

H5000/5100

RELATIVE HUMIDITY SENSOR



Main characteristics

- Capacitive thin film sensor
- Measuring range: 0 ... 100 %rh, -30 ... +80 °C
- Mixing ratio: 150g water / Kg of dry air
- Low hysteresis
- Response time: 2 seconds

The operating principle of capacitive relative humidity sensor is based on the hygroscopic properties of its polymer, which is used like a dielectric in a capacitor.

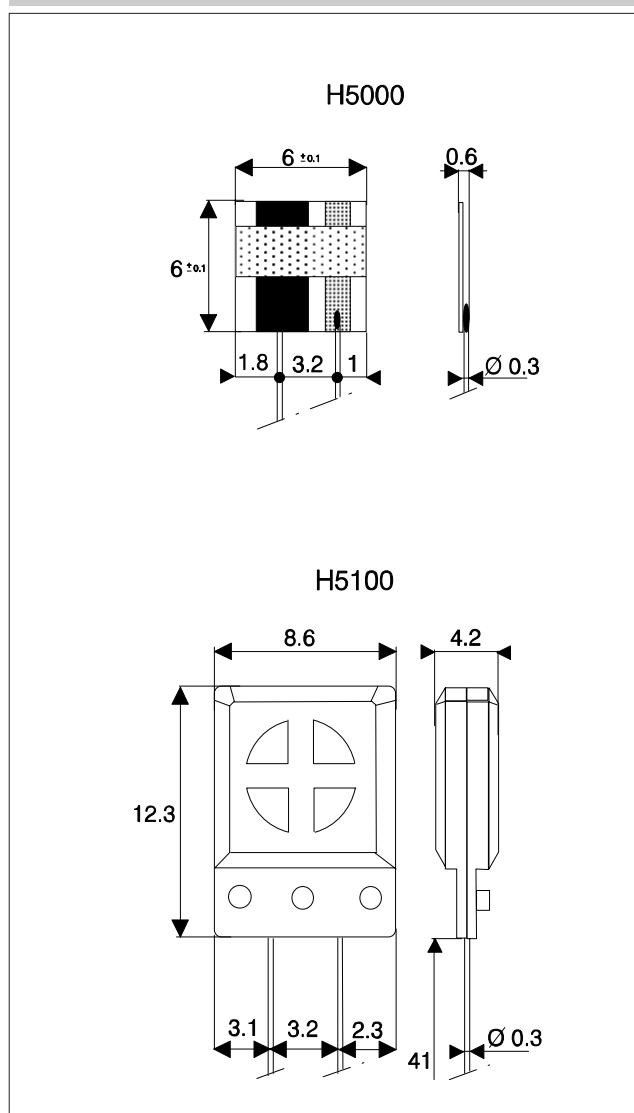
The polymer gets in equilibrium with its humid environment quickly and reversible and changes its capacity value depending on the humidity level.

TECHNICAL DATA

	H5000	H5100
Response time 90% of scale for a step change from 11% to 75 %rh	2 sec	2 sec
Operating range Humidity Temperature Pressure	0...100 %rh -30...+80 °C 0,04...30 bars	0...98 %rh * 30...+80 °C 0,04...30 bars
Mixing ratio	150g water / Kg dry air	
Nominal capacity C75 @ 25 °C, 75 %rh	500pF ± 10%	
Sensitivity (11%...75 %rh)	0,86 pF / %rh	
Linearity (11%...90 %rh)	± 2,5 %rh	
Long term stability (12 months) control @ 11 %rh	< 1% at 23 °C	
Max. air speed (without protection)	< 20 m / sec	
Hysteresis	0,5 %rh	
D Factor (loss angle value)	0,007	
Supply voltage Peak-to-peak	5VAC DC component < 0,2V	
Operating frequency range	5...300KHz	
Protection cap	NO	YES
Weight	0,1 g	1 g

* Non-condensing

DIMENSIONS



SENSOR LINE MODELLING

The excellent linearity of the HUMICOR allows an output converter **without linearisation** between 40 and 90 %rh at 23 °C
The response signal has been modeled for **one adjustment point**.

