LabTouch-aw

Operating Instructions

Leading the market thanks to INNOVATIVE solutions and sensor technology

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The Art of Precision Measurement

INDEX

1. Introduction

1.1 You Are Awesome!

Thank you for having purchased a Novasina LabTouch-aw system for measuring water activity. You have opted for a highly accurate and reliable instrument representing the latest state-of-the-art in electronics and software design when it comes to highest precision in aw (water activity) measuring.

To get the most out of all the possibilities of your Novasina LabTouch-aw and to ensure safe and reliable operation, please read these operating instructions carefully before setting the unit into operation.

Please keep this manual within reach of the installed instrument so that it will be at hand whenever you need it. If you lose the manual, please contact your Novasina representative for immediate replacement.

This operating instructions is valid for software versions V2.21 or higher

1.2 Important Notes

Intended use

The Novasina LabTouch-aw is intended to be used for measuring WATER ACTIVITY under strict adherence to the information and notes given in this manual. Any use beyond this scope is considered to be a violation of the intended purpose and may endanger your safety or could result in irreversible product damage and loss of all warranty claims. Any use of this Novasina instrument other than intended is at the customer's own risk and by no means the manufacturer nor the supplier will be liable for any resulting damage.

Safety instructions

- The Novasina LabTouch-aw system should only be serviced, maintained and repaired by qualified people who are familiar with the equipment.
- The LabTouch-aw system must not be used in hazardous zones or similar areas. The design is made for the laboratory use only.
- No explosive materials and no highly inflammable substances may be measured in the measurement chamber system.
- Just use the original power adapter from Novasina (part number 2600505)
- Before connecting the unit to the mains, ensure that:
  - The mains voltage is within 90...260V, at 50 or 60Hz. Please check the type plate of the system!
  - The power cable between the mains and the instrument is not damaged.
- The Novasina LabTouch-aw system may only be used under the specified operating conditions (see chapter 10).
- Observe and strictly adhere to the local regulations regarding the handling of mains-powered devices.
- Use only genuine accessories and spare parts available from your Novasina supplier or visit the homepage www.novasina.com.
- This instrument must not be modified in any way without the written permission of the manufacturer.
- Never open the instrument without removing the mains power cable first

2. General Product Description

2.1 System Overview

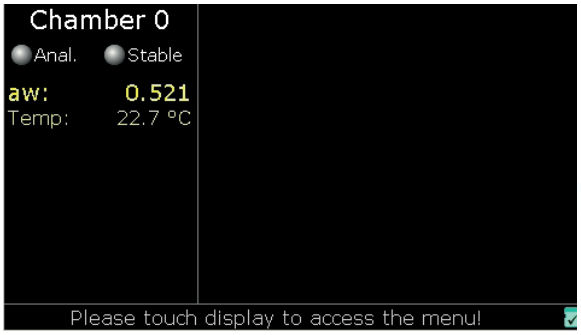
The LabTouch-aw system has been specifically developed for determining the water activity in a test sample like food, cosmetics or pharmaceuticals. Water activity is defined as the availability of “free” water in a sample and should not be directly compared with the water content (g water/ g sample). The water activity is given as the aw – value and ranges between 0 (absolute dryness) and 1 (100% relative humidity) and is a relative, sample-mass independent measurement. Only this free water takes an active part in the exchange of moisture with the ambient air and can possibly form the ideal medium for microbiological growth on the surface and influences the biological functions of microorganisms which has an impact on the microbiological stability plus chemical and physical properties of a product.

Special laboratory equipment is required for water activity (aw -value) determination which quantifies the air humidity over a sample in a closed chamber after reaching the humidity equilibrium between free water in the sample and water in the surrounding air.

The measured air humidity is directly proportional to the aw -value. An accurate and reproducible measurement is only possible if the sample temperature is kept constant (i.e. 25°C) and if the measurement is taken **after** reaching the humidity equilibrium. It is obvious that the measurement of water activity always take some time, means is not finished within a few seconds. The establishment of the equilibrium is sample-dependent and can not be shortened anyhow due to the fact that it is physics and chemistry.

An inevitable pre-requisite for determining water activity with extreme precision is the use of an excellent humidity sensor that provides exact, reproducible response over a very wide range (humidity from 0....100% rH), any hysteresis and a good chemical robustness. Novasina has been developing special electrolytic sensors that stand out for such unique properties for more than 50 years.

The integrated, resistive electrolytic LabTouch-aw sensor is based on the new chemical substance the Novasina „Novalyte“, which achieves the required accuracy and reproducibility for the daily sample measurement in the lab.



2.2 System Architecture

The LabTouch-aw consists of modular assemblies in combination with the unique resistive-electrolytic Novasina measurement technology, which is part of the aw-sensor. The aw-measurement signal is electronically processed together with the IR (infrared)sample temperature measurement and an additional temperature monitoring in the instrument's body. Recorded data can be stored on an removable SD-card.

The touch screen allows intuitive programming of the instrument as well as easy access to the various menus.

The LabTouch-aw comprises a semi-temperature stabilization of the measurement chamber which allows heating but no cooling.

For checking and adjusting the instrument, humidity standards can be used.

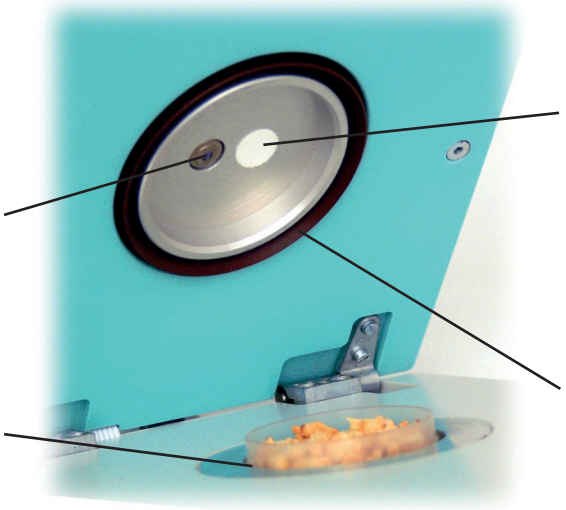
2.3 Instrument Overview

Front view:

The measurement cell including infrared temperature measurement is located in the inner part of the LabTouch-aw

Infrared temperature sensor for sample surface temp. measurement

Metal indentation for filled sample cup insertion

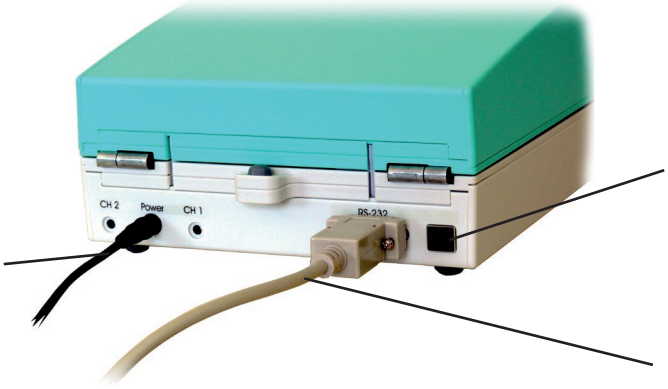


White pre-filter in front of the electrolytic measurement cell (sensor)

Sealing to eliminate air exchange with environment

The inner part of the measurement chamber is equipped with all the characteristic sensors

Power supply connector



USB connector for PC and Novalog MC communication

RS-232 interface for connection to PC

2.4 Scope of Delivery

The LabTouch-aw instrument is delivered as followed:

LabTouch-aw:

- Instrument LabTouch
- Power supply with different insertion plugs
- 4 pcs of humidity standards : SAL-T: 33, 58, 75 and 84%rH
- 40 pcs standardized disposable sample dishes (ePW)
- Factory calibration certificate
- SD-card 8 GB
- Tension ring
- 5 pcs pre-filter (white)
- Make sure you have a commercially available USB 2.0 or RS232 cable available
- The current manual can be downloaded at any time from www.novasina.ch

2.5 Optional Accessories

Mechanical filter

The white pre-filter provides mechanical protection of the measurement cell e.g. in case the sample cup is overfilled, sample will stick on the filter instead of the measurement cell.

This filter should be replaced when it is dirty or at least on a yearly base, otherwise it could influence the measurement. 5 units are included in the delivery of the instrument.

Chemical protection filter

Some samples do have volatiles components / ingredients thus the measuring cell has to be protected from damaging, gaseous substances. This is done by various filter systems which are provided by Novasina. To select an appropriate filter system, consult the Novasina protection filter systems data sheet or contact your local Novasina distribution partner.

