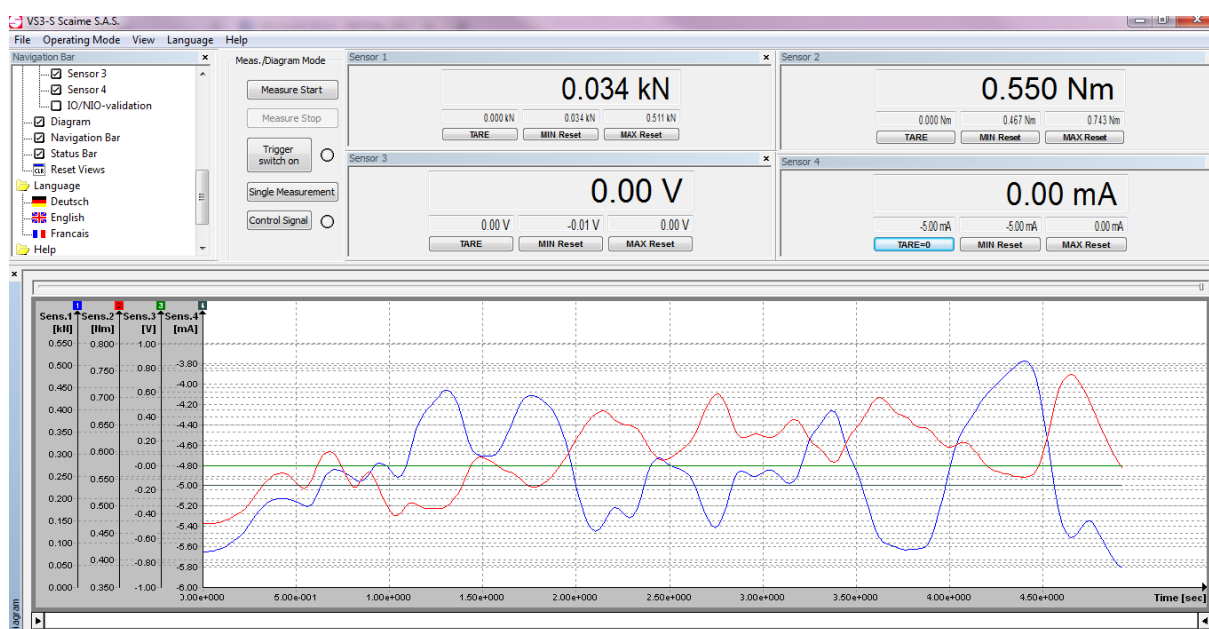




# Data acquisition module SI-USB3



## 1. [Index](#)

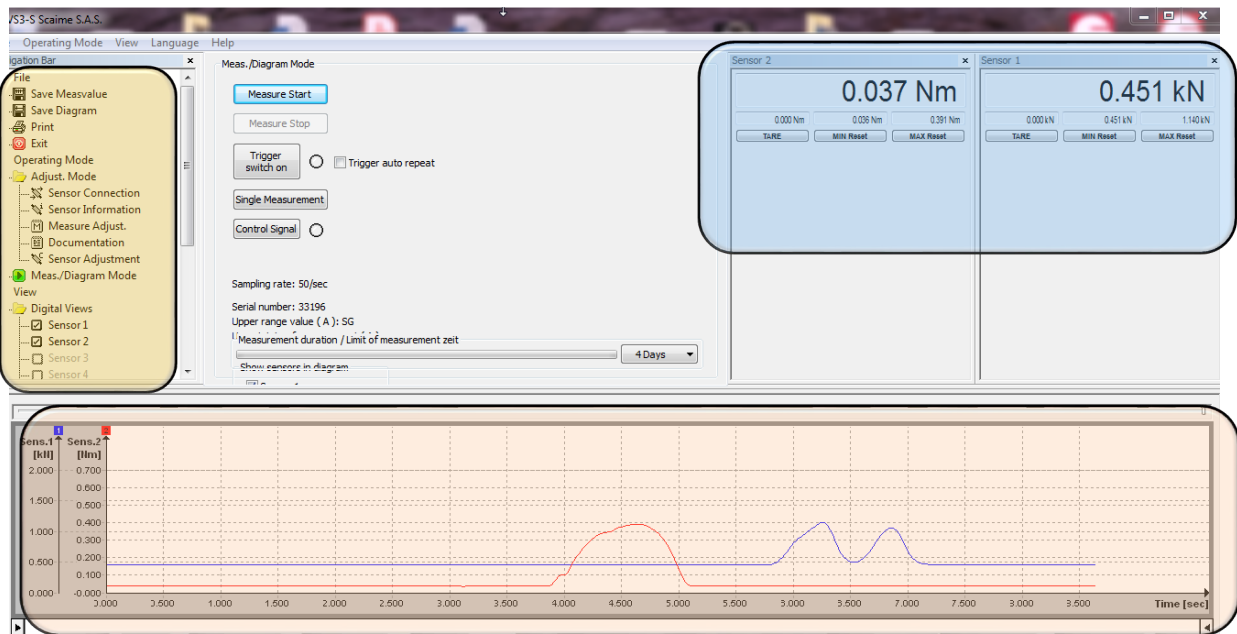
Introduction	P3
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## 2. Introduction

This software allows to visualize in numerical and/or graphic form and to save the values coming from the sensors.

