Peristaltic pumps

CPsingle, CPdouble X2

Installation and Operation Instructions

Original instructions
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
This unit is intended to discharge condensate from cooled process fluids. The temperature of these mediums is approx. 5 °C. This unit is suitable for use in Class I, Division 2 (US & Canada), Zone 2 (ATEX & IECEx).

Pump models for the USA and Canada 4492***2*** in explosive areas
The peristaltic pumps must be installed inside a housing which requires a tool to open and meets the requirements of the overall installation with respect to the housing, layout, space requirement and condensate separation.
Select a housing which meets the requirements of the pump's intended use with respect to mounting, spacing and creepage paths. The housing must be suitable for operating temperature ranges of -20 °C to min. 52 °C (US) and 0 °C to min. 52 °C (Canada).
It must be fully wired inside the housing. The cables and terminals used must be US-listed or (if applicable) CSA certified. They must be designed for the nominal voltage, the nominal current and operating temperature ranges of -20 °C to min. 52 °C (US) and 0 °C to min. 52 °C (Canada).
Water and contaminants must be prevented from entering the unit.

ATEX and IECEx certified pump models 4492**22**
The equipment must be installed in a lockable housing. The housing must have a minimum degree of protection of IP54 and meet the requirements under EN 60019-0 (IEC 60079-0) or be Ex e certified. The housing must require a tool to open. Install according to the installation requirements of IEC/EN 60079-14.
The housing must further meet the requirements of the overall installation with respect to the housing, layout, space requirement and condensate separation. The housing must be suitable for operating temperatures of 0 °C to min. 52 °C.
Water and contaminants must be prevented from entering the unit.

1.2 Scope of delivery
- 1 x Peristaltic pump
- Product documentation
- Connection- and mounting accessories (only optional)
1.3 Type plates

Examples:

Manufacturer with address
Type, electrical connection
Order no. + article no. + counter
Protection marking
Wetted parts
Temperature specifications
Year of manufacture, Instruction doc. no.

Bühler Technologies GmbH
Harkortstr. 29, D-40880 Ratingen

CPsingle-OEM-AC 230/115V50/60Hz 25/44mA
101001080015 44921220101
FM16ATEX0030X II 3G Ex nA IIC T4 Gc
IECEx FMG 16.0018X Ex nA IIC T4 Gc
USA/Canada: CL.1/DIV. 2 Gps: A,B,C,D T4
Material: PVDF, Norprene
Medium max: see manual; Tamb: 0°C-50°C
Year: 2016, Manual doc. no.: BX450027

Type, electrical connection
Order no. + article no., year of manufacture
Protection marking
(EN 13463-1; EN 13463-5)
Wetted parts, Instruction doc. no.
Temperature specifications

Bühler Technologies GmbH
Harkortstr. 29, D-40880 Ratingen

CPsingle-OEM-AC 230/115V50/60Hz 25/44mA
101001080015 44921220101; Year: 2016
II 3G c IIC T4 X
Material: PVDF, Norprene; doc. no.: BX450027
Medium max: see manual; Tamb: 0°C-50°C
1.4 Peristaltic pump ordering information

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

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Gas path</th>
<th>Version</th>
<th>Supply voltage</th>
<th>Area of application</th>
<th>Hose material</th>
<th>Flow rate / hour</th>
<th>Hose connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>4492</td>
<td>1</td>
<td></td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0.3 L/h</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>1 L/h (only 115 / 230 V AC, single gas path)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>13 ml/h (only 115 / 230 V AC, single gas path)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>61 ml/h (only 115 / 230 V AC, single gas path)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>Norprene</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>Fluran</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>Marprene</td>
<td></td>
</tr>
</tbody>
</table>

Please note hose material information during selection.

For 1 L/h pumps as well as 13 ml/h and 61 ml/h metering pumps the only hose material option is Norprene.

