iST Innovative Sensor Technology

physical. chemical. biological.

P14 Rapid-W_5
Capacitive Humidity Sensor
Optimal for weather balloons and radio sondes

Benefits & Characteristics

- Ultra fast response time
- Condensation resistant
- High humidity stability
- Wide temperature range

- Temperature shock resistant
- Fast recovery time
- Customer-specific sensor available upon request

Illustration[1]

Wired

SMD

1) For actual size, see dimensions

Technical Data

	Wired	SMD
Dimensions (L x W x H / H2 in mm):	5 x 3.81 x 0.4 / 0.8	6.35 x 2.54 x 0.4
Capacitance at 30 % RH and +23 °C (C_{30}):*	140 pF ±40 pF	180 pF ±50 pF
Typical sensitivity at C_{30} = 150 pF/ 180 pF (15 % RH to 90 % RH):	0.25 pF/% RH	0.3 pF/% RH
Operating humidity range:	0 % RH to 100 % RH (maximal dew point +85 °C)	
Operating temperature range:	-80 °C to +150 °C	
Loss factor:	< 0.01 (at 23 °C, at 10 kHz, at 90 % RH)	
Linearity error:	< 1.5 % RH (15 % RH to 90 % RH at +23 °C after one point calibration)	
Hysteresis:	< 1.5 % RH	
Response time t_{63}:[2]	< 1.5 s (50 % RH to 0 % RH at +23 °C)	

2) The response time is often measured for increasing humidity steps, whereas physics predicts that decreasing humidity leads to generally far longer response times for capacitive humidity sensors. IST thus measures response times always for decreasing humidity values, since this is the worst case.

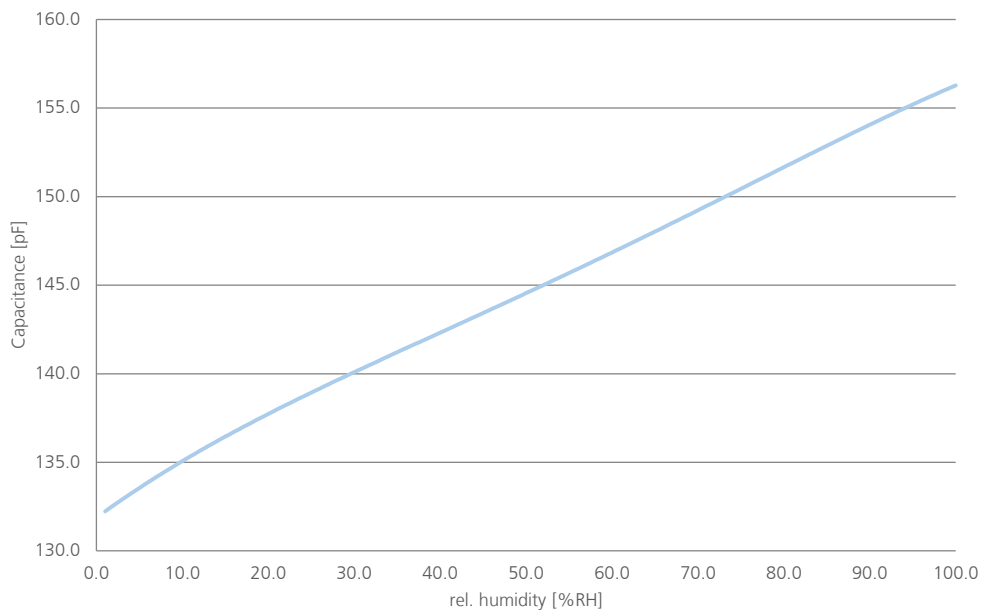| Temperature dependence (nominal):	Δ % RH = (B1 x % RH + B2) x T [°C] + (B3 x % RH + B4)	
	B1 = 0.0014 [1/ °C]	B2 = 0.1325 [% RH/ °C]
	B3 = -0.0317	B4 = -3.0876 [% RH]
Measurement frequency:	1 kHz to 100 kHz (recommended 10 kHz)	
Maximal supply voltage:	< 12 V_{pp} AC	

Signal form:	alternating signal without DC bias
Connection:*	CuP-SIL-wire post-plated with Sn, 10 mm or Au/Cu-wire, Ø 0.4 mm or SMD automatic assembly compatible
Packaging:	packed in a blister of 5 pcs

Customer-specific alternatives available

The calibration of the sensor must be done 5 days after soldering at the earliest.

Characteristic Curve

Wired

SMD