Gas Analysis

# Precooler

# PC1

## Installation and Operation Instructions

Original instructions

BE450029
02/2020

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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
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# Contents

# 1 Introduction

## 1.1 Intended use

This unit is intended for industrial use in gas analysis systems. It is a component for conditioning sample gas to reduce the load on the sample gas cooler and to protect the analysis instrument from residual moisture in the sample gas.

Please note the specifications in the data sheet on the specific intended use, existing material combinations, as well as pressure and temperature limits.

## 1.2 Overview

The PC1 precooler consists of two types which can be classified according to the following applications:

– Use without acid meter PG1,
– Use with acid meter PG2 (incl. acid meter connection).

This classification is reflected in the type designation. The exact item number of the model defined by you is determined by the model code in the category ordering information.

Additional components which every conditioning system should feature can optionally be integrated:

– Peristaltic pump for condensate separation,
– Meter,
– Dosing pump,
– 24 V or 230 V fan,
– Automatic condensate drain AK 5.5 or AK 20.

This allows for various configurations of the PC1 precooler and options. We paid attention to easy access to wear parts and consumables.

## 1.3 Scope of delivery

– Ventilation base body
– Heat exchanger (filled with borosilicate beads)
– Product Documentation
– Connection/mounting accessories

## 1.4 Ordering Instructions

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

| 45002 | X | 2 | 0 | 0 | X | 0 | Product Characteristics |
|---|---|---|---|---|---|---|---|
| | | | | | | | **Voltage** |
| | 0 | | | | | | 115 - 230 VAC |
| | 4 | | | | | | 24 VDC |
| | | | | | | | **Heat exchanger** |
| | | 2 | 0 | | | | Glass |
| | | | | | | | **Options (acid meter)** |
| | | | | 0 | 0 | 0 | without acid meter |
| | | | | 0 | 1 | 0 | ready for acid meter |

# 2 Safety instructions

## 2.1 Important advice

Operation of the device is only valid if:

- the product is used under the conditions described in the installation- and operation instruction, the intended application according to the type plate and the intended use. In case of unauthorized modifications done by the user Bühler Technologies GmbH can not be held responsible for any damage,
- when complying with the specifications and markings on the nameplates.
- the performance limits given in the datasheets and in the installation- and operation instruction are obeyed,
- monitoring devices and safety devices are installed properly,
- service and repair is carried out by Bühler Technologies GmbH,
- only original spare parts are used.

This manual is part of the equipment. The manufacturer keeps the right to modify specifications without advanced notice. Keep this manual for later use.

### 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 information |
|  | 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 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.
- The current and voltage supply for the aggregate has a (mains) separator with adequate switching capacity. National requirements must be observed.

### 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 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**


**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.

# 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

This unit is solely intended for wall-mounting in enclosed areas. Frost protection must be used in temperatures below 0 °C (32 °F).

Install the unit leaving enough room below the cooler to discharge the condensate. This space also ensures unobstructed airflow/convention. Leave room above for the gas supply. We recommend mounting at the same height, preferably horizontal to the gas cooler.

Be sure to maintain the approved ambient temperature. Ensure adequate ventilation when installing in enclosed housings, e.g. analyser cabinets. If the convection is inadequate, we recommend aerating the cabinet or installing a fan to lower the inside temperature.

**DANGER**


**Use in explosive areas**

The equipment is **not** suitable for use in explosive areas.

## 4.2 Installation

Mount the angles to the wall using the included screws and ensure the surface meets the requirements and the M3 plug will not be exposed to mechanical shock. Pay attention to accessibility during operation and maintenance. Run the gas supply to the precooler with a downward slope.

If a large amount of condensate accumulates, we recommend using a condensate trap with automatic condensate drain upstream from the cooler. Our condensate drains AK 20 or AK 5.5 are suitable for this purpose.

Glass vessels and automatic condensate drains are available for draining condensate for external mounting below the unit. When using automatic condensate drains, the sample gas pump must be installed ahead of the cooler (pressure operation) to ensure proper function of the condensate drain.

If the sample gas pump is located at the cooler outlet (suction operation), we recommend using glass condensate traps or peristaltic pumps.

### Connecting the condensate drains

Depending on the material, build a connecting line with fittings and tubing or hose between the heat exchanger and condensate drain. With respect to hoses, the condensate drain must be secured separately using a clamp.