For 1 L/h pumps as well as 13 ml/h and 61 ml/h metering pumps the only hose connections choices are "Option 4 and 5".
2 Safety instructions

2.1 Important advice

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

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 unit will void the warranty provided by Bühler Technologies GmbH,
- The specifications and markings in the type plate must be observed,
- The threshold values in the data sheet and the instructions must be observed,
- Monitoring equipment / protection devices must be connected correctly,
- Service and repair work not described in these instructions are performed by Bühler Technologies GmbH,
- Genuine replacement parts must be used.

Erecting electrical systems in explosive areas requires compliance with the following national regulations:
- EN 60079-14
- IEC 60079-14
- National electric code (NEC)
- Canadian electric code (CEC)

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.
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,
- Inspections prior to initial operation and routine inspections according to the Ordinance on Industrial Safety and Health (BetrSichV) are performed,
- 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.

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.

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 condensate**

a) Protect yourself from toxic, corrosive condensate when performing any type of work.

b) Wear appropriate protective equipment.

c) Please note the national safety rules!
3 Transport and storage

The products should be transported only in its original packaging or a suitable replacement. When not in use, protect the equipment against moisture and heat. Keep it in a covered, dry and dust-free room.
4 Installation and connection

4.1 Installation site requirements

Be sure to maintain the approved ambient temperature. Please also note the technical data of the add-on gas cooler.

When mounting to a subframe, it is screwed directly to the cooler housing.

The unit is intended for use in enclosed areas. Adequate protection from the weather must be provided when used outdoors.

**Pump models for the USA and Canada 4492***2*** in explosive areas**

The peristaltic pumps must be installed inside a housing which requires a tool to open and meets the requirements of the overall installation with respect to the housing, layout, space requirement and condensate separation.

Select a housing which meets the requirements of the pump’s intended use with respect to mounting, spacing and creepage paths. The housing must be suitable for operating temperature ranges of -20 °C to min. 52 °C (US) and 0 °C to min. 52 °C (Canada).

It must be fully wired inside the housing. The cables and terminals used must be US-listed or (if applicable) CSA certified. They must be designed for the nominal voltage, the nominal current and operating temperature ranges of -20 °C to min. 52 °C (US) and 0 °C to min. 52 °C (Canada).

Water and contaminants must be prevented from entering the unit.

**ATEX and IECEx certified pump models 4492**22**

Wiring incl. earth conductor must be carried out using connection terminals and inside a housing which meets the requirements under EN/IEC 60947-7-1, 60947-7-2, or 60999-1 (if applicable) or is approved for the nominal voltage, nominal current and the operating temperature of 0 °C to at least 52 °C and is Ex e certified.

The earth conductor wiring must meet the earth conductor requirements per EN 60079-0 /IEC 60079-0.

The equipment must be installed in a lockable housing. The housing must have a minimum degree of protection of IP54 and meet the requirements under EN 60019-0 (IEC 60079-0) or be Ex e certified. The housing must require a tool to open. Install according to the installation requirements of IEC/EN 60079-14.

The housing must further meet the requirements of the overall installation with respect to the housing, layout, space requirement and condensate separation. The housing must be suitable for operating temperatures of 0 °C to min. 52 °C.

Water and contaminants must be prevented from entering the unit.

4.2 Mounting

**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.

There are two holes at the bottom of the mounting bracket. These can be used for screws.

Connect the tubes to the connectors and assure they are close. The pump direction is given on the cover.
4.2.1 Installing the built-in style

The built-in style (without housing) of the CPsingle is delivered pre-assembled. Proceed as follows to install:

Prepare the mounting plate for the pump. The locations of the bores are indicated in the adjacent drawing. The mounting plate must not be thicker than 3 mm.

Remove the knurled nuts M3 (1) at both ends.
Pull the entire pump head off the gear axle with a slight back and forth motion.
You will see two hex nuts M3 (2).

Remove the two hex nuts and insert the drive motor including retaining plate and pressfit stubs into the prepared coupler from the back.
Tighten the hex nuts M3.

Attach the pump head bracket (3) to the gear axle.
Insert the rotor (4) – cylindrical neck forward - into the pump head bracket, now slide the entire assembly onto the gear axle and the retaining bolts.
Tighten (1) knurled nuts.

