

System components for sample gas conditioning

Sample gas cooler, gas feed unit, converter, accessories

Measurement made easy



SCC-C Sample gas cooler

SCC-F Sample gas feed unit

SCC-S Sample gas feed unit

Diaphragm pump 4N

SCC-K NO₂/NO converter

Membrane filter

CGKW Condensate monitor

Acid filter

Disposable filter

Flow meters, flow monitors

ER-144A/Ex Switching unit

KFA Isolated switch amplifier

Multi-way test gas cocks

Cylinder pressure reducers

SCC-C Sample gas cooler

- Compressor sample gas cooler
- Constant outlet dew point
- 1 or 2 gas paths
- Heat exchanger made from glass, PVDF or stainless steel, exchangeable without tools
- Corrosion-resistant gas lines
- High pressure design up to 1 MPa (10 bar)
- Temperature display
- Suitable for ambient temperatures up to 50 °C
- Compact surface-mounting housing (width 1/2 19 inches, 6 height units)
- System solutions in connection with the SCC-F sample gas feed unit
- Suitable for use in measuring equipment conforming with 17th BImSchV (German Federal Immission Protection Law)
- Explosion-proof versions with ATEX and CSA certifications



Sample gas inlet conditions

Sample gas pressure

Heat exchanger (HE) material	Sample gas pressure p_{abs} w/o peristaltic pump	Sample gas pressure p_{abs} with peristaltic pump
Glass	50–200 kPa (0.5–2.0 bar)	50–150 kPa (0.5–1.5 bar)
PVDF	50–250 kPa (0.5–2.5 bar)	50–150 kPa (0.5–1.5 bar)
Stainless steel	0.05–1 MPa (0.5–10 bar)	50–150 kPa (0.5–1.5 bar)

Sample gas flow rate

1 x 250 l/h (HE250) or 1 x 125 l/h (HE125) or 2 x 125 l/h, relating to sample gas pressure $p_{abs} = 100$ kPa (1 bar) and 25 °C

Sample gas inlet temperature

Max. 140 °C

Sample gas inlet dew point

Max. 70 °C,
max. 60 °C for HE250 at sample gas flow rate > 200 l/h

Operating data

Sample gas outlet temperature

Factory-set to +3 °C

Dew point stability

±0.3 °C per 10 °C temperature change,
±0.3 °C per 10 l/h change in flow rate

Refrigeration capacity

40 W at +10 to +50 °C

Warm-up time

Approx. 15 min

Pressure drop in heat exchanger

Approx. 1 hPa (1 mbar),
approx. 4–8 hPa (4–8 mbar) for HE125

Dead volume in heat exchanger

Heat exchanger material	Dead volume in heat exchanger	
	HE125	HE250
Glass	40 ml	140 ml
PVDF	25 ml	100 ml
Stainless steel	30 ml	100 ml

Gas tightness

5×10^{-6} hPa l/s

Display and status signal

Temperature display

Digital display in °C

Status signal

< 0 °C and > 8 °C, 2 potential-free two-way switches, switching capacity 250 V AC, 2 A

Construction

Design

Surface-mounting housing 1/2 19 inch, 6 height units

Mounting

On the wall with mounting brackets supplied or
in a 19-inch cabinet/rack

Housing material and color

Sheet steel; light gray (RAL 7035), basalt gray (RAL 7012)

Degree of protection of housing

IP20 to EN 60529

Dimensions

See dimensional drawing on page 4

Weight

Approx. 15.6/16.5 kg with 1/2 heat exchangers

Refrigerant

R 134a

SCC-C Sample gas cooler

Materials of gas-conducting parts

PVDF, PTFE, PP, glass, FPM, stainless steel (high pressure version)

Gas connections

Heat exchanger

Heat exchanger material	Sample gas inlets & outlets	Condensate outlet
Glass	Screwed pipe or hose connection GL 18 ¹⁾	Pipe nipple GL25
PVDF	6 mm tube	G 3/8 female thread
Stainless steel	G 1/4 female thread	G 3/8 female thread

1) 2 GL coupling nuts per heat exchanger with insert 6 x 4 x 1 mm threads for a hose or pipe are supplied with the unit

Peristaltic pump (option)

Condensate outlet PVDF, DN 4/6

Electrical connections

Power supply

Cable, 3 m long, permanently fixed

Status signal

Cable, 3 m long, permanently fixed

Electrical safety

Testing to EN 61010-1

Protective class

I

Overvoltage category / degree of contamination

III / 2

Protective separation

Electrical isolation of the 115 / 230 V AC power supply from the other current circuits by means of reinforced or double insulation. Functional extra-low voltages (PELV) on the low voltage side

Electromagnetic compatibility

Emitted interference

Testing to EN 61000 Part 6-3:2001

Immunity to interference

Testing to EN 61000 Part 6-2:2005

Mechanical capabilities

Testing to EN 60068-2-27 and EN 60068-2-6

Transport

Shock: 30 g / 18 ms / 18 shocks

Vibration: 1 g / ±0.15 mm / 5–150 Hz, 3 x 5 cycles

Operation

Vibration: 1 g / ±0.07 mm / 5–55 Hz, 3 x 2 cycles

Ambient conditions

Ambient temperature

Operation: +5 to +45 °C,

Storage and transport: –25 to +60 °C

Relative humidity

≤ 75 % annual average, occasional and slight condensation permitted, ≤ 95 % on 30 days per year

Power supply

Input voltage

230 V AC or 115 V AC –15 to +10 %, 50 to 60 Hz

Power consumption

Max. 200 VA

Starting current

2.5 A at 230 V AC

Options

Metering device

In gas path 1 by means of a peristaltic pump installed in the SCC-C sample gas cooler or in the SCC-F sample gas feed unit, feed tank as accessory, for small SO₂ measuring ranges (< 1000 mg/m³) or to avoid acid aerosols

Peristaltic pumps

1 or 2 peristaltic pumps for discharging condensate (flow rate approx. 300 ml/h, 5 rpm) and metering (flow rate approx. 15 ml/h), pressure resistance p_{abs} = 50–150 kPa (0.5–1.5 bar), peristaltic tube service life approx. 5 months, power consumption 3.5 VA, weight approx. 0.6 kg

Certifications

ATEX – Explosion protection

The SCC-C sample gas cooler in the category 3G explosion-proof version is suitable for use in zone 2 hazardous areas. Testing to EN 60079-0:2012 + A11:2013 and EN 60079-15:2010.

Designation:  II 3G Ex nA nC IIC T4 Gc

Type examination certificate: BVS 16 ATEX E 056 X

CSA – Explosion protection

The SCC-C sample gas cooler is certified to

- Class 2258 02 Process Control Equipment – For Hazardous Locations – Certified to Canadian Standards and
- Class 2258 82 Process Control Equipment – For Hazardous Locations – Certified to U.S. Standards

Class 1, Div. 2, Groups A, B, C and D, Temperature code T4, maximum ambient temperature +50 °C.

Certificate No. 1105720

GOST – Import and operation permission

Declaration of conformity No. TC N RU Д-DE.AB72.B.02311

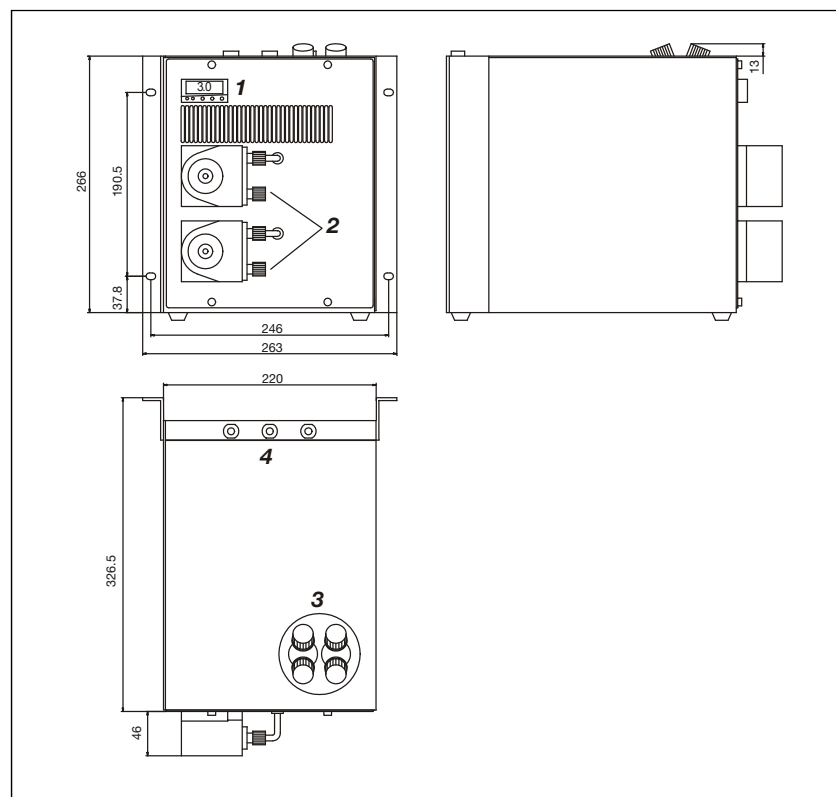
IECEE CB Scheme – Electrical safety

The SCC-C sample gas cooler is certified to the „IEC system for mutual recognition of test certificates for electrical equipment“. It complies with standard IEC 61010-1 (Third Edition).

Certificate No. SI-4210 A1

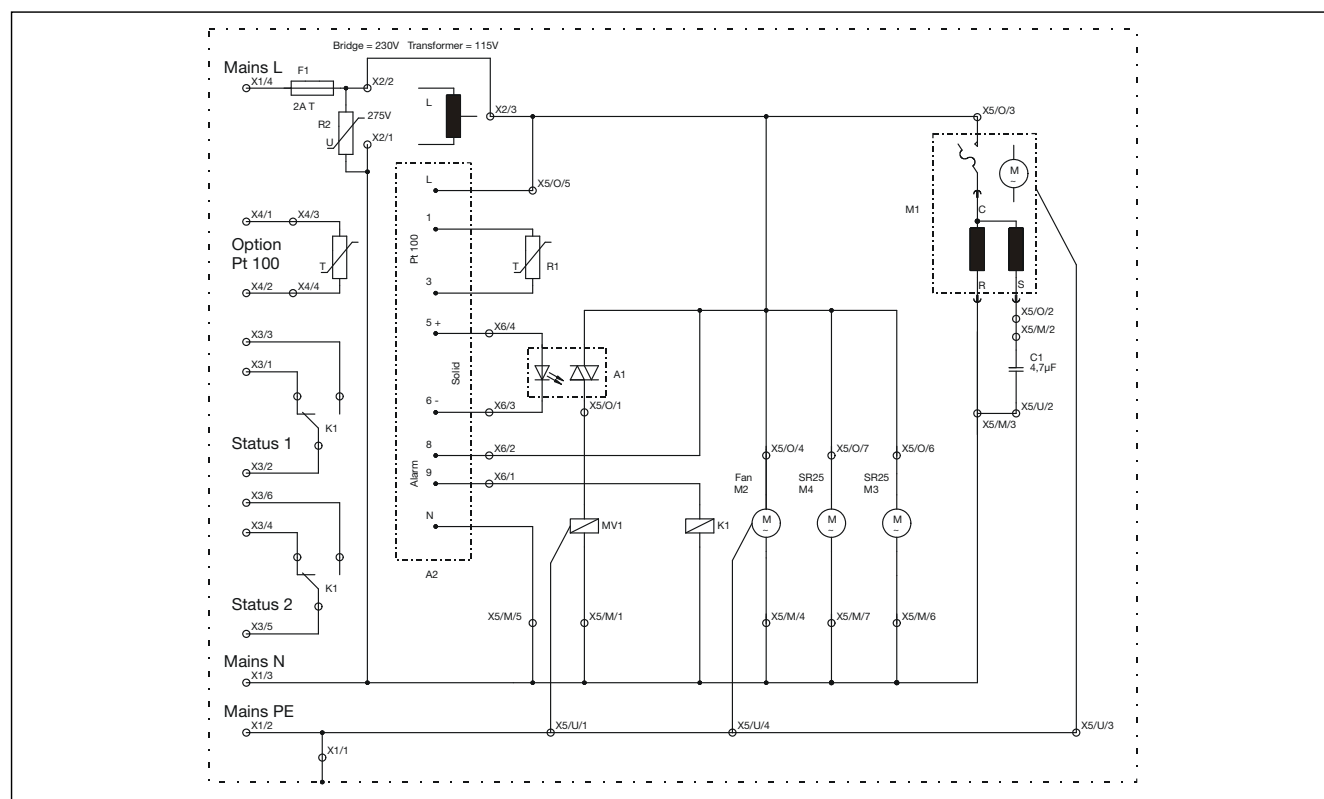
SCC-C Sample gas cooler

Dimensional drawing (dimensions in mm)



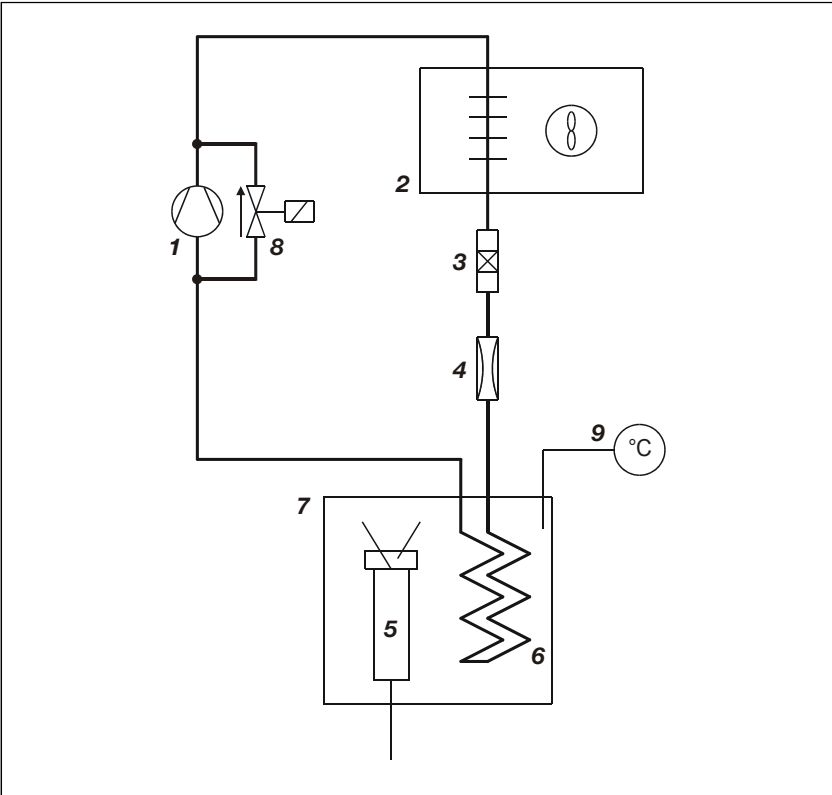
- 1 Temperature display
- 2 Condensate outlet (for option with peristaltic pumps)
- 3 Gas connections of heat exchangers
- 4 Conduits for the (permanently-connected) electrical connection lines

