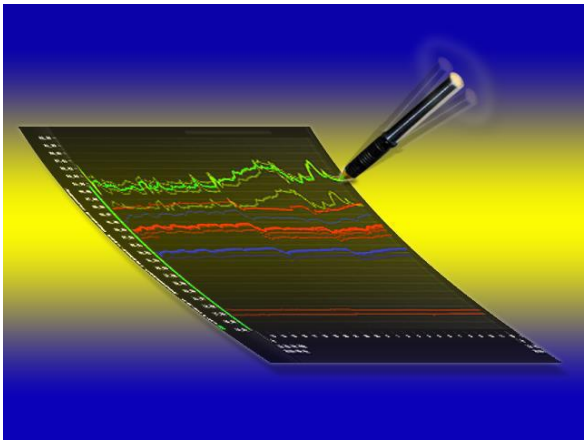

SENTAX SENSOR SYSTEM

Preliminary user manual

Version 1.4.4.4 – 2020-09-27

Inhalt

1. Introduction

Thank you for choosing Sentax.

Sentax is a powerful measurement, monitoring and analysis software. Not only old and new Omni Sensors can be all managed, Sentax is also able to integrate conventional third-party analog sensors into the system using an adapter (ADC stick) developed by Omni Sensors, as well as to store and graphically display the measurement data collected with it.

In addition to the sensor management, Sentax has an integrated real-time graphical representation of the recorded measured values in a line writer-like representation, as well as a permanent data recording with the integrated data logger, and a data evaluation module for the stored data. The collected data can also be passed to other applications, such as microsoft™ Excel or LabView™.

Furthermore, Sentax enables the parameterization and calibration of the connected sensors, if they support it.

A large variety of different sensor devices can be connected and operated simultaneously. These include such as sensors for temperature measurement, humidity sensors, pressure sensors or distance and level measuring devices, such as ultrasonic sensors.

The included software package also includes an embedded DLL, which allows sensor devices to be read into and managed in their own application. Examples of this are included in C++ on the disk or server.

2. General

2.1. Safety instructions

The program and the supported sensor devices may not be used in applications where persons may be at risk or injured, nor may they be emergency stop switches on plants and machines or in other safety-relevant areas!

Only use the original cables. It is essential to comply with the specifications of the sensor devices used with Poseidon.

It is essential that the connected sensor devices are checked at regular intervals for their full functionality. This is necessary because, for example the sinter filter of a sensor head could become enduring due to excessive contamination, and the ambient air could then no longer reach the actual sensor. It is strongly recommended that you perform the functional check at least once a month.

It must always be ensured that third-party serial devices connected to the PC and currently unused do not malfunction due to data sent by Sentax to detect a device.
Remove such devices before using Sentax or otherwise ensure their functionality.
Omni Sensors accepts no responsibility for any damage or consequential damage, or direct or indirect damage to equipment or equipment that may occur or may occur as a result of such malfunctions of third-party devices connected to the PC.

2.2. Terms of use and license agreement

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You may not analyze, reverse engineer, decompile, or disassemble, or connect the software to other software, paste or paste into other application software or print the software.

Please note: Omni Sensors assumes no liability for any consequences arising from or in connection with the use or operation of this software.

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2.2.2. License agreement

Section 1. *Explanation of the term*

1.1. "Software" includes all programs included in the Omni Sensors software product.
1.2. "User Documentation" includes the instructions associated with this Omni Sensors software product.

Section 2. *Conditions of use*

2.1. You may install this software on only one computer.
2.2. You may only make one backup copy of the software.

Section 3. *Restrictions*

3.1. You are not entitled to distribute or reproduce the software or user documentation, in full or in extracts, without the express permission of Omni Sensors.
3.2. Unless otherwise stated in this agreement or user documentation, you may not make a copy of the Software without the express permission of Omni Sensors.
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3.5. You may not transfer, sell, rent or lend this software, a copy of this software, or the user documentation.
3.6. Unless otherwise stated in this agreement or user documentation, you may not create, transfer, sell, rent or lend any derivative of this software or user documentation without the express permission of Omni Sensors.
3.7. You may not analyze, reverse engineer, decompile, or disassemble the software, DLL, or any area of the software, or connect the software to other software, or insert it into other application software or print the software.

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For a period of 90 days from receipt of the software or a product containing this software,
Omni Sensors warrants that any original storage medium on which this software is stored is free of any material errors or damages that may hinder the operation or functioning of the software.
Omni Sensors is solely liable for the replacement of the storage medium, which does not comply with the provisions of the limited warranty, if this is returned to Omni Sensors together with a copy of your receipt.
Omni Sensors assumes no warranty or liability for any damage that may occur as a result of the installation (for example viruses, data loss).

Section 5. *Disclaimer of liability*

5.1. Except for the limited warranty provided herein, there is no further warranty, either express or implied, including, but not limited to, warrant of for merchantability and/or fitness for a particular purpose.

5.2. Omni Sensors shall not be liable for any damage, of any kind, for or caused by it or any third party (including, but not limited to, general or specific damages, consequential damages or incidental damages, including damages resulting from loss of profit, business interruption, loss of business information or similar damages) resulting from or in connection with the delivery, use or operation of the software.

Section 6. *Effective term of validity*

6.1. This license agreement is effective from receipt of the software or any product that contains this software.

6.2. In the event of a breach of any provision or condition of this agreement, this agreement shall be deemed to have been terminated and you are obliged to return this software to Omni Sensors without delay. In this case, the purchase price will not be refunded.

