

Technical data	MFX 200 - B	
Accuracy class EN ISO 9513	0.5	
Indication error (rel.)*	0.5 %	
Indication error*	1.5 µm	
Error in gauge length (L _e)	± 0.5 %	
Gauge length (L _e)	10... 200 mm minus travel	
Activating force	max. 10 cN	
Clamping force	50 - 100 cN	
Operating temperature range	0 - 50 °C	
Weight	approx. 24 kg	

Measuring system	Standard	Optional
Name	LIDA 48	LIDA 47
Interface	1 Vpp	RS422/TTL
Measurement principle	Optic-incremental	
Travel	200 mm minus L _e	
Signal period	20 µm	0.2 µm
Resolution max.	0.01 µm	0.05 µm
Voltage supply	DC 5 V ±0.25 V	
Current consumption	<100 mA	<255 mA (without load)
Integrated interpolation	=====	100-fold
Sampling rate	=====	25kHz
Edge distance	=====	0.080 µs
Movement speed	≤480 m/min	≤30 m/min
Input frequency of the subsequent electronics	=====	8 MHz
Edge separation of the subsequent electronics	=====	≥0.05 µs

* The larger of the values is admissible

Sample dimensions

Round samples	up to Ø 80 mm
Square samples	up to 70 x 70 mm
Rectangular samples (width / thickness)	360 / 50 mm
Other dimensions are available on request	

Device options

1. Measuring arm with tilting mechanism
2. Adjustable clamping force 20... 100cN
3. Measuring head extended +45 mm or +90 mm
4. Measuring head for climatic chamber -50° ... + 350° C / Arm length 400 mm and 490 mm
5. Measuring arm for bending tests / Arm length 400 mm and 490 mm

MFX 200-B

Operating instructions

Feeler arm extensometer - automated -



M e s s - & F e i n w e r k t e c h n i k G m b H



P r e c i s i o n t e s t i n g o f l i n e a r s t r a i n

Controlling

Automatic Control:

The MFX is controlled via D-Sub connector X1 (15pin). The analogous potential of gauge length and position of the measuring arms must be applied on the connector X1-10 and X1-13. With a pulse to X1-1/X1-2 (approx. 100 ms) the upper and lower measuring heads move to their positions depending on the analogous tensions set to connector X1-1/X1-2 before. The measuring arms close and pins X1-5/X1-6 indicate the closure of internal contact K1-1 (status). Now the MFX is ready for the measurement process. With a pulse to X1-1/X1-3 (approx. 100 ms) the measuring arms open immediately and the measuring heads move to their former positions. The open contact k1-1 indicates the end of the test via X1-5/X1-6.

Manual control:

The MFX can also be controlled by a manual control board (see wiring diagram).

The adjustment of the gauge length and position over the button S3 is just possible when the measuring arms are open.

Function: When pushing the button S3 the measuring heads move to their position depending on the analogue tensions set with the potentiometer R1/R2 before. As long as the button S3 is closed adjustments of the gauge length (R1) and position (R2) can be made by operating R1/R2. After gauge length and position are set the button S3 has to be released and the button S1 has to be pushed to start the measuring process.

Pushing the button S2 will end the measuring process, the measuring arms open immediately and the measuring heads take their initial position.

The MFX is now ready for the next test. As long as gauge length and position do not change only the button S1 (start test) respectively S2 (end test) must be activated.

Counter setup/initial gauge length setup

To set up the customers counter you can reach over a computer controlled moving on the $L_e < 9.5$ mm with activate X1/4. The upper and lower measuring heads move towards their mechanical stops in front of the measuring arms (between their knife edges). In this position of the measuring heads the counter display should indicate 9.5 mm. This adjustment can be made by means of the counters

preset function. After this adjustment the counter display indicates the exact knife edge distance (initial gauge length) for every position of the measuring heads. The counter setup is necessary once after switching on the system but not after each test. Alternative you can move the measuring heads together by hand.

The connectors X13/LAN as well as X14/USB are in preparation. They are currently not in function and don't have to be connected.

