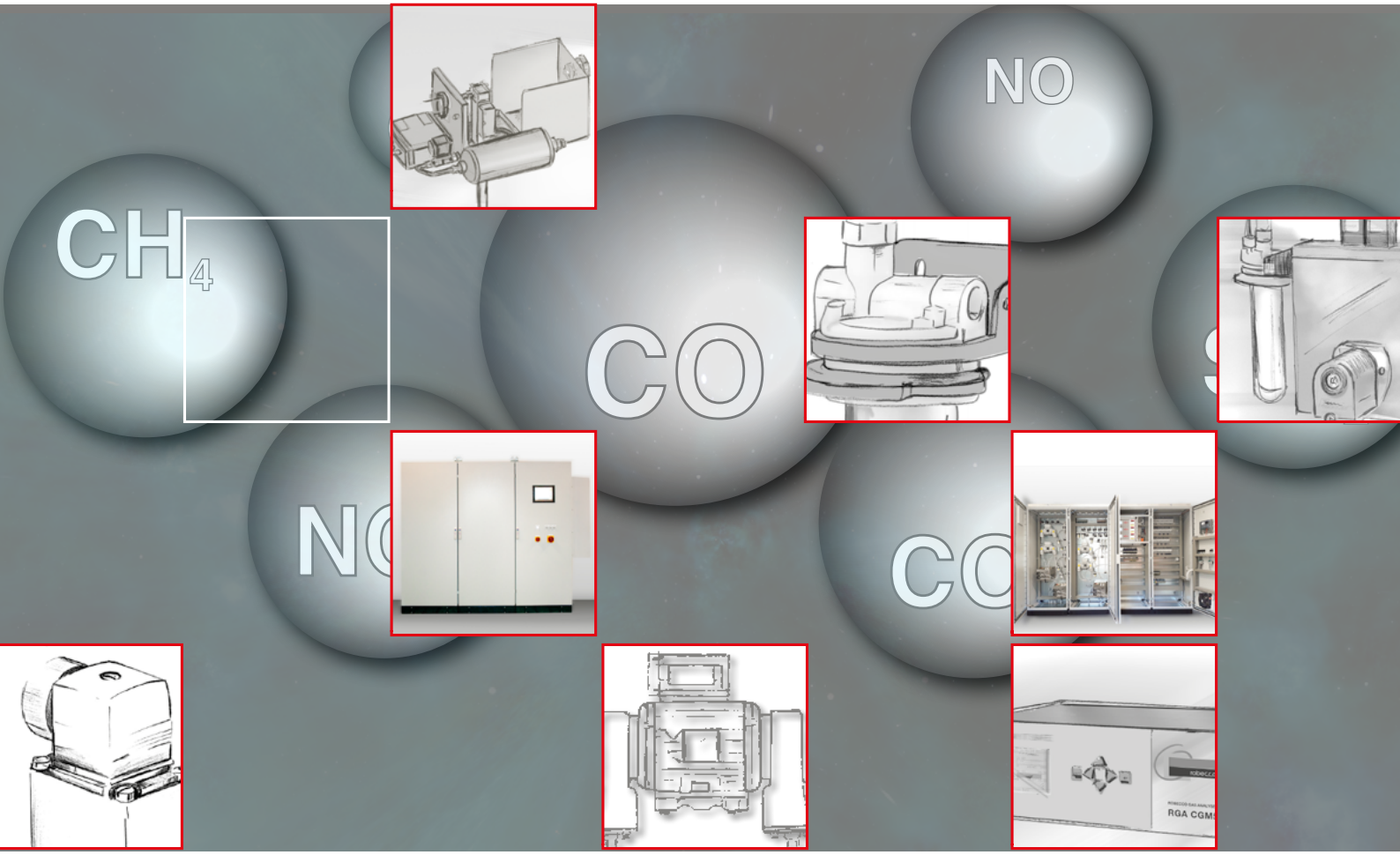
Gas Analysis Technology & Emission Measurement

Components and Systems



2022

CONTENT

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Gas analysis
& Emission measurement

In a large amount of different applications in the industry gas analysis is the key for safe and efficient control of production processes, environmental protection and Quality assurance.

Production and plant safety depend on exact determination of the operating and process parameters.

For this exact determination, systems must be professionally designed. They must be put together from specially developed, reliable components that must meet the sometimes high requirements in the sample gas preparation, especially in ATEX applications.

3. SYSTEM SOLUTIONS

GAS ANALYSER SYSTEM
System for measurement and monitoring of gases

robecco **GAS**

GAS WARNING SYSTEM
Compact system for measurement and monitoring of gases

robecco **RWS**

DRYER PROTECTION
System for early fire protection

robecco **RDP**

Gas analyser system

robecco GAS

System for measurement and monitoring of gases

INDUSTRY SECTOR

Biomass
Power plants
Minerals
Cement industry
Chemistry
Steel industry
Waste incineration
Pellet industry
Sludge
Food industry
etc.

Gas analysis
Operating measurement
Explosion protection
Emission measurement

Gas analyser system

robecco GAS

robecco GAS is an extractive gas warning system that is used for the continuous measurement of gases.
Gas preparation management with gas cooler, filter element, sample gas pump u. humidity sensor is integrated.

robecco **GAS**

APPLICATION:

❑ Operation measurement:	Analysis and measurement of gases to determine operational and process parameters.
❑ Emission measurement:	Continuous monitoring of emissions.
❑ Explosion protection:	Measurement of explosive and flammable gases and oxygen as key parameters for preventive explosion protection. ATEX-compliant version for safe and approved operation in potentially explosive areas.

TECHNICAL DATA

This gases can be analyzed:
CO (Carbon monoxide)
O2 (Oxygen)
CH4 (Methane)
CO2 (Carbon dioxide)
NO (Nitric oxide)
SO2 (Sulfur dioxide)
NO2 (Nitrogen dioxide)
further gases on request

Method of measurement
Infrared
Paramagnetic
Electrochemical

Number of measuring points
Modularly expandable
continuous / Sequential

Characteristics
Output of limit values and alarms
Automatic zero point calibration
Automatic blow back device for the Pre-filter sample gas probe

Mounting
Analysis cabinet outside the Ex zone, Measuring points also in EX zones,
Air-conditioned room or
optional with air conditioning

Protection class:
IP55 up to IP 66

Ambient temperature
-20 up to +40°C

Operation temperature cabinet:
+5 up to 30°C

Operating voltage:
110VAC / 230VAC, 50-60Hz

Interfaces:
Profinet, Ethernet
Profibus, MPI
Modbus
Potential-free contacts
Further on request

Technical characteristics of sample gas probe RSP-1:

❑ With pre-filter
❑ Optional blow back equipment device for pre-filter cleaning
❑ Optional heated

Mounting

- Any application
- Directly in the process at the sampling point
- Zone 20,21,22 and Zone 0,1,2 according to ATEX

Process temperature

- up to 550 C°, other on request

Technical characteristics of sample line RSL:

❑ With self-regulating heating trace

- The length of the line freely assembled up to 100m, Other on request

Mounting

- Any application
- Zone 20,21,22 and Zone 0,1,2 according to ATEX

Ambient temperature:

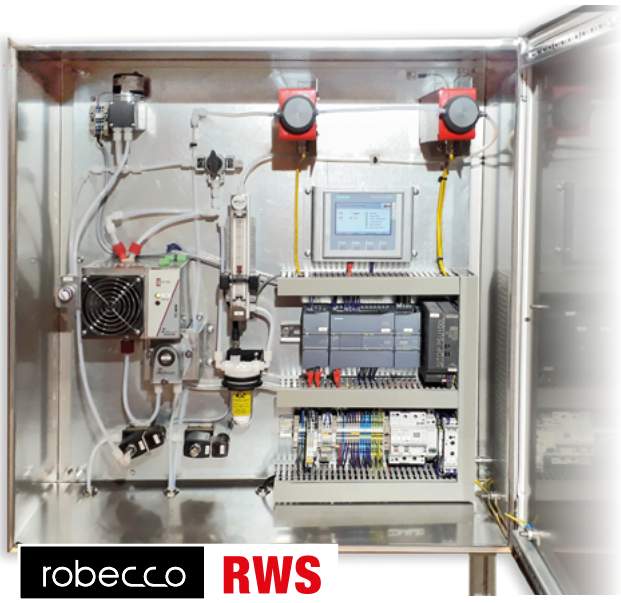
- Directly in the process at the sampling point -20 up to 60°C

Further information on request!

Gas warning system

robecco RWS compact

Compact system for measurement and monitoring of gases



INDUSTRY SECTOR

Biomass
Power plants
Cement industry
Chemistry
Waste incineration
Pellet industry
Sludge
etc.

Gas analysis
Operating measurement
Explosion protection
Emission measurement

Gas warning system

robecco RWS compact

robecco RWS compact is an extractive gas warning system that is used for the continuous measurement of gases. Gas preparation management with gas cooler, filter element, sample gas pump u. humidity sensor is integrated. The compact design enables it to be set up at the measuring point where space is limited.

robecco **RWS**

APPLICATION:

- ❏ Operation measurement: Measurement of gases to determine operational and process parameters.
- ❏ Emission measurement: Continuous monitoring of emissions, processes, rooms according to operational safety regulation.

TECHNICAL DATA

This gases can be analyzed:
CO (Carbon monoxide)
O2 (Oxygen)
CH4 (Methane)
CO2 (Carbon dioxide)
NO2 (Nitrogen dioxide)
further gases on request

Method of measurement
Infrared
Electrochemical

Number of measuring points
One continuous / two sequential

Characteristics
Output of limit values and alarms
Automatic blow back device for the Pre-filter sample gas probe
Compact design, Dimensions 760 x 760 x 300 mm (w x h x d)

Mounting
Locally at the sampling point

Protection class:
IP55 up to IP 66

Ambient temperature
-20 up to +40°C

Operating temperature Gas warning system:
+5 up to 30°C

Operating voltage:
110VAC / 230VAC, 50-60Hz

Interfaces:
Profinet, Ethernet
Profibus
Modbus
Potential-free contacts
Further on request

Technical characteristics of sample gas probe RSP-1:

- ❏ With pre-filter
- ❏ Optional blow back equipment device for pre-filter cleaning
- ❏ Optional heated

Mounting

- Any application
- Directly in the process at the sampling point
- Zone 20,21,22 and Zone 0,1,2 according to ATEX

Process temperature

- up to 550 C°, other on request

Technical characteristics of sample line RSL:

- ❏ With self-regulating heating trace
- The length of the line freely assembled up to 100m, Other on request

Mounting

- Any application
- Zone 20,21,22 and Zone 0,1,2 according to ATEX

Ambient temperature:

- Directly in the process at the sampling point -20 up to 60°C

Further information on request!

Dryer protection

robecco RDP

System for early fire protection

INDUSTRY SECTOR

Food industry
Petfood industry
plastics recycling industry

Gas analysis
Early fire protection

Dryer protections

robecco RDP

robecco RDP is a gas analyser system for the rapid detection of smoldering fires during drying processes. According to VDI guidelines 2263, sheets 7 and 7.1, the use of carbon monoxide (CO) detection has become proven for Early fire detection.

robecco RDP

APPLICATION:

❑ CO measurement:	Continuous monitoring of spray drying processes.
❑ Monitoring of drying processes:	Early detection of smoldering fires to pprevent explosions. The timely detection of a smoldering fire enables the operating company to effectively prevent the spread of a fire. Continuous CO monitoring ensures preventive, advance fire and explosion detection.

TECHNICAL DATA

This gases can be analyzed:
CO (Carbon monoxide)

Method of measurement
Infrared

Number of measuring points
Modularly expandable
continuous

Characteristics
Infrared differential measurement technology
Output of limit values and alarms
Automatic zero point calibration
Automatic blow back device for the Pre-filter sample gas probe

Mounting
Analysis cabinet outside the Ex zone
Air-conditioned room

Protection class:
IP55 up to IP 66

Ambient temperature
0°C up to +40°C

Operation temperature cabinet:
+5 up to 30°C

Operating voltage:
110VAC / 230VAC, 50-60Hz

Interfaces:
Profinet, Ethernet
Profibus, MPI
Modbus
Potential-free contacts

Technical characteristics of sample gas probe RSP-1:

❑ With pre-filter
❑ Optional blow back equipment device for pre-filter cleaning
❑ Optional heated

Mounting

- Any application
- Directly in the process at the sampling point
- Zone 20,21,22 and Zone 0,1,2 according to ATEX

Process temperature

- up to 550 C°, other on request

Technical characteristics of sample line RSL:

❑ With self-regulating heating trace

- The length of the line freely assembled up to 100m, Other on request

Mounting

- Any application
- Zone 20,21,22 and Zone 0,1,2 according to ATEX

Ambient temperature:

- Directly in the process at the sampling point -20 up to 60°C

Further information on request!

4.
COMPONENTS

Die sum of the parts

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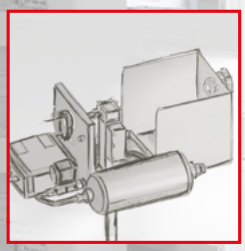
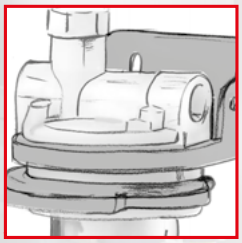
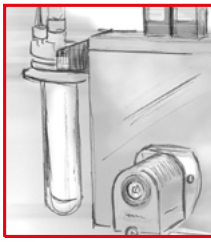
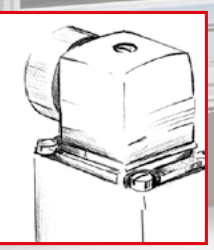
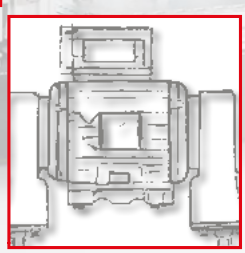
In addition to the systems of our own manufacturing,
we offer a range of equipment for the preparation of sample gas.











