

## Type MS04

Redox potential sensor cube



## Operating Instructions

We reserve the right to make technical changes without notice.  
Technische Änderungen vorbehalten.  
Sous réserve de modifications techniques.

© Bürkert SAS, 2014

Operating Instructions 1409/0\_EU-ML 00566499 Original EN

<b>1</b>	<b>ABOUT THE OPERATING INSTRUCTIONS .....</b>	<b>3</b>
1.1	Symbols used .....	3
1.2	Definition of the word "product" .....	3
1.3	Definition of the word "system" .....	4
1.4	Definition of the word "büS" .....	4
<b>2</b>	<b>INTENDED USE .....</b>	<b>4</b>
<b>3</b>	<b>BASIC SAFETY INFORMATION .....</b>	<b>5</b>
<b>4</b>	<b>GENERAL INFORMATION .....</b>	<b>6</b>
4.1	Contact .....	6
4.2	Warranty conditions .....	6
4.3	Informations on the internet .....	6
<b>5</b>	<b>DESCRIPTION .....</b>	<b>7</b>
<b>6</b>	<b>TECHNICAL DATA .....</b>	<b>8</b>
6.1	Conditions of use .....	8
6.2	Conformity to standards and directives .....	8
6.3	Materials the product is made of .....	8
6.4	Fluid data .....	8
6.5	Measurement data .....	9
6.6	Electrical data .....	9
6.7	Communication .....	9
<b>7</b>	<b>INSTALLATION .....</b>	<b>10</b>
7.1	Safety instructions .....	10
7.2	Mounting the product on the backplane .....	10
<b>8</b>	<b>ADJUSTMENT AND OPERATION .....</b>	<b>11</b>
8.1	Safety instructions .....	11
8.2	How to adjust the product .....	11
8.3	Adjustments that must be done .....	12
8.4	General information on the display software type ME21 .....	12

- 8.5 "Device" view of the product..... 13**
- 8.6 "Function" view of the product..... 14**
- 8.7 Detailed views of the büS function ..... 15**
- 8.8 "Parameter" view of the sensor..... 16**
  - 8.8.1 Configuring the triggering of the warnings..... 16
  - 8.8.2 Configuring the triggering of the errors ..... 17
- 8.9 "Diagnosis" view of the sensor..... 17**
- 8.10 "Maintenance" view of the sensor..... 18**
  - 8.10.1 Calibrating the offset value of the redox potential sensor..... 18
  - 8.10.2 Doing a 1 point calibration procedure of the redox potential sensor..... 18
  - 8.10.3 Simulating some data..... 21
  - 8.10.4 Reading the date of the last calibration ..... 21
  - 8.10.5 Reading the date of the next due calibration ..... 21
  - 8.10.6 Setting the time interval between two calibrations..... 21
- 9 MAINTENANCE AND TROUBLESHOOTING..... 22**
  - 9.1 Safety instructions ..... 22**
  - 9.2 Cleaning of the product..... 22**
  - 9.3 Replacing the external reference electrode..... 22**
  - 9.4 Troubleshooting if no message is displayed..... 23**
  - 9.5 Troubleshooting if the status LED of the product is red or orange ..... 24**
    - 9.5.1 Message "Too high redox potential value"..... 24
    - 9.5.2 Message "Too low redox potential value" ..... 25
- 10 SPARE PARTS AND ACCESSORIES..... 26**
- 11 PACKAGING, TRANSPORT..... 26**
- 12 STORAGE..... 26**
  - 12.1 To store the product for a maximum of 4 days ..... 26**
  - 12.2 To store the product for more than 4 days and less than one month ..... 27**
  - 12.3 To store the product for more than one month..... 27**
  - 12.4 After storage..... 27**
- 13 DISPOSAL OF THE PRODUCT..... 27**

MAN 1000239759 EN Version: D Status: RL (released | freigegeben) printed: 16.01.2025

# 1 ABOUT THE OPERATING INSTRUCTIONS

The Operating Instructions describe the entire life cycle of the product. Please keep the Operating Instructions in a safe place, accessible to all users and any new owners.

## The Operating Instructions contain important safety information.

Failure to comply with these instructions can lead to hazardous situations.

- ▶ The Operating Instructions must be read and understood.

## 1.1 Symbols used



### DANGER

Warns against an imminent danger.

- ▶ Failure to observe this warning can result in death or in serious injury.



### WARNING

Warns against a potentially dangerous situation.

- ▶ Failure to observe this warning can result in serious injury or even death.



### ATTENTION

Warns against a possible risk.

- ▶ Failure to observe this warning can result in substantial or minor injuries.

### NOTE

Warns against material damage.

- ▶ Failure to observe this warning may result in damage to the product or system.



Indicates additional information, advice or important recommendations.



Refers to information contained in the Operating Instructions or in other documents.

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

→ Indicates a procedure to be carried out.

- » Indicates the result of a specific instruction.

## 1.2 Definition of the word "product"

The word "product" used within these Operating Instructions always refers to the redox potential sensor cube type MS04.

### 1.3 Definition of the word "system"

The word "system" used within these Operating Instructions always refers to the Online Analysis System type 8905.

### 1.4 Definition of the word "bÜS"

The word "bÜS" used within these Operating Instructions always refers to the fieldbus developed by Bürkert.

