

Catalog
AP 11

Edition
2024

PROCESS AUTOMATION

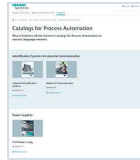
Components for Continuous Emission Monitoring

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Components for Continuous Emission Monitoring

Process Automation



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The products and systems described in this catalog are manufactured/distributed under application of a certified quality management system in accordance with DIN EN ISO 9001 (Certified Registration No. 000656 QM08). The certificate is recognized by all IQNet countries.

Gas sampling probes



1/2	Gas sampling probe with external, electrically heated filter
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Gas sampling probes

Gas sampling probe with external, electrically heated filter

With self-regulating heater

Application

For continuous gas sampling in processes with dust loads < 2 g/m³ and an operating pressure up to 6 bar.

Design

The gas sampling probe with external, electrically heated filter has a mounting flange (DN 65, PN 6, form B) with G $\frac{3}{4}$ female thread. A sampling pipe can be screwed into this.

An external filter element (separate article number) is located in a filter chamber heated to 180 °C. Self-regulating heating elements are used. Temperature controllers and temperature limiters are not required.

Wetted parts are made of stainless steel (mat. no. 1.4571), Viton and ceramic.

Special features

- Heated probe with external filter element (outlet filter)
- Can be ordered with or without weatherproof cover
- Simple removal of the external filter by rotating the handle by 90°
- The probe body and the area of the connection gland for the heated sample gas line are completely insulated.
- Self-regulated heating up to approx. 180 °C with undertemperature alarm
- For dust loads up to 2 g/m³
- This probe is not suitable for use in hazardous areas.

Selection and ordering data

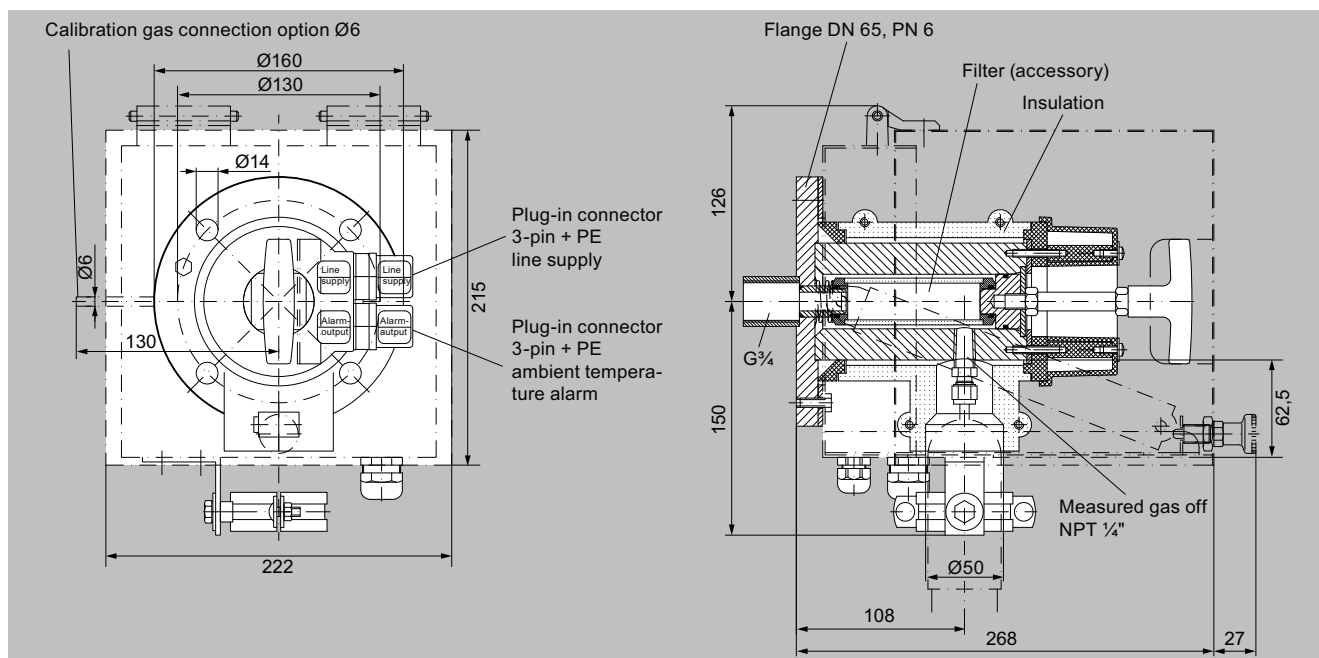
	Article No.
Gas sampling probe	
With self-regulating heating elements, with undertemperature alarm, heated, 115 ... 230 V AC, 50/60 Hz, 400 VA, complete thermal insulation with protective sleeve	
• without weatherproof cover	7MB1943-2FA00
• with weather protection cover	7MB1943-2FA01

The external filter element, the screw-in fitting for connection of the sample gas line, and the sampling tube must be ordered separately. Also refer to the configuration example under "Accessories and configuration example".

Technical specifications

Gas sampling probe with self-regulating heating	
Max. permissible operating pressure	6 bar
Operating temperature	Approx. 180 °C at ambient temperature -20 ... +80 °C, max. 200 °C
Material of filter housing and flange	Stainless steel, mat. no. 1.4571
Mounting flange	DN 65, PN 6, form B
Seals	Graphite/1.4404 and see filters
Connection of sample gas outlet	1 x female thread ¼ NPT
Electrical connection	2 plug-in connectors
Power supply	115/230 V AC, 50/60 Hz
Power consumption	Approx. 400 VA
Ambient temperature range	-20 ... +80 °C (can be limited by mounted options)

Dimensional drawings



Gas sampling probe with external, electrically heated filter, with self-regulating heating elements (weatherproof cover indicated by dash-dotted line)

Gas sampling probes

Gas sampling probe with external, electrically heated filter

With temperature controller

Application

For gases with a dust concentration up to approx. 2 g/m^3 and an operating pressure $< 6 \text{ bar}$.

Design

The gas sampling probe with external, electrically heated filter has a mounting flange (DN 65 PN 6, form B) with G $\frac{3}{4}$ female thread. A sampling pipe can be screwed into this.

The external filter element (separate order number) is fitted in a housing with minimum dead volume. It can be replaced quickly and easily without tools and without the need to dismantle the sample line.

The gas sampling probe is equipped with a weatherproof cover. The optimum heating of the complete filter housing, including the mounting flange, ensures safe outdoor operation without the temperature falling below the dew point.

Special features

- Heated probe with external filter element (outlet filter) and weatherproof cover
- Simple removal of outlet filter by rotating the handle by 90°
- The probe body and the area of the connection gland for the heated sample gas line are completely insulated
- Electronic temperature control up to 200 °C with low/high temperature alarm and display
- For dust loads up to 2 g/m^3
- This probe is not suitable for use in hazardous areas

Selection and ordering data

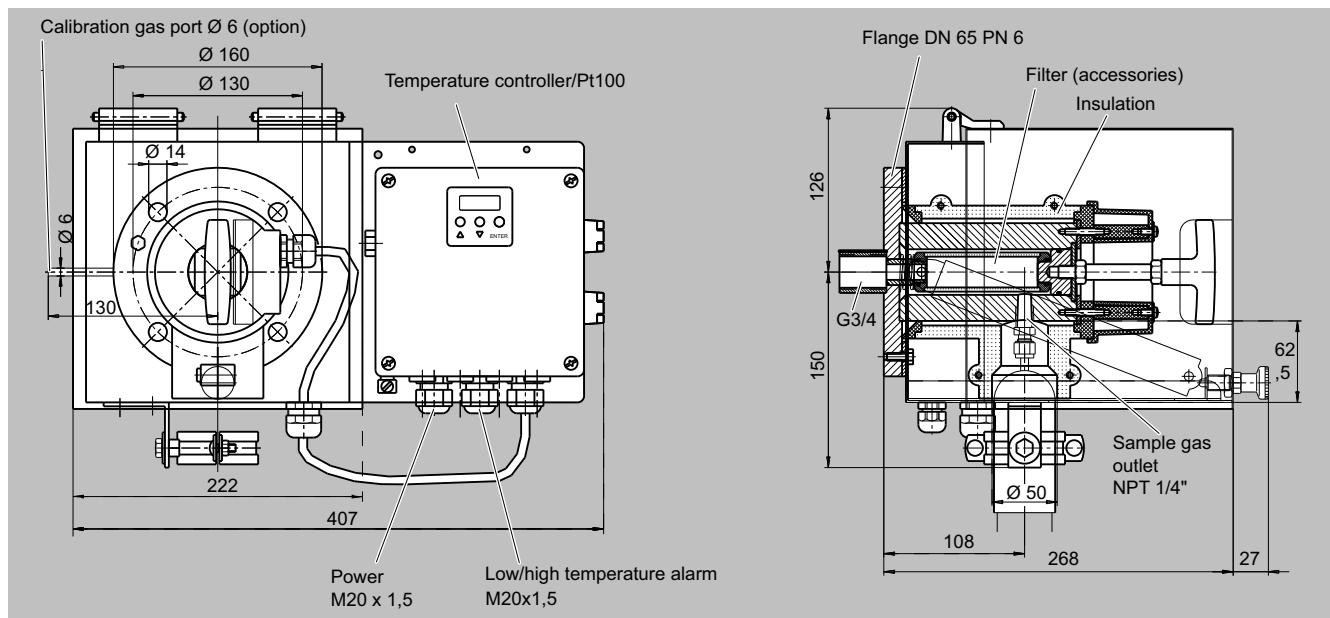
	Article No.
Gas sampling probe	
with external filter (separate order), heated, with weatherproof cover, heating controlled by add-on controller with overtemperature and under-temperature alarm	
• 230 V AC, 50/60 Hz	7MB1943-2FB01
• 115 V AC, 50/60 Hz	7MB1943-2FB02

The external filter element, the screw-in fitting for connection of the sample gas line, and the sampling tube must be ordered separately. Also refer to the configuration example under "Accessories and configuration example".

Technical specifications

Gas sampling probe with temperature controller	
Max. permissible operating pressure	6 bar
Max. permissible operating temperature	200 °C
Material of filter housing and flange	Stainless steel, mat. no. 1.4571
Mounting flange	DN 65, PN 6, form B
Seals	Graphite/1.4404 and see filters
Connection of sample gas outlet	1 x female thread $\frac{1}{4}$ NPT
Power supply	230 V AC; 2.0 A; 50/60 Hz or 115 V AC; 3.8 A; 50/60 Hz
Temperature range of controller	50 ... 200 °C
Alarm adjustable to	• $\pm 5 \dots \pm 30 \text{ K}$ of setpoint • Factory-set to $\pm 15 \text{ K}$ • Switching current max. 1 A
Degree of protection according to EN 60529	IP54
Ambient temperature range	-20 ... +70 °C (can be limited by mounted options)

Dimensional drawings



Gas sampling probe with external, electrically heated filter, weatherproof cover, and temperature controller

Gas sampling probes

Gas sampling probe with external, electrically heated filter

With self-regulating heater, Ex version according to ATEX

Application

For gases with a dust concentration up to approximately 2 g/m³, an operating pressure < 6 bar and for installation in an Ex zone.

Design

The gas sampling probe with external, electrically heated filter has a mounting flange (DN 65 PN 6, form B) with G $\frac{3}{4}$ female thread. A sampling pipe can be screwed into this.

The external filter element (separate article number) is fitted in a housing with minimum dead volume. It can be replaced quickly and easily without tools and without the need to dismantle the sample line.

The gas sampling probe is equipped with a weatherproof cover. The optimum heating of the complete filter housing, including the mounting flange, ensures safe outdoor operation without the temperature falling below the dew point.

This probe is suitable for use in Zone 1, 21 and for sampling from Zone 0, 20.

It should be noted that the permissible field of application of the probes may be limited when specially selected accessories are used. Please note the operating instructions of the probes, as well as the designation on the respective rating plate.

Special features

- Heated probe with external filter element (outlet filter) and weatherproof cover
- Simple removal of outlet filter by rotating the handle by 90°
- The probe body and the area of the connection gland for the heated sample gas line are completely insulated
- Self-regulated heating up to approx. 80 °C
- For dust loads up to 2 g/m³

Selection and ordering data

	Article No.
Gas sampling probe Ex	
Degree of protection II 1GD / 2GD T4 T130 °C according to ATEX, with weatherproof cover and Ex junction box	
• 230 V AC, 50/60 Hz	7MB1943-2FC01
• 115 V AC, 50/60 Hz	7MB1943-2FC02

The external filter element, the screw-in fitting for connection of the sample gas line, and the sampling tube must be ordered separately. Also refer to the configuration example under "Accessories and configuration example". When selecting the accessories, the special conditions of use in hazardous areas and with flammable gases and/or combustible dusts must be observed for all use cases. With specially selected accessories, the approved application area of the probes can be restricted (note rating plate and operating instructions).

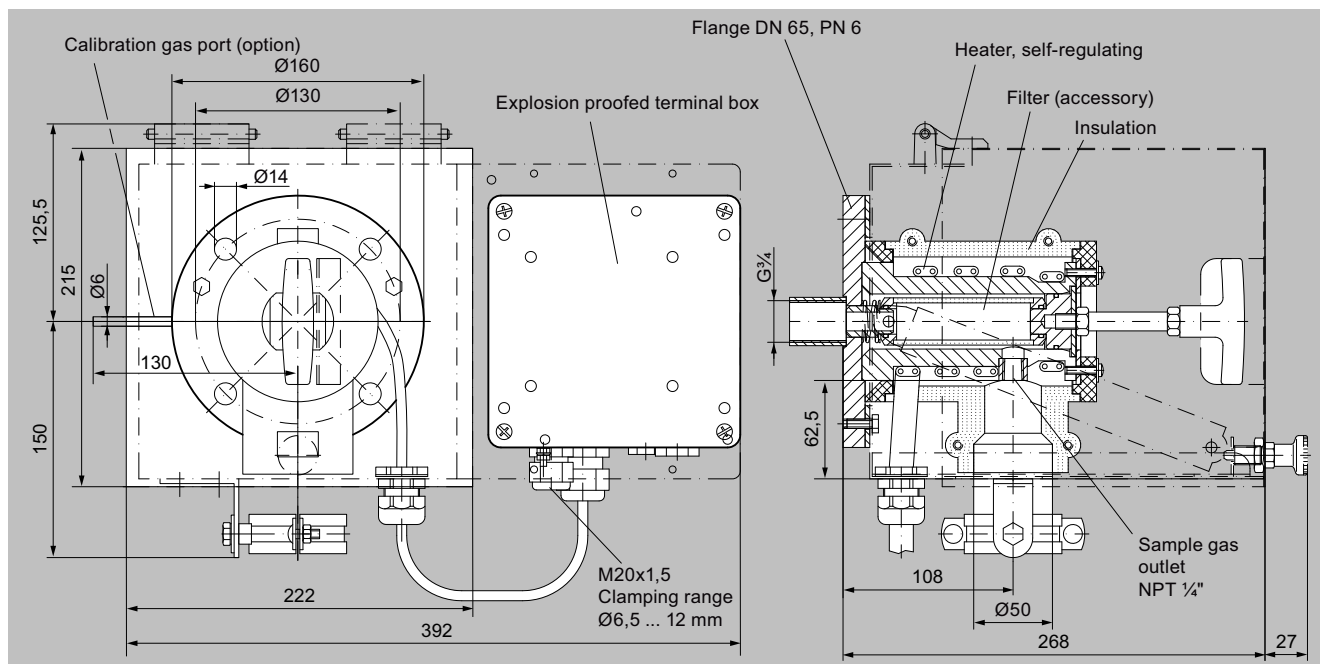
Technical specifications

Gas sampling probe with self-regulating heating, Ex version according to ATEX	
Max. permissible operating pressure	6 bar
Max. inlet temperature of process medium	135 °C in accordance with EC type-examination certificate BVS 07 ATEX E 050 X
Max. flow	1 000 l/h
Material of filter housing and flange	Stainless steel, mat. no. 1.4571
Seals	Graphite/1.4404 and see filters
Connection of sample gas outlet	1 x female thread $\frac{1}{4}$ NPT
Power supply	230 V AC; 50/60 Hz or 115 V AC; 50/60 Hz
External miniature circuit-breaker type C	• 2 A for 230 V; 50/60 Hz • 3 A for 115 V; 50/60 Hz
Ambient temperature range	-20 ... +50 °C in accordance with EC type-examination certificate BVS 07 ATEX E 050 X
Temperature self-regulating	Approx. 80 °C
Ex identification of basic devices	II 1GD / 2GD T4 T130 °C More precise specifications on Ex protection: EC type-examination certificate BVS 07 ATEX E 050 X

Gas sampling probe with external, electrically heated filter

With self-regulating heater, Ex version according to ATEX

Dimensional drawings



Gas sampling probe with external, electrically heated filter, weatherproof cover and self-regulating heater, explosion-proof version according to ATEX

Gas sampling probes

Gas sampling probe with external, electrically heated filter

With temperature controller, lockable gas path & backflush connection

Application

Heated gas sampling probe with additional inlet filter for gases with a dust concentration up to approx. 20 g/m³ and a pressure of < 6 bar.

Design

The gas sampling probe is suitable for use with a hot sample gas with high dust concentration. A built-in ball valve is used for shutting off the process gas stream from the analysis system. The ball valve is operated manually in the basic version. In other versions, it can be operated pneumatically. For sample gases with 2 to approx. 20 g dust/m³, an inlet filter is attached to the G³/₄" thread located in the sample gas stream. Between the inlet filter and the probe, an optional sampling pipe can be mounted as an extension. This inlet filter can be optionally periodically purged with instrument air in the direction of the process (backflushing). The connection for the purging air is located on the probe between the flange and the shut-off ball valve. Prior to purging, the outlet to the analyzer system is closed with the help of a ball valve.

A calibration gas connection with a non-return valve can also be optionally ordered.

The probe can be heated to 200 °C maximum. A heater overtemperature or undertemperature alarm is output via a floating changeover contact.

A minimum dead volume in the probe allows a short T90 time for the measuring equipment. The external filter element in the probe can be replaced quickly and easily without tools and without the need to dismantle the sample line.

The probe always has a weatherproof cover.

Special features

- Heated probe with shut-off ball valve, inlet filter and/or external filter with weatherproof cover
- Simple removal of outlet filter by rotating the handle by 90°
- The probe body and the area of the connection gland for the heated sample gas line are completely insulated.
- Electronic temperature controller up to 200 °C with under/over-temperature alarm and display
- For dust exposure up to 2 g/m³, for inlet filter 10 g/m³, and more to approx. 20 g/m³
- This probe is not suitable for use in hazardous areas.
- Can also be ordered with calibration gas connection

Gas sampling probes

Gas sampling probe with external, electrically heated filter

With temperature controller, lockable gas path & backflush connection

Selection and ordering data

	Article No.
Gas sampling probe For supply voltage 230 V AC, 2A, 50/60 Hz, with shut-off valve, weatherproof cover, controlled heating with alarm output, and backflushing connection	
Basic version with manual shut-off ball valve, without backflushing, without calibration gas connection	7MB1943-2FA02
Basic version with manual shut-off ball valve, without backflushing, with calibration gas connection 6 mm and non-return valve	7MB1943-2FA03
With backflushing for customer controller without heating of the air reservoir, without calibration gas connection	7MB1943-2FA04
With backflushing for customer controller without heating of the air reservoir, with calibration gas connection 6 mm and non-return valve	7MB1943-2FA05

	Article No.
With backflushing for customer controller and with heated air reservoir, without calibration gas connection	7MB1943-2FA06
With backflushing for customer controller and with heated air reservoir, with calibration gas connection 6 mm and non-return valve	7MB1943-2FA07

Specification of the probe versions with backflushing on the customer controller:

- Without internal backflushing controller
- Control of the solenoid valve in the compressed air line for backflushing: 24 V DC
- Pneumatic drive for shut-off ball valve: Monostable, unpressurized, open
- With end position switch for pneumatic drive
- With 3/2-way solenoid valve for controlling the pneumatic drive, 24 V DC

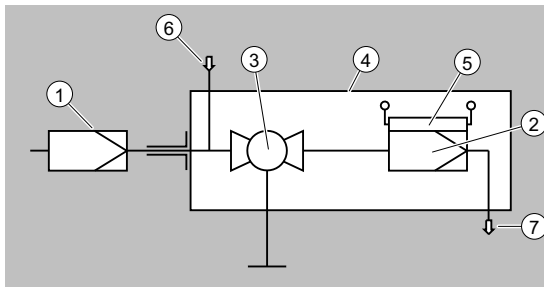


Diagram of the probe 7MB1943-2FA02

- 1 Inlet filter with/without extension – not included in scope of supply, must be ordered separately.
- 2 External filter element – not included in scope of supply, must be ordered separately.
- 3 Shut-off ball valve – installed in all versions of this probe
- 4 Weatherproof cover
- 5 Electric heater, regulated
- 6 Connection for backflushing
- 7 Connection for measured gas line (measured gas output)

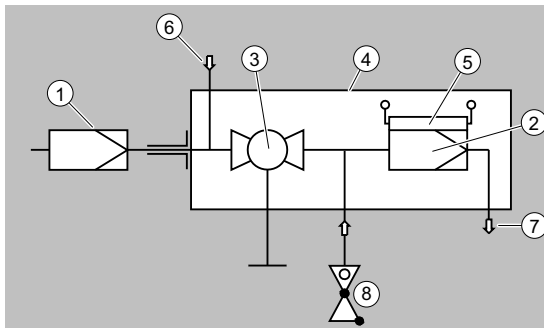


Diagram of the probe 7MB1943-2FA03

- 1 Inlet filter with/without extension – not included in scope of supply, must be ordered separately.
- 2 External filter element – not included in scope of supply, must be ordered separately.
- 3 Shut-off ball valve – installed in all versions of this probe
- 4 Weatherproof cover
- 5 Electric heater, regulated
- 6 Connection for backflushing
- 7 Connection for measured gas line (measured gas output)
- 8 Calibration gas connection 6 mm and non-return valve

Gas sampling probes

Gas sampling probe with external, electrically heated filter

With temperature controller, lockable gas path & backflush connection

Selection and ordering data (continued)

