



## Sample gas probes

GAS 222.20 Ex1

## 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

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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.

### ATEX

Used in zone 1 (explosion group IIC) and 21 (dust group IIIC) and sampling from zone 0 (explosion group IIC) and 20 (dust group IIIC).

### IECEX:

Used in zone 1 (explosion group IIC) and sampling from zone 0 (explosion group IIC).

#### DANGER




#### Explosion hazard

Gas and dust atmosphere must not be present at the same time. These so-called hybrid mixtures can have different ignition points than the individual components and are therefore not included in the explosion protection markings for gas and dust.

Blowing an internal explosive atmosphere back from the gas probe is prohibited due to the potential risk of explosion. Process gases or process gas mixtures must not contain solids which produce ignitable impact sparks when combined with the probe materials including filter and sampling tubes.


Probe marking, depending on the selected options and temperature class:

#### for zone 0/1:

**ATEX:**  II 1G/2G Ex db<sup>1</sup> eb mb<sup>2</sup> IIC T5/T6...T1/T2 Ga/Gb

**IECEX:** Ex db<sup>1</sup> eb mb<sup>2</sup> IIC T5/T6...T1/T2 Ga/Gb

#### for zone 0/21:

**ATEX:**  II 1G/2D

Ex db<sup>1</sup> eb mb<sup>2</sup> IIC T5 ... T1 Ga

Ex tb mb<sup>2</sup> IIIC T80 °C ... T226 °C Db

**IECEX:** -

#### for zone 20/21:

**ATEX:**  II 1D/2D Ex ta/tb mb<sup>2</sup> IIIC T120°C/T80°C...T300°C/T226°C Da/Db

**IECEX:** -

#### for zone 1:

**ATEX:**  II 2G Ex db<sup>1</sup> eb mb<sup>2</sup> IIC T6...T2 Gb

**IECEX:** Ex db<sup>1</sup> eb mb<sup>2</sup> IIC T6...T2 Gb

#### for zone 20/1:

**ATEX:**  II 1D/2G

Ex ta IIIC T120 °C ... T300 °C Da

Ex db<sup>1</sup> eb mb<sup>2</sup> IIC T6 ... T2 Gb

**IECEX:** -

#### for zone 21:

**ATEX:**  II 2D Ex tb mb<sup>2</sup> IIIC T80°C...T226°C Db

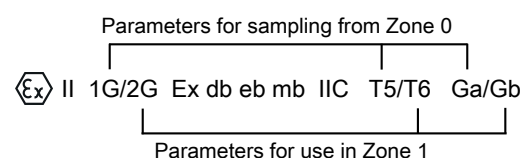
**IECEX:** -

<sup>1</sup> "db" only for GAS 222.21/31 versions with limit switch.

<sup>2</sup> "mb" only for version with solenoid valve.

Please refer to the type plate for the exact probe marking.

For devices designed for sampling from zone 0 or zone 20 the areas of application are indicated in the marking with "/":



The opposite is an example of the gas marking with separate areas of application. The same procedure applies to dust approvals.

Please note, unlike the operating zone, the temperature class for sampling zone 0 is lower. This is also indicated by the ignition protection marking in the type plate.

Always note the explosion protection marking in the name plate of your equipment (and all add-on parts).

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.

## Limitations categories/zones due to accessories

Please note, the accessories used may limit the approved applications of the probes.

Please note the following table:

		ATEX + IECEx		Only ATEX
GAS 222 types	with accessories:	Gas	Dust	Gas and dust (separate zones)
		Sampling zone/operating zone		
11 Ex1, 21 Ex1, 30 Ex1, 31 Ex1, 35 Ex1, 35-U Ex1	Pressure vessel PAV 01 (item no. 46222PAV and accessories)	Zone1***/Zone 1	Zone 20/Zone 21	Zone 20/Zone 1
11 Ex1, 21 Ex1, 30 Ex1, 31 Ex1	Ceramic inlet filter* (item no.:46222307 + 46222307F)	Zone 2/Zone 1	Zone 20/Zone 21	Zone 20/Zone 1 or Zone 2 / Zone 21
11 Ex1, 20 Ex1, 21 Ex1	Ceramic outlet filter* (item no. 46222026 + 46222026P)	Zone 2/Zone 1	Zone 20/Zone 21	Zone 20/Zone 1 or Zone 2 / Zone 21
11 Ex1, 20 Ex1, 21 Ex1	Sampling tubes (item no.: 46222001, 462220011, 46222006, 46222004, 46222016, 46222017, 46222018	Zone 0/Zone 1	No zone/Zone 21	Zone 0/Zone 21
11 Ex1, 20 Ex1, 21 Ex1	Ceramic sampling tubes** (item no.: 4622200205, 4622200210, 4622200215)	Zone 2/Zone 1	No zone/Zone 21	Zone 2/Zone 21

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

\*\* When sampling gas from Zone 2, ceramic sampling tubes may only be used if application- and process-related intensive electrostatic charges are ruled out.

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

## 1.2 Dust Atmosphere Requirements

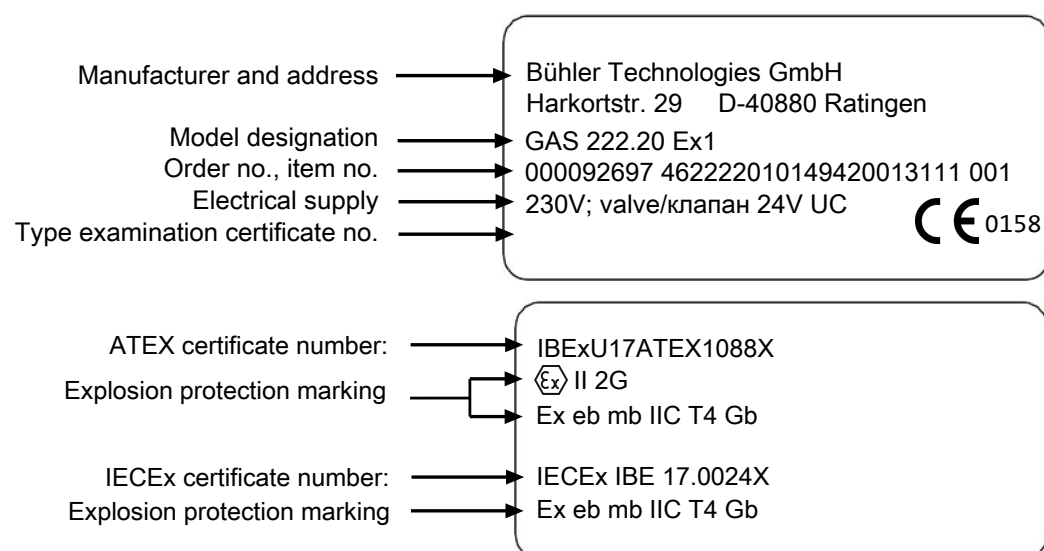
The sample gas probe may only be used in areas with explosive dust atmosphere if the smouldering temperatures of the dust layers and the ignition temperatures of the dust atmosphere is higher than the following temperatures.

	Probe temperature class					
	T80 °C	T120 °C	T130 °C	T175 °C	T226 °C	T300 °C
<b>Smouldering temperature for max. 5 mm dust layer</b>	≥ 155 °C	≥ 195 °C	≥ 205 °C	≥ 250 °C	≥ 301 °C	≥ 375 °C
<b>Dust atmosphere ignition temperature</b>	≥ 120 °C	≥ 180 °C	≥ 195 °C	≥ 263 °C	≥ 339 °C	≥ 450 °C

The basis for safety factors is EN 1127-1.

## 1.3 Type Plate

**Example:**



## 1.4 Scope of delivery

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

## 1.5 Ordering instructions

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

46222201	X	X	X	X	X	X	0	X	0	9	0	0	0	Product Characteristics							
														Flange							
	0	1												Flange DN65 PN6							
	0	2												Flange DN3"-150							
	x	x												Other							
														Hazardous area							
														Outside							
	4													Zone 1 (Atex/IECEX)							
	7													Zone 21 (Atex)							
	9													none							
														Inside							
	3													Zone 0 (Atex/IECEX)							
	4													Zone 1 (Atex/IECEX)							
	6													Zone 20 (Atex)							
	7													Zone 21 (Atex)							
	9													none							
														Temperature class inside/outside (dust only ATEX)							
														Ga/Gb	Ga/Db	Da/Gb	Da/Db				
	4													T3/T4	T3/T130°C	T175°C/T4	T175°C/T130°C				
	6													T5/T6	T5/T80°C	T120°C/T6	T120°C/T80°C				
														Temperature class inside/outside (dust only ATEX)							
														Gb/Gb	Gb/Db	Db/Gb	Db/Db				
	4													T4/T4	T4/T130°C	T130°C/T4	T130°C/T130°C				
	6													T6/T6	T6/T80°C	T80°C/T6	T80°C/T80°C				
														Power supply sample probe							
														1							115 V
														2							230 V
														Calibration gas port							
														0							No
													1							6 mm	
													2							6 mm with check valve	
													3							1/4"	
													4							1/4" with check valve	

## 1.6 Product Description

The probe has a self-regulating heating tape.