The connection to the PC is made directly through the USB connection, do not forget to upload the driver.

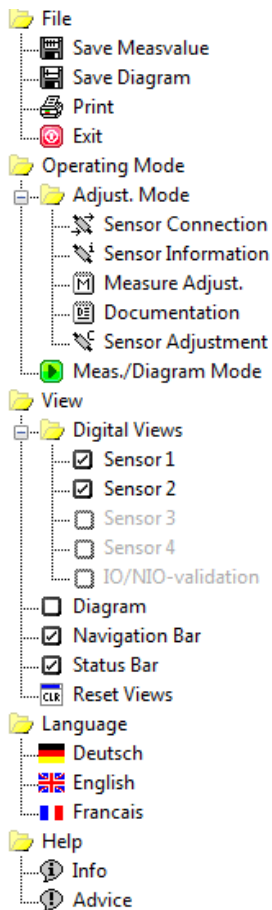
When the software is launched, it automatically scans the different ports to find the SI-USB3 unit's connected.



On the screen, the software is presented in 3 parts:

The left part allowing the parameter setting, the right part, the numerical display of the values (current, min, max values), the tare value (display reset) and the lower part for the display in the form of curves of the values coming from the connected sensors.

## 3. Menu



## 4. Save Measvalue

Allows to store on the PC the values coming from the sensors in cvs format (possibility that this can be done automatically at the end of the cycle).

## 5. Save Diagram

Allows to save the diagram/graph in .bmp format

## 6. Print

Allows to print the diagram

## 7. Sensor connection

Allows you to view the communication port and various information...

Sensor Connection							
Interface	<input type="checkbox"/> E...	Baud rate	Ad...	Serial number	Upper range value	State	Sensortype
USB [COM45]		115,2k	1	33196	SG	active	LCV-USB2 (Rev.: 10)
USB [COM46]		230,4k	1	33196	active	active	LCV-USB2 (Rev.: 10)
USB [COM47]		230,4k	1	33196	SG	active	LCV-USB2 (Rev.: 10)
USB [COM48]		230,4k	1	33196	Current	active	LCV-USB2 (Rev.: 10)

Upper range value: SG = strain gages sensor, active : tension input, Current : 4/20mA input, (-200°C; 860°C)  
PT100 sensor ...

## 8. Sensor Information

Allows you to view the different cards mounted inside the unit.

Sensor Information

Identification

No.	Interface type/Desidnation	Sensort...	Serial number	ID	Revision
1	LCV-USB2: SG	0	33196	5	10
2	LCV-USB2: SG	0	33196	5	10
3	LCV-USB2: active	0	33196	5	10
4	LCV-USB2: Current	0	33196	5	10

Factory adjustment

No.	Date	State
1	10/25/2018	inaktiv
2	10/25/2018	aktiv
3	10/26/2018	aktiv
4	10/26/2018	aktiv

User adjustment

No.	Date	State
1	03/22/2019	aktiv
2	03/25/2019	inaktiv
3	02/07/2106	inaktiv
4	02/07/2106	inaktiv

Properties

No.	Upper range value	Accuracy class	Uncertainty of m.
1	SG	0.1 %	0.2 %
2	SG	0.1 %	n.a.
3	active	0.1 %	n.a.
4	Current	0.1 %	n.a.

Serial number

33456

123456

aaaaaa

aaaaaa

## 9. Measure Adjust.

Allows the scaling of data, to define the number of functional channels, the measurement speed (sampling rate), the start condition (trigger), stop condition and evaluation (for control at the end of cycle).

**Measure Adjust.**

**Measured variable**

☒ Sensor 1   ☒ Sensor 2   ☐ Sensor 3   ☐ Sensor 4

**Sampling rate**: 50/sec

**Display**

	Decimal place	Unit	Average	Sign	Scaling
Sensor 1	3	[kN]	4	+	Change
Sensor 2	3	[Nm]	4	+	Change
Sensor 3	2	[V]	4	+	Change
Sensor 4	2	mA	4	+	Change

**Low pass filter**: 30 Hz

**Diagram**

X-axis: Time   Reducing the sampling rate by averaging via 1 value.

