Gas Analysis

Sample gas probes

GAS 222.15-MA

Installation and Operation Instructions

Original instructions

BE460070
09/2024

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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.

Document information
Document No..... BE460070
Version..... 09/2024

Contents

1 Introduction

1.1 Intended Use

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

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

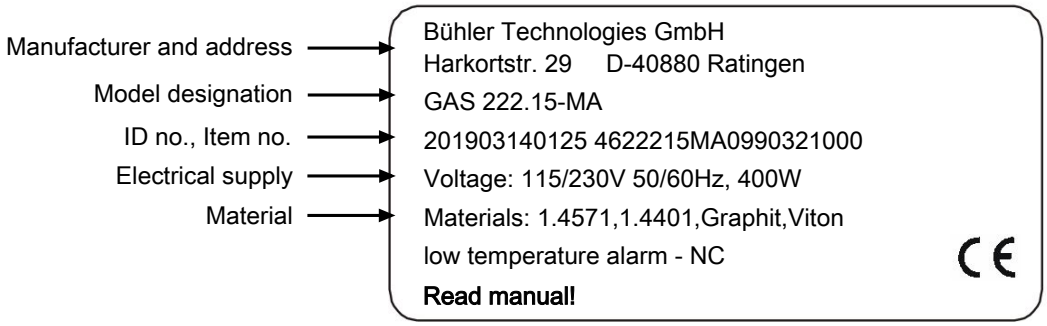
- Therefore also note the related drawing in the data sheet in the appendix.
- Before installing the device, verify the listed technical data meet the application parameters.
- Further verify all contents are complete.

Please refer to the type plate to identify your model. In addition to the job number/ID number, this also contains the article number and model designation.

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

1.2 Type plate

Example:



1.3 Scope of Delivery

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

1.4 Ordering instructions

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

4622215MA	X	9	9	0	3	X	X	0	0	0	Product characteristic
											Flange
	0										DIN DN65 PN6
	1										ANSI 3"- 150 lbs
											Voltage
					3						115/230 V
											Calibration gas connection
						0					without calibration gas connection
						1					6 mm
						2					6 mm with check valve
						3					1/4"
						4					1/4" with check valve
											Low temperature alarm
							1				opening contact (open at operating temperature)
							2				closing contact (closed at operating temperature)

1.5 Product description

The probe is equipped with an downstream filter (filter inside the probe).

Probe	Description
GAS 222.15-MA	Probe with downstream filter
Accessories	Please refer to the data sheet at the end of this manual for accessories for this probe

The probe is equipped with self-regulated PTC heating cartridges as well as a temperature contact. When the operating temperature is reached, the contact switches and signals the unit is ready for use. The temperature contact can be a NC contact or a NO contact.

2 Safety instructions

2.1 Important advice

This device may only be used if:

- The product is being used under the conditions described in the operating- and system 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 specifications and markings in the type plate are observed,
- the limits in the data sheet and the instructions must be observed,
- the handle including O-ring is installed with a suitable clearance and filter (if applicable),
- Monitoring equipment / protection devices are connected correctly,
- service and repair work not described in these instructions are performed by Bühler Technologies GmbH,
- using genuine replacement parts.

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 include the following warnings:

	General warning sign		General mandatory sign
	Voltage warning		Unplug from mains
	Warning not to inhale toxic gases		Wear respiratory equipment
	Warning of corrosive substances		Wear a safety mask
	Warning of explosion hazard		Wear gloves
	Warning of hot surfaces		

2.2 General 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.

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

Potentially explosive atmosphere

Explosion hazard if used in hazardous areas.
The device is not suitable for operation in hazardous areas with potentially explosive atmospheres.
Do not expose the device to combustible or explosive gas mixtures.

WARNING

Risk of breakage

a) Protect the equipment against being hit.

b) Protect the device against falling objects.

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.

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

4.1 Installation site requirements

CAUTION

Equipment damage

Protect the device from falling objects as well as external blows.

Lightning

On principle, the operator must meet all applicable standards with respect to preventing damage to the equipment due to lightning, which could result in equipment damage.

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.
- In addition, adequate and safe access for installation and future maintenance work should be provided. Particularly follow the uninstalled size of the probe tube!