## 2 INTENDED USE

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

- ▶ The product is intended solely for the measurement of the redox potential of water within a 8905 system.
- ▶ This product must be protected against electromagnetic interference, ultraviolet rays and, when installed outdoors, the effects of climatic conditions.
- ▶ This product must be used in compliance with the characteristics and commissioning and use conditions specified in the contractual documents and in the Operating Instructions.
- ▶ Requirements for the safe and proper operation of the product are proper transport, storage and installation, as well as careful operation and maintenance.
- ▶ Only use the product as intended.
- ▶ Observe any existing restraints when the product is exported.

### 3 BASIC SAFETY INFORMATION

This safety information does not take into account:

- any contingencies or occurrences that may arise during assembly, use and maintenance of the product.
- the local safety regulations that the operator must ensure the staff in charge of installation and maintenance observe.



#### Various dangerous situations.

To avoid injury take care:

- ▶ to prevent any unintentional power supply switch-on.
- ▶ to carry out the installation and maintenance work by qualified and skilled staff with the appropriate tools.
- ▶ to use the product only if in perfect working order and in compliance with the instructions provided in these Operating Instructions.
- ▶ to observe the general technical rules during the planning and use of the product.
- ▶ not to use this product in explosive atmospheres.
- ▶ not to use this product in an environment incompatible with the materials from which it is made.
- ▶ not to make any external or internal modifications to the product.

#### NOTE

##### Elements / Components sensitive to electrostatic discharges

- This product contains electronic components sensitive to electrostatic discharges. They may be damaged if they are touched by an electrostatically charged person or object. In the worst case scenario, these 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 described in the EN 61340-5-1 norm.
- Also ensure that you do not touch any of the live electrical components.

## **4 GENERAL INFORMATION**

### **4.1 Contact**

To contact the manufacturer of the product use following address:

Bürkert SAS

Rue du Giessen

BP 21

F-67220 TRIEMBACH-AU-VAL

The addresses of our international branches can be found on the Internet at: [www.burkert.com](http://www.burkert.com)

### **4.2 Warranty conditions**

The condition governing the legal warranty is the conforming use of the product in observance of the operating conditions specified in these Operating Instructions.

### **4.3 Informations on the internet**

You can find the Operating Instructions and technical data sheets regarding the type MS04 at: [www.burkert.com](http://www.burkert.com)



## 5 DESCRIPTION

The redox potential sensor cube is used in the system type 8905.

The electrical and fluid connections are made via the connection panel of the system type 8905.