Thanks to these filter systems, the lifetime of the measurement cell can be extended considerably. As most of the filter material do absorb the volatile component and get saturated by time, a regular check is mandatory to avoid a contamination of the sensor by an ineffective, saturated filter system

3. Putting into Operation

3.1 Installation

The LabTouch-aw measurement instrument is delivered with all necessary accessories to operate the instrument properly. Upon receipt, please double-check if everything is present according to the scope of delivery and immediately notify your Novasina sales partner if anything is missing or broken. Do not put damaged or incomplete measuring instruments into operation.
The equipment must be installed in a laboratory on an planar surface avoiding vibrations, strong heat radiation, air flow, dust, direct sunlight exposure and strong electromagnetic sources.
Make sure the power socket is not in too much distance to the instrument. It is recommended to store the accessories in close proximity to the instrument.

3.2 Putting into Operation

- Use the Novasina power adapter only. Third party products can destroy the instrument
- Check if the local mains voltage matches with the identification plate of the supplied external power supply and plug it to the socket.
- Plug the external power supply cable to the instrument socket on the back of the LabTouch-aw

Note:

The LabTouch-aw is very efficient and requires only little electrical power. The power supply complies with the latest standard (fulfills „energy star level IV“) so the instrument can be switched-on permanently and kept ready for measurements at any time. The LabTouch-aw should only be switched-off, if no measurements are performed for a longer time period (i.e. more than one week).

3.3 Basic Operations of the Instrument

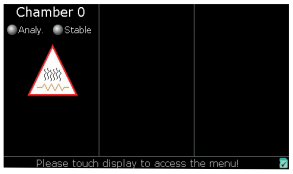
This chapter describes the basic operations as starting-up and shutting-down of the LabTouch-aw as well as other functions.

3.3.1 *Start-up procedure*

To start-up the instrument, proceed as follows:

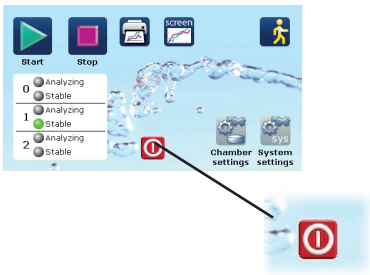
- Close the instrument if it has been opened
- Power-up the instrument by hitting the black button in front of the instrument which also can be used for opening the instrument. A beep indicates the initialization of the starting sequence

- The system is started-up which is indicated by two different start-up screens
- The start-up sequence is finished after approx. 1 minute and the measurement screen appears



- The current measurement values are displayed as soon as the sensor is ready to measure

- The duration of the pre-heating phase depends on the existing humidity and temperature in the measurement chamber. In general, it takes 2-3 minutes.



3.3.2 *Shut-down procedure*

To shut-down just press the red shut-down button on the main menu screen.

Confirm the shut-down process with "YES"

Important:

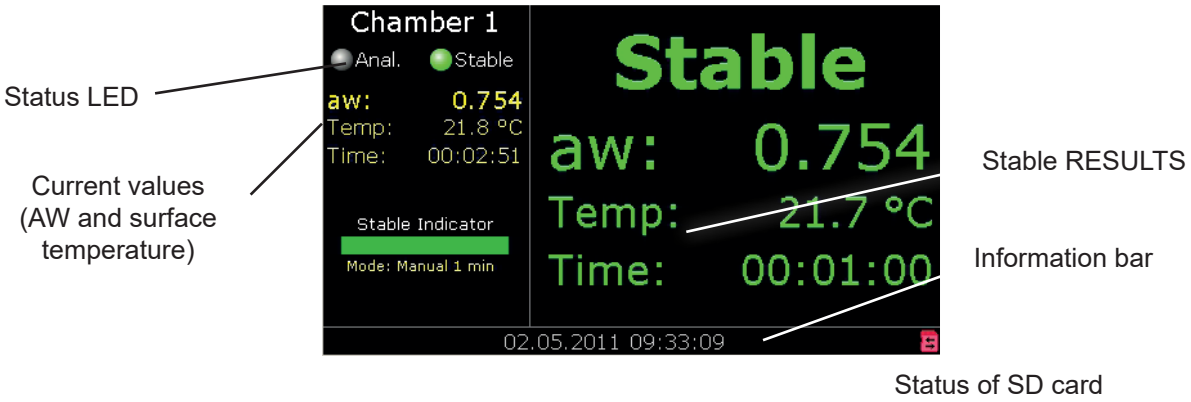
Always shut-down the instrument before you disconnect it from power otherwise there might be a loss of data and settings.

4. Screens and Functions

This chapter describes the main screens which appear on the display of the LabTouch-aw as well as the function of the symbols.

4.1 Measurement Screen

The measurement screen is displayed after the instrument has started up or if a measurement has been started.



- The LED's (yellow or green) indicating the status of the measurement are displayed in the first line.
- If there is a flashing, yellow-coloured LED beside the "Analy.", a measurement is on-going. If the green LED beside the "Stable" is activated, measurement has been finished.
- If no measurement has been started, no LED is activated.
- The displayed temperature turn to red colour if temperature control has been activated and the programmed temperature can not be reached.
- If a measurement has been started, the measurement time is displayed in addition.
- The sample number is displayed as well below the measurement time if the logging function is activated or if a protocol was stored. This allows an allocation of the measured values to a specific sample.
- There is a stable indicator which changes its colour from yellow to green and indicates the progress of the measurement. The greener the progress bar, the closer the measurement is to be completed.
- After reaching a stable measurement value, the respective measurement values at this point is displayed in green colour.

4.1.1 *Information bar*

The information bar is located in the footer of the measurement screen and provides helpful information as operating conditions to the user.
The various information are displayed alternately.

Text or Symbol	Description	Remarks
Date / Time	Current date and time	
Please touch display to access the menu!	Please touch display to access the menu!	
Press icon for more information!	To gather more information about a displayed symbol, press on it. Symbol descriptions see further down	
Press icon to abort beep!	Press on the speaker symbol to stop the beep	The beep appears once the measurement is finished
SD Card is write protected! 	The SD card is write protected. Please unlock the card by moving the little bar on the left side of the SD card	This text is displayed in light red colour
SD Card is not ready! 	The SD card is not ready for operation	This text is displayed in light red colour
Calibration validity expired	The sensor of the respective chamber needs to be recalibrated	This information appears only, if a warning for next calibration has been activated (see chapter 8.7). This text is displayed in light red colour
Filter exchange required	The protection filter of the respective chamber has to be exchanged	This text is displayed in light red colour
Demo license expires in XX:XX h	Demo license expires in XX:XX h	The instrument will be rebooted once the time has expired

4.1.2 *Symbol SD-Card*

The status of the SD card is displayed as a symbol on the right side of the measurement screen footer

Symbol	Description	Remarks
No symbol	SD card is not inserted	
	SD card is inserted correctly and ready for operation	It is allowed to remove the SD card in this status
	SD card is accessed by the system	SD card must no be removed, otherwise the file system and structure could be damaged -> loss of data
	A problem with the SD card has being recognized by the system	Remove SD card and re-insert the card after 10 sec. A re-initialization may solve the problem. If not, replace the card
	SD card has been write protected by the small bar on the left side of the card	SD card can be removed without problems

Important:
Before a SD card is removed, always switch to the measurement screen and double-check, if it is safe to remove the SD card. Please do not remove, if  is displayed!

4.1.3 *Symbols*

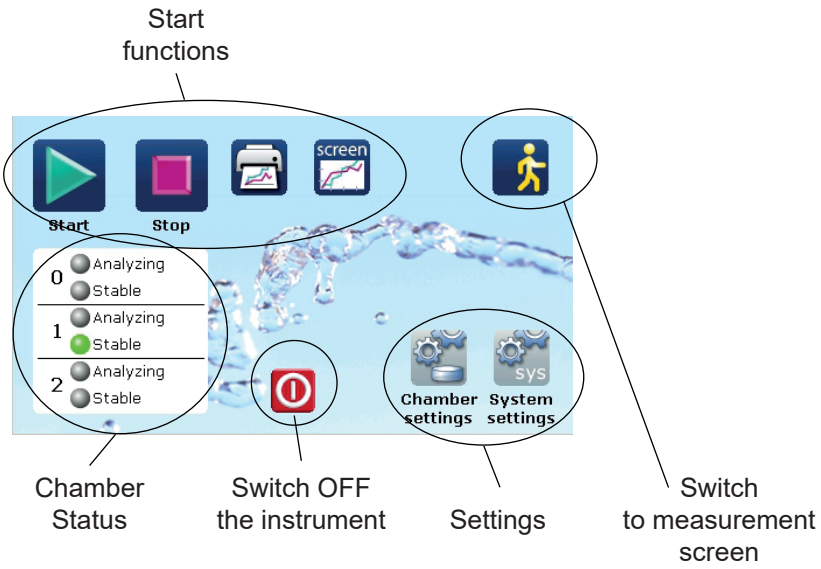
Instead of the current measurement information in yellow colour, some symbols might be displayed.

