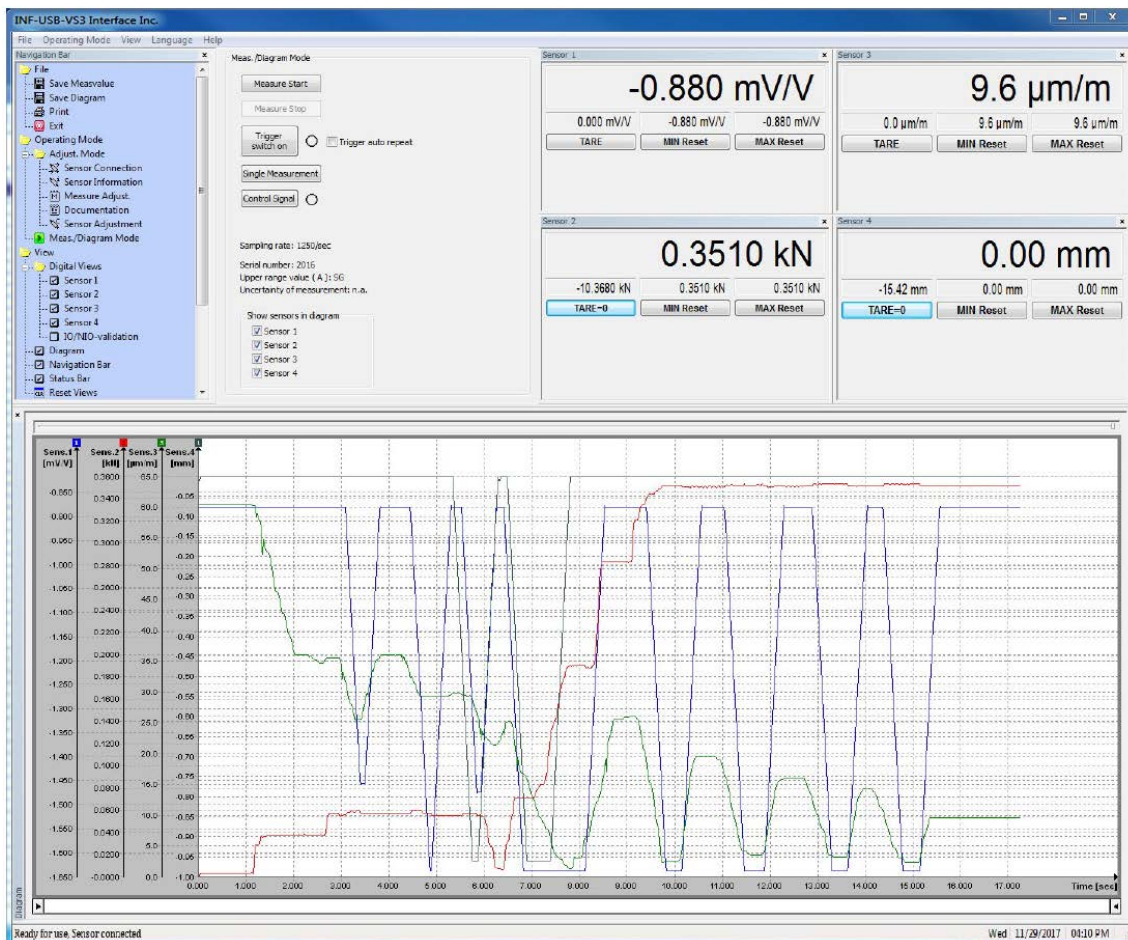


Interface

FORCE MEASUREMENT SOLUTIONS.

VS3 Configuration & Evaluation Software Manual



VS3 Configuration & Evaluation Software Manual

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1 Important Notes

Before installing and commissioning the device, these operating instructions, and in particular the corresponding safety instructions, must be read. The device may only be used as described in this manual to prevent injury or damage.

2 Remarks

This manual describes the installation under Windows 7. The installation under Windows 8 - 10 occurs accordingly.

Please note that Windows imperatively requires administrator rights for the installation of drivers. Please speak to your administrator if you do not have those rights.

2.1 License Conditions for Interface Software

The copyright of this software belongs to:

Interface Inc.
7418 East Helm Drive
Scottsdale, Arizona 85260

www.interfaceforce.com

During the software installation, the license conditions will be displayed and must be accepted, otherwise the installation will be aborted. After the installation, the license conditions can be viewed in menu 'Help -> Advice'.

2.2 Intended Use

The VS3 software was designed for the adjustment and control of the INF-USB2, INF-USB3, SI-USB, SI-RS485, SI-USB4, SI-ETH as well as T Series RS-485 devices. Further functions of the VS3 are display and storing of measured values. Any use beyond this is considered as not intended.

2.3 Designation of the Remarks

If possible remaining dangers emerge during the operation with VS3; this will be indicated by the following symbols in this operation manual:



Note: Important points to consider.

2.4 System Requirements

The operation of VS3 requires a PC with the following system conditions:

- Windows 7 - 10
- For SI-USB, INF-USB2, INF-USB3 or SI-USB4: USB-Interface
- For SI-ETH an Ethernet-Interface
- For devices with RS485: RS485-Interface or RS232-Interface when DRE/IF01 interface converter is used
- Maximum of two monitors will be supported

Recommended hardware requirements:

- Application process without diagram: Single-Core from 2.0 GHz
- Application process with diagram: Dual-Core from 1.8 GHz
- The higher the sampling rate and the longer a measurement lasts, the higher the required main storage should be. The measurement ends as soon as the system does not provide any more free main storage space. The absolute size of the main storage is depending on the operation system and the components installed in addition.

3 Preamble

3.1 Product Description




These operating instructions describe features and operating procedures for the VS3 software.

3.2 Structure of the Software

The VS3 consists of the following components:

- Configuration possibilities for the VS3
- Storage of sensor-related scaling and adjustment data
- For the presentation of measured data (actual value, tare value, minimal and maximal value)
- Display and storage of measured data evaluations
- Presentation of the measured data in a diagram
- Storage of measured data in CSV-format (output configurable)
- Storage of the diagram in BMP-format (output size configurable)
- Print-out of the diagram (output size defined)
- Presentation of the sensor information

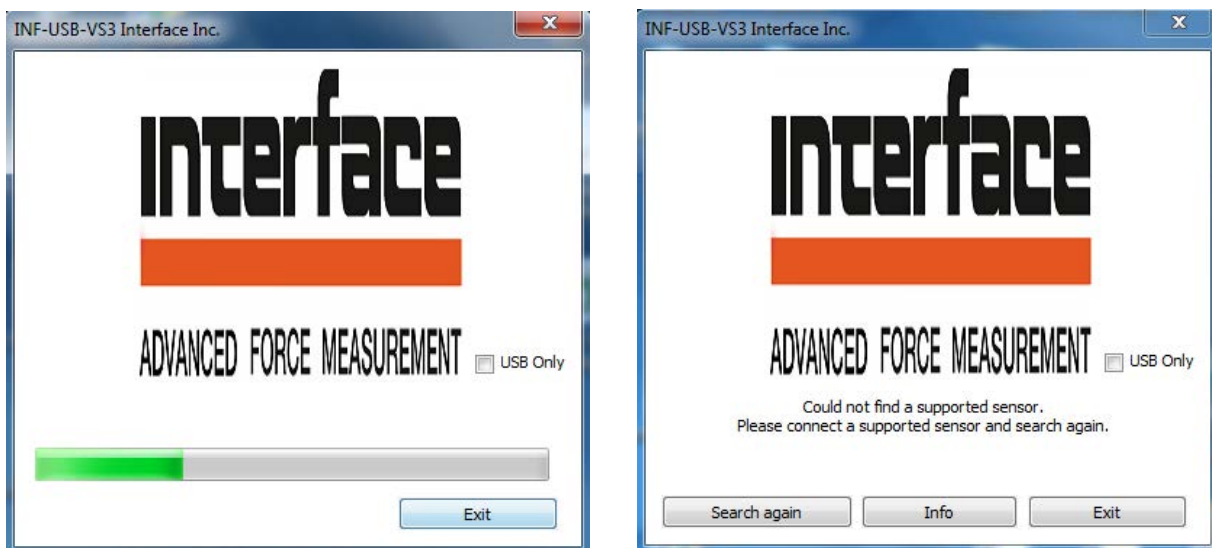
3.3 Safe and Correct Use

-  Observe the correct sensor adjustment.
-  Consider the correct VS3 configuration.
-  Choose a significant file identification/prefix when storing measured data.

4 Starting the Software

The software only starts if it can find at least one compatible sensor. After starting the executable, the search for a compatible sensor appears. If the search is unsuccessful, please check whether the cables from the sensor to the PC are undamaged and that the corresponding drivers have been installed correctly. Please also check if another software is connected to the sensor and disconnect this connection if necessary. Please check also whether the USB plug has been inserted correctly. Then click on **'Search again'** to search again for a compatible sensor. If a compatible sensor is found, the sensor-related data is automatically read out.

If you only want to work with sensors that are equipped with a USB interface, the search can be accelerated. To do this, click on the box **'USB Only'**. This setting can be changed at any time (here and in the dialog **'Sensor Connection'**).



5 Description of the Operating Mode

The software consists of a menu bar, navigation bar, status bar and a workspace. The functions of the menu bar comply with the navigation bar. The digital measured values of the physical values, the validation display and the diagram can be seen in '**Operating Mode -> Meas./Diagram Mode**'. In the workspace the consolidated dialogs are displayed in '**Operating Mode**'.

