

SIEMENS

SIWAREX WP231

Flexible weighing module for S7-1200.

Calibrating SIWAREX WP231 with SIWATOOL V7

Quick Guide

Date: 10/2012

For modules with order number 7MH4960-2AA01



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Introduction

SIWAREX WP231 is a calibratable (in preparation) and versatile weighing electronics for a seamless integration into SIEMENS SIMATIC S7-1200 systems or as a stand alone solution.

Purpose of this document for functional safety

This manual helps to carry out a fast commissioning of the weighing module. For further details please refer to the SIWAREX WP231 manual.

Notes on warranty

The contents of this programming manual shall not become part of or modify any prior or existing agreement, commitment or legal relationship. All obligations on the part of Siemens AG are contained in the respective sales contract, which also contains the complete and solely applicable warranty conditions. Any statements on the device versions described in the programming manual do not create new warranties or modify the existing warranty.

The content reflects the technical status at the time of printing. We reserve the right to make technical changes in the course of further development.

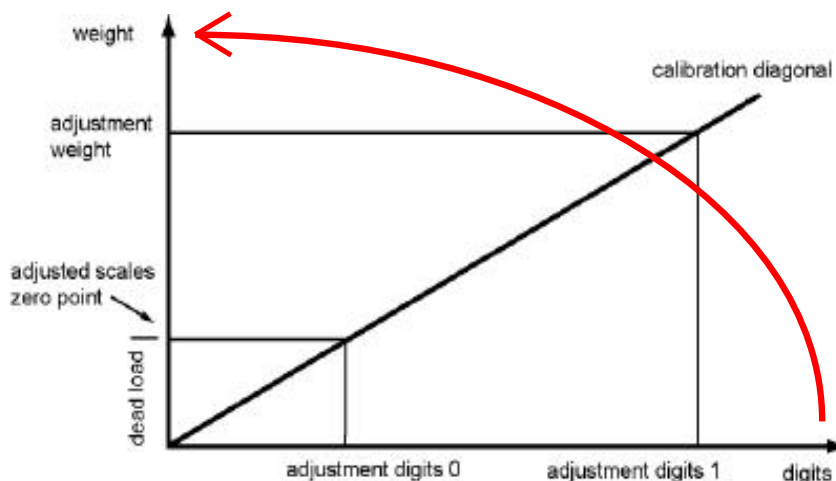
Validation of this document

This documentation is only valid in conjunction with the manual SIWAREX WP231. This manual is available online in the Siemens Techsupport:

<http://support.automation.siemens.com/WW/llisapi.dll?func=cslib.csinfo&lang=en&siteid=csius&aktpr im=0&extranet=standard&viewreg=WW&objid=64722267&treeLang=en/>

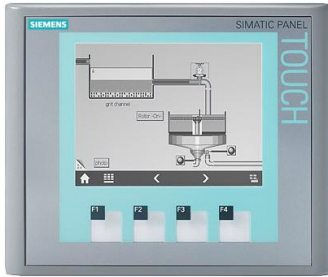
Goal of the calibration

Inside the SIWAREX WP231 the milli-volt signal from the load cells are converted into a digital value (digits). The aim of the calibration is the transformation of the digits into a valid weight value.



1 Hardware Requirements

Following hard- and software is required to integrate a scale into a SIMATIC S7-1200 system:
24V Power supply, SIWAREX WP231, SIWATOOL WP231 software, RJ45 cable, computer with Windows XP or higher and a calibration weight. This weight must be bigger than 5% of the nominal load of the connected scale (→ a scale with a nominal load of 2000kg needs to be calibrated with an adjustment weight of 100kg at least).