Insert the hose fitting (5) with hose into the square breakouts.
Finally, attach the hood (6) and secure with the knurled nut.
# 4.3 Electrical connections

## 4.3.1 Electrical Connections (housing version / 115 V or 230 V)

Make sure that mains voltage and frequency meet the specifications of the motor (voltage tolerance ± 5% and frequency tolerance ± 2%).

Peristaltic pumps of housing version type SA-AC (230/115 V) are delivered as standard with a 2 m connecting cable.

The fixed connection cable for the housing version has three numbered braids and one PE connection.

- The protective earth has to be connected to the green/yellow of the connection cable.
- Select mains and protection earth cross section according to the rated current.
- For the electrical connections especially for the protective conductor use a cable cross-section from minimum 0.5 mm².
- Obey differing specifications on the type plate. The conditions at the installation site must meet all specifications on the type plate.

When connecting to a 115 V or 230 V supply, connect the following braids:

<table>
<thead>
<tr>
<th>Power supply</th>
<th>Connection</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>115 V</td>
<td>Braid 2; 3 and PE</td>
<td><strong>DANGER</strong> Braid 1 is live and must be professionally insulated!</td>
</tr>
<tr>
<td>230 V</td>
<td>Braids 1; 3 and PE</td>
<td><strong>DANGER</strong> Braid 2 is live and must be professionally insulated!</td>
</tr>
</tbody>
</table>

## 4.3.2 Electrical Connections (built-in version / 115 V or 230 V)

The three strands (500 mm long) moulded to the motor are white, yellow and blue.

When connecting to a 115 V or 230 V supply, connect the following braids:

<table>
<thead>
<tr>
<th>Power supply</th>
<th>Connection</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>115 V</td>
<td>white and blue</td>
<td><strong>DANGER</strong> The yellow strand is live and must be professionally insulated!</td>
</tr>
<tr>
<td>230 V</td>
<td>yellow and blue</td>
<td><strong>DANGER</strong> The white strand is live and must be professionally insulated!</td>
</tr>
</tbody>
</table>
5 Operation and control

NOTICE
The device must not be operated beyond its specifications.

The pump does not have a power switch. It starts running as soon as the power supply is turned on.

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

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 condensate**

Protect yourself from toxic, corrosive condensate when performing any type of work.
Wear appropriate protective equipment.

The hose inside the pumps is a wear item and must regularly be checked for leaks. Replace as described in chapter “Replacing the hose”.

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 attached 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 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.

**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 condensate**

Protect yourself from toxic, corrosive condensate when performing any type of work. Wear appropriate protective equipment.

7.2 Replacing the hose

- 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 aside.
- Pull off the cover.
- Pull the connections sidewards and remove the hose.
- Replace the hose (Bühler spare part) and remount the pump in reverse order.
- Reconnect power supply.
7.3 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:

7.3.1 Ordering information replacement hoses for 0.3 l/h pumps

<table>
<thead>
<tr>
<th>4492</th>
<th>0</th>
<th>0</th>
<th>3</th>
<th>5</th>
<th>X</th>
<th>X</th>
<th>Product characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Output per liter*</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.3 L/h</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 L/h</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.01 L/h or 0.06 L/h</td>
</tr>
</tbody>
</table>

**Hose material**
- 1 Norprene
- 2 Fluran
- 3 Marprene

**Hose connection**
- 1 straight hose nipple
- 2 angled hose nipple
- 3 straight and angled hose nipple
- 4 Screw connection (metric)
- 5 Screw-in connection (US)
- 6 angled hose nipple and screw connection (metric)
- 7 angled hose nipple and screw connection (US)
- 8 straight hose nipple and screw connection (metric)
- 9 straight hose nipple and screw connection (US)

* for required flow capacity, see technical data.

**Information about hose materials**

The standard hose in Norprene has excellent mechanical properties with high chemical resistance to many substances.

Marprene offers a long life for many applications with high chemical resistance, particularly when oxidation agents are present. This is therefore the first alternative to the standard Norprene hose.