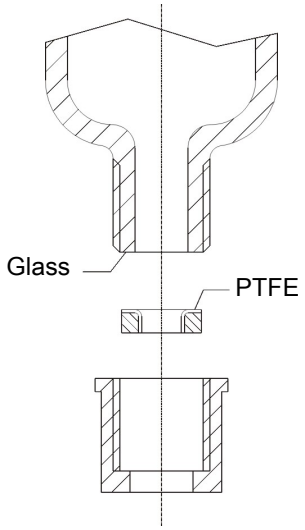
The condensate drain can be mounted directly to the heat exchanger.

Condensate lines must always be installed with a downward slope and a minimum inside diameter of 6 mm (1/4").

**Attention: Using the emission measurement requires a condensate drain and a line made exclusively from chemical-resistant materials or using a peristaltic pump. Stainless steel condensate drains are not recommended for this purpose!**

## 4.2.1 Connecting heat exchanger gas connections

Please note the correct position of the seal when connecting the gas lines (see image). The seal consists of a silicone ring with a PTFE sleeve. The PTFE side must face the glass thread.




### Installing the heat exchanger without acid meter:

The included heat exchanger must be installed in the ventilation base body using the supporting ring. On heat exchangers without dosing the gas inlet is marked red and the gas outlet black. The third, unmarked connection is sealed off with a dummy seal.

### Installing the heat exchanger with acid meter:

For heat exchangers with dosing the gas inlet is marked red and the gas outlet black. The inlet for the acid meter is unmarked. Be sure to push the acid supply as far into the middle of the heat exchanger as possible to ensure even distribution of the acid supply across all glass beads.

## 4.2.2 Connecting the peristaltic pump (accessory)

If a heat exchanger was also ordered, install this in the ventilation base body and connect it to the peristaltic pump.

The ø6 connection for the pump's condensate output must be carefully and properly connected with a suitable hose and hose clamp.

**NOTICE**

Installing peristaltic **pumps** CPsingle / CPdouble limits the maximum permissible **operating pressure** in the system!
Operating pressure ≤ 1 bar

## 4.3 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 ELCB (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.

Please refer to chapter "Technical Data" for the applicable separator data.

**WARNING** **Hazardous electrical voltage**

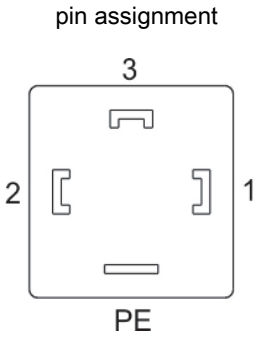
The device must be installed by trained staff only.

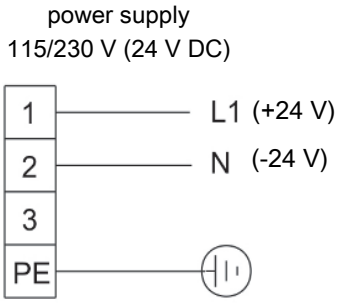
**CAUTION** **Wrong mains voltage**

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

## Plug connection

The device must be operated on 230 V AC or 24 V DC as specified in the type plate. The device has an EN 175301-803 power plug. If the lead is connected correctly, these cannot be confused. Therefore please be sure to correctly reassemble the plugs after connecting the wires. Below you will find the pin assignments, with the numbers corresponding to those on the plugs:



# 5 Operation and control

**NOTICE**

The device must not be operated beyond its specifications.

The unit is ready after switching on the precooler. Check for leaks before switching it on. When using a peristaltic pump, the pump must be on before adding sample gas. When using the optional acid meter, be sure the dosing pump was started at least 15 minutes (with a 3 m standard line) prior to taking measurement and moistens the glass beads in the process. Depending on the line length the flow time may vary, the calculation uses 5 minutes per metre.

Please refer to the data sheet for performance data and maximum ratings.

# 6 Maintenance

The basic version of the PC1 cooler requires no special maintenance.

However, it may have different options depending on the cooler model. In this case the following routine maintenance is required:

- **With optional peristaltic pump:** Check hoses
- **With optional dosing pump**: Check hoses

During maintenance, remember:

- The equipment must be maintained by a professional familiar with the safety requirements and risks.
- Only perform maintenance work described in these operating and installation instructions.
- When performing maintenance of any type, observe the respective safety and operation regulations.

**DANGER**

**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.

**CAUTION**

**Hot surface**

Risk of burns
Housing temperatures may be high during operation.
Allow the unit to cool down before performing maintenance or repairs.