Y1-axis: Sensor 1   Y2-axis: Sensor 2

**Trigger**

Start  
Source: Off/Measure Start

Additional program to execute (full path):

Stop  
Source: Off/Measure Stop

Additional program to execute (full path):

**IO/NIO-validation**

**First Condition**

Lower limit value   Upper limit value

**Second Condition**

Lower limit value   Upper limit value

### Measured variable

- Sensor x : select the channels will be displayed
- Sampling rate : Speed of measurements/records per second

### Display

Scaling of each channel

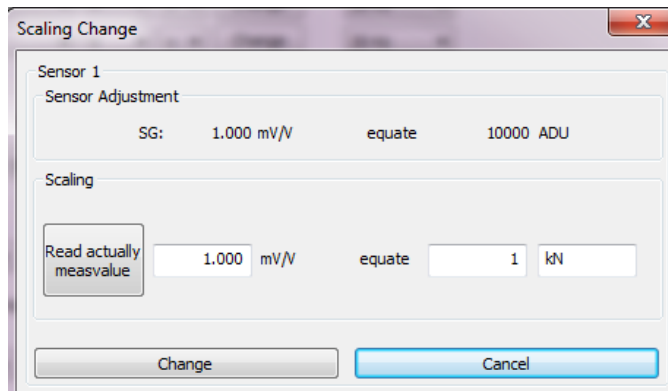
- Decimal place

**Display**

	Decimal place	Unit
Sensor 1	3	[kN]
Sensor 2	0	[Nm]
Sensor 3	2	[V]
Sensor 4	2	mA

Define the resolution or number of digits behind the decimal point (from 0 to 4)

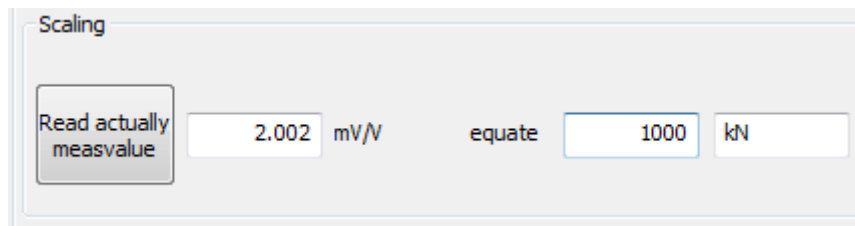
- Unit: unit displayed, click on Change to modify
- Average: corresponds to the number of average values (from 1 to 512) which allows to filter the displayed/stored values
- Sign: + or – reverse the measurement sign
- Scaling:



Possibility to set or modify unit (maximum 5 alphanumeric characters) example kN

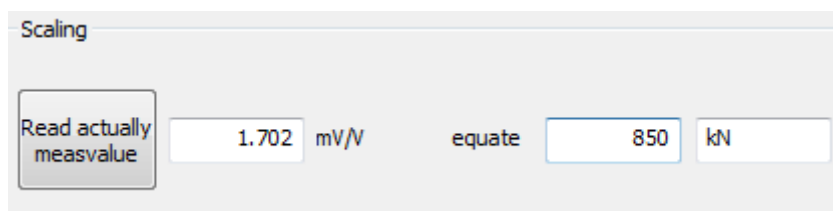
- Either the theoretical value and the corresponding value are set (ex : M12-1000kN -> 2.002mV/V correspond to 1000 kN)

The sensitivity of the sensor is entered in the mV/V window and the corresponding value is entered in the "equate" window. Confirm with Change.



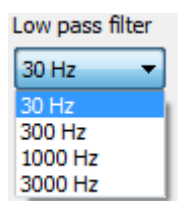
- Either a known load is applied, click on "Read actually measvalue" and note the value of this load in "equate". Confirm with Change.

If the sensor does not deliver 0mV/V without load. Sensor without load, click on "Read actually measvalue" and note the value (ex: 0.156). The known load is applied to the sensor (e. g. 850kN) and click on "Read actually measvalue" and the new value is displayed (e. g. 1,858). This means that for a load of 850 kN, the sensor signal varied from  $1.858 - 0.156 = 1.702$  mV/V. It will therefore be necessary to put 1.702 equate to 850 kN.



Confirm with Change.

- Low pass filter: filter 2° order for filtering the signal to obtain a better stability.

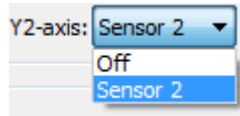


## Diagram

Select the channels to be displayed on the diagram (curves):

X – Axis: set Time, X (horizontal) axis will be the time.

Axis Y (vertical, similar for each channel)

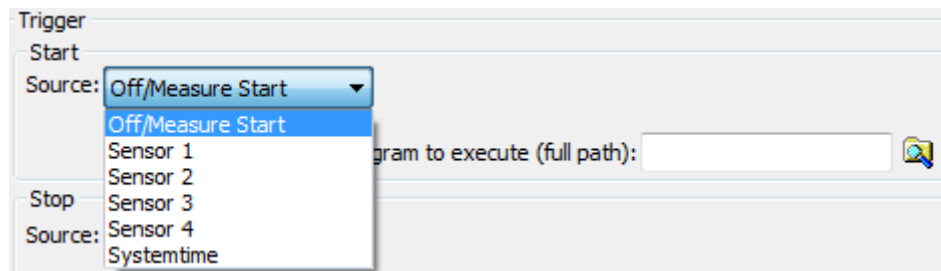


Off: this channel will not be displayed, Sensor X: this channel can be displayed

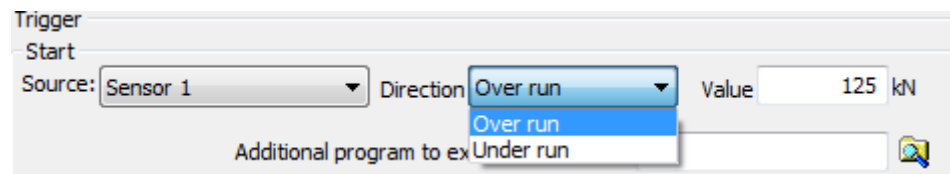
## Trigger

Condition to start the measure

### Start



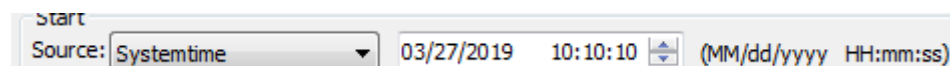
- Off/Measure start : Start and stop the measure manually, click on "Measure Start"
- Sensor X : set the sensor which the start condition will applied