Fluran is particularly beneficial if the condensate contains oils, petrols and other solvents. The mechanical properties should rather be assessed weaker, so we only recommend this hose material for the specified chemicals.

The flow capacity of Fluran and Marprene hoses is slightly lower.

Other materials are available on request.
8 Disposal

Dispose of parts so as not to endanger the health or environment. Follow the laws in the country of use for disposing of electronic components and devices during disposal.
### 9.1 Technical data

#### Technical Data Peristaltic Pumps CPsingle / CPdouble

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal voltage / power input:</td>
<td>230 V 50 Hz, 0.025 A</td>
</tr>
<tr>
<td>at ( T_{\text{amb}} = 20 , ^\circ\text{C} ) and under load</td>
<td>115 V 60 Hz, 0.044 A</td>
</tr>
<tr>
<td>Flow rate:</td>
<td>0.3 L/h (50 Hz) / 0.36 L/h (60 Hz) with standard hose</td>
</tr>
<tr>
<td></td>
<td>1.0 L/h (50 Hz) / 1.2 L/h (60 Hz)</td>
</tr>
<tr>
<td></td>
<td>13 ml/h</td>
</tr>
<tr>
<td></td>
<td>61 ml/h</td>
</tr>
<tr>
<td>Inlet vacuum:</td>
<td>max. 0.8 bar</td>
</tr>
<tr>
<td>Inlet pressure:</td>
<td>max. 1 bar</td>
</tr>
<tr>
<td>Output pressure:</td>
<td>1 bar</td>
</tr>
<tr>
<td>Protection class:</td>
<td>IP 44 (housing version)</td>
</tr>
<tr>
<td></td>
<td>IP 40 (built-in version)</td>
</tr>
<tr>
<td>Ambient temperatures:</td>
<td>0 … 50 °C</td>
</tr>
<tr>
<td>Cable lengths:</td>
<td>2 m (115/230 V housing version)</td>
</tr>
<tr>
<td></td>
<td>500 mm (115/230 V built-in version)</td>
</tr>
<tr>
<td>Materials</td>
<td></td>
</tr>
<tr>
<td>Hose:</td>
<td>Norprene (standard), Marprene, Fluran</td>
</tr>
<tr>
<td>Connections:</td>
<td>PVDF</td>
</tr>
<tr>
<td>Markings:</td>
<td>FM16ATEX0030X II 3G Ex nA IIC T4 Gc</td>
</tr>
<tr>
<td></td>
<td>IECEx FMG 16.0018X Ex nA IIC T4 Gc</td>
</tr>
<tr>
<td></td>
<td>USA/Canada: CL.1/Div. 2 Gps: A,B,C,D T4</td>
</tr>
</tbody>
</table>
9.2 Dimensions 115 / 230 V

Housing version

Housing version with 1 gas path

Housing version with 2 gas paths

Built-in versions

Built-in version with 1 gas path

Built-in version with 2 gas paths

(All dimensions in mm)
10 Attached documents
– Declaration of Conformity KX 450015
– Certificates: FM16ATEX0030X; FM16CA0040X; FM16US0070X
– RMA - Decontamination Statement
Hiermit erklärt Bühler Technologies GmbH, dass die nachfolgenden Produkte „Geräte“ im Sinne der Richtlinie

2014/34/EU (ATEX)

In ihrer aktuellen Fassung sind.

Folgende Richtlinien wurden berücksichtigt:

2014/35/EU (NSR/LVD)
2014/30/EU (EMV/EMC)

Produkt / products: Peristaltikpumpe / Peristaltic pump
Typ / type: CPsingle, CPdouble
Seriennummer / serial number: 4492XXX2X (X = 0-9)

Die Produkte werden entsprechend der derzeitig gültigen ATEX-Richtlinie innerhalb der internen Fertigungskontrolle folgendermaßen gekennzeichnet:

**II 3G c IIc T4 X**
Kennzeichnung unter Berücksichtigung des nicht-elektrischen Explosionsschutzes
Marking, taking into account non-electrical explosion protection

