

Quick Start Guide

BactoSense

Safety



Read the Instruction Manual before operating the BactoSense. Safety information can be found in chapter 4.

Intended use



The BactoSense and peripheral equipment are designed to measure microbial cells in drinking water.

Operating conditions

- Temperature 5 °C – 30 °C
- Humidity 10 % – 90 % RH
- Indoor use, max. 2000 m.a.s.l.

Sample conditions

- Temperature 5 °C – 40 °C
- Turbidity 1 – 10 FTU
- Conductivity 0 – 100'000 µS/cm at 20 °C
- pH 5 – 12
- Chlorine max. 3 mg/L
- Flow rate 200 – 400 mL/min with online sampling device, max. 0.5 bar

Switching on the BactoSense

1.	Press the power button on the right hand-side of the BactoSense. Wait a few seconds until the welcome screen appears on the user interface.
2.	 Press the <i>Login</i> button.
3.	Choose your user role, enter the corresponding PIN and press <i>OK</i> .
4.	 If you want to change the language, navigate to the <i>Home menu</i> , press the <i>System settings</i> button and then select <i>Language</i> .

Logout and power off

1.	 Press the <i>Logout</i> button in the top right corner of the user interface.
2.	Choose one of the following options:  <i>User logout</i> (to lock the screen or change user)  <i>Power off the BactoSense</i>  Apply appropriate instrument cleaning procedures before powering off the instrument. Find more information in the <i>Instrument cleaning</i> section on page 3 of this Quick Guide.

Check cartridge filling level

The cartridge filling level is indicated with the cartridge symbol in the top bar of the BactoSense user interface.



High filling level



Almost empty



Empty

If you need more specific information, navigate to the *Home menu*, and then press *System info*. Under *Cartridge capacity remaining* you see how full the cartridge still is (in percent).

Check cartridge expiration date

The cartridge expiration status is indicated with a cartridge expiration warning symbol in the top bar of the user interface.



Almost expired



Expired



Do not use expired cartridges. Such cartridges may contain deteriorated reagents, leading to erroneous measurement results.

The exact expiration date of a cartridge can be found on the cartridge itself, or in the user interface under *System info*.

Cartridge change

1.	 Wear protective gloves and safety goggles for the exchange procedure.
2.	In the BactoSense user interface, navigate to the <i>Home menu</i> and press <i>Maintenance</i> .
3.	Press <i>Cartridge change</i> . In this step, the old cartridge will be prepared for removal.
4.	Follow the instructions given in the user interface.

Cartridge storage

Store the cartridge between 15 °C and 25 °C, ideally at 15 °C, between 20 % and 60 % relative humidity, and in horizontal orientation. Make sure the liquid ports of the cartridge are tightly closed with the respective plugs.



Cartridges are intended to be refilled. Do not discard.



If you install a cartridge in an instrument after storage or transportation, follow the cartridge change process described above.

Find more information in the instruction manual:

- Cartridge change process, section 6.5.4.
- Cartridge storage, section 11.1.3.
- Cartridge transportation, section 11.2.2.
- Returning the cartridge for refill, section 11.3.2.

Measuring in Manual Mode

The manual measuring mode is used to measure individual grab samples. The operator collects such samples and attaches them to the manual sampling device one after the other.

The instruction manual contains information on how to install (section 5.7), uninstall (section 6.6.2) and store (section 11.1.2) the manual sampling device.

1.	Make sure the manual sampling device is correctly installed, as described in the instruction manual in section 5.7.
2.	Navigate to the <i>Home menu</i> of the BactoSense user interface. Select <i>Manual mode</i> and press <i>Start</i> to see the available protocol options.
3.	It is recommended to start the operations with the cleaning of the sampling device. Perform a <i>Clean sampling device process with Washstation</i> (instruction manual section 8.2.2) if you have a Washstation, and a <i>Clean sampling device process</i> otherwise (instruction manual section 8.2.3).
4.	Then attach your 5 mL screw cap sample tube containing 2 – 5 mL water sample to the manual sampling device. If you have previously performed a cleaning of the sampling device, we recommend to perform a <i>Prime</i> prior to the measurement. Select <i>Prime</i> from the list of available protocols and press <i>Next</i> and <i>Start</i> . More information can be found in the instruction manual in section 7.7.3.
5.	To measure the sample, navigate again to the list of available protocols and select the <i>Water Analysis</i> protocol.
6.	Select the number of replications with the [+] and [-] buttons in the <i>Replications</i> column. Replicates will be sampled from the same sample tube.
7.	Write the sample name into the <i>Sample name</i> field.
8.	Select the desired gating set for your measurement.
9.	Once you have completed the configurations, press <i>Next</i> .
10.	Press the <i>Start</i> button. The measurement will run now fully automatically. A single measurement lasts approximately 20 minutes. The current status is always displayed in the top bar of the user interface.
11.	After completing the measurement, review the results by pressing <i>Next</i> .
12.	If no further measurements are planned for the next couple of hours, perform a cleaning of the manual sampling device (with or without Washstation). After finishing, leave the Washstation or an empty tube attached to the sampling device.

Measuring in Auto Mode

In the auto (also called *online*) measuring mode the BactoSense is connected to a water source with the online sampling device and measures samples automatically in predefined intervals.

The instruction manual contains information on how to install (section 5.8), uninstall (section 6.6.1) and store (section 11.1.2) the online sampling device.