Probe	Description
GAS 222.20 Ex1	Probe with downstream filter
Accessories	Please refer to the data sheet at the end of this manual for accessories for this probe

## 2 Safety instructions

### 2.1 Important Information

This unit may only be used if:

- the product is being used under the conditions described in the operating- and installation instructions, used according to the nameplate and for applications for which it is intended. any unauthorized modifications to the device will void the warranty provided by Bühler Technologies GmbH,
- the limits in the data sheet and the instructions must be observed,
- the handle including O-ring are installed at a suitable ambient temperature range and filter (where applicable),
- monitoring equipment / protection devices must be connected correctly,
- service and repairs not described in these instructions is performed by Bühler Technologies GmbH,
- using genuine replacement parts.
- Regulation IEC/EN 60079-14 must be observed when erecting electrical systems in explosive areas.
- Additional national regulations pertaining to initial operation, operation, maintenance, repairs and disposal must be observed.
- These operating instructions are a part of the equipment. The manufacturer reserves the right to change performance-, specification- or technical data without prior notice. Please keep these instructions for future reference.

### Signal words for warnings

**DANGER**

Signal word for an imminent danger with high risk, resulting in severe injuries or death if not avoided.

**WARNING**

Signal word for a hazardous situation with medium risk, possibly resulting in severe injuries or death if not avoided.

**CAUTION**

Signal word for a hazardous situation with low risk, resulting in damaged to the device or the property or minor or medium injuries if not avoided.

**NOTICE**

Signal word for important information to the product.

### Warning signs

These instructions use the following warning signs:



Warns of a general hazard



General notice



Warns of voltage



Unplug from mains



Warns not to inhale toxic gasses



Wear respiratory equipment



Warns of corrosive liquids



Wear a safety mask



Warns of explosive areas



Wear gloves



## 2.2 General Hazard Warnings

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

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

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

### The operator of the system must ensure:

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

### Maintenance, Repair

Please note during maintenance and repairs:

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

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

#### NOTICE



#### Accessories may limit critical operating parameters of the base unit

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

#### NOTICE



#### When used in explosive areas

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

#### DANGER



#### Electrical voltage

Electrocution hazard.

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



**DANGER****Toxic, corrosive gas/condensate**

Sample gas/condensate may be hazardous to health.

- a) If necessary, ensure a safe gas/condensate discharge.
- b) Always disconnect the gas supply when performing maintenance or repairs.
- c) Protect yourself from toxic/corrosive gasses/condensate when performing maintenance. Wear appropriate protective equipment.

**DANGER****Explosion hazard**

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

- a) Use the devices only as described in this manual.
- b) Regard the process conditions.
- c) Check tubes and hoses for leakage.

**DANGER****Danger to life and explosion during installation and maintenance**

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

**DANGER****Use in explosive areas**

Flammable gas or dust atmospheres could ignite or explode. Avoid the following hazard sources:

**Application area!**

Never operate the gas probe outside the specifications. Sampling 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 temperatures during blowback. Never **blowback if explosive gas or dust atmospheres** are present. **Only use nitrogen (inert gas) to blowback flammable gas.**

**Dust**

If possible, take the electrical components which must be opened for repair to a dust-free room. If unable to do so, prevent dust from entering the housing.

**Zonal carryover when sampling from zone 20, 21, 22**

If the particle size of the dusts being filtered is smaller than the fineness of the filter elements used, zonal carryover from the process to the probe must be expected.

The fineness of the filter elements used must be clearly smaller than the average particle size of dusts in the process gas.

**Dust ignition**

Regularly clean dust from all components. Dust layers > 5 mm may have lower smouldering temperatures and the dust layer could potentially ignite at a temperature below its smouldering temperature.

Also remove dust under the thermal insulation and from the gas probe heating tape.

The ignition temperature and smouldering temperature of flammable dusts or dust layers which are present must be above the marked surface temperature plus a safety factor (also see section "Dust atmosphere requirements").

## **2.3 Ambient Temperature range of the equipment**

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

## **2.4 Permissible gas inlet temperature**

The permissible gas inlet temperatures between versions will vary based on the temperature class of the gas in den outer zones (see chapter "Technical Data").

## **3 Transport and storage**

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

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

## 4 Installation and connection

### NOTICE



#### Accessories may limit critical operating parameters of the base unit

Adding accessories may limit critical operating parameters. Ambient temperatures, zone classifications, explosion groups, temperature classes or chemical resistances of accessories may vary from the base unit.

Always include all technical data in the operating instructions and data sheets of all components in the safety assessment.

### 4.1 Installation site requirements

Sample gas probes are intended for flange mounting.

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

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

### 4.2 Installation

#### DANGER



#### Danger to life and explosion during installation and maintenance

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

#### DANGER



#### Explosion hazard

##### When used in explosive areas

Flammable gasses and dust could ignite or explode.

Never operate the gas probe outside the specifications. Extracting gases or gas mixtures which are also explosive in the absence of air is prohibited.

#### DANGER



#### Explosion hazard due to flame propagation

Severe injuries and damage to the system

If the process holds a risk of flame propagation, install a flame arrestor.

### 4.3 Installing the sampling tube (optional)

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

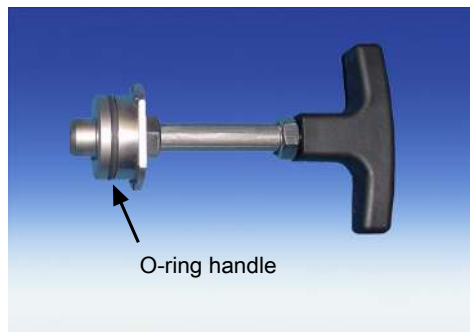
## 4.4 Installing the downstream filter

### NOTICE



The downstream filter and the O-ring for the handle must be inserted prior to first start-up.

**Operating without downstream filter prohibited!**



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

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

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

## 4.5 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.

## 4.6 Connecting the Gas Line

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

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

	Probe GAS 222
Connecting flange <sup>1)</sup>	DN65/PN6/DN3"-150
Sample gas inlet	G3/4
Sample gas outlet	NPT 1/4
Test gas connection <sup>1)</sup>	Tube Ø6 mm Tube Ø1/4

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.

## 4.6.1 Connecting the calibrating gas line (optional)

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

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

## 4.7 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 cable fitting).

### 4.7.1 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.

### 4.7.2 Connecting the Heating Tape

The probes have a self-regulating heating tape which connects inside the junction box per the terminal designations inside the terminal box. To ensure the highest level of safety possible (preventing fires, etc.) the manufacturer of the heating tape requires using RCDs of at least 30 mA. Further use a circuit breaker for adequate protection.

- Regularly check the function of the electrical protection.
- Also check visible parts of the heating tape for damage, e.g. from transport. Damaged heating tapes may allow moisture and dirt to enter and result in arcing and a heating system fire. Damaged heating tapes must not be used. Regularly check the visible area of the heating tape for mechanical damage during operation (visual inspection).
- Also observe the applicable explosion protection regulations when connecting the heating system to power. The manufacturer of the heating tape recommends regularly measuring the insulation resistance of the heating tape. The insulation resistance must be measured between the short-circuited copper conductors and the protective braiding. Measure with an insulation tester at a test voltage of 2500 VDC. The insulation resistance should be at least 10 MOhm.

On probes purchased with solenoid valves these will be factory fitted to the terminal strip.

Inside the junction box (pin assignment see drawing in the appendix) are terminals for connecting the solenoid valves for automatic blowback.

## 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 and the heating tape are not damaged and installed correctly.
- 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 voltage and frequency of the heating tape match the mains values.
- The electrical connections are tight.
- The monitoring equipment is connected and set as specified.
- Precautions have been taken.
- The earth is proper and functional.
- The downstream filter and the handle with O-ring are installed (if applicable).