- **Adjust. Mode** (see chapter 5.2)
- **Meas./ Diagram Mode** (see chapter 5.3)

Switching between the dialog boxes can be done through the navigation bar as well as via the equivalent menu bar. Adjustment changes in the dialog box will be accepted without confirmation. All settings will be saved when the application is closed and reloaded when the application is restarted.

The status bar displays current status information of the application.

- '**Ready for use. Sensor connected**'
- '**Sensor disconnected**'
- '**Measure...**'
- '**Wait for trigger start event**'
- '**Measure! Wait for trigger stop event**'

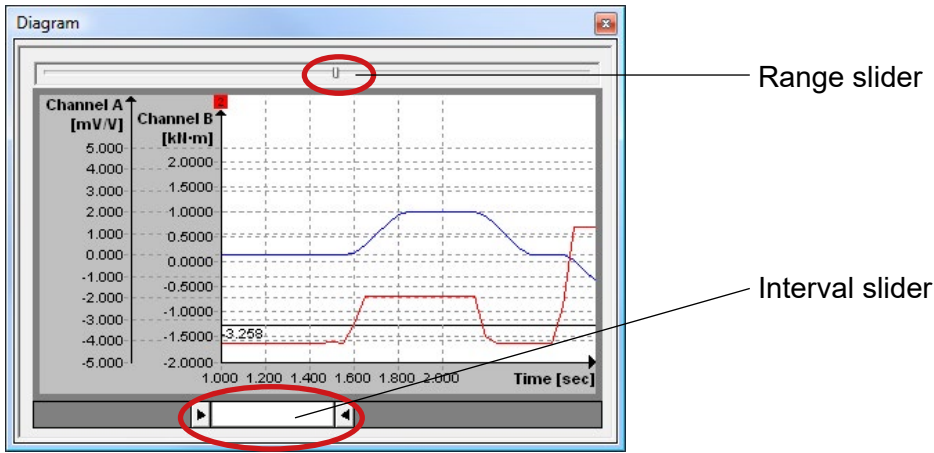
Furthermore, information from the menu bar and navigation bar through the control elements as well as the storage progress in a CSV-file are indicated in the status bar.

5.1 The Menu Bar / Navigation Bar of the Program

5.1.1 File -> Save Measured Value (Shortcut ,Strg+M')

From here, the measured data of the last measurement* are stored in a CSV-file. The output format of the file is adjustable in dialog box '**Operating Mode -> Adjust. Mode -> Documentation**' under the headline '**Output measured values**' (see chapter **5.2.4.1 Documentation -> Output Measured Values**). In the first column of the CSV-file, the measured values are numbered ascending. The output of columns two to maximal three will be taken over by adjustment '**Operating Mode -> Adjust. Mode -> Measure Adjust.**' under the '**Diagram**' headline. Here, each adjusted physical value will be written into the file. The sequence: [X-Axis], [Y1- Axis], [Y2- Axis], [Y3- Axis].

* Measurement: recording of a measured value series in the configured measuring rate of Start [...] to Stop [...]



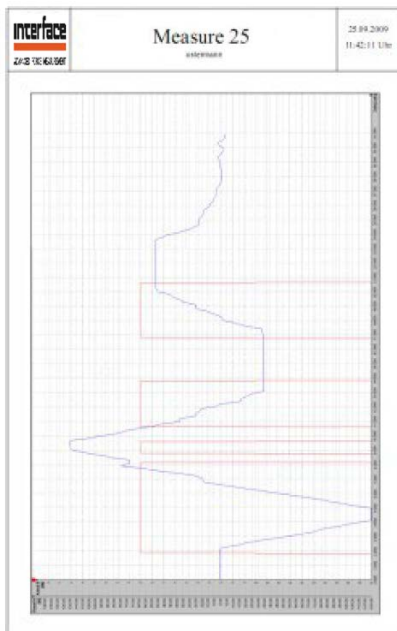
The diagram has a context menu. By right-clicking on the mouse, the following functions are available:

- **Zoom in:** The mouse pointer becomes cross-shaped. By pressing the left mouse key and moving the mouse in the diagram, a rectangle appears which can be zoomed by releasing the mouse key.
- **Zoom out:** The diagram indicates the complete range of the previous measurement.
- **Scrolling:** The mouse pointer becomes cross-shaped with arrows. By holding the left mouse key in the diagram, the curve can be shifted.
- **Cursor:** The cursor is used to display the measured values on the curve. If required, individual measuring points can be highlighted by clicking on them.
- **Grid on/off:** The dashed lines in the diagram form the grid. By this function, the dashed lines can be faded in/out.
- **show Legend:** The legend indicates the physical variables and their units. By this function, it can be faded in/out.



Caution: When storing the diagram, only the currently presented part of the measurement will be stored.

5.1.3 File -> Print (Shortcut ,Strg+P')



This function enables the print-out of the diagram with print time, configurable heading, configurable remark and configurable address. The user can carry out the configuration by the navigation bar '**Documentation**' (see chapter 5.2.4).

Line breaks in remark and address are converted into blanks. Following restrictions are valid:

- The heading is restricted to 20 characters
- The remark is restricted to 57 characters
- The address is restricted to 82 characters

5.1.4 File -> Exit (Shortcut 'Strg+E')

Closes the program. If the program is still in the measuring mode while closing, the measurement will be ended. If automatic storage is adjusted (see chapter **5.2.4.1 Documentation -> Output Measured Values** and chapter **5.2.4.2 Documentation -> Output Diagram**), it will be executed before the program is closed.

5.1.5 Operating Mode

This umbrella term contains all sensor-specific adjustments '**Adjust. Mode**' as well as the '**Meas./Diagram Mode**'. By selecting a mode it will be displayed in the workspace. Following dialog boxes can be displayed:

- Adjust. Mode -> Sensor Connection (see chapter 5.2.1)
- Adjust. Mode -> Sensor Information (see chapter 5.2.2)
- Adjust. Mode -> Measure Adjust. (see chapter 5.2.3)
- Adjust. Mode -> Documentation (see chapter 5.2.4)
- Adjust. Mode -> Sensor Adjustment (see chapter 5.2.5)
- Meas./Diagram Mode (see chapter 5.3)

When restarting the software it will start with the previous active dialog box. The next menu can be entered via the shortcut '**Ctrl+TAB**'; the previous menu can be entered by '**Ctrl+Shift+TAB**'.

5.1.6 View

The control elements under '**View**' are responsible for fade in/out of bars and displays as well as setting back the windows view. In the menu/navigation bar a check-mark indicates faded in/out bars and displays. The digital displays and the diagram can only be switched in the measuring and diagram mode, otherwise they are gray (disabled). While executing '**View -> Reset Views**' (e. g. via the shortcut '**Ctrl+R**') the digital displays, the diagram and the main window are set back to original condition.

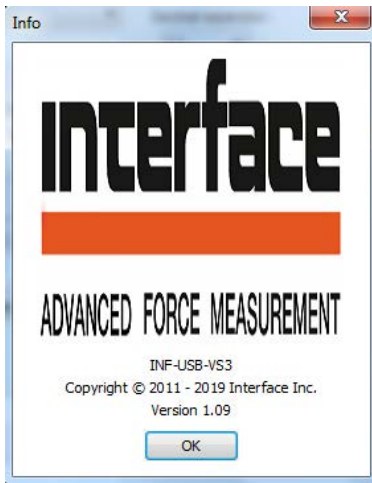
5.1.7 Language

Here, the language of the VS3 can be adjusted. All indications of the application are changed in accordance with the selected language. Following languages are supported:

- English
- German
- French

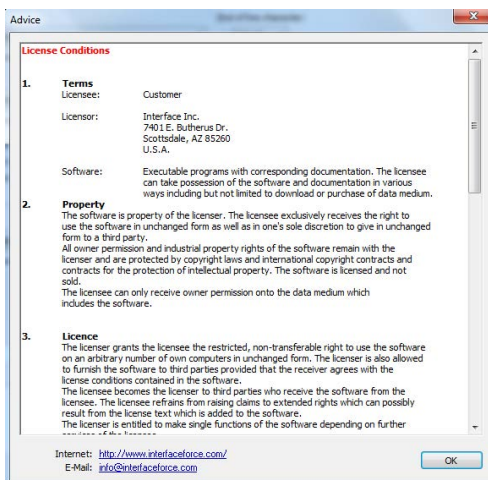
At restart of the software, the previously adjusted language will show.

5.1.8 Help -> Info



Here, the version number of the software is indicated.