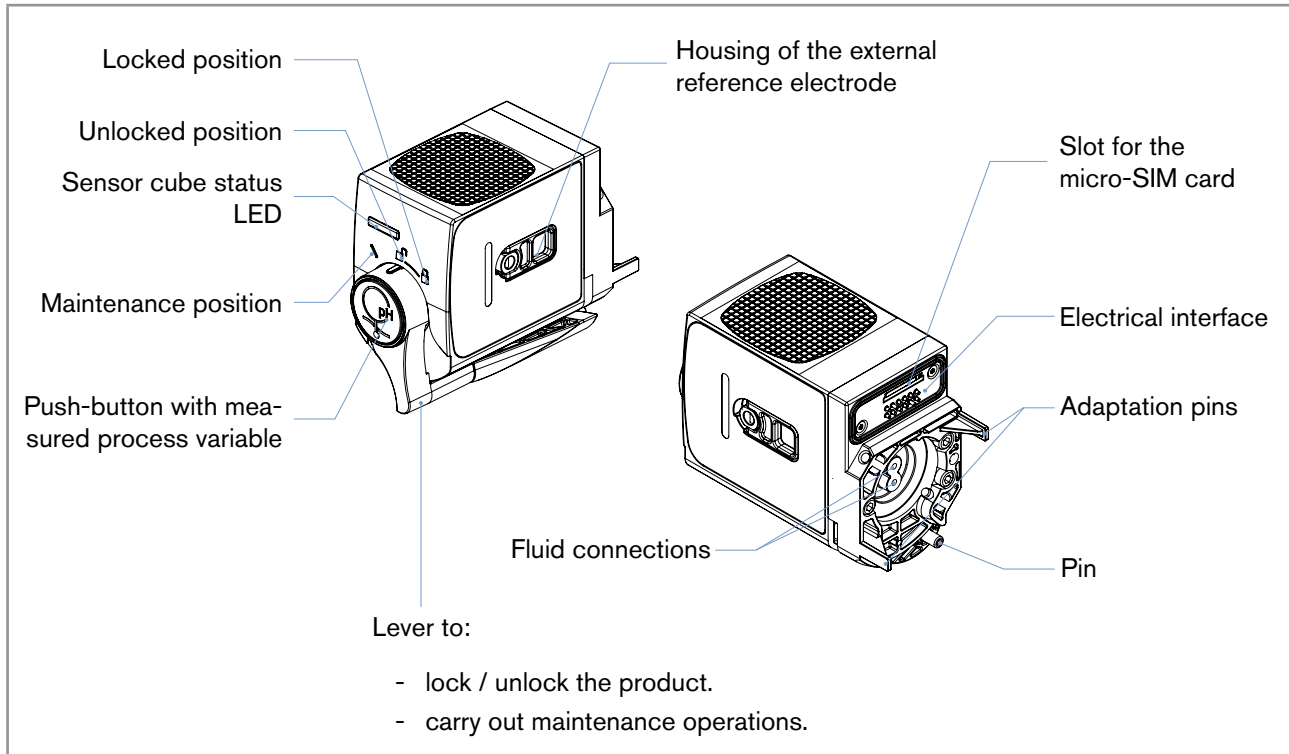


Fig. 1: Description of the product

## 6 TECHNICAL DATA

### 6.1 Conditions of use

Ambient temperature	0 to +40 °C
Air humidity	< 90 %, without condensation
Protection rating acc. to EN 60529	<ul style="list-style-type: none"> <li>▪ IP65, when plugged in the backplane</li> <li>▪ IP20, as standalone product</li> </ul>
Max. height above sea level	2000 m

### 6.2 Conformity to standards and directives

The product conforms to the CE directives of the system type 8905, only when the product type MS04 is plugged in the system type 8905.

### 6.3 Materials the product is made of

Part	Material
Housing	PPE+PS
Seal	EPDM
Lever	PC

### 6.4 Fluid data

<ul style="list-style-type: none"> <li>▪ Type of fluid</li> </ul>	<ul style="list-style-type: none"> <li>▪ Water, without particles: drinking water, industrial water</li> </ul>
<ul style="list-style-type: none"> <li>▪ pH value</li> </ul>	<ul style="list-style-type: none"> <li>▪ pH 4 to 9</li> </ul>
Minimal flow rate	3 l/h; recommended 6 l/h
Water sample pressure	PN6
Water sample temperature	0 to +40 °C, not freezing

## 6.5 Measurement data

redox potential measurement	
▪ Measuring range	▪ -2000 to +2000 mV
▪ Measurement deviation ("measurement bias", as defined in the standard JCGM 200:2012)	▪ $\pm 10$ mV
▪ Response time (t90)	▪ < 10 s
▪ Measurement sensor	▪ Platinum electrode
▪ Electrolyte of the external reference electrode	▪ 3 mol KCl
Maintenance interval of the external reference electrode	12 months, nominal, depending on the water quality

## 6.6 Electrical data

Operating voltage	24 V DC through the backplane of the system type 8905
Power consumption	0.8 VA

## 6.7 Communication

Internal communication	through büS
External communication by status LED	according to NAMUR NE 107

## 7 INSTALLATION

### 7.1 Safety instructions

#### NOTE

**Risk of damage to the product due to non-conforming installation.**

- The electrical and fluidic installations can only be carried out by qualified and skilled staff with the appropriate tools.
- Respect the installation instructions for the system.

#### NOTE

**Risk of damage to the product due to the power supply**

- Shut down and isolate the electrical power source before carrying out work on the system.

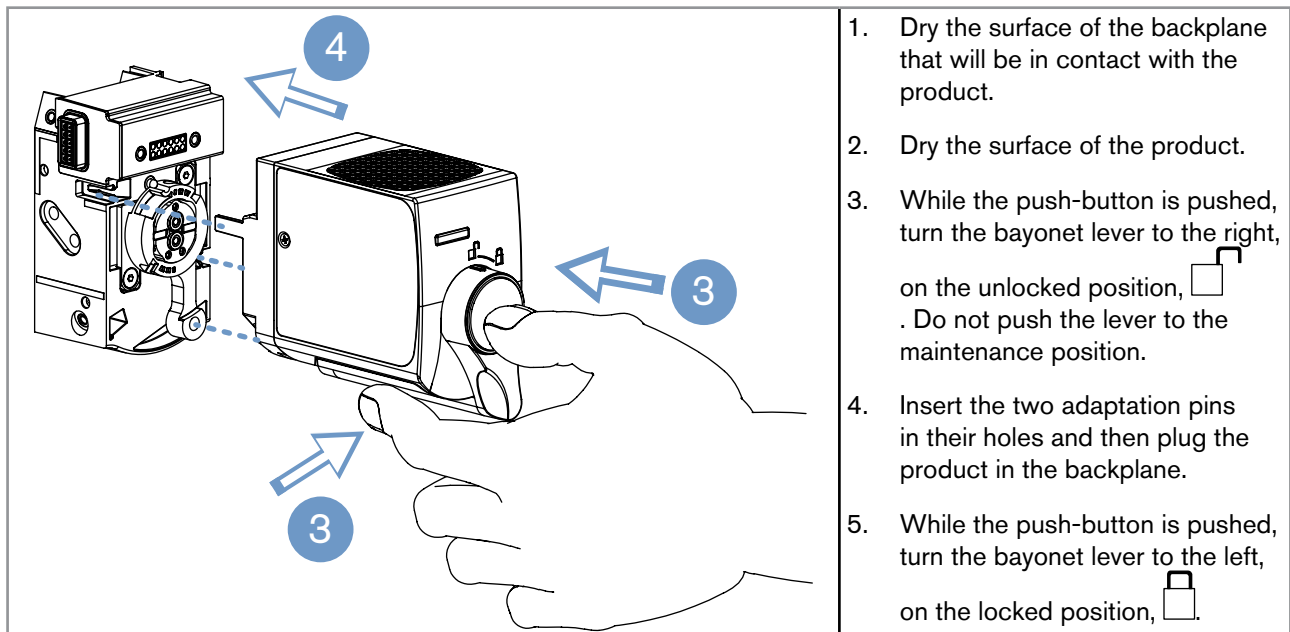
#### NOTE

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

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

### 7.2 Mounting the product on the backplane

The product is plugged in the backplane of the system Type 8905.