## 6 Maintenance

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

During maintenance, remember:

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

### DANGER



#### Danger to life and explosion during installation and maintenance

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

### DANGER



#### Electrical voltage

Electrocution hazard.

- 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 downstream filter

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

### NOTICE



The weather hood 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.

## 6.2 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> <p>If damaged, replace or have repaired by Bühler.</p>	Operator
Heating tape	every 8,000	<ul style="list-style-type: none"> <li>– Check insulation resistance and the electrical protection.</li> </ul>	Operator
Filter	every 8,000 h	<ul style="list-style-type: none"> <li>– Check dirt level of filter.</li> </ul>	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
Entire probe	after 20,000 h or 3 years	<ul style="list-style-type: none"> <li>– Inspection by Bühler</li> </ul>	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

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

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

**Bühler Technologies GmbH**

**- Reparatur/Service -**

**Harkortstraße 29**

**40880 Ratingen**

**Germany**

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

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

**service@buehler-technologies.com.**

### 7.1 Troubleshooting

#### CAUTION



#### Risk due to defective device

Personal injury or damage to property

- a) Switch off the device and disconnect it from the mains.
- b) Repair the fault immediately. The device should not be turned on again before elimination of the failure.



Problem / malfunction	Possible cause	Action
No or reduced gas flow	– Filter element clogged	– Clean or replace filter element
	– Gas circuit clogged	– Clean sampling tube
No heat output	– No / incorrect voltage	– Check power supply
Condensation forming	– Heater defective	– Send in probe for repair
	– Thermal bridges at the sampling point	– Insulate to eliminate thermal bridges

Tab. 2: Troubleshooting

## 7.2 Spare Parts

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
9009105	Measuring outlet seal
9009079	Flange seal DN65 PN6
9009042	Flange seal ANSI3" 150 lbs
9009068	Flange seal FD 40 WS
46222012	Seal kit for filter element and probe, material: Viton *
46222024	Seal kit for filter element and probe, material: Perfluorelastomere *
462220100011	Seal kit for filter element and probe, material: Viton LT **
46222010	Downstream filter, sintered stainless steel, material: Viton *
	Please see the accessories data sheet in the appendix for filter elements

\*Lowest ambient temperature: -20 °C (-4 °F)

\*\*Lowest ambient temperature: -40 °C (-40 °F)

The temperature limits of the seals in the low temperature range are particularly important and must be observed for unheated probes. On heated probes the seals will have higher temperatures during normal operation, so the limits specified for the low temperatures typically do not apply. When changing the seals in low temperatures the temperature limits must particularly be observed, as the filter element and handle may have these low temperatures outside the probe.

## 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.

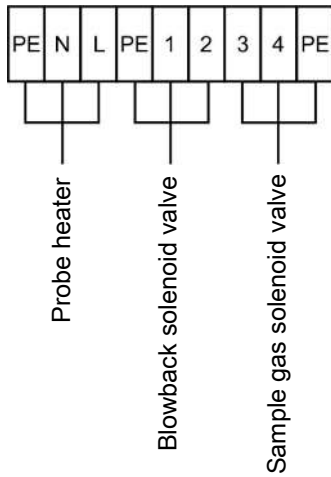
## 9 Appendices

### 9.1 Technical Data

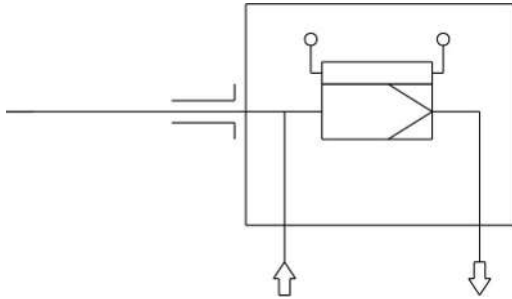
#### Gas Probe Technical Data

Ambient temperature:	-40 to +55 °C	
Permissible gas inlet temperatures:	<b>Outer zone temperature class</b>	<b>Permissible gas inlet temperature</b>
	T2	+135 °C
	T3	+135 °C
	T4	+130 °C
	T6	+70 °C
Self-regulating heater:	T4	+80 °C
	T6	+45 °C
Probe electrical data:	<b>Power at 0 °C:</b>	<b>External circuit breaker type C:</b>
	T4: 230 V, 100 W, 50/60 Hz 115 V, 100 W, 50/60 Hz	230 V, 2 A, 50/60 Hz 115 V, 3 A, 50/60 Hz
	T6: 230 V, 50 W, 50/60 Hz 115 V, 50 W, 50/60 Hz	
Max. operating pressure:	6 bar	
Max. flow rate:	1000 L/h	
Material:	1.4571	
Parts in contact with media:	Seals: Graphite/1.4404 and see filter	
Probe marking, depending on the selected options and temperature class:	<p><b>for zone 0/1:</b> ATEX:  II 1G/2G Ex db<sup>1</sup> eb mb<sup>2</sup> IIC T5/T6...T1/T2 Ga/Gb IECEX: Ex db<sup>1</sup> eb mb<sup>2</sup> IIC T5/T6...T1/T2 Ga/Gb</p> <p><b>for zone 1:</b> ATEX:  II 2G Ex db<sup>1</sup> eb mb<sup>2</sup> IIC T6...T2 Gb IECEX: Ex db<sup>1</sup> eb mb<sup>2</sup> IIC T6...T2 Gb</p> <p><b>for zone 0/21:</b> ATEX:  II 1G/2D Ex db<sup>1</sup> eb mb<sup>2</sup> IIC T5 ... T1 Ga Ex tb mb<sup>2</sup> IIC T80 °C ... T226 °C Db IECEX: -</p> <p><b>for zone 20/1:</b> ATEX:  II 1D/2G Ex ta IIC T120 °C ... T300 °C Da Ex db<sup>1</sup> eb mb<sup>2</sup> IIC T6 ... T2 Gb IECEX: -</p> <p><b>for zone 20/21:</b> ATEX:  II 1D/2D Ex ta/tb mb<sup>2</sup> IIC T120°C/T80°C...T300°C/T226°C Da/Db IECEX: -</p> <p><b>for zone 21:</b> ATEX:  II 2D Ex tb mb<sup>2</sup> IIC T80°C...T226°C Db IECEX: -</p> <p><sup>1</sup> "db" only for GAS 222.21/31 versions with limit switch <sup>2</sup> "mb" only for versions with solenoid valve</p>	
Applied standards:	IEC 60079-0 (Ed. 6.0); IEC 60079-7 (Ed. 5.0); IEC 60079-26 (Ed. 3.0); EN 60079-0:2012+A11:2013; EN 60079-7:2015; EN 60079-26:2015	
IECEX certificate number:	IECEX IBE 17.0024X	
ATEX certificate number:	IBExU17ATEX1088X	