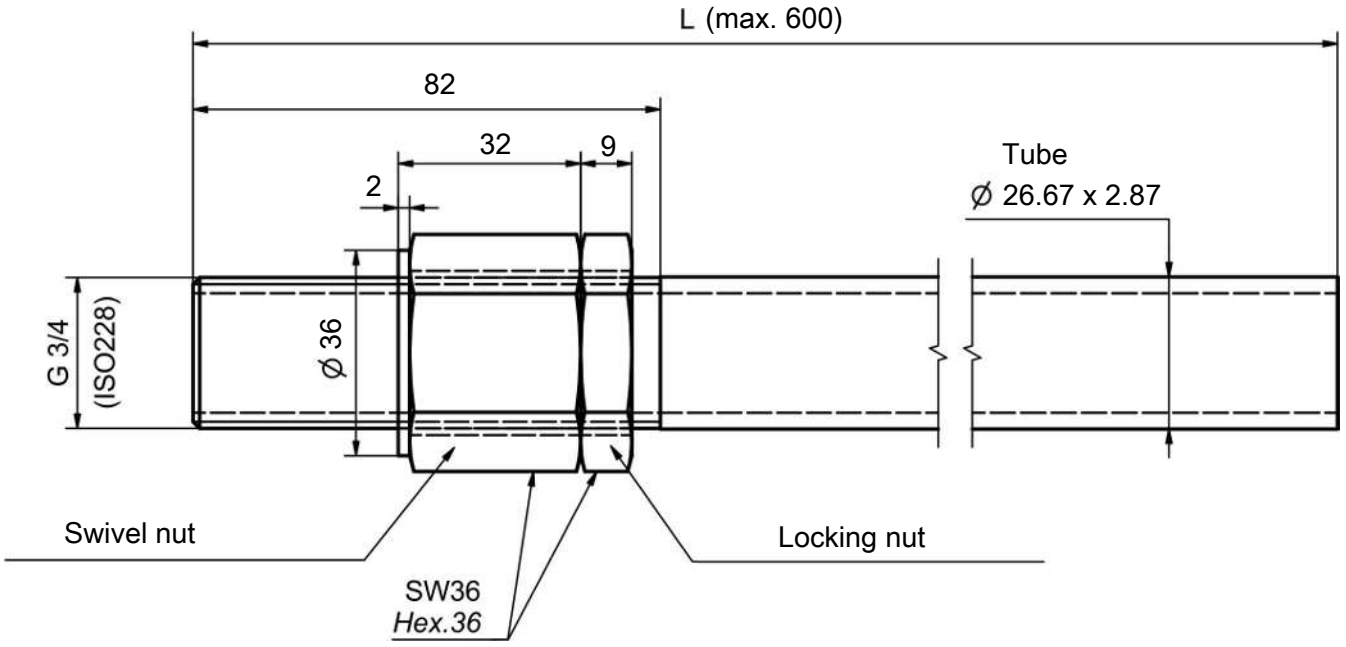
If the probe is transported to the installation site in pieces, it will first need to be assembled.

4.2 Installing the sampling tube (optional)

The sampling tube has three sections and must be screwed in.

Proceed as follows:

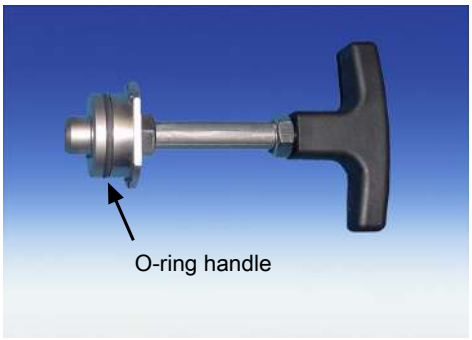
- Screw the tube all the way into the fitting on the probe.
- Tighten the swivel nut well. Ensure the 2 mm wide attached sealing face of the swivel nut faces the fitting.
- Also tighten the slim locking nut.
- Then attach the probe to the mating flange using the included seal and nuts.



4.3 Installing the downstream filter

NOTICE

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



Attach an O-ring suitable for the expected ambient temperature to the handle.