5.1.9 Help -> Advice

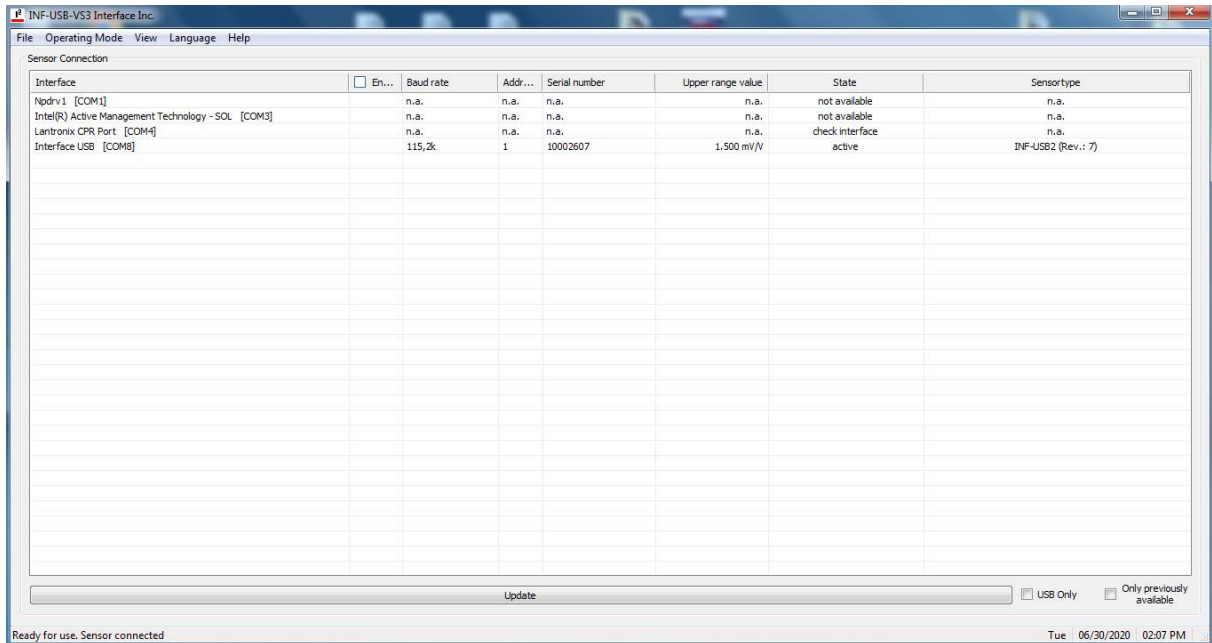


Contains the license conditions for this software, the address, as well as the website and e-mail links.

5.2 Adjust. Mode

The configuration mode contains all of the sensor-, measurement- and documentation adjustments as well as the output of sensor information. The adjustment dialog boxes are presented in the work space through the menu/navigation bar. In the following chapters, the adjustments are introduced and the functions are explained.

5.2.1 Sensor Connection



This software supports Interface devices of the type INF-USB2, INF-USB3, SI-ETH, SI-USB, SI-USB4, SI-RS485 as well as Interface T series devices with RS485-interface. If only one Interface device is directly or indirectly connected to the PC, this is automatically activated by the VS3. The VS3 can only activate one device at a time. In the case of several devices, the one that was active in the previous application session is activated. With a simple double-click on one of the displayed lines, with the status **'available'** the desired device is activated. Devices and sensors marked **'not available'** in the **'Status'** column, cannot be activated. **'Not available'** means that the VS3 cannot open or activate the interface or that the device has not responded.

If another process or another application accesses the desired interface, this access must be terminated and the **'Update'** button must be searched for free interfaces again. The status **'not supported'** indicates Interface devices not supported by the VS3 software with Interface protocol-enabled sensors.

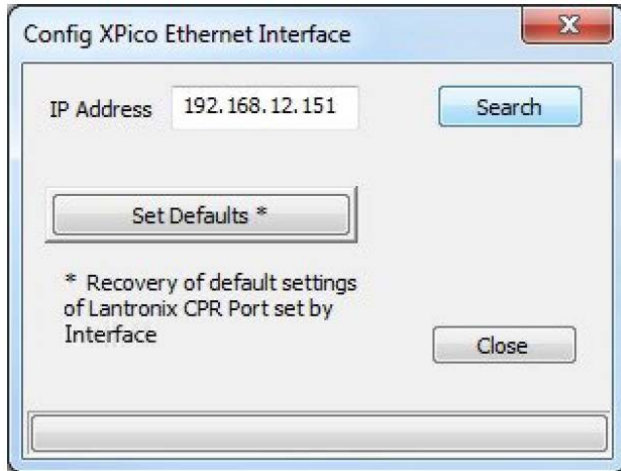
The list provides further information about the device, such as baud rate (115.2 or 230.4 kBaud), address, serial number, full scale value and sensor type. The full scale value indicates either the actual nominal value of the channels or the type of interface strain gauge, current or voltage. For two-channel devices (for example, SI-USB or SI-ETH), the measuring ranges are shown separated by a slash (channel A / channel B).

Disabling a device is done either by activating another device or by double-clicking on the active device. Disabling releases the COM interface and can be used by other applications.

5.2.1.1 Special Case SI-USB4

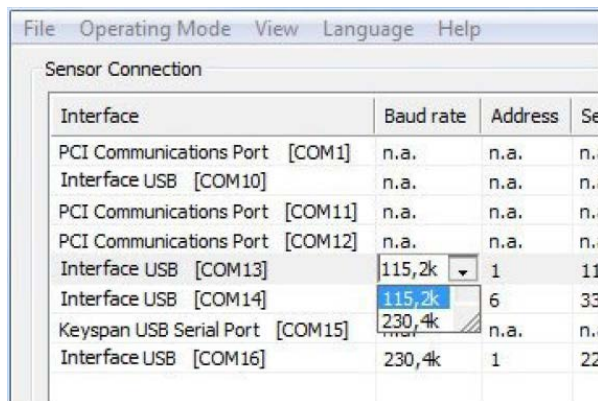
Internally, the SI-USB4 consists of up to a maximum of four supported devices grouped in pastel colors. All internally detected SI-USB4-boards of the device are shown in one line of the table. All these lines get the same status, e. g. light blue background and the numbering of sensors inside the device. If additional SI-USB4 are connected, other pastel colors will be used accordingly. With a double-click in a grouped line, all SI-USB4-boards of the device are switched to another status.

5.2.1.2 Special Case SI-ETH



If a SI-ETH is connected but not available, the settings of the corresponding port may be the reason. To Check this, please click on the corresponding line. Now the button '**Config**' should be visible. Clicking on this opens the dialog for restoring the default settings. Write the IP address of the searched SI-ETH in the field or search for it. If several IP addresses are offered, select the corresponding IP address. Then click on the '**Set Defaults**' button.

5.2.1.3 Device Connection -> Baud Rate



The baud rate can be switched between 115.2 kbaud and 230.4 kbaud by clicking in the '**Baud rate**' column on the corresponding interface (see example on the left under '**Interface**' '**Interface USB [COM 13]**'). In the case of SI-USB4, the baud rates of all its SI-USB4-boards change.

Baudrate in Baud	Maximal adjustable measure rate	
	Single Channel	2 Channel
115200	2500/s	1250/s
230400	5000/s	2500/s

A maximum of ten measurements per second are permitted for devices with type 4 interface electronics.



The changed baud rate is constantly stored in the sensor. This adjustment is also valid for the interplay with other applications.




The maximal adjustable sampling rate is depending on the adjusted baud rate and the used processor of the PC.

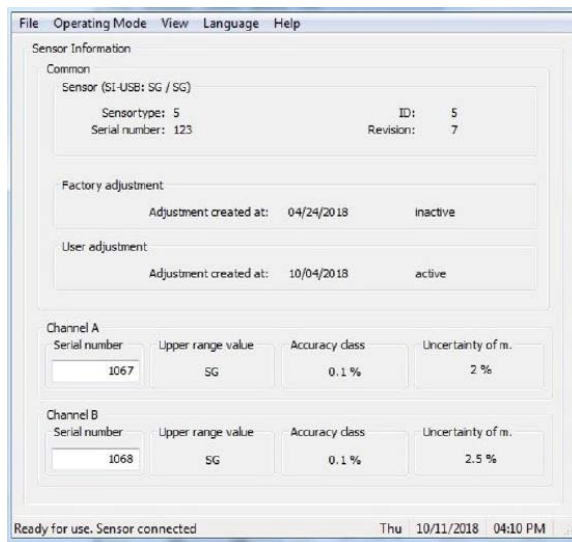
5.2.1.4 Device Connection -> Update

During this update all Interface interfaces which are integrated in the PC will be checked and read-out. The baud rate and the device address are determined and set automatically. Furthermore, the complete sensor data and sensor information will be read-out. The progress of the update will be visually presented (see following image). The update is also started every time a device is disconnected or connected via a USB port.

Interface	Baud rate	A...	Serial num...	Upper ran...	State	Sensortype
PCI Communications Port [COM1]	n.a.	n.a.	n.a.	n.a.	check interface	n.a.
Interface USB [COM10]	n.a.	n.a.	n.a.	n.a.	check interface	n.a.
PCI Communications Port [COM11]	n.a.	n.a.	n.a.	n.a.	check interface	n.a.
PCI Communications Port [COM12]	n.a.	n.a.	n.a.	n.a.	check interface	n.a.
Interface USB [COM13]	n.a.	n.a.	n.a.	n.a.	check interface	n.a.
Interface USB [COM14]	n.a.	n.a.	n.a.	n.a.	34%	n.a.
Keyspan USB Serial Port [COM15]	n.a.	n.a.	n.a.	n.a.	100%	n.a.
Interface USB [COM16]	n.a.	n.a.	n.a.	n.a.	100%	n.a.

