Calibrating SIWAREX CS with SIWATOOL CS

FAQ Release 1.0

Jan 2008

Keywords: SIWATOOL CS software, SIWAREX CS module, zero, range, adjustment, calibration, commissioning



<u>Contains</u>

- Hardware requirements

- Connections
- SIWATOOL start
- Resolution
- Filters
- Parameters
- Calibration procedure
- STEP 7 programming

- page 2-3
- page 4-5
- page 6
- page 7
- page 8
- page 9-10
- page 11-13 page 14

Q: How is the SIWAREX CS calibrated with SIWATOOL CS?

A: Following hardware parts and software are requested to build an ET200S station with a scale: SIWAREX CS module, Terminal module 30mm, IM151 Profibus or Profinet, Power Module, terminal module for power module, SIWATOOL CS configuration package, RS232 cable, computer with Windows XP or higher and a calibration weight bigger than 5% of the sum of the nominal value of all load cells.

Requested parts:



ET200S IM 151



PowerModule With Terminal module 15mm





SIWAREX CS 7MH4910-0AA01

Terminal module 30mm 6ES7193-4GC20-0AA0



SIWATOOL RS232 Cable: 7MH4607-8CA



PROFIBUS or PROFINET connection



Configuration Package for SIWAREX CS:



The physical connection is as shown below:





Connection and signal designations	Comment
SEN+	Sensor line +
SEN-	Sensor line -
SIG+	Measurement line +
SIG-	Measurement line -
EXC+	Load cell supply output +
EXC-	Load cell supply output -

Start SIWATOOL CS.



Select COM1 as the communication interface.

File Communication View Tools ?	
Choose interface Offline Offline Receive all data Send all data Test tare weigt Test tare weigt Choose interface Online Online Online Online Choose interface Online Online Online Online Test tare weigt Choose interface Online Online Online Test tare weigt Choose interface Test tare weigt Choose interface Online Online Online Online Test tare weigt Choose interface Test tare weigt Choose values int. (DR26) Choose values (DR30)	Image Image
	<pre> COM1 C COM2 C COM3 C COM4 OK Abort </pre>

Click Online.



Resolution of SIWAREX CS

The weight is converted into a 16 bits value. The value is comprised between 0 and 64000 The value is then transmitted as a signed integer to the SIMATIC PLC

INT Data Type

<u>Data Type</u>	Length (bits)	Format	Format Ex	ramples
			Min.	Max.
INT	16	Signed integer	-32768	+32767

INT has no comma and no units, the maximum value is 32767 For a 20 kg scale you may use a resolution of 1 g: Range 0 g to 20000 g

For a 40 kg scale you may use only a resolution of 10 g Range 0.00 kg to 40.00 kg

The comma is not part of an integer and is only used for the display \rightarrow Choose resolution and comma <u>before</u> parameterization.

When the communication is established, follow the procedure below to make the adjustment.

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ile Communication View Tools ?				
New Open Save Opline Offic	A - 🦛 755	Messanes		
SIWAREX CS		्रि र दूध र रिक्र (DB3)		-
G Modul info (DR9) G M Test tare weigt G M Trace input G M Process	Info Cal	ibration Scales parameter	Theoret.Calib.	
Process values int. (DR26)	Adj. digits 0			
	Adj. digits 1 60000	Adj, weight	1 2000	
	Adj. digits 2	Adj. weight	2 0	
	Characteristic value 2mV/V			
	Limit frequence	Hz		
	Depth of average 15 value filter 15			
				1 5

Adj.digits 0 and Adj.digits 1: Accept the default values.

Adj.weight 1: Enter the value of adjustment (calibration) weight.

Characteristic Value: Sensor characteristic aluee. Indicated on sensor. Default value is 2 mV/V.

Page 7 of 15



Limit frequency: Low-pass filter (0.05 Hz \sim 5 Hz). If it is set to 5 Hz, the scale will respond quickly to the weight change; if it is set to 0.5 Hz, the scale will "move slowly".



Step response of the digital low-pass filter of 2 Hz

Depth of average value filter: $n=2 \sim 255$.

The average value filter ensures a stable weight value and prevents interference. The weight is measured according to the average value of n weight values. If n = 10, 10 weight values will be used for calculating the average value. The earliest value is discarded every 20 milliseconds and the latest value will be added for the calculation.