Measuring signal

Two different inbuilt non-contact type of measuring systems from company Heidenhain are available. LIDA 48-

1 Vpp) and LIDA 47 (RS422/TTL). For more details of the measuring system see at the back of the page.

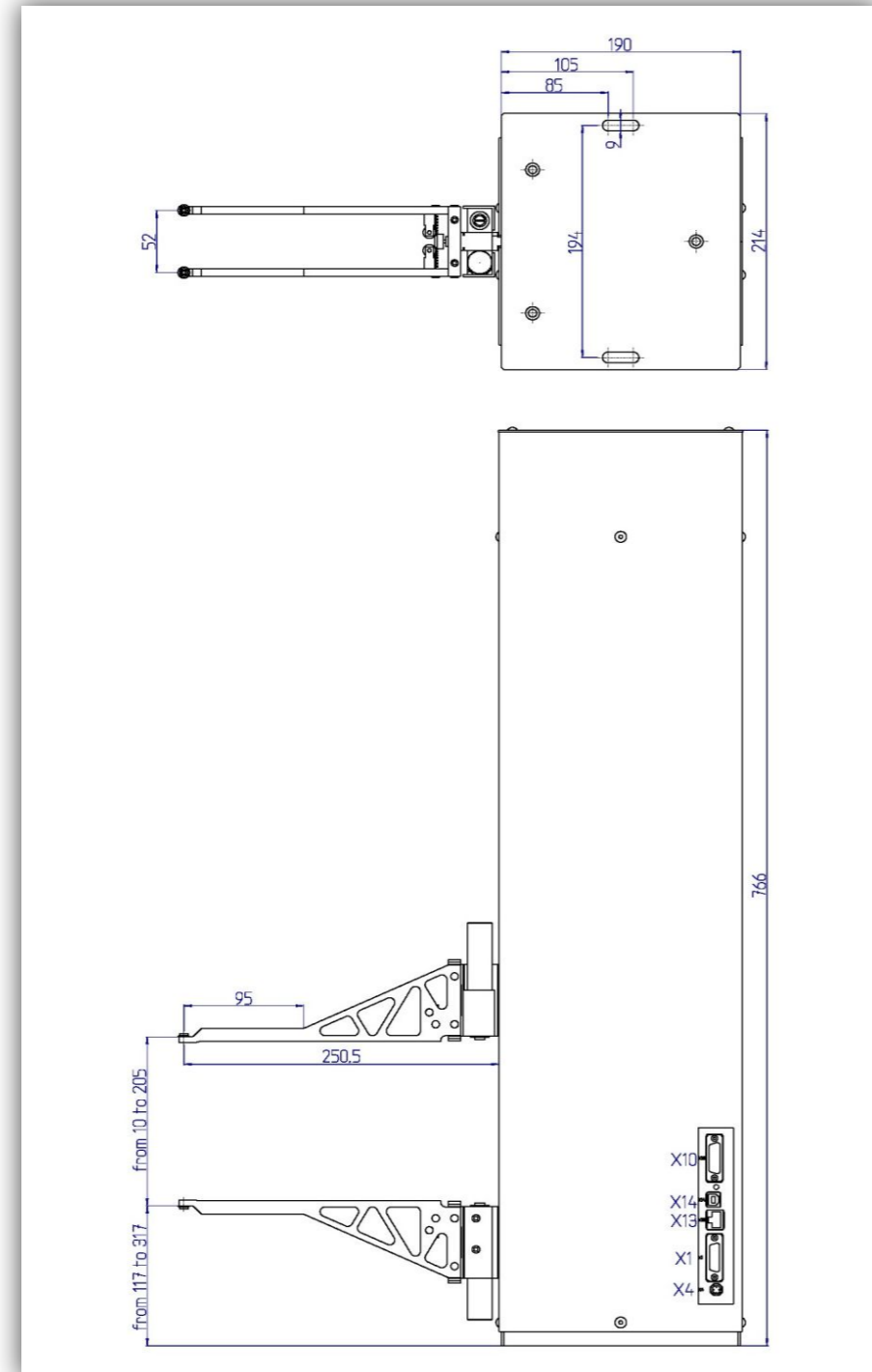
Installation

When the MFX is set up and fixed to the testing machine it is absolutely necessary to straighten the exact position of the device by means of a spirit level. This is essential for the balance weight to hang absolutely free.

Long holes in the fixing plate allow corrections even later on.

Fastening measuring heads

The measuring heads have to be mounted to the carriages of the MFX by means of the small guiding pins



Picture 1: MFX 200-B - Dimensions

which also prevent wrong mounting. Upper and lower measuring heads are interchangeable. The measuring heads finally have to be fixed with two hexagon screws.

Alignment of the measuring arms

The alignment has to be done in order to ensure the same knife edge distance (L_e) on both sides of the measuring arms. Therefore in the first step the measuring arms have to be moved to the position "open".