Circuit and connection diagram



SCC-C Sample gas cooler

Refrigerant circuit



- 1 Refrigerant compressor
- 2 Refrigerant condenser
- 3 Refrigerant dryer
- 4 Capillary tube
- 5 Heat exchanger
- 6 Evaporator
- 7 Cooling block with temperature sensor
- 8 Valve
- 9 Temperature controller

Accessories for condensate disposal

Time relay

Run time and off period settings

0.6–60 sec., recommended setting: cyclic duration factor 40 %, i.e. run time 5 minutes and off period 7.5 minutes

Degree of protection

Terminals IP20, housing IP50 to EN 60529

Weight

approx. 0.125 kg

Power supply

12–240 V AC/DC, 40–440 Hz

Condensate collecting bottle

Volume

10 l

Material

LDPE/PVC

Connections

Sample gas: 1 connecting piece for hose with ID 4–5 mm
 Condensate: 2 connecting pieces for hose with ID 12–13 mm
 Condensate drain: SW 22

Weight

approx. 1 kg

Level monitor

Switching voltage

30 V

Switching current

1 A

Switching power

30 VA

Connecting cable

2 x 0.25 mm², length 5 m

Ordering information

	Catalog No.
Timer relay	90805-4-0741607
Reagent and condensate bottle	23234-5-8328972
Level monitor condensate	23005-4-0741239
Level monitor reagent	90805-5-8308994
Condensate trap, filter surface 20 cm2	23065-5-8018512

SCC-C Sample gas cooler

Ordering information

Catalog No. 23070-0-										0	0	0	0
										↓	↓	↓	↓
Design													
Wall-mounted housing 1/2 19 Inch										1			
Preparation													
without										0			
with dosing unit										1			
Heat exchanger													
Glass											1		
PVDF											2		
Stainless steel											3		
Gas paths													
1 gas path 250 l/h												1	
1 gas path 125 l/h												2	
2 gas paths 2 x 125 l/h												3	
Condensate drain													
without												0	
1 peristaltic pump												1	
2 peristaltic pumps (2 x condensate)												2	
2 peristaltic pumps (1 x condensate, 1 x dosing)												3	
2 peristaltic pumps (1 x condensate, 1 x precondensation)												4	
Display													
Temperature display and monitoring												1	
Temperature display and monitoring and Pt 100												2	
Power supply													
230 V, 50/60 Hz												1	
115 V, 50/60 Hz												2	
Certification													
without												0	
with CSA certification												1	
with ATEX certification, Zone 2												2	
with GOST certification												3	
Catalog No. 23070-0-										↓	↓	↓	↓
										0	0	0	0

SCC-F Sample gas feed unit

- Complete sample gas conditioning in connection with the SCC-C sample gas cooler
- 2 independent gas paths
- Corrosion resistant, metal-free gas lines
- Compact surface-mounting housing (width 1/2 19 inches, 6 height units)
- Service-friendly due to easy access to the modules



Sample gas inlet conditions

Sample gas pressure

$p_{abs} = 70\text{--}105\text{ kPa}$ (0.7–1.05 bar)

Sample gas flow rate

Gas paths 1 and 2 max. 100 l/h, bypass max. 200 l/h

Sample gas inlet temperature

+10 to +50 °C

Sample gas inlet dew point

The dew point of the sample gas must be at least 5 °C lower than the lowest ambient temperature in the whole sample gas path. Otherwise a sample gas cooler or a condensate trap is required.

Operating data

Warm-up time

Approx. 10 minutes (plus warm-up time of sample gas cooler)

Dead volume

approx. 10 cm³ (plus dead volume of heat exchanger)

Gas tightness

5×10^{-6} hPa l/s

Flow rate display and adjustment

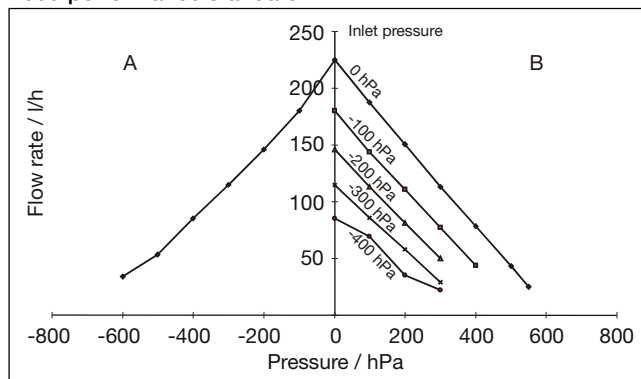
Rotameter 10–100 l/h with needle valve (metal-free)

Status signals

Status signals

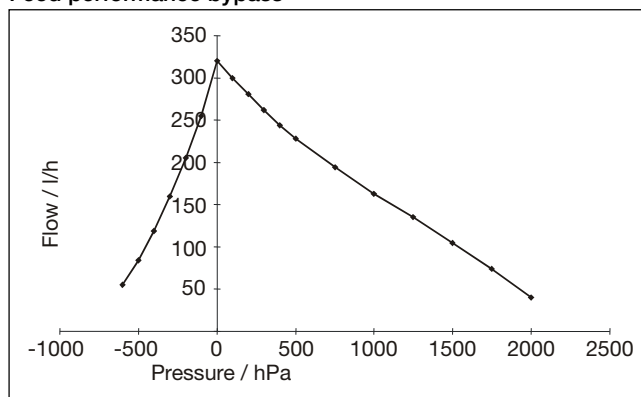
Flow rate and condensate monitors, one potential-free two-way switch each, switching capacity:
Version without I/O card 250 VAC, 2 A per sample gas path,
version with I/O card option: 30 V, 1 A

Feed performance standard



A Inlet: negative pressure, outlet: atmospheric pressure
B Inlet: acc. to chart, outlet: positive pressure

Feed performance bypass



SCC-F Sample gas feed unit

Construction

Design

Surface-mounting housing 1/2 19 inch, 6 height units

Mounting

On a mounting plate with the mounting brackets supplied or in a 19 inch cabinet/rack

Housing material and color

Sheet steel; light gray (RAL 7035), basalt gray (RAL 7012)

Degree of protection of housing

IP20 to EN 60529

Dimensions

See dimensional drawing on page 10

Weight

Max. 15 kg

Material of gas-conducting parts

PVDF, PTFE, PVC, EPDM, FPM, PP-EPDM elastomer

Gas connections

PVDF coupling for tube of 6 x 4 x 1 mm

Electrical connections

Power supply

Screw clamp terminals for stranded or solid wire with max. 2.5 mm²

Status signals

Screw clamp terminals for stranded or solid wire with max. 1.5 mm²

Electrical safety

Testing to EN 61010-1

Protective class

I

Overvoltage category/degree of contamination

II/2

Protective separation

Electrical isolation of the 115/230 V AC power supply from the other current circuits by means of reinforced or double insulation. Functional extra-low voltages (PELV) on the low voltage side

Electromagnetic compatibility

Tested to EN 61326-1

Industrial immunity to interference, radio interference level B

Mechanical capabilities

Testing to EN 60068-2-27 and EN 60068-2-6

Transport

Shock: 30 g/18 ms/18 shocks

Vibration: 1 g/±0.15 mm/5–150 Hz, 3 x 5 cycles

Operation

Vibration: 1 g/±0.07 mm/5–55 Hz, 3 x 2 cycles

Ambient conditions

Installation site

The SCC-F sample gas feed unit is only intended for installation indoors.

The max. altitude of the installation site may not exceed 2000 m above sea level.

Ambient temperature

Operation: +5 to +45 °C,

Storage and transport: –25 to +60 °C

Relative humidity

≤ 75 % annual average, occasional and slight condensation permitted, ≤ 90 % on 30 days/year

Power supply

Input voltage

230 V AC or 115 V AC, 50 Hz or 60 Hz

Power consumption during operation

Max. 185 VA

Options

Metering unit

By means of peristaltic pump, flow rate 15 ml/h, feed tank as accessory for small SO₂ measuring ranges (< 1000 mg/m³) or to avoid acid aerosols

I/O card

To connect the SCC-F sample gas feed unit and the SCC-C sample gas cooler to the AO2000 Series continuous gas analyzers via the system bus

- Display and monitoring of the cooler temperature
- Monitoring and processing of status signals of the SCC-F sample gas feed unit (condensate, flow rate)
- Control of up to three external solenoid valves for zero gas connection, 230 V, 50 Hz
- Digital inputs for monitoring condensate collecting bottles and reagent reservoirs

Certifications

CSA – Electrical safety

The SCC-F sample gas feed unit in the version with I/O card option is certified for use in general purpose environment, evidenced by full compliance with standards CAN/CSA-C22.2 No. 61010-1-12 und UL Std. No. 61010-1 (3rd Edition). Certificate No. 70010607

CSA – Explosion protection

The SCC-F sample gas feed unit is certified to

- Class 2258 02 Process Control Equipment – For Hazardous Locations – Certified to Canadian Standards and
- Class 2258 82 Process Control Equipment – For Hazardous Locations – Certified to U.S. Standards

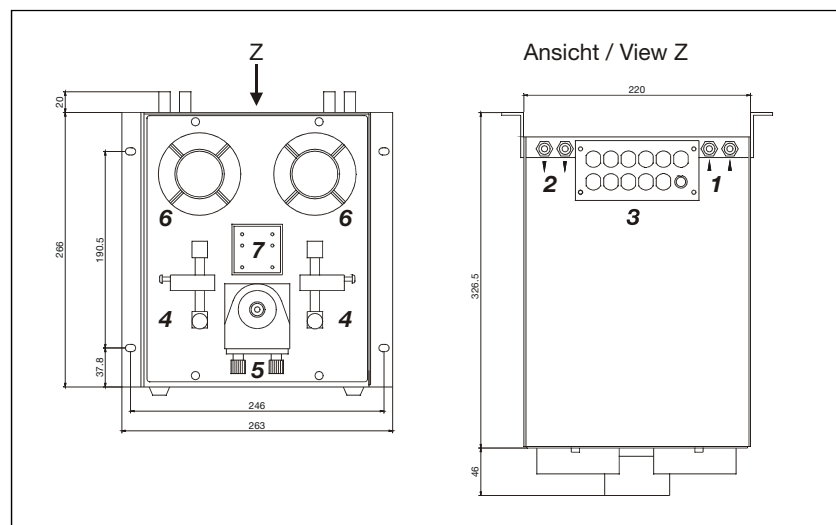
for use in hazardous areas Class 1, Div. 2, Groups A, B, C and D, temperature code T4, maximum ambient temperature +50 °C. Certificate No. 1105720

GOST – Import and operation permission

Declaration of conformity No. TC N RU Д-DE.AB72.B.02311

SCC-F Sample gas feed unit

Dimensional drawing (dimensions in mm)



- 1 Sample gas inlet
- 2 Sample gas outlet
- 3 Electrical connections
- 4 Flow rate monitor with needle valve
- 5 Metering pump
- 6 Condensate monitor
- 7 LED display and reset button of switching amplifiers

Note:

The illustration shows options. The scope and features of the ordered design may differ.

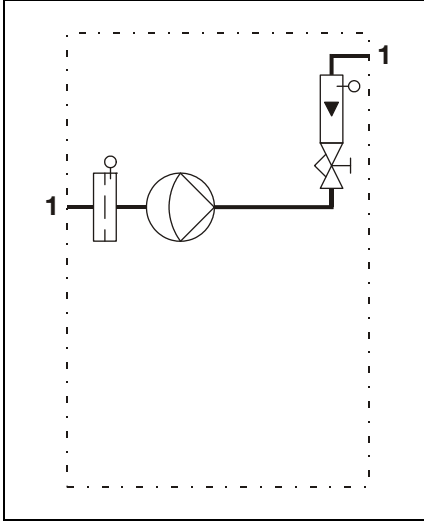
Ordering information

Catalog No. 23212-0-										
	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
Design										
Wall-mounted housing 1/2 19 Inch	1									
Gas paths										
1 gas path, 1 condensate monitor, 1 flow monitor, 1 diaphragm pump	1									
2 separate gas paths, 2 condensate monitors, 2 flow monitors, 2 diaphragm pumps	2									
1 gas path, 1 condensate monitor, 2 flow monitors, 1 diaphragm pump	3									
1 gas path, 1 condens. monitor, 2 flow monitors, 1 diaphr. pump, 1 pressure controller	4									
2 separate gas paths, 2 condensate monitors, 2 flow monitors, 1 diaphragm pump	5									
2 separate gas paths, 2 condensate monitors, 1 flow monitor, 1 diaphragm pump	6									
Dosing										
without		0								
with dosing pump		1								
Electronic processing unit										
with 1 electronic processing unit			1							
with 2 electronic processing units			2							
with I/O interface board			3							
Power supply										
230 V, 50/60 Hz				1						
115 V, 50/60 Hz				2						
Certification										
without					0					
with CSA certification					1					
with GOST certification					2					
	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
Catalog No. 23212-0-										