Panel with Ethernet Interface



24V Power Supply



SIWAREX WP231
7MH4960-2AA01



Configuration Package
SIWAREX WP231
7MH4960-2AK01



Standard RJ 45 Cable

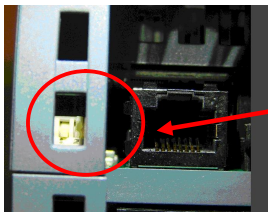
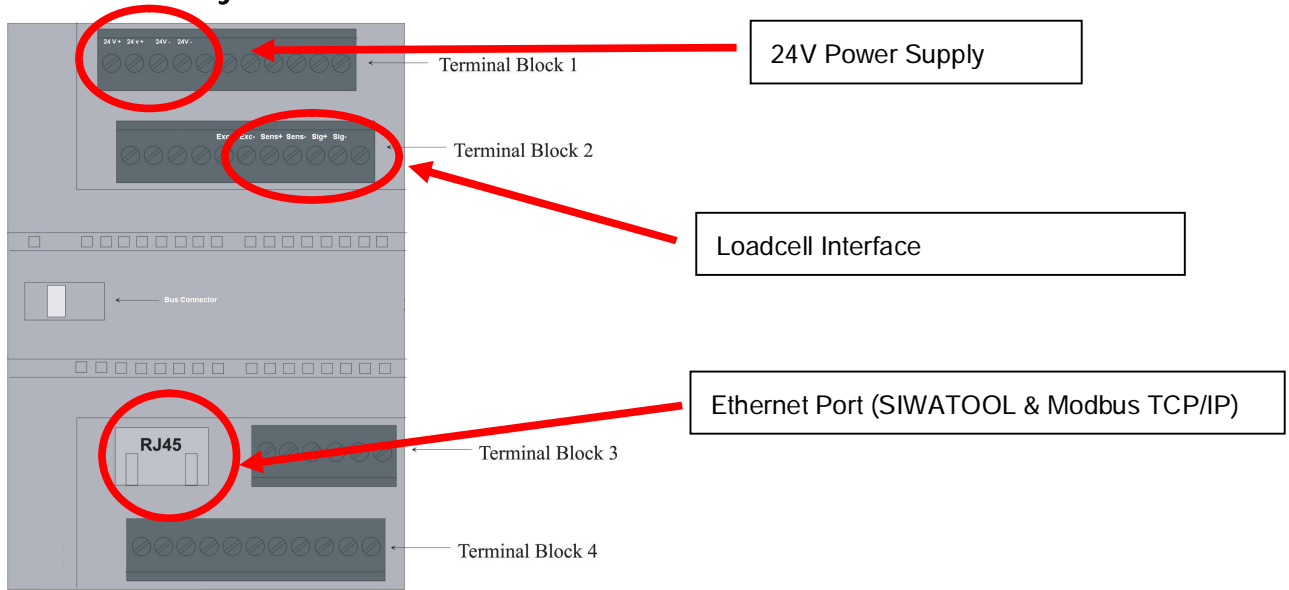


Adjustment weight
> 5% of the sum of the
nominal value of all load cells



Scale

2 Connectivity

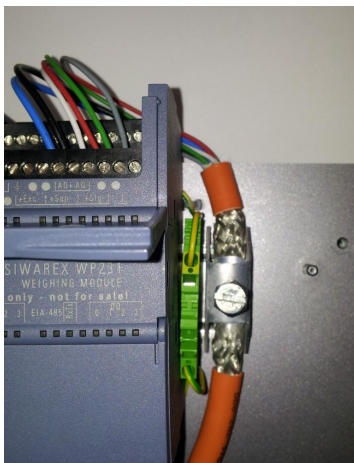


Two switches are located next to the RJ45 connector.
 If the right switch is set to the upper position (factory default) the outputs of WP231 will be deactivated if the PLC goes to stop.
 If it is set to the lower position, the outputs of WP231 will remain active even if the PLC goes to stop (=Stand-Alone-Mode). This is important if a continuous operation must be guaranteed.
 The left switch is not used.

In stand-alone mode the right switch must be set to the lower position!

Loadcell interface specification:

Signal name	Comment
EXC+	Loadcell Excitation +
EXC-	Loadcell Excitation -
SEN+	Loadcell Sense +
SEN-	Loadcell Sense -
SIG+	Loadcell Signal +
SIG-	Loadcell Signal -

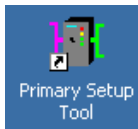


Important: The usage of a shield connector is highly recommended to avoid EMC interferences!

