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Instruction manual digital force gauge

SAUTER FC

Version 2.0
01/2020
GB

PROFESSIONAL MEASURING

GB

SAUTER FC

V. 2.0 04/2020

Instruction manual digital force gauge

Congratulations on the purchase of a digital force measuring device with internal measuring cell from SAUTER. We hope you will enjoy your quality measuring device with a wide range of functions. Please do not hesitate to contact us if you have any questions, requests or suggestions.

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1 Introduction

Please read these operating instructions carefully before commissioning, even if you already have experience with SAUTER measuring instruments.
After receipt of the force gauge, it should be checked in advance that no transport damage has occurred, that the outer packaging, the plastic housing, other parts or even the gauge itself have not been damaged. If any damage is evident, please notify SAUTER GmbH immediately.

The FC can measure tensile and compressive forces very accurately and it is easy to operate. It can be held in the hand for measurements or mounted on a suitable test stand.
SAUTER offers optional software and accessories to make the measuring instrument more versatile in use. Please ask SAUTER or the SAUTER supplier or visit our website www.sauter.eu.

2 Scope of delivery

- SAUTER FC, incl. internal battery
- Transport case
- Battery charger
- 5 pieces M3 x 8 screws for mounting on SAUTER test benches
- Standard attachments standard M6, as shown
  extension bar: 90mm

3 Technical data

3.1 Technical data FC with internal loadcell up to 1kN

Measuring device	FC 10	FC 50	FC 100	FC 500	FC 1K
Capacity	10N	50N	100N	500N	1000N
Measurement uncertainty	±0.3% of Max (measuring range)				
Work temperature	15°C to 35°C				
Relative air humidity	15% to 80% Humidity				
Weight (without accessories)	Approx. 500g				
Dimensions Display unit (LxWxH)	140x71x36mm				
Thread	M6				

4 Display indication

Position	Description
1	Measuring mode: Track mode; Peak mode; Preset mode
2	Battery symbol: shows the current charge status; flashes when the battery needs to be recharged
3	Default value status: OK : the value is between the lower and upper limit and is OK : the value is between the lower limit value and the value of 75% of the lower limit value, i.e. the value falls below the lower limit value : the value exceeds the upper limit value
4	Measuring units: the selected unit is displayed (N, kgf, ozf or lbf optional)
5	System Clock
6	Data transmission symbol
7	Data memory icon
8	Analogue load bar display
9	Current measured value
10	Direction of force (tension) Pressure ( )

5 Control buttons

SAVE/ESC: 

- Saving the measured value
- By pressing the SAVE/ESC button in the menu, you can return to the previous page

ZERO (zeroing): 

- Zeroing the display
- Arrow 'up' in the menu

ENTER: 

- Opening the menu
- Confirm the selection in the menu

Mode (mode change): 

- Selecting the measuring mode
- Arrow key 'down' in the menu

ON / OFF: 

- On / Off button (press button for approx. 1 s)

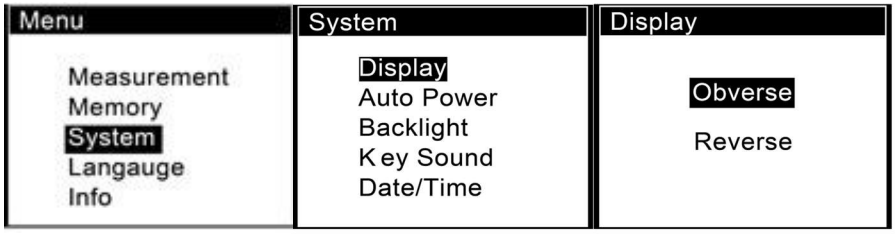
6 Menu items

6.1 **Language**

The display of the force gauge has several menu language versions. Select the desired language setting.

6.2 **Display modes**

The force gauge has two display modes: force transducer oriented display and reverse display. Select the desired display mode as required.



6.3 **Storing measured values**

The force gauge is equipped with the function for storing measured values. The stored data can be searched or printed out.

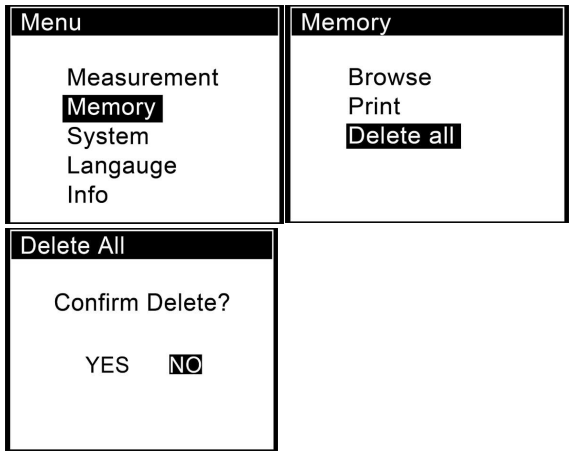
During the measurement, SAVE ESC press the key to save the respective value. The display will show the data storage symbol ( ).

The stored data is displayed. In Track mode and Preset mode, the current force value is measured, and in Peak mode, the maximum value.