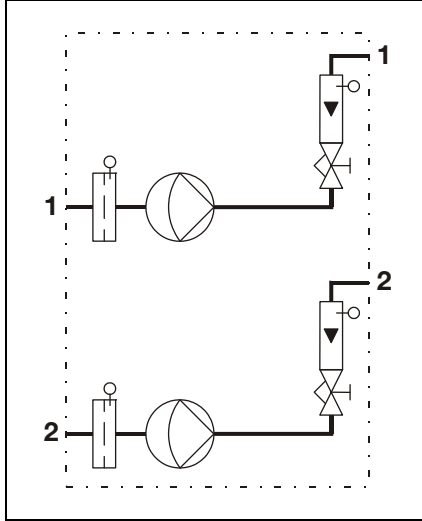
SCC-F Sample gas feed unit

Pneumatic diagrams

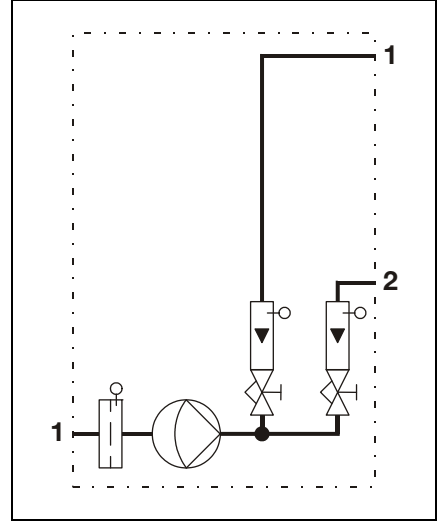
Catalog number 23212-0-11XXX000000



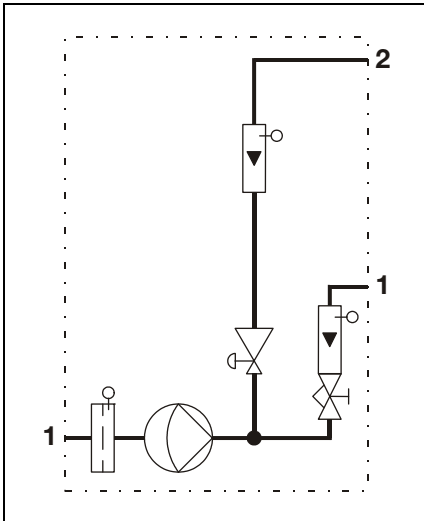
Catalog number 23212-0-12XXX000000



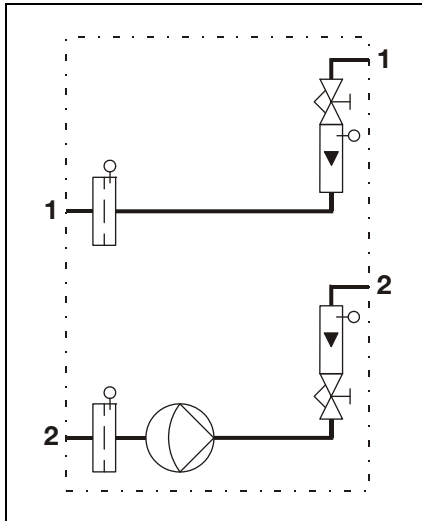
Catalog number 23212-0-13XXX000000



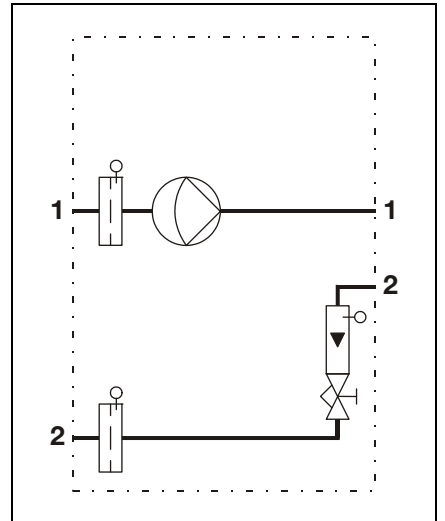
Catalog number 23212-0-14XXX000000



Catalog number 23212-0-15XXX000000



Catalog number 23212-0-16XXX000000



SCC-S Sample gas feed unit

- Process-proven modules
 - Diaphragm pump for feed-in of the gas
 - Membrane filter/condensate monitor
 - Flow monitor with needle valve
 - Ball valve/solenoid valves for feed-in of the test gas
 - Peltier cooler with condensate pump
- Ideal for use in simple processes (non-corrosive sample gases)
- Simple installation and connection
- Housing designed for 19-inch rack mounting and wall mounting (4 height units, IP20)
- Attractively priced system solution in combination with gas analyzers of the EasyLine series



Sample gas inlet conditions

Sample gas pressure

$p_{\text{abs}} = 70\text{--}105\text{ kPa}$ (0.7–1.05 bar)

Sample gas flow rate

Gas path: 7–70 l/h,

Bypass: 15–150 l/h (not in version with Peltier cooler)

Sample gas inlet temperature

+10 to +50 °C

Sample gas inlet dew point

Version with Peltier cooler: max. +50 °C (at max. +25 °C ambient temperature)

Version without Peltier cooler: The dew point of the sample gas must be at least 5 °C lower than the lowest ambient temperature in the whole sample gas path.

Operating data

Warm-up time

Version with Peltier cooler: approx. 10 minutes

Version without Peltier cooler: ready for immediate use

Gas tightness

$5 \times 10^{-6}\text{ hPa l/s}$

Flow rate display and adjustment

Rotameter with needle valve (metal-free)

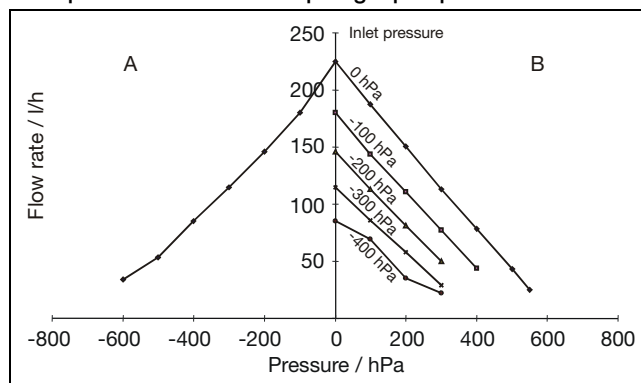
Outlet dew point (versions with Peltier cooler)

+3 °C

Condensate discharge (versions with Peltier cooler)

Peristaltic pump: feed performance approx. 300 ml/h at 5 rpm, pressure resistance $p_{\text{abs}} = 50\text{--}150\text{ kPa}$ (0.5–1.5 bar), peristaltic tube material TPE, peristaltic tube service life approx. 5 months, power consumption 3.5 VA, weight approx. 0.6 kg

Feed performance of the diaphragm pump



A Inlet: negative pressure, outlet: atmospheric pressure

B Inlet: acc. to diagram, outlet: positive pressure

Display and status signals

Temperature control and display (version with Peltier cooler)

Temperature controller with digital display of the cooler temperature in °C; set point factory-set at +3 °C, can be altered on site.

Status signals

Collective status signal of the condensate, flow and cooler monitoring: potential-free changeover contact, contact load 24 V DC/AC, 1 A

Status display of the condensate monitoring: Red LED on the front panel

SCC-S Sample gas feed unit

Applications: Peltier cooler for combustion gases

Application 1

SO₂ 0–75 mg/m³, NO 0–100 mg/m³, measurement with Uras26

Sample gas inlet dew point at the cooler inlet	Ambient temperature	Flow rate		
		30 l/h	60 l/h	90 l/h
30 °C	+10 °C	X	X	X
	+20 °C	X	X	–
	+30 °C	X	X	–
	+40 °C	–	–	–
50 °C	+10 °C	X	X	X
	+20 °C	X	X	–
	+30 °C	X	–	–
	+40 °C	–	–	–

X: permitted, –: not permitted

Application 2

SO₂ 0–400 mg/m³, NO 0–100 mg/m³, measurement with Uras26
(also for CO, CO₂ and O₂)

Sample gas inlet dew point at the cooler inlet	Ambient temperature	Flow rate		
		30 l/h	60 l/h	90 l/h
30 °C	+10 °C	X	X	X
	+20 °C	X	X	X
	+30 °C	X	X	X
	+40 °C	X	X	X
50 °C	+10 °C	X	X	X
	+20 °C	X	X	X
	+30 °C	X	X	X
	+40 °C	X	X	X

Construction

Design

19-inch housing (4 height units) for rack and wall mounting

Mounting

Rack mounting on mounting rails, wall mounting with pre-assembled mounting brackets on the housing.

The gas and electrical connections are located on the back of the housing for rack mounting and on the top of the housing for wall mounting. They can be altered on site.

Comply with the distances from the wall during installation: left and right-hand side panels at least 35 mm, back panel at least 25 mm.

A distance of at least 1 height unit from devices which develop heat is required for the version with Peltier cooler.

Max. inclination of the instrument 5°.

Housing material and color

Sheet steel, galvanized, basalt gray (RAL 7012),
front panel light gray (RAL 7035)

Degree of protection of housing

IP20 to EN 60529

Dimensions

See dimensional drawing on page 16

Weight

Approx. 17 kg

Material of gas-conducting parts

Glass, glass fiber, EPDM, ETFE, FPM, PP, PPH, PVC, PVDF, TPE

Gas connections

Sample gas inlet

PVDF angled screw fitting for tube 6 x 4 x 1 mm

Test gas inlets

PPH coupling for tube 6 x 4 x 1 mm

Gas outlets

PPH coupling for tube 6 x 4 x 1 mm

Electrical connections

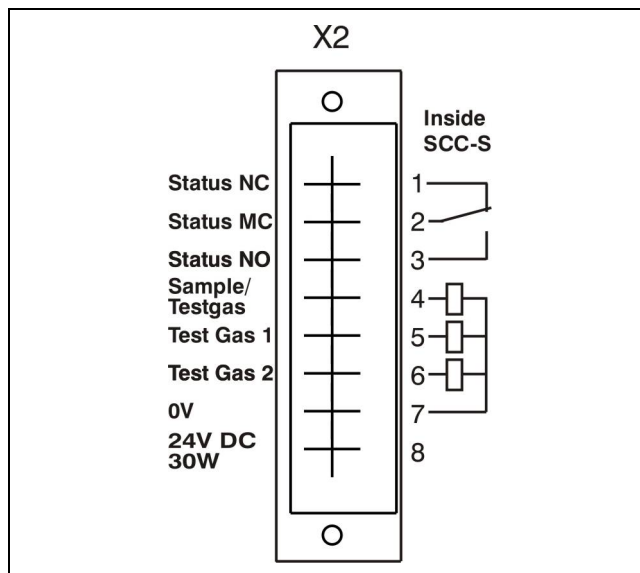
Power supply

Connector for non-heating apparatus (cable with grounding plug, length 2 m, supplied)

Status signal (standard) and external solenoid valves (option)

8-pin plug receptacle (see connection diagram, mating plug supplied)

Connection diagram



1–3 Status signal of the cooler, flow and condensate monitoring: potential-free changeover contact, contact load 24 V DC/AC, 1 A

4 Activation of solenoid valve Sample/Test gas

5 Activation of solenoid valve Test gas 1

6 Activation of solenoid valve Test gas 2

7 Internal power supply 0 V

8 Internal power supply +24 V DC

The connection diagram shows the internal wiring of the sample gas feed unit.

The integrated power supply can also be used for the supply of external solenoid valves: Terminal 7 = 0 V, terminal 8 = +24 V, maximum capacity 30 VA at 24 V DC.

Electrical safety

Testing to EN 61010-1

Protective class

I

Overvoltage category/degree of contamination

III/2

Protective separation

Electrical isolation of the 115/230 V AC power supply from the other current circuits by means of reinforced or double insulation. Functional extra-low voltages (PELV) on the low voltage side

Electromagnetic compatibility

Emitted interference

Testing to EN 61000 Part 6-3:2001

Immunity to interference

Testing to EN 61000 Part 6-2:2005

Mechanical capabilities

Testing to EN 60068-2-27 and EN 60068-2-6

Operation

Vibration: 1 g / ± 0.08 mm / 10 to 150 Hz, 3 x 2 cycles

Ambient conditions

Ambient temperature

Operation: +10 to +40 °C,
Storage and transport: -25 to +60 °C

Relative humidity

≤ 75 % annual average, occasional and slight condensation permitted, ≤ 90 % on 30 days/year

Power supply

Input voltage

230 V AC ± 10 %, 50 Hz or 115 V AC ± 10 %, 60 Hz

Power consumption during operation

230 V AC, 50 Hz, max. 300 VA

Protection of the instrument

Fine-wire fuse, 3.15 A, slow-blow

Options

Internal power supply/power stage

For the activation of max. 3 internal or external solenoid valves, operating voltage 24 V DC, capacity max. 30 VA, 3 A fine-wire fuse

Solenoid valves for internal test gas infeed

3/2-way solenoid valve: 1 ea., for switching over sample gas/test gas, valve type is pivoted armature valve, material PVDF and FPM, power supply 24 V DC, activation via a digital output of the gas analyzer or a PLC.

2/2-way solenoid valve: max. 2 ea., for test gas infeed, valve type is rocker valve with separating diaphragm, material PPH and FPM, power supply 24 V DC, activation via a digital output of the gas analyzer or a PLC.

