Online data sheet

S700

EXTRACTIVE GAS ANALYZERS

SICK
Sensor Intelligence.

Ordering information

Type	Part no.
S700	On request

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.

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

Other models and accessories ➜ www.sick.com/S700

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

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 H_2 in pressure swing adsorption plants
- Monitoring of CO_2 in natural gas in natural gas conditioning plants

Detailed technical data

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 hosed gas lines) Tubed gas lines Up tu 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	
CH_4	0 ... 100 ppm / 0 ... 100 Vol.-%
C_2H_2	0 ... 300 ppm / 0 ... 100 Vol.-%
C_2H_4	0 ... 300 ppm / 0 ... 100 Vol.-%
C_2H_6	0 ... 100 ppm / 0 ... 100 Vol.-%
$C_2H_2Cl_2$	0 ... 500 ppm / 0 ... 30 Vol.-%

C_3H_6	0 ... 300 ppm / 0 ... 100 Vol.-%
C_3H_8	0 ... 100 ppm / 0 ... 100 Vol.-%
C_4H_{10}	0 ... 100 ppm / 0 ... 100 Vol.-%
C_5H_{12}	0 ... 300 ppm / 0 ... 100 Vol.-%
C_6H_{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_3F	0 ... 500 ppm / 0 ... 50 Vol.-%
Frigen 134a, $C_2H_2F_4$	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_2O	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/m³
NO	0 ... 100 mg/m³
SO_2	0 ... 100 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
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_2O 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/m³
NO	0 ... 250 mg/m³

SO_2	0 ... 250 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
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 (t_{90})	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: supressed measuring ranges up to 95 ... 100 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	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

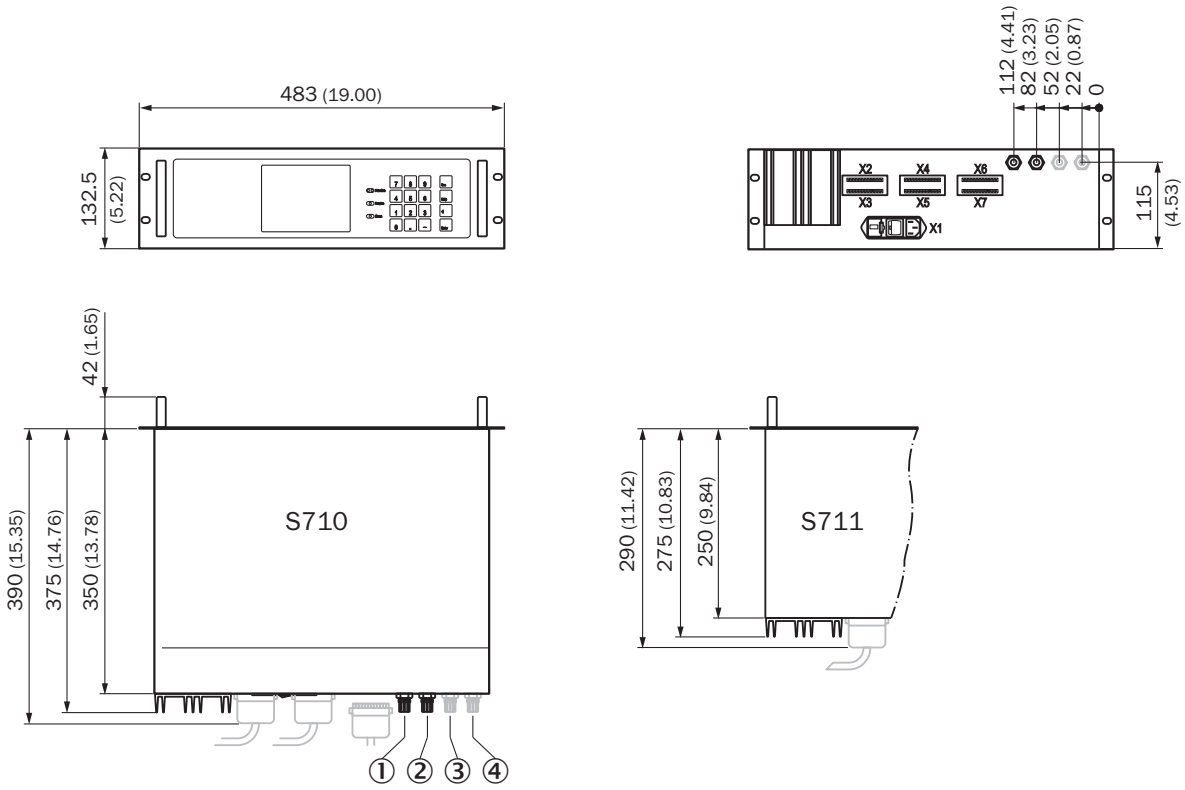
Description	Heat conductivity analyzer for the determination of concentrations in binary or quasi-binary gas mixtures
Measurement principles	Thermal conductivity measurement
Measuring ranges	
H_2 in Ar	0 ... 1 Vol.-% / 0 ... 100 Vol.-%
H_2 in CH_4	0 ... 1 Vol.-% / 0 ... 100 Vol.-%
H_2 in CO_2	0 ... 1 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.-%
H_2 in O_2	0 ... 1 Vol.-% / 0 ... 100 Vol.-%
	Other measuring ranges and components on request
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
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	
CH_4	0 ... 2 Vol.-%
CO	0 ... 0.5 Vol.-%
CO_2	0 ... 0.1 Vol.-%
SF_6	0 ... 10 Vol.-%
	Other measuring ranges and components on request
Response time (t_{90})	≤ 25 s At 60 l/h, depending on cuvette length, gas flow and number of measuring components
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