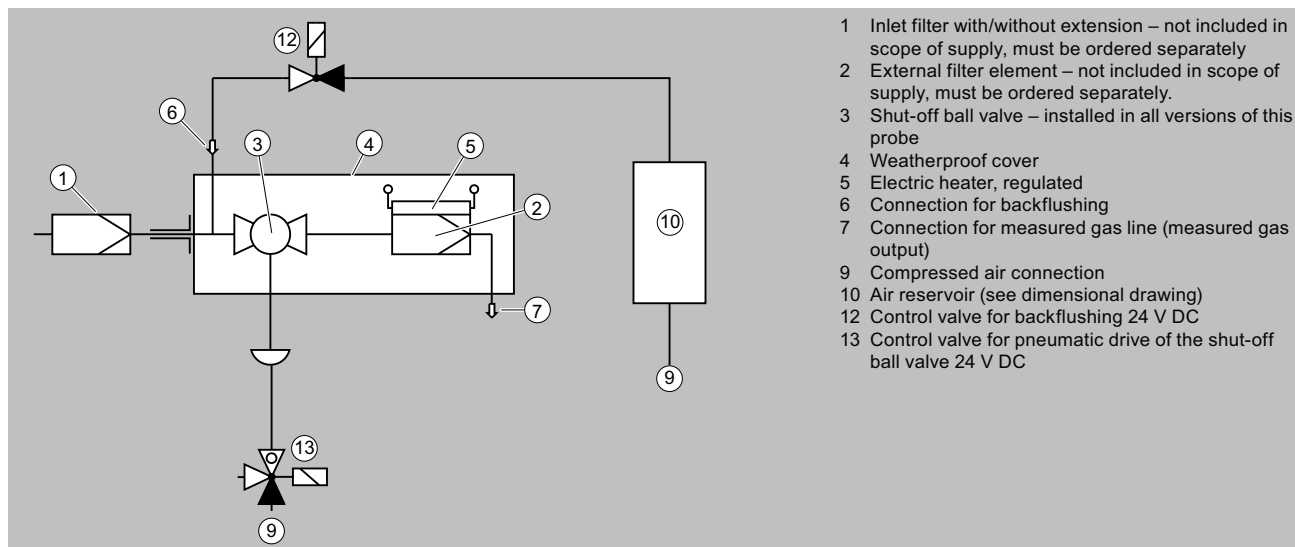


Diagram of the probe 7MB1943-2FA04

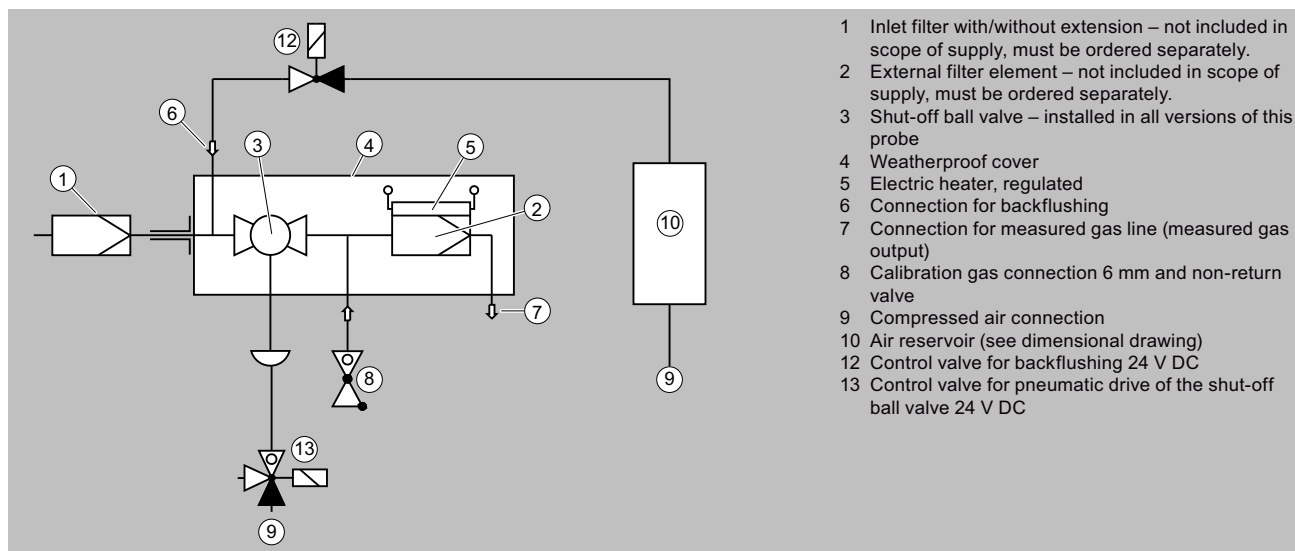


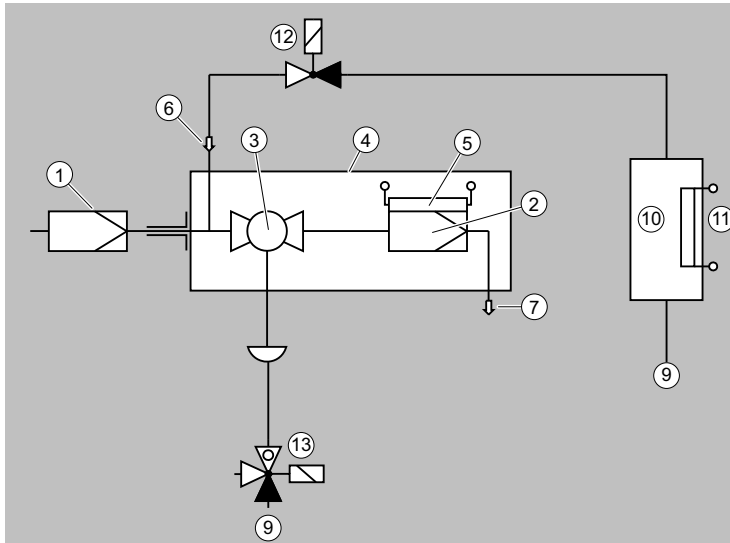
Diagram of the probe 7MB1943-2FA05

Gas sampling probes

Gas sampling probe with external, electrically heated filter

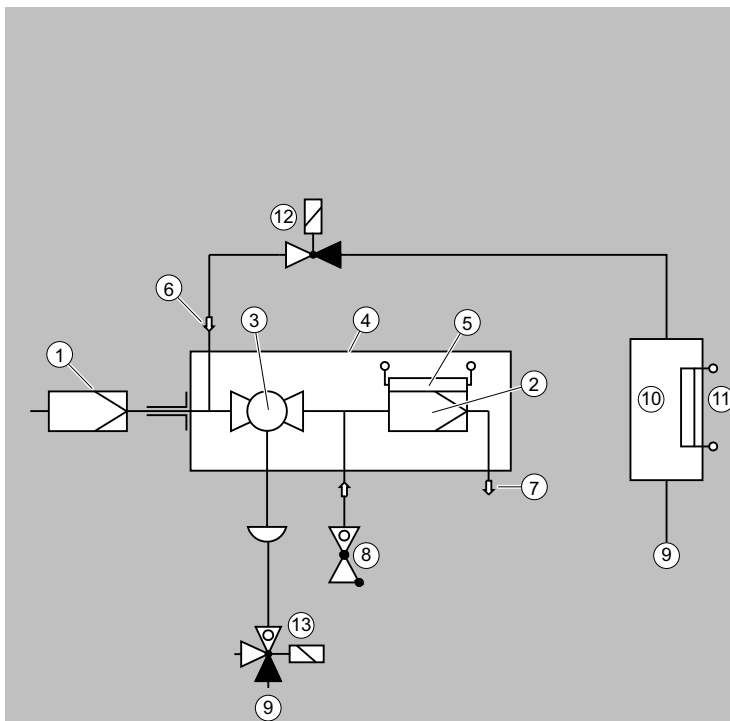
With temperature controller, lockable gas path & backflush connection

Selection and ordering data (continued)



- 1 Inlet filter with/without extension – not included in scope of supply, must be ordered separately.
- 2 External filter element – not included in scope of supply, must be ordered separately.
- 3 Shut-off ball valve – installed in all versions of this probe
- 4 Weatherproof cover
- 5 Electric heater, regulated
- 6 Connection for backflushing
- 7 Connection for measured gas line (measured gas output)
- 10 Air reservoir (see dimensional drawing)
- 11 Self-regulating heater 230 V AC for the air reservoir
- 12 Control valve for backflushing 24 V DC
- 13 Control valve for pneumatic drive of the shut-off ball valve 24 V DC

Diagram of the probe 7MB1943-2FA06



- 1 Inlet filter with/without extension – not included in scope of supply, must be ordered separately.
- 2 External filter element – not included in scope of supply, must be ordered separately.
- 3 Shut-off ball valve – installed in all versions of this probe
- 4 Weatherproof cover
- 5 Electric heater, regulated
- 6 Connection for backflushing
- 7 Connection for measured gas line (measured gas output)
- 8 Calibration gas connection 6 mm and non-return valve
- 9 Compressed air connection
- 10 Air reservoir (see dimensional drawing)
- 11 Self-regulating heater 230 V AC for the air reservoir
- 12 Control valve for backflushing 24 V DC
- 13 Control valve for pneumatic drive of the shut-off ball valve 24 V DC

Diagram of the probe 7MB1943-2FA07

The external filter element, the screw-in fitting for connection of the sample gas line, the inlet filter and optional extension must be

ordered separately. Also refer to the configuration example under "Accessories and configuration example".

Gas sampling probes

Gas sampling probe with external, electrically heated filter

With temperature controller, lockable gas path & backflush connection

Technical specifications

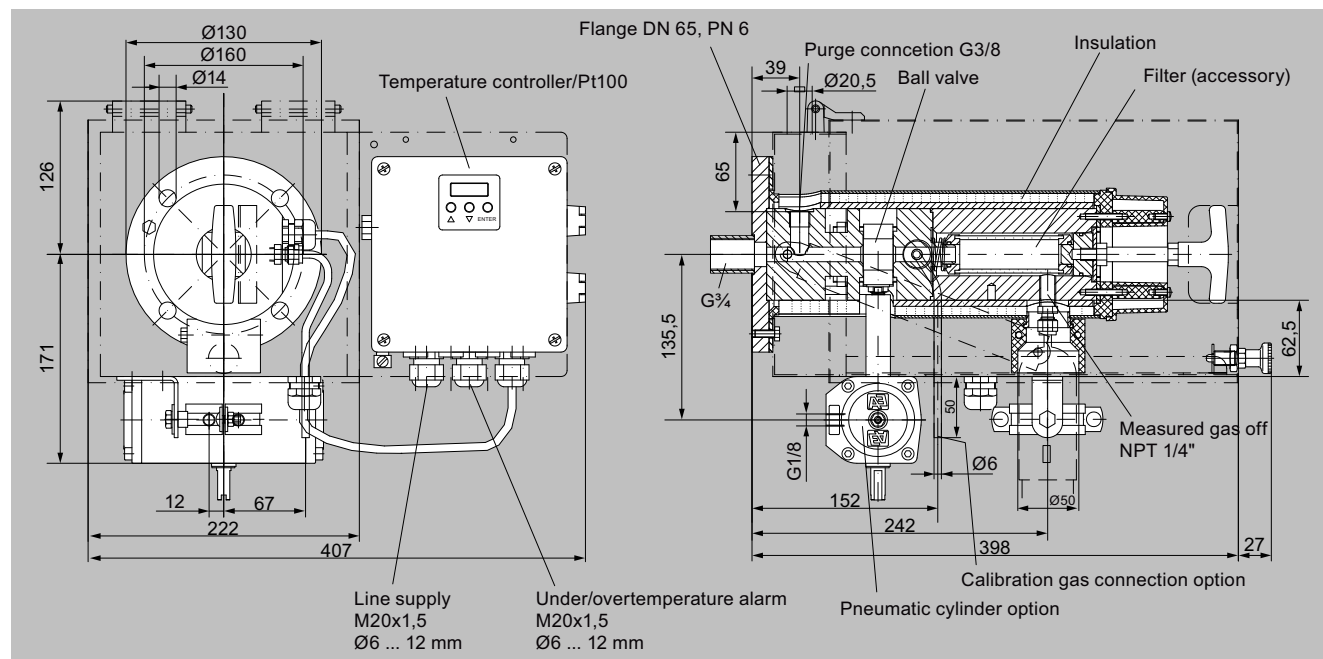
Gas sampling probe with temperature controller, lockable gas path and backflush connection	
Max. permissible operating pressure	6 bar
Max. permissible operating temperature	200 °C
Material of filter housing and flange	Stainless steel, mat. no. 1.4571
Ball valve material	Stainless steel, mat. no. 1.4408
Mounting flange	DN 65, PN 6, form B
Seals	PTFE/Graphite/1.4404 and see filters
Connection of sample gas outlet	1 x female thread ¼ NPT
Power supply	230 V AC, 50/60 Hz, 440 VA
Temperature setting range of controller	50 ... 200 °C
Alarm adjustable to	• ± 5 ... ± 30 K of setpoint • Factory-set to ± 15 K • Switching current max. 1 A
Degree of protection according to EN 60529	IP54
Ambient temperature range	-20 ... +70 °C (can be limited by mounted options)

Gas sampling probes

Gas sampling probe with external, electrically heated filter

With temperature controller, lockable gas path & backflush connection

Dimensional drawings



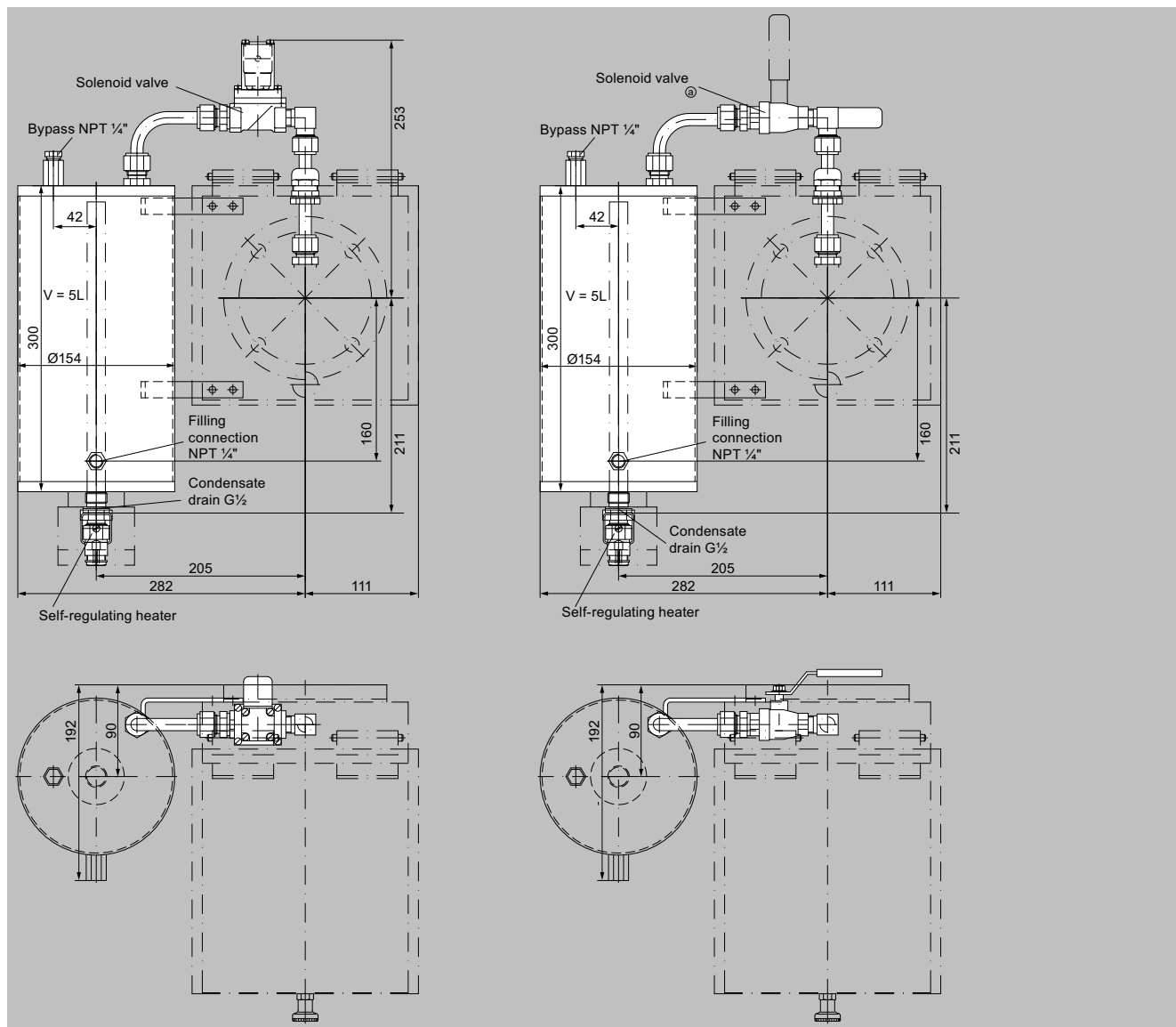
Gas sampling probe with shut-off ball valve, external, electrically heated filter, weatherproof cover and backflushing connection, ball valve

Gas sampling probes

Gas sampling probe with external, electrically heated filter

With temperature controller, lockable gas path & backflush connection

Dimensional drawings (continued)



Air reservoir

Design

Depending on the application, a complete gas sampling probe comprises the following elements:

- Inlet filter that extends into the sample gas stream
- Extension for inlet filter
- Sampling pipe
- Probe body

- External filter element (outlet filter)

- Screw-in fitting for connection to the sample gas line

Each component is selected individually. The following table will help you to select the components. In addition to the dust concentration, the temperature and corrosiveness of the media are criteria for selecting the probe components.

Further special versions are available on request as required.

	Dust In the sample gas	Sample gas		Installation		Probe type
		Wet	Dry	Indoors	Outdoors	
1	< 20 mg/m ³		x	x	x	7MB1943-1EA01/02
2	< 2 g/m ³	x	x	x		7MB1943-2FA00
3	< 2 g/m ³	x	x	x	x	7MB1943-2FA01
4	< 2 g/m ³	x	x	x	x	7MB1943-2FB01/02
5	< 20 g/m ³	x	x	x	x	7MB1943-2FA02/03/04/05/06/07

Selection table for sampling probes

Gas sampling probes

Accessories and configuration example

Selection and ordering data

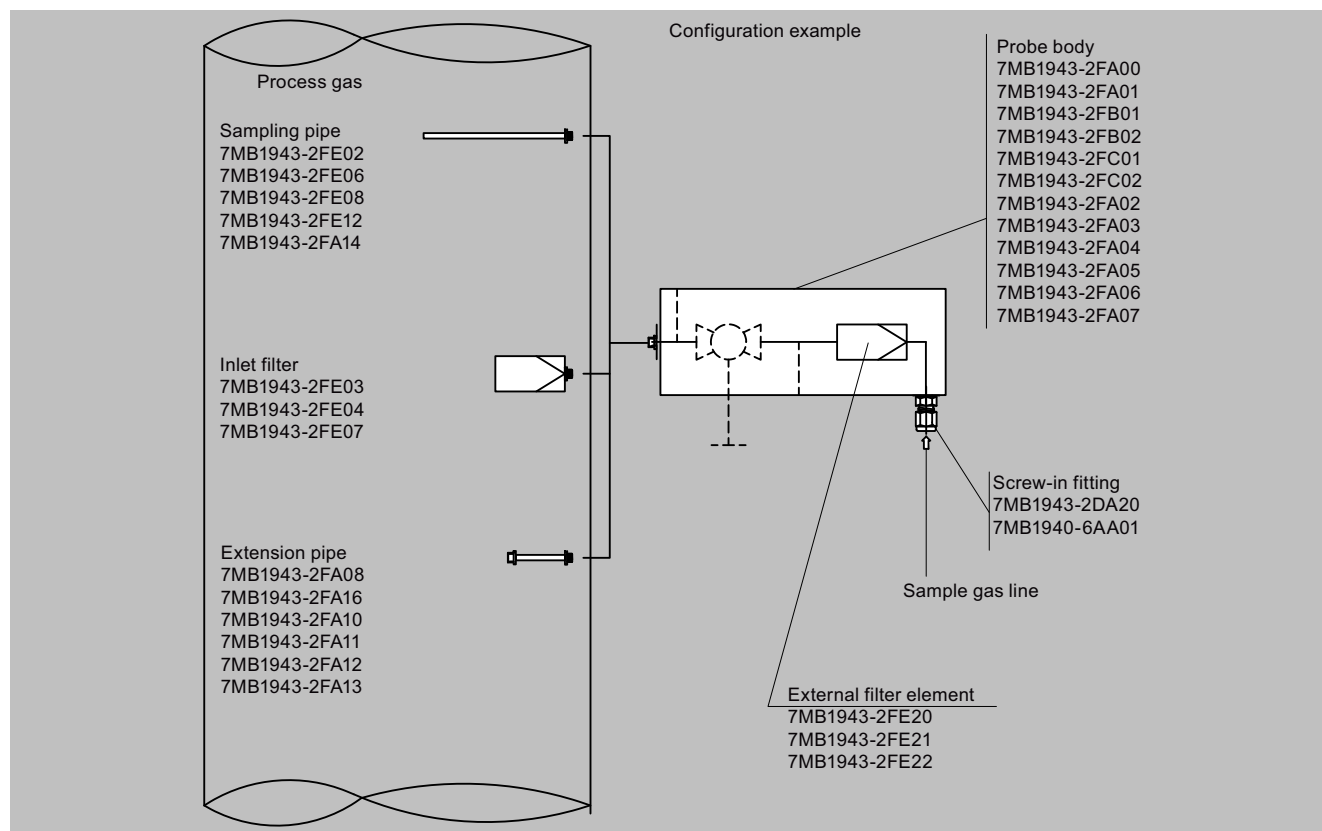
	Article No.
External filter elements (outlet filter) including O-rings	
Ceramic filter, pore size 3 µm, with O-rings of Viton	7MB1943-2FE20
Filter of sintered stainless steel, pore size 5 µm, with O-rings of Viton	7MB1943-2FE21
Filter of star-crimped stainless steel fabric, pore size 10 µm, with O-rings of Viton	7MB1943-2FE22
Inlet filter	
Up to < 10 g/m ³ dust: Filter made of sintered stainless steel, L = 237 mm, connection G¾", wrench size 36, gas temperature up to 600 °C, pore size 5 µm, external diameter 51 mm	7MB1943-2FE03
Up to < 20 g/m ³ dust: Filter made of sintered stainless steel, L = 538 mm, connection G¾", wrench size 36, gas temperature up to 600 °C, pore size 5 µm, external diameter 60 mm	7MB1943-2FE04
For high-temperature applications: Filter made of ceramic/1.4571, L = 478 mm, connection G¾", gas temperature up to 1 000 °C (with oxidized atmosphere max. 750 °C, with reducing atmosphere max. 600 °C), with adapter flange DN 65, PN 6, pore size 2 µm	7MB1943-2FE07
Extensions, unheated type G¾, pipe of stainless steel 1.4571, at one end G¾ male thread, at the other end G¾ female thread, wrench size 36	
Length 200 mm	7MB1943-2FA08
Length 500 mm	7MB1943-2FA16
Length 700 mm	7MB1943-2FA10
Length 1 000 mm	7MB1943-2FA11
Length 1 200 mm	7MB1943-2FA12
Length 1 500 mm	7MB1943-2FA13
Straight screw-in fittings ¼ NPT For connecting a sample gas line with stainless steel fittings to the probe	
• For 6 mm outer diameter	7MB1943-2DA20
• For 8 mm outer diameter	7MB1940-6AA01
Supporting sleeve for screw-in fitting is required in addition to the screw-in fitting to secure a PTFE hose to the probe	
• Supporting sleeve for 6 mm hose	7MB1943-2DA10
• Supporting sleeve for 8 mm hose	7MB1940-6AB01
Sampling pipes with male thread G¾ stainless steel	
Sampling pipe made of stainless steel 1.4571, L = 1 000 mm, D = 20 mm, gas temperature up to 600 °C, without connection for inlet filter	7MB1943-2FE12
Sampling pipe made of ceramics, L = 1 000 mm, D = 24 mm, gas temperature up to 1 600 °C, without connection for inlet filter	7MB1943-2FE02
Sampling pipe made of Inconel 600, L = 1 000 mm, D = 21.3 mm, gas temperature up to 1 050 °C, without connection for inlet filter	7MB1943-2FE08
Sampling pipe made of Hastelloy C4, L = 1 000 mm, D = 12 mm, gas temperature up to 400 °C, without connection for inlet filter	7MB1943-2FE06

