Gas Analysis

Sample gas probes

GAS 222.11 Ex2

Installation and Operation Instructions

Original instructions

BE460063
09/2023

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Read this instruction carefully prior to installation and/or use. Pay attention particularly to all advises and safety instructions to prevent injuries. Bühler Technologies can not be held responsible for misusing the product or unreliable function due to unauthorised modifications.

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1 Introduction

1.1 Intended Use

The sample gas probe is intended for installation into gas analysis systems in commercial applications.

It may be operated in a Zone 2, explosion class IIC, explosive gas atmosphere which is rarely and only temporarily explosive. Zone 2 explosive gas atmospheres may be extracted with or transported with these probes.

The explosion protection markings on the probes are:

ATEX: Ⓔx II 3G Ex ec[1] mb[2] IIC T3/T4 Gc

IECEx: Ex ec[1] mb[2] IIC T3/T4 Gc

[1] Only for versions with terminal box.

[2] Only for versions with solenoid valve.

Passing through gases

Flammable gases above the UEL (upper explosion limit) may only be blown back with inert gases. Flammable gases from 25 % LEL (lower explosion limit) and up to the LEL may be blown back provided the operator ensures the blown back gas is not and cannot be explosive. For safety reasons we recommend only using inert gases in these cases as well.

Blowing back explosive atmospheres (range from LEL to UEL) with the probes is prohibited due to possible adiabatic compression (high blowback pressure against contaminated filter). The operator is responsible for compliance with these conditions taking into account his risk assessment.

Sample gas probes are among the main components in a gas conditioning system.

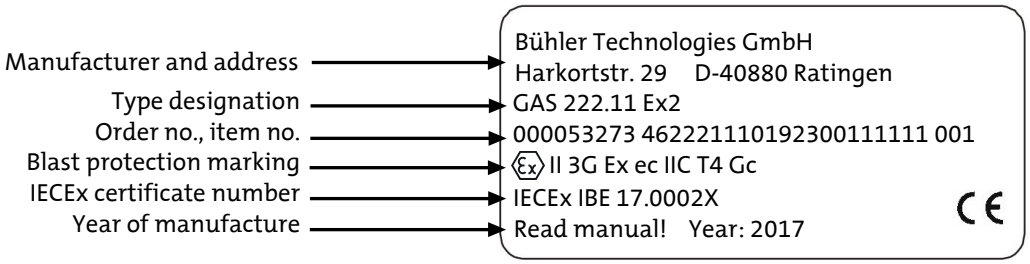
- Therefore also note the related drawing in the data sheet in the appendix.
- Before installing the device, verify the listed technical data meet the application parameters.
- Further verify all contents are complete.

Please refer to the type plate to identify your model. In addition to the job number it also contains the item number and model designation.

Please note the specific values of the device when connecting, and the correct versions when ordering spare parts.

1.2 Type Plate

Example:



1.3 Contents

- 1 x Sample gas probe
- 1 x Flange gasket and screws
- Product documentation
- Connection and mounting accessories (only optional)

1.4 Ordering instructions

The item number is a code for the configuration of your unit. Please use the following model key:

4622211	X	X	X	X	X	X	0	0	X	X	X	X	X	X	Product characteristics
															Junction box
	0														No
	1														Yes
															Flange
		0	1												Flange DN65 PN6
		0	2												Flange DN3"-150
															Hazardous area Outside and Inside
				2	9										Ex-Zone 2 outside, none inside
				2	2										Ex-Zone 2 outside and inside
															Temperature class
						3									T3
						4									T4
															Power supply sample probe
							0								none
															Calibration gas port
									0						No
									1						6 mm
									2						6 mm with check valve
									3						1/4"
									4						1/4" with check valve
															Capacitive vessel *
										0					No
										1					Yes
															Valve for pressurized air *
											0				Ball valve
											1				Solenoid valve 110 V (marked with "mb")
											2				Solenoid valve 230 V (marked with "mb")
											3				Solenoid valve 24 V (marked with "mb")
											9				none
															Pneumatic actuator for internal ball valve
												0			No
												1			Mono stable depressurized open
												2			Mono stable depressurized closed
															Limit switch for pneumatic actuator
													0		No
													1		Yes
															Solenoid valve for pneumatic actuator
														0	No
														1	110 V (marked with "mb")
														2	230 V (marked with "mb")
														3	24 V (marked with "mb")

* Blowback of explosive atmosphere prohibited.

1.5 Product Description

Probe	Description
GAS 222.11 Ex2	Probe with upstream and/or downstream filter, shut-off valve and blowback connection
Accessories	Please refer to the data sheet at the end of this manual for accessories for this probe.

2 Safety instructions

2.1 Important Information

This unit may only be used if:

- the product is being used under the conditions described in the operating- and installation instructions, used according to the nameplate and for applications for which it is intended. any unauthorized modifications to the device will void the warranty provided by Bühler Technologies GmbH,
- the limits in the data sheet and the instructions must be observed,
- the handle including O-ring are installed at a suitable ambient temperature range and filter (where applicable),
- monitoring equipment / protection devices must be connected correctly,
- service and repairs not described in these instructions is performed by Bühler Technologies GmbH,
- using genuine replacement parts.

Regulation IEC/EN 60079-14 must be observed when erecting electrical systems in explosive areas.

Additional national regulations pertaining to initial operation, operation, maintenance, repairs and disposal must be observed.

These operating instructions are a part of the equipment. The manufacturer reserves the right to change performance-, specification- or technical data without prior notice. Please keep these instructions for future reference.

Signal words for warnings

DANGER	Signal word for an imminent danger with high risk, resulting in severe injuries or death if not avoided.
WARNING	Signal word for a hazardous situation with medium risk, possibly resulting in severe injuries or death if not avoided.
CAUTION	Signal word for a hazardous situation with low risk, resulting in damaged to the device or the property or minor or medium injuries if not avoided.
NOTICE	Signal word for important information to the product.

Warning signs

These instructions use the following warning signs:

	Warns of a general hazard		General notice
	Warns of voltage		Unplug from mains
	Warns not to inhale toxic gasses		Wear respiratory equipment
	Warns of corrosive liquids		Wear a safety mask
	Warns of explosive areas		Wear gloves

2.2 General Hazard Warnings

The maximum surface temperatures of the probes also vary based on operating conditions (steam temperature, sample gas inlet temperature, ambient temperature, fluid flow rate). When used in **explosive areas, also particularly note** the related hazard warnings.

The equipment must be installed by a professional familiar with the safety requirements and risks.

Be sure to observe the safety regulations and generally applicable rules of technology relevant for the installation site. Prevent malfunctions and avoid personal injuries and property damage.

The operator of the system must ensure:

- Safety notices and operating instructions are available and observed,
- The respective national accident prevention regulations are observed,
- The permissible data and operational conditions are maintained,
- Safety guards are used and mandatory maintenance is performed,
- Legal regulations are observed during disposal,
- compliance with national installation regulations.

Maintenance, Repair

Please note during maintenance and repairs:

- Repairs to the unit must be performed by Bühler authorised personnel.
- Only perform conversion-, maintenance or installation work described in these operating and installation instructions.
- Always use genuine spare parts.
- Do not install damaged or defective spare part. If necessary, visually inspect prior to installation to determine any obvious damage to the spare parts.

Always observe the applicable safety and operating regulations in the respective country of use when performing any type of maintenance.

NOTICE

Accessories may limit critical operating parameters of the base unit

Adding accessories may limit critical operating parameters. Ambient temperatures, zone classifications, explosion groups, temperature classes or chemical resistances of accessories may vary from the base unit.
Always include all technical data in the operating instructions and data sheets of all components in the safety assessment.

NOTICE

When used in explosive areas

Regulation IEC/EN 60079-14 must be observed when erecting electrical systems in explosive areas.
Additional national regulations pertaining to initial operation, operation, maintenance, repairs and disposal must be observed.

DANGER

Electrical voltage

Electrocution hazard.

a) Disconnect the device from power supply.

b) Make sure that the equipment cannot be reconnected to mains unintentionally.

c) The device must be opened by trained staff only.

d) Regard correct mains voltage.

DANGER

Toxic, corrosive gas/condensate

Sample gas/condensate may be hazardous to health.

a) If necessary, ensure a safe gas/condensate discharge.

b) Always disconnect the gas supply when performing maintenance or repairs.

c) Protect yourself from toxic/corrosive gasses/condensate when performing maintenance. Wear appropriate protective equipment.

DANGER

Explosion hazard

Life and explosion risk may result from gas leakage due to improper use.

a) Use the devices only as described in this manual.

b) Regard the process conditions.

c) Check tubes and hoses for leakage.

DANGER

Danger to life and explosion during installation and maintenance

The unit must not be worked on (assembly, installation, maintenance) in explosive atmospheres.

DANGER

Use in explosive areas
Flammable gasses could ignite or explode. Avoid the following hazard sources:
Application area!
Never operate the gas probe outside the specifications. Extracting gases or gas mixtures which are also explosive in the absence of air is prohibited.
Electrostatic charge (sparking)!
The equipment may only be used where normal operating conditions do not frequently produce flammable, electrostatic discharge.
Always clean plastic housing parts and decals with a damp cloth.
Flame propagation!
If the process holds a risk of flame propagation, install a flame arrestor.
Adiabatic compression (explosion hazard)
Adiabatic compression may cause high gas temperatures during blowback. **Never blowback if gases are explosive**. **Only use nitrogen (inert gas) to blowback** flammable **gas**.

2.3 Ambient Temperature range of the equipment

The ambient temperature range may be limited based on the version. Please note the Ambient temperature ranges under "Technical Data".

3 Transport and storage

Only transport the product inside the original packaging or a suitable alternative.

The equipment must be protected from moisture and heat when not in use. They must be stored in a covered, dry and dust-free room at a temperature between -20 °C to 50 °C (-4 °F to 122 °F).

4 Installation and connection

NOTICE

Accessories may limit critical operating parameters of the base unit

Adding accessories may limit critical operating parameters. Ambient temperatures, zone classifications, explosion groups, temperature classes or chemical resistances of accessories may vary from the base unit.
Always include all technical data in the operating instructions and data sheets of all components in the safety assessment.

4.1 Installation site requirements

Sample gas probes are intended for flange mounting.

- Installation site and installation position are determined based on requirements specific to the application.
- If necessary, the connection piece should be slightly tilted toward the centre of the channel.
- The installation site should be protected from the weather.
- In addition, adequate and safe access for installation and future maintenance work should be provided. Particularly follow the uninstalled size of the probe tube!

If the probe is transported to the installation site in pieces, it will first need to be assembled.

4.2 Installation

DANGER

Danger to life and explosion during installation and maintenance

The unit must not be worked on (assembly, installation, maintenance) in explosive atmospheres.

DANGER

Explosion hazard

When used in explosive areas
Flammable gasses and dust could ignite or explode.
Never operate the gas probe outside the specifications. Extracting gases or gas mixtures which are also explosive in the absence of air is prohibited.

DANGER

Explosion hazard due to flame propagation

Severe injuries and damage to the system
If the process holds a risk of flame propagation, install a flame arrestor.

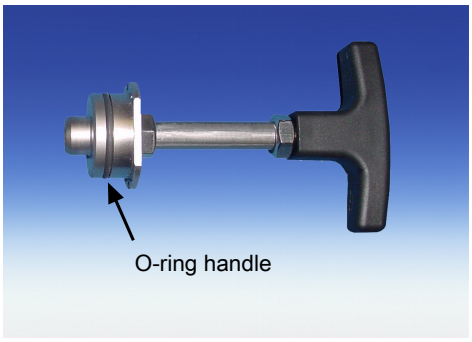
4.3 Installing the sampling tube (optional)

The sampling tube, if necessary with the fitting extension, must be screwed in. The probe is then attached to the mating flange using the included seal and nuts.

4.4 Installing the downstream filter

NOTICE

The downstream filter and the O-ring for the handle must be inserted prior to first start-up.
Operating without downstream filter prohibited!



Attach an O-ring suitable for the expected ambient temperature (see "Spare Parts and Accessories").

Attach the downstream filter to the handle. Then carefully insert the handle with filter in the gas probe and turn 90° to secure.

Verify the handle is seated correctly. When seated correctly it locks onto the filter housing.

4.5 Installing the upstream filter (Optional)

The upstream filter, if necessary with matching extension, must be screwed in. The probe is then attached to the mating flange using the included seals and screws.

4.6 Connecting the Gas Line

The sample gas line must be carefully and properly connected using a suitable fitting.