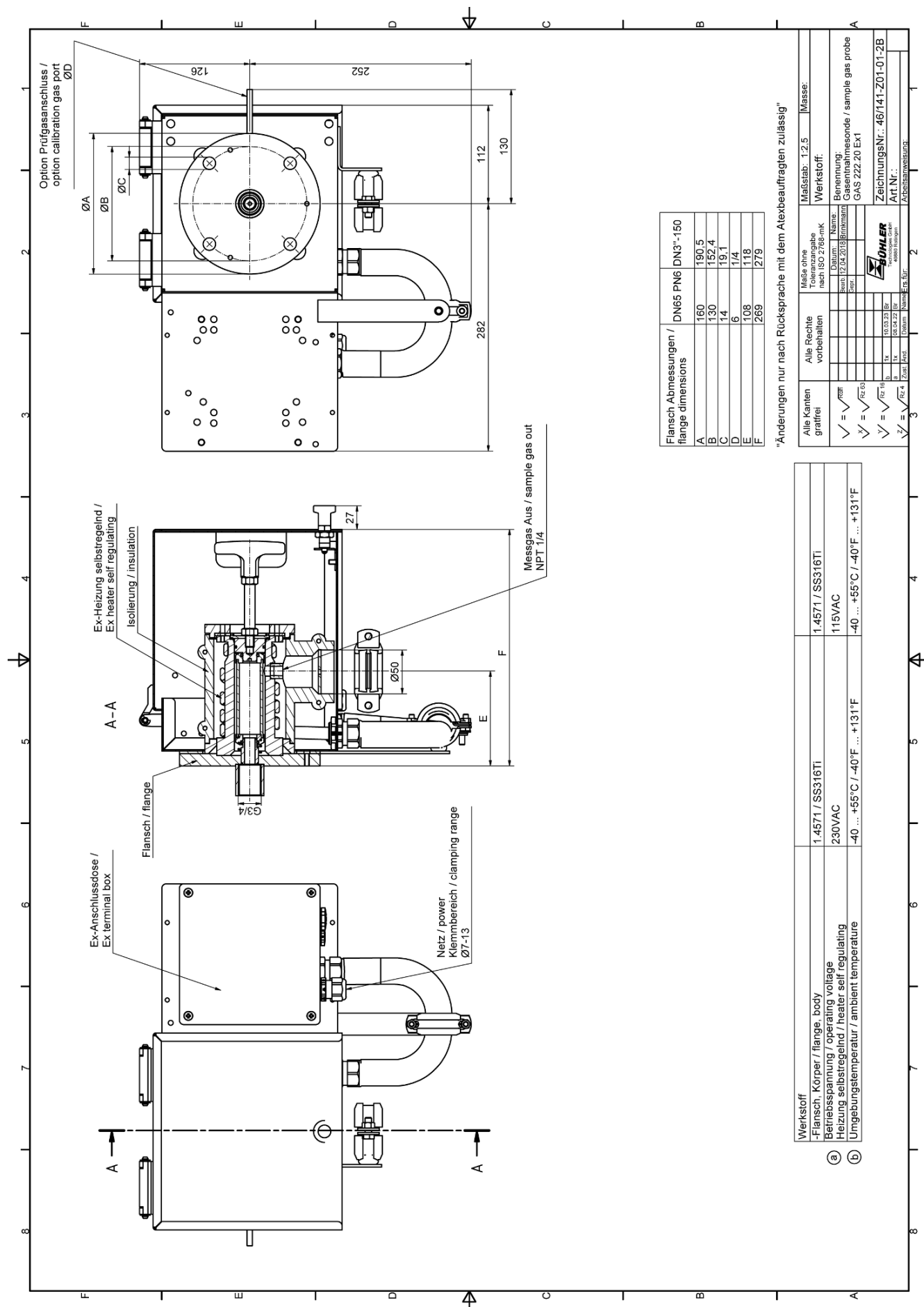
## 9.2 Probe Terminal Diagram



## 9.3 Flow chart



## 9.4 Dimensions





## 9.5 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.

## 9.6 User book (Please make copies)

## **10 Attached Documents**

- Type Examination Certificate IBExU17ATEX1088X
- Certificate IECEx IBE 17.0024X
- Declaration of Conformity KX460031
- Accessories Data Sheet 461099
- RMA - Decontamination Statement



[1] **EU-TYPE EXAMINATION CERTIFICATE - Translation**

[2] Equipment or protective systems intended for use in potentially explosive atmospheres, Directive 2014/34/EU

[3] EU-type examination certificate number **IBExU17ATEX1088 X** | Issue 2

[4] Product: **Sample Gas Probes**  
Type: GAS 222.xx(-x) Ex1

[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, notified body number 0637 in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, 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 the Directive.

The examination and test results are recorded in the confidential test report IB-22-3-0205.

[9] Compliance with the essential health and safety requirements has been assured by compliance with: EN IEC 60079-0:2018, EN 60079-1:2014, EN IEC 60079-7:2015/A1:2018, EN 60079-18:2015/A1:2017, EN 60079-26:2015, EN 60079-30-1:2017 und EN 60079-31:2014 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 EU-type examination certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

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

**GAS 222.20/21/31/35:**

The explosion protection marking for use in the boundary wall between categories 1G and 2G is:

**Ex II 1G/2G Ex db eb mb IIC T5/T6...T1/T2 Ga/Gb**

The explosion protection marking for use in category 2G is:

**Ex II 2G Ex db eb mb IIC T6...T2 Gb**

The explosion protection marking for use in the boundary wall between categories 1D und 2D is:

**Ex II 1D/2D Ex ta/tb mb IIIC T120 °C/T80 °C...T300 °C/T226 °C Da/Db**

The explosion protection marking for use in category 2D is:

**Ex II 2D Ex tb mb IIIC T80 °C...T226 °C Db**

The explosion protection marking for use in the boundary wall between categories 1G and 2D is:

**Ex II 1G/2D**  
**Ex db eb mb IIC T5 ...T1 Ga**  
**Ex tb mb IIC T80 °C...T226 °C Db**

The explosion protection marking for use in the boundary wall between categories 1D and 2G is:

**Ex II 1D/2G**  
**Ex ta IIC T120 °C...T300 °C Da**  
**Ex db eb mb IIC T6 ...T2 Gb**

*GAS 222.10/11/30/35-U:*

The explosion protection marking for use in the boundary wall between categories 1G and 2G is:

**Ex II 1G/2G Ex db eb mb IIC T4 Ga/Gb**

The explosion protection marking for use in category 2G is:

**Ex II 2G Ex db eb mb IIC T4 Gb**

The explosion protection marking for use in the boundary wall between categories 1D und 2D is:

**Ex II 1D/2D Ex ta/tb mb IIC T130°C Da/Db**

The explosion protection marking for use in category 2D is:

**Ex II 2D Ex tb mb IIC T130 °C Db**

The explosion protection marking for use in the boundary wall between categories 1D und 2D is:

**Ex II 1G/2D**  
**Ex db eb mb IIC T4 Ga**  
**Ex tb mb IIC T130 °C Db**

The explosion protection marking for use in the boundary wall between categories 1D and 2G is:

**Ex II 1D/2G**  
**Ex ta IIC T130 °C Da**  
**Ex db eb mb IIC T4 Gb**

These are the maximal markings and depends on the used configuration.

IBExU Institut für Sicherheitstechnik GmbH  
Fuchsmühlenweg 7  
09599 Freiberg, GERMANY

By order



Dr.-Ing. P. Cimalla



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

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

Freiberg, 2023-02-13

[13]

### Schedule

[14]

**Certificate number IBExU17ATEX1088 X | Issue 2**

[15] **Description of product**

A sample gas is transported through the sample gas probe to a gas analyzer via an external sample gas pump.

#### Unheated Types

Unheated sample gas probes (type 10, 11, 30, 35-U) are designed for use in category 2G or 2D and for sampling from category 1G or 1D. The sample gas passes through a particle filter which is located inside the probe (type 10, 11) or outside the probe in the process (type 11, 30, 35-U). With version 11 and 30 it is possible to separate the inside of the probe from the process by means of a ball valve, e.g. to change the filter.

#### Heated Types

Heated sample probes (type 20, 21, 31, 35) are designed for use in category 2G or 2D and for sampling from category 1G or 1D. The sample gas passes through a particle filter which is located inside the probe (type 20, 21) or outside the probe in the process (type 21, 31, 35). With the versions 21 and 31, it is possible to separate the inside of the probe from the process by means of a ball valve, e.g. to change the filter (type 21). For category 1G and 1D applications, the temperature class / maximum surface temperature inside deviates from the outside, see special conditions.

Heated and unheated probes are suitable for an ambient temperature of -40 to +60 °C. They are always equipped with approved electrical components (e.g. solenoid valves, terminal box). The type code and the implementation in the order configurator exclude the configuration of unheated probes without electrical components as type-tested devices.

The ambient temperature range, the temperature classes and maximum surface temperatures depend solely on the selection of the components used.

Ambient temperature range:	-40 °C to +60 °C (maximum range, depending on components used)
Rated voltage:	115 V AC and 230 V AC
Rated frequency:	50/60 Hz



*Summary of the test results*

The sample gas probe type GAS 222.xx(-x) Ex1 meets the requirements of explosion protection for equipment of Group II, Category 2G and 1G/2G in type of protection increased safety in combination with flameproof enclosures and encapsulation as well as Category 2D and 1D/2D in type of protection protection by enclosure in combination with encapsulation as well as for the combinations 1D/2G and 1G/2D.

**[17] Specific conditions of use**

- Strain relief for the cable connection must be installed.
- The cable must be secured against twisting and loosening.
- For heated sample gas probes, the temperature class / maximum surface temperature inside (category 1) deviates from that outside (category 2) and has to be observed accordingly.
- The maximum permitted ambient temperature range is -40 °C up to +60 °C. It depends on the components used and can be further restricted by these components. Additional information is mentioned in the instructions.

