



CORPORATE STANDARD

AA 732 26 22

Rev. No. 03

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CYLINDRICAL PLATINUM RESISTANCE TEMPERATURE DETECTOR, INSERTION TYPE

1.0 SCOPE:

This standard specifies the requirements of cylindrical platinum resistance temperature detectors suitable for measuring the temperature of bearing bushes of electrical machines from 0° to 200° C.

2.0 DESIGNATION:

A cylindrical platinum resistance temperature detector of nominal diameter 4mm and length 25mm with simplex element shall be designated as follows:

2.1 On Drawings/Indents:

Material specification column : AA 732 26 22

Description column : PRTD CYL D4L 25

Material code column : AA 732 26 22 014

2.2 On enquiries and purchase orders:

In addition to incorporating the above details a copy of this standard shall be enclosed.

3.0 Technical Requirements:

3.1 General : The temperature detectors shall be suitable for tropical climate for operation at 0 - 50° C and RH of 95%, max.:

3.2 Resistance element:

3.2.1 The resistance element shall be of platinum conforming to IS:2848, tolerance class B.

3.2.2 The element shall be simplex or duplex, 2 wire or 3 wire as specified in order.

3.2.3 The resistance values at different temperatures and the corresponding tolerances shall be as per IS: 2848 reproduced in Table-1.

3.2.4 The element shall be non-inductively wound on a mica strip and suitably encapsulated using epoxy resin. The surface shall be smooth and uniform and shall be suitably protected to avoid ingress of moisture.

3.3 Insulation:

3.3.1 The insulation provided for the element must withstand a high voltage test at 1 kV A.C. for 1 minute at a temperature of 20± 5° C and relative humidity of 80%.

3.3.2 The electrical insulation resistance shall not be less than 20 M-ohms at 20± 5° C and 2 M-ohms at 150° C and relative humidity 80%.

Revisions :

CI 17.5.23 of MOM of WG-M&CD

APPROVED :

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3.4 Leads:

- 3.4.1 The lead wires shall be of 19/0.15 mm silver clad copper with polytetrafluoroethylene insulation and tinned copper braiding.
- 3.4.2 The leads shall be suitably brazed to the resistance element so as to withstand a pulling force of 5 kg, when applied to each of the leads.

3.5 Dimensions and Tolerances:

As shown in the figure and Table – 2.

4.0 TESTS:

4.1 Routine Tests:

Each resistance element shall be subjected to the following routine tests.

a) Insulation Resistance Test:

As per IS:2848, clause 8.2.

b) Resistance Accuracy Test:

As per IS:2848, clause 8.3 at not fewer than two suitably spaced points over a declared working range of temperature.

c) High voltage test at 1 kV for 1 minute, non-repetitive.

d) Dimensional checkup.

4.2 Type Tests:

The following type test shall be conducted on each model of the thermometer developed by the supplier in the recognised third party laboratory as per the relevant clauses of IS:2848.

BHEL reserves the right for asking the supplier to conduct the type test on any consignment.

- | | |
|--------------------------------|-----------|
| a) Insulation resistance test | (CI 8.2) |
| b) Resistance accuracy test | (CI 8.3) |
| c) Thermal response time test | (CI 8.4) |
| d) Self heating test | (CI 8.5) |
| e) Immersion error test | (CI 8.6) |
| f) Thermo electric effect test | (CI 8.7) |
| g) Limiting temperature test | (CI 8.8) |
| h) Stability test | (CI 8.9) |
| i) Vibration test | (CI 8.11) |
| j) Pressure test | (CI 8.12) |

5.0 INSPECTION:

The supplier shall provide all facilities to BHEL inspector or their authorized representative to witness the inter stage and final tests.



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6.0 TEST CERTIFICATE:

Three copies of the following test certificates shall be supplied, unless otherwise stated in the order.

In addition, the supplier shall ensure to enclose one copy of the test certificate along with their dispatch documents to facilitate quick clearance of the material.

- a) Calibration guarantee certificate for each detector. (One thermo-element against each consignment shall be calibrated at two points at 25% and 75% of the range and calibration shall be guaranteed for other thermo-elements).
- b) Material certificate for the thermo-element.
- c) Test certificate covering the routine tests specified in clause 4.1 for each detector.
- d) Test certificate covering the type tests specified in clause 4.2 for each consignment.

7.0 GUARANTEE CERTIFICATE :

A guarantee certificate for trouble free performance for 24 months from the date of shipment or 12 months from the date of commissioning whichever is earlier shall be supplied.

8.0 DOCUMENTS:

The descriptive leaflets/catalogue giving full details of the temperature detector shall be furnished along with the offer. The final operation/trouble shooting and maintenance manuals shall be supplied within 4 weeks after placement of order.

9.0 PACKING:

Each temperature detector shall be wrapped individually in a bubbled polythene sheet and packed in a thermocole material to withstand normal transit risks. An additional copy each of the test and guarantee certificate shall be enclosed to the packing list along with the consignment.

10.0 MARKING:

10.1 Each detector shall be marked permanently with the following details:

- a) Supplier's Name or Trade mark.
- b) Supplier's identification number
- c) Year and month of manufacture.

10.2 A tag bearing the relevant 12 digit material code of BHEL shall be attached to each instrument.

10.3 The following details shall be marked on the packing case:

- a) Manufacturers Name or Trade mark.
- b) BHEL order number .
- c) BHEL standard No: AA 732 26 22
- d) Size and number of items (to be marked on the individual boxes)

11.0 REFERRED STANDARDS (Latest publications including amendments):

- 1) IS:2848

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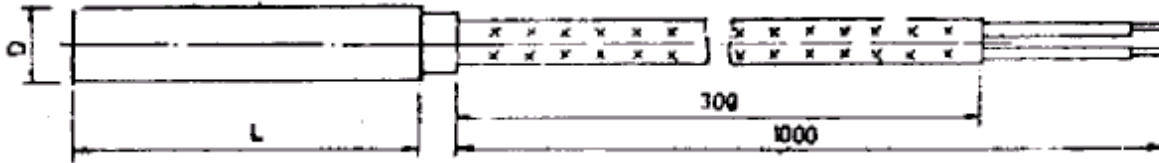


TABLE – 1 : CHARACTERISTICS (CI 3.2.3)

° C	R, ohms	TOLERANCE	
		ohms	° C
0	100.00	± 0.1	± 0.3
10	103.90		
20	107.79		
30	111.67		
40	115.54		
50	119.40		
60	123.24		
70	127.07		
80	130.89		
90	134.70		
100	138.50	± 0.1	± 0.3
110	142.29		
120	146.06		
130	149.82		
140	153.57		
150	157.31		
160	161.04		
170	164.76		
180	168.46		
190	172.16		
200	175.83	± 0.1	± 0.3

TABLE – 2 : CORPORATE RATIONALISED SIZES (CI 3.5)

SIMPLEX ELEMENT			DUPLEX ELEMENT				
D	L	SUB-CODE	D	L	SUB-CODE		
4	0	25 0	014	4	0	25 0	022
	-0.2	-1.0			-0.2	-1.0	

All dimensions are in 'mm'.

- Note:** 1) For obtaining 12 digit material code, suffix sub code to the standard number.
2) Specific requirements of the plants shall be covered by plant annexures to this standard.