

Data acquisition module SI-USB3





NU-Logiciel SI-USB3-E-0219

SCAIME SAS - Technosite Altéa - 294, rue Georges Charpak - 74100 JUVIGNY Tél. : +33 (0)4 50 87 78 64 - www.scaime.com

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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.

S3-S Scaime S.A.S. Operating Mode View Lar	nguage Help					
Baton Bar File Save Diagram Print © Exit Operating Mode → Adjust. Mode → Sensor Connection → Sensor Connection → Sensor Connection → Sensor Connection → Sensor Adjustment © Meas./Diagram Mode View Digital Views → Dispital Views → Sensor 1 → Sensor 3 → Sensor 4	Meas./Diagram Mode Measure Start Measure Start Measure Stop Trigger Trigger	rigger auto repeat	4Days V	Sensor 2 0.00 0000 Nm 0.005 Nm Tare Mni Read	x Sensor 1 37 Nm 0.391 Nm 0.000 kN Tare	x 0.451 kN 0.511N 1.101N MAX Reset MAX Reset
Sens.2 Itim 2.000 0.700 1.500 0.800 1.500 0.800 0.600 0.800 0.600 0.800 0.600 0.800 0.000 0.000 0.000 0.000	00 1.000 1.600 2.000	2.600 3.000 3.600	4000 4.500 5.000	5.600 3.000 3.600	7.000 7.600 3.000	2.500 Time [sec]

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. <u>Menu</u>

🥭 File
📰 Save Measvalue
🔚 Save Diagram
🚑 Print
🔁 Operating Mode
🚊 🗁 Adjust. Mode
Sensor Connection
[M] Measure Adjust.
Sensor Adjustment
Meas./Diagram Mode
🤁 View
🖕 🗁 Digital Views
Sensor 1
Sensor 2
Sensor 3
Sensor 4
IO/NIO-validation
Diagram
Navigation Bar
Status Bar
Reset Views
🗁 Language
English
Francais
🗁 Help
D Info
Advice

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. <u>Save Diagram</u>

Allows to save the diagram/graph in .bmp format

6. <u>Print</u>

Allows to print the diagram

7. Sensor connection

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

Sensor	Connection

Interface	🗌 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			

ctory	adjustment		User adj	ustment	
No.	Date	State	No.	Date	State
1	10/25/2018	inaktiv	1	03/22/2019	aktiv
	10/25/2018	aktiv	2	03/25/2019	inakti
3	10/26/2018	aktiv	3	02/07/2106	inakti
4	10/26/2018	aktiv	4	02/07/2106	inakti

ropert	tes			Serial number
No.	Upper range value	Accuracy class	Uncertainty of m.	
1	SG	0.1%	0.2 %	33456
2	SG	0.1%	n.a.	123456
3	active	0.1%	n.a.	аааааа
4	Current	0.1%	n.a.	Беееее
	4			

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 varia	able				Sampling rate
V	Sensor 1	Sensor 2	Sensor 3	Sensor 4	50/sec 🔻
Display					Y
	Decimal place	e Unit	Average Sign	Scaling	Low pass filter
Sensor 1	3	[kN]	• 4 • + •	Change	30 Hz 🔻
Sensor 2	3	• [Nm] •	• 4 • + •	Change	30 Hz 🔻
Sensor 3	2	• [M •	• 4 • + •	Change	30 Hz 🔻
Sensor 4	2	▼] [mA	• 4 • + •	Change	30 Hz 🔻
Diagram					
X-axis: Tim	e 🔻	Reduci	ing the sampling rate	e by averaging v	ia 1 value.
Y1-axis: Ser	nsor 1 🔻	Y2-axis: Sensor	2 🔻		
Trigger					
Start					
Source: Off/	Measure Star	t 🔻			
	Addi	tional program to	execute (full path)	:	2
Stop					
Source: Off/	Measure Stop	•			
	Addi	tional program to	execute (full path)	:	
IO/NIO-validat	tion				
-First Condition	n		Second Cor	ndition	
		•			•
Lower limit v	alua Ur	poer limit value	Lower limit	tvalue Ur	pper limit value
Lower milit v		Aper mine value			per anic 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 1	[Nm]
Sensor 3	2 3	[M]
Sensor 4	4	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 values for the moving average (from 1 to 512) which allows to filter the displayed/stored values
- Sign: + or reverse the measurement sign
- Scaling:

Scaling Chang	je		-		×
Sensor 1 Sensor Adju	ustment				
	SG:	1.000 mV/V	equate	10000 ADU	
Scaling	_				
Read actua measvalue	lly 2	1.000 mV/V	equate	1 kN	
	Cha	nge		Cancel	

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.

Scaling				
Read actually measvalue	2.002 mV/V	equate	1000 kN	

• 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.