**[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

Dr.-Ing. P. Cimalla

Freiberg, 2023-02-13





# 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 17.0024X

Issue No: 0

Certificate history:

Issue No. 0 (2018-09-03)

Status: Current

Page 1 of 3

Date of Issue: 2018-09-03

Applicant: Bühler Technologies GmbH  
Harkortstr. 29  
40880 Ratingen  
Germany

Equipment: Sample Gas Probe GAS 222.xx Ex 1

Optional accessory:

Type of Protection: Ex eb

Marking:

For EPL Ga/Gb:  
Ex db eb mb IIC T5/T6...T1/T2 Ga/Gb

For EPL Gb:  
Ex db eb mb IIC T6...T2 Gb

For further information see typecode in annex

Approved for issue on behalf of the IECEx

Certification Body:

Dipl.-Ing. Alexander Henker

Position:

Deputy Head of Certification Body

Signature:

(for printed version)

Date:

2018-09-03

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:

IBExU Institut für Sicherheitstechnik GmbH  
Certification Body  
Fuchsmühlenweg 7  
09599 Freiberg  
Germany





# IECEX Certificate of Conformity

Certificate No: IECEx IBE 17.0024X

Issue No: 0

Date of Issue: 2018-09-03

Page 2 of 3

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

IEC 60079-0 : 2011 Edition:6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-26 : 2014-10 Edition:3.0	Explosive atmospheres – Part 26: Equipment with Equipment Protection Level (EPL) Ga
IEC 60079-7 : 2015 Edition:5.0	Explosive atmospheres – Part 7: Equipment protection by increased safety "e"

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

## TEST & ASSESSMENT REPORTS:

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

Test Report:

DE/IBE/ExTR16.0034/00

Quality Assessment Report:

DE/BVS/QAR16.0002/02





# IECEx Certificate of Conformity

Certificate No: IECEx IBE 17.0024X

Issue No: 0

Date of Issue: 2018-09-03

Page 3 of 3

## Schedule

### EQUIPMENT:

*Equipment and systems covered by this certificate are as follows:*

The sample gas probes GAS 222. xx Ex 1 are to be operated in a zone 1 and can extract from zone 0. A sample gas is transported through the gas sampling probe to an external sample gas pump and then transported to a gas analyzer. The sample gas passes through a particle filter inside the probe (type 20,21) or outside the probe (in the process, type 21, 31,35). With the ball valve it is possible to separate the probe interior from the process in order to change the filter (type 21).

The heating tape is wrapped around the probe's inner stainless steel body and is therefore not directly accessible. The sheath of the inside stainless steel bodies of probes type 20, 21, 31 and 35 consists of a combination of VA sheath and insulation, the Type 20 also has the option of an enclosure made of pure epoxy heat insulation. Furthermore, all probes are surrounded by a protective cover made of sheet steel, which can be opened for maintenance purposes, and are thus protected against external influences.

Versions 20, 21,31 and 35 can be operated with a backwash mechanism. Compressed air (or inert gas) from a reservoir (pmax=10 bar) is immediately let into the probe to remove particles from the filter (in the process). Flammable gases may only be flushed back with inert gas (e. g. nitrogen). Backwashing is not permitted for explosive gas mixtures.

For EPL Ga/Gb applications, the temperature class inside is one class lower than outside.

The probes are suitable for an ambient temperature of -40 to +60°C.

### SPECIFIC CONDITIONS OF USE: YES as shown below:

Strain relief for the cable connection must be installing.

The cable must be secured against twisting and loosening.

When extracting from zone 0, the higher temperature class inside must be considered.

The ambient temperature range depends on the components used. Further information are mentioned in the instructions.

### Annex:

[Annex IBE 17\\_0024\\_00.pdf](#)







# 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.: **IECEx IBE 17.0024X** Page 1 of 4 Certificate history:  
Issue 0 (2018-09-03)

Status: **Current** Issue No: 1

Date of Issue: 2020-09-02

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

Equipment: **Sample Gas Probe GAS 222.xx Ex 1**

Optional accessory:

Type of Protection: **Ex e, Ex t with Ex d and Ex m**

Marking: **For GAS 222.20/21/31/35**

EPL Ga/Gb:  
Ex db eb mb IIC T5/T6...T1/T2 Ga/Gb  
**For GAS 222.10/11/30/35-U**

EPL Ga/Gb:  
Ex db eb mb IIC T4 Ga/Gb  
EPL Gb:  
Ex db eb mb IIC T4 Gb

EPL Da/Db:  
Ex ta/tb mb IIIC T130°C Da/Db

EPL Gb:  
Ex db eb mb IIC T6...T2 Gb

EPL Db:  
Ex tb mb IIIC T130°C Db  
EPL Ga/Db:  
Ex db eb mb IIC T4 Ga  
Ex tb mb IIIC T130 °C Db  
EPL Da/Gb:  
Ex ta IIIC T130 °C Da  
Ex db eb mb IIC T4 Gb

This is the maximal marking and depends on the used configuration. For further information see typecode in annex.

Approved for issue on behalf of the IECEx  
Certification Body:

**Dipl.-Ing. Alexander Henker**

Position:

**Deputy Head of Certification Body**

Signature:  
(for printed version)

*A. Henker*

Date:

2020-09-02

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Certificate issued by:

**IBExU Institut für Sicherheitstechnik GmbH**  
Fuchsmühlenweg 7  
09599 Freiberg  
Germany

**IBExU**



# IECEx Certificate of Conformity

Certificate No.: IECEx IBE 17.0024X

Page 2 of 4

Date of issue: 2020-09-02

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 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements  
Edition:7.0

IEC 60079-1:2014-06 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"  
Edition:7.0

IEC 60079-18:2017 Explosive atmospheres - Part 18: Protection by encapsulation "m"  
Edition:4.1

IEC 60079-26:2014-10 Explosive atmospheres – Part 26: Equipment with Equipment Protection Level (EPL) Ga  
Edition:3.0

IEC 60079-31:2013 Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"  
Edition:2

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/ExTR16.0034/00](#)

[DE/IBE/ExTR16.0034/01](#)

Quality Assessment Report:

[DE/BVS/QAR16.0002/03](#)



# IECEx Certificate of Conformity

Certificate No.: IECEx IBE 17.0024X

Page 3 of 4

Date of issue: 2020-09-02

Issue No: 1

## EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

A sample gas is transported through the gas sampling probe to a gas analyzer via an external sample gas pump.

### Unheated Types

Unheated sample gas probes (type 10, 11, 30, 35-U) are designed for use in EPL Gb/Db and for sampling from EPL Ga/Da. The sample gas passes through a particle filter which is located inside the probe (type 10,11) or outside the probe in the process (type 11). With version 11, it is possible to separate the inside of the probe from the process by means of a ball valve, e.g. to change the filter.

### Heated Types

Heated sample probes (type 20, 21, 31, 35) are designed for use in EPL Gb and for sampling from EPL Ga. The sample gas passes through a particle filter which is located inside the probe (type 20, 21) or outside the probe in the process (type 21, 31, 35). With the versions 21, 31 it is possible to separate the inside of the probe from the process by means of a ball valve, e.g. to change the filter (type 21). For EPL Ga/Gb applications, the temperature class inside is one class lower than outside.

Heated and unheated probes are suitable for an ambient temperature of -40 to +60°C. They are always equipped with approved electrical components (e.g. solenoid valves, terminal box). The type code and the implementation in the order configurator exclude the configuration of unheated probes without electrical components as IECEx type-tested devices.

## SPECIFIC CONDITIONS OF USE: YES as shown below:

Strain relief for the cable connection must be installing.

The cable must be secured against twisting and loosening.

When extracting from EPL Ga with heated gas probes, the more critical temperature class inside must be considered.

The extended ambient temperature range is -40 °C up to +60 °C but further depends on the components used. Additional informations are mentioned in the instructions.