This table provides an overview of the sample gas probe connections:

	Probe GAS 222	Reservoir PAV01	Ball valve pneumatic drive	Control valve 3/2-way solenoid valve
Connecting flange [1]	DN65/PN6/ DN3"-150			
Sample gas inlet	G3/4			
Sample gas outlet	NPT 1/4			
Blowback connection	G3/8			
Test gas connection [1]	Tube Ø6 mm Tube Ø1/4			
Filling port		NPT 1/4		
Condensate		G1/2		
Bypass		NPT 1/4		
Control air			G1/8	G1/4 NPT 1/4

Tab. 1: Gas Probe Connections (Varies by Model)

[1] Varies by version.

Connecting the sample gas line requires a pipe fitting with NPT 1/4" female thread.

WARNING

Gas emanation

Sample gas can be harmful to the health!
Check the lines for leaks.

4.6.1 Blowback Connection

Without accessories installed for the blowback device, the blowback connection comes with a sealed G3/8 screw-in connection. If you require blowback, you will need to undo this screw-in connection and ensure the blowback line is connected properly and tight.

DANGER

Toxic, corrosive gasses

Explosive or toxic gases can develop due to a leaking or open blowback connection.

4.6.2 Connecting the calibrating gas line (optional)

Connecting the calibrating gas line requires a Ø6 mm or Ø1/4" pipe fitting.

If the calibrating gas connection was ordered with check valve, a Ø6 mm or Ø1/4" pipe can be connected directly to the check valve.

4.7 Connecting the Backwashing System and the Compressed Air Cylinder (Optional)

The air lines must be connected carefully and properly, using suitable fittings.

If the probe is equipped with pressure vessel for efficient blowback (optional), a manual shut-off valve (ball valve) must be installed in the air supply, immediately upstream from the pressure vessel.

On probes used to sample flammable gas, nitrogen (inert gas) must be used for blowback. Blowback of explosive gases is prohibited.

NOTICE

The operating pressure of the compressed air (inert gas) required for blowback must always be higher than the process pressure.
Required pressure differential min. 3 bar (44 psi).

DANGER

Broken pressure vessel

Gas leak, danger due to flying parts.
Maximum operating pressure of the pressure vessel 10 bar (145 psi)!
The operating pressure reduces based on the operating voltage (see solenoid valve type plate).

DANGER

Adiabatic compression during gas blowback (explosion hazard)!

Adiabatic compression may cause high gas temperatures and must be checked by the user.
Gas blowback may result in high gas temperatures due to adiabatic compression. This can cause flammable gases to ignite spontaneously.

a) Blowback of explosive atmosphere / gases is prohibited.

b) Flammable atmosphere / gases (non-explosive) may only be blown back with nitrogen (inert gas).

4.8 Electrical Connections

WARNING

Hazardous electrical voltage

The device must be installed by trained staff only.

CAUTION **Wrong mains voltage**

Wrong mains voltage may damage the device.
Regard the correct mains voltage as given on the type plate.

CAUTION **Equipment damage**

Cables damaged
Do not damage the cable during installation. Install a strain relief for the cable connection. Secure the cable against twisting and loosening. Please note the temperature resistance of the cables (> 100 °C/212 °F).

Only use cables with a temperature resistance of > 100 °C (212 °F) to connect to power. Make sure the connecting cable has sufficient strain relief.

4.8.1 Version With Terminal Box

This probe version includes a terminal box. All electrical connections are factory connected to the terminals in the terminal box.

Connect the respective power supply for the solenoid valves to the terminals per the connection diagram.

The probe may only be operated using the Ex e cable fittings and the terminal box closed. Never change the terminal assignment.

4.8.2 Connecting the Earth Conductor/Grounding

Always connect all of the designated connections on your unit to your protective bonding system. Connect the grounding to the additional equipotential bonding system terminal on the housing.

4.8.3 Solenoid Valves (Optional)

DANGER **Explosion hazard when opening the solenoid valve housing**

The solenoid valve is a closed system. It must not be removed!

A fuse suitable for the rated current (max. 3 x Ib per IEC 60127-2-1) or a protective motor switch with short circuit and fast thermal response (set for rated current) must be connected upstream from each magnet to prevent short-circuits.

- For magnets with a very low rated current, a fuse of the lowest current value under the IEC standard will suffice. This fuse must be connected separately, upstream.
- The rated fuse voltage must be equal to or greater than the specified nominal voltage (U_N +10 %) of the magnet. The fuse rating is specified in the type plate of the solenoid valve.
- The limiting breaking capacity of the fuse element must be equivalent to or greater than the maximum short-circuit current expected at the installation site (typically 1500 A).

DANGER **Potential equalization/static charge**

Static charges can result in incendive sparking.
Avoid static charges. All conductive probe parts must be earthed!
The housing has a connection for an earth/equipotential bonding conductor. Ensure the housing is adequately earthed (minimum conductor cross-section 4 mm^2).
Particularly also observe the requirements of IEC/EN 60079-14!

4.8.4 Limit Switch (Optional)

The optimal limit switch has a separate terminal box with terminals (terminal diagram see "Appendix").

5 Operation and Control

NOTICE

The device must not be operated beyond its specifications.

NOTICE

The weather hood (if applicable) must be closed during operation!

WARNING

Housing or component damage

Never exceed the maximum working pressure and temperature range of the drive.

DANGER

Explosion hazard due to electrostatic discharge

Equipment may only be used where normal operating conditions do not produce frequent flammable, electrostatic discharge.

5.1 Before Startup

Before starting the device, verify:

- The hose- and electrical connections are not damaged and correctly installed.
- No parts of the sample gas probe have been removed.
- The protection and monitoring devices are installed and functional (e.g. flame arrester).
- The gas inlet and outlet on the gas probe are open.
- Ambient parameters are met.
- Probe parts are resistant to media to be conveyed and in the surrounding area.
- The performance specifications in the type plate are met.
- The electrical connections are tight.
- The monitoring equipment is connected and set as specified.
- All connection cables are installed without strain.
- Precautions have been taken.
- The earth is proper and functional.
- The downstream filter and the handle with O-ring are installed (if applicable).

6 Maintenance

– Damaged parts must be replaced immediately.
– Regularly check the function of the electrical protection.

During maintenance, remember:

– The equipment must be maintained by a professional familiar with the safety requirements and risks.
– Only perform maintenance work described in these operating and installation instructions.
– Observe the respective safety regulations and operating specifications when performing any type of maintenance.
– Always use genuine spare parts.

DANGER

Danger to life and explosion during installation and maintenance

The unit must not be worked on (assembly, installation, maintenance) in explosive atmospheres.

DANGER

Electrical voltage

Electrocution hazard.

a) Disconnect the device from power supply.
b) Make sure that the equipment cannot be reconnected to mains unintentionally.
c) The device must be opened by trained staff only.
d) Regard correct mains voltage.

DANGER

Toxic, corrosive gases

The measuring gas led through the equipment can be hazardous when breathing or touching it.

a) Check tightness of the measuring system before putting it into operation.
b) Take care that harmful gases are exhausted to a save place.
c) Before maintenance turn off the gas supply and make sure that it cannot be turned on unintentionally.
d) Protect yourself during maintenance against toxic / corrosive gases. Use suitable protective equipment.

DANGER

Dangerous electrostatic charge (explosion hazard)

Incendive electrostatic charges may occur when cleaning plastic housing parts and decals (e.g. with a dry cloth or compressed air). The sparks this produces could ignite flammable, explosive atmospheres.
Always clean plastic housing parts and decals **with a damp cloth**!

WARNING

Housing or component damage

Never exceed the maximum working pressure and temperature range of the drive.

CAUTION

Hot surface

Risk of burns
Depending on the operating parameters, the housing temperature may reach over 100 °C during operation.
Allow the unit to cool down before performing maintenance.

CAUTION

Excess pressure

The unit mustn't be pressurised or energised when opened.
If necessary, close the gas supply and ensure a safe pressure on the process end before opening.

CAUTION

Drive pressurised

Never loosen or remove the cover or any accessories with the drive pressurised.

CAUTION

Never open the drive with the function "single-acting"!

This may only be done at the manufacturer's plant.

CAUTION

Do not attach levers or tools to the drive's spindle!

Levers and tools on the spindle can flap around when switching the compressed air or control voltage back on and cause serious injury or damage!

6.1 Maintaining the filter element

The probes feature a particle filter which needs to be changed as it becomes dirty.

To do so, disconnect the voltage supply and if applicable close the shut-off valve to the process or switch off the process.

CAUTION! Do not damage the rear filter seat.

NOTICE

Ceramic filter elements are very brittle by nature. Handle them with care, don't let them fall.
Filter elements made out of sintered stainless steel can be cleaned in an ultrasonic bath and be used several times as long as both seals are still in proper conditions.

6.1.1 Replacing the downstream filter

- Unlock and raise the weather hood (if applicable).
- Turn the handle at the back end of the probe by 90° (handle must then be horizontal), pushing in slightly, and remove.
- Remove the dirty filter element and check the sealing surfaces.
- Before installing the new filter element, replace the seal on the handle plug (seal included with the filter element). When changing the seals in low temperatures the temperature limits must particularly be observed (see "Spare Parts and Accessories")
- Then carefully insert the handle with new filter, push in slightly and turn 90° (handle must then be vertical). Pull on the handle to verify the filter element is firmly seated.
- With the filter removed, if necessary also need clean the inside of the sampling tube by blowing it out or using a cleaning wand.

NOTICE

The weather hood (if applicable) can only be closed again when the handle is completely vertical. To do so, loosen the hood from the locking supports by lifting slightly, then flip down. Ensure that the hood lock clicks into place correctly.

6.1.2 Replacing the upstream filter

The probe can be equipped with both an upstream filter as well as an downstream filter. When sampling flammable gases, nitrogen (inert gas) must be used for blowback. Blowback of explosive gases is prohibited.

The effectiveness of cleaning a filter within a process is directly influenced by the available airflow (amount of gas). We therefore recommend using a pressure vessel directly on the probe.

With sufficient upstream filter blowback (within the process stream) the probes are maintenance-free. However, due to process conditions the filter may clog over time. In this case the filter element will need to be replaced.

To do so, the probe must be completely removed and reinstalled after changing the element. If the probe is equipped with an downstream filter, it must be replaced.

NOTICE

Ceramic filter elements are very brittle by nature. Handle them with care, don't let them fall.
Filter elements made out of sintered stainless steel can be cleaned in an ultrasonic bath and be used several times as long as both seals are still in proper conditions.

NOTICE

The weather hood (if applicable) can only be closed again when the handle is completely vertical. To do so, loosen the hood from the locking supports by lifting slightly, then flip down. Ensure that the hood lock clicks into place correctly.

Condensate inside the pressure vessel

Depending on the installation site and application conditions a small amount of condensate may form inside the blowback air pressure vessel. Open the drain screw at the bottom of the vessel and drain the condensate at least once a year.

If the probe needs to be serviced more frequently due to operating conditions, we recommend also draining the condensate at these intervals.

CAUTION

High pressure

Pressure vessel under pressure.
Before opening the condensate drain, close the air supply to the blowback control and drain the vessel by manual blowback.
Pressing the main switch for the blowback control to interrupt the voltage supply.

6.2 Backwashing the Intake Filter (within the process stream)

DANGER

Adiabatic compression during gas blowback (explosion hazard)!

Adiabatic compression may cause high gas temperatures and must be checked by the user.
Gas blowback may result in high gas temperatures due to adiabatic compression. This can cause flammable gases to ignite spontaneously.

a) Blowback of explosive atmosphere / gases is prohibited.

b) Flammable atmosphere / gases (non-explosive) may only be blown back with nitrogen (inert gas).

Be sure to use filtered air with a minimum rating of PNEUROP / ISO Class 4 for blowback:

Class	Particles / m^3 Particle size: (1 to 5) µm	Pressure dew point [°C]	Residual oil content [mg / m^3]
4	**to 1000** (no particles ≥ 15 µm)	≤ 3	≤ 5

6.2.1 Manual Blowback (Without Blowback Control)

The shut-off valve in the air supply (inert gas supply) to the pressure vessel must be open. The optional pressure gauge on the pressure vessel shows the current operating pressure.

– To blowback, first close the shut-off valve in the gas probe (handle below the probe/weather hood).
– Then **abruptly** open the ball valve inside the connecting line from the pressure vessel to the probe until the display on the pressure gauge has dropped to the lowest reading.
– After blowback, close the ball valve and open the shut-off valve in the probe.

6.2.2 Automatic Blowback (External Blowback Control)

For automatic blowback, the shut-off valve in the probe with must have a pneumatic control (optional). The control unit for the system is designed for sequential valve control, i.e.:

1. Close the shut-off valve in the probe using the pneumatic control.
2. Open the solenoid valve between the pressure vessel and probe for approx. 10 seconds.
3. Open the shut-off valve in the probe.

Blowback can also be set as a closed process at intervals ranging from several minutes to hours or even days based on requirements.

6.3 Maintenance Schedule

NOTICE

When using the probe in explosive areas the maintenance schedule must be observed!