Those symbols have the following meaning:

Symbol	Description	Remarks
	The system detected a problem with the respective chamber	Press on the symbol to gather more specific information
	Sensor will be put into operating conditions	• Press on the symbol to gather more specific information • A measurement can be started even if the symbol is present but data will just be analyzed once the symbol has disappeared
	Based on a specific situation, no measurement values can be established (i.e. activated dew protection of the sensor)	• Press on the symbol to gather more specific information • A dew protection can as well be activated, if the sensor has been calibrated improperly and measures a much higher aw-value than the real one.
	Danger of water condensation in the chamber	• Remove the sample as soon as possible from the chamber • In addition, there is a warning beep which lasts till the opening of the chamber or for 30 sec.

4.2 Main Menu Screen

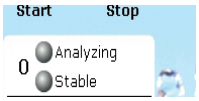
The main menu screen provides easy access to programming and measurement functions.



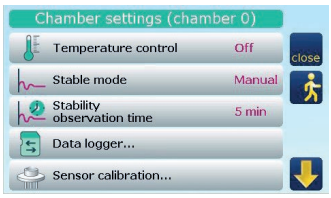
4.3 Navigation in Sub-Menus

Navigation through the sub-menus is simple and only 4 different icons are available to do it:

Symbol	Description	Remarks
	Close a sub-menu and return to the menu above	
	Close all sub-menus and return to the measurement screen	
	Move one menu point upwards	This icon is only displayed, if there are menu points upwards the visible area
	Move one menu point downwards	This icon is only displayed, if there are menu points downwards the visible area

Symbol	Description	Remarks
	Start a measurement and switch automatically to the measurement screen	If a measurement is on-going or finished and the "Start" icon is pressed again, the instrument will ask if you really want to start a new one as the current data will no longer be displayed
	Abort a measurement and switch automatically to the measurement screen	• A query is issued if the measurement should really be stopped. • Opening the chamber will immediately stop an on-going measurement
	Release a test protocol and switch automatically to the measurement screen.	
	Adjustment of the way the chamber(s) are displayed on the measurement screen and switches to it afterwards: - *All chambers:* Multiple chambers will be displayed.	Individual chamber view is changed automatically to all chambers view in case a measurement has been finished in a non-displayed chamber.
	Switch from the main menu to the measurement screen	This function is available in the sub-menus as well
	Access the submenu "system settings" where all system parameters can be programmed	Access can be restricted by setting password. Refer to chapter 9.8 for more information
	Access the sub-menu "chamber settings" where all chamber parameters can be programmed	Access can be restricted by setting password. Refer to chapter 9.8 for more information
	Shut-down / switch-off the instrument	Please switch-off the instrument only by using this function to avoid loss of data (logging data etc.)
	Status of chamber at a glance (flashing LED's): - *Analyzing:* Measurement is on-going - *Stable*: Measurement is finished	This icon changes its size depending on the number of connected chambers

4.4 Menu "Chamber Settings"



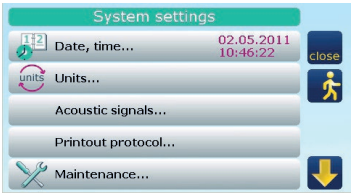
All chamber related settings as stable observation time or calibration can be done in this menu.
Functions of the icons on the main menu screen once the icons are pressed:

The table below should give an overview about the available functions. Detailed descriptions will be given thereafter.

Menu point	Description	Remark	Factory default setting
Temperature control	Setting of measurement temperature control (or switch off)	Details see chapter 5.2.	Off
Stable mode	Settings / Mode for stability observation time	Details see chapter 6.2	A (Average)
Stability observation time	Programmable stability time, only available if stable mode "Manual" and "Query" have been selected	Details see chapter 6.2.2	5 min
Stability check temperature	Monitoring of adherence of nominal temperature, only available if temperature control is activated	Details see chapter 6.2.2 available if temperature control is switched on and Stable Mode is not set to"Quick"	On
Data logger	Sub-menu for programming the logger and/or logging functions.	Details see chapter 7	Sample number: 0000 Interval recording: 10 sec
Sensor calibration	Enter sub-menu for sensor calibration	Details see chapter 8	

Menu point	Description	Remark	Factory default setting
Info	The following information will be displayed: **CHAMBER** *Instrument:* Measurement chamber tag *Serial number:* Serial number of the measurement chamber *Firmware:* Firmware version **SENSOR** *Version*: Sensor version *Serial number:* Serial number of the sensor *Firmware:* Info about the cability of the file system *Last calibration:* Date and time of the latest calibration. **PROTECTION FILTER** *Last exchange*: Date of the last protection filter exchange if option activated		

4.5 Menu "System Settings"



All system related settings as display settings, changing units etc can be done in this menu.

Menu point	Description	Remark	Factory default setting
Date, Time	Set current date and time	It is mandatory to set the correct date and time, otherwise the calibration points management is disturbed and reminders do not work properly	aw, °C, DD.MM.YYYY
Units	Sub-menu for changing units (i.e. aw or %rH etc.).		
Acoustic signals	Sub-menu for adjustments of acoustic signals (as beep) for end of measurement notification.		
Printout protocol	Sub-menu for protocol printout configuration.	see chapter 7.2 - 7.6	
Maintenance	Sub-menu to perform maintenance tasks.		
Info	Info about the firmware of the instrument and display of the license type		

5. Temperature Control

This chapter describes how the temperature control works on the LabTouch.

5.1 Basics

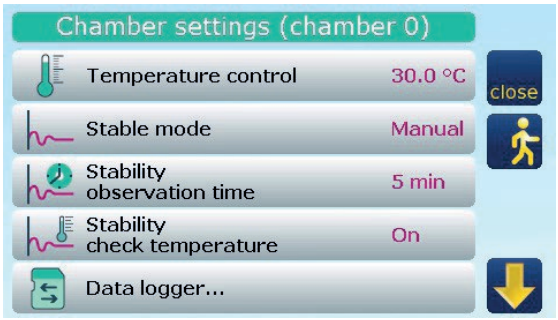
Most of the samples are significantly influenced by temperature. For this reason, the instrument is equipped with a simple temperature-controlled measurement chamber. As opposed to the LabMaster-aw, the LabTouch-aw does not offer a cooling function which just allows measurement temperatures at **least +2°C but max. +10°C above** environmental (lab) temperature
Furthermore, the instrument does not have an thoroughly isolated measurement chamber. Thus the accuracy can get worse if the temperature inside the chamber is significantly higher than the environmental one, especially if the infrared sensor is covered by an installed sensor protection filter.

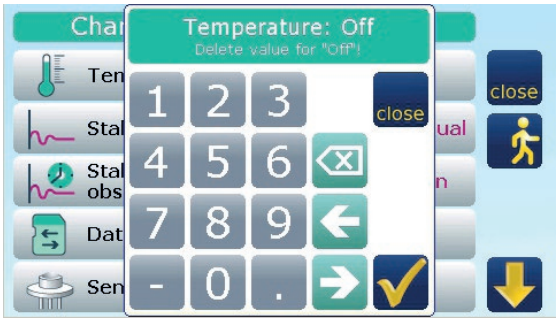
5.2 Setting the Measurement Temperature

- Press "Chamber settings" on the main menu screen and select "Temperature control afterwards, then enter the requested measurement temperature there. If no value is entered, the temperature control is switched-off.
- A warning notice is displayed if the programmed temperature is less than the required 2°C above the environmental one. In addition, the displayed

temperature in the measurement screen turns red in this case and the user will be noticed in the status bar by a respective hint.

- If the environmental temperature is changing during an on-going measurement in a way that the programmed temperature can not be reached, the displayed temperature turns red as well and the instrument will not reach stability, means the measurement can not be finished.
  The notice "retarded (temp)" appears below the stable indicator.
- Stability is foreclosed if nominal temperature cannot be reached plus if "Stability check temperature" is activated . Retarded (temp) is displayed in this case as well.





Note:
The programmed temperature must be between 15°C and 30°C!

6. How to Perform Measurements

Information about starting a measurement can be found in this chapter.

6.1 First Measurement

Prepare the sample by cutting it into small pieces and fill the sample cup till the visible first rim. This is approximately 2/3 of the sample cup. As the water activity is a relative measurement, the amount of sample is negligible, means, it does not matter how much sample is placed in the sample cup, the result will be the same. Just note that the bottom of the sample cup should be covered at least to achieve reasonable performance. Do not overfill the sample cup, otherwise some sample will be pressed into the white sensor protection filter which can cause wrong measurements, thereby requires immediate filter replacement.

6.1.1 *Insert a Sample*

Place the prepared sample cup into the metal indentation of measurement chamber and close it.

- If the sample is too hot (**more than 4°C** above environmental temperature), an alarm is issued and the chamber has to be opened as soon as possible to avoid condensation within the same. At the same time, a respective symbol is displayed.

Condensation has to be avoided as water droplets are formed in the measurement chamber and wrong measurement results for the current and the following samples will be the consequence. The sensor itself is actively and reliably protected by a dew protection as long as the instrument is switched on.

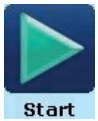
If the instrument is switched-off and hot sample is placed into the chamber, the sensor might be destroyed, especially if additional vibrations are present. Please do not place any sample into the measurement chamber while the instrument is switched-off!