Selection and ordering data (continued)

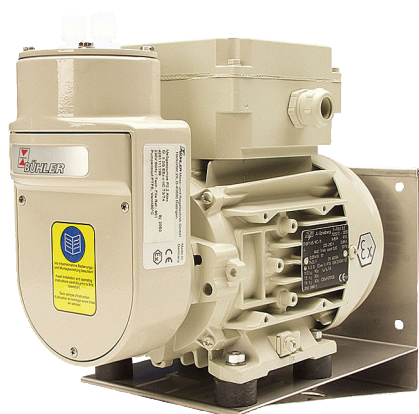
	Article No.
Sampling pipe made of PVDF with demister out of ETFE L = 800 mm, D = 50 mm, gas temperature up to 120 °C, without connection for inlet filter	7MB1943-2FA14
Substitute demister made of ETFE	7MB1943-2FA15
Replacement O-rings made of Viton for the external filter element (outlet filter), 1 set 1 set consisting of: • 1 O-ring 29.82 x 2.62 mm Viton 500 • 2 O-rings 15.54 x 2.62 mm • 1 micro tube, volume 0.5 ml, fill with O-ring lubricant up to 280 °C	7MB1943-2FE23
Protection plate Material: Stainless steel Protection plate as mechanical protection for inlet filter • For filter 7MB1943-2FE04	7MB1943-2FE14

More information

Configuration example



Sample gas pumps



2/2	Diaphragm pump with metal-free gas paths
2/3	Corrosion-resistant bellows pump

Sample gas pumps

Diaphragm pump with metal-free gas paths

Application

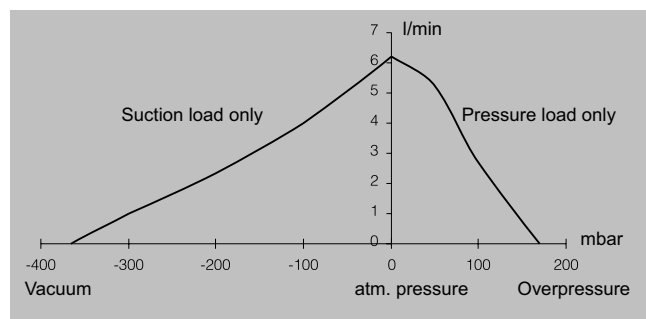
Suction or pressure driven handling of sample and reference gases.
For mounting in analyzer cabinets.

Selection and ordering data

	Article No.
Diaphragm pump with pump suspension and metal-free gas paths Without enclosure	
• Auxiliary power 230 V AC, 50 Hz	7MB1943-3AA00
Set of consumable parts (diaphragm, valve reed, and gaskets)	7MB1943-3AA04
PVDF fitting for S1 connection	See under "Components for sample preparation/connecting elements made of PVDF"

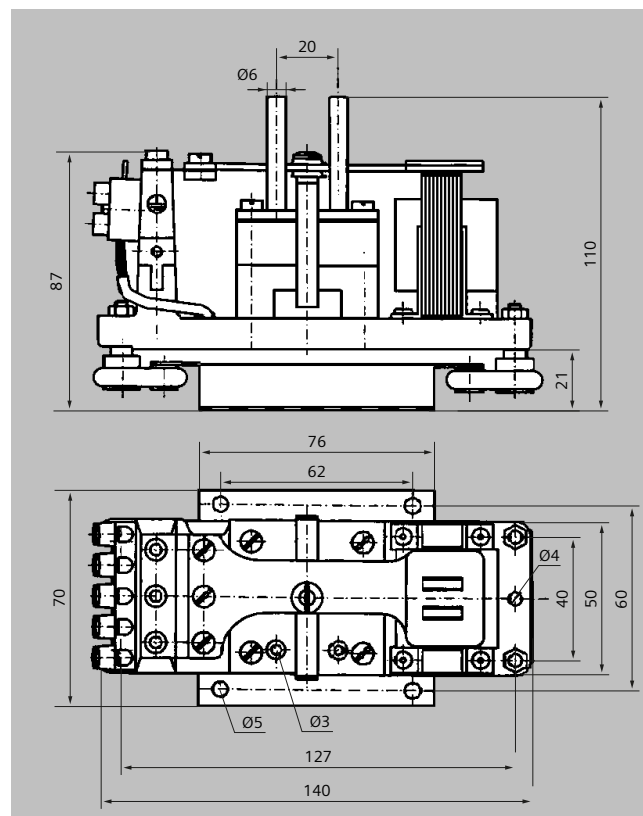
Technical specifications

Diaphragm pump with metal-free gas paths	
Pump capacity	See graphic "Diaphragm pump, capacity"
Materials	
• Diaphragm and valve reed	EPDM
• Gas couplings	Polyvinylidene fluoride (PVDF)
• Pump manifold	PVDF
Max. permissible ambient temperature	50 °C
Degree of protection acc. to EN 60529	IP20
Auxiliary power	See ordering data
Power consumption	6.5 VA, approx. 45 mA at 230 V AC, 50 Hz
Weight	Approx. 1.2 kg



Diaphragm pump, capacity

Dimensional drawings



Diaphragm pump with metal-free gas path and pump suspension

Sample gas pumps

Corrosion-resistant bellows pump

Application

Transportation of corrosive gases at temperatures up to 100 °C.

Special features

- Suitable for continuous operation
- PTFE (Teflon) and PVDF as the wetted parts materials
- Integrated bypass
- Simple, robust design
- Easy to replace valves
- Bellows made of one solid piece
- Pumps sample gases containing condensation
- Long service life

Selection and ordering data

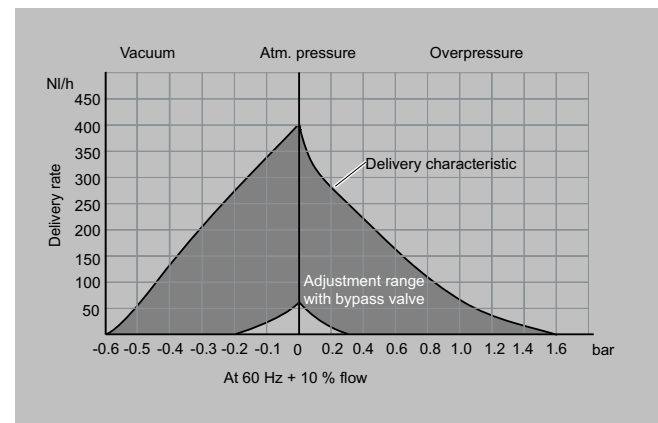
	Article No.
Corrosion-resistant bellows pump with pump support	
• Power supply 230 V AC, 50/60 Hz; 0.85/0.8 A	7MB1943-3CA10
• Power supply 115 V AC, 50/60 Hz; 1.7/1.6 A	7MB1943-3CA20
Spare parts	
Valve (2 units required), material: PTFE/PVDF	7MB1943-3CA15
PTFE bellows, complete	7MB1943-3CA16
Eccentric and plunger with ball bearing	7MB1943-3CA17

Further pump versions, also with head made of stainless steel 1.4571, are available on request.

Technical specifications

Corrosion-resistant bellows pump

Pump capacity	• See graphic "Corrosion-resistant bellows pump, capacity" • Adjustable using built-in bypass valve
Operating pressure on the output side	Max. 1.5 bar overpressure
Permissible gas temperature	Max. 100 °C
Permissible ambient temperature	Max. 60 °C
Degree of protection acc. to EN 60529	• IP55 (electrical) • IP20 (mechanical)
Auxiliary power	Either 230 V AC or 115 V AC; see ordering data
Connection	• For PTFE hose DN 4/6 (with 230 V AC version) • For PTFE hose 1/4" (with 115 V AC version)
Dimensions	See dimensional drawing
Weight	6.5 kg
Scope of delivery	• 1 x sample gas pump with motor • 4 x rubber/metal buffer • 1 x motor console made of 1.4301
Parts wetted by medium	PTFE (Teflon) and PVDF

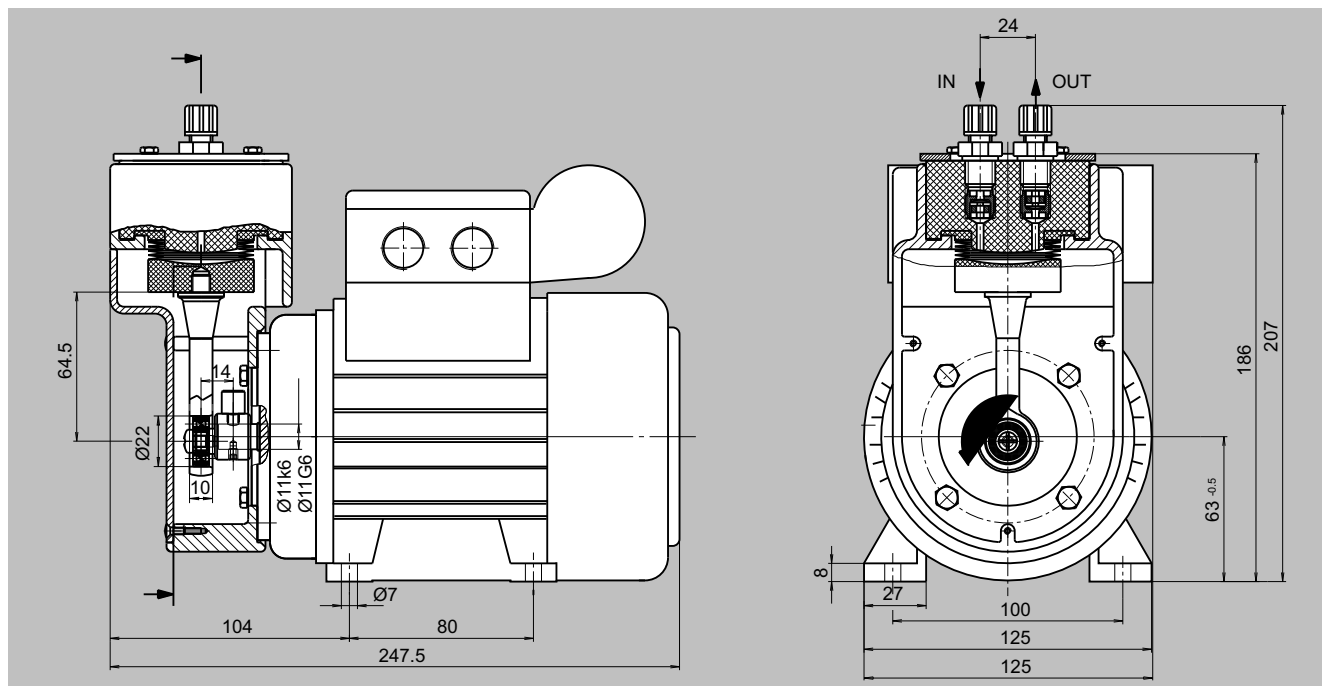


Corrosion-resistant bellows pump, capacity

Sample gas pumps

Corrosion-resistant bellows pump

Dimensional drawings



Corrosion-resistant bellows pump

Heated sample gas lines



3/2	Temperature-controlled, heated sample gas lines
3/2	Non-replaceable Teflon core
3/2	Max. 120 °C, can be shortened
3/4	Max. 200 °C
3/6	Max. 190 °C, for FIDAMAT total hydrocarbon analyzer
3/7	Temperature-controlled, heated sample gas filter
3/7	Max. 180 °C, for FIDAMAT total hydrocarbon analyzer

Heated sample gas lines

Temperature-controlled, heated sample gas lines

Non-replaceable Teflon core / Max. 120 °C, can be shortened

Design

Non-replaceable Teflon core, max. 120 °C, can be shortened	
Internal hose	PTFE pipe, 200 mm at both ends unheated, protruding, for cutting/clamping ring
Hose connection and termination	Silicone end cap
Heating	Heating band, routed in parallel
Thermal insulation	Thermo-fleece (CFC-free, flame-retardant)
Outer sheath	Polyamide corrugated hose PA12 black, waterproof, flame retardant acc. to UL94 HB, thermally stable from -50 ... +120 °C, short-term +150 °C
Temperature sensor	Pt100 in 2-wire system
Heat conductor/protective conductor	Copper braiding
Power supply connection	Power supply and sensor cables with common outlet, end sleeves, l = 3 000 mm
Implemented tests	acc. to VDE 0721 Part 1 • High-voltage test • Insulation resistance test

Selection and ordering data

Note

The complete ordering data for a heated sample gas line must include both items I and II.

	Article No.
Pos. I <i>Preamsembled pack for temperature-controlled, heated sample gas line for operating temperatures up to 120 °C; can be shortened (delivery unit 1 line)</i> Both ends preassembled, with PTFE hose Non-replaceable Teflon core, with 1 Pt100 temperature sensor	7MB1943-2AB13
Pos. II Length-related data (delivery unit 1 m) <u>Outer sheath</u> <i>Polyamide corrugated hose (PA12)</i> <u>Cable</u> • PTFE hose 4/6 mm • PTFE hose 6/8 mm	7MB1943-2AB10 7MB1943-2AB12
Temperature-controlled, heated sample gas line for operating temperatures up to 120 °C; can be shortened Neither end preassembled, with PTFE hose, with 1 Pt100 temperature sensor <u>Outer sheath</u> <i>Polyamide corrugated hose (PA12)</i> <u>Cable</u> • PTFE hose 4/6 mm • PTFE hose 6/8 mm <i>Preamsembled pack for connection of heated sample gas line (cabinet end)</i> Comprising: • 1 silicon end cap • 1 connections set for heating band • 1 Pt 100 temperature sensor <i>Preamsembled pack for connection of heated sample gas line (sampling end)</i> Comprising: • 1 silicon end cap • 1 connections set for heating band <i>Temperature-resistant adhesive tape (33 m)</i> Note: 10 m are required to assemble a hose <i>Silicone adhesive (1 tube)</i> Note: Half a tube is required to assemble a hose	7MB1943-2AB14 7MB1943-2AB16 7MB1943-2AB20 7MB1943-2AB22 7MB1943-2AB24 7MB1943-2AB26
Recommended temperature controller	3RS1042-1GW70

Heated sample gas lines

Temperature-controlled, heated sample gas lines

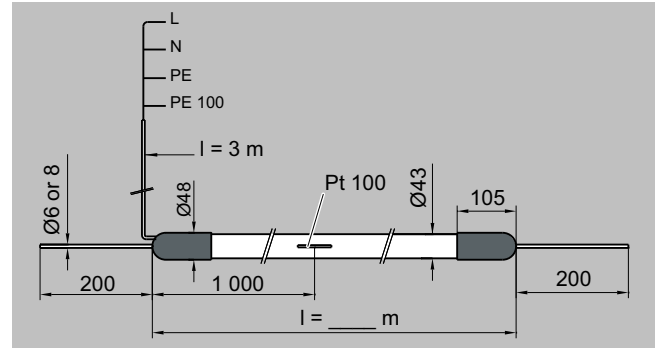
Non-replaceable Teflon core / Max. 120 °C, can be shortened

Technical specifications

Non-replaceable Teflon core, max. 120 °C, can be shortened

Max. permissible operating temperature	
• Switched on	120 °C
• Switched off	200 °C
Max. length of heating circuit	100 m
Max. production length	100 m
Distance between contacts	0.6 m
Safety class	I
Degree of protection	IP54
Outer diameter	Approx. 43 mm
Smallest bending radius	300 mm
Max. permissible operating pressure	6 bar for DN(NW)4, 4 bar for DN(NW)6; at 200 °C
Power supply	230 V AC, 50 Hz
Rated power	40 W/m
Weight (heating hose)	Approx. 0.8 kg/m

Dimensional drawings



Temperature-controlled, heated sample gas line for operating temperatures up to max. 120 °C, non-replaceable Teflon core, can be shortened

Heated sample gas lines

Temperature-controlled, heated sample gas lines

Non-replaceable Teflon core / Max. 200 °C

Design

Non-replaceable Teflon core, max. 200 °C	
Internal hose (type)	Hose with Teflon (PTFE) core, stainless steel braiding
Connection fittings at inlet and outlet	Two-side pipe fitting RSL, mat. no. 1.4571, for cutting/clamping ring
Hose connection and termination	Silicone end cap
Heat conductor	Humidity-proof, PTFE isolated, braided by protective conductor
Thermal insulation	Thermo-fleece (CFC-free, flame-retardant)
Outer sheath	Polyamide corrugated hose PA12 black, waterproof, flame-retardant acc. to UL94 HB
• Ambient temperature	-40 °C ... +105 °C
Power supply connection	Power supply and sensor cables with common outlet, end sleeves, l = 3 000 mm
Implemented tests	acc. to VDE 0721 Part 1 • High-voltage test • Insulation resistance test

Selection and ordering data

Note

The complete ordering data for a heated sample gas line includes items 1 and 2.

	Article No.
Pos. 1a <i>Preassembly for temperature-controlled, heated sample gas line for operating temperatures up to 200 °C</i> (delivery unit 1 unit) Non-replaceable Teflon core, with 1 Pt100 temperature sensor in 2-conductor system	7MB1943-2BA00
Pos. 1b <i>Special version for Gaset CEMS FTIR</i> <i>Preassembly for temperature-controlled, heated sample gas line for operating temperatures up to 200 °C</i> (delivery unit 1 unit) Non-replaceable Teflon core, with 1 thermocouple type K Ni-CrNi without silicon end cap on the electrical connection side	7MB1943-2BA04
Pos. 2 <i>Length-related data</i> (delivery unit 1 m) <u>Outer sheath</u> Polyamide corrugated hose (PA12) <u>Cable</u> • PTFE hose 4/6 mm • PTFE hose 6/8 mm <u>Temperature sensor mounting point</u> Measured from the electrical connection side (standard) or specified in plain text:	7MB1943-2AA01 7MB1943-2AA02 Sensor 1: 1 m Sensor 1: m
2nd temperature sensor	On request
2nd heating circuit	On request
Recommended temperature controller for Pt100	3RS1042-1GW70

Ordering example

The following is required:

Temperature-controlled, heated sample gas line for operating temperatures up to 200 °C, with straight connection fittings at both ends, outer sheath made of corrugated hose PA12, PTFE hose 4/6 mm, 10 m long, Pt100

Order as follows:

7MB1943-2BA00 + 10 x 7MB1943-2AA01

Technical specifications

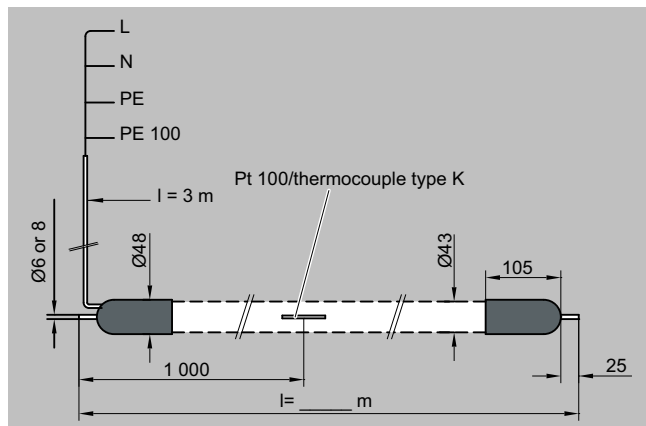
Non-replaceable Teflon core, max. 200 °C	
Max. permissible operating temperature	200 °C
Max. length of heating circuit	54 m
Max. production length	54 m
Safety class	I
Degree of protection	IP54
Smallest bending radius	300 mm
Max. permissible operating pressure	10 bar
Power supply	230 V AC, 50 Hz
Rated power	100 W/m
Weight (heating hose)	Approx. 0.8 kg/m

Heated sample gas lines

Temperature-controlled, heated sample gas lines

Non-replaceable Teflon core / Max. 200 °C

Dimensional drawings



Temperature-controlled, heated sample gas line for operating temperatures up to max. 200 °C, non-replaceable Teflon core

Heated sample gas lines

Temperature-controlled, heated sample gas lines

Non-replaceable Teflon core / Max. 190 °C, for FIDAMAT total hydrocarbon analyzer

Design

Non-replaceable Teflon core, max. 190 °C, for total hydrocarbon analyzer FIDAMAT	
Internal hose	PTFE pipe, single stainless steel braiding
Connection fittings at inlet and outlet	Two-side pipe fitting RSL, mat. no. 1.4571
Hose connection and termination	Silicone end cap
Heat conductor	PTFE-insulated with PE braiding, moisture-proof
Thermal insulation	Thermo-fleece (CFC-free, flame retardant), silicone foam hose as sheath
Temperature sensor	Pt100 in 2-wire system
Power supply connection	Power supply and sensor cables with common outlet, l = 3 000 mm, silicone protective hose, end sleeves
Implemented tests	acc. to VDE 0721 Part 1 • High-voltage test • Insulation resistance test

Technical specifications

Non-replaceable Teflon core, max. 190 °C, for total hydrocarbon analyzer FIDAMAT	
Max. permissible operating temperature	190 °C
Max. production length	5 m
Safety class	I
Degree of protection	IP54
Outer diameter	Approx. 33 mm
Smallest bending radius	200 mm
Max. permissible operating pressure	10 bar
Power supply	230 V AC, 50/60 Hz
Rated power	100 W/m
Only for indoor use	

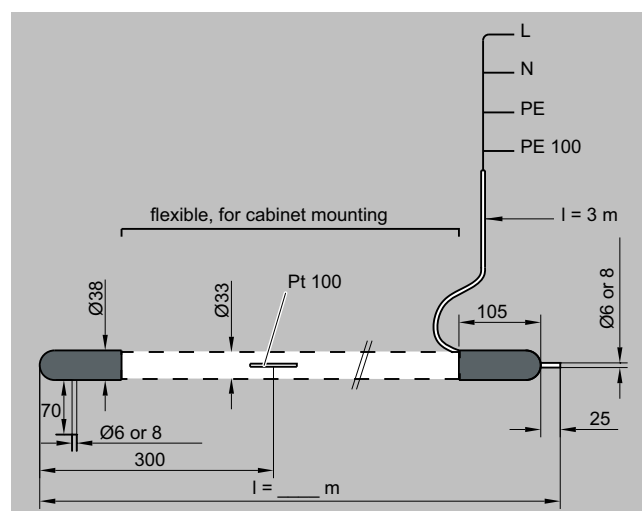
Selection and ordering data

Note

The complete ordering data for a heated sample gas line must include both items I and II.

