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Calibrating SIWAREX CS with SIWATOOL CS

FAQ Release 1.0 **Jan 2008**

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

Contains

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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

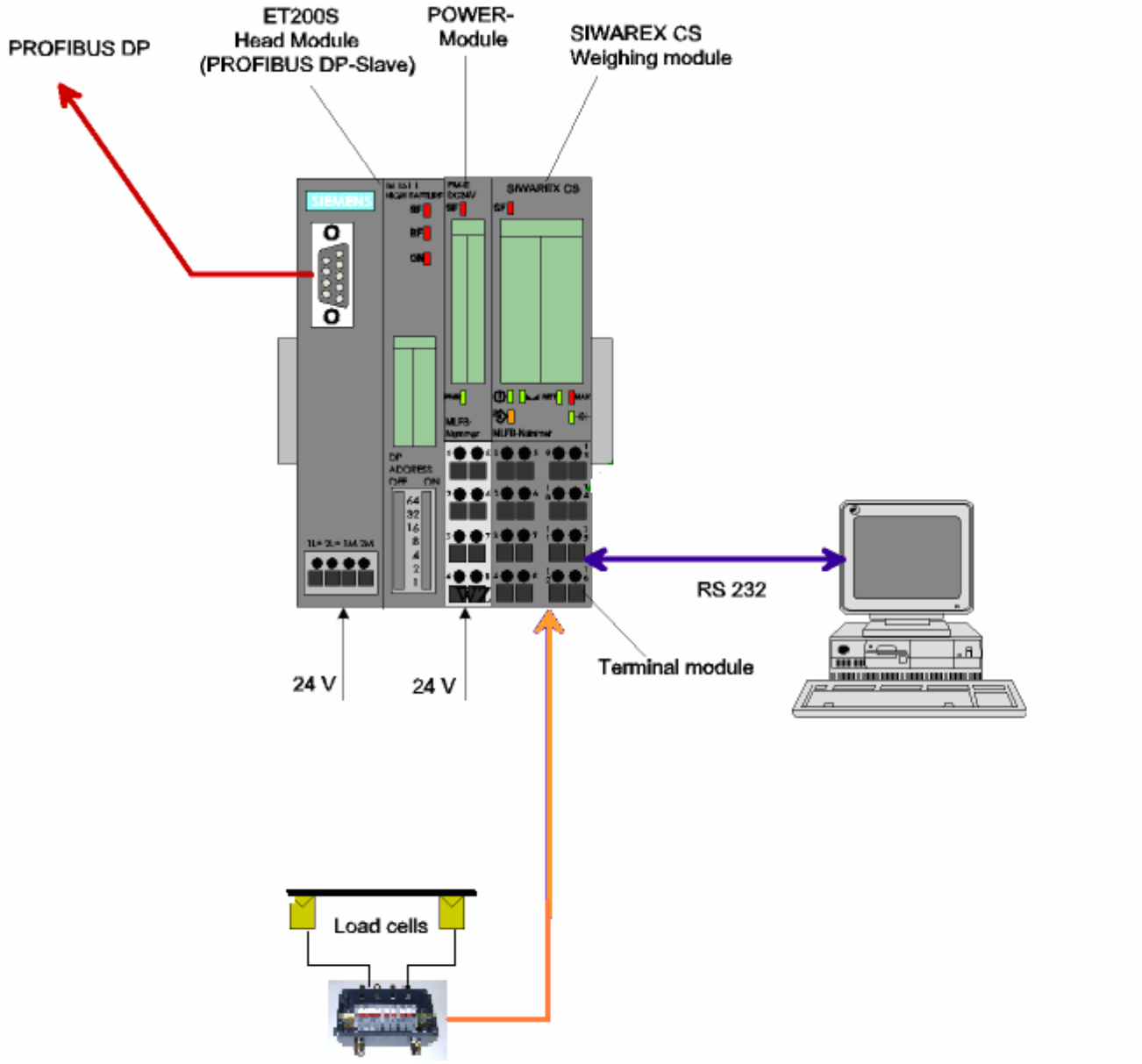
PROFIBUS or PROFINET
connection

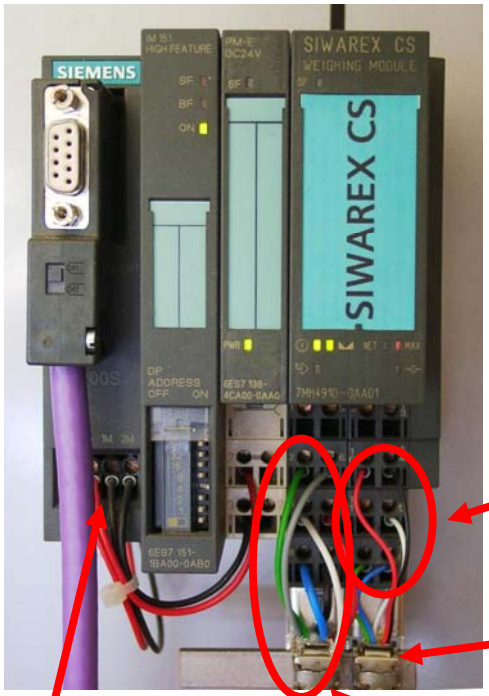
Configuration Package for SIWAREX CS:

Adjustment weight

Scale

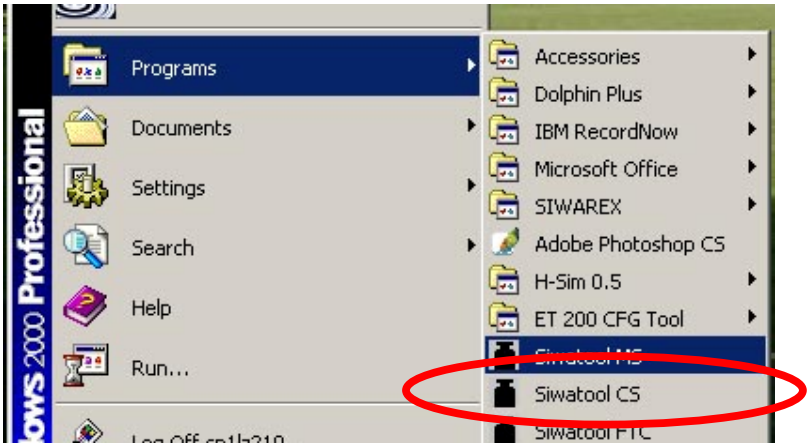
The physical connection is as shown below:


PROFIBUS DP
ET200S
Head Module
(PROFIBUS DP-Slave)
POWER-
Module
SIWAREX CS
Weighing module
RS 232
Terminal module
24 V
24 V
Load cells

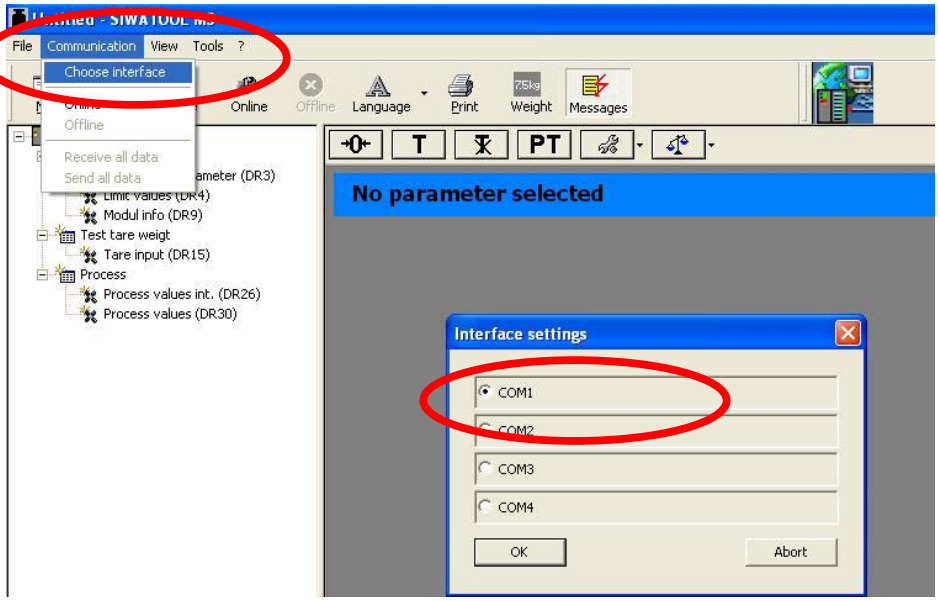


Connection and signal designations	Comment
SEN+	Sensor line +
SEN-	Sensor line -
SIG+	Measurement line +
SIG-	Measurement line -
EXC+	Load cell supply output +
EXC-	Load cell supply output -

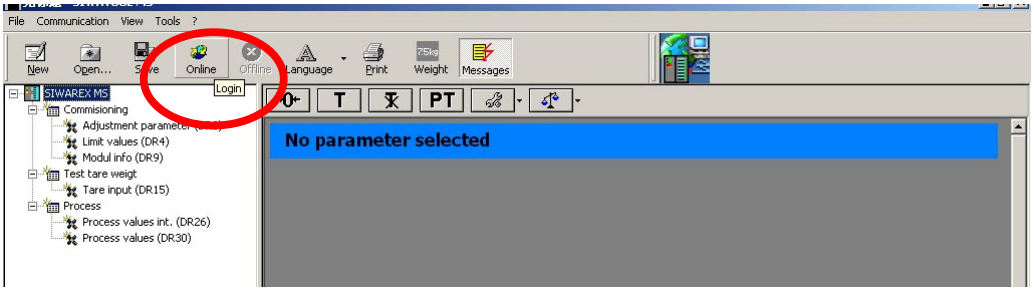
Start SIWATOOL CS.