# IECEx Certificate of Conformity

Certificate No.: IECEx IBE 17.0024X

Page 4 of 4

Date of issue: 2020-09-02

Issue No: 1

## DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

- Addition of certification for the use in hazardous dust atmospheres EPL Db and sampling of hazardous dust atmospheres EPL Da.
- Inclusion of the unheated probe types (10, 11, 30, 35-U) in combination with an ex-approved electrical component
- Constructive changes

## Annex:

[Annex IBE 17\\_0024\\_01.pdf](#)







# 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.: **IECEx IBE 17.0024X** Page 1 of 4 Certificate history:  
Status: **Current** Issue No: 2 [Issue 1 \(2020-09-02\)](#)  
Date of Issue: 2023-02-13 [Issue 0 \(2018-09-03\)](#)  
Applicant: **Bühler Technologies GmbH**  
Harkortstr. 29  
40880 Ratingen  
Germany  
Equipment: **Sample Gas Probe GAS 222.xx Ex 1**  
Optional accessory:  
Type of Protection: **Ex e, Ex t with Ex d and Ex m**  
Marking: **For GAS 222.20/21/31/35**

EPL Ga/Gb:  
Ex db eb mb IIC T5/T6...T1/T2 Ga/Gb

EPL Gb:  
Ex db eb mb IIC T6...T2 Gb

EPL Da/Db:  
Ex ta/tb mb IIIC T120 °C/T80 °C...T300 °C/T226 °C Da/  
Db

EPL Db:  
Ex tb mb IIIC T80 °C...T226 °C Db

EPL Ga/Db:  
Ex db eb mb IIC T5 ...T1 Ga  
Ex tb mb IIIC T80 °C...T226 °C Db

EPL Da/Gb:  
Ex ta IIIC T120 °C...T300 °C Da  
Ex db eb mb IIC T6 ...T2 Gb

### For GAS 222.10/11/30/35-U

EPL Ga/Gb:  
Ex db eb mb IIC T4 Ga/Gb  
EPL Gb:  
Ex db eb mb IIC T4 Gb

EPL Db:  
Ex tb mb IIIC T130°C Db  
EPL Ga/Db:  
Ex db eb mb IIC T4 Ga  
Ex tb mb IIIC T130 °C Db  
EPL Da/Gb:  
Ex ta IIIC T130 °C Da  
Ex db eb mb IIC T4 Gb

EPL Da/Db:  
Ex ta/tb mb IIIC T130°C Da/Db

This is the maximal marking and depends on the used configuration. For further information see typecode in annex.

Approved for issue on behalf of the IECEx  
Certification Body:

**Dr.-Ing. Peter Cimalla**

Position:

**Deputy Head of department Certification Body**

Signature:  
(for printed version)

Date:  
(for printed version)

1. This certificate and schedule may only be reproduced in full.
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Certificate issued by:

**IBExU Institut für Sicherheitstechnik GmbH**  
Fuchsmühlenweg 7  
09599 Freiberg  
Germany





# IECEx Certificate of Conformity

Certificate No.: **IECEx IBE 17.0024X**

Page 2 of 4

Date of issue: 2023-02-13

Issue No: 2

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

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 60079-0:2017](#) Explosive atmospheres - Part 0: Equipment - General requirements  
Edition:7.0

[IEC 60079-1:2014-06](#) Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"  
Edition:7.0

[IEC 60079-18:2017](#) Explosive atmospheres - Part 18: Protection by encapsulation "m"  
Edition:4.1

[IEC 60079-26:2014-10](#) Explosive atmospheres – Part 26: Equipment with Equipment Protection Level (EPL) Ga  
Edition:3.0

[IEC 60079-31:2013](#) Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"  
Edition:2

[IEC 60079-7:2017](#) Explosive atmospheres - Part 7: Equipment protection by increased safety "e"  
Edition:5.1

[IEC/IEEE 60079-30-1:2015](#) Explosive atmospheres - Part 30-1: Electrical resistance trace heating - General and testing requirements  
Edition:1.0

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/ExTR16.0034/00](#)

[DE/IBE/ExTR16.0034/01](#)

[DE/IBE/ExTR16.0034/02](#)

Quality Assessment Report:

[DE/BVS/QAR16.0002/05](#)



# IECEx Certificate of Conformity

Certificate No.: **IECEx IBE 17.0024X**

Page 3 of 4

Date of issue: 2023-02-13

Issue No: 2

## EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

A sample gas is transported through the sample gas probe to a gas analyzer via an external sample gas pump.

### Unheated Types

Unheated sample gas probes (type 10, 11, 30, 35-U) are designed for use in EPL Gb or Db and for sampling from EPL Ga or Da. The sample gas passes through a particle filter which is located inside the probe (type 10, 11) or outside the probe in the process (type 11, 30, 35-U). With version 11, 30 it is possible to separate the inside of the probe from the process by means of a ball valve, e.g. to change the filter.

### Heated Types

Heated sample probes (type 20, 21, 31, 35) are designed for use in EPL Gb or Db and for sampling from EPL Ga or Da. The sample gas passes through a particle filter which is located inside the probe (type 20, 21) or outside the probe in the process (type 21, 31, 35). With the versions 21, 31 it is possible to separate the inside of the probe from the process by means of a ball valve, e.g. to change the filter (type 21). For EPL Ga and Da applications, the temperature class or maximum surface temperature inside deviates from the outside, see special conditions of use.

Heated and unheated probes are suitable for an ambient temperature of -40 to +60°C. They are always equipped with approved electrical components (e.g. solenoid valves, terminal box). The type code and the implementation in the order configurator exclude the configuration of unheated probes without electrical components as IECEx type-tested devices.

The ambient temperature range, the temperature classes and maximum surface temperatures assigned depend on the selection of the components used.

## Technical data:

ambient temperature range:	-40 °C...+60 °C (maximum range, depending on components used)
rated voltage:	115 V AC or 230 V AC
rated frequency:	50 Hz or 60 Hz

## SPECIFIC CONDITIONS OF USE: YES as shown below:

- Strain relief for the cable connection must be installing.
- The cable must be secured against twisting and loosening.
- For heated sample gas probes, the temperature class / maximum surface temperature inside (EPL Ga or Da) deviates from that outside (EPL Gb or Db) and must be observed accordingly.
- The maximum permitted ambient temperature range is -40 °C up to +60 °C. It depends on the components used and can be restricted by these components. Additional information is mentioned in the instructions.



# IECEx Certificate of Conformity

Certificate No.: **IECEx IBE 17.0024X**

Page 4 of 4

Date of issue: 2023-02-13

Issue No: 2

**DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)**

The use of alternative trace heating units including new end seals has been considered.

**Annex:**

[Annex IBE 17\\_0024\\_02.pdf](#)





# EU-Konformitätserklärung EU-declaration of conformity



Hiermit erklärt Bühler Technologies GmbH, dass die nachfolgenden Produkte „Geräte“ im Sinne der Richtlinie

Herewith declares Bühler Technologies GmbH that the following products are "equipment" according to Directive

2014/34/EU  
(ATEX)

In ihrer aktuellen Fassung sind.

in its actual version.

**Produkt | products:** Gasentnahmesonde | *Sample gas probe*  
**Beheizte Typen | heated types:** GAS 222.20 Ex1, GAS 222.21 Ex1, GAS 222.31 Ex1, GAS 222.35 Ex1  
**Unbeheizte Typen | unheated types:** GAS 222.11 Ex1, GAS 222.30 Ex1, GAS 222.35-U Ex1

Die Produkte werden entsprechend der derzeit gültigen ATEX-Richtlinie innerhalb der internen Fertigungskontrolle gefertigt und gekennzeichnet. Die Kennzeichnung des individuellen Produkts ist von der verwendeten Konfiguration abhängig und ist auf dessen Typenschild ersichtlich. Es finden sich nicht pauschal alle Maximalkennzeichnungen auf den Typenschildern. Die Maximalkennzeichnungen lauten wie folgt:

*The products are manufactured and labelled in compliance with the current ATEX directive during in-house production control. The individual products are labelled based on the actual configuration indicated in the type plate. Not all maximum markings are indicated in the type plates across the board. The maximum markings are as follows:*

## Für Zone 0/1 | for Zone 0/1:

beheizt | heated: II 1G/2G Ex db<sup>1</sup> eb mb<sup>2</sup> IIC T5/T6...T1/T2 Ga/Gb  
unbeheizt | unheated: II 1G/2G Ex db<sup>1</sup> eb mb<sup>2</sup> IIC T4 Ga/Gb

## Für Zone 1 | for Zone 1:

beheizt | heated: II 2G Ex db<sup>1</sup> eb mb<sup>2</sup> IIC T6...T2 Gb  
unbeheizt | unheated: II 2G Ex db<sup>1</sup> eb mb<sup>2</sup> IIC T4 Gb

