GMS800
Modular Gas Analyzers

Tailor-made gas analysis solutions for process and emission monitoring

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

Endress+Hauser
People for Process Automation

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 SO_2, NO and NO_2 concentrations
- Monitoring of NO_x in denitrification plants by direct measurement of NO and NO_2 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 H_2S 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 H_2 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 GMS811:
19" rack housing with 4 rack units, IP 40

Type GMS820P:
Flame-proof enclosure, IP 65, for use in explosion zone 1

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. SO_2, NO_2, NO, CS_2 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 H_2O 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. H_2, He, CO_2 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.

GMS800
Tailor-made gas analysis for process and emission monitoring

Product description

The GMS800 is a product familiy of extractive analyzers which can measure more than 60 different gas compounds. The GMS800 is characterized by its modular design: 6 analyzing modules, one gas module, I/O modules and an operating unit. Standardized 19" racks 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 the required interfaces for remote control via networks through to the connection to a process control system.

At a glance

- 6 different analyzer modules: DEFOR (NDUV, UVRAS), MULTOR (NDIR), OXOR-E (electrochemical O_2), OXOR-P (paramagnetic O_2), THERMOR (TC), and UNOR (NDIR)
- 4 different types of enclosures
- Gas module with sample gas pump and/or control sensors
- New enclosure type for easy and quick integration in analyzer systems
- Remote diagnosis via Ethernet with SOPAS ET software

Your benefits

- Approved according to EN 15267 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
- Reliable measuring results by proven measurement technology
- Easy maintenance and repair due to replacement of complete assemblies or modules

Fields of application

- Emission monitoring according to EN 15267 and process gas measurements, including in potentially explosive atmospheres
- Emission monitoring of very low concentrations
- Measurement of smallest concentrations of NO, NO_2, and SO_2
- NO_x monitoring by direct measurement of NO and NO_2
- Measurement of sulfur compounds in process gases
- CO monitoring for explosion protection
- Measurement of smallest concentrations in hydrogen or hydrocarbons

More Information online

For more information, enter the link or scan the QR code to get direct access to technical data, operating instructions, software, application examples, and much more.
www.endress.com/gms800

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 general

Measured values	CH_4, CO, CO_2, H_2, H_2O, He, N_2O, NH_3, NO, NO_2, O_2, SO_2 Hydrocarbons (e.g. C_2H_2), halogenated hydrocarbons (e.g. CH_2Cl_2) and other gases upon request
Performance-tested measurands	CH_4, CO, CO_2, NO, NO_2, O_2, SO_2
Gas flow rate	30 l/h ... 60 l/h (7,925 gal/h ... 15,85 gal/h)
Sample gas temperature	
Analyzer inlet:	0 °C ... +45 °C (32 °F ... +113 °F)
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 (41 °F ... 113 °F)
Storage temperature	–20 °C ... +70 °C (–4 °F ... 158 °F)
Ambient pressure	700 hPa ... 1,200 hPa
Geographical altitude	+ 2,500 m (+8,200 ft) (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
Electrical safety	CE
Enclosure rating	IP40
Dimensions (W x H x D)	483 mm x 178 mm x 388 mm (19.02 in x 7.01 in x 15.28 in) (for details see dimensional drawings)
Weight	9 kg ... 20 kg (19.8 lbs ... 44.0 lbs), depending on configuration
Power supply	
Voltage	93 V AC ... 132 V AC 186 V AC ... 264 V AC 210 V AC ... 370 V AC
Frequency	47 ... 63 Hz
Power consumption	≤ 300 VA
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
Electrical safety	CE
Enclosure rating	IP40
Dimensions (W x H x D)	483 mm x 178 mm x 388 mm (19.02 in x 7.01 in x 15.28 in) (for details see dimensional drawings)
Weight	9 kg ... 20 kg (19.8 lbs ... 44.0 lbs), depending on configuration
Power supply	
Voltage	93 V AC ... 132 V AC 186 V AC ... 264 V AC 210 V AC ... 370 V AC
Frequency	47 ... 63 Hz
Power consumption	≤ 300 VA
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"