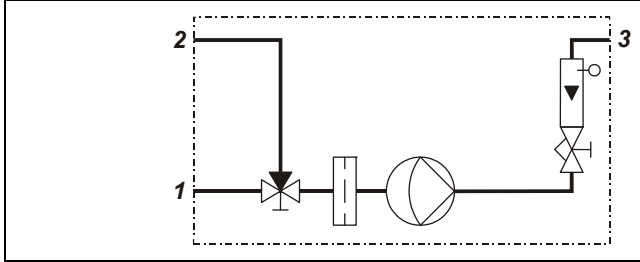
Condensate discharge for external cooler

Peristaltic pump: flow rate approx. 300 ml/h at 5 rpm, pressure resistance $p_{abs} = 50\text{--}150$ kPa (0.5–1.5 bar), peristaltic tube material TPE, peristaltic tube service life approx. 5 months, power consumption 3.5 VA, weight approx. 0.6 kg

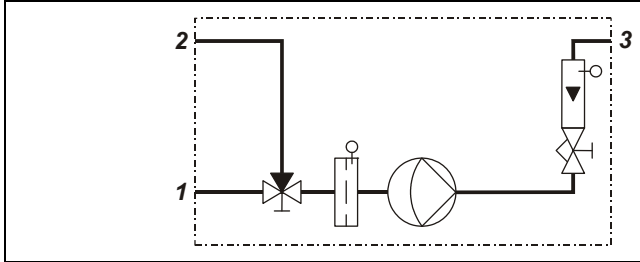
SCC-S Sample gas feed unit

Pneumatic diagrams

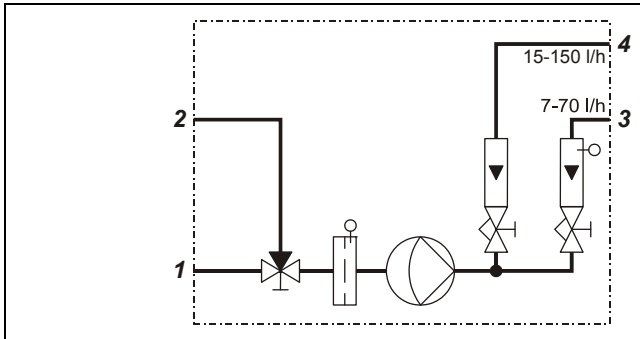
Version 1 Catalog number 23236-0-X11000XX0000



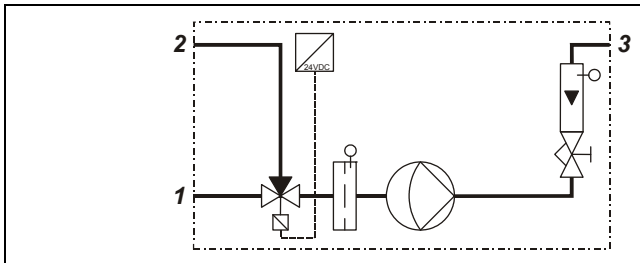
Version 2 Catalog number 23236-0-X21000XX0000



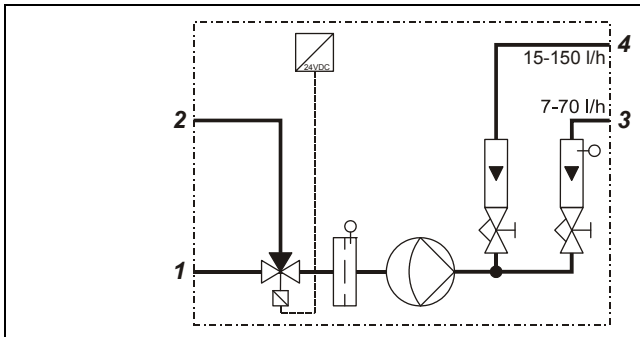
Version 3 Catalog number 23236-0-X31000XX0000



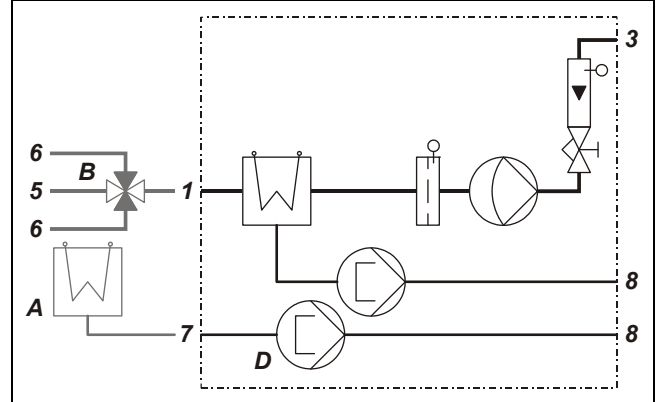
Version 4 Catalog number 23236-0-X22000XX0000



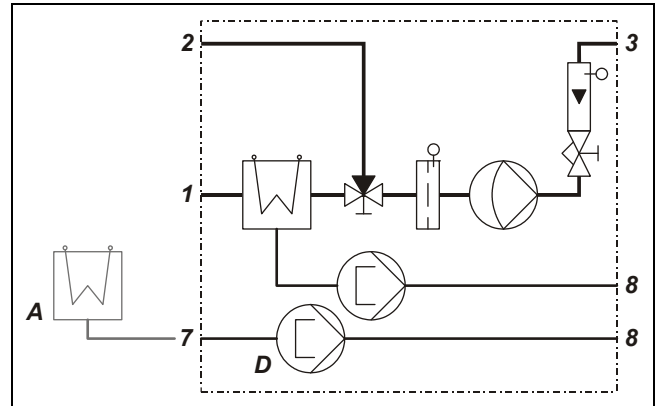
Version 5 Catalog number 23236-0-X32000XX0000



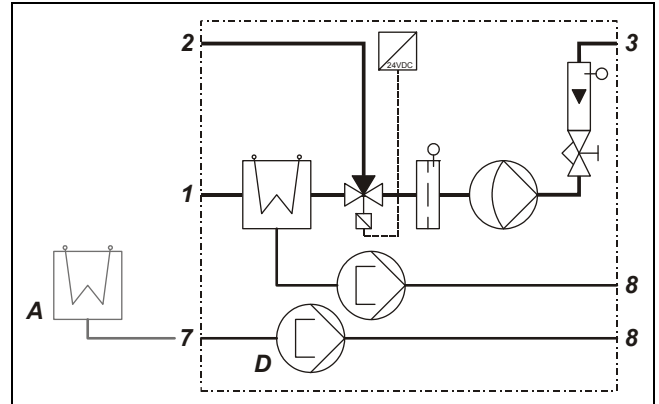
Version 6 Catalog number 23236-0-X2001XXX0000



Version 7 Catalog number 23236-0-X2101XXX0000



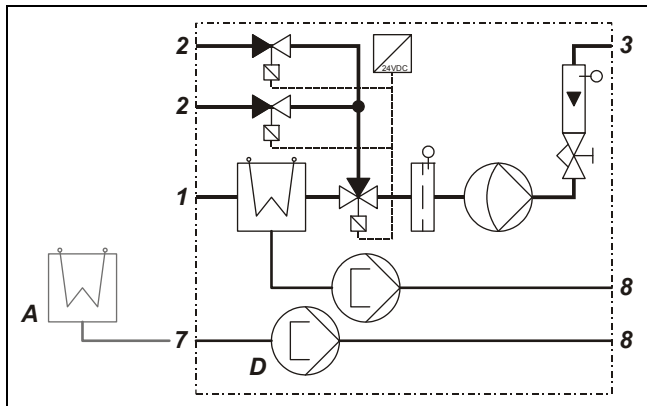
Version 8 Catalog number 23236-0-X2201XXX0000



SCC-S Sample gas feed unit

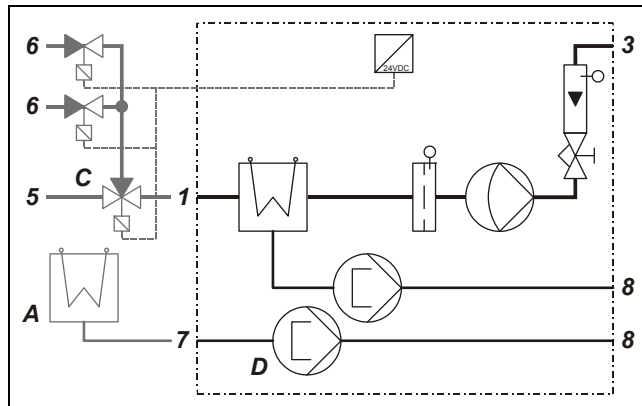
Pneumatic diagrams

Version 9 Catalog number 23236-0-X2301XXX0000



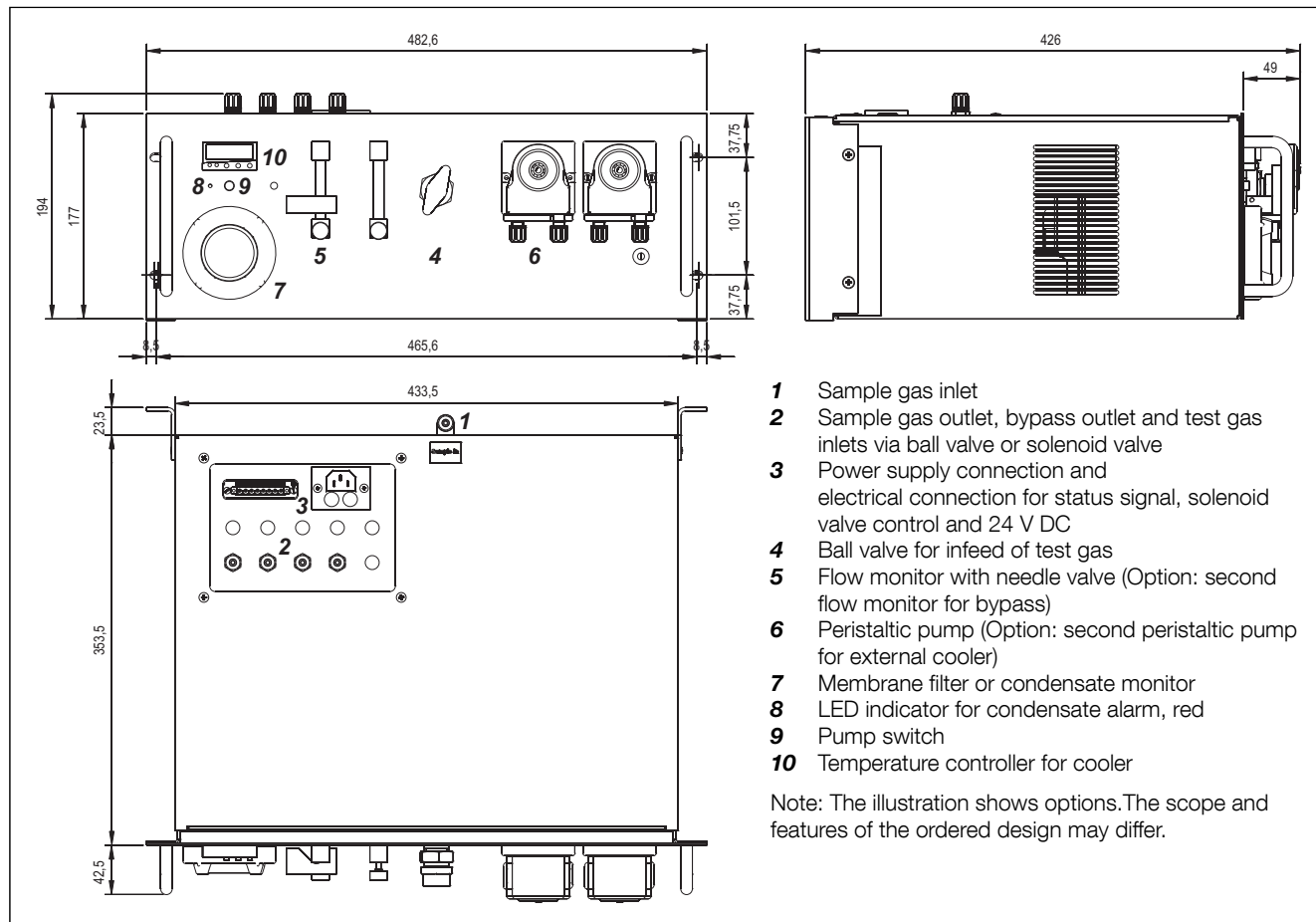
- 1 Sample gas inlet
- 2 Test gas inlet
- 3 Gas outlet
- 4 Bypass outlet
- 5 Sample gas inlet for external infeed
- 6 Test gas inlet for external infeed
- 7 Condensate inlet from the external cooler
- 8 Condensate outlet

Version 10 Catalog number 23236-0-X2011XXX0000



- Not supplied:
- A** External cooler
 - B** External multi-way cock
 - C** External solenoid valves
- Option:
- D** Additional condensate pump for external cooler

Dimensional drawing (dimensions in mm)



SCC-S Sample gas feed unit

Ordering information

Catalog number 23236-0-										0	0	0	0
										↓	↓	↓	↓
Design													
19-inch housing for rack mounting, 4 height units, IP20										1			
19-inch housing for wall mounting, 4 height units, IP20										2			
Gas path													
Membrane filter, pump and flow monitor with needle valve (Version 1)										1			
Condensate monitor, pump and flow monitor with needle valve (Vers. 2, 4, 6–10)										2			
Condensate monitor, pump and flow monitor 7–70 l/h, bypass 15–150 l/h (Vers. 3, 5)										3			
Internal test gas infeed													
without (Versions 6, 10)											0		
One 3-way test gas cock (Versions 1, 2, 3, 7)											1		
One 3/2-way solenoid valve (Versions 4, 5, 8)											2		
One 3/2-way solenoid valve and two 2/2-way solenoid valves (Version 9)											3		
Electrical power stage (24 VDC, 30 VA) for external test gas infeed													
without (Versions 1–9)												0	
For up to three external solenoid valves (Version 10)												1	
Cooler and condensate pump													
without (Versions 1–5)												0	
with Peltier cooler and condensate pump (Versions 6–10)												1	
Condensate pump for external cooler													
without (Versions 1–5)												0	
with additional condensate pump (Versions 6–10)												1	
Power supply													
230 V, 50 Hz												1	
115 V, 60 Hz												2	
Approvals													
None												1	
										↓	↓	↓	↓
Catalog number 23236-0-												0	0
												0	0

Diaphragm pump 4N

- Feed in of the sample gas
- Compact unit with degree of protection of housing IP20 or IP54



Operating data

Inlet pressure

$p_{abs} = 70\text{--}105\text{ kPa}$ (0.7–1.5 bar)

Flow rate

Max. 250 l/h at atmospheric pressure

Inlet temperature

+5 to +50 °C

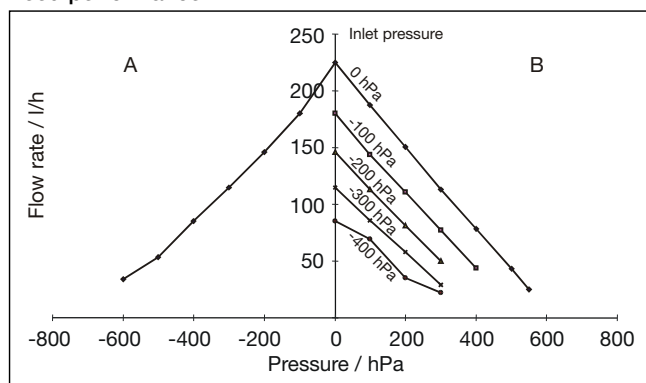
Inlet dew point

Below room temperature

Tightness

Pressure drop 0.1 hPa/min

Feed performance



A Inlet: negative pressure, outlet: atmospheric pressure

B Inlet: according diagram, outlet: positive pressure

Construction

Design

Surface-mounting case for wall attachment, motor axis horizontal

Housing material and color

Plastic, RAL 7035

Degree of protection of housing

IP20 or IP54 to EN 60529

Class of protection

I

Dimensions

See dimensional drawing on page 19

Weight

Approx. 1.8 kg

Materials of gas-conducting parts

Valve plate, diaphragm: EPDM (ethylene-propylene); pump body: PP (polypropylene); hose: FPM; nozzles: ETFE (ethylene-tetrafluorethylene)

Gas connections

G 1/4 female thread for male fittings, nozzles for hose inside diameter 4 mm are supplied with the unit.