## Für Zone 0/21 | for Zone 0/21:

beheizt | heated: II 1G/2D  
Ex db<sup>1</sup> eb mb<sup>2</sup> IIC T5 ... T1 Ga  
Ex tb mb<sup>2</sup> IIC T80 °C ... T226 °C Db  
unbeheizt | unheated: II 1G/2D  
Ex db<sup>1</sup> eb mb<sup>2</sup> IIC T4 Ga  
Ex tb mb<sup>2</sup> IIC T130 °C Db

## Für Zone 20/1 | for Zone 20/1:

beheizt | heated: II 1D/2G  
Ex ta IIC T120 °C ... T300 °C Da  
Ex db<sup>1</sup> eb mb<sup>2</sup> IIC T6 ... T2 Gb  
unbeheizt | unheated: II 1D/2G  
Ex ta IIC T130 °C Da  
Ex db<sup>1</sup> eb mb<sup>2</sup> IIC T4 Gb

## Für Zone 20/21 | for Zone 20/21:

beheizt | heated: II 1D/2D Ex ta/tb mb<sup>2</sup> IIC T120°C/T80°C...T300°C/T226°C Da/Db  
unbeheizt | unheated: II 1D/2D Ex ta/tb mb<sup>2</sup> IIC T130°C Da/Db

## Für Zone 21 | for Zone 21:

beheizt | heated: II 2D Ex tb mb<sup>2</sup> IIC T80°C...T226°C Db  
unbeheizt | unheated: II 2D Ex tb mb<sup>2</sup> IIC T130°C Db

<sup>1</sup> "db" nur für Versionen GAS 222.11/21/30/31 mit Endlagenschalter | "db" only for GAS 222.11/21/30/31 versions with limit switch.

<sup>2</sup> „mb“ nur bei Varianten mit Magnetventil | "mb" only for versions with solenoid valve.

Zur Beurteilung der Konformität gemäß ATEX-Richtlinie wurden folgende harmonisierte Normen herangezogen:  
For the assessment of conformity according to the ATEX directive the following standards have been used:

EN IEC 60079-0:2018  
EN 60079-18:2015/A1:2017  
EN 60079-31:2014

EN 60079-1:2014  
EN 60079-26:2015

EN IEC 60079-7:2015+A1:2018  
EN 60079-30-1:2017

Baumusterprüfbescheinigungs-Nr. | *Type-examination certificate no.:*  
Eingeschaltete notifizierte Stelle | *Engaged notified Body:*

IBExU17ATEX1088X, Ausgabe/Edition 2  
IBExU, Fuchsmühlenweg 7  
09599 Freiberg, Germany  
0637

Kennnummer | *Identification Number:*

Eingeschaltete benannte Stelle für das Qualitätssicherungssystem |  
*Engaged notified body for the quality assurance system*

DEKRA Testing and Certification GmbH  
Dinnendahlstraße 9  
44809 Bochum, Germany  
0158

Kennnummer | *Identification Number:*

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.

*This declaration of conformity is issued under the sole responsibility of the manufacturer.*

Dokumentationsverantwortlicher für diese Konformitätserklärung ist Herr Stefan Eschweiler mit Anschrift am Firmensitz.

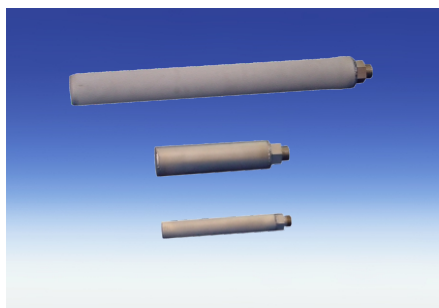
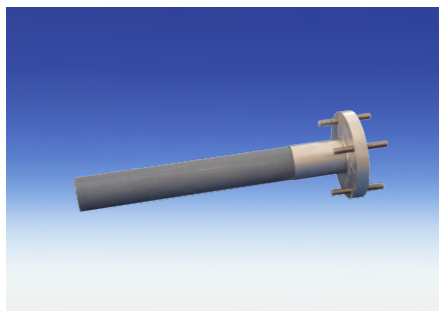
*The person authorised to compile the technical file is Mr. Stefan Eschweiler located at the company's address.*

Ratingen, den 26.01.2024

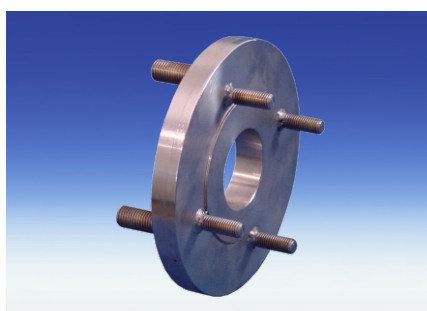
Stefan Eschweiler  
Geschäftsführer – *Managing Director*

Frank Pospiech  
Geschäftsführer – *Managing Director*

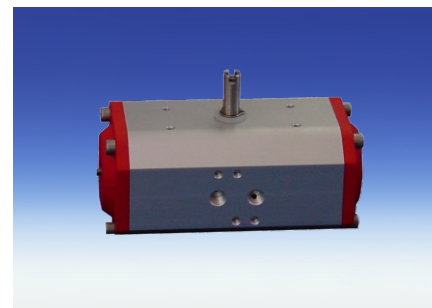
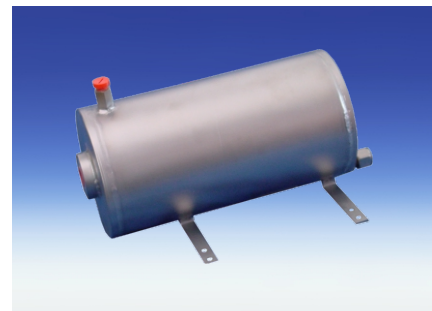
# Accessories for Sample Gas Probe GAS 222



- 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

Page 5 - 7

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						X					X			
35F	stainless steel	600°C	229 mm	0.5 µm	46222359F*				X						X						X			X		X			X						X					X			

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

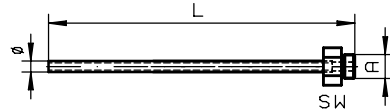
\* Prices and delivery time on request

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			X	X				
for in-situ filter 04				462223044		X	X					X	X				X	X			X	X			X	X						X	X			X	X				
Extensions																																									
Typ		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								

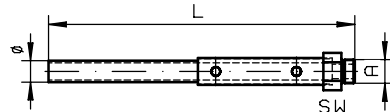
\* Mounting is only possible at a plain flange without G3/4 thread. Therefore a G has to be added to the part number, e.g. 4622220G.  
It is not possible to add a heated extension after delivery.

## 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



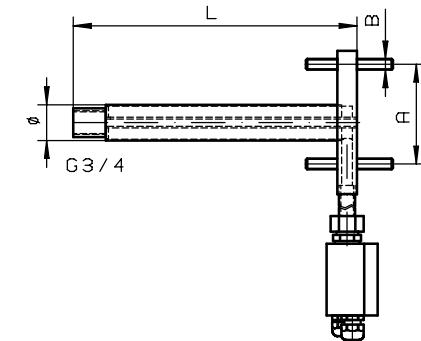
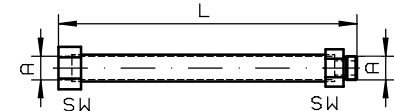
Typ	L	ø	A	SW
02-0,5	500	24	G3/4	36
02-1,0	1000	24	G3/4	36
02-1,5	1500	24	G3/4	36



## 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

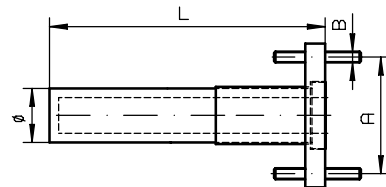
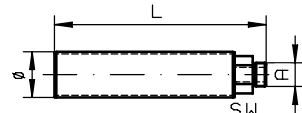


Beheizt / heated

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

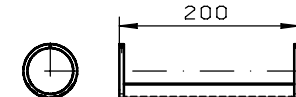
## Eintrittssfilter / in-situ filter

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

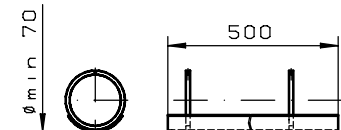



Abweisblech / protection shield

Eintrittsfilter / in-situ filter 03



Eintrittsfilter / in-situ filter 04



alle Kanten 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		Rohre/Filter/Verlängerungen		
✓ <sub>y</sub> = ✓ <sub>Rz 16</sub>						Gepr.					tubes/filter/extensions		
✓ <sub>z</sub> = ✓ <sub>Rz 4</sub>											GAS 222		
								Zeichn. -Nr 46/107-Z01-01-3A					
								Art -Nr					
		a	neu	29.09.06	Br	Ers. für		ARBEITSANWEISUNG					
		Zust	Änd	Datum	Name								