Note:

The condensation alarm does not work properly if the infrared temperature sensor is blocked by an inserted, chemical sensor protection filter.

6.1.2 *Start a Measurement*

Program the respective stability parameters, depending on the sample properties (see chapter 6.2).



Start a measurement as follows:

- Switch to the main menu screen
- Press the "Start" button.

-> The measurement is started and the measurement screen is displayed

End of measurement :

If stability is reached, the instrument takes the reading which is as well the end of the measurement. A "beep" indicates it acoustically.

Note:

- If the stability times are set in an inappropriate way, the readings might be taken too early (stability not completely accomplished) or measurement time is extended unnecessarily.
- Always remove the sample before shutting-down the instrument. The dew protection is not active once the instrument is switched off and the sensor might be damaged in this case. In addition, volatile substances in low concentration can accumulate and deteriorate the sensor's performance. To it, the warm-up phase is remarkably longer if a sample with high water activity is not removed after finishing the measurement.

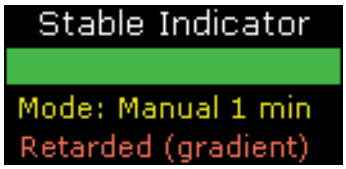
6.2 Stability System

The key to a successful and reliable water activity measurement is the fact that the reading has to be taken once the equilibrium between the free water in the sample and the surrounding air has been established. Even as different, more or less successful approaches are present in the market, Novasina has its own, unique equilibrium detecting system which is the most accurate and reliable one, proven by hundreds of satisfied customers.
Theoretically, a full established equilibrium is reached after endless time period. Of course, there must be a tradeoff as the measurement results have to be available within reasonable time. For that reason, the LabTouch-aw is equipped with a so called stability indicator, which supports the user in finding the best compromise between measurement duration and sufficient accuracy.

6.2.1 *Stable Indicator*

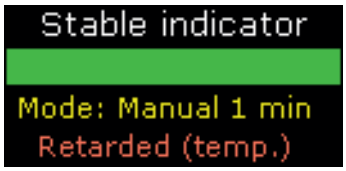
What is a stable indicator? Well, it is not the same as a predictor which "predicts" the residual measurement time in minutes and seconds. It is more a tool which takes the previous measurement history of the sample into the account and graphically outputs the progress. This can lead to the fact that the green bar is getting smaller even if the measurement is developped if the establishment of the equilibrium is interrupted by the evaporation of additional free water coming from the inner part of the sample or if environmental temperature is changed dramatically and temperature-control of the chamber is switched off.

How is it working? In simple terms, the system observes the change of the measurement value within a programmable time. The maximal allowed deviation in aw is 0.001aw. The programmable time is the one which can be set as "stability observation time" in minutes or which can be selected as "stability mode" The progress bar indicates the already reached stability. The programed stability parameters are displayed underneath the progress bar.



Thus, as closer the deviation comes to 0.001aw within the programmed stability observation time frame, the greener the bar will get.

If the equilibrium has been established and thereby the values considered as stable but questionable due to a remarkable temperature difference between sample surface (IR-sensor) and the second temperature sensor in the instrument's body, the display of the stability values is retarded. A respective notification below the stable indicator is shown.



A similar notification is issued if the values are considered as stable but the programed temperature could not be reached and stability check temperature has been activated.

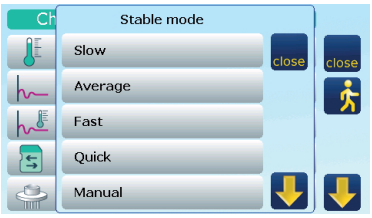
If temperature control is switched-off, so will be "retarded (temp)".

6.2.2 *Program Stability Time*

The required stability time for a reliable water activity measurement is specific for each product. To make your decision easier, you can find some recommended settings in the table below

Please feel free to contact the responsible Novasina distributor in your area or Novasina AG in Switzerland (www.novasina.com or lab@novasina.ch) if you need assistance in selecting an appropriate stability time for your sample. Please provide as much information as possible about the ingredients, including volatiles.

You can choose from four pre-settings and two manual ones. To program the stability time, respectively to select one of the predefined stability settings, press "chamber settings" on the main menu screen and select the menu "Stable mode



Pre-settings:

Quick	Measurement is finished in maximum 10 minutes.
F	Fast, stability observation time is set to approx. 2 minutes
A	Average stability observation time is set to approx. 4 minutes
S	Slow, stability observation time is set to approx. 6 minutes

Product	Recommended settings
Production Line with reduced accuracy expectation but need for fast measurements	Quick
Powders, Jam, Tomato Sauce	F
Dried Meat, Fruits, Cereals	A
Chocolate, Fish, Cheese, Bakery Products, Fresh Meat, Butter	S

The determination of the most appropriate stability time can be done as following

- Choose a suitable pre-set stability mode (F, A or S)
- Start a measurement with the sample which you want to optimize or find out the stability time. After stability is reached, do not open the chamber and take out the sample, let it in for another 30-60 minutes. Now compare the stable value with the current one (both values can be seen on the measurement screen)

    - If the deviation is more than 0.005aw, choose the next higher stability pre-setting level.
    - If the measurement takes too long (more than 120 minutes), choose the next lower stability pre-setting level.

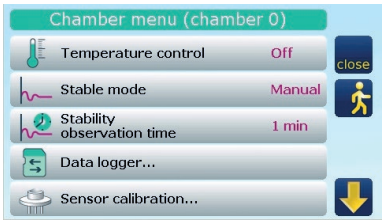
Note:
Use Excel to display the stored measurement values on the SD-card on a computer. With the help of the graph it is easier to find the most appropriate stability time for a specific product.

Manual setting and query

Beside the pre-settings, the instrument offers the ability to enter a stability time manually. This feature should only be used by experienced users as the correlation between water activity and product properties have to be understood.

- "Manual":

  While selecting Manual in the menu "stable mode", an additional menu "Stability observation time" appears right underneath. A stability time from 1-30min. can be entered there.



- "Query":

  If "Query" is chosen in the stable mode menu, the user is asked every time about the desired stability mode while starting a measurement. This option is only useful, if various samples are measured with the instrument, so that the operator does not have to change this parameter everytime and adjust the unit.

7. Logging Functions

This chapter describes the logging functionalities of the LabTouch-aw

7.1 Automatic Logging of the Last 10 Measurements

The last 10 measurements are logged automatically. This feature is very useful if the measurement value has not been written down before opening the chamber since opening leads to a display refresh.

7.1.1 *Displaying of Stable Measurement Values*

- Select the "Chamber settings" menu which can be found on the main menu screen and choose "Data logger..." -> "Display last results".
- From the appearing list of the last 10 measurements, the respective one can be selected and the detailed information as measurement result (aw), time etc. is displayed.

7.1.2 *Erasing of Logged Stable Measurement Values*

- Select the "Chamber settings" menu which can be found on the main menu screen and choose "Data logger..." -> "Display last results".
- Scroll to the end of the list by pressing the "arrow down" symbol.
- Then press on "Clear all results" and confirm the appearing query with [Yes].

7.2 Logging on SD-Card

There is a possibility to log various data on a SD-card which comes with the instrument and has to be inserted on the right-hand side of the instrument. The measurement values can be logged in arbitrary intervals between 2 till 60 seconds. In addition, it is possible to store the recorded values (stable, actual) as digitally signed text file.

The stored data can be analyzed using Excel. Within the SD-card directories, the files XXXXLOG.txt (log-files) und XXXXPRO.txt (protocol) are stored. XXXX corresponds to the sample number.

7.2.1 *Handling of the SD-Card*

Both, SD and SD-HC cards can be used but they need to be FAT-formatted. Please note the following, important notices:

- SD-cards must only be removed while the measurement screen is displayed. Please take care that the symbol (SD-card is accessed by the system) is not displayed in the information bar.
- Mount or dismount SD- Micro cards always together with the respective adapter otherwise there might be a loss of data or a complete hang-up of the system (in this case remove the power supply, plug it in again and restart the instrument.
- If an SD-card is recognized as faulty (respective symbol is issued), remove the card from the instrument for at least 5 sec. and re-insert it again. If the problem persist, reformat the card with the help of a computer.

Note:
Reformatting deletes all the recorded values on the SD-card.

7.2.2 *Record a Measurement*

- Please configure the following parameters in the menu point "data logger" which can be found in the menu "Chamber settings":
  - **"Product name"**
    Name of the sample. This name is as well listed in the head of the logging file.
  - **"Sample number"** (number for the next measurement)
    The number is used to allocate a protocol to a sample. The sample number is displayed in the measurement screen as well as integrated into the file name of the logging file (i.e.0034LOG.TXT).
    - If there is already a file with the same name on the SD-card, it will be overwritten as soon as the measurement is started.
    - It will be automatically adopted at the first start of the measurement and the number will be increased by +1 for the next measurement (i.e. 0034 will become 0035)
  - **"Interval recording"**
    Program the recording interval. If no value is entered the logger is turned off and values are transferred to the SD-card.