**II 3G Ex nA IIc T4 Gc**
Kennzeichnung unter Berücksichtigung des elektrischen Explosionsschutzes
Marking, taking into account electrical explosion protection

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 13463-1:2009
- EN 13463-5
- EN 60079-0:2012 + A11:2013
- EN 60079-15:2010

Zusätzlich wurden berücksichtigt:

In addition, the following standards have been used:

- TRBS 2153

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 05.12.2016

Stefan Eschweiler
Geschäftsführer – Managing Director

Frank Pospiech
Geschäftsführer – Managing Director
1 TYPE EXAMINATION CERTIFICATE

2 Equipment or Protective systems intended for use in Potentially
Explosive Atmospheres - Directive 2014/34/EU

3 Type Examination Certificate No: FM16ATEX0030X

4 Equipment or protective system: Model 4492 CPsingle and CPdouble Condensate
   Pumps

5 Name of Applicant: Bühler Technologies GmbH

6 Address of Applicant: Harkortstrasse 29, Ratingen, DE-40880, Germany

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to
   this certificate and documents therein referred to.

8 FM Approvals Ltd. certifies that this equipment has been found to comply with the Essential Health and
   Safety Requirements relating to the design and construction of equipment intended for use in potentially
   explosive atmospheres given in Annex II to the Directive.

   The examination and test results are recorded in confidential report number:

   3058168 dated 24th August 2016

9 Compliance with the Essential Health and Safety Requirements, with the exception of those identified in
   item 15 of the schedule to this certificate, has been assessed by compliance with the following documents:


10 If the sign ‘X’ is placed after the certificate number, it indicates that the equipment is subject to specific
    conditions of use specified in the schedule to this certificate.

11 This Type Examination certificate relates only to the design, examination and tests of the specified
    equipment or protective system in accordance to the Directive 2014/34/EU. Further requirements of the
    Directive apply to the manufacturing process and supply of this equipment or protective system. These
    are not covered by this certificate.

12 The marking of the equipment or protective system shall include:

   II 3 G Ex nA IIC T4 Ta = 0°C to 50°C Gc

Mick Gower
Certification Manager, FM Approvals Ltd.

Issue date: 18th January 2017

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE
13 Description of Equipment or Protective System:

**General** – The 4492 CPsingle and CPdouble peristaltic pumps are intended to discharge condensate from gas analysis systems in commercial applications. The pumps consist of a pump head and drive motor and operate on the peristaltic principle. The output axle of the gear motor turns a rotor on which two diametrically arranged rollers press a hose against a dimensionally adapted hood and the continuous rotation displaces the contents of the hose in the direction of rotation. The constructive selection of rotor speed and hose diameter also allow minimal or larger amounts to be conveyed, depending on the viscosity of the medium to be pumped.

**Construction** - The pumps are provided with flying leads. As their physical configuration is not compatible with Zone 2 wiring methods, installation within a suitable final enclosure is required.

**Ratings** - The 4492 CPsingle and CPdouble peristaltic pumps operate at 115 Vac or 230 Vac, selectable by the installer's wiring configuration. The pumps are rated for use in an ambient temperature range of 0°C to +50°C.

4492abcdefg, CPsingle and CPdouble condensate pumps
NI/I/2/ABCD/T4  0°C < Ta < 50°C

a = Condensate path; 1 or 2
b = Building version; 1 or 2
c = Voltage; 2
d = Application area; 2
e = Hose material; 1, 2 or 3
f = Liters/hour; 0, 1, 2 or 3
g = Hose connections; 1, 2, 3, 4, 5, 6, 7, 8 or 9

14 Specific Conditions of Use:

1. The equipment shall be installed within a tool-secured enclosure providing a minimum degree of ingress protection of IP54 and meeting the requirements of EN 60079-0 or certified as Ex e and in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application. The enclosure shall be rated for the service temperature range of 0°C to 52°C.

2. Wiring, including the earth conductor, shall be terminated within the enclosure using terminals meeting EN 60947-7-1, 60947-7-2, or 60999-1, as applicable, or certified as Ex e and rated for the marked supply voltage, load current and service temperature range of 0°C to 52°C.

