Gas Analysis

Sample gas probes

GAS 222.30 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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1 Introduction

1.1 Intended Use

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

ATEX/IECEx

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).

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 selected options:

for zone 0/1:

ATEX: Ⓔx II 1G/2G Ex db[1] eb mb[2] IIC T4 Ga/Gb

IECEx: Ex db[1] eb mb[2] IIC T4 Ga/Gb

for zone 1:

ATEX: Ⓔx II 2G Ex db[1] eb mb[2] IIC T4 Gb

IECEx: Ex db[1] eb mb[2] IIC T4 Gb

for zone 0/21:

ATEX: Ⓔx II 1G/2D
Ex db[1] eb mb[2] IIC T4 Ga
Ex tb mb[2] IIIC T130 °C Db

IECEx: Ex db[1] eb mb[2] IIC T4 Ga
Ex tb mb[2] IIIC T130 °C Db

for zone 20/1:

ATEX: Ⓔx II 1D/2G
Ex ta IIIC T130 °C Da
Ex db[1] eb mb[2] IIC T4 Gb

IECEx: Ex ta IIIC T130 °C Da
Ex db[1] eb mb[2] IIC T4 Gb

for zone 20/21:

ATEX: Ⓔx II 1D/2D Ex ta/tb mb[2] IIIC T130°C Da/Db

IECEx: Ex ta/tb mb[2] IIIC T130°C Da/Db

for zone 21:

ATEX: Ⓔx II 2D Ex tb mb[2] IIIC T130°C Db

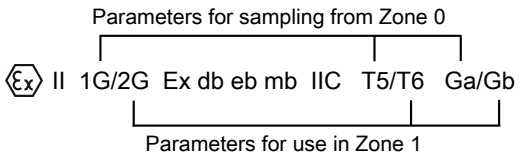
IECEx: Ex tb mb[2] IIIC T130°C Db

[1] "db" only for GAS 222.11/30 versions with limit switch.

[2] "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.

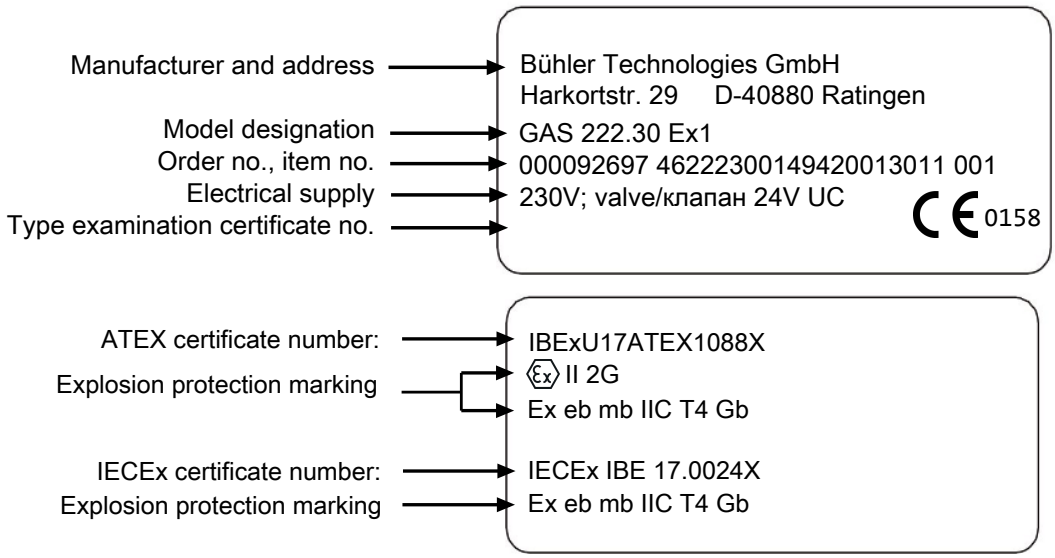
1.2 Dust Atmosphere Requirements

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**
Smouldering temperature for max. 5 mm dust layer	≥ 155 °C	≥ 195 °C	≥ 205 °C	≥ 250 °C	≥ 301 °C	≥ 375 °C
Dust atmosphere ignition temperature	≥ 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:

4622230	X	X	X	X	X	4	0	0	X	X	X	X	X	X	Product Characteristics			
															Terminal box			
	0														No			
	1														Yes			
															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/IECEx)			
				9											none			
															Inside			
					3										Zone 0 (Atex/IECEx)			
					4										Zone 1 (Atex/IECEx)			
					6										Zone 20 (Atex/IECEx)			
					7										Zone 21 (Atex/IECEx)			
					9										none			
															Temperature class (inside/outside)			
															Ga/Gb or Gb/Gb	**Ga/Db or Gb/Db**	**Da/Gb or Db/Gb**	**Da/Db or Db/Db**
						4									T4/T4	T4/T130 °C	T130 °C/T4	T130 °C/T130 °C
															Calibration gas port			
									0						No			
									1						6 mm			
									2						6 mm with check valve			
									3						1/4"			
									4						1/4" with check valve			
															Pressure vessel *			
										0					No			
										1					Yes			
															Purge valve *			
											0				Ball valve			
											1				Solenoid valve 110 V (marked with "mb")			
											2				Solenoid valve 230 V (marked with "mb")			
											3				Solenoid valve 24 V (marked with "mb")			
											9				none			
															Pneumatic actuator for internal ball valve			
												0			No			
												1			Monostable pressure-free opened			
												2			Monostable pressure-free closed			
															Limit switch for pneumatic actuator			
													0		No			
													1		Yes (marked with "db" or "ta" or "tb")			
															Solenoid valve for pneumatic actuator			
														0	No			
														1	110 V (marked with "mb")			
														2	230 V (marked with "mb")			
														3	24 V (marked with "mb")			

* Blowback of explosive atmosphere prohibited.

1.6 Product Description

Probe	Description
GAS 222.30 Ex1	Probe with inlet filter, shut-off valve and blowback connection
Accessories	Please refer to the data sheet at the end of this manual for accessories for this probe

2 Safety instructions

2.1 Important Information

This unit may only be used if:

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

Signal words for warnings

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

Warning signs

These instructions use the following warning signs:

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

2.2 General Hazard Warnings

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

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

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

The operator of the system must ensure:

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

Maintenance, Repair

Please note during maintenance and repairs:

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

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

NOTICE

Accessories may limit critical operating parameters of the base unit

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

NOTICE

When used in explosive areas

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

DANGER

Electrical voltage

Electrocution hazard.

a) Disconnect the device from power supply.

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

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

d) Regard correct mains voltage.

