

M920 troubleshooting

Service manual



MEATEST

Content

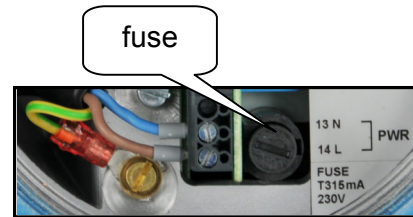
- 1 M920 troubleshooting.....3
 - 1.1 Display is not working.....3
 - 1.2 Unstable reading / unstable zero3
 - 1.3 Error 01 – Current error.....3
 - 1.4 Error 45 – Excitation error.....3
 - 1.5 Error 46 – Empty pipe3
 - 1.6 Sensor testing4
 - 1.7 Sensor installation5
 - Sensor must always remain full.....5
 - Inlet and outlet.....5
 - Mounting position.....5
 - Control valve5
 - Pump5
 - Vibration5
 - Overheating6
 - 1.8 Sensor earthing.....6

1 M920 troubleshooting

1.1 Display is not working

Disconnect the power supply.

- Check the fuse (it is located under the back cover) and replace it with a new fuse of the same rating if necessary.
- Check the power supply cable.
- Check the power supply voltage (value, frequency and stability).



1.2 Unstable reading / unstable zero / Error 04 – ADC Overload

- Check earthing of the sensor. See chapter **Sensor earthing**.
- Check measuring electrodes in the sensor. Electrodes must be clean.
- Check electromagnetic disturbance. The reason can be source of electromagnetic disturbance near the flowmeter (pumps, transducers, DC/DC or AC/DC convertors).
- Check connection cables between sensor and transmitter (remote version only).
- Check the sensor. See chapter **Sensor testing**
- Check the transmitter using the internal flow simulator.
- Pipe must be completely full with conductive liquid. Liquid must be without bubbles. See chapter **Sensor installation**.
- Flowmeters with rubber liner can display unstable zero after installation. It is recommended to soak the liner 24 hours before the installation. Other possibility is to soak it after installation with the process liquid. However in this case the flowmeter can show small deviation for zero flowrate during the first day after installation.

1.3 Error 08 – Current open

Reason: Current loop analog output is disconnected.

- Check connection cables of current loop output.
- Connect the current output or switch the current output OFF (if it is not used). This message can be disabled in “Setup menu”.

1.4 Error 05 – Excitation short

Reason: Resistance of excitation coils is lower than 50 Ω (short circuit).

- Check connection cables between sensor and transmitter (remote version only).
- Check the sensor. See chapter **Sensor testing**
- Check the transmitter using the internal flow simulator.

1.5 Error 11 – Excitation open

Reason: Resistance of excitation coils is higher than 250 Ω (coils are disconnected).

- The same procedure as for Error 05 – Excitation short

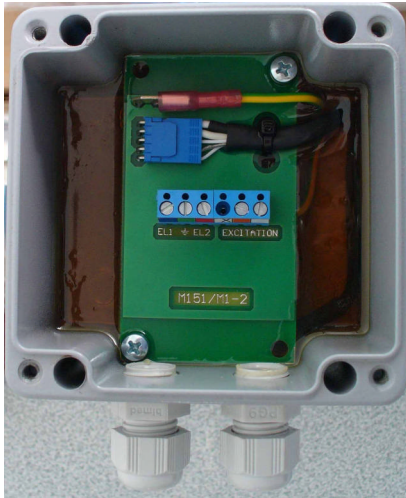
1.6 Error 10 – Empty pipe

Reason: There is no conductive liquid between electrodes (pipe without conductive liquid).

- Check measuring electrodes in the sensor. Electrodes must be clean.
- Check connection cables between sensor and transmitter (remote version only).
- Check the sensor. See chapter **Sensor testing**
- Check the transmitter using the internal flow simulator.
- Pipe must be completely full with conductive liquid. Liquid must be without bubbles. See chapter **Sensor installation**.

