SD10244XXX, PT RTD probe sensor

The history of revision change for the specification

Date	Revision	Changes
2019/09/26	A0	New Approval

SD10244XXX, PT RTD probe sensor

Features / Applications :

- Features:
  - Low drift
  - Long service life
  - Wide temperature range
  - Wide range of resistance values
  - Temperature linear control
  - High precision
  - Fast response time
  - RoHS compliant

- Application:
  - Home Appliances: Oven

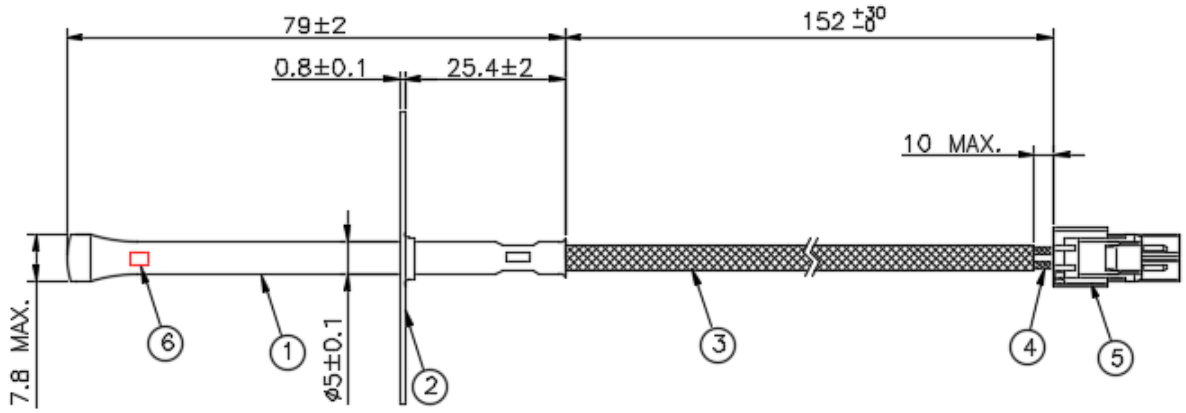
Electrical Specifications :

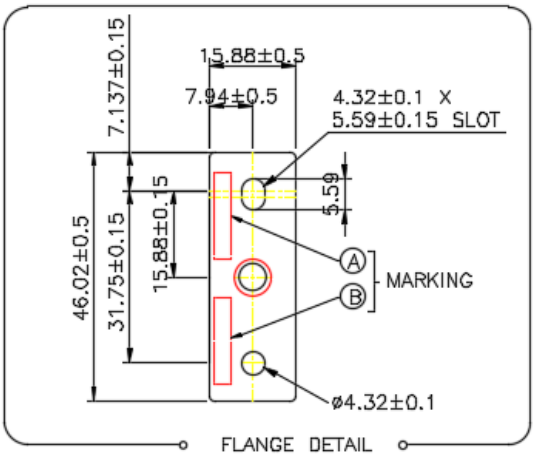
Characteristics	Feature
Resistance value at 0℃	1000±4.0Ω
Temperature coefficient of resistance (TCR)	3750ppm/℃
Operation Temperature Range	-40℃~ +538℃
Maximum ambient on sensor	593℃
Maximum Applied current	2 mA

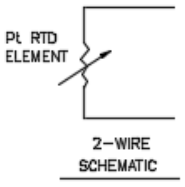
Outline Drawing :

Unit: mm

Dimension







	Marking	
A	CYNTEC part number	SD10244XXX
B	Date code:	CYNTECXXXX

Outline Specifications :

No.	Material	Specification
①	Probe tube	Φ5XL79 mm, material: 300 series stainless steel tube. Discoloration due to welding and high temperature testing is acceptable.
②	Flange	Material: 300 series stainless steel.
③	Fiberglass sleeving	This sleeve is #11 size with a minimum wall thickness of 0.012 and is rated up to 1200°F.

④	Lead wire	24 AWG nickel plated stranded copper with fiberglass insulation over each.
⑤	Connector	Terminal: TE 175151-2 Housing: TE 176271-1
⑥	Sensor element	1000 ohms thin film platinum RTD, alpha(TCR)= 3750 ppm/℃ ESD sensitivity level: ±2KV

Type Designation :

SD 102 4 4 XXX

(1) (2) (3) (4) (5)

Where:

(1) Series No: SD= PT probe

(2) Resistance Value: 102=500=500 ohm

(3) TCR/Class: 4 = 3750/C

(4) Package type : 4 = Metal tube type

(5) Serial no

Characteristics :

Electrical

Item	Specification and Requirement	Test Method
Dielectric strength	Current leakage<1mA No breakdown.	Apply 1250 VAC between the lead wires and stainless steel tube for 1 second at room temperature.
Insulation resistance	>50 Megohms	Apply 50 VDC between the leads wire and stainless steel tube for 1 second.
Short time overload	△R(0 degree):≤0.24% Without distinct damage in appearance.	Repeat 10 cycles as follow: Apply current: 5mA rated current for 5 seconds and 30 seconds at room temperature.
ESD	△R(0 degree):≤0.24%	Human body, 2KV.