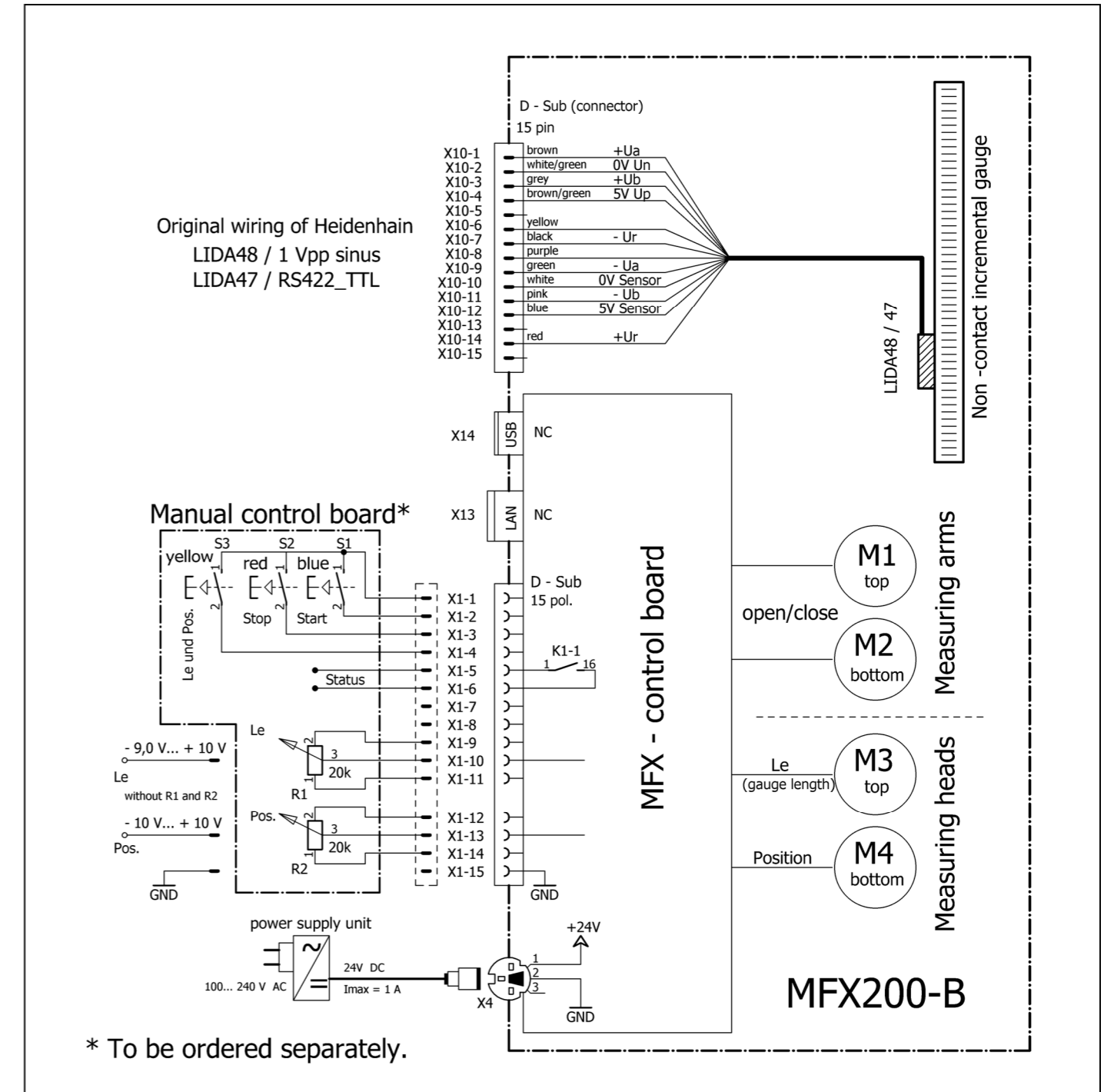
Afterwards the two hexagon fastening screws of the measuring heads have to be let off slightly ($1/4$ of a turn).

After this the measuring arms have to be aligned in front of the knife edges, so that there is no gap on both sides of the arms when they are pushed gently together by hand. In this position the hexagon screws have to be tightened. This alignment has to be checked again and if necessary it has to be corrected.

Maintenance

The MFX extensometer is usually maintenance-free. However in dirty environments it may be necessary to clean the columns and ball bearings

inside the housing. Therefore the housing has to be removed. Columns and bearings have to be cleaned with a cloth soaked in alcohol or acetone. Care has to be taken not to wash any solvent into the bearings. The whole guiding system has to be kept dry and free of grease.



Picture 2: MFX 200-B - Connection