epoxy encapsulated
Protection / Housing / dimensions	portable housing / 362 x 156 x 320 mm (wxhxd)
Weight	7,5 kg
Accessories :	Protective carrying case
Version: AMS 3110 E V-2013-07	

Specifications subject to change

ppm / Vol % Oxygen Analyser AMS 3126



available options:

particle filter 2-7 μ m
5-way valve
electronical flowmeter
auto-calibration
2 free adjustable relays
different housing

The application:

The Oxygen Analyser AMS 3126 has been developed for the measurement of PPM- and Vol %-concentrations of oxygen traces in gases with combustible components. Two separate electrochemical sensors, calibrated for the application, guarantee highly accurate measuring values in both ranges. The electrochemical sensors in the Oxygen Analyser AMS 3126 are interconnected electronically. This provision ensures to protect the sensor for the PPM-concentrations efficiently against high oxygen concentrations. The result is a high availability of the Oxygen Analyser AMS 3126 for process measurements.

The measuring principle:

The electrochemical sensors for the measurement of trace oxygen are mainly consisting of five components:

- Oxygen sensitive cathode
- Anode
- Electrolyte
- Diffusion membrane
- Housing with electrical connections

The measuring gas diffuses through a membrane to a thin layer of electrolyte. At the cathode the oxygen reduces. The free flowing electrons are drifting to the Anode. This generates a electrical current which is direct proportional to the oxygen concentration of the measuring gas. The use of electrochemical sensors allows in standard applications the measurement of trace oxygen in a number of complex and aggressive gas mixtures. The fitting sensor for a specific application has to be selected considering the different available electrolytes and electrodes. It is therefore essential to know the physical and chemical application parameters such as temperature, gas pressure, humidity content and the consistency of a specific measuring gas.

The Oxygen Analysers Model AMS 3110, AMS 3126, AMS 3160, AMS 3175 and AMS 3186 are operating on electrochemical sensors which are adapted to a specific customer application. The sensors are mounted on specially developed measuring chambers. To compensate temperature fluctuations during a measurement the sensor signal is temperature monitored. The entire sensor assembly is potted gas tight to avoid leakage. The operational life time of an electrochemical sensor is determined from the PPM-hours a sensor exposed to oxygen. Therefore the sensors have a shorter life expectancy in air than in low PPM-Oxygen concentrations. The life time in air is usually only a few months, but 3 years or longer in PPM-Oxygen concentrations.

The measuring system:

The Oxygen Analyser AMS 3126 is equipped with two interconnected electrochemical sensor for the PPM- and Vol-% measuring range. The analyser switches automatically between the two electrochemical sensors depending on the oxygen concentration.

For measurements of Oxygen concentrations in the Vol-% range, and during short in-breaks the PPM-range sensor is protected against the negative effects of high oxygen concentrations. This allows instantenous measurements below 25 ppm, and safes from long purge cycles of the PPM-oxygen sensor in the Oxygen Analyser AMS 3126.

Technical Data

Analyser	AMS 3126
Measuring principle	Electrochemical Oxygen Sensor
Application	Gases industries, Chemical Industries
Measuring range	4, automatically changing, with digital identification 0 ... 25 Vol % or 0 ... 10, 0 ... 100, 0 ... 1000 ppmv
Analogue signal port	(0) 4 ... 20mA, galvanically separated
Reproducibility	+/- 2 % of the measuring value
Resolution	0,01 ppm – C(O ₂) – 0,01 % depending on O ₂ concentration and application
T90-Time	ca. 40 seconds
Display	2* 16 digit, illuminated LCD display
Messages	2 free adjustable isolated changeover relays
Gas connection	inlet / outlet 3 / 6 mm ferrule pack
Gas sampling	built-in inlet / outlet valve flowmeter, pressure reducer
Sample flow	min. 40 NI/h, max. 70 NI/h / purge gas 3 NI/h
Sample pressure (inlet)	min. 1,01 bar abs., max. 10 bar abs.
Sample pressure	Integrated pressure reducer
Ambient operating temp.	- 5 °C up to + 45 °C
Relative humidity of the gas	0 ... 99 % not condensing
Power supply	110 or 230 VAC / 60 - 50 Hz
Protection / Housing / Dimensions	IP20 / portable housing IP20 / 19" rack 3 HU
Weight	5-8 kg, depending on housing / options
Options	5-way valve, manual, for switching between the gases (e.g. PR-Gas 1+2 / Cal-Gas 1+2) auto-calibration electronical flowmeter particle filter 2-7µm different housing
Version: AMS 3126 E V-2013-07	

Specifications subject to change

Trace Oxygen Analyser AMS 3160



available options:

- pressure reducer
- manual bypass- and purge valve
- manual 5 way valve
- 2 free adjustable messages
- particle filter 2-7 μ m
- electronically flow control / -alarm
- electronical/pneumatical gas pump
- protective case
- charging unit
- different housings

The Application:

The Trace Oxygen Analyser AMS 3160 operates on base of an electrochemical sensor. The analyser AMS 3160 is an analogue instrument for applications in which highly accurate, long life measuring technology has advantages over micro processor controlled electronic analysers. The available versions of the Trace Oxygen Analyser AMS 3160 are for general applications. The smallest measuring range is 0 ... 10 ppm of O₂.

The Measuring principle:

The electrochemical sensors for the measurement of trace oxygen are mainly consisting of five components:

- Oxygen sensitive cathode
- Anode
- Electrolyte
- Diffusion membrane
- Housing with electrical connections

The measuring gas diffuses through a membrane to a thin layer of electrolyte. At the cathode the oxygen reduces. The free flowing electrons are drifting to the Anode. This generates a electrical current which is direct proportional to the oxygen concentration of the measuring gas. The use of electrochemical sensors allows in standard applications the measurement of trace oxygen in a number of complex and aggressive gas mixtures. The fitting sensor for a specific application has to be selected considering the different available electrolytes and electrodes. It is therefore essential to know the physical and chemical application parameters such as temperature, gas pressure, humidity content and the consistency of a specific measuring gas.

The Trace Oxygen Analysers Model AMS 3110, AMS 3126, AMS 3160, AMS 3175 and AMS 3186 are operating on electrochemical sensors which are adapted to a specific customer application. The sensors are mounted on specially developed measuring chambers. To compensate temperature fluctuations during a measurement the sensor signal is temperature monitored. The entire sensor assembly is potted gas tight to avoid leakage. The operational life time of an electrochemical sensor is determined from the PPM-hours a sensor is exposed to oxygen. Therefore the sensors have a shorter life expectancy in air than in low PPM-Oxygen concentrations. The life time in air is usually only a few months, but 3 years or longer in PPM-Oxygen concentrations.

The Measuring system:

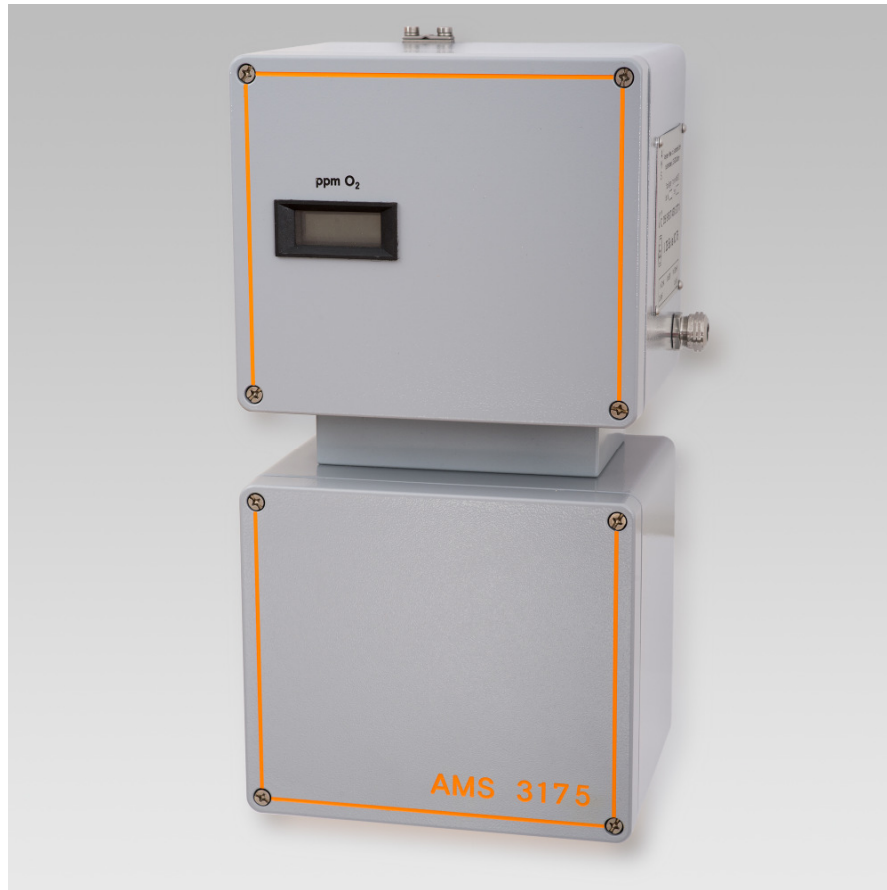
The Trace Oxygen Analyser AMS 3160 is consisting of the analyser electronic the pneumatic components for gas extraction and flow control built into an electronic housing 42 TE / 3 HE. The analyser can be equipped with a pressure reducer for gas pressure of 10 bar (abs) and a purge valve to protect the electrochemical sensors against high gas pressure and high oxygen concentrations. For mobile applications the instrument can be installed in a portable housing. The Trace Oxygen Analyser AMS 3160 can be equipped with a rechargeable battery to make the instrument independent from external power sources in mobile applications. A list of available options allows adopting the Trace Oxygen Analyser AMS 3160 to almost every application in process gas analysis.