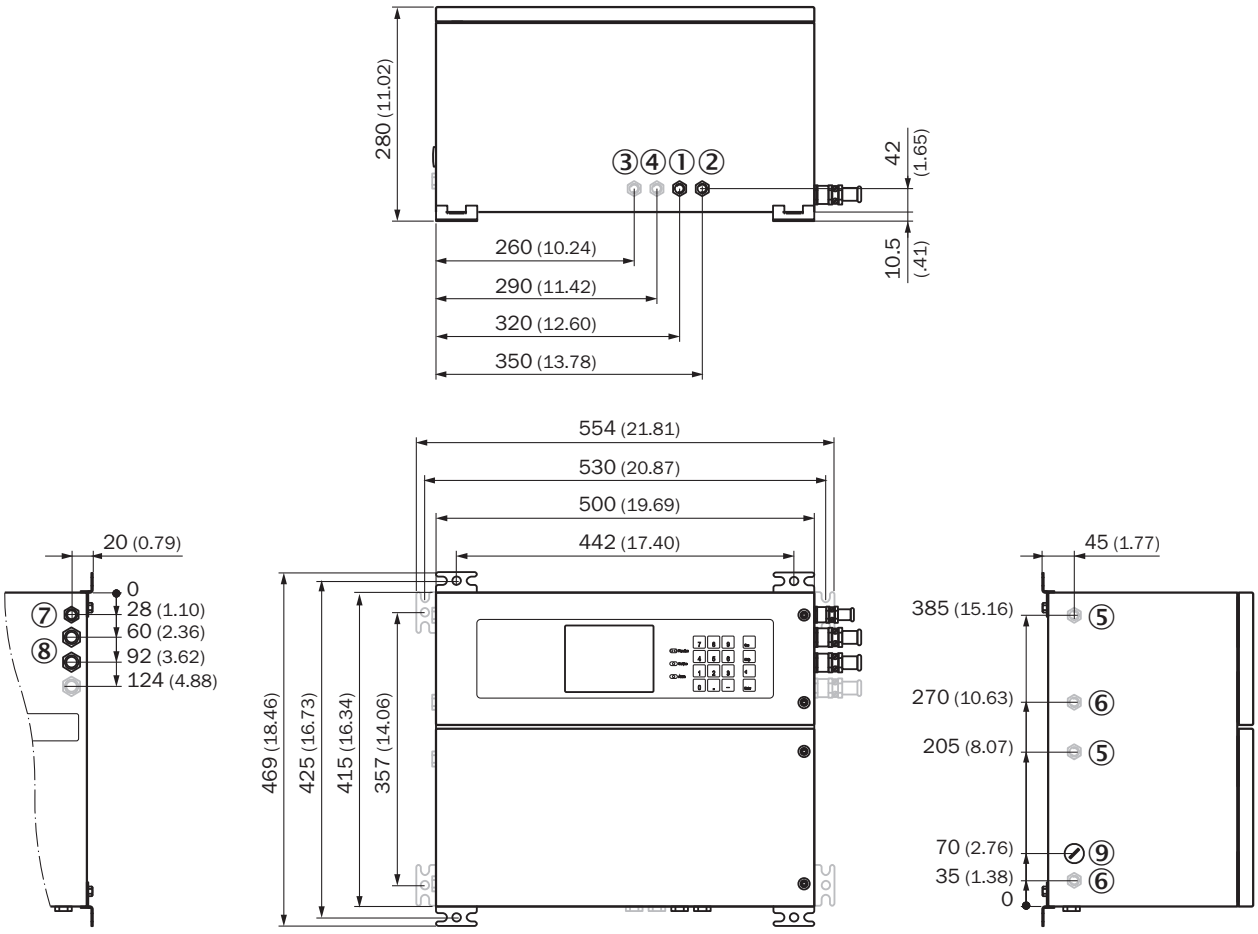
Dimensional drawings (Dimensions in mm (inch))

