THERMOMETRICS
A COMMITMENT TO EXCELLENCE

JS8746

Harsh Environment Temperature Sensor



Ensuring a temperature-controlled environment for transportation of goods by land, sea or air is of the utmost importance to guarantee that the merchandise does not deteriorate during shipment due to temperature. In many cases, such as medical products, the shipping companies have a statutory duty to demonstrate that the product has been kept within strict temperature limits. Failure to do so can lead to the write-off and destruction of large quantities of expensive product.

The marine environment is especially complex and susceptible to change; container ships are subject to the extremes of artic and tropical weather systems. Sea water is highly corrosive, containing large quantities of chlorides and sulfates. Ozone, ultraviolet sunlight (UV) and cleaning detergents provide additional degradation potential to exposed materials.

Although the JS8746 Harsh Environment Temperature Sensor has been designed to address all aspects of temperature measurement for HVAC control systems in the container-ship market, this sensor can also be used in a variety of other applications. Employing materials and build standards that enhance the sensor's ability to withstand water ingression and degradation, the sensor meets statutory requirements for temperature measurement and performance expectations.

Highly Accelerated Corrosion Test (HACT)

Highly Accelerated Corrosion Test (HACT) was developed by Delta (DK) and has been accepted throughout the marine shipping market to demonstrate long-term performance of electrical equipment exposed to this environment. Each day of HACT testing equates to 1 year of marine environment exposure. The JS8746 has exceeded 14 days of testing, substantially outperforming competitor products.

Applications

- Marine container ship applications
- Compressors
- Condensing units
- Heat pumps
- Air conditioning
- Refrigerated truck and trailer
- Reefer containers

Features

- HACT Exposure: +14 days
- Temp Tolerance Rating: ±0.2°C and ±0.15°C
- Temp Rating: -40°C to 120°C
- Environmental Protection: IP68
- Resistant to: Salt solutions, Ozone, UV and a variety of marine environment cleaning detergents
- Inert to trace levels of airborne R134a refrigerant
- Stainless steel hard shell, with class corrosion resistance A2 or better according to ISO3506
- Double insulated cable, multicore copper conductors and tin-coated, conductors cross-sectional area 0.25 mm_2 (23 AWG) min, configured as 19mm x 0.14mm
- Crimp caps, tin-coated brass, with integral strain relief for the conductor

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JS8746 Specifications

Resistance at 25ºC:
10,000 Ω nominal

Thermal Equilibrium Temperature Tolerance:
±0.2ºC or ±0.15ºC
(Temperature Range: 0ºC to 70ºC)

B25/85:
3977K nominal

Withstand Voltage:
2.5kV rms for minimum of 1 minute, where a broadly sinusoidal wave-form at 50 Hz is applied between the stainless steel housing and the conductors of the cable. A failure is recorded if the current exceeds 1mA.

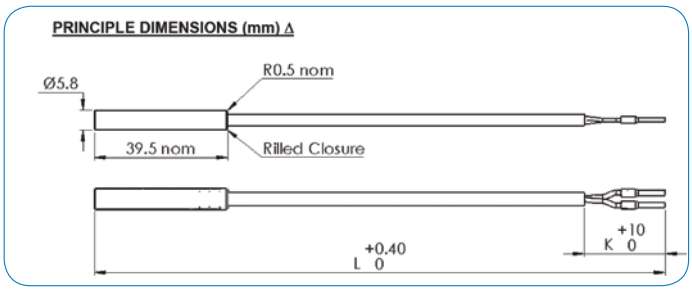
Temperature Range:
-40ºC to 125ºC

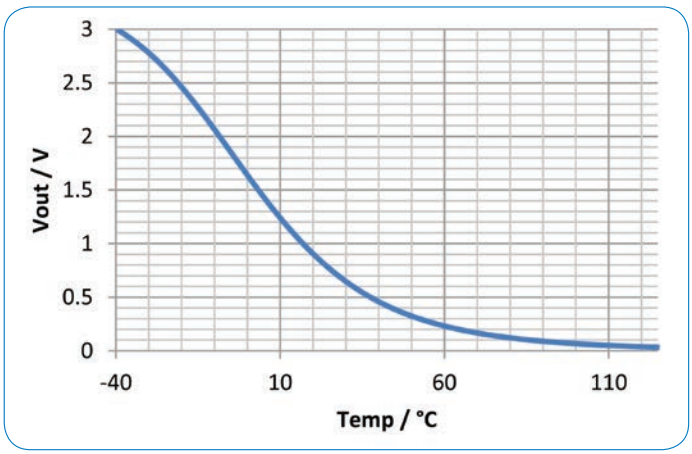
Time Constant:
20 seconds or less to register 63% of a known temperature transient

