Digital Force Gauge SAUTER FS



PREMIUM
★★★



Measurement of forces in different tensile or compression directions possible with only one measuring device



Supplied in a high-quality and robust system case (systainer® T-LOC) including plug-in power supply and USB cable type C



Tip: Order the practical system case (systainer® T-LOC) for storing and transporting of accessories, clamps, sensors, etc. at the same time, SAUTER FS TKZ, see *Accessories*

## Premium force gauge with integrated load cell (optional) and connection possibility for up to 4 external load cells

### Use with integrated load cell

The SAUTER FS premium force gauge has an load measuring cell for tensile and compressive force applications. Either mobile for rapid testing or stationary integrated into a test stand or production line, the multifunction display allows all the values recorded to be read off at a glance in real time.
Via the integrated interface, the data can be sent to a PC or laptop for further processing.

### Use with external load cells

The SAUTER FS premium force gauge is compatible with all SAUTER strain gauge measuring cells, see *Measuring cells*. Up to 4 external measuring cells can be connected simultaneously.



Can be mounted on all SAUTER test stands, illustration shows optional accessories, as well as the SAUTER TVL-XS manual test stand



Simultaneous measurement on up to four channels. External sensors with sensor data memory, optionally available, see *Measuring Cells*



Compact force gauge with internal measuring cell (up to max. 500 N) for fast and mobile force measurements. Illustration shows optional accessories, SAUTER AE 500 screw tension clamp
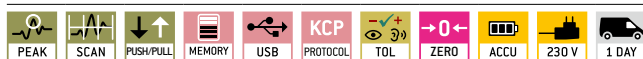
## Digital Force Gauge SAUTER FS

### Features

- 3,5" touchscreen
- Standard version with 2 or 4 measuring channels for external force sensors (subsequently expandable from 2 to 4)
- An internal load cell is possible (is deactivated if an external load cell is connected)
- Suitable for 4-wire and 6-wire sensors with strain gauges
- Two-point adjustment with weights or numerical adjustment possible
- The specific data of an external sensor are stored directly in the connector
- USB interface for data transfer and power supply as standard
- Internal device memory (16 GB)
- Adjustable SI units:
  kg, N, kN, mN, MN, Nm, kNm, mNm
- Tolerance function
- Track function for continuous measurement display
- Peak value measurement
- Mountable on all SAUTER test stands

### Technical data

- High resolution: up to 10000 points per measurement channel
- Storage of measured values as well as their transmission to the interface with up to 1000 Hz per measuring channel
- Measurement accuracy:
  - with internal load cell: 0.1% of [Max]
  - with external load cell: among other things from the load cells used
- Overall dimensions W×D×H 71×31×180 mm
- Overload protection: 150% of [Max] with internal measuring cell
- Thread on load receptor: M6 (outer)
- Rechargeable battery pack integrated, as standard, operating time up to 8 h without backlight, charging time approx. 8 h
- External mains adapter, for connection to the USB-C connector, standard
- Net weight approx. 0,40 kg

### Accessories

- For subsequent expansion to 4 measuring channels: A/D converter module, only for FS 2 and FS 2-xxx models, SAUTER FS 34
- Stainless steel handle bar with rubber grip, SAUTER AFK 02
- Transport case, e.g. for accessories, SAUTER FS TKZ
- Standard attachments, SAUTER AC 43
- Hook for tensile and fracture testing up to 500 N, thread: M6, 1 item, SAUTER AC 49
- Plug-In for data transfer of measuring data from the measuring instrument and transfer to a PC, e.g. in Microsoft Excel®, SAUTER AFI-2.0, see internet
- Suitable load cells see page 98 et seq.
- Holders for object fixation and other accessories, please see internet or see page 39 et seq.

Optional calibration, see page 115
Calibration is recommended for each measuring cell!
Assembly and adjustment of measuring cell, connector and sensors must be ordered separateley, see table below, SAUTER FS 401 - FS 408

Order example SAUTER FS force gauge with 2 load cells:

| | | |
|---|---|---|
| 1× | FS 2-500 | 2-channel force gauge with integrated load cell for tension/compression force measurements |
| 1× | 963-361 | DAkkS calibration certificate tension/compression force up to 500 N |
| 1× | CO 100-Y1 | Miniature compression load cell up to 1 kN |
| 1× | FS 403 | Two-point adjustment up to 2 kN, incl. plug and memory for SAUTER FS |
| 1× | 963-262 | DAkkS calibration certificate compression force up to 2 kN |
| 1× | CS 500-3P2 | Stainless steel "S" load cell for tension/compression force up to 5 kN |
| 1× | FS 404 | Two-point adjustment up to 5 kN, incl. connector and memory for SAUTER FS |
| 1× | 963-363 | DAkkS calibration certificate tension/compression force up to 5 kN |