	Article No.
Pos. I <i>Preassembly for temperature-controlled, heated sample gas line for operating temperatures up to 190 °C</i> (delivery unit 1 unit) Non-replaceable Teflon core, with 1 Pt100 temperature sensor, at analyzer end with right-angled sample gas outlet	
• For PTFE hose 4/6 mm	7MB1943-2AA74
• For PTFE hose 6/8 mm	7MB1943-2AA75
Pos. II <i>Length-related data</i> (Minimum length 0.5 m – can be ordered in 0.1 m increments)	
<u>Model a</u>	7MB1943-2AA76
Outer sheath: silicone foam hose Hose: PTFE hose 4/6 mm	
<u>Model b</u>	7MB1943-2AA77
As model a, except cable: PTFE hose 6/8 mm	
Recommended temperature controller	3RS1042-1GW70

Dimensional drawings



Temperature-controlled, heated sample gas line for operating temperatures up to max. 190 °C, non-replaceable Teflon core (for FIDAMAT total hydrocarbon analyzer)

Heated sample gas lines

Temperature-controlled, heated sample gas filter

Max. 180 °C, for FIDAMAT total hydrocarbon analyzer

Application

The electrically heated filter separates off solids occurring in analysis techniques up to a maximum operating temperature of 180 °C. It offers an additional unheated and filter-free outlet for cold measurements.

Design

The universal filter made of temperature-resistant PTFE with integrated filter element is located in a two-part aluminum body. The temperature is controlled by means of a heating cartridge and an adjustable thermostat including overtemperature limiter and under-temperature alarm at 30 °C above and below the reference temperature respectively. The switching element of the thermostat as well as the electrical terminals are located in a junction box. The operating temperature of the filter is displayed on a thermometer. For thermal insulation reasons and as protection against accidental contact, the heated filter part is covered by an insulated cap. To prevent cold points, the connection glands are also heated. The pipe clamps present on both sides serve to support the hoses. The unheated output is located upstream of the filter element in the gas flow direction. Depending on the requirements, the cold gas stream therefore needs to be filtered in the cold sample conditioning system.

Selection and ordering data

	Article No.
Electrically heated sample gas filter up to max. 180 °C "FIDAMAT"	
• Gas inlet on left	7MB1943-2AA80
• Gas inlet on right	7MB1943-2AA81
Replacement filter element	
Made of PTFE, pore size 2 µm	7MB1943-2AA14

Technical specifications

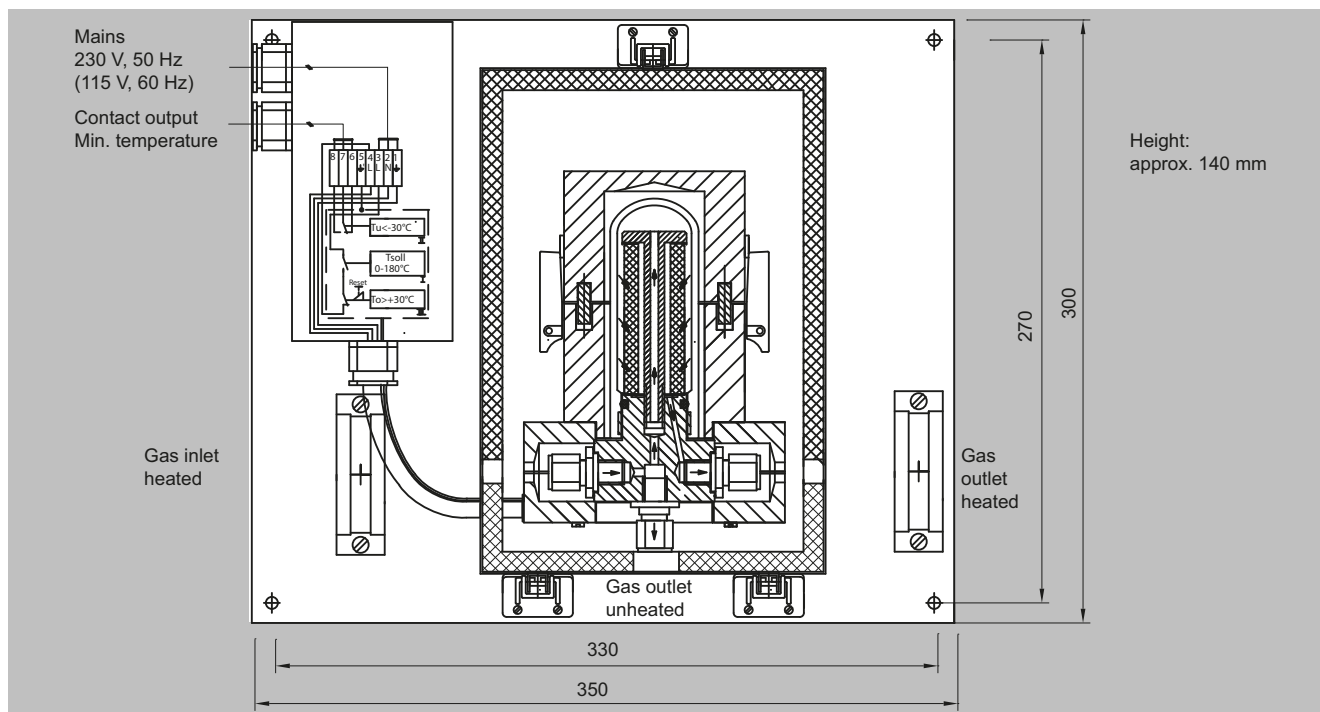
Max. 180 °C, for FIDAMAT total hydrocarbon analyzer	
Max. permissible operating temperature	180 °C
Max. permissible ambient temperature	50 °C
Degree of protection	IP44
Filter material	PTFE
Filter fineness	2 µm
Dead volume	65 cm ³
Filter surface	70 cm ²
Max. permissible operating pressure	4 bar
Power supply	230 V AC, 50 Hz
Rated power	350 VA
Mounting type	Wall mounting

Heated sample gas lines

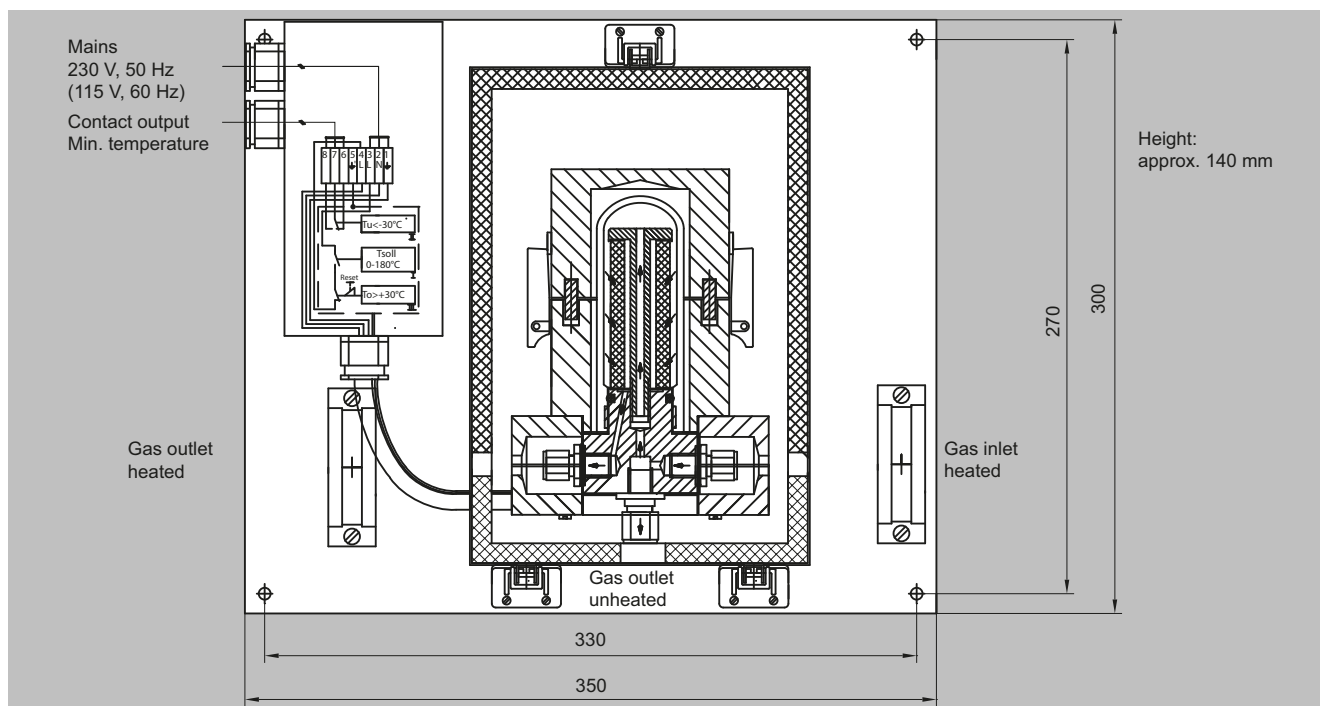
Temperature-controlled, heated sample gas filter

Max. 180 °C, for FIDAMAT total hydrocarbon analyzer

Dimensional drawings



Temperature-controlled, heated sample gas filter for operating temperatures up to max. 180 °C, gas inlet on left (for FIDAMAT total hydrocarbon analyzer)



Temperature-controlled, heated sample gas filter for operating temperatures up to max. 180 °C, gas inlet on right (for FIDAMAT total hydrocarbon analyzer)

Components for sample preparation



4/2	Filters
4/2	Room air filter
4/3	Front mounting filter
4/4	Coalescence filter
4/6	Universal filter
4/8	Moisture sensor and wiring modules
4/10	Condensation trap with PP enclosure
4/11	Condensation removal
4/11	Condensation tank
4/12	Hose pump for condensation removal
4/13	Gas coolers
4/13	Compressor gas coolers
4/20	Valves
4/20	Needle valve made of PVDF
4/21	Shutoff and multiway ball valves made of PVDF
4/22	Solenoid valves
4/22	2/2-way solenoid valve made of PVDF, pivoted-armature valve
4/23	3/2-way solenoid valve made of PVDF, pivoted-armature valve
4/24	Flowmeters
4/24	Glass flowmeter
4/25	Switch amplifier
4/26	NO2/NO converter
4/28	Fittings
4/28	Connecting elements made of PVDF and Teflon

Components for sample preparation

Filters

Room air filter

Application

The room filter filters the ambient air and separates dust present in the air down to a particle size of approx. 20 µm.

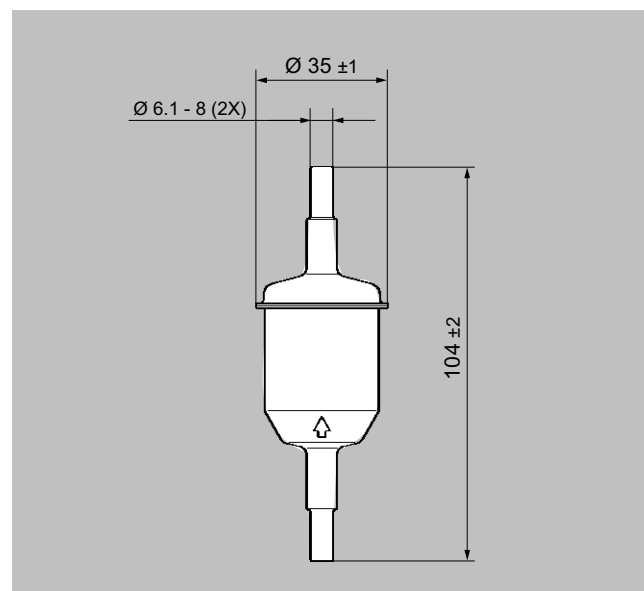
Selection and ordering data

	Article No.
Room air filter	C79127-Z400-A1

Technical specifications

Room air filter	
Filter element	Paper, 20 µm (non-replaceable)
Material (enclosure)	Polyamide (natural colors)
Max. permissible operating temperature	100 °C
Connection	Connecting sleeves, 6 mm diameter

Dimensional drawings



Room air filter

Components for sample preparation

Filters

Front mounting filter

Application

For mounting in panels or cabinets.

Selection and ordering data

	Article No.
Front mounting filter With glass-fiber filter element 0.1 µm	7MB1943-2CA30

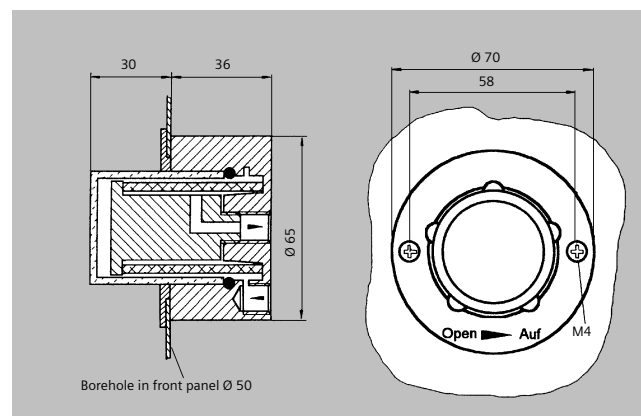
Consumables

	Article No.
Glass-fiber filter element 0.1 µm	7MB1943-2CA32

Technical specifications

Front mounting filter	
Filter fineness (pore size)	0.1 µm
Filter surface	50 cm ²
Max. operating pressure	4 bar
Max. permissible ambient temperature	80 °C
Max. permissible sample gas temperature	80 °C
Dead volume	30 ml
Sample gas connections	G1/8
Mounting type	Fitting in front panel
Material of parts wetted by the sample gas	PVDF, glass, Viton
Weight	280 g

Dimensional drawings



Front mounting filter

Components for sample preparation

Filters

Coalescence filter

Application

For mounting in sample conditioning systems.

Design

To remove aerosols (fine drops of liquid) from the gas stream.

The collected condensation is drained in the case of pressurized systems via automatic condensation drain valves, or in the case of vacuum systems via hose pumps.

Caution!

Condensation can be corrosive. Observe the accident prevention regulations and other directives.

The coalescence filter comprises:

- Filter head (PVDF)
- Filter bubble (Duran glass)
- Gasket material (Viton)

Special features

- User-friendly and unique quick-release connection, allows extremely simple and rapid replacement of the filter element without tools
- Additional connection in filter head (G 1/4") for moisture sensor or bypass
- Connection of automatic condensation drains possible

For use in hazardous areas

The filters comply with the basic safety requirements of directive 94/9/EC and are thus suitable for use in hazardous areas (Zone 1, Group IIB). Non-flammable gases and flammable gases of Group IIB or IIC (which can be occasionally explosive in normal operation, Zone1) can be passed through the filters depending on the filter element used.

The information in the associated Operating Instructions must be observed!

Selection and ordering data

	Article No.
Coalescence filter With filter insert made of borosilicate fiber	7MB1943-2AC12

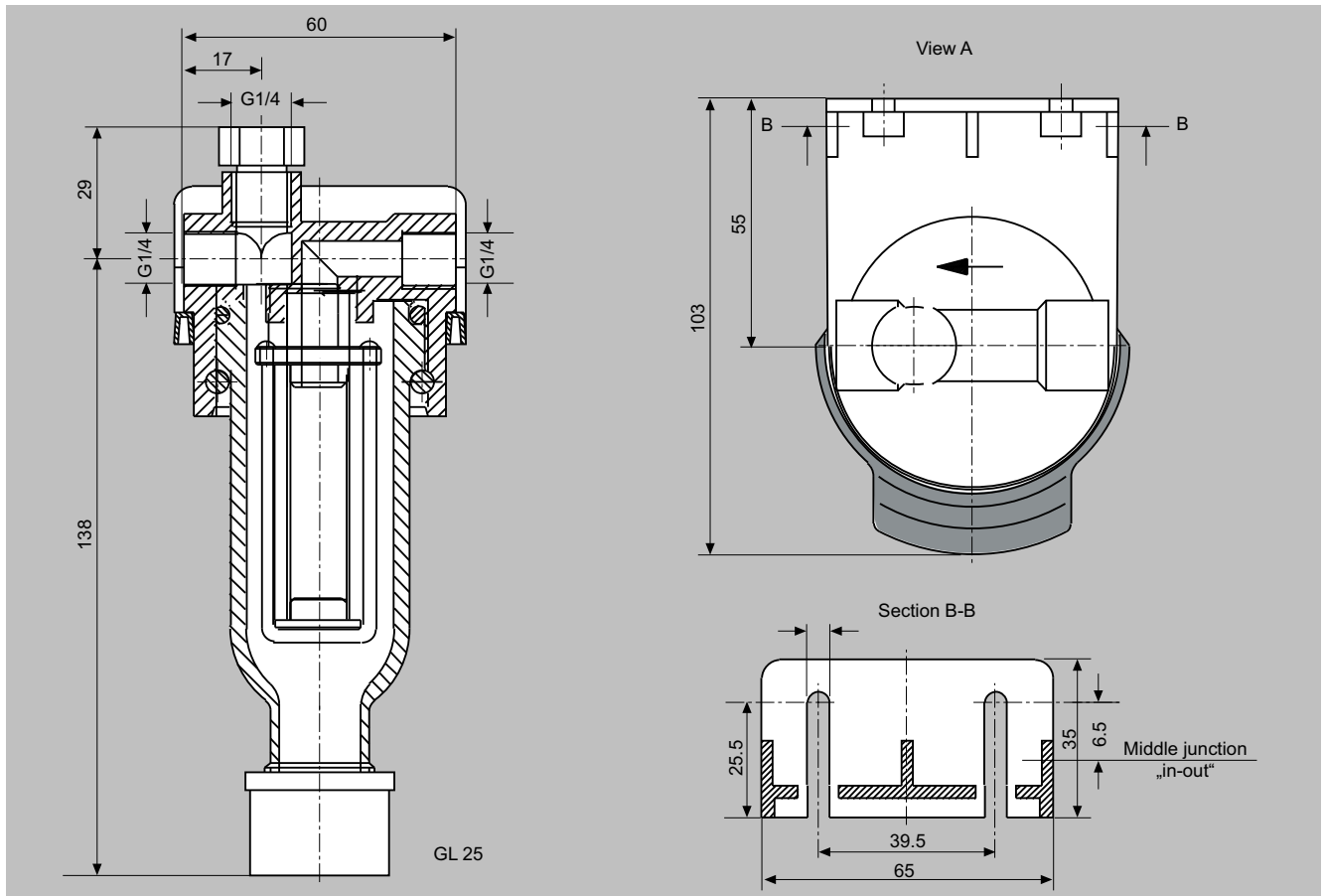
Accessories

	Article No.
Filter insert Made of borosilicate fiber (1 unit)	7MB1943-2AC13

Technical specifications

Coalescence filter	
Gas connections	Inlet and outlet, 2 x G 1/4 female thread diagonally opposite on side
Sample gas pressure	Max. 4 bar
Filter surface	28 cm ²
Dead volume	73 ml
Mounting type	Wall mounting
Operating temperature	Max. 100 °C
Weight	Approx. 0.24 kg

Dimensional drawings



Coalescence filter

Components for sample preparation

Filters

Universal filter

Application

For mounting in sample conditioning systems.

Design

The universal filter with quick-release fastener has a filter mesh of 2 µm. The quick-release fastener means that the PTFE or glass-fiber filter insert can be easily changed. Dry dusts are filtered out reliably, and a moisture sensor can be installed on request. The filter insert can be easily checked through the transparent housing.

Special features

- User-friendly and unique quick-release connection, allows extremely simple and rapid replacement of the filter element without tools
- Low dead volume
- Additional connection in filter head (G ¼") for moisture sensor, bypass or vent

For use in hazardous areas

The filters comply with the basic safety requirements of directive 94/9/EC and are thus suitable for use in hazardous areas (Zone 1, Group IIB). Non-flammable gases and flammable gases of Group IIB or IIC (which can be occasionally explosive in normal operation, Zone 1) can be passed through the filters depending on the filter element used.

The information in the associated Operating Instructions must be observed!