Technical Data

Analyser	AMS 3160
Measuring principle	Electrochemical oxygen sensor
Measuring range	4, manual changeover 0 ... 10, 0 ... 100, 0 ... 1000, 0 ... 10000 ppmv
Analogue signal port	0 ... 10 V, 0 (4) ... 20mA
Reproducibility	+/- 2 % of the measuring value
Resolution	0,01 ppm – C(O ₂) – 1 ppm depending on the O ₂ concentration
T90-Time	ca. 40 seconds
Display	3 ½ digit LCD display
Messages	2 free adjustable messages in relation to the O ₂ concentration
Gas connection	inlet / outlet 3 / 6 mm ferrule pack
Gas sampling	built-in inlet / outlet valve flowmeter
Sample flow	min. 20 NI/h, max. 40 NI/h
Sample pressure (inlet)	min. 1,01 bar abs., max. 2 bar abs.
Sample pressure (measuring cell)	max. 50 mbar pressure
ambient operating temp.	- 0 °C up to + 45 °C
Relative humidity of the gas	0 ... 99 % not condensing
Power supply	110 or 230 VAC / 60 - 50 Hz
Protection / Housing / Dimensions	IP 65 / wall mounting housing 300 x 250 x 320 mm IP 54 / 63 TE, 3 HU portable housing IP 20 / 19" rack 3 HU IP 20 / ½ 19" electronic housing, 3 HU IP 20 / ½ 19" cassette
Weight	8-10 kg
Options	gas pump pressure reducer (max 10 bar in, 50 mbar out) automatical bypass- and purge valve analogue outlet galvanically separated particle filter 2-7µm manual 5 way valve charging unit protective case electronically flow control / -alarm
Version: AMS 3160 E V-2013-07	

Specifications subject to change.

Trace Oxygen Analyser AMS 3175 Ex



The Application:

The Trace Oxygen Analyser AMS 3175 is an easy to operate system for the measurement of oxygen traces in hazardous areas classified as Zone 1 and Zone 2. Typical applications are the measurement of oxygen traces in noble gases, inert gas and gases with oxidising content.

The Measuring principle:

The electrochemical sensors for the measurement of trace oxygen are mainly consisting of five components:

- Oxygen sensitive cathode
- Anode
- Electrolyte
- Diffusion membrane
- Housing with electrical connections

The measuring gas diffuses through a membrane to a thin layer of electrolyte. At the cathode the oxygen reduces. The free flowing electrons are drifting to the Anode. This generates an electrical current which is direct proportional to the oxygen concentration of the measuring gas. The use of electrochemical sensors allows in standard applications the measurement of trace oxygen in a number of complex and aggressive gas mixtures. The fitting sensor for a specific application has to be selected considering the different available electrolytes and electrodes. It is therefore essential to know the physical and chemical application parameters such as temperature, gas pressure, humidity content and the consistency of a specific measuring gas.

The Trace Oxygen Analysers Model AMS 3110, AMS 3126, AMS 3160, AMS 3175 and AMS 3186 are operating on electrochemical sensors which are adapted to a specific customer application. The sensors are mounted on specially developed measuring chambers. To compensate temperature fluctuations during a measurement the sensor signal is temperature monitored. The entire sensor assembly is potted gas tight to avoid leakage. The operational life time of an electrochemical sensor is determined from the PPM-hours a sensor exposed to oxygen. Therefore the sensors have a shorter life expectancy in air than in low PPM-Oxygen concentrations. The life time in air is usually only a few months, but 3 years or longer in PPM-Oxygen concentrations.

The Measuring system:

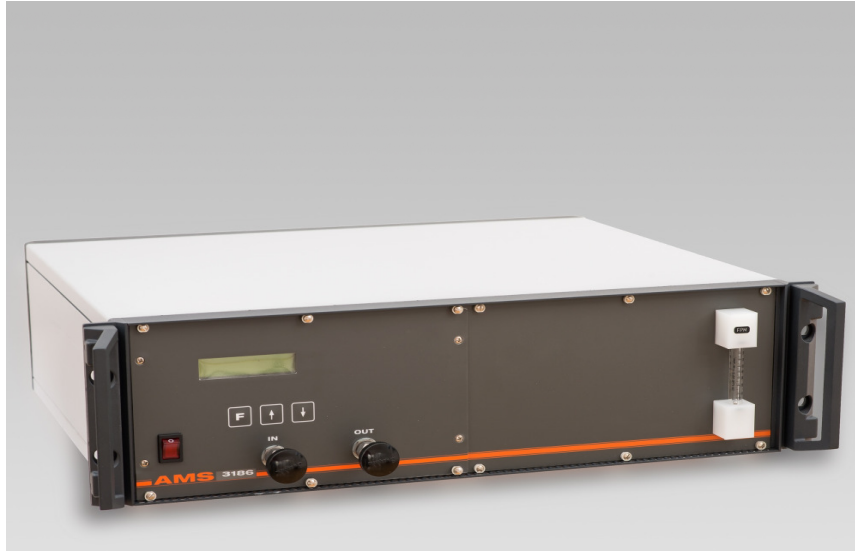
The Trace Oxygen Analyser AMS 3175 is certified as 2-Wire-Transmitter for use in hazardous areas classified as Zone 1. The transmitter is, if powered by an intrinsically safe power circuit, certified according ATEX II 2G Ex ia IIC T6. The electronics and the analytical components are mounted, separated gas tight, in Aluminium die cast housings for wall mounting. The pneumatic components are consisting of the valves to control and adjust the gas flow in the instrument and a mechanical flow indicator. As option the gas connections can be equipped with flame barriers for gas group IIC.

Technical Data

Analyser	AMS 3175 Ex
Ex-classification	ATEX 2 G, Ex ia IIC T6
Measuring principle	Electrochemical oxygen sensor
Application	Gases Industries, Chemical Industries
Measuring range	max. 4 automatic selection 0 ... 10, 0 ... 100, 0 ... 1000, 0 ... 10000 ppmv
Analogue signal port	4 ... 20mA two-wire transmitter
Reproducibility	+/- 2 % of the measuring value
Resolution	0,01 ppm – C(O ₂) – 1 ppm depending on the O ₂ concentration
T90-Time	ca. 40 seconds
Display	4 ½ digit LCD display
Messages	2 free adjustable isolated changeover relays
Gas connection	inlet / outlet 6 / 6 mm ferrule pack
Gas sampling	built-in inlet / outlet valve flowmeter
Sample flow	min. 20 NI/h, max. 40 NI/h
Sample pressure (inlet)	min. 1,01 bar abs., max. 2 bar abs.
Sample pressure (measuring cell)	max. 50 mbar pressure
Ambient operating temp.	- 0 °C up to + 45 °C
Relative humidity of the gas	0 ... 99 % not condensing
Power supply	24 VDC intrinsically safe
Protection / Housing / Dimensions	IP 65 / wall mounting housing off Aluminium die-casting, separated for electronic and gas analytics / 446 x 232 x 180 mm (hxbxt)
Weight	9 kg
Options	intrinsically safe power supply with signal separator Flame arrester ATEX II G IIC
Version: AMS 3175 E V-2013-07	

Specifications subject to change.

Trace Oxygen Analyser AMS 3186



available options:

bypass- and purge valve, manual
2 free adjustable messages
electronically flow control
electrical/pneumatic gas pump
manual 5 way valve
particle filter 2-7 μ m
auto-calibration, also with remote control
automatic purge of the sensor
pressure reducer
different housings
thermostatted measuring cell

The Application:

The Trace Oxygen Analyser AMS 3186 operates on base of an electrochemical sensor. The Trace Oxygen Analyser AMS 3186 is a micro-processor controlled analyser for the highly accurate measurement of lowest oxygen traces. Changes in concentrations of < 0,1 ppm of oxygen with a resolution of 0,01 ppm can be measured. The available housings are designed for use in General Applications. The lowest oxygen measuring range is 0 ... 1 ppm.