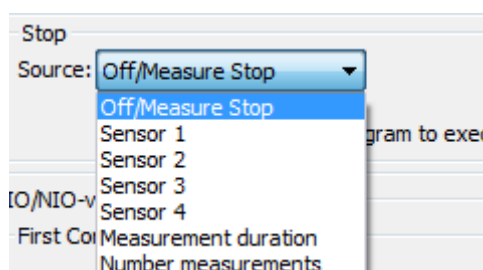
Over run: as soon as the value is higher than the value defined in "value", the measurement will start.

Under run: as soon as the value is lower than the value defined in "value", the measurement will start.

- Systemtime : Start at a date, time set

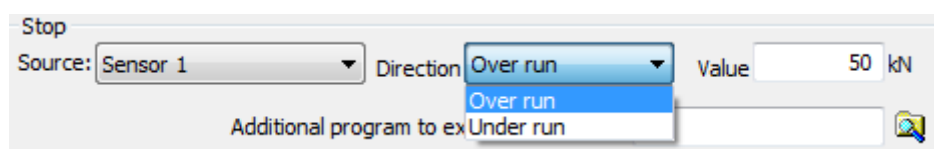


### Stop



Off / Measure stop: stop the measure manually, click on "Measure Stop"

Sensor x : set the sensor which the stop condition will applied



Over run: as soon as the value is higher than the value defined in "value", the measurement will be stopped.

Under run: as soon as the value is lower than the value defined in "value", the measurement will be stopped.

Measurement duration: set a measurement time in second before the measurements will be stopped

Stop  
Source: Measurement duration 20 sec (1000 Measure points)

Number measurements: set the number of values before the measurements will be stopped

Stop  
Source: Number measurements 500 Measure points (10 sec)

## IO/NIO-validation

Possibility to make a control during the measurement with 1 or 2 conditions

IO/NIO-validation

First Condition ☒

Sensor 1

Lower limit value 20 [kN] Upper limit value 50 [kN]

Second Condition

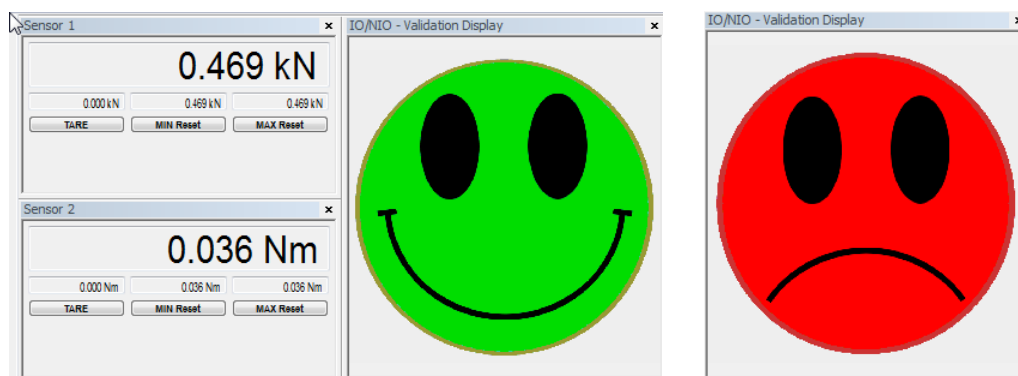
Sensor 1  
Sensor 2  
Sensor 3  
Sensor 4

Lower value

Sensor x: set the sensor for the control

The control will be compliant if the maximum value is between the lower and upper limit value:

At the end of the cycle, a green or red "smylet" will easily identify whether the control was compliant or not.





## Documentation (PC storage measurement)

Allows you to configure the different parameters for saving data in the PC.

The screenshot shows the 'Documentation' configuration window. It has three main sections: 'Output measured values', 'Output diagram', and 'Additional information'.  
1. 'Output measured values' section: Contains two identical blocks. Each block has 'Automatic storage' set to 'None', a 'Target directory' (C:\Users\ode\Docur and C:\Users\ode\Desktop), and a 'Prefix' (TAB and OKNOK\_E). To the right are dropdowns for 'End of line character' (LF CR), 'Column separator' (;), and 'Decimal separator' ([.]).  
2. 'Additional information show/hide' section: Contains checkboxes for 'Headline', 'Uncertainty of measurement', 'Date / Time', 'Address', 'Comment', and 'Physical unit'. 'Date / Time' and 'Physical unit' are checked.  
3. 'Output diagram' section: Has 'Automatic storage' set to 'None', 'Target directory' (C:\Users\ode\Docur), 'Prefix' (DGM), and 'Memory size' (window).  
4. 'Additional information' section: Contains text boxes for 'Headline' (SCAIME SAS), 'Address' (74105 Juvigny France), and 'Comment' (Production test Product A12588).  
A callout box points to the 'Automatic storage' dropdowns with the text: 'Output measured values = file .csv' followed by a list: '- First for measurements' and '- Second for result IO/NIO'. Another callout points to the 'Memory size' dropdown with the text: 'Output diagram = diagram picture'.