3. The earthing scheme shall be constructed in accordance with the earthing requirements of EN 60079-0.

15 Essential Health and Safety Requirements:

The relevant EHSRs that have not been addressed by the standards listed in this certificate have been identified and assessed in the confidential report identified in item 8.
16 **Test and Assessment Procedure and Conditions:**

This Type Examination Certificate is the result of testing of a sample of the product submitted, in accordance with the provisions of the relevant specific standard(s), and assessment of supporting documentation. It does not imply an assessment of the whole production.

Whilst this certificate may be used in support of a manufacturer’s claim for CE Marking, FM Approvals Ltd accepts no responsibility for the compliance of the equipment against all applicable Directives in all applications.

This Certificate has been issued in accordance with FM Approvals Ltd’s ATEX Certification Scheme.

17 **Schedule Drawings**

A list of the significant parts of the technical documentation is annexed to this certificate and a copy has been kept by FM Approvals Ltd.

18 **Certificate History**

Details of the supplements to this certificate are described below:

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>01st September 2016</td>
<td>Original Issue.</td>
</tr>
<tr>
<td>28th October 2016</td>
<td><strong>Supplement 1:</strong> Report Reference: RR207007 dated 25th October 2016</td>
</tr>
<tr>
<td></td>
<td>Description of the Change: Minor revisions to instructions not impacting certification</td>
</tr>
<tr>
<td>18th January 2017</td>
<td><strong>Supplement 2:</strong> Report Reference: RR208001 dated 15th January 2017</td>
</tr>
<tr>
<td></td>
<td>Description of the Change: Unique instruction manual number created for ‘Ex’ pump variants. Marking label revised.</td>
</tr>
</tbody>
</table>
CERTIFICATE OF CONFORMITY

1. HAZARDOUS LOCATION ELECTRICAL EQUIPMENT PER CANADIAN REQUIREMENTS

2. Certificate No: FM16CA0040X

3. Equipment: Model 4492 CPsingle and CPdouble Condensate Pumps (Type Reference and Name)

4. Name of Listing Company: Bühler Technologies GmbH

5. Address of Listing Company: Harkortstrasse 29, DE-40880, Ratingen, Germany

6. The examination and test results are recorded in confidential report number:
   3058168 dated 24th August 2016

7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:
   CSA-C22.2 No. 213: R2013, CAN/CSA-C22.2 No. 61010-1:2004

8. If the sign ‘X’ is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.

9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

10. Equipment Ratings:

    Class I, Division 2, Groups A, B, C and D, T4 hazardous (classified) locations with an ambient temperature rating of 0°C to +50°C

11. The marking of the equipment shall include:

Certificate issued by:

J. E. Marquedant
Manager, Electrical Systems

24 August 2016
Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
T: +1 (1) 781 762 4300   F: +1 (1) 781 762 9375   E-mail: information@fmapprovals.com   www.fmapprovals.com

F 348 (Mar 16)
12. **Description of Equipment:**

**General** – The 4492 CPsingle and CPdouble peristaltic pumps are intended to discharge condensate from gas analysis systems in commercial applications. The pumps consist of a pump head and drive motor and operate on the peristaltic principle. The output axle of the gear motor turns a rotor on which two diametrically arranged rollers press a hose against a dimensionally adapted hood and the continuous rotation displaces the contents of the hose in the direction of rotation. The constructive selection of rotor speed and hose diameter also allow minimal or larger amounts to be conveyed, depending on the viscosity of the medium to be pumped.

**Construction** - The pumps are provided with flying leads. As their physical configuration is not compatible with Class I, Division 2 wiring methods, installation within a suitable final enclosure is required.

**Ratings** - The 4492 CPsingle and CPdouble peristaltic pumps operate at 115 Vac or 230 Vac, selectable by the installer’s wiring configuration. The pumps are rated for use in an ambient temperature range of 0°C to +50°C.