The order number for the SIMATIC shield connector is 6ES5728-8MA11

3 PST Primary Setup Tool

SIWAREX WP 231 is connected to SIWATOOL with an ethernet cable. A correct parameterization of the IP address of the PC and the WP231 is required to establish the communication. One easy way is to use the PST software which is available in the software configuration package. The IP of the PC needs to be in the same IP range and Subnet-Mask like the WP231 module. (e.g. WP231=192.168.0.21 → PC IP must be 192.168.0.XXX, but not 192.168.0.21).



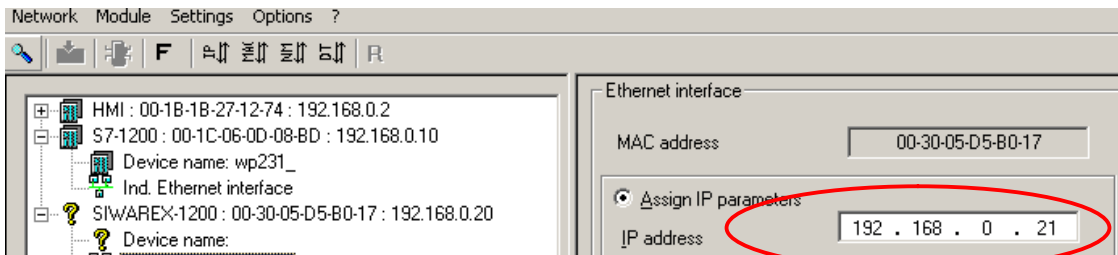
Start PST



Choose Ethernet interface of the PC



Browse

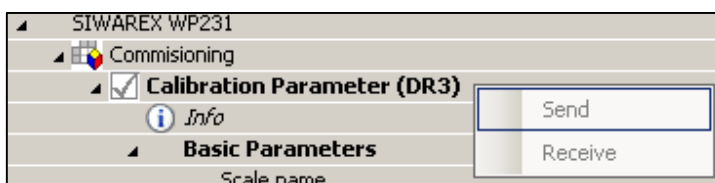
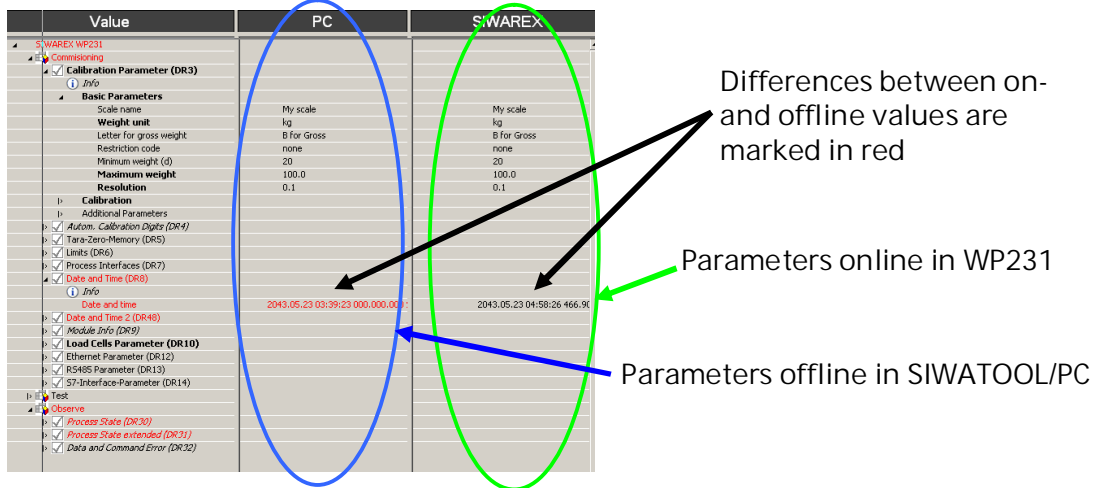
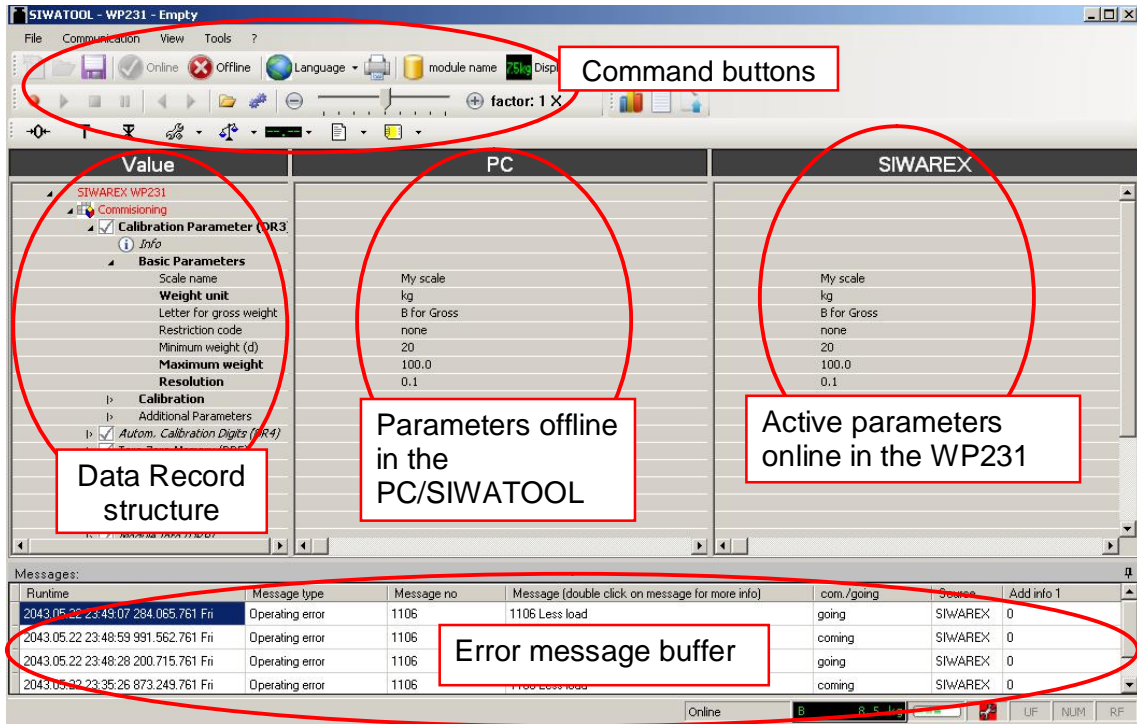