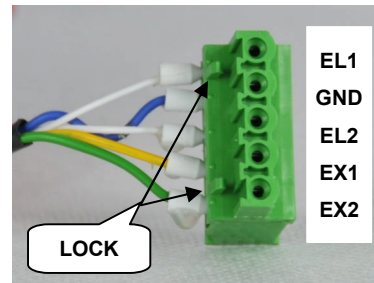
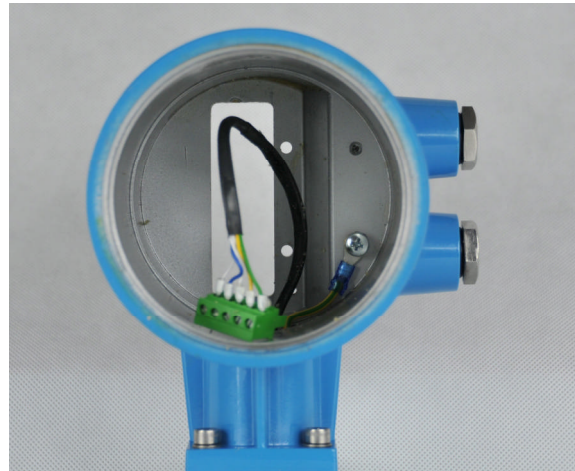
1.7 Sensor testing

Sensor terminal strip (remote version):



1	2	3	NC	5	6
EL1	GND	EL2		EXCITATION	

Sensor connector (compact version):



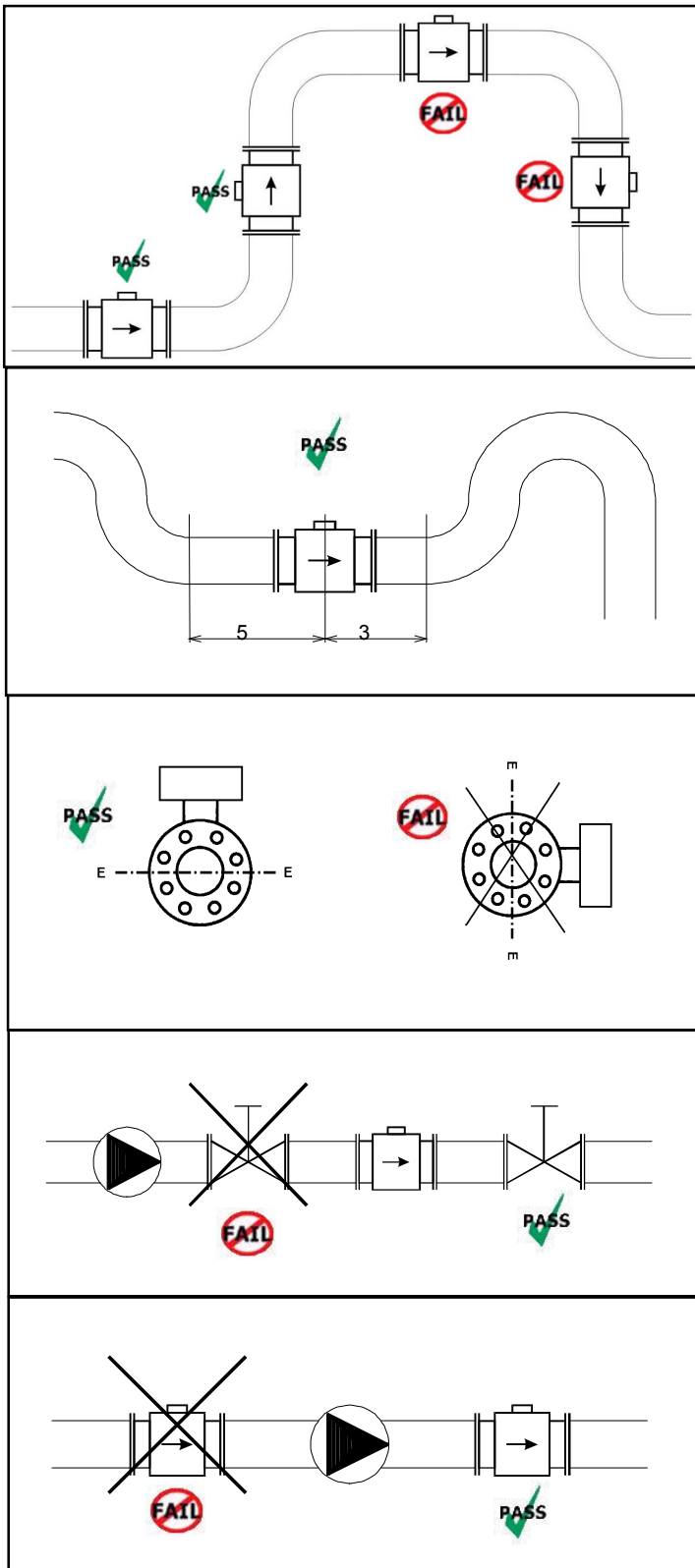
For tests 1 and 3, you need an Ohmmeter with a measurement range of 0-20 MΩ. Measurement Voltage has to be more than 5V.