Note:
If a interval recording time or sample number is changed during an on-going measurement, it affects only the following but not the current measurement.

Insert a sample and start the measurement. "(rec)" in front of the sample number indicates that the recording is active.The recording will be continued till the chamber is opened or the SD-card is removed.

Note:

If a logging has been stopped it can just be restarted after the chamber has been opened as by the sample number is just increased in this case.

7.2.3 *Measurement Protocol*

Finished and on-going measurements can be protocolled on the SD-card. These protocols can be read-out by using the Novalog MC software or a standard text editor. The use of the Novasina Novalog MC software has the advantage that a digital signature is used on the protocol which allows the recognition of unauthorized changes of the data.

Enter lab name :

- Go to "System settings" -> "Printout protocol..." -> "Laboratory" and enter the name of a respective lab. This name will be as well listed on the protocol.
- If Novalog MC is used o gather the protocol: If there is no entry in the "Laboratory" field in the instrument, it can be entered afterwardsin Novalog MC. The original protocol will not be changed by this action as there are a few editable fields in the protocol and "Laboratory" is one of it.

Automatic saving of the "Stable protocol" once a measurement has been finished

- Go to "System settings" -> "Printout protocol..." -> "Automatic output of stable protocol" and select "SD". Thus, the protocol will be stored automatically on the SD-card.
- The saving process has to be initiated manually if "Automatic output of

stable protocol" is set to "Off".

- Transmittance to the Novalog MC software can be done by selecting "PC" or "SD+PC". This way, a automatic print-out of the protocol on any connected PC printer (incl. pdf) can be achieved . "PC" or "SD+PC" are only displayed if the the instrument has been licensed for NovalogMC.

Manual saving of a protocol

- A protocol of the current values ("Actual protocol") can be saved anytime and even during an on-going measurement on the SD-card by pressing the printer symbol on the main menu screen. Just select "Actual to SD-Card" on the appearing pop-up window.
- A "Stable protocol" can only be stored this way, if stable values are present, respectively if a measurement value had been considered as stable. If these pre-requisites are fulfilled, a pop-up appears after pressing the print button and you have to select "Stable to SD-card" to initiate the saving process.
- The protocols can be transfered directly to a PC if the instrument has been recognized by the optional NovalogMC software by selecting "Actual to PC" respectively "Stable to PC" after pressing the printer symbol
- "Actual to PC" and "Stable to PC" are not displayed without a connection to NovalogMC

8. Sensor Calibration

The electrolytic sensor can be verified at any time by using the Novasina SAL-T standards which are included in the delivery or which have been bought through the local Novasina distributor. These reusable standards generate defined and reproducible humidity, respectively aw-values. If verification fails, a calibration can be performed in an easy way.

Note: The calibration values will be stored in a small memory located on the sensor board. It is not required that a calibration is performed at all available calibration points. Perform a two-point calibration with one point below and one above of the normal measurement range (bracket calibration).

For example: Your samples are always around 0.700aw. It is sufficient if you use the 58%rH and the 75.%rH SAL-T standards for calibration. If verification is requested, calibrate at 58%rH and 84% rH and use the 75%rH SAL-T standards for verification.

8.1 How to Handle SAL-T Standards Correctly

The Novasina SAL-T standards are not labeled with a due date. The shelf-life itself depends on the handling and storage conditions. Experiences in the field have proven that those standards can be good for 3-5 years if handled correctly. To achieve the best possible shelf-life, please

- Shake all SAL-T standards twice a month for one minute, nevertheless if you have used them or not. There is no need to take it out of the plastic container.
- Always store the standards in the plastic container (close tightly) and not exposed to direct sunlight.
- Do not expose the salt tablet to environmental air for longer than necessary; thus, put it back if calibration has been finished at the particular point.

Please always double-check, if the SAL-T standards below 33%rH contain no or just few water and all the others are present as slurries (salt/water mixture). Contact the local representative if you feel unsure, how to handle the SAL-T standards correctly or feel uncertain if the existing ones are still in good shape.

8.2 Values of SAL-T Standards

Type of Hum.check	Novasina type	EU Toxic classe	Color of salt	Chem. symbols	% relative humidity in relation of temperature (x / 100 in a_w)				Literature Reference
					15°C	20°C	25°C	30°C	
SAL-T / 6	SC-6	Xn	white	LiBr	6.9	6.6	6.4	6.2	A
SAL-T / 11	SC-11	Xn	white	LiCl	11.3	11.3	11.3	11.3	A
SAL-T / 33	SC-33	--	blue	$MgCl_2$-$6H_2O$	33.3	33.1	32.8	32.4	A
SAL-T / 53	SC-53	O	green	$Mg(NO_3)_2$-$6H_2O$	55.9	54.4	52.9	51.4	A
SAL-T / 58	SC-58	--	white	NaBr	60.7	59.1	57.6	56.0	A
SAL-T / 75	SC-75	--	purple	NaCl	75.6	75.5	75.3	75.1	A/B
SAL-T / 84	SC-84	--	white	KCl	85.9	85.1	84.3	83.6	A
SAL-T / 90	SC-90	T	white	$Ba(Cl)_2$-$2H_2O$	90.9	90.5	90.1	89.9	C
SAL-T / 97	SC-97	--	yellow	K_2SO_4 (>20%)	97.9	97.6	97.3	97.0	A

Lit :
A : Greenspan, Humidity Fixed points of Binary Saturated Aequeous Solutions
Journal of Research of the National Bureau of Standards Vol. 81A, No1 01/02 1977
B : Robinson R.A. and Stokes R.H. Electrolyte Solutions, Butterworths London 1959
C : Wexler, Humidity and Moisture Vol.3, Fundamentals and Standards, Robert E.Krieger, Publishing Company Huntingon, New York

8.3 Factory Calibration, Delivery Status

Every LabTouch-aw as well as every new replacement sensor "CM-2 or CM-3" is delivered with a factory calibration at 7 points: 0.11, 0.33, 0.58, 0.75, 0.84, 0.90 and 0.97, including a factory certificate. For verification and possible calibration there are 4 different SAL-T salt tablets included in the delivery but additional ones can be bought if necessary.

8.4 Calibration and Verification

To ensure the integrity of the LabTouch-aw, please set-up a defined standard verification interval. A one point verification is fairly enough. Please make sure that verification is done at least every week. It helps to see first contamination issues, sensor pollution or aging effects and supports the user in making the right corrective measures.

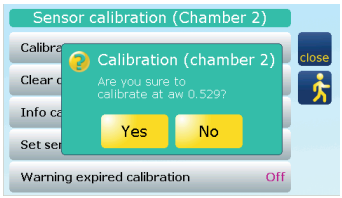
Before you start a calibration, make sure:

- Environmental or preseted temperature is between 15°C (59°F) and 30°C (86°F).
- Adequate visual control and right handling of the SAL-T standards has been done in advance
- SAL-T standard has to be shaken before placed in the measurement chamber. This is required to activate the salt/water slurry and to release salt crystals which might stick on the membrane.

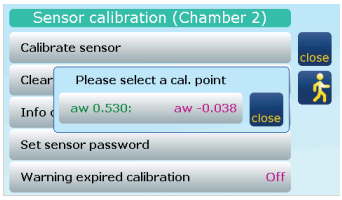
Calibration can now be performed:

Place the respective SAL-T humidity standard into the measurement chamber and close it. Do not press start, just let it in for at least 45min. so that the humidity equilibrium can be established perfectly.

Note:
Please keep in mind which SAL-T has been placed into the chamber.

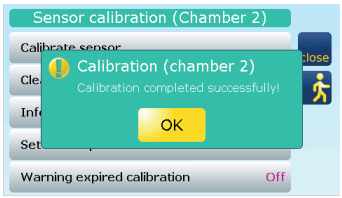


- Go to "Chamber settings" -> "Sensor calibration..." -> "Calibrate sensor"
- Possible calibration points will be displayed thereby the most probable one is green colored. The pink colored value is the deviation of the actual aw value in the chamber compared to the reference value or in other words, how much the measured value will be corrected by the calibration at this point once executed.



- Select now the appropriate, displayed aw-value according to the inserted SAL-T standard. A pop-up window appears asking for confirmation if the calibration should really be performed. Double-check if you have selected the correct reference value and press [Yes].
- If the sensor is password protected, enter it with the help of the displayed keyboard (see chapter 8.7).

Important:
There is a default password (8808) installed from factory.



- An information screen appears if the calibration has been performed and stored correctly. Press [OK] to confirm. Afterwards, the instrument switches to the main measurement screen.

