bürkert
FLUID CONTROL SYSTEMS

# Type 8906

Online Analysis System on backplate

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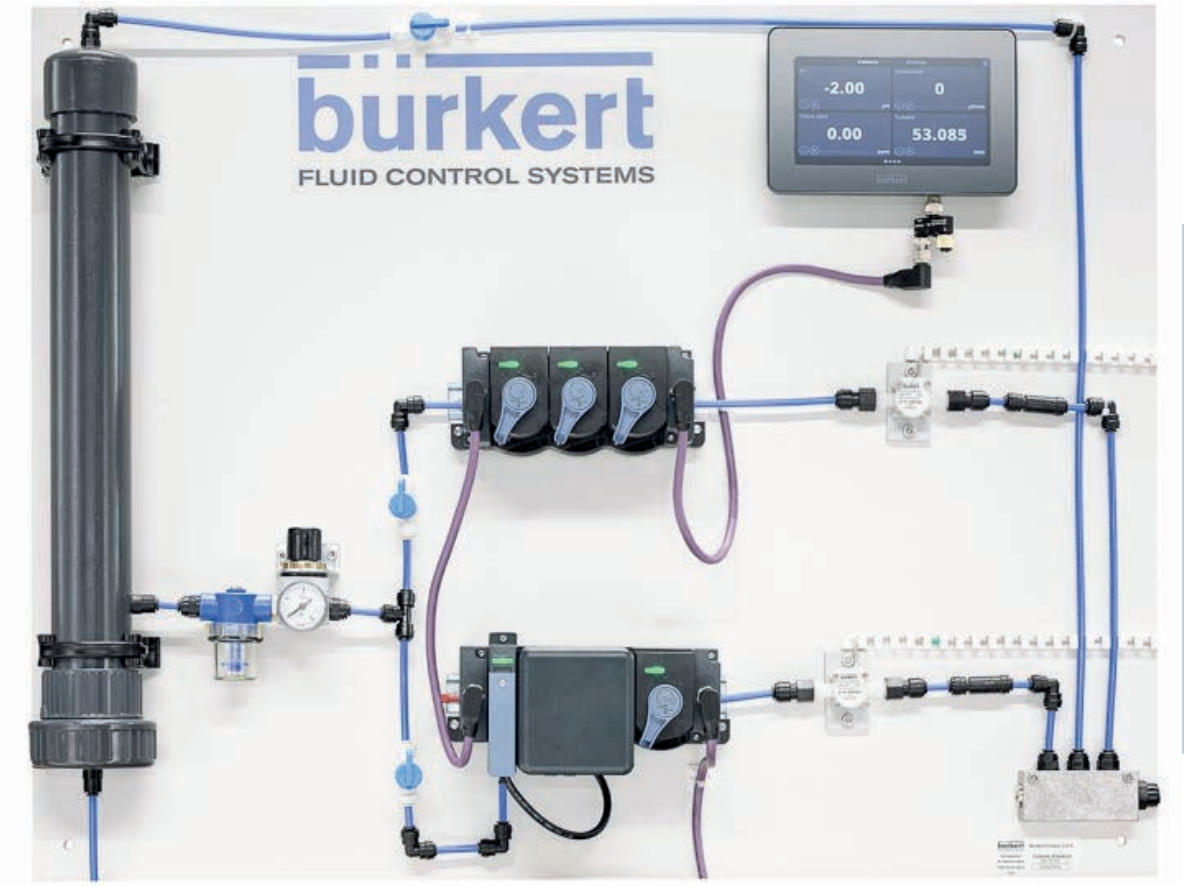


## Operating Instructions

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# 1 ABOUT THIS DOCUMENT

The document is an important part of the system and guides the user to safe installation and operation. The information and instructions in this document are binding for the use of the system.

- ▸ Before using the system for the first time, read and observe the whole safety chapter.
- ▸ Before starting any work on the system, read and observe the respective sections of the document.
- ▸ Keep the document available for reference and give it to the next user.
- ▸ Contact the Bürkert sales office for any questions.

Further informations concerning the system at: country.burkert.com.

## 1.1 Manufacturer

**Bürkert SAS**

20, Rue du Giessen

F-67220 TRIEMBACH-AU-VAL

The contact adresses are available at country.burkert.com in the menu Contact.

## 1.2 Symbols used

**DANGER**

**Warns of a danger that leads to death or serious injuries.**

**WARNING**

**Warns of a danger that can lead to death or serious injuries.**

**CAUTION**

**Warns against a possible risk.**

**NOTICE**

**Warns against material damage.**

- ▸ Failure to observe this warning may result in damage to the system.

Indicates important additional information, tips and recommendations.

Refers to information in this document or in other documents.

- ▸ Indicates an instruction to be carried out to avoid a danger, a warning or a possible risk.

→ Indicates a step to be carried out.

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## 1.3 Terms and abbreviations

The word "system" used in the Operating Instructions always refers to the Online Analysis measurement system Type 8906 on backplate.

The term "büS" used in the Operating Instructions refers to the industrial communication, developed by Bürkert, based on the CANopen protocol. The term "büS" refers to the Bürkert system bus.

→ For more information on büS, read the cabling guide available in English and German (Cabling_guide_for_büS_networks.pdf) at country.burkert.com search for "Guide for planning büS networks".

→ For more information on CANopen which is related to the system, refer to the Operating Instructions "CANopen Network configuration" at country.burkert.com.

# 2 SAFETY

## 2.1 Intended use

**Use of the system that does not comply with the instructions could present risks to people, nearby installations and the environment.**

The system is intended, depending on the sensor cubes and the electronic modules fitted, solely for the acquisition, processing, transmission and regulation of physico-chemical parameters such as conductivity, OPR, pH, Chlorine or Chlorine dioxide, dissolved iron and/or oxygen, turbidity, Nitrate, UV 254, temperature or flow in drinking water.

- The system must only be used for the analysis of aqueous fluids with water qualities equal or better than drinking water. The use of other media can damage the sensors or the components of the system, generate the development of bacterium in the pipes or inside the sensors. For using the system with other media than water, please contact the Bürkert Customer Service.
- Use the system in compliance with the characteristics and start-up/commissioning and use conditions specified in the contractual documents and in the Operating Instructions of all the electronic modules, of all the sensor cubes and of all the components that are used in the system.
- Do not use the system for security applications.
- Store, transport, install and operate the system properly.
- Only operate a system in perfect working order.
- Only use the system as intended.
- Only combine the system with third-party devices or components recommended and authorized by Bürkert.
- The system must be protected against electromagnetic interference, ultraviolet rays and, when installed outdoors, the effects of climatic conditions.

## 2.2 Safety instructions

This safety information does not take into account any contingencies or occurrences that may arise during installation, use and maintenance of the system.

The operating company is responsible for the respect of the local safety regulations including for the staff safety.

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**Risk of injury due to electrical voltage.**

- If the system is installed outdoors, make sure that all the elements of the system and all the conductors are protected from the rain and humidity.
- Before carrying out work on the system, disconnect the electrical power for all the conductors and isolate it.
- All equipment connected to the system must be double insulated with respect to the mains according to the standard UL/EN 61010-1.
- Observe all applicable accident protection and safety regulations for electrical equipment.

**Risk of injury due to pressure in the system.**

- Before any intervention on the system, stop the circulation of fluid, cut off the pressure and drain the pipe.
- Before any intervention on the system, make sure that there is no pressure in the pipe.
- Observe the dependency between the fluid temperature and the fluid pressure.

**WARNING**

**Risk of injury due to nonconforming assembly.**

- The system must only be assembled by qualified and skilled staff with the appropriate tools.

**Risk of injury due to unintentional switch on of power supply or uncontrolled restarting of the system.**

- Avoid unintentional activation of the system.
- Guarantee a set or controlled restarting of the process subsequent to any intervention on the system.

**CAUTION**

**Unwanted development of bacterium when using non opaque flexible hoses.**

- Use opaque flexible hoses, preferably in PE, PTFE or PVDF, to do the fluidic connections.
- Do not use flexible hoses in PVC.

**CAUTION**

**Risk of injury due to a heavy system.**

A heavy system can fall down during transport or during installation and cause injuries.

- Transport, install and dismantle a heavy system with the help of another person.
- Use appropriate tools.
- Use safety gloves and wear security shoes and any other appropriate security equipment to handle the system.

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**Risk of burns due to high fluid temperatures.**

- Use safety gloves to handle the system.
- Before opening the pipe, stop the circulation of fluid and drain the pipe.
- Before opening the pipe, make sure that the pipe is completely empty.

**Risk of injury due to the nature of the fluid.**

- Respect the prevailing regulations on accident prevention and safety relating to the use of dangerous fluids.

**Various dangerous situations**

To avoid injury, observe the following instructions:

- Do not use the system in explosive atmospheres.
- Do not use the system in an environment incompatible with the system materials.
- Do not use fluid that is incompatible with the system materials. Find the compatibility chart on our homepage: country.burkert.com.
- Do not subject the system to mechanical stress.
- Do not make any modifications to the system.
- Prevent any unintentional power supply switch-on.
- Only qualified and skilled staff may carry out the installation and maintenance work.
- Ensure a defined or controlled restarting of the process after a power supply interruption.
- Observe the general technical rules.

**NOTICE**

**Elements and components that are both sensitive to electrostatic discharges**

The system contains electronic components that are sensitive to electrostatic discharges. The components may be damaged if they are touched by an electrostatically charged person or object. In the worst case scenario, the components are instantly destroyed or go out of order as soon as they are activated.

- To minimise or even avoid all damage due to an electrostatic discharge, take all the precautions that are described in the EN 61340-5-1 norm.
- Do not touch any of the live electrical components.