Gas analyser

RGA-CGM 5

Continuous measurement of gases

robecco **RGA-CGM 5**

INDUSTRY SECTOR

Biomass
Power plants
Minerals
Cement industry
Chemistry

Gas analysis
Emission measurement
Operating measurement

Gas analyser

RGA-CGM 5

The robecco gas analyser RGA-CGM5 serves the continuous gas measurement. It is universally applicable for operational-, exhaust-, raw gas and process measurement.
Three different measuring methods can be selected depending on the measuring gas: Infrared absorption / electrochemical cell / paramagnetic measurement method. The principle allows the simultanous measurement of up to five infrared gas components.

robecco RGA-CGM 5

- ❏ Three principal measurement methods: Infrared absorption, electrochemical cell, paramagnetic measurement method
- ❏ (simultaneous) Measurement of up to five gas components
- ❏ System status indicator and message output
- ❏ 2 limit messages configurable per measuring component
- ❏ Measuring range switching per measuring component
- ❏ Display for measured value indication
- ❏ Flow control and display of flow rate
- ❏ internal monitoring for condensate
- ❏ Control of zero point drift
- ❏ low maintenance
- ❏ optional: two separate gas paths

TECHNICAL DATA

Dimension
Robust housing with compact 19 "3U plug
483 mm x 133 mm x 354 mm (w x h x d)

weight
ca. 4,6 kg

Ambient temperature
5°C – 30°C

Infrared photometer
thermostatically

measurement accuracy
<2%

measurement methods
electrochemical cell (O_2, H_2S)
infrared absorption (CO, CO_2, SO_2, NO, NO_2, CH_4, H_2O)
paramagnetic measurement method (O2)

Display
5“ graphic display (LCD), 240 x 128 Pixel
Measured value display in mg/m³, ppm und vol. %
Languages: German, English, French, Polish available

Zero-point correction
automatically

sensitivity correction
Manual with calibration gas, optionally automatic

Air pressure correction
internally

Outputs:
Maximal 5 analog outputs 4...20 mA, Bürde max. 500 Ohm
Digital outputs 24V DC / 0,4 A potential free (e.g. Malfunction, maintenance, maintenance requirements, limit values)

Limit values
freely configurable
2 limit values per measuring component

Power supply
85-264V, 50-60 Hz, 40 W

Technical characteristics photometer:

❏ Elements:
- emitting module
- cuvettes
- reflector module
- 4-channel pyrodetector
- detector module

❏ spectral
1µ bis 9µ

❏ Power supply
5V DC

❏ Power consumption during operation
about 20 W at ambient temperature of 30°C

- simultaneous measurement of up to four infrared gases
- no mechanical moving parts

AVAILABLE MEASURING RANGES

Gas	smallest measuring range infrared	smallest measuring range electrochemical
CO	0 – 100 ppm	
NO	0 – 225 ppm	
SO_2	0 – 70 ppm	
CO_2	0 – 20000 ppm	
CH_4	0 – 278 ppm	
O_2		0 – 25 Vol%

additional gas components and measuring ranges optionally available

ORDER NUMBERS

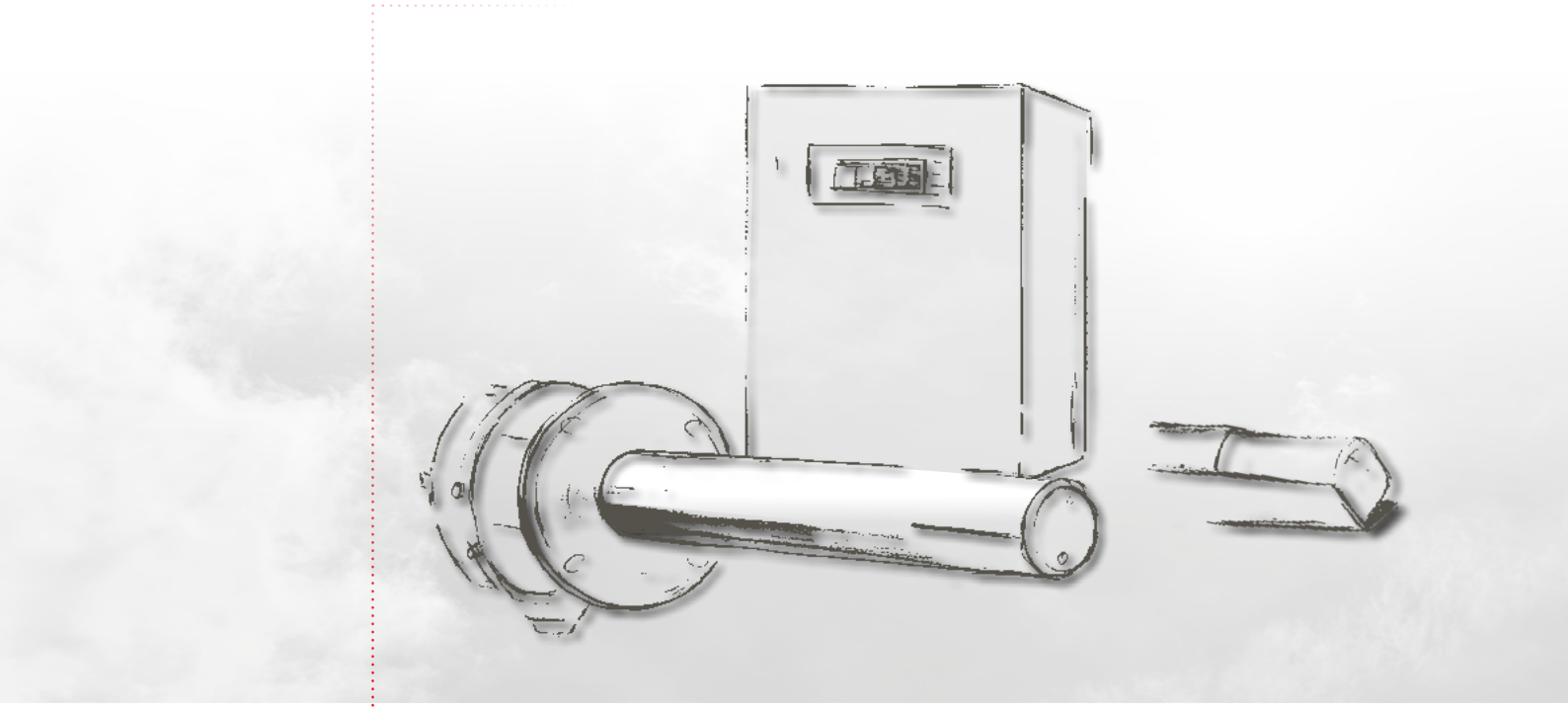
RGA CGM5, 1 gas path, 1. CO: 0..5.000 ppm without O2:	**R001475**
RGA CGM5, 1 gas path, 1. CO: 0..5.000 ppm | O2: 0..25% (EC):	**R000916**
RGA CGM5, 2 gas paths, 2x CO: 0...5.000 ppm & O2: 0...25% EC:	**R000992**
Optional extension robecco RGA CGM5; CH4: 0...500ppm	**R000993**
Optional extension robecco RGA CMG5; O2: 0..25% paramagnetic:	**R001102**

Further information on request!

IN-SITU Oxygen analyser

ROC-3

Oxygen measurement



INDUSTRY SECTOR

Biomass
Power plants
Minerals
Cement industry
Chemistry

Gas analysis
Emission measurement
Operating measurement

IN-SITU Oxygen analyser

ROC-3

The In-Situ Oxygen analyser is used to measure oxygen in industrial furnaces and other incinerators at temperatures of up to 600°C (optional 1400°C). The measurement is based on the low-maintenance and reliable technology of Zirkonium dioxide. ROC is a compact and robust sensor with high measuring accuracy, very low drift of measuring signal and a long lifetime.

Oxygen analyser ROC-3

- ❏ Reliable technology
- ❏ Simple operation
- ❏ Measuring cell with very low drift
- ❏ No test gas required
- ❏ Measuring values checkable at every time
- ❏ Test air connection at the probe, optional
- ❏ easy to maintain, modular design of sample probe and electronics
- ❏ For temperatures up to 600°C,
  optional protection tubes and filter available for high dust concentrations and temperatures up to 1.400°C
- ❏ 10m connecting line

TECHNICAL DATA

Measuring probe

Material
Stainless steel 1.4571

Immersion depht
350 mm / 500 mm / 1000 mm / 2000 mm

Connection
3“ 150 lbs
other dimensions om request

Protection class
IP 65

Flue gas temperature
max. 600°C / 1400°C with special protective tube

Ambient temperature at the sampling point
-40°C – +150°C

Filter porosity
Filter 10µ – 100µ

Electronic unit

Material housing
Sheet steel, IP 66

Dimensions
400 mm x 300 mm x 150 mm

Measuring range
0–1999 ppm O2
0–5 / 0–10 / 0–21 / 0–25% O2

Output signal
Analog output: 4...20mA
RS 232, Modbus RTU by RS 485
Digital output:O_2 min, O_2 max, maintenance, malfunction

Accuracy
> 0,1% O2
at ppm range> 0,5%

Display
Illuminated LED

Ambient temperature
0°C – 50°C

Power supply
115 or 230 V, 50Hz

ORDER NUMBERS

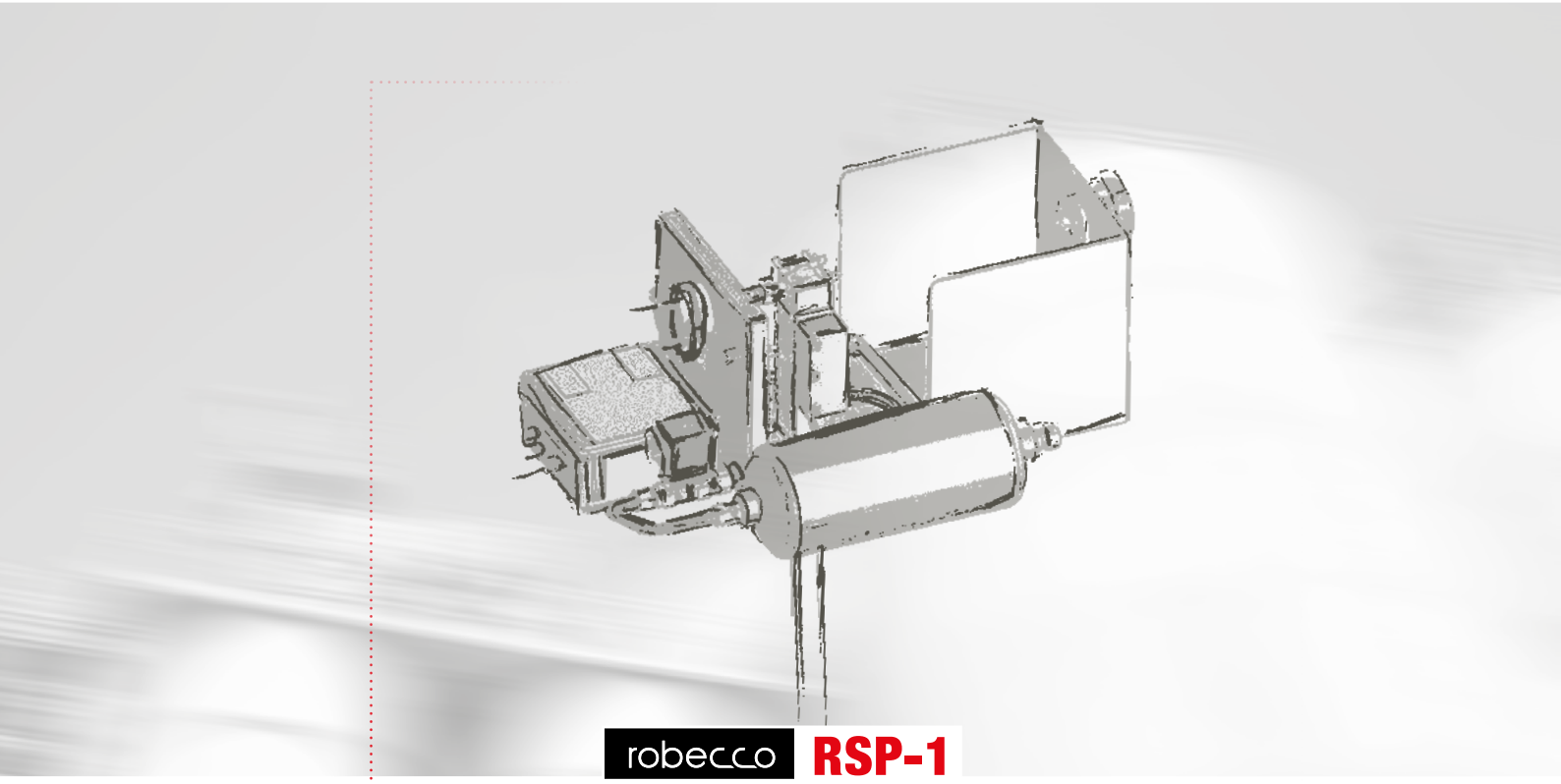
Prefilter F-115-E10	**R002616**
ROC-3 IN-SITU Oxygen analyser 140V–240V / 50 Hz	**R002615**

Further information on request!

Sample gas probe

RSP-1HB | RSP-1HX | RSP-1XX

Continuous extraction of sample gas for the gas analysis



INDUSTRY SECTOR

Biomass
Power plants
Minerals
Cement industry
Chemistry

Gas analysis
Emission measurement
Operating measurement

Sample gas probe

robecco RSP-1 RSP-1HB | RSP-1HX | RSP-1XX

Sample gas probes extract sample gas unadulterated from processes and make it available for further analysis. Unwanted contaminants are already filtered at the sampling point.

The maintenance of the probes is easy and possible without great use of special tools.

Sample gas probe RSP-1HB	**Sample gas probe** RSP-1HX	**Sample gas probe** RSP-1XX
Heated probe with Outletfilter and weather protective hood, blow back	*Heated probe with Outletfilter and weather protective hood*	*Unheated probe with Outletfilter and weather protective hood*
❑ Fast changing of filter elements	❑ Fast changing of filter elements	❑ Fast changing of filter elements
❑ Low-maintenance	❑ Low-maintenance	❑ Low-maintenance
❑ Large active filter surface	❑ Large active filter surface	❑ Large active filter surface
❑ For dust concentrations up to 2g/m³ with Outletfilter for dust concentr. up to 10g/m³ with Prefilter	❑ For dust concentr. up to 2g/m³ with Outletfilter for dust concentr. up to 10g/m³ with Prefilter	❑ For dust concentrations up to 2g/m³ with Outletfilte for dust concentr. up to 10g/m³ with Prefilter
❑ With blow back for dust concentr. >10g/m³	❑ Without blow back	❑ Without blow back
❑ Heated, 80°C	❑ Heated, 80°C	❑ Unheated

TECHNICAL DATA

Material Stainless steel 1.4301 Gas contacting materials: 1.4404 Sealing: Klingensil C4400 Filter element: Sintered metal 316L, 1.4404	Material Stainless steel 1.4301 Gas contacting materials: 1.4404 Sealing: Klingensil C4400 Filter element: Sintered metal 316L, 1.4404	Material Stainless steel 1.4301 Gas contacting materials: 1.4404 Sealing: Klingensil C4400 Filter element: Sintered metal 316L, 1.4404
Operating pressure max. 200kPa abs.	Operating pressure max. 200kPa abs.	Operating pressure max. 200kPa abs.
Inlet temp. process medium max. 200°C	Inlet temp. process medium max. 200°C	Inlet temp. process medium max. 250°C
Ambient temperature -20 °C up to +60°C	Ambient temperature -20 °C to +60°C	Ambient temperature -20 °C to +60°C
self limiting heater ca. 80°C	self limiting heater ca. 80°C	
power consumption heater 110 – 265 VAC, 50/60 Hz, 50 Watt	power consumption heater 110 – 265 VAC, 50/60 Hz, 50 Watt	
power consumption valve 24 VDC, 8 Watt		
Sample gas input G3/4" female thread	Sample gas input G3/4" female thread	Sample gas input G3/4" female thread
Sample gas outlet 4/6 tube connection	Sample gas outlet 4/6 tube connection	Sample gas outlet 4/6 tube connection
Compressed air connection 12 mm outside diameter		
P max Compressed air 10 bar		
Filter element (Outlet filter) 2µ	Filter element (Outlet filter) 2µ	Filter element (Outlet filter) 2µ
Process connection DN 65 / PN 6	Process connection DN 65 / PN 6	Process connection DN 65 / PN 6
Dimensions l 470 mm / w 345 mm / h 260 mm	Dimensions l 390 mm / w 215 mm / h 260 mm	Dimensions l 255 mm / w 215 mm / h 260 mm
Weight ca.12 kg	Weight ca. 9 kg	Weight ca. 9 kg

