Technical data	MFA 2
Accuracy class EN ISO 9513	0.2
Measuring principle	Strain gauge full bridge
Measuring path for tensile test MFA 2	2 mm (3 mm)
Measuring path for pressure test	to be agreed
Indication error *	0.2 %
Indication error *	0.6 µm
Error in initial measuring instrument length	< 50 µm
Sensitivity	2 mV/V
Rated resistance of bridge	350 Ohm
Max. voltage input	10 V
Actuation force	10 - 60 cN
Standard initial instrument measuring length	30 (25)** and 50 mm
Attachments for initial instrument measuring length	30 to 300 mm
Standard temperature range	+1 °C to + 60 °C
Type for temperature chamber	+1 °C to + 200 °C
Weight of single-side MFA	190 g
Weight of double-side MFA	260 g

* The greater value is permissible
** By turning the blades through 180 degrees

Adjustable at following cross sections of specimen***	
circular	0 to 30 mm
flat	0 to 30 x 30 mm
circular with special clamping device	0 to 60 mm
flat with special clamping device	0 to 60 mm thickness and 60 mm width
Cable length	5 m

***Others on request

MFA 2

Hand clamped extensometer

Mess- & Feinwerktechnik GmbH

Precision testing of linear strain

Review 2018.03.

Area of application

The MFA 2 is suitable for virtually all tests above an initial gauge length (L_e) of 25 mm. Its measuring accuracy exceeds all requirements set down by standard EN ISO 9513. Its design, which has been tried and tested over many years of use, guarantees a high level of reliability and a long service life, even under difficult operating conditions. The MFA is particularly suitable for determining the module of elasticity, proof stress and ultimate strain. The MFA is fast, straightforward and easy to use, and therefore enables large numbers of tests to be carried out.

Design and function

A lever mounted in ball bearings, which have been tensioned to prevent play, and housed in a casing of a high-strength aluminium alloy is used to take up the clamping forces. The path of the test elongation is transferred to the measuring spring through this lever. If the measuring distance (path) is exceeded or the test piece breaks prematurely when the MFA is in use, the measuring spring is fully protected by stops. The measuring spring is applied with a temperature-compensated strain gauge full bridge, which is calibrated to 2 mV/V for the nominal measuring path.
The L_e of the measuring instrument can be equipped for all required lengths from 25 to 300 mm.

The extension arms can be changed quickly and without tools. The basic equipment comprises the extension arms for L_e 30 (25*) mm and L_e 50 mm. The clamping device enables a quick and easy clamping.
The upper moving measuring arm is held in its zero position by a stop, which means that it does not have to be adjusted or released. The pressing force and the opening width of the MFA are infinitely variable. Rectangular knife edges, specially designed for thin circular test pieces and the averaging double - sided MFA version, can be supplied.

Operation

To attach the MFA 2, the clamping device has to be opened with the thumb and forefinger. Care must be taken at the positioning the device on the specimen, that the bottom knife edge contacts on specimen at first. The clamping device should be positioned on the MFA casing so that the backing rolls are symmetrically opposite the knife edges. For gauge lengths bigger than 60 mm, the clamping device has to be screwed directly onto the extension arm. The extension arms can be changed without danger of twisting by releasing the coupling ring. On the double-sided MFA, the lever should be set to "Zero" before clamping and then to "Measure" to facilitate clamping without initial tension.