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# 3 DESCRIPTION

## 3.1 Area of application

The Online Analysis measurement system Type 8906 on backplate is, independantly to its arrangement, dedicated to provide physico-chemical parameters and process values used to check and control the quality of clear water, such as surface water, underground water, drinking water, softened or osmotic water.

Defined as a modulable construction, the system Type 8906 can provide different measurements, arrangements and communication protocol, selected and adjusted to the expressed requirements.

Depending on the arrangement selected, one or more of the following measurements can be proposed: conductivity, OPR, pH, Chlorine or Chlorine dioxide, dissolved iron and/or oxygen, turbidity, Nitrate, UV 254, temperature or flow.

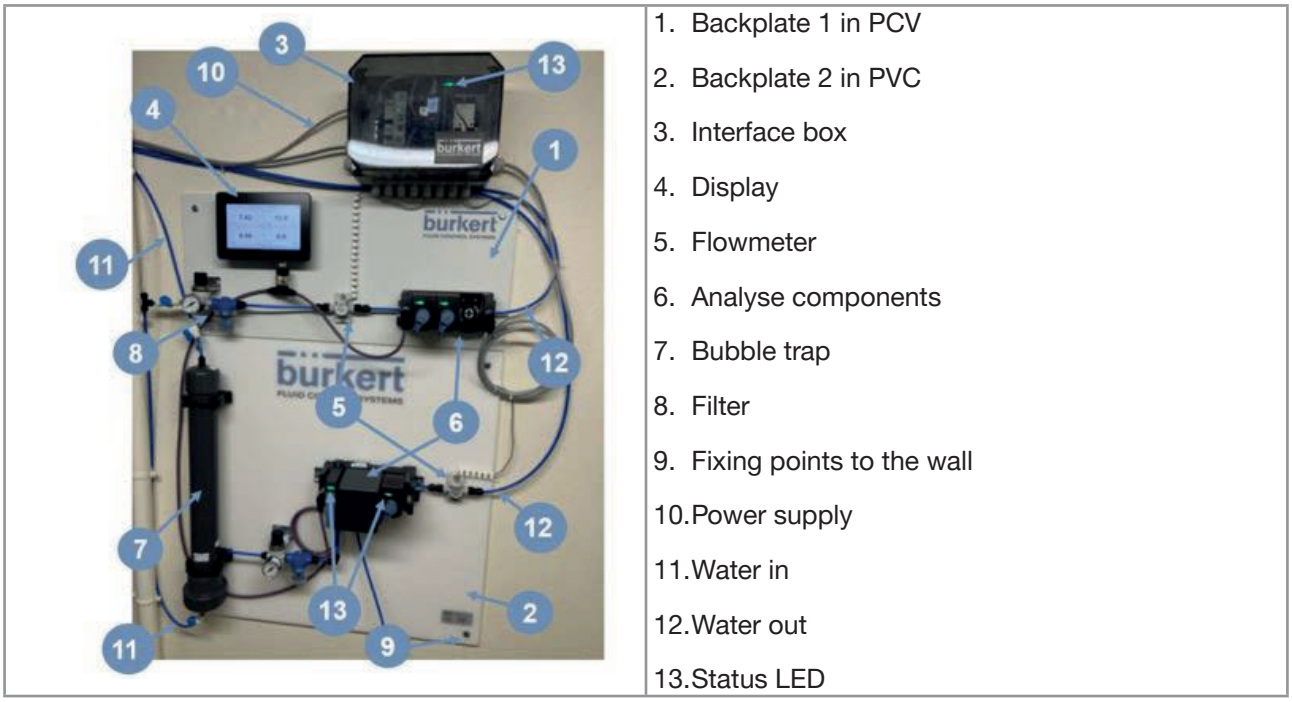
## 3.2 System overview

The Online Analysis measurement system Type 8906 on backplate is a flexible and tunable solution designed to a specific application.

Depending on the selected configuration, the system Type 8906 can contain:

- One or several PVC backplates that can be fixed on the wall and that are wired to the water supply to be analyzed. Each backplate can be tuned with specific functions (display, flowmeter, bubble trap, cleaning system…) and can perform specific measurement of the connected fluid.
- One or several boxes, fixed on the wall and wired to the power supply. The boxes can be tuned with specific functions (IO-modules, gateway, power supply…).

The backplates and boxes have to be wired together. See chapter 5 Installation.




1. Backplate 1 in PCV
2. Backplate 2 in PVC
3. Interface box
4. Display
5. Flowmeter
6. Analyse components
7. Bubble trap
8. Filter
9. Fixing points to the wall
10. Power supply
11. Water in
12. Water out
13. Status LED

*Fig. 1: Example of arrangement with 2 backplates and 1 interface box*

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## 3.3 Measuring principle

The Online Analysis measurement system Type 8906 on backplate is dedicated to the analyze, the acquisition and the regulation of clear water (drinking water or industrial water), connected to the installation through different type of sensors.

The use of the system with liquids other than water (drinking water or clear industrial water) may damage the sensors or the components of the system, generate the development of bacterium in the pipes or inside the sensors. For using the system with other media than water, please contact the Bürkert Customer Service.

Depending on the configuration of the system, different measuring and/or analysis sensors can be proposed, each of them having their own measuring principles, assembly constraints and recommendations.

### 3.3.1 Sensor cubes

For measuring and monitoring of characteristics such as conductivity, pH, ORP, Chlorine and/or turbidity, the Online Analysis measurement system Type 8906 on backplate is based on Bürkert's sensor cube technology, mounted on a backplane which is fixed on the PVC backplates.

All sensor cubes have the same dimensions, can be interchanged and can offer different type of measurements. The following sensor cubes are available for the system:

- a pH and temperature sensor cube
- a chlorine and temperature sensor cube
- a chlorine dioxide and temperature sensor cube
- a conductivity and temperature sensor cube
- an ORP (redox potential) sensor cube
- a turbidity sensor cube

Each sensor cube is identified by a specific logo on its push-button:

| | MS01 | MS02 | | MS03 | MS04 | MS05 |
|---|---|---|---|---|---|---|
| **Logo on the push-button** |  |  |  |  |  |  |
| **Measured physical quantity** | pH and temperature | Chlorine and temperature | Chlorine dioxide and temperature | Conductivity and temperature | Redox potential | Turbidity |

**Backplane for the sensor cubes**

Each sensor cube is plugged on a sensor cube backplane.

All the backplanes for the sensor cubes have the same design. Thus any sensor cube can be plugged on any sensor cube backplane in the system Type 8906.

The backplanes are connected to each other and feed the sensor cubes with the power supply and the process water.

The backplanes are connected in parallel, i.e. if a sensor cube is removed, the other sensor cubes continue measuring.

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When the sensor cube is removed from its backplane, the interface is tight.

A locking pin prevents from unintentional move of the bayonet lever.

**DANGER**

**Risk of injury due to the nature of the fluid if no sensor cube is plugged on a backplane.**

If the fluid outlet of the backplane is open, fluid may splash on you.

- The fluid outlet must stay closed if the backplane has no sensor cube.
- Do not move the bayonet lever with the hand.

**NOTICE**

**The backplane may be damaged if no sensor cube is plugged on a backplane.**

A short-circuit may damage the backplane if the electrical contacts are touched with a conductive material.

- ▸ Do not touch the electrical contacts.
- ▸ Cover the electrical contacts with a correct protection cap: contact the manufacturer.

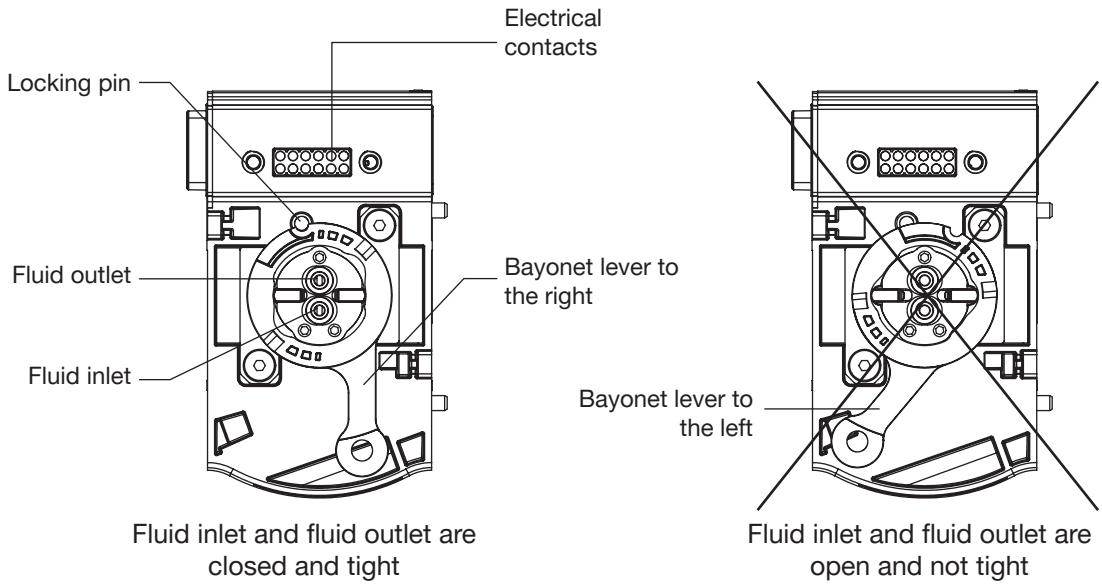


*Fig. 2: Description of a sensor cube backplane*

To mount a sensor cube on the backplane, refer to chapter 5.5.

To remove a sensor cube from the backplane, refer to chapter 5.6.

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Depending on your system configuration, please refer to the Operating Instructions of the sensor cubes to get more information on technical data, adjustment, and maintenance of the sensor cubes.

