

Sample gas probes

GAS 222.35 Ex2

## Installation and Operation Instructions

Original instructions





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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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Document information

Document No..... BE460056  
Version..... 03/2022

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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 probe has a temperature switch which may only be operated as simple electrical equipment on an intrinsically-safe circuit supplied by a type-tested switch amplifier.

The explosion protection markings on the probes are:

**ATEX:**  II 3G Ex ec ic mb<sup>1</sup> IIC T3/T4 Gc

**IECEx:** Ex ec ic mb<sup>1</sup> IIC T3/T4 Gc

<sup>1</sup> Only for versions with solenoid valve.

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.


## 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.

## 1.2 Type Plate

### Example:

Manufacturer and address	→	Bühler Technologies GmbH Harkortstr. 29 D-40880 Ratingen
Model designation	→	GAS 222.35 Ex2
Order no., item no.	→	000053273 462223510192331111000 001
Blast protection marking	→	 II 3G Ex ec ic IIC T4 Gc
Electrical supply	→	115/230V 50/60Hz; Valves: 24V UC
IECEx certificate number	→	IECEx IBE 17.0002X
Year of manufacture	→	Read manual! Year: 2017



## 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:

4622235	X	0	X	X	X	X	3	X	X	X	X	0	0	0	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
					3										115/230 V
															Low temperature alarm
						1									Opener (open at operating temperature) (marked with "ic")
						2									Closer (closed at operating temperature) (marked with "ic")
															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

\* Blowback of explosive atmosphere prohibited.

## 1.5 Product Description

The probe is equipped with self-regulating PTC heating cartridges and a temperature contact.

Probe	Description
GAS 222.35 Ex2	Probe with retractable upstream filter and blowback connection
GAS 222.35-JB Ex2	Probe with retractable upstream filter, blowback connection and terminal box
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 temperature switch is being operated on an intrinsically-safe circuit,
- the controller itself is installed outside the explosive area,
- 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

<b>DANGER</b>	Signal word for an imminent danger with high risk, resulting in severe injuries or death if not avoided.
<b>WARNING</b>	Signal word for a hazardous situation with medium risk, possibly resulting in severe injuries or death if not avoided.
<b>CAUTION</b>	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.
<b>NOTICE</b>	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.

**Sparking!**

Protect the M3 connectors from external blows.

**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 Special conditions for safe use

The temperature switch must be operated intrinsically safe. See parameters in chapter "Connecting the Temperature Switch".

## 2.4 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 upstream filter

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.

### 4.4 Insulation

On heated probes completely insulate any exposed flange areas and, if applicable, the connection piece to absolutely prevent thermal bridges. The insulating material must meet the application requirements and be weatherproof.

## 4.5 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
Connecting flange <sup>1)</sup>	DN65/PN6/ DN3"-150	
Sample gas inlet	G1/2	
Sample gas outlet	NPT 1/4	
Blowback Connection	G3/8	
Test gas connection <sup>1)</sup>	Tube Ø6 mm Tube Ø1/4	
Filling port		NPT 1/4
Condensate		G1/2
Bypass		NPT 1/4

Tab. 1: Gas probe connections (varies by model)

<sup>1)</sup> Varies by version.

Please note the following items when connecting the sample gas line (NPT 1/4") on heated probes to prevent thermal bridges:

- Choose the shortest possible screw connection.
- Shorten the connection pipe for the sample gas line as much as possible. To do so, remove the insulation around the sample gas line. This is done by loosening the fixing bolts.

### CAUTION



#### Fragile

The insulation is fragile. Handle with care, do not drop.

After connecting the sample gas line it must be braced and secured with the clamp.

Long sample gas lines may require additional support clamps along the way to the analysis system! Once all lines have been connected and checked for leaks, carefully reinstall and secure the insulation.

### WARNING



#### Gas emanation

**Sample gas can be harmful to the health!**

Check the lines for leaks.

### 4.5.1 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.

### 4.5.2 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.

## 4.6 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).

## 4.7 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 (match cable diameter to the seal on the cubic plug/cable fitting).

Please note, the heating system briefly has high starting currents (max. 6 A). Use a suitable fuse (8 A). When connecting, also observe the applicable explosion protection regulations (e.g. IEC/EN 60079-14).

### 4.7.1 Version Without Terminal Box

The probe includes two cubic plugs per EN 175301-803. The plug is configured so it cannot be connected reversed. For safety reasons this configuration must not be modified.

One plug is used to power the two heating cartridges (power supply (115/230) VAC, 50/60 Hz, see type plate), the other plug is for the temperature switch (alarm output).

The supply line cross-sections must be suitable for the rated current. Use a maximum line cross-section of 1.5 mm<sup>2</sup> and a cable diameter of 8-10 mm.

Connect the power supply and the intrinsically-safe temperature switch per the connection diagram.

Connect optional probe accessories directly to the respective power supply.

### 4.7.2 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 two heating cartridges, the intrinsically-safe temperature switch and the optional accessories 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.

### 4.7.3 Connecting the Temperature Switch

According to IEC/EN 60079-11 the temperature switch in this probe is a simple electrical equipment and to be considered a purely ohmic circuit. It may only be operated with a type-tested controller with an intrinsically-safe circuit.

Temperature switch connection data:

$U_i = 30 \text{ V}$ ;  $I_i = 100 \text{ mA}$ ;  $C_i = 0$ ;  $L_i = 0$

Never exceed the connection data!

### 4.7.4 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.

### 4.7.5 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 I<sub>b</sub> 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<sup>2</sup>).

Particularly also observe the requirements of IEC/EN 60079-14!

## 5 Operation and Control

### NOTICE



The device must not be operated beyond its specifications.

### NOTICE



The weather hood must be closed during operation!

### 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 heater voltage and frequency match the mains values.
- The temperature switch is connected intrinsically-safe.
- 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.
- When performing maintenance of any type, observe the respective safety and operation regulations.

### 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.

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



### DANGER



#### Toxic, corrosive gases

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

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



### 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.

### 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!**

## 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 upstream filter

The probes are equipped with an upstream filter which is always inside the process stream. The filter is suitable for blowback with compressed air (inert gas), i.e. blowing air (inert gas) through the filter from the inside to the outside to remove adhering particles. 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.

Proceed as follows:

- Slightly push in the handle at the back of the probe and turn 90° (handle must then be horizontal) and remove.
- Screw the dirty filter element out of the handle.
- Check the sealing faces on the handle, replace O-rings, then install the filter element and new seal. (The spare filter includes O-rings and seals).
- Then insert the handle with the new or cleaned filter, push in slightly and turn 90° (handle must then be vertical). Pull on the handle to verify the filter element is firmly seated.

