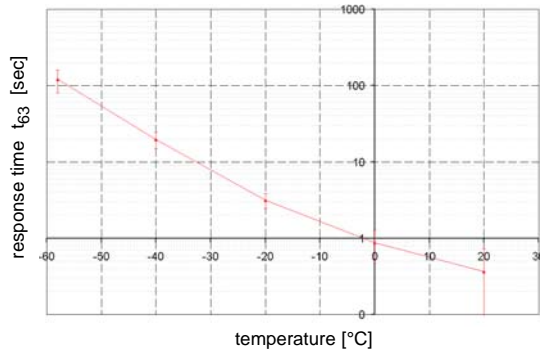


# HC103M2

## Fast High End Humidity Sensors for Radiosondes / Registering Balloons

### Technical Data

Nominal capacitance $C_0$ (at 30°C / 86°F)	160 ± 40 pF
Sensitivity	0.55pF /% RH
Working range humidity	0...100% RH
temperature	-80...120°C (-112...248°F)
Linearity error (0...98% RH)	< ± 2% RH
Hysteresis	1.9 ± 0.25% RH
Response time RH $t_{63}$	



Temperature dependence <sup>1)</sup>	dC = -0.0019*RH*(T-30°C) [pF]
Loss tangent	< 0.05
Maximum supply voltage	5V max (UPP)
Maximum DC voltage	< 5mV
Operating frequency	10...100 kHz, recommended 20kHz
Packaging tray 101.6x101.6 mm (4x4")	240 sensors
tape and reel	refer to ordering guide

1) more details for  $t < -20^\circ\text{C}$  on request

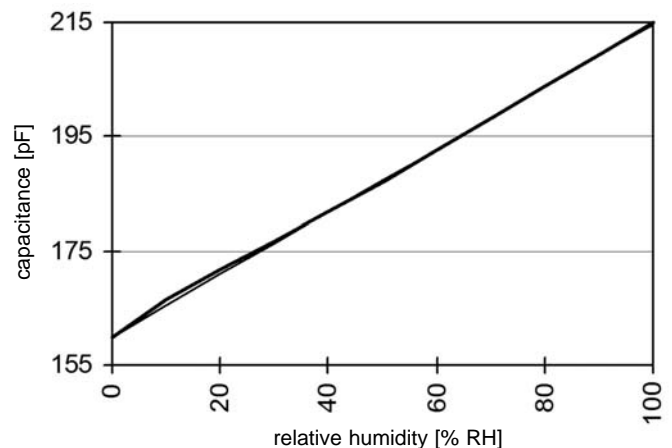
### Characteristics

The average increase of capacitance over the working range is 55pF. For the range of 0–98% RH linear approximation is possible, errors will be lower than < ± 2% RH.

The sensor characteristic is determined by the following linear formula:

$$C(\text{RH}) = C_0 * [1 + HC_0 * \text{RH}]$$

with  $HC_0 = 3420 \pm 250 \text{ ppm /\% RH}$



For high accuracy requirements, the sensitivity is determined by the following polynomial:

$$C(\text{RH}) = C_0 * [1 + HC_0 * \text{RH} + K(\text{RH})]$$

whereby:

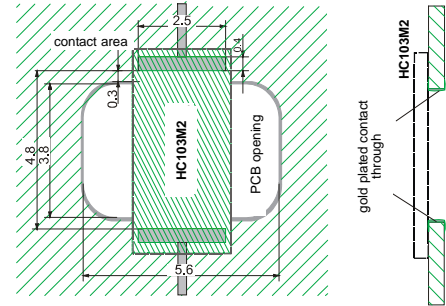
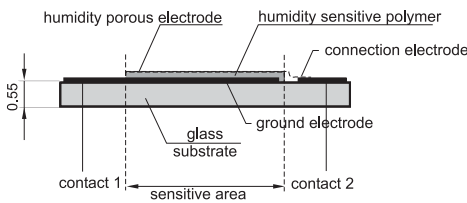
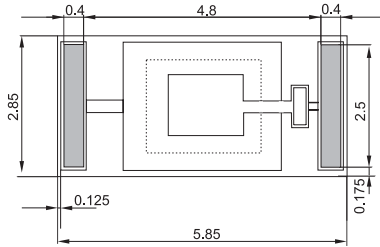
$$K(\text{RH}) = A_1 * \text{RH} + A_2 * \text{RH}^{1.5} + A_3 * \text{RH}^2 + A_4 * \text{RH}^{2.5}$$

$A_1 = 2.6657E^{-3}$        $A_2 = -9.6134E^{-4}$   
 $A_3 = 1.1272E^{-4}$        $A_4 = -4.3E^{-6}$

## Dimensions (mm)

1 mm = 0.03937" / 1" = 25.4 mm

## Mounting Instructions



To allow full access of the air, the humidity sensor should be positioned over an opening in the printed circuit board (PCB).

False readings because of humidity assimilation at the front side of the PCB should be avoided as much as possible by using gold-plated-through holes.

## Assembling and Soldering

HC103M2 sensor series are designed for SMD automatic assembling with subsequent reflow-soldering. For more details please refer to mounting instructions.

### Recommended SMD equipment:

- Automatic tooling machine with suction pipette
- Optical control for sensor identification

## Ordering Guide

## Order Example

TYPE	PACKAGING
HC103M2	(103M2) tray (240 sensors) (no code) 500 sensors per reel (TR0,5) 1000 sensors per reel (TR1) 2500 sensors per reel (TR2,5) 10000 sensors per reel (TR10)
HC	

### HC103M2TR1

Type: HC103M2  
 Packaging: 1000 sensors per reel