# 7 Service and repair

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

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

Please contact our Service Department with any questions:

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

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

**Bühler Technologies GmbH**

**- Reparatur/Service -**

**Harkortstraße 29**

**40880 Ratingen**

**Germany**

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

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

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

## 7.1 Troubleshooting

| Problem / Malfunction | Possible cause | Action |
|---|---|---|
| Fan doesn't start | – Mains voltage interrupted | – Connect to mains; check the plug is correctly inserted |
| | – Fan has reached the end of its life | – Replace fan |
| Reduced gas flow rate | – Gas circuit clogged | – Remove and clean heat exchanger and glass beads |
| | – Gas connections leaking | – Leak test |

## 7.2 Safety instructions

- The device must be operated within its specifications.
- All repairs must be carried out by Bühler authorised personnel only.
- Only perform modifications, servicing or mounting described in this manual.
- Only use original spare parts.
- If leaks can cause a hazardous situation, a collection device must be used.
- Ensure parts in contact with mediums are resistant to the mediums (see Technical Data).

**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.

**CAUTION** **Hot surface**

Risk of burns
Housing temperatures may be high during operation.
Allow the unit to cool down before performing maintenance or repairs.

## 7.3 Cleaning and removal of the heat exchanger

Heat exchangers only need to be replaced or maintained if clogged or damaged. If they are clogged, we recommend checking if using a filter will avoid future occurrences.

- Close gas supply.
- Switch off and unplug the device.
- Disconnect gas connections and condensate drain. **(Observe safety notes!)**
- Pull the heat exchanger up and out.
- Remove the bottom screw connection (GL25) and the ball lock and pour the glass beads out of the heat exchanger. **(Observe safety notes!)**
- Flush the heat exchanger and glass beads with distilled water until all contaminants have been removed.
- If severely contaminated, clean the heat exchanger and glass beads in a sonic bath with isopropyl alcohol.
- Refill heat exchanger with glass beads (wear safety gloves!)
- Reconnect the gas supply and condensate drain. The gas inlet is marked red.
- Restore the power and gas supply.

## 7.4 Replacing the peristaltic pump hose (accessory)

- Turn off gas supply.
- Switch the device off and disconnect power supply.
- Remove the supplying and draining hoses from the pump (**Take care of the safety instructions!**).
- Loosen the centre knurled screw but do not remove it. Push the screw downwards.
- Pull off the cover.
- Pull the connections sidewards and remove the hose.
- Replace the hose and remount the pump in reverse order.
- Reconnect power supply.

## 7.5 Replacing the heat exchanger

- Close gas supply.
- Switch off devices and disconnect all plugs (e.g. supply input for precooler and, if applicable, for condensate pump, etc.).
- Remove gas hoses and, if applicable, the dosing hose **(observe safety notes!)**.
- Remove hose for the automatic condensate drain or condensate pump **(observe safety notes!)**.
- Remove the glass cartridge from the housing.
- Carefully position the new glass cartridge on the support ring inside the housing.
- Restore the power and gas supply.

## 7.6 Replacing the fan

- Close gas supply.
- Switch off devices and disconnect all plugs (e.g. supply input for precooler and, if applicable, for condensate pump, etc.).
- Remove gas hoses and, if applicable, the dosing hose **(observe safety notes!)**.
- Remove the hose to the automatic condensate drain or to the condensate pump **(observe safety notes!)**.
- Remove the glass cartridge from the housing.
- Remove the cable lugs from the fan plug.
- Remove the fan and internal finger guard from the internal housing.
- Install the new fan and the internal finger guard. Please note the direction of airflow. The glass cartridge is vented by the fan.
- Attach the cable lugs to the fan plug (with 24 V DC fans please note the polarity).
- Carefully position the glass cartridge on the support ring inside the housing.
- Restore the power and gas supply.

## 7.7 Replacing the dosing hoses (1.6 mm)

- Close gas supply.
- Switch off the precooler and dosing pump and disconnect all plugs (e.g. supply input connector plug, etc.).
- Remove dosing hoses **(observe safety notes!)**.
- Connect the new dosing hoses (Bühler spare part) to adapter type 1 on the dosing pump.
- Restore the power and gas supply.

## 7.8 Spare parts and accessories

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

Upgrade and expansion parts can be found in our catalogue.