### NOTICE



The weather hood can only be closed again when the handle is completely vertical. In order to do so, loosen the hood from the locking supports by lifting slightly and then fold 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 <sup>3</sup> Particle size: (1 to 5) µm	Pressure dew point [°C]	Residual oil content [mg / m <sup>3</sup> ]
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	<ul style="list-style-type: none"> <li>– Check gas connections</li> <li>– Check safety devices and controllers</li> <li>– Check electrical protective measures</li> <li>– Proper function, dirt, visual inspection for dirt / damage.</li> </ul> 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	<ul style="list-style-type: none"> <li>– Replace O-rings.</li> <li>– Replace seals after every filter change.</li> </ul>	Operator
Pressure vessel	every 8,000 h	– Drain condensate	Operator
Entire probe With respect to the ball valve and solenoid valves	after 20,000 h or 3 years	– Inspection by Bühler	Service technician / Bühler

## 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

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
	– Blowback (optional) not responding	– Check compressed air supply
		– Check solenoid valve
No heat output	– No/incorrect power supply	– Check power supply
Condensation forming	– Heater defective	– Send in probe for repair
	– Thermal bridges at the sampling point	– Insulate to eliminate thermal bridges

### 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
46 222 351 5	Seal kit for filter element and probe, material: Viton/Cu
	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.

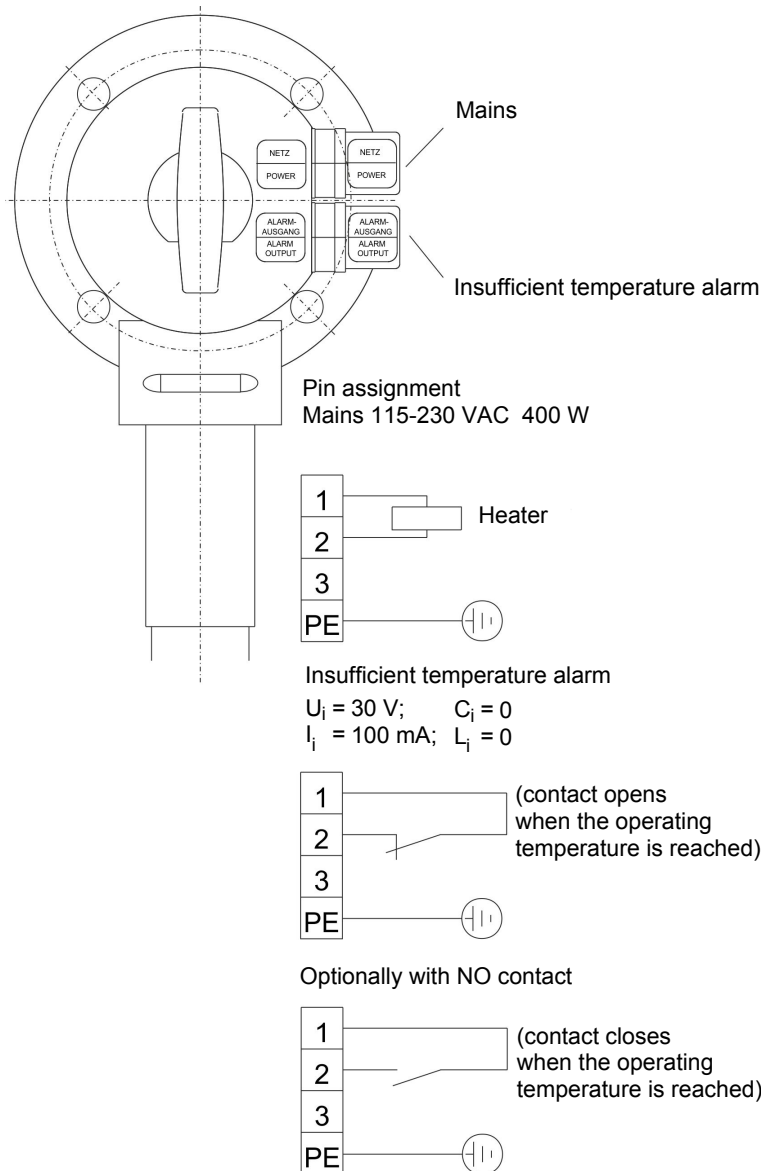
## 9 Appendices

### 9.1 Technical Data

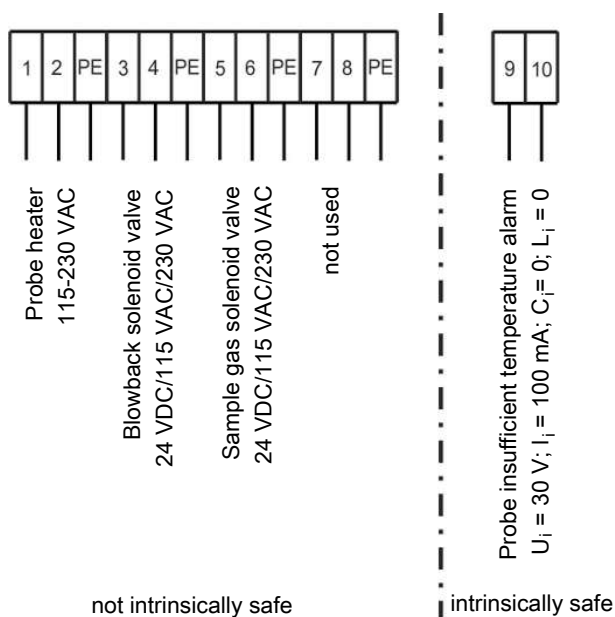
#### Gas Probe Technical Data

Ambient temperature without accessories:	-20 to +80 °C	
Ambient temperature for accessories:	<b>Component</b>	<b>Ambient temperature range</b>
	Valve for pressurized air:	$-30\text{ °C} < T_{\text{amb}} < +55\text{ °C}$
	Junction box:	$-20\text{ °C} < T_{\text{amb}} < +70\text{ °C}$
Max. gas inlet temperature:	+195 °C (T3)/+130 °C (T4)	
Medium temperature (blowback):	<b>Component</b>	<b>Medium temperature range</b>
	Valve for pressurized air:	-10 °C to +80 °C
Self-regulating heater:	+130 °C (T3)/+70 °C (T4)	
Low temperature alarm:	Contact switches at < 95 °C (T3) or < 50 °C (T4); Simple electrical equipment according to EN 60079-11; $U_i$ 30 V, $I_i$ = 100 mA; $C_i/L_i \sim 0$	
Electrical data:	230 V, 2.0 A, 50/60 Hz 115 V, 3.8 A, 50/60 Hz	
Max. operating pressure	6 bar	
Material:	1.4571	
Parts in contact with media:	Seals: Graphite/1.4404 and see filter	
Markings:	ATEX:  II 3G Ex ec ic mb IIC T3/T4 Gc IECEx: Ex ec ic mb IIC T3/T4 Gc	