GMS820P design

Description	Flame-proof enclosure for use in Ex-zone 1 areas
Ex-approvals	
IECEx	Ex db eb [ia] IIC T6
ATEX	II 2G Ex db eb [ia] IIC T6 Gb II 2G Ex db eb IIC T6 Gb
Electrical safety	CE
Enclosure rating	IP65
Dimensions (W x H x D)	790 mm x 590 mm x 353 mm (31.10 in x 23.23 in x 13.90 in) (for details see dimensional drawings)
Weight	140 kg ... 150 kg (308.7 lbs ... 330.7 lbs), depending on configuration
Power supply	
Voltage	93 V AC ... 132 V AC 186 V AC ... 264 V AC 210 V AC ... 370 V AC
Frequency	47 ... 63 Hz
Power consumption	≤ 300 VA
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

Description	Closed sheet steel housing for wall mounting for use indoors
Ambient temperature	+5 °C ... +45 °C (41 °F ... 113 °F)

Storage temperature	–10 °C ... +70 °C (14 °F ... 158 °F)
Ambient humidity	10 % ... 95 %, non-condensing
Ex-approvals	
IECEx	GMS841: Ex nA nC IIC T4 Gc GMS841: Ex nA nC [ia Ga] IIC T4 Gc
ATEX	GMS841: II 3G Ex nA nC IIC T4 Gc GMS841: II 3G Ex nA nC [ia Ga] IIC T4 Gc
NEC/CEC (US/CA)	GMS842: Class I, Division 2, Groups A, B, C and D; T4 GMS842: Ex nA nC IIC T4 Gc GMS842: Ex nA nC [ia Ga] IIC T4 Gc GMS842: Class I, Zone 2 AEx nA nC IIC T4 Gc GMS842: Class I, Zone 2 AEx nA nC [ia Ga] IIC T4 Gc
Electrical safety	CE
Enclosure rating	IP66 / NEMA 4x
Dimensions (W x H x D)	522 mm x 475 mm x 478 mm (20.55 in x 18.70 in x 18.82 in) (for details see dimensional drawings)
Weight	30 kg (66 lbs), depending on configuration
Power supply	
Voltage	85 V AC ... 264 V AC
Frequency	47 ... 63 Hz
Current consumption	≤ 10 A
Power consumption	≤ 300 VA, depending on configuration
Sample gas connections	Inside thread G1/4": for screw-in fittings
	Swagelok 6 mm: stainless steel, for metal tube
	Swagelok 1/4": stainless steel, for metal tube
	PVDF compression fitting: for hose 6 x 1 mm

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_2S	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 an air-conditioned environment with temp. stability of ± 2 °C

Certified measuring ranges	
NO	0 ... 50 mg/m³ / 0 ... 1,000 mg/m³ / 0 ... 2,000 mg/m³
NO_2	0 ... 50 mg/m³ / 0 ... 500 mg/m³
SO_2	0 ... 75 mg/m³ / 0 ... 287 mg/m³ / 0 ... 2,000 mg/m³
Response time (t_{90})	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 TA-Luft (Prevention of Air Pollution) EN 15267 EN 14181 MCERTS
Corrective functions	Manual or automatic adjustment with test gases or adjustment cell
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_2O 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/m³ / 0 ... 500 mg/m³
CO	0 ... 200 mg/m³ / 0 ... 2,000 mg/m³
CO_2	0 ... 25 Vol.-%
NO	0 ... 250 mg/m³ / 0 ... 2,500 mg/m³
SO_2	0 ... 250 mg/m³ / 0 ... 2,000 mg/m³
Response time (t_{90})	≤ 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 TA-Luft (Prevention of Air Pollution) EN 15267 EN 14181 MCERTS
Corrective functions	Manual or automatic adjustment with test gases or adjustment cell
Test functions	Self test and fault diagnosis