The Measuring principle:

The electrochemical sensors for the measurement of trace oxygen are mainly consisting of five components:

- Oxygen sensitive cathode
- Anode
- Electrolyte
- Diffusion membrane
- Housing with electrical connections

The measuring gas diffuses through a membrane to a thin layer of electrolyte. At the cathode the oxygen reduces. The free flowing electrons are drifting to the Anode. This generates an electrical current which is direct proportional to the oxygen concentration of the measuring gas. The use of electrochemical sensors allows in standard applications the measurement of trace oxygen in a number of complex and aggressive gas mixtures. The fitting sensor for a specific application has to be selected considering the different available electrolytes and electrodes. It is therefore essential to know the physical and chemical application parameters such as temperature, gas pressure, humidity content and the consistency of a specific measuring gas. The operational life time of an electrochemical sensor is determined from the PPM-hours a sensor exposed to oxygen. Therefore the sensors have a shorter life expectancy in air than in low PPM-Oxygen concentrations. The life time in air is usually only a few months, but 3 years or longer in PPM-Oxygen concentrations

The Measuring system:

The Trace Oxygen Analyser AMS 3186 consists of an electronic, the pneumatic components for the gas supply and flow control, installed in an electronic housing 84 TE / 3 HE. To protect the analyser against high gas pressure and high oxygen concentrations, the analyser can be equipped with a pressure reducer for gas pressure up to 10 bar (abs) and a manual purge valve. The Trace Oxygen Analyser AMS 3186 is the ideal system for automated process control. A micro processor controls the electronics and the display. Calibration and service are menu-driven. Automated components allow remote control of the Trace Oxygen Analyser AMS 3186 from the control room. For use of the Trace Oxygen Analyser AMS 3186 in hazardous areas classified as Zone 2 the system gas can be equipped with an inert gas purging system. Automatic calibration and purging of the electrochemical sensor are available options.

Technical Data

Analyser	AMS 3186
Measuring principle	Electrochemical oxygen sensor
Application	Gases Industries, Chemical Industries
Measuring range	2, automatic selection, digital ID 0 ... 10, 0 ... 1000 ppmv
Analogue signal port	0 (4) ... 20mA, galvanically separated, with measuring range changeover and digital identification
Reproducibility	+/- 2 % of the measuring value
Resolution	0,01 ppm - C(O ₂) -1 ppm, depending on the O ₂ concentration
T90-Time	ca. 40 seconds
Display	2* 16 digit, illuminated LCD display
Messages	2 free adjustable isolated changeover relays
Gas connection	inlet / outlet 3 / 6 mm ferrule pack
Gas sampling	built-in inlet / outlet valve, flowmeter
Sample flow	min. 20 NI/h, max. 40 NI/h
Sample pressure (inlet)	min. 1,01 bar abs., max. 2 bar abs.
Sample pressure (measuring cell)	max. 50 mbar pressure
digital communication	serial interface RS 232
Ambient operating temp.	- 5 °C up to + 45 °C
Relative humidity of the gas	0 ... 99 % not condensing
Power supply	230 VAC, 24 VAC
Protection / Housing / Dimensions	IP 54 / wall mounting housing IP 20 / 19" rack, 3 HU / IP 20 / 63 TU portable housing
Ex-classification	in IP 55 wall mounting housing with inert gas purge also qualified for applications in Ex-Zone 2
Weight	5 – 7 kg
Options	bypass- and purge valve, manual measuring range max. 4, automatic selection, digital ID electronically flow control electrical/pneumatic gas pump manual 5 way valve particle filter 2-7µm auto-calibration, also with remote control automatic purge of the sensor pressure reducer max. 10 bar, out 50 mbar thermostatted measuring cell
Version: AMS 3186 E V-2013-07	

Specification subject to change.

Trace Oxygen Analyser AMS 5100



available options:

- pressure reducer
- particle filter 2-7µm
- manual 5 way valve
- electronical/pneumatic gas supply pump
- electronical flowmeter
- auto-Calibration
- back purge
- 2 free adjustable measuring values
- different housings

The Application:

The basics of the Trace Oxygen Analyser AMS 5100 is the development project "AMS 5000" for a compact electronic to be used with Zircon dioxide and electrochemical sensors for the measurement of trace oxygen and Oxygen concentrations in Percent range. The Trace Oxygen Analyser AMS 5100 is for the measurement of oxygen traces in inert gases. For this application the Trace Oxygen Analyser AMS 5100 is equipped with a Zircon dioxide sensor. Due to the compact size of the electronics the Trace Oxygen Analyser AMS 5100 can be mounted in an electronic housing 28 TE, 3 HE and has a depth of 250 mm. The Trace Oxygen Analyser AMS 5100 is available in several housings for General- and Ex-Applications.

The Measuring Principle:

The Zircon dioxide sensor is the ideal transducer for the trace analysis of Oxygen in Inert gases. The sensor can be mounted together with the electronics in one single housing. In combination with a calibration adapter the Zircon dioxide sensor can be mounted directly into a gas pipe. This setup allows the supply of the Zircon dioxide sensors with reference- and calibration gas. To increase the reproducibility of the measuring values the analyser can be equipped with the optional Auto-Calibration feature.

The Measuring System:

A long list of options allows adopting the Trace Oxygen Analyser AMS 5100 for almost every application. Four measuring ranges with automatic switchover can be set freely within the measuring range. The software for remote control, calibration and service with remote display allows the direct access via the computer network of the customer to further increase the flexibility of the Trace Oxygen Analyser AMS 5100.

Technical Data

Analyser	AMS 5100
Measuring principle	ZrO ₂ probe with Pt-electrodes
Application	Soldering machines, Gases Industries, Chemical Industries
Measuring range	0 ... 25 Vol % 0 ... 1 ppmv
Analogue signal port	(0) 4...20 mA or 0...10V, galvanically separated
Reproducibility	+/- 2 % of the measuring value
Resolution	0,01 ppm – C(O ₂) – 0,01 % depending on the O ₂ concentration
T90-Time	ca. 20 Seconds
Display	2* 16 digit, illuminated LCD display 1. Line: display of concentration in ppm or Vol % 2. Line: Messages, device status, sensor parameters
Messages	1 System message (measuring value yes / no) max. 2 messages configurable as oxygen value, calibration message, measuring value in the range, flow
Gas connection	inlet / outlet 3 / 6 mm ferrule pack
Gas sampling	built-in inlet / outlet valve
Sample flow	min. 30 NI/h, max. 50 NI/h
sample pressure (inlet)	min. 1,01 bar abs., max. 10 bar abs.
Digital communication	serial interface RS232
Ambient operating temp.	+ 5 °C up to + 60 °C
Power supply	110 ... 230 VAC or 24 VDC
Protection / Housing / Dimensions	IP20 / electronics unit, 28 TE / 3HU IP65 / wall mounting housing / ca. 300 x 260 x 130 mm (hxbxt) IP54 / portable housing 42 TE / 3 HU IP 54 / panel mounting 144 x 144 mm Ex-d housing for Ex Zone 2
Weight	2,5 kg ... 10 kg depending housing and built-in options
Options	pneumatic pump electronic flow control software for remote control and service max. 4 measuring ranges automatically switching with digital identification auto-calibration pressure regulator flowmeter
Version: AMS 5100 E V-2013-07	

Specifications subject to change.

Oxygen Analyser for measurement in the Vol. % - Range AMS 3220



available options:

- pressure reducer
- particle filter 2-7µm
- manual 5 way valve
- electronical/pneumatic gas supply pump
- electronical flowmeter
- auto-Calibration
- back purge
- 2 free adjustable measuring values
- different housings

The Application:

The Oxygen Analyser AMS 3220 is designed for the measurement of Oxygen concentrations in noble gases and process gases without combustible impurities. For this application the Oxygen Analyser AMS 3220 is equipped with a Zircondioxid sensor. Due to the compact design the Oxygen Analyser AMS 3220 fits in an electronic housing IP20, 28 TE, 3 HE with a depth of 250 mm. The Oxygen Analyser AMS 3220 is available in different housings for General Applications and classified areas. The Oxygen Analyser AMS 3220 is certified by the German TÜV according European and German environmental regulations and fulfils the requirements for QAL 1 according EN 14181 and EN ISO 14956. The Oxygen Analyser AMS 3220 is tested for suitable flue gas applications according to TA-Luft, 13. und 17. BlmSchV.

The Measuring principle:

The Zircondioxid sensor is the ideal detector for the measurement of Oxygen in gases without combustible impurities. The Zircondioxid sensor can be installed in the housing of the Oxygen Analyser AMS 3220 . Using a calibration adapter with the Zircondioxid sensor, the Zircondioxid sensor can also be installed directly in a process gas pipe. This setup allows easy supply of calibration and reference gas to the sensor by using a separate pneumatic unit. In combination with the optional, time controlled auto-calibration feature the already high accuracy and reproducibility of the Oxygen Analyser AMS 3220 is improved further.