DANGER

Toxic, corrosive gas/condensate

Sample gas/condensate may be hazardous to health.

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

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

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

DANGER

Explosion hazard

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

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

b) Regard the process conditions.

c) Check tubes and hoses for leakage.

DANGER

Danger to life and explosion during installation and maintenance

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

DANGER

Use in explosive areas
Flammable 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 filter 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 upstream filter

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

4.4 Connecting the Gas Line

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

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

	Probe GAS 222	Reservoir PAV01	Ball valve/ blowback valve (without PAV01)	Ball valve pneumatic drive	Control valve 3/2-way solenoid valve
Connecting flange [1]	DN65/PN6/ DN3"-150				
Sample gas inlet	G3/4				
Sample gas outlet	NPT 1/4				
Blowback connection	G3/8		Ø12		
Test gas connection [1]	Tube Ø6 mm Tube Ø1/4				
Filling port		NPT 1/4			
Condensate		G1/2			
Bypass		NPT 1/4			
Control air				G1/8	G1/4

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

[1] 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.

4.4.1 Blowback Connection

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

DANGER

Toxic, corrosive gasses

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

4.4.2 Connecting the calibrating gas line (optional)

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

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

4.5 Connecting the Blowback and Pressure Vessel (Optional)

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

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

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

NOTICE

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

DANGER

Broken pressure vessel

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

DANGER

Adiabatic compression during gas blowback (explosion hazard)!

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

a) Blowback of explosive atmosphere / gases is prohibited.

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

4.6 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).

4.6.1 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.

4.6.2 Solenoid Valves (Optional)

DANGER

Explosion hazard when opening the solenoid valve housing

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

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

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

DANGER

Potential equalization/static charge

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

4.6.3 Limit Switch (Optional)

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

5 Operation and Control

NOTICE

The device must not be operated beyond its specifications.

NOTICE

The weather hood must be closed during operation!

WARNING

Housing or component damage

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

DANGER

Explosion hazard due to electrostatic discharge

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

5.1 Before Startup

Before starting the device, verify:

- The hose- and electrical connections are not damaged and correct installed.
- No parts of the 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 electrical connections are tight.
- The monitoring equipment is connected and set as specified.
- Precautions have been taken.
- The earth is proper and functional.
- The outlet filter and the handle with O-ring are installed (if applicable).

6 Maintenance

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

During maintenance, remember:

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

DANGER

Danger to life and explosion during installation and maintenance

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

DANGER

Electrical voltage

Electrocution hazard.

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

DANGER

Toxic, corrosive gases

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

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

DANGER

Dangerous electrostatic charge (explosion hazard)

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

WARNING

Housing or component damage

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

CAUTION

Hot surface

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

CAUTION

Excess pressure

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

CAUTION

Drive pressurised

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

CAUTION

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

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

CAUTION

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

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

6.1 Maintaining the filter element

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

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

CAUTION! Do not damage the rear filter seat.

NOTICE

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

6.1.1 Replacing the upstream filter

The probes are equipped with an upstream filter which is always inside the process stream. The filter is suitable for (Inert gas) blowback with compressed air, i.e. blowing air (Inert gas) through the filter from the inside to the outside to remove adhering particles. When sampling flammable gases, nitrogen (inert gas) must be used for blowback. Blowback of explosive gases is prohibited.

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

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

To do so, the probe must be completely removed and reinstalled after changing the element.

Condensate inside the pressure vessel

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

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

CAUTION

High pressure

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

6.2 Blowback of the in-situ filter (within the process stream)

DANGER **Adiabatic compression during gas blowback (explosion hazard)!**

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

a) Blowback of explosive atmosphere / gases is prohibited.

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

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

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

6.2.1 Manual Blowback (Without Blowback Control)

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

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

6.2.2 Automatic Blowback (External Blowback Control)

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

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

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

6.3 Maintenance Schedule

NOTICE

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

Maintenance schedule for normal ambient conditions:

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

7 Service and repair

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

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

Please contact our Service Department with any questions:

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

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

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

Bühler Technologies GmbH

- Reparatur/Service -

Harkortstraße 29

40880 Ratingen

Germany

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

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

service@buehler-technologies.com.

7.1 Troubleshooting

CAUTION

Risk due to defective device

Personal injury or damage to property

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

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

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

7.2 Spare Parts and Accessories

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

Upgrade and expansion parts can be found in our catalog.

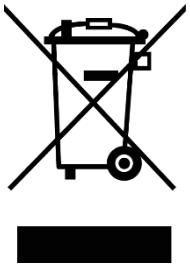
Available spare parts:

Item no.	Description
90 091 05	Measuring outlet seal
90 090 79	Flange seal DN65 PN6
90 090 68	Flat seal FD 40 WS
	Please see the accessories data sheet in the appendix for filter elements