6.4 **Delete all records**

To empty the memory, all data can be deleted at once. The display then shows a dialog box with a corresponding security prompt.

Individual data can be deleted from the 'Browse' menu.

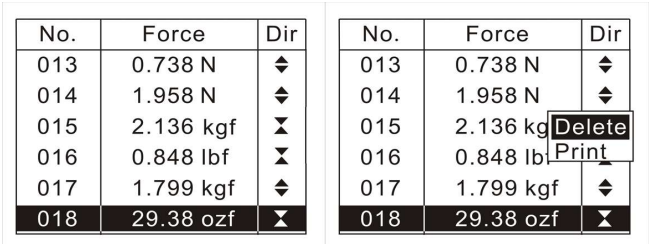


6.5 **Browse Menu**

With the menu 'Browse' you can browse the memory contents of the save order.

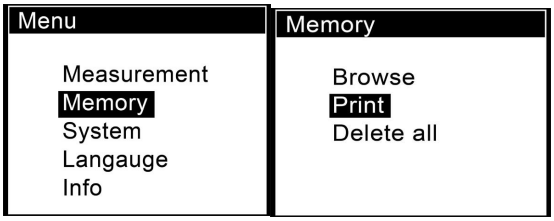
The keys →0← MENU ↑ or are used to navigate between the data records MODE MENU ↓.
At the top of the list the last saved record is displayed.

After pressing the button, MENU ↵ a small selection window appears on the display. In this window you can choose between the 'Delete' or 'Print' option



If the 'Delete' option is selected, a dialog box with a corresponding security prompt is displayed.

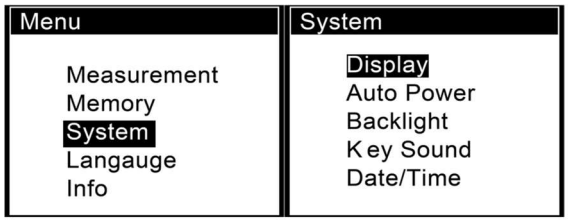
To exit the menu, SAVE ESC press the key.



If the percentage drop is between 5% - 10%, please contact the supplier to have the loadcell replaced. These values are given as a guide only. The actual need for calibration/replacement of the loadcell varies with its individual characteristics.

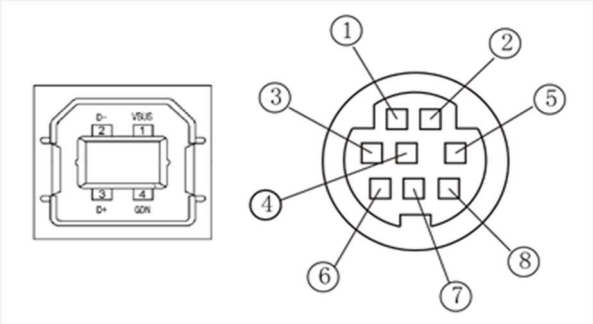
6.6 **System settings**

In the 'System' menu, settings for the display, automatic switch-off function, backlight, key tone, etc. can be selected.



6.7 **USB/Loading**

Via this port, USB2.0 can be used to connect the force gauge to a PC computer for data processing.
The Ni-MH battery can also be charged via this connection. To do this, connect the mains adapter.



6.8 **Multifunctional port**

The PIN assignment is shown in the table.

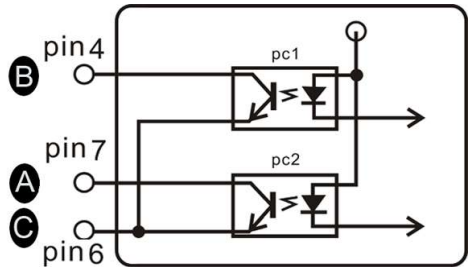
Pin	Description
1	TX (RS232)
2	RX (RS232)
3	GND (RS232)
4	Default value output B
5	
6	Default value output C (general)
7	Default value output A
8	

6.9 **RS-232 specification:**

- Hardware flow control: none
- Word length: 8 bits
- Stop bit: 1 bit
- Parity: none
- Data transmission rate: 38400

6.9.1 **Default value outputs**

Two preset value outputs form an open collector in the NPN version.
The circuit diagram below shows the inner default value circuit:



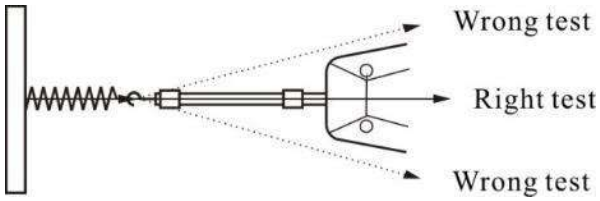
Pins 6 and 7 are switched on after the overload alarm is triggered.
In setting mode, pins 6 and 7 are switched on after the upper limit value has been exceeded, and pins 4 to 6 - after the lower limit value has been fallen below.

Max. permissible voltage: for pins 7 to 6 and 4 to 6 the voltage must be below 35V, and for pins 6 to 7, pins 6 to 4 below 6V!