Electrical connections

Terminals via cable connection M20

Diaphragm pump 4N

Mechanical capabilities

Testing to DIN EN 60068-2-27 and DIN EN 60068-2-6

Transport

Shock: 30 g/18 ms/18 shocks

Vibration: 2 g/±0.15 mm/5–150 Hz, 3 x 5 cycles

Operation

Vibration: 2 g/±0.07 mm/4–7 Hz, 3 x 2 cycles

Ambient conditions

Ambient temperature

Operation: IP54 +5 to +40 °C, IP20 +5 to +50 °C

Storage and transport: –25 to +65 °C

Relative humidity

≤ 90 % annual average, condensation permitted

Climatic class

3K4 to EN 60721-3-3

Power supply

AC voltage

230 V ± 10 %, 50 Hz or 60 Hz

115 V ± 10 %, 50 Hz or 60 Hz

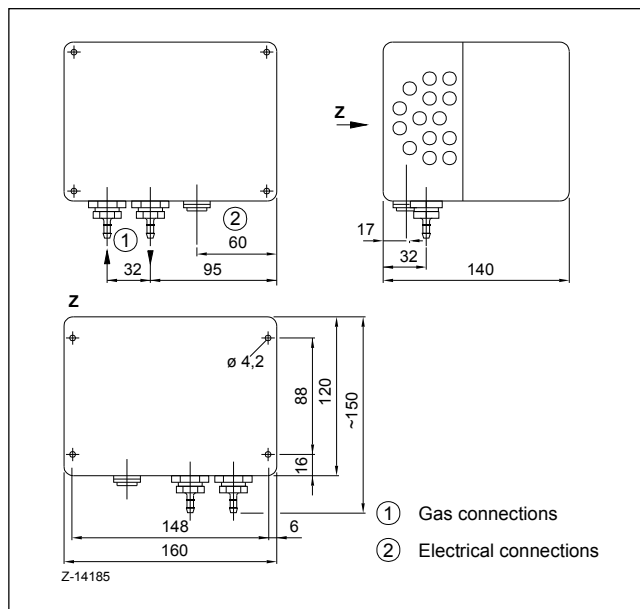
Power consumption

approx. 50 VA

Ordering information

	Catalog No.
Diaphragm pump 4N, IP20; 230V, 50/60 Hz	23134-5-8018545
Diaphragm pump 4N, IP20; 115V, 50/60 Hz	23134-5-8018546
Diaphragm pump 4N, IP54; 230V, 50/60 Hz	23134-5-8018547
Diaphragm pump 4N, IP54; 115V, 50/60 Hz	23134-5-8018548

Dimensional drawing (dimensions in mm)



SCC-K NO₂/NO converter

- Catalytic converter based on carbon-molybdenum
- High catalyst service life
- Catalyst cartridge can be changed without tools
- Option: Version with heated sample gas inlet



Operating data

Sample gas flow rate

Max. 150 l/h

Temperature range

Depending on sample gas flow rate:

30 l/h: 320 °C; 60 l/h: 320 °C; 90 l/h: 340 °C, 150 l/h: 360 °C

Effectivity

≥ 95 % with new catalyst

Sample gas pressure p_{abs}

≤ 200 kPa (2 bar)

Pressure drop

≤ 2 kPa (20 mbar) at 90 l/h

Warm-up time

Approx. 30 min

90% time T_{90}

≤ 10 s at 60 l/h

Status signal

Status signal for temperature deviation

1 NO potential-free contact,
capacity 24 V DC, 1 A

Construction

Design

19 inch slide-in housing, 3 height units

Mounting

In 19 inch cabinet/rack or with mounting brackets (accessories)
on the wall, distance above min. 1 height unit

Housing material and color

Sheet steel; light gray (RAL 7035), basalt gray (RAL 7012)

Degree of protection of housing

IP20 to EN 60529

Dimensions

See dimensional drawing on page 22

Weight

Approx. 8–9 kg

Materials of gas-conducting parts

Stainless steel 1.4571 (SAE 316Ti), PVDF, PTFE, FPM

Gas connections

Sample gas inlet and outlet unheated

G 1/4 female thread

Heated sample gas inlet

Swagelok® screwed connection for pipes with 6 mm inner
diameter

SCC-K NO₂/NO converter

Electrical connections

Power supply

Connector for non-heating apparatus, cable with grounding plug, length 2 m

Status signal

9 pin Sub-D female connector with counter-plug

Electrical safety

Testing to EN 61010-1

Protective class

I

Overvoltage category / degree of contamination

III / 2

Protective separation

Electrical isolation of the 115 / 230 V AC power supply from the other current circuits by means of reinforced or double insulation. Functional extra-low voltages (PELV) on the low voltage side

Electromagnetic compatibility

Emitted interference

Testing to EN 61000 Part 6-3:2001

Immunity to interference

Testing to EN 61000 Part 6-2:2005

Ambient conditions

Ambient temperature

Operation: +10 to +50 °C,
Storage and transport: -25 to +65 °C

Relative humidity

≤ 75 % annual mean, occasional and slight condensation permitted

Power supply

Input voltage

230 V AC, -15 / +10 %, 48–62 Hz or
120 V AC, -10 / +10 %, 48–62 Hz

Power consumption

240 V AC: 575 VA; 120 V AC: max. 560 VA

Service life of catalyst

The service life of the catalyst depends on its operating temperature as well as the flow rate and the NO₂ and O₂ content of the sample gas. It is > 6 months for 320 °C, 30 l/h, 10 ppm NO₂ and 5 Vol.-% O₂.

Certification

CSA – Electrical safety

The SCC-K NO₂/NO converter is certified for use in general purpose environment, evidenced by full compliance with standards CAN/CSA-C22.2 No. 61010-1-04 and UL 61010-1 (2nd Edition).
Certificate No. 2298365

GOST – Import and operation permission

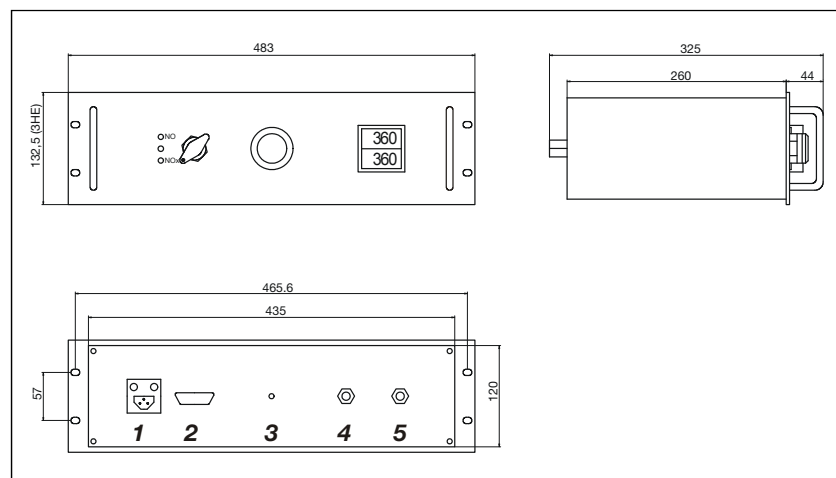
Declaration of conformity No. TC N RU Д-DE.AB72.B.02311

Ordering information

	Catalog No.
Converter SCC-K, cock PVDF, 230 V AC	23093-4-0801974
Converter SCC-K, 2 solen. valves, 230 V AC	23093-4-0801975
Converter SCC-K, heated, 1 s.v., 230 V AC	23093-4-0801976
Converter SCC-K, cock PVDF, 120 V AC	23093-4-0801977
Converter SCC-K, 2 solen. valves, 120 V AC	23093-4-0801978
Converter SCC-K, heated, 1 s.v., 120 V AC	23093-4-0801979
Accessories	
Wall mounting bracket	23009-4-0801980
Carbon catalyst set	23009-4-0801981

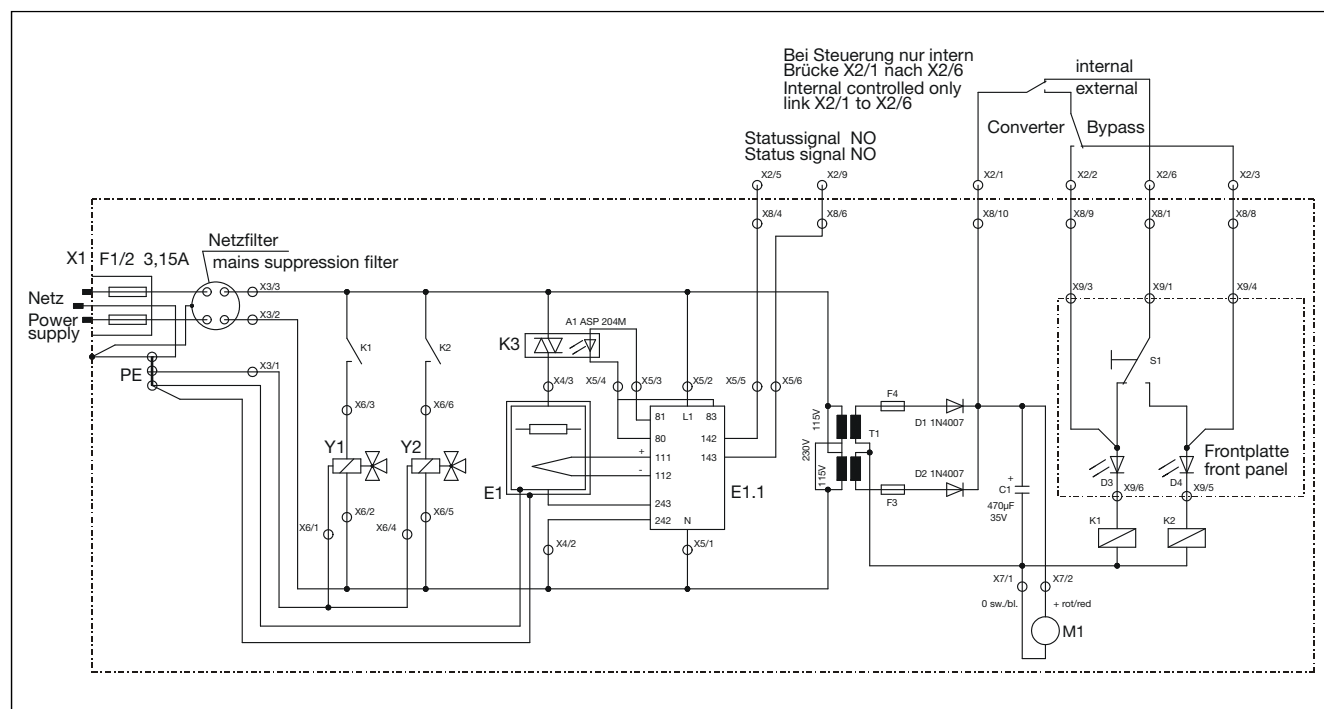
SCC-K NO₂/NO converter

Dimensional drawing (dimensions in mm)



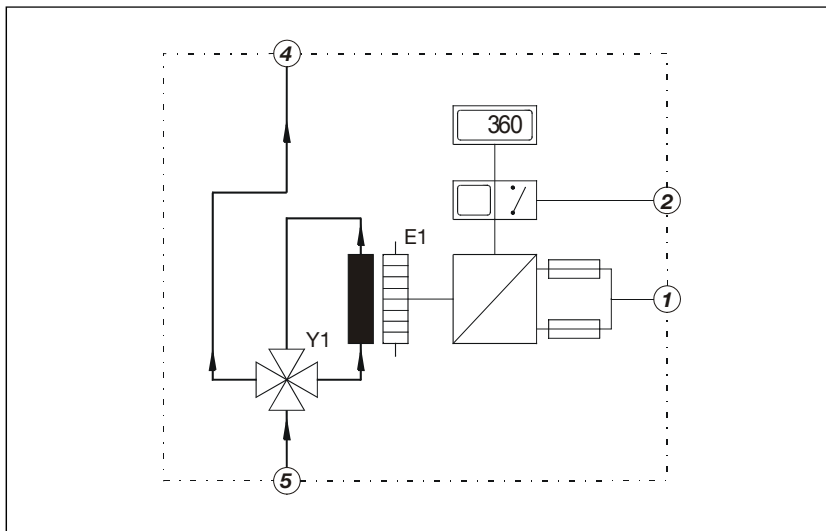
- 1** Power supply input X1
- 2** Status signal output X2
(9-pin Sub-D female connector)
- 3** Heated sample gas inlet 6 mm
- 4** Sample gas outlet G 1/4 female thread
- 5** Sample gas inlet G 1/4 female thread

