**Type HCZ-H8** 

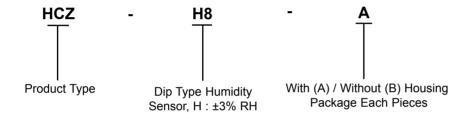
#### Description

This product specification is applied to the Humidity Sensor Type HCZ-H8. The terminal electrode material uses lead free solder (Sn / Ag / Cu). This product is conformity with RoHS directive which means that lead, cadmium, mercury, hexavelent chromium and specific bromine-based flame retardants have not been used.

#### Applications

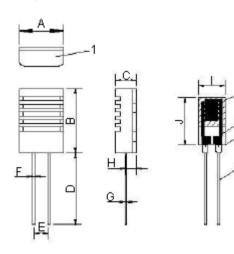
The applications of the component are used in relative humidity measurement, control and display. There are many end products can be used. For example air conditioner, humidifier, dehumidifier, hygrometer, recorder, transmitter etc.

## **Model Number**



# **Configuration and Main Parts**

#### Configuration : (Units : mm)

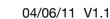


	1
Symbol	Dimensions (mm)
А	8.3 ±0.2
В	13.5 ±0.2
С	4 ±0.5
D	15 ±2
Е	2.54 ±0.2
F	0.5 ±0.1
G	0.2 ±0.1
Н	2 ±0.5
I	5.08 ±0.3
J	10 ±0.3
	1





multicomp



# **Type HCZ-H8**



### **Main Parts**

No.	Parts	Reference
1	Sensor case	PBT
2	Substrate	Alumina
3	Sensing material	Polymer
4	Electrode	Ag / Carbon
5	Lead frame	Phosphor bronze

## **Electrical Characteristics**

#### **General Characteristics:**

	Units	Min.	Тур.	Max.
Rated voltage	V <sub>rms</sub>	-	-	1
Rated power	mW	-	-	0.2
Operating frequency range	KHz	0.5	1	2
Operating temperature range	°C	0	-	60
Operating humidity range	% RH	-	-	90
Impedance range at 60% RH and 25°C**	ΚΩ	22.9	-	41.9
Humidity accuracy	- % RH	-3	-	+3
Hysteresis (40% RH to 80% RH)		-		2
Temperature dependence (Reference)	% RH / °C	-	0.3	-

\*\*Measurement by LCR meter at 1 KHz, 1 V<sub>rms</sub> (sine wave)

#### Relative Humidity - Impedance - 25°C, 1 KHz, 1 $V_{rms}$ (Sine wave)

% RH	20	30	40	50	60	70	80	90
Normal Value (KΩ)	6,300	1,400	310	87	31	11.8	4.8	2

Relative humidity - Impedance curve is shown in page 3

### **Mechanical Characteristics**

No.	Item	Description	Criteria*
6.1	Shock resistance	Drop down 3 times at 80 cm.	
6.2	Vibration resistance	2 hours each in the directions of X-Y-Z, at the frequency of 10-55 Hz, and amplitude of 1.5 mm.	No abnormal appearance and electrical properties.
6.3	Resistance to soldering heat	The lead terminal shall be immersed by 3 mm from the substrate for 3 s in solder bath of $330 \pm 5^{\circ}$ C.	
6.4	Strength of terminations	500 g at 10 s in the axial direction of lead terminal.	Secured



# **Type HCZ-H8**



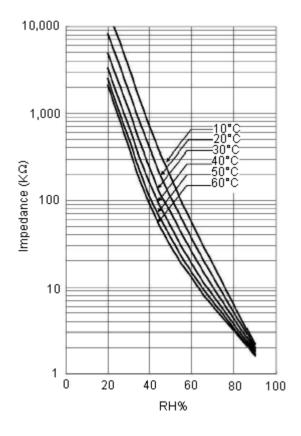
### Reliability

No.	Item	Description	Criteria*
7.1	Heat resistance	t resistance 1,000 hrs at 70°C	
7.2	Cool resistance	Cool resistance 1,000 hrs at -30°C	
7.3	Humidity resistance	1,000 hrs at 60°C, 90% RH	
7.4	Humidity cycle	Repeat 1,000 cycles One cycle: 30 mins at 25°C, < 20% RH 30 mins at 25°C, > 90% RH	< ±3% RH
7.5	Temperature cycle	Repeat 100 cycles Each cycle: 30 mins at -30°C 30 mins at 85°C	1
7.6	Voltage resistance	3,000 hrs at 1 KHz, 1 V <sub>rms</sub>	

\* The criteria test that the sensors finish the description process after 2 hours under normal temperature and humidity, The test condition is fixed at 25°C, 60% RH by LCR meter at 1 KHz, 1  $V_{rms}$  (sine wave).

