

Digital Force Gauge SAUTER FL-M



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

Features	Technical data	Accessories
<ul style="list-style-type: none"> • 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 • Delivered in a robust carrying case 	<ul style="list-style-type: none"> • Transfer rate to PC: approx. 25 measured values per second • Measuring precision: 0,2 % of [Max] • Overload protection: 120 % of [Max] • Overall dimensions WxDxH 175x75x30 mm • Dimensions load cell WxDxH 76,2x51x19 mm (FL 2K), 76,2x51x28 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 	<ul style="list-style-type: none"> • 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	OPTION
PEAK PUSH/PULL MEMORY RS 232 USB ANALOG TOL ZERO ACCU 230 V 1 DAY UNIT	SOFTWARE DAKKS ISO

Model	Measuring range	Readability	Option DAKKS Calibration Certificate (≤ 5 kN)/Factory calibration certificate (> 5 kN)		
			Tensile force	Compressive force	Tensile/Compressive force
SAUTER	[Max] N	[d] 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

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

CAL BLOCK
Calibration block
 Standard for adjusting or correcting the measuring device

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

SCAN
Scan mode
 Continuous capture and display of measurements

PUSH/PULL
Push and Pull
 The measuring device can capture tension and compression forces

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

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

MEMORY
Internal memory
 To save measurements in the device memory

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

PROFIBUS
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
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

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

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

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

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

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

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

DUAL
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)

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

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

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

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

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

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

TOL
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

IP
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
ZERO
 Resets the display to "0"

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

ACCU
Rechargeable battery pack
 Rechargeable set

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

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

ELECTRO
Motorised drive
 The mechanical movement is carried out by an electric motor

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

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

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

DAkkS +3 DAYS
DAkkS calibration possible
 The time required for DAkkS calibration is shown in days in the pictogram

ISO +4 DAYS
Factory calibration (ISO)
 The time required for factory calibration is specified in the pictogram

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

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

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