This screenshot shows the 'Automatic storage' dropdown menu open for the first 'Output measured values' section. The menu options are: 'None' (highlighted), 'Save all measurements into one file', and 'Save each measurement with an own index'. The other settings in the window remain the same as in the previous screenshot.

**None:** Values are not automatically recorded, it will have to be done manually by "Save Measvalue".

**Save all measurements into one file:** if several measurements are performed (with a stop and a start between each measurement), only one csv file will be created automatically.

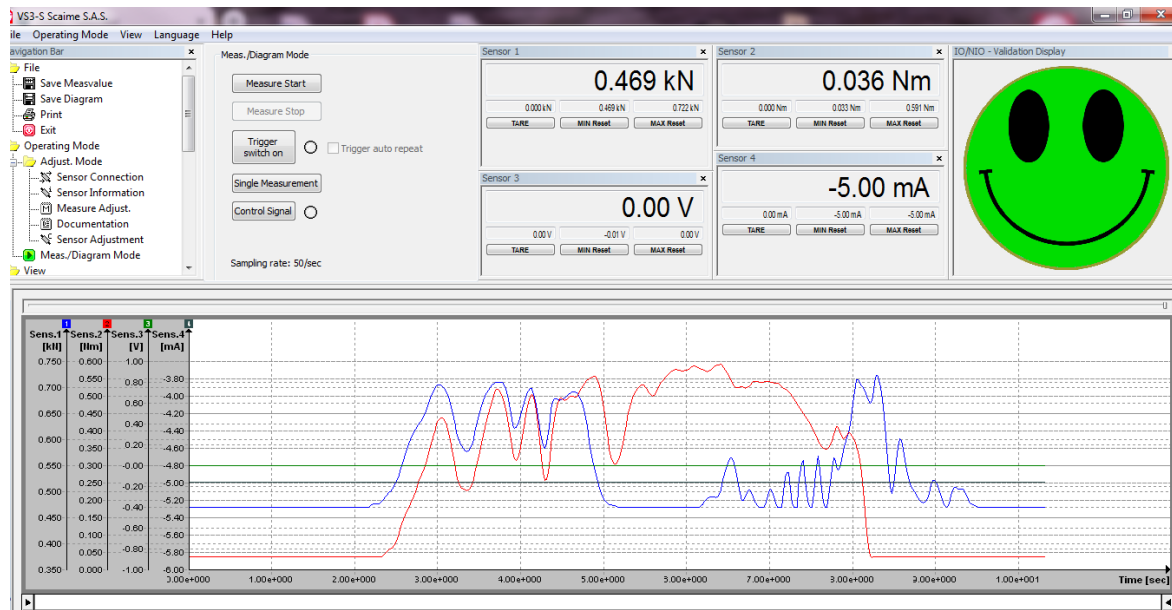
**Save each measurements with their own index:** if several measurements are performed (with a stop and a start between each measurement), a csv file will be created per measurement.

**Column separator:** character that will separate the columns (TAB or ; or , or "space")

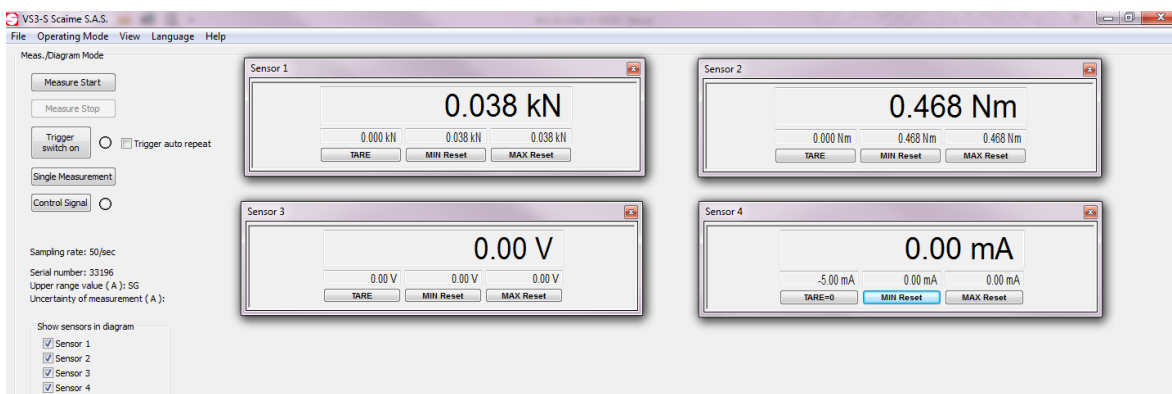
**Decimal separator:** character defining the decimal point ( . or , )

