



CORPORATE STANDARD

AA 732 40 02

Rev. No. 01

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TEMPERATURE SWITCH IN WEATHER PROOF ENCLOSURE WITH ADJUSTABLE DIFFERENTIAL (Micro Switch for A.C./D.C.)

1.0 SCOPE:

This standard specifies the requirements of temperature switch in weather proof enclosure with adjustable differential and with 2 SPDT (2NO+2NC) micro switch having contact rating 5 amps at 240 volts A.C or 0.5 amps at 240 volts D.C. for use in fertilizer, petrochemical, refinery industry and power plants and gives information as to the ranges covered by the same.

2.0 DESIGNATION:

A temperature switch to this standard of range 0 to 45⁰C, process connection M20X1.5 (6g) and capillary length 3 metres shall be designated as follows:

2.1 On Drawings and Indents:

Material specification column : AA 732 40 02
 Description column : TEMPSWITCH WRPF 0 - 45⁰C
 Material code column : AA 732 40 02 021

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 switches shall be suitable for ambient of ammonia and sulphur with ambient temperature 0-50⁰C and relative humidity 95%, max. The switches shall be tropicalized. Copper and copper alloys shall be avoided for all the parts exposed to atmosphere.

3.2 Housing:

Weather proof and dust tight housing made of die cast aluminium alloys as per IP55 of IS:13947-P₁ / BS:5490/IEC:529/NEMA:4-250. The external surfaces of the housing shall be finished with light grey epoxy enamel paint.

3.3 Capillary:

Capillary shall be of stainless steel with coiled stainless steel armouring. Capillary length shall be as specified in the enquiry/order.

3.4 Sensing Bulb and Stem:

Stainless steel bulb of length between 60mm to 150mm and bulb diameter shall be 12mm (in case the standard bulb diameter is less than 12mm, a push fit stainless steel sleeve of 12mm diameter shall be put on the bulb).

Revisions :

CI 17.5.24 of MOM of WG-M&CD

APPROVED :

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**3.5 Process connection:**

M20X1.5 (6g) adopter of mild steel (cadmium plated) as shown in the figure, unless otherwise specified.

3.6 Temperature compensation:

The temperature switch shall be provided with compensating arrangement for ambient temperature changes from 0 to 50°C.

3.7 Electrical entry:

Cable gland with neoprene grommet to suit PVC cable with maximum outside diameter of 17.5mm.

3.8 Switching differential:

The switching differential shall be variable and the ranges of differential shall be as per table-1. The set point adjuster for the differential setting shall be inside the housing and shall be adjustable against a calibrated scale with the range specified in table –1.

3.9 Main set point adjuster:

Micro switch for A.C./D.C. 2 SPDT (2NO+2NC) contacts having rating 5 amps at 240 volts A.C./0.5 amps at 240 volts D.C.

3.10 Accuracy:

Repetition accuracy $\pm 1.0^{\circ}\text{C}$. Scale calibration $\pm 3^{\circ}\text{C}$.

3.11 Over temperature:

The temperature switch shall meet the accuracy requirements, after subjecting it to maximum over temperature as given in table-1.

3.12 Switching data:

Microswitch for AC/DC, 2 SPDT type, contact rating , single pole double throw type and DPDT for 5 amps at 240 volts AC or 0.5 amps at 240 volts D.C.

3.13 Ranges:

The ranges shall be as specified in the enquiry / purchase order. The ranges of BHEL are given in table 1 for general information.

4.0 TEST CERTIFICATES:

Three copies of the following test certificates shall be provided by the supplier for the each item of the consignment quoting BHEL standard number and order number.

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

- a) Calibration certificate
- b) Certificate for weatherproof and dust tight housing
- c) Over temperature test
- d) Ambient temperature compensation test

5.0 INSPECTION :

The supplier shall provide all facilities to the BHEL Inspector or their authorised representative to witness the interstage and final tests.



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6.0 GUARANTEE CERTIFICATE:

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

7.0 DOCUMENTS:

The descriptive leaflets/catalogues giving full sectional details of the instrument shall be furnished with the offer and also alongwith consignment. One transparent copy of the final operating, trouble shooting and maintenance shall be supplied within 4 weeks, after placement of the order.

8.0 PACKING:

The packing shall be sea worthy. The process and electrical connections shall be protected by suitable caps. Each instrument shall be wrapped individually in a bubbled polythene sheet and packed in a carton or case with adequate cushioning material to withstand transit risks.

9.0 MARKING:

9.1 The manufacturer's identification serial number shall be marked in a suitable location and the same shall be mentioned in test certificates pertaining to it.