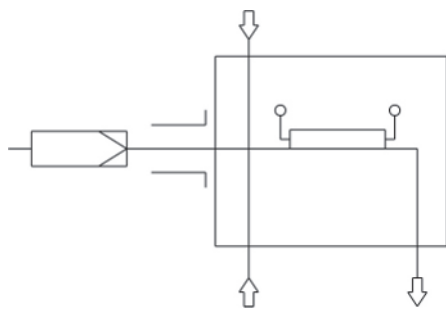
## 9.2 Connection Diagram



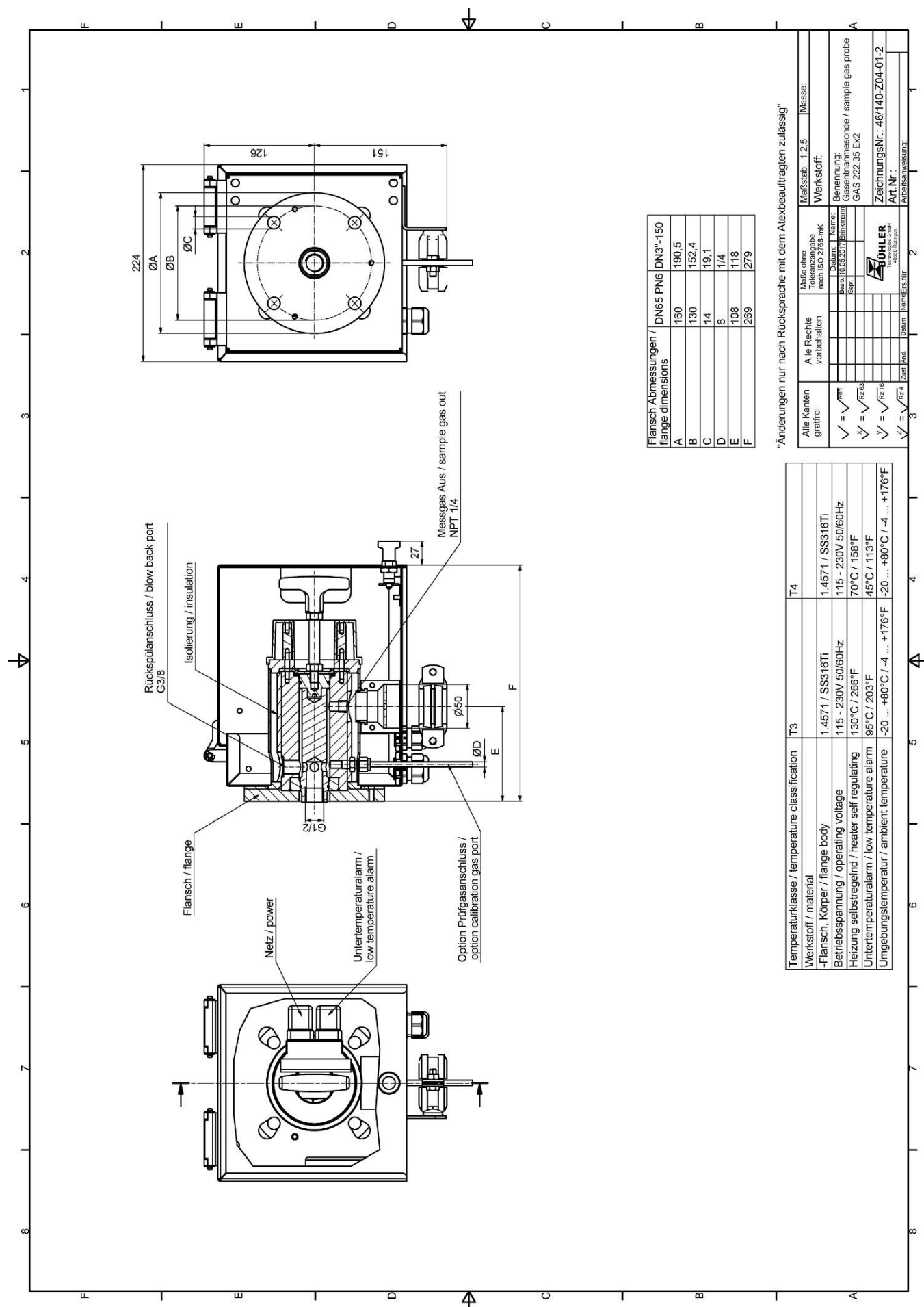
## 9.3 Terminal Diagram Probe Terminal Box



## 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 <sub>3</sub> COCH <sub>3</sub>	Acetone		1/1	1/1	4/4	1/1
C <sub>6</sub> H <sub>6</sub>	Benzol		1/1	1/1	3/3	1/1
Cl <sub>2</sub>	Chlorine	10 % wet	1/1	1/1	3/0	4/4
Cl <sub>2</sub>	Chlorine	97 %	1/0	1/0	1/1	1/1
C <sub>2</sub> H <sub>6</sub>	Ethane		1/0	1/0	1/0	2/0
C <sub>2</sub> H <sub>5</sub> OH	Ethanol	50 %	1/1	1/1	2/2	1/0
C <sub>2</sub> H <sub>4</sub>	Ethylene		1/0	1/0	1/0	1/0
C <sub>2</sub> H <sub>2</sub>	Ethyne		1/0	1/0	2/0	1/0
C <sub>6</sub> H <sub>5</sub> C <sub>2</sub> H <sub>5</sub>	Ethylbenzene		1/0	1/0	2/0	1/0
HF	Hydrofluoric acid		1/0	2/0	4/0	3/4
CO <sub>2</sub>	Carbon dioxide		1/1	1/0	1/1	1/1
CO	Carbon monoxide		1/0	1/0	1/0	1/1
CH <sub>4</sub>	Methane	technically pure	1/1	1/0	1/1	1/1
CH <sub>3</sub> OH	Methanol		1/1	1/1	3/4	1/1
CH <sub>3</sub> Cl <sub>2</sub>	Methylene chloride		1/0	1/0	3/0	1/1
H <sub>3</sub> PO <sub>4</sub>	Phosphoric acid	1-5 %	1/1	1/1	1/1	1/1
H <sub>3</sub> PO <sub>4</sub>	Phosphoric acid	30 %	1/1	1/1	1/1	1/1
C <sub>3</sub> H <sub>8</sub>	Propane	gaseous	1/1	1/0	1/0	1/0
C <sub>3</sub> H <sub>6</sub> O	Propylene oxide		1/0	2/0	4/0	1/0
HNO <sub>3</sub>	Nitric acid	1-10 %	1/1	1/0	1/1	1/1
HNO <sub>3</sub>	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 <sub>2</sub>	Oxygen		1/1	1/1	1/2	1/1
SF <sub>6</sub>	Sulphur hexafluoride		1/0	1/0	2/0	0/0
H <sub>2</sub> SO <sub>4</sub>	Sulfuric acid	1-6 %	1/1	1/1	1/1	1/2
H <sub>2</sub> S	Hydrogen sulphide		1/1	1/1	4/4	1/1
N <sub>2</sub>	Nitrogen		1/1	1/0	1/1	1/0
C <sub>6</sub> H <sub>5</sub> C <sub>2</sub> H <sub>3</sub>	Styrene		1/1	1/0	3/0	1/0
C <sub>6</sub> H <sub>5</sub> CH <sub>3</sub>	Toluol (methylbenzene)		1/1	1/1	3/3	1/1
H <sub>2</sub> O	Water		1/1	1/1	1/1	1/1
H <sub>2</sub>	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)