Circuit and connection diagram



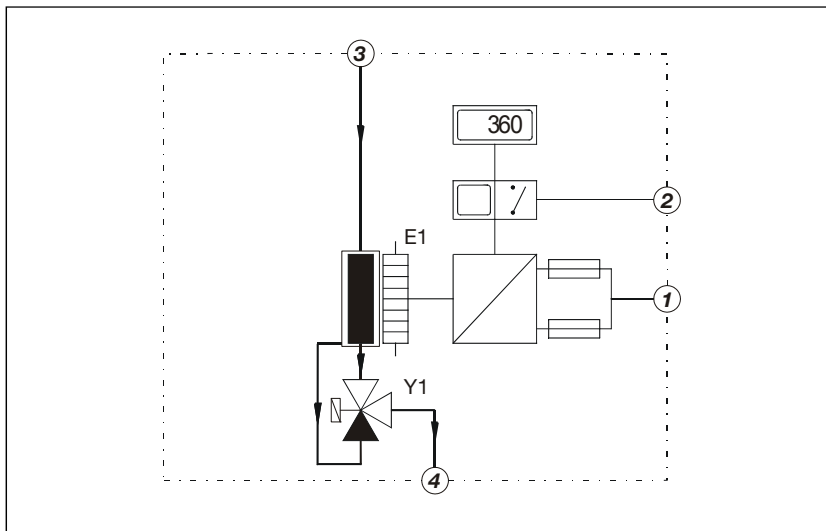
SCC-K NO₂/NO converter

Pneumatic diagrams



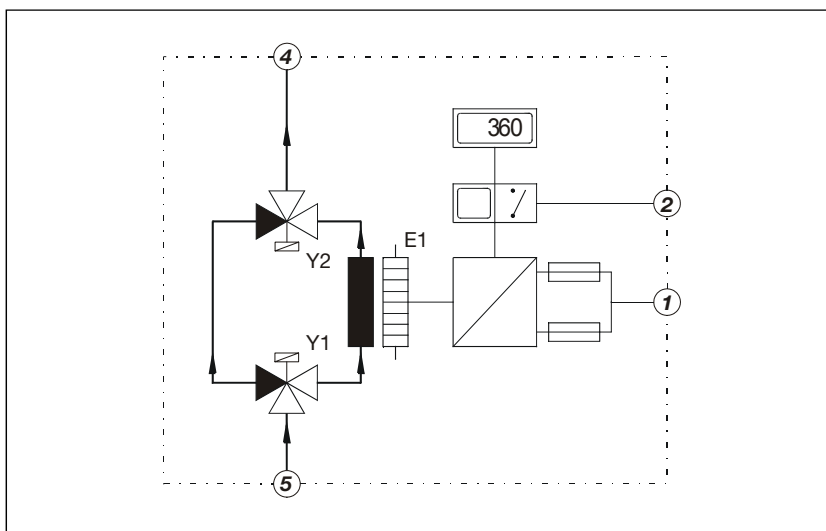
Standard version with 4-way ball valve

- 1 Power supply
- 2 Status signal
- 4 Sample gas outlet
- 5 Sample gas inlet
- E1 Tube furnace
- Y1 4-way ball valve



Option with heated sample gas inlet

- 1 Power supply
- 2 Status signal
- 3 Heated sample gas inlet
- 4 Sample gas outlet
- E1 Tube furnace
- Y1 3/2-way solenoid valve



Option with two solenoid valves

- 1 Power supply
- 2 Status signal
- 4 Sample gas outlet
- 5 Sample gas inlet
- E1 Tube furnace
- Y1 3/2-way solenoid valve
- Y2 3/2-way solenoid valve

Membrane filter

Application

Membrane filters are used in gas conditioning systems of analyzer equipment for fine filtering of dust particles $\geq 1 \mu\text{m}$, in order to protect the analysis instruments from contamination in the event of disturbances in the sample gas conditioning chain.

Technical data

Flow rate (air)

Max. 300 l/h

Gas pressure p_{abs}

PVC: max. 150 kPa (1.5 bar),
stainless steel: max. 200 kPa (2 bar)

Gas temperature

PVC: max. 55 °C, stainless steel: max. 100 °C

Retention rate

100 % for particles $\geq 1 \mu\text{m}$

Pressure drop

2.5 to 20 hPa (mbar) at a flow rate of 30–250 l/h (air)

Materials of gas-conducting parts

Case: PVC or stainless steel 1.4571 (SAE 316Ti),
gas connections: PTFE, round cord rings: FPM,
filter membrane: glass fiber

Filter surface

Approx. 24 cm²

Dead volume

Approx. 15 cm³

Weight

PVC: approx. 0.59 kg, stainless steel: approx. 1.4 kg

Mounting

Panel and wall mounting (with mounting bracket)

Gas connections

G 1/4 female thread or nozzles for hose internal diameter 4 mm

Scope of delivery

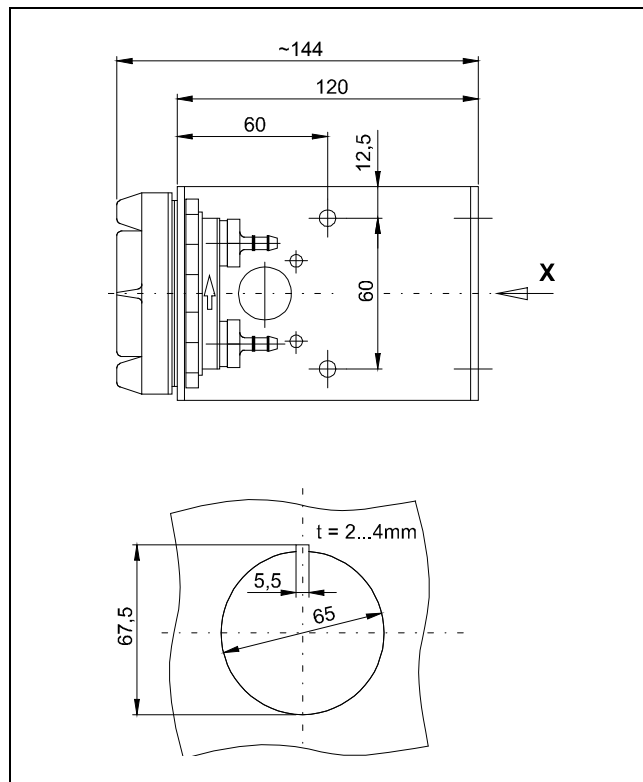
Membrane filter, mounting bracket, 2 nozzles, 2 round cord rings

Ordering information

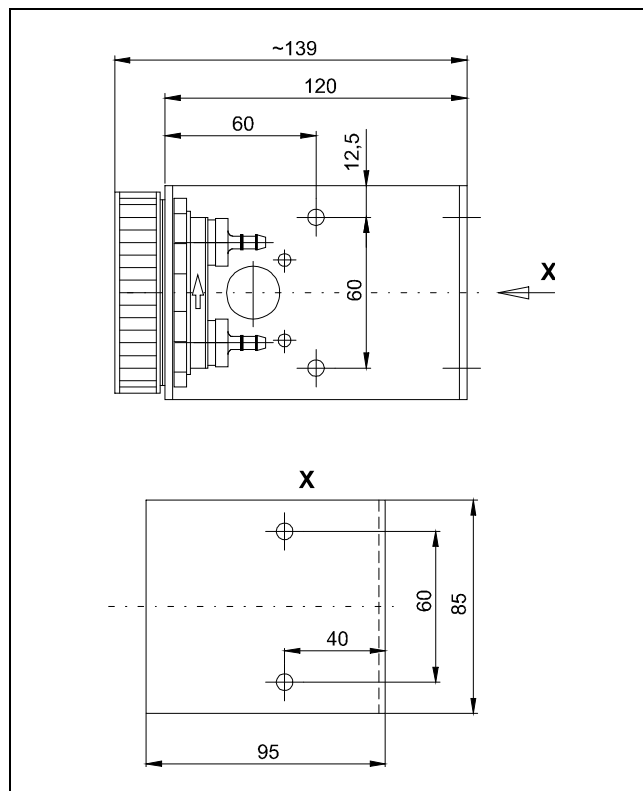
	Catalog No.
Membrane filter	
Membrane filter, PVC	23145-5-8018438
Membrane filter, stainless steel	23147-5-8018439
Condensate monitor (see page 25)	
Condensate monitor, PVC	23158-5-8018440
Condensate monitor, stainless steel	23157-5-8018039

Dimensional drawings (dimensions in mm)

Membrane filter, PVC version



Membrane filter, stainless steel version



Application

The condensate monitor CGKW is used to indicate moisture (condensate) or any other electrically-conducting liquid which penetrates into the sample gas line to the gas analyzer. At the same time, the condensate monitor is a membrane filter and it therefore satisfies the double function of fine filtering the sample gas as well as of signaling moisture. The filter membrane holds back the penetrated concentrate for a short while. An independent condensate barrier (see application examples) can be constructed with the condensate monitor as sensor element and the switching unit ER-144A/Ex (see page 30).

Technical data

Flow rate (air)

Max. 300 l/h

Gas pressure p_{abs}

PVC: max. 150 kPa (1.5 bar),

stainless steel: max. 200 kPa (2 bar)

Gas temperature

Max. 55 °C

Retention rate

100 % for particles $\geq 1 \mu\text{m}$

Pressure drop

2.5 to 20 hPa (mbar) at a flow rate of 30–250 l/h (air)

Materials of gas-conducting parts

Case: PVC or stainless steel 1.4571 (SAE 316Ti), gas connections: PTFE, electrodes: stainless steel 1.4305 (SAE 303), round cord rings: FPM, filter membrane: glass fiber

Filter surface

Approx. 24 cm²

Dead volume

Approx. 15 cm³

Dimensions

As for membrane filter (see page 24)

Weight

PVC: approx. 0.71 kg, stainless steel: approx. 1.5 kg

Mounting

Panel and wall mounting (with mounting bracket)

Gas connections

G 1/4 female thread or nozzles for hose inside diameter 4 mm

Electrical connections

Two-core cable, approx. 1 m, for connecting to the switching unit ER-144A/Ex (see page 30)

Mounting orientation

Safety nose at top, electrode below

Scope of delivery

Condensate monitor, mounting bracket, 2 nozzles, 2 round cord rings, 25 filter membranes, operating manual

Ordering information

See page 24

Explosion protection (only with stainless steel case)

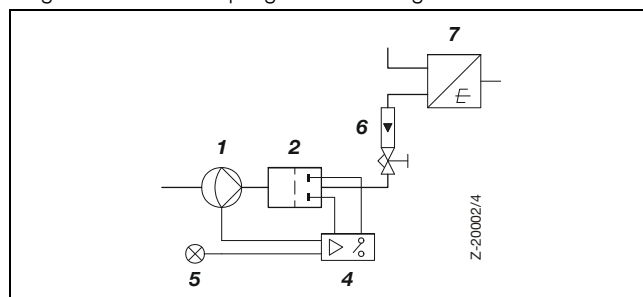
The condensate monitor is a device without voltage source. If the condensate monitor is being operated in the intrinsically-safe

control circuit of the switching unit ER-144A/Ex, the apparatus is permitted in hazardous areas of Zones 1 and 2 up to a gas and ambient temperature of 55 °C without restriction of the explosion groups and temperature classes.

Application examples

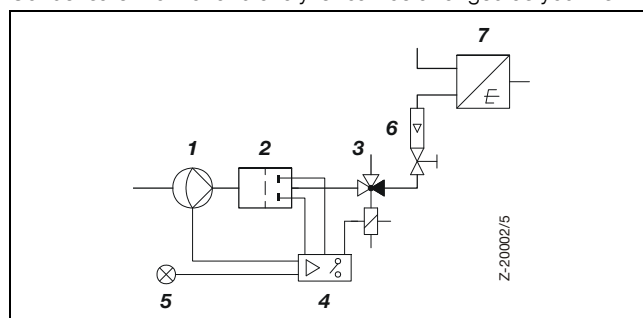
The process gas is present at zero pressure or with negative pressure

Sample gas feeding by pump. Condensate barrier by switching off the pump. Condensate monitor and analyzer must be arranged above the sample gas conditioning chain.



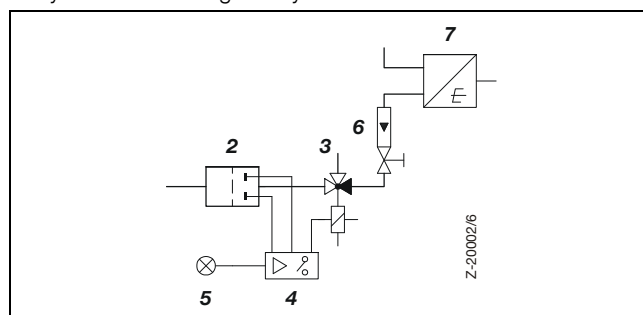
The process gas is present at zero pressure or with weak positive pressure

Sample gas feeding by pump. Condensate barrier by switching off the pump and switching over a 3/2-way solenoid valve. Condensate monitor and analyzer can be arranged as you wish.



The process gas is present with positive pressure

Sample gas feeding by positive pressure. Condensate barrier by switching over a 3/2-way solenoid valve. Condensate monitor and analyzer can be arranged as you wish.



- | | | |
|----------------------|------------------|------------|
| 1 Membrane pump | 4 Switching unit | 7 Analyzer |
| 2 Condensate monitor | 5 Pilot lamp | |
| 3 Solenoid valve 1) | 6 Flow meter | |

1) The sample gas path to the analyzer is blocked in the de-energized condition.

Acid filter

Application and description

The acid filter is used in the gas conditioning system. Its purpose is to collect the sulfuric acid aerosols entrapped in the sample gas. The acid filter may always be required where the SO_3 content in the sample gas is greater than 1 mg/m^3 or the SO_2 content is greater than 1000 mg/m^3 – for example in flue gas from heavy-oil or hard coal firings.

The filter element is made up of borosilicate fibers. An influencing and "hang-up" of the measuring component in the sample gas is not detectable with this material.