Refer to the following types, available at: country.burkert.com:

- MS01 pH sensor cube
- MS02 Chlorine sensor cube
- MS03 Conductivity sensor cube
- MS04 Redox potential sensor cube
- MS05 Turbidity sensor cube

## 3.3.2 FIA sensor cube for iron content Type MS06

Depending on the system configuration, the FIA sensor cube Type MS06 analyses the sample water using a reagent to determine the iron content. The analysis is performed according to the principle of flow injection analysis.

The FIA sensor cube for iron content Type MS06 is necessarily combined with the reagent unit Type MZ30, which integrates the reagent, the required calibration solution and the cleaning solution.

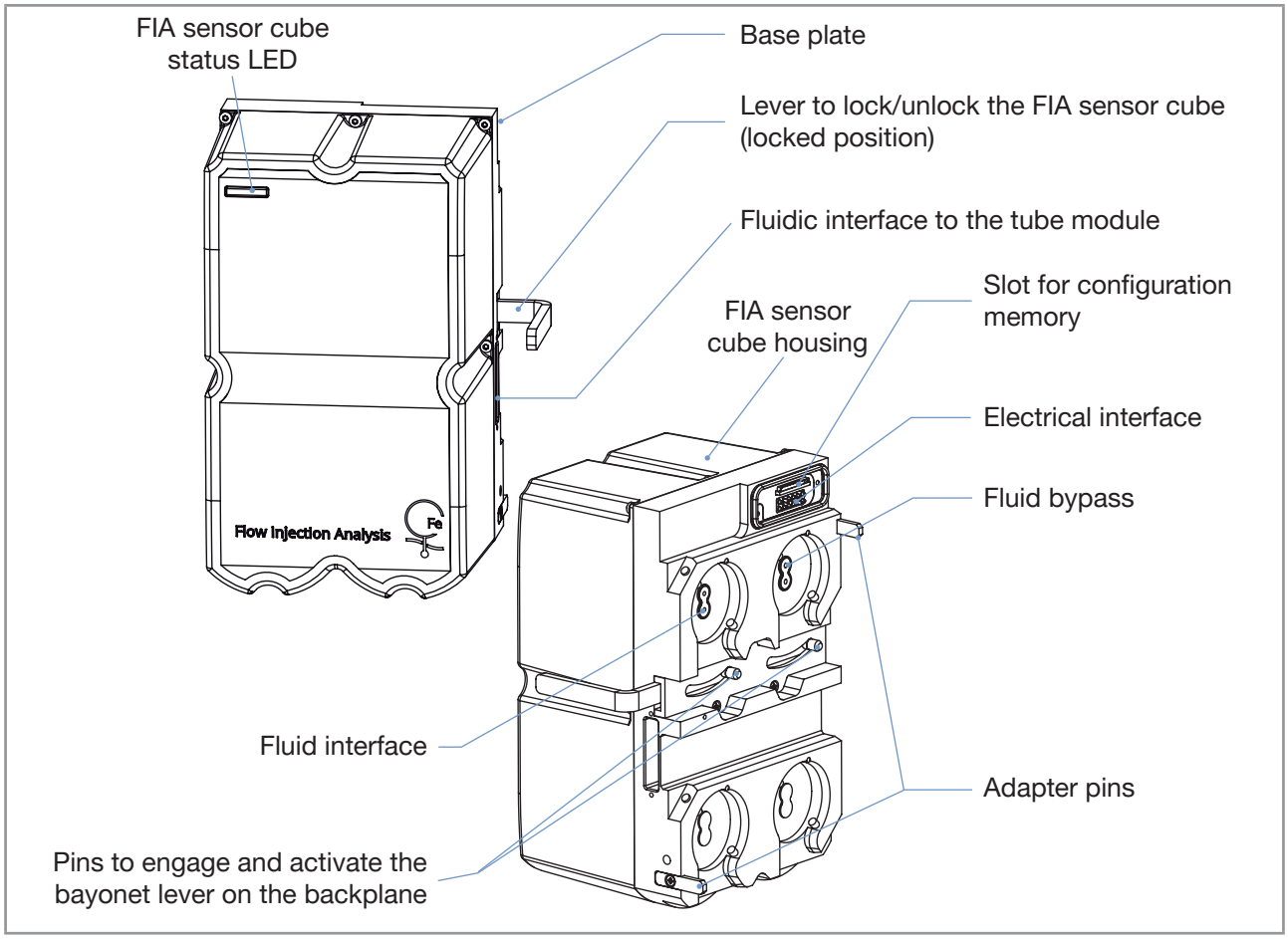


*Fig. 3: Description of the FIA sensor cube for iron content*

On the Online Analysis measurement system Type 8906 on backplate, the FIA sensor cube is mounted and fitted on a 3-backplates arrangement as illustrated in Fig. 4.

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**NOTICE**

**The IP65 protection rating is not guaranteed if the blanking plates are not screwed onto the electrical interfaces of the backplanes.**

- Make sure that each of the blanking plates illustrated in Fig. 4 is equipped with a seal.
- Make sure that the blanking plates illustrated in Fig. 4 are screwed on the correct electrical interfaces of the backplanes.
- Tighten the blanking plates with a torque of 0.6 N·m (i. e. 0.44 ft·lbf).

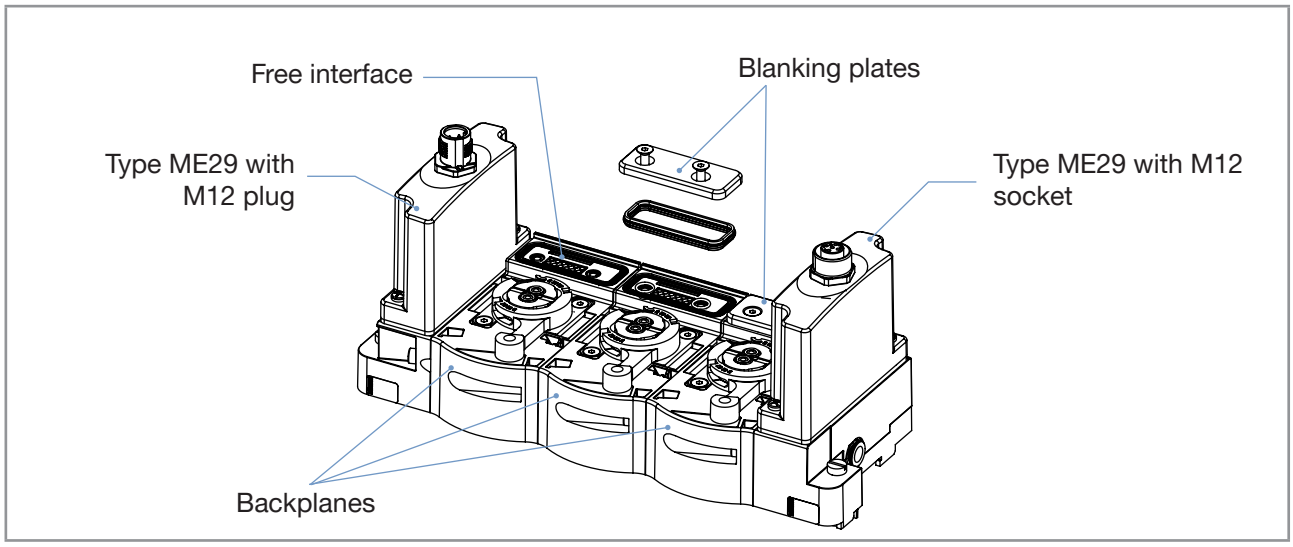


*Fig. 4: Backplanes for the FIA sensor cube Type MS06; arrangement and fitting of a 3 backplane combination*

To mount the FIA sensor cube for iron content on the backplane, refer to chapter 5.5.

For more information on the sensor Type MS06, please refer to the Operating Instructions available at country.burkert.com.

### 3.3.3 SAC 254 mm sensor Type MS08 for dissolved organics measurement

Depending on the system configuration, the SAC 254 mm sensor Type MS08 analyses the UV absorption in the UV range at 254 mm in the fluid to detect dissolved organic matter. This sensor is a photometer, realizing an optical measurement without the use of any reagent.

On the Online Analysis measurement system Type 8906 on backplate, the SAC 254 mm sensor Type MS08 is directly installed with its measuring chamber. This sensor cannot be used out of this chamber.

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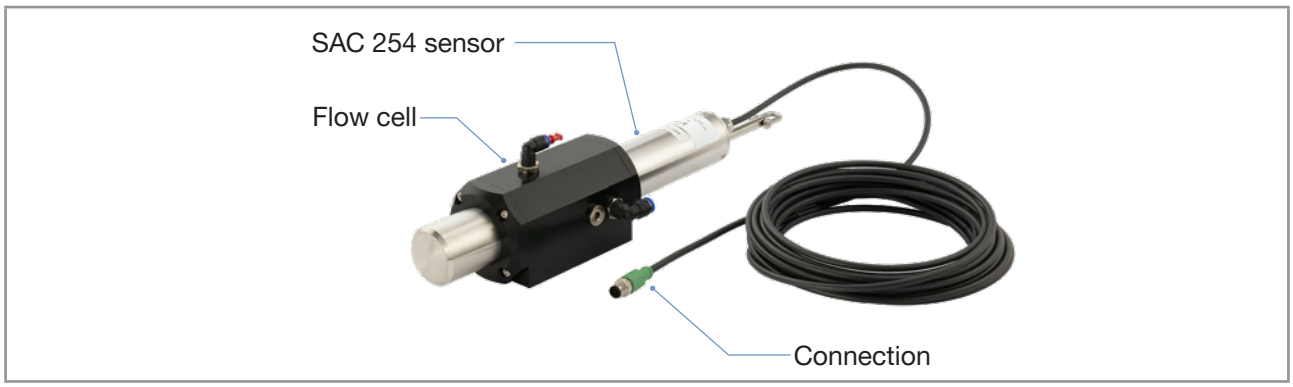


*Fig. 5: Description of the SAC 254 mm sensor Type MS08*

For more information on the SAC 254 mm sensor Type MS08, please refer to the Operating Instructions available at country.burkert.com.