2.3. Requirements

The Sentax application program is implemented as a native Windows 32-bit or 64-bit application.
It is running on all current Windows systems.

- If you are using a 32-bit version of Windows, you can only use the 32-bit version of Sentax.
- If you are using a 64-bit version of Windows, you can use both the 32-bit application and the 64-bit application.

In general, the 64-bit version is preferable because it is not subject to the 2 GB memory limit of the 32-bit version.
For memory-intensive operations such for example in the line recorder or when displaying the measurement data evaluation, the 64-bit version offers significant advantages that can be noticeable in higher speed and generally better performance of Sentax.

Please note: Sentax is massively parallelized. This means that the more processor cores or threads available on each system, the better and faster Sentax works.

Especially when evaluating measurement data records, a higher number of processor cores can offer significant speed advantages. The measurement value acquisition for each connected sensor also works in a separate thread. In contrast to the predecessor software Poseidon, Sentax collects and displays all measurement data in parallel or quasi-simultaneously.

2.4. Installing the program

The Sentax application program "Sentax32.exe" or "Sentax64.exe" contains all the necessary program parts and data that are necessary for the function. Therefore, the file can be copied to any folder on a Windows PC and run from there. An installer variant will always copy the application program to an Omni Sensors folder in the programs folder of the Windows installation. However, the program also runs from other starting points. The respective data, which is automatically extracted from the program when you first call up or after installing an update, for example this manual, is usually automatically installed in the user's folders provided for this purpose by Windows, for example"documents". Likewise, for example the data recordings are automatically stored there.

Sentax also creates entries in the Windows registry. These can only be found under the key "HKEY_CURRENT_USER\SOFTWARE-MELTEC". If Sentax was installed without an installer, you can manually delete this key from the registry if the program has been uninstalled. Only relatively unimportant data, such as window positions and sizes, is stored in the registry. For old sensors that cannot be parameterized, changes such as for measurement curve color, etc. are also stored there. So if the key was accidentally deleted, you would only need to renew some settings. Apart from such settings, however, the program function would not be affected and the missing entries will be automatically recreated by Sentax the next time you start.

Please note: **At this point it should also be mentioned that Sentax does not collect any personal data and forwards it to any telemetry servers. In principle, no network connection is required for the function of Sentax. Some functions, for example alarming by e-mail can of course require this. However, the serial number of the sensors is recorded for their identification, for example in connection with measurement curves (see: file name of the measurement data recording). All recorded metrics are automatically stored in corresponding files in the user's documents folder. Of course, an e-mail address you have to enter, of course, because otherwise an alarm could not work in this way.**

2.5. Supported sensor devices

Sentax supports most of the sensor devices produced by Omni Sensors in recent years. All USB sensors with UFT or MCS protocol are supported, including relatively old devices. The level of support depends primarily on the capabilities of the device.

Sentax monitors USB device change events on the local PC. When Windows reports such an event, Sentax starts an automatic detection procedure that attempts to detect a newly plugged-in device or capture the removal of a device. Such device detection can lead to a short-term failure of measurement detection on other devices, but it does not necessarily have to. If other serial USB devices are connected to the PC during this time that are not currently being used elsewhere, data may be sent to these devices to determine the type.

Please note: **It must always be ensured that third-party serial devices connected to the PC and currently unused do not malfunction due to data sent by Sentax to detect a device. Remove such devices before using Sentax or otherwise ensure their functionality. Omni**

Sensors accepts no responsibility for any damage or consequential damage, or direct or indirect damage to equipment or equipment that may occur or may occur as a result of such malfunctions of third-party devices connected to the PC.

2.5.1 Supported sensor devices with MCS-Bus report

The MCS bus is the actual "native" bus for Sentax devices. This communication protocol is supported by any Sentax device.

The MCS bus uses a large protocol based on the transmission of short fixed-length data sets. The records contain a header with source and destination addresses and can be sent and received within a bus as in a network. Therefore, several sensors can be operated in parallel at one interface, for example by means of a semi-duplex RS485 connection. Different endpoints in an MCS bus device can also be addressed. Each USB port of the PC to which a Sentax sensor with MCS bus support is connected is a separate bus, which is managed by the Sentax application program. In theory, up to 250 devices can be managed per MCS bus.

Please note: The entire parameterization and measurement data acquisition with Sentax sensors are only handled via this protocol.

2.5.2 Supported sensor devices with UFT- report

The UFT protocol is mainly used by older Omni Sensors sensors. It is based on a simple protocol using variable long data sabers. In addition to the MCS bus protocol, all Sentax sensor devices also support the UFT protocol. The protocols are not compatible, but the sensors detect them automatically. A description of the UFT protocol is available from Omni Sensors. Parameterization of the sensors with the UFT protocol is not possible or only to a very limited extent. The Sentax sensors, which offer extensive parameter setting, can only be fully used with the MCS protocol. However, the UFT protocol allows the acquisition of basic measurements. The UFT protocol only works point-to-point, a bus with multiple devices is not supported.

2.5.3 Connecting and removing sensor devices

To connect a supported sensor device, it is only necessary to connect the sensor to a free USB port of the PC. The sensors are usually powered by USB. The number of sensor devices that can be operated at the same time depends on the configuration and equipment of the respective computer system.