Options: Extension sampling tubes, prefilter, valve voltage 120V / 230V, Heating element for low temperatures

ORDER NUMBERS

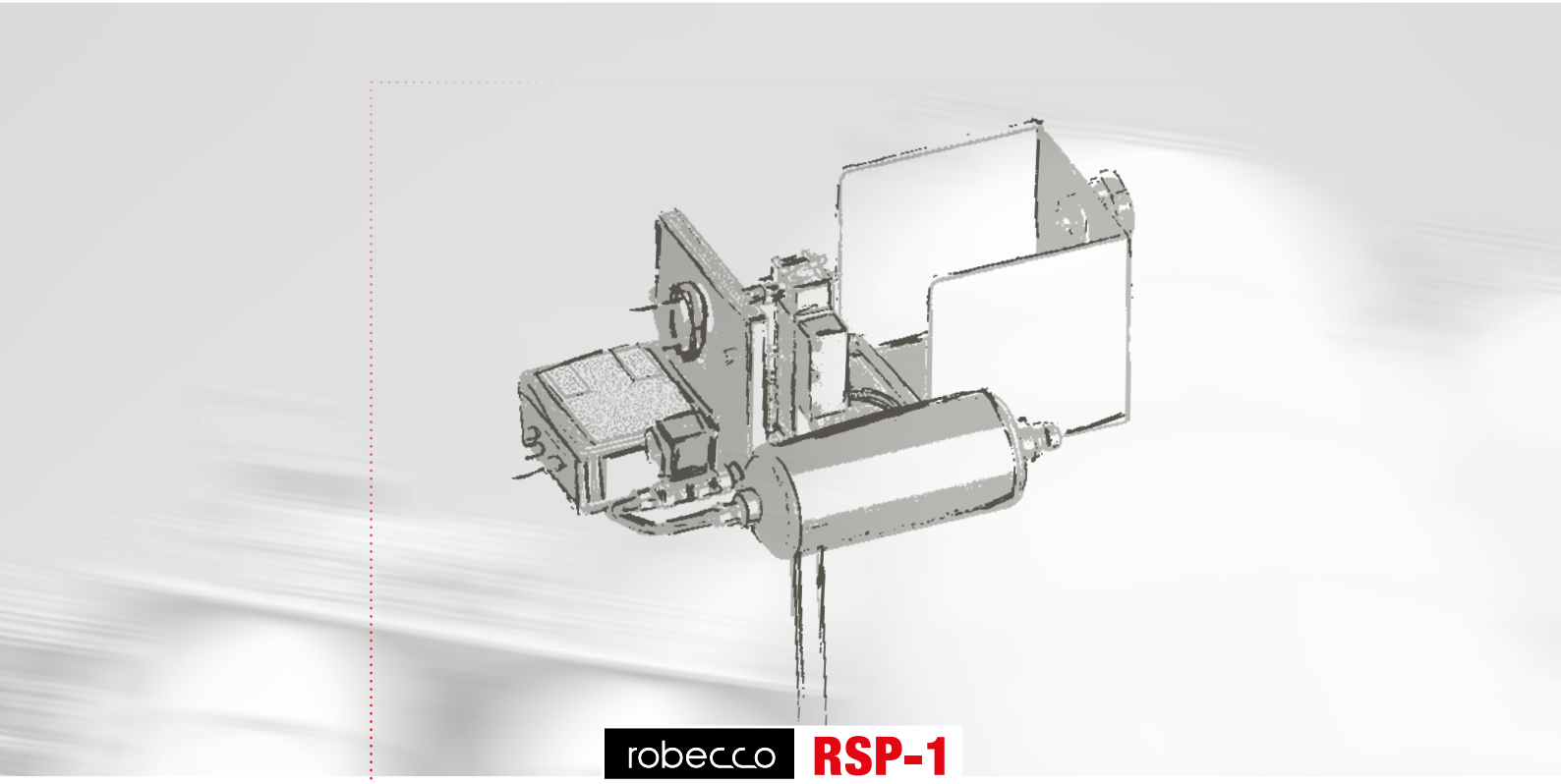
Sample gas probe RSP-1HB (with blowback)	**R000825**	Extension sampling tube E-1000	**R000171**
Sample gas probe RSP-1HX	**R000826**	Prefilter F 200 5µ	**R002602**
Sample gas probe RSP-1XX (without heating/ without. blowback.	**R000827**	Spare part kit for RSP-1	**R001886**
Flange DN 65/PN6	**R000335**	consisting of 1x filter element 2µ, 1x Seal for	
Extension sampling tube E-500	**R000172**	filter element, 1x Flat seal probe body	

Further information on request!

Sample gas probe

RSP-1HB-EX | RSP-1HX-EX | RSP-1XX

Continuous extraction of sample gas for the gas analysis



robecco **RSP-1**

INDUSTRY SECTOR

Biomass
Power plants
Minerals
Cement industry
Chemistry

Gas analysis
Emission measurement
Operating measurement

PRODUCT INFORMATION

Sample gas probe

robecco **RSP-1** RSP-1HB-EX | RSP-1HX-EX | RSP-1XX

Sample gas probes extract sample gas unadulterated from processes and make it available for further analysis. Unwanted contaminants are already filtered at the sampling point.

The maintenance of the probes is easy and possible without great use of special tools. Explosion protection is realized by appropriate construction.

Sample gas probe RSP-1HB-EX	**Sample gas probe** RSP-1HX-EX	**Sample gas probe** RSP-1XX
Heated probe with Outletfilter and weather protective hood, blow back	*Heated probe with Outletfilter and weather protective hood*	*Unheated probe with Outletfilter and weather protective hood*
❑ Fast changing of filter elements	❑ Fast changing of filter elements	❑ Fast changing of filter elements
❑ Low-maintenance	❑ Low-maintenance	❑ Low-maintenance
❑ Large active filter surface	❑ Large active filter surface	❑ Large active filter surface
❑ For dust concentrations up to 2g/m³ with Outletfilter for dust concentr. up to 10g/m³ with Prefilter	❑ For dust concentr. up to 2g/m³ with Outletfilter for dust concentr. up to 10g/m³ with Prefilter	❑ For dust concentrations up to 2g/m³ with Outletfilter for dust concentr. up to 10g/m³ with Prefilter
❑ With blow back for dust concentr. >10g/m³	❑ Without blow back	❑ Without blow back
❑ Heated, 80°C	❑ Heated, 80°C	❑ Unheated
❑ Installation in EX-zone 21, 22	❑ Installation in EX-zone 21, 22	❑ Installation in EX-zone 21, 22

TECHNICAL DATA

Material Stainless steel 1.4301 Gas contacting materials: 1.4404 Sealing: Klingensil C4400 Filter element: Sintered metal 316L, 1.4404	Material Stainless steel 1.4301 Gas contacting materials: 1.4404 Sealing: Klingensil C4400 Filter element: Sintered metal 316L, 1.4404	Material Stainless steel 1.4301 Gas contacting materials: 1.4404 Sealing: Klingensil C4400 Filter element: Sintered metal 316L, 1.4404
Operating pressure max. 200kPa abs.	Operating pressure max. 200kPa abs.	Operating pressure max. 200kPa abs.
Inlet temp. process medium max. 200°C	Inlet temp. process medium max. 200°C	Inlet temp. process medium max. 250°C
Ambient temperature -20 °C up to +60°C	Ambient temperature -20 °C to +60°C	Ambient temperature -20 °C to +60°C
self limiting heater ca. 80°C	self limiting heater ca. 80°C	
power consumption heater 110 – 265 VAC, 50/60 Hz, 50 Watt	power consumption heater 110 – 265 VAC, 50/60 Hz, 50 Watt	
power consumption valve 24 VDC, 8 Watt		
Sample gas input G3/4" female thread	Sample gas input G3/4" female thread	Sample gas input G3/4" female thread
Sample gas outlet 4/6 tube connection	Sample gas outlet 4/6 tube connection	Sample gas outlet 4/6 tube connection
Compressed air connection 12 mm outside diameter		
P max Compressed air 10 bar		
Filter element (Outlet filter) 2µ	Filter element (Outlet filter) 2µ	Filter element (Outlet filter) 2µ
Process connection DN 65 / PN 6	Process connection DN 65 / PN 6	Process connection DN 65 / PN 6
Dimensions l 470 mm / w 345 mm / h 260 mm	Dimensions l 390 mm / w 215 mm / h 260 mm	Dimensions l 255 mm / w 215 mm / h 260 mm
Weight ca.12 kg	Weight ca. 9 kg	Weight ca. 9 kg

Options: Extension sampling tubes, prefilter, valve voltage 120V / 230V, Heating element for low temperatures

ORDER NUMBERS

Sample gas probe RSP-1HB-EX (with blowback)	**R000823**	Extension sampling tube E-1000	**R000171**
Sample gas probe RSP-1HX-EX	**R000824**	Prefilter F 200 5µ	**R002602**
Sample gas probe RSP-1XX (without heating/ without. blowback.	**R000827**	Spare part kit for RSP-1-EX	**R001886**
Flange DN 65/PN6	**R000335**	consisting of 1x filter element 3µ, 1x Seal for	
Extension sampling tube E-500	**R000172**	filter element, 1x Flat seal probe body	

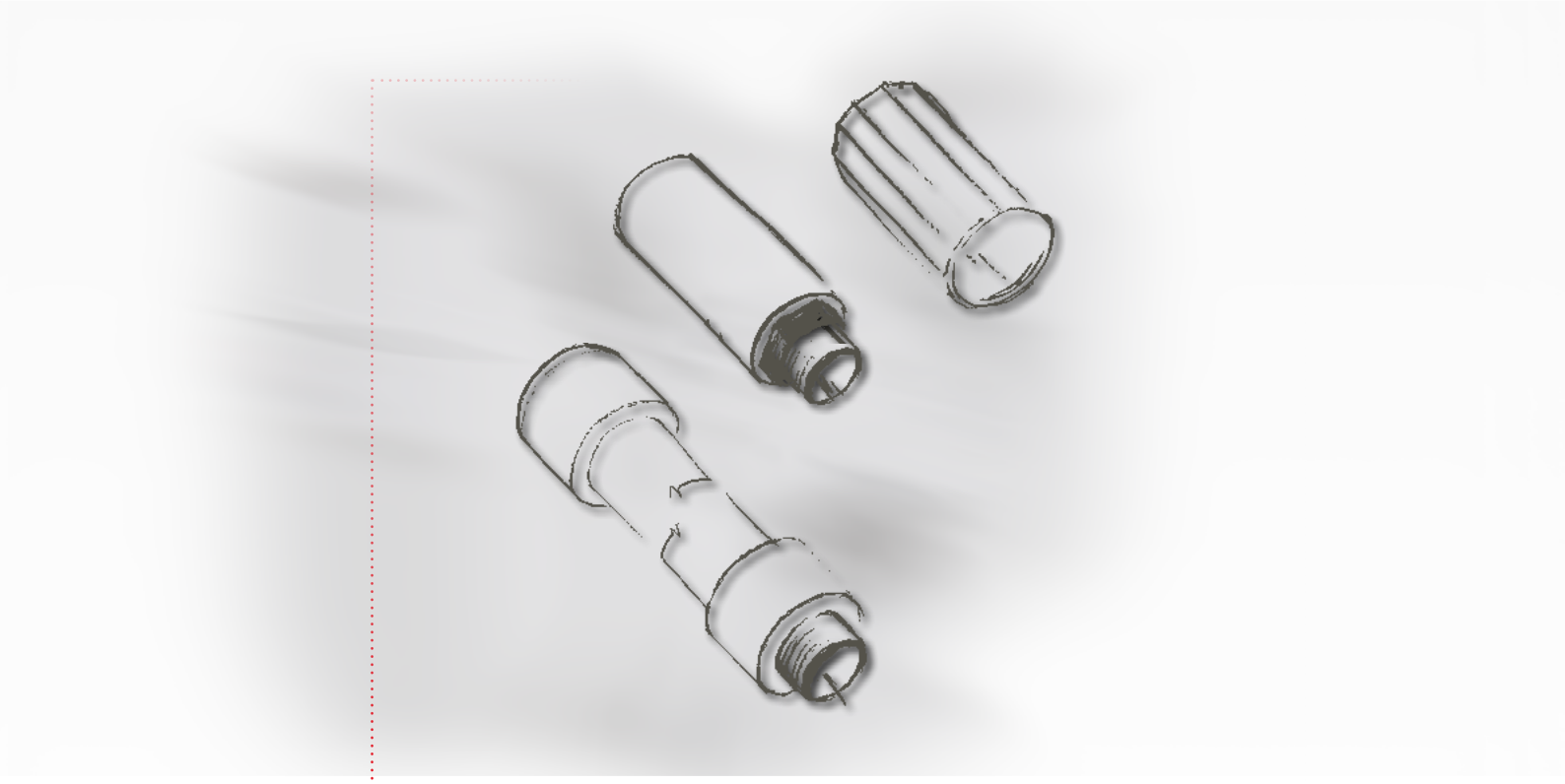
Further information on request!

Sample probe equipment

Prefilter F-200-E5

Deflector | Sample pipe E

Equipment for sample gas probes



INDUSTRY SECTOR

Biomass
Power plants
Minerals
Cement industry
Chemistry

Gas analysis
Emission measurement
Operating measurement

Sample probe equipment

Prefilter F-200-E5
Deflector
Sample pipe E

Prefilter serve as additional process filters and AS separation.
The prefilter can be protected against rough contamination of the process stream by using the deflector.
The prefilter can be optimally placed in the process using the sample pipe.

TECHNICAL DATA

Prefilter F-200-E5

Prefilter F-200-E5

- ❏ Maximum gas temperature
  Prefilter R-7 up to 550°C
- ❏ Material
  Stainless steel 1.4404
- ❏ Size
  o-Ø=54 mm | i-Ø=50 mm | total l.=230 mm | Filterl.=200 mm
- ❏ Connection
  G 3/4" male thread | wrench size 36
- ❏ Filter porosity
  5µm

Deflector

Deflector for F-200-E5 Sample pipe

- ❏ Material
  Stainless steel 1.4301
- ❏ Dimensions
  o-Ø=65 mm

Sample pipe E

Sample pipe E-500

- ❏ Length
  500 mm
- ❏ Maximum gas temperature
  600°C
- ❏ Material
  Stainless steel 1.4571
- ❏ Dimensions
  Outer diameter: 30 mm | Inner diameter: 24 mm
- ❏ Connection
  male thread G 3/4" | female thread G 3/4" | wrench size 36

Sample pipe E-1000

- ❏ Length
  1000 mm
- ❏ Maximum gas temperature
  600°C
- ❏ Material
  Stainless steel 1.4571
- ❏ Dimensions
  Outer diameter: 30 mm | Inner diameter: 24 mm
- ❏ Connection
  male thread G 3/4" | female thread G 3/4" | wrench size 36

ORDER NUMBERS

Prefilter F-200-E5:	**R002602**
Sealing for Prefilter F-200-E5:	**R000907**
Deflector for F-200-E5:	**R000800**
Sample pipe E-500:	**R000172**
Sample pipe E-1000:	**R000171**
Sealing for Sample pipe:	**R000907**

Further information on request!