## **10 Attached Documents**

- Type Examination Certificate IBExU17ATEXB007X
- Certificate IECEX IBE 17.0002X
- Declaration of Conformity KX460030
- 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:

**II 3G Ex ec ic mb IIC T3/T4 Gc**

IBExU Institut für Sicherheitstechnik GmbH  
Fuchsmühlenweg 7  
09599 Freiberg, GERMANY

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 -

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

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

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

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.

Item number IECEx GAS 222 Ex2

FB106109 | 0

Intrinsically safe thermo alarm:

$U_i = 30 \text{ V}$

$I_i = 0.1 \text{ A}$

**[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  $-20 \text{ °C}$  up to  $+80 \text{ °C}$ .

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:

 **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

By order

Dipl.-Ing. [FH] A. Henker

**IBExU**  
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09599 Freiberg/Sachsen  
Telefon (03731) 3805-0  
Telefax (03731) 38 05 10  
- Stamp -

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

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, 2021-03-09



## Schedule

**Certificate number IBExU17ATEXB007 X | Issue 1**

### 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:**

[illegible]

1		6mm
2		6mm + check valve
3		1/4
4		1/4 + check valve
<b>pressure vessel</b>		
0		no
1		yes
<b>purge valve</b>		
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
<b>pneumatic actuator for internal ball valve</b>		
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)
<b>limit switch for pneumatic actuator</b>		
0		no
1		yes (only for GAS 222.11/30/21/31)
<b>solenoid valve for pneumatic actuator</b>		
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:

$U_i = 30 \text{ V}$

$I_i = 0.1 \text{ A}$

*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](http://www.iecex.com)

Certificate No.: IECEx IBE 17.0002X

Issue No: 0

Certificate history:

Issue No. 0 (2017-06-30)

Status: **Current**

Page 1 of 4

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](http://www.iecex.com).

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** Explosive atmospheres - Part 0: General requirements

Edition:6.0

**IEC 60079-7 : 2015** Explosive atmospheres – Part 7: Equipment protection by increased safety "e"

Edition:5.0

*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 blowback 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:

$U_i = 30 \text{ V}$

$I_i = 0.1 \text{ A}$

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

Page 4 of 4

**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
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 temperature 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")





# 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](http://www.iecex.com)

Certificate No.:	<b>IECEx IBE 17.0002X</b>	Page 1 of 5	<u>Certificate history:</u>
Status:	<b>Current</b>	Issue No: 1	<b>Issue 0 (2017-06-30)</b>
Date of Issue:	2021-03-09		
Applicant:	<b>Bühler Technologies GmbH</b> Harkortstr. 29 40880 Ratingen Germany		
Equipment:	<b>Sample Gas Probes Serie 222.xx Ex 2</b>		
Optional accessory:			
Type of Protection:	<b>Ex e, Ex m</b>		
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](http://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**

Page 2 of 5

Date of issue: 2021-03-09

Issue No: 1

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

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

Page 3 of 5

Date of issue: 2021-03-09

Issue No: 1

## 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 blowback 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:

$U_i = 30 \text{ V}$

$I_i = 0.1 \text{ A}$

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**

Page 4 of 5

Date of issue: 2021-03-09

Issue No: 1

## Equipment (continued):

Change in type code



# IECEx Certificate of Conformity

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

Page 5 of 5

Date of issue: 2021-03-09

Issue No: 1

## 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 2 of 2

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 222.20 Ex2, GAS 222.21 Ex2  
GAS 222.31 Ex2, GAS 222.35 Ex2

Die Produkte werden entsprechend der derzeit 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:**  II 3G Ex ec ic mb<sup>1</sup> IIC T3/T4 Gc

**IECEx:** Ex ec ic mb<sup>1</sup> IIC T3/T4 Gc

<sup>1</sup> 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

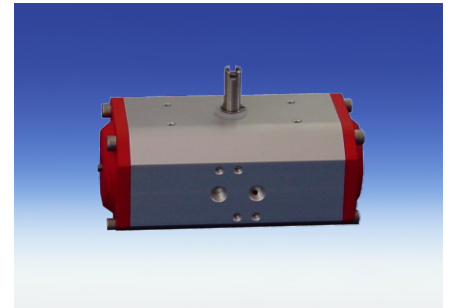
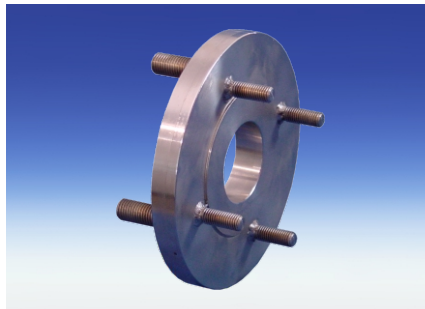
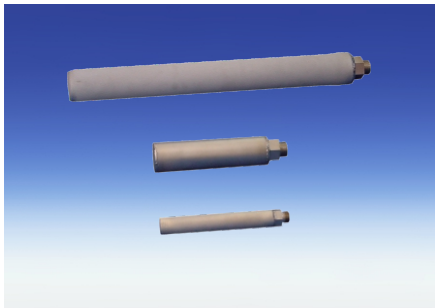
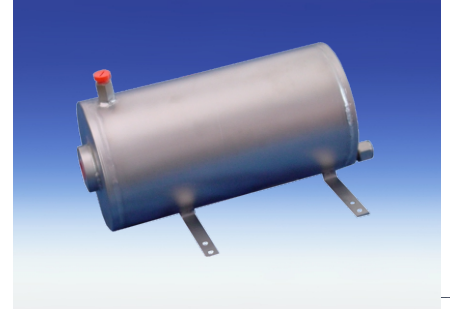
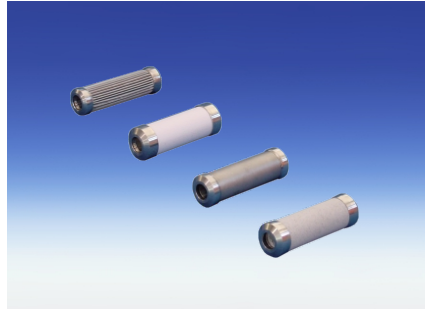
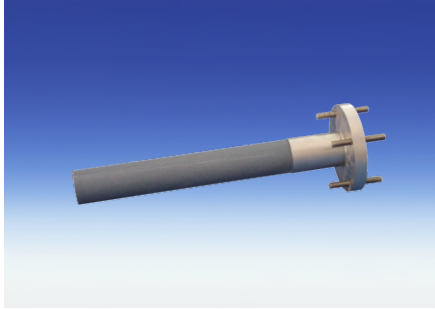
  
Frank Pospiech  
Geschäftsführer – Managing Director

KX 46 0030

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



# Accessories for Sample Gas Probe GAS 222



- Sample tubes
- In-situ filters
- Extensions
- Downstream filters
- Cal gas connections
- Adapter flanges
- Capacitive vessel
- Pneumatic actuators
- 3/2-way-solenoid valves
- Blowback controllers

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Page 8

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For general information, see data sheet "Sample gas probes GAS 222" DE461000.