As a rule, the number of usb slots available can be greatly expanded by using USB HUBs. However, it should be noted that either the power supply of the USB is sufficient for all connected devices or HUBs with their own power supply are used (recommended).

A sensor device can be disconnected from the USB at any time if required. The corresponding measuring point in Sentax is then first stored in orange to signal that there is no longer a connection to this device. If you want to permanently remove the measuring point from the measuring point list, please use the reorganization function via the toolbar or the menu function. Even after a restart of the Sentax application, disconnected sensors are no longer included in the list.

2.5.4 Installing the program

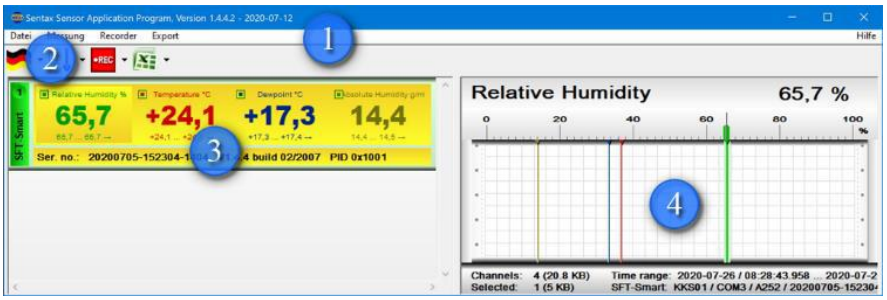
Sensor	Supported protocol	Parameterization with Sentax
OFT-001	MCS-Bus / UFT	Parameterization possible
OFT -0025	MCS-Bus / UFT	Parameterization possible
OFT -005	MCS-Bus / UFT	Parameterization possible
OFT -010	MCS-Bus / UFT	Parameterization possible
OFT -020	MCS-Bus / UFT	Parameterization possible
OFT -420	MCS-Bus / UFT	Parameterization possible
OFT -Smart	MCS-Bus / UFT	Parameterization possible
OHT20-A	UFT	No parameterization
OHT20-B	UFT	No parameterization
OHT20-C	UFT	No parameterization
OHT20T-A	UFT	No parameterization
OHT20T-B	UFT	No parameterization
OHT20T-C	UFT	No parameterization
OT150-A	UFT	No parameterization
OT150-B	UFT	No parameterization
OT60-A	UFT	No parameterization
OT60-B	UFT	No parameterization

3. The Sentax application program

3.1. The Sentax main window

The main window of the Sentax application chart mainly contains the sensor list (3) and a line writer window (4). For each managed sensor, an entry in the sensor list is displayed, provided that the sensor contains at least one measuring point. A sensor can contain one and up to four measuring points. For each measuring point, a measuring curve consisting of all recorded measured values of the measuring point over a certain period of time is displayed.

There is also a menu bar (1) and a toolbar (2) in the main window. Both elements provide access to various additional functions, which are explained below.



(1) Menu bar
(2) Toolbar
(3) Sensor list, 1 sensor-entry
(4) Line writers

3.2.1. Display of the main window

3.2.1.1. Window size and position

The Sentax main window can be freely moved on the desktop and resized in a very large area. The resizing is limited if the representation of certain elements would no longer make sense. The most recently set window position and window size is saved when the window is closed, unless the window is maximized or minimized at this time. If the same window is reopened, the size and position are restored. The window size and position are not saved when the window is maximized or minimized.

Please note: If Sentax is displayed and terminated on a multi-screen desktop, then the window positions for this configuration are also saved. If the configuration is changed afterwards, for example only one display, then it is possible that a window is displayed in a position that is no longer visible. In this case, you must either restore the old configuration and place the Sentax windows so that they are visible on the new configuration, or you must delete the registry entries with the window positions so that the windows will reappear at default positions.
The registry key is: "*HKEY_CURRENT_USER\SOFTWARE\MELTEC\WindowPositions*".

3.2.1.2. Classification of function elements

The contents of the main window can be split between the sensor list and the line writer.

Please note: **It is possible to reduce the display area of the sensor list to such an extent that only the colored edge bar of the sensor entry is visible. If you want to see the readings, then widen the range of the sensor list again according to the requirements.**

To change the split, move the pointer to the separator bar between the sensor list and the line writer and move it with the left mouse button pressed.

3.2.2. The toolbar in the main window

The buttons in the toolbar of the main window provide quick access to important Sentax controls. The buttons consist of up to two elements, the button and a small arrow button on the right. Use the button to call a main function, the arrow button to open a context menu to select the main function or for sub-functions.

Language selection. Here you can select the display language of Sentax. The selection is persistent and applies to all dialogs and advertisements in Sentax.

Sensor management. Pressing this button renews the device list. The device list is updated and devices that no longer exist or are no longer working are removed from the list. The function can be specified even further via the small arrow button. In addition, the display can be adjusted.

Recording of the measurement data on or off. An evaluation window can be opened via the arrow button. First, the running recording is automatically evaluated and displayed. Any number of evaluation windows can be opened. You can delete the current ad in it and drag'n drop it.

Calling the export functions. An export function can be selected via the arrow button. The selected export function is called repeatedly via the main button.

3.2.3. Language selection

Sentax supports direct display in 6 languages:

German

English


Italian


French


Spanish


Dutch


The selection of one language is persistent, that means once a selection is applied immediately and is valid until another selection is made. The selection is valid in the whole program for all advertisements and dialogs. However, it is possible that individual displayed texts or dialogs are not yet available or are not fully available in all languages.