**Check IP address (factory default is 192.168.0.21)
Eventually change IP address**



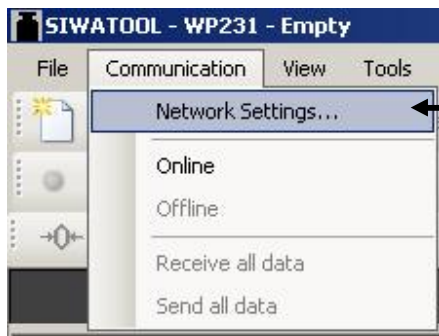
Download new IP address to the module

4 SIWATOOL overview

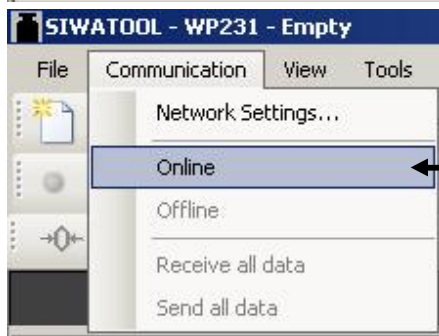


A right click on the name of a data record (e.g. DR3 like in the picture on the left) opens a small pop-up with options to "Send" the complete data-record from the PC into the WP231 or to "Receive" the complete data record from the WP231 into the PC. It's possible to send or receive a complete Data Record only! It's not possible to send or receive only a single parameter inside a data record.