Maintenance schedule for normal ambient conditions:

Component	Interval in operating hours	Work to be performed	To be performed by
Entire probe	every 8000 h	– Check gas connections – Check safety devices and controllers – Check electrical protective measures – Working properly, dirt, visual inspection for dirt/damage. If damaged, replace or have repaired by Bühler.	Operator
Ball valves	every 8000 h	– Check ball valve function and check for leaks.	Operator
Filter	every 8,000 h	– Check dirt level of filter.	Operator
Seals	every 8,000 h	– Replace O-rings. – Replace seals after every filter change.	Operator
Pressure vessel	every 8,000 h	– Drain condensate	Operator
Drive	1 x per year	– Replace seals, guides and lubricants.	Manufacturer
Entire probe With respect to ball valve, pneumatic and solenoid valves	after 20,000 h or 3 years	– Inspection by Bühler	Service technician / Bühler
Limit switch	after 5 years	– Replace seals on the shaft and the housing cover.	Operator

7 Service and repair

This chapter contains information on troubleshooting and correction should an error occur during operation.

Repairs to the unit must be performed by Bühler authorised personnel.

Please contact our Service Department with any questions:

Tel.: +49-(0)2102-498955 or your agent

For further information about our services and customised maintenance visit http://www.buehler-technologies.com/service.

If the equipment is not functioning properly after correcting any malfunctions and switching on the power, it must be inspected by the manufacturer. Please send the equipment inside suitable packaging to:

Bühler Technologies GmbH

- Reparatur/Service -

Harkortstraße 29

40880 Ratingen

Germany

Please also attach the completed and signed RMA decontamination statement to the packaging. We will otherwise be unable to process your repair order.

You will find the form in the appendix of these instructions, or simply request it by e-mail:

service@buehler-technologies.com.

7.1 Troubleshooting

CAUTION

Risk due to defective device

Personal injury or damage to property

a) Switch off the device and disconnect it from the mains.

b) Repair the fault immediately. The device should not be turned on again before elimination of the failure.

Problem / Malfunction	Possible cause	Action
No or reduced gas flow	– Filter element clogged	– Clean or replace filter element
	– Gas circuit clogged	– Clean sampling tube
	– Ball valve closed	– Open ball valve
	– Blowback (optional) not responding	– Check compressed air supply
		– Check solenoid valve, check pneumatic control

Tab. 2: Troubleshooting

7.2 Spare Parts and Accessories

Please also specify the model and serial number when ordering parts.

Upgrade and expansion parts can be found in our catalog.

Available spare parts:

Item no.	Description
90 091 05	Measuring outlet seal
90 090 79	Flange seal DN65 PN6
90 090 42	Flange seal ANSI3” 150 lbs
90 090 68	Flat seal FD 40 WS
46 222 012	Seal kit for filter element and probe, material: Viton
46 222 024	Seal kit for filter element and probe, material: Perfluoroelastomer
46 222 010	Downstream filter, sintered stainless steel, material: Viton
	Please see the accessories data sheet in the appendix for filter elements

8 Disposal

The applicable national laws must be observed when disposing of the products. Disposal must not result in a danger to health and environment.

The crossed out wheelie bin symbol on Bühler Technologies GmbH electrical and electronic products indicates special disposal notices within the European Union (EU).

The crossed out wheelie bin symbol indicates the electric and electronic products bearing the symbol must be disposed of separate from household waste. They must be properly disposed of as waste electrical and electronic equipment.

Bühler Technologies GmbH will gladly dispose of your device bearing this mark. Please send your device to the address below for this purpose.

We are obligated by law to protect our employees from hazards posed by contaminated devices. Therefore please understand that we can only dispose of your waste equipment if the device is free from any aggressive, corrosive or other operating fluids dangerous to health or environment. **Please complete the "RMA Form and Decontamination Statement", available on our website, for every waste electrical and electronic equipment. The form must be applied to the packaging so it is visible from the outside.**

Please return waste electrical and electronic equipment to the following address:

Bühler Technologies GmbH
WEEE
Harkortstr. 29
40880 Ratingen
Germany

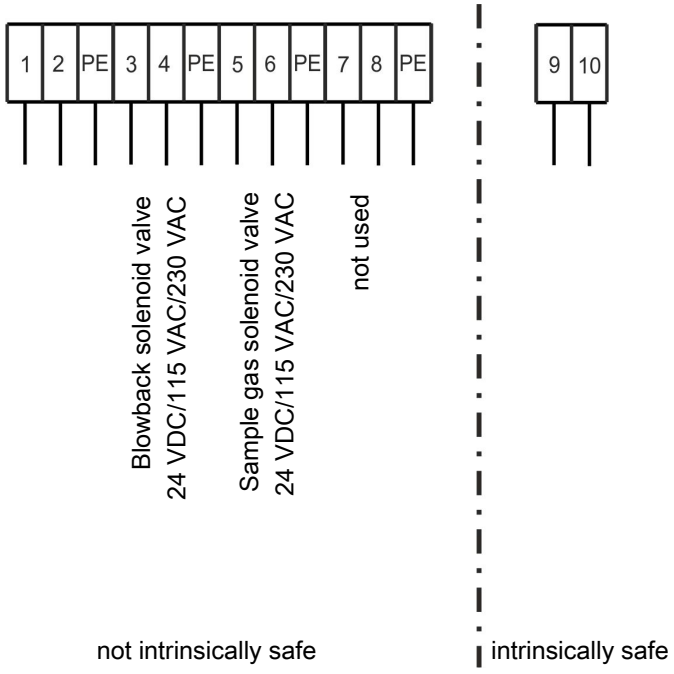
Please also observe data protection regulations and remember you are personally responsible for the returned waste equipment not bearing any personal data. Therefore please be sure to delete your personal data before returning your waste equipment.

9 Appendices

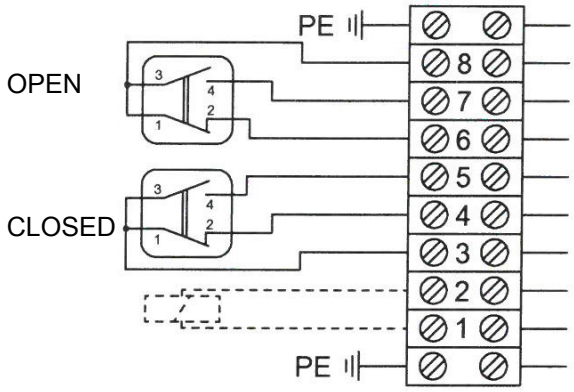
9.1 Technical Data

Gas Probe Technical Data		
Ambient temperature without accessories:	-20 to +80 °C	
Ambient temperature for accessories:	**Component**	**Ambient temperature range**
	Valve for pressurized air:	-30 °C < T_{amb} < +55 °C
	Solenoid valve for pneumatic actuator:	-10 °C < T_{amb} < +55 °C
	Pneumatic actuator:	-20 °C < T_{amb} < +80 °C
	Limit switch:	-25 °C < T_{amb} < +60 °C
	Junction box:	-20 °C < T_{amb} < +70 °C
Max. gas inlet temperature:	+195 °C (T3)/+130 °C (T4)	
Medium temperature (blowback):	**Component**	**Medium temperature range**
	Valve for pressurized air:	-10 °C to +80 °C
	Solenoid valve for pneumatic actuator:	-10 °C to +100 °C
Max. operating pressure:	6 bar	
Materials in contact with media		
Flange:	Stainless steel 1.4571	
Probe body:	Stainless steel 1.4571	
Ball valve:	Stainless steel 1.4408/1.4462/PTFE	
Seal:	Stainless steel 1.4404/graphite/and see filter	
Markings:	ATEX: Ⓔx II 3G Ex ec mb IIC T3/T4 Gc IECEx: Ex ec mb IIC T3/T4 Gc	

9.2 Terminal Diagram Probe Terminal Box

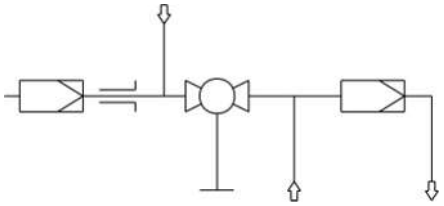


9.3 Terminal Diagram Terminal Box Limit Switch

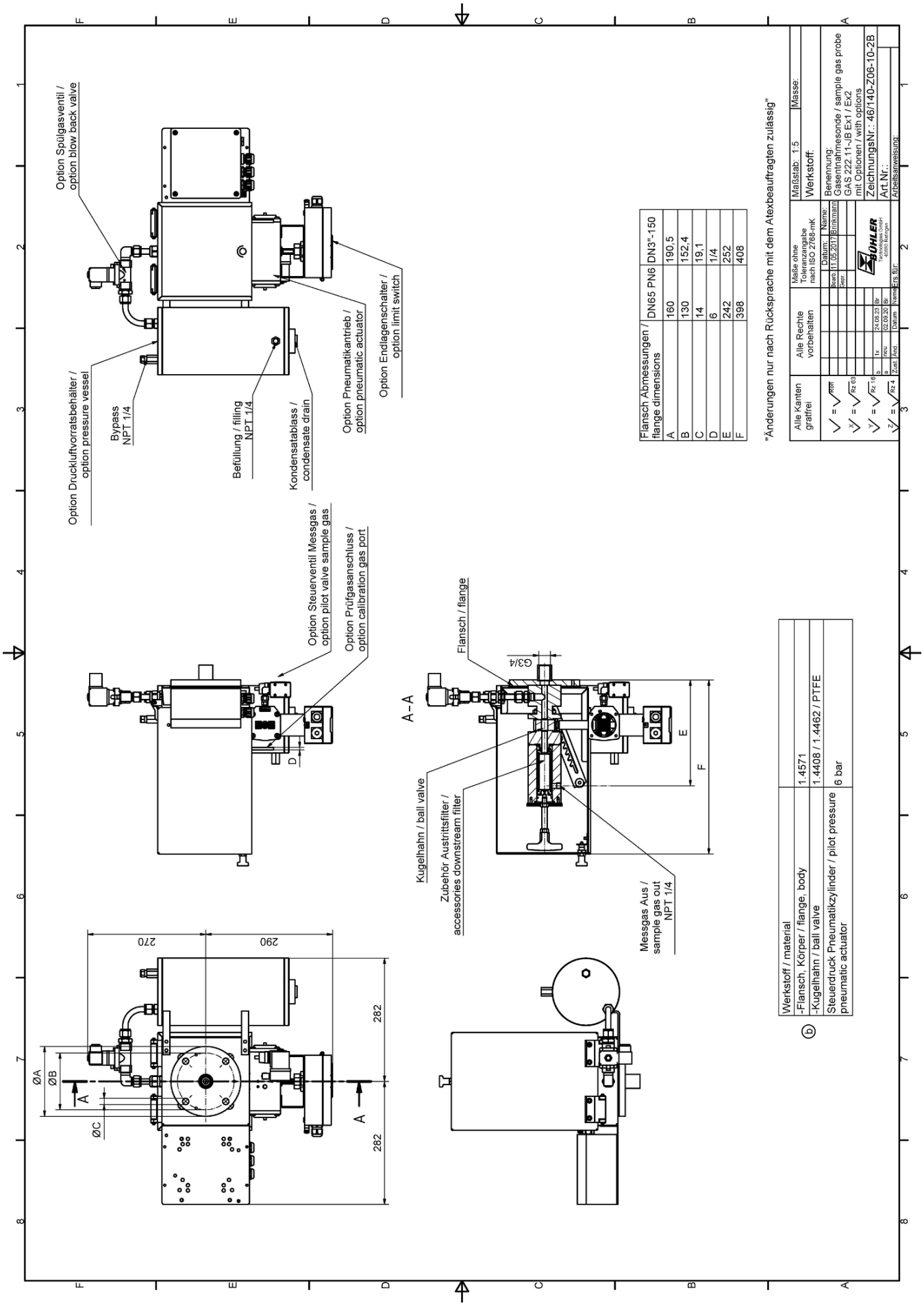


The connection diagram shows the limit switch box in the intermediate position. Switches not actuated.

9.4 Flow chart



9.5 Dimensions



9.6 List of chemical resistance

Materials of your device in contact with media are printed on the type plate.