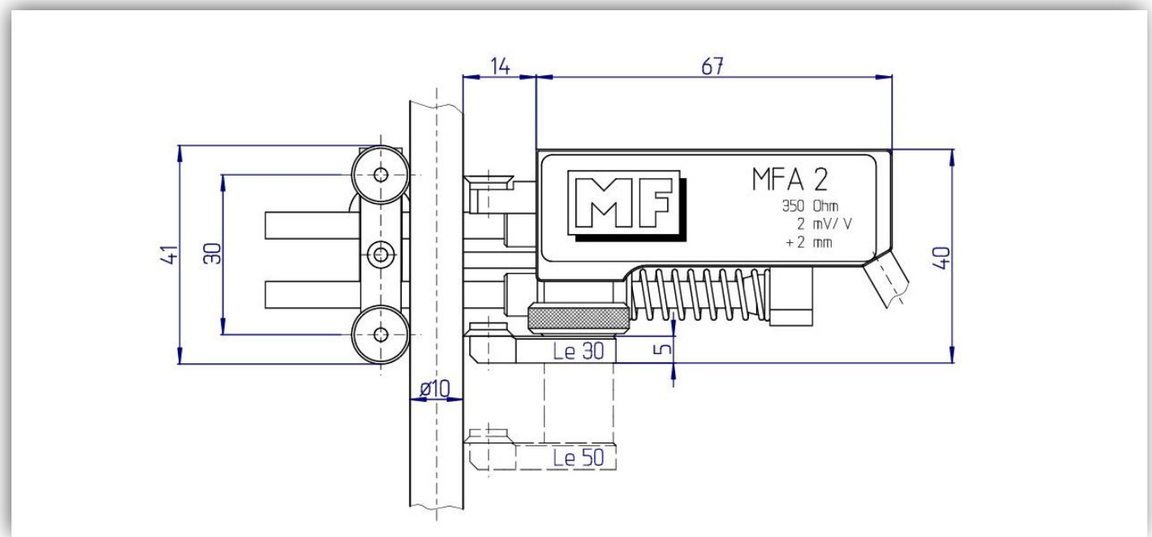
Delivery scope

Single-sided extensomter	
1	MFA 2 with 5 m cable
1	Extension arm, L_e 30 (25*) mm
1	Extension arm, L_e 50 mm
1	Clamping device with cylindrical backing rollers
2	Spare fixing screws, M3 T10
1	TORX screwdriver, T10
1	Test Specification Sheet
1	Storage case

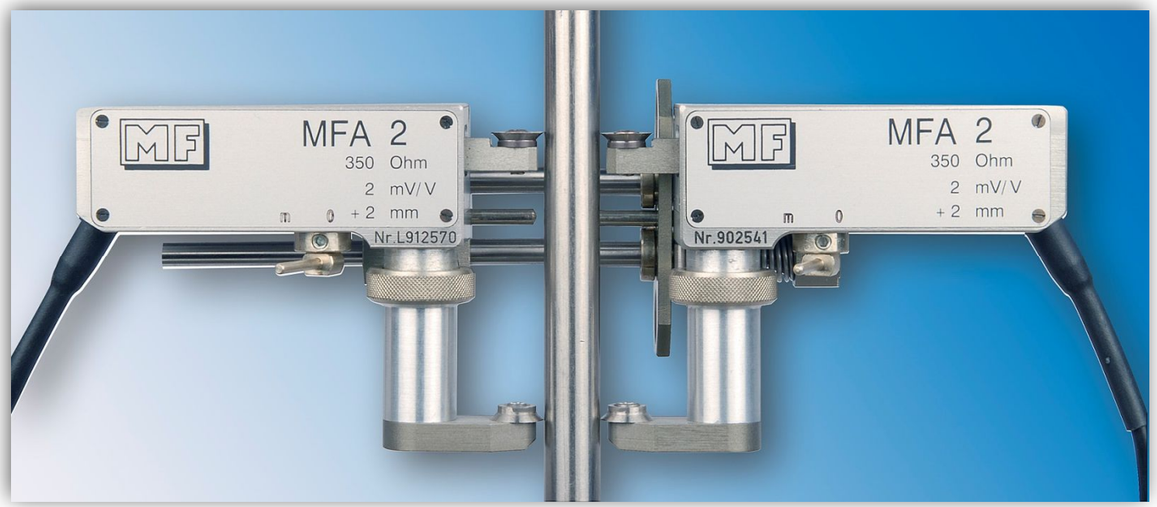
Spare parts and accessories

Single-sided extensometer
Extension arms L_e 25 mm to 300 mm (cannot be adjusted)
Adapter for test pieces of up to 60 mm x 60 mm and 60 mm diameter
Knife edge fixing screw, M3 T10
Circular knife edge, 9.5 mm
Rectangular knife edge, 9.5 x 10 mm
Clamping device

* A gauge length of 25 mm can be set by turning the knife edges on the 30 mm extension arm and on the MFA housing.



