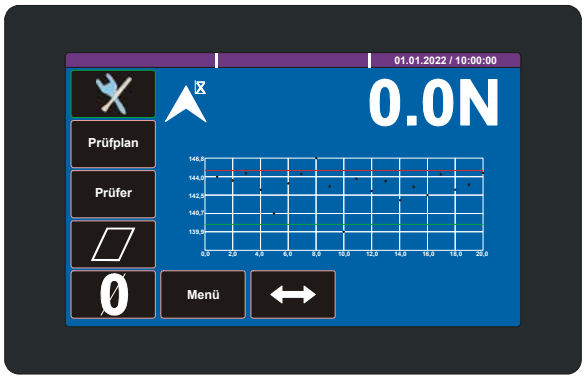
Force Measuring System Model FMS

for precise tensile & compressive force measurements

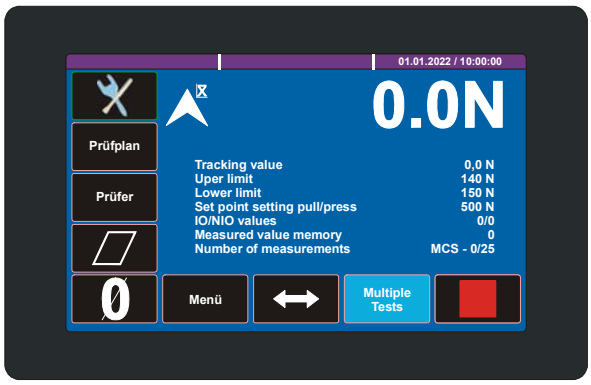
MI&T GmbH Berlin
Mess- & Prüftechnik
Measuring Instruments & Testers

General Information:

- Digital high-precision force measuring system for measurements of tensile and compressive forces.
- Force measuring system consisting of FMS Force Gauge and high-precision remote load cell with sensor interface MCS (A/D converter and RS485 interface) integrated in the connection cable of the load cell.
- High measuring accuracy, resolution and repeatability.
- Easy operation.
- Rapid internal update rate consistently captures even critical force readings
- Tracking Mode with indication of current force values.
- Minimum and maximum value memory (resettable).
- Tare compensation.
- Graphical presentation of measured values.
- Optional: Output of stored measuring series in a PDF file via USB port
- Configuration menu for general parameter settings.
- Load cells with different capacities can be used and operated alternately. After factory parameterization of the FMS interface of the respective load cell, the FMS software recognizes each load cell automatically. Thus, measurement can be started immediately after connection of the load cell through the RJ45-connector of the interface to the FMS gauge.
- Ideally suitable for calibration of MI&T test stations and testers.

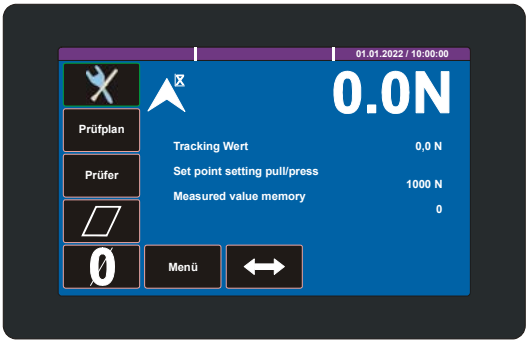


FMS with graphical presentation of measured values



FMS with optional MCS firmware

SM load cell



Measured valued display of FMS Force Gauge

Technical Specifications:

Model Designation:	**FMS**
Indication Ranges:	depending on load cell model, see e. g. SM load cells.
Resolution:	±10000 digits with MCS interface
Accuracy error:	≤ ±0.1% F.S. ± LSD.
Load Cells:	see specifications of SM load cells

MCS Sensor Interface:

Interface:	RS485
Power Supply:	from RS485, 3 V, ≤ 20 mA
Measured Values:	±3 mV/V
Resolution:	± 10000 digits
Zero Point:	0 Digits
Output Format:	16 Bit Signed Int.
Internal update rate:	10000 Hz
Cable lengths:	sensor cable 1m RS485 cable 0.5 m (max. 2 m) with RJ45 connector
Dimensions:	94x50x25 mm (LxWxH), weight: 280 g.
Miscellaneous:	Temperature drift: 4 Bit/K Nominal temperature range: +10…+40 ºC

FMS Force gauge with configuration & evaluation software:

Control unit with 7" touch screen display (capacitive); operation of displayed operating elements for measuring system by touch screen; Serial RS232 und USB port:
Dimensions housing: ca. 195x120x40 mm; Weight ca. 900 g;
Supply voltage: 12 V (by external power adapter);
Features: Indication of current measuring value (Tracking Mode), Peak Point mode; graphical presentation of measured values of active measuring series, resettable maximum value (peak value) memory, tare compensation, measured value memory; measuring series management; Test plans can be created for fixed test parameter settings; Users can be created and saved (with password); Password protection for test parameter settings can be activated;
Setup menu for internal parameter selection, single and listing output via serial port, output of test report with stored measuring series as PDF file via USB interface; Real time clock for data output with date and time;
operating languages: German, English, French, Spanish (selectable).