Formula	Medium	Concentration	Teflon® PTFE	FFKM	Viton® FPM	V4A
CH_3COCH_3	Acetone		1/1	1/1	4/4	1/1
C_6H_6	Benzol		1/1	1/1	3/3	1/1
Cl_2	Chlorine	10 % wet	1/1	1/1	3/0	4/4
Cl_2	Chlorine	97 %	1/0	1/0	1/1	1/1
C_2H_6	Ethane		1/0	1/0	1/0	2/0
C_2H_5OH	Ethanol	50 %	1/1	1/1	2/2	1/0
C_2H_4	Ethylene		1/0	1/0	1/0	1/0
C_2H_2	Ethyne		1/0	1/0	2/0	1/0
$C_6H_5C_2H_5$	Ethylbenzene		1/0	1/0	2/0	1/0
HF	Hydrofluoric acid		1/0	2/0	4/0	3/4
CO_2	Carbon dioxide		1/1	1/0	1/1	1/1
CO	Carbon monoxide		1/0	1/0	1/0	1/1
CH_4	Methane	technically pure	1/1	1/0	1/1	1/1
CH_3OH	Methanol		1/1	1/1	3/4	1/1
CH_3Cl_2	Methylene chloride		1/0	1/0	3/0	1/1
H_3PO_4	Phosphoric acid	1-5 %	1/1	1/1	1/1	1/1
H_3PO_4	Phosphoric acid	30 %	1/1	1/1	1/1	1/1
C_3H_8	Propane	gaseous	1/1	1/0	1/0	1/0
C_3H_6O	Propylene oxide		1/0	2/0	4/0	1/0
HNO_3	Nitric acid	1-10 %	1/1	1/0	1/1	1/1
HNO_3	Nitric acid	50 %	1/1	1/0	1/0	1/2
HCl	Hydrochloric acid	1-5 %	1/1	1/1	1/1	2/4
HCl	Hydrochloric acid	35 %	1/1	1/1	1/2	2/4
O_2	Oxygen		1/1	1/1	1/2	1/1
SF_6	Sulphur hexafluoride		1/0	1/0	2/0	0/0
H_2SO_4	Sulfuric acid	1-6 %	1/1	1/1	1/1	1/2
H_2S	Hydrogen sulphide		1/1	1/1	4/4	1/1
N_2	Nitrogen		1/1	1/0	1/1	1/0
$C_6H_5C_2H_3$	Styrene		1/1	1/0	3/0	1/0
$C_6H_5CH_3$	Toluol (methylbenzene)		1/1	1/1	3/3	1/1
H_2O	Water		1/1	1/1	1/1	1/1
H_2	Hydrogen		1/0	1/0	1/0	1/0

0 - no information available

1 - durability/suitability very good

2 - durability/suitability good

3 - limited suitability

4 - not suitable

Two values are specified per medium. Left number = value at 20 °C, right number = value at 50 °C.

Important information

The tables were listed based on specifications from various raw material manufacturers. The values solely refer to laboratory tests using raw materials. Components made from these are often subject to impacts which cannot be determined in laboratory testing (temperature, pressure, material strain, impacts of chemical agents, design features, etc.). The values specified can therefore only serve as a guideline. When in doubt, we recommend performing a test. These specifications do not infer a legal claim, we exclude any warranty and liability. The chemical and mechanical durability alone do not suffice to determine the usage property of a product, particularly e.g. the regulations for liquid fuels (Ex-protection) must be observed.

Durability to other mediums available upon request.

9.7 User book (Please make copies)

Maintained on	Unit no.	Operating hours	Remarks	Signature

10 Attached Documents

- Type Examination Certificate IBExU17ATEXB007X
- Certificate IECEx IBE 17.0002X
- Declaration of Conformity KX460027
- Accessories Data Sheet 461099
- RMA - Decontamination Statement

[1] TYPE EXAMINATION CERTIFICATE - Translation

[2] Equipment
of equipment-groups I and II, equipment-categories M2 and 2 plus 3

[3] Type examination certificate number **IBExU17ATEXB007 X** | Issue 0

[4] Product: **Sample Gas Probe**
Type: GAS 222.xx Ex2

[5] Manufacturer: Bühler Technologies GmbH

[6] Address: Harkortstr. 29
40880 Ratingen
GERMANY

[7] This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

[8] IBExU Institut für Sicherheitstechnik GmbH certifies that this product has been found to comply with the essential health and safety requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014.

The examination and test results are recorded in the confidential test report IB-16-3-053.

[9] Compliance with the essential health and safety requirements has been assured by compliance with:
EN 60079-0:2012 + A11:2013 EN 60079-7:2015
except in respect of those requirements listed at item [18] of the schedule.

[10] If the sign "X" is placed after the certificate number, it indicates that the product is subject to the specific conditions of use specified in the schedule to this certificate.

[11] This type examination certificate relates only to the design of the specified equipment and not to specific items of equipment subsequently manufactured or supplied.

[12] The marking of the product shall include the following:

Ⓔx II 3G Ex ec ic mb IIC T3/T4 Gc

IBExU Institut für Sicherheitstechnik GmbH
Fuchsmühlenweg 7
09599 Freiberg, GERMANY

Tel: + 49 (0) 37 31 / 38 05 0
Fax: + 49 (0) 37 31 / 38 05 10

By order

Dipl.-Ing. [FH] A. Henker

IBExU
Institut für Sicherheitstechnik GmbH
Fuchsmühlenweg 7
09599 Freiberg/Sachsen
Telefon (03731) 3805-0
Telefax (03731) 38 05 10

- Stamp -

Certificates without signature and stamp are not valid. Certificates may only be duplicated completely and unchanged. In case of dispute, the German text shall prevail.

Freiberg, 2017-08-24

[13] **Schedule**

[14] **Certificate number IBExU17ATEXB007 X** | Issue 0

[15] **Description of product**

At the gas analysis the sampling point is a critical interface between the process and the analysis system. The probes are used to take gas samples from a sampling point. They can be unheated or heated. The probes are equipped with an in-situ filter or a downstream filter or with a combination of both. Some probes have an integrated shut off ball valve (manual or pneumatic) for the blowback of the filter. Optionally, the probes can be equipped with a calibration gas port, solenoid valves and a pressure vessel. The standard flanges for mounting are DN3" - 150 and DN65 PN6, other flanges are possible due to the maximum operating pressure.

Type code:

Item number IECEx GAS 222 Ex2

4	6	2	2	2																

		Sample probe basis unit
1	0	GAS 222.10
1	1	GAS 222.11
3	0	GAS 222.30
3	5	GAS 222.35-U
2	0	GAS 222.20
2	1	GAS 222.21
3	1	GAS 222.31
3	5	GAS 222.35
		Junction box
0		No
1		Yes
		Flange
0	1	Flange DN65 PN6
0	2	Flange DN3"-150
x	x	others
		Hazardous area Outside and Inside
9	2	Ex-Zone 2 inside
2	9	Ex-Zone 2 outside
2	2	Ex-Zone 2 outside and inside
		Temperature class
3		T3
4		T4
		Power supply sample probe
0		None (only for GAS 222.10/11/30/35-U)
3		115/230V (only for GAS 222.20/21/31/35)
		Low temparature alarm
0		None (only for GAS 222.10/11/30/35-U)
1		opener (only for GAS 222.20/21/31/35) (marked with "ic")
2		closer (only for GAS 222.20/21/31/35) (marked with "ic")
		Calibration gas port
0		No
1		6mm
2		6mm + check valve
3		1/4
4		1/4 + check valve
		Capacitive vessel
0		No
1		Yes (not for zone 2 inside)
		Valve for pressurized air
0		Ball valve
1		solenoid valve 115V (marked with "mb")
2		solenoid valve 230V (marked with "mb")
3		solenoid valve 24V (marked with "mb")
9		without
		Pneumatic actuator for internal ball valve
0		No
1		Mono stable depressurized open (only for GAS 222.11/30/21/31)
2		Mono stable depressurized closed (only for GAS 222.11/30/21/31)
		Limit switch for pneumatic actuator
0		No
1		Yes (only for GAS 222.11/30/21/31)
		Solenoid valve for pneumatic actuator
0		No
1		Yes (only for GAS 222.11/30/21/31) (marked with "mb")

Intrinsically safe thermo alarm:
U_i = 30 V
I_i = 0.1 A

[16] **Test report**
The test results are recorded in the confidential test report IB-16-3-053 of 2017-08-24.
The test documents are part of the test report and they are listed there.

Summary of the test results
The Sample Gas Probe of the type GAS 222.xx Ex2 fulfils the requirements of the type of protection increased safety „e" for explosion protected equipment of group II and category 3 G.

[17] **Specific conditions of use**
The plug connector is to be installed and operated corresponding to the low risk of mechanical danger in accordance with IEC 60079-0.

High charge producing processes and manual rubbing must be prevented.

The sample gas probe can be used in an ambient temperature range of –20 °C up to +80 °C.

The plug connectors may only be used for fixed installation. The operating company must provide a suitable stress relief.

[18] **Essential health and safety requirements**
In addition to the essential health and safety requirements (EHSRs) covered by the standards listed at item [9], the following are considered relevant to this product, and conformity is demonstrated in the test report: None

[19] **Drawings and Documents**
The documents are listed in the test report.

IBExU Institut für Sicherheitstechnik GmbH
Fuchsmühlenweg 7
09599 Freiberg, GERMANY

By order

Dipl.-Ing. [FH] A. Henker

Freiberg, 2017-08-24

[1] TYPE EXAMINATION CERTIFICATE - Translation

[2] Equipment
of equipment-groups I and II, equipment-categories M2 and 2 plus 3

[3] Type examination certificate number **IBExU17ATEXB007 X** | Issue 1

[4] Product: **Sample Gas Probe**
Type: GAS 222.xx Ex2

[5] Manufacturer: Bühler Technologies GmbH

[6] Address: Harkortstr. 29
40880 Ratingen
GERMANY

[7] This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

[8] IBExU Institut für Sicherheitstechnik GmbH certifies that this product has been found to comply with the essential health and safety requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014.

The examination and test results are recorded in the confidential test report IB-21-3-0003.

[9] Compliance with the essential health and safety requirements has been assured by compliance with:
EN 60079-0:2012 + A11:2013 EN IEC 60079-7:2015/A1:2018
except in respect of those requirements listed at item [18] of the schedule.

[10] If the sign "X" is placed after the certificate number, it indicates that the product is subject to the specific conditions of use specified in the schedule to this certificate.

[11] This type examination certificate relates only to the design of the specified equipment and not to specific items of equipment subsequently manufactured or supplied.

[12] The marking of the product shall include the following:

Ⓔx II 3G Ex ec ic mb IIC T3 or T4 Gc

Different variants of the marking can be marked on the unit and result from the type code.

IBExU Institut für Sicherheitstechnik GmbH
Fuchsmühlenweg 7
09599 Freiberg, GERMANY

Tel: + 49 (0) 37 31 / 38 05 0
Fax: + 49 (0) 37 31 / 38 05 10

By order

Dipl.-Ing. [FH] A. Henker

IBExU
Institut für Sicherheitstechnik GmbH
Fuchsmühlenweg 7
09599 Freiberg/Sachsen
Telefon (03731) 3805-0
Telefax (03731) 38 05 10
- Stamp -

Freiberg, 2021-03-09

[13] **Schedule**

[14] **Certificate number IBExU17ATEXB007 X** | Issue 1

[15] **Description of product**

At the gas analysis the sampling point is a critical interface between the process and the analysis system. The probes are used to take gas samples from a sampling point. They can be unheated or heated. The probes are equipped with an in-situ filter or a downstream filter or with a combination of both. Some probes have an integrated shut off ball valve (manual or pneumatic) for the blowback of the filter. Optionally, the probes can be equipped with a calibration gas port, solenoid valves and a pressure vessel. The standard flanges for mounting are DN3" - 150 and DN65 PN6, other flanges are possible due to the maximum operating pressure.

Type code:

4 6 2 2 2 | | | | | | | | | | | | | | | | | | |

	sample probe basis unit
1 0	GAS 222.10
1 1	GAS 222.11
3 0	GAS 222.30
3 5	GAS 222.35-U
2 0	GAS 222.20
2 1	GAS 222.21
3 1	GAS 222.31
3 5	GAS 222.35

	junction box
0	no
1	yes

	flange
0 1	flange DN65 PN6
0 2	flange DN3"-150
x x	others

	hazardous area outside and inside
9 2	Ex-Zone 2 inside
2 9	Ex-Zone 2 outside
2 2	Ex-Zone 2 outside and inside

	temperature class
3	T3
4	T4

	power supply sample probe
0	none (only for GAS 222.10/11/30/35-U)
3	115/230V (only for GAS 222.20/21/31/35)

	low temparature alarm
0	none (only for GAS 222.10/11/30/35-U)
1	opener (only for GAS 222.20/21/31/35) (marked with "ic")
2	closer (only for GAS 222.20/21/31/35) (marked with "ic")

	calibration gas port
0	no

1								6mm
2								6mm + check valve
3								1/4
4								1/4 + check valve
								pressure vessel
							0	no
							1	yes
								purge valve
						0		ball valve
						1		solenoid valve 110V (marked with "mb")
						2		solenoid valve 230V (marked with "mb")
						3		solenoid valve 24V (marked with "mb")
						9		without
								pneumatic actuator for internal ball valve
					0			no
					1			mono stable depressurized open (only for GAS 222.11/30/21/31)
					2			mono stable depressurized closed (only for GAS 222.11/30/21/31)
								limit switch for pneumatic actuator
				0				no
				1				yes (only for GAS 222.11/30/21/31)
								solenoid valve for pneumatic actuator
			0					no
			1					110V (only for GAS 222.11/30/21/31) (marked with "mb")
			2					230V (only for GAS 222.11/30/21/31) (marked with "mb")
			3					24V (only for GAS 222.11/30/21/31) (marked with "mb")

Intrinsically safe thermo alarm:
U_i = 30 V
I_i = 0.1 A

Variation compared to issue 0 of this certificate:

Variation of type code

[16] **Test report**
The test results are recorded in the confidential test report IB-21-3-0003 of 2021-02-18.
The test documents are part of the test report and they are listed there.