Select COM1 as the communication interface.



Click **Online**.



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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

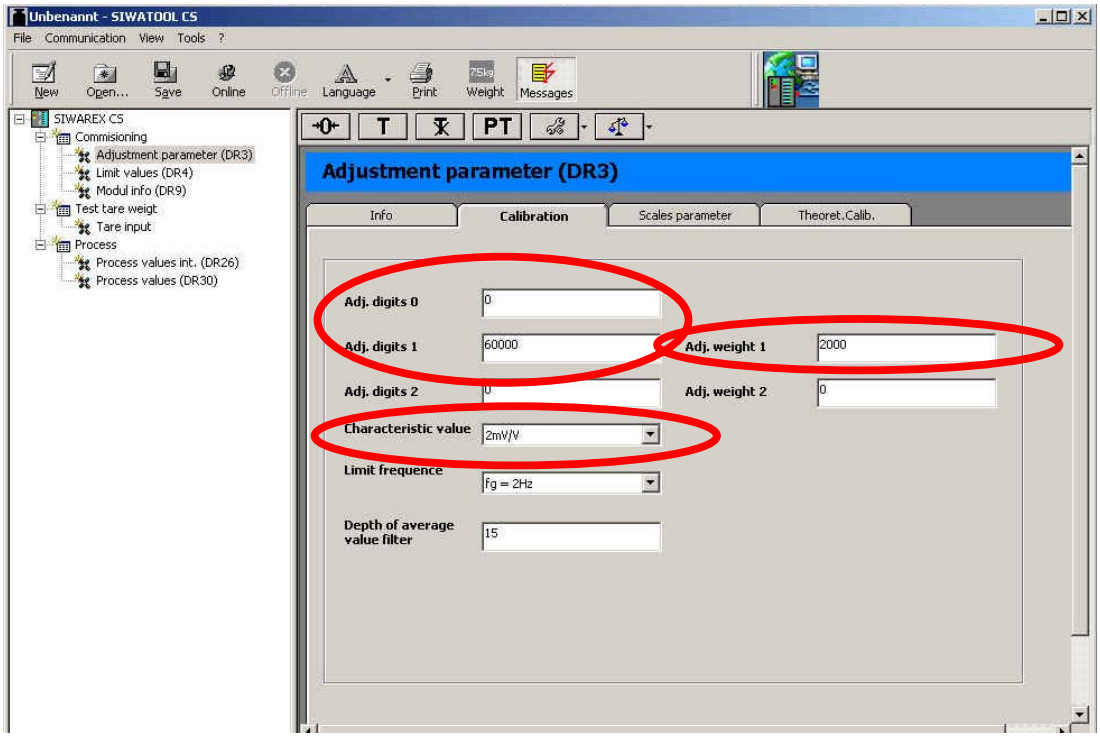
INT Data Type

Data Type	Length (bits)	Format	Format Examples	
			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

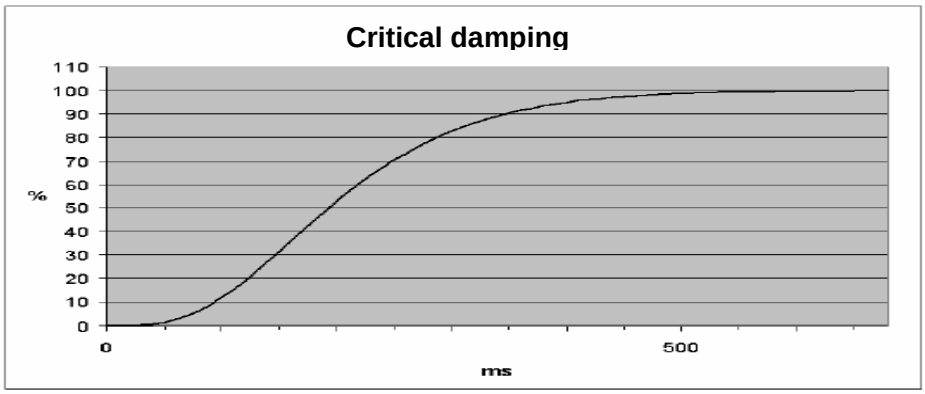
For a 40 kg scale you may use only a resolution of 10 g
Range 0.00 kg to 40.00 kg
The comma is not part of an integer and is only used for the display
→ **Choose resolution and comma <u>before</u> parameterization.**

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



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.