### 3.3.4 Nitrate sensor Type MS09

Depending on the system configuration, the nitrate sensor Type MS09 analyses the UV absorption measurement in the fluid to determine the nitrate content. This sensor is a photometer, realizing an optical measurement without the use of any reagent.

On the Online Analysis measurement system Type 8906 on backplate, the nitrate sensor Type MS09 is directly installed with its measuring chamber. This sensor cannot be used out of this chamber.

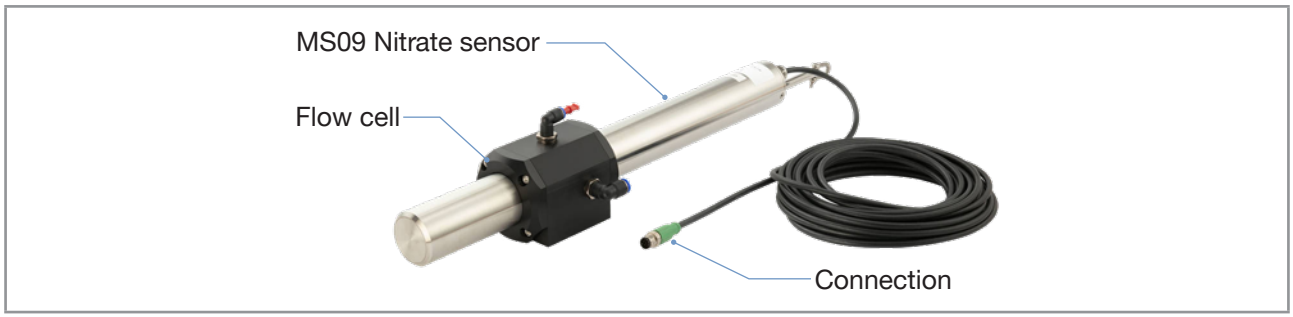


*Fig. 6: Description of the nitrate sensor Type MS09*

For more information on the nitrate sensor Type MS08, please refer to the Operating Instructions available at country.burkert.com.

### 3.3.5 Flow sensor Type 8031

Depending on the system configuration, the volume flow in the measuring line can be measured by a compact low-flow paddle-wheel sensor Type 8031. The low-flow sensor Type 8031 is specially designed for applications with low-flow and for solid-free liquids.

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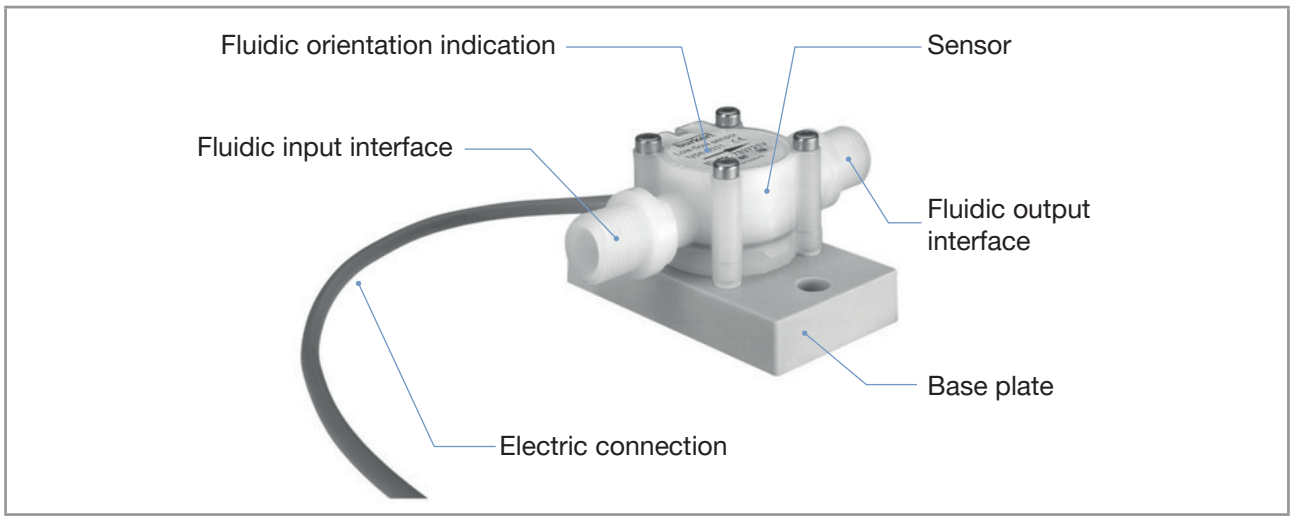


*Fig. 7: Description of the flow sensor Type 8031*

For more information on the low-flow sensor Type 8031, please refer to the Operating Instructions available at country.burkert.com.

## 3.4 Display Type ME61

The system Type 8906 can integrate a process view display Type ME61 to show the monitored parameters and/or allow some parametrization.

For more information on the display Type ME61, please refer to the Operating Instructions available at country.burkert.com.

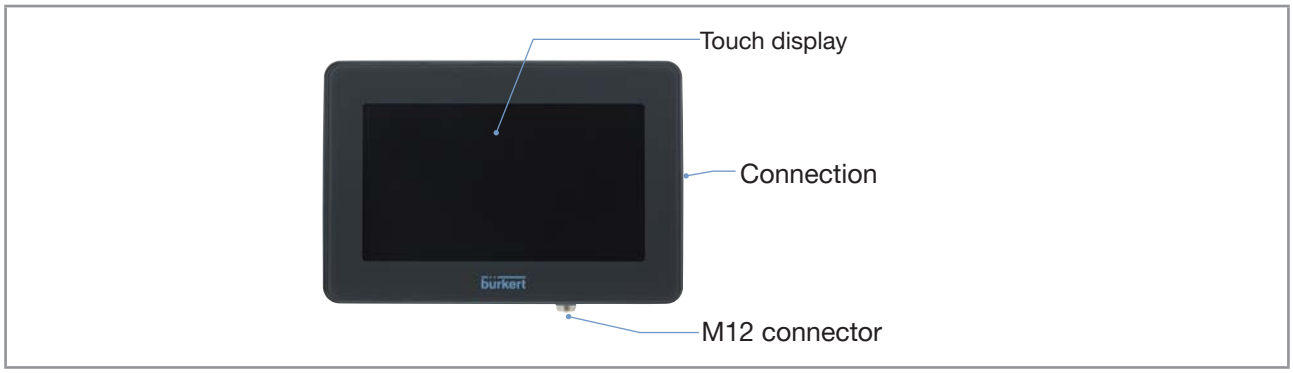


*Fig. 8: Description of process view display Type ME61*

## 3.5 Cleaning system Type MZ20

Depending on the system configuration, the Online Analysis measurement system Type 8906 on backplate can integrate a cleaning module Type MZ20 compatible with the sensors used in the system Type 8906.

The quality of the measuring water may soil the sensors. To ensure continuously good measurements, the installed cleaning system Type MZ20 clean the sensors at equal intervals, irrespective of the quality of the measuring water, in an automatic way.

The cleaning system Type MZ20 is suitable for mounting on the backplate using a standard rail (DIN) as in Fig. 9.

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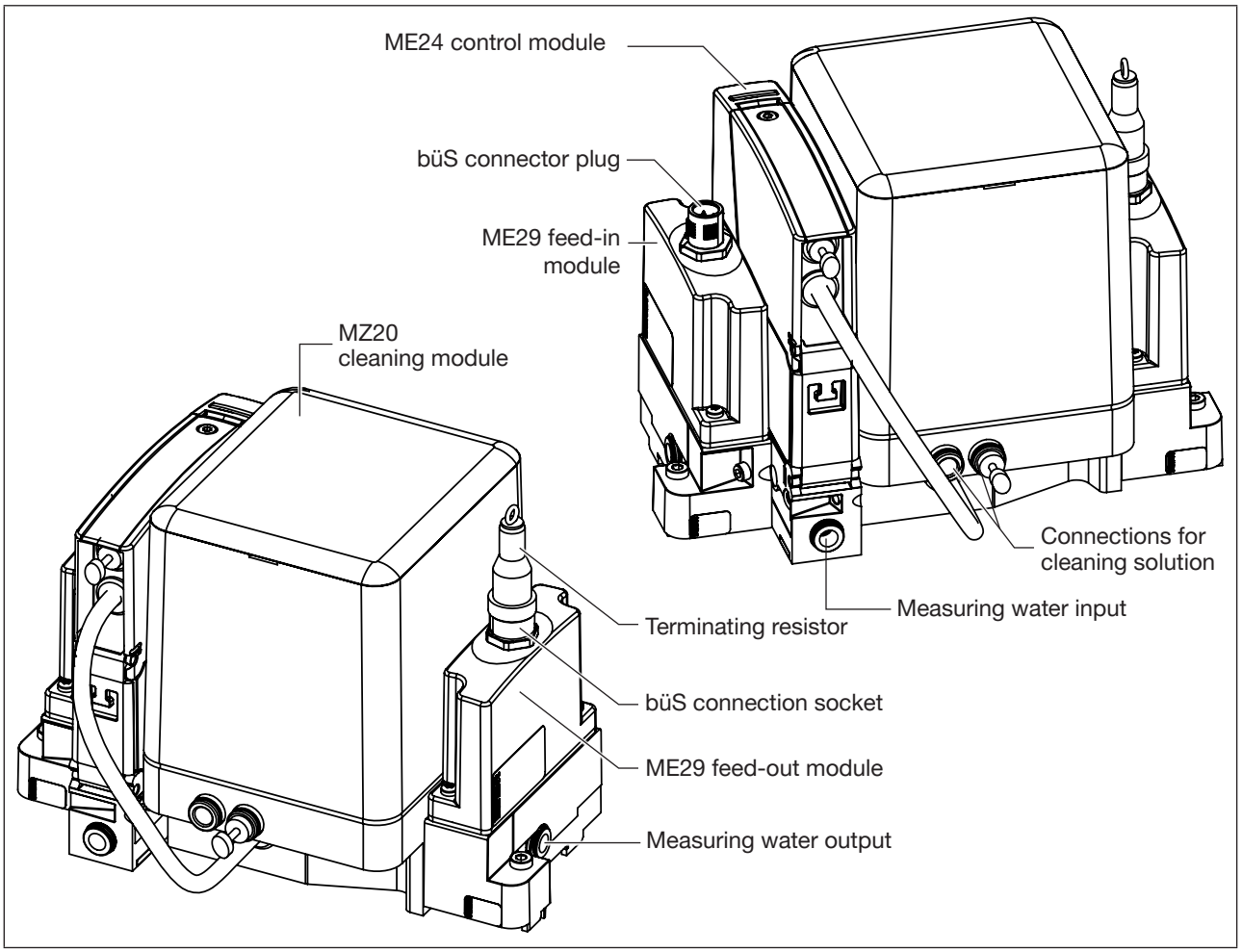