1.	Make sure the online sampling device is correctly installed, as described in the instruction manual in section 5.8.
2.	Navigate to the <i>Home menu</i> of the BactoSense user interface. Select <i>Auto mode</i> and press <i>Start</i> to see the available protocol options.
3.	In the list of protocols, make sure <i>Online Sampling Device (with Backflush)</i> is selected.
4.	Write the sample name into the <i>Sample name</i> field.
5.	Select the desired gating set for your measurement.
6.	Press <i>Next</i> .
7.	Set the desired measurement interval, i.e. how frequently a sample will be measured.
8.	Select whether you want to start with the first measurement immediately or prefer another starting time.
9.	Once you have completed the configurations, press <i>Start</i> . The measurement series will now run automatically. During the analysis, the latest estimation of cell counts for the currently analysed sample is displayed in the action bar. After each measurement, the time series graph is updated automatically. To see more detailed results, press the <i>View results</i> button.
10.	If you want to stop the automated measurement series, press the <i>Stop</i> button.
11.	If no further measurement series is planned for the next couple of days, remove the online sampling device according to the instructions in the instruction manual (section 6.6.1), install the manual sampling device and perform a cleaning of the manual sampling device process (with or without Washstation). Leave the Washstation or an empty tube attached to the sampling device.

Find more information in the instruction manual:

- Reviewing results, section 7.3.2 (manual) and 7.2.3 (auto).
- Renaming results, section 7.3.3.
- Filtering results, section 7.5.
- Exporting results, section 7.6.

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Instrument cleaning

Keeping the BactoSense clean is essential for ensuring optimal performance and correct measurement results. Use the following indications to select the appropriate cleaning routine.

Indications	Process / Requirements
<ul style="list-style-type: none">• Before shutting down the instrument• After measuring a highly concentrated sample• If the instrument will be idle for more than a few hours• If the manual sampling device has been newly installed	<p>Make sure the manual sampling device is installed.</p> <p>Perform the automated <i>Clean sampling device with Washstation</i> protocol, see instruction manual section 8.2.2. This protocol requires a Washstation (part number 100173). If no Washstation is available, perform a <i>Clean sampling device</i> protocol according to the instruction manual section 8.2.3.</p>
<ul style="list-style-type: none">• If the manual sampling device may have been contaminated due to improper storage• After stopping in an error state with a loaded sample• When facing a persistent biological contamination which can't be cleared with the sampling device cleaning procedure	<p>Perform the biological decontamination process.</p> <p>This process requires a Cleaning Kit (part number 200005).</p> <p>Follow the instructions in the User manual of the Cleaning Kit.</p>
<ul style="list-style-type: none">• If the needle of the manual sampling device has deposits• If high baseline in SSC or air bubble detection warnings appear frequently• If the biological decontamination process was not successful	<p>Perform the non-biological decontamination process.</p> <p>This process requires a Cleaning Kit (part number 200005).</p> <p>Follow the instructions in the User manual of the Cleaning Kit.</p>

Operational qualification

Operational qualification is a process to ensure the BactoSense operates as intended. The following options are available:

- To do a fully automated quick check of the instrument status, perform the self-check procedure described in instruction manual, section 9.6.
- To rule out a contamination, perform the cleanliness verification procedure described in the instruction manual, section 6.7.1.
- To do a full instrument validation procedure, use the Validation Kit. This procedure validates cleanliness and proper functioning of the BactoSense.

Transport

When transporting the BactoSense or the cartridge, adhere to the following instructions. More detailed information can be found in the instruction manual, section 11.2.

Mode	Instructions
Standard shipping	<ul style="list-style-type: none">• Follow the cartridge change procedure to safely remove the cartridge. Then pack BactoSense and cartridge in their standard cardboard boxes with foam inserts. Ship on a pallet or skid.• Perform instrument validation using the bNovate Validation Kit when re-installing.
Long distance or uneven road by car	<ul style="list-style-type: none">• Follow the cartridge change procedure to safely remove the cartridge. Then pack BactoSense and cartridge in their standard cardboard boxes with foam inserts, or alternatively use the transport case.• Perform instrument validation using the bNovate Validation Kit when re-installing.
Short distance by car, even road, instrument laying on its backside	<ul style="list-style-type: none">• Follow the cartridge change procedure to safely remove the cartridge. Transport the BactoSense in the transport case.
Short distance by car, even road, instrument in upright position	<ul style="list-style-type: none">• Transport in the transport case, without removing the cartridge.• Perform a Fill Tubing process after switching the instrument on again.
Short distance within facility, instrument in upright position	<ul style="list-style-type: none">• Transport in the transport case or by hand, without removing the cartridge.• Perform a <i>Fill Tubing</i> process after switching the instrument on again.

Storage

1. Follow the cartridge removal procedure (instruction manual section 6.5.5) to safely remove the cartridge (not needed if storage conditions for the cartridge can also be fulfilled).
2. Make sure the manual sampling device is mounted to the BactoSense, with the Washstation or an empty tube attached.
3. Then pack the BactoSense and cartridge into their standard cardboard box(es) with foam inserts, or into the transport case.
4. Store the BactoSense between 10 °C and 30 °C, and with a relative humidity between 10 % and 70 %. For the cartridge, the storage conditions on page 1 apply.

Detailed information can be found in the instruction manual in chapter 11.