8 Disposal

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

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



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

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

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

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

Bühler Technologies GmbH
WEEE
Harkortstr. 29
40880 Ratingen
Germany

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

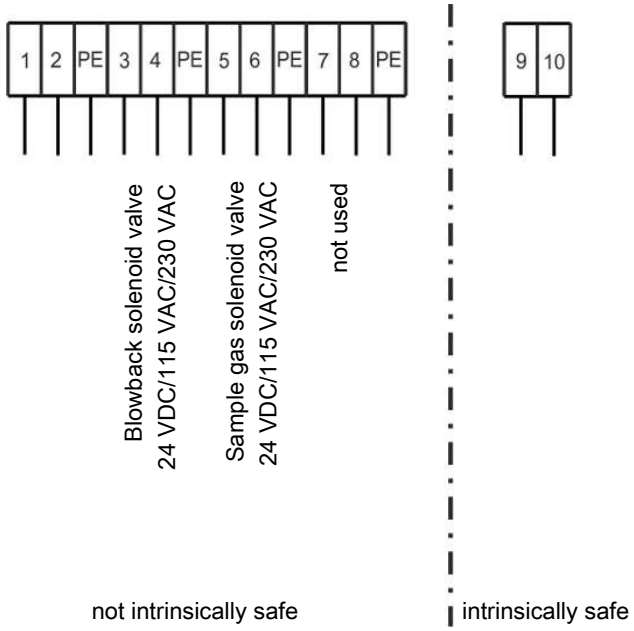
9 Appendices

9.1 Technical Data

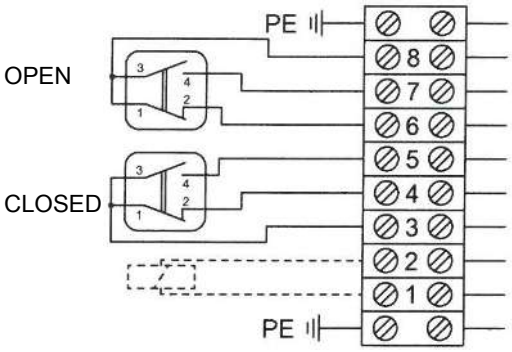
Gas Probe Technical Data

Ambient temperature without accessories:	-40 to +55 °C	
Ambient temperature with accessories:	**Component**	**Ambient temperature range**
	Compressed air valve:	-30 °C < T_{amb} < +55 °C
	Solenoid valve for pneumatic drive:	-10 °C < T_{amb} < +55 °C
	Pneumatic drive:	-20 °C < T_{amb} < +55 °C
	Limit switch:	-25 °C < T_{amb} < +55 °C
	Terminal box:	-20 °C < T_{amb} < +55 °C
Permissible gas inlet temperatures:	**Outer zone temperature class**	**Permissible gas inlet temperature**
	T2	135 °C
	T3	135 °C
	T4	130 °C
Medium temperature (blowback):	**Component**	**Medium temperature range**
	Compressed air valve:	-10 °C to +80 °C
	Solenoid valve for pneumatic drive:	-10 °C to +100 °C
Max. operating pressure:	6 bar	
Max. flow rate:	1000 L/h	
Materials in contact with media Flange: Probe body: Ball valve: Seal:	 Stainless steel 1.4571 Stainless steel 1.4571 Stainless steel 1.4408/1.4462/PTFE Stainless steel 1.4404/graphite/and see filter	
Probe marking, depending on the selected options and temperature class:	**for zone 0/1:** ATEX: Ⓔx II 1G/2G Ex db^1 eb mb^2 IIC T4 Ga/Gb IECEx: Ex db^1 eb mb^2 IIC T4 Ga/Gb **for zone 1:** ATEX: Ⓔx II 2G Ex db^1 eb mb^2 IIC T4 Gb IECEx: Ex db^1 eb mb^2 IIC T4 Gb **for zone 0/21:** ATEX: Ⓔx II 1G/2D Ex db^1 eb mb^2 IIC T4 Ga Ex tb mb^2 IIIC T130 °C Db IECEx: Ex db^1 eb mb^2 IIC T4 Ga Ex tb mb^2 IIIC T130 °C Db **for zone 20/1:** ATEX: Ⓔx II 1D/2G Ex ta IIIC T130 °C Da Ex db^1 eb mb^2 IIC T4 Gb IECEx: Ex ta IIIC T130 °C Da Ex db^1 eb mb^2 IIC T4 Gb **for zone 20/21:** ATEX: Ⓔx II 1D/2D Ex ta/tb mb^2 IIIC T130°C Da/Db IECEx: Ex ta/tb mb^2 IIIC T130°C Da/Db **for zone 21:** ATEX: Ⓔx II 2D Ex tb mb^2 IIIC T130°C Db IECEx: Ex tb mb^2 IIIC T130°C Db [1] "db" only for GAS 222.11/30 versions with limit switch [2] "mb" only for versions with solenoid valve	
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 Terminal Diagram Probe Terminal Box