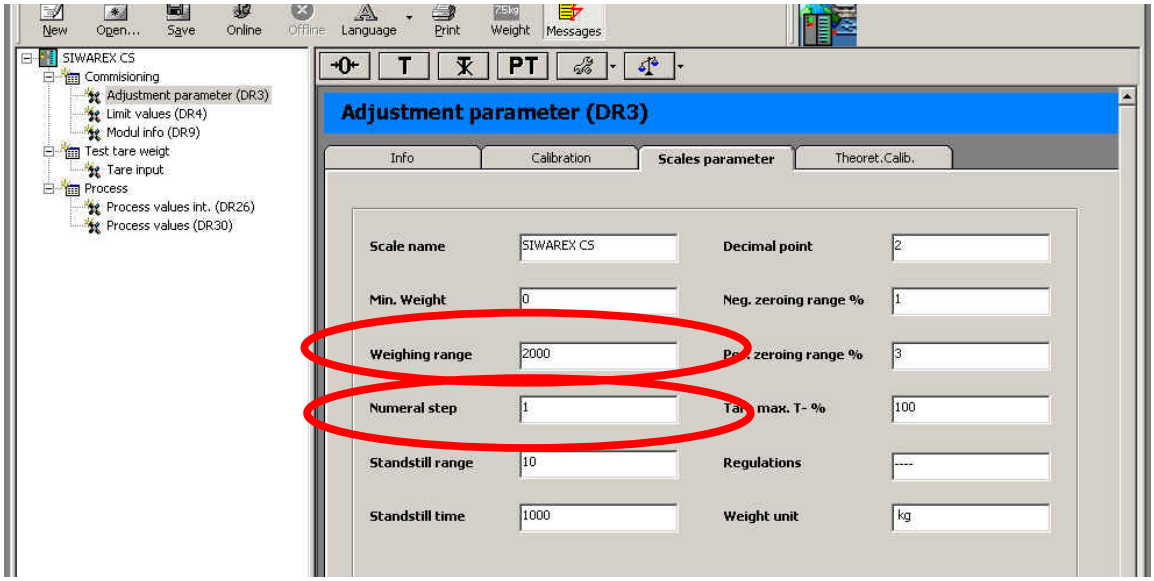
Limit frequency: Low-pass filter (0.05 Hz ~ 5 Hz).
If it is set to 5 Hz, the scale will respond quickly to the weight change; if it is set to 0.5 Hz, the scale will “move slowly”.



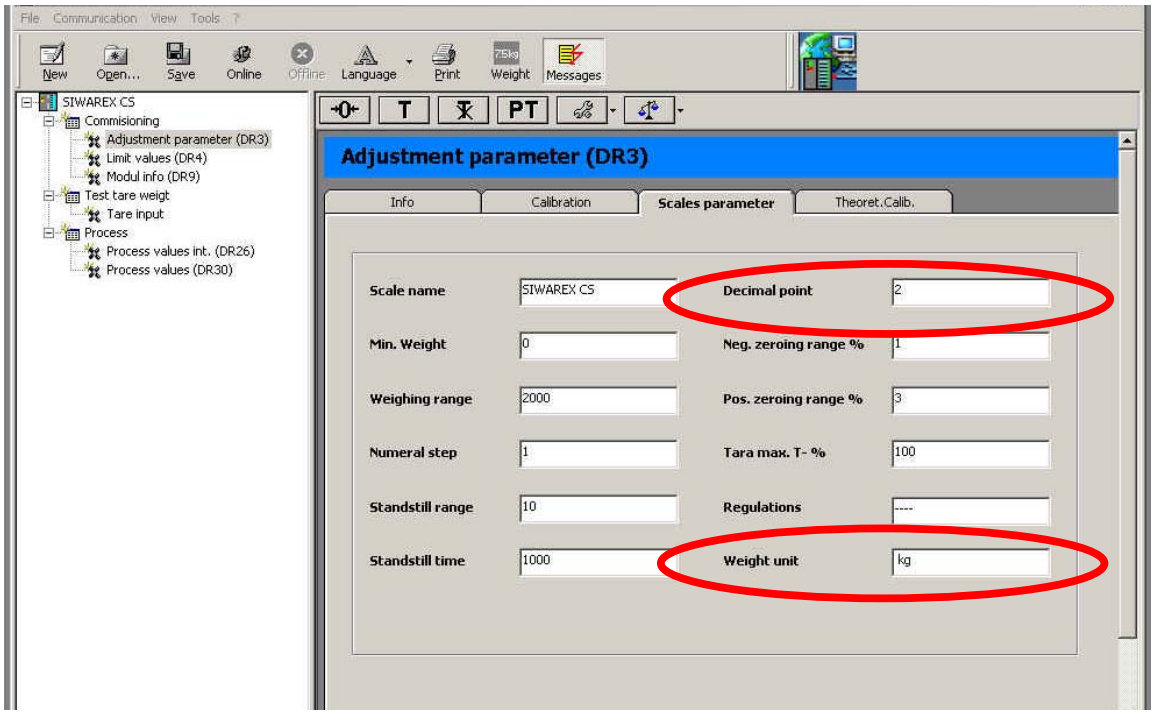
Step response of the digital low-pass filter of 2 Hz

Depth of average value filter: n=2 ~ 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.