 **Caution:** The state of RS485 devices must be updated manually with the 'Update'-Button.

5.2.2 Sensor Information



Sensor Information

Common

Sensor (SI-USB: SG / SG)

Sensortype: 5 ID: 5
Serial number: 123 Revision: 7

Factory adjustment

Adjustment created at: 04/24/2018 inactive

User adjustment

Adjustment created at: 10/04/2018 active

Channel A

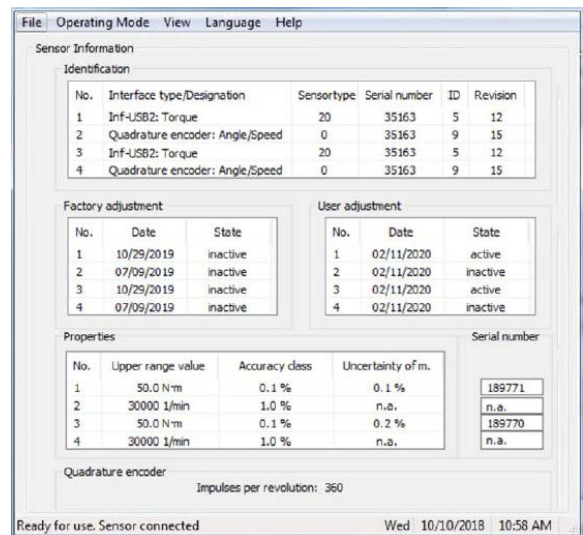
Serial number	Upper range value	Accuracy class	Uncertainty of m.
1067	SG	0.1 %	2 %

Channel B

Serial number	Upper range value	Accuracy class	Uncertainty of m.
1068	SG	0.1 %	2.5 %

Ready for use. Sensor connected Thu 10/11/2018 04:10 PM

Not SI-USB4 sensors



Sensor Information

Identification

No.	Interface type/Designation	Sensortype	Serial number	ID	Revision
1	Inf-USB2; Torque	20	35163	5	12
2	Quadrature encoder; Angle/Speed	0	35163	9	15
3	Inf-USB2; Torque	20	35163	5	12
4	Quadrature encoder; Angle/Speed	0	35163	9	15

Factory adjustment

No.	Date	State
1	10/29/2019	inactive
2	07/09/2019	inactive
3	10/29/2019	inactive
4	07/09/2019	inactive

User adjustment

No.	Date	State
1	02/11/2020	active
2	02/11/2020	inactive
3	02/11/2020	active
4	02/11/2020	inactive

Properties

No.	Upper range value	Accuracy class	Uncertainty of m.
1	50.0 N·m	0.1 %	0.1 %
2	30000 1/min	1.0 %	n.a.
3	50.0 N·m	0.1 %	0.2 %
4	30000 1/min	1.0 %	n.a.

Serial number

189771
n.a.
189770
n.a.

Quadrature encoder

Impulses per revolution: 360

Ready for use. Sensor connected Wed 10/10/2018 10:58 AM

SI-USB4 sensors

The dialogs shown above display information and properties about the activated sensor. The data is read by the VS3 when the sensor is activated. If no sensor is activated, all information is displayed 'n.a.'. If the measurement uncertainty is equal to 'n.a.', this means that there is no measurement uncertainty for the activated sensor. This value in % can be determined with a factory calibration. The determined value can be stored in the 'Sensor Adjustment' menu under 'Store uncertainty of measurement in the sensor' in the activated sensor.

VS3 compatible Interface units each have two memory locations for adjustment values, a fixed factory adjustment block, and a variable user adjustment block. The status 'active' during the user adjustment is additionally marked with a '*' if this adjustment uses the same factors as the factory adjustment. This is the case after the subsequent storage of a measurement uncertainty during active factory adjustment.

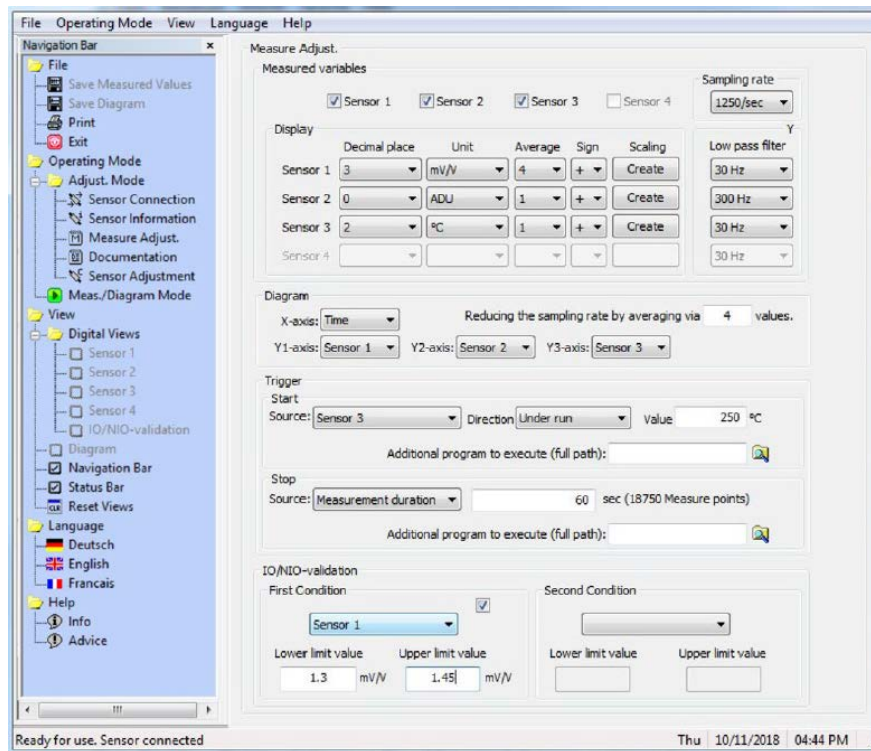
5.2.2.1 Sensor Information -> Common/Identification

Here, you will find general information about the activated devices. Under the heading 'Sensor' you will find in brackets the name of the device with the type of sensor (SG, voltage, current, torque, force, etc.), with channel A and channel B separated by a slash. The details sensor type, serial number, ID, revision and factory adjustment are invariable factory parameters.

5.2.2.2 Sensor Information -> Channels

These fields contain information of the respective measuring channel. In case of the INF-USB2 or INF-USB3, only channel A is viewable and in case of SI-ETH, SI-USB or SI-RS485, channel A and channel B can be viewed. The serial number can be changed by the user. Interface recommends entering the serial number of the connected sensor. The serial number is limited to a maximum of six characters. Possible characters are uppercase and lowercase letters from A to Z and numbers from 0 to 9. The 'Serial number' field is backed up with a confirmation prompt and will appear after the first change.

5.2.3 Measurement Adjustments



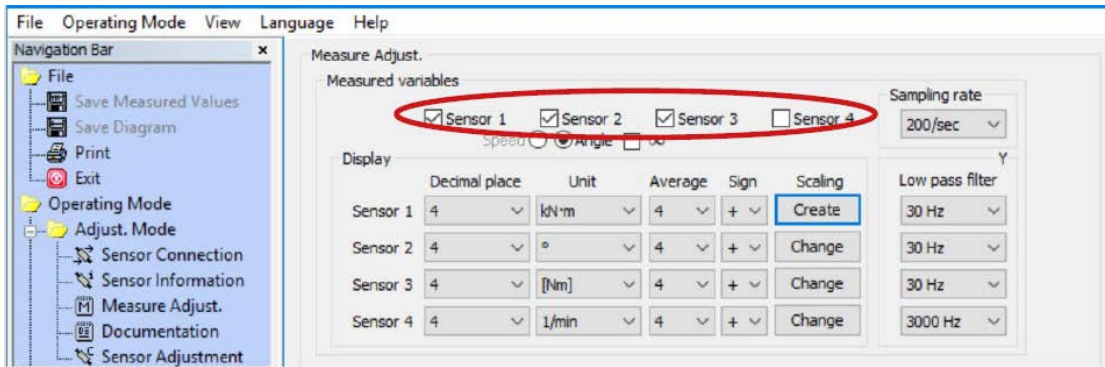
In this dialog box, the digital measuring adjustments can be viewed and changed. The measurement adjustments are subdivided into measured variable, diagram, trigger and 'IO/NIO'-evaluation. These adjustments will be accepted without confirmation.

The adjustments in 'Measured variables -> Sampling rate', 'Measured variables -> Display' and 'Measured variables -> Diagram -> Reducing the sampling rate by averaging via X values' are sensor related data and are saved in the sensor. Herewith, an automatic configuration of the software to the connected sensor is warranted.

When the application is finished, the previously not mentioned values are stored in the Windows registry under the logged in user and restored after a restart of the software.

5.2.3.1 Measurement Adjustments -> Measured Variable -> Type

This workspace is for the configuration of the measured variables which were recorded by VS3. Within the oval, the desired sensors/channels can be selected (see picture).



Caution: At type 'INF-USB2' or 'INF-USB3' (without optional external trigger input) channel A is a default adjustment and cannot be changed.

5.2.3.2 Measurement Adjustments -> Measured Variable -> Low Pass Filter



Caution: This selection option is only available for 'SI-USB' and 'SI-ETH'!

The integrated analog input filter is configured with this setting. The adjustment is made separately for each measuring channel.

The following 3dB-frequencies are adjustable: 30 Hz, 300 Hz, 1000 Hz, 3000 Hz.

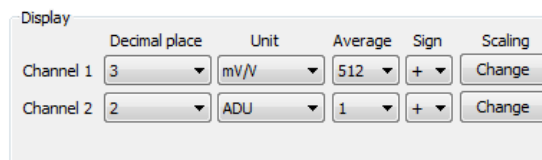
5.2.3.3 Measurement Adjustments -> Measured Variable -> Sampling Rate

Following measuring rates are adjustable: 5000/s, 2500/s, 1250/s, 1000/s, 500/s, 250/s, 200/s, 185/s, 100/s, 50/s, 33/s, 25/s, 20/s, 10/s, 1/s, 50/min, 20/min, 10/min, 1/min.