Sample line

RSL-L | RSL-H

Heated measuring pipe for the gas analysis

INDUSTRY SECTOR

Biomass
Power plants
Minerals
Cement industry
Chemistry

Gas analysis
Emission measurement
Operating measurement

Sample line robecco RSL

RSL-L | RSL-H

Prefabricated sample lines with self-regulating heaters in different performance classes.

With this flexibility, a wide range of applications can be covered. The PTFE sampling tube is protected by an insulation and a polyamide 12 outer sheath. An application in a robust environment is possible.

RSL- L

- ❏ Individually customizable length of sample line, up to max. 100 m
- ❏ Self-regulating heating capacity: 20W/m
- ❏ Connection kit available, extras
- ❏ Assembly:
  C- profiles with clips and counter part (BK42mm)
  min. bending radius: 100 mm
  min. assembly temperature: 0° C
  fastening distance horizontal: max. 1,0 m // - vertical: max. 2,0 m

RSL- H

- ❏ Individually customizable length of sample line, up to 60 m
- ❏ Self-regulating heating capacity: 45W/m
- ❏ Connection kit available, extras
- ❏ Assembly:
  C- profiles with clips and counter part (BK42mm)
  min. bending radius: 100 mm
  min. assembly temperature: 0° C
  fastening distance horizontal: max. 1,0 m // - vertical: max. 2,0 m

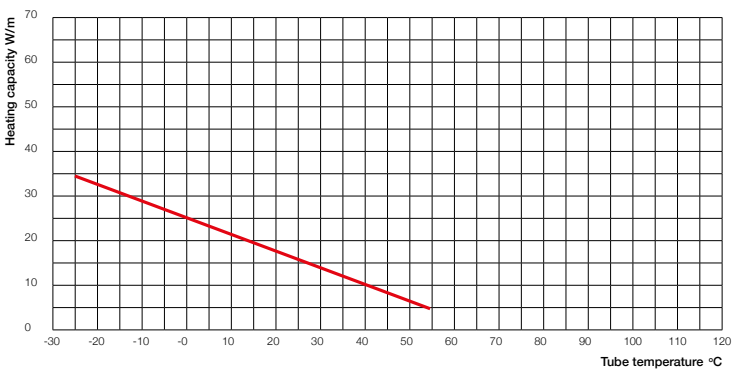
TECHNICAL DATA

Protective tube:
- Antistatic and UV resistant
  Very good cooling properties
- High, dynamic load-bearing capacity
- Halogen free and cadmium free
- Operating temperature range from -40°C to + 90°C //
  (for short periods 150°C)

PTFE- tube:
- Anti adhesive, chemical resistant
- self-extinguishing UL 94 V-0
- Operating temperature range from -20°C up to + 260°C
  Tube diameter 4/6 mm und 6 /8mm availagle, 4/6 standart
- Compressive strength at 20°C: 4 mm- 12,0 bar
- Compressive strength at 100°C: 4 mm- 5,1 bar

Self-regulating heating tape:
- Max. allowable temperature: switched on 60°C
- Min. allowable temperature:-45°C
- Power supply:: 230 ± 10%, further on request
- Temperature classification: T6 (85°C)
- Large range of approvals
- Adjusts to the heat capacity of the relevant work piece temperature
- Heating tape available at capacities of
  10W/m; 20W/m; 30W/m oder 40 W/m
- If required, the line lenght can be adjusted at site
- No overheating on overlapping

Example 20, Watt line

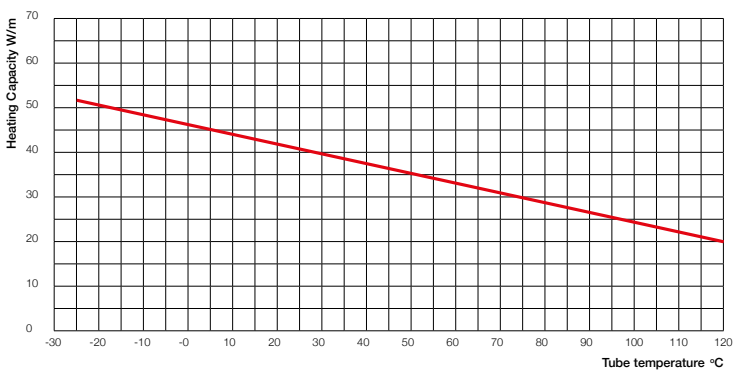


Protective tube:
- Antistatic and UV resistant
  Very good cooling properties
- High, dynamic load-bearing capacity
- Halogen free and cadmium free
- Operating temperature range from -40°C to + 90°C //
  (for short periods 150°C)

PTFE- tube:
- Anti adhesive, chemical resistant
- self-extinguishing UL 94 V-0
- Operating temperature range from -20°C up to + 260°C
  Tube diameter 4/6 mm und 6 /8mm availagle, 4/6 standart
- Compressive strength at 20°C: 4 mm- 12,0 bar
- Compressive strength at 100°C: 4 mm- 5,1 bar

Self-regulating heating tape:
- Max. allowable temperature: switched on 120°C
- Min. allowable temperature:-45°C
- Power supply:: 230 ± 10%, further on request
- Temperature classification: T3 (200°C)
- Large range of approvals
- Adjusts to the heat capacity of the relevant work piece temperature
- Heating tape available at capacities of
  10W/m; 15W/m; 20W/m; 30W/m; 45 W/m; 60W/m or 75W/m
- If required, the line lenght can be adjusted at site
- No overheating on overlapping

Example 45 Watt line

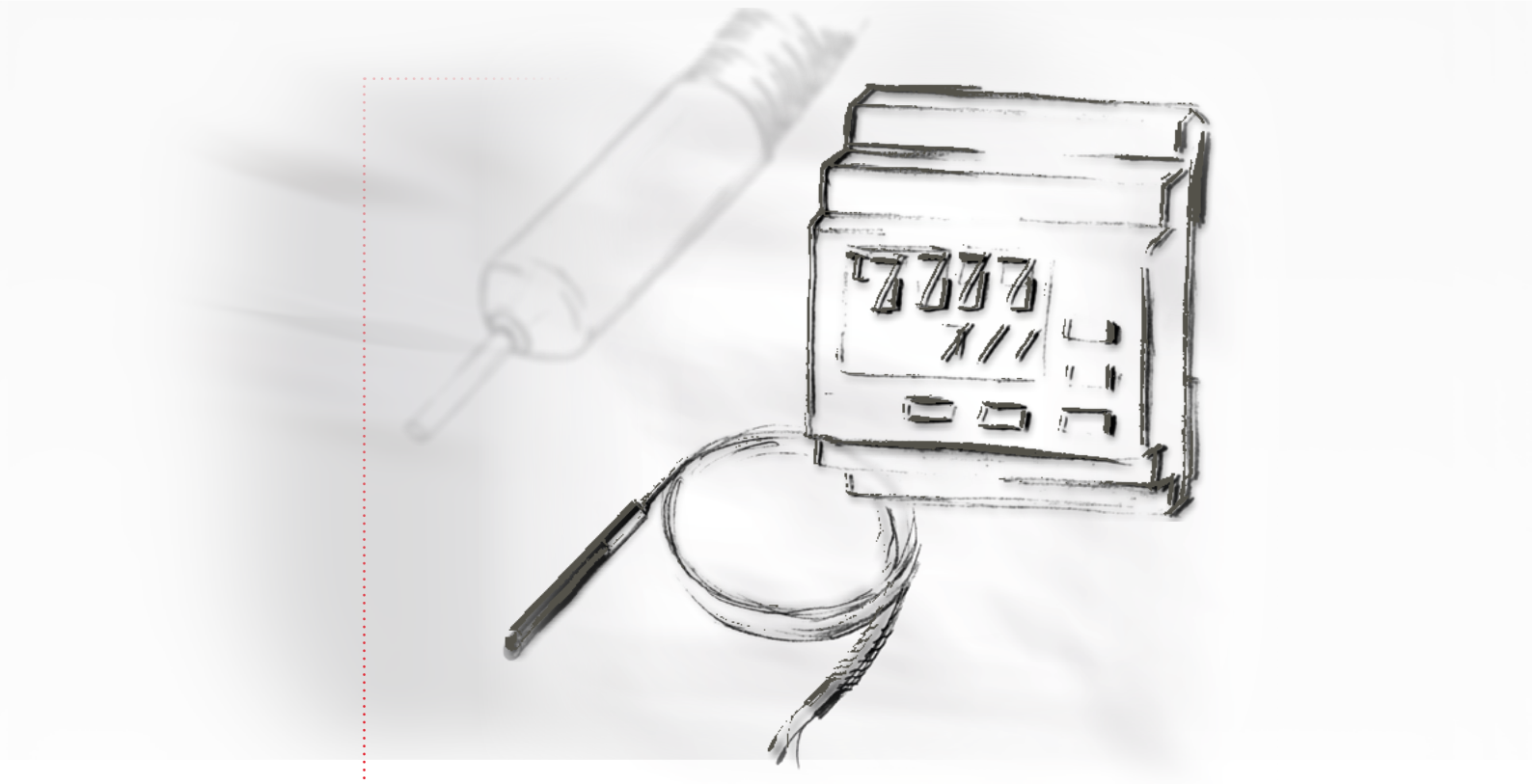


Further information on request!

Heating regulation

Heating regulator
Temperature sensor PT 100

for sample lines



INDUSTRY SECTOR

Biomass
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Gas analysis
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Operating measurement

Heating regulation

Heating regulator | Temperature sensor PT 100

By using an electronic control unit,
a flexible temperature of the gas sampling lines can be set.

Heating regulator

- ❏ Adjustable -50°C – +400°C
- ❏ Compact Design
- ❏ LED-Display
- ❏ Sensor connection Pt 100 2-wire, 3-wire, configurable
- ❏ Alarm contact

- ❏ Rated voltage
  24V DC
- ❏ Switching capacity
  1 changeover contact 16A, 1 NO contact 8A
- ❏ Operation temperature
  -25 ... +55°C
- ❏ Range of temperature
  0 ... +400°C, configurable
- ❏ Power
  Max. 4 mA, <5W
- ❏ ATEX- approval
  on demand
- ❏ Protection class
  IP 20

Temperature sensor PT 100

- ❏ Up to 25°C
- ❏ 3-wire technology

- ❏ Material
  1.4571
- ❏ Lead
  Fluoropolymer
- ❏ Lenght
  3m
- ❏ Class
  B
- ❏ Protection class
  IP 65

ORDER NUMBERS

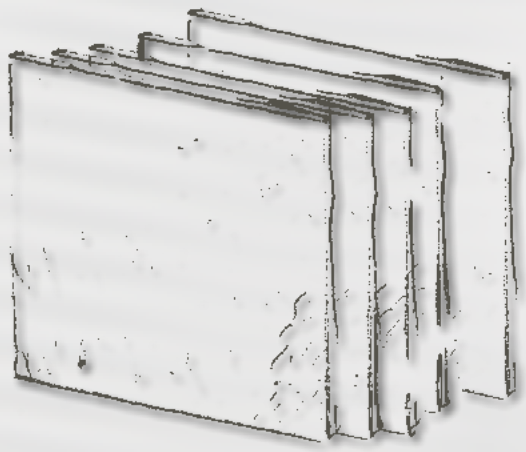
Elektronisches Regelgerät:	**auf Anfrage**
Temperature sensor PT 100:	**auf Anfrage**

Further information on request!

Filter mats

FM-1

For use in the cabinet



INDUSTRY SECTOR

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Emission measurement
Operating measurement

Filter mats FM-1

Reliable filtering of virtually all types of dust from a particle size of 10 µm.

Filter mats FM-1

- ❏ Temperature-resistant to 100°C
- ❏ Self- extinguishing DIN 53438
- ❏ Filtering from a particle size of 10 µm.
- ❏ Structure: open at dust-laden air side, closed at clean-air side

TECHNICAL DATA

Dimensions
B 221 mm / H 221 mm / D 17 mm

Weight
0,08 kg

Material
Chopped-fibre mat with a progressive structure.

Filter class to DIN EN 779:
G3

ORDER NUMBER

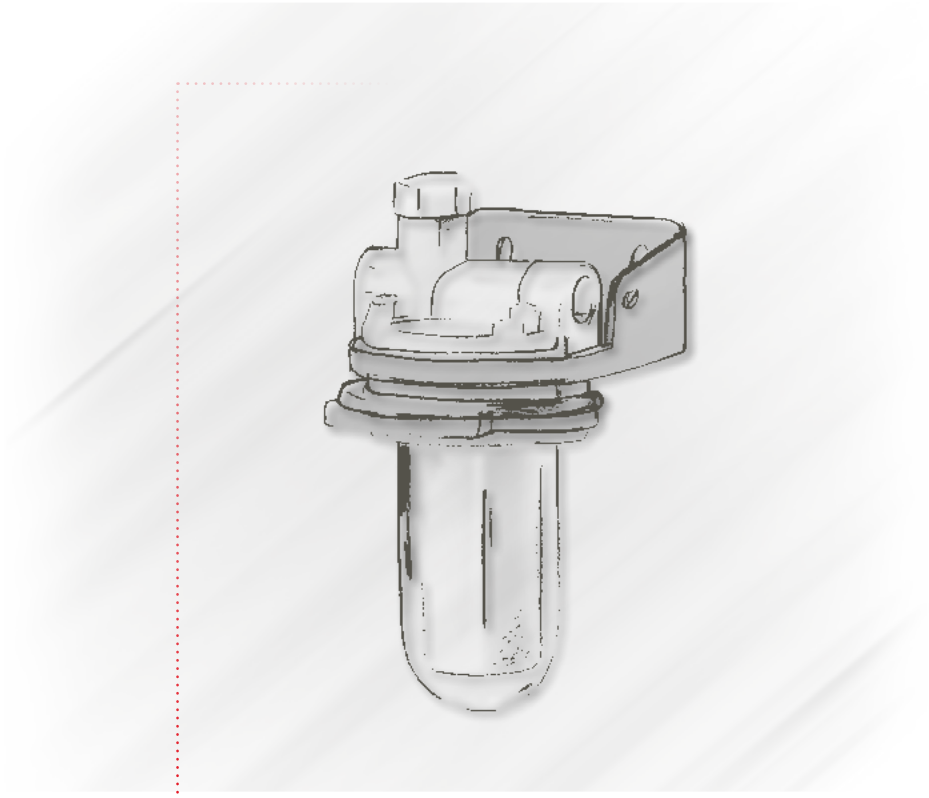
Filter mats FM-1 (VE=5)	**R000327**

Further information on request!

Fine filter

FF-3

Filtration of sample gas for analytics



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Fine filter

FF-3

Filtration of the finest particles. Fine filter are installed at the point of entering the analysis system and before sensitive system components. Filter must be corrosion-resistant and non absorbent.