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

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

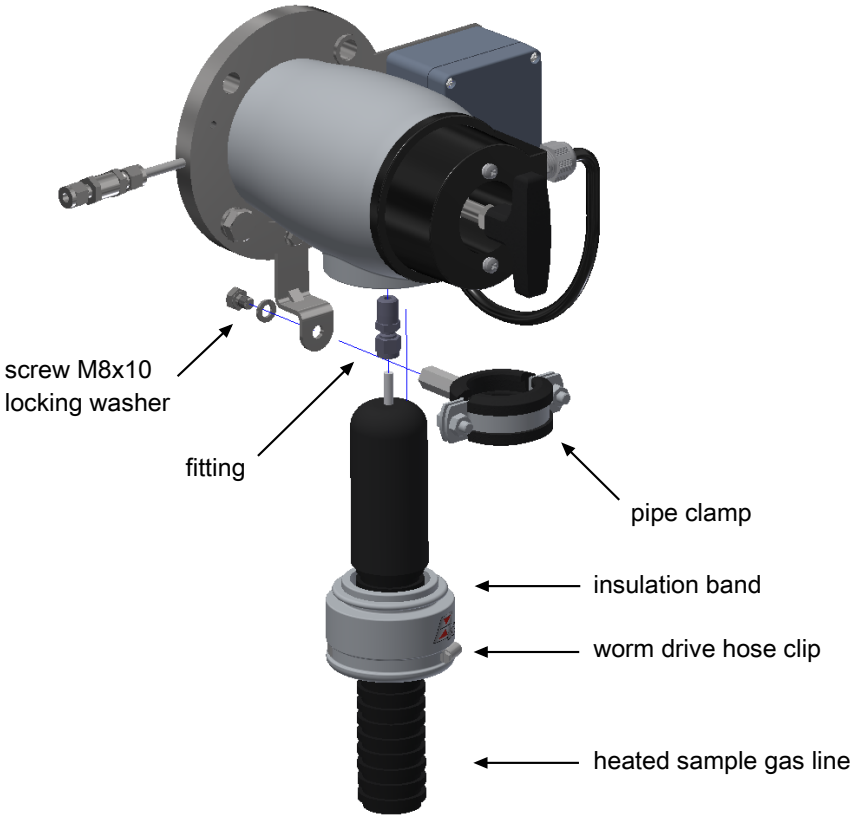
4.4 Insulation

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

4.5 Installing a heated sample gas line

To install a heated sample gas line:

– Remove the pipe clamp and insulating sleeve by loosening the M8x10 screw and removing the sleeve from the insulation.
– Install a suitable pipe fitting in the probe body. Slip the insulating sleeve over the sample gas line and connect to the pipe fitting inside the probe body.
– Reinsert the insulating sleeve in the insulation, turning (a drop of lubricant safe for silicone may help) and tighten the worm drive hose clip. This ensures the connection between the insulating sleeve and the sample gas line is water- and dustproof. The factory installed insulating sleeve is suitable for use with a heated line for outside diameters of 47 – 53 mm. Insulating sleeves for other line diameters are available on request.
– Lastly, reinstall the pipe clamp and attach the sample gas line to it accordingly. Long sample gas lines may require additional support clamps along the way to the analysis system!



NOTICE

Using the correct combination of line diameter and insulating sleeve significantly affects the IP level of the entire system.

4.6 Connecting the Gas Line

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

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

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

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.

Long sample gas lines may require support clamps along the way to the analysis system!

WARNING **Gas emanation**

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

4.7 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.

4.8 Electrical connections

The operator must install an external separator for the device which is clearly assigned to this device.

This separator

– must be located near the device,
– must be easy for the operator to reach,
– must comply with IEC 60947-1 and IEC 60947-3,
– must separate all live conductors and the status output, and
– must not be attached to the power feed.

The RCD (tripping current 30 mA) must shut off the load within the required amount of time. It must be suitable for the maximum load.

An additional, or integrated in the separator, overcurrent device is required. All feeders except the ELCB must have overcurrent devices, e.g. circuit breakers or fuses. This should be next to each other, have the same rating, and not be integrated in the neutral wire of multi-phase equipment.

For the applicable separator data, please note the values specified under chapter Technical Data [> page 19].

The probe itself has self-regulating heating elements and can therefore be connected to a 100 V – 230 VAC power supply.

The probe comes with a connection housing which contains the terminal strip for connecting the mains supply for the heater and a potential-free temperature switch. Connect per Connection Diagram [> page 20].

All connection lines must be fed into the system through the cable glands. Include strain relief for the connection cables. The supply line cross-sections must be suitable for the rated current and meet local regulations.

Please refer to the Technical Drawing for the clamping ranges.

WARNING

Hazardous electrical voltage

The device must be installed by trained staff only.

CAUTION

Mains connection cable

The mains connection cable must be suitable for the maximum power consumption of the equipment. It must be of heat-resistant material and not contact hot surfaces. The mains connection cable must meet IEC60227 or IEC60245 or be approved by another recognized testing body.

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).

5 Operation and Control

NOTICE

The device must not be operated beyond its specifications.

CAUTION

Hot surface

Risk of burns

Surface temperatures may be high during operation. Depending on the installation conditions on site, these areas may require a warning sign.

5.1 Before Startup

Before starting the device, verify:

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

6 Service

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.
- The appliance must be checked for external damage and soiling at regular intervals.
- The particle filter must be replaced depending on how dirty it is.
- Any dirty surfaces should be cleaned with a damp cloth.

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

The gas inside the filter, condensate and used filter elements may be caustic or corrosive.

Sample gas can be harmful.

a) Before maintenance turn off the gas supply and surge with air if necessary.

b) Exhaust sample gas to a safe place.

c) Protect yourself against toxic / corrosive gas during maintenance. Wear appropriate personal protection equipment.