Set the weighing range of the scale and the step (resolution) of the scale.

New Open Save Online	Image: Second secon	
Commissioning Commiss	Adjustment parameter (DR3)	<u></u>
Test tare weigt Tare input Tare input Process Process	Info Calibration 5	icales parameter Theoret.Calib.
Process values (DR30)	Scale name SIWAREX CS	Decimal point 2
	Min. Weight 0	Neg. zeroing range % 1
	Weighing range 2000	Po. zeroing range % 3
	Numeral step 1	Tar max. T- % 100
	Standstill range 10	Regulations
	Standstill time 1000	Weight unit kg

Set the weight unit and the decimal point as follows:

SIWAREX CS Commisioning 'the Adjustment parameter (DR3) 'the Modul info (DR9)	+0+ T 死 Adjustment pa	PT & f	1 -	
Test tare weigt	Info	Calibration	Scales parameter Theore	t.Calib.
Process Process values int. (DR26)	Scale name	SIWAREX CS	Decimal point	2
	Min. Weight	0	Neg. zeroing range %	1
	Weighing range	2000	Pos. zeroing range %	3
	Numeral step	1	Тага тах. Т- %	100
	Standstill range	10	Regulations	
	Standstill time	1000	Weight unit	kg

Standstill time (ms) and Standstill range are used to monitor when the scale stand still.

If the weight change is lower than the specified range (standstill value) within the specified period (standstill time), then the scale stands still.

SIEMENS Negative and positive zeroing range.

This specification can be used to limit the effect of the function and therefore to protect the process. It is given in % of the max weighing range. Zeroing will be rejected if the current gross weight is too high or too low.

SIWAREX CS Commissioning	+0+ T 😨 Adjustment pa	PT 3	₫ <u>°</u> -		
Test tare weigt	Info	Calibration	Scales parameter	Theoret.Calib.	
Process values int. (DR26)	Scale name	SIWAREX CS	Decimal point	2	
	Min. Weight	0	Neg. zeroing ran	ge % 1	
	Weighing range	2000	Pos. zeroing ran	ge % 3	
	Numeral step	1	Tara max. T- %	100	
	Standstill range	10	Regulations		
	Standstill time	1000	Weight unit	kg	

After setting the parameters, click $\ensuremath{\textbf{Send}}$.

		w		
Send	Receive	Polling	Accept	Abort

Ensure that the scale is empty (not loaded) and click Adjustment zero valid (3).



Place the adjustment weight on the scale to adjust the range of the scale.



Click Adjustment weight 1 valid (4).



Calibration is complete.

Eventually you may save the calibration data's into a file

Receive all data's from the SIWAREX CS to the PC



During the transmission from the Siwarex CS module to the PC, the following messagewindow appears:

Comn	nunication status	×
	Receive all data from SIWAREX CS	
	Degrant Determined	
	Request Data record	
	OK Abort	

Save the data as a Siwatool CS File:

File Comm	unication View	Tools ?				
New Open						
Save as						
Speichern	unter					? ×
Speichern	🗀 Temp		•	• 🗢 🗈	r 🔝	
Dateiname	: Silio_H2D2				Speiche	m
Dateityp:	SIWATOOL	CS Files (*.)	cs)	•	Abbrech	en

STEP 7 Programming

In the HW-Config from STEP 7 select register "FM" then SIWAREX CS module and place it with Drag&Drop into the configuration.



Note the I-Address of the module and enter it as input parameter ADDR of the FB41

CALL "STOS DD"	DP41
CALL SICS_DK	, DB41
ADDR	:=256
DB_SCALE	:=21
DB_VECTOR	:=20
CMD_IN	:="DB_SCALE_CS".i_CMD_INPUT
SEL_PROC_VAL	:="DB_SCALE_CS".b_SELECT_PROC_VAL
EXT_TARA	:="DB_SCALE_CS".i PRESET_TARE
CMD INPR	:="DB SCALE CS".bo CMD IN PROGRESS
CMD FOR	:="DB SCALE CS".bo CMD FINISHED OF

For the program, see the file" Info_CS_Getting_Started_24_en.pdf" in the part Getting started of the SIWAREX CS configuration package.

For detailed programming, see SIWAREX CS Manual.

If you have any problems or suggestions regarding the related products or documents, please feel free to contact:

Technical support for SIWAREX

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