3.2.3.1. Sensor management

The managed sensors are displayed with the measuring points they provide in the sensor list. The Sensor Management button offers the appropriate functions for managing the sensors. In particular, the renewal of the sensor list is initiated with this function, but also different display settings.

Functions:

Clean up the device list	Clean up the sensor list. All devices that are no longer working will be removed from the list. Devices that report an error, have been removed from the bus or are otherwise unavailable are not automatically removed from the list to make a possible problem visible until the user notices it. This feature can then remove devices that are no longer working and clean up the display of the sensor devices.
Start device search	This function initiates a device search manually. Normally, Sentax monitors the USB to detect any configuration changes. If a change is detected, Sentax automatically starts a search for newly connected devices. This function allows the user to manually start a search.
Clean up and start search	This function combines the two functions described earlier.
Open device parameters	This menu function opens the general settings for a sensor device, see section 3.2.4.2.
Hide all writer channels	This menu function hides all measurement curves from the line writer window. Individual, desired curves can then be displayed again.
Switch all writer channels	Function inverts the settings for hidden measurement curves in the line writer. This means that all hidden curves become visible again and all last visible curves are hidden.
Reduce the measuring station display **Enlarge the measuring station display**	With this function, the display of the sensor devices in the sensor list can be enlarged (full display) or reduced (concentrated display). See section 3.2.4.1.

3.2.3.2 Data recording

Turn the data recording on or off with this button. For more information, see section 3.3. With the arrow button on the side of the recording button, you can open the measurement data evaluation.

3.2.3.3 Data export

Functions:

Export values to MS Excel™ when trigger value changes. **Write values to text file when the trigger value changes.**	If one of these options is selected, measurements are exported only if the measured value changes and the trigger signal is also set in the measuring point parameters. Measuring points where the trigger signal is not set cannot cause an export, even if the measured value changes.
Export all changed readings to MS Excel™. **Write all changed metrics to text file.**	If one of these options is selected, all measurements where the measured value has changed will be exported.

Please note: Measurements are only exported if a measurement value has changed. A change is detected when the measured value has changed by more than one scale level, as specified in the measurement point parameters.

3.2.3.4 The sensor list

The sensor list is a list of all connected sensor devices.

3.2.4 Sensor entries in the sensor list

(1) Measuring point #1, relative humidity.
(2) Measuring point #2, temperature.
(3) Measuring point #3, dew point temperature.
(4) Measuring point #4, absolute humidity.
(5) Side strips with sensor name and numbering.
(6) Device and connection information.

Each sensor entry consists of 3 segments. A side strip displays the name of the sensor, as well as a color to indicate the type of sensor. The color of the side strip has nothing to do with the color of the measuring points or measuring curves, which can be set separately. Typically, each device class is marked with a specific color. This makes it easier to detect in the list. To the right of it is a field that displays 1 to 4 measuring points. Below it is a field with general information about the sensor device and the type of connection to Sentax.

Each field for a measuring point in turn consists of a name of the measuring point, the measured value, the trend displays and measuring point-specific special information, for example level of the analog output in case the sensor has one and the output of this measuring point has been assigned.

When you move the mouse cursor over the fields of a sensor entry, the field below the mouse cursor is highlighted. You can click all the fields to perform specific functions. For example, a single click on a measuring point results in the corresponding measurement curve being selected, brought to the foreground and highlighted in the line writer. Double-clicking on a measuring point field opens a parameterization dialog for this measuring point. In double-clicking a field that is not a measuring point opens a general parameterization dialog for the sensor.

Please note: A distinction is made here between 2 parameterization dialogs. On the one hand, general settings of the sensor can be changed, on the other hand, the setting for the detection and treatment of each measuring point can be adjusted separately.

The entries in the sensor list can be displayed in a smaller size so that more entries are visible at the same time.