### 7.8.1 Spare Parts and Accessories

| Item no. | Description |
|---|---|
| 45002014 | Heat exchanger glass cartridge with inlet markings |
| 45002015 | Pack of borosilicate glass beads |
| 45002007 | Ball lock |
| 4460028 | 230 VAC Fan |
| 4460029 | 24 VDC fan |
| 45002013 | Dosing hose (acid meter) |
| 4382006 | Laboratory screw connection GL 14 (acid meter) |
| 45100144 | Seal for GL 14 |
| 45100134E | Seal for GL 14 DN 4/6 |
| 45100137E | Seal for GL 25 DN 5/8 |
| 4510028 | Automatic condensate drain AK 5.5 |
| 4410004 | Automatic condensate drain AK 20 |
| see data sheet 450020 | Peristaltic Pump CPsingle, CPdouble |

# 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

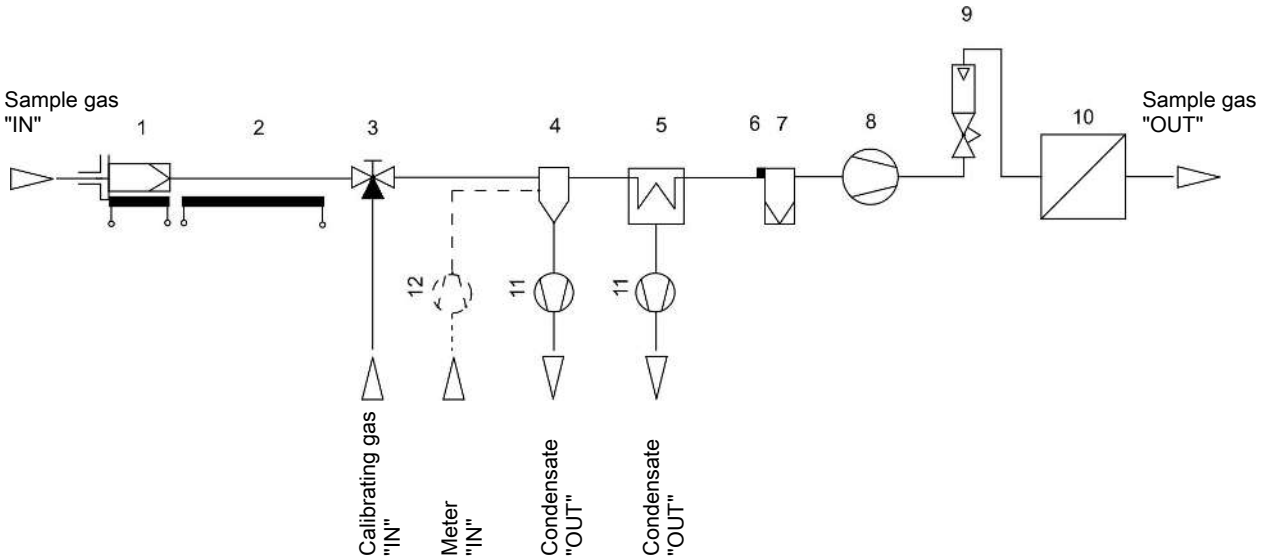
| PC1 Precooler Technical Data | |
|---|---|
| Ready for operation | Ready for use immediately after switching on |
| Ambient temperature | 5 °C to 40 °C |
| IP rating | IP 20 |
| Housing | Stainless steel |
| Packaging dimensions | approx. 330 mm (L) x 170 mm (H) x 250 mm (W) |
| Weight incl. heat exchanger | approx. 1.3 kg |
| Max. inlet dew point | 70 °C |
| Max. pressure | 1 bar |
| Max. gas temperature | 140 °C |
| Dead volume | 80 ml |
| Operating voltage | 230 VAC / 24 VDC |
| Electrical Connections | Plug per EN 175301-803 |
| Gas connections (metric) | GL 14 (6 mm) |
| Gas connections (US) | GL 14 (1/4") |
| Condensate out connection (metric) | GL 25 (12 mm) |
| Condensate out connection (US) | GL 25 (1/2") |
| Acid meter connection | GL 14 (6 mm) |
| Parts in contact with media<br>Heat exchanger: | <br>Duran glass and borosilicate glass beads |

## 9.2 Parts in contact with mediums

Borosilicate glass heat exchanger cartridge with inlet markings.

PTFE seal for the screw connection on the glass heat exchanger.