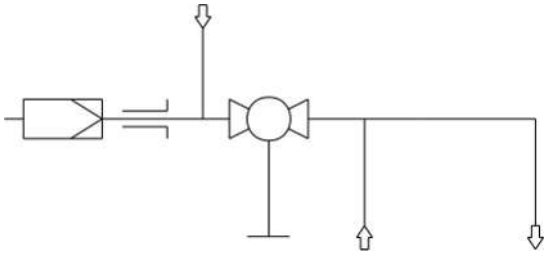


9.3 Terminal Diagram Terminal Box Limit Switch

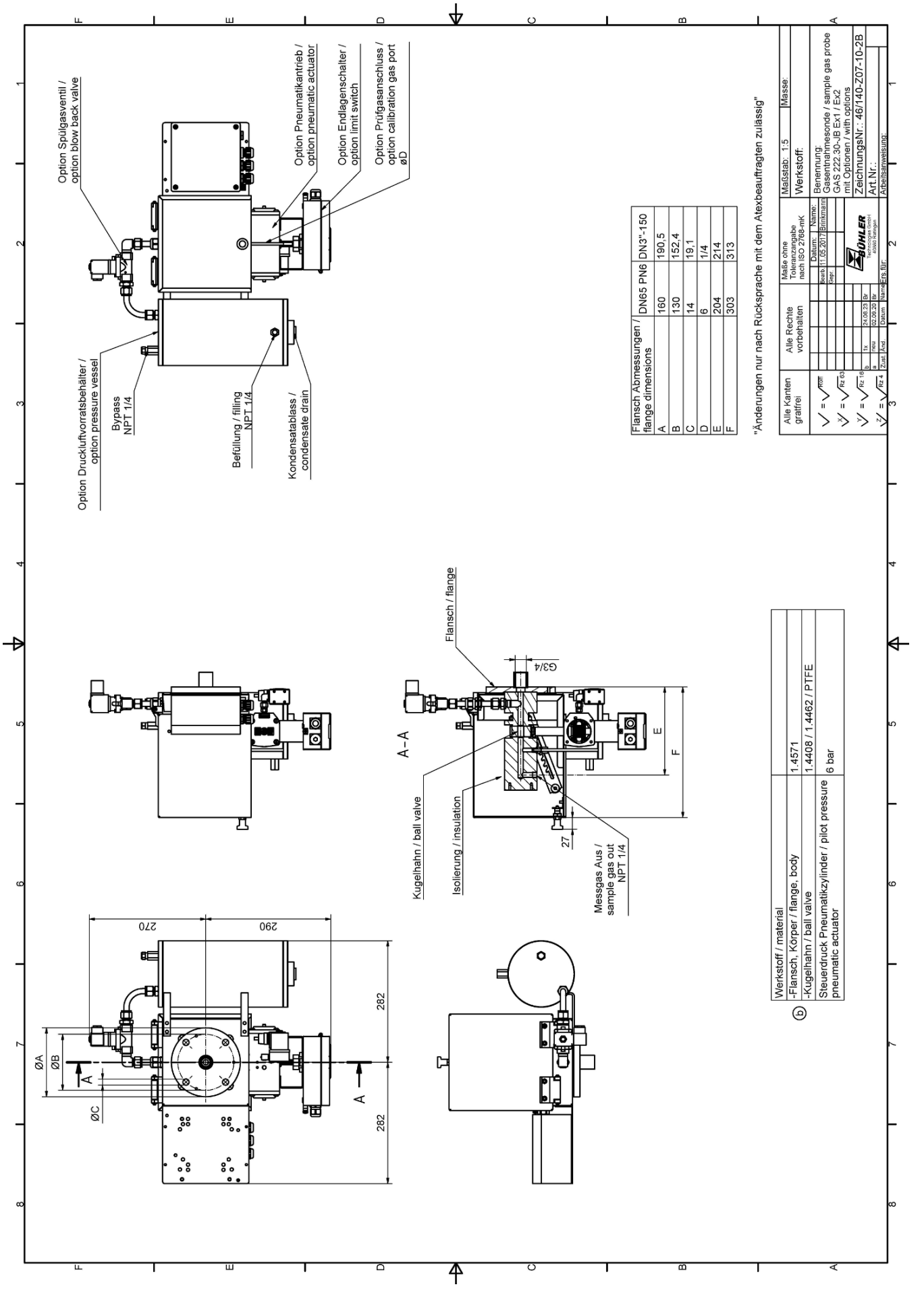


The connection diagram shows the limit switch box in the intermediate position. Switches not actuated.

9.4 Flow chart



9.5 Dimensions



9.6 List of chemical resistance

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

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

0 - no information available

1 - durability/suitability very good

2 - durability/suitability good

3 - limited suitability

4 - not suitable

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

Important information

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

Durability to other mediums available upon request.

9.7 User book (Please make copies)

Maintained on	Unit no.	Operating hours	Remarks	Signature

10 Attached Documents

- Type Examination Certificate 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:

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

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

Ⓔx II 1D/2G
Ex ta IIIC 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:

Ⓔx II 1G/2G Ex db eb mb IIC T4 Ga/Gb

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

Ⓔx 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:

Ⓔx II 1D/2D Ex ta/tb mb IIIC T130°C Da/Db

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

Ⓔx II 2D Ex tb mb IIIC T130 °C Db

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

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

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

Ⓔx II 1D/2G
Ex ta IIIC 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

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

By order

Dr.-Ing. P. Cimalla

- Seal -
(notified body number 0637)

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.

Freiburg, 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

4 6 2 2 2										0						
																sample probe basis unit
																unheated
					1	0										GAS 222.10
					1	1										GAS 222.11
					3	0										GAS 222.30
					3	5										GAS 222.35-U
																heated
					2	0										GAS 222.20
					2	1										GAS 222.21
					3	1										GAS 222.31
					3	5										GAS 222.35
																junction box
							0									no (only GAS 222.10/11/30/35-U)
							1									yes
																flange
							0	1								flange DN65 PN6
							0	2								flange DN3"-150
							x	x								others
																hazardous area
																outside
									4							zone 1
									7							zone 21
																inside
										3						zone 0
										4						zone 1
										6						zone 20
										7						zone 21
										9						none
																temperature class inside / outside (GAS 222.20/21/31/35)
																Ga/Gb / **Ga/Db** / **Da/Gb** / **Da/Db**
											2					T1 /T2 / T1/T226°C / T300°C/T2 / T300°C/T226°C
											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 (GAS 222.20/21/31/35)
																Gb/Gb / **Gb/Db** / **Db/Gb** / **Db/Db**
											2					T2/T2 / T2/T226°C / T226°C/T2 / T226°C/T226°C
											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
																temperature class inside / outside (GAS 222.10/11/30/35-U)
																Ga/Gb or Gb/Gb / **Ga/Db or Gb/Db** / **Da/Gb or Db/Gb** / **Da/Db or Db/Db**
											4					T4/T4 / T4/T130°C / T130°C/T4 / T130°C/T130°C
																power supply sample probe
												0				none (only for GAS 222.10/11/30/35-U)
												1				115 V (only for GAS 222.20/21/31/35)
												2				230 V (only for GAS 222.20/21/31/35)
																calibration gas port
													0			no
													1			6 mm
													2			6 mm + check valve
													3			1/4
													4			1/4" + check valve
																pressure vessel
														0		no
														1		yes
																purge valve
															0	ball valve
															1	solenoid valve 110 V (marked with „mb") (only T2-T4 oder T130°C)
															2	solenoid valve 230 V (marked with „mb") (only T2-T4 oder T130°C)
															3	solenoid valve 24 V (marked with „mb") (only T2-T4 oder T130°C)
															9	without
																pneumatic actuator for internal ball valve
															0	no
															1	mono stable depressurized open (only for GAS 222.11/30/21/31)
															2	mono stable depressurized closed (only forGAS 222.11/30/21/31)
																limit switch for pneumatic actuator
															0	no
															1	yes (only for GAS 222.11/30/21/31) (marked with „db" or „ta" or „tb")
																solenoid valve for pneumatic actuator
															0	no
															1	110V (only for GAS 222.11/30/21/31) (marked with "mb") (only T2-T4 or T130°C)
															2	230V (only for GAS 222.11/30/21/31) (marked with "mb") (only T2-T4 or T130°C)
															3	24V (only for GAS 222.11/30/21/31) (marked with "mb") (only T2-T4 or T130°C)

Variation compared to issue 1 of this certificate:

- The use of alternative trace heating devices including new end seals has been assessed.
- Conforming with current standard EN 60079-18:2015/A1:2017

[16] **Test report**

The test results are recorded in the confidential test report IB-22-3-0205 of 2023-01-17.
The test documents are part of the test report and they are listed there.

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

Certificate No.: IECEx IBE 17.0024X

Issue No: 0

Certificate history:
Issue No. 0 (2018-09-03)

Status: **Current**

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)

A. Henker

Date: 2018-09-03

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3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

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

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

IEC IECEx

IECEx Certificate of Conformity - Annex

IBExU

Certificate No: IECEx IBE 17.0024X

Issue No: 0

Date of Issue: 2018-09-03

Item number IECEx GAS 222 Ex1

4	6	2	2	2			1							0						

Code	Description
	Sample probe basis unit
2 0	GAS 222.20
2 1	GAS 222.21
3 1	GAS 222.31
3 5	GAS 222.35
	Flange
0 1	Flange DN65 PN6
0 2	Flange DN3"-150
x x	others
	Hazardous area
	outside
4	1
5	2
9	none
	inside
3	0
4	1
5	2
9	none
	Temperature class
2	T2 (T1/T2 for EPL Ga/Gb)
3	T3 (T2/T3 for EPL Ga/Gb)
4	T4 (T3/T4 for EPL Ga/Gb)
5	T5 (T4/T5 for EPL Ga/Gb)
6	T6 (T5/T6 for EPL Ga/Gb)
	Power supply sample probe
1	115V
2	230V
	Calibration gas port
0	No
1	6mm
2	6mm + check valve
3	1/4
4	1/4 + check valve
	Capacitive vessel
0	No
1	Yes (not for gas zone inside)
	Valve for pressurized air
0	Ball valve
1	solenoid valve 115V (marked with "mb") (only T2-T4)
2	solenoid valve 230V (marked with "mb") (only T2-T4)
3	solenoid valve 24V (marked with "mb") (only T2-T4)
9	without
	Pneumatic actuator for internal ball valve
0	No
1	Mono stable depressurized open (only for GAS 222.21/31)
2	Mono stable depressurized closed (only for GAS 222.21/31)
	Limit switch for pneumatic actuator
0	No
1	Yes (marked with "db") (only for GAS 222.21/31)
	Solenoid valve for pneumatic actuator
0	No
1	Yes (marked with "mb") (only for GAS 222.21/31) (only T2-T4)

IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

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

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

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

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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3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.