**End of line character:** character of end line (LF CR or CR or LF)

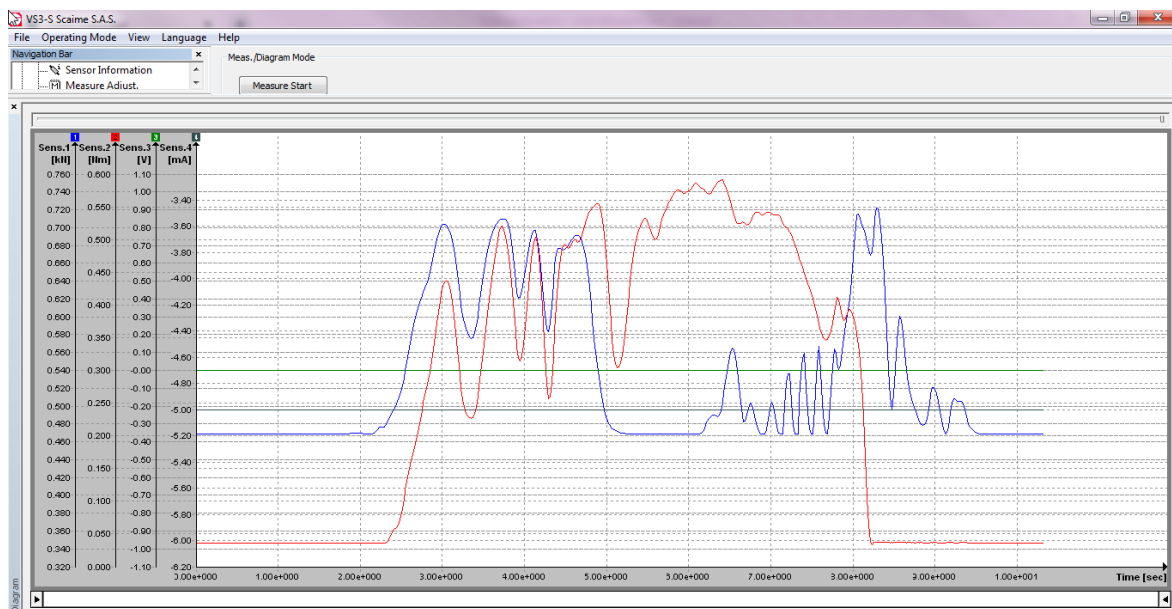
10. Sensor adjustment  
Reserved for factory
11. Measurement mode: displays possible
- 11.1 Display: numerical values, diagram and validation result



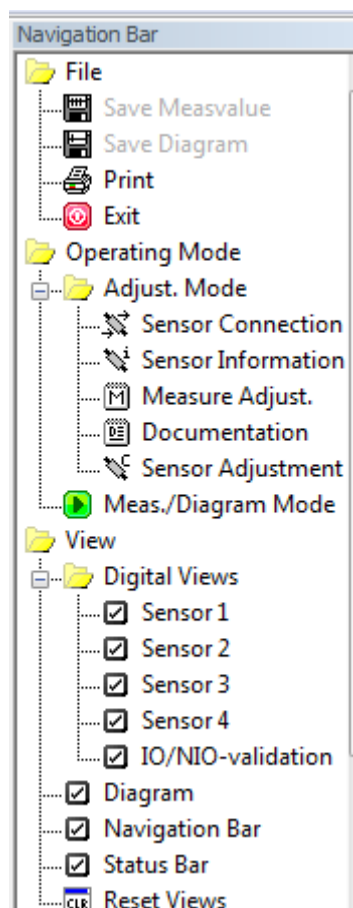
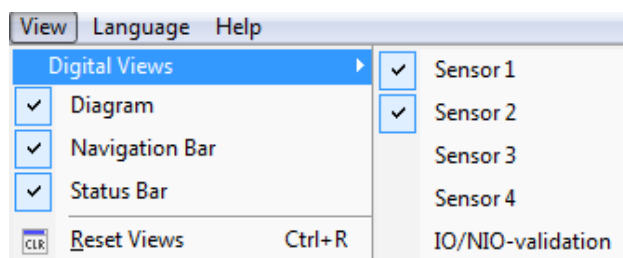
### 11.2 Display: only numerical values displayed (digital display)



### 11.3 Display: only diagram displayed



The choice can be done via "View" or via Navigation Bar



## 12. Meas./Diagram mode

### Start / stop measurement

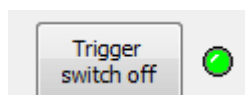
The screenshot shows a control panel titled "Meas./Diagram Mode". It contains several buttons: "Measure Start", "Measure Stop", "Trigger switch on", "Single Measurement", and "Control Signal". There are also radio buttons for "Trigger auto repeat" and "Control Signal". Below these buttons, the following information is displayed: "Sampling rate: 50/sec", "Serial number: 33196", "Upper range value ( A ): SG", and "Uncertainty of measurement ( A ):". A section titled "Show sensors in diagram" contains four checked checkboxes for "Sensor 1", "Sensor 2", "Sensor 3", and "Sensor 4". At the bottom, there is a "Measurement duration / Limit of measurement zeit" section with a slider and a dropdown menu set to "2 Days".