CAUTION

Hot surface

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

CAUTION

Excess pressure

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

6.1 Maintaining the filter element

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

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

CAUTION! Do not damage the rear filter seat.

NOTICE

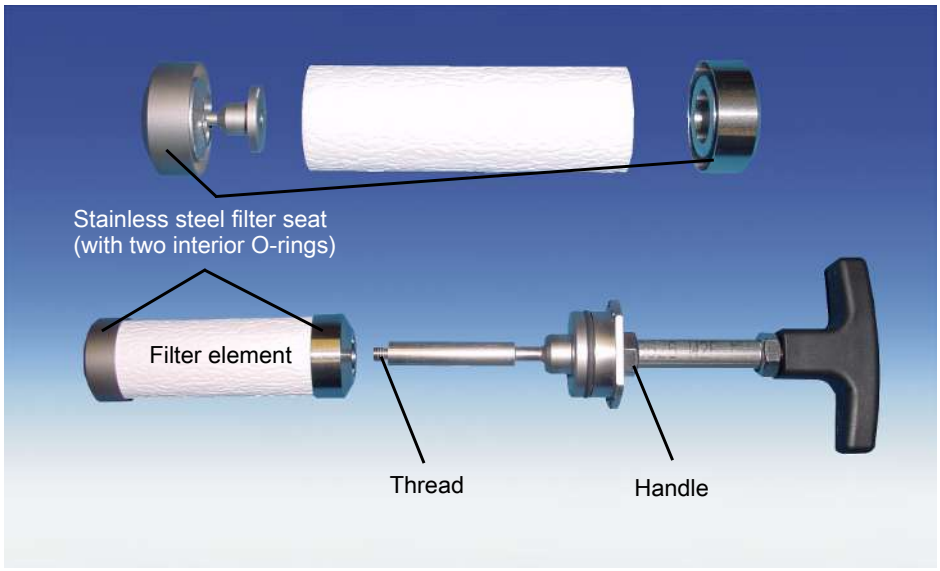
Ceramic filter elements are very brittle by nature. Handle them with care, don't let them fall.
Filter elements made out of sintered stainless steel can be cleaned in an ultrasonic bath and be used several times as long as both seals are still in proper conditions.

6.1.1 Replacing the downstream filter

- Turn the handle at the back end of the probe by 90° (handle must then be horizontal), pushing in slightly, and remove.
- Remove the dirty filter element and check the sealing surfaces.
- Before installing the new filter element, replace the seal on the handle plug (seal included with the filter element).
- Then carefully insert the handle with new filter, push in slightly and turn 90° (handle must then be vertical). Pull on the handle to verify the filter element is firmly seated.
- With the filter removed, if necessary also need clean the inside of the sampling tube by blowing it out or using a cleaning wand.

6.1.2 Replacing the Outlet Filter with Micro-Fibreglass Filter Element

- Turn the handle at the rear end of the probe by 90° (handle must be horizontal), pushing in slightly, and remove.
- Unscrew the dirty filter element counter-clockwise from the thread of the handle.
- Pull both stainless steel filter seats off the filter element.
- Before installing the new filter element, replace the seal on the handle and inside the stainless steel filter seats (seals are included with the filter element).
- Then turn the handle with the new filter by 90° (handle must be vertical), pushing in slightly.
  CAUTION! Do not damage the rear filter seat.



With the filter removed, you may also clean the inside of the sampling tube if necessary by blowing it out or using a cleaning wand.

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 – Gas path clogged	– Clean or replace filter element, clean sampling tube
No heat output/no display	– No/incorrect power supply	– Check power supply
Condensation forming	– Heater failure	– Send in probe for repair
	– Thermal bridges at the sampling point	– Insulate to eliminate thermal bridges

Tab. 2: Troubleshooting

7.2 Spare Parts

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

Upgrade and expansion parts can be found in our catalog.

Available spare parts:

Item no.	Description
9009105	Measuring outlet seal
9009079	Flange seal DN65 PN6
9009042	Flange seal ANSI3” 150 lbs
9009068	Flat seal FD 40 WS
46222012	Seal kit for filter element and probe, material: Viton
46222024	Seal kit for filter element and probe, material: Perfluoroelastomer
46222010	Downstream filter, sintered stainless steel, material: Viton
	Please see the accessories data sheet in the appendix for filter elements

7.2.1 Options

The base unit can optionally be equipped with a sampling tube type ST...-MA. These are type approved by DNV and available in 200, 400 and 600 mm lengths. You will find the dimensions on the last page.