Certificate issued by:

IBExU Institut für Sicherheitstechnik GmbH
Fuchsmühlenweg 7
09599 Freiberg
Germany

IECEx Certificate of Conformity

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

Issue No: 1

Date of issue: 2020-09-02

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 Edition:7.0	Explosive atmospheres - Part 0: Equipment - General requirements
IEC 60079-1:2014-06 Edition:7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-18:2017 Edition:4.1	Explosive atmospheres - Part 18: Protection by encapsulation "m"
IEC 60079-26:2014-10 Edition:3.0	Explosive atmospheres – Part 26: Equipment with Equipment Protection Level (EPL) Ga
IEC 60079-31:2013 Edition:2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
IEC 60079-7:2017 Edition:5.1	Explosive atmospheres - Part 7: Equipment protection by increased safety "e"

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

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

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 - Annex

Certificate No: IECEx IBE 17.0024X

Issue No: 1

Date of Issue: 2020-09-02

4	6	2	2	2										0										

Code	Description			
	sample probe basis unit			
	unheated			
1 0	GAS 222.10			
1 1	GAS 222.11			
3 0	GAS 222.30			
3 5	GAS 222.35-U			
	heated			
2 0	GAS 222.20			
2 1	GAS 222.21			
3 1	GAS 222.31			
3 5	GAS 222.35			
	junction box			
0	no (only for GAS 222.10/11/30/35-U)			
1	yes			
	flange			
0 1	flange DN65 PN6			
0 2	flange DN3"-150			
x x	others			
	hazardous area			
	outside			
4	zone 1			
7	zone 21 (only for GAS 222.10/11/30/35-U)			
	inside			
3	zone 0			
4	zone 1			
6	zone 20 (only for GAS 222.10/11/30/35-U)			
7	zone 21 (only for GAS 222.10/11/30/35-U)			
9	none			
	temperature class inside / outside (GAS 222.20/21/31/35)			
	Ga/Gb	**Gb/Gb**		
2	T1 /T2	T2/T2		
4	T3/T4	T4/T4		
6	T5/T6	T6/T6		
	temperature class inside / outside (GAS 222.10/11/30/35-U)			
	Ga/Gb or Gb/Gb	**Ga/Db or Gb/Db**	**Da/Gb or Db/Gb**	**Da/Db or Db/Db**
4	T4/T4	T4/T130°C	T130°C/T4	T130°C/T130°C
	power supply sample probe			
0	none (only for GAS 222.10/11/30/35-U)			
1	115V (only for GAS 222.20/21/31/35)			
2	230V (only for GAS 222.20/21/31/35)			
	calibration gas port			
0	no			
1	6mm			
2	6mm + check valve			
3	1/4			
4	1/4 + check valve			
	pressure vessel			
0	no			
1	yes			
	purge valve			
0	ball valve			
1	solenoid valve 110V (marked with "mb") (only T2-T4 or T130°C)			
2	solenoid valve 230V (marked with "mb") (only T2-T4 or T130°C)			
3	solenoid valve 24V (marked with "mb") (only T2-T4 or T130°C)			
9	without			
	pneumatic actuator for internal ball valve			
0	no			
1	mono stable depressurized open (only for GAS 222.11/30/21/31)			
2	mono stable depressurized closed (only for GAS 222.11/30/21/31)			
	limit switch for pneumatic actuator			
0	no			
1	yes (only for GAS 222.11/30/21/31) (marked with "db" or "ta" or "tb")			
	solenoid valve for pneumatic actuator			
0	no			
1	110V (only for GAS 222.11/30/21/31) (marked with "mb") (only T2-T4 or T130°C)			
2	230V (only for GAS 222.11/30/21/31) (marked with "mb") (only T2-T4 or T130°C)			
3	24V (only for GAS 222.11/30/21/31) (marked with "mb") (only T2-T4 or T130°C)			

IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

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

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

Page 1 of 4

Certificate history:
Issue 1 (2020-09-02)
Issue 0 (2018-09-03)

Status: **Current**

Issue No: 2

Date of Issue: 2023-02-13

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/Db:
Ex ta/tb mb IIIC T130°C Da/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: **Dr.-Ing. Peter Cimalla**

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

Signature:
(for printed version)

Date:
(for printed version)

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Certificate issued by:

IBExU Institut für Sicherheitstechnik GmbH
Fuchsmühlenweg 7
09599 Freiberg
Germany

IECEx Certificate of Conformity

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 Edition:7.0	Explosive atmospheres - Part 0: Equipment - General requirements
IEC 60079-1:2014-06 Edition:7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-18:2017 Edition:4.1	Explosive atmospheres - Part 18: Protection by encapsulation "m"
IEC 60079-26:2014-10 Edition:3.0	Explosive atmospheres – Part 26: Equipment with Equipment Protection Level (EPL) Ga
IEC 60079-31:2013 Edition:2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
IEC 60079-7:2017 Edition:5.1	Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
IEC/IEEE 60079-30-1:2015 Edition:1.0	Explosive atmospheres - Part 30-1: Electrical resistance trace heating - General and testing requirements