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 (t_{90})	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
Process pressure	
Analyzer inlet:	–200 hPa ... 300 hPa, relative
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
Corrective functions	Manual or automated 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 measurement 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 (t_{90})	≤ 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 TA-Luft (Prevention of Air Pollution) EN 15267 EN 14181 MCERTS
Corrective functions	Manual or automated 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	
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 (t_{90})	≤ 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 automated 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	
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
Certified measuring ranges	
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
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
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 TA-Luft (Prevention of Air Pollution) EN 15267 EN 14181 MCERTS
Corrective functions	Manual or automatic adjustment with test gases or adjustment cell
Test functions	Self test and fault diagnosis

BCU control unit

Modbus	✔
Type of fieldbus integration	TCP RTU RS-485
Ethernet	✔
Function	Connection to SOPAS ET software or OPC server
Indication	Status LEDs: “Power,” “Failure,” and “Maintenance request”
	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

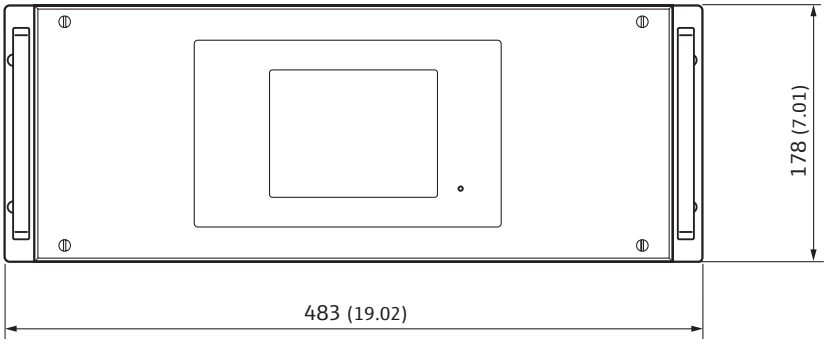
Sample gas connections	PVDF compression fitting: for hose 6 x 1 mm
	Swagelok 6 mm: stainless steel, for metal tube
	Swagelok 1/4": stainless steel, for metal tube
Options	Magnetic piston pump (0 ... 60 l/h at 100 hPa low pressure) Humidity sensor Pressure sensor (500 ... 1500 hPa) Flow sensor (0 ...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