1. Dry the surface of the backplane that will be in contact with the product.
2. Dry the surface of the product.
3. While the push-button is pushed, turn the bayonet lever to the right, on the unlocked position, . Do not push the lever to the maintenance position.
4. Insert the two adaptation pins in their holes and then plug the product in the backplane.
5. While the push-button is pushed, turn the bayonet lever to the left, on the locked position, .

Fig. 2: Mounting a product on the backplane of the system

## 8 ADJUSTMENT AND OPERATION

### 8.1 Safety instructions

#### NOTE

##### Risk of damage to the product due to non-conforming adjustment.

- The operators in charge of adjustment must have read and understood the contents of these Operating Instructions.
- The operators in charge of adjustment must have read and understood the contents of the Operating Instructions of the display software type ME21 and/or the contents of the Operating Instructions of the Bürkert Communicator software type 8920 and/or the Operating Instructions of the controller module type ME25.
- In particular, observe the safety recommendations and intended use.
- The product/installation must only be adjusted by suitably trained staff.

#### NOTE

##### Risk of damage to the product due to non-conforming commissioning.

- Before commissioning, make sure that the staff in charge have read and fully understood the contents of these Operating Instructions.
- In particular, observe the safety recommendations and intended use.
- The product / the installation must only be commissioned by suitably trained staff.

#### NOTE

##### Risk of damage to the product due to non-conforming operation.

- The operators in charge of operation must have read and understood the contents of these Operating Instructions.
- In particular, observe the safety recommendations and intended use.
- The product/installation must only be operated by suitably trained staff.

### 8.2 How to adjust the product

The adjustment of the product can be made:

- either with the display of the system type 8905. The display of the system is managed by the software type ME21. See chap. 8.4.
- or with a PC and the Bürkert Communicator software type 8920. To get general information about the software type 8920, refer to the Operating Instructions of the type 8920.

## 8.3 Adjustments that must be done

Do the adjustments:

- after the product has been installed in the system.
- after the fluidic and electrical installations have been made on the system.
- after the tightness of the system has been checked.
- after the system has operated for a polarization time of 12 hours.
- Before commissioning the product/system for the first time and for the correct operation of the product and of the system, calibrate the offset value of the redox potential sensor (refer to chap. [8.10.1](#)).
- Before commissioning the product/system after a maintenance operation (i.e. replacement of the external reference electrode):
  - let the system operate for a polarization time of 12 hours,
  - and calibrate the offset value of the redox potential sensor (refer to chap. [8.10.1](#)).
- Calibrate the product every month.

## 8.4 General information on the display software type ME21

These Operating Instructions explain the adjustments that are specific to the product type MS04.

→ To get general information about the display software type ME21, refer to the Operating Instructions of the type ME21 that is on the CD delivered with the system and that is also available at [www.burkert.com](http://www.burkert.com).


The Operating Instructions of the display software type ME21:

- give general information on the software, such as: description of the user interface, structure of the menus, description of the possible views ("Device" view for example), description of the navigation buttons...
- explain how to make the general adjustments such as: the display language, the locating of the product...
- explain how to configure and customize the "Desktop" views with values or graphs.
- give general information on the error messages and the operating of the system status light.

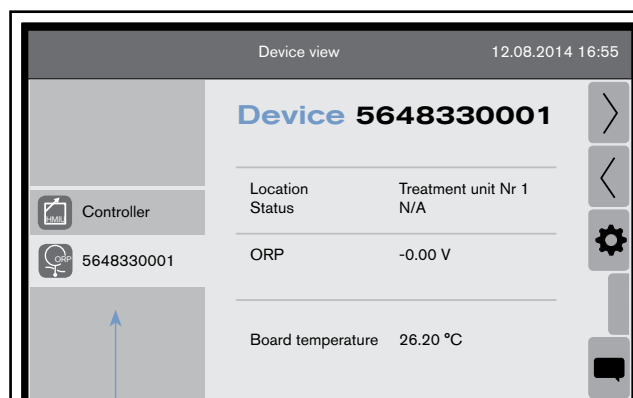
## 8.5 "Device" view of the product

The "Device" view shows some of the measurement data related to the product.



→ If the display shows a "Desktop" view, tap  to access the "Device" view.

→ To display the "Device" view of the product, select the product in the list of devices on the left of the display.




List of devices that are connected to the bÜS

The following data can be read from the "Device" view of the product:

- the devices that are connected on the bÜS with their "Unique device name". By default, the "Unique device name" is built up with two numbers: the order code of the product (for example 564833, for the redox potential sensor cube) and the series number (0001, for example).
- where the product is geographically located.
- the measured value of the redox potential of the water sample.
- the measured value of the temperature of the internal measurement board.

Table 1: "Device" view of the product



→ To display the "Function" view of the product, tap .