Selection and ordering data

	Article No.
Universal filter	
For filter insert made of glass fibers, pore size 2 µm	7MB1943-2AC00
For filter insert made of Teflon, pore size 2 µm	7MB1943-2AC01

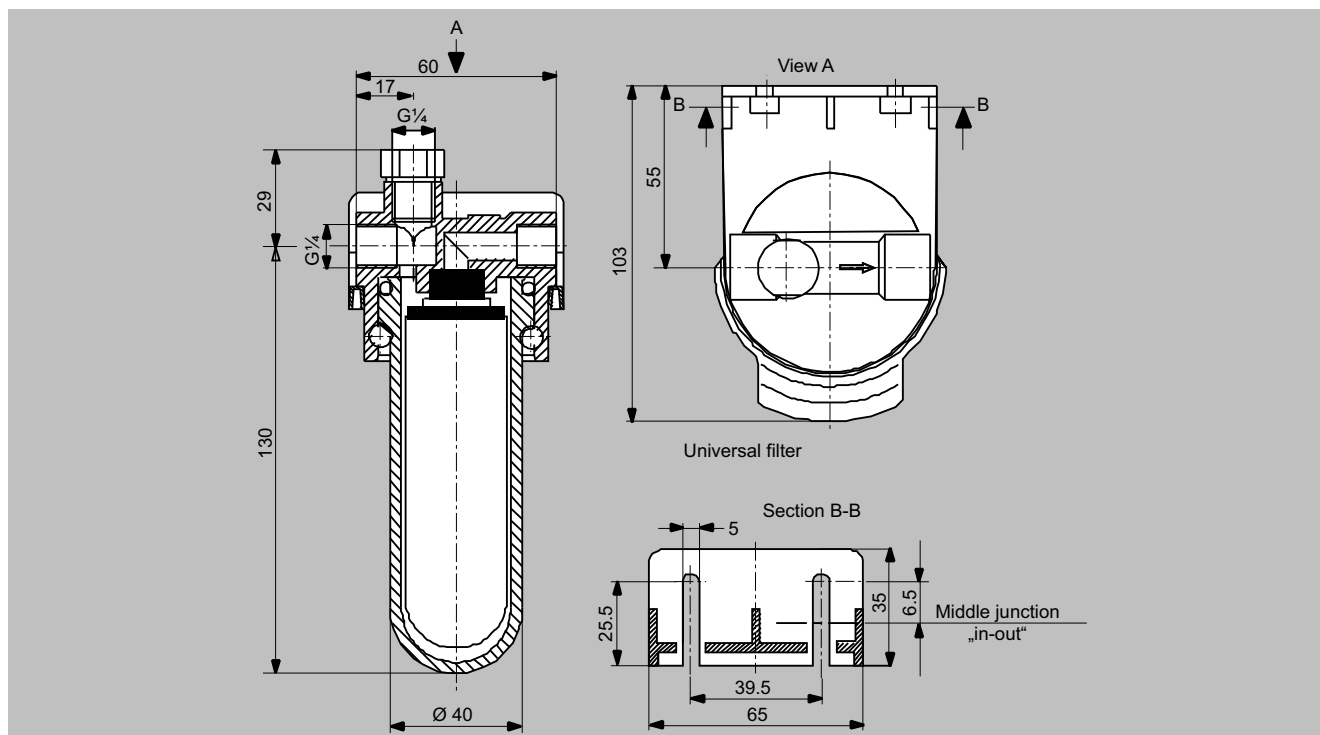
Accessories and consumables

	Article No.
Filter inserts (per 5 units)	
Made of glass fiber, pore size 2 µm, matching 7MB1 943-2AC00	7MB1943-2AC10
Made of Teflon, pore size 2 µm, matching 7MB1 943-2AC01 (filter insert cannot be combined)	7MB1943-2AC11

Technical specifications

Universal filter	
Gas connections	Inlet and outlet, 2 x G¼ female thread diagonally opposite on side
Sample gas pressure	Max. 4 bar
Filter surface	
• Glass fiber	80 cm²
• Teflon (PTFE)	60 cm²
Dead volume	57 ml
Mounting type	Wall mounting
Operating temperature	Max. 100 °C
Materials	
• Filter head	PVDF
• Enclosure	Duran glass
• Seal	Viton
Weight	Approx. 0.30 kg

Dimensional drawings



Universal filter

Components for sample preparation

Filters

Moisture sensor and wiring modules

Application

The moisture sensor is used to signal the penetration of moisture in sample gas treatment systems in order to prevent the damaging of measuring cells by condensation. It is fitted in the gas stream and already responds to low quantities of moisture; it therefore is not dependent on an accumulation of condensation. Once the fault has been eliminated, the moisture sensor is immediately dried by the flow of gas. It is maintenance-free.

The moisture sensor is connected to a wiring module with which the sample gas pump can be switched off and an alarm signal triggered. Once the sample gas has passed the moisture sensor, it first flows through the filter housing before reaching the analyzer. This buffer provides an additional safety period for a response by the wiring module if the sensor detects moisture. There are three different wiring modules for selection depending on the conditions of use.

Design

The moisture sensor can be used together with the universal filter, the coalescence filter, or with flow adapters. Together with the wiring module, the moisture sensor has an open-circuit monitoring function.

For use in hazardous areas

The moisture sensor can only be used in the ATEX area together with the associated wiring module with intrinsically-safe output (II 2G EEx ib IIC T5). The wiring module itself must be installed in a non-hazardous environment.

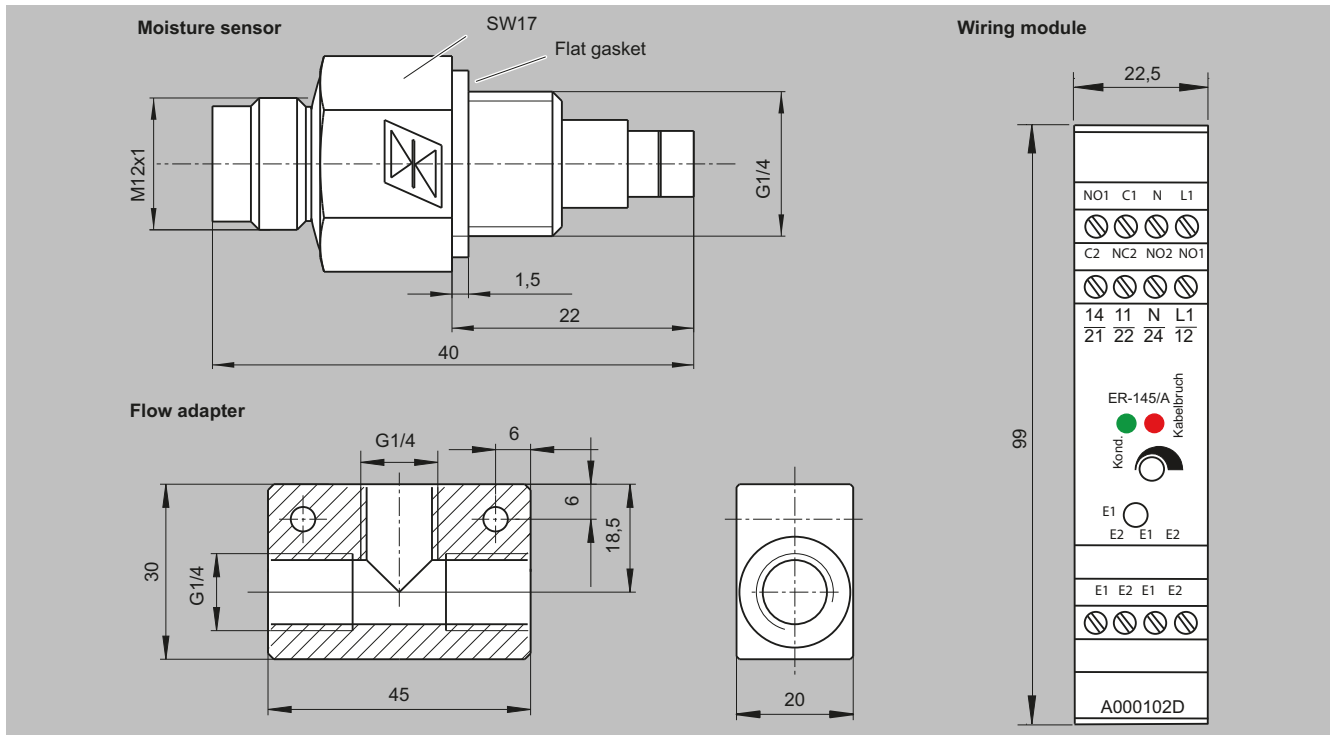
Technical specifications

Moisture sensor and wiring modules		
Max. permissible operating temperature	50 °C	
Max. permissible operating pressure	2 bar; other version for higher pressure on request	
Cable length (moisture sensor)	4 m	
Materials	PVDF, stainless steel 1.4571, epoxy resin	
Weight	Approx. 0.1 kg	
Wiring modules	• With intrinsically-safe output for applications according to ATEX • Rail mounting	• Non-Ex applications in accordance with IEC General Purpose • Rail mounting
Supply voltage	230 V AC or 115 V AC 48 ... 62 Hz	24 V DC ±10%
Ex protection class	II(1)G [EEx ia] IIC	-
Ex certificate	TÜV 00 ATEX 1604	-
Max. cable length	70 m	4 m
Degree of protection acc. to EN 60529		
• Device	IP40	IP40
• Terminal strip	IP20	IP20
Operating temperature	-25 ... +60 °C	-20 ... +60 °C
Mounting type	DIN rail 35 mm	DIN rail 35 mm
Dimensions (H x W x D) in mm	99 x 22.5 x 120	75 x 70 x 109
Weight	Approx. 0.2 kg	Approx. 0.2 kg

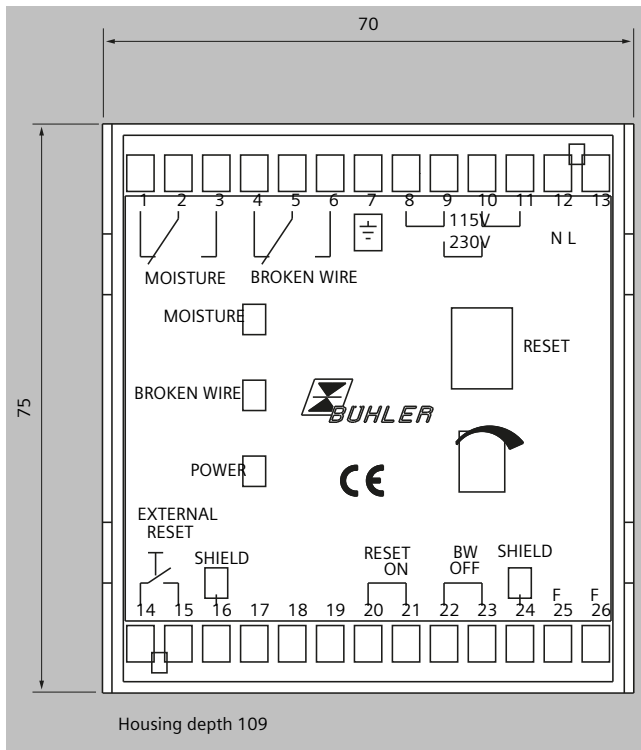
Selection and ordering data

	Article No.
Moisture sensor	7MB1943-2AC51
Cable length 4 m, connection G $\frac{1}{4}$	
Wiring modules	
With intrinsically-safe output for applications according to ATEX	
• For 1 moisture sensor, power supply 230 V AC, 48 ... 62 Hz	7MB1943-2AC40
• For 1 moisture sensor, power supply 115 V AC, 48 ... 62 Hz	7MB1943-2AC41
For use in accordance with IEC General Purpose	
• For max. 2 moisture sensors, auxiliary power 24 V DC	7MB1943-2AC42
Flow adapter	
Made of PVDF, for moisture sensor for installation in sample gas line	7MB1943-2AC06
Made of stainless steel 1.4571, for installation in piping	7MB1943-2AC43

Dimensional drawings



Moisture sensor, wiring module with intrinsically-safe output for applications according to ATEX, and flow adapter



Wiring module for non-hazardous applications

Components for sample preparation

Condensation trap with PP enclosure

Overview



Condensation trap WT 20.5 with PP enclosure

Application

The condensation trap is positioned in the hose directly upstream of the gas analyzer. If the assigned gas preparation system fails (cooler, hose pump, dust filter or similar), the semipermeable diaphragm protects the gas analyzer from condensation and dust.

Selection and ordering data

	Article No.
Condensation trap 1/8" NPT male thread	7MB1943-2AC32

Accessories

	Article No.
2 units Connection adapter (PP) 1/8" NPT threaded connection to hose connection 6/4 mm	7MB1943-2AC34

Technical specifications

Condensation trap with PP enclosure	
Max. operating pressure of gas	2 bar
Max. condensation pressure	2 bar
Max. rec. gas flow	400 l/h
Pressure drop with 100 l air/h	10 mbar
Pore size of diaphragm	< 0.1 µm
Max. operating temperature	0 / +90 °C
Used materials	PP, PTFE
Gas connections	1/8" NPT male thread

Components for sample preparation

Condensation removal

Condensation tank

Application

Condensation tank for use with analyzer systems, for installation in analyzer cabinets or sheds.

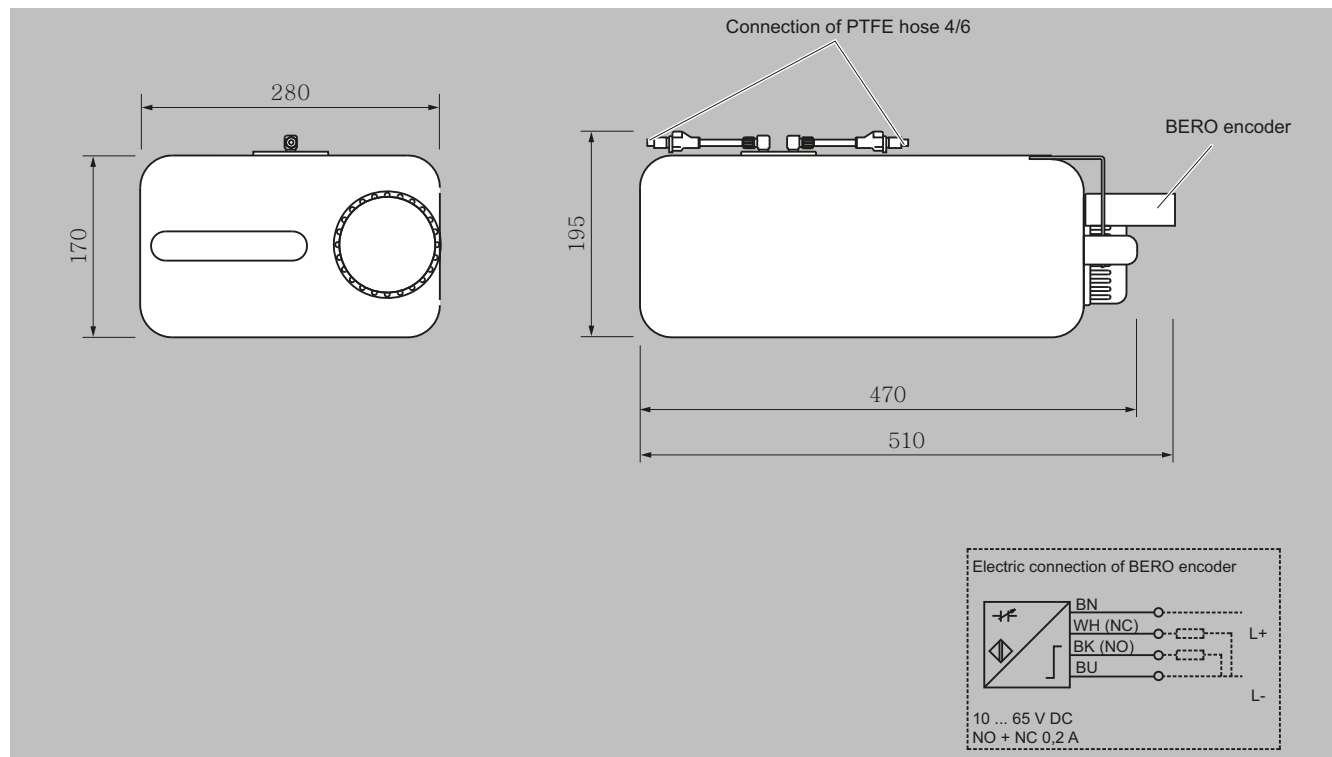
Selection and ordering data

	Article No.
Condensation tank Completely assembled, but without BERO sensor	7MB1943-2AA65
Liquid limit monitor (BERO) Power supply 24 V DC	7MB1943-2AA66

Technical specifications

Condensation tank	
Tank material	Polyethylene
Capacity	19 l
Weight of condensation tank (without Bero sensor)	1.05 kg
Weight of Bero sensor	0.23 kg
Quick-release connections for condensation inlet and venting	For PTFE hose 4/6
Auxiliary power for Bero sensor	24 V DC

Dimensional drawings



Condensation tank with liquid limit monitor

More information

The liquid limit monitor (BERO sensor) must be ordered separately and fitted by the customer into the fixing bracket on the condensation tank.

See the connection diagram for the electrical connection of the BERO sensor.

Components for sample preparation

Condensation removal

Hose pump for condensation removal

Application

For the continuous removal of condensation.

Selection and ordering data

	Article No.
Hose pump	7MB1943-3AA20

Accessories and consumables

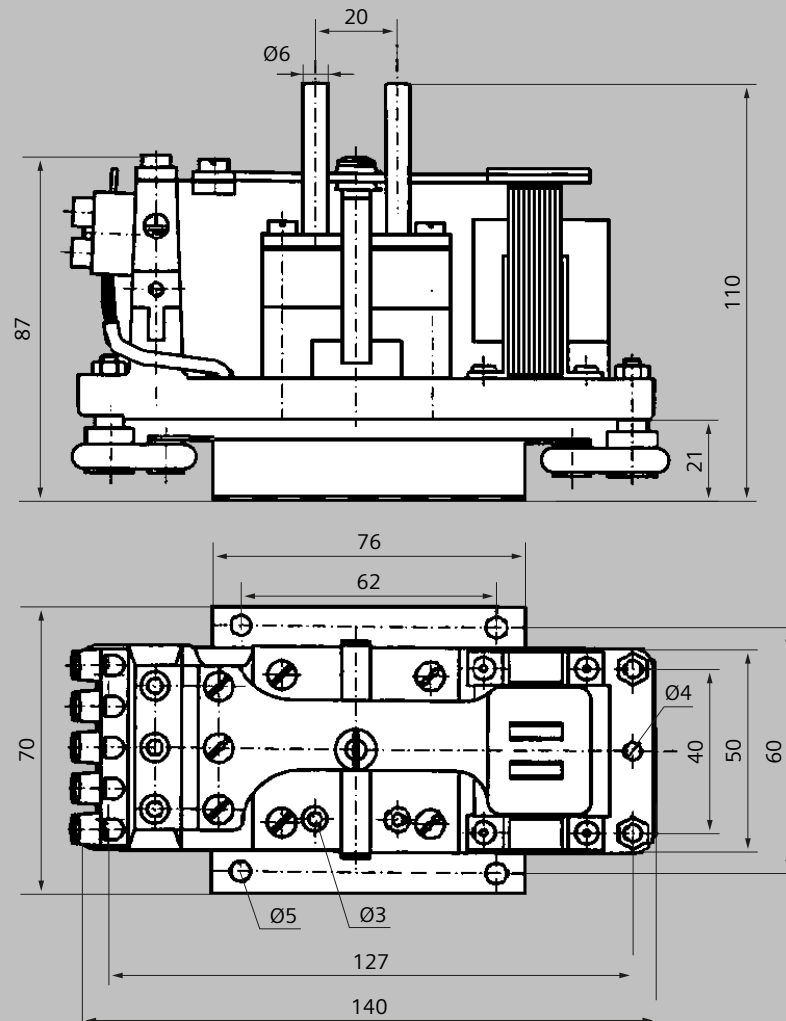
	Article No.
Hose	7MB1943-3AA22
Elbow union For Teflon hose 4 x 1 mm	See Connection elements/connection elements made of PVDF

Technical specifications

Hose pump for condensation removal

Pump capacity	Approx. 0.3 l/h
Materials	
• Hose	Novopren
• Hose couplings	PVDF
Electrical connections	Terminals
Max. permissible ambient temperature	40 °C
Final pressure	0.8 bar
Explosion protection	–
Auxiliary power	115/230 V AC, 50/60 Hz, switchable
Weight	Approx. 0.5 kg

Dimensional drawings



Hose pump

Components for sample preparation

Gas coolers

Compressor gas coolers

Overview



Application

Reduction of the dew point of moist sample gases in order to bring the sample gas to a stable, low dew point. The gas cooler prevents condensation of the sample gas in the subsequent sample preparation system and in the analyzer. As a result of the constant, low dew point, the use of gas coolers also largely reduces water vapor cross-sensitivity (e.g. with NDIR devices) and volume errors.

The non-explosion-proof compressor gas coolers are available with 1, 2 or 4 cooling circuits/heat exchangers (for 1 to 4 sample gas streams). The explosion-proof compressor gas coolers can be fitted with 1 or 2 cooling circuits/heat exchangers.

With the non-explosion-proof compressor gas coolers, the condensation produced in the respective heat exchanger is disposed of using hose pumps. The hose pumps guarantee that the system is sealed off from the atmosphere. This prevents the sucking-in of "incorrect air" or the discharge of sample gas in the case of an overpressure.

With the explosion-proof gas coolers, the condensation must be disposed of externally (e.g. via automatic condensation traps or explosion-proof hose pumps).

Some versions of the non-explosion-proof gas coolers (type CSS-V) are also equipped with a fine filter with moisture sensor and evaluation electronics in addition to the hose pumps.

The status alarm is triggered if there is an inrush of liquid.