Summary of the test results
The Sample Gas Probe of the type GAS 222.xx Ex2 fulfils the requirements of the type of protection increased safety „e“ for explosion protected equipment of group II and category 3G.

[17] **Specific conditions of use**
The plug connector is to be installed and operated corresponding to the low risk of mechanical danger in accordance with EN 60079-0.

High charge producing processes and manual rubbing must be prevented.

The sample gas probe can be used in an ambient temperature range of –20 °C up to +80 °C.

The plug connectors may only be used for fixed installation. The operating company must provide a suitable stress relief.

[18] **Essential health and safety requirements**
In addition to the essential health and safety requirements (EHSRs) covered by the standards listed at item [9], the following are considered relevant to this product, and conformity is demonstrated in the test report: None

[19] **Drawings and Documents**
The documents are listed in the test report.

IBExU Institut für Sicherheitstechnik GmbH
Fuchsmühlenweg 7
09599 Freiberg, GERMANY

By order

Dipl.-Ing. [FH] A. Henker

Freiberg, 2021-03-09

IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx IBE 17.0002X

Issue No: 0

Certificate history:
Issue No. 0 (2017-06-30)

Status: **Current**

Date of Issue: **2017-06-30**

Applicant: **Bühler Technologies GmbH**
Harkortstr. 29
40880 Ratingen
Germany

Equipment: **Sample Gas Probes Serie 222.xx Ex 2**
Optional accessory:

Type of Protection: **Ex e, Ex m**

Marking:

Ex ec ic mb IIC T3/T4 Gc

For further information see typecode in annex..

Approved for issue on behalf of the IECEx Certification Body: Prof. Dr. Tammo Redeker

Position: Head of Certification Body

Signature:
(for printed version)

Date: 2017-06-30

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

IECEx Certificate of Conformity

Certificate No: IECEx IBE 17.0002X Issue No: 0

Date of Issue: **2017-06-30** Page 2 of 4

Manufacturer: **Bühler Technologies GmbH**
Harkortstr. 29
40880 Ratingen
Germany

Additional Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Edition:6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-7 : 2015 Edition:5.0	Explosive atmospheres – Part 7: Equipment protection by increased safety "e"

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

DE/IBE/ExTR16.0018/00

Quality Assessment Report:

DE/BVS/QAR16.0002/01

IECEx Certificate of Conformity

Certificate No: IECEx IBE 17.0002X Issue No: 0

Date of Issue: **2017-06-30** Page 3 of 4

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

In gas analysis the sample point is a critical interface between the process and the analysis system. Probes are used to take sample gas from the sample point, they can be unheated or heated. They are equipped with a downstream or an in-situ filter or with a combination of both.

Some probes have an integrated shut off ball valve (manual or pneumatic) for blowblack the filter.

Optional they can be equipped with a calibration gas port, solenoid valves and a pressure vessel.

The standard flanges for mounting are DN3" - 150 and DN65 PN6, others a possible under regarding of the max. operating pressure.

Rated ambient temperature range: –20 °C up to +80 °C

Intrinsic safe thermos alert:

U_i = 30 V

I_i = 0.1 A

Typecode in Annex

SPECIFIC CONDITIONS OF USE: YES as shown below:

The plug connector is to be installed and operated in accordance with IEC 60079-0 in accordance with the risk of mechanical hazards "low".

High charge producing processes and manual rubbing must be prevented.

The Sample Gas Probe can be used in an ambient temperature range of –20 °C up to +80 °C.

The plug connectors may only be used for fixed installation. The operator must provide suitable stress relief.

IECEx Certificate of Conformity

Certificate No: IECEx IBE 17.0002X Issue No: 0

Date of Issue: **2017-06-30**

Annex:

Annex IECExIBE17_0002X_0.pdf

IECEx Certificate of Conformity - Annex

Certificate No:	IECEx IBE 17.0002X	Issue No: 0
Date of Issue:	2017-06-30	Page 1 of 1

Item number IECEx GAS 222 Ex2

4	6	2	2	2															

																				Sample probe basis unit
1	0																			GAS 222.10
1	1																			GAS 222.11
3	0																			GAS 222.30
3	5																			GAS 222.35-U
2	0																			GAS 222.20
2	1																			GAS 222.21
3	1																			GAS 222.31
3	5																			GAS 222.35
		0																		**Junction box**
		0																		No
		1																		Yes
			0	1																**Flange**
			0	2																Flange DN65 PN6
			x	x																Flange DN3"-150
					9	2														others
					2	9														**Hazardous area Outside and Inside**
					2	2														Ex-Zone 2 inside
							3													Ex-Zone 2 outside
							4													Ex-Zone 2 outside and inside
								0												**Temperature class**
								3												T3
									0											T4
									3											**Power supply sample probe**
										0										None (only for GAS 222.10/11/30/35-U)
										1										115/230V (only for GAS 222.20/21/31/35)
										2										**Low temparature alarm**
											0									None (only for GAS 222.10/11/30/35-U)
											1									opener (only for GAS 222.20/21/31/35) (marked with "ic")
											2									closer (only for GAS 222.20/21/31/35) (marked with "ic")
												0								**Calibration gas port**
												1								No
												2								6mm
												3								6mm + check valve
												4								1/4
													0							1/4 + check valve
													1							**Capacitive vessel**
														0						No
														1						Yes (not for zone 2 inside)
															0					**Valve for pressurized air**
															1					Ball valve
															2					solenoid valve 115V (marked with "mb")
															3					solenoid valve 230V (marked with "mb")
															9					solenoid valve 24V (marked with "mb")
																0				**Pneumatic actuator for internal ball valve**
																1				No
																2				Mono stable depressurized open (only for GAS 222.11/30/21/31)
																	0			Mono stable depressurized closed (only for GAS 222.11/30/21/31)
																	1			**Limit switch for pneumatic actuator**
																		0		No
																		1		Yes (only for GAS 222.11/30/21/31)
																			0	**Solenoid valve for pneumatic actuator**
																			0	No
																			1	Yes (only for GAS 222.11/30/21/31) (marked with "mb")

IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	**IECEx IBE 17.0002X**	Page 1 of 5	Certificate history:
Status:	**Current**	Issue No: 1	Issue 0 (2017-06-30)
Date of Issue:	2021-03-09		
Applicant:	**Bühler Technologies GmbH** Harkortstr. 29 40880 Ratingen **Germany**		
Equipment:	**Sample Gas Probes Serie 222.xx Ex 2**		
Optional accessory:			
Type of Protection:	**Ex e, Ex m**		
Marking:	Ex ec ic mb IIC T3 or T4 Gc For further information see typecode in annex.		

Approved for issue on behalf of the IECEx Certification Body: **Alexander Henker**

Position: **Deputy Head of department Certification Body**

Signature: (for printed version)

Date: 2021-03-09

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.

Certificate issued by:

IBExU Institut für Sicherheitstechnik GmbH
Fuchsmühlenweg 7
09599 Freiberg
Germany

IECEx Certificate of Conformity

Certificate No.: **IECEx IBE 17.0002X**

Issue No: 1

Date of issue: 2021-03-09

Manufacturer: **Bühler Technologies GmbH**
Harkortstr. 29
40880 Ratingen
Germany

Additional manufacturing locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements.This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :
The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2011 Explosive atmospheres - Part 0: General requirements
Edition:6.0

IEC 60079-7:2017 Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
Edition:5.1

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Reports:

DE/IBE/ExTR16.0018/00 DE/IBE/ExTR16.0018/01

Quality Assessment Report:

DE/BVS/QAR16.0002/04

IECEx Certificate of Conformity

EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

In gas analysis the sample point is a critical interface between the process and the analysis system. Probes are used to take sample gas from the sample point, they can be unheated or heated. They are equipped with a downstream or an in-situ filter or with a combination of both.

Some probes have an integrated shut off ball valve (manual or pneumatic) for blowblack the filter.

Optional they can be equipped with a calibration gas port, solenoid valves and a pressure vessel.

The standard flanges for mounting are DN3" - 150 and DN65 PN6, others a possible under regarding of the max. operating pressure.

Rated ambient temperature range: -20 °C up to +80 °C

Intrinsic safe thermos alert:

U_i = 30 V

I_i = 0.1 A

Typecode in Annex

SPECIFIC CONDITIONS OF USE: YES as shown below:
The plug connector is to be installed and operated in accordance with IEC 60079-0 in accordance with the risk of mechanical hazards "low".

High charge producing processes and manual rubbing must be prevented.

The Sample Gas Probe can be used in an ambient temperature range of -20 °C up to +80 °C.

The plug connectors may only be used for fixed installation. The operator must provide suitable stress relief.

IECEx Certificate of Conformity

Equipment (continued):

Change in type code

IECEx Certificate of Conformity

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
Change in type code

Annex:

Annex IECExIBE17_0002X_1.pdf

IECEx Certificate of Conformity - Annex

Certificate No:	IECEx IBE 17.0002X	Issue No: 1
Date of Issue:	2021-03-09	Page 1 of 2

4	6	2	2	2															

sample probe basis unit	
10	GAS 222.10
11	GAS 222.11
30	GAS 222.30
35	GAS 222.35-U
20	GAS 222.20
21	GAS 222.21
31	GAS 222.31
35	GAS 222.35

junction box	
0	no
1	yes

flange	
01	flange DN65 PN6
02	flange DN3"-150
xx	others

hazardous area outside and inside	
92	Ex-Zone 2 inside
29	Ex-Zone 2 outside
22	Ex-Zone 2 outside and inside

temperature class	
3	T3
4	T4

power supply sample probe	
0	none (only for GAS 222.10/11/30/35-U)
3	115/230V (only for GAS 222.20/21/31/35)

low temparature alarm	
0	none (only for GAS 222.10/11/30/35-U)
1	opener (only for GAS 222.20/21/31/35) (marked with "ic")
2	closer (only for GAS 222.20/21/31/35) (marked with "ic")

calibration gas port	
0	no
1	6mm
2	6mm + check valve
3	1/4
4	1/4 + check valve

IECEx Certificate of Conformity - Annex

								pressure vessel
0								no
1								yes
								purge valve
		0						ball valve
		1						solenoid valve 110V (marked with "mb")
		2						solenoid valve 230V (marked with "mb")
		3						solenoid valve 24V (marked with "mb")
		9						without
								pneumatic actuator for internal ball valve
			0					no
			1					mono stable depressurized open (only for GAS 222.11/30/21/31)
			2					mono stable depressurized closed (only for GAS 222.11/30/21/31)
								limit switch for pneumatic actuator
				0				no
				1				yes (only for GAS 222.11/30/21/31)
								solenoid valve for pneumatic actuator
					0			no
					1			110V (only for GAS 222.11/30/21/31) (marked with "mb")
					2			230V (only for GAS 222.11/30/21/31) (marked with "mb")
					3			24V (only for GAS 222.11/30/21/31) (marked with "mb")

EU-Konformitätserklärung
EU-declaration of conformity

Hiermit erklärt Bühler Technologies GmbH, dass die nachfolgenden Produkte den wesentlichen Anforderungen der Richtlinie

Herewith declares Bühler Technologies GmbH that the following products correspond to the essential requirements of Directive

2014/34/EU
(Atex)

in ihrer aktuellen Fassung entsprechen.

in its actual version.

Produkt / products: Gasentnahmesonde / *Sample gas probe*
Typ / type: GAS 222.11 Ex2, GAS 222.30 Ex2, GAS 222.35-U Ex2

Die Produkte werden entsprechend der derzeitig gültigen Atex-Richtlinie innerhalb der internen Fertigungskontrolle folgendermaßen gekennzeichnet:
The products are marked according to the currently valid Atex directive during internal control of production:

Atex: Ⓔx II 3G Ex ec[1] mb[2] IIC T3/T4 Gc
IECEx: Ex ec[1] mb[2] IIC T3/T4 Gc
[1] Nur bei Varianten mit Anschlusskasten/for versions with terminal box.
[2] Nur bei Varianten mit Magnetventil/for versions with solenoid valve.