The Measuring system:

A long list of options allows to adapt the Oxygen Analyser AMS 3220 for almost every application. Four measuring ranges with automatic switch-over and digital measuring range recognition can be set freely within the maximum measuring range. The software for remote control and remote service with access via the customer computer network further increase the flexibility of the Oxygen Analyser AMS 3220 in a application.

Technical Data

Analyser	AMS 3220 Analyser
Application	Certified for flue gas applications according European and German environmental regulations
Measuring principle	ZrO ₂ sensor with Pt-electrodes
Measuring range	0 ... 25 Vol%
Analogue signal port	(0) 4 ... 20 mA or 0 ... 10V, galvanically separated
Reproducibility	+/- 2 % of the measuring value
Resolution	C(O ₂) – 0,01 %
T90-Time	< 20 sec.
Display	2* 16 digit, illuminated LCD display 1. Line: display of concentration in Vol % 2. Line: messages, device status, sensor parameters
Messages	1 System message (measuring value yes / no) max. 2 messages configurable as measuring values
Digital communication	serial interface RS232
Ambient operation temp.	+ 5 °C up to + 45 °C
Power supply	24 / 110 / 230 VAC
Protection / Housing / Dimensions	IP65 / wall mounting housing / ca. 300 x 320 x 130 mm (hxbxt) IP20 / electronics unit 28 TE / 3HU IP54 / portable housing 42 TE / 3 HE IP 54 / panel mounting 144 x 144 mm
Approvals	TÜV certification 936/807023/A of 14.08.2000
Weight	2,5...10 kg
Options	auto-calibration back purge for high dust concentrations pressure reducer particle filter 2-7µm manual 5 way valve electronical/pneumatic gas supply pump electronical flowmeter software for remote control and service
Version: AMS 3220 E V-2013-07	

Specification subject to change.

Oxygen Analyser for measurement in the Vol. % - Range **AMS 5200**



available options:

- pressure reducer
- particle filter 2-7µm
- manual 5 way valve
- electronical/pneumatic gas supply pump
- electronical flowmeter
- auto-Calibration
- back purge
- 2 free adjustable measuring values
- different housings

The Application:

The basics of the Oxygen Analyser AMS 5200 is the development project "AMS 5000" for a compact electronic to be used with Zircon dioxide and electrochemical sensors for the measurement of trace oxygen and Oxygen concentrations in Percent range.

The Oxygen Analyser AMS 5200 is designed for the measurement of Oxygen concentrations in noble gases and process gases without combustible impurities. For this application the Oxygen Analyser AMS 5200 is equipped with a Zircondioxid sensor. Due to the compact design the Oxygen Analyser AMS 5200 fits in a electronic housing IP20, 28 TE, 3 HE with a depth of 250 mm. The Oxygen Analyser AMS 5200 is available in different housings for General Applications and classified areas.

The Measuring principle:

The Zircondioxid sensor is the ideal detector for the measurement of Oxygen in gases without combustible impurities. The Zircondioxid sensor can be installed in the housing of the Oxygen Analyser AMS 5200. Using a calibration adapter with the Zircondioxid sensor, the Zircondioxid sensor can also be installed directly in a process gas pipe. This setup allows easy supply of calibration and reference gas to the sensor by using a separate pneumatic unit. In combination with the optional, time controlled auto-calibration feature the already high accuracy and reproducibility of the Oxygen Analyser AMS 5200 is improved further.

The Measuring system:

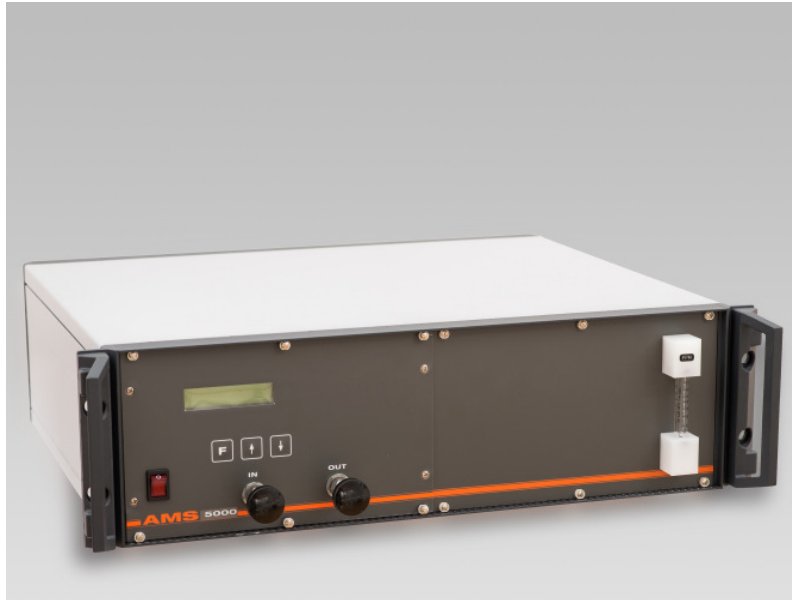
A long list of options allows to adopt the Oxygen Analyser AMS 5200 for almost every application. Four measuring ranges with automatic switch-over and digital measuring range recognition can be set freely within the maximum measuring range. The software for remote control and remote service with access via the customer computer network further increase the flexibility of the Oxygen Analyser AMS 5200 in a application.

Technical Data

Analyser	AMS 5200 Analyser
Measuring principle	ZrO ₂ sensor with Pt-electrodes
Application	Soldering machines OEM application Gases Industries Chemical Industries
Measuring range	0 ... 25 Vol %
Analogue signal port	(0) 4 ... 20 mA or 0 ... 10V, galvanically separated
Reproducibility	+/- 2 % of the measuring value
Resolution	0,01 %
T90-Time	ca. 20 Seconds
Display	2* 16 digit, illuminated LCD display 1. Line: display of concentration in ppm or Vol % 2. Line: messages, device status, sensor parameters
Messages	1 system message (measuring value yes / no) max. 2 messages configurable as oxygen value, calibration message, measuring value in the range, flow rate
Gas connection	inlet / outlet 3 / 6 mm ferrule pack
Gas sampling	min. 30 NI/h, max. 50 NI/h
Sample pressure (inlet)	min. 1,01 bar abs., max. 10 bar abs.
Digital communication	serial interface RS232
Ambient operating temp.	+ 5 °C up to + 60 °C
Power supply	110 ... 230 VAC or 24 VDC
Protection / Housing / Dimensions	IP20 / electronics unit 28 TE / 3HU IP65 / wall mounting housing / ca. 300 x 260 x 130 mm (hxbxt) IP54 / portable housing 42 TE / 3 HE IP 54 / panel mounting 144 x 144 mm
Weight	2,5 kg ... 10 kg depending on housing and built-in options
Options	pneumatic suction Mechanical and electronic flow analysis manual 5 way valve Particle filter 2-7µm Software for remote display and service max. 4 measuring ranges automatically switching with digital range detection auto-calibration pressure regulator
Version: AMS 5200 E V-2013-07	

Specifications subject to change.

Oxygen Analyser for applications in the Vol. % - Range **AMS 5225**



available options:

pressure reducer
particle filter 2-7µm
manual 5 way valve
electronical/pneumatic gas supply pump
electronical flowmeter
auto-Calibration
2 free adjustable measuring values
different housings

The Application:

The Oxygen Analyser AMS 5225 is equipped with a electrochemical sensors for the measurement of Vol. % concentrations. The analyser AMS 5225 is a micro-processor equipped instrument for highly accurate measurements off Oxygen in the Vol. % range. Changes in the Oxygen concentration < 0,1 Vol. % can be determined with a resolution of 0,01 Vol. %. The analyser is available in housings for General Applications.

The Measuring principle:

The electrochemical sensors for the measurement of trace oxygen are mainly consisting of five components:

- Oxygen sensitive cathode
- Anode
- Electrolyte
- Diffusion membrane
- Housing with electrical connections

The measuring gas diffuses through a membrane to a thin layer of electrolyte. At the cathode the oxygen reduces. The free flowing electrons are drifting to the Anode. This generates an electrical current which is direct proportional to the oxygen concentration of the measuring gas. The use of electrochemical sensors allows in standard applications the measurement of trace oxygen in a number of complex and aggressive gas mixtures. The fitting sensor for a specific application has to be selected considering the different available electrolytes and electrodes. It is therefore essential to know the physical and chemical application parameters such as temperature, gas pressure, humidity content and the consistency of a specific measuring gas. The operational life time of an electrochemical sensor is determined from the PPM-hours a sensor exposed to oxygen. Therefore the sensors have a shorter life expectancy in air than in low PPM-Oxygen concentrations. The life time in air is usually only a few months, but 3 years or longer in PPM-Oxygen concentrations.