<- normal (large) representation

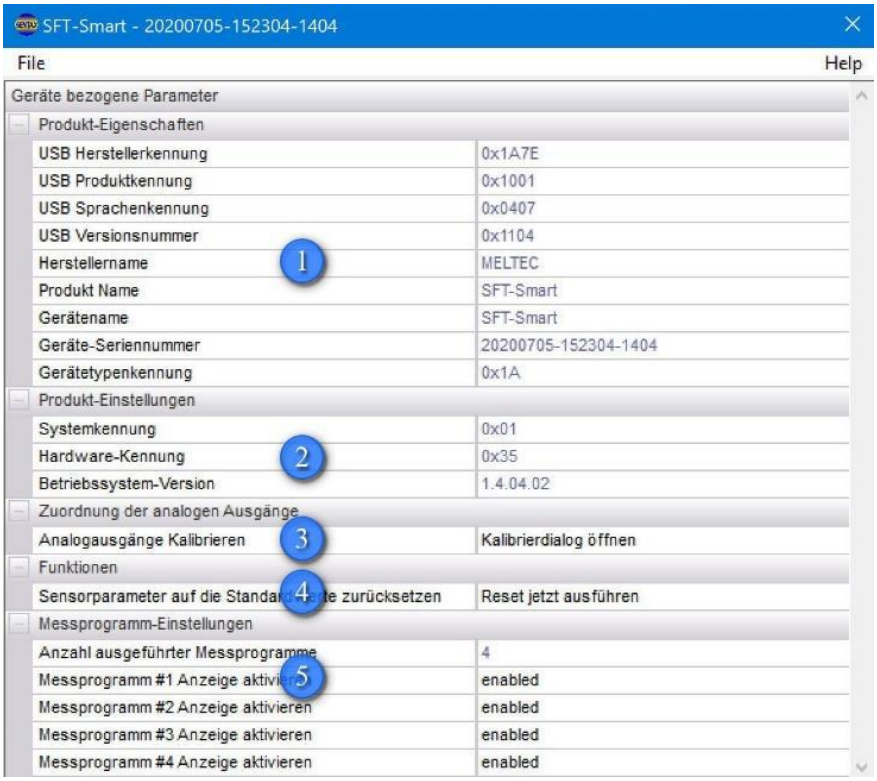
<- reduced representation

3.2.4.1 Parameterization of a sensor

To parameterize a sensor, select it from the sensor list first. Double-click an area that does not belong to a sensor measurement point. A parameterization dialog opens, which is precisely tailored to the selected sensor if the sensor supports this. Due to the variety of functions and the different sensor types, the parameterization dialogs can also look different or contain different elements.

In some cases, parameterizations can also be made for sensors that do not actually support this. Sentax then stores the settings locally for the serial number of the sensor. However, these settings mainly include the display and evaluation of the measurement data in Sentax, or possibly alarm settings. Furthermore, the scope of these settings is limited to the local PC.

When parameterizing sensors that support this, the changes are usually stored in the sensor device. The scope of these settings then includes all software that manages this sensor, including on the network.



The diagram shows the parameterization using a representative example, an SFT smart sensor:

(1) Master data area. This area is visible to all sensors.

(2) Product settings. View product-specific additional data.

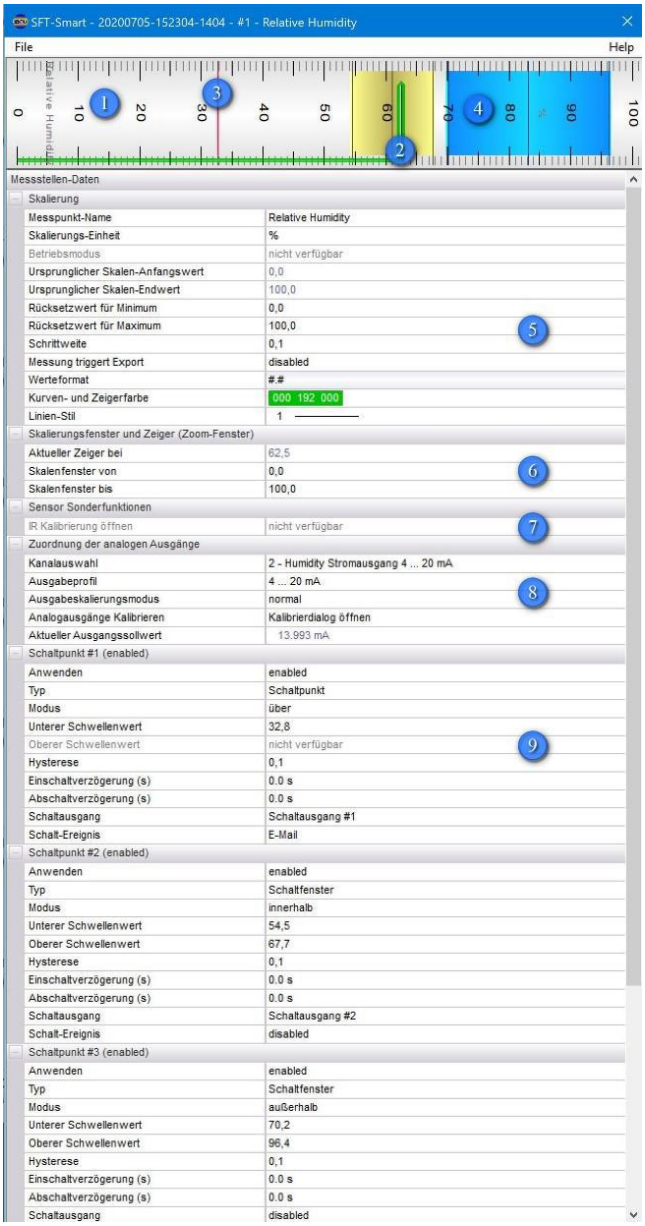
(3) Special settings for analog outputs. If a sensor has analog outputs, the setting options are displayed here. The field is sensor-specific, here for an SFT-Smart.

(4) Configuration of the measuring point display. This field is present for many sensors, but may vary depending on the number of measuring points available.

The moment you close the dialog, any changed settings are saved. If the sensor supports the storage of parameterization in the device, then only the changed values are written directly to the device and are immediately effective.

3.2.4.2 Parameterization of a measuring point

To parameterise a sensor, select it from the sensor list first. Double-click the field of the selected measuring point one to four. The opening dialog box contains parameters that are generally available as well as measuring points-specific settings. The general parameters for each measuring point of a sensor are defined by a scale. The measuring station-specific parameters depend on the respective hardware.



(1) Sensor scale. This is the graphical representation of the currently set sensor scale as well as the measured value and the switching points.

(2) Pointer, current reading. Shows the level of the current measurement in relation to switching points and scale.

(3) Switching point. Single switching point. The switching event occurs when the measurement level exceeds or falls below the threshold.