Fine filter FF-3

- ❏ Simple Installation, simple maintenance
- ❏ Quick-release fastener
- ❏ Quick and easy filter changes without tools
- ❏ Option to drain condensate in the filter glass
- ❏ Bypass connection in the filter head (G1/4), connection options for bypass, moisture detector or ventilation
- ❏ Corrosion-resistant, non-absorbent
- ❏ Use in explosive areas 2G
- ❏ one filter element is included with delivery
- ❏ Variable wall fixing element included

TECHNICAL DATA

Material
Filter head: PVDF
Filter cover: Glas
Gasket: Viton

Thread
G1/4

Weight
ca. 0,8kg

Operating temperature
max. 100 °C

Operating pressure
max. 4 bar

Ambient temperature range for Ex area applicationns
-5 °C ≤ T_{amb} ≤ 60 °C

Filter porosity
2 µ

Filter area
60 cm^3

Dimensions
B 60 mm (w.o. fixing parts) | H 132 mm | T 103 mm (with fixing parts)

Filter element FF-3 E2

- ❏ 5 pices per packaging unit

Material
PTFE

Filter surface:
60 cm^2

Filter porosity
2 µ

ORDER NUMBERS

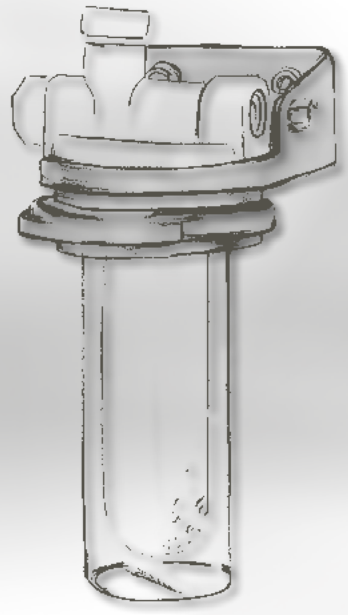
Fine filter FF-3	**R000125**
Filter element FF-3 E2 (VE 5)	**R002081**

Further information on request!

Ambient air filter

RF-3

Filtering of ambient air for gas analysis



INDUSTRY SECTOR

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Ambient air filter

RF-3

Particles, existing in the ambient air, are filtered from the measuring gas flow.
Through the transparent filter housing the contamination of the filter element is clearly visible.

Ambient air filter RF-3

- ❏ Easy Installation, easy to maintain
- ❏ Quick-release fastener
- ❏ Quick and easy filter changes without tools
- ❏ Variable wall fixing element
- ❏ Use in explosive areas 2G
- ❏ one filter element is included in delivery

TECHNICAL DATA

Material
Filter head: PVDF
Filter cover: Glas
Gasket: Viton

Thread
G1/4

Weight
ca. 0,28 kg

Operating temperature
max. 100 °C

Ambient temperature range for Ex area applications
-5 °C ≤ T_{amb} ≤ 60 °C

Filter porosity
2 µ

Filter surface
80 cm^2

Dimensions
w 70 mm (w.o. connection accessories) x h 155 mm x d 103 mm

Filter element RF-3 E2

- ❏ 5 pieces per packing unit

Material:
Fibreglass

Filter element:
Sleeve

Filter surface:
80 cm^2

Filter lenght:
100 mm

Filter porosity:
2 µ

ORDER NUMBERS

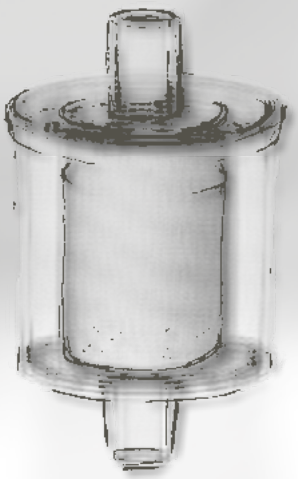
Ambient air filter RF-3:	**R000126**
Filter element RF-3 E2 (VE=5):	**R001729**

Further information on request!

Ambient air inline Filter

RF-2-E.1

Filtering of ambient air for gas analysis



INDUSTRY SECTOR

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Ambient air inline filter

RF-2-E.1

Particles, existing in the ambient air, are filtered from the measuring gas flow.
Through the transparent filter housing the contamination of the filter element is clearly visible.

Ambient air inline filter RF-2-E.1

- ❏ Disposable filter, housing and filter element inseparably connected
- ❏ no replace of filter elements

TECHNICAL DATA

Raw meterial Filter housing: Polyamid Filter element: Microglasfaser with PVDF-Binder (Kynar)
Connection 6 mm
Weight ca. 0,016 kg
Operating temperature max. 110 °C / 0 bar
Operating temperature max. 50 °C / 8 bar
Filter porosity 0,1 µ
Dimensions (wo. Connecting elements) b 25 mm x h 45 mm x w 25 mm
Filter surface 6 cm^2

ORDER NUMBERS

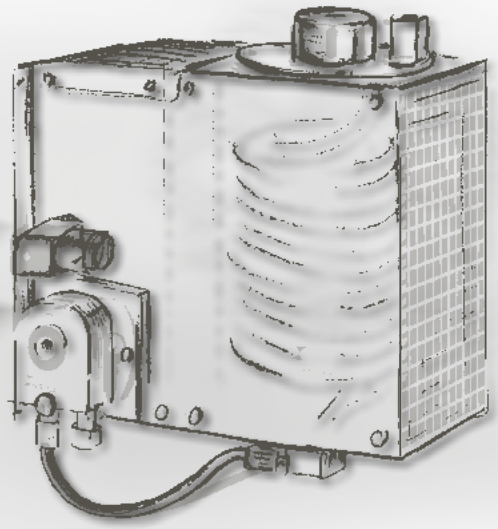
Ambient air Inline Filter RF-2-E.1 / VE-5 pices:	**R002619**

Further information on request!

Precooler

VK-3

Pre-cooling of the sample gas at applications where the moisture content of the sample gas is particularly high.



INDUSTRY SECTOR

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Precooler

VK-3

Used to extract moisture from the sample gas. The pre-cooler is used when the moisture content is particularly high or the moisture content fluctuates greatly.

Preecooler VK-3

- ❏ Heat exchanger of stainless steel
- ❏ with extractor fan
- ❏ stainless steel case
- ❏ Built-in peristaltic pump
- ❏ Easy to install, compact size in protection cage
- ❏ wall-mounted
- ❏ Low maintenance

TECHNICAL DATA

Dimesions over all	w 270 /h 339 /d 219,5 mm
Weight	15 kg
Protection class	IP 20
Supply voltage	230 VAC 50Hz 115 VAC 60Hz optional
Power input	25 W
Ambient temperature	0 ... 60°C
Heat exchanger	
Gas pressure	max. 1 bar
Max. gas inlet temperature	max.180°C
Gas connections Input / Output	G 3/8
Pump condensate connection	DN 4 screw connection

ORDER NUMBER

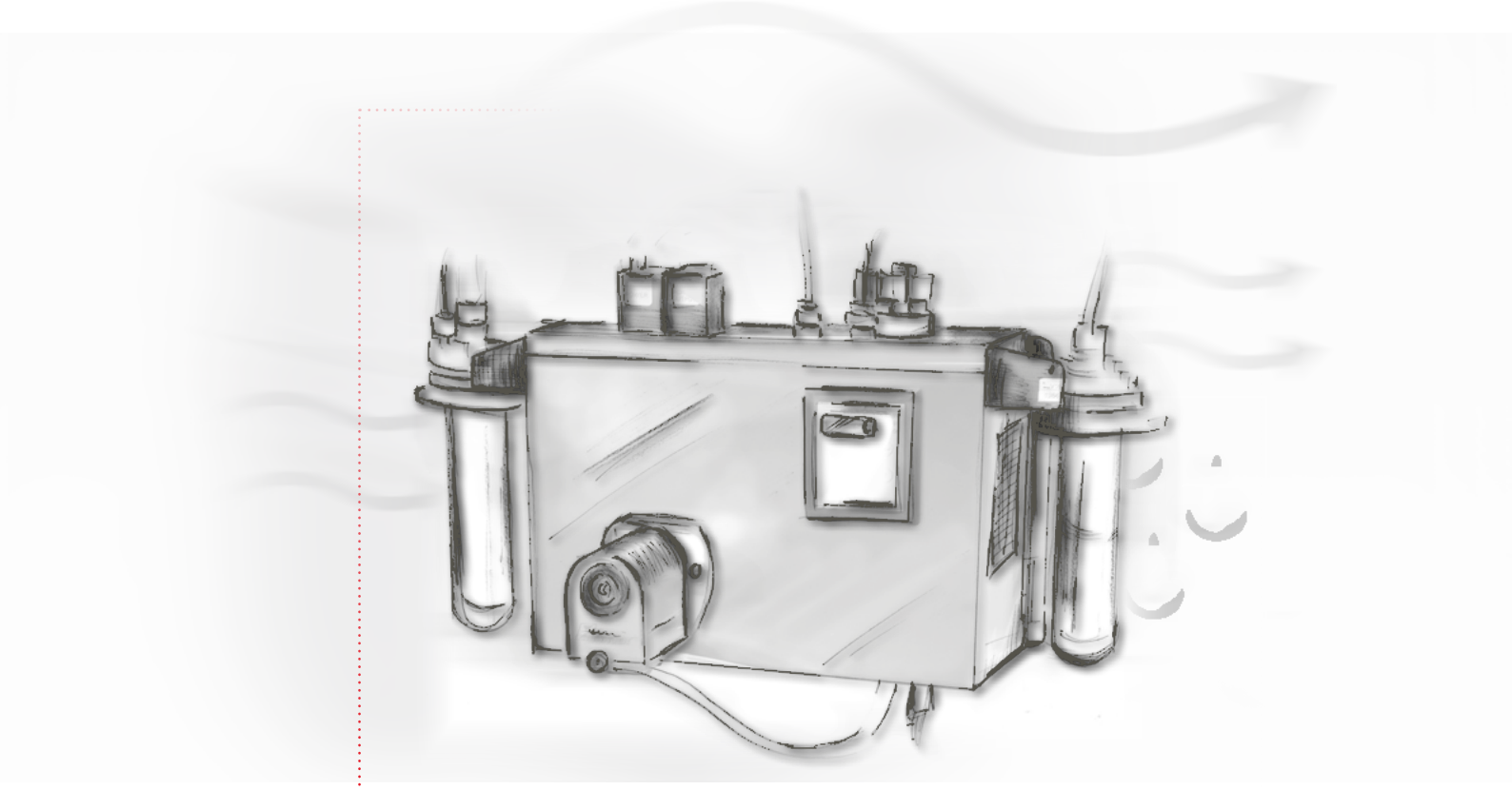
Preecooler VK-3, 230V:	**R000403**
Replacement tube for precooler VK-3 | Q=1,0l/h:	R002603

Further information on request!

Sample gas compressor cooler

KMK-2 | KMK-3.1

Cooling of the sample gas and condensate drain of



INDUSTRY SECTOR

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Sample gas compressor cooler

KMK-2 | KMK-3.1

In certain ambient conditions, compressor cooling systems are used for efficient gas cooling in the sample gas conditioning system. KMK sample gas coolers can be used for 1 or to 2 gas paths.

Sample gas compressor cooling systems are used for efficient sample gas cooling. The resulting condensate is drained off using an integrated peristaltic pump.

Sample gas compressor cooler KMK-2

- ❏ compressor cooling
- ❏ 1 or 2 heat exchangers or gas paths
- ❏ Digital temperature display
- ❏ Status relay as potential-free contact
- ❏ Heat exchanger made of glass (stainless steel and PVDF on request)
- ❏ Stainless steel housing
- ❏ integrated condensate drain (peristaltic pump)

Sample gas compressor cooler KMK-3.1

- ❏ compressor cooling
- ❏ 1 or 2 gas paths
- ❏ Digital temperature display
- ❏ Status relay as potential-free contact
- ❏ Heat exchanger made of glass (stainless steel and PVDF on request)
- ❏ Stainless steel housing
- ❏ Sample gas cooler set incl. heat exchanger made of glas, condensate pump, fine filter, moisture detector (single or double)

TECHNICAL DATA

	Dimensions: 1 gas path	**Dimensions: 2 gas paths**
Dimensions over all w 308 / h 312 / d 375 mm	**Dimensions** all about w 405 / h 295 / d 400 mm	**Dimensions** all about w 490 / h 295 / d 428 mm
Weight 17 kg	**Weight: 1 gas path** 15 kg	**Weight: 2 gas paths** 15 kg
Connection of sample gas and condensate outlet PVDF-hose fitting DN 4/6	Connection of sample gas and condensate outlet PVDF-hose fitting DN 4/6	
Protection class IP 20	Protection class IP 20	
Supply voltage 220...240 VAC 50/60 Hz	Supply voltage 115 V 50/60 Hz or 230 V/ 50/60 Hz +5%	
Power input 190 VA	Power input 300 VA	
Switching capacity alarm output potential-free max. 230V, 6A min., 5VA DC/5 mA	Switching capacity alarm output potential-free max. 250V, 2A, 50VA	
Heat exchanger glas WtG	**Heat exchanger glas WtG / double-Wt**	
Gas flow rate / max. gas temperature max. 250 Nl/h / max. 140°C	Gas flow rate max. 280 l/h / max. 2 x 140 l/h	
Cooling capacity 160 w	Cooling capacity max. 450 kj/h / max. 230 kj/h	

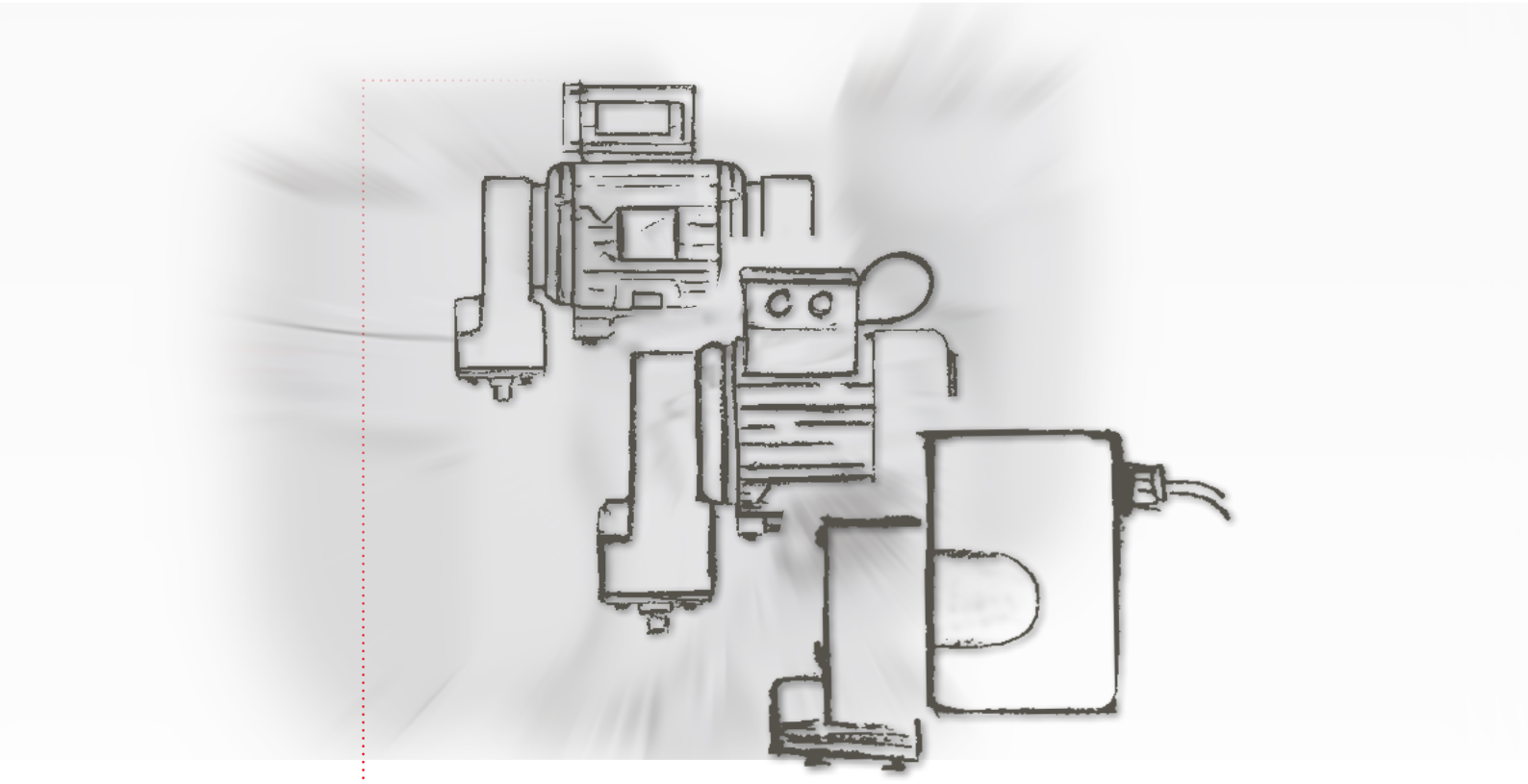
ORDER NUMBERS

Sample gas cooler KMK-2-1 WtG/1 gas path, 230V:	**R001657**	Sample gas cooler-Set **KMK-3.1-1** WtG/1 gas path 115V:	**R001890**
Sample gas cooler KMK-2-2 WtG/2 gas paths, 230V:	**R001659**	Sample gas cooler-Set **KMK-3.1-1** WtG/1 gas path 230V:	**R001891**
Sample gas cooler KMK-2-2 WtG/2 gas paths, 115V:	**R002027**	Sample gas cooler-Set **KMK-3.1-2** WtG/2 gas paths 115V:	**R001892**
		Sample gas cooler-Set **KMK-3.1-2** WtG/2 gas paths 230V:	**R001893**
Equipment:		Equipment:	
Spare tube KMK-2, PU 5 pieces	R000213	Spare tube KMK-3.1	R002556
		Filter element FF-3L-E2	R002081