Die Eignung dieses Produkts für die Zone 2 wurde durch eine Baumusterprüfbescheinigung mit der Nummer IBExU17ATEXB007 X festgestellt.

Die Betriebsanleitung zu diesem Produkt beinhaltet besondere Installations- und Betriebsbedingungen und sind für die sichere Anwendung zu beachten.

Gasentnahmesonden sind zum Einbau in Gasanalysesystemen bestimmt.

This product's suitability for Zone 2 was determined by type-examination certificate number IBExU17ATEXB007 X.

The operating instructions for this product contains special installation and operating conditions and must be observed to ensure safe operation.

Sample gas probes are intended for installation in gas-analysis systems.

Zur Beurteilung der Konformität wurden folgende harmonisierte Normen herangezogen:
For the assessment of conformity the following standards have been used:

EN 60079-0:2012 + A11:2013 **EN IEC 60079-7 + A1:2018**

Der Hersteller hat die Übereinstimmung des Gerätes mit aktuelleren Normenausgaben als in der Baumusterprüfbescheinigung aufgeführt geprüft und die Konformität festgestellt:
The manufacturer has checked the compliance of the device with more current standards than those listed in the type examination certificate and has established conformity:

EN IEC 60079-0:2018

Dokumentationsverantwortlicher für diese Konformitätserklärung ist Herr Stefan Eschweiler mit Anschrift am Firmensitz.
The person authorised to compile the technical file is Mr. Stefan Eschweiler located at the company's address.

Ratingen, den 25.02.2021

Stefan Eschweiler
Geschäftsführer – *Managing Director*

Frank Pospiech
Geschäftsführer – *Managing Director*

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Internet: www.buehler-technologies.com

Accessories for Sample Gas Probe GAS 222

In many applications gas analysis is key for safe and efficient control of process flows, environmental protection, and quality assurance. In extractive gas analysis the selection of the gas sampling point is crucial for the reproducibility and accuracy of the analysis results.

The specific filter capacity, corrosion resistance and functional equipment requirements for the probe are determined by the composition of the sample gas. To meet these requirements, there is a wide range of accessories available for the GAS probe series.

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Overview and functionality of the accessories

Blowback (optionally heated)

If the sample gas has a high dust content, particles will settle in the filter over time. To prevent clogging, the upstream filter can be fitted with a blowback device that flushes it with compressed air either at fixed intervals or manually, ensuring effective cleaning.

Demister

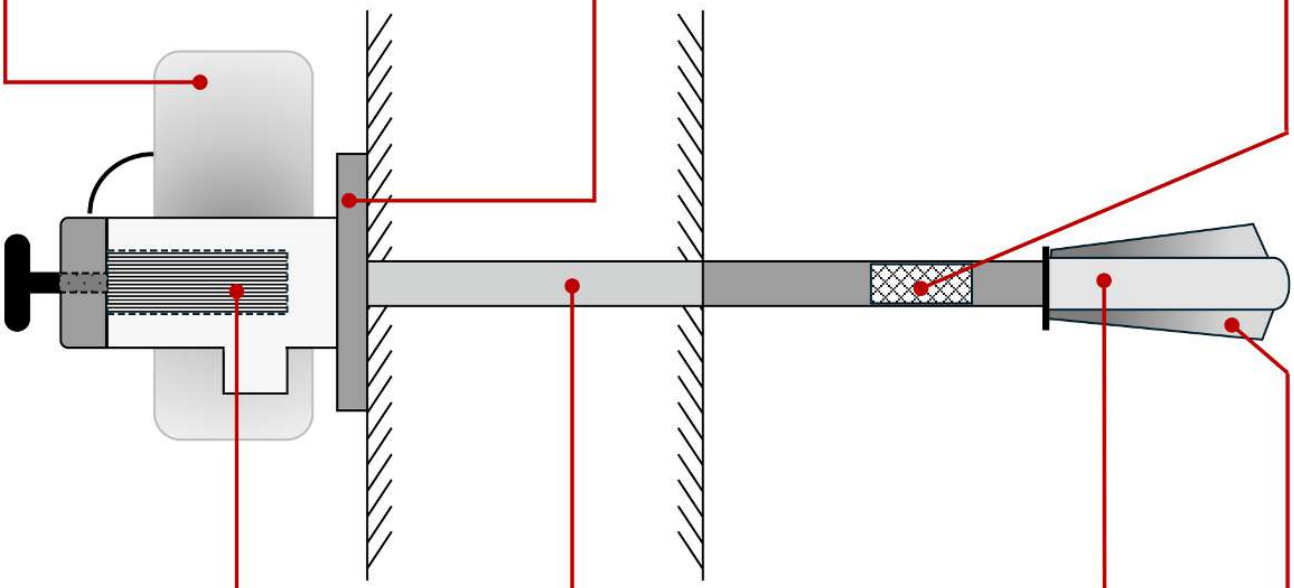
A demister or droplet separator is always recommended if the process gas has a high water content or aerosols. It consists of a wire mesh on which liquid droplets condense due to their higher inertia, while the gas flows through unhindered, and the condensate flows back into the process.

Gas connection

A purge gas connection is provided on the probes for purging the probe with inert gas or instrument air.

Adapter flanges

The probe can be fitted with a DIN or ANSI flange. Numerous adapter flanges are available to ensure adaptation to the process connection.



Downstream filter

The downstream filter is located in the probe head and is suitable for dust loads up to 2 g/m³. It can be used in combination with an upstream filter, thereby increasing operational reliability. The filter can be exchanged easily and without tools, using the handle.

Sampling tube (opt. upstream filter)

The sampling tube extends into the process stream and is available for various temperature and media resistance levels. An upstream filter can be connected here to remove particles from the process gas. In the case of very high dust concentrations, a blowback system can be used to clean the upstream filter.

Extension

The extension is located between the probe and the sampling tube or upstream filter. It serves as a bridge between the process connection of the probe and the sampling point (e.g. through a chimney wall). The extension can also be heated to prevent condensate cold spots.

Deflector

To protect the upstream filter from abrasion and deposits caused by particles, a deflector can be attached to the filter to divert the flow.

Ordering instructions

The following pages list the accessories that, together with the basic probe type, result in a functional probe. The basic probe type determines which options are available for a probe. The options for the blowback control are already defined by the item number. Further accessories are listed in the corresponding tables:

Table 1: Blowback control and extensions

Table 2: Sampling tubes

Table 3: Downstream filter

Table 4: Upstream filters

Table 5: Accessories - adapter flanges, fittings

Table 6: Spare parts and accessories

An overview of the individual accessories and their functions is shown in the diagram on the previous page.

Restrictions and notes

Blowback control integrated in the probe controller

A blowback control integrated in the probe controller is standard. Parameters such as the time and duration of the blowback are set once on the probe, after which the process is carried out automatically. The status of the controller and the condition of the blowback can be read electrically. If required, a separate RSS blowback control can also be connected to the probe, which facilitates manual blowback and is separate from the probe.

Limitations categories/zones due to accessories

For safe operation of our Ex probes for use in potentially explosive areas, we strongly recommend the accessories marked with the Ex symbol. These have been subjected to thorough safety testing in combination with our Ex probes. Bühler assumes no responsibility for explosion protection, function or conformity if accessories or components not approved by Bühler are used. The use of accessories not listed may compromise safety and is at your own risk. Statutory liability provisions remain unaffected by this.

		ATEX + IECEX	Only ATEX	
GAS 222 models	**with accessories:**	**Gas**	**Dust**	**Gas and dust** (separate zones)
		Sampling zone/operating zone		
11 Ex1, 21 Ex1, 30 Ex1, 31 Ex1, 35 Ex1, 35-U Ex1	Pressure vessel PAV 01 (item no. 46222PAV and accessories)	Zone1***/Zone 1	Zone 20/Zone 21	Zone 20/Zone 1
11 Ex1, 21 Ex1, 30 Ex1, 31 Ex1	Deflectors for upstream filters	Zone 1/Zone 1	Zone 21/Zone 21	Zone 1/Zone 21
11 Ex1, 21 Ex1, 30 Ex1, 31 Ex1	Ceramic upstream filters* (item no.: 46222307, 46222307F, 46222307C, 46222330, 46222330C)	Zone 2/Zone 1	Zone 20/Zone 21	Zone 20/Zone 1 or Zone 2 / Zone 21
11 Ex1, 20 Ex1, 21 Ex1	Ceramic downstream filters* (item no.: 46222026 / 46222026P)	Zone 2/Zone 1	Zone 20/Zone 21	Zone 20/Zone 1 or Zone 2 / Zone 21
11 Ex1, 20 Ex1, 21 Ex1	Sampling tubes (item no.: 46222001XXXX, 46222006XXXX, 46222004XXXX, 46222016XXXX)	Zone 0/Zone 1	No zone/Zone 21	Zone 0/Zone 21
11 Ex1, 20 Ex1, 21 Ex1	Ceramic sampling tubes** (item no.: 46222002XXXX)	Zone 2/Zone 1	No zone/Zone 21	Zone 2/Zone 21

* Accessories are not suitable for sampling highly ignitable dusts with a minimum ignition energy (MIE) of < 3 mJ.

** When extracting gas from Zone 2, ceramic sampling tubes may only be used if application- and process-related electrostatic charging can be ruled out.

*** Blowback of explosive atmosphere/gases is prohibited.

General accessories

Probe models:		GAS 222.10	GAS 222.11	GAS 222.15	GAS 222.17	GAS 222.20	GAS 222.21	GAS 222.30	GAS 222.31	GAS 222.35	Item no.
Unheated/heated extension	Length [mm]										
Ex G 3/4 Unheated Stainless steel (1.4571)	200	●	●	●	●	●	●	●	●		4622230320200
	400	●	●	●	●	●	●	●	●		4622230320400
	500	●	●	●	●	●	●	●	●		4622230320500
	700	●	●	●	●	●	●	●	●		4622230320700
	1000	●	●	●	●	●	●	●	●		4622230321000
	1200	●	●	●	●	●	●	●	●		4622230321200
	1500	●	●	●	●	●	●	●	●		4622230321500
	2000	●	●	●	●	●	●	●	●		4622230322000
Ex G 1/2 Unheated Stainless steel (1.4571)	250									●	4622235910250
	500									●	4622235910500
	700									●	4622235910700
	1500									●	4622235911500
GF heated, 230 V Stainless steel (1.4571)	500					●	●		●		462223036
	1000					●	●		●		462223033
GF heated, 115 V Stainless steel (1.4571)	500					●	●		●		462223136
	1000					●	●		●		462223133
GF ANSI heated, 115 V Stainless steel (1.4571)	500					●	●		●		462223036C1
	1000					●	●		●		462223033C1
GF heated, 230 V Hastelloy	1000					●	●		●		462223033H
Blowback control											
Blowback control 24 V			●				●	●	●	●	46222199
Blowback control 115/230 V			●				●	●	●	●	46222299

Ex Recommended accessories for use in hazardous areas.

Tab. 1: Blowback control and extensions

Probe models:		GAS 222.10	GAS 222.11	GAS 222.15	GAS 222.17	GAS 222.20	GAS 222.21	GAS 222.30	GAS 222.31	GAS 222.35	
Sampling tubes	Length [mm]										Item no.
Ex Hastelloy/1.4571 [1] ø12 mm T_{max} : 400 °C	500	●	●	●	●	●	●	●	●		462220060500
	1000	●	●	●	●	●	●	●	●		462220061000
	1500	●	●	●	●	●	●	●	●		462220061500
	2000	●	●	●	●	●	●	●	●		462220062000
Ex Stainless steel [1] ø12 mm T_{max} : 600 °C	300	●	●	●	●	●	●	●	●		462220010300
	500	●	●	●	●	●	●	●	●		462220010500
	1000	●	●	●	●	●	●	●	●		462220011000
	1500	●	●	●	●	●	●	●	●		462220011500
	2000	●	●	●	●	●	●	●	●		462220012000
Ex Stainless steel [1] ø20 mm T_{max} : 600 °C	500	●	●	●	●	●	●	●	●		462220160500
	1000	●	●	●	●	●	●	●	●		462220161000
	1500	●	●	●	●	●	●	●	●		462220161500
	2000	●	●	●	●	●	●	●	●		462220162000
Ex Inconel/1.4571 [1] ø21 mm T_{max} : 1050 °C	500	●	●	●	●	●	●	●	●		462220040500
	1000	●	●	●	●	●	●	●	●		462220041000
	1500	●	●	●	●	●	●	●	●		462220041500
	2000	●	●	●	●	●	●	●	●		462220042000
Kanthal/1.4571 ø15 mm T_{max} : 1400 °C	500	●	●	●	●	●	●	●	●		462220170500
	1000	●	●	●	●	●	●	●	●		462220171000
	2000	●	●	●	●	●	●	●	●		462220172000
Ex Ceramic/1.4571 [1] ø24 mm T_{max} : 1600 °C	500	●	●	●	●	●	●	●	●		4622200205
	1000	●	●	●	●	●	●	●	●		4622200210
	1500	●	●	●	●	●	●	●	●		4622200215
Ex Sampling tube with demister Material: 1.4571 T_{max} : 400 °C	100	●	●	●	●	●	●	●	●		4622204201
	300	●	●	●	●	●	●	●	●		4622204203
	500	●	●	●	●	●	●	●	●		4622204205
	600	●	●	●	●	●	●	●	●		4622204206
	800	●	●	●	●	●	●	●	●		4622204208
	1000	●	●	●	●	●	●	●	●		4622204210
Ex Sampling tube with demister Material: Hastelloy T_{max} : 400 °C	500	●	●	●	●	●	●	●	●		4622201290500
	750	●	●	●	●	●	●	●	●		4622201290750
	1000	●	●	●	●	●	●	●	●		4622201291000
Sampling tube with demister Material: PVDF/ETFE T_{max} : 120 °C	200	●	●	●	●	●	●	●	●		462220400200
	650	●	●	●	●	●	●	●	●		462220400650
	800	●	●	●	●	●	●	●	●		46222040

1) Restrictions for the approved Ex zones for sampling and operation apply. Details can be found in the table at the beginning of the data sheet.