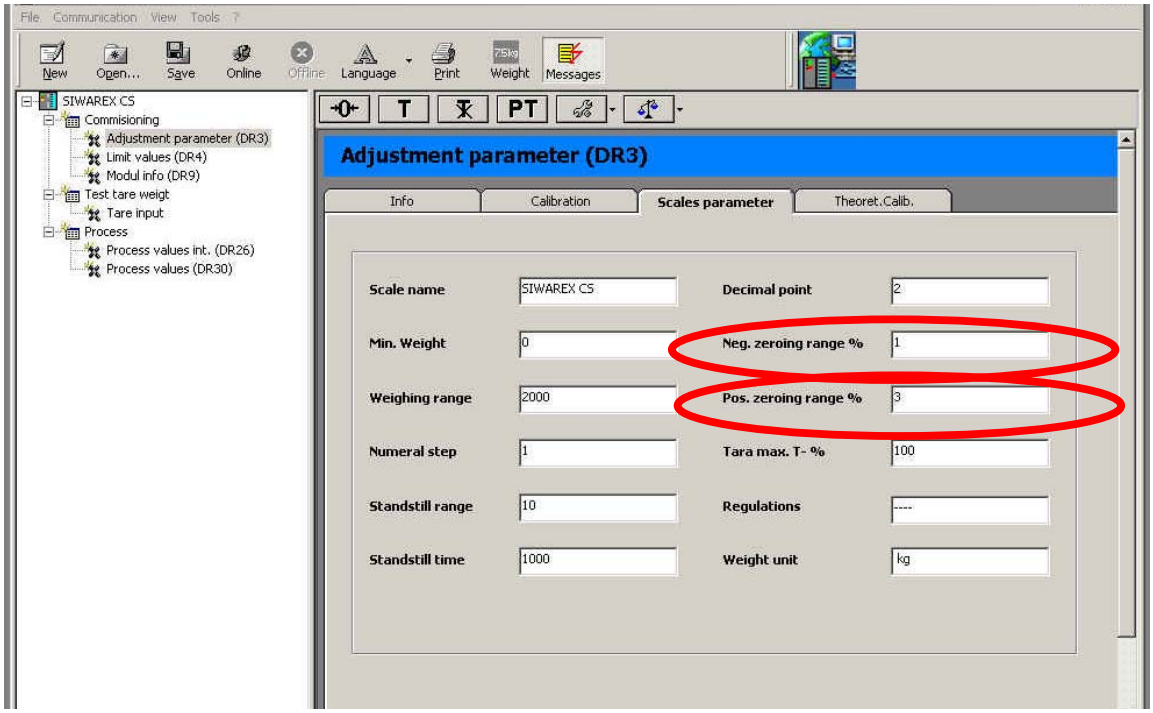
Set the weight unit and the decimal point as follows:



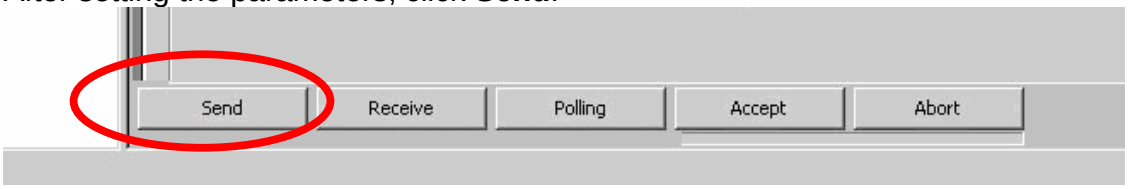
Standstill time (ms) and Standstill range are used to monitor when the scale stand still.
If the weight change is lower than the specified range (standstill value) within the specified period (standstill time), then the scale stands still.

Negative and positive zeroing range.

