

Air Conditioner Sensor



■ Application



Ambient Indoor/Room
air temperature sensing

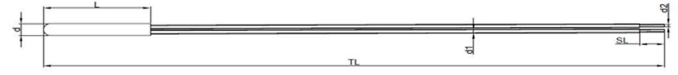


Outdoor air
temperature sensing



Automotive
Climate Control

■ Dimensions



* The dimensions depend on our standards or customer requirements.

■ Electrical Data (Resistance and Beta Values)

Resistance At 25°C (Ω)	Beta Value (25°C/85 °C) (Unit :K)	Resistance At 25°C (Ω)	Beta Value (25°C/85°C) (Unit :K)
2000	3540	20000	4000
2057	3540	30000	4050
2800	3900	47000	4100
3000	3977	49300	3960
4700	3977	50000	4100
5000	3977	100000	4400
10000	3977	170000	4250

■ Features

- Good resistance accuracy at 25°C (commonly $R_{(25)} = 5k\Omega$, $10k\Omega$, etc) and tight tolerance on Beta (B) value (which defines how resistance changes with temperature) for consistent calibration.
- Fast response (low thermal time constant) so that the sensor tracks temperature changes quickly enough for control decisions (e.g., icing detection). accuracy at 25°C (commonly $R_{(25)} = 5k\Omega$, $10k\Omega$, etc) and tight tolerance on Beta (B) value which defines how resistance changes with temperature) for consistent calibration.
- Good environmental robustness: moisture resistance, condensation tolerance (e.g., in evaporator coil area humidity), good mechanical stability.
- Variants / options: different lead lengths, connector types, packaging types (probe vs air/ambient bead), custom Beta, custom R values, bespoke cable lengths for OEM HVAC systems.

■ Options Available

- Encapsulation types: epoxy coated, glass encapsulated bead, metal housing (immersion sensors), chip version.
- Lead types: insulated thin wires, high temp wires, connectorized harness, or simple pair of wires.
- Tolerance classes: e.g., $\pm 1\%$, $\pm 3\%$ on $R_{(25)}$ and $\pm 1\%$ or $\pm 2\%$ on Beta, depending on cost/accuracy.
- Leadwire options: insulated thin wires, high temp wires, connectorized harness, or simple pair of wires. e.g., $\pm 1\%$, $\pm 3\%$ on $R_{(25)}$ and $\pm 1\%$ or $\pm 2\%$ on Beta, depending on cost/accuracy.

■ Rated Temp and Dissipation Factor

Heat capacity (Cth) :			$\approx 18 \text{ mJ/K}$
Lower Temperature :	-40°C	Dissipation factor in air(δth) :	approx 1.5 mW/K
Upper Temperature :	140°C	Beta Tolerance ($\Delta\beta/\beta_N$) :	$\pm 1\%$, $\pm 2\%$, $\pm 3\%$.
Max Permissible Power at 25°C :	60 mW	Resistance Tolerance ($\Delta R/R_N$) :	$\pm 0.5\%$, $\pm 1\%$, $\pm 2\%$, $\pm 5\%$
Rated Temperature (TN) :	25°C	Thermal cooling time constant in air (τ_c) :	$\approx 12s$

■ Reliability Data

Test	Standard	Test Conditions	Change In R	Remarks
Storage in dry heat	IEC 60068-2- 2	Storage at upper category temp T: 100°C t: 1000 h	<2%	No Visible Damage
Storage in damp heat, steady state	IEC 60068 - 2- 78	Temp of air: 40 °C Relative humidity of air: 93 % Duration: 56 days	<2%	No Visible Damage
Storage in coldness		Storage at lower category temp T: -30 °C t: 1000 h	<2%	No Visible Damage
Vibration resistance	IEC 60068-2-6	Frequency range: 5 to 500 Hz Amplitude: 7.5 mm, 2 g Duration: 3 x 8 h	<3%	No Visible Damage
Long-term stability (empirical value)		Temperature: 200 °C t: 10000 h	<3%	No Visible Damage
Voltage proof Test		1250 V AC, 1 s	<3%	No Flashover
Insulation test		The sensors are placed in a vessel containing metallic balls of 1 mm diameter (with total immersed head). The applied voltage is 100 V DC.		No Visible Damage
Rapid temperature cycling	IEC 60068 - 2- 14	Lower test temp : -30°C Upper test temp : 150°C Time to change from Low to Up Temp : <30s Number of cycles: 1000 Medium: air	<2%	No Visible Damage

■ Ordering Codes For Sensor

STTS 103 R5 E17 V H 451 3977 C16			
Product Category		Connector	
STTS	NTC THERMISTOR TEMPERATURE SENSOR SERIES	C16	HR2522J-2Y 2 Pin Connector
		C22	PAP-02 V - S (JST) Connector
Resistance Value		Beta Value (In K)	
103	10 * 10^3 Ohm	3435	3435 K
102	10 * 10^2 Ohm	3977	3977 K
302	3* 10^2 Ohm	4000	4000 K
Tolerance in R Value		Wire Length (In MM)	
103	10 * 10^3 Ohm	451	450 MM
103	10 * 10^3 Ohm	501	500 MM
103	10 * 10^3 Ohm	1001	1000 MM
Encapsulation		Wire Gauge	
E17	5*25 MM COPPER TUBE	N	AWG 21
E136	6.5*32 MM COPPER TUBE	H	AWG 26
E45	5*25 MM NICKEL PLATED PLASTIC TUBE	K	AWG 24
Wire Type			
V	PVC Twin Parallel Copper Wire		
N	XLPE Multi Strand Copper Wire		
U	PVC Multi Core copper wire		