S710 and S711 design



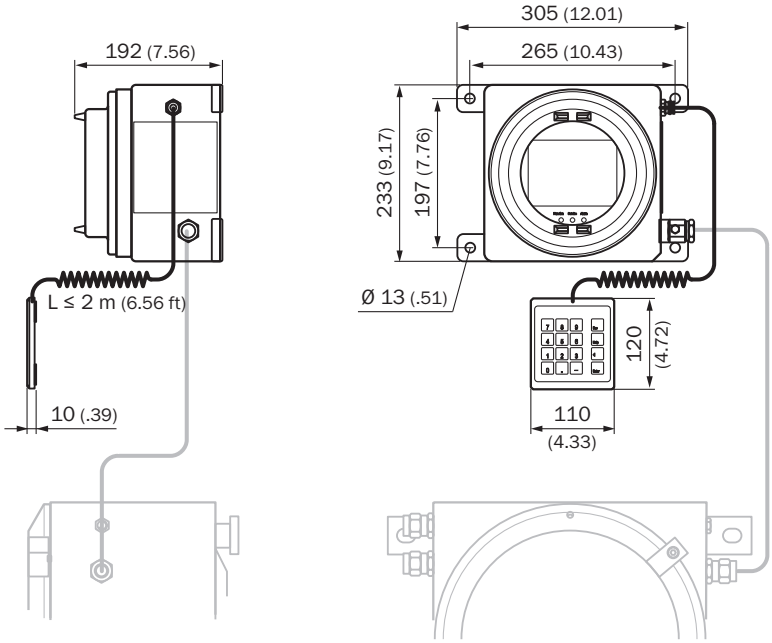
① 1. sample gas inlet
② Exhaust gas outlet
③ 2. sample gas inlet
④ 3. sample gas inlet