Type designation	ST200-MA	ST400-MA	ST600-MA
Item no.	46222103	46222097	46222096
Length (mm)	200	400	600

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

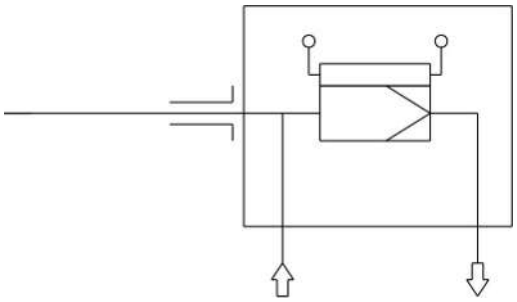
Please also observe data protection regulations and remember you are personally responsible for the returned waste equipment not bearing any personal data. Therefore please be sure to delete your personal data before returning your waste equipment.

9 Appendices

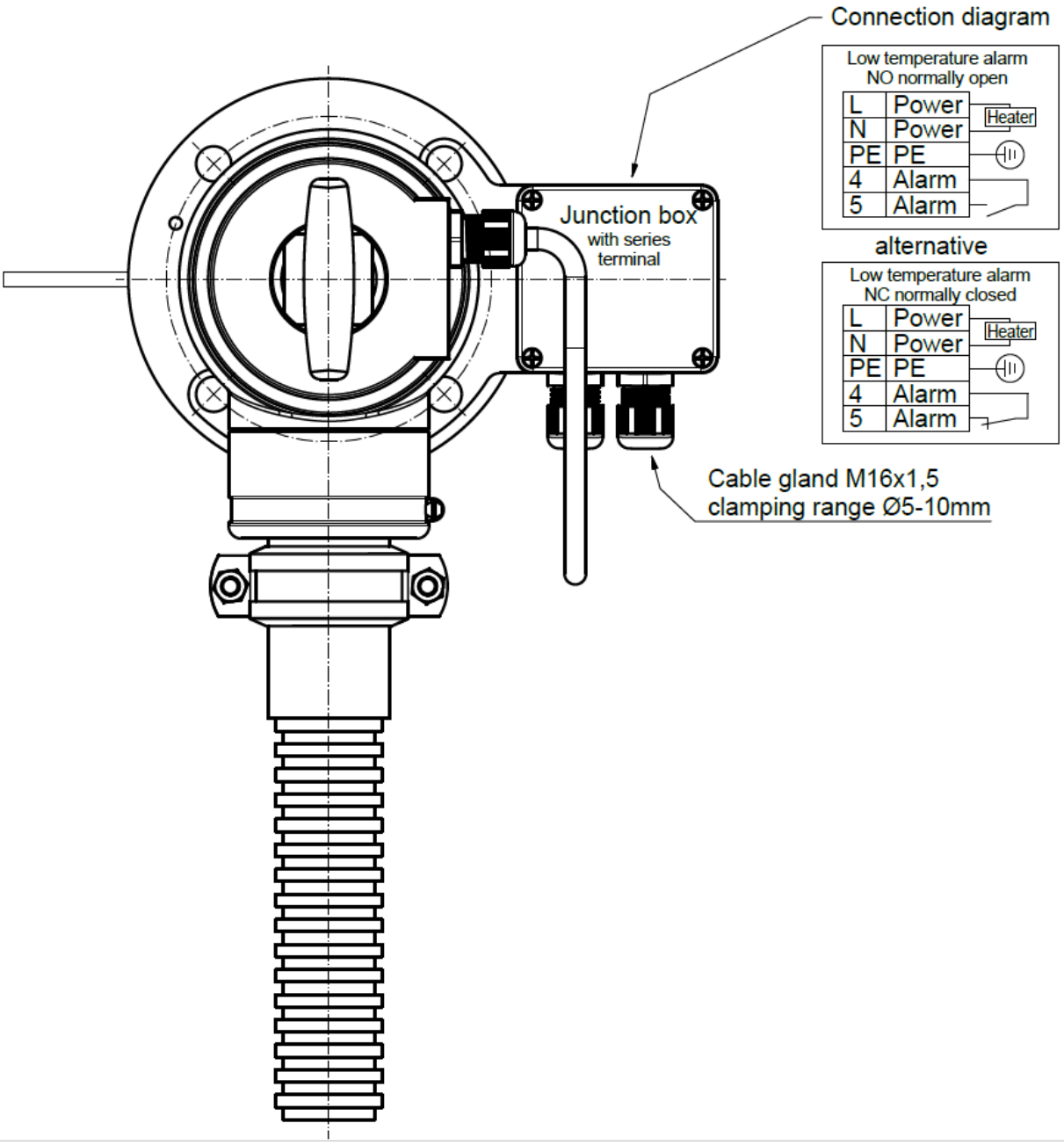
9.1 Technical Data

Gas Probe	
Type tested:	**DNV** rules for classification Ships, offshore units, and high speed and light craft Certificate no.: TAA00002FW **Lloyd's Register** Type Approval System, Test Specification Number 1 - March 2019 Certificate no.: LR2008137TA
Product Design Assessment:	ABS