The maximal adjustable sampling rate is depending on the adjusted baud rate and the PC system (see chapter 6.2.1.1 sensor connection -> baud rate).

5.2.3.4 Measurement Adjustments -> Measured Variable -> Display

The configuration view differs depending on the connected device. At the INF-USB3 only one channel will be displayed. At SI-RS485, SI-ETH and at SI-USB, there are two channels.



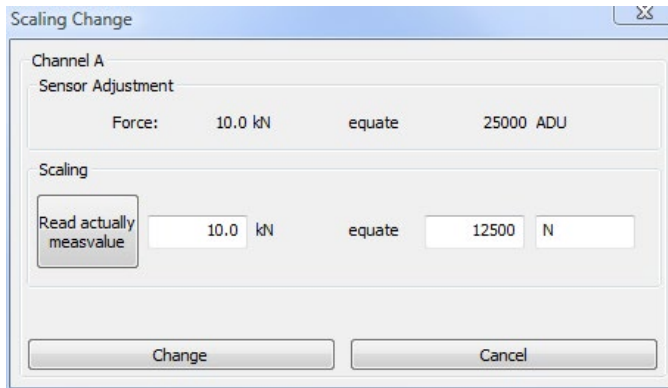
The adjustments under 'Measured variable -> Display' determine the output and display of the respective channel. Hereby, the number of decimal places, the unit, gliding averaging and the leading sign can be selected and configured.

Furthermore, an own serial number can be assigned to each channel. Up to four decimal places can be indicated for every physical size. This adjustment is considered in the digital displays, in the diagram and in the readout of the CSV-file. For the adjustment of the unit of a physical size, German, English and American units can be selected. The selection is dependent on the type class of the connected device. The conversion onto the adjusted unit is automatically carried out by the software. The under '**Scaling**' additionally defined unit is shown in square brackets. A gliding average can be formed for each physical size of 1 to 512 values, with a grading in raster 2^n of the adjusted sampling rate. The leading sign of the channel is predefined in the sensor and through the adjustment '**Measured variable -> Display -> Sign**' it can be changed.

Key 'Change'* under scaling opens a dialog which allows scaling as well as the definition of an ad-

ditional unit. In the choice box ,**Measured variable -> Display -> Unit**‘, the additional unit is marked with square brackets.

* If no scaling was stored, **‘Create**’ will appear instead of **‘Change**’ and the selection in the unit box is limited to the device type without an additional unit.



In dialog **‘Scaling Change**’ the input variable (see image **‘Scaling Change**’ under headline **‘Measure Adjust.**’) can be scaled with an arbitrary unit. The **‘Sensor Adjustment**’ displays the defined proprietary calibration and/or the user adjustment of the channel. In the image channel A with the input variable **‘Force**’ which reads out 25000 ADU at 10.0 kN nominal value was selected.

A readjustment of these values can be carried out through the input boxes in **‘Scaling Change**’ resp. **‘Scaling Create**’. In the left input box either a certain value can be entered or the actual measured value of the sensor can be read. In the middle input box the new output value which corresponds to the input value of the left box must be entered. In the right input box a unit with a maximum length of five digits can be entered. By pressing key **‘Change**’, these inputs will be saved in the sensor.



Caution: The closer the scaling value to the final value of the sensor, the more precisely is the display of the measured value during the measurement.



A PT100 sensor integrated in the SI-USB4 cannot be rescaled - just like the channels of devices with RS-485-interfaces.

5.2.3.5 Measure Adjustments -> Diagram


Diagram


X-axis: Time Reducing the sampling rate by averaging via 125 values.

Y1-axis: Channel A Y2-axis: Channel B


In input box '**Reducing the sampling rate by averaging via X values**' it is possible to decrease the measuring points which should be saved by entering a value for X. Hence, the adjusted sampling rate e. g. 200/s at X = 10 will be reduced to 20 displayed values in the diagram. This is also valid for storing the measured values in a file. When reducing the sampling rate, an averaging over the last X values is carried out.

 The adjustment '**Reducing the sampling rate by averaging via X values**' has no effect on the represented values in the digital displays.

 The adjustments under **5.2.3.4 Measure Adjust. -> Measured variable -> Display -> Average** of the individual physical sizes and the adjustment '**Reducing the sampling rate by averaging via X values**' act cumulatively.

 During the update of the diagram during an ongoing measurement, the complete measurement is represented at a resultant sampling rate less than or equal to 20/s. At sampling rates higher 20/s, only the last 5 seconds of the measurement are represented. After the termination of the measurement, the complete measurement is always shown in the diagram.

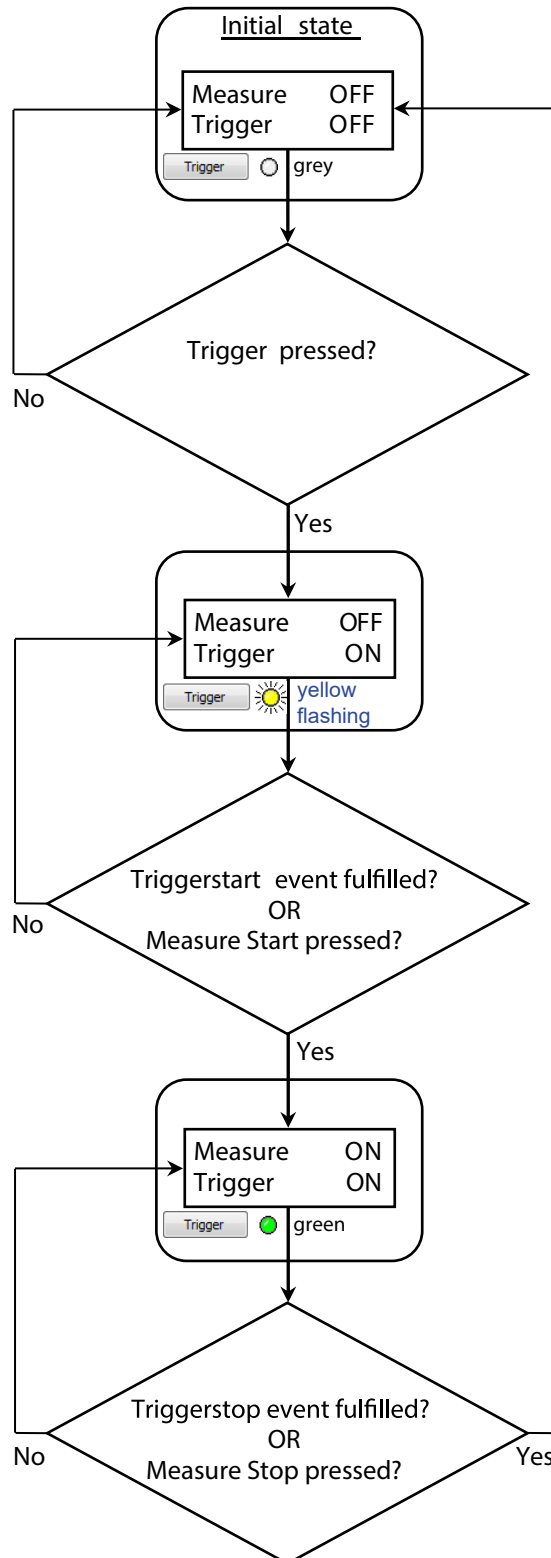
The adjustment of this configuration should be started with the X-axis. Resulting from the adjustment of the X-axis, the application updates the number of Y-axis as well as their selectable contents. All combinations of measuring variables can be represented in a diagram.

 **Caution:** The measured values are written in a CSV-file with the adjusted channels. The writing sequence is: [X-axis], [Y1-Achse], [Y2-axis]. If a Y-axis is not required, it is also possible to set them to '**Off**'. Nevertheless, the application assures that minimum one variable on the Y axis has not been set to '**Off**'.

5.2.3.6 Measurement Adjustment -> Trigger

Course:

1. Select a start event
2. Select a stop event
3. Enter the trigger key
4. Actuate a trigger start event
5. Actuate a trigger stop event
6. Measurement recorded



In the previous signal flowchart, the general course of measurement by means of a triggering is described. The activation button '**Trigger**' can be found in the 'Meas./Diagram Mode' under '**Measure Stop**'. The software triggering consists of two events which are adjustable according the requirements as follows:

- **Trigger start -> Source**

- o **Off/Measure Start:** Entering '**Measure Start**' releases the Trigger start event (the function to start an event can also be entered in the following sources).
- o **Channel A / Channel B:** See chapter **5.2.3.6.1 Trigger**.
- o **System time:** The application shows an input box where the date and the time of the measurement start can be adjusted.

The adjustment is limited to the current time plus 15 seconds. These values must be readjusted after each measurement; otherwise the following measurement will start immediately by pressing the trigger, because the previously adjusted time lies in the past.

- **Trigger stop -> Source**

- o **Off/Measure Stop:** Entering '**Measure Stop**' releases the Trigger stop event (the function to stop an event can also be entered in the following sources).
- o Channel A / Channel B: See chapter **5.2.3.6.1 Trigger**
- o **Measurement duration:** For this selection, an input box is available. The time unit (seconds, minutes) is taken from the sampling rate. The number of measurements is calculated and displayed by the application next to the input box.
- o **Number of measurements:** For this selection, an input box is available to indicate the number of measuring points. The measurement duration is displayed and calculated next to the input box. The time unit (seconds, minutes) is taken from the sampling rate.