*Fig. 9: Description of the cleaning system Type MZ20*

For more information on the cleaning system Type MZ20, please refer to the Operating Instructions available at country.burkert.com.

## 3.6 Bürkert bus system / Fieldbus gateway Type ME43

The different sensors on the backplate can be connected together onto büS (Bürkert bus system) with specific bus cables to the fieldbus gateway Type ME43.

The fieldbus gateway Type ME43 provides interface between the Bürkert products and standard industrial field protocol.

The different sensors assembled on the Online Analysis measurement system Type 8906 on backplate are connected together and can communicate with büS (Bürkert bus system.) Additional Bürkert components, communcating in büS and already present in the factory, can be easily connected to the system Type 8906.

Depending on the system arrangement selected, the communication interface between various industrial field protocol and the büS system of the system Type 8906 can be ensured by a fieldbus gateway Type ME43, installeld in an interface box (see Fig. 1.)

The fieldbus gateway Type ME43 can also handle some additional sensors communicating in analog and/or digital way using I/O modules Type ME44.

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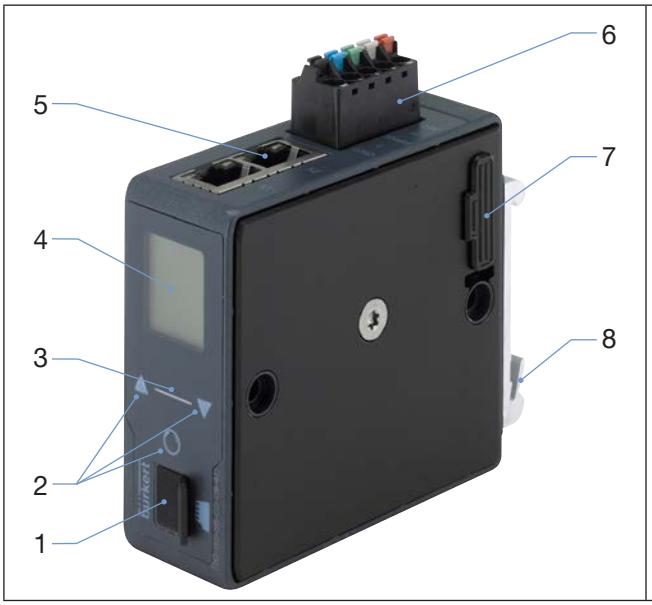
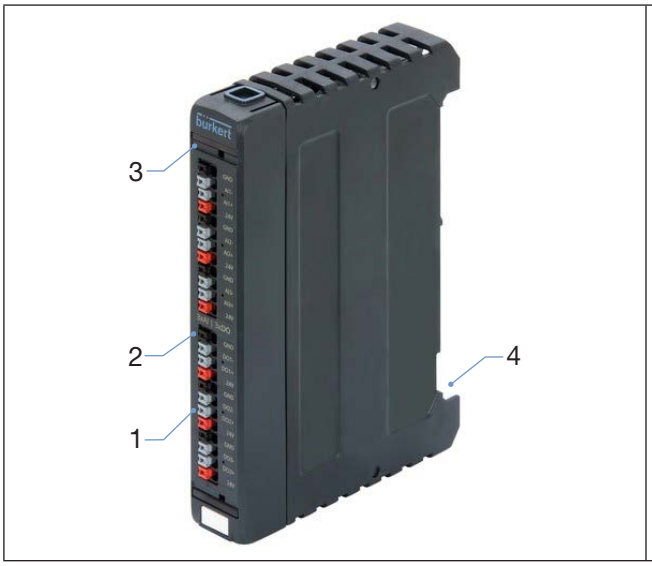



1. Micro-SD card slot
2. Buttons
3. NAMUR LED
4. Display
5. Fieldbus connection
6. büS connector
7. Slot for terminal resistance
8. Standard rail

*Fig. 10: Description of the fieldbus gateway Type ME43*

For more information on the fieldbus gateway Type ME43, please refer to the Operating Instructions available at country.burkert.com.




1. Connection AO-AI-DO-DI (depending on the version)
2. Indication of the type and number of connections
3. NAMUR LED
4. Standard rail

*Fig. 11: Description of the I/O module Type ME44*

For more information on the I/O module Type ME44, please refer to the Operating Instructions available at country.burkert.com.

## 3.7 Product-status indicator

The product-status indicator changes its colour and state based on the NAMUR NE 107 recommendation. Refer to Table 1. The colour of the product-status indicator shows whether the product-internal diagnostics are active or inactive. If the product-internal diagnostics are active and different product states have been generated, the colour of the product-status indicator shows the product state with the highest priority.

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If the product-status indicator flashes, then the product is selected in a man-machine interface such as the Bürkert Communicator software.

*Table 1: Product-status indicator - Colours and states in accordance with NAMUR NE 107, edition 2006-06-12*

| Status of the diagnostics on the product | Colour of the product-status indicator | Colour code (for a PLC) | Product status | Meaning |
|---|---|---|---|---|
| **Inactive or disabled diagnostics**<br>• Product status changes are not shown.<br>• Messages are neither listed nor transmitted via any connected fieldbus. | White | 0 | - | Diagnostics are inactive. |
| **Active or enabled diagnostics**<br>• Product status is shown by the color of the device status indicator.<br>• Messages are listed and possibly transmitted via any connected fieldbus. | Green | 1 | - | Diagnostics are active and no event has been generated. |
| | Blue | 2 | Maintenance required | The device continues to measure but a function is temporarily restricted.<br>→ Do the required maintenance operation. |
| | Yellow | 3 | Out of specification | The ambient conditions or process conditions for the device are outside the permitted ranges.<br>Device internal diagnostics point to problems in the device or with the process properties. |
| | Orange | 4 | Function check | Ongoing work on the device (for example, checking the correct behaviour of the outputs by simulating measurement values); the output signal is temporarily invalid (e.g. frozen). |
| | Red | 5 | Failure, error, malfunction | Due to a malfunction of the device or its periphery, the measured values can be incorrect. |

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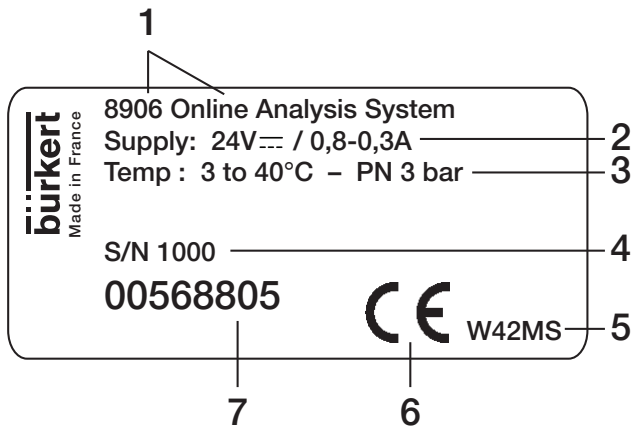
## 3.8 Description of the type label of the system




1. Type of the system
2. Technical data of the power supply (only for interface boxes)
3. Ambient temperature range and nominal pressure of the fluid
4. Serial number
5. Manufacturing code
6. Conformity logo
7. Order code

*Fig. 12: Type label (example)*

## 3.9 Symbols on the system

| Symbol | Description |
|---|---|
| ⎓ | Direct current |
| ~ | Alternating current |
| ⏚ | Earth terminal |
| ⏚ | Protective conductor terminal |

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# 4 TECHNICAL DATA

## 4.1 Conditions of use

| | |
|---|---|
| **Ambient temperature** | +0...+40 °C |
| **Air humidity** | < 90 %, without condensation |
| **Protection rating according to EN 60529** | Only the following components are IP65:<br>• Flowmeter Type 8031<br>• Nitrate sensor cube Type MS08<br>• SAC 254 mm sensor Type MS09<br>• Cleaning system Type MZ20<br>• Display Type ME61<br>• when plugged on the backplane, sensors Type MS01, MS02, MS03, MS04 and/or MS05 |
| **Maximum height above sea level** | 2000 m |

## 4.2 Conformity to standards and directives

The system complies with the relevant EU harmonisation legislation. In addition, the system also complies with the requirements of the laws of the United Kingdom.

The harmonised standards that have been applied for the conformity assessment procedure are listed in the current version of the EU Declaration of Conformity/UK Declaration of Conformity.