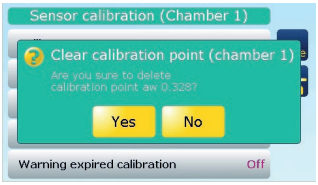
8.5. Deleting Calibration Points

Note that a deletion of one calibration point just deletes the stored value, not the point itself. Thus, if the respective SAL-T standard is placed into the measurement chamber, the system recognizes the point again. This procedure is normally not required but makes sense if one of the following situations is present or happened:

- If there is a requirement to calibrate a sensor completely. It is then useful to delete the stored calibration points to see the ones which had been already calibrated during this run, otherwise, "cal" is still displayed behind every calibrated value.
- If a complete calibration is required but you do not have all of the supplied SAL-T standards available. Keep in mind that a deleted point is much better than one calibrated the wrong way. The LabTouch-aw calculates the missing point from the two nearest ones (mostly one above and one below of the deleted point).

8.5.1 *Perform a Deletion of a Cal Point*

- Go to "Chamber settings" -> "Sensor calibration..." -> "Clear calibration point". A list with all calibrated points is displayed.
- Select the point to be deleted and confirm the request with [Yes].



Note:
At the end of the list (move down by using the arrow down key), there is the option to clear all points at once ("Clear all cal. points").

- You will be asked to enter the sensor password if one is set.
- Afterwards, "Clear cal. point successful" confirms the deletion .

8.6 Display Cal Points

Go to "Chamber settings" -> "Sensor calibration..." -> "Info calibration points" and select the requested calibration point. The following information is displayed. Important: Please provide this information as well if you ask Novasina to support a calibration problem.

- **"Last calibration "**
  Date and time of the last save or deletion of a cal. point.
- **"Instrument "**
  Instrument and serial number of the same which had been used for calibration / deletion.
- **"Reference value "**
  Reference value including temperature consideration.
- **"Correction value "**
  Correction of a cal. point, compared to the unchangeable baseline of the sensor.
- **"Temperature "**
  Temperature at which the calibration had been performed.

Note:
A sensor drift by time can easily be detected if the correction value is always noted while calibrating the sensor. The absolute amount of this value does not say anything about the quality of the sensor!

8.7 Sensor Protection

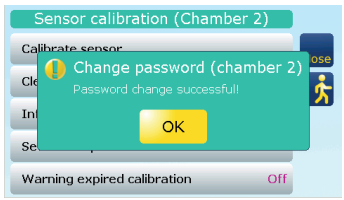
The sensor can be protected against unauthorized changes (calibration etc.).

Important:
If the sensor password got lost (forgotten etc), the sensor has to be returned to Novasina in Switzerland as special equipment is required to unlock it. Please be careful while protecting a sensor!

8.7.1 *Set a Sensor Password*

- Go to "Chamber settings" -> "Sensor calibration..." -> "Set sensor password".
- Enter the requested password. Capital or non-capital letters have to be respected!
- If no password is requested, just leave the field empty

Note:
If you perform the calibrations on a LabSwift but use the sensor on a LabTouch, do only enter a number in the range from 0000 to 9999.

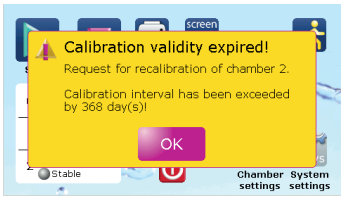


- If a sensor protection password has already been set, it has to be entered ("Please enter previous password!").

Note:

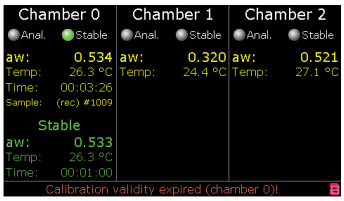
- The factory set password is 8808.
- A successful change of the password is confirmed by the instrument.

8.8 Automatic Notification for Calibration



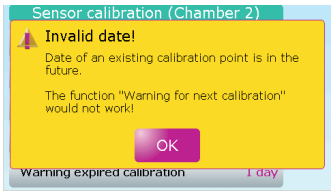
This feature offers to possibility to indicate the user of a required calibration. It is very useful if a specific calibration interval is listed in an SOP (standard operating procedure). Once a calibration has been performed, the indication disappears. The same happens if the automatic warning has been disabled.

- Go to "Chamber settings" -> "Sensor calibration..." -> "Warning expired calibration" and enter the amount of days after which a new calibration must be performed.
  - No indication is issued if no value is programmed here
- If a calibration is required, a pop-up window is issued once a measurement is started
- In addition, the user is noticed in the infromation bar in the measurement display



Important:

The indication works only as expected if the date and time is set correctly in the systems settings menu.



- The user is noticed if a calibration date is in the future (may happened by mistyping the current date and time in system settings). In this case, please double-check the time and date and set them correctly if required. It is necessary to delete all calibration points and recalibrate the same if date and/or time has been changed as the programmed date is taken into the account.

8.9 Automatic Notification for Filter Exchange

The working principle of this function is similar to the one described in chapter 8.8 "Automatic Notification for Calibration".
Once the filter exchange interval had been recorded, it can be programmed Go to "Chamber settings" -> "Sensor calibration" - > "Warning filter exchange..." ->"Warning filter exchange". This is as well the procedure if this option has to be deactivated later.

If a filter has been exchanged, it is mandatory that the system will be notified about it. Select "Chamber settings" -> "Sensor calibration" - > "Warning filter exchange..." -> "Reset filter warning" and the counter will be reseted.

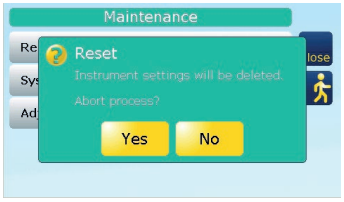
9. Additional Functions

This chapter describes all the additional functions as system settings which can be found in the menu structure of the LabTouch-aw.

9.1 Change Acoustic Signals

- Go to "System settings" -> "Acoustic signals..." and select one of the options to adjust the acoustic signal:
  - **"Key beep"**
    Switch on or off the haptic key feedback.
  - **"Duration stability signal beep"**
    Enter the duration of the beep which is issued if stability is reached. If you want to switch off the beep, just delete any entered value.

9.2 Reset to Default Values



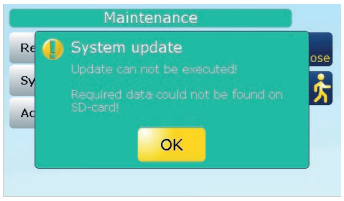
Chose "System settings" -> "Maintenance..." -> "Reset to factory settings" ->[Yes], ->[No] to set the instrument back to factory default values.

Note:

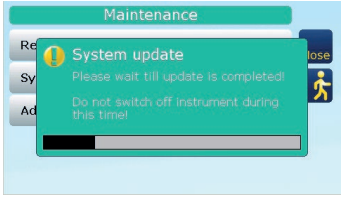
- The storage of the last 10 stable measurement values will be deleted as well.
- The calibration values and other data (i.e. sensor password) stored on the sensor will remain and are not deleted by this process.

9.3 Update of the System

Updates of the firmware are distributed by Novasina representatives. Once you got the update file, copy the folder "Update" into the main directory of the SD-card by using a PC. Please do not compress it to a .zip, just use the file as it is.



- Please double-check, if the folder contains three different files: "LabTouchC.bin", "LabTouchM.bin" and "LabTouchS.bin"
- Go to "System settings" -> "Maintenance" -> "System update" and confirm with [YES].
- The update is performed in various steps. Please note that the system is restarted during the update process. **Do not touch anything or disconnect anything during this procedure!**



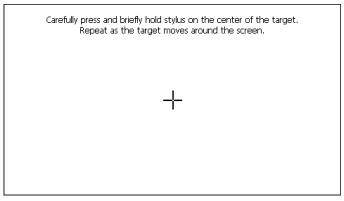
Note:

- The system is designed in a way that an update can be re-initialized in case it is aborted by incident (i.e. loss of power etc.)..
- Please use only files which are distributed by your official Novasina representative. The use of other files can irreversibly damage the instrument and cause loss of warranty.

9.4 Intensity of the Backlight

- Go to "System settings" -> "Maintenance" .> "Display settings" -> "Back-light brightness" to adjust the intensity of the backlight according to the environmental light conditions.

9.5 Touch Screen Calibration



- The touch screen is factory calibrated and a readjustment is normally not necessary. If a touch is not recognized at the place it should, a readjust-ment might correct it.
  - Go to "System settings" -> "Maintenance" -> Display settings..." ->"Adjust touch panel"
  - Touch the screen at exactly those positions indicated with a cross. Use a soft-tip pen (no ball-pen)
  - The system accepts the adjustment only, if you touch the white area within 30 seconds after activation of the last cross.