4492abcdefg, CPsingle and CPdouble condensate pumps
NI/I/2/ABCD/T4  0°C < Ta < 50°C

a = Condensate path; 1 or 2  
b = Building version; 1 or 2  
c = Voltage; 2  
d = Application area; 2  
e = Hose material; 1, 2 or 3  
f = Liters/hour; 0, 1, 2 or 3  
g = Hose connections; 1, 2, 3, 4, 5, 6, 7, 8 or 9

13. **Specific Conditions of Use:**

1. The equipment shall be installed within a tool-secured enclosure in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application. The enclosure shall be rated for the service temperature range of 0°C to 52°C.

2. Wiring shall be terminated within the enclosure using Canadian-Certified terminal(s) rated for the marked supply voltage, load current and service temperature range of 0°C to 52°C.

14. **Test and Assessment Procedure and Conditions:**

This Certificate has been issued in accordance with FM Approvals Canadian Certification Scheme.

15. **Schedule Drawings**

A copy of the technical documentation has been kept by FM Approvals.
16. **Certificate History**

   Details of the supplements to this certificate are described below:

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>24(^{th}) August 2016</td>
<td>Original Issue.</td>
</tr>
</tbody>
</table>
CERTIFICATE OF CONFORMITY

1. HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS


3. Equipment: Model 4492 CPsingle and CPdouble Condensate Pumps (Type Reference and Name)

4. Name of Listing Company: Bühler Technologies GmbH

5. Address of Listing Company: Harkortstrasse 29, DE-40880, Ratingen, Germany

6. The examination and test results are recorded in confidential report number: 3058168 dated 24th August 2016

7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:


8. If the sign ‘X’ is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.

9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

10. Equipment Ratings:

   Nonincendive for Class I, Division 2, Groups A, B, C and D, T4 hazardous (classified) locations with an ambient temperature rating of 0°C to +50°C

11. The marking of the equipment shall include:

Certificate issued by:

J. E. Marquedant
Manager, Electrical Systems

24 August 2016
Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
T: +1 (1) 781 762 4300  F: +1 (1) 781 762 9375  E-mail: information@fmapprovals.com  www.fmapprovals.com

F 347 (Mar 16)  Page 1 of 3
Class I Division 2, Groups A, B, C, D; T4 Ta = 0°C to +50°C

12. Description of Equipment:
   
   General – The 4492 CPsingle and CPdouble peristaltic pumps are intended to discharge condensate from gas analysis systems in commercial applications. The pumps consist of a pump head and drive motor and operate on the peristaltic principle. The output axle of the gear motor turns a rotor on which two diametrically arranged rollers press a hose against a dimensionally adapted hood and the continuous rotation displaces the contents of the hose in the direction of rotation. The constructive selection of rotor speed and hose diameter also allow minimal or larger amounts to be conveyed, depending on the viscosity of the medium to be pumped.

   Construction - The pumps are provided with flying leads. As their physical configuration is not compatible with Class I, Division 2 wiring methods, installation within a suitable final enclosure is required.

   Ratings - The 4492 CPsingle and CPdouble peristaltic pumps operate at 115 Vac or 230 Vac, selectable by the installer's wiring configuration. The pumps are rated for use in an ambient temperature range of 0°C to +50°C.

4492abcdefg, CPsingle and CPdouble condensate pumps
NI/I/2/ABCD/T4  0°C < Ta < 50°C
   a = Condensate path; 1 or 2
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   c = Voltage; 2
   d = Application area; 2
   e = Hose material; 1, 2 or 3
   f = Liters/hour; 0, 1, 2 or 3
   g = Hose connections; 1, 2, 3, 4, 5, 6, 7, 8 or 9

13. Specific Conditions of Use:
   
   1. The equipment shall be installed within a tool-secured enclosure in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application. The enclosure shall be rated for a service temperature range of -20°C to 52°C.

   2. Wiring shall be terminated within the enclosure using US-Listed terminal(s) rated for the marked supply voltage and load current and a service temperature range of -20°C to 52°C.

14. Test and Assessment Procedure and Conditions:

   This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

15. Schedule Drawings

   A copy of the technical documentation has been kept by FM Approvals.