STANDARD

PEAK | SCAN | PUSH/PULL | MEMORY | USB | KCP PROTOCOL | TOL | ZERO | ACCU | 230 V | 1 DAY

OPTION

SOFTWARE | DAkkS +4 DAYS | ISO +4 DAYS

| Model | Measuring range internal load cell | Readability internal load cell | Internal load cell | Number of measuring channels |
|---|---|---|---|---|
| SAUTER | [Max] N | [d] N | | |
| FS 2 | – | – | – | 2 |
| FS 2-20 | 20 | 0,004 | • | 2 |
| FS 2-50 | 50 | 0,01 | • | 2 |
| FS 2-100 | 100 | 0,02 | • | 2 |
| FS 2-200 | 200 | 0,04 | • | 2 |
| FS 2-500 | 500 | 0,1 | • | 2 |
| FS 4 | – | – | – | 4 |
| FS 4-20 | 20 | 0,004 | • | 4 |
| FS 4-50 | 50 | 0,01 | • | 4 |
| FS 4-100 | 100 | 0,02 | • | 4 |
| FS 4-200 | 200 | 0,04 | • | 4 |
| FS 4-500 | 500 | 0,1 | • | 4 |

**Service required for use with external sensors:**

| Model | Adjustment of optional, external sensors | Measuring range [Max] |
|---|---|---|
| SAUTER | | kN |
| FS 401 | Numeric* | – |
| FS 402 | | 0,5 |
| FS 403 | | 2 |
| FS 404 | | 5 |
| FS 405 | Two-point | 20 |
| FS 406 | | 50 |
| FS 407 | | 120 |
| FS 408 | | 250 |

*only for sensors > 250 kN

**Adjusting program (CAL)**
For quick setting of the instrument's accuracy. External adjusting weight required

**Calibration block**
Standard for adjusting or correcting the measuring device

**Peak hold function**
Capturing a peak value within a measuring process

**Scan mode**
Continuous capture and display of measurements

**Push and Pull**
The measuring device can capture tension and compression forces

**Length measurement**
Captures the geometric dimensions of a test object or the movement during a test process

**Focus function**
Increases the measuring accuracy of a device within a defined measuring range

**Internal memory**
To save measurements in the device memory

**Data interface RS-232**
Bidirectional, for connection of printer and PC

**Profibus**
For transmitting data, e.g. between scales, measuring cells, controllers and peripheral devices over long distances. Suitable for safe, fast, fault-tolerant data transmission. Less susceptible to magnetic interference

**Profinet**
Enables efficient data exchange between decentralised peripheral devices (balances, measuring cells, measuring instruments etc.) and a control unit (controller). Especially advantageous when exchanging complex measured values, device, diagnostic and process information. Savings potential through shorter commissioning times and device integration possible

**Data interface USB**
To connect the measuring instrument to a printer, PC or other peripheral devices

**Bluetooth\* data interface**
To transfer data from the balance/measuring instrument to a printer, PC or other peripherals

**WIFI data interface**
To transfer data from the balance/measuring instrument to a printer, PC or other peripherals

**Data interface infrared**
To transfer data from the measuring instrument to a printer, PC or other peripheral devices

**Control outputs (optocoupler, digital I/O)**
To connect relays, signal lamps, valves, etc.

**Analogue interface**
To connect a suitable peripheral device for analogue processing of the measurements

**Analogue output**
For output of an electrical signal depending on the load (e.g. voltage 0 V – 10 V or current 4 mA – 20 mA)

**Statistics**
Using the saved values, the device calculates statistical data, such as average value, standard deviation etc.

**PC Software**
To transfer the measurement data from the device to a PC

**Printer**
A printer can be connected to the device to print out the measurement data

**Network interface**
For connecting the scale/measuring instrument to an Ethernet network

**KERN Communication Protocol (KCP)**
It is a standardized interface command set for KERN balances and other instruments, which allows retrieving and controlling all relevant parameters and functions of the device. KERN devices featuring KCP are thus easily integrated with computers, industrial controllers and other digital systems

**GLP/ISO record keeping**
of measurement data with date, time and serial number. Only with SAUTER printers

**Measuring units**
Weighing units can be switched to e.g. non-metric. Please refer to website for more details

**Measuring with tolerance range (limit-setting function)**
Upper and lower limiting can be programmed individually. The process is supported by an audible or visual signal, see the relevant model

**Protection against dust and water splashes IPxx**
The type of protection is shown in the pictogram cf. DIN EN 60529:2000-09, IEC 60529:1989 +A1:1999+A2:2013

**ZERO**
Resets the display to "0"

**Battery operation**
Ready for battery operation. The battery type is specified for each device

**Rechargeable battery pack**
Rechargeable set

**Plug-in power supply**
230V/50Hz in standard version for EU. On request GB, AUS or US version available

**Integrated power supply unit**
Integrated, 230V/50Hz in EU. More standards e.g. GB, AUS or US on request

**Motorised drive**
The mechanical movement is carried out by a electric motor

**Motorised drive**
The mechanical movement is carried out by a synchronous motor (stepper)

**Fast-Move**
The total length of travel can be covered by a single lever movement

**Conformity assessment**
Models with type approval for construction of verifiable systems

**DAkkS calibration possible**
The time required for DAkkS calibration is shown in days in the pictogram

**Factory calibration (ISO)**
The time required for factory calibration is specified in the pictogram

**Package shipment**
The time required for internal shipping preparations is shown in days in the pictogram

**Pallet shipment**
The time required for internal shipping preparations is shown in days in the pictogram

SAUTER GmbH · c/o KERN & SOHN GmbH · Ziegelei 1 · 72336 Balingen · Germany · Tel. +49 7433 9933-0 · info@sauter.eu · www.sauter.eu

180 YEARS since 1844 KERN & SOHN