9.6 Communication Interface

Factory default setting for the communication with the optional NovalogMC software is the USB interface

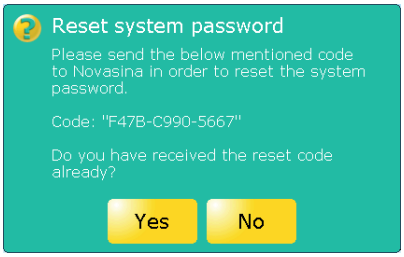
Note: USB functionality is implemented in NovalogMC version V2.20 and higher

- Please change settings as follows if a communication via RS-232 interface is required. Go to "System settings" -> "Maintenance" -> "Interface for computer connection" an choose RS-232

9.7 Password Protection of "Chamber settings" und "System settings"

- Go to "System settings" -> "Maintenance" -> "Set system password" to enter a password to protect menus from unauthorized access
- Password can contain a maximum of 12 characters. Upper and lower case will be differentiated
- A set password will be activated once user returns to main screen after setting the password.
- Password protection will be deactivated by going to menu "Set system password" and do not enter anything in the editor. Just let the input box "Please enter new password".
- A forgotten password can only be resetted by Novasina

Reset a forgotten or lost password



- Go to "System settings" -> "Maintenance" -> "Set system password" and enter GET CODE in the input box "Please enter system password!"
- A pop-up appears with a specific code which has to be sent to your No-vasina agent.
- You will get a new code back which you can enter if you answer the Reset system password query with "Yes"
- The reset code from Novasina remains valid until password is reseted or once athe valid code has been entered. It is a single-use code, thus if password is forgotten again, a new code has to be ordered.
- Note: Requesting a new code comes with costs.

10. Maintenance

The following chapter describes the main maintenance task which can be performed by the user himself.

10.1. Cleaning of the instrument

For cleaning the instrument just use a soft tissue and pure water. If necessary use mild detergents in addition. NEVER use cleaners containing aggressive and/or oxidizing chemicals . Make sure you dry the chamber thoroughly dried after cleaning to avoid wet residuals and hence an influence on the coming water activity measurements. If the outer parts need to be cleaned, be aware that some areas of the instrument are not sealed and water can enter the instrument. Best way is to use a wet tissue as well to remove dirt and dust.

Caution !

Before cleaning, switch off the ***LabTouch-aw*** and **disconnect it from the mains**.

10.2. Cleaning the aw-measurement cell „CM-2 or CM-3“

Please do NEVER clean the sensor itself, neither the green/brown protection filter in front of it. The sensor is a very sensitive element with a chemical filter protection on the top. Every cleaning with chemical or mechanical means (touching, pressurized air cleaning, etc.) will destroy the measuring sensor inevitably. Possible warranty claims expire instantly.

10.3. Cleaning the Infrared „IR“ sensor

Clean the IR sensor with a humid cotton bud. Watch out not using strong forces on the window of the IR-sensor. A contaminated IR-sensor leads to longer measurement times but not to wrong measurements.

10.4. Periodic Recalibration with Humidity Standards

Like all precision measurement instruments, the *LabTouch-aw* must be chekked periodically and if necessary recalibrated. This procedure was already described in the chapter 8. Only in this way you can ensure the accuracy of your measurements. The Novasina SAL-T humidity standards are applicable for this procedure. If required the standards can be provided with an certificate issued by international accredited lab.

10.5. Replacing Protective Filters

Always use protection filters to protect the measuring sensor from contamination by unwanted particles or volatile components. Various filters are available for different type of volatiles. Please consult the filter selection data sheet or contact your local Novasina agent if you need help.

Such chemical protection filters have to be replaced periodically due to the fact that they get saturated. Filters can increase the measurement time and they incativate the IR-temperature measurement.

Novasina provides the following protection filters for the ***Lab*Touch-aw** :

- **eVC-21 filter :**
  Chemical filter: protects against short-chained organic acids as acetic and formic acid and other carboxylic acids (butyric acid etc) and oxidizing agents as hydrogen peroxide and chlorine and as well againts diluted sulfur dioxide
- **Redox filter :**
  Chemical filter : protects against volatiles containing primary and secondary alcohols (attention, ethanol is an exception, special alcohol cell has then to be used), gylcerin, glycols, aroma, perfumes, flavours etc.
- **eVALC-1 alcohol filter :**
  Chemical-mechanical filter : protects against fine dust or in combination with an eVC-21 against strong aroma.

10.5.1. *How to check protection filters for saturation*

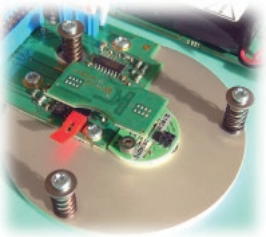
All filters are apsorption-type, thus they will become saturated after some time and loose their functionality. It is of crucial importance to check the filter for saturation. Please proceed as follows:

1. Select a SAL-T standard which has an aw-value close to the procudts which are normally measured with the instrument.
2. Shake the standard and place it into the measurement chamber. Close the chamber and wait for 45 minutes. Take the reading.
3. Compare the reading with the theoretical value at this point and at the measurement temperature.
4. If the deviation is more than +/- 0.005aw, do a calibration. Note the date of calibration.
5. If the calibration interval gets shorter (i.e. from 30 days to 20 days) at least two times in a row, replace the filter. The more frequent calibration is an indication for sensor contamination.
6. By replacing the filter, you get an idea about the exchange internval (install date to exchange date) and you can define a standard filter exchange interval.

⚠

Attention !
Defective or wrong mounted filters do not fullfil their function and provide the risk of instrument or sensor damage. Such filters must be replaced immediately.

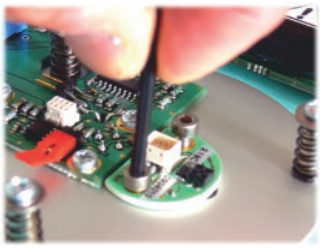
10.6. Replacing a CM-2 or CM-3 Sensor Unit



Note:

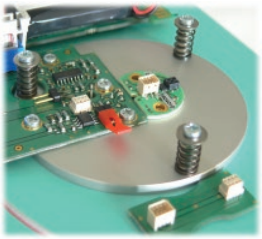
The ***LabTouch-aw*** contains sensitive electronic assemblies. Please protect these items from electrostatic discharge (esd) by discharging yourself at a grounded, conductive surface before you open the housing of the instrument.

- Switch off the instrument and disconnect the mains from the system.
- Open the measurement chamber and dismount the 4 screws of the cover plate using the hexagon wrench which was delivery with the instrument
- The housing cover can now be separated from the upper measurement chamber plate



NOTE: The upper measurement chamber plate is still connected to the lower housing by a ribbon cable. Do not loosen or remove the ribbon!

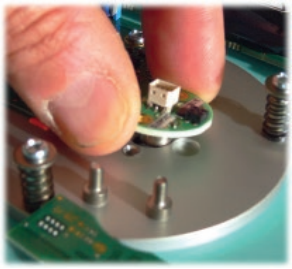
- Look for the board which covers the sensor and remove it by grabbing the PCB on the side walls and firmly lifting it.
- Remove now the two screws which fix the actual sensor in the measuring head and remove the sensor unit completely out of the head.



Note:

It is recommended to exchange the white sensor protection filter as well. Press the sinter filter downwards and insert a new one.

- Insert now the new measuring sensor in the respective place and fix it with the two screws.



Warning !

- Never apply any pressure with any item on the top of the measuring cell. This might damage the sensor protection filter and makes the sensor uesless
- Always remove the measuring sensor while exchanging the sinter filter, otherwise you risk that the sensor and a purchase of a new one would be required.

Every measuring sensor is protected with a password. The factory-setting is „**8808**“. Do not forget to adjust the password according to your requirements, otherwise the protection can’t be assured.

Important: Make sure you mount back the cover correctly. Special care has to be taken for the 4 screws fixing the cover to the cover plate. Screw them tightly. If cover is not closed properly, measurement problems can occur

10.7. Important Notes About The Sensor

The sensor supplied with the Novasina *LabTouch-aw* is factory tested and fully calibrated at the following seven a_w-value reference points : **0.11aw, 0.33aw, 0.58aw, 0.75aw, 0.84aw and 0.90aw and 0.97aw**.

Humidity sensors are subject to certain ageing phenomena, which manifest themselves in deviations from the original value. Due to this reason, every sensor undergoes a 3 month ageing proces at Novasina so that the drift can be reduced to the lowest level possible. Nevertheless, slight deviations by time are inevitable but they can be compensated by recalibration. Thus it is recommended to periodically check the performance of the sensors by verifying the current value taken at the humidity reference points, compare it to the reference value and recalibrate the instrument if required. The standards are reusable and a shelf-life of approx. 3-5 years depening on the handling and storage conditions. All calibration data are stored on the intelligent sensor. Thus a new sensor can be inserted into the ***Lab*Touch-aw** and measurements can be performed without any calibration.

