Troubleshooting Guide Maltose & Glucose V2.0

Contents

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Software

Can I use the MalgluSens software on a MAC?

No, the software is only compatible with Windows. There might be an option to run it via boot camp, parallels desktop or virtual box (etc), but we cannot give detailed guidance on this topic.

Is it possible to install the MalgluSens software on a windows server instead of a Laptop or PC?

Yes, install using the MSI FILE provided with the software files.

Which Windows versions are supported by the MalgluSens software?

MalgluSens software is tested on Windows 7/8/8.1/10 and 11.

My software does not connect to the DirectSens® Reader.

Please first check if the reader is turned on. The illuminated white ring around the power button indicates a turned-on reader. If the reader is turned on and there is still no connection with the software, please check if the DirectSens® Reader is recognized by your PC or Laptop. Right-click on the windows icon in the bottom left corner of the screen and select the device manager. In the section “COM Ports” you can see if and which COM port is assigned to the reader. The COM Port number may vary. If you still cannot get any connection with the software please take a closer look at “My DirectSens® reader is turned on and recognized by my PC, but I still cannot get any connection with the software”.

My DirectSens® Reader is turned on and recognized by my PC, but I still cannot get any connection with the software.

The software automatically detects a connected reader but in some rare cases PC specific settings may prevent detection.
If there is a problem with the firmware on the reader it can be repaired by pressing “Windows + R” and searching for “%user profile%\AppData\Roaming\Microsoft\Windows\Start Menu\Programs\DirectSens\”. Click on “Force device firmware update”.
If there is a problem with windows administrative privileges make sure to right click the installer and “Run as administrator” to reinstall the software as an admin.
If there is a problem with the reader after the PC went in standby mode, make sure power delivery during standby is enabled in windows and in the BIOS of your PC.
If there is a very high COM Port number assigned to the reader it can cause problems with the software. In windows device manager, make sure to remove old or unused COM Port devices which are no longer in use.
Also make sure no other programs are using the device, the drivers are installed correctly (reinstall if necessary), your USB port uses updated drivers and provides enough power.
If there is still no connection between the PC and the DirectSens® Reader try a different USB-Port or ideally another PC if available.

Which units can be displayed by the software?

The software can display % or g/L or mg/100g or ppm.

How can I select units and set them as default?

You can choose the unit on the "results" screen. You can choose between %, g/L, mg/100g or ppm. Your selection is saved for the next measurements. If the software is closed the units will be set to default unit %.

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I cannot see (click) the “Settings” button in the MalgluSens software

The settings button appears only when the reader is connected and the start screen (sample name: ……) is activated.

How can I change the directory/location where the measurement results are saved?

On the results screen of the software the output location for saving the results file (and test report) can be adjusted.

How can I see previous measurement data in the software?

Result file MalgluSens.xls:
All measured results are stored as Excel file (.XLS file) by default. If needed, the output format can be changed to comma separated value file (.CSV file; see section settings in the reader kit & software guide). The file is located at the default path C:\Users\[USERS]\Documents\Maltose & Glucose.xls. If there is an existing MalgluSens.xls file, the software will automatically amend the values to the file. If no file called MalgluSens.xls exists, it will be created automatically.
Viewing results of current session:
Individual results of the ongoing measurement session can be viewed by clicking on the button “View last results” in the upper left corner. This will open a window with the measurement specific data, which can be easily exported to an excel file.

How can I check if the reader and bar code scanner are correctly recognized on the PC / Laptop

Please refer to the reader kit & software guide for further information.

Reader

My DirectSens® Reader is not working.

The USB-cable is not connected properly.
→Check USB-cable connection of reader and scanner.
The software is not installed properly.
→Refer to software installation guide.
A protocol step was missed.
→Re-read and follow the manual exactly.
Sample or other kinds of liquid were spilled into the reader front adapter.
→Change the adapter according to the instructions. A spare adapter is part of the reader kit.

What can I do if a piece of broken sensor is stuck in the adapter slot of the reader device?

Try to carefully remove the broken sensor with tweezers. Avoid bending the contacts. If successfully removed check the adapter by running a calibration. If the removal of the pieces from the adapter slot is not possible exchange the adapter and check the new adapter by running a calibration.

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How to maintain the DirectSens® Reader?