**Measure Start:** start the measurement

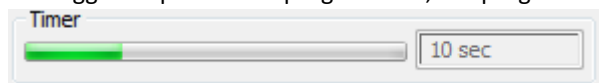
**Measure Stop:** stop the measurement

**Trigger switch on:** if a start by a trigger condition has been set

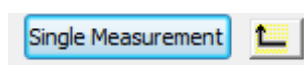
Click on this button, the light turns flashing yellow, when the start condition is reached, the light turns green indicating that the measurement is running.



If a trigger stop has been programmed, the progress of the recording is visible on the line below

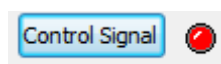


**Single Measurement:** one click -> a single measure

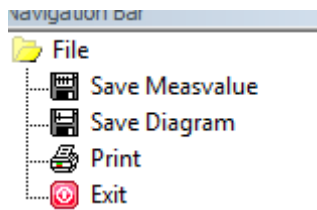


Click on the arrow to revalidate the "Measure Start" button.

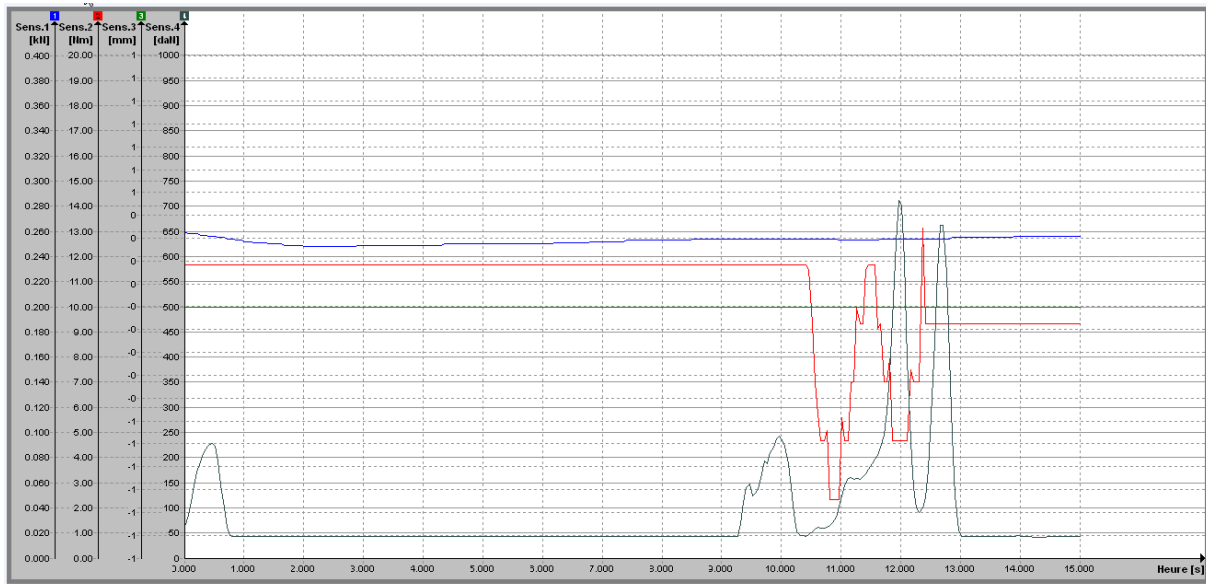
**Control Signal:** if the sensor is equipped with Control signal, this function will be activated, the LED turns red. Click again to stop this function, LED switch off.



### 13. Save Diagram:



Save the picture of the diagram (format .bmp)



### 14. Save Measvalue

If automatic recording has not been programmed, it is possible to record all measurements (.csv format).

### 15. Print

Printing the diagram

### 16. Accessory , wall bracket or foot (option)

Housing disassembly:

Take off the 4 blinders and unscrew the 4 screws "torx T10"



Wall bracket: remove the 2 blue covers on the sides and insert the 2 wall brackets.

Foot: Remove only one blue cover to insert the foot.



Insert the accessory.

Put the face back in place, taking care to replace the seal, the 4 screws and the covers.



## 17. Electrical connection

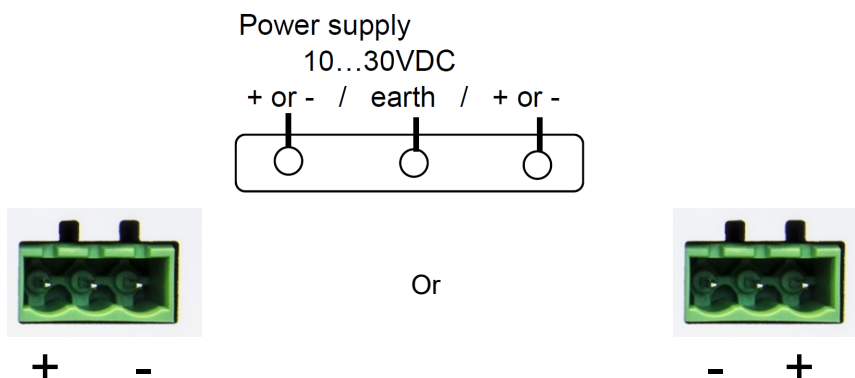
### Power supply 10...30VDC (I < 900mA)

Use the main power supply adaptor provided or connect a power supply on the connector 3 pins.