Correct handling of the sensor and instrument :

Note :

The Novasina sensor is a very sensitive, high precision device. Please observe the following rules in order to avoid measuring errors or even destruction of the sensor :

- Do not let fall neither the sensing element nor the ***Lab*Touch-aw** and strictly avoid shock vibrations
- Do not perform a measurement if the white pre-filter is not mounted.
- Use Novasina protection filters, which can be mounted in front of the sensor, if your product contains volatiles and/or aggressive substances as acids, polyols, alcohols or aroma. Make sure you have inserted the correct filter once such components are present in the sample
- Sensors that are not used should be stored in a clean, sun protected environment at room temperature and ambient humidity.
- If ***Lab*Touch-aw** is not in use, keep the measurement chamber empty and closed.
- Never clean the sensor nor the instrument using agressive chemicals or mechanical abrassive media. If the instrument is contaminated with product, use a soft towel and water to clean it. Dry it well afterwards.
- Under no circumstances connect the sensor to an Ohmmeter or another measuring device. This may damage the sensor and will expire the warranty of the sensor!

Any warranty will expire if one or more of the previous mentioned points counteracts !!

Measurements up to +/- 1.000 aw

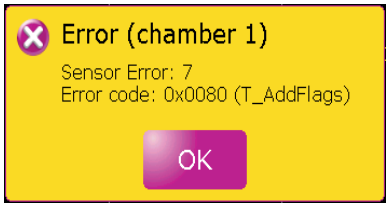
The new sensor of the ***Lab*Touch-aw** is capable to perform measurements up to 1.00 aw (100%rh). A built-in heating system protects the measuring cell from saturation and therefore against destruction. Just note that a calibration is only possible up to 0.97aw (97%rH).

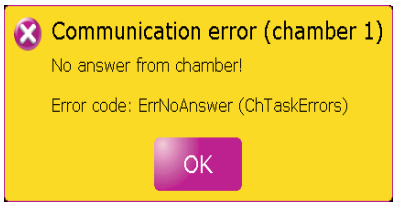
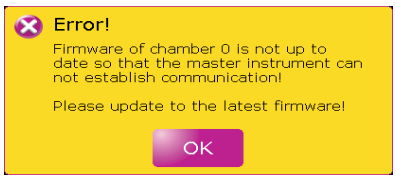
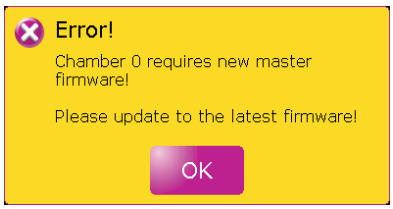
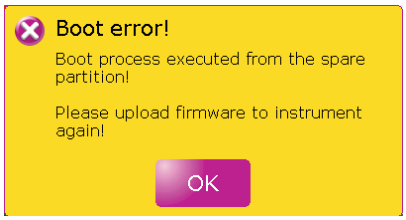
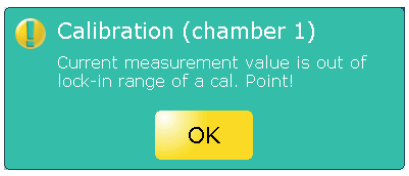
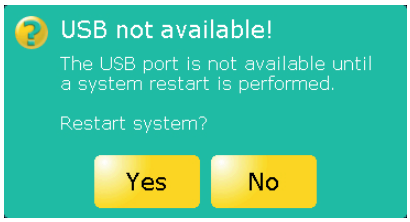
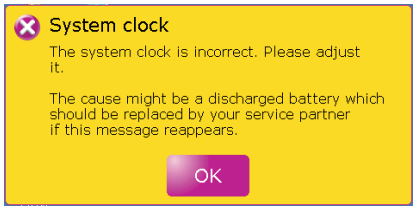
11. Error Codes, First Level Support

The most important error codes are described in this chapter. Please take a picture of the instrument and describe exactly what you have done previously if problems occur and error codes not listed below are displayed or if the problem can not be easily fixed on-site. Send those information to your local Novasina distributor.

- Please send us as well a picture about the currently installed firmware version: It can be found in "System settings" -> "Info".
- Send as well a picture of the displayed values once "Chamber setting -> Info" has been selected

12. LabTouch Menu Structure

Message / Problem	Cause / Reason	Measure(s) (explanation see next page)
Error message during system update		See chapter 9.3 #1
	A protocol print-out by pressing the print button has been performed but no media (SD-Card or direct connection to a computer with NovalogMC) is available to store or print-out the data.	Insert a SD-card or connect the instrument to a PC with running NovalogMC software
	There is a problem with the sensor: The displayed number after "Sensor Error" has the following meanings:	
	1. Data structure of the sensor is damaged (CRC error)	#2, #3, #4
	2. The required heating voltage can not be establishes.	#2, #5
	3. Capability Sensor : The programming of the sensor is outdated and does not provide the functionality as requested by the instrument.	#5
	4. Capability Instrument : The currently installed sensor is not supported by the instrument	#6
	5. Sensor data can not be read-out during operation.	#2, #3, #6, #4
	6. Error IR-temperature measurement	#11, #2, #4
	7. Error NTC temperature measurement	#4
	8. AD Over- or Underflow of humidity measurement.	#2, #4
	10. Requested scanning instance can not be adjusted.	#2, #5
	20. Sensor (data structure) is not compatible	#2, #6, #5
	99 Unknown error	#2, #3, #6, #5, #4

	No response from the measurement chamber!	#7, #1, #8, #4
	A firmware update of the chamber is required as the current settings are outdated which results in communication failure.	#9
	The master firmware is outdated and needs to be updated, thus no communication with the measurement chamber possible	#9
	Due to a CRC error, the system was booted from a reserve partition, thus the currently running firmware is not up-to-date	#9, #4
	Sensor calibration is not possible as the actual value is out of the calibration window of the respective humidity standard. The sensor might be contaminated or defective.	#10, #3, #4
	If this error message appears, please restart the instrument to have the USB port available and activated If the USB interface is not used, a restart is not necessary. In this case the activation is done automatically during the next restart	
	Program date and time again. Exchange internal battery (CR2032) if this message persists.	
Instrument does not react anymore to inputs (press icons etc.) Sometimes, it is accompanied by error messages of the operating system	There is a fatal error present. System needs to be rebooted.	#2 if it occurs several times a month): #1, #4

The measures should be performed according the sequence as listed in the row "Measure(s)"

#1:	Send a picture of the displayed message and firmware version to your local Novasina representative
#2:	Turning the instrument off and then on again. If an ordinary turn-off is not possible, please disconnect the power connector from the instrument for at least 5 seconds.
#3	Use another, appropriate sensor cell.
#4	Error in the instrument. Please contact your local Novasina representative.
#5	The used sensor is not compatible with the instrument.
#6	Perform a firmware update, if latest version is not currently installed. See chapter 9.3
#7	Double-check connection to the external chamber: Is the connecting cable plugged-in properly?
#8	External chamber is defective. Please contact your local Novasina representative.
#9	Perform an update as described in chapter 9.3.
#10	Double-check if the used SAL-T standards are in good shape (check chapter 8.1). Make sure, you have waited at least 45 min. after inserting the SAL-T into the chamber before you performed the calibration
#11	Temperature difference between chamber and sample is too big. Wait till sample temperature is lower

12. Lab-Touch Menu Structure

Chamber Settings

- ***Temperature control***
  - 15....30°C
- ***Stable mode***
  - F (Fast)
  - A (Average)
  - S (Slow)
  - Quick
  - Manual or Query
- ***Stability observation time (only if Manual or Query in stable mode)***
  - 1...30 min
- ***Data logger***
  - Display last results
  - Product name
  - Sample number
  - Interval recording
- ***Sensor calibration***
  - Calibrate sensor
  - Clear calibration point
  - Info calibration point
  - Set sensor password
  - Warning expired calibration
- ***Info***
  - Chamber
  - Sensor

System Settings

- ***Date, time***
  - Set date
  - Set time
- ***Units***
  - Humidity units
  - Temperature unit
  - Date format
- ***Acoustic signals***
  - Key beep
  - Duration stability signal beep
- ***Printout protocol***
  - Automatic output of stable protocol
  - Laboratory
- ***Maintenance***
  - Display settings
  - Reset to factory settings
  - System update
  - Set system password
  - Set options code
- ***Info***
  - System info

Notizen/Notes/Notes

Novasina – Swiss Quality, Flexibility and Competence

Since its establishment more than 60 years ago, the Novasina company has specialised in the accurate measuring of air and material humidity. The basis of this was the world's first, self-developed electronic measuring sensor for measuring humidity. This technology is based on the resistive electrolytic measurement principle. This was further developed and optimised over decades. This measuring principle is generally the most demanding and most accurate. Modern substances and materials allow continuous optimisation and expansion of the area of application of this measuring sensor. Today the highly accurate humidity measurement is among our core competences and forms an important pillar of our success. Intensive research and development further ensures a decisive advantage for us. Novasina sensors and measuring instruments are mainly applied to the area of air and material humidity. This is almost exclusively used in industrial applications as well as in research and development.

We fully develop and produce Novasina precision measuring instruments in which our Know-how of many years is always included. We are proud of the „SWISS MADE" label, which guarantees the highest quality, innovation and longevity.

The diversity of our customers, business partners and applications as well as our international orientation makes Novasina the competent partner for demanding humidity measurements in the industrial area!

Your Novasina Team

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