Ex Recommended accessories for use in hazardous areas.

Tab. 2: Sampling tubes

Accessories for probes with downstream filter

Probe models:		GAS 222.10	GAS 222.11	GAS 222.15	GAS 222.17	GAS 222.20	GAS 222.21	Item no.
Downstream filter	average pore size [µm]							
Sintered stainless steel O-ring: Viton	0,5	●	●	●	●	●	●	46222010F [4]
Ⓔx	5	●	●	●	●	●	●	46222010
Sintered stainless steel O-ring: FFKM	0,5	●	●	●	●	●	●	46222010FP [4]
Ⓔx	5	●	●	●	●	●	●	46222010P
Ceramic [1] O-ring: Viton Ⓔx	3	●	●	●	●	●	●	46222026
Ceramic [1] O-ring: FFKM Ⓔx	3	●	●	●	●	●	●	46222026P
Sintered stainless steel O-ring: Viton	15	●	●	●	●	●	●	462220139
Sintered stainless steel O-ring: FFKM	15	●	●	●	●	●	●	462220139P
Micro-strand glass fibre with silicate binder O-ring: Viton (matching handle)		●	●	●	●	●	●	462220671 (46222067)
Micro-strand glass fibre with silicate binder O-ring: FFKM (matching handle)		●	●	●	●	●	●	462220671P (46222067)
Cover piece incl. tube, filter wool O-ring: Viton		●	●	●	●	●	●	46222163
Cover piece incl. tube, filter wool O-ring: FFKM		●	●	●	●	●	●	46222163P
Cover piece incl. tube, steel wool O-ring: Viton		●	●	●	●	●	●	46222163001

1) Restrictions for the approved Ex zones for sampling and operation apply. Details can be found in the table at the beginning of the data sheet.

4) Upon request.

Ⓔx Recommended accessories for use in hazardous areas.

Tab. 3: Downstream filter

Accessories for probes with upstream filter

Probe models:		GAS 222.11	GAS 222.21	GAS 222.30	GAS 222.31	GAS 222.35	Item no.
Ex Upstream filters	average pore size [µm]						
Stainless steel/1.4404/1.4571 Length: 229 mm T_{max}: 600 °C	0,5					●	46222359F [4]
	5					●	46222359
Stainless steel/1.4571 Length: 237 mm T_{max}: 600 °C	0,5	●	●	●	●		46222303F [4]
	5	●	●	●	●		46222303
Stainless steel with displacer Length: 237 mm T_{max}: 600 °C	0,5	●	●	●	●		462223031F [4]
	5	●	●	●	●		462223031
Stainless steel/1.4571 Length: 538 mm T_{max}: 600 °C	0,5	●	●	●	●		46222304F [4]
	5	●	●	●	●		46222304
Stainless steel with displacer Length: 538 mm T_{max}: 600 °C	0,5	●	●	●	●		462223041F [4]
	5	●	●	●	●		462223041
Hastelloy Length: 237 mm T_{max}: 400 °C	0,5	●	●	●	●		46222303HF [4]
	5	●	●	●	●		46222303H
Hastelloy Length: 538 mm T_{max}: 400 °C	0,5	●	●	●	●		46222304HF [4]
	5	●	●	●	●		46222304H
Hastelloy with displacer Length: 237 mm T_{max}: 400 °C	0,5	●	●	●	●		462223031HF [4]
	5	●	●	●	●		462223031H
Hastelloy with displacer Length: 538 mm T_{max}: 400 °C	0,5	●	●	●	●		462223041HF [4]
	5	●	●	●	●		462223041H
Ceramic/1.4571 [1] Length: 478 mm T_{max}: 1000 °C	0,3	●	●	●	●		46222307F [2]
	2	●	●	●	●		46222307 [2]
	2	●	●	●	●		46222307C [2], [3]
Ceramic/1.4571 [1] Length: 978 mm T_{max}: 1000 °C	2	●	●	●	●		46222330 [2]
	2	●	●	●	●		46222330C [2], [3]
Ex Deflectors							
For upstream filters 03 [1]		●	●	●	●		462223034
For upstream filters 04 [1]		●	●	●	●		462223044

1) Restrictions for the approved Ex zones for sampling and operation apply. Details can be found in the table at the beginning of the data sheet.
2) Furnace gas filtration: oxidising atmosphere max. 750 °C, reducing atmosphere max. 600 °C; Not suitable for extracting ignition-sensitive dusts with minimum ignition energy < 3 mJ.
3) For probes with ANSI flanges
4) Upon request.
Ex Recommended accessories for use in hazardous areas.

Tab. 4: Upstream filters

Probe models: / Accessories - fittings	GAS 222.10	GAS 222.11	GAS 222.15	GAS 222.17	GAS 222.20	GAS 222.21	GAS 222.30	GAS 222.31	GAS 222.35	Item no.
Sample gas connection for Ø 6 mm pipe	●	●	●	●	●	●	●	●	●	9029000
Sample gas connection for Ø 8 mm pipe	●	●	●	●	●	●	●	●	●	9029001
Purge gas connection Ø 12 mm pipe		●				●	●	●	●	9029002
Sample gas connection for Ø 1/4" pipe	●	●	●	●	●	●	●	●	●	9008584
Sample gas connection for Ø 3/8" pipe	●	●	●	●	●	●	●	●	●	9029011
Purge gas connection Ø 1/2" pipe		●				●	●	●	●	9008582
Accessories – adapter flanges - selection - others upon request										
Probe ·····► Process										
DIN DN 65 PN 6 — ANSI DN 1 1/4" 150 lb.	●	●	●	●	●	●	●	●	●	46222501
DIN DN 65 PN 6 — ANSI DN 2" 150 lb.	●	●	●	●	●	●	●	●	●	46222314
DIN DN 65 PN 6 — ANSI DN 2" 300 lb.	●	●	●	●	●	●	●	●	●	46222502
DIN DN 65 PN 6 — ANSI DN 2 1/2" 150 lb.	●	●	●	●	●	●	●	●	●	46222068
DIN DN 65 PN 6 — ANSI DN 3" 150 lb.	●	●	●	●	●	●	●	●	●	46222014
DIN DN 65 PN 6 — ANSI DN 3" 300 lb.	●	●	●	●	●	●	●	●	●	46222034
DIN DN 65 PN 6 — ANSI DN 4" 150 lb.	●	●	●	●	●	●	●	●	●	46222035
DIN DN 65 PN 6 — DIN DN150 PN 6	●	●	●	●	●	●	●	●	●	462220140
DIN DN 65 PN 6 — ANSI DN 6"-150 lb.	●	●	●	●	●	●	●	●	●	462220127
ANSI DN 3"-150 lb. — ANSI DN 4" 150 lb.	●	●	●	●	●	●	●	●	●	46222058

Recommended accessories for use in hazardous areas.

Tab. 5: Accessories - adapter flanges, fittings

Spare parts and accessories

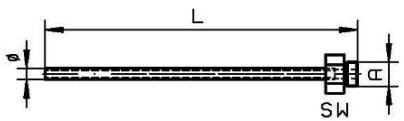
Probe models: / Downstream filter	GAS 222.10	GAS 222.11	GAS 222.15	GAS 222.17	GAS 222.20	GAS 222.21	GAS 222.30	GAS 222.31	GAS 222.35	Item no.
Filter wool	●	●	●	●	●	●				46222167
Ex O-ring set Viton incl. installation grease	●	●	●	●	●	●				46222012
Ex O-ring set LT 170 incl. installation grease	●	●	●	●	●	●				462220100011
Ex O-ring set FFKM incl. installation grease	●	●	●	●	●	●				46222024
Sampling tubes										
Demister ETFE T_{max} : 120 °C (matching safety pin)	●	●	●	●	●	●	●	●		462220402 (462220403)
Ex Demister stainless steel T_{max} : 400 °C (matching safety pin)	●	●	●	●	●	●	●	●		4611004 (462220421)
Ex Demister Hastelloy T_{max} : 400 °C (matching safety pin)	●	●	●	●	●	●	●	●		4622201291 (4622201292)

Ex Recommended accessories for use in hazardous areas.

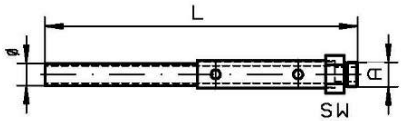
Tab. 6: Spare parts and accessories

Entnahmerohre / tubes

Typ	L	ø	A	SW
01	var.	12	G3/4	36
06	var.	12	G3/4	36
08	var.	21,3	G3/4	36
12	var.	20	G3/4	36
13	var.	15	G3/4	36
14	var.	18	G3/4	36



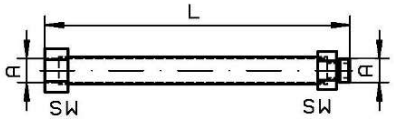
Typ	L	ø	A	SW
02-0,5	500	24	G3/4	36
02-1,0	1000	24	G3/4	36
02-1,5	1500	24	G3/4	36

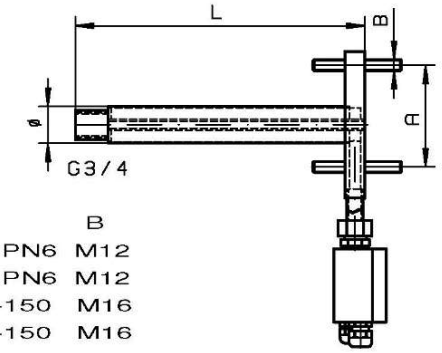


Verlängerungen / extensions

unbeheizt / unheated

Typ	L	A	SW
G3/4	var.	G3/4	36
G1/2	var.	G1/2	27



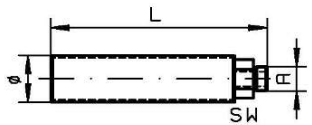


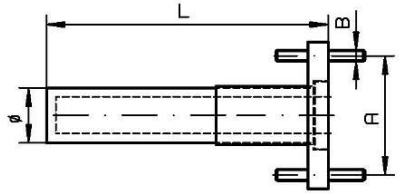
beheizt / heated

Typ	L	ø	A	B
GF	500	40	DN65 PN6	M12
GF	1000	40	DN65 PN6	M12
GF ANSI/CSA	500	40	DN3"-150	M16
GF ANSI/CSA	1000	40	DN3"-150	M16

Eintrittsfilter / in-situ filters

Typ	L	ø	A	SW
03	237	51	G3/4	36
031	237	51	G3/4	36
04	538	60	G3/4	36
041	538	60	G3/4	36
35	229	29	G1/2	27

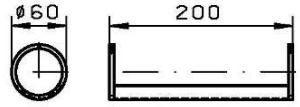




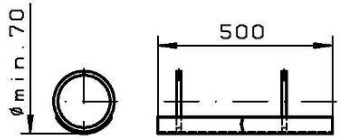
Typ	L	ø	A	B
07	500	60	DN65 PN6	M12
07 ANSI	500	60	DN3"-150	M16

Abweisblech / protection shield

Eintrittsfilter / in-situ filter 03



Eintrittsfilter / in-situ filter 04



alle Kanten gratfrei

Oberflächenbearbeitungszeichen

√ = √ Rzh
√X = √ Ra 63
√Y = √ Ra 16
√Z = √ Ra 4

Maße ohne Toleranzangabe nach ISO 2768-mK

	Datum	Name
Bearb.	21.01.2004	Brinkmann
Gepr.		