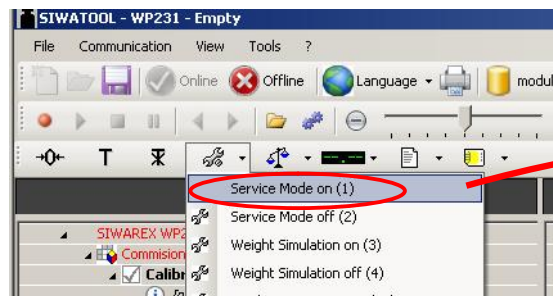
5 SIWATOOL start



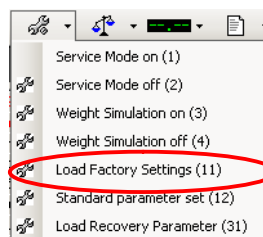
Check IP address
factory default is 192.168.0.21



Change to "online" mode



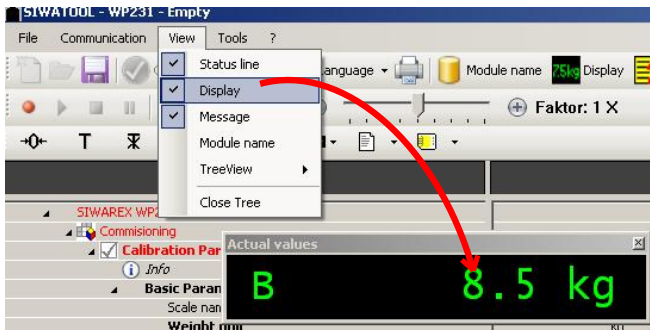
Switch "Service Mode" on, the status is shown on the right bottom of SIWATOOL.



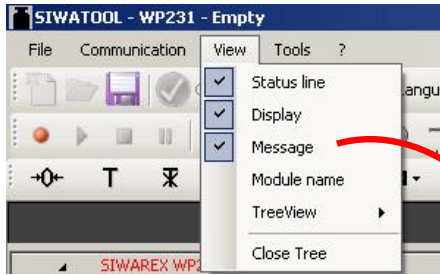
Load Factory settings (11)
Caution all old data/settings will be lost!



Receive all data



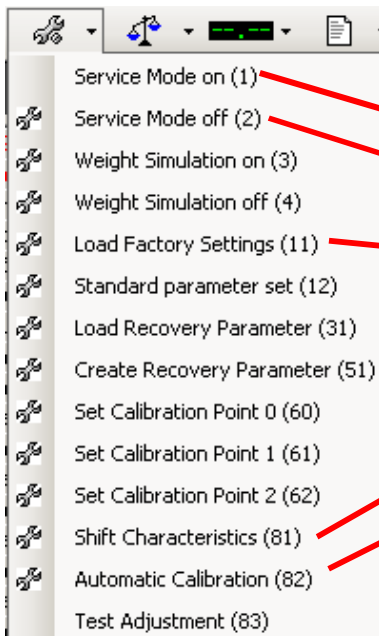
Show/Hide actual value



Show/Hide error message buffer

Messages:

Runtime	Message type	Message no	Message (double click on message for more info)
2043.05.22 23:49:07 284.065.761 Fri	Operating error	1106	1106 ADC digits max -
2043.05.22 23:48:59 991.562.761 Fri	Operating error	1106	1106 ADC digits max -
2043.05.22 23:48:28 200.715.761 Fri	Operating error	1106	1106 ADC digits max -



For the 5 minute calibration following commands are necessary:

- Service Mode on (1) → **Service mode on**
- Service Mode off (2) → **Service mode off**
- Load Factory Settings (11) → **Load factory settings**
- Shift Characteristics (81) → **Shift Characteristics**
- Automatic Calibration (82) → **Automatic Calibration**

6 Calibration procedure

There are two different ways for calibrating the scale. The first method called “automatic calibration” uses only the data of the scale/loadcells and no calibration weight is required. The other method uses calibration weights.

The accuracy will be higher, if the calibration is performed with weights.

It is recommended to start with the “automatic calibration” first, in order to check the functionality of the scale. If necessary, a calibration with weights can increase the accuracy of the system afterwards.

6.1 Automatic calibration

Only data record 3 and 10 must be defined to perform the “Automatic calibration”. All important parameters are **marked in bold**.