Sample gas pumps

P-280 | P-400 | P-400-2

Suction of sample gas for gas analysis



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Sample gas pumps

P-280 | P-400 | P-400-2

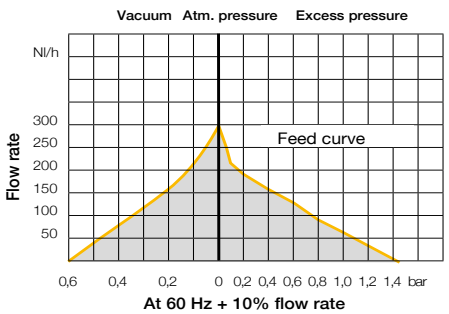
Sample gas pumps suck the sample gas from the sampling point to the conditioning system and the analyser. It is extremely resistant against agressive sample gas.
Sucking of sample gas with condensate is possible.

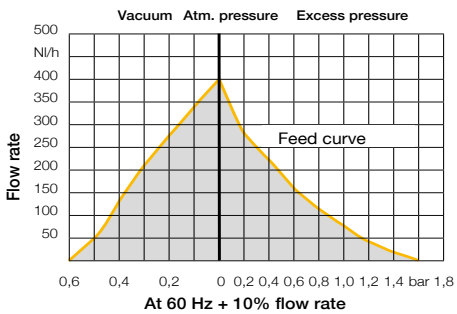
Sample gas pumps P-280	**Sample gas pumps** P-400	**Sample gas pumps** P-400-2
❑ Requires little space	❑ simple, robust construction	❑ simple, robust construction
❑ Easy to replace valves	❑ Easy to replace valves	❑ Easy to replace valves
❑ Adjustable needle valve as Bypass valve (optional)	❑ Adjustable needle valve as Bypass valve (optional)	❑ Adjustable needle valve as Bypass valve (optional)
❑ Single-piece bellows	❑ Single-piece bellows	❑ Single-piece bellows
❑ Sucks sample gas with condensate	❑ Sucks sample gas with condensate	❑ Sucks sample gas with condensate
❑ 115V-version FM C-US approval optional	❑ 115V-version FM C-US approval optional	❑ 115V-version FM C-US approval optional
❑ Mounting bracket and set of vibration absorber is included	❑ Mounting bracket and set of vibration absorber is included	❑ Mounting bracket and set of vibration absorber is included

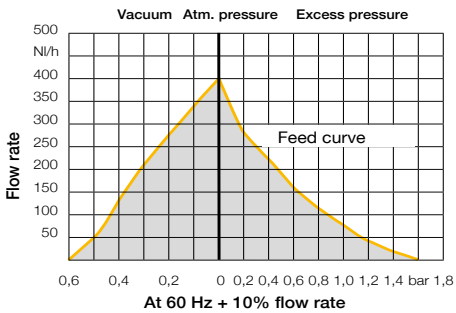
TECHNICAL DATA

Nominal voltage / Power input 230 V 50 Hz, 0,48 A 115 V 60 Hz, 0,84 A (optional) 24 V DC, 0,8 A (optional)	Nominal voltage / Power input 230 V 50/60 Hz. 0,85/0,8 A 115 V 50/60 Hz. 1,7/1,6 A (optional) 400 V 50/60 Hz. 0,5/0,43 A (optional)	Nominal voltage / Power input 230 V 50/60 Hz. 1,75/1,45 A 115 V 50/60 Hz. 3,5/2,9 A (optional)
Protection class mechanical IP 20	Protection class mechanical IP 20	Protection class mechanical IP 20
Materials in contact with media PVDF	Materials in contact with media, depending on the configuration: PVDF	Materials in contact with media, depending on the configuration: PVDF
Weight (without accessories) ca. 1,3 kg	Weight (without accessories) ca. 6,5 kg	Weight (without accessories) ca. 12,5 kg
Ambient temperature max. 50 °C	Ambient temperature max. 60 °C	Ambient temperature max. 60 °C
Medium temperature max. 70 °C	Medium temperature Valve PTFE/PVDF max. 100 °C Valve PTFE/PEEK max. 160 °C (optional)	Medium temperature Valve PTFE/PVDF max. 100 °C Valve PTFE/PEEK max. 160 °C (optional)
Nominal output: 280 l/h	Nominal output: 400 l/h	Nominal output: 2x400 l/h
Dimensions WITH ACCESSORIES (Mounting accessories and tube fitting) w 85 mm x h 175 mm x d 186 mm	Dimensions WITH ACCESSORIES (Mounting accessories and tube fitting) B 130 mm x H 262 mm x T 302 mm	Dimensions WITH ACCESSORIES (Mounting accessories and tube fitting) B 331 mm x H 276 mm x T 215 mm

FEED CURVE







ORDER NUMBERS

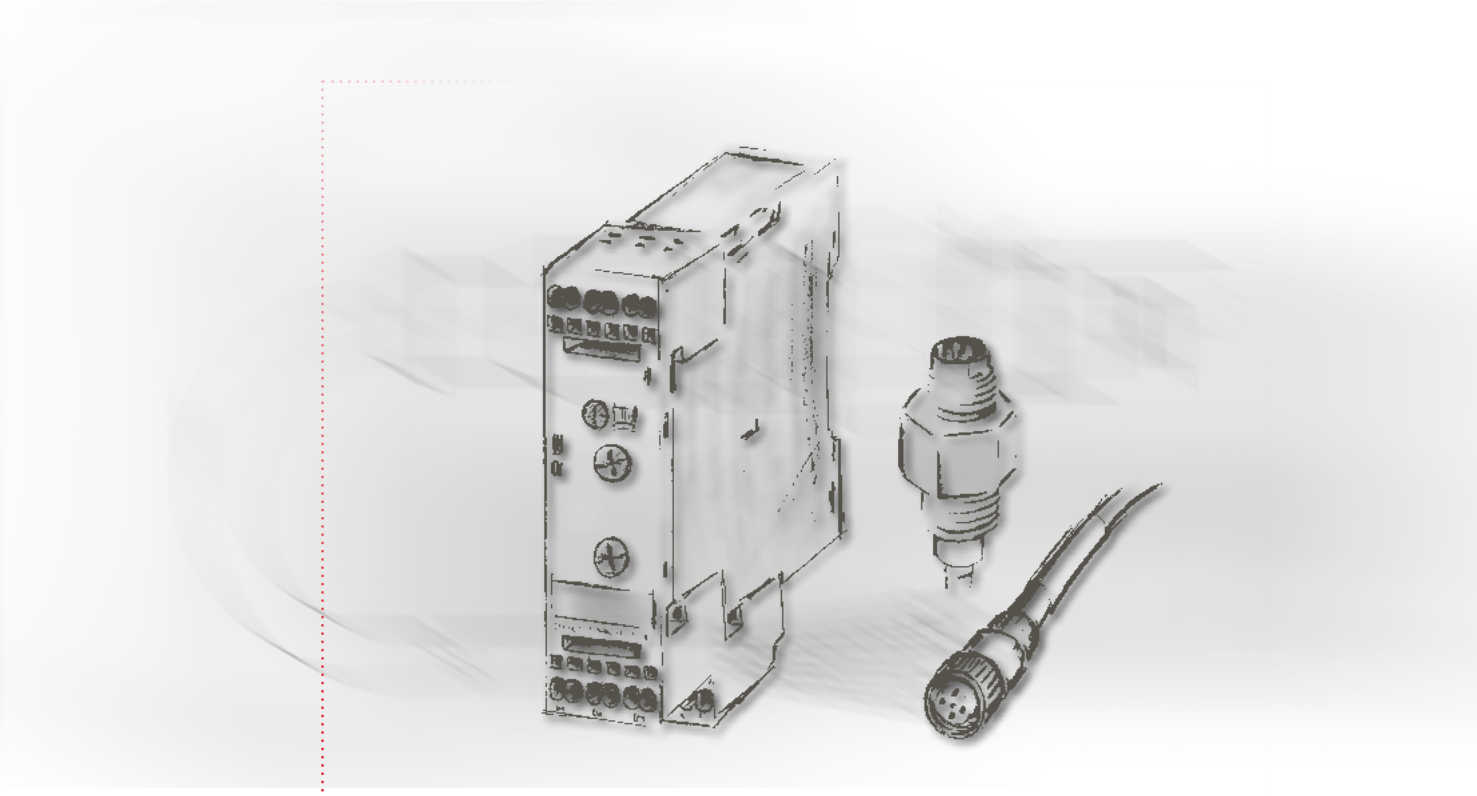
Sample gas p. P-280, 230V with accessories	**R000130**	**Sample gas p. P-400, 230V with accessories:**	**R001286**	**Sample gas p. P-400-2, 230V, inkl. Zubehör:**	**R001287**
Sample gas p. P-280, 230V with accessories:	**R001889**	**Sample gas p. P-400, 115V, with accessories:**	**R001395**	**Sample gas p. P-400-2, 115V inkl. Zubehör:**	**R001370**
wear parts:		wear parts:		wear parts:	
Set Inlet/outlet valve for P-280:	R000912	Set Inlet/outlet valve for P-400:	R000220	Set Inlet/outlet valve for P-400:	R000220
Bellow P-280:	R000913	Bellow P-400:	R000221	Bellow P-400:	R000221
Set of valves/eccentric for P-280	R000911	Set of valves/eccentric for P-400:	R001542	Set of valves/eccentric for P-400:	R001542

Further information on request!

Moisture sensor

Moisture sensor FS-3 | Sensor cable SK-3
Controller BG-3

Monitoring of condensate slip
at sample gas coolers



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Moisture sensor

Moisture sensor FS-3 | Sensor cable SK-3 | Controller BG-3

The composition of measuring gas is subject to fluctuations. A condensate slip behind the cooler can happen. Moisture sensors installed in the cooler output indicate such a slip.

This will generate the respective signals/alarms in the control system, combined with suitable controllers.

Moisture sensor FS-3

- ❏ Extremely fast warning at the beginning of the condensation
- ❏ Sensor versions with cable break monitoring

Material
PVDF,1.4571, Epoxite resin, 1.4576, PTFE

Cable length
Standard 4 m, 4 x 0,34²

Max. operating pressure
2 bar

Operating temperature
3° C up to 50° C

Sensor cable SK-3

- ❏ 4-pins
- ❏ PUR halogen free, DIN VDE 0472
- ❏ A-coding
- ❏ Water-resistant
- ❏ Quick and easy installation

Material
Contact: CuSn
Contact surface: Ni/Au
Knurl: die-cast zinc, nickel-plated
Handle body: TPU, flame retardant, self-extinguishing

Plug / socket size
M12

Conductor cross-section
0,34 mm²

Protection class
IP65/IP67

Ambient temperature (operation)
-5°C up to +80°C

Rated current in A
4 A / 250V

Cable Ø
4,7 mm

Cable Lenght
2m or 5m

Controller BG-3

- ❏ LED- display
- ❏ Adjustable response delay time
- ❏ 1Changer output

Supply voltage
24–240V DC and 50/60 Hz AC

switching output current
AC bis 3A / 24V DC 1 A

Protection class
IP 20

Dimensions (w x h x d /mm)
22,5 x 95,5 x 86

Connection
Terminals

ORDER NUMBERS

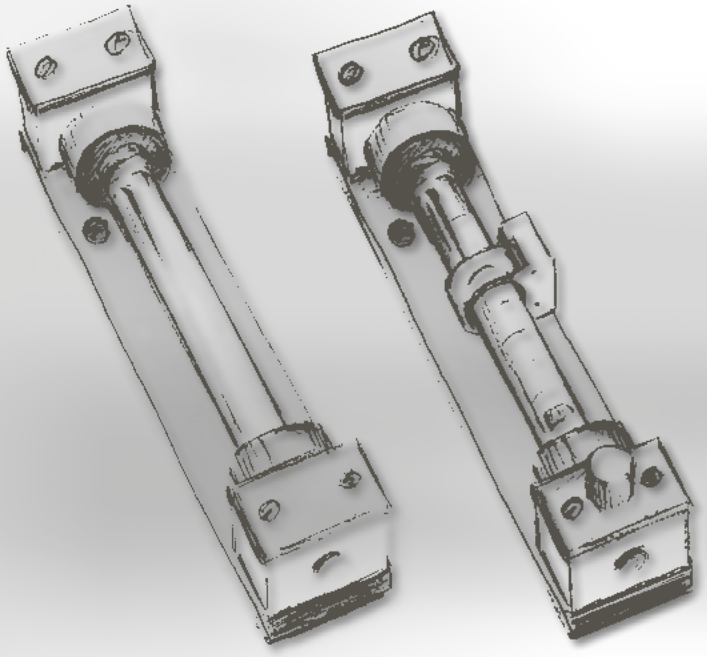
Moisture sensor FS-3:	**R000131**
Sensor cabel SK-3-2 (Length 2m)**:**	**R001120**
Sensor cabel SK-3-5 (Length 5m)**:**	**R001121**
Controller BG-3 for moisture sensor FS-3:	**R000318**

Further information on request!

Flow meter

SM-M | SM-VA | SM-K

Visual flow monitoring of sample gases



INDUSTRY SECTOR

Biomass
Power plants
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Chemistry

Gas analysis
Emission measurement
Operating measurement

Flow meter

SM-M | SM-VA | SM-K

Flowmeter for direct reading of the current flow of gases.
The flow of the media lifts a floating cone.
This indicates the flow on a scale.