The reader is basically maintenance free, but it is highly recommended to run a system test procedure with the calibration device that is supplied with the reader kit at least once per year.
In the following cases it is necessary to exchange the front adapter with the sensor slot against a new one:

1) A piece of a broken sensor strip cannot be removed out of the sensor slot by use of tweezers.
2) The test procedure using the calibration device shows results that are out of specification.
3) Sample or other kinds of liquid were spilled into the sensor strip slot and check with calibration device shows failure.

QR Code Scanning

What to do if the QR code scanner is not working?

Check if the QR code scanner is selected in the MalgluSens software in the settings menu.
Check if the QR code scanner is plugged in correctly and lights up when moved or the scanning button is pressed. If not, use different USB port/PC.
Check if the QR code scanner is recognized by the PC in the device manager.
Reinstall drivers for the QR code scanner.
If none of the above mentioned measures help, you have two options:

1) Use a webcam: If your PC or Laptop has a webcam, you can use this for scanning the QR codes. From the startup screen of the MalgluSens software open the “settings” menu and select the option “webcam QR scanner”.
2) Type in number code: You can scan the QR code using a QR scanning app on your mobile phone. The information that is displayed contains a number code. In the MalgluSens software you can use this number code as a replacement for the QR scan. When the software asks for the QR scan, select the box “Enter the QR code value manually” and then type in the number code.
   Note: With many mobile phone cameras, the QR code on the sensor box cannot be read because it is not flat enough. Remove the sticker from the box to make it readable.

My USB camera (QR code reader) is not working - no picture is displayed

Please check in “Settings” in the MalgluSens software if the correct scanning device is selected. You can choose between “QR code scanner” and “Webcam QR Scanner”.

I lost the QR code of my Maltose & Glucose Biosensor Assay Kit

You can use the QR code of another kit, but only if the batch number is the same. You find the batch number on the sticker on top of the kit box. If you do not have another kit of the same batch on stock, please contact the customer support <maltose@directsens.com>.

Calibration Device

How often should I use the calibration device?

Please define the intervals according to the requirements of your quality management system. DirectSens® recommends doing a calibration once per year.

What is the calibration device and how to use it?

A detailed description of using the calibration device is included in the Reader Kit & Software Guide. It can be opened by clicking on “Open manual” in the MalgluSens Software.

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Measurement

The results are erratic – some too high, some too low

General hint: Perform a measurement with the positive control (POC) that is supplied with the Maltose & Glucose Biosensor Kit. This helps you to understand if the problem is caused by the measurement procedure itself or if it is more related to the sample.

The sample application onto the sensor strip is inadequate

→ Apply the sample so that the whole active spot is covered. Use the pipette tip to enlarge the sample drop on the sensor without scratching the sensor surface.

→Do not pipette the sample up and down on the sensor during application - mixing the sample on sensor will give higher test results.

The sample is not sufficiently homogenized

→Ensure that samples are thoroughly mixed with water during stock solution preparation by gently agitating the mixture. Additionally, verify that the stock solution is adequately mixed with Buffer 1 and Buffer 2. Here, it is recommended to mix by taking the solution up and down with the pipette four times.

Front adapter of the reader is broken

→Exchange front adapter against spare adapter that is part of the reader kit.

The results are consistently too high

The sample application onto the sensor strip is inadequate

→Do not pipette the sample up- and down on the sensor during application - mixing the sample on sensor will give higher test results.

Dilution error

→Check your dilution routine and the multiplication factor that you are using and compare it with the values given in the manual.

→ Check if the pipette is working correctly and if your pipetting routine is correct. You can find useful information in the manual of the pipette and / or using online tutorials.

Sample is inhomogeneous

→ Make sure to mix the sample thoroughly before taking an aliquot for the measurement.

Maltose is too high

→ Maybe you have a problem with the glucose measurement because a too low glucose result leads to a too high maltose result

The measuring temperature is too high

→ Ensure that the diluted sample, which is applied to the sensors, and the sensor itself are at a temperature of 22 ± 2 °C (72 ± 3°F). Best is to operate the whole measurement in an air-conditioned room at that temperature.

Starch hydrolyzing enzymes from the production process have not been deactivated sufficiently

→ In this case the glucose and maltose results will increase with the time of sample storage. The effect is stronger on the maltose result than on the glucose result. Make sure that the enzymes get thoroughly deactivated prior to measurement (typically by heat treatment).

