

MSGs Control Electronics (v3.0)

MICROSENS

U. Lehmann

April 2014

The MSGs Control Electronics provides the connections for driving the MSGs gas sensor. It provides the sensor heating voltage V_h , which can be varied by the user as well as an offset voltage V_{off} , which can also be adjusted according to the user's needs.

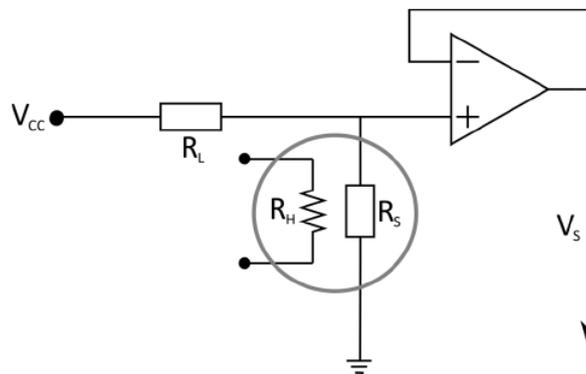


Figure 1: Schematics of the sensor readout circuit.

The change in the sensor resistivity is converted into a measured voltage. According to the circuitry the measured voltage (indicated on the PCB as V_m) can be converted into the sensor resistance R_s via:

$$R_s = \frac{V_s \cdot R_L}{V_{CC} - V_s} = \frac{(V_{off} - V_m) \cdot R_L}{V_{CC} - V_{off} + V_m}$$

Characteristics:

	Min	Typical	Max	Unit
V_in (*)	6	9	24	V
Vm	-5		5	V
Vh (**)	0.5	2.9 (***)	3.5	V
Voff	0		5	V

Table 1: Input and Out-put Characteristics of the MSGs Control Electronics.

(*) When using the system in a continuous mode and with power supply voltages V_{in} higher than 12V, a cooling element might be required for the voltage converter.

(**) **ATTENTION:** The heater voltage V_h should be set according to the sensor datasheet. An excess heater voltage can lead to a destruction of the sensor!

(***) This heating voltage will set the sensor temperature to 450°C.

Connections:

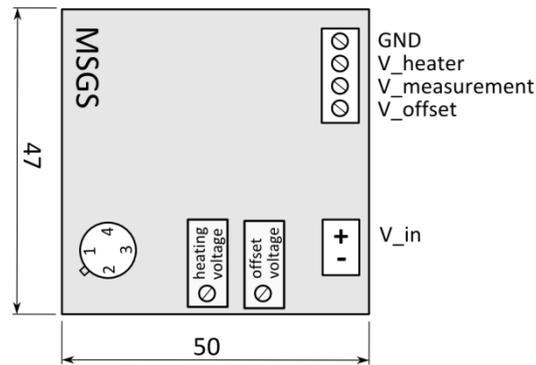


Figure 2: Schematics of the dimensions and connections of the MSGS Control Electronics

The heating voltage as well as the offset voltage can be varied via the corresponding potentiometers on the PCB. The heating voltage should only be varied when the sensor is connected in order to ensure the correct value of the heating voltage. The offset voltage serves to move the level of the amplified sensor output voltage into the measurement window.

Packaging:

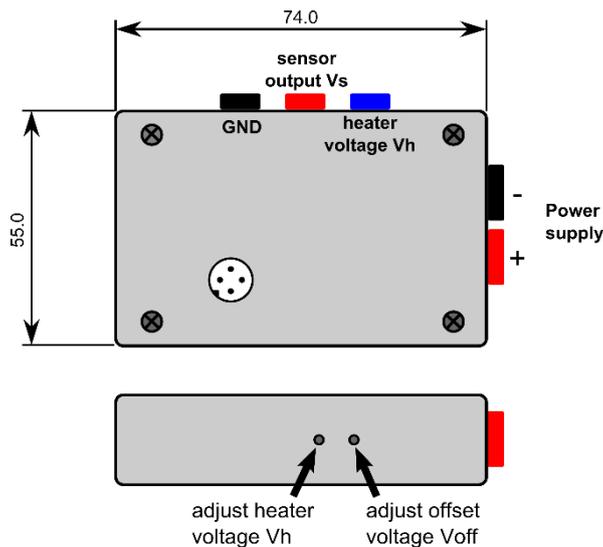


Figure 3: Schematics and dimensions of the MSGS electronics packaging.

For changing the MSGS sensor, the MSGS electronics packaging needs to be opened. The sensor socket sits on the electronics board, with the notch indicator giving the correct orientation of the MSGS sensor.

Warning:

When using the MSGS Control Electronics make sure that the chosen settings correspond with the power requirements of the sensor being used. Excess power can lead to a destruction of the sensor.