SIWAREX WP231	
Comissioning	
Calibration Parameter (DR3)	
Info	
Basic Parameters	
Calibration	
Additional Parameters	
Autom. Calibration Digits (DR4)	
Tara-Zero-Memory (DR5)	
Limits (DR6)	
Process Interfaces (DR7)	
Date and Time (DR8)	
Date and Time 2 (DR48)	
Module Info (DR9)	
Load Cells Parameter (DR10)	
Info	
No of load cells	1
Switch 50/60Hz	50 Hz
No points of support	1
Gain load cell (mV/V)	2.0
Zero offset load cell (µV/V)	0.0
Nominal load one load cell	60.0
Set known dead load	0.0
Ethernet Parameter (DR12)	

Keep the factory setting for parameters not **marked in bold**

SIWAREX WP231	
Comissioning	
Calibration Parameter (DR3)	
Info	
Basic Parameters	
Scale name	
Weight unit	kg
Letter for gross weight	B For Gross
Restriction code	none
Minimum weight (d)	20
Maximum weight	100.0
Resolution	0.1
Calibration	
Calibration weight 0	0.0
Calibration weight 1	100.0
Calibration weight 2	0.0
Calibration digits 0 (real)	0
Calibration digits 1 (real)	2000
Calibration digits 2 (real)	0
Additional Parameters	

DR3

“Maximum weight” is the nominal load of the scale.

Resolution is the smallest weight step displayed.

For the automatic calibration, Calibration weight 0 must be 0.

Calibration weight 1 can be defined freely between 50% and 100% of the “Maximum weight”.

Other parameters are self explaining

Note: the resolution is related to the weight display and is independent from the weight accuracy.

SIWAREX WP231	
Load Cells Parameter (DR10)	
Info	
No of load cells	1
Switch 50/60Hz	50 Hz
No points of support	1
Gain load cell (mV/V)	2.0
Zero offset load cell (µV/V)	0.0
Nominal load one load cell	60.0
Ethernet Parameter (DR12)	

DR10

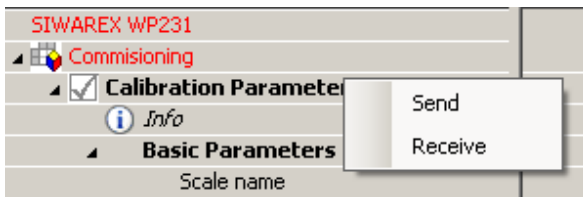


The exact value of the gain is not always known. In this case enter the average nominal value (mean value of several nominal values as given in the catalog.)

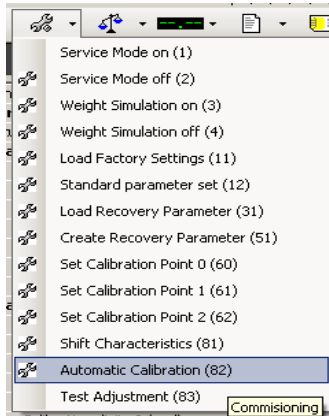
Enter all other parameters marked in bold

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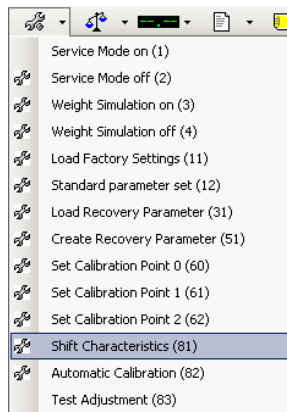
SIWAREX_WP231_Quick Guide_SIWATOOL_V1_5.doc; 10/2012



After defining all parameters, DR3 and DR10 must be sent via a right mouse click on the data record name and "Send".



Execute the command "Automatic calibration"



Ensure that scale is empty and execute the command "Shift Characteristics"

Put a know weight onto the scale and check for plausibility.