The Measuring system:

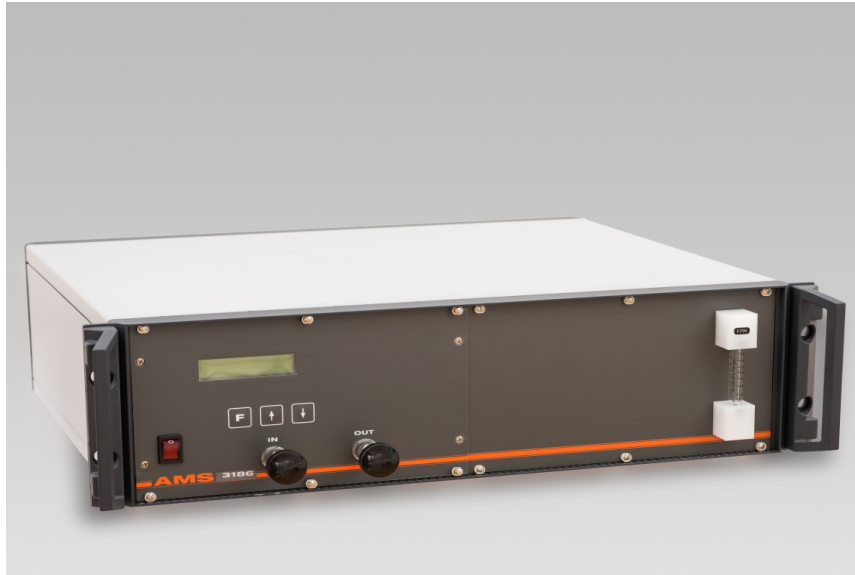
The Oxygen Analyser AMS 5225 consists of an electronic, the pneumatic components for the gas supply and flow control, installed in an electronic housing 28 TE / 3 HE. The analyser can be equipped with a pressure reducer for max. 10 bar (abs.) to protect the sensor against high gas pressure. The Oxygen Analyser AMS 5225 is the ideal system for automated process control. A micro processor controls the electronics and the display.

Technical Data

Analyser	AMS 5225
Measuring principle	Electrochemical oxygen sensor
Application	Soldering machines
	Welding technology
	Gases Industries
	Chemical Industries
Measuring range	0 ... 25 Vol. %
Analogue signal port	(0) 4 ... 20 mA or 0 ... 10V, galvanically separated
Reproducibility	+/- 2 % of the measuring value
Resolution	0,01%
T90-Time	ca. 20 Seconds
Display	2* 16 digit, illuminated LCD display
	1. Line: display of concentration in ppm or Vol %
	2. Line: Messages, device status, sensor parameters
Messages	1 system message (measuring value yes / no)
	max. 2 messages configurable as oxygen value,
	calibration message, measuring value in the range, flow rate
Gas connection	inlet / outlet 3 / 6 mm ferrule pack
Sample flow	min. 30 NI/h, max. 50 NI/h
Sample pressure (inlet)	min. 1,01 bar abs., max. 10 bar abs.
Digital communication	serial interface RS232
Ambient operating temp.	+ 5 °C up to + 60 °C
Power supply	110 ... 230 VAC or 24 VDC
Protection / Housing / Dimensions	IP20 / electronics unit 28 TE / 3HU IP65 / wall mounting housing / ca. 300 x 260 x 130 mm (hxbxt) IP54 / portable housing 42 TE / 3 HU IP 54 / panel mounting 144 x 144 mm
Weight	2,5 kg ... 10 kg depending on housing and built-in options
Options	pneumatic pump mechanical and electronic flow analysis software for remote display and service max. 4 measuring ranges automatically switching with digital range detection Manual 5 way valve auto-calibration pressure regulator
Version: AMS 5225 E V-2013-07	

Specification subject to change

Trace Oxygen Dewpoint-Analyser AMS 3186 Dewpoint



available options:

- manual bypass- and purge valve
- electronically flow control
- electrical/pneumatic gas pump
- auto-calibration, also with remote control
- automatic purge of the sensor
- manual 5 way valve
- particle filter 2-7 μ m
- pressure reducer
- 2 free adjustable messages
- different housings

The Application:

The Trace Oxygen Analyser AMS 3186 operates on base of an electrochemical sensor. The Trace Oxygen Analyser AMS 3186 is a micro-processor controlled analyser for the highly accurate measurement of lowest oxygen traces. Changes in concentrations of < 0,1 ppm of oxygen with a resolution of 0,01 ppm can be measured. The available housings are designed for use in General Applications. The lowest oxygen measuring range is 0 ... 1 ppm. For determine the dewpoint of the sample gas the analyser could be equiped with a dewpoint measurement in addition to the oxygen measurement.

The Measuring principle:

The electrochemical sensors for the measurement of trace oxygen are mainly consisting of five components:

- Oxygen sensitive cathode
- Anode
- Electrolyte
- Diffusion membrane
- Housing with electrical connections

The measuring gas diffuses through a membrane to a thin layer of electrolyte. At the cathode the oxygen reduces. The free flowing electrons are drifting to the Anode. This generates an electrical current which is direct proportional to the oxygen concentration of the measuring gas. The use of electrochemical sensors allows in standard applications the measurement of trace oxygen in a number of complex and aggressive gas mixtures. The fitting sensor for a specific application has to be selected considering the different available electrolytes and electrodes. It is therefore essential to know the physical and chemical application parameters such as temperature, gas pressure, humidity content and the consistency of a specific measuring gas. The operational life time of an electrochemical sensor is determined from the PPM-hours a sensor exposed to oxygen. Therefore the sensors have a shorter life expectancy in air than in low PPM-Oxygen concentrations. The life time in air is usually only a few months, but 3 years or longer in PPM-Oxygen concentrations

The measuring principle of the dew point sensor:

The measuring principle is based on a metal oxide dewpoint sensor with a multiple structure. The function is based on the adsorption of steam in a porously dielectrical coat. This adsorption coat is situated between two conducting layers on stable ceramic substrate. Due to the very high dielectric constant of water it is possible to reliably register the smallest storage of water. The design of the sensor is very low therefore the sensor responds to the slightest changes in the applied moisture.

The Measuring system:

The Trace Oxygen Analyser AMS 3186 consists of an electronic, the pneumatic components for the gas supply and flow control, installed in an electronic housing 84 TE / 3 HE. To protect the analyser against high gas pressure and high oxygen concentrations, the analyser can be equipped with a pressure reducer for gas pressure up to 10 bar (abs) and a manual purge valve. The Trace Oxygen Analyser AMS 3186 is the ideal system for automated process control. A micro processor controls the electronics and the display. Calibration and service are menu-driven. Automated components allow remote control of the Trace Oxygen Analyser AMS 3186 from the control room. For use of the Trace Oxygen Analyser AMS 3186 in hazardous areas classified as Zone 2 the system gas can be equipped with an inert gas purging system. Automatic calibration and purging of the electrochemical sensor are available options.

Technical Data

Analyser	AMS 3186 Dewpoint
Measuring principle	Electrochemical oxygen sensor Dewpoint: ceramic sensor
Application	Gases Industries, Chemical Industries
Measuring range	
Oxygen	4, automatic selection, adjustable 0 ... 10, 0 ... 1000 ppmv
Dewpoint	+20 ... -100 °C, optional -40...-120 °C
Analogue signal port	
Oxygen	0 (4) ... 20mA, galvanically separated, with measuring range changeover and digital identification
Dewpoint	0 (4) ... 20mA, galvanically separated
Reproducibility	+/- 2 % of the measuring value
Resolution	0,01 ppm - C(O ₂) -1 ppm, depending on the O ₂ concentration 0,1 °C – C(Dew) – 1 °C, depending on concentration
T90-Time	appr.30...40 seconds O ₂ , appr. 40 seconds Dewpoint
Display	2* 16 digit, illuminated LCD display
Messages	Status, calibration and service request, each 1 message for O ₂ / Dewpoint
Gas connection	inlet / outlet 3 / 6 mm ferrule pack
Gas sampling	built-in inlet / outlet valve, flowmeter
Sample flow	min. 20 NI/h, max. 40 NI/h
Sample pressure (inlet)	min. 1,01 bar abs., max. 2 bar abs.
Sample pressure (measuring cell)	max. 50 mbar pressure
digital communication	serial interface RS 232
Ambient operating temp.	- 5 °C up to + 45 °C
Relative humidity of the gas	0 ... 99 % not condensing
Power supply	230 VAC, 24 VAC
Protection / Housing / Dimensions	IP 54 / wall mounting housing IP 20 / 19", 3 HE, 473 mm deep, electronic housing IP 20 / ½ 19", 3HE, 250 mm deep, electronic cassette IP 20 / 63 TE, 3 HE, 300 mm deep portable housing
Ex-classification	in IP 55 wall mounting housing with inert gas purge also qualified for applications in Ex-Zone 2
Weight	5 – 7 kg
Options	bypass- and purge valve, manual electronically flow control electrical/pneumatic gas pump manual 5 way valve particle filter 2-7µm auto-calibration, also with remote control automatic purge of the sensor pressure reducer max. 10 bar, out 50 mbar
Version: AMS 3186 Dewpoint E V-2013-10	

Specification subject to change.