### Conformity to the Pressure Equipment Directive

- Pressure Equipment Directive 2014/68/EU, article 4 §1
  The system can only be used under the following conditions (depending on the PN = maximum admissible pressure in bar, the DN = nominal diameter of the pipe in mm, and the type of fluid):

| Type of fluid | Conditions |
|---|---|
| Fluid group 1, article 4 §1.c.i | DN ≤ 25 |
| Fluid group 2, article 4 §1.c.i | DN ≤ 32<br>or DN > 32 and PNxDN ≤ 1000 |
| Fluid group 1, article 4 §1.c.ii | DN ≤ 25<br>or PNxDN ≤ 2000 |
| Fluid group 2, article 4 §1.c.ii | DN ≤ 200<br>or PN ≤ 10<br>or PNxDN ≤ 5000 |

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## 4.3 Fluid data

| | |
|---|---|
| **Type of fluid** | Water, without particles |
| **Fluid temperature** | → Refer to the Operation Instructions of all the sensors assembled on the selected arrangement<br>→ Apply the most restrictive value given in the Operating Instructions of the sensors |
| **Fluid pH** | → Refer to the Operation Instructions of all the sensors assembled on the selected arrangement<br>→ Apply the most restrictive value given in the Operating Instructions of the sensors |
| **Fluid flow rate** | → Refer to the Operation Instructions of all the sensors assembled on the selected arrangement<br>→ Apply the most restrictive value given in the Operating Instructions of the sensors |
| **Fluid pressure** | → Refer to the Operation Instructions of all the sensors assembled on the selected arrangement<br>→ Apply the most restrictive value given in the Operating Instructions of the sensors |

## 4.4 Electrical data

### 4.4.1 System with an AC switched-mode power supply

| | |
|---|---|
| **Operating voltage** | 100...240 V AC |
| **Frequency** | 50...60 Hz |
| **Current consumption at 100 V AC** | 0.8 A |
| **Current consumption at 240 V AC** | 0.3 A |
| **Integrated current limiting fuse** | A slow blow 2 A-fuse. The fuse cannot be replaced and is integrated in the power supply. |

### 4.4.2 System energized with a direct voltage power supply

| | |
|---|---|
| **Operating voltage** | 20...30 V DC |
| **20...30 V DC power source (not supplied)** | • Filtered and regulated<br>• SELV circuit, at a non-hazardous energy level<br>• Tolerance: ±10 % |
| **Maximum power consumption** | 96 VA |

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## 4.5 Mechanical data

| | |
|---|---|
| Weight<br>(depending on the system configuration) | min. about 2 kg |
| Dimensions<br>(depending on the system configuration) | |
| Backplate (hight x width) | According the selected arrangement<br>(min. 300 mm x 300 mm) |

*Table 2: Product materials*

| Component | Material |
|---|---|
| Backboard | PVC |
| Box | Polycarbonate |
| Fluidic lines | Polyethylen |
| Fluidic connectors | POM |
| Display | Polycarbonate |
| Sensor cubes housing | PPE, PPS |
| Sensor cubes lever | Zamack painted |
| Backplane | Aluminium anodisé |
| Rail DIN | Stainless steel |

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# 5 INSTALLATION

## 5.1 Safety instructions

**DANGER**

**Danger due to electrical voltage.**

- Shut down the electrical power source of all the conductors and isolate it before carrying out work on the system.
- Observe all applicable accident protection and safety regulations for electrical equipment.

**Risk of injury due to high pressure in the system.**

- Stop the circulation of fluid, cut off the pressure and drain the pipe before loosening the process connections.

**WARNING**

**Risk of injury due to non-conforming installation.**

- Electrical and fluidic installations can only be carried out by qualified and authorised personnel with the appropriate tools.
- Fit a circuit breaker or a switch to the electrical installation of the building in which the system is installed.
- Install the circuit breaker or the switch in an easily accessible place.
- Identify the circuit breaker or the switch as the disconnecting component for the electrical power supply to the system.
- Install overload devices that are appropriate to the electrical installation. For a version powered by 100...240 V AC, connect a 6 A to 16 A rated fuse, in the phase conductor (L) and in the neutral conductor (N).
- Do not power the 20...30 V DC version of the system with an AC voltage or with a DC voltage higher than 30 V DC.
- Do not power the 100...240 V AC version with a DC voltage or with an AC voltage higher than 240 V AC.
- Observe standard NF C 15-100 / IEC 60634.

**Risk of injury due to unintentional switch on of power supply or uncontrolled restarting of the system.**

- Avoid unintentional activation of the system.

**CAUTION**

**Risk of injury due to a heavy system.**

A heavy system can fall down during transport or during installation and cause injuries.

- Transport, install and dismantle a heavy system with the help of another person.
- Use appropriate tools.
- Use safety gloves and wear security shoes and any other appropriate security equipment to handle the system.

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**NOTICE**

**Risk of damage to the system due to the environment**

- Protect the system against electromagnetic interference, ultraviolet rays and, when installed outdoors, the effects of the climatic conditions.

## 5.2 Installing the system Type 8906 on a support

**CAUTION**

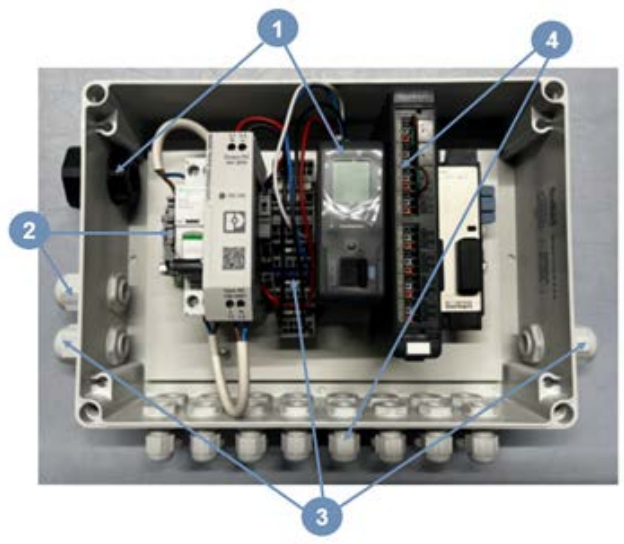
**Risk of injury due to a heavy system.**

A heavy system can fall down during transport or during installation and cause injuries.

- Transport, install and dismantle a heavy system with the help of another person.
- Use appropriate tools.
- Use safety gloves and wear security shoes and any other appropriate security equipment to handle the system.

1. Weight the system Type 8906
2. Make sure that the support is stable enough for the system and can resist to the weight of the system.
3. Choose a mounting location with enough space and position the display at a visible place.
4. Prepare screws that can support the weight of the system. If necessary, prepare also adapted wall plugs.
5. Drill 4 holes per backplates in the wall. Ensure that the system will be as straight as possible.
6. Insert wall plugs if needed and screw the backplates on the wall. Respect the tightening torque given by the screw-manufacturer for the type of screws selected.

## 5.3 Wiring and connecting the interface box




1. Fieldbus gateway. See chapter 5.3.1.
2. Power supply. See chapter 5.3.2.
3. büS cables. See chapter 5.3.3.
4. Inputs/outpouts for flowmeters. See chapters 5.3.4 and 5.3.5.

*Fig. 13: Overview of the interface box (example)*

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### 5.3.1 Connecting a fieldbus gateway

For this operation, please refer to the components highlighted on Fig. 13.

| | |
|---|---|
|  | 1. Make sure that the system Type 8906 is powered off.<br>2. Unscrew the inner ring of the black plastic connector (positioned on the link side of the box) dedicated to a RJ45 cable. |
|  | 3. Open in 2 the connector using a small flat screwdriver. |
|  | 4. Insert the RJ45 cable in the seal already mounted in the connector. A second seal, with a smaller diameter, is also provided with the box.<br>5. Assemble the seal (and the cable) in the connector and screw back the inner ring |
|  | 6. Plug the RJ45 cable in one of the 2 ports of the fieldbus gateway. |

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## 5.3.2 Connection for power supply 24 V DC / 230 V AC

**DANGER**

**Risk of injury from electric shocks.**

- Before working on the installation or on the system, swith off the power supply. Make sure that nobody can switch the power supply on.
- Observe all applicable accident protection and all applicable safety regulations for electrical equipment.

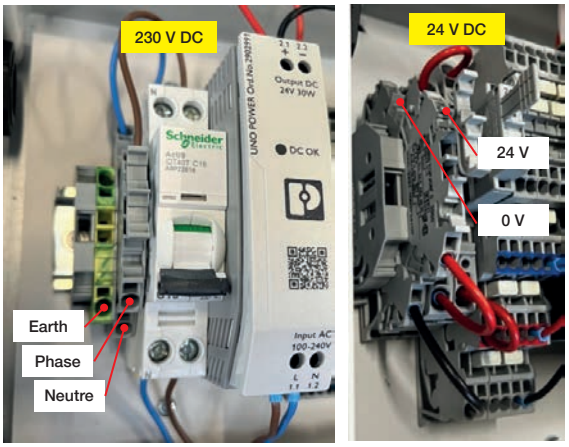
**NOTICE**

**Risk of injury from improper operation**

Improper operation can lead to injuries and damage to the system and its environment.

- Before commissioning, make sure that the operating personnel are familiar with, and fully understand the content of the Operating Instructions.
- Observe the safety information and the intended use.
- Only properly trained personnel may commission the installation and the system.
- Only properly trained personnel may change parameters with the help of the IO-Link master or Communicator software. Refer to IO-Link instruction manual for assiciated safety instructions.