Optional Accessories:

- Firmware upgrade MCS for machine capability studies
- CMS configuration and evaluation software for Windows PC's
- Hold racks for assembly of load cells on MI&T testers

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Load Cells Model SM

High-precision Force Transducers for tension & compression

MI&T GmbH Berlin
Mess- & Prüftechnik
Measuring Instruments & Testers

General Information:

- The load cells of the model series SM can be used in all fields of application of tensile and compressive force measurements.
- Separate load cells, to be connected by a detachable cable to the force gauge or force measuring system.
- In combination with a FMS/CMS force measuring system an efficient measuring system is provided for precise force measurements.
- The base body of the load cells is characterized by high stability and stiffness.
- If loaded the DMS load cells of S type generate a rated output signal, which is exact proportional to the applied load.
- Under load the resulting deflection of the base body is measured by strain gages, which are mounted on the S beam base body. The force measuring gauge/system evaluates whose rated output.
- The precise manufactured internal construction ensures that the applied forces are concentrated into defined areas whereas inaccuracies caused by side forces or bend moments are minimized.
- To obtain measurements with highest possible accuracy it is necessary to ensure that the load path must be through the load axis of the load cell. Loads not being perfectly aligned should be avoided.
- At top and bottom of the load cells there is each one threaded hole to mount in applications.
- During the use and assembly of load cells a suitable overload protection must be installed, especially in case of load cells with small capacities.

Load cell SM 1000 N

Load cell SM 5000 N

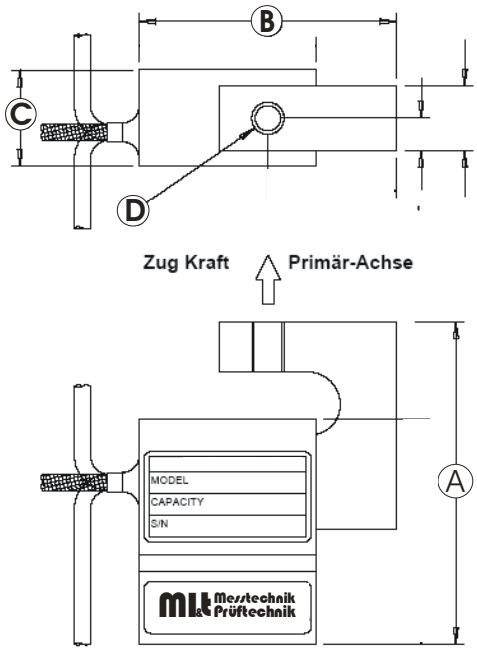
SM with Force Measuring System FMS:

Type	Indication Range [N]	Resolution* [N]
50	0- 50	0.005
100	0- 100	0.01
200	0- 200	0.01
250	0- 250	0.01
500	0- 500	0.05
1000	0- 1000	0.1
2000	0- 2000	0.1
5000	0- 5000	0,5
10000	0- 10000	1
25 kN	0- 25000	3

Technical Specifications:

Model Designation:	**SM**
Capacity [N]:	accord. to below-mentioned table
Rated Output:	2-3 mV/V
Input Resistance:	350 ± 3,5 Ω
Output Resistance:	350 ± 3,5 Ω
Excitation Voltage:	15 V DC max.
Deflection:	0.076-0.127 mm (according to type)
Weight:	ca. 190-600 g (depend. on model)
Nonlinearity:	±0.03-0.06% FS
Zero Balance:	±1% RO
Insulation Resistance:	5 GΩ (Bridge/Housing)
Safe Overload:	±150% of capacity
Breaking Load:	±500% of capacity

Capacities and dimensions:



Model	Capacity [N]	A [mm]	B [mm]	C [mm]	D
SM 50 N	50	64	51	19	M6
SM 100 N	100	64	51	19	M6
SM 200 N	200	64	51	19	M6
SMT 250 N	250	64	59	17	M6
SM 500 N	500	64	51	19	M6
SM 1000 N	1000	64	51	19	M6
SM 2000 N	2000	76	51	19	M12
SM 5000 N	5000	76	51	19	M12
SSM 10000 N	10000	76	51	25	M12
SSM 25000 N	25000	101	76	45	M16

Further load cell models with other force ranges available on request