Connector 3 pins:



Earth to be connected to the center, no polarity, + and - can be connected independently on the 2 external terminals.



### Sensors

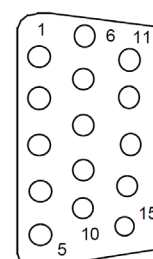
Make sure to connect the sensor correctly to the card and the settings made.



Connector SUB-D 15 pins

N°	fonction
1	- excitation / 0V
2	+ excitation 12V
3	N.C
4	Reserved
5	Reserved
6	- excitation / 0V
7	N.C
8	+ excitation 4V
9	N.C
10	Cal / Control
11	+ signal
12	- signal (0V for 5 / 10V and pot. card)
13	shield
14	N.C
15	+5V (for potentiometer card)

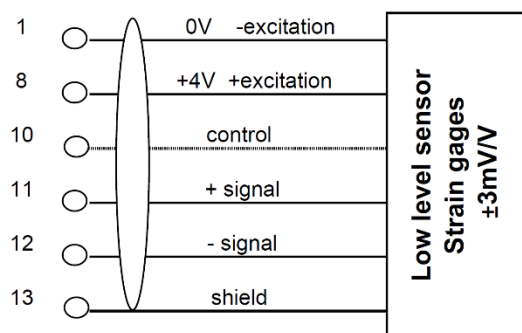
**Connector SUB D15**



solder view

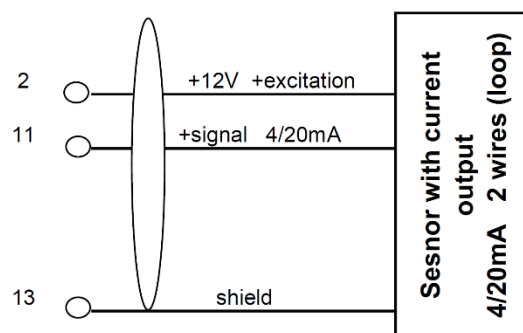
## Connection

**Be sure to follow the wiring plan carefully**  
sensor/signal connected to SUB-D 15 connector

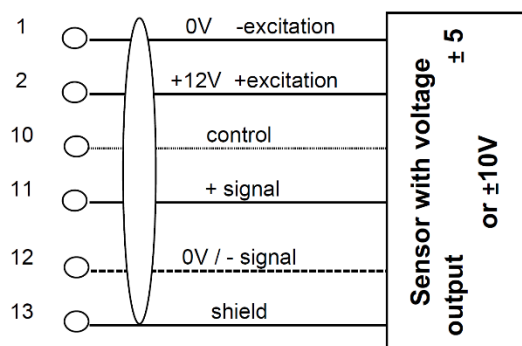


**Sensor without electronic, signal in mV/V**

Nota: control is connected only if the sensor is equipped with this function

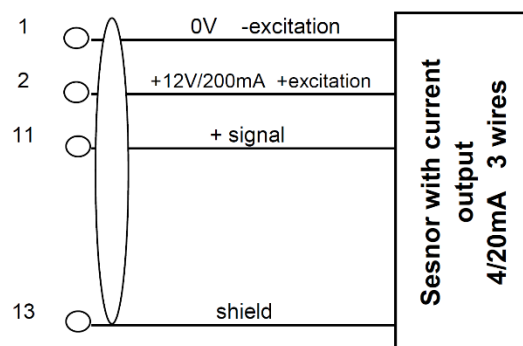


**Sensor with signal mA output**

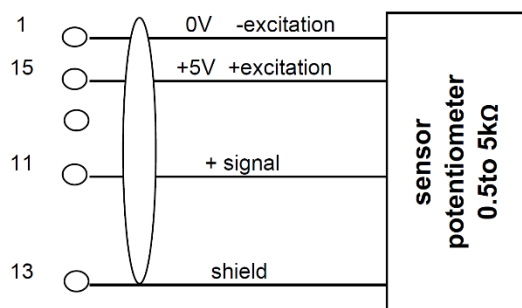


**Sensor with signal Voutput**

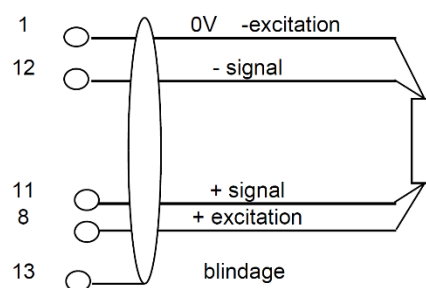
Nota: control is connected only if the sensor is equipped with this function



**Sensor with signal mA output**



**potentiometer**



**PT100 probe**

**For PT100 probe: connect the wires as close as possible to the PT100 probe wires + and - signal**