High density sample:

→If the sample has a total sugar content > 10 %, the density is significantly higher than that of water, which leads to errors in the result when you are using % w/w or g/100 g as measuring units.

→ Please refer to the chapter “Special sample types” for further information.

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The results are consistently too low

The sample application onto the sensor strip is inadequate

→ Apply the sample so that the whole active spot is covered. Use the pipette tip to enlarge the sample drop on the sensor without scratching the sensor surface.

Dilution error

→ Check your dilution routine and the multiplication factor that you are using and compare it with the values given in the manual.

→ Check if the pipette is working correctly and if your pipetting routine is correct. You can find useful information in the manual of the pipette and / or using online tutorials.

Sample is inhomogeneous

→ Make sure to mix the sample thoroughly before taking an aliquot for the measurement.

The measuring temperature is too low

→ Ensure that the diluted sample, which is applied to the sensors, and the sensor itself are at a temperature of 22 ± 2 °C (72 ± 3°F). Best is to operate the whole measurement in an air-conditioned room at that temperature.

The kit was not stored at the recommended temperature (2 – 8 °C/36 – 46 °F)

→ Perform a measurement with the positive control to check the performance of the kit. Discard the kit in case results are not within specifications of the positive control.

The kit has expired (check the expiry date on the outer kit box)

→ Discard the kit and use a non-expired kit.

Sample was microbially contaminated during storage

→ check for visible particles in the sample. Whenever possible, use fresh samples. Otherwise, store them cool or frozen.

HPLC for reference analysis was calibrated with glucose monohydrate / maltose monohydrate

→ Maltose & Glucose results are calculated as pure glucose and pure maltose. In case of monohydrate based HPLC results, multiply the glucose HPLC reference value with 0.909 and the maltose HPLC reference value with 0.950.

The results in wt % or in g/100 g are too low

→The reason can be a high sample density (typically when total sugar > 10 %). Divide the result in wt % or in g/100 g by the density of the sample. See the respective Application Note for high-density / high-viscosity samples for more information.

Other sugar species in the sample than glucose and maltose

→ If the combined amount of glucose and maltose measured with the Maltose & Glucose kit is lower than the total sugar determined by e.g. HPLC, please verify the HPLC results to see whether additional sugar species are present in the sample.

Examples for other sugar types: Fructose, Sucrose, Lactose or Galactose

Almonds or coconuts can add sucrose or fructose to the drink; for vegan drink samples sucrose may be an added ingredient.

Only the maltose result is too low

→Too high glucose result. Check the glucose measurement routine.

→Incubation at 53 °C (127 °F) was insufficient (too short, too low or too high temperature).

→Buffer 2 is contaminated with microorganisms (check for visible particles). Use a fresh buffer 2. If the second vial is still unused, discard the first and use the second one. Always use one vial up completely before opening the other vial. Refer to the manual regarding buffer usage routines.

Is the Maltose & Glucose measurement affected by temperature?

Since the test is based on a biological recognition element (enzyme) a deviation in temperature will affect the results. Increased temperature will result in higher values and vice versa. It is not

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recommended to use DirectSens® assay kits with other temperature than specified (22 °C ± 2 °C / 72± 3°F).

Is it possible to use the same sensor strip for several measurements?

Sensors only give accurate results when used one-time. The active spot contains additives that are needed for the measurement which are washed out during the first usage.

Is there any difference between using a water bath or a dry bath for incubation at 53 °C ?

No significant difference of maltose test results was obtained using a water bath or a dry bath for 53 °C incubation. Keep in mind that water baths generally have a longer heat-up time to reach the desired temperature. For convenience, we recommend using a dry bath (e.g. LAB FISH mini dry bath) for 53 °C incubation.

Is it required to start the 53 °C incubation step immediately after sample and buffer 2 are mixed?

It is recommended to follow the measurement procedure described in the Maltose & Glucose Manual. However, sample preparation (mixing sample + buffer 2) has been tested to remain stable for up to 60 min prior to the 53 °C incubation step.

Is it required to start the measurement immediately after the 53 °C incubation step?

It is recommended to follow the measurement procedure described in the Maltose & Glucose Manual. However, samples can be stored at room temperature for up to 60 min after the 53 °C incubation step.