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FM Approvals LLC, 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
T: +1 (1) 781 762 4300  F: +1 (1) 781 762 9375  E-mail: information@fmapprovals.com  www.fmapprovals.com
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<tbody>
<tr>
<td>24th August 2016</td>
<td>Original Issue.</td>
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</tbody>
</table>
Um eine schnelle und reibungslose Bearbeitung Ihres Anliegens zu erreichen, füllen Sie bitte diesen Rücksendeschein aus. Eine genaue Fehlerbeschreibung ist für die Ursachenanalyse nötig und hilft bei der schnellen Bearbeitung des Vorgangs. Die Aussage „Defekt“ hilft bei der Fehlersuche leider nicht.

Die RMA-Nummer bekommen Sie von Ihrem Ansprechpartner im Vertrieb oder Service.


Bringen Sie den Rücksendeschein mit der Dekontaminierungsklärung bitte zusammen mit den Versandpapieren in einer Klarsichthülle außen an der Verpackung an. Ansonsten ist eine Bearbeitung Ihres Reparaturauftrages nicht möglich!

Angaben zum Absender:

<table>
<thead>
<tr>
<th>Firma / Company</th>
<th>Ansprechpartner / Contact person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anschrift / Address</td>
<td>Abteilung / Department</td>
</tr>
<tr>
<td></td>
<td>E-Mail / E-Mail:</td>
</tr>
<tr>
<td></td>
<td>Tel. / Phone</td>
</tr>
<tr>
<td></td>
<td>Fax / Fax:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Artikelnummer / Item number</th>
<th>RMA-Nr. / RMA no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auftragsnummer / Order number</td>
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<tr>
<td>Anzahl / Quantity</td>
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<table>
<thead>
<tr>
<th>Rücksendegrund / Return reason</th>
<th>Vorgangsnummer des Kunden / Customer transaction number:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reparatur / Repair</td>
<td></td>
</tr>
<tr>
<td>Garantie / Warranty</td>
<td></td>
</tr>
<tr>
<td>Zur Prüfung / For inspection</td>
<td></td>
</tr>
<tr>
<td>Rückgabe / Return</td>
<td></td>
</tr>
</tbody>
</table>

Fehlerbeschreibung / Description of the problem:

<table>
<thead>
<tr>
<th>Ort, Datum / Place, Date</th>
<th>Unterschrift / Stempel / Signature / Stamp:</th>
</tr>
</thead>
</table>
Bitte füllen Sie diese Dekontaminierungserklärung für jedes einzelne Gerät aus.

<table>
<thead>
<tr>
<th>Gerät / Device</th>
<th>RMA-Nr. / RMA no:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Ich bestätige hiermit, dass das oben spezifizierte Gerät ordnungsgemäß gereinigt und dekontaminiert wurde und keinerlei Gefahren im Umgang mit dem Produkt bestehen.

Ansonsten ist die mögliche Gefährdung genauer zu beschreiben:

Aggregatzustand (bitte ankreuzen):

- □ Flüssig / Liquid
- □ Fest / Solid
- □ Pulvrig / Powdery
- □ Gasförmig / Gaseous

Folgende Warnhinweise sind zu beachten (bitte ankreuzen):

- Explosiv / Explosive
- Giftig / Tödlich / Toxic / lethal
- Entzündliche Stoffe / Flammable substances
- Brandfördernd / Oxidizing
- Komprimierte Gase / Compressed gasses
- Gesundheitsgefährdend / Hazardous to health
- Gesundheitsschädlich / Harmful to health
- Umweltgefährdend / Harmful to the environment

Bitte legen Sie ein aktuelles Datenblatt des Gefahrenstoffs bei!

Please complete this decontamination statement for each individual item

I herewith declare that the device as specified above has been properly cleaned and decontaminated and that there are no risks present when dealing with the device.

In other cases, please describe the hazards in detail:

Aggregate state (please check):

Please note the following warnings (please check):

Please include an updated data sheet of the hazardous substance!

Ort, Datum / Place, Date: ____________________________

Unterschrift / Stempel / Signature / Stamp: ____________________________