Remark: The adjustments of trigger start and trigger stop can be optionally combined with each other.



Remark: The adjustments '**Measurement duration**' and '**Number of measurements**' refer to the adjusted sampling rate and not to the reduction of the sampling rate.

Additional program to execute (full path): Two trigger events can be assigned actions through these fields. After the event occurrence and/or evaluation and storage actions, the program specified in this field will be executed.

Any executable files and batch files are admissible. These files can be manually specified with full path or selected via requester through the folder icon.

5.2.3.6.1 Trigger

Trigger

Start

Source: Systemtime 10/16/2013 13:33:52 (MM/dd/yyyy HH:mm:ss)

Additional program to execute (full path):

Stop

Source: Channel B Direction: over run Value: 5 cm

Additional program to execute (full path):

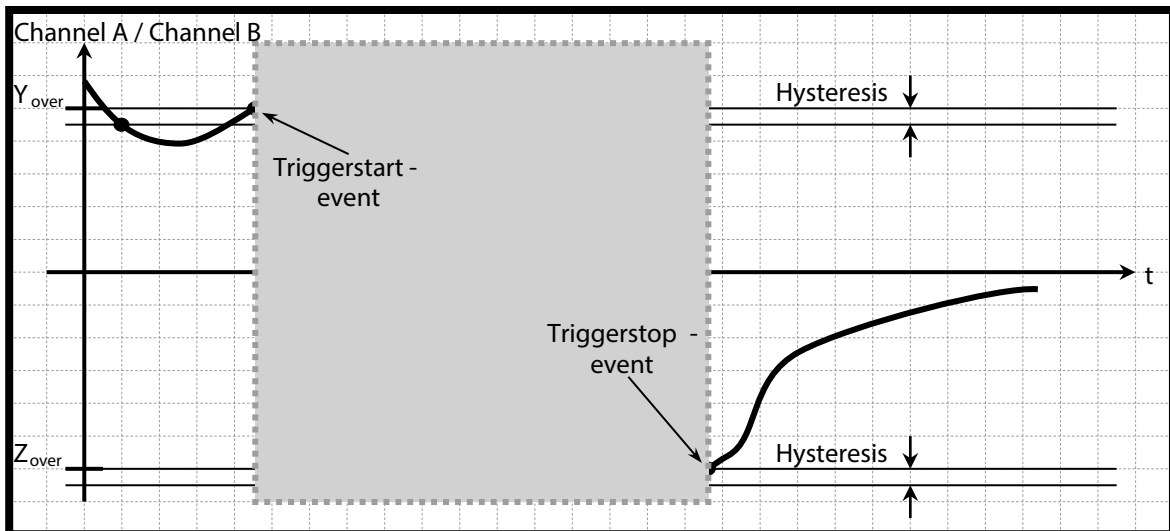
The picture on the following page shows an example of how a measurement by means of triggering can be recorded to a physical variable. At excess, the hysteresis value will be deducted from the threshold and at under-run it will be added.

At this triggering, not only the value of threshold (Y_{over} ; Z_{over}) of a physical variable, but also a direction must be indicated. In the example diagram, the direction 'Over run' is triggered. This means, that the measured value must drop below the hysteresis value first, before the trigger is responsive to the exceeding of the threshold. In contrast, the setting 'Under run' means that the measured value must rise over the hysteresis value before the trigger is responsive to dropping below the threshold value.

The gray boxed area of the example diagram corresponds to the display in the diagram of the VS3 after the measurement. This area can be saved in a CSV-file.

- Y_{over} = Trigger start value of a physical variable with directional adjustment 'Over run'
- Z_{over} = Trigger stop value of a physical variable with directional adjustment 'Under run'

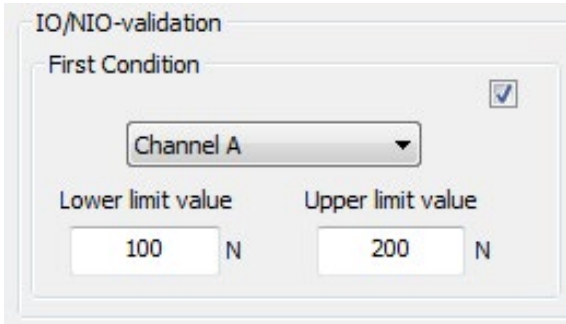
5.2.3.6.2 Example Diagram



5.2.3.6.3 Hysteresis

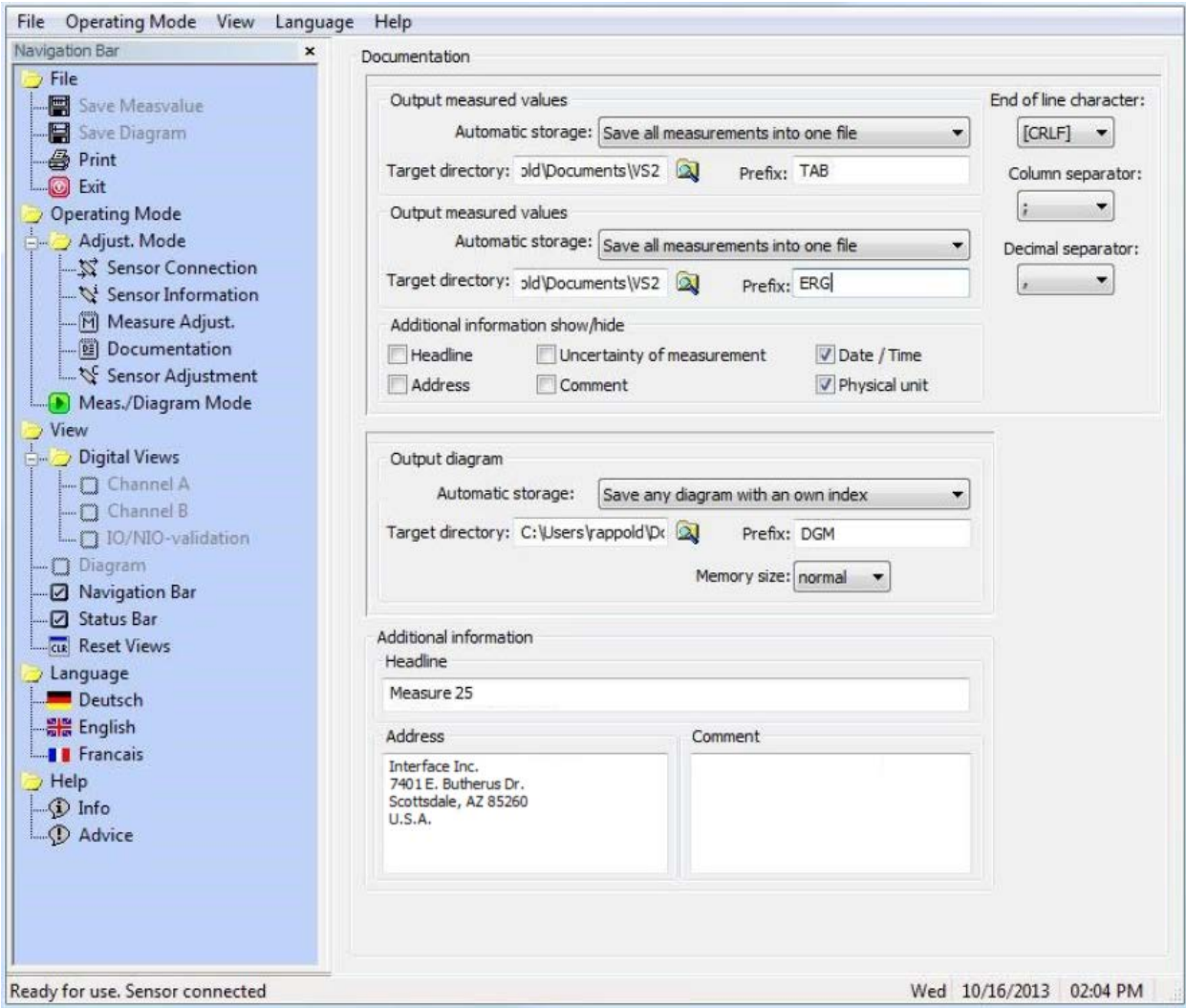
The size of the hysteresis is 1% of the indicated nominal value of the connected sensor. Except for type classes SG, Current and Voltage the hysteresis will be scaled to maximal 1 % of the input value because the nominal value is usually not known.

5.2.3.7 Measurement Adjustments -> IO/NIO Evaluation



These settings affect the evaluation of a measurement series. After a trigger stop event occurs, the max. values of these measurement series are determined and compared with the stored limits. In order to obtain an IO-display, the max. value of a measurement series must be above the lower and below the upper limit. If two conditions are defined, both conditions must meet the IO criteria for a total IO-display.

5.2.4 Documentation



Here, the user can carry out documentation configuration. The adjustments refer to the storage of measurements as BMP and/or CSV-file.


5.2.4.1 Documentation -> Output Measured Values


Automatic storage

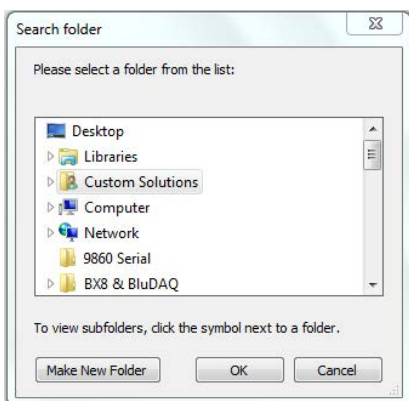
The storage of the measured value into an output file can occur automatically by the software.