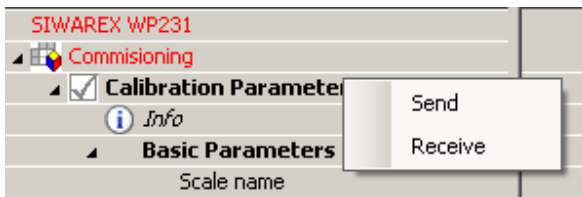
6.2 Calibration with calibration weight

Enter the calibration weight value

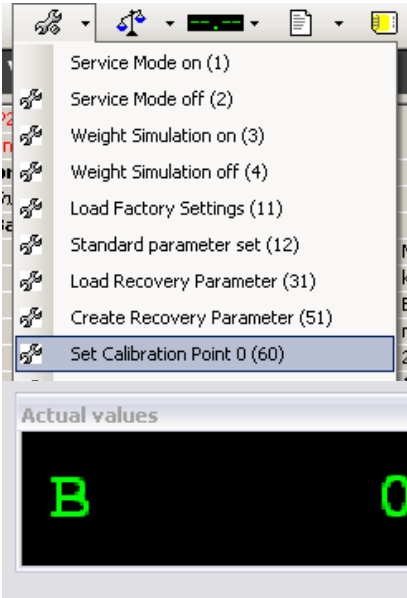
DR3

SIWAREX WP231	
Comissioning	
Calibration Parameter (DR3)	
Info	
Basic Parameters	
Scale name	
Weight unit	kg
Letter for gross weight	B for Gross
Restriction code	none
Minimum weight (d)	20
Maximum weight	100,0
Resolution	0,1
Calibration	
Calibration weight 0	0,0
Calibration weight 1	100,0
Calibration weight 2	0,0
Calibration digits 0 (real)	0
Calibration digits 1 (real)	2000
Calibration digits 2 (real)	0
Additional Parameters	

Calibration weight 0 is usually 0kg (scale empty), however it can be set to another value. Calibration weight 1 needs to be more than 5% of the sum of the nominal load of all connected load cells



After defining all parameters, DR3 must be sent via a right mouse click on the data record name and "Send".

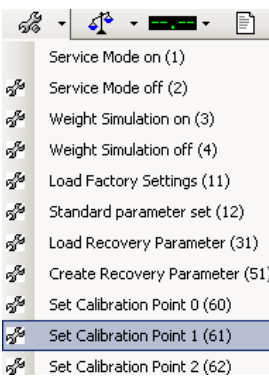


Ensure that scale is empty and execute the command "Set calibration point 0 (60)"

The gross weight should be 0 kg now

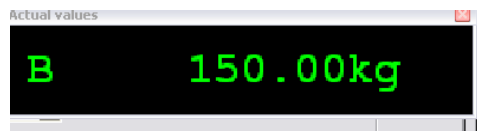


Put the defined calibration weight on the scale

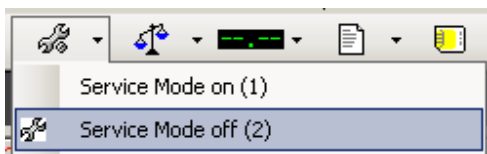


Execute "Set calibration point 1 (61)"

The display should show the predefined "Calibration weight 1" in the display. If not check the error message buffer! Otherwise the adjustment is completed now.

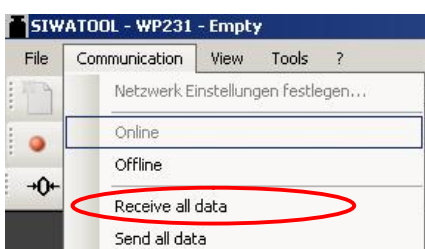


Switch "Service mode off (2)"

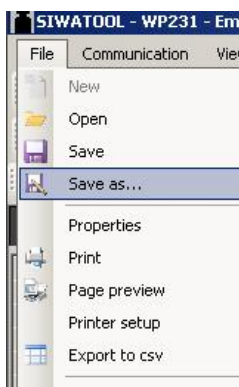


7 Backup

Creating a complete scale backup



Read all data into the PC



Save Siwatool file.

**If the module needs to be replaced,
this Siwatool file can be uploaded into the module and
the scale doesn't need to be re-configured/calibrated.**

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

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