## 8.6 "Function" view of the product

The "Function" view shows the functions available for a product and, for each function, the main data related to each function.

To display the "Function" view of the product:

1. select the product in the list of devices, on the left of the display,



2. tap



	<p><b>"Function" view of the büS</b></p> <p>→ To display the "Function" view of the büS the product is connected to, select "büS" in the list of devices on the left of the display.</p> <p>→ Tap  to access the "Parameter" view. See chap. <a href="#">8.7</a>.</p>
	<p><b>"Function" view of the sensor</b></p> <p>→ To display the "Function" view of the sensor, select "Sensor" in the list of devices on the left of the display.</p> <p>→ Tap  to access the "Parameter" view. See chap. <a href="#">8.8</a>.</p>

Table 2: "Function" view of the product



## 8.7 Detailed views of the bÜS function

Table 3: "Parameter" view of the "bÜS" function

	<p><b>"Parameter" detailed view of the bÜS</b></p> <p>To set the user-specific data for the identification of the device on the bÜS:</p> <ul style="list-style-type: none"> <li>Unique Device Name of the product.</li> </ul> <p>→ Make sure you choose a unique name for the product because the bÜS must recognize the product.</p> <p>→ Make sure you choose a unique name that is self explanatory to identify the product because, if the unique name is changed, all the settings made on the bÜS must be changed.</p> <ul style="list-style-type: none"> <li>Description</li> <li>Location</li> <li>Grouping setting</li> </ul>
--	--

Table 4: "Diagnosis" view of the "bÜS" function

	<p><b>"Diagnosis" detailed view of the bÜS</b></p> <p>To read some bÜS data and device data:</p> <ul style="list-style-type: none"> <li>Address and baud rate</li> <li>Device name and device order code (Identity number)</li> <li>Software and hardware information</li> <li>Information relating to the TFT</li> <li>Device driver information</li> </ul> <p>No changes by user are possible.</p>
--	--

MAN 1000239759 EN Version: D Status: RL (released | freigegeben) printed: 16.01.2025

Table 5: "Maintenance" view of the "büs" function

	<p><b>"Maintenance" detailed view of the büs</b></p> <p>Restart the product for a reset.</p>
--	--

## 8.8 "Parameter" view of the sensor

→ In the "Function" view, tap  to access the "Parameter" view.

	<p>The "Parameter" view of the sensor makes it possible:</p> <ul style="list-style-type: none"> <li>▪ to change the units of the displayed redox potential.</li> <li>▪ to enter the value of the T10-90 response time for the measured signal.</li> <li>▪ to configure the triggering of the warnings, see chap. <a href="#">8.8.1</a>.</li> <li>▪ to configure the triggering of the errors, see chap. <a href="#">8.8.2</a>.</li> </ul>
--	---

Table 6: "Parameter" view of the sensor

### 8.8.1 Configuring the triggering of the warnings


The values of some process variables can be monitored to detect a problem in the process or on the product.

For the redox potential sensor cube, the redox potential of the water sample can be monitored.

Procedure:

1. Tap **Warnings ...** in the "Parameter" view of the sensor.
2. Tap **Activation flags** in the "Sensor Parameter" view.
3. Select the process variables to be monitored and validate.
4. Set the minimum and/or maximum threshold values.



When the parametered threshold values are reached and the activation flag of the related process variable is


selected, a warning message is generated in the "Messages List": tap  to access the "Messages List". See chap. [9.4](#) for the troubleshooting details.

## 8.8.2 Configuring the triggering of the errors

The values of some process variables can be monitored to detect a problem in the process or on the product. For the redox potential sensor cube, the redox potential of the water sample can be monitored.

Procedure:


1. Tap **Errors ...**  in the "Parameter" view of the sensor.
2. Tap **Activation flags**  in the "Sensor Parameter" view.
3. Select the process variables to be monitored and validate.
4. Set the minimum and/or maximum threshold values.

When the parametered threshold values are reached and the activation flag of the related process variable is selected, an error message is generated in the "Messages List": tap  to access the "Messages List". See chap. 9.4 for the troubleshooting details.

## 8.9 "Diagnosis" view of the sensor

The "Diagnosis" view makes it possible to read the following values:

- the measured value of the redox potential of the water sample.
- the value of the offset of the redox potential sensor, calculated through calibration or entered in the "Maintenance" view.
- the measured value of the temperature of the measurement board.
- the measured impedance of the reference electrode.
- the time the product has already operated.
- the calibration limits of the offset value of the redox potential sensor.
- the calibration limits of the slope value of the redox potential sensor.


→ From the "Parameter" view of the sensor, tap  to access the "Diagnosis" view.

## 8.10 "Maintenance" view of the sensor

The "Maintenance" view makes it possible:

- to modify the offset value of the redox potential sensor,
- to automatically calibrate the product, with the calibration wizard,
- to check the operating of the product by simulating some data,
- to read the date of the last calibration,
- to read the date of the next due calibration,
- to set the number of days between two calibrations.




→ From the "Parameter" view of the sensor, tap  to access the "Maintenance" view.

### 8.10.1 Calibrating the offset value of the redox potential sensor

To measure redox potential values with as less deviation as possible you must calibrate the redox potential sensor.