Three adjustment possibilities can be selected:

- **None:** The automatic storage is disabled.
- **Save all measurements into one file:** This option files each measurement in the same CSV-file at the end. The name from the prefix field is used as the file name. The file is saved in the registered target directory.
- **Save each measurement with an own index:** This option creates a separate CSV-file at the end of each measurement. The file name consists of the prefix and the index YYYYMMDDHHmmss##### ('#####' number beginning with leading zeros 0000; 0001; ...)

 The path length is limited by the operating system

 **Remark:** Definition 'Measurement' see chapter 5.1.1 File -> Save Measured value (short-cut 'Ctrl+M')



Target directory: The target path is entered in 'Target directory' (standard adjustment: ...**<user name>**\My documents\VS3). Likewise, you can click on the folder and select a directory.


Prefix: Please enter the file name which is used for the automatic storage in this input box (further details about file name/prefix can be found under headline 'Automatic storage').

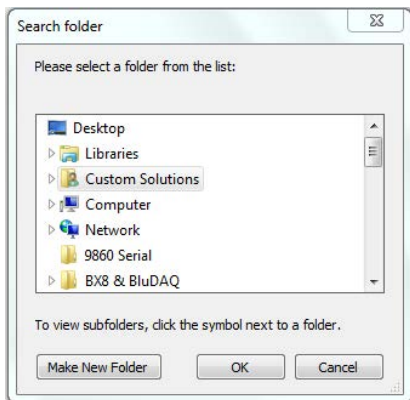
5.2.4.2 Documentation -> Output Diagram

Automatic storage

The software can automatically save the diagram in an output file. For this, 3 adjustment possibilities are available:

- **None:** The automatic storage is disabled.
- **Save any diagram with the same file name:** This option attaches every further measurement to the same CSV-file at the end. The name from the prefix field is used as the file name. The file is saved in the entered destination directory.
- **Save any diagram with an own index:** This option creates a separate BMP-file at the end of each measurement. The file name is a combination of the prefix and the index YYYYMMTTHHmmss##### ('#####' number beginning with leading zeros 0000; 0001; ...)

 The path length is limited by the running system.



Target directory: The target path is entered in 'Target directory' (standard adjustment: ...**<user name>**\My documents\VS3). Likewise, you can click on the folder and select a directory.

Prefix: Please enter the file name which is used for the automatic storage in this input box (further details about file name/prefix can be found under headline 'Automatic storage').

5.2.4.3 Common Settings 'Output Values' and 'Output IO/NIO Evaluation'

End of line character

The desired line ending mark for the output in a file gets adjusted in this box. Following possibilities can be selected:

CRLF	Carriage Return / Line Feed	- Carriage return line feed (MS-DOS, Windows)
LF	Line Feed / Carriage Return	- Line feed carriage return (Linux, Console)
CR	Carriage Return	- Carriage return (Apple Mac OS up to version 9)
LF	Line Feed	- Line feed (Unix-derivate, Mac OS X)

Column separator

The column delimiter will be read out at the first execution of the application from Windows system control (country selection) and will be set accordingly. At each further restart of the application, the previously adjusted delimiter will be used. Following selection is possible in this box:

TAB	Tabulator
;	Semicolon
,	Comma
.	Point
	Space character

Decimal separator

The decimal delimiter is carried out the same way as described for the column separator. Following selection is possible in this box:

,	:	Comma
.	:	Point



Remark: Supplementary changes of the country adjustments in the operating system have no influence on the once adjusted values of this software.

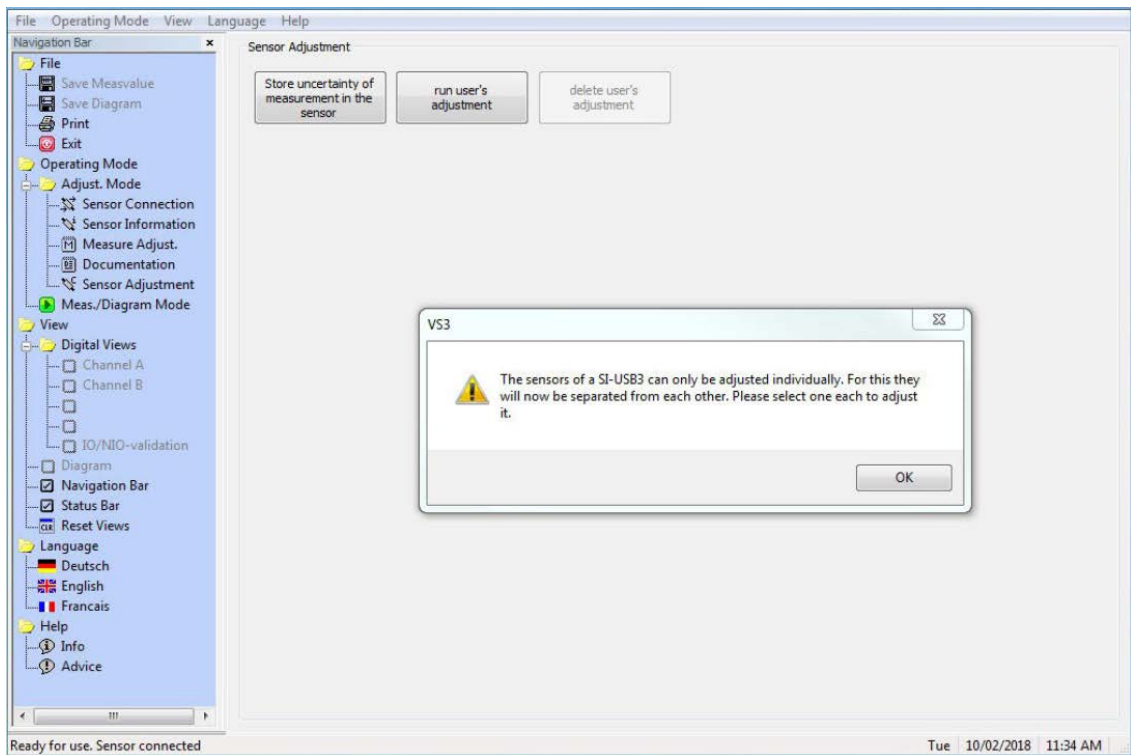
Additional information show/hide

In this group, check-marks can be placed to add further information to the output of measured values. The entries in the three entry boxes 'Headline', 'Address' and 'Comment' can be specified arbitrarily. With the check-mark, these entries will be recorded in the output file. The 'Uncertainty of measurement' - if the connected sensor has one - can also be displayed in the output file. By a check-mark in 'Date/Time' the measurement period can also be recorded in the output file. By a check-mark in 'Physical unit' it is also possible to systematically fade in/out the physical units in the output file.

5.2.4.4 Documentation -> Additional Informations

This is free text which can be activated in 'Documentation -> Output measured values -> Additional information show/hide'.

5.2.5 Sensor Adjustment



This dialog gives you the choice between three actions that you can perform with the sensors: storing the measurement uncertainty, adjusting and clearing the user adjustment. In the latter, the factory adjustment becomes current. In the case of the SI-USB4, however, the sensors will at first be separated from each other so that in the 'Sensor Connection' dialog, you will have a single sensor for each of them to be able to choose the adjustment by its activation.

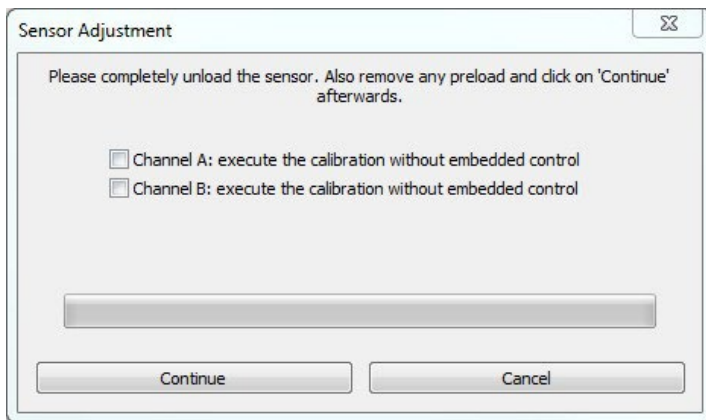
5.2.5.1 Store Uncertainty of Measurement in the Sensor

In this dialog, a measurement uncertainty in % (for example with regard to nominal value or adjustment value, see chapter 5.2.5.2) can be stored in the connected sensor. This size, if present, will be displayed in the 'Sensor Information' dialog. Furthermore, the measurement uncertainty can be output in the CSV output file (see chapter 5.2.4.1 Documentation -> Output Measured Values).

The value of the measurement uncertainty is usually determined during a factory calibration. If the factory calibration of the connected sensor is active and a value for the measurement uncertainty is given, then the sensor was subjected to factory calibration by Interface GmbH. Permissible values of this size are [5 % > Uncertainty > 0 %]. The value of the measurement uncertainty is only for documentation. This value has no influence on the measured values.