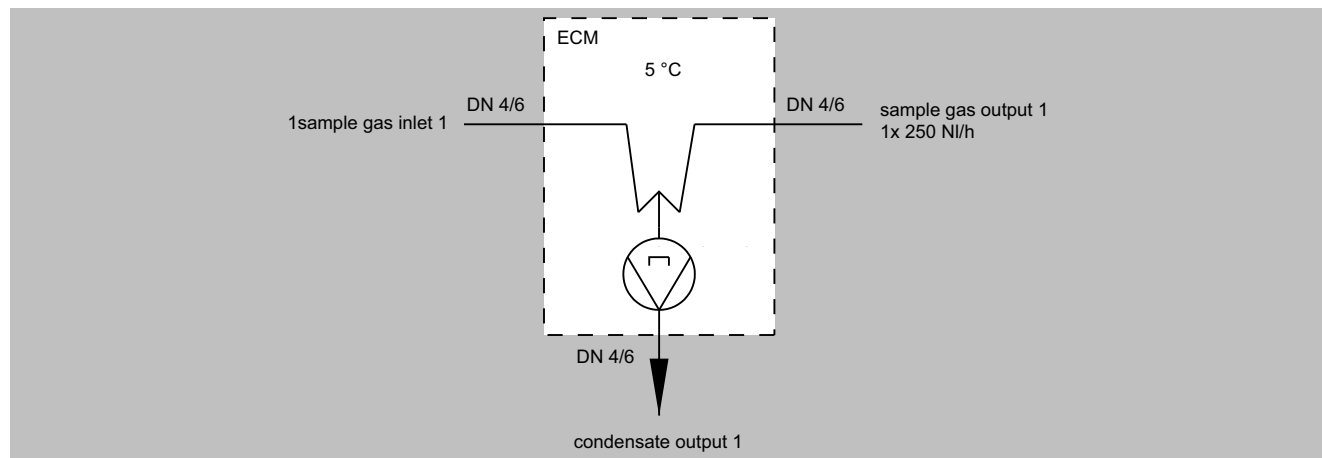
Components for sample preparation

Gas coolers

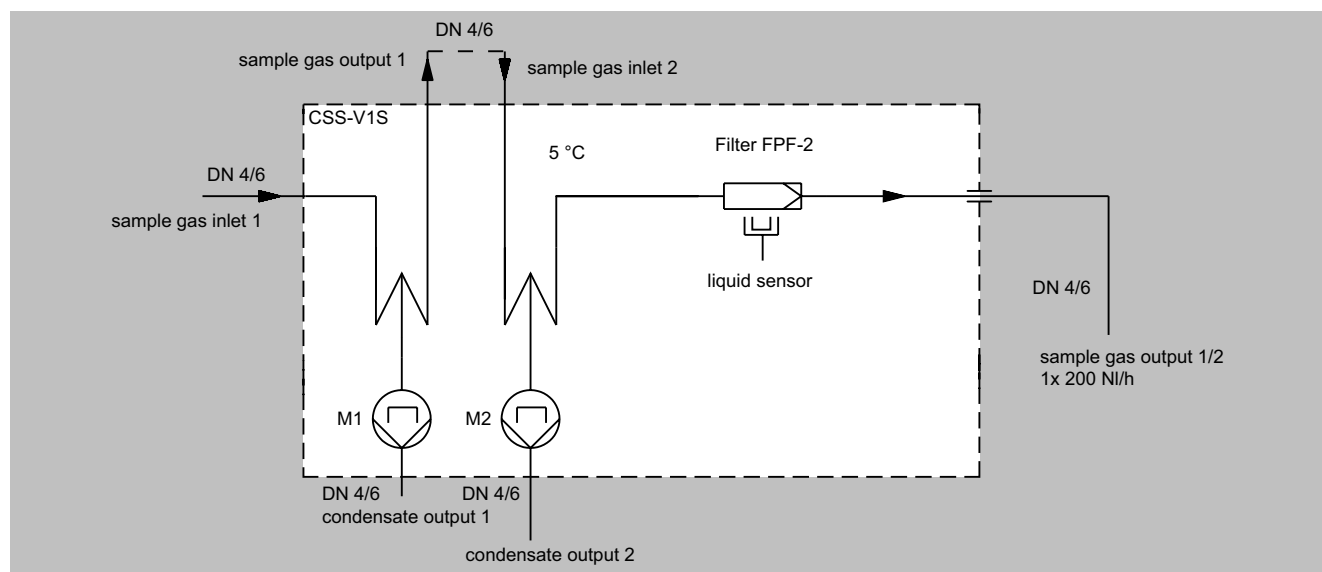
Compressor gas coolers

Design

Flow diagram of the non-explosion-proof compressor gas coolers



Design with 1 gas path



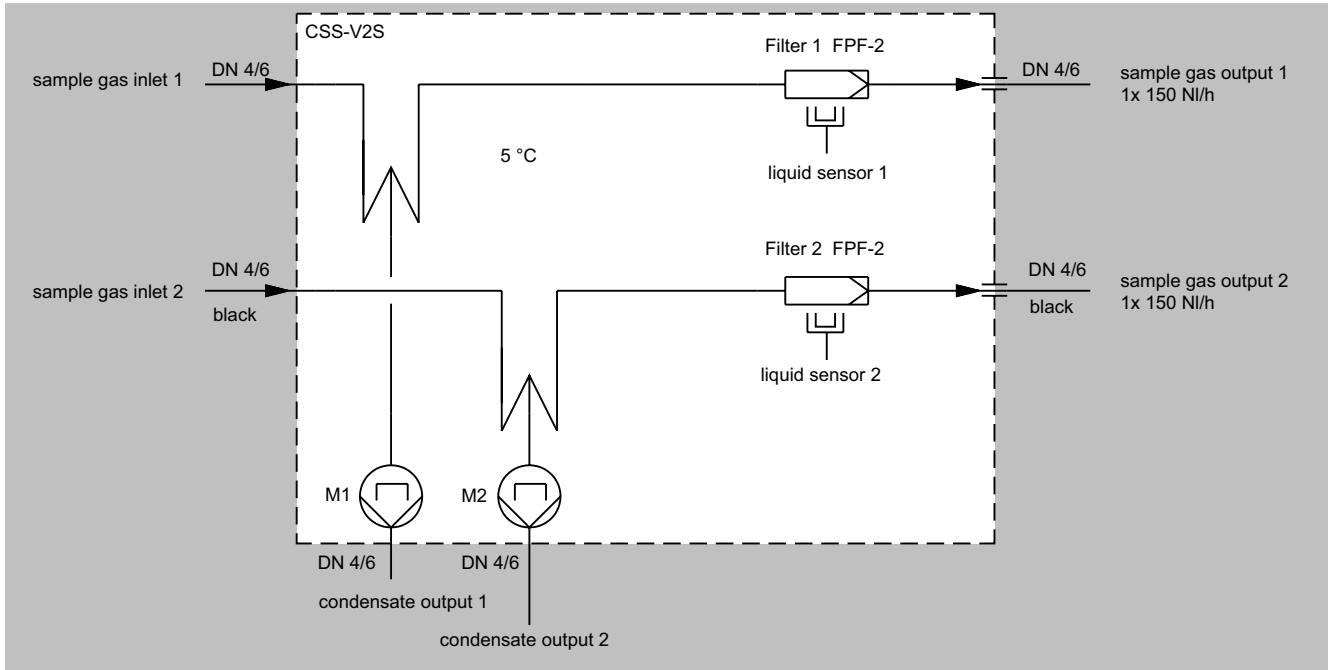
Design with 2 gas paths; version 1

Components for sample preparation

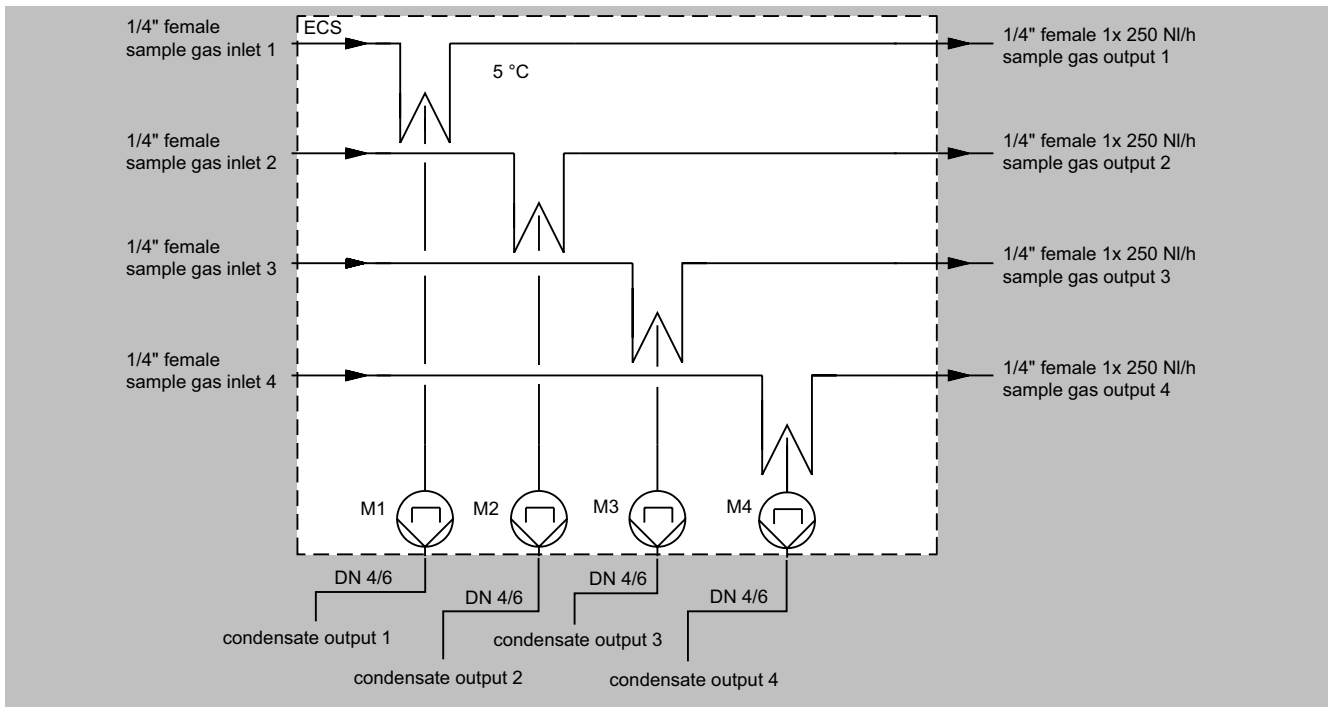
Gas coolers

Compressor gas coolers

Design (continued)



Design with 2 gas paths; version 2



Design with 4 gas paths

Components for sample preparation

Gas coolers

Compressor gas coolers

Selection and ordering data

Non-Ex-protected compressor gas coolers

Device versions	Article No.		Type
1 gas path With 1 × heat exchanger/hose pump, without fine filter with humidity sensor • Auxiliary power 230 V AC, 50 Hz • Auxiliary power 115 V AC, 60 Hz	7MB1943-3BB45 7MB1943-3BB46		ECM
2 gas paths, version 1, series connection With 2 × heat exchanger/hose pump and 1 × fine filter with humidity sensor • Auxiliary power 230 V AC, 50 Hz • Auxiliary power 115 V AC, 50 ... 60 Hz	7MB1943-3BB47 7MB1943-3BB48		CSS-V1S
2 gas paths, version 2, parallel connection With 2 × heat exchanger/hose pump and 2 × fine filter with humidity sensor • Auxiliary power 230 V AC, 50 Hz • Auxiliary power 115 V AC, 50 ... 60 Hz	7MB1943-3BB60 7MB1943-3BB50		CSS-V2S
4 gas paths With 4 × heat exchanger/hose pump, without fine filter with humidity sensor • Auxiliary power 230 V AC, 50 Hz • Auxiliary power 115 V AC, 60 Hz	7MB1943-3BB53 7MB1943-3BB54		ECS

Accessories for non-Ex-protected compressor gas coolers

	Article No.
Hose pump, complete (SR25.2)	7MB1943-3AA26
Spare hose with connection glands	7MB1943-3AA27
Hose reel stand, complete	7MB1943-3AA28
Spare filter, glass fiber, 0.3 µm (25 units/pack)	7MB1943-3AC40
O-ring for filter, FPF-2/54, Viton	7MB1943-3AC41

Selection and ordering data (continued)

Ex-protected compressor gas coolers

Device versions	Article No.		Type
1 gas path With 1 × stainless steel heat exchanger • Auxiliary power 230 V AC, 50 Hz • Auxiliary power 115 V AC, 50 ... 60 Hz	7MB1943-3BB55 7MB1943-3BB56		EC-EX 1SS
2 gas paths With 2 × stainless steel heat exchanger • Auxiliary power 230 V AC, 50 Hz • Auxiliary power 115 V AC, 50 ... 60 Hz	7MB1943-3BB57 7MB1943-3BB58		EC-EX 2SS

Versions with 3 or 4 gas paths on request.

Components for sample preparation

Gas coolers

Compressor gas coolers

Technical specifications

Non-Ex-protected compressor gas coolers

Type	Unit	ECM	CSS-V1S and CSS-V2S	ECS
Gas paths / heat exchangers (HE) Material PVDF	Pcs.	1	2	4
Integrated hose pump (SR25.2)	Pcs.	1	2	4
Integrated fine filter with moisture sensor	Pcs.	0	1 or 2	0
Gas flow	l/h	Max. 250 ¹⁾	Max. 2 × 150 ¹⁾	Max. 4 × 250 ¹⁾
Gas inlet temperature	°C	Max. 180 ¹⁾	Max. 105 ¹⁾	Max. 180 ¹⁾
Gas inlet dew point	°C	Max. 80 ¹⁾		
Gas outlet dew point	°C	Factory setting +5; adjustment range 2 ... 7		
Ambient temperature	°C	10 ... 50	10 ... 40	5 ... 45
Gas pressure	bar a	Max. 2	0.7 ... 1.4	Max. 2
Dead volume/HE	ml	100	25	70
Wetted parts material		PVDF, Novopren	PVDF, Novopren, PVC, FPM, PPH, PTFE	PVDF, Novopren
Operational readiness	min	< 15	10	< 30
Power consumption	VA		Max. 220	Max. 280
Power supply connection		• 230 V AC, 50 Hz • 115 V AC, 60 Hz	• 230 V AC, 50 Hz • Optional 115 V AC; 50 ... 60 Hz	• 230 V AC, 50 Hz • 115 V AC, 60 Hz
Electrical connection		Terminals 2.5 mm ²	IEC plug with 2 m cable	Terminals 2.5 mm ²
Status alarm (max. 250 V, 2 A, AC/DC 500 VA, 50 W)		2 × changeover contacts (floating)	1 × changeover contact as group alarm	2 × changeover contacts (floating)
Degree of protection for enclosure		IP 20 (EN 60529)		
Enclosure version/mounting type		Wall mounting	19" rack mounting or wall mounting	
Enclosure dimensions (W × H × D)	mm	270 × 270 × 316	483 × 268 × 348	483 × 360 × 406
Weight	kg	Approx. 14	Approx. 23	Approx. 34
Gas/condensation connections		For PTFE hose 4/6		
Enclosure color	RAL	9003	7035	9003

¹⁾ Technical specifications with maximum values must be evaluated with consideration of the total cooling capacity at 25 °C and an outlet dew point of 5 °C.

Non-Ex compressor gas cooling units, variants

Variants	Description
Type CSS-V1S	Heat exchangers in series HE 1 for preliminary condensation; HE 2 for constant dew point temperature of sample and calibration gas. Calibration gas valves and sample gas pump can be installed between the two HE output HE1 and input HE 2. Behind HE 2, there is a fine filter that can be accessed from the front. To protect subsequent analyzers from an inrush of liquid, a liquid alarm sensor is integrated in the filter.
Type CSS-V2S	Heat exchangers in parallel 2 separate heat exchangers arranged in parallel, each with a downstream filter and liquid alarm sensor; e.g. for measuring two different sample gases in one analyzer cabinet.

Ex-protected compressor gas coolers

Type	Unit	EC-Ex 1SS	EC-Ex 2SS
Gas paths / heat exchangers (HE) Material stainless steel; 1.4571	Pcs.	1	2
Gas flow	l/h	Max. 250 ¹⁾	Max. 2 × 250 ¹⁾
Gas inlet temperature	°C	Max. 180 ¹⁾	
Gas inlet dew point	°C	Max. 80 ¹⁾	
Gas outlet dew point	°C	Factory setting +5; adjustment range 2 ... 7	
Ambient temperature	°C	5 ... 45	
Gas pressure	bar a	Max. 11	
Dead volume/HE	ml	70	
Wetted parts material		Stainless steel	

Components for sample preparation

Gas coolers

Compressor gas coolers

Technical specifications (continued)

Type	Unit	EC-Ex 1SS	EC-Ex 2SS
Operational readiness	min	<30	
Power consumption	VA	Approx. 280	
Power supply connection		• 230 V AC; 50 Hz; $\pm 10\%$ • Optional 115 V AC; 50 ... 60 Hz; $\pm 10\%$	
Electrical connection		Terminals 2.5 mm ²	
Status alarm (max. 230 V 2 A AC/DC 100 VA, 50 W)		1 × changeover contact	
Degree of protection		IP 20 (EN 60529)	
Ex approval (ATEX)		II 2G EEx pedq [ib] IIC T4	
Enclosure version/mounting type		19" rack mounting or wall mounting	
Enclosure dimensions (W x H x D)	mm	483 × 360 × 450	
Weight	kg	Approx. 40	
Gas connections		• G1/4 inch (female) • Optionally available with NPT 1/4 inch	
Condensation connections		• G3/8 inch (female) • Optionally available with NPT 3/8 inch	
Enclosure color	RAL	9003	

¹⁾ Technical specifications with maximum values must be evaluated with consideration of the total cooling capacity at 25 °C and an outlet dew point of 5 °C.

Components for sample preparation

Valves

Needle valve made of PVDF

Application

Needle valves are used to set the gas flow to the required value. They should not be used as shut-off valves.

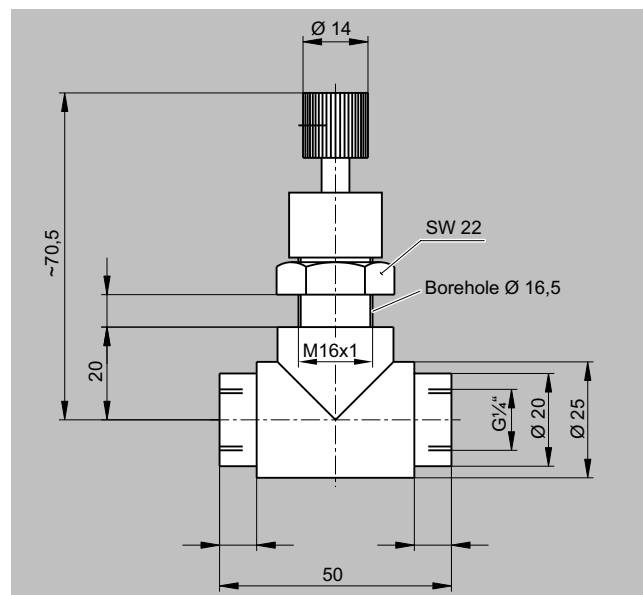
Selection and ordering data

	Article no.
Needle valve made of PVDF	7MB1943-2BA13

Technical specifications

Needle valve made of PVDF	
Nominal diameter	4 mm
Permissible operating overpressure	10 bar at 20 °C 4 bar at 80 °C
Max. permissible process medium temperature	120 °C
Max. permissible ambient temperature	120 °C
Material	PVDF
Gas connection	Threaded joint for hose 4/6
Weight	Approx. 0.1 kg

Dimensional drawings



Regulating valve made of PVDF

Components for sample preparation

Valves

Shutoff and multiway ball valves made of PVDF

Application

To shut off and switch over gases. Also suitable for highly corrosive gases.

Selection and ordering data

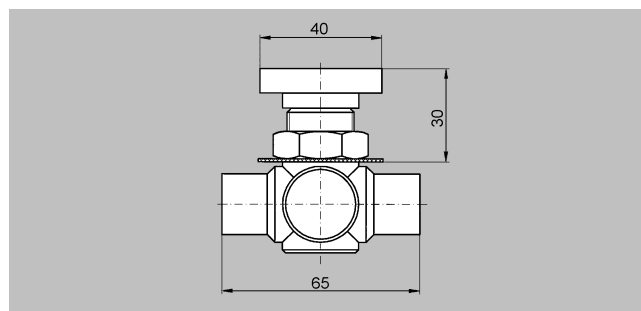
	Article No.
Shut-off ball valve made of PVDF With mounting clamps	7MB1943-2BA25
3-way ball valve made of PVDF With mounting clamps	7MB1943-2BA30
5-way ball valve made of PVDF With mounting clamp	7MB1943-2BA35
Spacer for wall mounting For 5-way ball valve	7MB1943-2BA40
Screw-in fitting G$\frac{1}{4}$ made of PVDF For Teflon hose with 6 mm outer diameter	See "Connecting elements/connecting elements made of PVDF"

Technical specifications

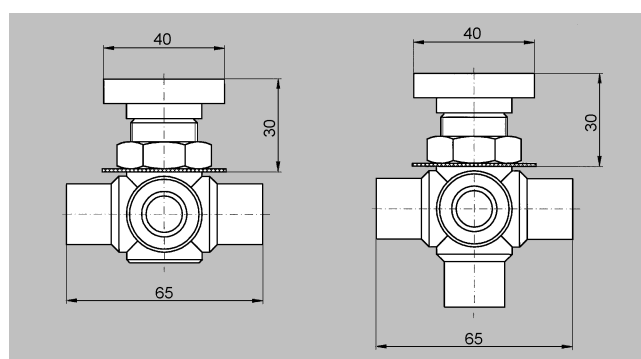
Shut-off and multiway ball valves made of PVDF	
Gas connection	Screw-in fitting G $\frac{1}{4}$
Nominal diameter	4 mm
Permissible operating overpressure	10 bar
Max. permissible medium temperature	140 °C
Max. perm. ambient temperature	90 °C ¹⁾
Material of parts wetted by the sample gas	Polyvinylfluoride (PVDF) / Viton
Mounting type	With mounting clamp

¹⁾ 140 °C on request

Dimensional drawings



Shut-off ball valve



3-way and 5-way ball valve

Components for sample preparation

Solenoid valves

2/2-way solenoid valve made of PVDF, pivoted-armature valve

Selection and ordering data

	Article No.
2/2-way solenoid valve made of PVDF¹⁾	
Power supply 230 V AC, 50 Hz	7MB1943-2BA50
Power supply 24 V DC	7MB1943-2BA55

¹⁾ 2 screw-in fittings are also required (not included in scope of delivery)