Sample tubes, in-situ filters and extensions				222.10	222.11	222.30	222.35-U	222.15	222.17	222.20	222.21	222.31	222.35	222.20 DH	222.20 Atex	222.21 Atex	222.31 Atex	222.35 Atex	222.20 Atex2	222.21 Atex2	222.31 Atex2	222.35 Atex2	222.10 ANSI	222.11 ANSI/ CSA	222.30 ANSI/ CSA	222.35-U ANSI/ CSA	222.15 ANSI/ CSA	222.17 ANSI/ CSA	222.20 ANSI/ CSA	222.21 ANSI/ CSA	222.31 ANSI/ CSA	222.35 ANSI/ CSA	222.20 DH ANSI/ CSA	222.20 AMEX	222.21 AMEX	222.31 AMEX	222.35 AMEX	Type GAS
Sample tube																																						
Material	T max.	Length	Part No.:																																			
01 1.4571	600°C	300 mm	462220010300	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X					X	X	X	
01 1.4571	600°C	500 mm	462220010500	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X					X	X	X	
01 1.4571	600°C	1000 mm	462220011000	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X					X	X	X	
01 1.4571	600°C	1500 mm	462220011500	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X					X	X	X	
01 1.4571	600°C	2000 mm	462220012000	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X					X	X	X	
02 Ceramics / 1.4571	1600°C	0.5 m	4622200205	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X					X	X	X	
02 Ceramics / 1.4571	1600°C	1.0 m	4622200210	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X					X	X	X	
02 Ceramics / 1.4571	1600°C	1.5 m	4622200215	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X					X	X	X	
06 Hastelloy / 1.4571	400°C	500 mm	462220060500	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X					X	X	X	
06 Hastelloy / 1.4571	400°C	1000 mm	462220061000	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X					X	X	X	
06 Hastelloy / 1.4571	400°C	1500 mm	462220061500	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X					X	X	X	
06 Hastelloy / 1.4571	400°C	2000 mm	462220062000	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X					X	X	X	
08 Inconel / 1.4571	1050°C	500 mm	462220040500	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X					X	X	X	
08 Inconel / 1.4571	1050°C	1000 mm	462220041000	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X					X	X	X	
08 Inconel / 1.4571	1050°C	1500 mm	462220041500	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X					X	X	X	
08 Inconel / 1.4571	1050°C	2000 mm	462220042000	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X					X	X	X	
08 Inconel / 1.4571	1050°C	2500 mm	462220042500	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X					X	X	X	
12 1.4571	600°C	500 mm	462220160500	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X					X	X	X	
12 1.4571	600°C	1000 mm	462220161000	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X					X	X	X	
12 1.4571	600°C	1500 mm	462220161500	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X					X	X	X	
12 1.4571	600°C	2000 mm	462220162000	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X					X	X	X	
13 Kanthal / 1.4571	1400°C	up to 1 m	46222017	X	X			X	X	X	X			X					X	X			X	X			X	X	X	X					X	X	X	
Sample tube with demister PVDF/ETFE	120°C	800 mm	46222040	X	X			X	X	X	X			X									X	X			X	X	X	X					X			
Demister ETFE / as spare part	120°C		462220402	X	X			X	X	X	X			X									X	X			X	X	X	X					X			
Sample tube with demister / 1.4571	400°C	300 mm	4622204203	X	X			X	X	X	X			X									X	X			X	X	X	X					X			
Sample tube with demister / 1.4571	400°C	500 mm	4622204205	X	X			X	X	X	X			X									X	X			X	X	X	X					X			
Sample tube with demister / 1.4571	400°C	1000 mm	4622204210	X	X			X	X	X	X			X									X	X			X	X	X	X					X			
Demister 1.4571 / as spare part	400°C		4611004	X	X			X	X	X	X			X									X	X			X	X	X	X					X			

Sample tubes, in-situ filters and extensions						<div><div>▪ Various materials</div><div>▪ Various dimensions</div><div>▪ Heated or nonheated extensions</div></div>																																				
In-situ filter							222.10	222.11	222.30	222.35-U	222.15	222.17	222.20	222.21	222.31	222.35	222.20 DH	222.20 Atex	222.21 Atex	222.31 Atex	222.35 Atex	222.20 Atex2	222.21 Atex2	222.31 Atex2	222.35 Atex2	222.10 ANSI	222.11 ANSI/ CSA	222.30 ANSI/ CSA	222.35-U ANSI/ CSA	222.15 ANSI/ CSA	222.17 ANSI/ CSA	222.20 ANSI/ CSA	222.21 ANSI/ CSA	222.31 ANSI/ CSA	222.35 ANSI/ CSA	222.20 DH ANSI/ CSA	222.20 AMEX	222.21 AMEX	222.31 AMEX	222.35 AMEX	Type GAS	
	Material	T max.	Length	Pore size	Part No.:																																					
03	stainless steel	600°C	237 mm	5 µm	46222303		X	X					X	X					X	X			X	X			X	X					X	X				X	X			
03F	stainless steel	600°C	237 mm	0.5 µm	46222303F*		X	X					X	X					X	X			X	X			X	X					X	X				X	X			
03H	Hastelloy	600°C	237 mm	5 µm	46222303H*		X	X					X	X					X	X			X	X			X	X					X	X				X	X			
03HF	Hastelloy	600°C	237 mm	0.5 µm	46222303HF*		X	X					X	X					X	X			X	X			X	X					X	X				X	X			
031	stainless steel, with volume displacer	600°C	237 mm	5 µm	462223031		X	X					X	X					X	X			X	X			X	X					X	X				X	X			
031F	stainless steel, with volume displacer	600°C	237 mm	0.5 µm	462223031F*		X	X					X	X					X	X			X	X			X	X					X	X				X	X			
031H	Hastelloy, with volume displacer	600°C	237 mm	5 µm	462223031H*		X	X					X	X					X	X			X	X			X	X					X	X				X	X			
031HF	Hastelloy, with volume displacer	600°C	237 mm	0.5µm	462223031HF*		X	X					X	X					X	X			X	X			X	X					X	X				X	X			
04	stainless steel	600°C	538 mm	5 µm	46222304		X	X					X	X					X	X			X	X			X	X					X	X				X	X			
04F	stainless steel	600°C	538 mm	0.5 µm	46222304F*		X	X					X	X					X	X			X	X			X	X					X	X				X	X			
04H	Hastelloy	600°C	538 mm	5 µm	46222304H*		X	X					X	X					X	X			X	X			X	X					X	X				X	X			
04HF	Hastelloy	600°C	538 mm	0.5 µm	46222304HF*		X	X					X	X					X	X			X	X			X	X					X	X				X	X			
041	stainless steel, with volume displacer	600°C	538 mm	5 µm	462223041		X	X					X	X					X	X			X	X			X	X					X	X				X	X			
041F	stainless steel, with volume displacer	600°C	538 mm	0.5 µm	462223041F*		X	X					X	X					X	X			X	X			X	X					X	X				X	X			
041H	Hastelloy, with volume displacer	600°C	538 mm	5 µm	462223041H*		X	X					X	X					X	X			X	X			X	X					X	X				X	X			
041HF	Hastelloy, with volume displacer	600°C	538 mm	0.5 µm	462223041HF*		X	X					X	X					X	X			X	X			X	X					X	X				X	X			
07	Ceramics / 1.4571	1000°C <sup>1)</sup>	478 mm	2 µm	46222307		X	X					X	X					X	X			X	X																		
07F	Ceramics / 1.4571	1000°C <sup>1)</sup>	478 mm	0.3 µm	46222307F*		X	X					X	X					X	X																						
07 ANSI	Ceramics / 1.4571	1000°C <sup>1)</sup>	478 mm	2 µm	46222307C																						X	X					X	X				X	X			
35	stainless steel	600°C	229 mm	5 µm	46222359				X							X					X			X				X												X		
35F	stainless steel	600°C	229 mm	0.5 µm	46222359F*				X							X					X			X				X												X		