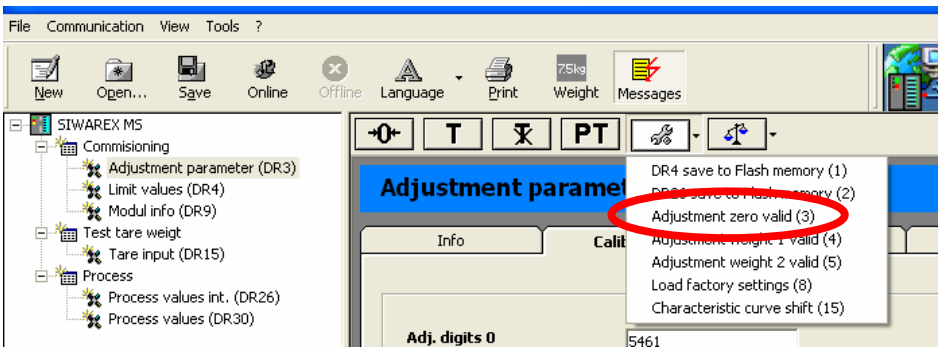
This specification can be used to limit the effect of the function and therefore to protect the process. It is given in % of the max weighing range. Zeroing will be rejected if the current gross weight is too high or too low.

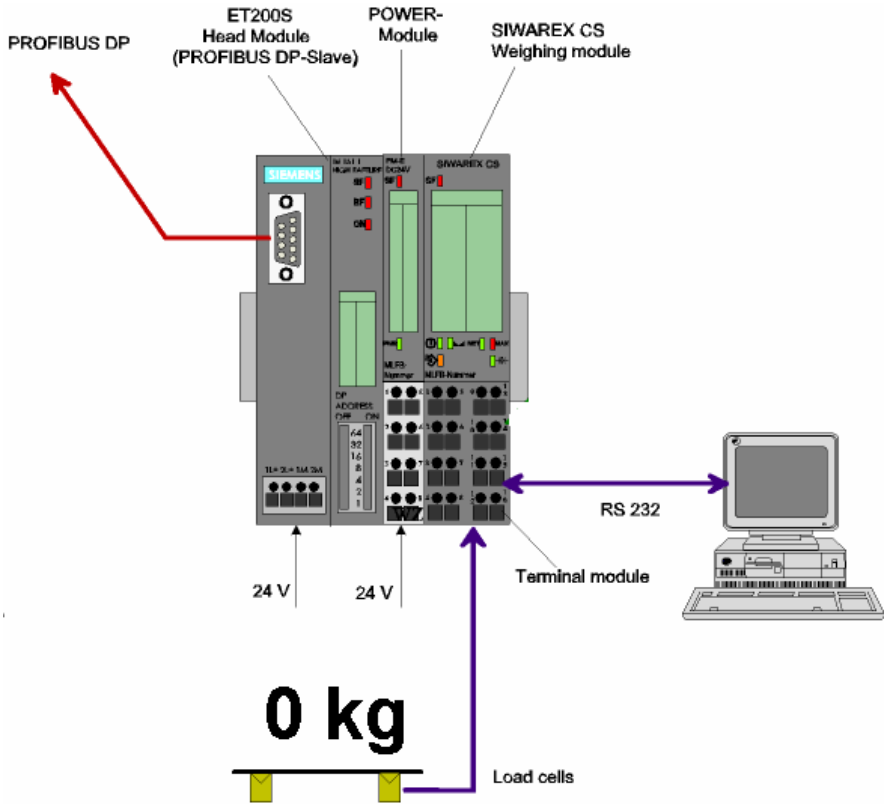


After setting the parameters, click **Send**.