This can be done:

- either by adjusting by hand the offset value of the redox potential sensor: in the "Maintenance" view of the sensor, tap **ORP**  **Offset** and enter an offset value.
- or by doing a 1 point calibration procedure to automatically adjust the offset value of the redox potential sensor. See chap. [8.10.2](#).

### 8.10.2 Doing a 1 point calibration procedure of the redox potential sensor



#### **Danger due to the nature of the fluid**

- ▶ Respect the regulations on accident prevention and safety relating to the use of aggressive fluids.

Do a 1 point calibration procedure to automatically adjust the offset value of the redox potential sensor.

1. Connect a peristaltic pump in the water sample inlet circuit of the system, as shown in [Fig. 3](#). If the fluidic connections are not done correctly, the product and the system can be damaged because the pressure in the product and in the system is too high.

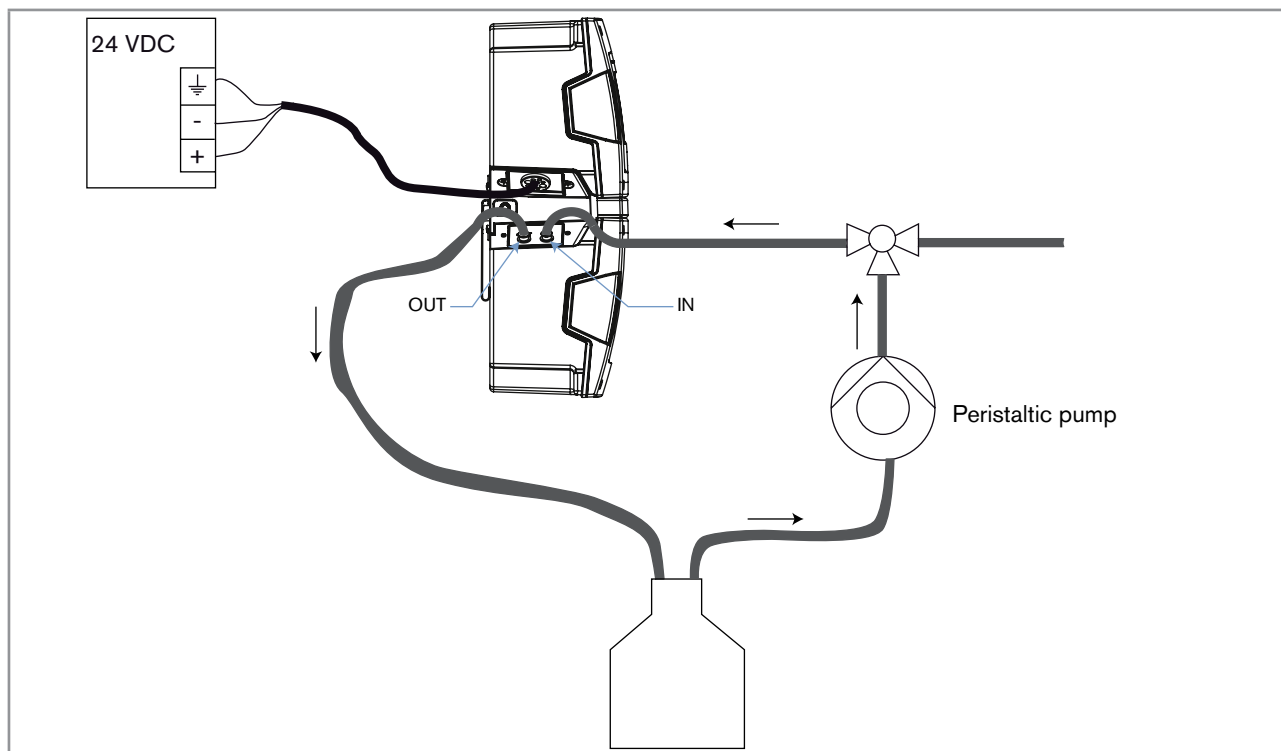






Fig. 3: Installation for the calibration of the product in a system type 8905

2. Make sure the direction of the flow is correct.
3. Make sure the fluidic installation for the calibration is tight.
4. Let clean water flow through the system to rinse the product.
5. Prepare the buffer solution with a redox potential value of 475 mV (order code 418555).
6. In the "Maintenance" view of the sensor, tap **ORP calibration wizard** **1 point** ...▶.
7. Step 1/5: let the buffer solution flow through the sensor.
8. Tap .
9. Step 2/5: tap **Input buffer value** ▶ and enter the redox potential value of the buffer solution.
10. Validate.
11. Tap .
12. Step 3/5: when the redox potential measurement is stable, tap .

13. Step 4/5:

- if the calibration has succeeded, the calculated offset value is displayed and the date of the last calibration is updated (see chap. 8.10.4). Tap  to go to the step 5/5.
- if an error message is displayed, refer to [Table 7](#).
- if a warning message is displayed, refer to [Table 8](#).