1) Hot gas filtration, oxidizing atmosphere max. 750 °C  
Hot gas filtration, reductive atmosphere max. 600 °C

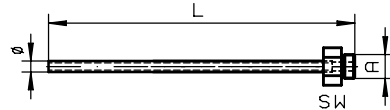
\* Prices and delivery time on request

Sample tubes, in-situ filters and extensions					222.10	222.11	222.30	222.35-U	222.15	222.17	222.20	222.21	222.31	222.35	222.20 DH	222.20 Atex	222.21 Atex	222.31 Atex	222.35 Atex	222.20 Atex2	222.21 Atex2	222.31 Atex2	222.35 Atex2	222.10 ANSI	222.11 ANSI/ CSA	222.30 ANSI/ CSA	222.35-U ANSI/ CSA	222.15 ANSI/ CSA	222.17 ANSI/ CSA	222.20 ANSI/ CSA	222.21 ANSI/ CSA	222.31 ANSI/ CSA	222.35 ANSI/ CSA	222.20 DH ANSI/ CSA	222.20 AMEX	222.21 AMEX	222.31 AMEX	222.35 AMEX	Type GAS		
<div><div>▪ Various materials</div><div>▪ Various dimensions</div><div>▪ Heated or nonheated extensions</div></div>																																									
Protection shield				Part No.:																																					
for in-situ filter 03				462223034		X	X					X	X				X	X			X	X				X	X					X	X								
for in-situ filter 04				462223044		X	X					X	X				X	X			X	X				X	X					X	X								
Extensions																																									
Type		Material	Mains voltage	Length																																					
G3/4	nonheated	1.4571		0.2 m	4622230320200	X	X	X		X	X	X	X	X		X	X	X	X		X	X	X		X	X	X		X	X	X	X	X		X	X	X	X			
G3/4	nonheated	1.4571		0.4 m	4622230320400	X	X	X		X	X	X	X	X		X	X	X	X		X	X	X		X	X	X		X	X	X	X	X		X	X	X	X			
G3/4	nonheated	1.4571		0.5 m	4622230320500	X	X	X		X	X	X	X	X		X	X	X	X		X	X	X		X	X	X		X	X	X	X	X		X	X	X	X			
G3/4	nonheated	1.4571		0.7 m	4622230320700	X	X	X		X	X	X	X	X		X	X	X	X		X	X	X		X	X	X		X	X	X	X	X		X	X	X	X			
G3/4	nonheated	1.4571		1 m	4622230321000	X	X	X		X	X	X	X	X		X	X	X	X		X	X	X		X	X	X		X	X	X	X	X		X	X	X	X			
G3/4	nonheated	1.4571		1.2 m	4622230321200	X	X	X		X	X	X	X	X		X	X	X	X		X	X	X		X	X	X		X	X	X	X	X		X	X	X	X			
G3/4	nonheated	1.4571		1.5 m	4622230321500	X	X	X		X	X	X	X	X		X	X	X	X		X	X	X		X	X	X		X	X	X	X	X		X	X	X	X			
G3/4	nonheated	1.4571		2 m	4622230322000	X	X	X		X	X	X	X	X		X	X	X	X		X	X	X		X	X	X		X	X	X	X	X		X	X	X	X			
G1/2	nonheated	1.4571		0,25 m	4622235910250				X						X				X				X				X												X		
G1/2	nonheated	1.4571		0,5 m	4622235910500				X						X				X				X				X												X		
G1/2	nonheated	1.4571		0,7 m	4622235910700				X						X				X				X				X												X		
G1/2	nonheated	1.4571		1,5 m	4622235911500				X						X				X				X				X												X		
GF	heated*	1.4571	230V	0.5 m	462223036						X	X	X																												
GF	heated*	1.4571	230V	1 m	462223033						X	X	X																												
GF	ANSI / CSA,heated*	1.4571	115V	0.5 m	462223036C1																										X	X	X								
GF	ANSI / CSA,heated*	1.4571	115V	1 m	462223033C1																										X	X	X								
Controller for heated extension integrated into probe controller				46222292							X	X	X																		X	X	X								

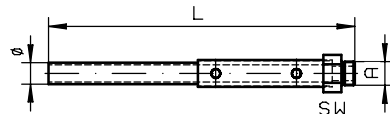
\* Mounting is only possible at a plain flange without G3/4 thread. Therefore a G has to be added to the part number, e.g. 4622220G.  
It is not possible to add a heated extension after delivery.