## 9.3 Diagram typical installation




| | | | |
|---|---|---|---|
| 1 | Sample gas probe | 2 | Sample gas line |
| 3 | Reversing tap | 4 | PC1 Precooler |
| 5 | Sample gas cooler | 6 | Moisture detector |
| 7 | Fine mesh filter | 8 | Sample gas pump |
| 9 | Flow meter | 10 | Analyser |
| 11 | Condensate pump | 12 | Dosing pump |

## 9.4 Heat exchanger overview

| Heat exchanger | PG1 (2 connections) | PG2 (with acid meter connection) |
|---|---|---|
| Version/Material | Duran glass | Duran glass |
| Max. inlet dew point | 70 °C | 70 °C |
| Gas inlet temperature | 140 °C | 140 °C |
| Gas pressure $p_{max}$ | 1 bar | 1 bar |
| Pressure drop Δp (v=200 L/h) total | 4 mbar | 4 mbar |
| Dead volume $V_{tot}$ total | 80 ml | 80 ml |
| Gas connections (metric) | GL 14 (6 mm) | GL 14 (6 mm) |
| Gas connections (US) | GL 14 (1/4") | GL 14 (1/4") |
| Condensate out connection (metric) | GL 25 (12 mm) | GL 25 (12 mm) |
| Condensate out connection (US) | GL 25 (1/2") | GL 25 (1/2") |
| Acid connection | --- | GL 14 (6 mm) |

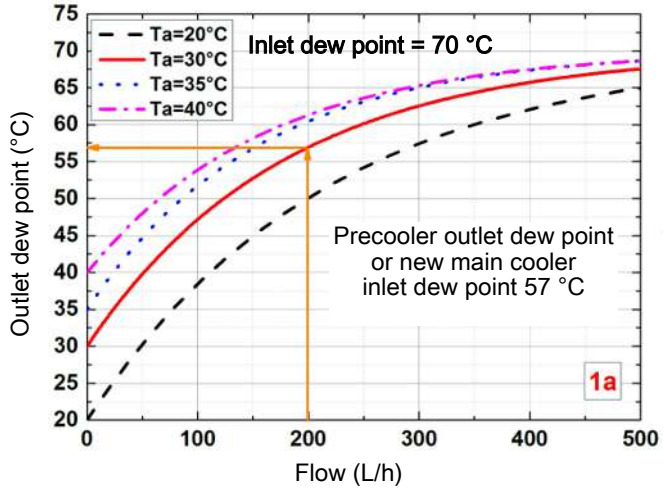
## 9.5 Cooling characteristics/aftercooler configuration

The outlet dew point of the precooler can be determined using the flow outlet dew point diagram (see diagrams 1a and 1b). This should be used as the inlet dew point for a downstream main cooler. Along with the gas flow parameters determined by the application and the ambient temperature the downstream main cooler can be configured for the required cooling capacity (also see cooler calculator at www.buehler-technologies.com). We will gladly also provide you with a personal consultation and configure the cooling units required for your application.

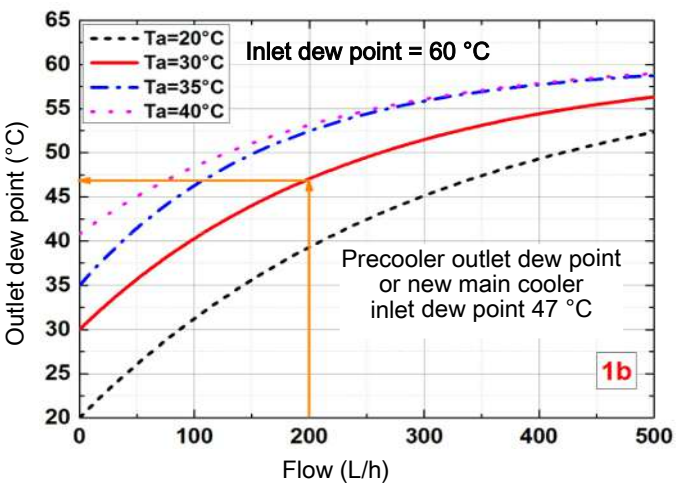
### Examples for determining the precooler outlet dew point:

1. Diagram 1a: Precooler inlet dew point = 70 °C, flow = 200 L/h, $T_a$ = 30 °C; precooler outlet dew point = 57 °C (corresponds to approx. 30 W precooling capacity). The new inlet dew point for the downstream main cooler is therefore 57 °C.
2. Diagram 1b: Precooler inlet dew point = 60 °C, flow = 200 L/h, $T_a$ = 30 °C; precooler outlet dew point = 47 °C (corresponds to approx. 18 W precooling capacity). The new inlet dew point for the downstream main cooler is therefore 47 °C.