14. Step 5/5: validate or cancel the calibration.

Table 7: Error message at the end of the 1 point calibration of the redox potential sensor



<b>Displayed message</b>	Computed calibration value out of error limits
<b>Symbol displayed on the Unique Device Name of the product</b>	
<b>Possible cause</b>	The sensor calibration has failed because the calculated offset value is out of the error range.
<b>What to do?</b>	<ol style="list-style-type: none"> <li>1. Compare the calculated offset value with the calibration limits that can be read in the "Diagnosis" view.</li> <li>2. Replace the external reference electrode by a new one.</li> <li>3. Do the calibration again.</li> <li>4. If the calibration fails again, replace the product by a new one.</li> </ol>

Table 8: Warning message at the end of the 1 point calibration of the redox potential sensor

<b>Displayed message</b>	Computed calibration value out of warning limits	
<b>Symbol displayed on the Unique Device Name of the product</b>		
<b>Possible cause</b>	The calculated offset value is out of the warning range because:	
	<ul style="list-style-type: none"> <li>▪ either a wrong buffer solution has been used for the calibration.</li> </ul>	<ul style="list-style-type: none"> <li>▪ or the external reference electrode is aging.</li> </ul>
<b>What to do?</b>	<ol style="list-style-type: none"> <li>1. Make sure the buffer solution used is the correct one.</li> <li>2. If it is not the correct one, abort the calibration.</li> <li>3. Use a correct buffer solution and do the complete calibration procedure again.</li> </ol>	<p>→ You can choose to either validate or cancel the calibration.</p> <ul style="list-style-type: none"> <li>▪ If you validate the calibration, the new calculated offset value is used to determine the redox potential value, and the last calibration date is updated.</li> <li>▪ If you cancel the calibration, the current offset value is used to determine the redox potential value, and the last calibration date is not updated.</li> </ul> <p>→ Plan to replace the external reference electrode.</p>

### 8.10.3 Simulating some data

Check the operating (for example, make sure the warning and/or error limits are correctly set) of the product and/or process by simulating some data.

1. In the "Maintenance" view of the sensor, tap **Simulation Status** and choose "ON" to activate the simulation.
2. Validate.
3. To simulate a redox potential value, tap **Simulation redox potential** and enter the redox potential value to be simulated.

### 8.10.4 Reading the date of the last calibration

To read the date of the last calibration that has succeeded.

→ In the "Maintenance" view of the sensor, read the date in the field **Calibration schedule Last calibration**.

### 8.10.5 Reading the date of the next due calibration

To read the date of the next calibration that must be done.

→ In the "Maintenance" view of the sensor, read the date in the field **Calibration schedule Next calibration**.

### 8.10.6 Setting the time interval between two calibrations

To set the time interval, in days, between two calibrations:

1. In the "Maintenance" view of the sensor, tap **Calibration schedule Interval in days**.
1. Enter the number of days between two calibrations. We recommend to calibrate the product every month.
2. Validate.

When the due calibration date is reached, a warning message is displayed in the Messages List.

## 9 MAINTENANCE AND TROUBLESHOOTING

### 9.1 Safety instructions



#### WARNING

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

- ▶ Maintenance must only be carried out by qualified and skilled staff with the appropriate tools.

#### NOTE

**Risk of damage to the product due to the power supply**

- Shut down and isolate the electrical power source before carrying out work on the system.

### 9.2 Cleaning of the product



#### DANGER

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

- ▶ Respect the regulations on accident prevention and safety relating to the use of aggressive fluids.

The product can be cleaned with a cloth dampened with water (max. 40 °C) or with an acid detergent (with max. 5% of hydrochloric acid).

### 9.3 Replacing the external reference electrode

The external reference electrode must be replaced if the error calibration limits for the offset value of the redox potential sensor are exceeded.

Procedure to replace the external reference electrode:

<ol style="list-style-type: none"> <li>1. Remove the redox potential sensor cube from the system as described in the Operating Instructions of the system type 8905.</li> <li>2. Lift the drop lever of the reference electrode and turn it by a quarter turn to the left.</li> </ol>	
<ol style="list-style-type: none"> <li>3. Pull the lever to remove the external reference electrode.</li> <li>4. Dispose of the used external reference electrode. Keep to the existing provisions on the subject of waste disposal and environmental protection.</li> </ol>	






<p>5. If necessary, clean the empty seating of the electrode reference with a dry cloth or cotton swabs.</p> <p>6. Prepare the new reference electrode.</p> <p>7. Carefully remove the protective cap because it contains some KCl.</p>	
<p>8. Make sure the seal is in its groove on the external reference electrode.</p> <p>9. If necessary, remove the solid deposits from the capillary.</p> <p>10. Moisten the seal with water. If not, the seal can be damaged.</p>	
<p>11. Lift the drop lever of the reference electrode and turn it by a quarter turn to the left.</p> <p>12. Insert the new external reference electrode fully.</p>	
<p>13. Turn the drop lever by a quarter turn to the right and lower it fully in its seating.</p>	
<p>14. Mount the redox potential sensor cube back in the system as described in the Operating Instructions of the system type 8905.</p>	


## 9.4 Troubleshooting if no message is displayed

<p><b>Colour of the product status LED</b></p>	<p>OFF</p>
<p><b>Possible cause</b></p>	<p>The product / the system is not energized.</p>
<p><b>What to do?</b></p>	<ol style="list-style-type: none"> <li>1. Check the wiring.</li> <li>2. Make sure the voltage supply is 24 V DC.</li> <li>3. Check that the power supply source is working properly.</li> </ol>


## 9.5 Troubleshooting if the status LED of the product is red or orange


If an error or a warning message has been generated by the system:

- the status light of the system is red or orange,
- the status LED of the product is red or orange,
- the symbol  or  appears on the Unique Device Name of the product, in the list of devices,
- the symbol  appears in the top left corner of the display.