S715 design

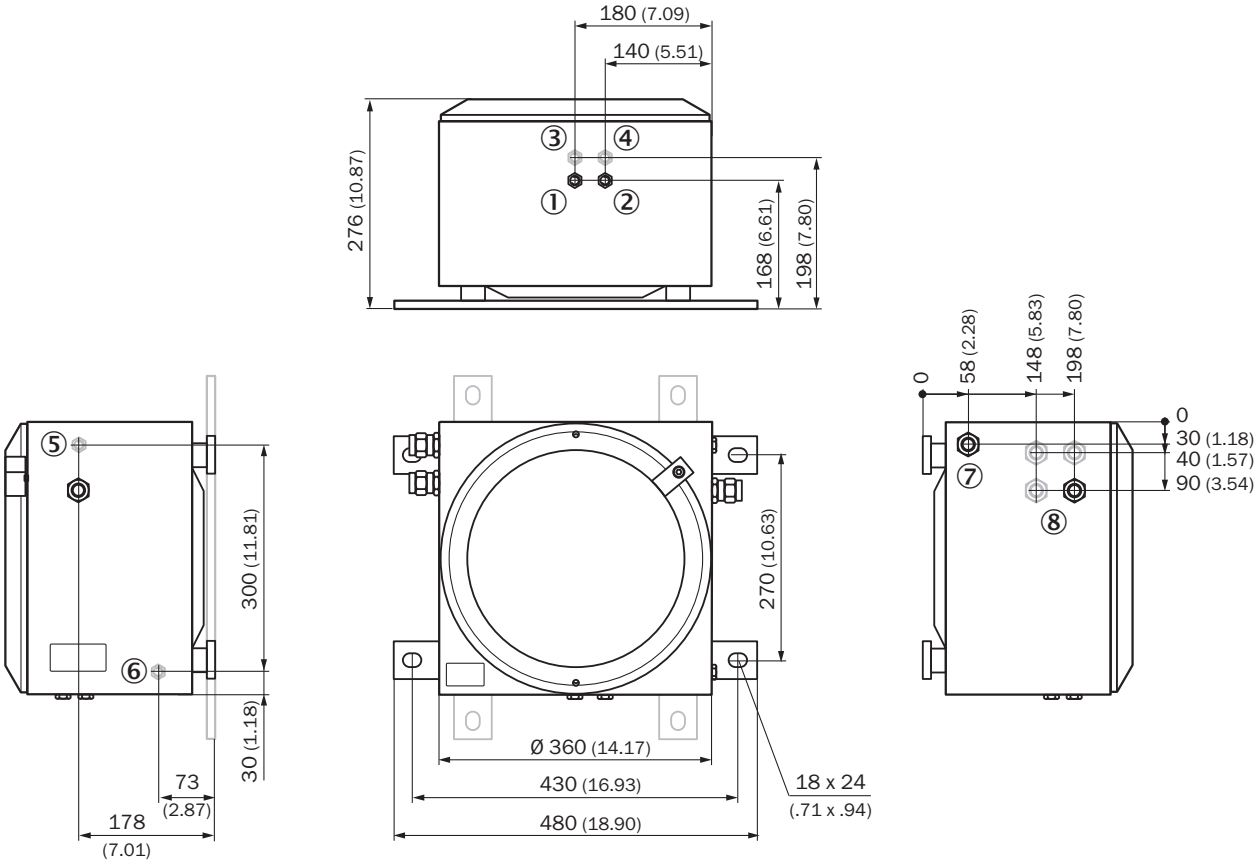


① 1. sample gas inlet
② Exhaust gas outlet
③ 2. sample gas inlet
④ 3. sample gas inlet
⑤ Purge gas inlet
⑥ Purge gas outlet

Display and keyboard for S720 Ex and S721 Ex design

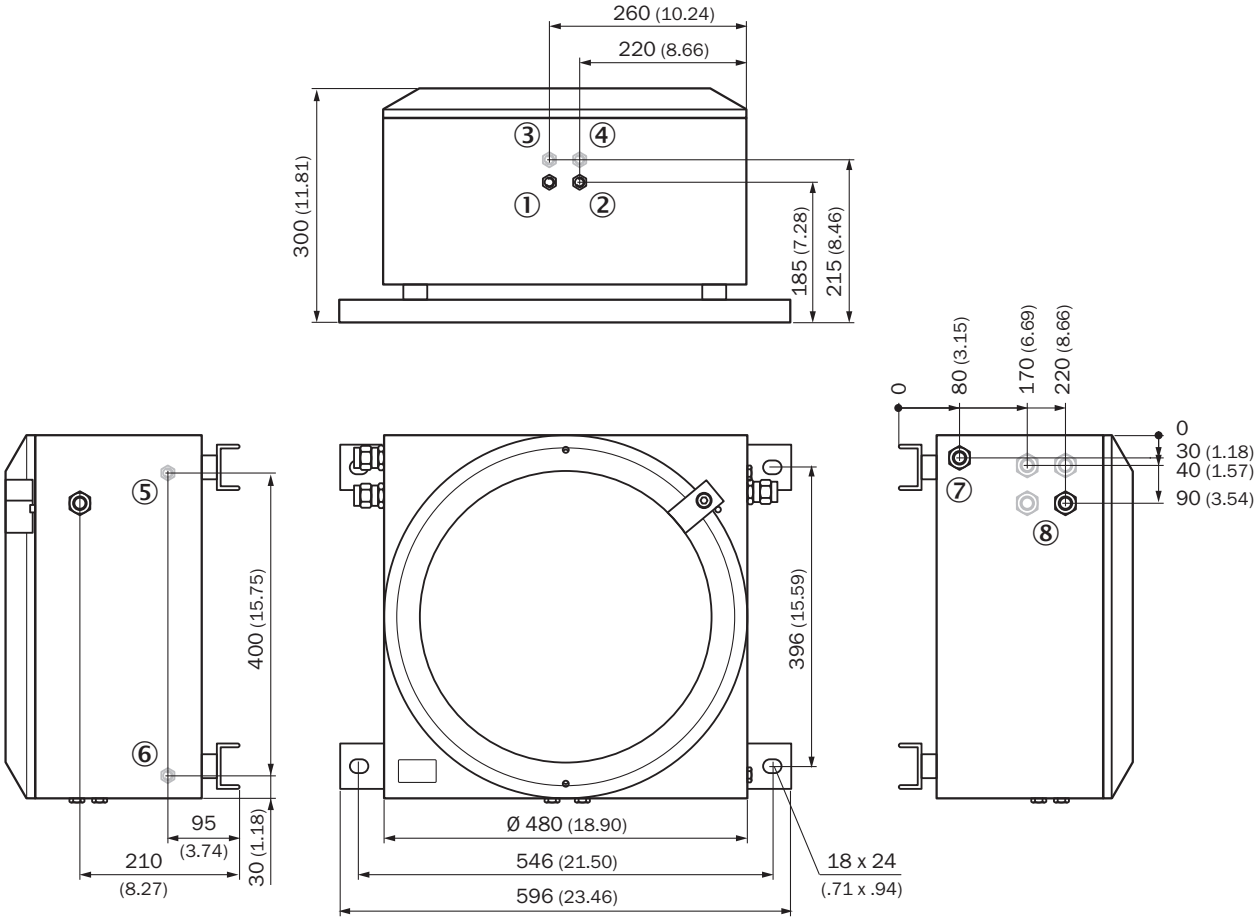


S720 Ex design



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 one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. 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 a wide range of 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 complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

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