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

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

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

IECEx Certificate of Conformity - Annex

Certificate No: IECEx IBE 17.0024X

Issue No: 2

Date of Issue: 2023-02-13

Type code: 4 6 2 2 2 _ _ _ _ _ _ _ _ _ 0 _ _ _ _ _ _

Position	Code	Description			
1–5	4 6 2 2 2				
15	0				
6–7		**sample probe basis unit**			
6–7		**unheated**			
6–7	1 0	GAS 222.10			
6–7	1 1	GAS 222.11			
6–7	3 0	GAS 222.30			
6–7	3 5	GAS 222.35-U			
6–7		**heated**			
6–7	2 0	GAS 222.20			
6–7	2 1	GAS 222.21			
6–7	3 1	GAS 222.31			
6–7	3 5	GAS 222.35			
8		**junction box**			
8	0	no (only for GAS 222.10/11/30/35-U)			
8	1	yes			
9–10		**flange**			
9–10	0 1	flange DN65 PN6			
9–10	0 2	flange DN3"-150			
9–10	x x	others			
11–12		**hazardous area**			
11		**outside**			
11	4	zone 1			
11	7	zone 21 (only for GAS 222.10/11/30/35-U)			
12		**inside**			
12	3	zone 0			
12	4	zone 1			
12	6	zone 20 (only for GAS 222.10/11/30/35-U)			
12	7	zone 21 (only for GAS 222.10/11/30/35-U)			
12	9	none			
13		**temperature class inside / outside (GAS 222.20/21/31/35)**			
13		**Ga/Gb**	**Gb/Gb**		
13	2	T1 /T2	T2/T2		
13	4	T3/T4	T4/T4		
13	6	T5/T6	T6/T6		
13		**temperature class inside / outside (GAS 222.10/11/30/35-U)**			
13		**Ga/Gb or Gb/Gb**	**Ga/Db or Gb/Db**	**Da/Gb or Db/Gb**	**Da/Db or Db/Db**
13	4	T4/T4	T4/T130°C	T130°C/T4	T130°C/T130°C
14		**power supply sample probe**			
14	0	none (only for GAS 222.10/11/30/35-U)			
14	1	115V (only for GAS 222.20/21/31/35)			
14	2	230V (only for GAS 222.20/21/31/35)			
16		**calibration gas port**			
16	0	no			
16	1	6mm			
16	2	6mm + check valve			
16	3	1/4			
16	4	1/4 + check valve			
17		**pressure vessel**			
17	0	no			
17	1	yes			
18		**purge valve**			
18	0	ball valve			
18	1	solenoid valve 110V (marked with "mb") (only T2-T4 or T130°C)			
18	2	solenoid valve 230V (marked with "mb") (only T2-T4 or T130°C)			
18	3	solenoid valve 24V (marked with "mb") (only T2-T4 or T130°C)			
18	9	without			
19		**pneumatic actuator for internal ball valve**			
19	0	no			
19	1	mono stable depressurized open (only for GAS 222.11/30/21/31)			
19	2	mono stable depressurized closed (only for GAS 222.11/30/21/31)			
20		**limit switch for pneumatic actuator**			
20	0	no			
20	1	yes (only for GAS 222.11/30/21/31) (marked with "db" or "ta" or "tb")			
21		**solenoid valve for pneumatic actuator**			
21	0	no			
21	1	110V (only for GAS 222.11/30/21/31) (marked with "mb") (only T2-T4 or T130°C)			
21	2	230V (only for GAS 222.11/30/21/31) (marked with "mb") (only T2-T4 or T130°C)			
21	3	24V (only for GAS 222.11/30/21/31) (marked with "mb") (only T2-T4 or T130°C)			

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 derzeitig 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:* Ⓔx II 1G/2G Ex db[1] eb mb[2] IIC T5/T6...T1/T2 Ga/Gb
unbeheizt | *unheated:* Ⓔx II 1G/2G Ex db[1] eb mb[2] IIC T4 Ga/Gb

Für Zone 0/21 | ***for Zone 0/21:***
beheizt | *heated:* Ⓔx II 1G/2D
Ex db[1] eb mb[2] IIC T5 ... T1 Ga
Ex tb mb[2] IIIC T80 °C ... T226 °C Db
unbeheizt | *unheated:* Ⓔx II 1G/2D
Ex db[1] eb mb[2] IIC T4 Ga
Ex tb mb[2] IIIC T130 °C Db

Für Zone 20/21 | ***for Zone 20/21:***
beheizt | *heated:* Ⓔx II 1D/2D Ex ta/tb mb[2] IIIC T120°C/T80°C...T300°C/T226°C Da/Db
unbeheizt | *unheated:* Ⓔx II 1D/2D Ex ta/tb mb[2] IIIC T130°C Da/Db

Für Zone 1 | ***for Zone 1:***
beheizt | *heate):* Ⓔx II 2G Ex db[1] eb mb[2] IIC T6...T2 Gb
unbeheizt | *unheated:* Ⓔx II 2G Ex db[1] eb mb[2] IIC T4 Gb

Für Zone 20/1 | ***for Zone 20/1:***
beheizt | *heated* Ⓔx II 1D/2G
Ex ta IIIC T120 °C ... T300 °C Da
Ex db[1] eb mb[2] IIC T6 ... T2 Gb
unbeheizt | *unheated* Ⓔx II 1D/2G
Ex ta IIIC T130 °C Da
Ex db[1] eb mb[2] IIC T4 Gb

Für Zone 21 | ***for Zone 21:***
beheizt | *heated:* Ⓔx II 2D Ex tb mb[2] IIIC T80°C...T226°C Db
unbeheizt | *unheated:* Ⓔx II 2D Ex tb mb[2] IIIC T130°C Db

[1] "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.*
[2] „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.:*** IBExU17ATEX1088X, Ausgabe/Edition 2
Eingeschaltete notifizierte Stelle | ***Engaged notified Body:*** IBExU, Fuchsmühlenweg 7
09599 Freiberg, Germany

Kennummer | ***Identification Number:*** 0637

Eingeschaltete benannte Stelle für das Qualitätssicherungssystem |
Engaged notified body for the quality assurance system DEKRA Testing and Certification GmbH
Dinnendahlstraße 9
44809 Bochum, Germany