Technical data

Flow rate (air)

Max. 250 l/h

Gas pressure

$p_{\text{abs}} = 50\text{--}200 \text{ kPa}$ (0.5–2 bar)

Sample gas temperature

Max. 150°C

Sample gas dew point

Max. 70°C

Retention rate

99.99 % for particles $\geq 0.1 \mu\text{m}$

Pressure drop

10 hPa at 250 l/h, 50 hPa at 250 l/h

Dead time

Approx. 20 s

Materials of gas-conducting parts

Connection cap: PVDF; vessel: glass; filter element: borosilicate glass micro fiber

Dead volume

Approx. 130 ml

Dimensions

See dimensional drawing

Weight

Approx. 0.57 kg

Mounting

Wall mounting with mounting bracket, mounting orientation vertical

Gas connections

Male fitting (PVDF) for 4/6/1 mm, drainage connection GL14 with terminal fitting 4/6/1 mm (PVDF)

Ambient temperature

$+5$ to $+50^\circ\text{C}$

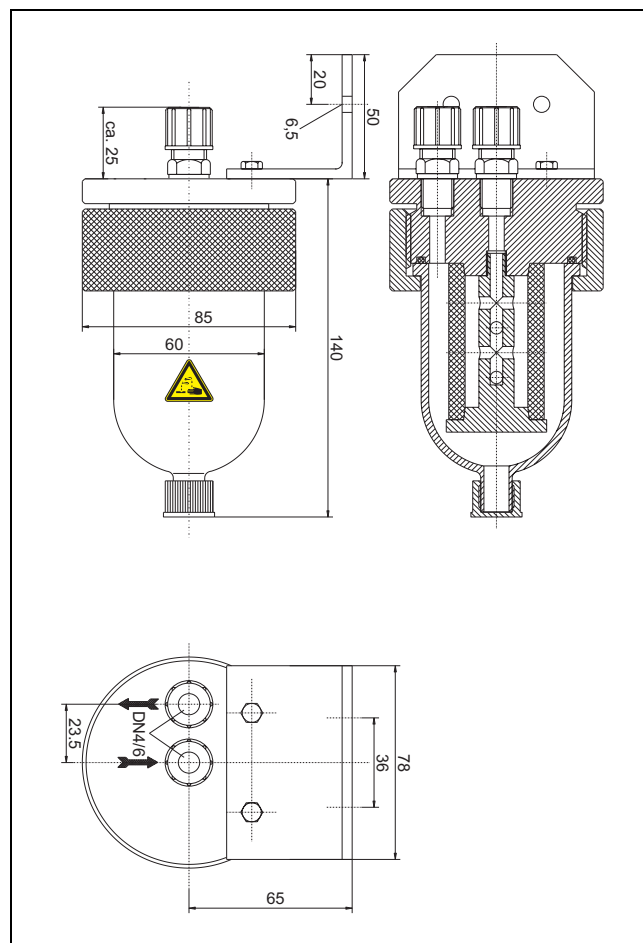
Service life

Change element if there is contamination and perceptibly higher pressure drop

Scope of delivery

Filter vessel with filter element, two male fittings, drainage connection GL14, mounting bracket, mounting and replacement instructions

Dimensional drawing (dimensions in mm)



Ordering information

	Catalog No.
Acid filter	23045-5-8018419

Disposable filter

Application and description

The disposable filter is used in the gas conditioning system. It is mounted in the sample gas line upstream of the gas analyzer.

The disposable filter consists of a micro fiber filter pipe which is welded into a plastic case.

Technical data

Flow rate (air)

Max. 250 l/h

Gas pressure

$p_{abs} \leq 200 \text{ kPa}$ (2 bar)

Sample gas temperature

+5 to +50 °C

Retention rate

99.99 % for particles $\geq 0.1 \mu\text{m}$

Pressure drop

Approx. 2 hPa at 60 l/h

Dead time

Approx. 3 s at 60 l/h

Materials of gas-conducting parts

Case: PA, Filter element: borosilicate glass micro fiber

Case volume

11.5 cm³

Dimensions

Height 80 mm, diameter 28 mm

Weight

Approx. 0.1 kg

Mounting

Mounting orientation preferably vertical

Gas connections

Two pipe nipples, outside diameter 6.3 mm

Ambient temperature

+5 to +50 °C

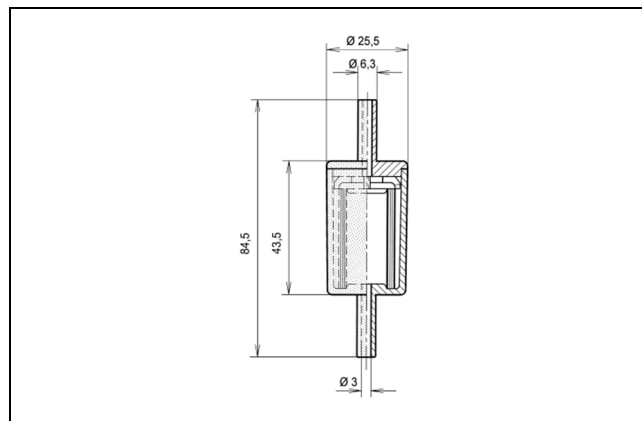
Service life

Change filter if there is condensate accumulation (acid), and in any case every 6 months

Scope of delivery

Disposable filter, mounting and replacement instructions

Dimensional drawing (dimensions in mm)



Ordering information

	Catalog No.
Disposable filter	23044-5-8018418

Flow meters, flow monitors

- Flow measurement using float-type flow meters
- Replaceable measuring tube
- Integral needle valve
- Flow monitor with inductive contact



Flow meter 7–70 l/h

Measuring range

7–70 l/h nitrogen at 20 °C and 1013 hPa (mbar)

The following flow rates are obtained with other gases under the same conditions at the 60 l/h mark (approximate values):

Sulfur dioxide	SO ₂	49 l/h
Carbon dioxide	CO ₂	55 l/h
Argon	Ar	49 l/h
Air		59 l/h
Oxygen	O ₂	54 l/h
Carbon monoxide	CO	60 l/h
Methane	CH ₄	86 l/h
Hydrogen	H ₂	159 l/h
Helium	He	77 l/h

Measuring deviation

±5 % of the full-scale value

Gas inlet conditions

Pressure max. 10 MPa (10 bar), temperature 100 °C

Flow rate adjustment

With integral needle valve

Materials of gas-conducting parts

Measuring tube	Borosilicate glass
Float	Stainless steel 1.4401 (SAE 316)
Float catcher	PTFE
Fitting	Stainless steel 1.4571 (SAE 316Ti)
Needle valve	Stainless steel 1.4571 (SAE 316Ti)
Seals	FPM
Nozzles	PTFE

Weight

Approx. 0.5 kg

Mounting

Panel or wall mounting by means of mounting bracket

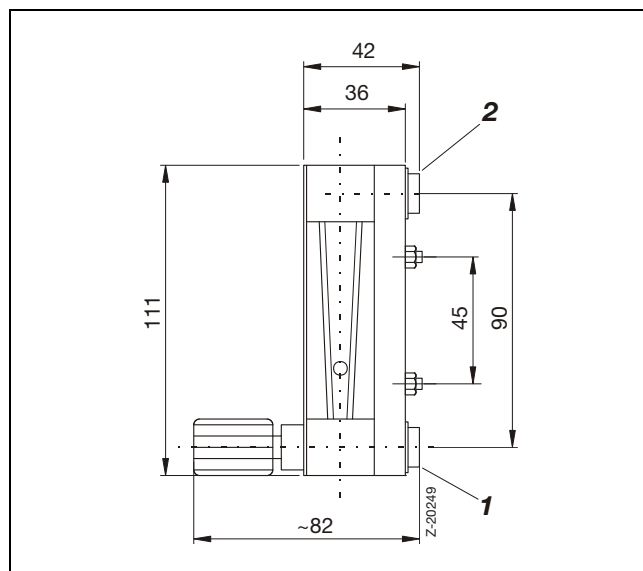
Gas connections

1/4 NPT female thread or sleeve for hose 4 mm inner diameter

Scope of delivery

Flow meter, mounting bracket, 2 nozzles

Dimensional drawing (dimensions in mm)



- 1 Gas inlet
2 Gas outlet

Flow meters, flow monitors

Flow monitor 1.6–16 l/h, 7–70 l/h

Measuring range

1.6–16 l/h or 7–70 l/h nitrogen at 20 °C and 1013 hPa (mbar)

Measuring deviation

±5 % of the full-scale value

Flow rate adjustment

With integral needle valve

Materials of gas-conducting parts

As with flow meter 7–70 l/h

Weight

Approx. 0.8 kg

Mounting

As with flow meter 7–70 l/h

Gas connections

As with flow meter 7–70 l/h

Signaling

With inductive contact RC 10-14-NO

Float catcher set to 5 l/h or 20 l/h

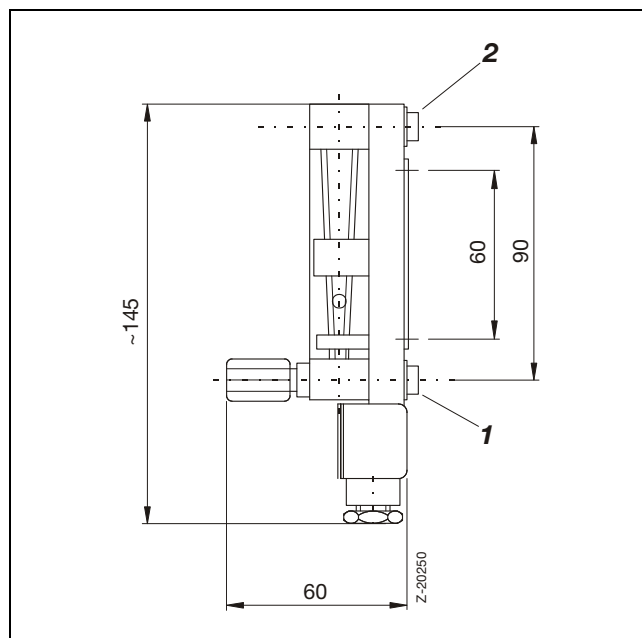
Electrical connections

Terminal boxes with EMC filter and cable gland M16

Scope of delivery

Flow monitor, mounting bracket, 2 nozzles, O-ring

Dimensional drawing (dimensions in mm)



1 Gas inlet

2 Gas outlet

Flow monitor for chlorine 7–70 l/h

Measuring range

7–70 l/h chlorine at 20 °C and 1013 hPa (mbar)

Measuring deviation

±5 % of the full-scale value

Gas inlet conditions

Pressure max. 4 MPa (4 bar), temperature 100 °C

Flow rate adjustment

With integral needle valve PEEK

Materials of gas-conducting parts

Measuring tube	Borosilicate glass
Float	PEEK with lining
Float catcher	PTFE, set to 20 l/h
Case	PVDF
Seals	FFKM

Weight

Approx. 0.5 kg

Mounting

Panel or wall mounting by means of mounting bracket

Gas connections

1/4 NPT female thread

Signaling

With inductive contact RC 10-14-NO

Float catcher set to 20 l/h

Electrical connections

Terminal boxes with EMC filter and cable gland M16

Scope of delivery

Flow monitor, mounting bracket, 2 nozzles, O-ring

Ordering information

	Catalog No.
Flow meter 7–70 l/h	23151-5-8018474
Flow monitor 1.6–16 l/h	23155-5-8018476
Flow monitor 7–70 l/h	23155-5-8018475
Flow monitor for chlorine 7–70 l/h	23155-5-8018477

10/23-5.20 EN Rev. 15

KFA Isolated switch amplifier

Application and description

The KFA isolated switch amplifier is used as switch amplifier for the flow monitor (see page 28).

The control circuit is monitored for line breakage and short circuit. External faults are indicated by a red flashing LED.

Technical data

Input (intrinsically safe)

$U_0 \leq 10.6 \text{ V}$

$I_0 \leq 19.1 \text{ mA}$

$P_0 \leq 51 \text{ mW}$

Permissible connection values

Explosion group	IIC	IIB	IIC
External capacitance	72 μF	16.2 μF	2.32 μF
External inductance	780 mH	390 mH	97 mH

Output relays

Potential-free changeover contacts, max. 253 V AC, 2 A;
 $\cos \varphi > 0.7$; switching frequency < 10 Hz

Construction

Surface-mounting case

Degree of protection of housing

IP20 to EN 60529

Weight

approx. 150 g

Mounting

on standard rail 35 mm to EN 60715:2001

Ambient temperature

-20 to +60 °C

Power supply

207–253 V AC or 103.5–126 V AC, 45–65 Hz, $\leq 1 \text{ VA}$

EC type examination certificate

PTB 00 ATEX 2081

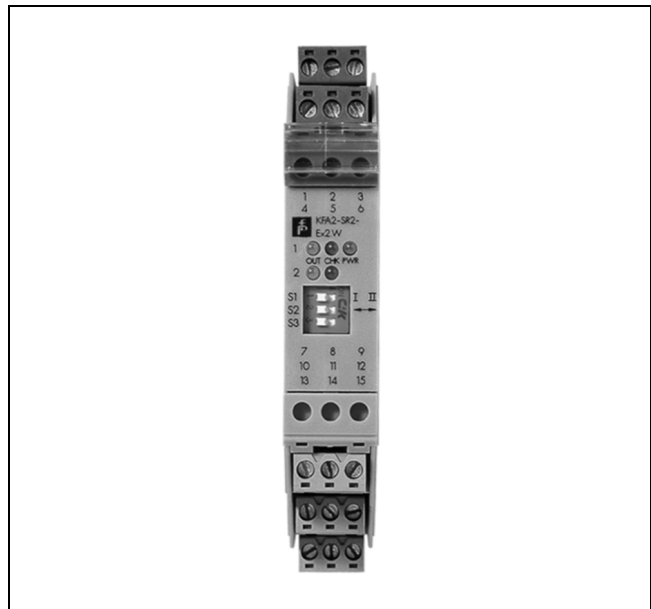
Designation

Ex II (1)G [Ex ia Ga] IIC,

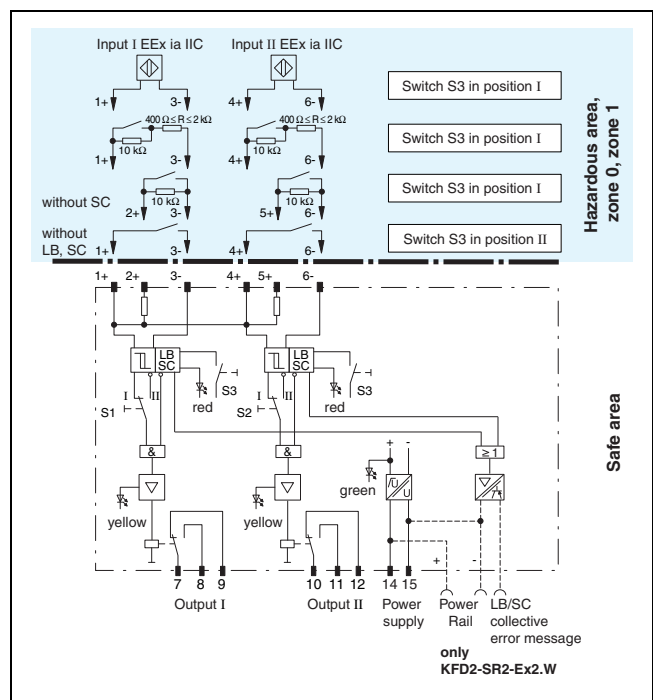
Ex II (1)D [Ex ia Da] IIC

Installation location

Outside the hazardous area



Electrical connections



Ordering information

	Catalog No.
KFA6-SR2-Ex1.W, 1 channel, 230 V AC	23372-5-8328644
KFA6-SR2-Ex2.W, 2 channels, 230 V AC	23372-5-8328645
KFA5-SR2-Ex1.W, 1 channel, 115 V AC	23372-5-8328851
KFA5-SR2-Ex2.W, 2 channels, 115 V AC	23372-5-0730651