Mechanical

Item	Specification and Requirement	Test Method
Flange pull force	>8 Kgf	Apply axial pull force on the flange assembled in probe housing.
Wire pull out force	>5.4 Kgf	Apply axial pull out force on the leads wire in probe housing.
Crimping pull out force	>3.0 kgf	Fix the crimped terminal to the jig, apply axial pull out force on the wire at the speed rate of 100 mm/minute

Endurance

Item	Specification and Requirement	Test Method
Low temperature test	△R(0 degree):≤0.24% Without distinct damage in appearance.	(1) Keep the probe sensor in -55℃ for 1000 hours.
High temperature test	△R(0 degree):≤0.24% Without distinct damage in appearance.	Keep the probe sensor in 538℃ for 1000 hours.
Humidity test	△R(0 degree):≤0.24% Without distinct damage in appearance.	Keep the probe sensor in 60℃ and 90%~95% R.H. for 1000 hours.
Thermal cycles	△R(0 degree):≤0.24% Without distinct damage in appearance.	(1) Keep the probe sensor in 538℃ for 3 hours. (2) keep the probe sensor in 70℃ for 30 minutes. Repeat (1)~(2) for 150 cycles.
Thermal shock	△R(0 degree):≤0.24% Without distinct damage in appearance.	(1) Keep the probe sensor in 538℃ for 10 minutes. (2) Keep the probe sensor in room temperature for 5 minutes. Repeat (1)~(2) for 250 times.

Temperature and resistance relationship:

■ The temperature and resistance relationships used in this standard are as follows:

When T < 0℃ :

$Rt = R0 [1 + aT + bT^2 + cT^3 (T – 100)]$

When T ≥ 0℃ :

$Rt=R0 (1+ aT + bT^2)$

Where

Rt: resistance at a certain temperature T

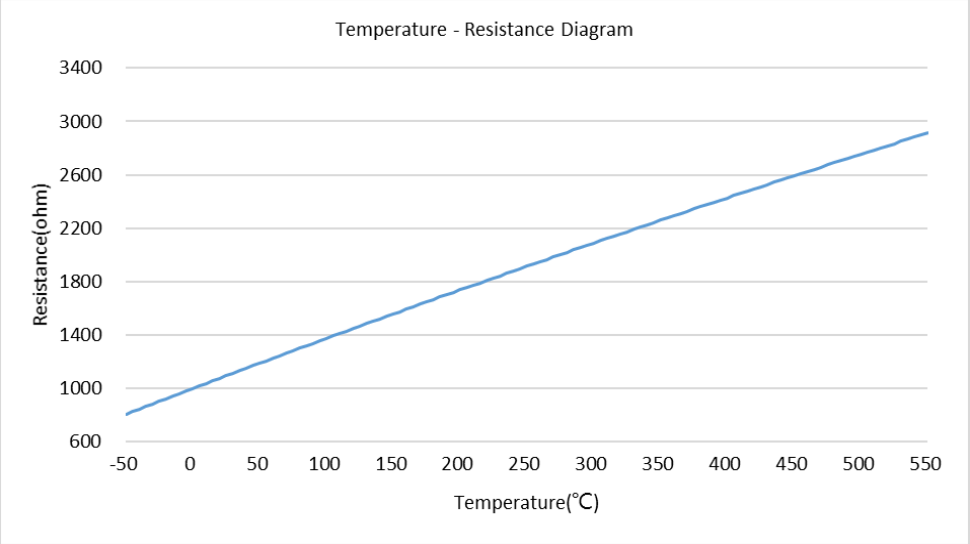
R0: resistance at 0℃

a, b, c : coefficient (refer to the following table)

Coefficient for TCR=3750 PPM/℃

Temperature	a	b	c
T < 0℃	3.81019E-03	-6.01875E-07	-6.14500E-12
T ≧ 0℃	3.81019E-03	-6.01875E-07	0

■ Temperature – Resistance Diagram



Certificate :

■ The probe sensor recognized by Underwriters Laboratories

UL component listing: UL file # E158992