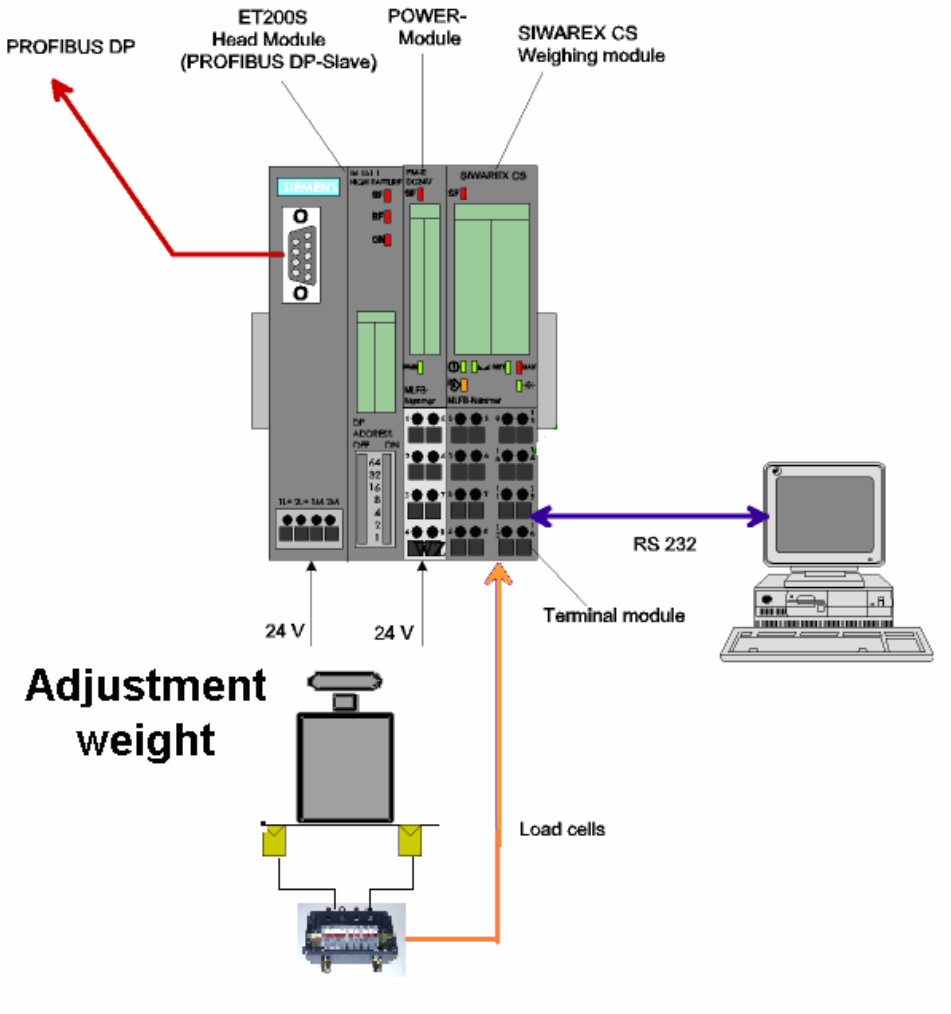


Ensure that the scale is empty (not loaded) and click **Adjustment zero valid (3)**.

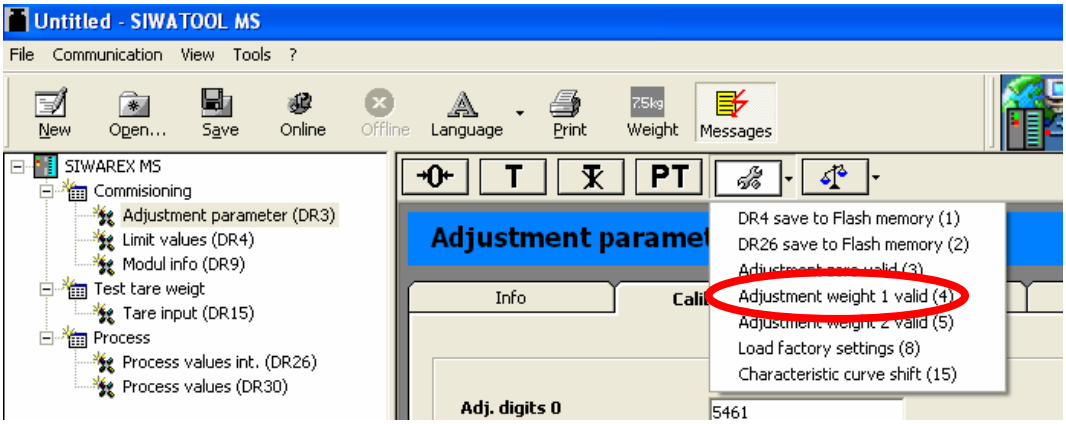




Place the adjustment weight on the scale to adjust the range of the scale.



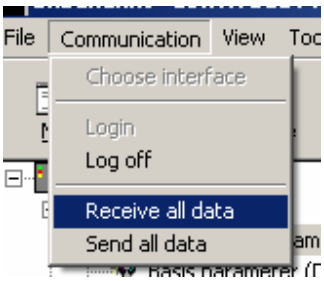
Click **Adjustment weight 1 valid (4)**.



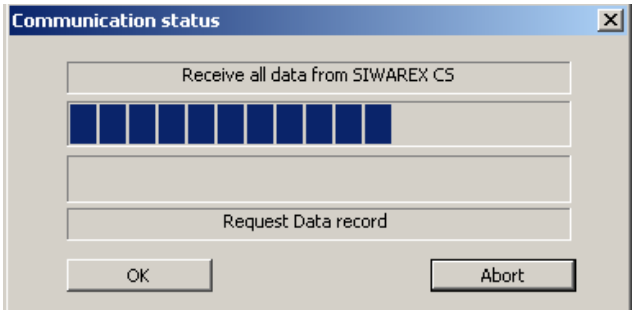
Calibration is complete.