## 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



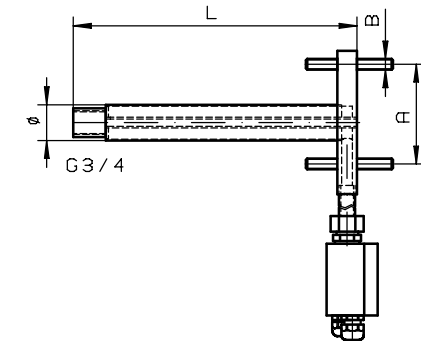
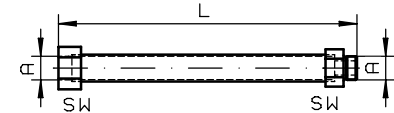
Typ	L	ø	A	SW
02-0,5	500	24	G3/4	36
02-1,0	1000	24	G3/4	36
02-1,5	1500	24	G3/4	36



### Verlängerungen / extensions

Unbeheizt / unheated

Typ	L	A	SW
G3/4	0,2-2 m	G3/4	36
G1/2	0,25-1,5m	G1/2	27

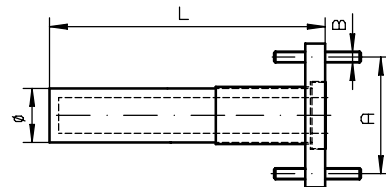
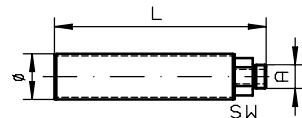


Beheizt / heated

Type	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

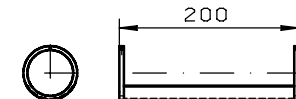
## Eintrittssfilter / in-situ filter

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

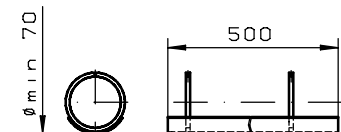



Abweisblech / protection shield

Eintrittsfilter / in-situ filter 03



Eintrittsfilter / in-situ filter 04



alle Konten gratfrei:		ALLE RECHTE VORBEHALTEN				Maße ohne Toleranzangabe nach ISO 2768-mK				Maßstab 1 5		(Gewicht)	
Oberflächenbear- beitungszeichen										Werkstoff			
✓ = ✓ <sub>Rz</sub>						Datum	Name			Benennung			
✓ <sub>x</sub> = ✓ <sub>Rz 63</sub>						Bearb.	21.01.2004			Brinksann			
						Gepr.							
✓ <sub>y</sub> = ✓ <sub>Rz 16</sub>													
✓ <sub>z</sub> = ✓ <sub>Rz 4</sub>													
										Zeichn. -Nr 46/107-Z01-01-3A			
										Art -Nr			
		a	neu	29.09.06	Br	Ers. für				ARBEITSANWEISUNG			
		Zust	Änd	Datum	Name								

[illegible]

\*max. pressure 6 bar

## **Details:**

### **A) Blowback**

#### **Ordering note for capacitive vessel:**

For attachment to GAS 222.11 / 30 / 35-U, a support is required.

#### **Ordering note for pneumatic actuator:**

If a blowback controller is required, only actuator P/N 46222030 is possible.

We advise the installation of a position indicator switch to control the pneumatic actuator.

### **Integrated blowback controller in the probe controller**

In addition to the stand-alone blowback controller (RRS), an integrated blowback controller is optionally available

Blowback cycle time and actual blowback time can be adjusted via the keys and menu of the controller. The blowback and manual operation will be shown on the display. The blowback controller can be programmed via the keys – manual or automatic operation is possible. Besides the status output of the controller, a blowback status signal is provided. Blowback will be usually initiated by signals coming from the main controls.

If the position indicator switch is installed, the controller will use this input for the process logic.

### **B) Hazardous Areas**

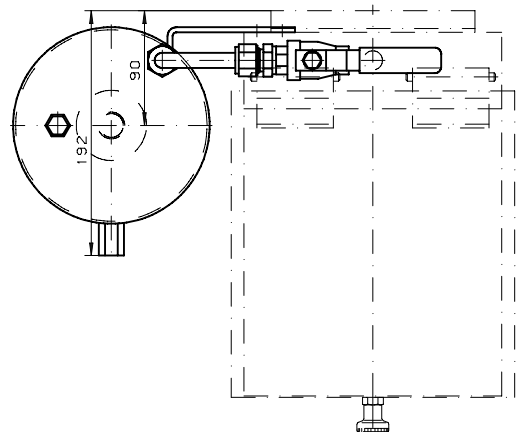
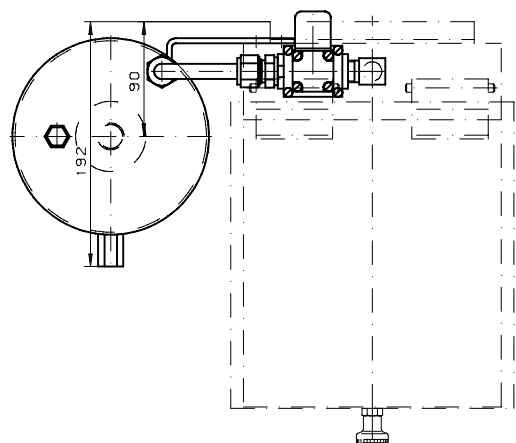
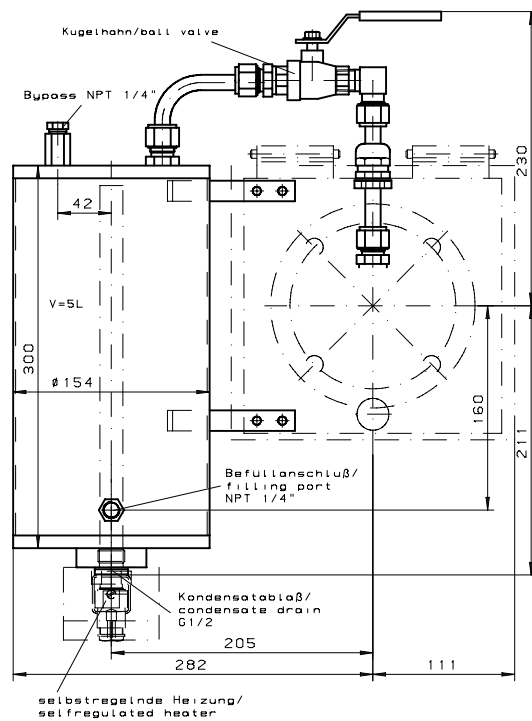
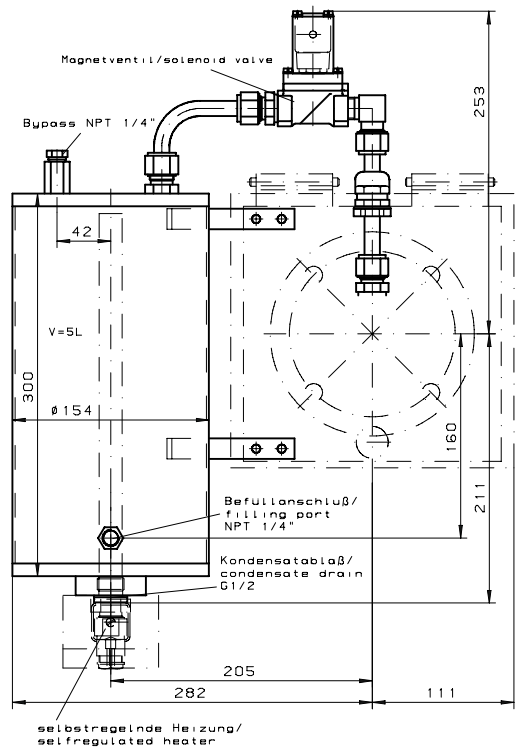
Please note that installed accessories may change the approved category of the probe.