Accuracy of the model: **3.6 pF equals ± 4.5 %rh**

$$C = (a * UR - \frac{b}{(UR + c)} + d) * C75$$

With :

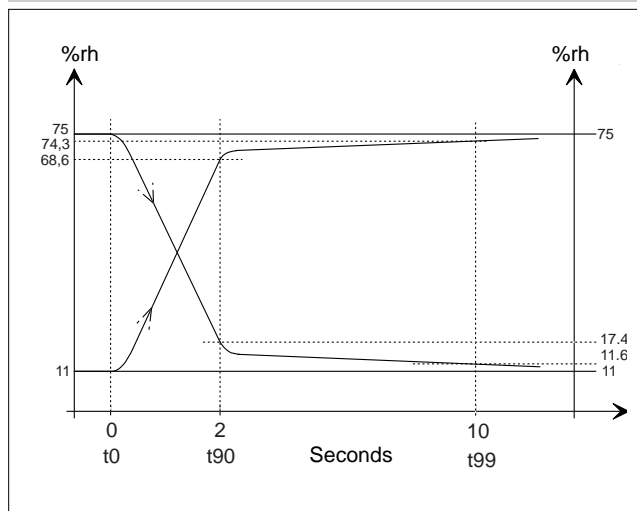
$a=1.569*10^{-3}$; $b=0.298$; $c=11$; $d=0.88475$

C= Capacity value of the sensor in pF.

rh= Value of relative humidity in %rh for the environment of the sensor.

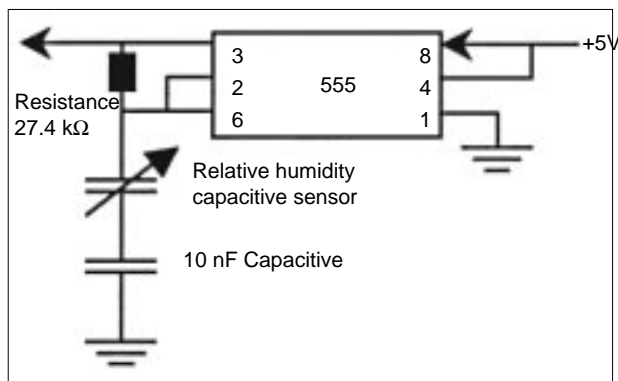
C75= Capacity value at 75 %rh, indicated for every single sensor on its packaging.

RESPONSE TIME



APPLICATION EXAMPLE

At the output of oscillator TLC555C, the signal frequency represents the relative humidity level (pin 3) and can easily be processed in an analogue or digital system



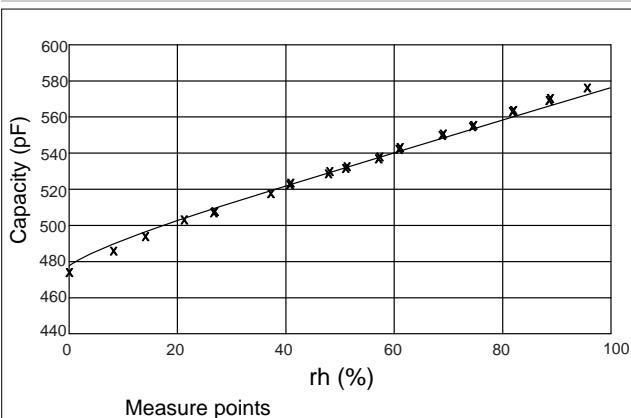
Converter for relative humidity to frequency

Sensitivity : ≈ 100 Hz / %rh

Applied frequency (for this oscillator) 50 to 60 Hz

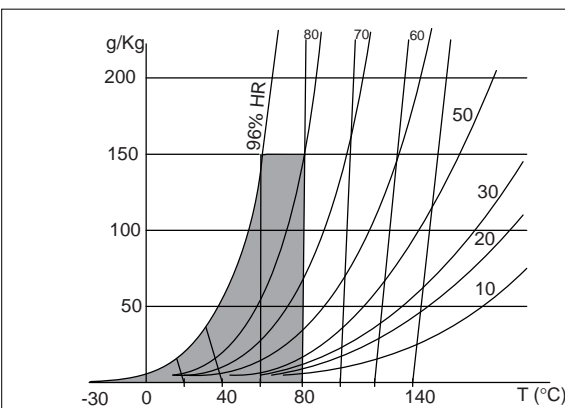
Output compatible to TTL / CMOS (5V)

TYPICAL RESPONSE CURVE



This line shows the **important part of the sensor sensibility range for a measuring range of 0 à 100 %rh**: representing a typical variation of approx. **90 pF**.

MEASURING RANGE



ORDERING CODE

For H5000: Ref. 0150440

For H5100: Ref. 0150450

GEFRAN spa reserves the right to make any kind of design or functional modification at any moment without prior notice



LEADER Electronic Co., Ltd

116, Jianghuali, Jianghua Road, Jiangmen City, GD, PRC

Tel: + 86 750 3101711, 3379183

Fax: + 86 750 3388669

Website: www.leadersensors.com

E-mail: leader@leadersensors.com



code 85506 - 05/00