a	neu	29.09.06	Br
Zust.	Änd.	Datum	Name

Ers für

BÜHLER

Maßstab 1:5 (Gewicht)

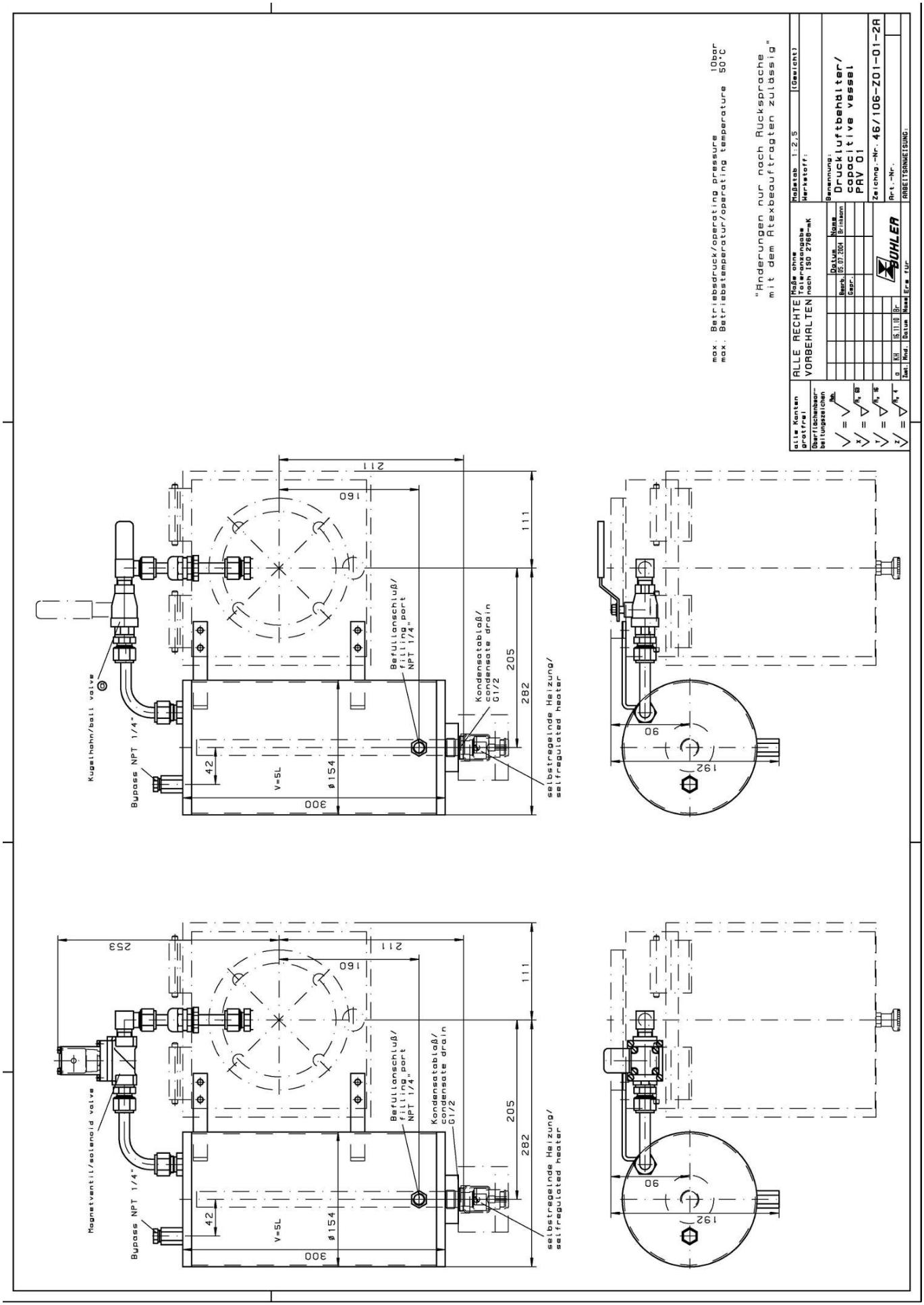
Werkstoff:

Benennung: Rohre/Filter/Verlängerungen tubes/filter/extensions GAS 222

Zeichng.-Nr. 46/107-Z01-01-3A

Art.-Nr.

ARBEITSANWEISUNG:


max. Betriebsdruck/operating pressure 10bar
max. Betriebstemperatur/operating temperature 50°C
"Änderungen nur nach Rücksprache mit dem Atexbeauftragten zulässig"
ALLE RECHTE VORBEHALTEN
Maßstab 1:2,5
Werkstoff:
Benennung:
Druckluftbehälter/ capacitive vessel PRV 01
Zeichng.-Nr. 46/106-Z01-01-2A
Art.-Nr.
ARBEITSANWEISUNG:
Kugelhahn/ball valve
Magnetventil/solenoid valve
Bypass NPT 1/4"
Befüllanschluß/ filling port NPT 1/4"
Kondensatablaß/ condensate drain G1/2
selbstregelnde Heizung/ selfregulated heater
V=5L
ø154
42
300
205
282
111
160
211
253
90
192

RMA-Formular und Erklärung über Dekontaminierung
RMA-Form and explanation for decontamination

RMA-Nr./ RMA-No.

Die RMA-Nr. bekommen Sie von Ihrem Ansprechpartner im Vertrieb oder Service. Bei Rücksendung eines Altgeräts zur Entsorgung tragen Sie bitte in das Feld der RMA-Nr. "WEEE" ein./ You may obtain the RMA number from your sales or service representative. When returning an old appliance for disposal, please enter "WEEE" in the RMA number box.

Zu diesem Rücksendeschein gehört eine Dekontaminierungserklärung. Die gesetzlichen Vorschriften schreiben vor, dass Sie uns diese Dekontaminierungserklärung ausgefüllt und unterschrieben zurücksenden müssen. Bitte füllen Sie auch diese im Sinne der Gesundheit unserer Mitarbeiter vollständig aus./ This return form includes a decontamination statement. The law requires you to submit this completed and signed decontamination statement to us. Please complete the entire form, also in the interest of our employee health.

Firma/ Company

Firma/ Company	
Straße/ Street	
PLZ, Ort/ Zip, City	
Land/ Country	

Ansprechpartner/ Person in charge

Name/ Name	
Abt./ Dept.	
Tel./ Phone	
E-Mail	

Gerät/ Device	
Anzahl/ Quantity	
Auftragsnr./ Order No.	

Serien-Nr./ Serial No.	
Artikel-Nr./ Item No.	

Grund der Rücksendung/ Reason for return

- ☐ Kalibrierung/ Calibration
- ☐ Modifikation/ Modification
- ☐ Reklamation/ Claim
- ☐ Reparatur/ Repair
- ☐ Elektroaltgerät/ Waste Electrical & Electronic Equipment (WEEE)
- ☐ andere/ other

bitte spezifizieren/ please specify

Ist das Gerät möglicherweise kontaminiert?/ Could the equipment be contaminated?

☐ Nein, da das Gerät nicht mit gesundheitsgefährdenden Stoffen betrieben wurde./ No, because the device was not operated with hazardous substances.

☐ Nein, da das Gerät ordnungsgemäß gereinigt und dekontaminiert wurde./ No, because the device has been properly cleaned and decontaminated.

☐ Ja, kontaminiert mit:/ Yes, contaminated with:

☐ explosiv/ explosive	☐ entzündlich/ flammable	☐ brandfördernd/ oxidizing	☐ komprimierte Gase/ compressed gases	☐ ätzend/ caustic	☐ giftig, Lebensgefahr/ poisonous, risk of death	☐ gesundheitsgefährdend/ harmful to health	☐ gesundheitsschädlich/ health hazard	☐ umweltgefährdend/ environmental hazard

Bitte Sicherheitsdatenblatt beilegen!/ Please enclose safety data sheet!

Das Gerät wurde gespült mit:/ The equipment was purged with:

Diese Erklärung wurde korrekt und vollständig ausgefüllt und von einer dazu befugten Person unterschrieben. Der Versand der (dekontaminierten) Geräte und Komponenten erfolgt gemäß den gesetzlichen Bestimmungen.

This declaration has been filled out correctly and completely, and signed by an authorized person. The dispatch of the (decontaminated) devices and components takes place according to the legal regulations.

Falls die Ware nicht gereinigt, also kontaminiert bei uns eintrifft, muss die Firma Bühler sich vorbehalten, diese durch einen externen Dienstleister reinigen zu lassen und Ihnen dies in Rechnung zu stellen.

Should the goods not arrive clean, but contaminated, Bühler reserves the right, to comission an external service provider to clean the goods and invoice it to your account.

Firmenstempel/ Company Sign

Datum/ Date

rechtsverbindliche Unterschrift/ Legally binding signature

Bühler Technologies GmbH, Harkortstr. 29, D-40880 Ratingen
Tel. +49 (0) 21 02 / 49 89-0, Fax: +49 (0) 21 02 / 49 89-20
E-Mail: service@buehler-technologies.com
Internet: www.buehler-technologies.com

Vermeiden von Veränderung und Beschädigung der einzusendenden Baugruppe

Die Analyse defekter Baugruppen ist ein wesentlicher Bestandteil der Qualitätssicherung der Firma Bühler Technologies GmbH. Um eine aussagekräftige Analyse zu gewährleisten muss die Ware möglichst unverändert untersucht werden. Es dürfen keine Veränderungen oder weitere Beschädigungen auftreten, die Ursachen verdecken oder eine Analyse unmöglich machen.

Umgang mit elektrostatisch sensiblen Baugruppen

Bei elektronischen Baugruppen kann es sich um elektrostatisch sensible Baugruppen handeln. Es ist darauf zu achten, diese Baugruppen ESD-gerecht zu behandeln. Nach Möglichkeit sollten die Baugruppen an einem ESD-gerechten Arbeitsplatz getauscht werden. Ist dies nicht möglich sollten ESD-gerechte Maßnahmen beim Austausch getroffen werden. Der Transport darf nur in ESD-gerechten Behältnissen durchgeführt werden. Die Verpackung der Baugruppen muss ESD-konform sein. Verwenden Sie nach Möglichkeit die Verpackung des Ersatzteils oder wählen Sie selber eine ESD-gerechte Verpackung.

Einbau von Ersatzteilen

Beachten Sie beim Einbau des Ersatzteils die gleichen Vorgaben wie oben beschrieben. Achten Sie auf die ordnungsgemäße Montage des Bauteils und aller Komponenten. Versetzen Sie vor der Inbetriebnahme die Verkabelung wieder in den ursprünglichen Zustand. Fragen Sie im Zweifel beim Hersteller nach weiteren Informationen.

Einsenden von Elektroaltgeräten zur Entsorgung

Wollen Sie ein von Bühler Technologies GmbH stammendes Elektroprodukt zur fachgerechten Entsorgung einsenden, dann tragen Sie bitte in das Feld der RMA-Nr. „WEEE“ ein. Legen Sie dem Altgerät die vollständig ausgefüllte Dekontaminierungserklärung für den Transport von außen sichtbar bei. Weitere Informationen zur Entsorgung von Elektroaltgeräten finden Sie auf der Webseite unseres Unternehmens.

Avoiding alterations and damage to the components to be returned

Analysing defective assemblies is an essential part of quality assurance at Bühler Technologies GmbH. To ensure conclusive analysis the goods must be inspected unaltered, if possible. Modifications or other damages which may hide the cause or render it impossible to analyse are prohibited.

Handling electrostatically conductive components

Electronic assemblies may be sensitive to static electricity. Be sure to handle these assemblies in an ESD-safe manner. Where possible, the assembles should be replaced in an ESD-safe location. If unable to do so, take ESD-safe precautions when replacing these. Must be transported in ESD-safe containers. The packaging of the assemblies must be ESD-safe. If possible, use the packaging of the spare part or use ESD-safe packaging.

Fitting of spare parts

Observe the above specifications when installing the spare part. Ensure the part and all components are properly installed. Return the cables to the original state before putting into service. When in doubt, contact the manufacturer for additional information.

Returning old electrical appliances for disposal

If you wish to return an electrical product from Bühler Technologies GmbH for proper disposal, please enter "WEEE" in the RMA number box. Please attach the fully completed decontamination declaration form for transport to the old appliance so that it is visible from the outside. You can find more information on the disposal of old electrical appliances on our company’s website.

Bühler Technologies GmbH, Harkortstr. 29, D-40880 Ratingen
Tel. +49 (0) 21 02 / 49 89-0, Fax: +49 (0) 21 02 / 49 89-20
E-Mail: service@buehler-technologies.com
Internet: www.buehler-technologies.com