(4) Switching window. The switching event occurs when the measurement level is either inside or outside the defined switching window.

(5) General scaling parameters, always available.

(6) Current display window, always available.

(7) Sensor-specific settings.

(8) Settings for analog outputs, if supported by the sensor.

(9) Switching point settings, always available.

3.2.4.3 Fields of measuring points parameters, scaling

This section defines general parameters for scaling the measurement point. These parameters can be set for each measuring point of a sensor. Only the "Operating Mode" parameter is not supported by every measuring point.

Scaling:

Measuring points name	Each measuring point has a designation. This is usually the name of the measurement for example "humidity" or "temperature". However, the name can be customized by the user.
Scaling-unit	Here you can define the name of the perished unit.
Operating mode	An operating mode setting depends on the sensor type and is not available for each measuring point.
Original scale initial value	Defines the initial physical value that the sensor can capture at this point of measurement. Since this value is given by the hardware, it cannot be changed by the user.
Original scale end value	Defines the final physical value that the sensor can capture at this point of measurement. Since this value is given by the hardware, it cannot be changed by the user.
Reset value for minimum	Lower value of the scale, which is set to 100% when reset, for example when double-clicking in the measuring sheet. The value must be at least 1/2 scale below the upper reset value and should be equal to or above the initial physical value.
Reset value for maximum	Upper value of the scale, which is set to 100% when reset for example when double-clicking in the measuring sheet. The value must be at least 1/2 scale above the lower reset value and should be equal to or below physical end value.
Step range	Step level in the scale. The value is mainly used to find a suitable scale split. It is also used for value checks. The scale range must always contain at least one scale level. The scale level, and the scale range, must never be 0.
Measurement triggers export	If this parameter is activated, a change in the measured value by a fraction of the scale level will trigger an export output if the measurement data export, for example after MS Excel, is activated.
Value format	Sets the formatting of the metric, essentially the number of decimal places displayed.
Curve- and pointer color	A pointer color can be determined for each measuring point. If measured values are recorded and displayed in a measurement curve, this color is also used as a curve color.
Line style	Sets the style, essentially the line width, for a measurement curve from measurements of this measuring point.

3.2.4.3.1 Fields of measuring points parameters, scaling windows

The Scale window describes the current view in the scale of the measuring point. If, for example, the level axis in the measuring sheet is changed in the evaluation dialog, this is done by resetting the display window of the scale of the measuring point.

Scaling window

Current pointer	Pointer of the measuring point. This is the current reading, or the measurement level at a specific time.
Scale window of	Determines the lower measurement level for the display.
Scale windows up to	Sets the upper measurement level for the display.

3.2.4.3.2 Fields of measuring points parameters, special functions

Special functions are not available for every measuring point. Hardware-specific functions are supported here, for example the calibration of infrared sensors.

3.2.4.3.3 Fields of measuring points parameters, assignment of analog outputs

These functions also depend on the sensor hardware used. Not every sensor is equipped with analog voltage or current outputs. If so, the assignment and the operating mode can be set here. The possibilities also depend on the sensor used.

Some of the fields described below may also occur multiple times for each channel if the sensor supports multiple analog outputs.

Assignment of analog outputs

Channel Selection	If the sensor has several outputs and these can be freely assigned to the measuring points (a fixed assignment can also be made), then this assignment can be defined here.
Output profile	If supported, the profile of the analog output can be set here. Depending on the sensor, the following profiles can be supported: • Current output, 0 ... 20 mA • Current output, 4 ... 20 mA • Voltage output, 0 ... 10 V • Voltage output, 0 ... 5 V • Voltage output, 0 ... 2.5 V • Voltage output, 0 ... 1 V Not all of the options listed here are necessarily available, this also depends mainly on the type of sensor used, or its equipment.
Output scaling mode	This parameter sets the mode for the analog output. There is a choice between "normal" and "inverted". In normal mode, the output level increases with the measurement level. In inverted mode, the output level is inversely proportional to the measurement level. This mode is used, among other things, for level measurements, where the for example,

	distance between sensor and level is lowest with complete container filling, but the level is highest and therefore the largest analog level is to be output.
Calibrate outputs	This button opens the dialog for calibrating the analog outputs of the sensor.
Current output set point	Here the set point for an analog output is displayed, which should result at the current measurement level and the selected setting.