Sample application

A correct sample application is crucial for measurement accuracy. Inadequate sample application yields erratic test results (some too high, some too low).

Apply 100 µL of sample directly onto the central active spot (black dot on the sensor strip). Distribute the sample by circular movement of the pipette tip so that the whole outer black circle around the active spot is covered. Make sure that this procedure is completed within 15 seconds.

What to do if the measurement starts before the sample is fully applied?

The DirectSens® reader has an automatic sample detection integrated in the adapter. When applying sample onto the sensor strip it will be detected automatically, and a 15 second count down starts for sample application. Make sure to apply the whole sample during these 15 seconds. You may try this a few times on one used sensor – then it will work reliably for the future. The automatic sample detection increases the measuring accuracy, therefore it is recommended not to deactivate it.

What to do if the software is at “insert sensor” and the sample is already applied?

In case the software is still at “insert sensor” the test results are not reliable, and the measurement should be repeated.

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The central black spot of the sensor has been scratched during sample application – Does it affect the test result?

Heavily scratching the sensible black area of the sensor can give erratic results (results are probably too high). It is recommended to repeat the measurement with a new sensor.

Pipetting the sample up-and down on sensor during application – Does it affect the test result?

Avoid pipetting the sample up- and down on the sensor during application –mixing the sample on sensor will give higher test results.

Kit components

I have some spare items (buffer, positive control) from a previous test kit left; can I use them with a new kit?

No. Please avoid mixing components from assay kits with different batch numbers.

Can I still use a test kit which arrived without cooling?

The recommended storage temperature for the Maltose & Glucose test kits is 2 – 8 °C (36 – 46 °F). However, storage at room temperature for up to 60 days and storage at 35 °C (95 °F) for up to 7 days has no influence on the quality of the test. Since it is difficult to find out what the exact temperature conditions were during transportation it is recommended to perform a positive control for each kit that arrives uncooled. If the positive control is within specifications the test kit can be used.

How long does it take to bring sensor strips and buffers to room temperature?

Buffer and control solution vials need approx. 30 minutes to reach room temperature when taken out of the fridge. Test strips take approx. 1 minute to reach room temperature when taken out of the black test strip vial.

However, bringing the kit components to room temperature prior to measurement is not required.

Can I use an expired sensor strip?

It is highly recommended never to use expired sensor strips because the results are not reliable anymore. However, for training purpose it is possible to use them. In this case, the software will show a warning about product expiration on the screen after the QR code of the strip has been scanned ("SENSOR HAS EXPIRED"). Click on the button "Next". In the next screen, you are asked "Do you really want to use the sensor". Click onto the button "Yes" and then continue as usual with the measurement. To check if expired test kit still works according to specifications please use positive control.

What happens if I forget to store the test kit in the fridge?

To guarantee highest accuracy the assay kits must be stored at 2-8 °C (36 - 46 °F). However, storage at room temperature for up to 60 days and storage at 35 °C (95 °F) for up to 7 days has no influence on the quality of the test.

Can I store buffer 1 and 2 at room temperature?

For long term storage of the buffers, a temperature of 2 – 8 °C (36 – 46 °F) is absolutely mandatory.

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I need more buffer for my sample prep. How can I source it?

Make sure that you always use exactly 100 µL of buffer 1 and the same amount of buffer 2 for each measurement. The Maltose & Glucose test kit contains enough buffer for 25 measurements. If you accidentally run out of buffer, please contact <maltose@directsens.com>.

Special Sample Types

High-density / high-viscosity samples

Samples with high sugar content (> 10 % total sugar) have a significantly higher density than water. If you are measuring these kinds of samples and need the results in % w/w or g/100 g, the results will be too high. Please refer to the respective application note for high-density / high-viscosity samples.

Solid samples

Please refer to the respective application note for solid samples.

Vegan drinks containing almonds or coconuts

Almonds and coconuts typically contain glucose, fructose and sucrose. Fructose and sucrose cannot be measured with the Maltose & Glucose kit.

Samples with a glucose or maltose concentration outside of the Maltose & Glucose specifications

Please contact the customer support <maltose@directsens.com>.

Samples containing solid particles

If the solid particles are highly concentrated and if they contain glucose and maltose, the particles may cause a measuring bias. In this case, mixing with a high shear mixer can help by decreasing the particle size and thus facilitate the dissolution of bound glucose and maltose.

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