**Flow outlet dew point diagram for $TP_{IN}$ = 70 °C**

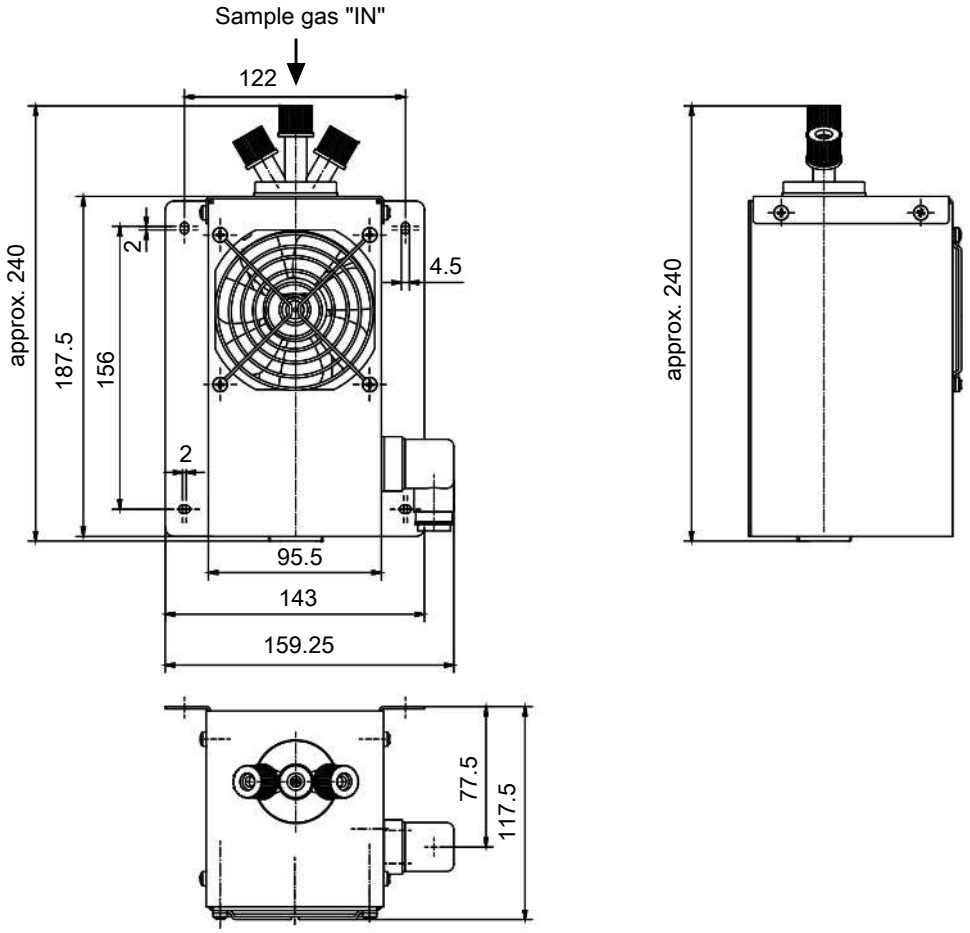



**Flow outlet dew point diagram for $TP_{IN}$ = 60 °C**




*Tab. 1:* Precooler outlet dew point varies by sample gas flow (at inlet dew point 70 °C (1a left) and 60 °C (1b right) and different ambient temperatures $T_a$)

## 9.6 Dimensions



# 10 Attached documents

- Declaration of Conformity KX450019
- RMA - Decontamination Statement

## *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.

Folgende Richtlinie wurde berücksichtigt:

The following directive was regarded:

**2014/30/EU (EMV/EMC)**

**Produkt / products:** Vorkühler / *Precooler*
**Typ / type:** PC1

Das Betriebsmittel dient der Aufbereitung des Messgases, um das Analysengerät vor Restfeuchtigkeit im Messgas zu schützen.
*This equipment is used for conditioning the sample gas to protect the analysis instrument from residual moisture in the sample gas.*

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 61326-1:2013** **EN 61010-1:2010/A1:2019/AC:2019-04**

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 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*



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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**

The following legislation were regarded:

**Electromagnetic Compatibility Regulations 2016**

**Product:** Precooler
**Type:** PC1

This equipment is used for conditioning the sample gas to protect the analysis instrument from residual moisture in the sample gas.

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 61326-1:2013**

Ratingen in Germany, 17.02.2023

Stefan Eschweiler
*Managing Director*

Frank Pospiech
*Managing Director*



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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



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### 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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