Flow meter SM-M	**Flow meter** SM-VA	**Flow meter** SM-K
❑ *Brass housing*	❑ *Stainless steal housing*	❑ *PTFE- housing*
❑ Corrosion-resistant materials	❑ Corrosion-resistant materials	❑ Corrosion-resistant materials
❑ Easy installation	❑ Easy installation	❑ Easy installation
❑ Easy measuring tube replacement	❑ Easy measuring tube replacement	❑ Easy measuring tube replacement
❑ Vertical connection without valve	❑ Vertical connection without valve	❑ Vertical connection without valve
❑ Not oxygen-cleaned	❑ Not oxygen-cleaned	❑ Not oxygen-cleaned
❑ Vertical assembly	❑ Vertical assembly	❑ Vertical assembly
❑ With alarm module	❑ With alarm module	❑ Optionally with alarm module integrated (not retrofittable)
❑ Optionally with regulator valve	❑ Optionally with regulator valve	❑ Optionally with regulator valve
❑ Separate mounting brackets necessary	❑ Separate mounting brackets necessary	❑ Prepared for direkt mounting

TECHNICAL DATA

Operating conditions Outflow against atmospheric pressure (20°C,1.01325 bar abs)	Operating conditions Outflow against atmospheric pressure (20°C,1.01325 bar abs)	Operating conditions Outflow against atmospheric pressure (20°C,1.01325 bar abs)
Connection 2 x G 1/4" female thread	Connection 2 x G 1/4" female thread	Connection 2 x G 1/4" female thread
Temperature -15 up to +120°C (media temp.)	Temperature -15 up to +120°C (media temp.)	Temperature -20 up to +80°C
Pressure max.16 bar	Pressure max.16 bar	Pressure 4 bar
Installation length 210 mm (without connection accessories)	Installation length 210 mm (without connection accessories)	Installation length 205 mm (without connection accessories)
Materials in contact with media Measuring tube: Borosilicate glass with enclosure Housing: brass	Materials in contact with media Measuring tube: Borosilicate glass with enclosure Housing: stainless steel	Materials in contact with media Measuring tube: Borosilicate glass Housing: PTFE
Flow 0,2 up to 2l/min	Flow 0,2 up to 2l/min	Flow 0,4 up to 4l/min

Alarm module

The flow is controlled by the alarm module. In case of falling below the setted min.-flow, there is an alarm.

preassembled	preassembled	optional with alarm modul

Electronic evaluation unit SM-A-3

The electronic evaluation unit is used for signal conditioning.
Electronic evaluation unit 24V / DC

ORDER NUMBERS

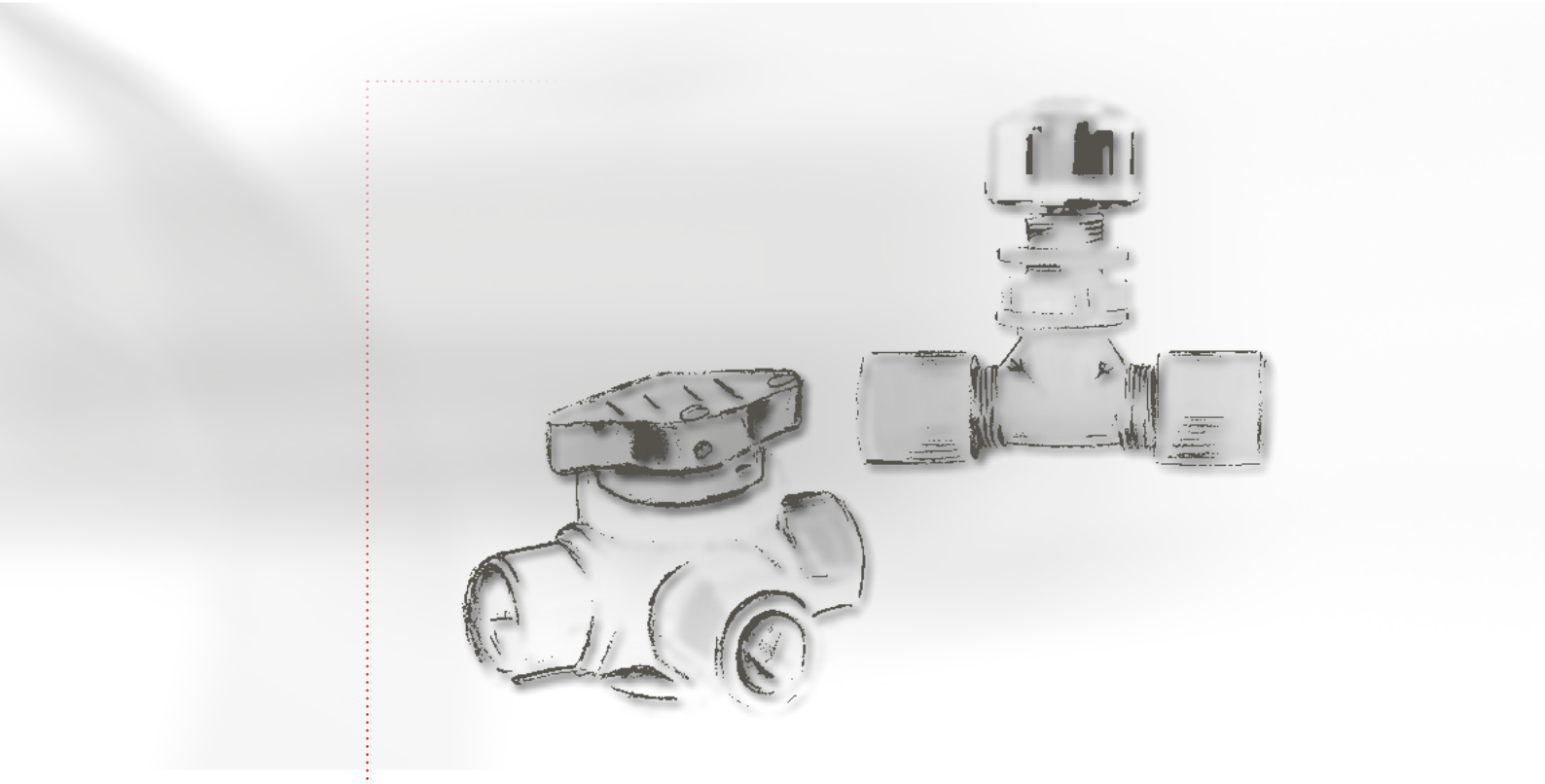
Flow meter SM-M-A-2	**R002030**	**Flow meter SM-VA-A-2**	**R002031**	**Flow meter SM-K-A-3**	**R000134**
				Flow meter SM-K-3	**R000135**
				Electronic evaluation SM-A-3	R000136
Alarm module for flow meter SM-M	**R000796**	**Alarm module for flow meter SM-VA**	**R000796**		
Mounting brackets for flow meter	R001399	Mounting brackets for flow meter	R001399		

Further information on request!

Flow regulation

Ball valve HV-K-3/2 | Regulating valve RV-K

Regulating of gases for the analysis



INDUSTRY SECTOR

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Flow regulation

Ball valve HV-K-3/2 | Regulation valve RV-K

The manually controllable ball valves and flow regulation valves are used for separation, regulation and control of gas flow in the analytics.

Ball valve HV-K-3/2

- 3/2 way ball valve, horizontal, with angle drilling
- Regulating and separation of agressive gases
- Save & compact
- Material: PVDF
- High resistant for most aggressive media
- Easy installation wherever required
- Maximum tightness: Valve inlet made in one piece. Simultaneous centering and sealing of the ball in the area of the connections

Regulation valve RV-K

- Needle valve
- Regulating and stop valve of gases
- Save & compact
- Material: PVDF
- High resistant for most aggressive media
- Two-pieces hand wheel for non slip operation
- Zero dead space construction
- Marking of regulation valves via exchangeable rings in different colours (included in the scope of delivery)

TECHNICAL DATA

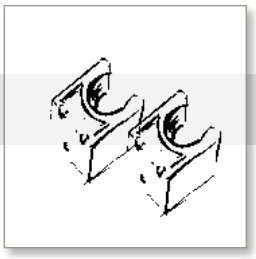
Ball valve HV-K-3/2	Regulation valve RV-K
Nominal diameter DN 04	Flow 2,2 l/min
Dimension d 49 mm x l 05 mm x b 49 mm	Dimension h 48,5 mm x l 51 mm x b 20 mm
Connection G 1/4" female thread	Connection 4/6 mm pipe connection
Material PVDF /FKM Sealing sleeve made of PTFE	Material PVDF
Valve inlet sealing with O-Ring (FKM)	
Pressure 10 bar	Pressure 10 bar
Temperature max 120° C	Temperature -20°C to +100°C

Fixing set

- Clamp for wall mounting

Dimension
DN 20

Material
PP-Polypropylene

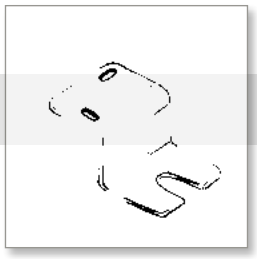


Mounting bracket

- Bracket for wall mounting

Dimensions
w 80 mm x h 50 mm x d 40 mm

Material
Galvanized steel
t=2 mm



ORDER NUMBERS

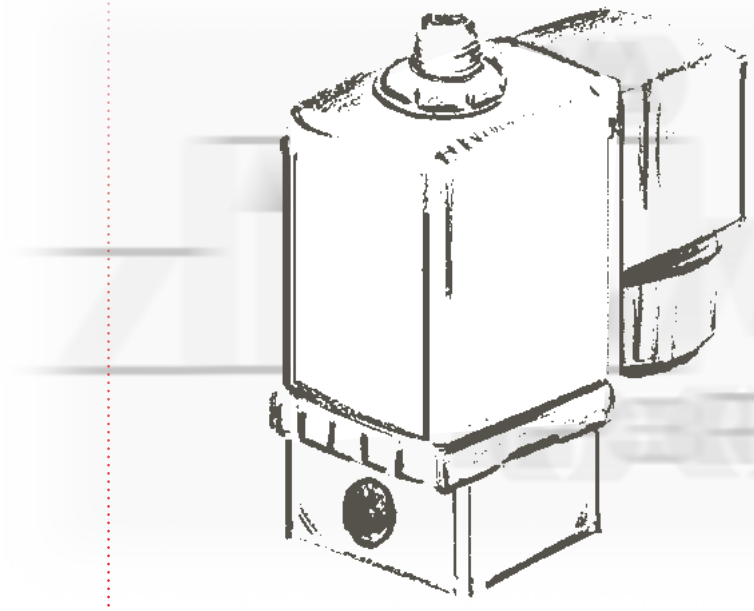
Ball valve HV-K-3/2:	**R000121**	**Regulation valve RV-K:**	**R001284**
Mounting set for ball valve HV-K-3/2:	R000122	Mounting bracket for RV-K:	R001400

Further information on request!

Solenoid valve

MV-M-3/2 | MV-M-2/2

Directional control of sample gas for the analysis



INDUSTRY SECTOR

Biomass
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Solenoid valve

MV-M-3/2 | MV-M-2/2

Solenoid valves for the control of gases for analysis.

Solenoid valve MV-M-3/2

- ❏ 3/2-way-valve, Brass
- ❏ Plunger valve
- ❏ Direct acting, compact
- ❏ Vibration proof, bolted coil system
- ❏ Energy-saving impulse versions

Solenoid valve MV-M-2/2

- ❏ 2/2-way-valve, Brass
- ❏ Plunger valve
- ❏ Direct acting, compact
- ❏ Vibration proof, bolted coil system
- ❏ Energy-saving impulse versions

TECHNICAL DATA

Solenoid valve MV-M-3/2	Solenoid valve MV-M-2/2
Housing Brass	Housing Brass
Gasket Viton/ FKM	Gasket Viton/ FKM
Threaded socket Class B	Threaded socket Class B
Protection class mecanical IP 65 (combined with relevant socket)	Protection class mecanical IP 65 (combined with relevant socket)
Nominal size 2,0	Nominal size 2,0
Line connection 2x G 1/4 female thread, 1x 6 1/8 male thread	Line connection 2x G 1/4 female thread, 1x 6 1/8 male thread
Pressure range 0-10 bar	Pressure range 0-10 bar
Effective coil power 8 W	Effective coil power 8 W
Operating voltage 24V DC optional 115V optional 230V	Operating voltage 24V DC optional 115V optional 230V

Power connection for Solenoid valve MV-M

- ❏ 28 mm, 3-pin
- ❏ with LED
- ❏ Protection class IP 65

For the properly electrical connection of the solenoid valves.

Mounting

- ❏ Holder for solenoid valve

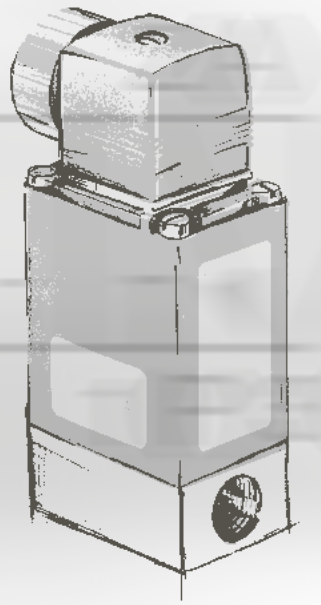
ORDER NUMBER

Solenoid valve MV-M-3/2:	R000123	Solenoid valve MV-M-2/2:	R000139
Power connection with LED 24VDC for Solenoid valve:	R000124	Power connection with LED 24VDC for Solenoid valve:	R000124
Holder for solenoid valve MV:	**R001098**	Holder for solenoid valve MV:	**R001098**

Solenoid valve

MV-VA-3/2 | MV-VA-2/2

Directional control of sample gas for the analysis



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Solenoid valve

MV-VA-3/2 | MV-VA-2/2

Solenoid valves for the control of gases for analysis.

Solenoid valve MV-VA-3/2

- ❏ 3/2-way-valve, stainless steel
- ❏ Pivoted armature valve, maintenance-free
- ❏ Direct acting, media separated valve
- ❏ Vibration proof, block screwed coil system
- ❏ Coil as energy-saving impulse versions or with electronic power reduction
- ❏ Suitable for aggressive media

Solenoid valve MV-VA-2/2

- ❏ 3/2-way-valve, stainless steel
- ❏ Pivoted armature valve, maintenance-free
- ❏ Direct acting, media separated valve
- ❏ Vibration proof, block screwed coil system
- ❏ Coil as energy-saving impulse versions or with electronic power reduction
- ❏ Suitable for aggressive media

TECHNICAL DATA

Housing Stainless steel1.4401	Housing Stainless steel1.4401
Gasket FKM	Gasket FKM
Protection class mecanical IP 65 (combined with relevant socket)	Protection class mecanical IP 65 (combined with relevant socket)
Nominal size 3,0	Nominal size 3,0
Line connection 3 x G 1/4 female thread	Line connection 3 x G 1/4 female thread
Pressure range 0-10 bar	DPressure range 0-10 bar
Effective coil power 11 W	Effective coil power 11 W
Operating voltage 24V DC optional 115V optional 230V	Operating voltage 24V DC optional 115V optional 230V

Power connection MV-VA

- ❏ 28 mm, 3-pin
- ❏ with LED
- ❏ Protection class IP 65

For the properly electrical connection of the solenoid valves.