#### References

# Relative Humidity-Impedance Curve-Measured at 1 KHz, 1 V<sub>rms</sub> (sine wave)





# **Type HCZ-H8**

### Impedance - % RH vs. Temperature

nce - %	B RH vs	s. Temp	erature								Unit: KΩ
5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C
-	15,000	11,000	8,200	6,300	4,900	4,000	3,300	2,800	2,500	2,200	2,100
10,000	7,400	5,300	3,900	3,000	2,300	1,800	1,500	1,300	1,100	1,000	920
4,800	3,400	2,400	1,800	1,400	1,100	870	710	600	510	450	410
2,100	1,500	1,100	820	630	490	390	320	270	230	200	180
980	700	520	400	310	240	190	160	130	110	100	91
480	350	260	200	160	120	100	86	73	63	55	50
250	190	140	110	87	74	61	51	44	38	34	30
130	100	80	64	49	43	36	30	26	23	21	19
73	57	46	37	31	26	22	19	17	15	14	13
41	32	27	22	19	16	14	12	11	10	9.2	8.6
23	19	16	14	11.8	10.2	9.1	8.2	7.5	6.9	6.5	6.1
13	11	9.5	8.4	7.5	6.7	6.1	5.6	5.2	4.9	4.6	4.4
7.2	6.4	5.8	5.2	4.8	4.4	4.1	3.8	3.6	3.4	3.3	3.2
4	3.7	3.5	3.3	3	2.9	2.8	2.6	2.5	2.4	2.4	2.3
2.2	2.2	2.1	2	2	1.9	1.8	1.8	1.7	1.7	1.7	1.6
	5°C - 10,000 4,800 2,100 980 480 250 130 73 41 23 13 7.2 4	5°C 10°C   - 15,000   10,000 7,400   4,800 3,400   2,100 1,500   980 700   480 350   250 190   130 100   73 57   41 32   23 19   13 11   7.2 6.4   4 3.7	5°C 10°C 15°C   - 15,000 11,000   10,000 7,400 5,300   4,800 3,400 2,400   4,800 3,400 2,400   2,100 1,500 1,100   980 700 520   480 350 260   250 190 140   130 100 80   73 57 46   41 32 27   23 19 16   13 11 9.5   7.2 6.4 5.8   4 3.7 3.5	5°C 10°C 15°C 20°C   - 15,000 11,000 8,200   10,000 7,400 5,300 3,900   4,800 3,400 2,400 1,800   2,100 1,500 1,100 820   980 700 520 400   480 350 260 200   480 350 260 200   130 190 140 110   130 100 80 64   73 57 46 37   41 32 27 22   23 19 16 14   13 11 9.5 8.4   7.2 6.4 5.8 5.2   4 3.7 3.5 3.3	Image: Constraint of the section of the sec	5°C 10°C 15°C 20°C 25°C 30°C   - 15,000 11,000 8,200 6,300 4,900   10,000 7,400 5,300 3,900 3,000 2,300   4,800 3,400 2,400 1,800 1,400 1,100   2,100 1,500 1,100 820 630 490   980 700 520 400 310 240   480 350 260 200 160 120   480 350 260 200 160 120   250 190 140 110 87 74   130 100 80 64 49 43   73 57 46 37 31 26   41 32 27 22 19 16   23 19 16 14 11.8 10.2   13 11 9.5 8.4 7.5 6.7	5°C 10°C 15°C 20°C 25°C 30°C 35°C   1 15,000 11,000 8,200 6,300 4,900 4,000   10,000 7,400 5,300 3,900 3,000 2,300 1,800   4,800 3,400 2,400 1,800 1,400 1,100 870   2,100 1,500 1,100 820 630 490 390   980 700 520 400 310 240 190   480 350 260 200 160 120 100   480 350 260 200 160 120 100   250 190 140 110 87 74 61   130 100 80 64 49 43 36   73 57 46 37 31 26 22   41 32 27 22 19 16 14   13	5°C 10°C 15°C 20°C 25°C 30°C 35°C 40°C   15,000 11,000 8,200 6,300 4,900 4,000 3,300   10,000 7,400 5,300 3,900 3,000 2,300 1,800 1,500   4,800 3,400 2,400 1,800 1,400 1,100 870 710   2,100 1,500 1,100 820 630 490 390 320   980 700 520 400 310 240 190 160   480 350 260 200 160 120 100 86   250 190 140 110 87 74 61 51   130 100 80 64 49 43 36 30   73 57 46 37 31 26 22 19   41 32 27 22 19 16 14	$5^{\circ}C$ $10^{\circ}C$ $15^{\circ}C$ $20^{\circ}C$ $25^{\circ}C$ $30^{\circ}C$ $35^{\circ}C$ $40^{\circ}C$ $45^{\circ}C$ $15,000$ $11,000$ $8,200$ $6,300$ $4,900$ $4,000$ $3,300$ $2,800$ $10,000$ $7,400$ $5,300$ $3,900$ $3,000$ $2,300$ $1,800$ $1,500$ $1,300$ $4,800$ $3,400$ $2,400$ $1,800$ $1,400$ $1,100$ $870$ $710$ $600$ $2,100$ $1,500$ $1,100$ $820$ $6330$ $490$ $390$ $320$ $270$ $980$ $700$ $520$ $400$ $310$ $240$ $190$ $160$ $130$ $480$ $350$ $260$ $200$ $160$ $120$ $100$ $86$ $73$ $480$ $350$ $260$ $200$ $160$ $120$ $100$ $86$ $73$ $250$ $190$ $140$ $110$ $87$ $74$ $611$ $511$ $44$ $130$ $100$ $800$ $644$ $499$ $433$ $366$ $300$ $266$ $73$ $57$ $466$ $377$ $311$ $26$ $222$ $199$ $117$ $41$ $322$ $277$ $222$ $199$ $166$ $144$ $122$ $111$ $23$ $19$ $166$ $144$ $11.8$ $10.2$ $9.14$ $8.2$ $7.5$ $131$ $19$ $58$ $5.2$ $4.8$ $4.4$ $4.1$ $3.8$ $3.6$ $72$ $6.4$ $5.8$ $5.2$ $4.8$ $4.4$	$5^{\circ}C$ $10^{\circ}C$ $15^{\circ}C$ $20^{\circ}C$ $25^{\circ}C$ $30^{\circ}C$ $35^{\circ}C$ $40^{\circ}C$ $45^{\circ}C$ $50^{\circ}C$ $15,000$ $11,000$ $8,200$ $6,300$ $4,900$ $4,000$ $3,300$ $2,800$ $2,500$ $10,000$ $7,400$ $5,300$ $3,900$ $3,000$ $2,300$ $1,800$ $1,500$ $1,300$ $1,100$ $4,800$ $3,400$ $2,400$ $1,800$ $1,400$ $1,100$ $870$ $710$ $600$ $510$ $2,100$ $1,500$ $1,100$ $820$ $630$ $490$ $390$ $320$ $270$ $230$ $2,100$ $1,500$ $1,100$ $820$ $630$ $490$ $390$ $320$ $270$ $230$ $2,100$ $1,500$ $1,100$ $820$ $630$ $490$ $390$ $320$ $270$ $230$ $2,100$ $1,500$ $1,100$ $820$ $630$ $490$ $390$ $320$ $270$ $230$ $980$ $700$ $520$ $400$ $310$ $240$ $190$ $160$ $130$ $110$ $480$ $350$ $260$ $200$ $160$ $120$ $100$ $86$ $73$ $63$ $130$ $100$ $800$ $64$ $49$ $43$ $36$ $30$ $26$ $23$ $130$ $100$ $80$ $64$ $49$ $43$ $36$ $30$ $26$ $23$ $133$ $100$ $80$ $64$ $49$ $43$ $36$ $30$ $26$ $4.9$ $134$	$5^{\circ}C$ $10^{\circ}C$ $15^{\circ}C$ $20^{\circ}C$ $25^{\circ}C$ $30^{\circ}C$ $35^{\circ}C$ $40^{\circ}C$ $45^{\circ}C$ $50^{\circ}C$ $55^{\circ}C$ $15,000$ $11,000$ $8,200$ $6,300$ $4,900$ $4,000$ $3,300$ $2,800$ $2,500$ $2,200$ $10,000$ $7,400$ $5,300$ $3,900$ $2,300$ $1,800$ $1,500$ $1,300$ $1,100$ $1,000$ $4,800$ $3,400$ $2,400$ $1,800$ $1,400$ $1,100$ $870$ $710$ $600$ $510$ $450$ $2,100$ $1,500$ $1,100$ $820$ $630$ $490$ $390$ $320$ $270$ $230$ $200$ $2,100$ $1,500$ $1,100$ $820$ $630$ $490$ $390$ $320$ $270$ $230$ $200$ $980$ $700$ $520$ $400$ $310$ $240$ $190$ $160$ $130$ $110$ $100$ $480$ $350$ $260$ $200$ $160$ $120$ $100$ $86$ $73$ $633$ $55$ $250$ $190$ $140$ $110$ $87$ $74$ $611$ $51$ $44$ $38$ $34$ $130$ $100$ $80$ $64$ $49$ $43$ $36$ $30$ $26$ $23$ $21$ $73$ $57$ $46$ $37$ $31$ $26$ $22$ $19$ $17$ $15$ $46$ $41$ $32$ $27$ $22$ $19$ $16$ $14$ $12$ $11$ $10$ $92$ $23$ $19$ $16$ <

## **Part Number Table**

Description	Part Number
Humidity Sensor	HCZ-H8-B
	HCZ-H8-A

Important Notice : This data sheet and its contents (the "Information") belong to the members of the Premier Famell group of companies (the "Group") or are licensed to it. No licence is granted for the use of it other than for information purposes in connection with the products to which it relates. No licence of any intellectual property rights is granted. The Information is subject to change without notice and replaces all data sheets previously supplied. The Information supplied is believed to be accurate but the Group assumes no responsibility for its accuracy or completeness, any error in or omission from it or for any use made of it. Users of this data sheet should check for themselves the Information or use of it (including liability resulting from negligence or where the Group was aware of the possibility of such loss or damage arising) is excluded. This will not operate to limit or restrict the Group's liability for death or personal injury resulting from its negligence. Multicomp is the registered trademark of the Group. © Premier Farnell plc 2011.



www.element14.com www.farnell.com www.newark.com