Trace Oxygen-Dewpoint-Analyser AMS 5100 Dewpoint



available options:

electronical/pneumatic gas supply pump
electronical flowmeter
auto-Calibration
pressure reducer
particle filter 2-7µm
different housings

The Application:

The basics of the Trace Oxygen Analyser AMS 5100 is the development project "AMS 5000" for a compact electronic to be used with Zircon dioxide and electrochemical sensors for the measurement of trace oxygen and Oxygen concentrations in Percent range. The Trace Oxygen Analyser AMS 5100 Dewpoint is suitable for the measurement of oxygen traces in inert gases. For this application the Trace Oxygen Analyser AMS 5100 Dewpoint is equipped with a Zircon dioxide sensor. Due to the compact size of the electronics the Trace Oxygen Analyser AMS 5100 Dewpoint can be mounted in an electronic housing IP 20, 42 TE, 3 HE and has a depth of 250 mm. The Trace Oxygen Analyser AMS 5100 Dewpoint is available in several housings for General- and Ex-Applications. For determine the dewpoint of the sample gas the analyser could be equipped with a dewpoint measurement in addition to the oxygen measurement.

The Measuring Principle:

The Zircon dioxide sensor is the ideal transducer for the trace analysis of Oxygen in Inert gases. The sensor can be mounted together with the electronics in one single housing. In combination with a calibration adapter the Zircon dioxide sensor can be mounted directly into a gas pipe. This setup allows the supply of the Zircon dioxide sensors with reference- and calibration gas. To increase the reproducibility of the measuring values the analyser can be equipped with the optional Auto-Calibration feature.

The measuring principle of the dew point sensor:

The measuring principle is based on a metal oxide dewpoint sensor with a multiple structure. The function is based on the adsorption of steam in a porously dielectrical coat. This adsorption coat is situated between two conducting layers on stable ceramic substrate. Due to the very high dielectric constant of water it is possible to reliably register the smallest storage of water. The design of the sensor is very low therefore the sensor responds to the slightest changes in the applied moisture.

The Measuring System:

A long list of options allows adopting the Trace Oxygen Analyser AMS 5100 Dewpoint for almost every application. Four measuring ranges with automatic switchover can be set freely within the measuring range. The software for remote control, calibration and service with remote display allows the direct access via the computer network of the customer to further increase the flexibility of the Trace Oxygen Analyser AMS 5100.

Technical Data

Analyser	AMS 5100 Dewpoint
Measuring principle	Oxygen: ZrO ₂ probe with Pt-electrodes Dewpoint: ceramic sensor
Application	Gas Industries, Chemical Industries, Inert-Gas-Applications
Measuring Ranges Oxygen Dewpoint	0...25 Vol % to 0...1 ppmv - 100 ... + 20 °C
Analogue signal port	(0) 4...20 mA or 0...10V, galvanically separated one for each measuring component
Reproducibility	+/- 2 % of the measuring value
Resolution	0,01 ppm – C(O ₂) – 0,01 % depending on the O ₂ concentration 0,1 °C for Dewpoint
T90-time	appr. 20 seconds for oxygen / appr. 40 seconds for Dewpoint
Display	2* 16 digit, illuminated LCD display 1. Line: Oxygen concentration ppm or Vol % 2. Line: Dewpoint °C For settings you can change the second line of the display
Messages	1 System message (measuring value yes / no) 1 Message for Oxygen / Dewpoint
Gas connection	inlet / outlet 3 / 6 mm ferrule pack
Gas sampling	built-in inlet / outlet valve
Sample flow	min. 30 NI/h, max. 50 NI/h
sample pressure (inlet)	min. 1,01 bar abs., max. 10 bar abs.
Digital communication	serial interface RS232
Ambient operating temp.	+ 5 °C up to + 60 °C
Power supply	110 ... 230 VAC or 24 VDC
Protection / Housing / Dimensions	IP20 / electronics unit, 42 TE / 3HE IP65 / wall mounting housing / ca. 300 x 260 x 130 mm (hxbxt) IP54 / portable housing 42 TE / 3 HE IP 54 / panel mounting 144 x 144 mm Ex-d housing for Ex Zone 2
Weight	2,5 kg ... 10 kg depending housing and built-in options
Options	electronical/pneumatic gas supply pump electronic flow control particle filter 2-7µm auto-calibration max. 4 measuring ranges automatically switching with digital identification software for remote control and service Manual 5 way valve pressure regulator
Version: AMS 5100 Dewpoint V-2013-10	

Specifications subject to change.

Two-Component Analyser AMS 6000



available options:

- pressure reducer
- particle filter 2-7µm
- manual 5 way valve
- manual purge
- electronical/pneumatic gas supply pump
- electronical flowmeter
- auto-Calibration
- 2 free adjustable measuring values
- Ex-Zone 2 applicable
- different housings

The application:

The AMS 6000 analyser is suitable for measuring traces of oxygen and one other component like humidity, CO, H₂ and .. at once. This means it is possible to analyse more than one component at the same measuring point. For measuring O₂, CO₂ or H₂ an electrochemical sensor is deployed and for the determination of humidity a ceramic sensor is applied. Highly accurate measurement is achievable with the processor-controlled analyser. Changes in concentration of < 0,1 ppm with an resolution of 0,01 ppm can be measured.

The measuring principle of an electrochemical sensor:

The measuring principle based on the diffusion of the measuring gas through to a membrane in a thin layer of electrolyte. Due to the reaction the free-flowing electrons are drifting to the anode. This generates an electrical current which is direct proportional to the concentration of the measuring gas. The appropriation of different electrochemical sensors allows the measurement of complex and aggressive gas mixtures in addition to standard applications. It is necessary to choose the measuring cell with due regard to the different available electrolytes and electrodes. Therefore it is essential to know the physical and chemical application parameters such as temperature, gas pressure, humidity content and the consistency of the measuring gas.

The measuring principle of the dew point sensor:

The function is based on the adsorption of steam in a porously dielectrical coat. This adsorption coat is situated between two conducting layers on stable ceramic substrate. Due to the very high dielectric constant of water it is possible to reliably register the smallest storage of water.

The measuring system:

The two-component analyser consists of an electronic, the pneumatic components for the gas supply and the flow control. A lot of different options like bypass- and purge valve, pressure reducer, continuous purging for application in Ex-Zone 2, automatic calibration, external sensor and so on allows the adaptation of the analyser to customer needs. Based on the various components the analyser is fit into different housings. The AMS 6000 is the ideal system for automated process control. Calibration and service are menu-driven. Automated components for remote control from the control room could be installed. For the using the analyser in hazardous areas classified as Ex Zone 2 the system can be equipped with an inert gas purging system.

Technical Data

Analyser	AMS 6000
Measuring Principle O ₂ , CO, H ₂ .../ Dew Point	Electrochemical Sensor / Ceramic Sensor
Application	Gas Industries, Chemical Industries
Measuring Ranges O ₂ Measuring range CO, H ₂ , Dew Point	2 / 4, automatic change-over, digital identification 1
Measuring Range Limit: O ₂ / CO / H ₂ min. / max. Measuring Range Limit: Dew Point	adjustable, depends on the sensor 0...10 / 0...10.000 ppm - 100...+ 20 °C Dew Point / 0...3.000 ppm humidity (please specify when ordering)
Analogue Signal Port	2x 0 (4) ... 20mA, galvanically isolated, automatic change-over, (one analogue signal port for each measuring component)
Reproducibility	+/- 2 % of the measuring value
Resolution (A) O ₂ , CO, H ₂ ...	0,01 ppm < A < 1 ppm depends on the measuring component
Resolution (A) Dew Point	0,1 °C < A < 1 °C / 0,1 ppm < A < 1 ppm
T90-time O ₂ , CO, H ₂ / dew point	30...40 sec. / 60 sec.
Display	2* 16 digit LCD, back-lit
Messages	Alarms, Status, Calibration, Service Request, Floating Change-over Relays
Gas Connection	Inlet / Outlet 3 / 6 mm ferrule pack
Gas Sampling	Built-in inlet / outlet valve, Flow Meter
Sample Flow	min. 20 NI/h, max. 40 NI/h
Sample Pressure (inlet)	min. 1,01 bar abs., max. 2 bar abs.
Sample Pressure (sensor)	max. 50 mbar Excess Pressure
Digital Communication	Serial interface RS 232
Ambient Temperature	- 5 °C up to + 45 °C
Rel. Humidity O ₂ , CO, H ₂ / Dew Point	0 ... 99 % / please refer to measuring range
Power supply	230 VAC, 24 VDC
Protection / Housing / Dimensions	IP 20 Electronic Housing 19", 3 HE, depth: 473 mm IP 20 Electronic Rack ½ 19", 3 HE
Weight	3 – 7 kg, depends on the components
Options	manual Purge and Bypass Valve electronic Flow Monitoring Ex-Zone 2 applicable Electrical/pneumatical sample Gas Pump manual 5 way valve particle filter 2-7µm automatic Calibration, remote-control available automatic Purging of the Sensor pressure Reducer max. 10 bar, out 50 mbar
Version: AMS 6000 E V-2013-07	

Technical data are subject to change.