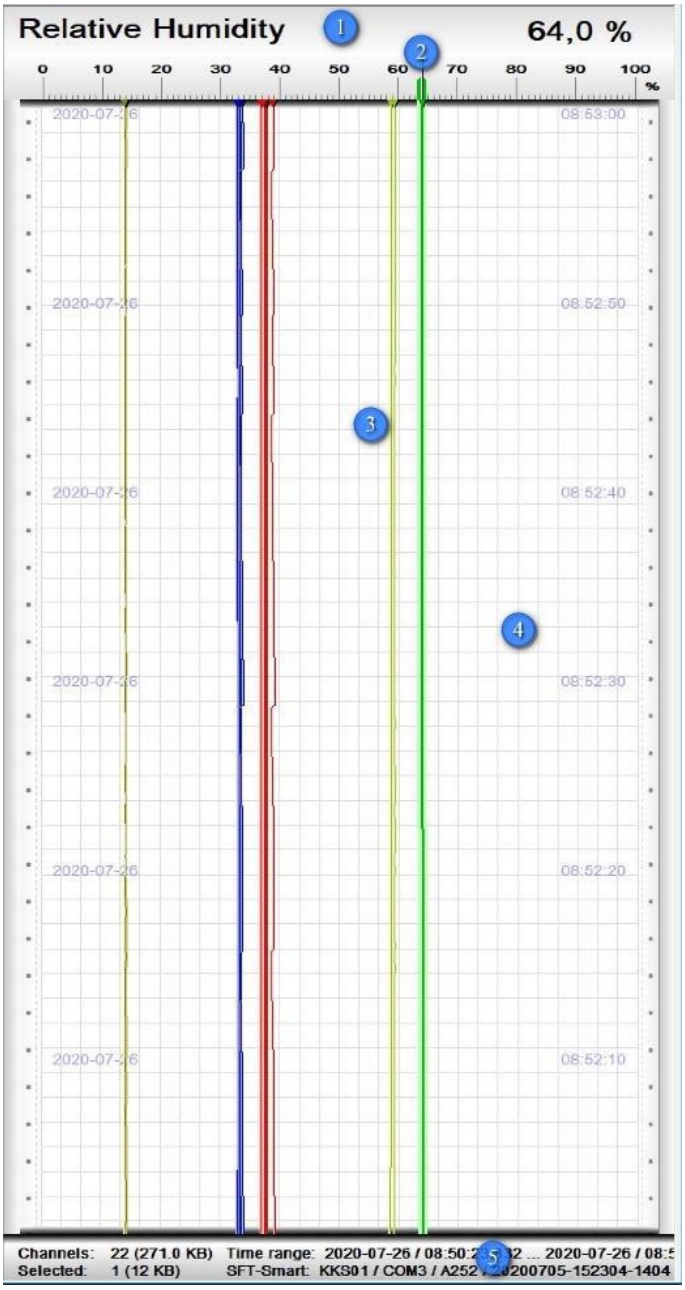
3.2.4.3.4 Fields of measuring point parameters, switching point settings

The sensors can manage up to three switching events. Any switching event can be turned on or off, regardless of the order. A switching event can be defined by a switching point or a switching window. The parameters described below can be set for each switching event.

Switching point settings

Apply	This can be used to turn a switching event on or off.
Type	This parameter determines whether to use a switching point or a switch window. A switching point consists of only one threshold, while the switching window is defined by a lower and an upper threshold.
Mode	Determines whether a switching point triggers the switching event below or above (level below or exceeds the set threshold). A switching window determines whether the switching event is triggered inside or outside (level is inside or outside the set window).
Lower threshold	Sets the threshold for a switching point or the lower threshold for a switch window.
Upper threshold	When a switch window is used, this value sets the upper threshold.
Hysteresis	Determines the hysteresis that is considered when a threshold is exceeded or exceeded before triggering a switching event.
Switch-on delay	Determines a time delay in seconds that must elapse between the overs or below a threshold before triggering the switching event. If the over shoot or fall of the threshold was shorter, no switching event is triggered.
Shutdown delay	Determines a minimum amount of time, in seconds, for which the trigger criterion no longer needs to exist before the switching event ends.
Output	Determines a switching output if the sensor has one to switch when triggering the switching event.
Switching event	Defines another event to be raised when the switching event is triggered, such for example send an alarm e-mail or SMS (if supported).

3.2.4.3.5 The line writer window



(1) Skala der ausgewählten Messstelle
(2) Vordergrundmesskurve (gewählte Messstelle)
(3) Messkurve eines anderen Sensors im Hintergrund
(4) Linienschreiber-Papierrolle
(5) Übersicht für die aktuelle Schreiber-Ansicht

This view is used for the real-time display of the running measurements in graphical form. A representation is used that is similar to the representation of a classic analog line writer with paper roll (4). The paper roll is moved from top to bottom at a certain, adjustable speed, whereby, so to speak, the upper roll of paper is spun off and rolled up onto the lower paper roll. A scale is displayed above the paper strip (1). Since there is only room for a scale at the same time, a measurement curve can be selected as the foreground measurement curve. The scale of this selected measurement curve is then displayed, and the measurement curve itself is displayed slightly thicker, highlighting it as the selected measurement curve. Only the pointer (2) for the selected measurement curve can be seen in the selected scale. The hands of the other measurement curves are obscured by the selected scale. To select a measuring curve, it can be clicked directly with the mouse or the corresponding measuring point can be selected in the measuring point list. The space bar allows you to switch through all curves when the input focus is on the line writer window.

The adjustable speed of the paper roll and the current display size define a time range for which the measurements are displayed. You can use the mouse or key commands to manually change the time range. If you do this, the automatic forwarding of the paper roll will be disabled for a certain period of time. However, the recording of the measurements continues in the background. If you wait some time without changing anything in the line writer, or press the Return button, the paper feed will continue at the current time position.

3.2.5 Keyboard commands in the line writer window

If the input focus is on the line writer window, then various keyboard commands are available for operation:

Key / key combination	**function**
Spacebar	Select the next measurement curve.
Input (Return)	The paper feed is reactivated.
Pos1 (Home)	The display area and feed are set to standard and the paper feed is reactivated.
Arrow key on the left	The time range of the display is enlarged (zoomout).
Arrow key on the right	The time range of the display is reduced (zoomin in).
Up/down arrow key	The time window moves forward or backward while the size remains the same.
Strg. + C	The current Recorder view is copied as an image to the Windows Clipboard and can be pasted elsewhere .B for documentation.