Before testing, it is necessary to connect terminal strip no. 2 (GND) to the grounding screw on the neck of the sensor.

	Check resistance:	Expected Value:	Probable cause if different value:
1	- 1 x 2 (EL1 x GND) - 3 x 2 (EL2 x GND)	1 kΩ to 1 MΩ With a full sensor tube > 1 MΩ With an empty sensor tube	Lower value: Short-circuit on the electrode Higher value: If the value with a full sensor tube is higher, the electrode is not connected.
2	- 5 x 6 (EXCITATION)	50 to 140 Ω	Lower value: Short-circuit on the excitation coils Higher value: Disconnected or interrupted excitation.
3	- 5 x 2 (EX1 x GND) - 6 x 2 (EX2 x GND)	> 10 MΩ	Lower value: Coils not isolated from the sensor body

If measured values are outside mentioned limits check connectors and cables (short circuits or disconnected cables) and for compact version check the lock position of the connector.

1.8 Sensor installation



Sensor must always remain full

The sensor tube must always remain full. The best way to achieve this is to locate the sensor in a low section of pipe. When the sensor is mounted on a vertical section of pipe, the flow direction must be upwards.

Inlet and outlet

It is recommended to install the sensor in a section of straight pipe with at least 5 times the pipe diameter before sensor and 3 times after sensor.

Mounting position

The axis of measuring electrodes must be approximately horizontal.

Control valve

Suitable location of a shutoff valve is downstream of a sensor.

Pump

Never install the sensor on the suction side of a pump or on a section of pipe where a vacuum is possible.

Vibration

To avoid mechanical damage protect both electronic unit and sensor against mechanical vibrations. When strong vibrations are possible, both the input and output pipe must be mechanically fixed or the remote version with a separate electronic unit should be used.

Overheating

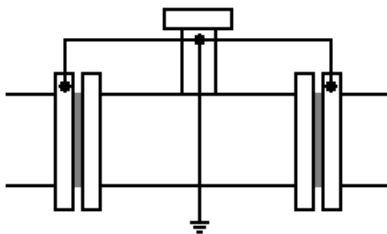
To avoid overheating, the electronic unit should be protected against direct sunlight especially in areas with a warm climate with ambient temperatures over 30 °C. If necessary a sunshade has to be mounted over the electronic unit or a remote version with a separate electronic unit should be used.

1.9 Sensor earthing

To ensure the correct operation of the flowmeter an earthing connection between the sensor and pipeline must be made. The sensor is equipped with screw connection for an earthing wire. This screw has to be connected to the flange on the pipeline. Use copper wire to connect between the flange and the earth screw on the sensor.

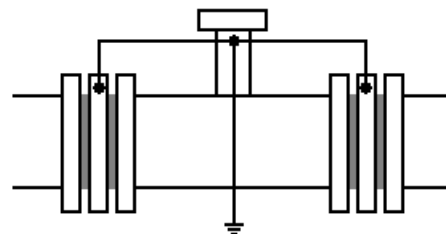
If the pipeline is manufactured from a non-electrically conductive material, or if the pipe is lined with a similar material, special grounding rings must be installed between flanges.

Metal pipeline



Plastic pipeline / pipeline with internal coating

Only with grounding rings



Manufacturer

MEATEST, spol.s r.o.
Zelezna 509/3, 619 00 Brno
Czech Republic

tel: +420 – 543 250 886
fax: +420 – 543 250 890
meatest@meatest.cz
www.meatest.com