Follow strictly the advices given in the installation- and operation manual and regard the marking on the type plate.

<b>Sample Gas Probe GAS 222.xx Atex</b>		
<b>Model</b>	<b>with Accessories</b>	<b>resulting restricted area; marking</b>
21 Atex, 31 Atex, 35 Atex	Pressure vessel PAV 01 (Part-No. 46222PAV with accessories)	II 1D / 2GD
21 Atex, 31 Atex,	In situ filter*, ceramics (Art.-Nr.:46222307 + 46222307F)	II 1D 3G / 2GD
20 Atex , 21 Atex,	Downstream filter*, ceramic (Part-No. 46222026 + 46222026P)	II 1D 3G / 2GD
20 Atex, 21 Atex,	Sample tube (Part-No. 46222001, 462220011, 46222006, 46222004, 46222016)	II 1G / 2GD
20 Atex, 21 Atex,	Sample tube**, ceramics (Part-No. 4622200205, 4622200210, 4622200215)	II 3G / 2GD
21 Atex, 31 Atex,	Pneumatic cylinder with end switch Atex (Part-No. 46222019)	II 1GD / 2G3D

\* Accessory not suitable for sampling dust with extremely low ignition energy < 3mJ.

\*\* When gases are sampled from Zone 2, ceramic sample tube must be used only if application related or process related electrostatic charging is eliminated.



max	Betriebsdruck/operating pressure	10bar
max	Betriebstemperatur/operating temperature	50°C

"Änderungen nur nach Rücksprache  
mit dem ATEXbeauftragten zulässig"

[illegible]



Downstream filter elements and further options				222.10	222.11	222.30	222.35-U	222.15	222.17	222.20	222.21	222.31	222.35	222.20 DH	222.20 Atex	222.21 Atex	222.31 Atex	222.35 Atex	222.20 Atex2	222.21 Atex2	222.31 Atex2	222.35 Atex2	222.10 ANSI	222.11 ANSI/ CSA	222.30 ANSI/ CSA	222.35-U ANSI/ CSA	222.15 ANSI/ CSA	222.17 ANSI/ CSA	222.20 ANSI/ CSA	222.21 ANSI/ CSA	222.31 ANSI/ CSA	222.35 ANSI/ CSA	222.20 DH ANSI/ CSA	222.20 AMEX	222.21 AMEX	222.31 AMEX	222.35 AMEX	Type GAS
Downstream filter			Part no.:																																			
Material	O-Rings	Pore size																																				
Ceramics	Viton	3 µm	46222026	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X			X	X	X			
Ceramics	Perfluorelastomer	3 µm	46222026P	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X			X	X	X			
Sintered stainless steel	Viton	5 µm	46222010	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X			X	X	X			
Sintered stainless steel	Perfluorelastomer	5 µm	46222010P	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X			X	X	X			
Sintered stainless steel	Viton	0,5 µm	46222010F*	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X			X	X	X			
Sintered stainless steel	Perfluorelastomer	0,5 µm	46222010FP*	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X			X	X	X			
Pleated stainless steel	Viton	10 µm	46222011	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X			X	X	X			
Pleated stainless steel	Perfluorelastomer	10 µm	46222011P	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X			X	X	X			
Handle to hold the micro-fibreglass filter element			46222067	X	X			X	X	X	X			X									X	X			X	X	X	X			X	X	X			
Micro glass fiber with silicate binder			462220671	X	X			X	X	X	X			X									X	X			X	X	X	X			X	X	X			
Micro glass fiber with silicate binder			462220671P	X	X			X	X	X	X			X									X	X			X	X	X	X			X	X	X			
Closing handle with filter tube and filter wool			46222163	X	X			X	X	X	X			X									X	X			X	X	X	X			X	X	X			
Closing handle with filter tube and filter wool			46222163P	X	X			X	X	X	X			X									X	X			X	X	X	X			X	X	X			
Filter wool			46222167	X	X			X	X	X	X			X									X	X			X	X	X	X			X	X	X			
Set of O-rings Viton incl. grease			46222012	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X			X	X	X			
Set of O-rings Perfluorelastomer incl. grease			46222024	X	X			X	X	X	X			X	X	X			X	X			X	X			X	X	X	X			X	X	X			
Further options																																						
Adapter flange ANSI 3"-150lbs			46222014	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X															
Cal gas connection ø6mm			46222309	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Cal gas connection ø6mm with check valve			46222311	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Cal gas connection ø1/4"			46222336	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Cal gas connection ø1/4" with check vavle			46222337	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Fitting for sample gas port ø6mm			9008173	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Fitting for sample gas port ø8mm			9008174	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Fitting for back wash port ø12mm			9008369		X	X	X			X	X	X				X	X	X		X	X	X		X	X	X			X	X	X			X	X	X		
Ffitting for sample gas port ø1/4"			9008584	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Fitting for sample gas port ø3/8"			9008583	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Fitting for back wash port ø1/2"			9028033		X	X	X			X	X	X				X	X	X		X	X	X		X	X	X			X	X	X			X	X	X		
Locking screw G3/8 for backflush connection			9008084			X	X			X	X	X				X	X	X		X	X	X			X	X			X	X	X			X	X	X		
Sealing ring for sealing the backflush connection with a locking screw			9009258			X	X			X	X	X				X	X	X		X	X	X			X	X			X	X	X			X	X	X		
Mounting bracket with clamp ring for DN65 PN6			462220102				X																															
Mounting bracket with clamp ring for ANSI 3"-150 lbs			462220102C																							X												

\* Prices and delivery time on request

# 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

Gerät/ Device

Anzahl/ Quantity

Auftragsnr./ Order No.

### Ansprechpartner/ Person in charge

Name/ Name

Abt./ Dept.

Tel./ Phone

E-Mail

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



☐  
gesundheitsge-  
fährdend/  
harmful to  
health



☐  
gesund-  
heitsschädlich/  
health hazard



☐  
umweltge-  
fährdend/  
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 commission an external service provider to clean the goods and invoice it to your account.

Firmenstempel/ Company Sign

Datum/ Date

rechtsverbindliche Unterschrift/ Legally binding signature



### **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 assemblies 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.