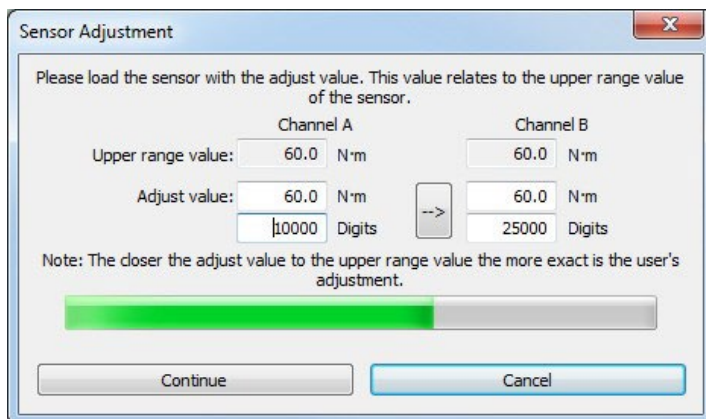
5.2.5.2 Adjustment

Adjustment allows you to readjust the measuring chain that corresponds to the active sensor or to readjust it to your requirements. The results are then saved in the device. Interface assumes no warranty or warranty claims for the user adjustment. You will receive the appropriate warning before proceeding with the adjustment.



In the 'Sensor Adjustment' dialog that appears, select whether the built-in control - if available - should be used or not.

In the next steps, the sensor is loaded or unloaded.



Press the 'Continue'- button to trigger the adjustment for the determination of the zero point. At the end of this process, you will receive the next dialog sensor adjustment:

In this dialog you enter the new adjustment values for the rated load (s) and ADU value (in the range between 5000 and 30000).

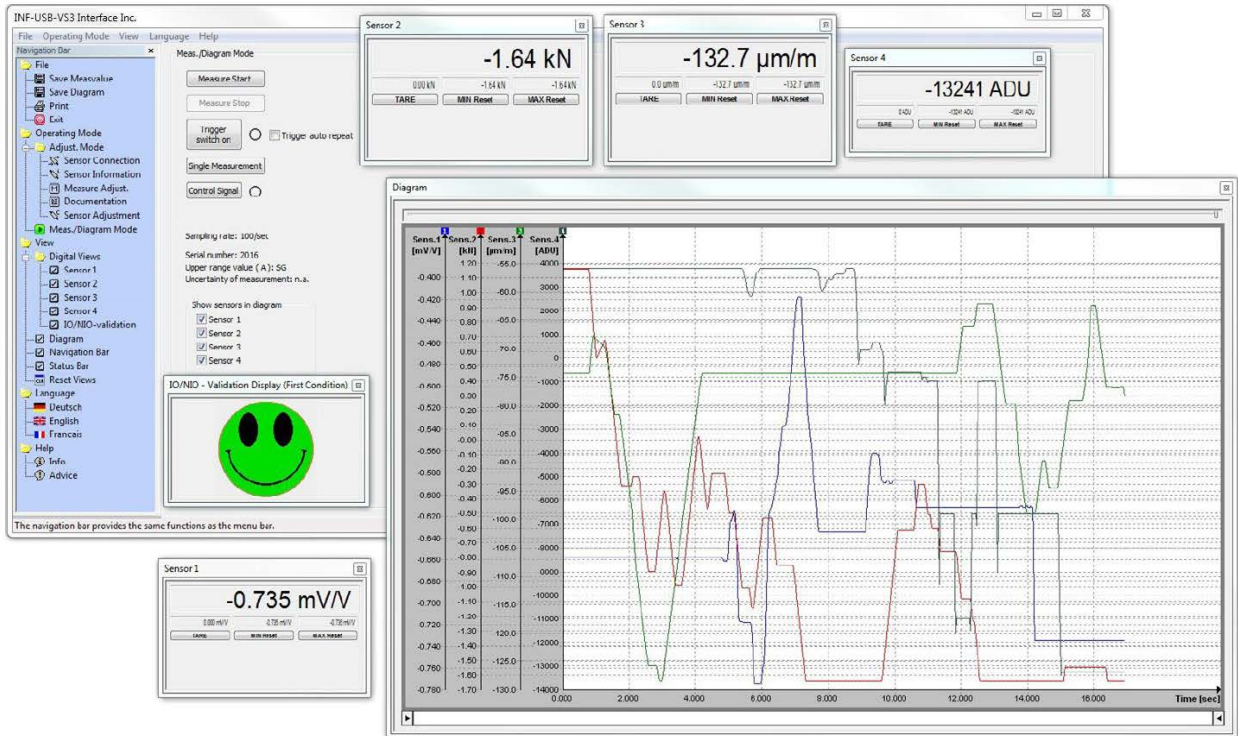
Then, press the 'Continue'- button to trigger the adjustment.

After the end of this process, the adjustment is completed.

5.3 Meas./Diagram Mode



Caution: During a measurement it is not allowed to interrupt the data connection to the PC!



In the **'Meas./Diagram Mode'** the digital displays of the physical variables and the diagram can be activated. Only the displays which were check-marked in **'Measure Adjust. -> Measured variables'** are active.

Each, of the digital displays and diagrams are in a separate window. These windows can be docked on the main window or they can freely be placed on the monitor. In order to scroll the windows, the mouse pointer must be placed on the title bar of the respective window. By keeping the left mouse key pressed, the window can be moved or docked. The contents of the window automatically adjusts to the size of the window. Pressing the **'Ctrl'** key prevents docking with the main window.

Each digital display has 4 output fields: for the current measured value, the tare value, the minimum value and the maximum value. The minimum and maximum value can be reset by the buttons **'MIN Reset'** and **'MAX Reset'**. If the tare-button shows **'TARE'** and is kept pressed, this will set the current measured value to zero and the tare difference will be displayed above in the output field. Afterwards this button shows **'TARE=0'**, the taring can be canceled again.

The **'IO/NIO'** display always shows the total of all defined criteria. If the criteria is met, a green indicator appears. If at least one criterion is not met, the indicator turns red. A gray indicator means that there is currently no evaluation, e. g. after start-up or after a new series of measurements was started.

Measuring Start

With this button, a measurement gets started. The digital displays and the diagram will be fed with measured values after pressing this button. Unnecessary keys are deactivated during the measurement. Also, the status of the application '**Measuring...**' is indicated in the status bar.

Measuring Stop

Can only be used during active measurement. As soon as the key was pressed, the measurement will be stopped and will initiate possible automatic storage (see chapter **5.2.4 Documentation**). At active automatic storage into a file, the progress is shown on the status bar as well as the idle state '**Ready for use. Sensor connected**'.

Trigger switch on

This key activates a software triggering as explained in chapter **5.2.3.6.1 Trigger**. The status lamp on the side of the key blinks yellow at active triggering. By pressing again, the triggering will be deactivated. The course of a software trigger is described in chapter **5.2.3.6 Measure Adjustment -> Trigger**

Trigger LED	Condition
Gray	Trigger OFF
Flashing yellow	Trigger waits for a trigger start event. Only the digital displays are updated.
Green	Trigger Measurement ON. Digital displays and diagram are updated with values.

Trigger auto repeat

By a check mark, the trigger gets reactivated as soon as all actions of the Trigger-Stop-Event are processed (e. g. write file. See chapter **5.2.4.1 Documentation -> Output Measured Values** and chapter **5.2.4.2 Documentation -> Output Diagram**)



Activate only if an automatic storage from **5.2.4.1** or **5.2.4.2** is active.

Single Measurement

With this key, a single current measured value gets requested from the active sensor. This function can only be carried out in the idle mode/measuring stop of the application.

Control Signal

The button '**Control Signal**' is only activated during the measurement at low sampling rates (< 20/s) and in idle mode.

With the help of the control signal, the measuring bridge in the sensor gets detuned and issues the nominal range. A red lamp next to the button indicates active control. By clicking on '**Control Signal**' again, it will be deactivated.

6 Debugging

This chart helps to find frequent errors and the measures for debugging.

Error	Possible Cause	Debugging
Application does not start	Operating system is too old	<ul style="list-style-type: none">• Required operating systems: WIN 7 ... 10
	Drivers for the USB devices do not work	<ul style="list-style-type: none">• Refer to the installation manual for Interface USB drivers
	Drivers for the ETH sensors do not work	<ul style="list-style-type: none">• Refer to the installation manual for Interface ETH drivers
	Sensor is not connected to the PC	<ul style="list-style-type: none">• Connect sensor to the PC
Sensor is connected to the PC, but the application won't start or the communication not available	Driver problems or misconduct of the ETH connection	<ul style="list-style-type: none">• Terminate the application. Unplug the ETH connection between sensor and PC and reconnect it

7 Warranty

Warranty

All instruments from Interface Inc., ('Interface') are warranted against defective material and workmanship for a period of (1) one year from the date of dispatch. If the 'Interface' product you purchase appears to have a defect in material or workmanship or fails during normal use within the period, please contact your Distributor, who will assist you in resolving the problem. If it is necessary to return the product to 'Interface' please include a note stating name, company, address, phone number and a detailed description of the problem. Also, please indicate if it is a warranty repair. The sender is responsible for shipping charges, freight insurance and proper packaging to prevent breakage in transit. 'Interface' warranty does not apply to defects resulting from action of the buyer such as mishandling, improper interfacing, operation outside of design limits, improper repair or unauthorised modification. No other warranties are expressed or implied. 'Interface' specifically disclaims any implied warranties of merchantability or fitness for a specific purpose. The remedies outlined above are the buyer's only remedies. 'Interface' will not be liable for direct, indirect, special, incidental or consequential damages whether based on the contract, tort or other legal theory. Any corrective maintenance required after the warranty period should be performed by 'Interface' approved personnel only

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