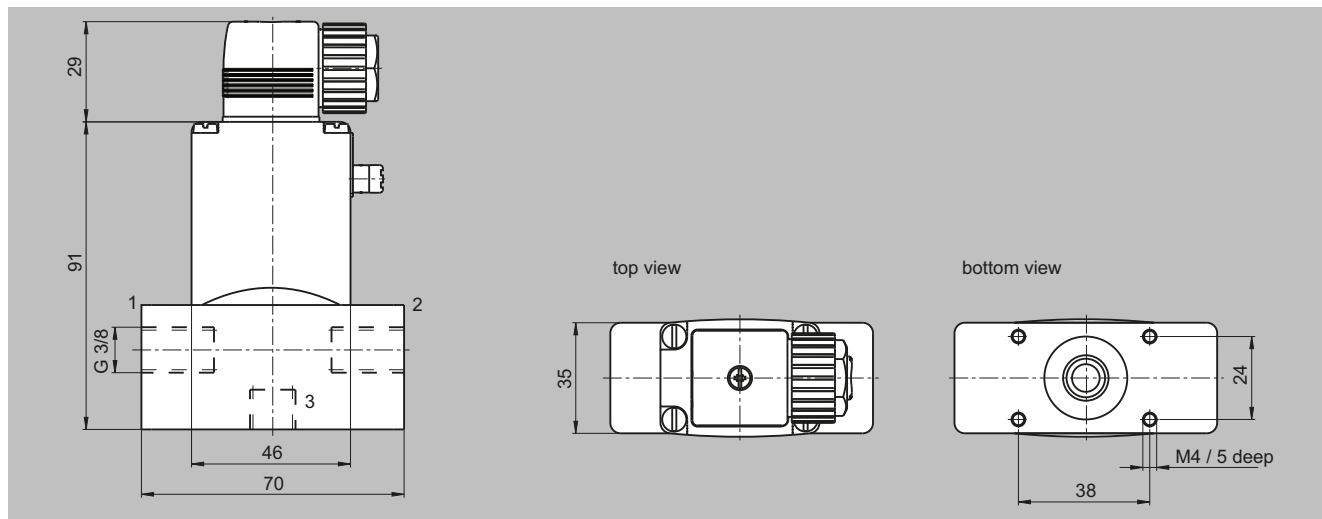
Accessories

	Article No.
Appliance socket acc. to DIN EN 175301-803, form A, with LED and varistor	
For 12 ... 24 V AC/DC	7MB1943-2BB20
For 200 ... 240 V AC/DC	7MB1943-2BB22

Technical specifications

2/2-way solenoid valve made of PVDF, pivoted-armature valve	
Brief characteristics	- Valve body made of polyvinylidene fluoride (PVDF) - Pivoted-armature valve with manual override - Direct-acting with seal diaphragm - Suitable for a wide range of aggressive media - Use, for example, in analyzer systems for emissions monitoring at exhaust gas chimneys (CEMS)
Permissible pressure range	
• With 230 V AC auxiliary power	0 ... 4 bar above atmospheric pressure
• With 24 V DC auxiliary power	0 ... 2 bar above atmospheric pressure
Nominal diameter	4 mm
Seal material	FFKM seat seal and FKM
Gas connection	G 3/8 female thread
Electrical connection	Appliance socket with LED and varistor (not included in scope of delivery)
Degree of protection acc. to EN 60529	IP65
Installation position	Any
Auxiliary power	230 V AC, 50 Hz, 40 VA (startup), 8 VA (operation) or 24 V DC, 8 W (operation)
Principle of operation	Closed when deenergized (NC)
Ambient temperature	Max. +50 °C
Weight	Approx. 0.32 kg

Dimensional drawings



2/2-way solenoid valve 24/230 V made of PVDF, with device socket

Components for sample preparation

Solenoid valves

3/2-way solenoid valve made of PVDF, pivoted-armature valve

Selection and ordering data

	Article No.
3/2-way solenoid valve made of PVDF¹⁾	
Power supply 230 V AC, 50 Hz	7MB1943-2BA65
Power supply 24 V DC	7MB1943-2BA67

¹⁾ 3 screw-in fittings are also required (not included in scope of delivery)

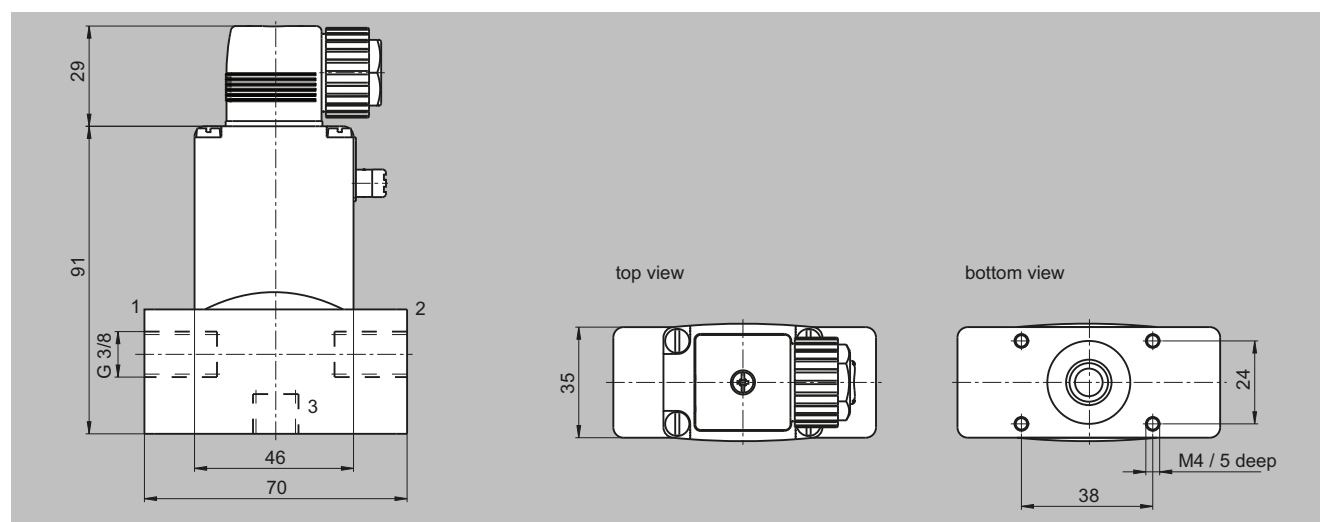
Accessories

	Article No.
Appliance socket acc. to DIN EN 175301-803, form A, with LED and varistor	
For 12 ... 24 V AC/DC	7MB1943-2BB20
For 200 ... 240 V AC/DC	7MB1943-2BB22

Technical specifications

3/2-way solenoid valve made of PVDF, pivoted-armature valve	
Brief characteristics	- Valve body made of polyvinylidene fluoride (PVDF) - Pivoted-armature valve with manual override - Direct-acting with seal diaphragm - Suitable for a wide range of aggressive media - Use, for example, in analyzer systems for emissions monitoring at exhaust gas chimneys (CEMS)
Permissible pressure range	
• With 230 V AC auxiliary power	0 ... 2 bar above atmospheric pressure
• With 24 V DC auxiliary power	0 ... 1 bar above atmospheric pressure
Nominal diameter	4 mm
Seal material	FFKM seat seal and FKM
Gas connection	G 3/8 female thread
Electrical connection	Appliance socket with LED and varistor
Degree of protection acc. to EN 60529	IP65
Installation position	Any
Auxiliary power	230 V AC, 50 Hz, 40 VA (startup), 8 VA (operation) or 24 V DC, 8 W (operation)
Principle of operation	3/2-way, mixing valve
Ambient temperature	Max. +50 °C
Weight	Approx. 0.32 kg

Dimensional drawings



3/2-way solenoid valve 24/230V made of PVDF, with appliance socket

Components for sample preparation

Flowmeters

Glass flowmeter

Application

To measure and display volume flows. The flowmeter version with PEEK float is also suitable for corrosive gases.

The flowmeter works according to the variable-area measuring principle and therefore does not cause a delay in indication.

The flow is adjusted using a precision valve.

The flowmeter is available with or without a limit signal transmitter. An isolated switch amplifier is required when using a limit signal transmitter (see "Flowmeter/Isolated switch amplifier").

Selection and ordering data

	Article No.
Flowmeter	
Measuring range 10 ... 100 l/h	
• Without limit signal transmitter	7MB1943-2BB30
• With limit signal transmitter	7MB1943-2BB35
Flowmeter for corrosive gases	
Measuring range 10 ... 100 l/h	
• Without limit signal transmitter	7MB1943-2BB31
• With limit signal transmitter	7MB1943-2BB36

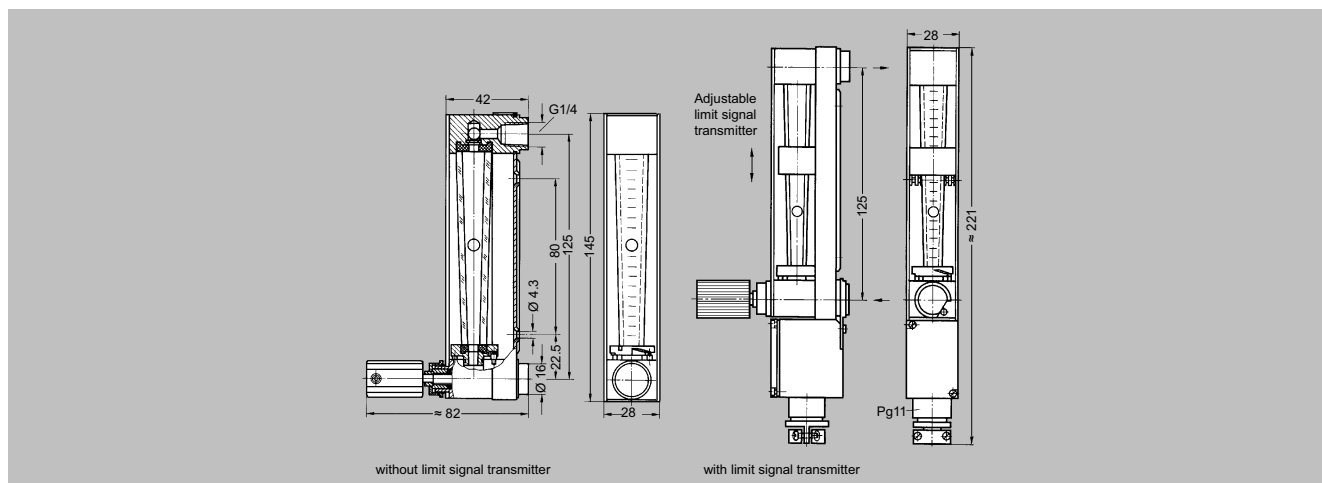
Accessories

2 screw-in fittings with G $\frac{1}{4}$ female thread are optionally required in addition, see "Connection elements/Connection elements made of PVDF".

Technical specifications

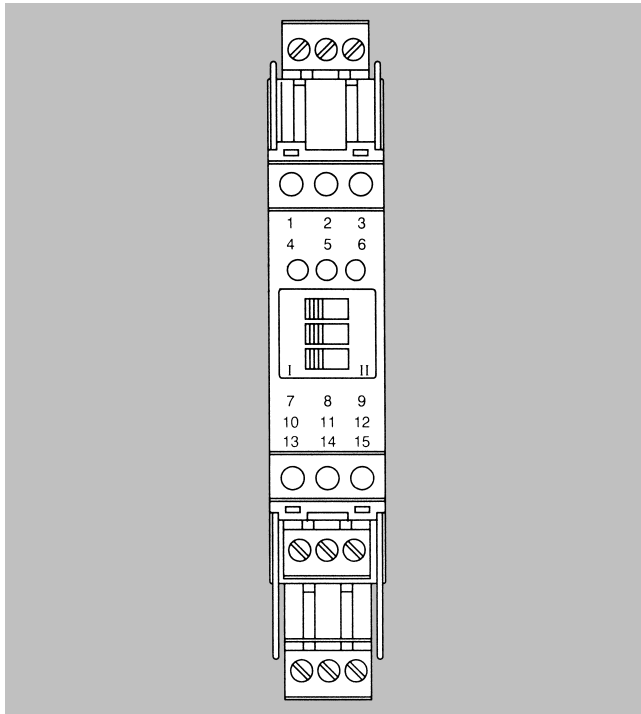
Glass flowmeter	
Flowmeter	
Measuring range	10 ... 100 l gas/h
Materials	
• Heads	PVDF
• Measuring cone	Borosilicate glass
• Variable area	
- 7MB1943-2BB30 and 7MB1943-2BB35	Stainless steel (mat. no. 1.4401)
- 7MB1943-2BB31 and 7MB1943-2BB36	Peek
Seal	Viton
Gas connection	G $\frac{1}{4}$ female thread
Max. permissible operating pressure	6 bar
Weight	Approx. 0.4 kg
Limit signal transmitter	
Rated voltage	8 V DC
Current consumption	
• Active surface free	3 mA
• Active surface covered	1 mA
Intrinsic inductance	170 μ H
Intrinsic capacity	90 nF
Permissible ambient temperature	-25 ... +100 °C
Degree of protection acc. to EN 60529	IP67

Dimensional drawings



Flowmeter DK 800

Overview



Isolated switch amplifier, front view

Selection and ordering data

	Article No.
Switch amplifier	
24 V DC	
• 1-channel	7MB1943-2BB41
• 2-channel	7MB1943-2BB42
230 V AC, 45 ... 65 Hz	
• 1-channel	7MB1943-2BB43
• 2-channel	7MB1943-2BB44
115 V AC, 45 ... 65 Hz	
• 1-channel	7MB1943-2BB46
• 2-channel	7MB1943-2BB47

Accessories

Two screw-in fittings with G $\frac{1}{4}$ female threads are required in addition. They are available in two versions. For ordering data see "Connecting elements/Connecting elements made of PVDF".

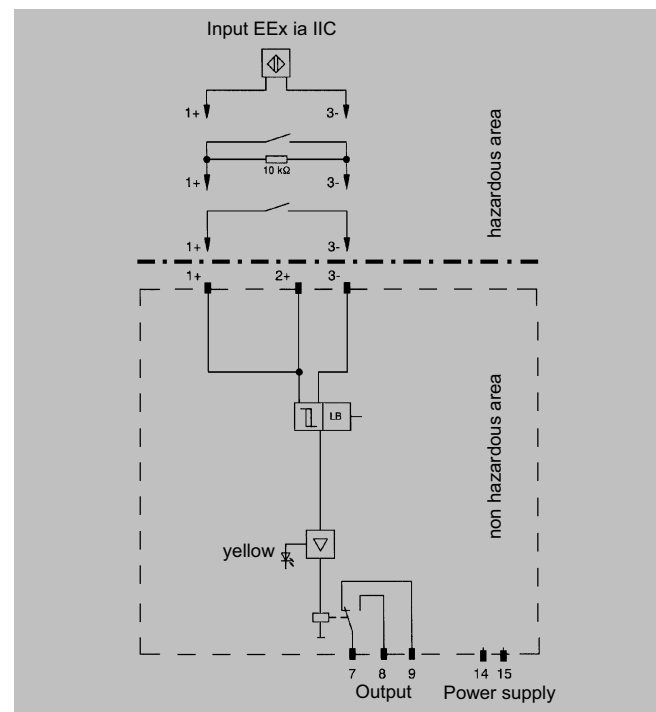
Technical specifications

Switch amplifier	
Switching capacity	Signal outputs (not intrinsically-safe) with changeover contact max. 253 V; 2 A
Ambient temperature	-20 ... +60 °C
Dimensions (L x W x H) in mm	120 x 20 x 115 (rail mounting)
Degree of protection	Control circuit EEx ia IIC
Weight	Approx. 0.15 kg

Application

- Inputs (intrinsically-safe) acc. to DIN EN 60947-5-6 (NAMUR) or mechanical contacts
- Control circuits EEx ia IIC
- Reversible direction of control action
- Signal outputs (not intrinsically-safe) with changeover contact max. 253 V AC / 2 A
- EMC according to EN 61326, NAMUR NE 21
- Electrical isolation according to EN 50020

Circuit diagrams



Isolated switch amplifier, schematic diagram (1 channel)

Components for sample preparation

NO₂/NO converter

Overview



NO₂/NO converter

Benefits

- 19" rack-mounted enclosure
- High conversion rate > 97%
- High NO₂ conversion capability (max. 300 ppm NO₂)
- Long service life
- Easy replacement of converter cartridge without tools
- Integrated maintenance calculator for service life monitoring
- Bypass solenoid valves (optional)

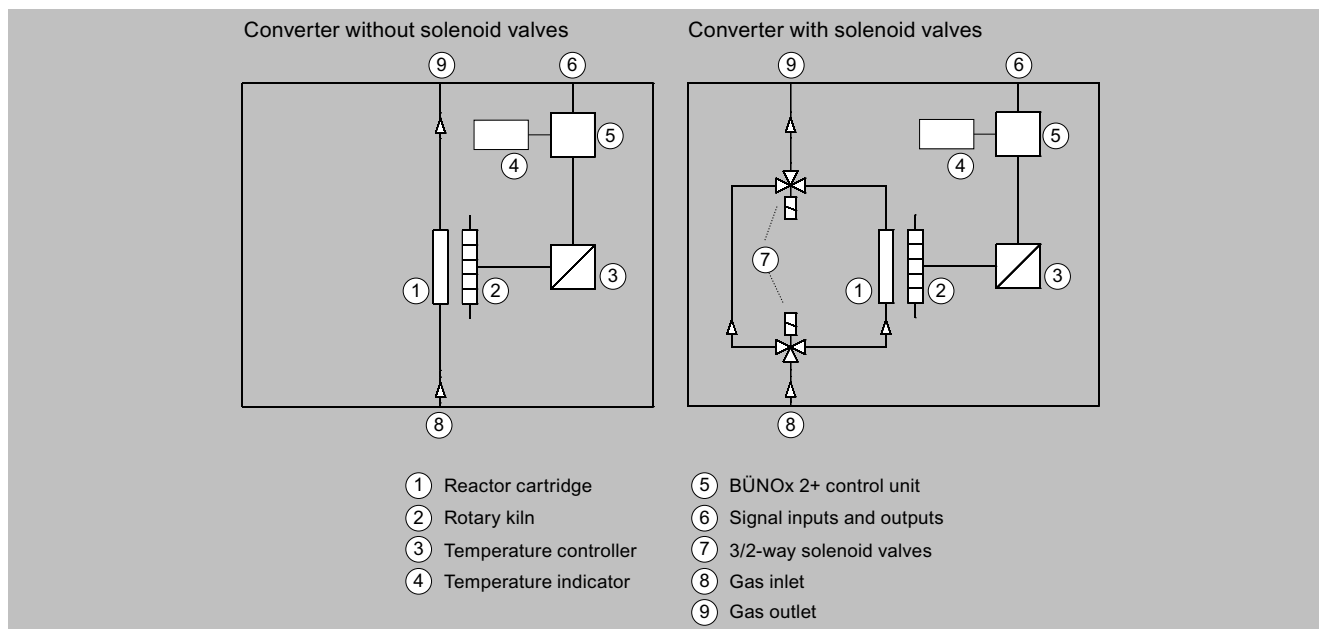
Application

The gas converter enables the continuous measurement of the significant NO_x components (NO + NO₂) by converting the NO₂ portion into dry sample gases in NO. The sum NO_x can thus be measured indirectly with the ULTRAMAT 23 or ULTRAMAT 6.

Design

The NO₂-NO converter is available as a 19" rack unit. A converter with bypass solenoid valves (optional) is available in addition. No conversion of NO₂ to NO takes place in bypass operation. The maintenance workload for the device is minimized by the reactor

fastener on the front panel. The converter is intended for conversion after the sample gas cooler. The input dew point of the sample gas cannot be lower than 10 °C.



Gas flow chart NO₂-NO converter

Mode of operation

The NO₂ is converted into NO in a heated reactor cartridge. The reactor filling and the special design of the reactor cartridge allow a very high conversion rate of NO₂. During normal operation, the current converter temperature is shown on the display. The remaining service life of the converter cartridge can be calculated based on the operating conditions and a service request can be generated.