Picture 1: MFA 2 - Dimensions



Picture 2: MFA 2 – double-sided extensometer

Delivery scope

Double-sided extensometer	
1	Double-sided MFA 2 with 5 m cable
2	Extension arm, L_e 30 (25*) mm
2	Extension arm, L_e 50 mm
1	Double clamping device
3	Spare fixing screws, M3 T10
1	TORX screwdriver, T10
1	Test Specification Sheet
1	Storage case

Spare parts and accessory

Double–sided extensometer
Pair of extension arms for double-sided MFA 2, L_e 25 mm - 300 mm (cannot be adjusted)
Pair of adapters for test pieces of up to 60 mm width and 60 mm diameter
Holder with cylindrical backing rolls for clamping one MFA only
Knife edge fixing screw, M3 T10
Circular knife edge, 9.5 mm diameter
Rectangular knife edge, 9.5 x 10 mm
Clamping device

* A gauge length of 25 mm can be set by turning the knife edges on the 30 mm extension arm and on the MFA housing.

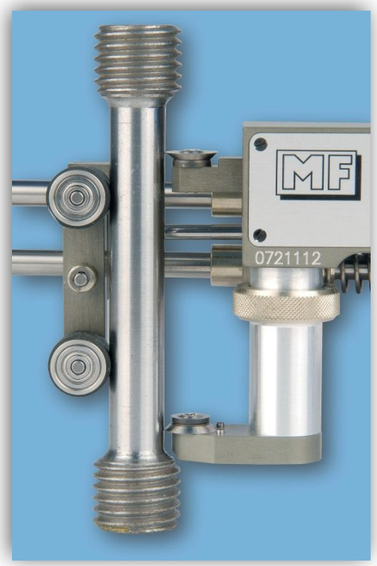
Equalisation

1. Set levers to “m “on double-sided MFA 2.
2. Bring unclamped MFA 2 in measuring position and adjust the amplifier to “Zero”.
3. Push movable knife edge gentle towards to its upper stop.
4. Calibrate measuring amplifier in this position to the value which is documented in the test specification sheet
5. To be sure that the calibration has been carried out correctly, repeat steps 2 to 5 and readjust if necessary.

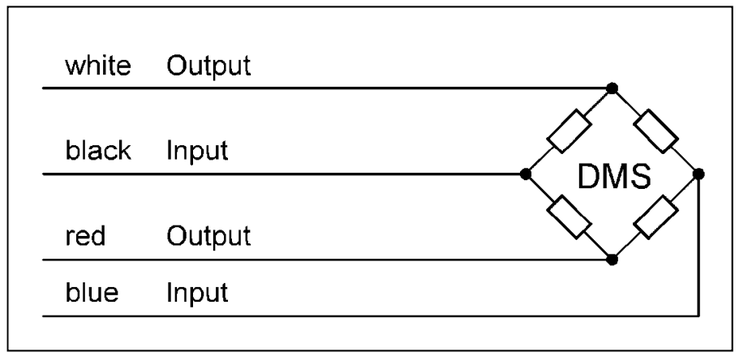
With that the equalisation of the MFA 2 is brought to its end.

Recommendation

The following equalisation instruments can be used for high calibration requirements:
KMF 3 for sensitivity equalisation and KMF 100 for sensitivity equalisation also for checking the linearity.



Picture: MFA 2 - with L_e 50 mm



Picture 4: Wiring