Scaling					
Read actually measvalue	1.702	mV/V	equate	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):

Diagram		
X-axis:	Time	~
Y1-axis:	Time Sensor 1	
	Sensor 2	
Trigger	Sensor 3	
Start	Sensor 4	

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

Axis Y (vertical, similar for each channel)

Y2-axis:	Sensor 2 🔻	
	Off	
	Sensor 2	

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

Trigger

Condition to start the measure

<u>Start</u>

Trigger Start			
Source:	Off/Measure Start 🔹 🔻		
	Off/Measure Start		
	Sensor 1	gram to execute (full path):	2
C1	Sensor 2		
Stop	Sensor 3		
Source:	Sensor 4		
	Systemtime		

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

Trigger					
start					
Source: Sensor 1	 Direction 	Over run 🔫	Value	125	kN
		Over run			
	Additional program to ex	Under run			

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

NTAFT					
Source	Systemtime	• 03/27/2019	10:10:10 🜲	(MM/dd/yyyy	HH:mm:ss)
<u>Stop</u>					
Stop					
Source:	Off/Measure Stop 🔹				
	Off/Measure Stop				
	Sensor 1	gram to exec			
	Sensor 2 Sensor 3				
IO/NIO-v	Sensor 4				
First Co	Measurement duration				
	Number measurements				

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

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

Stop							
Source:	Sensor 1		Direction	Over run 🔻	Value	50	kN
				Over run			
		Additional pro	gram to ex	Under run			

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

Source: Mea	surement 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

Stop

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

IO/NIO-validation				Second Condition	
Sensor 1 Lower limit value	Upp dN]	er limit valu	e [kN]	Lower Sensor 1 Sensor 2 Sensor 3 Sensor 4	

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.

Documentation	
Output measured values Automatic storage: None	End of line character:
Target directory: C:\Users\ode\Dogur	Column separator:
Output measured values	; •
Automatic storage: None	 Decimal separator:
Target directory: C:\Users\ode\Deskt	[.]
Additional information show/hide	Output measured values - file, csv
Headline Uncertainty of measurement Date / Time	
Address Comment Physical unit	 First for measurements Second for result IO/NIO
Output diagram	Output diagram = diagram picture
Automatic storage: None	
Target directory: C:\Users\ode\Docur	
Memory size: window	
Additional information Headline	
SCAIME SAS	
Address Comment	
74105 Juvigny France Production test Product A1258B	
ocumentation	
Output measured values End o	fline character:
Automatic storage: None	FCR -
Target directory: C:\Users\o Save all measurements into one file Save each measurement with an own index	umn separator:
Output measured values	•
Automatic storage: None Deci	imal separator:
Target directory: C:\Users\ode\Deskt	
Additional information show/hide	
Headline Uncertainty of measurement Uncertainty of measurement Uncertainty	
Auuress Comment Physical Unit	

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 . or "space")

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

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

10. <u>Sensor adjustment</u> Reserved for factory

11. <u>Measurement mode</u>: 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

Viev	v Language Help		
C	Digital Views 🔹 🕨 🕨	~	Sensor 1
~	Diagram	~	Sensor 2
~	Navigation Bar		Sensor 3
~	Status Bar		Sensor 4
CLR	Reset Views Ctrl+R		IO/NIO-validation
	Navigation Bar File Save Measvalue Save Diagram Print Operating Mode Sensor Connel Sensor Inform Measure Adjue Sensor Adjust Measure Adjue Sensor Adjust Meas./Diagram M View View View Sensor 1 Sensor 1 Sensor 1 Sensor 2 Sensor 3 Sensor 4 Oligital Views Sensor 4 Oligital Niews Sensor 4 Sensor 4 Sens	ection nation st. on nen 1ode	

12. <u>Meas./Diagram mode</u>

<u>Start / stop measurement</u>

Mass Diagram Mode				
ricas, plagram rioue				
Measure Start				
Measure Stop				
Trigger switch on				
Single Measurement				
Control Signal				
Sampling rate: 50/sec				
Serial number: 33196				
Upper range value (A): SG				
Uncertainty of measurement (A):				
Show sensors in diagram				
Sensor 1				
Sensor 2				
Sensor 3				
Sensor 4				
Measurement duration / Limit of measurement zeit 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

limer	
	10 sec

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 Cal Control signal, this function will be activated, the LED turns red and the display shows the value of this function (in general full scale). Click again to stop this function, LED switch off.



13. <u>Save Diagram</u>:



Save the picture of the diagram (format .bmp)



14. <u>Save Measvalue</u>

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

15. <u>Print</u>

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. <u>Electrical connection</u>

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

CONNECTEUR SUB-D 15 POUR CHAQUE CARTE	SUB-D15 CO	NNECTOR FOR EACH CARD	BORNE - PIN
- alimentation / commun (0 V)	- excitation / o	commun (O V)	1
+ alimentation (12 V)	+ excitation (12 V)		2
NC	NC		3
Signal A	Signal A	5V TTL	4
Signal B	Signal B	5V TTL	5
0 V	O V		6
NC	NC		7
+ alimentation capteur à jauges (4 V)	+ excitation st	rain gages sensor (4 V)	8
NC	NC		9
control signal	control signal		10
+ signal	+ signal		11
-signal / (commun 0 V sauf pour PDJ)	-signal / (com	mun 0 V except SG)	12
blindage	shield		13
NC	NC		14
+5 V référence	+ 5 V referenc	ce	15





Connection

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



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