Kennummer | ***Identification Number:*** 0158

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*

Bühler Technologies GmbH, Harkortstr. 29, D-40880 Ratingen,
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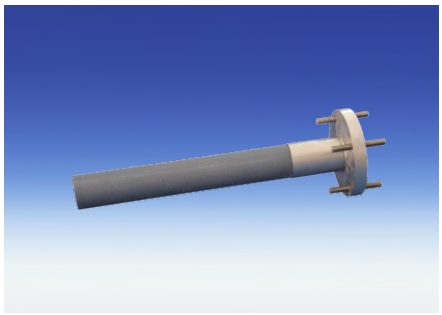
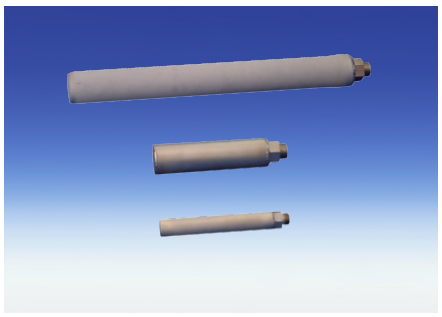
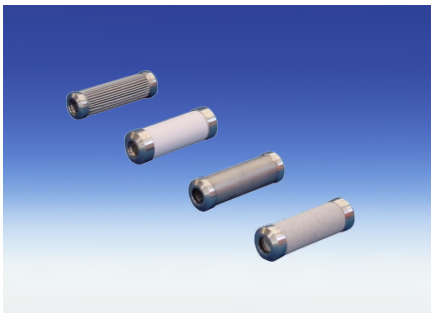
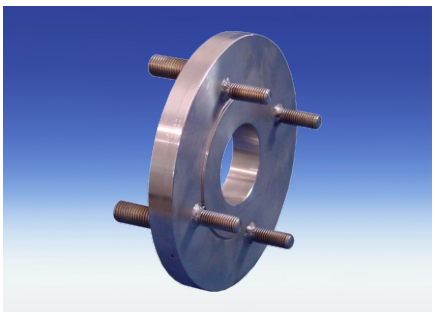
Internet: www.buehler-technologies.com

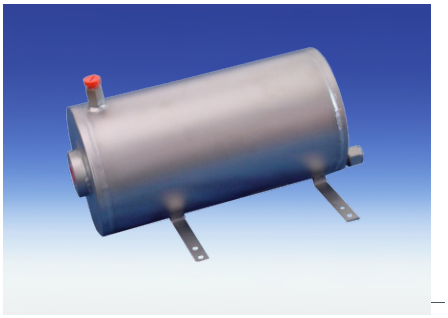
Accessories for Sample Gas Probe GAS 222

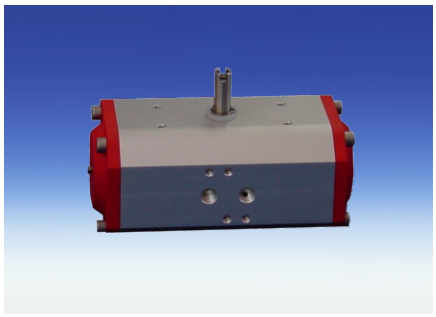












- **Sample tubes**
- **In-situ filters**
- **Extensions**

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- **Downstream filters**
- **Cal gas connections**
- **Adapter flanges**

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- **Capacitive vessel**
- **Pneumatic actuators**
- **3/2-way-solenoid valves**
- **Blowback controllers**

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

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Sample tubes, in-situ filters and extensions

- Various materials
- Various dimensions
- Heated or nonheated extensions

Sample tube					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**	**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

- Various materials
- Various dimensions
- Heated or nonheated extensions

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[1)]	478 mm	2 µm	46222307		X	X					X	X				X	X			X	X																	
07F	Ceramics / 1.4571	1000°C[1)]	478 mm	0.3 µm	46222307F*		X	X					X	X				X	X																					
07 ANSI	Ceramics / 1.4571	1000°C[1)]	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
35F	stainless steel	600°C	229 mm	0.5 µm	46222359F*				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

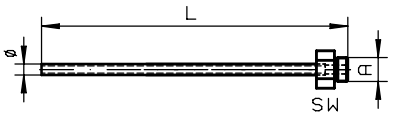
- Various materials
- Various dimensions
- Heated or nonheated extensions

					Part No.:	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
Protection shield					**Part No.:**																																	
for in-situ filter 03					462223034		X	X					X	X				X	X			X	X			X	X							X	X		
for in-situ filter 04					462223044		X	X					X	X				X	X			X	X			X	X							X	X		
Extensions																																						
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					X
G1/2	nonheated	1.4571		0,5 m	4622235910500				X						X					X				X				X						X					X
G1/2	nonheated	1.4571		0,7 m	4622235910700				X						X					X				X				X						X					X
G1/2	nonheated	1.4571		1,5 m	4622235911500				X						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					

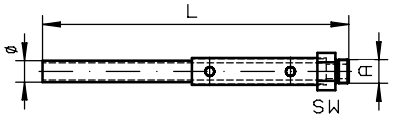
* Mounting is only possible at a plain flange without G3/4 thread. Therefore a G has to be added to the part number, e.g. 4622220G.
It is not possible to add a heated extension after delivery.

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



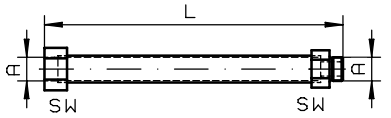
Typ	L	ø	A	SW
02-0,5	500	24	G3/4	36
02-1,0	1000	24	G3/4	36
02-1,5	1500	24	G3/4	36

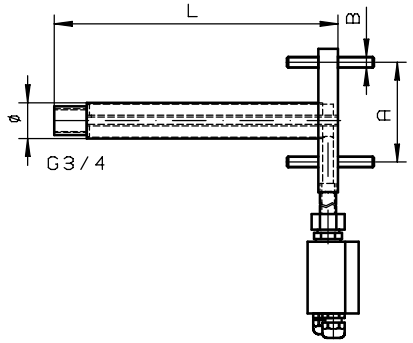


Verlängerungen / extensions

Unbeheizt / unheated

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



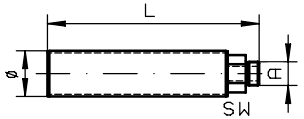


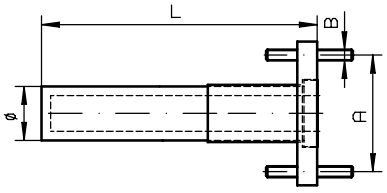
Beheizt / heated

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

Eintritssfilter / 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



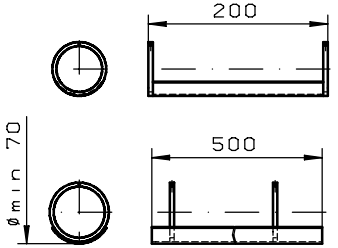


Typ	L	ø	A	B
07	500	60	DN65 PN6	M12
07 ANSI	500	60	DN3"-150	M16

Abweisblech / protection shield

Eintrittsfilter / in-situ filter 03

Eintrittsfilter / in-situ filter 04



alle Kanten gratfrei	ALLE RECHTE VORBEHALTEN	Maße ohne Toleranzangabe nach ISO 2768-mK						Maßstab 1 5	(Gewicht)
Oberflächenbearbeitungszeichen								Werkstoff	
√ = Rch						Datum	Name	Benennung	
X √ = Rz 63					Bearb	21 01 2004	Brinkmann	Rohre/Filter/Verlängerungen tubes/filter/extensions GAS 222	
Y √ = Rz 16					Gepr				
Z √ = Rz 4								Zeichng -Nr	46/107-Z01-01-3A
					BÜHLER			Art -Nr	
a	neu	29 09 06	Br						
Zust	Änd	Datum	Name	Ers für				ARBEITSANWEISUNG	

Blowback

- With ball valve or solenoid valve
- Heated or nonheated
- Manuell or automatic control

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

*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.

