

MDAC GP-meter 6.0 Calibration Guide

Tools

Calibrating the GP-meter 6.0 consists of calibrating the hardware circuits of the meter, and of calibrating for the sensor to be used.

Calibrating the hardware circuits is likely to improve the accuracy of the meter and is also a good check that the kit is constructed correctly.

The LSU4.X sensor to be used has pump-current characteristics that range widely. In OEM applications, the calibration is somewhat automatic due to the presence of a resistor in the wiring harness that is set during manufacture.

We have chosen to not use this feature of the LSU4.X in order to reduce kit complexity and to allow the user a precision free-air calibration option.

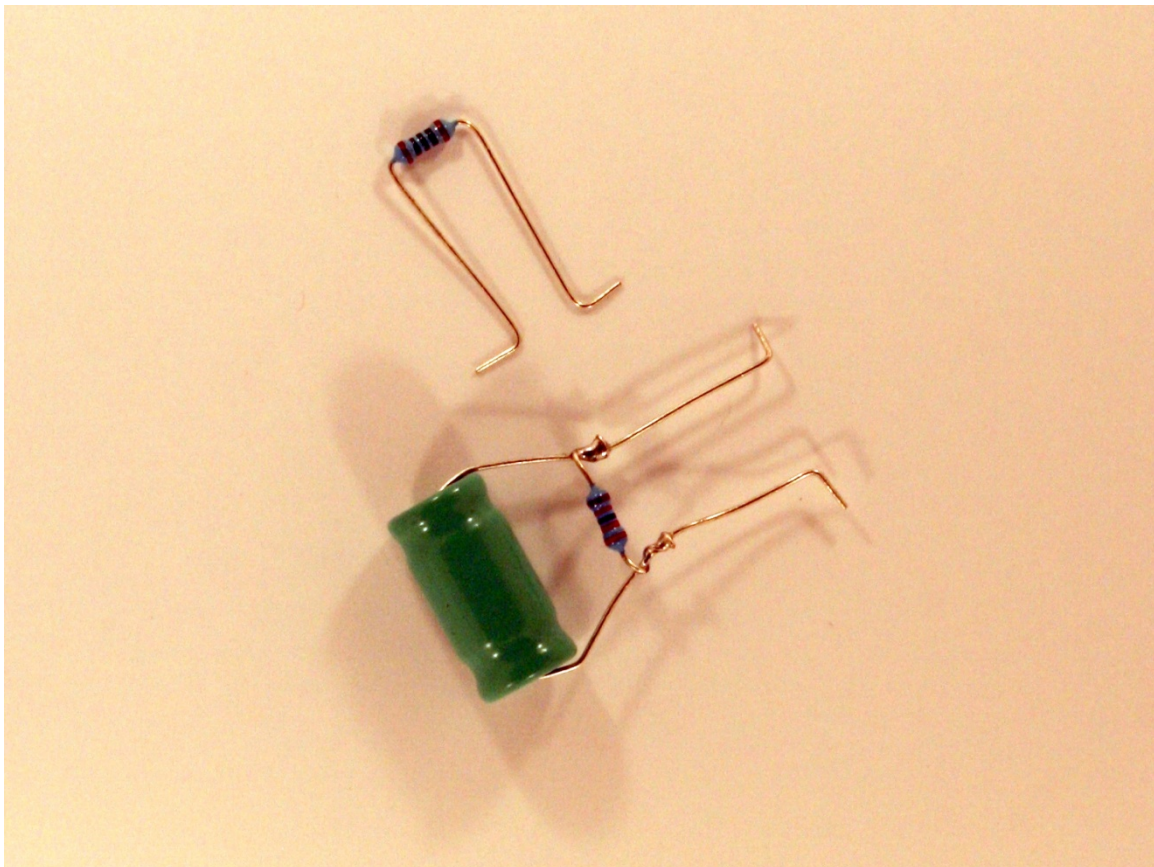
To calibrate the GP-meter 6.0 you will need to supply the following tools and materials:

1. Quality digital multi-meter
2. PC with MDAC GP-meter 6.0 calibration application installed
3. GP-meter 6.0 module to LSU4.X harness connector wiring harness
4. 12V power source and wire to make connection

GP-meter 6.0 Hardware Circuit Calibration

Step 1 – Construct the test equipment

1. Using the 22k resistor and non-polarised capacitor supplied, construct the test clip as shown in the picture
2. Bend the leads of the 100 Ohm resistor as shown in the picture



Step 2 – Calibrate the pump current offset

1. Connect the GP-meter 6.0 wiring harness.
2. Connect power and after 30 seconds, connect the calibration application.
3. Set the warm-up period to 255 seconds

4. Adjust the pump current offset settings until the both pump current readings are zero.
5. Stop the calibration application.

Step 3 – Calibrate the positive pump current

1. Remove 12V power.
2. Using the test clip, insert the leads at pin 1 and 5 of the left LSU4.X harness interface connector
3. Using the 100 Ohm resistor, insert the leads at pin 5 and 6 of the left LSU4.X harness interface connector.

TAKE CARE NOT TO SHORT ANY LEADS!

4. Connect power and after 30 seconds, connect the calibration application.
5. Measure the voltage across R29 and observe the pump current left reading on the calibration application. The pump current nA reading should be 10 times the voltage in mV. Adjust the pump current positive cal left until the pump current reads correctly.
6. For the LSU4.X right channel, repeat the procedure, measuring R28 voltage.
7. Stop the calibration application.

Step 4 – Calibrate the negative pump current

1. Remove 12V power.
2. Using the test clip, insert the leads at pin 1 and 3 of the left LSU4.X harness interface connector.
3. Using the 100 Ohm resistor, insert the leads at pin 5 and 6 of the left LSU4.X harness interface connector.

TAKE CARE NOT TO SHORT ANY LEADS!

4. Connect power and after 30 seconds, connect the calibration application.
5. Measure the voltage across R29 and observe the pump current left reading on the calibration application. The pump current nA should be 10 times the voltage in mV. Adjust the pump current positive cal left until the pump current reads correctly.
6. For the LSU4.X right channel, repeat the procedure, measuring R28 voltage.
7. Stop the calibration application.

Step 5 – Calibrate the LSU4.X sensor

1. Connect the LSU4.X sensor to the LSU4.X wiring harness and the LSU4.X wiring harness to the GP-meter 6.0 wiring harness.
2. Connect power and after 30 seconds, connect calibration application.

THE SENSOR IS TO BE FREE AIR CALIBRATED. IF THIS IS DONE ON THE BENCH, PLACE THE SENSOR ON A METAL PLATE BECAUSE IT WILL GET VERY HOT! CALIBRATING A SENSOR FITTED TO THE EXHAUST IS NOT RECOMMENDED UNLESS THE EXHAUST IS KNOWN TO BE FLUSHED WITH FRESH AIR!

3. Using the calibration application set the LCD display to show LSU4.X left sensor.
4. Observe the LCD display. The range FACLM9 – to FACLP9 should be shown. The M9-1 (minus 9-1) and P1-9 (plus 1-9) are intended to give a guide as to how ‘far off’ the calibration is. Adjust the pump current sensor setting until the LCD shows in the range FACLM3 to FACLP3. Repeat the procedure for the right LSU4.X sensor (if fitted).