For this operation, please refer to the components highlighted on Fig. 13.

| | |
|---|---|
|  | 1. Make sure that the system is powered off.<br>2. Unscrew of one the 3 cable glands localized on the side of the box (2 on left side – 1 on the right side). |
|  | 3. Insert the cable 2 wires (24 V DC) or 3 wires (230 V AC) in the cable gland.<br>4. Connect the wires according to the figure besides.<br>5. Close the cable gland to ensure the sealing of the connection. |

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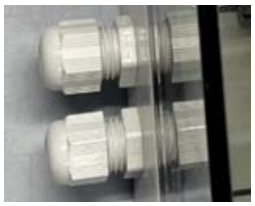
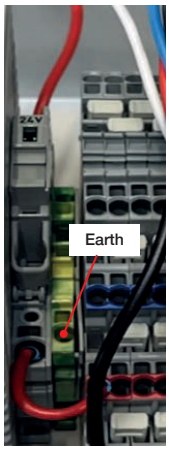
### 5.3.3 Connection for büS cable

| | |
|---|---|
|  | 1. Unscrew of one the 3 cable glands localized on the side of the box (2 on left side – 1 on the right side) |
|  | 2. Insert M12 female / wire büS cable in the cable gland (wire side in the box.) |
|    | 3. Insert the 5 wires in the corresponding terminal block<br>4. Close the cable gland to ensure the sealing of the connection. |

### 5.3.4 Wiring the inputs and outputs

1. Unscrew the cable glands installed at the bottom of the box, number depending on the number of cables to be installed.
2. Insert the cables in the cable glands.
3. Plug the wires on the inputs/outputs cards of the ME44.

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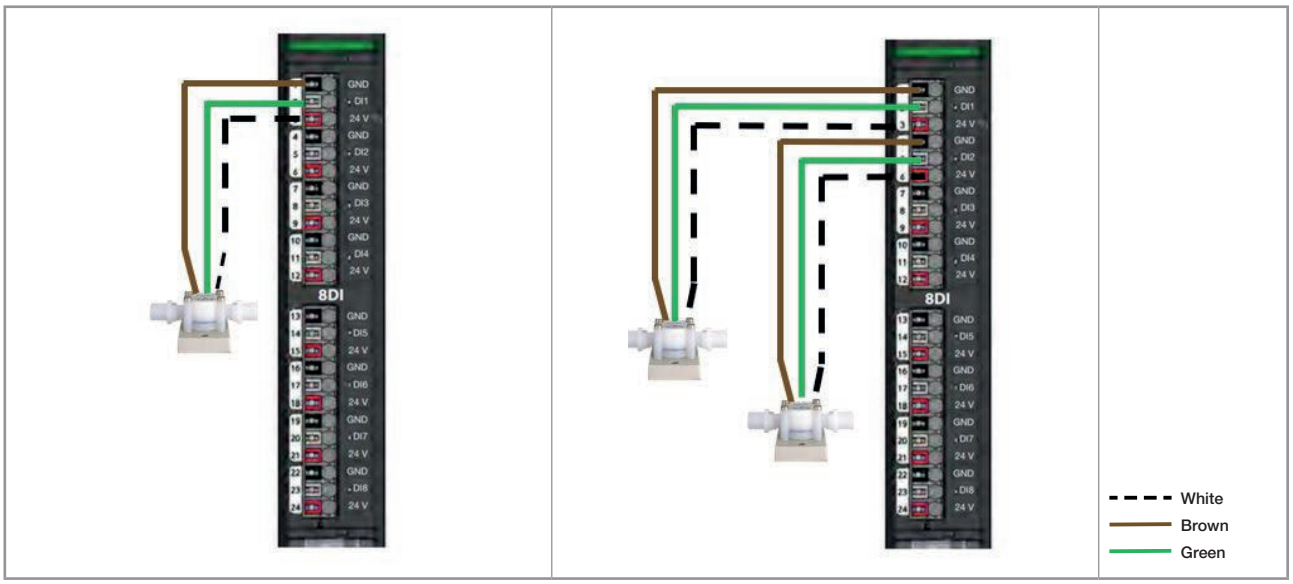
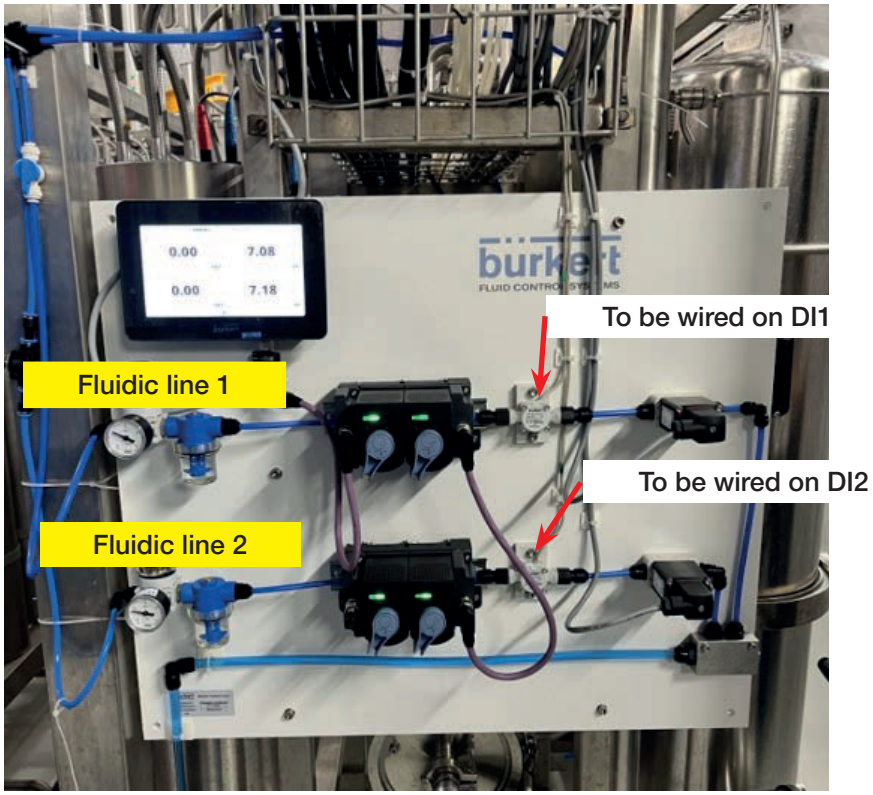
## 5.3.5 Wiring of the flowmeters

Please find on the picture below the instructions to connect the wires for the flowmeters. The wire length shall be adapted to the required length and use the provided trough.




In case of 2 fluidic lines with 2 flowmeters, like on the example below, the flowmeter of the 1st fluidic line shall be wired on DI1 and the flowmeter of the 2nd fluidic line shall be wired on DI2.



## 5.4 Doing the fluidic installation

**Risk of burns due to high fluid temperatures.**

- Use safety gloves to handle the system.
- Before opening the pipe, stop the circulation of fluid and drain the pipe.
- Before opening the pipe, make sure that the pipe is completely empty.

**Risk of injury due to the nature of the fluid.**

- Respect the prevailing regulations on accident prevention and safety relating to the use of dangerous fluids.

The Online Analysis measurement system Type 8906 on backplate is delivered with the fluidic connections realized between the different components of the system.

To make sure that the system Type 8906 is working properly, make sure that the input and the output line of the fluidic installation on the panel are connected to the water inlet and to the water outlet of the line to be analyzed.

→ Connect the flexible hoses, 6 mm in diameter, to the water inlet and to the water outlet. To avoid leakage, make sure that the cut of the tube is straight.

**CAUTION**

**Unwanted development of bacterium when using non opaque flexible hoses.**

- Use opaque flexible hoses, preferably in PE, PTFE or PVDF, to do the fluidic connections.
- Do not use flexible hoses in PVC.

→ To respect the PN1 or PN3 water pressure in the system Type 8906, install a pressure reducer. The pressure gauge of the pressure reducer must be installed in the inlet path of the system (if not already installed on the backplate).

→ Do not operate the system without having connected the system to the fluid line to be analyzed.

→ Make sure that all the necessary valves are opened on the system.

→ Make sure that there are no leakage, either in the system or at the inlet and outlet connections.

→ During the first minutes of run, check that there is no visible leakage on the system, especially at the input connection and at the output connection of the system Type 8906.

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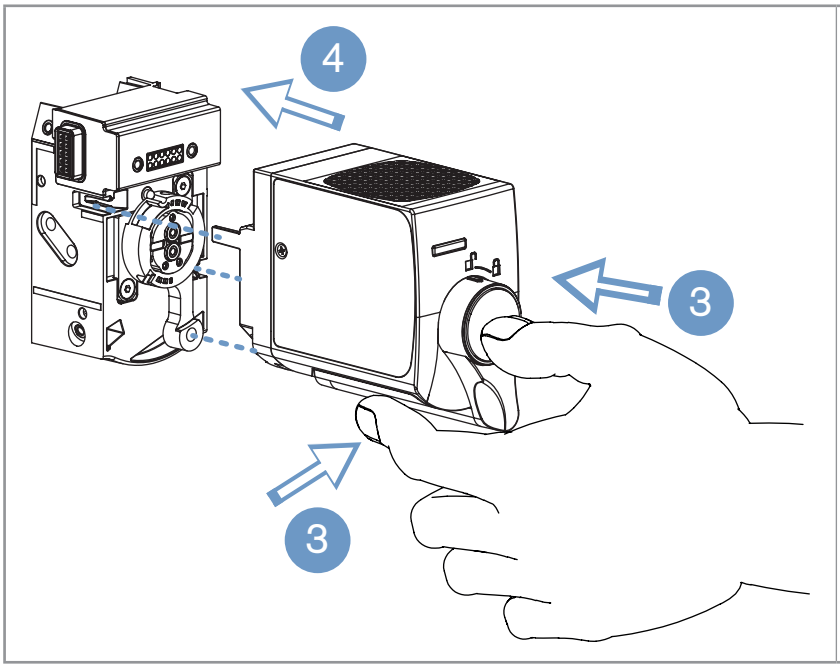
## 5.5 Mounting a sensor cube on a sensor cube backplane

The sensor cube is plugged in a sensor cube backplane of the system Type 8906.