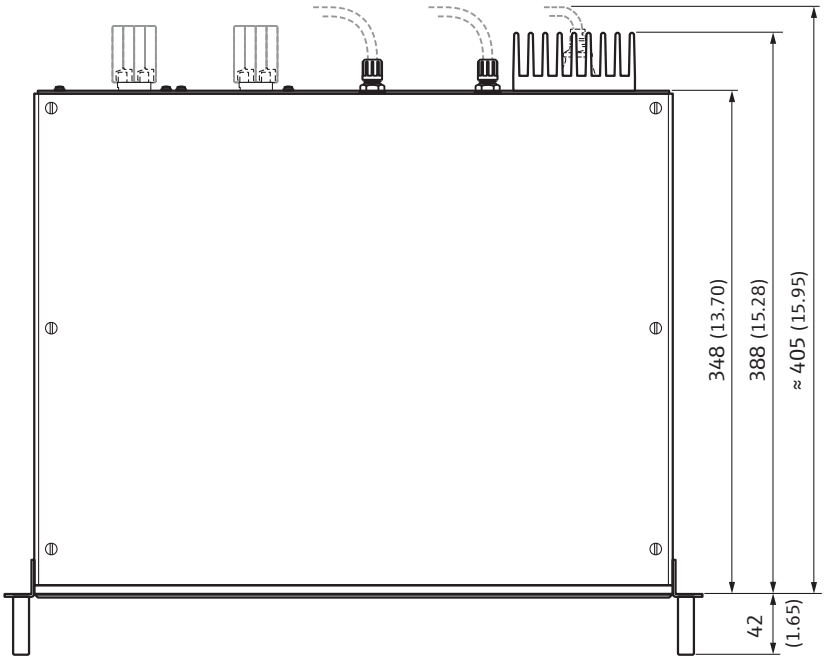
Ordering information

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

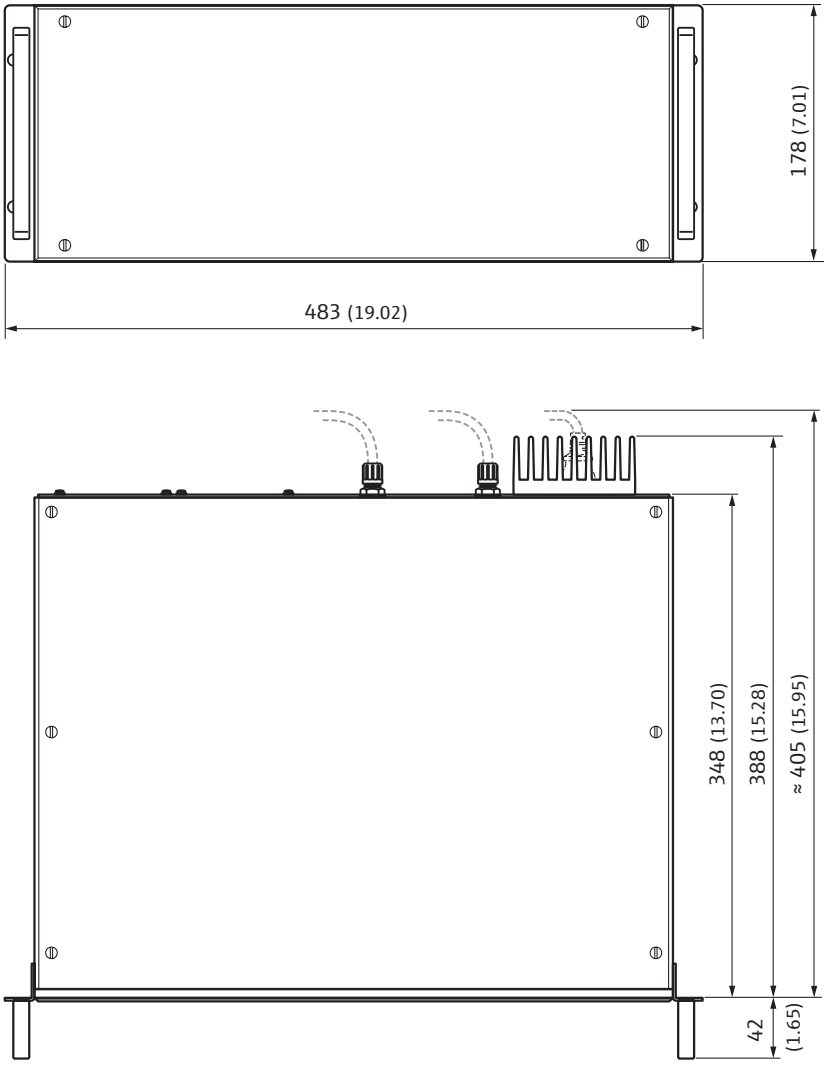
Dimensional drawings

GMS810 design (dimensions in mm (inch))