→ Tap  to access the "Messages List".


### 9.5.1 Message "Too high redox potential value"

<b>Displayed message</b>	Too high redox potential value
<b>Symbol displayed on the Unique Device Name of the product</b>	
<b>Possible cause</b>	<p>The redox potential value of the water sample is out of range.</p> <p>The message is displayed when the following settings have been made in <b>Messages triggers Errors</b> ▶ ("Parameter" view of the sensor):</p> <ul style="list-style-type: none"> <li>▪ the error "activation flag" for the high threshold of the redox potential value is selected,</li> <li>▪ and the high threshold set for the redox potential value has been reached.</li> </ul>
<b>What to do?</b>	→ Check the process.

<b>Displayed message</b>	Too high redox potential value
<b>Symbol displayed on the Unique Device Name of the product</b>	
<b>Possible cause</b>	<p>The redox potential value of the water sample is out of range.</p> <p>The message is displayed when the following settings have been made in <b>Messages triggers Warnings</b> ▶ ("Parameter" view of the sensor):</p> <ul style="list-style-type: none"> <li>▪ the warning "activation flag" for the high threshold of the redox potential value is selected,</li> <li>▪ and the high threshold set for the redox potential value has been reached.</li> </ul>
<b>What to do?</b>	→ Check the process.

## 9.5.2 Message "Too low redox potential value"

<b>Displayed message</b>	Too low redox potential value
<b>Symbol displayed on the Unique Device Name of the product</b>	
<b>Possible cause</b>	<p>The redox potential value of the water sample is out of range.</p> <p>The message is displayed when the following settings have been made in <b>Messages triggers Errors</b> ▶ ("Parameter" view of the sensor):</p> <ul style="list-style-type: none"> <li>▪ the error "activation flag" for the low threshold of the redox potential value is selected,</li> <li>▪ and the low threshold set for the redox potential value has been reached.</li> </ul>
<b>What to do?</b>	→ Check the process.

<b>Displayed message</b>	Too low redox potential value
<b>Symbol displayed on the Unique Device Name of the product</b>	
<b>Possible cause</b>	<p>The redox potential value of the water sample is out of range.</p> <p>The message is displayed when the following settings have been made in <b>Messages triggers Warnings</b> ▶ ("Parameter" view of the sensor):</p> <ul style="list-style-type: none"> <li>▪ the warning "activation flag" for the low threshold of the redox potential value is selected,</li> <li>▪ and the low threshold set for the redox potential value has been reached.</li> </ul>
<b>What to do?</b>	→ Check the process.

## 10 SPARE PARTS AND ACCESSORIES



### CAUTION

**Risk of injury and/or damage caused by the use of unsuitable parts.**

Incorrect accessories and unsuitable replacement parts may cause injuries and damage the product and the surrounding area.

- ▶ Use only original accessories and original replacement parts from Bürkert.

Accessory	Order code
Buffer solution, 475 mV	418555
External reference electrode	566084

## 11 PACKAGING, TRANSPORT

### NOTE

#### Damage due to transport

Transport may damage an insufficiently protected product.

- Transport the product in shock-resistant packaging and away from humidity and dirt.
- Do not expose the product to temperatures that may exceed the admissible storage temperature range.
- Protect the electrical interfaces using protective plugs.

## 12 STORAGE

### NOTE

#### Poor storage can damage the product.

- ▶ Depending on the duration of the storage time, obey the storage instructions in the chapters [12.1](#) to [12.3](#).
- ▶ After any storage period, obey the instructions in chap. [12.4](#).

### 12.1 To store the product for a maximum of 4 days

1. Rinse the product with tap water.
2. Purge the product with air at a max. pressure of 2 bar.
3. Store the product at room temperature (about 23 °C ±10 °C).
4. Store the product in a dry place away from dust.

## 12.2 To store the product for more than 4 days and less than one month

1. Rinse the product with tap water.
2. DO NOT PURGE THE PRODUCT because it will dry out.
3. Store the product at room temperature (about 23 °C ±10 °C).
4. Store the product in a dry place away from dust.

## 12.3 To store the product for more than one month

1. Remove the external reference electrode.
2. Rinse the product with tap water.
3. Purge the product with air at a max. pressure of 2 bar.
4. Store the product at room temperature (about 23 °C ±10 °C).
5. Store the product in a dry place away from dust.

## 12.4 After storage

Before commissioning a product that has been stored:

1. If necessary, mount a new external reference electrode. See chap. [9.3](#).
2. Plug the product in the system.
3. While the power supply of the system is OFF, let the water sample flow through the product for at least 2 hours.
4. Calibrate the product. See chap. [8.8](#).

# 13 DISPOSAL OF THE PRODUCT

→ Dispose of the product and its packaging in an environmentally-friendly way.

### NOTE

**Damage to the environment caused by products contaminated by fluids.**

- Keep to the existing provisions on the subject of waste disposal and environmental protection.



#### Note:

Comply with the national and/or local regulations which concern the area of waste disposal.





