

Calibration of humidity sensors.

The calibration of humidity sensors is not so easy. One can perform a lot of measurements in the climate chamber but there is a much cheaper and low cost way to check humidity sensors by means of salt solutions. Special saturated salt solutions have always the same humidity in the area above. This humidity depends only on temperature. Find below and overview of salt-solutions that can be used.

Salt (saturated in water)		RH (%)	
		@ 25 °C	@ 20 °C
Lithium Chloride	LiCl	11.3 (± 0.3)	12
Magnesium Chloride	MgCl	32.8 (± 0.3)	33.1 (± 0.2)
Magn. Nitrate	Mg(NO ₃)	53.0 (± 0.1)	55
Sodium Chloride	NaCl	75.3 (± 0.1)	75.5 (± 0.1)
Potassium Chloride	K ₂ SO ₄	97.3 (± 0.5)	97.6 (± 0.5)

(Handbook of Chemistry and Physics)

Table 1, Humidity of saturated salt solutions

The salt solution must be put into a glass container with a sealable top. With a couple of cm. Salt solution on bottom the humidity above is constant and only depends on temperature. Place the sensor into the air above the solution and close the access hole carefully. Leave the sensor stabilizing for about half an hour and read afterwards the sensors value. Be aware that the temperature of the container needs to be constant over the period. Therefore it is recommended to use a well-isolated glass container.

In case a two point calibration is performed in general LiCl and NaCl solutions are used.

In a three point calibration LiCl, Mg(NO₃) and K₂SO₄ solutions are recommended.

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