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

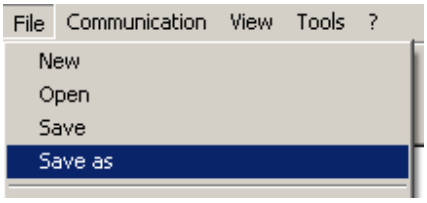
Receive all data's from the SIWAREX CS to the PC

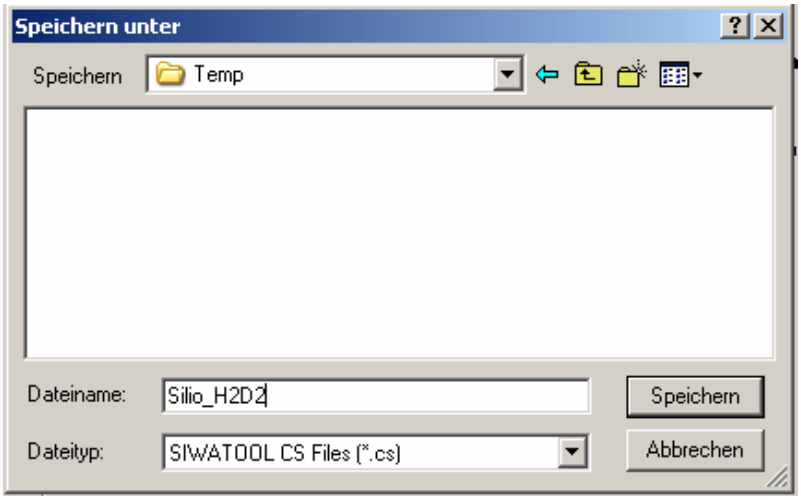


During the transmission from the Siwarex CS module to the PC, the following message-window appears:



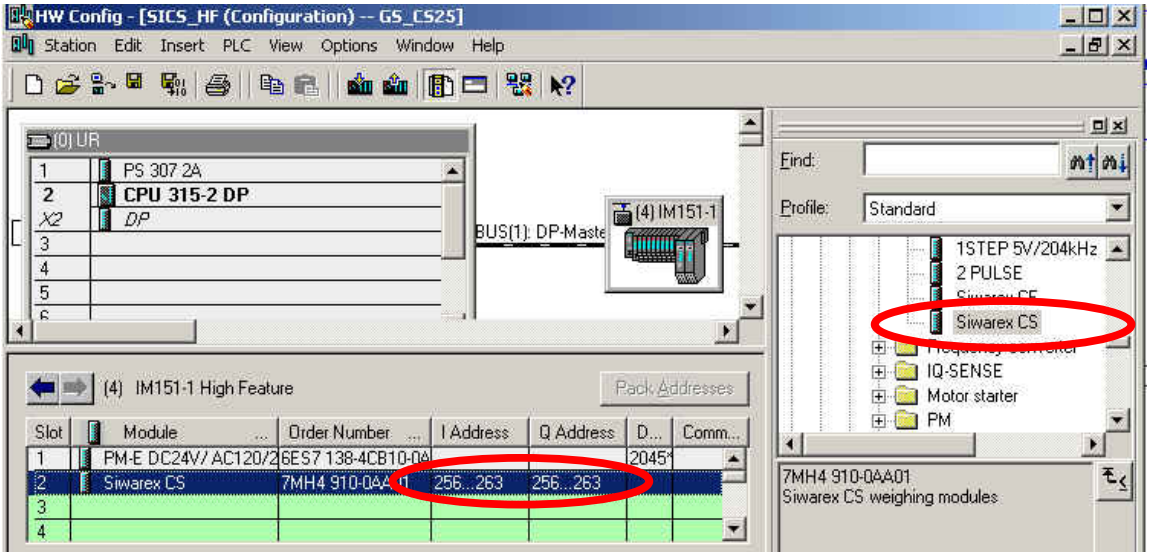
Save the data as a Siwatool CS File:



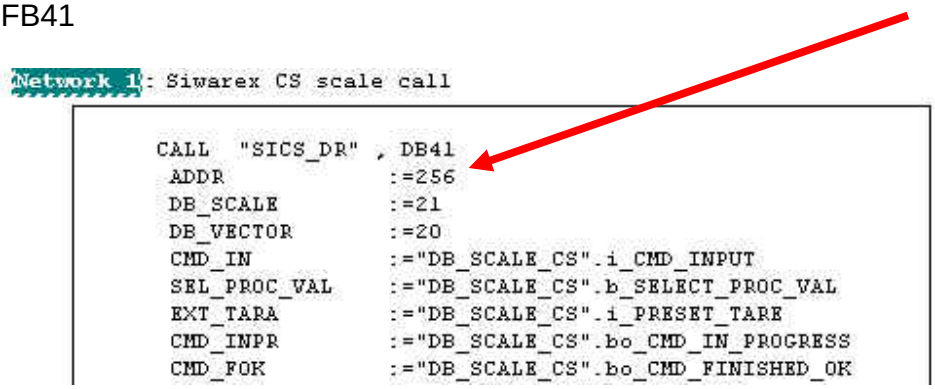


STEP 7 Programming

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



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:

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