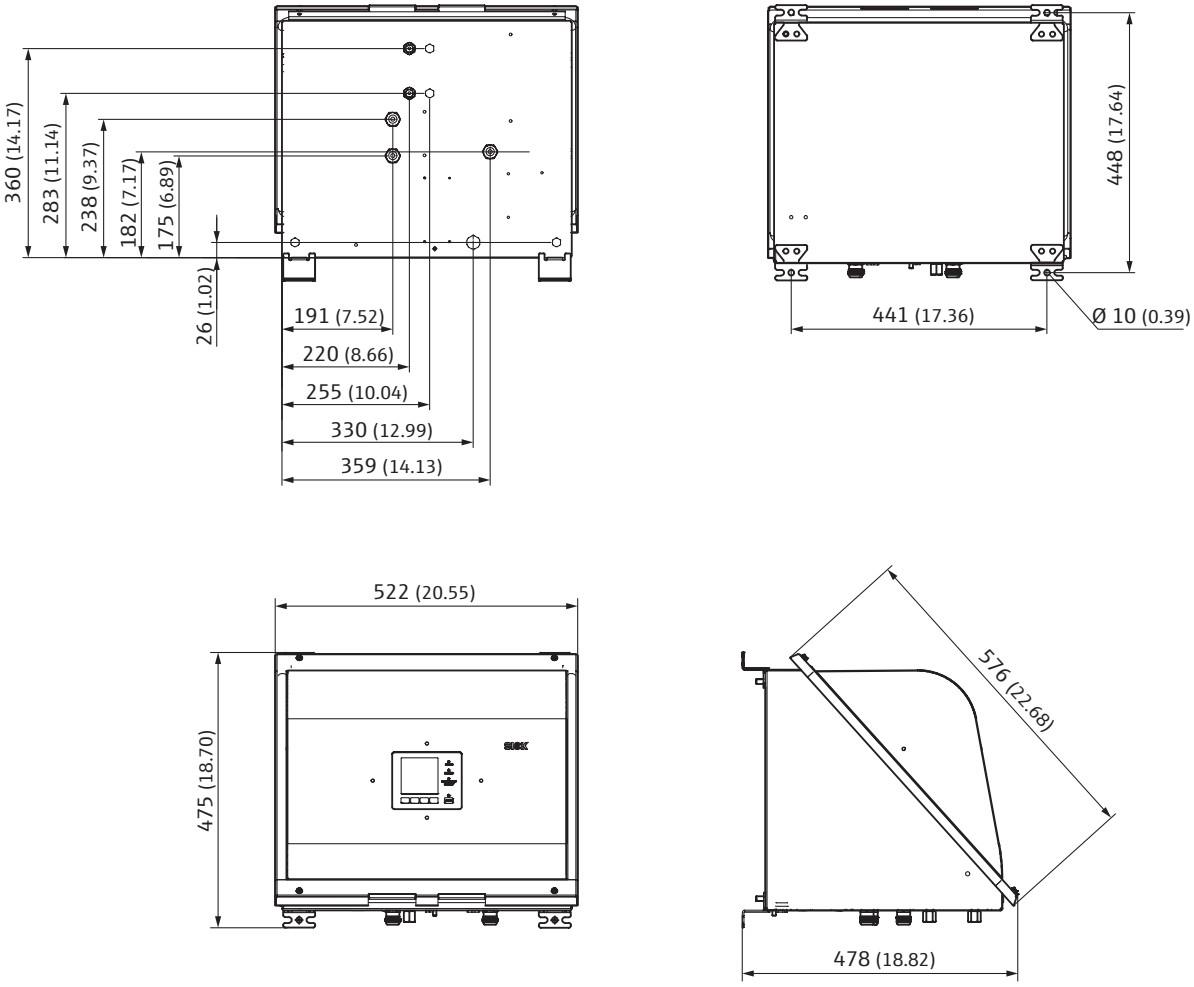




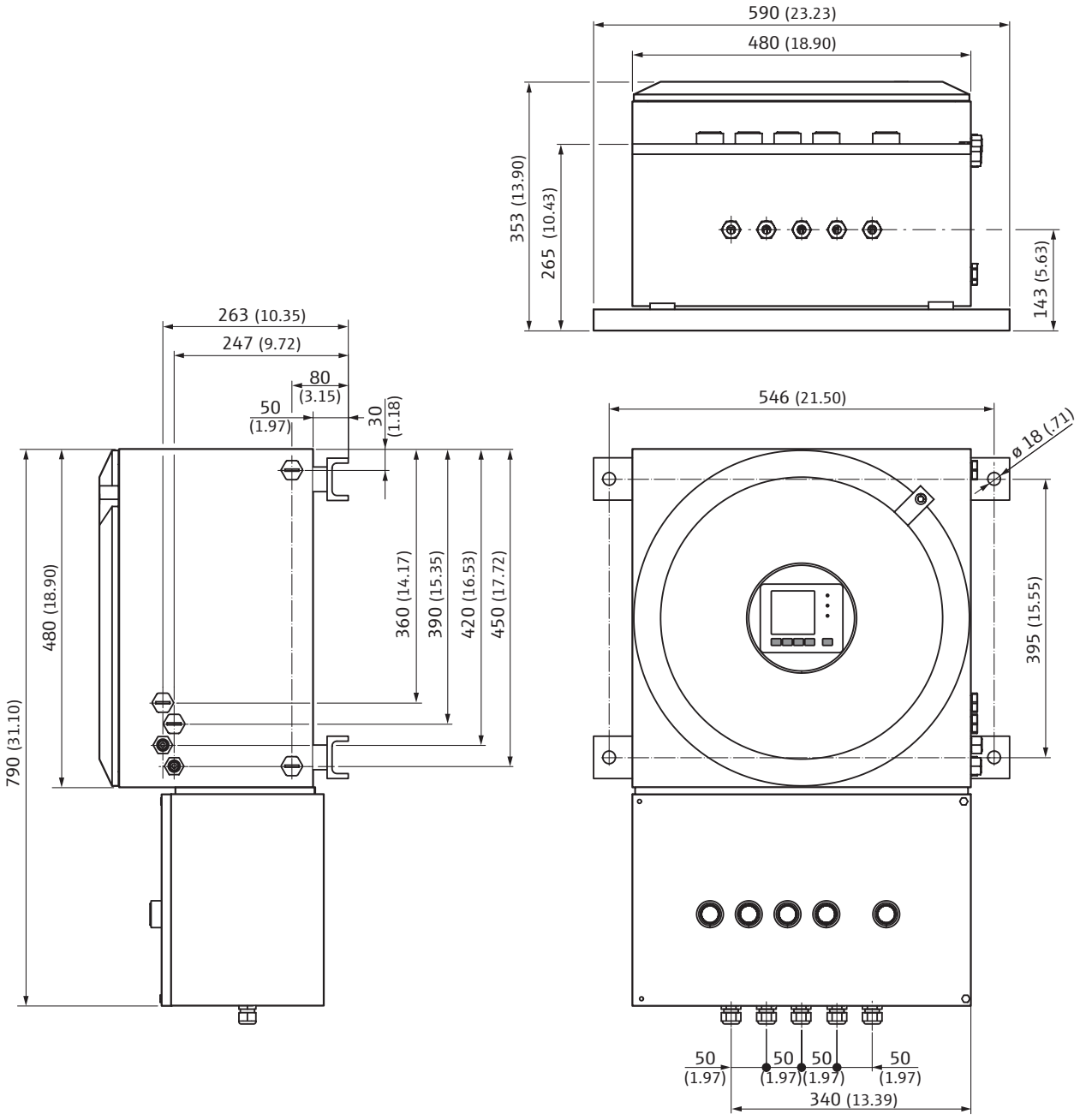
GMS811 design (dimensions in mm (inch))



GMS840 design (dimensions in mm (inch))