Thermal Conductivity Gas Analyser TCD 200 TG



available options:

pressure reducer
Inert gas purging for preventing
particle filter 2-7µm
electronical flowmeter
5 way valve
electrical/pneumatical pump
2 free adjustable relays
different housing

The Application:

The measuring principle of Thermal Conductivity uses the different thermal conductivity of gases. The gas analysis through thermal conductivity for the measurement of gas components is a common method since the early 20th. Century. Typical applications are the measurement of:

- Hydrogen in Nitrogen
- Hydrogen in Helium
- Argon in Nitrogen or Oxygen
- Carbon dioxide in Nitrogen or Oxygen
- Carbon dioxide in Methan

The Measuring principle:

The sensor of the Thermal Conductivity Analyser TCD 200 TG is consisting of a silicium micro-mechanic. Due to the extremely low thermal mass of the sensor very fast response times can be achieved. Typical T90-Times are < 2 Seconds. For every thermal conductivity sensor a specific calibration matrix has to be generated, taking into account the specifics of the application. This has the positive side-effect, that due to the stability of the thermal conductivity sensors at the span, only the Zero-Point has to be calibrated in the field. Complex and therefore expensive calibration gas mixtures are no longer necessary.

The Measuring system:

The Thermal Conductivity Analyser TCD 200 TG is available for wall mounting, IP 65, or in an electronic housing IP 20. The micro-processor controls the electronics and the display. Calibration and maintenance sequences can be controlled from the analyser main menu. Via the keyboard of the TCD 200 TG the settings of the alarm boundaries, the analogue signal port and the analyser display can be made conveniently. Automated components allow remote control of the Thermal Conductivity Analyser TCD 200 TG from the control room. For use of the Thermal Conductivity Analyser TCD 200 TG in hazardous areas classified as Zone 2, the system can be equipped with continuous inert gas purging.

Important Notice: Gas mixtures which are led into the Thermal Conductivity Analyser TCD 200 TG must not be flammable by themselves!

Technical Data

Measuring system	TCD 200 TG
Measuring principle	Thermal Conductivity
Measuring range	Depending on gas composition i. e. H ₂ / N ₂ , CO ₂ / N ₂ , CH ₄ / N ₂ , Ar / N ₂
Analogue output port	(0) 4 ... 20mA or 0...10 V
Reproducibility	≤ 1 % of measuring range
Resolution	0,1 % of measuring range, or 0,01 Vol. % depending on gas concentration
T-90 Time	≤ 2 Sec. at a flow of 50 NI / h
Longterm drift	< 2 % of the smallest measuring range per week
Display	2 x 16 digit LCD Display
Messages	2 freely programmable messages with reference to the gas concentration
Gas connections	Inlet / Outlet 3 (6) / 6 mm ferrule pack
Gas sampling	integrated gas inlet valve Gas flow meter
Sample gas flow	min. 25 NI/h, max. 50 NI/h
Sample gas pressure	min. 1,01 bar abs., max. 2 bar abs.
Sample gas temperature	5 °C bis + 45 °C
Ambient temperature	5 °C bis + 45 °C
Relative humidity	0 ... 99 % not condensing
Power supply	24 VDC
Protection class / Housing / Dimensions	IP 20 / electronics unit, 28 TE / 3HU IP 65 / wall mounting housing / ca. 300 x 260 x 130 mm (hxbxt) IP 54 / portable housing 42 TE / 3 HU IP 54 / panel mounting 144 x 144 mm
Weight	2-5 kg
Options	inert gas purging for preventing hazardous atmosphere inside housing pressure reducer (max 10 bar in, 50 mbar out) particle filter 2 µm 5 way valve electrical/pneumatical pump electronic flow monitoring /-alarm
Version: TCD200TG E V-2013-07	

Specification subject to change.

Thermal Conductivity Gas Analyser TCD 200 TG Ex



available options:

pressure reducer
particle filter 2-7µm
electronical flowmeter
manual 5 way valve
2 free adjustable relays

The Application:

The measuring principle of Thermal Conductivity uses the different thermal conductivity of gases. The gas analysis through thermal conductivity for the measurement of gas components is a common method since the early 20th. Century. Typical applications are the measurement of:

- Hydrogen in Nitrogen
- Hydrogen in Helium
- Argon in Nitrogen or Oxygen
- Carbon dioxide in Nitrogen or Oxygen
- Carbon dioxide in Methan

The Measuring principle:

The sensor of the Thermal Conductivity Analyser TCD 200 TG Ex is consisting of a silicium micro-mechanic. Due to the extremely low thermal mass of the sensor very fast response times can be achieved. Typical T90-Times are < 2 Seconds. For every thermal conductivity sensor a specific calibration matrix has to be generated, taking into account the specifics of the application. This has the positive side-effect, that due to the stability of the thermal conductivity sensors at the span, only the Zero-Point has to be calibrated in the field. Complex and therefore expensive calibration gas mixtures are no longer necessary.

The Measuring system:

The Thermal Conductivity Analyser TCD 200 TG Ex is available for wall mounting IP 65. The micro-processor controls the electronics and the display. Calibration and maintenance sequences can be controlled from the analyser main menu. Via the keyboard of the TCD 200 TG Ex the settings of the alarm boundaries, the analogue signal port and the analyser display can be made conveniently. Automated components allow remote control of the Thermal Conductivity Analyser TCD 200 TG Ex from the control room. For use of the Thermal Conductivity Analyser TCD 200 TG in hazardous areas classified as Zone 2, the system can be equipped with continuous inert gas purging.

Important Notice: Gas mixtures which are led into the Thermal Conductivity Analyser TCD 200 TG Ex must not be flammable by themselves!

Technical Data

Measuring system	TCD 200 TG Ex
Ex-classification	ATEX II 3G for Zone 2
Measuring principle	Thermal Conductivity
Measuring range	Depending on gas composition i. e. H ₂ / N ₂ , CO ₂ / N ₂ , CH ₄ / N ₂ , Ar / N ₂
Analogue output port	(0) 4 ... 20mA or 0...10 V
Reproducibility	≤ 1 % of measuring range
Resolution	0,1 % of measuring range, or 0,01 Vol. % depending on gas concentration
T-90 Time	≤ 2 Sec. at a flow of 50 NI / h
Longterm drift	< 2 % of the smallest measuring range per week
Display	2 x 16 digit LCD Display
Messages	2 freely programmable messages with reference to the gas concentration
Gas connections	Inlet / Outlet 3 (6) / 6 mm ferrule pack
Gas sampling	integrated gas inlet valve Gas flow meter
Sample gas flow	min. 25 NI/h, max. 50 NI/h
Sample gas pressure	min. 1,01 bar abs., max. 2 bar abs.
Sample gas temperature	5 °C bis + 45 °C
Ambient temperature	5 °C bis + 45 °C
Relative humidity	0 ... 99 % not condensing
Power supply	24 VDC
Protection class / Housing / Dimensions	IP 65 / Wall mounting housing / 600 x 380 x 210 mm
Weight	appr. 40 kg
Options	electronic flow monitoring /-alarm pressure reducer (max 10 bar in, 50 mbar out) particle filter 2-7µm manual 5 way valve
Version: TCD200TG Ex E V-2013-07	

Specification subject to change.

Analyser for measurement of Toxic Gases AMS 6420



The Application:

The Analyser AMS 6420 has been developed for the measurement of toxic impurities and Hydrogen in process gases. The measurement of toxic impurities is usually required in combination to a trace oxygen analysis in process gases. In these applications the Analyser AMS 6420 can be integrated in the gas pathway after the trace oxygen analysis. The advantage for the customer is, that both analysers can be supplied with process gas by only one gas path way.

The Measuring principle:

The electrochemical sensors which are used in the Toxic gas Analyser AMS 6420 are selected specifically for an application. The many years of experience of AMS in manufacturing gas analysers for process applications guarantee the supply of a highly precise and long-life solution.

The universal sensor electronics of the Toxic gas Analyser AMS 6420 allows adopting a specific

sensor for an application. An important factor is the selection of an electrochemical sensor with focus on the electrolyte and the material of the electrodes. This requires knowledge of the physical and chemical parameters of the gas such as gas temperature, pressure / draft of the process gas at the measuring point, humidity content and the specification of the gas with focus on by-gases. AMS provides specific questionnaires containing the relevant data.

The Measuring system:

The Toxic gas Analyser AMS 6420 is available in various housings for General Applications. A number of options allow adopting the AMS 6420 even to extreme applications.