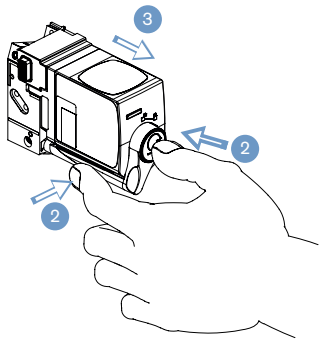

1. Dry the surface of the backplane that will be in contact with the sensor cube.
2. Dry the surface of the sensor cube.
3. While the push-button is pushed, turn the bayonet lever to the right, on the unlocked position, 🔓.
4. Insert the 2 adaptation pins in their holes and then plug the sensor cube in the backplane.
5. While the push-button is pushed, turn the bayonet lever to the left, on the locked position, 🔒.

*Fig. 14: Mounting a sensor cube on the backplane of the system Type 8906*

## 5.6 Removing a sensor cube from the backplane

To avoid water hammers in the system and before removing the last sensor cube from its backplane, stop the circulation of the water.

To remove a sensor cube from its backplane, do the following.




1. Push the button and turn the bayonet lever to the right in the unlocked position (🔓).
2. Pull the sensor cube.

*Fig. 15: Removing the sensor cube from the backplane*

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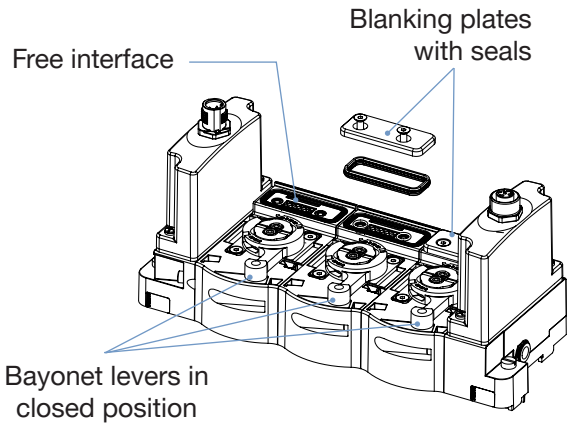
## 5.7 Mounting the FIA sensor cube for iron content on the backplane

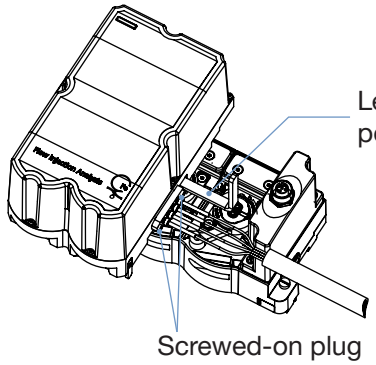
The FIA sensor cube creates air bubbles during sampling. Subsequent sensor cubes can be influenced by these.

▸ Mount the FIA sensor cube downstream other sensor cubes.

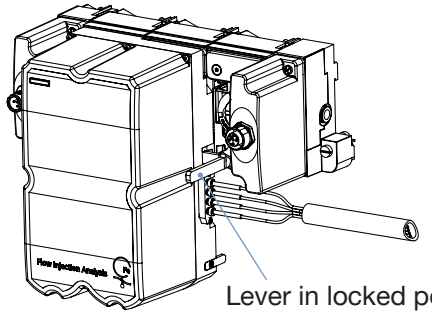
If the FIA sensor cube is mounted on a 3 backplane combination, install the FIA sensor cube as far to the **left** as possible so that the lever can be unlocked.




1. Make sure that the seal is present on the FIA sensor cube, on the electrical interface to the backplane.
2. Make sure that the four bayonet levers are in the closed position.
3. Make sure that the three blanking plates are protecting the electrical interfaces of the backplanes.
4. Dry the surface of the backplane.
5. Dry the surface of the FIA sensor cube.
6. Make sure that a seal is present on each of the 4 fluidic interfaces with the tube module and that the tubes are empty.




7. Screw the tube module plug on to the FIA sensor cube (torque 0.15 N·m, i. e. 0.11 ft·lbf). Do not kink or damage the tubes in the process.
8. Make sure that the lever is against the stop in the unlocked position and that the bolts engage in the holes of the bayonet lever during mounting.
9. Insert the two adaptation pins in their holes and then plug the FIA sensor cube in the backplane.




10. Push the levers into the locked position.

The FIA sensor cube is electrically and fluidically connected to the backplane.

*Fig. 16: Mounting the FIA sensor cube on a 3 backplane combination*

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## 5.8 Before commissioning the system Type 8906

Before commissioning the Online Analysis measurement system Type 8906 on backplate:

- Make sure that at least one sensor cube is inserted on a backplane.
- Make sure that the system is tight.
- Make sure that the system is connected to the fluid to be analyzed.
- Make sure that the system is connected to the power supply.
- Make sure that the flow rate provided is within the recommendations of all the sensors installed on the system.

→ To adjust a given electronic module, refer to the related Operating Instructions available at country.burkert.com.

→ To adjust a given sensor cube, refer to the related Operating Instructions available at country.burkert.com.

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# 6 MAINTENANCE

## 6.1 Safety instructions

**DANGER**

**Danger due to electrical voltage.**

- Shut down the electrical power source of all the conductors and isolate it before carrying out work on the system.
- Observe all applicable accident protection and safety regulations for electrical equipment.

**Risk of injury due to high pressure in the system.**

- Stop the circulation of fluid, cut off the pressure and drain the pipe before loosening the process connections.

**WARNING**

**Risk of injury due to non-conforming maintenance.**

- Maintenance must only be carried out by qualified and skilled staff with the appropriate tools.
- Obey the maintenance instructions of these Operating Instructions and the maintenance instructions of the Operating Instructions of all the electronic modules and of all the sensor cubes that are fitted in the system.

**CAUTION**

**Risk of injury due to a heavy system.**

A heavy system can fall down during transport or during installation and cause injuries.

- Transport, install and dismantle a heavy system with the help of another person.
- Use appropriate tools.
- Use safety gloves and wear security shoes and any other appropriate security equipment to handle the system.

## 6.2 Cleaning of the system

All the components of the system Type 8906 can be cleaned with a cloth dampened with water or a detergent compatible with the materials the system is made of.

Please feel free to contact your Bürkert supplier for any additional information.

## 6.3 Maintenance on a component

To do maintenance on a component of the system, refer to the related Operating Instructions available at country.burkert.com.

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# 7 TROUBLESHOOTING

| Problem | What to do |
|---|---|
| The system status light and the display are OFF | → Make sure that the system is energized. |
| The water does not flow | → Make sure that the fluidic installation is correct. |
| Incorrect values are measured | → Make sure that the installation is in line with the recommendations of the different sensors installed on the selected system.<br>→ If the error still remain, contact your Bürkert sales office. |
| The LEDs of the sensor cubes are OFF | → Make sure that the electrical connections in the system are correctly plugged.<br>→ Make sure that the electrical connections, in particular the büS cable, are correctly plugged between the different elements of the system. |
| There is water spreading out of the sensor-cubes housing | → Make sure that all the sensor cubes are correctly mounted on the backplanes and locked.<br>→ Make sure that the quick-connect couplings of the water pipes are tight and correctly mounted. |
| There is water below the system, on the floor | → Make sure that all the hydraulic pipes are correctly fitted in the connectors.<br>→ Make sure that the tubes are straightly cut at the input and at the output of the system. |

→ If an error occured on your system which is not explained in the Operating Instructions, contact your Bürkert sales office.

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# 8 PACKAGING, TRANSPORT

**CAUTION**

**Risk of injury due to a heavy system.**

A heavy system can fall down during transport or during installation and cause injuries.

- Transport, install and dismantle a heavy system with the help of another person.
- Use appropriate tools.
- Use safety gloves and wear security shoes and any other appropriate security equipment to handle the system.

**NOTICE**

**Damage due to transport**

Transport may damage an insufficiently protected system.

- Plug out all the electronic modules and all the sensor cubes from the system.
- Protect the electrical interfaces using protective plugs.
- Transport each electronic module and each sensor cube separately in a shock-resistant packaging and away from humidity and dirt.
- Transport the system in a shock-resistant packaging and away from humidity and dirt.
- Do not expose the system to temperatures that may exceed the admissible storage temperature range.
- Do not expose the electronic modules and the sensor cubes to temperatures that may exceed the admissible storage temperature range.
- Keep the packaging of the system and the shock absorbent paper because they must be used to send the system back to the after-sales service.

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# 9 STORAGE

**NOTICE**

**Poor storage can damage the system.**

→ To store the system for less than 4 days:

- rinse the complete hydraulic circuit with tap water, cut-off the power supply, and purge the system with air at the maximum pressure of 2 bar.
- store at room temperature (about 23 °C), the system with the sensor cubes plugged on their backplanes.
- store the system in a dry place away from dust.

→ To store the system for more than 4 days:

- rinse the complete hydraulic circuit with tap water, cut-off the power supply, and purge the system with air at the maximum pressure of 2 bar.
- remove each sensor cube from its backplane.
- refer to the Operating Instructions of each sensor cube for the related storage conditions.
- store the system without sensor cubes at a temperature between –20 °C and +70 °C.

# 10 DISPOSAL

**Environmentally friendly disposal**

- Follow national regulations regarding disposal and the environment.
- Collect electrical and electronic devices separately and dispose of them as special waste.

Further information at country.burkert.com.

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