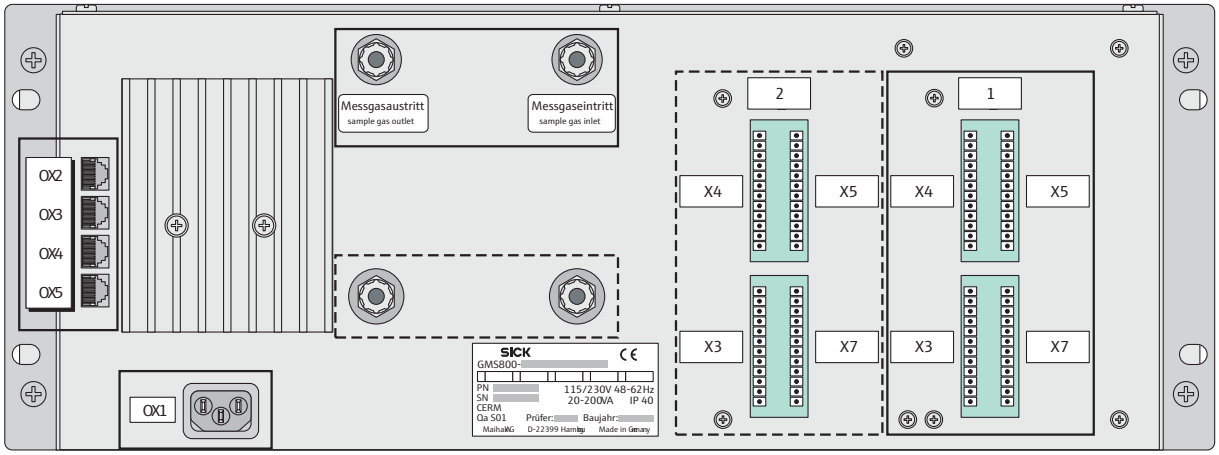


GMS820P design (dimensions in mm (inch))

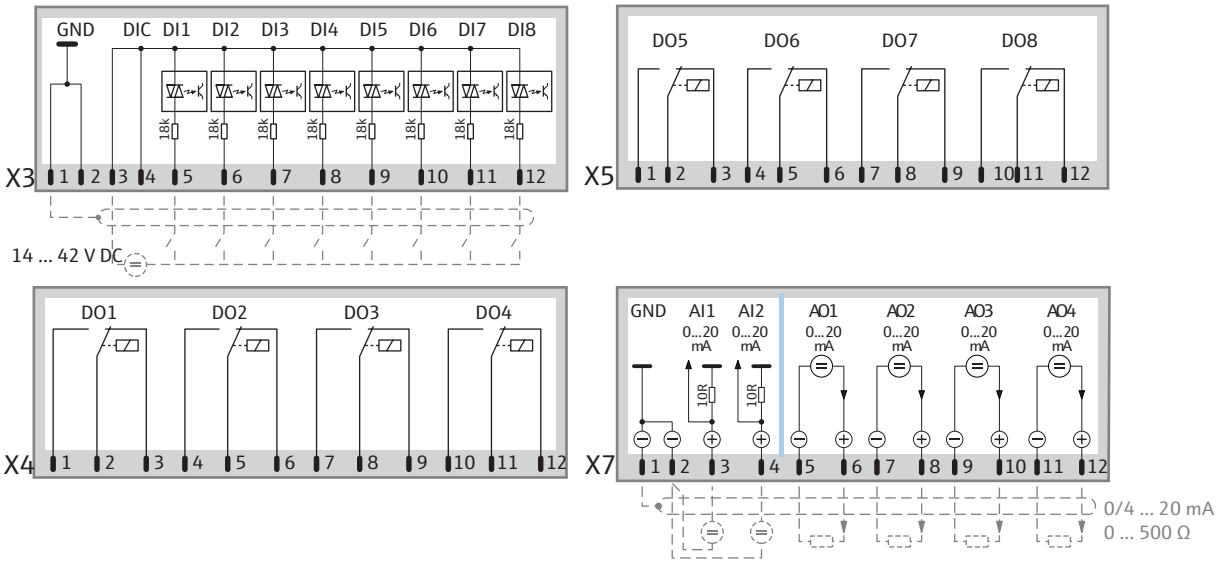


Connection types

GMS810 design



GMS800 I/O module



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