Components for sample preparation

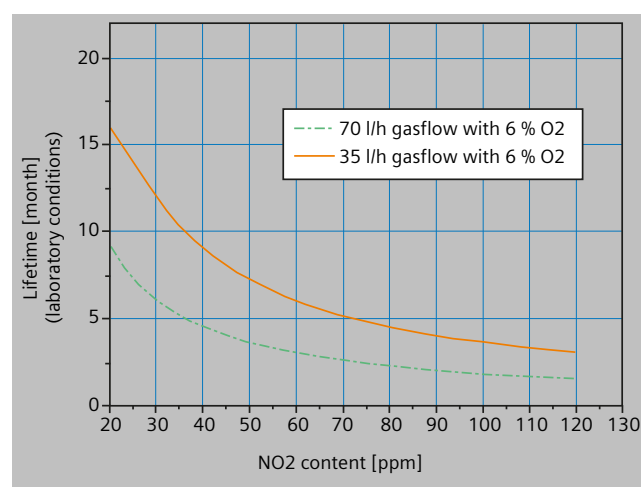
NO₂/NO converter

Selection and ordering data

	Article no.
NO₂-NO converter	
230 V, 50/60 Hz	7MB1943-2DB50
115 V, 50/60 Hz	7MB1943-2DB51
NO₂-NO converter with bypass valve	
230 V, 50/60 Hz	7MB1943-2DB53
115 V, 50/60 Hz	7MB1943-2DB54
Replacement reactor cartridge (typ: MC) for Bünox2+	7MB1943-2DB52
Replacement reactor cartridge (typ: MC) for Bünox Generation 1	7MB1943-2DB42

Technical specifications

NO ₂ /NO converter	
General information	
Operating temperature	400 °C
Operational readiness	After a warm-up time of approx. 30 min
Gas inlet conditions	
Sample gas pressure	Max. 1.5 bar a
Sample gas flow	Max. 120 l/h (max. 2 l/min)
Sample gas temperature	5 ... 80 °C
Dew point	< 10 °C
Climatic conditions	
Permissible ambient temperature	
• Operation	5 ... 50 °C
• Storage and transport	-20 ... +70 °C
Permissible ambient humidity	< 80% relative humidity for storage and transport
Electrical specifications	
Power supply	115 V AC or 230 V AC 50/60 Hz
Power consumption	< 500 W
Thermal load	85 W with an oven temperature of 400 °C
Electrical inputs and outputs	
Status outputs	3 change-over contacts for service, operating mode and temperature max. 230 V AC/DC, 1 A
Signal input	Control of solenoid valves, with external switch, 24 V DC, 1 mA
Dimensions	
19" rack unit, 3 U	133 x 483 x 285 (H x W x D)
Degree of protection	IP20 (EN 60529)
Gas connections	6 mm
Conversion properties (NO₂ -> NO)	
Degree of conversion NO ₂ -> NO	≥ 97% with new cartridge
Cartridge service life	Depending on load > 12 months (see diagram)
Maximum load	Approx. 300 ppm NO ₂ at 70 l/h
Conversion temperature	400 °C

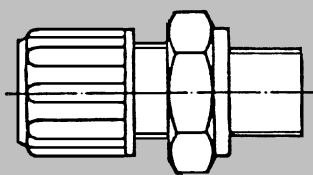


Components for sample preparation

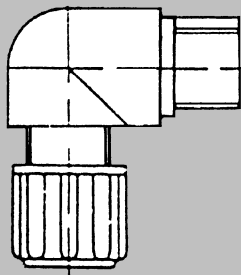
Fittings

Connecting elements made of PVDF and Teflon

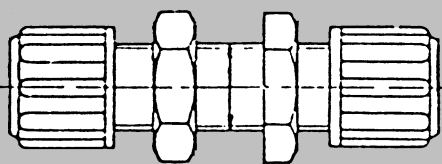
Overview



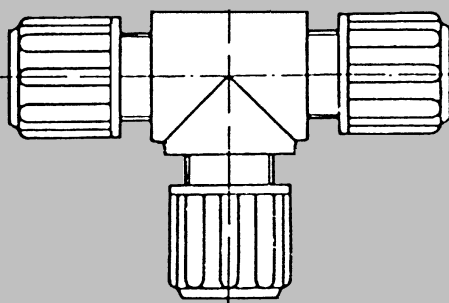
Straight male coupling



Elbow male coupling



Bulkhead union



T-coupling

Selection and ordering data

	Article No.
Sealing glands	
Screwed glands made of PVDF for PTFE hose DN 4/6	
Straight screw-in fitting G 1/8	7MB1940-6AA08
Straight screw-in fitting G 1/4	7MB1940-6AA06
Straight screw-in fitting G 3/8	7MB1943-2DA02
Elbow screw-in fitting G 1/8	7MB1943-2DA12
Elbow screw-in fitting G 1/4	7MB1943-2DA15
Elbow screw-in fitting G 3/8	7MB1943-2DA16
Screwed glands made of PVDF for PTFE hose DN 4/6	
Screwed gland	7MB1943-2DA18
T-screwed gland	7MB1943-2DA17
Elbow union	7MB1943-2DA06
Hose material	
Supporting sleeve made of stainless steel	
For hose 4/6	7MB1943-2DA10
PTFE hose 4/6 (per m)	
Natural colors, suitable for clamping ring connection system	7MB1943-2DB10

Appendix



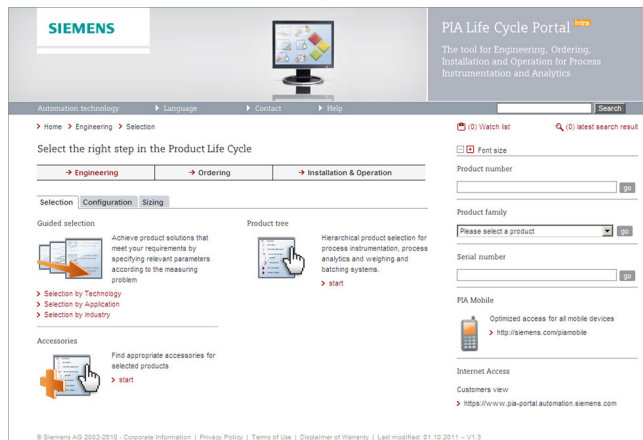
5/2	PIA Life Cycle Portal
5/2	Engineering, Ordering, Installation and Operation Tool
5/3	Partners at Siemens
5/4	Siemens Partner Program
5/5	Product documentation
5/5	Supplied product documentation, QR Code, SIOS
5/6	Conditions of sale and delivery

Appendix

PIA Life Cycle Portal

Engineering, Ordering, Installation and Operation Tool

Overview



The PIA Life Cycle Portal provides the appropriate functionality in all stages of the Product Life Cycle for products of Process Instrumentation, Process Analytics and Weighing Technology.

The application guides you through Engineering & Selection, supports you at the Order and provides tools and information for Installation and Operation.

- **Phase 1:** Selection & Planning
- **Phase 2:** Ordering
- **Phase 3:** Installation & Operation
- **Additional features:** e. g. PIA Mobile

Phase 1: Selection & Planning



Selection

Achieve product solutions that meet your requirements by specifying relevant parameters according to the measuring point by using the *guided selection* or select the product directly in the *product and accessories tree*.



Configuration

Configure a selected product step by step and use the integrated configuration knowledge to avoid errors. Product configurations which cannot be ordered are blocked.



Sizing & calculation

Sizing & calculation tools for Gas Analyzers, Weighing and Batching Systems and Flow measurement instruments.

Phase 2: Ordering



Bulk upload

Verify several part numbers in one step by uploading a simple text file.



Watchlist & projects

Collect products in a *watch list* and save it as a *project* for later use.



Interface to the Industry Mall

Order the selected products with the ordering system for Siemens' automation and drive solutions.

Phase 3: Installation & Operation



Spare parts

Find appropriate *spare parts* for selected products or corresponding product families.



After sales support

Go to the *Service and Support Portal* to access manuals, certificates and further information concerning service & support.



Device information and history

Serial number specific product information for installed devices

Additional features



Personalize

Register in order to customize the application to your personal needs.



PIA Mobile

Use the product *selection, configuration and device information and history* with the version optimized for mobile devices.
www.siemens.com/piamobile



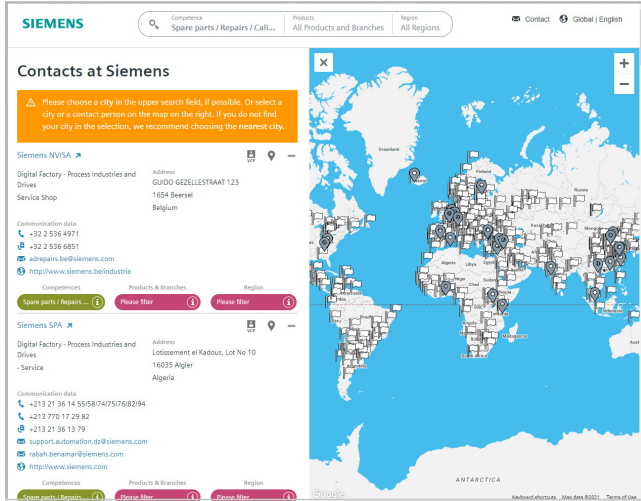
Product details

Find all relevant product information at a single glance: commercial and technical data, certificates, images and documents etc.

More information

PIA Life Cycle Portal
Ostliche Rheinbrückenstraße 50
76187 Karlsruhe, Germany
Tel.: +49 (721) 595 2114
E-Mail: support.pia-portal@siemens.com
www.siemens.com/pia-portal

Partners at Siemens



At your service locally, around the globe for consulting, sales, training, service, support, spare parts on the entire portfolio of Siemens.

Your partner can be found in our Personal Contacts Database at: www.siemens.com/automation-contact

You start by selecting

- the required competence,
- products and branches,
- a country and a city

or by a

- location search or free text search.

Appendix

Partners at Siemens

Siemens Partner Program

Overview

Siemens Solution and Approved Partner – Partners for your success



Highest competence in automation and drive technology

Siemens works closely together with selected partner companies around the world in order to ensure that customer requirements for all aspects of automation and drives are fulfilled as best as possible – wherever you are, and whatever the time.

We place great value on our customers acting in accordance with the same ideals which characterize Siemens as a whole: Competence, professionalism and quality. That is why continuous development through qualification and certification measures in line with global standards is a central aspect of our Partner Program. This means that with our partners, you benefit from the same high quality standards all over the world. The partner emblem is the symbol for tried and tested quality.

The partner network for industry

The Siemens Partner Program offers you expertise and experience close at hand.

Within our global network, we distinguish between Solution Partners and Approved Partners. We currently work with more than 1,500 Solution Partners around the world. Our network of over 150 Approved Partners continues to grow. In more than 80 countries worldwide.

Siemens Solution Partner – Automation Drives



At present we are working with more than 1,500 Solution Partners worldwide. They are characterized by extensive application, system and sector knowledge, as well as proven project experience, and are able to implement future-proof tailored solutions of the highest quality, based on our product and system portfolio.

Siemens Approved Partner – Value Added Reseller



With their detailed technical knowledge, Siemens Approved Partners – Value Added Resellers offer a combination of products and services that range from specialist technologies and customized modifications to the provision of high-quality system and product packages. They also provide qualified technical support and assistance.

Siemens Approved Partner – Industry Services



Siemens Approved Partner – Industry Services put their unique expertise entirely at the service of enhancing your productivity and can be instrumental in ensuring the availability of your plants.

Partner Finder

The ideal partner for your task is just a mouse click away!

In the Siemens global Solution Partner Program, customers are certain to find the optimum partner for their specific requirements – with no great effort. The Partner Finder is basically a comprehensive database that showcases the profiles of all our partners.

Easy selection:

Set filters in the search screen form according to the criteria that are relevant to you. You can also directly enter the name of an existing partner.

Skills at a glance:

Gain a quick insight into the specific competencies of any particular partner with the reference reports.

Direct contact option:

Use our electronic query form:

www.siemens.com/partnerfinder

Additional information of the Siemens Partners for industry is available online at:

www.siemens.com/partnerprogram

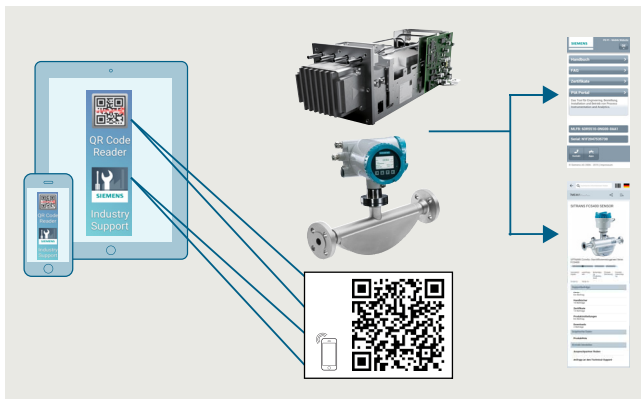
Supplied product documentation on DVD and safety instructions



Siemens products for process analytics will be delivered with a multi-language **Safety note** and a **DVD „Analytical products“**.

On the DVD, customers can find many important operating instructions and certificates of our Siemens portfolio for process analytics. As well, product or order-specific print material may be part of the delivery.

QR code – Easy access to product information

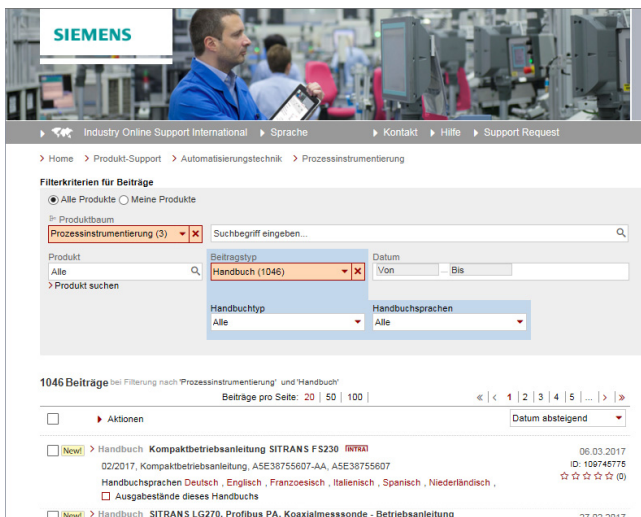


For easy identification, our devices are fitted with a QR code which can be read with the Siemens Industry Support App or any other QR code reader.

This not only enables simple access to article and serial numbers, it also provides you with a direct link to the product documentation, certificates, FAQs and videos.

You can find the Siemens Industry Support App or other QR code reader in your App Store for iOS, Android or Windows mobile.

Siemens Industry Online Support Portal (SIOS)



For the complete portfolio, customers can download product documentation for free using the following links to our **Siemens Industry Online Support Portal (SIOS)**:

<http://www.siemens.com/processanalytics/documentation>

By entering the product names as Search term and selecting the field Entry type, you can find all operating instructions, current catalogs and brochures, certificates, product software (EDDs, calculation tools), product notes and other useful information.

Appendix

Conditions of sale and delivery

1. General Provisions

By using this catalog you can purchase hard- and software products as well as services (together hereinafter referred to as "products") described therein from Siemens Aktiengesellschaft subject to the following Terms and Conditions of Sale and Delivery (hereinafter referred to as "T&C"). Note, for products purchased from any Siemens entity having a registered office outside of Germany, the respective terms and conditions of sale and delivery of the respective Siemens entity apply exclusively. The following T&C apply exclusively for orders placed with Siemens Aktiengesellschaft, Germany.

1.1 For customers with a seat or registered office in European Union

For customers with a seat or registered office in European Union, the following terms and conditions apply subordinate to T&C:

- for products, which include specific terms and conditions in the text of the product description, these specific terms and conditions shall apply and subordinate thereto,,
- for stand-alone software products and software products forming a part of a product or project, the "General Conditions for Software Products for Infrastructure & Industry Business (German law)"¹⁾ and/or
- for consulting services the "Allgemeine Geschäftsbedingungen für Beratungsleistungen für Infrastructure & Industry Geschäft (Deutsches Recht)"¹⁾ (available only in German) and/or
- for other services, the „Supplementary Terms and Conditions for Services for Infrastructure & Industry Business (German Law) ("BL")"¹⁾ and/or
- for other products the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry"¹⁾.
In case such products should contain Open Source Software, the conditions of which shall prevail over the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry"¹⁾, the Product will be given a note as to which special conditions apply to this open source software. This shall apply mutatis mutandis for notices referring to other third-party software components.

1.2 For customers with a seat or registered office outside European Union

For customers with a seat or registered office outside European Union, the following terms and conditions apply subordinate to T&C:

- for products, which include specific terms and conditions in the description text, these specific terms and conditions shall apply and subordinate thereto,
- for consulting services the "Standard Terms and Conditions for Consulting Services for Infrastructure & Industry Business (Swiss Law)"¹⁾ and/or
- for other services the "International Terms & Conditions for Services"¹⁾ supplemented by "Software Licensing Conditions"¹⁾ and/or
- for other products the "International Terms & Conditions for Products"¹⁾ supplemented by "Software Licensing Conditions"¹⁾

1.3 For customers with master or framework agreement

To the extent products offered are covered by an existing master or framework agreement, the terms and conditions of that agreement shall apply instead of T&C.

2. Prices

The prices are in € (Euro) ex point of delivery, exclusive of packaging.

The sales tax (value added tax) is not included in the prices. It shall be charged separately at the respective rate according to the applicable statutory legal regulations.

Prices are subject to change without prior notice. We will charge the prices valid at the time of delivery.

To compensate for variations in the price of raw materials (e.g. silver, copper, aluminum, lead, gold, dysprosium and neodym), surcharges are calculated on a daily basis using the so-called metal factor for products containing these raw materials.

A surcharge for the respective raw material is calculated as a supplement to the price of a product if the basic official price of the raw material in question is exceeded.

The metal factor of a product indicates the basic official price (for those raw materials concerned) as of which the surcharges on the price of the product are applied, and with what method of calculation. The metal factor, provided it is relevant, can be found in the respective product description.

An exact explanation of the metal factor can be downloaded at: https://mall.industry.siemens.com/legal/ww/en/terms_of_trade_en.pdf

To calculate the surcharge (except in the cases of copper, dysprosium and neodym), the official price from the day prior to that on which the order was received or the release order was effected is used.

To calculate the surcharge applicable to copper, the official price from two days prior to that on which the order was received or the release order was effected is used.

To calculate the surcharge applicable to dysprosium and neodym ("rare earths"), the corresponding three-month basic average price in the quarter prior to that in which the order was received or the release order was effected is used with a one-month buffer (details on the calculation can be found in the explanation of the metal factor).

3. Additional Terms and Conditions

The dimensions are in mm. In Germany, according to the German law on units in measuring technology, data in inches apply only to devices for export.

Illustrations are not binding.

Insofar as there are no remarks on the individual pages of this catalog – especially with regard to data, dimensions and weights given – these are subject to change without prior notice.

¹⁾ The text of the Terms and Conditions of Siemens AG can be downloaded at https://mall.industry.siemens.com/legal/ww/en/terms_of_trade_en.pdf

4. Export Control and Sanctions Compliance

4.1 General

Customer shall comply with all applicable sanctions, embargoes and (re-)export control laws and regulations, and, in any event, with those of the European Union, the United States of America and any locally applicable jurisdiction (collectively "Export Regulations").

4.2 Checks for Products

Prior to any transaction by customer concerning products (including hardware, documentation and technology) delivered by Siemens, or products (including maintenance and technical support) performed by Siemens with a third party, customer shall check and certify by appropriate measures that

- (i) the customer's use, transfer, or distribution of such products, the brokering of contracts or the provision of other economic resources in connection with products will not be in violation of any Export Regulations, also taking into account any prohibitions to circumvent these (e.g., by undue diversion);
- (ii) the products are not intended or provided for prohibited or unauthorized non-civilian purposes (e.g. armaments, nuclear technology, weapons, or any other usage in the field of defense and military);
- (iii) customer has screened all direct and indirect parties involved in the receipt, use, transfer, or distribution of the products against all applicable restricted party lists of the Export Regulations concerning trading with entities, persons and organizations listed therein and
- (iv) products within the scope of items-related restrictions, as specified in the respective annexes to the Export Regulations, will not, unless permitted by the Export Regulations, be
 - (a) exported, directly or indirectly (e.g., via Eurasian Economic Union (EAEU) countries), to Russia or Belarus, or
 - (b) resold to any third party business partner that does not take a prior commitment not to export such products to Russia or Belarus.

4.3 Non-Acceptable Use of Software and Cloud Services

Customer shall not, unless permitted by the Export Regulations or respective governmental licenses or approvals,

- (i) download, install, access or use the products from or in any location prohibited by or subject to comprehensive sanctions or subject to license requirements according to the Export Regulations;
 - (ii) grant access to, transfer, (re-)export (including any "deemed (re-)exports"), or otherwise make available the products to any entity, person, or organization identified on a restricted party list of the Export Regulations;
 - (iii) use the products for any purpose prohibited by the Export Regulations (e.g. use in connection with armaments, nuclear technology or weapons);
 - (iv) upload to a products platform any customer content unless it is non-controlled (e.g. in the EU: AL = N; in the U.S.: ECCN = N or EAR99);
 - (v) facilitate any of the afore mentioned activities by any user.
- Customer shall provide all users with all information necessary to ensure compliance with the Export Regulations.

4.4 Semiconductor Development

Customer will not, without advance written authorization from Siemens, use offerings for the development or production of integrated circuits at any semiconductor fabrication facility located in China meeting the criteria specified in the U.S. Export Administration Regulations, 15 C.F.R. 744.23.

4.5 Information

Upon request by Siemens, customer shall promptly provide Siemens with all information pertaining to users, the intended use and the location of use or the final destination (in the case of hardware, documentation and technology) of the products. Customer will notify Siemens prior to customer disclosing any information to Siemens that is defense-related or requires controlled or special data handling pursuant to applicable government regulations, and will use the disclosure tools and methods specified by Siemens.

4.6 Reservation

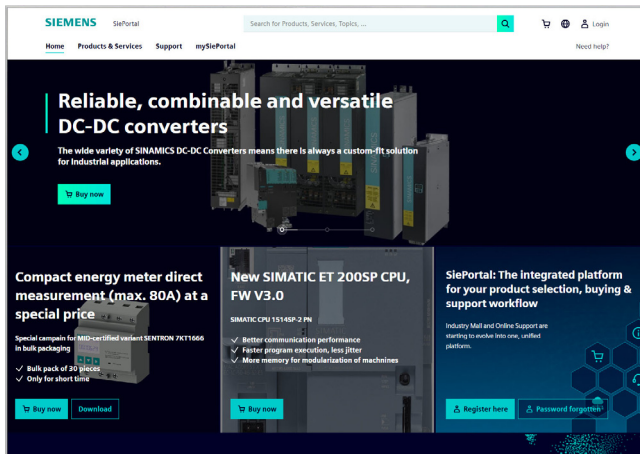
Siemens shall not be obligated to fulfill this agreement if such fulfillment is prevented by any impediments arising out of national or international foreign trade or customs requirements or any embargoes or other sanctions. Customer acknowledges that Siemens may be obliged under the Export Regulations to limit or suspend access by customer and/or users to products.

5. Miscellaneous

Errors excepted and subject to change without prior notice.

Selection and ordering at Siemens

SiePortal – Ordering products and downloading catalogs



Easy product selection and ordering with SiePortal

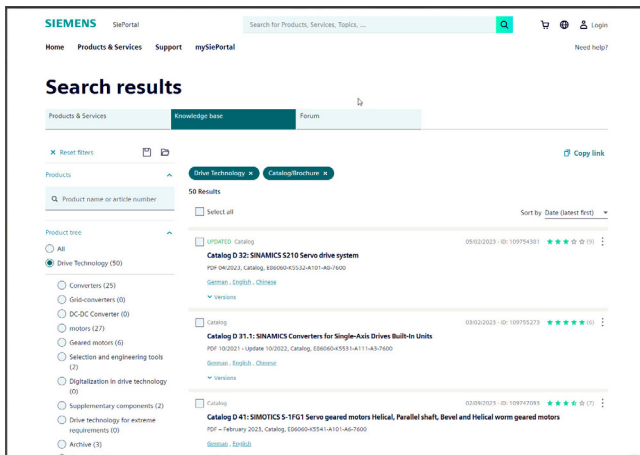
SiePortal > Products & Services

The internet ordering platform of Siemens AG is located in SiePortal. It provides you with online access to a comprehensive product spectrum that is presented in an informative, well-organized way.

Powerful search functions help you select the required products, while configurators enable you to configure complex product and system components quickly and easily. CAx data are also available for you to use.

Data transfer allows the entire procedure, from selection through ordering to tracking and tracing, to be carried out online. Availability checks, individual customer discounting, and quotation preparation are also possible.

<https://sieportal.siemens.com>



Downloading catalogs

SiePortal > Support > Knowledge base

You can download catalogs and brochures in PDF format from Siemens Industry Online Support without having to register.

The filter box makes it possible to perform targeted searches.

<https://sieportal.siemens.com>

Get more information

All the latest information on process analytical instruments can be found on the internet at:

www.siemens.com/processanalytics

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Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept.

Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial security measures that may be implemented, please visit <https://www.siemens.com/industrialsecurity>

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under <https://www.siemens.com/industrialsecurity>

Subject to changes and errors. The information given in this document only contains general descriptions and/or performance features which may not always specifically reflect those described, or which may undergo modification in the course of further development of the products. The requested performance features are binding only when they are expressly agreed upon in the concluded contract.

All product designations may be trademarks or other rights of Siemens AG, its affiliated companies or other companies whose use by third parties for their own purposes could violate the rights of the respective owner.

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information on
process analytics
products