Multi-way test gas cocks

Multi-way test gas cock, PVDF version

Flow rate

Approx. 1000 l/h at 100 hPa pressure difference and 20 °C

Gas pressure

$p_{abs} = 50\text{--}200\text{ kPa}$ (0.5–2 bar)

Leakage rate

$\leq 5 \times 10^{-3}\text{ hPa l/s}$

Materials of gas-conducting parts

PVDF, PTFE, FPM

Weight

Approx. 0.7 kg

Mounting

Wall or panel mounting

Gas connections

G 1/4

Ambient temperature

+5 to +80 °C



Multi-way test gas cock, stainless steel version

Flow rate

Approx. 1000 l/h at 50 hPa pressure difference and 20 °C

Gas pressure

$p_{abs} = 17.6\text{ MPa}$ (176 bar)

Leakage rate

$\leq 5 \times 10^{-3}\text{ hPa l/s}$

Materials of gas-conducting parts

PTFE, stainless steel SS 316, suitable for pure oxygen

Weight

Approx. 0.8 kg

Mounting

Wall mounting (with accessories) or panel mounting

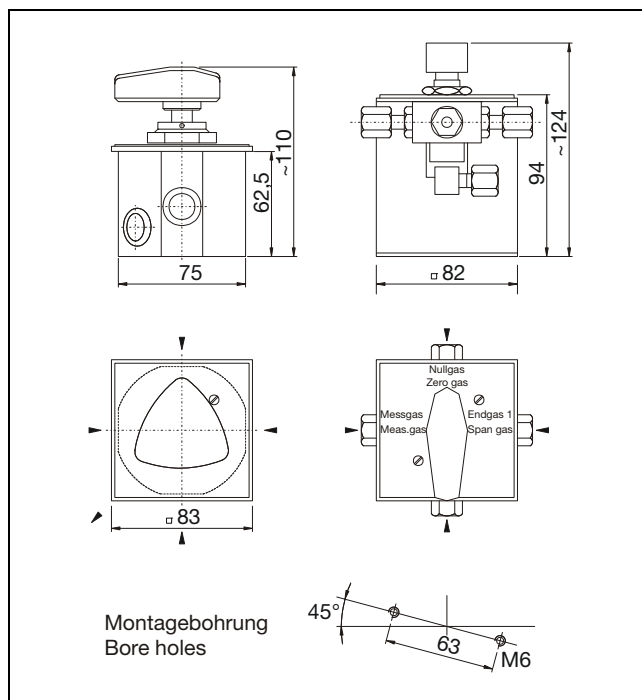
Gas connections

1/8 NPT and screw fitting for pipes with 6 mm outer diameter

Ambient temperature

+10 to +65 °C

Dimensional drawing (dimensions in mm)



Ordering information

	Catalog No.
Test gas cock PVDF	23177-4-0839859
Test gas cock stainless steel for wall mounting	23177-5-8308581

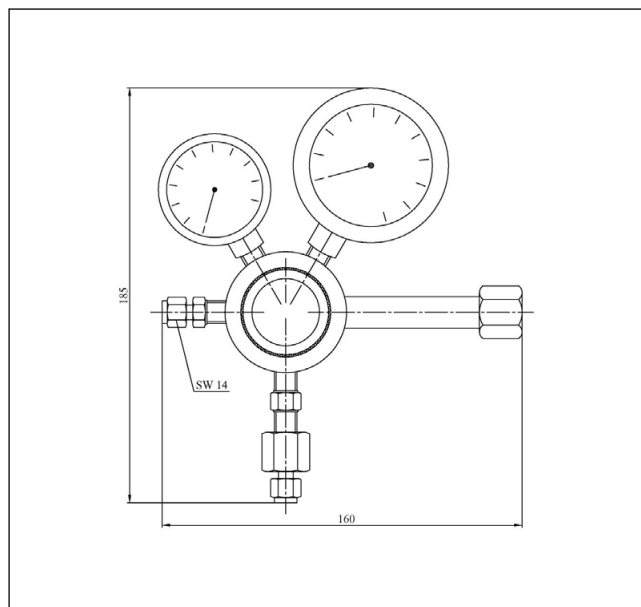
Cylinder pressure reducers

Application and description

Cylinder pressure reducers are used to reduce the filling pressure in pure gas and test gas cylinders to the required operating pressure. Material compatibility must be observed in respect of the test gas (see technical data). Two-stage cylinder pressure reducers are employed where very constant pressure and flow are required at low operating pressure – for example where the subsequent gas paths are switched over using solenoid valves. Pressure reducers with minimum contact at the high-pressure gauge give an indication when the cylinder pressure has dropped to such a level that it is necessary to replace the gas cylinder.

Ordering information

	Catalog No.
2-stage for nitrogen	23422-5-8018376
2-stage for non-corrosive test gases	23422-5-8018377
2-stage for corrosive test gases	23422-5-8018378
1-stage for nitrogen, brass	23422-4-0730654
1-stage for non-corrosive test gases, brass	23422-4-0730655
2-stage for hydrogen, brass	23422-4-0730652
2-stage for hydrogen, stainless steel	23422-4-0730653

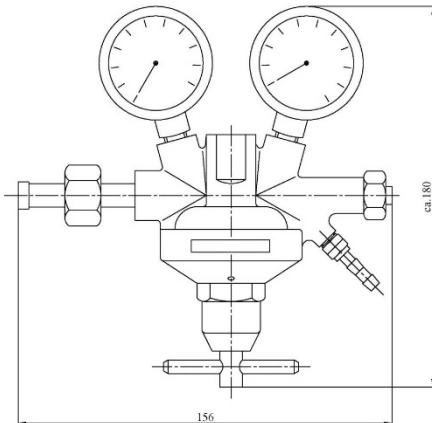
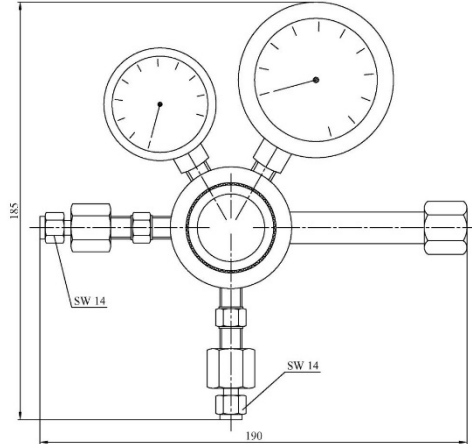


Technical data

Catalog No.	23422-5-8018376	23422-5-8018377	23422-5-8018378
Gas type	Nitrogen	Non-corr. test gases	Corrosive test gases
Construction	2-stage, brass, with minimum contact	2-stage, stainless steel, with min. contact	
Inlet pressure	max. 21 MPa (210 bar)	max. 21 MPa (210 bar)	
Outlet pressure (adjustable)	10 to 150 kPa (0.1 to 1.5 bar)	10 to 150 kPa (0.1 to 1.5 bar)	
Safety valve set to	approx. 1.6 MPa (16 bar)	approx. 1.6 MPa (16 bar)	
Relief valve set to	approx. 200 kPa (2 bar)	approx. 200 kPa (2 bar)	
Pressure gauge indication inlet pressure	0 to 25 MPa (0 to 250 bar)	0 to 25 MPa (0 to 250 bar)	
Pressure gauge indication outlet pressure	-100 to +300 kPa (-1 to +3 bar)	-100 to +300 kPa (-1 to +3 bar)	
Flow rate	25 to 500 l/h	25 to 500 l/h	
Control action	Back pressure increase with falling cylinder pressure down to 3 bar equals zero	Back pressure increase with falling cylinder pressure down to 3 bar equals zero	
Status signal	Reed contact 100 V, 0.5 A	Reed contact 100 V, 0.5 A	
Membrane material	Stainless steel	Stainless steel	
Seal material	ETFE, PVDF, EPDM	ETFE, PVDF, EPDM	
Case material	Brass chromium plated	Stainless steel 1.4401 (SAE 316)	
Dimensions (W x H x D)	approx. 160 x 185 x 167 mm	approx. 160 x 185 x 167 mm	
Weight	approx. 2.1 kg	approx. 2.1 kg	
Connection to cylinder (thread to DIN 477)	Hexagon	Hexagon	
Gas outlet connection	Clamping ring screw fitting Swagelok® for pipe with 6 mm outside diameter	Clamping ring screw fitting Swagelok® for pipe with 6 mm outside diameter	
Safety valve connection	Clamping ring screw fitting Swagelok® for pipe with 6 mm outside diameter	Clamping ring screw fitting Swagelok® for pipe with 6 mm outside diameter	
Relief valve connection	1/4 NPT male thread	1/4 NPT male thread	
Ambient temperature	-5 to +75 °C	-5 to +75 °C	
Scope of delivery	Pressure reducer, pressure gauge, safety valve and clamping ring screw fitting attached; replacement seals, manual	Pressure reducer, pressure gauge, safety valve and clamping ring screw fitting attached; replacement seals, manual	
Dimensional drawing	see above	see above	

Cylinder pressure reducers

Technical data

Catalog No.	23422-4-0730654	23422-4-0730655	23422-4-0730652	23422-4-0730653
Gas type	Nitrogen	Non-corrosive test gases	Hydrogen	Hydrogen
Construction	1-stage, brass	1-stage, brass	2-stage, brass	2-stage, stainless steel
Inlet pressure	21 MPa (210 bar)	21 MPa (210 bar)	21 MPa (210 bar)	21 MPa (210 bar)
Control range	0 to 250 kPa (2.5 bar)	0 to 250 kPa (2.5 bar)	0 to 350 kPa (3.5 bar)	0 to 350 kPa (3.5 bar)
Control action	–	–	Back pressure increase with falling cylinder pressure down to 3 bar equals zero	Back pressure increase with falling cylinder pressure down to 3 bar equals zero
Pressure gauge	31.5 MPa (315 bar)	31.5 MPa (315 bar)	–	–
Reed contact press. gauge	–	–	25 MPa (250 bar)	25 MPa (250 bar)
Contact	–	–	falling opening	falling opening
Outlet pressure gauge indication range	0 to +400 kPa (0 to +4 bar)	0 to +400 kPa (0 to +4 bar)	–100 to +500 kPa (–1 to +5 bar)	–100 to +500 kPa (–1 to +5 bar)
Body material	Brass	Brass	Brass	Steel 1.4404 (SAE 316L)
Membrane material	NBR	NBR	Stainless steel	Stainless steel
Case seal material	NBR	NBR	NBR	EPDM
Seat material	–	–	PVDF/PTFE	PVDF/PTFE
Filter	100 µm	100 µm	50 µm	50 µm
Connection cable	–	–	3 m	3 m
Bottle connection	DIN 477, No. 10	DIN 477, No. 14	DIN 477, No. 1	DIN 477, No. 1
Safety relief valve	1	1	2	2
Ambient temperature	–5 to +75 °C	–5 to +75 °C	–5 to +75 °C	–5 to +75 °C
Weight	2.1 kg	2.1 kg	2.1 kg	2.1 kg
Special features			Outlet with throttle approx. 40 l/h and 6 mm screwed fitting	Outlet with throttle approx. 40 l/h and 6 mm screwed fitting
Dimensional drawings				

Contact us

ABB Limited**Industrial Automation**

Howard Road, St. Neots
Cambridgeshire, PE19 8EU
United Kingdom
Phone: +44 870 600 6122
Fax: +44 1480 213 339

ABB Pte. Ltd.**Industrial Automation**

2 Ayer Rajah Crescent
139935 Singapore, Singapore
Phone: +65 6773 5961
Fax: +65 6778 0222

ABB Engineering Ltd.**Industrial Automation**

10 Jiuxianqiao Lu
100015 Beijing, China
Phone: +86 10 84566688 Ext. 6217
Fax: +86 10 84567650

ABB Inc.**Industrial Automation**

3700 W Sam Houston Parkway South,
Suite 600, Houston, TX 77042, USA
Phone: +1 713 587 8000

www.abb.com/analytical

ABB Australia Pty Limited**Industrial Automation**

Bapaume Road
2170 Moorebank
New South Wales, Australia
Phone: +61 2 9821 0968
Fax: +61 2 9400 7050

ABB Ltd.**Industrial Automation**

14 Mathura Road
121003 Faridabad, Haryana, India
Phone: +91 129 2279627
Fax: +91 129 2279692

ABB Automation GmbH**Industrial Automation**

Stierstaedter Strasse 5
60488 Frankfurt am Main, Germany
Fax: +49 69 7930-4566
E-mail: cga@de.abb.com

Note

We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents – in whole or in parts – is forbidden without prior written consent of ABB.

Copyright © 2017 ABB
All rights reserved



Sales



Service