Ambient categories as per DNV-CG-0339:	Temperature: D Humidity B Vibration B EMC B Housing: B (IP66)
Environmental categories as per LR:	ENV1, ENV2
Probe gas inlet temperature:	max. 200 °C
Ambient temperature:	-20 to +60 °C
Self-regulating heater:	+180 °C
Low temperature alarm:	Switching current max. 4 A (switch-back point < 140 °C)
Electrical data:	115 V/230 V, 50/60 Hz, 400 W
Weight:	8.5 kg
IP rating:	IP66
Max. operating pressure:	6 bar
Materials in contact with media:	1.4571, graphite/1.4404 and see filter

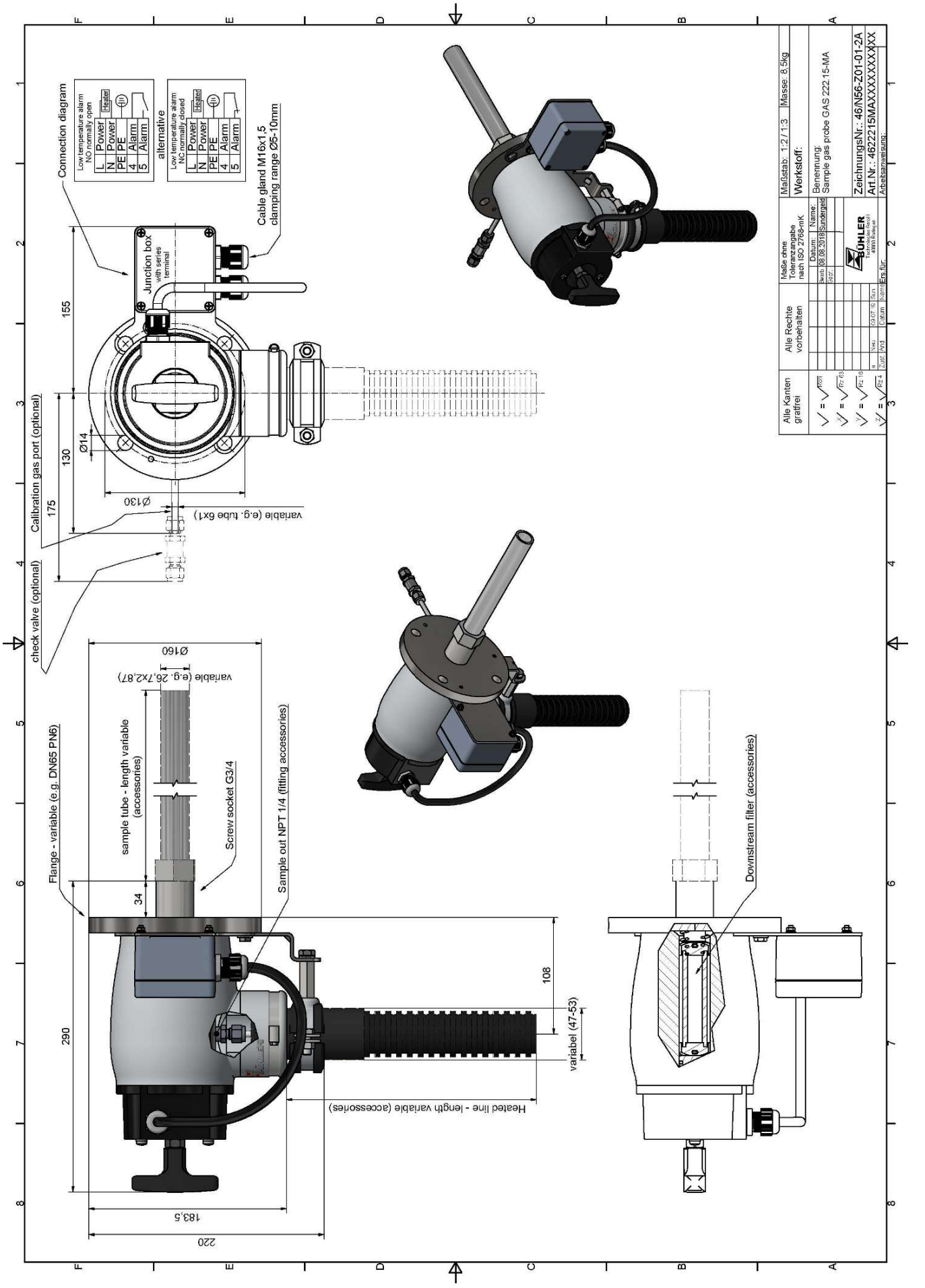
9.2 Flow chart



9.3 Connection Diagram



9.4 Probe dimensions



9.5 User book (Please make copies)

Maintained on	Unit no.	Operating hours	Remarks	Signature

10 Attached documents

– Approval DNV
– Declaration of Conformity KX460035
– RMA – Decontamination Statement