Mounting

- ❏ Holder for MV

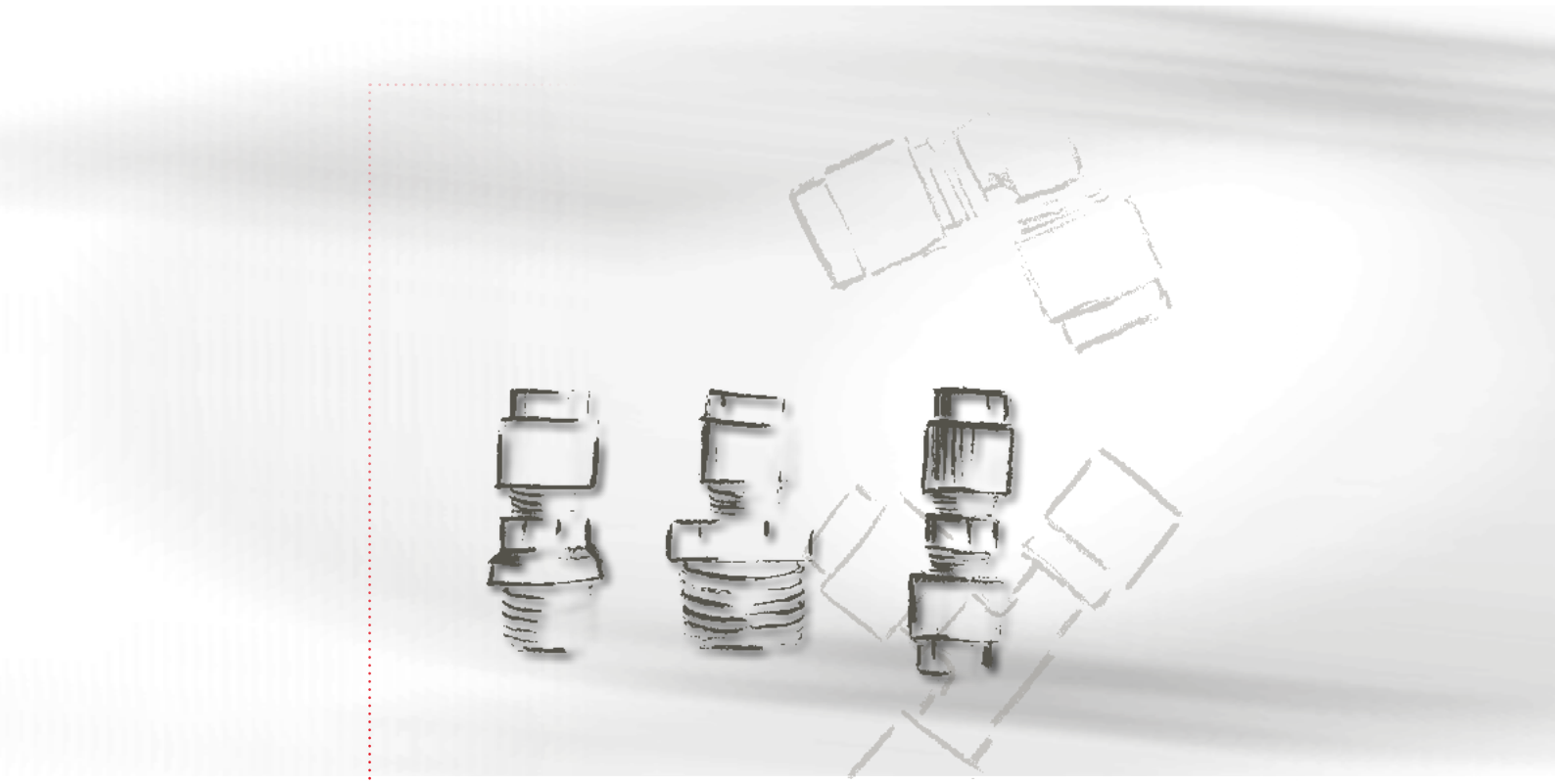
ORDER NUMBERS

Solenoid valve MV-VA-3/2:	**R002202**	**Solenoid valve MV-VA-2/2:**	**R001800**
Power connection with LED 24VDC for Solenoid valve:	R000124	Power connection with LED 24VDC for Solenoid valve:	R000124
Holder for MV:	R001098	Holder for MV:	R001098

Connecting elements

Screw in tube fittings & Connecting elements

Equipment for tube connections



INDUSTRY SECTOR

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Connecting elements

Screw in tube fittings
Connecting elements

Equipment for tube connections and tubing.

Screw in tube fittings & Connecting elements

❏ Simple, quick installation
❏ High chemical resistance

❏ Simple, quick installation
❏ High chemical resistance

❏ Simple, quick installation
❏ High chemical resistance

TECHNICAL DATA

Screw in tube fittings

Form	Straight
Material	PVDF
Connection thread	R 1/4”
Hose connection	1 x 4/6
Pressure (PN)	10 bar
Temperature	-40 ...100°C
Weight	7,5 g

Screw in tube fittings

Form	Straight
Material	PVDF
Connection thread	R 3/8”
Hose connection	1 x 6/8
Pressure (PN)	10 bar
Temperature	-40 ...100°C
Weight	7,8 g

Screw in tube fittings

Form	T-form
Material	PVDF
Connection thread	R 1/4”
Hose connection	2 x 4/6
Pressure (PN)	10 bar
Temperature	-40 ...100°C
Weight	11,6 g

Screw in tube fittings

Form	Right-angled
Material	PVDF
Connection thread	R 1/4”
Hose connection	1 x 4/6
Pressure (PN)	10 bar
Temperature	-40 ...100°C
Weight	7,9 g

Connecting elements

Form	Straight
Material	PVDF
Hose connection	2 x 4/6“
Pressure (PN)	10 bar
Temperature	-40 ...100°C
Weight	7,8 g

Connecting elements

Form	T-form
Material	PVDF
Hose connection	3 x 4/6“
Pressure (PN)	10 bar
Temperature	-40 ...100°C
Weight	11,6 g

Connecting elements

Form	Right-angled
Material	PVDF
Hose connection	2 x 4/6“
Pressure (PN)	10 bar
Temperature	-40 ...100°C
Weight	7,3 g

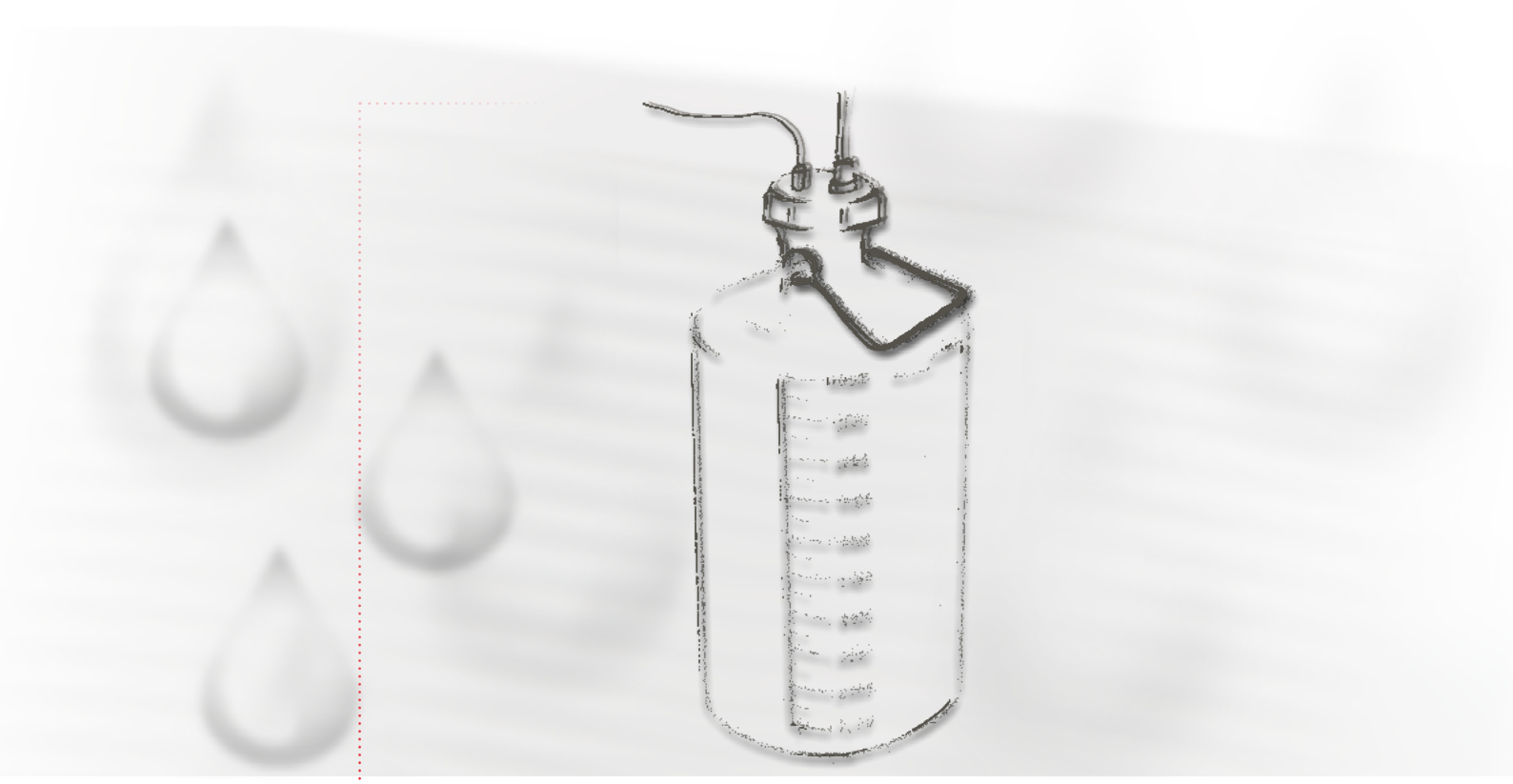
ORDER NUMBERS

1/4" DN 4/6 Screw in tube fittings straight	R002397
1/4" DN 4/6 T-form screw in tube fittings	R002289
1/4" DN 4/6 Right angled screw in tube fittings	R000587
3/8" DN 6/8 Screw in tube fittings straight	R000586
DN 4/6 Connecting elements straight	R000581
DN 4/6 T-form Connecting elements	R000583
DN 4/6 Right angled Connecting elements	R000584

Condensate reservoir

KSB-F-10

with integrated fill level signalling



INDUSTRY SECTOR

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Condensate reservoir

KSB-F-10

The KSB-F is an 10l nature coloured ballon with handels, litre scale, closure head and integrated fill level indicator.

Condensate reservoir KSB-F-10

- ❏ nature coloured
- ❏ litre scale
- ❏ with closure head and handels
- ❏ with integrated fill level indicator (liquit float switch)

TECHNICAL DATA

Dimensiones	Ø x h: 206 x 427 mm
Nominal volume	10l
Weight	ca. 600 g
Raw meterial	HD-PE
Nominal screw diameter	ca. 50 mm

Liquit float switch

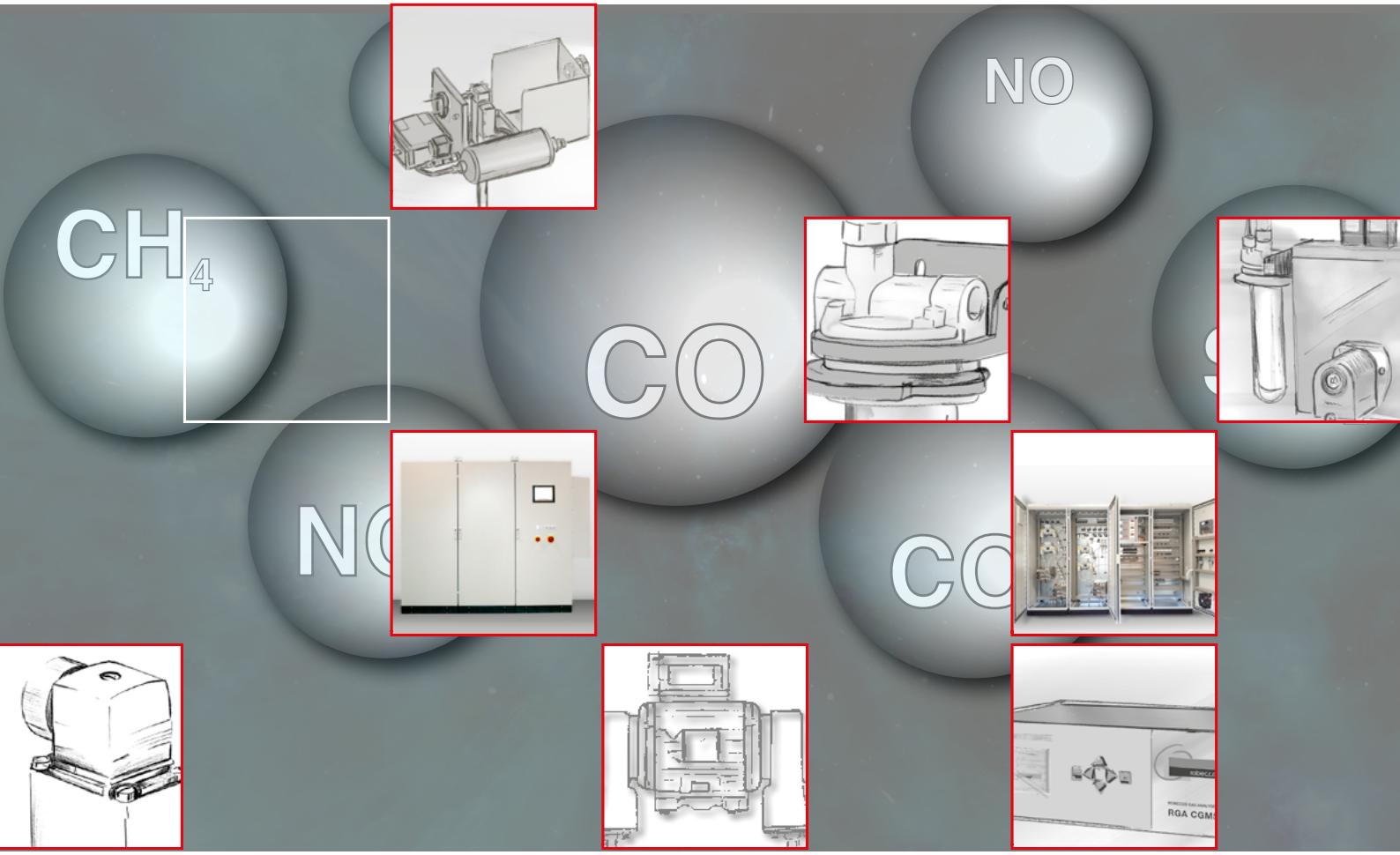
- ❏ Fill level indicator and signalling

TECHNICAL DATA

Contact type	1 closer
Cable length	0,30 m
Switching voltage	200 V/AC
Max. switching current	0,5 A
Protection	IP 64
RoHS-konform	Yes
Plug	2-pin, pin housing universal Mate-N-LOK

ORDER NUMBERS

Condensate reservoir KSB-F-10	**R002401**


NO
CH_4
CO
CO