Blowback		
<div><div><div>▪ With ball valve or solenoid valve</div><div>▪ Heated or nonheated</div><div>▪ Manuell or automatic control</div></div></div>		
Capacitive vessel	Ambient temperature	Part No.:
PAV 01		46222PAV
Accessories for capacitive vessel		
ball valve		46222PAVKH
2/2-way-MV 24VDC*	-10 ... +55°C	46222PAVMV1
2/2-way-MV 110V 50Hz	-10 ... +55°C	46222PAVMV2
2/2-way-MV 220-230V 50/60Hz	-10 ... +55°C	46222PAVMV3
2/2-way-MV 24VUC Atex II 2G/D EEx m II T4 IP65	-10 ... +60°C	46222PAVMV4
2/2-way-MV 110VUC Atex II 2G/D EEx m II T4 IP65	-10 ... +60°C	46222PAVMV5
2/2-way-MV 230VUC Atex II 2G/D EEx m II T4 IP65	-10 ... +60°C	46222PAVMV6
2/2- way- AMEX 24 V/ 60 Hz Cl. I Div 2	-10 ... +55°C	46222PAVMV14
2/2- way- AMEX 120 V/ 60 Hz Cl. I Div 2	-10 ... +55°C	46222PAVMV8
2/2- way- AMEX 240 V/ 60 Hz Cl. I Div 2	-10 ... +55°C	46222PAVMV9
self regulated heating system 115/230V 50/60Hz		46222PAVHZ1
self regulated heating system 115-230V 50/60Hz Atex 2 II 3G Ex nA IIC T3 Gc X		46222PAVHZ2
self regulated heating system 115-230V 50/60Hz Atex 2 II 3G Ex nA IIC T4 Gc X		46222PAVHZ3
self regulated heating system AMEX,115-230V,50/60 Hz, Cl. I Div 2 B,C,D,T3		46222PAVHZ4
self regulated heating system AMEX,115-230V,50/60 Hz, Cl. I Div 2 B,C,D,T4		46222PAVHZ6
support of pressurised vessel		462223502
Bourdon tube pressure gauge 0-10 bar		46222PAVMA
Pneumatic actuators		
spring return, opened unpressurised		46222008
spring return, closed unpressurised		46222030
double action		46222009
limit switch		9008928
limit switch Atex II 2G/3D IIC T6 IP65		9008930
limit switch Atex II 2G/2D IIC T6 IP65		9027002
3/2-way-SV for controlling of pneumatic actuator		
24 VDC	-10 ... +55°C	46222075
110 V 50 Hz	-10 ... +55°C	46222076
230 V 50 Hz	-10 ... +55°C	46222077
ATEX 24 V UC II 2G/D EEx m II T4	-10 ... +60°C	46222078
ATEX 110 V UC II 2G/D EEx m II T4	-10 ... +60°C	46222079
ATEX 230 V UC II 2G/D EEx m II T4	-10 ... +60°C	46222080
AMEX 24 V 60 Hz, NPT1/4", Cl. I Div 2	-10 ... +55°C	46222116
AMEX 120 V 60 Hz, NPT1/4", Cl. I Div 2	-10 ... +55°C	46222050
AMEX 240 V 60 Hz, NPT1/4", Cl. I Div 2	-10 ... +55°C	46222056
5/2-way-SV for controlling of pneumatic actuator	-10 ... +70°C	9148000117
Blowback controller		
RSS 24 VDC, IP65		46222199
RSS 115/230 VAC, IP65		46222299
RSS-MC integrated into probe controller cabinet		46222392

\*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**

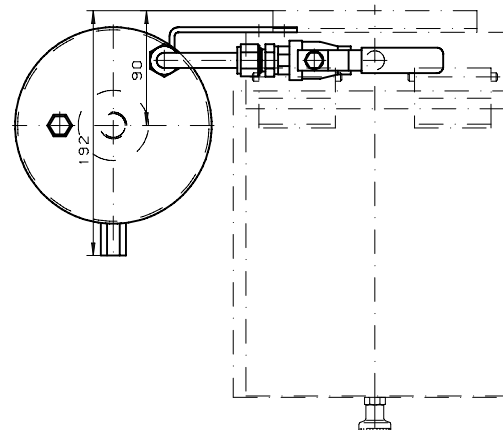
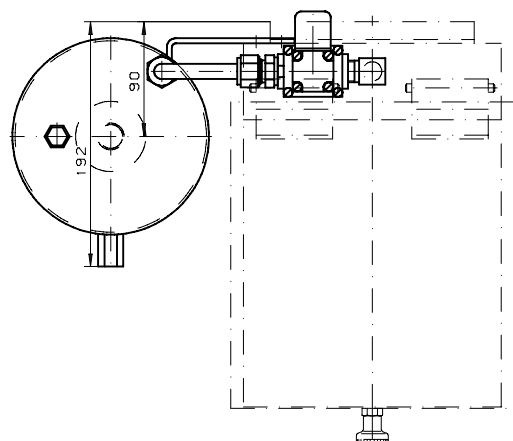
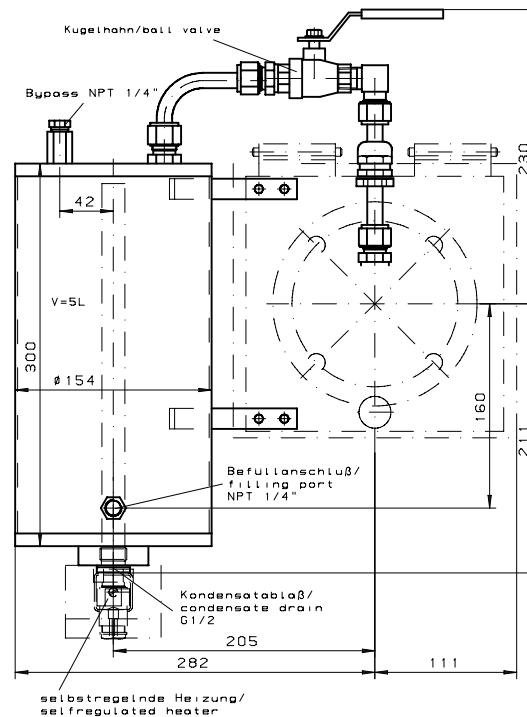
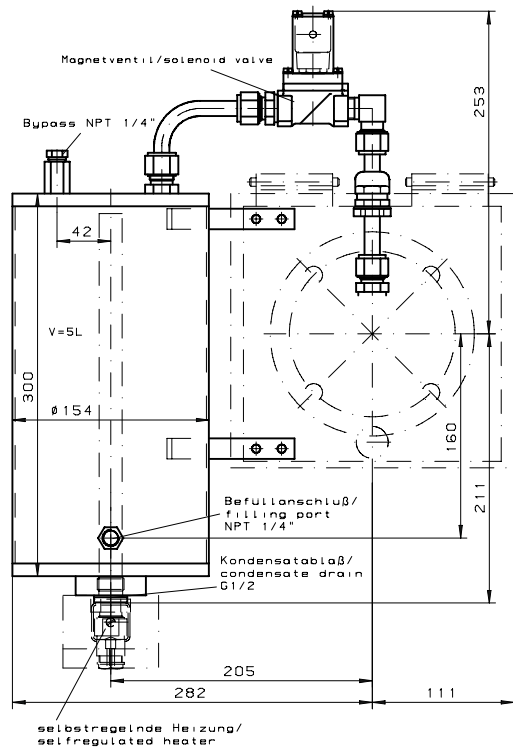
Please note that installed accessories may change the approved category of the probe.

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"

alle Kanten gratfrei:	ALLE RECHTE VORBEHALTEN	Maße ohne Toleranzangabe nach ISO 2768-mK	Maßstab 1:2,5 Merkstoff	(Gewicht)
Oberflächenbear- beitungszeichen			Benennung	
✓ = ✓ x = ✓ ✓ = ✓ ✓ = ✓ ✓ = ✓			Druckluftbehälter/ capacitive vessel PAV 01	
			Zeichne -Nr 46/106-Z01-01-2	
			Art -Nr	
			ARBEITSANWEISUNG	

\* 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.