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

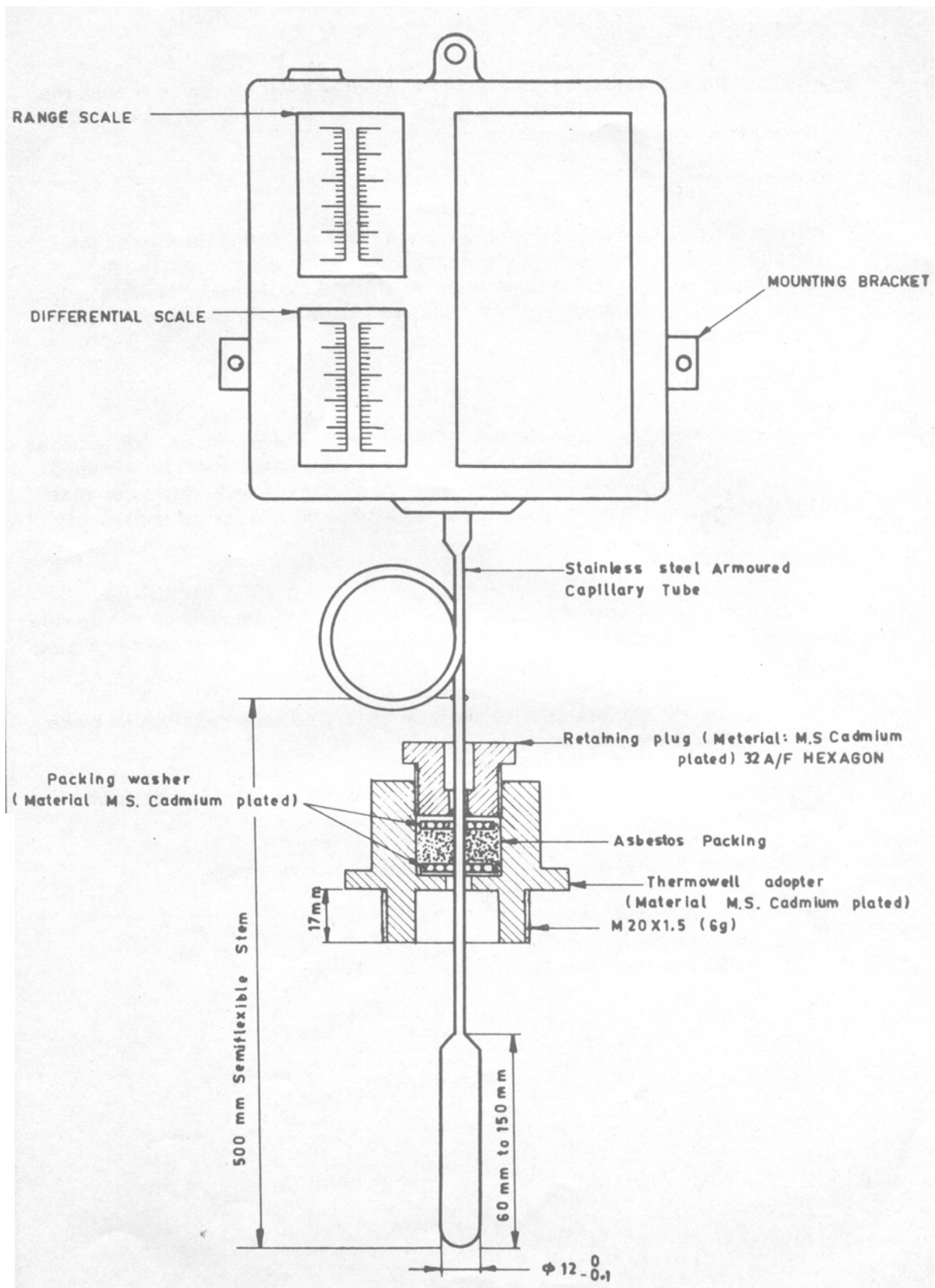
9.3 BHEL tag. No & service details shall be inscribed on a metal name plate affixed to the cover, if specified.

9.4 The following details shall be marked on each packing case.

- a) Manufacturer's name or trade mark.
- b) BHEL order No.
- c) BHEL standard NO. AA 732 40 02.

10.0 REFERRED STANDARDS (Latest Publications Including Amendments):

- 1) IS: 13947, part 1





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TABLE – 1

Range °C	Differential range °C	Maximum over temperature °C	Process Connection	SUB CODE		
				Capillary length (Metres)		
				3	6	9
- 5 – 65	10 – 30	75	M20x1.5 (6g)	013	200*	404
0 – 45	3.5 – 15	55		021	218	412
20 – 95	6.5 – 25	105		030*	226	420
40 – 125	7 – 25	135		048	234	439
70 – 150	1.5 – 10	215		056	242	447
110 – 210	6.5 – 25	225		064	250	455
150 – 250	1.5 – 10	300		072	269	463
220 – 300	1.5 – 10	350		080	277	471
280 – 380	12 – 30	400		099	285	480*
375 – 500	12 – 45	540		102	293	498
400 – 600	30 – 75	630		110	301	501

NOTE:

1. To obtain 12 digit code, suffix sub-code to the standard number.
2. Specific requirements of the plants shall be covered by plant Annexure to this standard.
3. These switches shall be mounted in suitable thermowells. Reference may be made to the following BHEL standards for selection of thermowells. AA 732 60 05 and AA 732 60 10.