TYPE APPROVAL CERTIFICATE

Certificate no.:
TAA00002FW
Revision No:
2

This is to certify:

that the Emission Monitoring System

with type designation(s)
GAS 222.15-MA

issued to
Bühler Technologies GmbH
Ratingen, Nordrhein-Westfalen, Germany

is found to comply with
DNV rules for classification – Ships, offshore units, and high speed and light craft

Application:

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Location classes:

Temperature	**D**
Humidity	**B**
Vibration	**B**
EMC	**B**
Enclosure	**B (IP66)**

Issued at **Høvik** on **2024-09-12**

This Certificate is valid until **2029-09-16**.
DNV local unit: **Essen**

Approval Engineer: **Holger Jansen**

for **DNV**
Digitally signed by
Elter, Frederik Tore
Location: DNV
Høvik, Norway

Product description

GAS 222.15-MA Sample Gas Probe
The sample gas probe is intended for installation into gas analysis systems.
The probe is equipped with an outlet filter (filter inside the probe) and with self-regulated PTC heating cartridges as well as a temperature contact. When the operating temperature is reached, the contact switches and signals the unit is ready for use. The temperature contact can be a NC contact or a NO contact. The gas sampling probe can optionally be equipped with a sampling tube ST200-MA, ST400-MA or ST600-MA.

Technical Data:

Probe gas inlet temperature:	max. 200 °C
Ambient temperature:	-20 to +60 °C
Self-regulating heater:	+180 °C
Low temperature alarm:	Switching current max. 4 A (switch-back point < 140 °C)
Electrical data:	115/230 V, 50/60 Hz, 400 W

Application/Limitation

- The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV Rules for Ships Pt.4 Ch.9 Control and Monitoring Systems.
- Each product delivery is to be supplied with related manual for installation, maintenance and use
- " GAS 222.15-MA " sample gas probe shall be installed, calibrated and operated in compliance with manufacturer's instructions.

Type Approval documentation

Test Reports:
Phoenix Testlab E181579E1 U190520E1 2nd version, U181579E1, S181579E1 2nd version
Akuvib Engineering and Testing GmbH, No. 2020-0643-VU
Installation and Operation Instructions BE460070 02/2021
Drawing No. 46/N56-Z01-01-2A, Rev. A, 09.07.2019
Drawing No. 46/N93-Z01-01-4A, Rev. A, 14.01.2021
Type Approval Assessment Report issued at Essen on 2024-08-26

Tests carried out

Applicable tests according to DNV CG-0339, August 2021

Marking of product

The products to be marked with:
- manufacturer name
- model name
- serial number
- power supply ratings

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE

DNV·GL

TYPE APPROVAL CERTIFICATE

Certificate No:
TAA00002FW
Revision No:
1

This is to certify:

That the Emission Monitoring System

with type designation(s)
GAS 222.15-MA

Issued to
Bühler Technologies GmbH
Ratingen, Nordrhein-Westfalen, Germany

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Temperature	**D**
Humidity	**B**
Vibration	**B**
EMC	**B**
Enclosure	**B (IP66)**

Issued at **Hamburg** on **2021-01-18**

This Certificate is valid until **2024-09-16.**
DNV GL local station: **Essen**

Approval Engineer: **Didier Girardin**

for **DNV GL**
Digitally Signed By:
Papanuskas, Joannis

Joannis Papanuskas
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Product description

GAS 222.15-MA Sample Gas Probe
The sample gas probe is intended for installation into gas analysis systems.
The probe is equipped with an outlet filter (filter inside the probe) and with self-regulated PTC heating cartridges as well as a temperature contact. When the operating temperature is reached, the contact switches and signals the unit is ready for use. The temperature contact can be a NC contact or a NO contact. The gas sampling probe can optionally be equipped with a sampling tube ST200-MA, ST400-MA or ST600-MA.

Technical Data:

Probe gas inlet temperature:	max. 200 °C
Ambient temperature:	-20 to +60 °C
Self-regulating heater:	+180 °C
Low temperature alarm:	Switching current max. 4 A (switch-back point < 140 °C)
Electrical data:	115/230 V, 50/60 Hz, 400 W

Application/Limitation

- The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV GL, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV GL Rules for Ships Pt.4 Ch.9 Control and Monitoring Systems.
- Each product delivery is to be supplied with related manual for installation, maintenance and use
- " GAS 222.15-MA " sample gas probe shall be installed, calibrated and operated in compliance with manufacturer's instructions.