On customer request AMS designs and fabricates analyser cabinets with measuring signal distribution around the AMS analysis systems. Always focusing on a specific customer application.

Technical Data

Analyser	AMS 6420
Measuring principle	Electrochemical sensor
Application	Gases Industries, Chemical Industries
Gas components	Carbon monoxide, Hydrogen
Measuring ranges	4
	0 ... 10, 0 ... 100, 0 ... 1000, 0 ... 10000 ppm _v
Analogue signal port	0 ... 10 V, 0 (4) ... 20mA
Reproducibility	+/- 2 % of the measuring value
Resolution	0,01 ppm – C(gas) – 0,01 %
	depending on gas concentration
T90-Time	ca. 40 Seconds
Display	3 ½ digit LCD display
Messages	2 free adjustable messages based on the gas concentration
Gas connection	inlet / outlet 3 / 6 mm ferrule pack
Gas sampling	built-in inlet / outlet valve, flowmeter
Sample flow	min. 20 NI/h, max. 40 NI/h
Sample pressure (inlet)	min. 1,01 bar abs., max. 10 bar abs.
Ambient operating temp.	- 5 °C up to + 45 °C
Relative humidity of the gas	0 ... 99 % not condensing
Power supply	110 or 230 VAC / 60 - 50 Hz
Protection / Housing /	IP 65 / wall mounting housing 300 x 250 x 320 mm
Dimensions	IP 54 / 63 TE, 3 HU portable housing
	IP 20 / 19" rack, 3 HU
	IP 20 / ½ 19" electronics housing, 3 HU
	IP 20 / ½ 19" cassette
Weight	8-10 kg
Options	Gas pump
	Pressure reducer (max 10 bar in, 50 mbar out)
	Automatic bypass- and purge valve
	Analog output galvanically separated
	Particle filter 2 µm
	Electronic flow monitoring / -alarm
Version: AMS 6420 E V01-2010-12	

Technische Änderungen vorbehalten.

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Paramagnetic oxygen analyser

PAROX 2000*Plus*

precise and maintenance-free

Plus auto-calibration



Brief description

The **PAROX 2000*Plus*** is a precise oxygen analyser for continuous monitoring purposes at an amazing price. Build in a modular housing system, with a modern micro-controller technology, it is specially designed for process and ambient air measurements. The analyser is equipped with an auto-calibration functionality and a self-diagnosis capability and has an RS232 interface. With the programmable auto calibration function it is capable to fulfil a fully automatic calibration by means of the integrated relays. The measuring unit is thermostat temperature controlled to 55°C. The operation and parameterisation is carried out by means of a user friendly 4 keys and a 16-digit LCD display and also through RS232 interface

Measuring principle

The measurement is based on the paramagnetic characteristic of oxygen. It generates a partial pressure within a strong and non-homogeneous magnetic field which moves a rotatable glass dumbbell within the measuring cell. This small rotation is measured by the projection of a light source on a photodiode via a small mirror on the dumbbell. A small current through a wire around the dumbbell forces the dumbbell to its initial position. This current is amplified and is directly proportional the oxygen concentration.

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Housings



PAROX 2000Plus

19" 3 HU rack or table model with or without sample test gas filter and flow display on the front panel (option).

Single or multiple channel versions (MBE 2000Plus).

WxHxD: 482 x 133 x 245 mm



PAROX 2100Plus

1/2 19" portable model optional with filter on the rear.

WxHxD: 235 x 155 x 280 mm



PAROX 2200Plus

wall-mounted housing Rittal,

Single or multiple channel versions (MBE 2200Plus).

WxHxD: 380 x 410 x 210 mm

Specifications

Measurement range output

free settable by input of parameters between 0- 100% O₂

Measurement range

Standard range 0-25%, 0-100%,

others on request

Measurement signal

4-20mA or 0-20mA (max. apparent ohmic resistance 500 Ohm)

Status output

2 alarm relays, 1 malfunction relay

Output connection

pump relay, maintenance

sample gas relay, zero gas relay, test gas relay

for the autocalibration

Display

LCD digital multifunction display, indication of measured value:

100.0 %O₂; Flow 99l/h, alarms, malfunction, parameters,

total 16 digits

Options

- pressure compensation (electronic or backpressure regulator)
- test gas pump
- sample gas filter
- external flow display (rotameter)
- flow sensor with alarm setting
- NDIR sensors for CO₂, CH₄ and CO (MBE 2000Plus).

Design

Materials of gas conducting parts PVDF, glass, steel 1.4571, gold, viton, platinum-iridium, epoxy resin, nickel

Gas connections PVDF bulkhead connection, for hose with inside \varnothing 4mm

Power supply

Voltage 100 - 240VAC 50/60Hz

Operating conditions

Flow 10-90 l/h

Gas conditioning necessary for humid and/or corrosive gases, pre-filter required

Operating gas pressure 10-1000 hPa (0.01-1bar)

Operating temperature 5-45°C

Calibration 2-point calibration: with gases as desired,
menu-controlled, time controlled.
fully automatic AUTOCAL or semiautomatic calibration

Storage and transport temperature -25°C to +65°C

Relative humidity 0-75% RH

Background gas influence slight (for guideline data see operating instructions)

Measuring details

PAROX 2000*Plus*

Detection limit 0,01 % O₂

Repeatability $\leq \pm 0,03$ % O₂ (time base for gas switch ≥ 5 min)

Zero point drift $\leq \pm 0,1$ % O₂ / week (offset)
may be higher during the first days after putting into operation
or after longer period of storage or transport

Temperature influence at zero $< \pm 0,05$ % O₂ / °C

Temperature influence span $< \pm 0,20$ % of measured value / °C

Pressure influence on zero no influence

Pressure influence span 1% air pressure change causes 1% change in reading without
backpressure regulator (option) or pressure compensation
(option)

Flow error $\leq 0,1$ Vol.-% O₂ within 10...90 l/h
with the in-build flow regulator (option)

T90-time ≤ 6 s at 90 l/h and gas change from nitrogen to air

Multi-Component Gasanalyser

MBE 2000*Plus*

NDIR Analyser / Paramagnetic Oxygen Analyser

Plus automatic calibration



Description

In the field of biogas, mainly gases like methane (CH₄, NDIR), carbon dioxide (CO₂, NDIR), carbon monoxide (CO, NDIR) or oxygen (O₂, paramagnetic, see PAROX 2000*Plus*) are in the centre of interest. The MBE 2000*Plus* is a precise and cost effective multi-component gas analyser able to measure above mentioned gases.

Build in a modular housing system, it can be specified with 1-, 2-, 3- or even 4 components as per your requirement. Equipped with a modern micro-controller technology, it is specially designed for a wide field of application in ambient, emission and process gas measurements, e.g. biogas, sewer gas, landfill gas, gases from fermentation processes, toxicity and lower explosion limits.

The analyser has an auto-calibration functionality and a self-diagnosis capability as well as an RS232 interface. If connected to the correct zero gas and test gas, the programmable auto calibration function is capable to fulfil a fully automatic calibration by means of the integrated relays. The operation and parameter setting can be carried out by means of a user friendly 4 key pad and a 16-digit LCD display or also through an RS232 interface.

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Specifications	MBE 2000 <i>Plus</i>
Measurement range output	free settable by input of parameters within the measuring range
Measurement ranges	CH ₄ : Standard range 0-10%, 0-100% CO ₂ : Standard range 0-2000ppm, 0-100% CO: Standard range 0-10% O ₂ : Standard range 0-25%, 0-100%, others on request
Measurement signal	4-20mA or 0-20mA (max. apparent ohmic resistance 500 Ohm)
Status output	2 alarm relays, 1 malfunction relay
Output connection	pump relay, maintenance sample gas relay, zero gas relay, test gas relay for the autocalibration
Display	LCD digital multifunction display, indication of measured value: 100.0 %O ₂ ; Flow 99l/h, alarms, malfunction, parameters, total 16 digits
Measuring details	
Accuracy	± 2 % of the measuring range (NDIR) / ± 0.1 % (paramagnetic)
Repeatability	± 1.5 % of the measured value (NDIR) / ± 0.03 % (paramagnetic)
Zero point drift	Zero point ± 2 % of the measuring range per year(NDIR) / ± 0.1 % per week (paramagnetic)
Options	
	<ul style="list-style-type: none"> • pressure compensation (electronic or backpressure regulator) • test gas pump • sample gas filter • external flow display (rotameter) • flow sensor with alarm setting
Design	
Gas connections	PVDF bulkhead connection, for hose with inside ø 4mm
Housings	<ul style="list-style-type: none"> • 19" 3HU Rack • ½ 19" portable • wall mounting Rittal
Power supply	
Voltage	100 - 240VAC 50/60Hz
Application	
	<ul style="list-style-type: none"> • monitoring of Biogas • Sewer gases • Fermentation process control • Enclosed spaces • LEL monitoring