



# HS20

## Relative Humidity Sensor



Telaire HS20 is a bulk-resistance type of Relative Humidity (RH) Sensor providing a variable impedance value in response to the adsorbed water within the sensor's proprietary thin-film polymer. Applied to an interdigitated electrode, the polymer's chemical functional groups disassociate into ionic groups in the presence of water, increasing the sensor's electrical conductivity. Excited by a low voltage alternating current, the sensor's resulting impedance is measured via supporting circuitry.

### Features

- Low cost
- Low power
- Inverse exponential humidity response curve
- Fast response time
- Exceptional linearity
- Low hysteresis
- Excellent interchangeability
- Simple signal conditioning circuitry
- Wide operating range
- Small size

### Applications

- HVAC controls
- White goods
- Handheld instruments
- Medical devices
- Wireless transmitters
- Asset monitoring
- Data loggers
- Consumer goods
- Automotive climate control
- Agriculture and horticulture
- Environmental chambers
- Enthalpy measurement

# HS20 Specifications

PARAMETER	LIMITS			UNIT	CONDITION
	MIN	TYP	MAX		
Storage Temperature	0		50	°C	
Storage Humidity	20		90	%RH	Without condensation
Operating Humidity	30		90	%RH	Do not allow dewdrops to form.
Operating Temperature	0		50	°C	
Power Rating	AC 1V				50Hz ~ 1KHz
Nominal Impedance Value		67.3		KΩ	25°C, 50%RH
Tolerance on Impedance Value	53.9		70.7	KΩ	

## Reliability

PARAMETER	CRITERIA	CONDITION
Dry Heat Storage	<±5 %RH	80°C, 1000 hours
Cold Storage	<±5 %RH	-40°C, 1000 hours
Damp Heat Storage	<±5 %RH	60°C, 90 %RH, 1000 hours
Heat Cycle Test	<±5 %RH	-40°C/30min ~ +80°C/30min, 100 cycles
Low Humidity Storage	<±5 %RH	25°C, 20 %RH, 1000 hours
Dry Heat Operation	<±5 %RH	80°C, 1000 hours, AC 1V, 1KHz

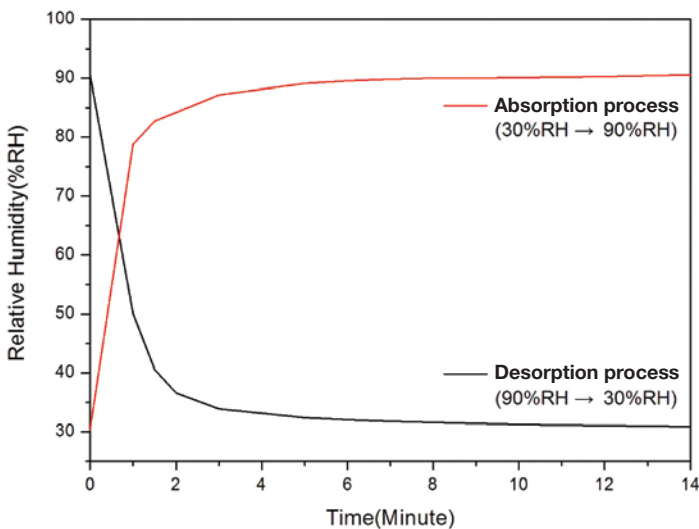


Figure 1: Typical Humidity Response Curve

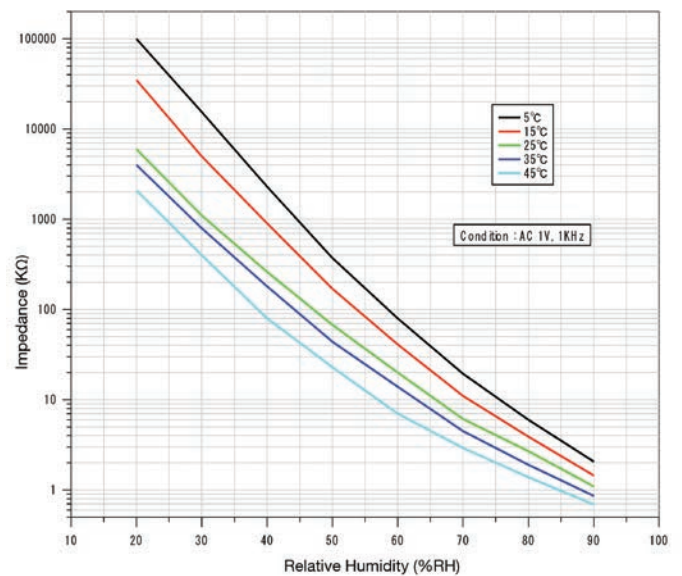


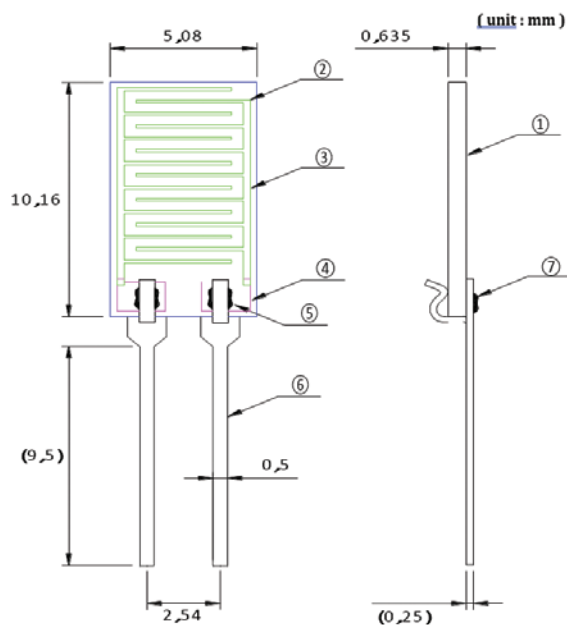
Figure 2 Typical Sensitivity Characteristics

# HS20 Specifications (Cont.)

## Typical Sensitivity Characteristics

%RH	5°C	15°C	25°C	35°C	45°C
20	100000	35000	6000	4000	2100
30	15500	5000.0	1100.0	800.0	400.00
40	2300.0	900.0	260.00	180.00	80.00
50	372.00	170.00	67.30	44.00	23.00
60	80.00	41.00	20.00	14.00	7.00
70	19.50	11.00	6.13	4.50	2.92
80	6.00	3.90	2.70	1.90	1.39
90	2.06	1.45	1.10	0.860	0.693

## Dimensions



No.	Construction List	Material
1	Substrate	Alumina ( $A_2O_3$ )
2	Resistance	$RuO_2$
3	Polymer Film	Organic Polymer
4	Electrode	Pd-Ag
5	Epoxy Paste	Ag
6	Terminal	
7	Epoxy Resin	Black

## Notes

1. Use only within specified conditions.
2. Do not disassemble or change any parts.
3. Do not touch sensor element.
4. Do not apply any direct current to the sensor.
5. Do not touch the film or the surface of the sensor.
6. In use and stock, freezing, dust, mist, oil, alcohol, corrosive gases or any other dirty/anomalous ambient may cause degradation of the sensor's characteristics.
7. Protect the sensor film from flux/fume and high temperature during soldering.
8. Do not immerse sensor in water.

**Amphenol**  
**Advanced Sensors**

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