Type Approval documentation

Test Reports:
Phoenix Testlab E181579E1 U190520E1 2nd version, U181579E1, S181579E1 2nd version
Akuvib Engineering and Testing GmbH, No. 2020-0643-VU
Installation and Operation Instructions BE460070 07/2019
Drawing No. 46/N56-Z01-01-2A, Rev. A, 09.07.2019
Drawing No. 46/N93-Z01-01-4A, Rev. A, 14.01.2021

Tests carried out

Applicable tests according to DNV GL CG-0339, November 2016

Marking of product

The products to be marked with:
- manufacturer name
- model name
- serial number
- power supply ratings

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE

DNV·GL

Certificate No:
TAA00002FW

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Sample Gas Probe

with type designation(s)
GAS 222.15-MA

Issued to
Bühler Technologies GmbH
Ratingen, Nordrhein-Westfalen, Germany

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Temperature	**D**
Humidity	**B**
Vibration	**B**
EMC	**B**
Enclosure	**B (IP66)**

Issued at **Hamburg** on **2019-09-17**
This Certificate is valid until **2024-09-16**.
DNV GL local station: **Essen**

Approval Engineer: **Didier Girardin**

for **DNV GL**

Joannis Papanuskas
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Job Id: **262.1-031372-1**
Certificate No: **TAA00002FW**

Product description

GAS 222.15-MA Sample Gas Probe
The sample gas probe is intended for installation into gas analysis systems.
The probe is equipped with an outlet filter (filter inside the probe) and with self-regulated PTC heating cartridges as well as a temperature contact. When the operating temperature is reached, the contact switches and signals the unit is ready for use. The temperature contact can be a NC contact or a NO contact.

Technical Data:

Probe gas inlet temperature:	max. 200 °C
Ambient temperature:	-20 to +60 °C
Self-regulating heater:	+180 °C
Low temperature alarm:	Switching current max. 4 A (switch-back point < 140 °C)
Electrical data:	115/230 V, 50/60 Hz, 400 W

Application/Limitation

- The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV GL, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV GL Rules for Ships Pt.4 Ch.9 Control and Monitoring Systems.

- Each product delivery is to be supplied with related manual for installation, maintenance and use

- " GAS 222.15-MA " sample gas probe shall be installed, calibrated and operated in compliance with manufacturer's instructions.

Type Approval documentation

Test Reports:
Phoenix Testlab E181579E1 U190520E1 2nd version, U181579E1, S181579E1 2nd version
Installation and Operation Instructions BE460070 07/2019
Drawing No. 46/N56-Z01-01-2A, Rev. A, 09.07.2019

Tests carried out

Applicable tests according to DNV GL CG-0339, November 2016

Marking of product

The products to be marked with:
- manufacturer name
- model name
- serial number
- power supply ratings

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
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- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE

EU-Konformitätserklärung
EU Declaration of Conformity

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

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

2014/35/EU
(Niederspannungsrichtlinie / *low voltage directive*)

in ihrer aktuellen Fassung entsprechen.

in its actual version.

Produkt / *products*: Messgassonde / sample gas probe
Typ / type: GAS222.15-MA

Die Betriebsmittel sind zur Gasentnahme aus dem Abgasstrom oder einem laufenden Prozess bestimmt.
The equipment is intended for gas sampling from flue gas or a running process.

Das oben beschriebene Produkt der Erklärung erfüllt die einschlägigen Harmonisierungsrechtsvorschriften der Union:
The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

EN ISO 12100:2010 **EN 61010-1:2010/A1:2019/AC:2019-04** **EN 60204:2018**

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

Ratingen, den 17.02.2023

Stefan Eschweiler
Geschäftsführer – *Managing Director*

Frank Pospiech
Geschäftsführer – *Managing Director*

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

UK Declaration of Conformity

The manufacturer Bühler Technologies GmbH declares, under the sole responsibility, that the product complies with the requirements of the following UK legislation:

Electrical Equipment Safety Regulations 2016

Product: Sample gas probe
Type: GAS222.15-MA

The equipment is intended for gas sampling from flue gas or a running process.

The object of the declaration described above is in conformity with the relevant designated standards:

EN 61010-1:2010/A1:2019/AC:2019-04
EN 60204:2018

EN ISO 12100:2010

Ratingen in Germany, 17.02.2023

Stefan Eschweiler
Managing Director

Frank Pospiech
Managing Director

Bühler Technologies GmbH, Harkortstr. 29, D-40880 Ratingen,
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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
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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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