Housing:
Stainless steel hard shell, with class corrosion resistance A2 or better according to ISO3506

Cable:
Double-insulated, multicore copper conductors and tin-coated conductors cross-sectional area 0.25 mm_2 (23 AWG) min, configured as 19mm x 0.14mm

Crimp Caps:
Tin-coated brass with integral strain relief for the conductor





Thermal Equillibrium Resistance Versus Temperature Properties

Part Number	L / mm	K / mm	Tolerance 0-70°C / ± °C
JS8746A-0.20	1000	50	0.20
JS8746B-0.20	2000	50	0.20
JS8746C-0.20	3000	50	0.20
JS8746A-0.15	1000	50	0.15
JS8746B-0.15	2000	50	0.15
JS8746C-0.15	3000	50	0.15

Thermal Equillibrium Resistance Vs. Temperature Table

Note: Temperature tolerances for ±0.2°C between 0°C and 70°C are shown.

Temp °C	R nom / Ω	R min / Ω	R max / Ω	R Tol - %	R Tol + %	Temp Tol + °C	Temp Tol - °C
-40	333560	328250	338930	-1.59	1.61	0.24	-0.24
-35	241070	237420	244750	-1.51	1.53	0.24	-0.24
-30	176080	173550	178630	-1.44	1.45	0.23	-0.23
-25	129930	128160	131700	-1.36	1.37	0.23	-0.23
-20	96807	95560	98061	-1.29	1.30	0.22	-0.22
-15	72809	71922	73699	-1.22	1.22	0.22	-0.22
-10	55253	54617	55890	-1.15	1.15	0.21	-0.21
-5	42292	41834	42751	-1.08	1.09	0.21	-0.21
0	32639	32382	32897	-0.79	0.79	0.15	-0.15
5	25391	25139	25642	-0.99	0.99	0.20	-0.20
10	19902	19711	20093	-0.96	0.96	0.20	-0.20
15	15713	15567	15860	-0.93	0.93	0.20	-0.20
20	12493	12380	12606	-0.90	0.90	0.20	-0.20
25	10000	9912.2	10088	-0.88	0.88	0.20	-0.20
30	8055.9	7987.3	8124.6	-0.85	0.85	0.20	-0.20
35	6530.0	6475.9	6584.1	-0.83	0.83	0.20	-0.20
40	5324.6	5281.8	5367.5	-0.80	0.80	0.20	-0.20
45	4366.5	4332.4	4400.7	-0.78	0.78	0.20	-0.20
50	3600.5	3573.1	3627.9	-0.76	0.76	0.20	-0.20
55	2984.6	2962.5	3006.7	-0.74	0.74	0.20	-0.20
60	2486.6	2468.7	2504.5	-0.72	0.72	0.20	-0.20
65	2081.8	2067.2	2096.4	-0.70	0.70	0.20	-0.20
70	1751.1	1739.1	1763.0	-0.68	0.68	0.20	-0.20
75	1479.6	1468.8	1490.3	-0.72	0.73	0.22	-0.22
80	1255.6	1246.0	1265.2	-0.77	0.77	0.24	-0.24
85	1070.0	1061.4	1078.6	-0.81	0.81	0.25	-0.26
90	915.55	907.82	923.29	-0.84	0.85	0.27	-0.27
95	786.43	779.50	793.39	-0.88	0.88	0.29	-0.29
100	678.07	671.84	684.32	-0.92	0.92	0.31	-0.31
105	586.75	581.16	592.38	-0.95	0.96	0.33	-0.34
110	509.52	504.48	514.58	-0.99	0.99	0.35	-0.36
115	443.94	439.40	448.51	-1.02	1.03	0.38	-0.38
120	388.06	383.97	392.19	-1.06	1.06	0.40	-0.40
125	340.29	336.59	344.02	-1.09	1.10	0.42	-0.42

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