Digital Force Gauge SAUTER FL-M



PREMIUM
★★★

**1**

# Powerful digital force gauge with graphic assisted display for tensile and compressive force measurements with external load cell

## Features

- Premium force gauge with external measuring cell, tension loops included with delivery
- Turnable display with backlight
- Peak-Hold function to capture the peak value or Track function for continuous display of measurement
- Metal housing for durable use in harsh environmental conditions
- Can be mounted on all SAUTER test stands starting 1 kN
- Capacity display: A bar lights up to show how much of the measuring range is still available
- Measuring with tolerance range (limit-setting function): Upper and lower limit adjustable, in pull and push direction. The process is supported by a visual signal
- Internal memory for up to 500 measurement values
- Continuous analogue output: Linear voltage signal in dependence to the load (-2 to +2V)
- USB data interface, as standard
- Selectable measuring units: N, kN, kgf, ozf, lbf
- **1** Delivered in a robust carrying case

## Technical data

- Transfer rate to PC: approx. 25 measured values per second
- Measuring precision: 0,2 % of [Max]
- Overload protection: 120 % of [Max]
- Overall dimensions W×D×H 175×75×30 mm
- Dimensions load cell W×D×H 76,2×51×19 mm (FL 2K), 76,2×51×28 mm (FL 5K, 10K, 20K)
- Thread: M12
- Rechargeable battery pack integrated, as standard, operating time up to 10 h without backlight, charging time approx. 8 h
- Net weight approx. 1,4 kg

## Accessories

- 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
- Data transfer software with graphic display of the measurement process, force-time, SAUTER AFH FAST
- USB cable, included with the delivery, can be ordered separately, USB/PC connection cable (USB-A/USB mini), SAUTER FL-A01
- RS-232 adapter cable, SAUTER FL-A04
- Holders for object fixation and other accessories, please see internet

STANDARD

| PEAK | PUSH/PULL | MEMORY | RS 232 | USB | ANALOG | TOL | ZERO | ACCU | 230 V | 1 DAY | UNIT |

OPTION

| SOFTWARE | DAkkS +4 DAYS | ISO +4 DAYS |

| Model | Measuring range | Readability | Option **DAkkS Calibration Certificate** (≤ 5 kN)/**Factory calibration certificate** (> 5 kN) | | |
|---|---|---|---|---|---|
| | | | Tensile force | Compressive force | Tensile/Compressive force |
| | [Max] | [d] | | | |
| SAUTER | N | N | KERN | KERN | KERN |
| **FL 2K** | 2500 | 1 | 963-162 | 963-262 | 963-362 |
| **FL 5K** | 5000 | 2 | 963-163 | 963-263 | 963-363 |
| **FL 10K** | 10000 | 5 | 961-164 | 961-264 | 961-364 |
| **FL 20K** | 20000 | 10 | 961-164 | 961-264 | 961-364 |

Further calibration options on request

**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

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