3.2.5.1 Data recording and evaluation

The Sentax application program automatically stores all recorded measurement data in special measurement data databases. A separate measurement data recording is created for each sensor device. This is done automatically.

3.3 Recording of measurement data in Sentax

The files for saving the measurements are stored in the document folder of the current user. Because Sentax may capture several hundred measurements per second from 1 to 4 measuring points per sensor device, the recording length per file is currently limited to one calendar week, i.e. weekly files are created. These start with a Monday and end with a Sunday. When a new week starts, a new file is automatically created. This should normally not make the weekly file of a Sentax sensor larger than 1 GB, usually 400 to 500 MB. However, the size always depends on the respective circumstances and the possible measurement rate.

All weekly files of a measurement are summarized in a separate subdirectory, so a new folder is created for each week. The folder name is composed of the year and calendar week. The file name of the weekly files is again composed of the serial number of the sensor, the year and the calendar week. Therefore, there can usually be no duplicate file names.

Each measurement is saved with a complete time stamp containing the full calendar date and the exact time the measurement was recorded. The maximum time resolution is one millisecond. To save space, a new measurement value is only saved if the measurement level has changed by at least 1/100 level of the currently set scale of the sensor.

If the measurement level changes less than 1/100 scale level, then only one detection counter is increased for the recording interval. A record of the record could therefore contain approximately 25 by 65.7% humidity. However, the counter is not increased indefinitely. After at least 100 equal values, a new measurement data set is stored again, so that the time stamp retains a certain minimum accuracy. When a recording is evaluated for multiple measurements, the time interval between two recordings is divided by the number of the same measurement levels, so a uniform, linear time history is assumed for each individual value.

The measurements in the measurement database file are sorted according to the respective acquisition time. Each file contains a special index that provides quick access to the measurements collected at a given time.

3.3.1 Evaluation of recorded measurement data with Sentax

A separate evaluation window can be opened for the evaluation of recorded measurement data.
Also this window can be freely placed on the screen and set in size largely freely.

If Sentax is currently recording data when a new evaluation window is opened, the evaluation of the files of the current measurement is automatically displayed. Otherwise, files can be moved to the evaluation window with the mouse for evaluation by drag'n drop.

Multiple evaluations can be opened at the same time, both for different files and for the same. The measurement data recording can continue in the meantime.

Measurements are evaluated asynchronously for each file in its own thread. Therefore, there may be time differences in the display in the sheet, so not every curve may be displayed at the same time if the range selection displays changes. As long as a progress bar is still displayed in the upper right edge of the sheet, the current display is not up-to-date. Depending on the computer you are using, the available storage space, the number of files, etc., the evaluation may take several seconds or more. A powerful PC is clearly an advantage here, it may have to evaluate hundreds of thousands or even millions of measurements. The time required for the evaluation depends mainly on the number of measured values, but less on the duration of the recording.

(1) Menu bar

(2) Toolbar in the evaluation window

(3) Measuring sheet

(4) Measurement level scale

(5) Time scale

(6) Measuring points (if activated)

3.3.2 The menu in the evaluation window

3.3.2.1 The toolbar in the evaluation window

The toolbar (2) provides quick access to various basic functions. Most buttons also offer a selection of sub functions above the small arrow on the right side of the buttons.

Language selection. This button is visible in the toolbars of most dialogs. The language in the entire program can be set hereby. Currently, the languages German, English, Italian, French, Spanish and Dutch are supported. The selected language is activated immediately and applies to all dialogs and displays in the program.

Delete the current evaluation. All added recording files are unloaded and the graphic is deleted. You can then add other new recordings.

Back to the previous evaluation. The parameters for all views for which an evaluation has been created are stored on a batch and can be restored via this button.

Evaluate a new section from the loaded recording. Different presets can be selected via the arrow on the right side of the button.

Copy the current view of the evaluation as an image to the Windows Clipboard.

Print the current view.

With this button, a continuous update of the evaluation can be switched on or off. If the button is activated, Sentax immediately starts with a new evaluation of the currently selected recordings as soon as their contents have changed. With short recordings, and depending on the performance of the computer used, almost real-time representation can be achieved. However, for longer recordings, or a larger number or a slower computer, the evaluation may take several seconds or more. If changes have been detected, the new evaluation does not begin until all previously running evaluations have been completed.

3.3.2.2 General operating functions in the evaluation window

All operating functions in the evaluation window are currently optimized for mouse operation. An integration of stylus and other accessories is in preparation.

If the mouse arrow is moved over a curve, the found curve is brought to the foreground, the scale at the left edge indicates the scale of the foreground curve, and the measuring point closest to the mouse arrow is searched and its data is displayed next to the mouse arrow.

If the mouse arrow is moved while holding down the left mouse button at the same time, the selected image section is changed in relation to the movement of the mouse arrow. Please note that in order to change the displayed section, a re-evaluation of the selected recordings is usually necessary. Depending on the amount, size, and performance of the computer you are using, this may take a few seconds or longer.

If the mouse arrow is moved while holding down the right mouse button at the same time, a selection rectangle is displayed, with which a new section can be selected for evaluation. As with any change to the cutout, the evaluation of the selected recordings must be recalculated.

A double click in the sheet display returns to the 100% display.

3.3.2.3 Key functions in the evaluation window

Key combination	**function**
Strg + C	Copy the current view to the Windows Clipboard.
Strg + L	Hide or show legend.