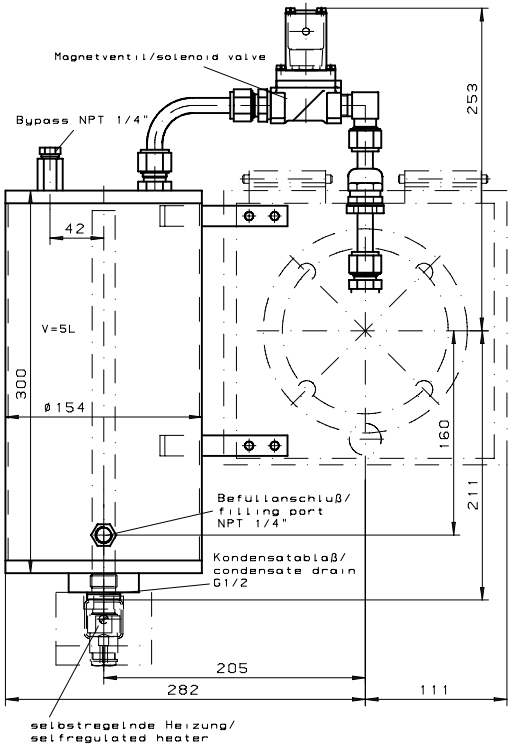
If the position indicator switch is installed, the controller will use this input for the process logic.

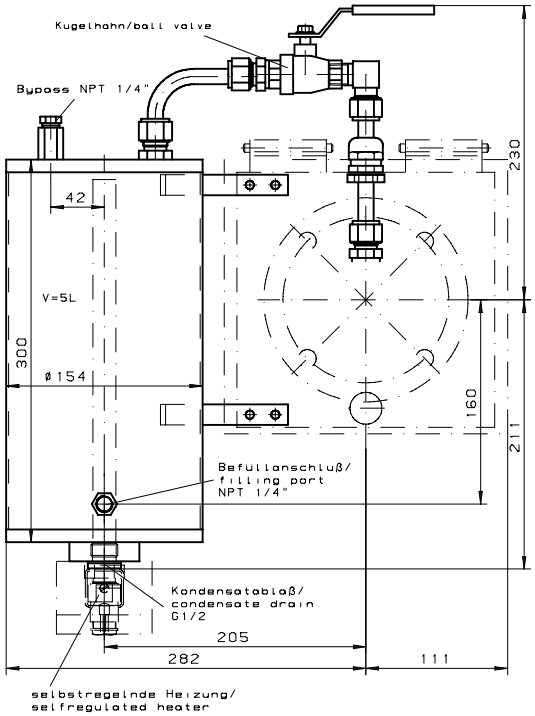
B) Hazardous Areas

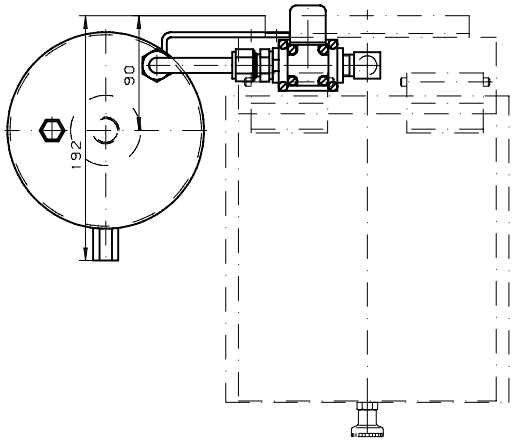
Please note that installed accessories may change the approved category of the probe.
Follow strictly the advices given in the installation- and operation manual and regard the marking on the type plate.

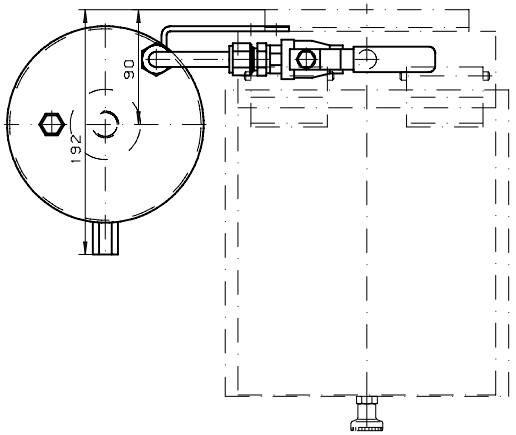
Sample Gas Probe GAS 222.xx Atex		
Model	**with Accessories**	**resuting restircted area; marking**
21 Atex, 31 Atex, 35 Atex	Pressure vessel PAV 01 (Part-No. 46222PAV with accessories)	II 1D / 2GD
21 Atex, 31 Atex,	In situ filter*, ceramics (Art.-Nr.:46222307 + 46222307F)	II 1D 3G / 2GD
20 Atex , 21 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	(Gewicht)
Oberflächenbearbeitungszeichen										Werkstoff	
							Datum	Name		Benennung	
						Bearb	05 07 2004	Brinksann		Druckluftbehälter/ capacitive vessel PAV 01	
						Gepr					
										Zeichng -Nr	46/106-Z01-01-2
										Art -Nr	
										ARBEITSANWEISUNG	
		Zust	Änd	Datum	Name	Ers für					

Downstream filter elements and further options

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

* Prices and delivery time on request

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

RMA-Nr./ RMA-No.

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

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

Firma/ Company

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

Ansprechpartner/ Person in charge

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

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

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

Grund der Rücksendung/ Reason for return

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

bitte spezifizieren/ please specify

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

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

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

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

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

Bitte Sicherheitsdatenblatt beilegen!/ Please enclose safety data sheet!

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

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

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

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

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

Firmenstempel/ Company Sign

Datum/ Date

rechtsverbindliche Unterschrift/ Legally binding signature

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

Vermeiden von Veränderung und Beschädigung der einzusendenden Baugruppe

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

Umgang mit elektrostatisch sensiblen Baugruppen

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

Einbau von Ersatzteilen

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

Einsenden von Elektroaltgeräten zur Entsorgung

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

Avoiding alterations and damage to the components to be returned

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

Handling electrostatically conductive components

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

Fitting of spare parts

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

Returning old electrical appliances for disposal

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

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