

## Electrolytic humidity sensor EFS-10

### Description



### Characteristic features

- Measuring range 10...95 % RH at -20...85 °C
- Simple evaluation
- Compact size
- No calibration needed
- Economic design

### Areas of application

- Climate monitoring
- Consumer applications
- Office equipment
- Building instrumentation
- Cooling and air conditioning systems
- Air humidifiers, air dryer

### Technical data

Humidity sensor EFS-10	
Measurement principle	Electrolytic
Humidity-operating range without condensation	10...95 % RH
Temperature-operating range	-20...85 °C
Hysteresis	± 2 % RH
Response time $t_{90}$	< 120 sec
Impedance	1,5 k $\Omega$ – 10 M $\Omega$
Rating	0,26 mW max.
Measuring voltage	1V <sub>eff</sub>
Signal waveform	AC voltage (without DC voltage ratio)
Measuring frequency	0,1-5 kHz, nominal 1 kHz
Dimensions (B x L x D)	5 x 10 x 0,6 mm
Connector	SIL 15 mm, or customer specific
Article number	EFS-10

### Features

The humidity sensor EFS-10 is an electrolytic type polymer sensor for measurement of relative humidity. The sensor converts the prevailing humidity value into impedance, which can be electronically measured.

The physical measurement principle is based on the characteristics of a hygroscopic material whose conductivity changes as a function of humidity in the environment. The humidity measuring range is right from 10 to 95 % RH. The measurement of impedance should be done with an AC current (without DC-offset). The recommended operating frequency is 1 kHz for a measuring voltage of maximum 1 V<sub>eff</sub>.

The sensors of one production batch are identical in characteristics and hence, for medium precision requirements, calibration can be skipped. Because of this advantage, these sensors are ideally suited for price sensitive consumer applications.

The sensors are resistant to common household chemicals including cigarette smoke. However, the suitability for a certain application should be checked by the user before hand.

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### Impedance characteristics

The table shows the impedance value (in kΩ) of the sensor element as a function of relative humidity and temperature.

Temp. [°C]	Relative Humidity [%]							
	20	30	40	50	60	70	80	90
10	9000	2500	740	220	72,00	25,80	9,50	3,72
15	6364	1803	543	166	55,64	20,94	8,07	3,26
20	4500	1300	398	125	43,00	17,00	6,85	2,85
25	2890	900	270	81	33,00	13,00	5,30	2,20
30	2100	670	210	66	25,50	10,20	4,28	1,85
35	1652	530	168	54	21,54	8,69	3,71	1,62
40	1300	420	135	45	18,20	7,40	3,22	1,41
45	1020	317	103	35	14,28	6,02	2,67	1,20
50	800	240	79	27	11,20	4,90	2,22	1,02

### Drawing