7 Warnings

Incorrectly performed force measurements can lead to serious injury to persons and damage to objects and must therefore only be performed by trained and experienced personnel.
In particular, it must be avoided that forces act on the purchased measuring instrument which exceed the maximum load (Max) of the instrument or which do not act axially via the external and internal load cell; or if high impulse forces act on the measuring instrument.

Avoid twisting the loadcell, otherwise it could be damaged and the measuring accuracy will decrease in any case.



Inappropriate use

Do not use the measuring instrument for medical weighing.
If small quantities of the material to be measured are removed or added, incorrect measurement results may be displayed due to the "stability compensation" in the measuring instrument! (Example: Slow flow of liquids out of a container suspended from the measuring cell).
Do not apply a continuous load to measuring instruments with external measuring cell.

Overloads

Please prevent the measuring instrument from being overloaded beyond the specified maximum load (Max), minus any tare load that may already be present. This can damage the measuring instrument (danger of breakage!)

Attention:

- Make sure that never let people or objects are under the load, as this could injure or could be damaged!
- The measuring instrument is not suitable for weighing people, do not use it as an infant measuring instrument!
- The measuring device does not comply with the German Medical Devices Act (MPG).
- Never operate the measuring instrument in rooms where there is a risk of explosion. The standard version is not explosion-proof.
- The design of the measuring instrument must not be changed. This can lead to incorrect measurement results, safety-related defects and the destruction of the measuring device.
- The measuring instrument may only be operated or maintained by trained personnel.
- The measuring instrument may only be used in accordance with the described specifications.
- SAUTER must give written approval for any other areas of use / applications.

Warranty

The warranty is void if

- Non-compliance with our guidelines of the operating instructions
- Use outside the described field of application
- Modifying or opening the device
- mechanical damage and damage caused by agents such as liquids or liquids have been caused
- improper assembly or electrical installation
- Overloading the measuring cell

Test equipment monitoring

As part of quality assurance, the metrological characteristics of the measuring instrument and any test weight that may be present must be checked at regular intervals. The user responsible must define a suitable interval for this purpose as well as the type and scope of this inspection.
Information on the monitoring of measuring instruments and the necessary test weights is available on the SAUTER homepage (www.sauter.eu). The weights and

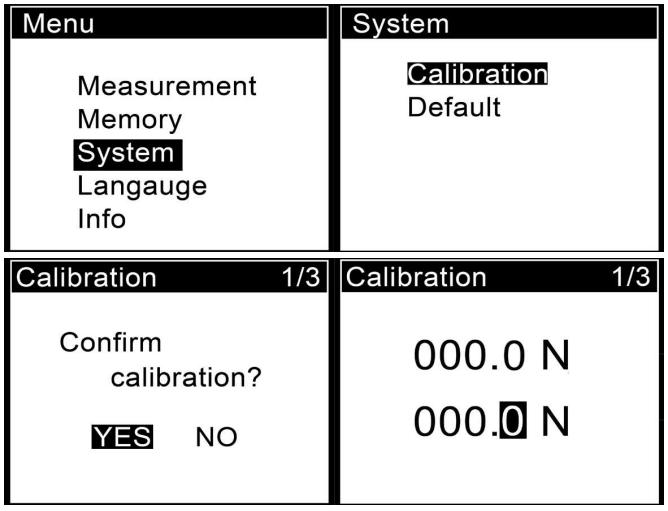
measuring instruments can be checked and adjusted quickly and at favourable prices in KERN's accredited DAkkS laboratory (traceability to the national standard).

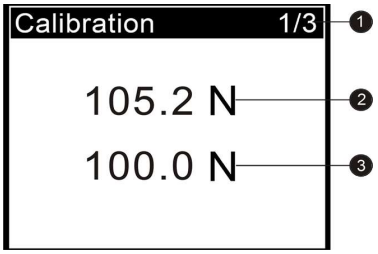
Note:
To view the CE declaration, please click on the following link:
https://www.kern-sohn.com/shop/de/DOWNLOADS/

8 Adjustment FC

After a certain period of use, the force gauge may show deviations in a measuring range which are due to the functioning of the device or other external influences.
In such a case, the device can be sent to our customer service for expert testing and recalibration.
However, if you have standard force gauges and a measuring stand, you can perform the calibration yourself according to the instructions below:

1. Fasten the force gauge to the measuring stand or to another holder
2. Zero the tare value by pressing the key.
3. Call up the calibration menu.





❶Kalibrierungsdauer
❷Aktueller Measured value
❸Standardwert, entered

4. Load with test weight. The current measured value now equals the test weight load. Wait until the measured value stabilizes before reading the measured value.
5. Use the and keys to enter the test weight.
6. Press the key to initiate a new calibration procedure. The calibration process can be interrupted by pressing the key.
   If the calibration procedure is completed or interrupted three times, a message window appears with the request to confirm the displayed message "Save and Exit" (YES) or (NO).

   Press the or key to select the desired option, then press the key.

   If the "YES" option is selected, the display shows "Calibration complete!

9 Technical drawings