




TD-106-I Rev No. 5	Form No.		<h1 style="text-align: center;">PRODUCT STANDARD</h1> <h2 style="text-align: center;">PULVERISERS</h2> <h3 style="text-align: center;">HYDERABAD</h3>		Product STD No.	BA 53135																						
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COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED, It must not be used directly or indirectly in any way detrimental to the interest of the company.		<u>SMART TYPE ELECTRONIC TEMPERATURE TRANSMITTERS</u>																										
		<p>1.0 SCOPE: This specification covers the requirement of smart temperature transmitter.</p> <p>2.0 DESCRIPTION: The microprocessor based smart temperature transmitter shall convert the primary sensor input into a proportionate 4-20mA DC output signal. The input can be any type of thermocouple (milli Volts signal) or RTD. The transmitter shall be inherently smart. Thermocouple burn-out or RTD wire-break protection for “failsafe” condition shall be provided.</p>																										
		<p>3.0 SPECIFICATIONS:</p> <p>3.1 Performance specifications:</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 40%;">Ambient temperature</td> <td style="width: 10%;">:</td> <td style="width: 50%;">- 40 to 85 °C</td> </tr> <tr> <td>Input type</td> <td>:</td> <td>3 OR 4 -wire RTD Pt 100 to IEC 751 or Thermo-couple E, K, J, T as per IASC96.1 (As mentioned in Enquiry)</td> </tr> <tr> <td>Output</td> <td>:</td> <td>2-wire 4-20 ma DC signal (with digital signal Super imposed) and shall conform to HART protocol.</td> </tr> <tr> <td>Characteristics</td> <td>:</td> <td>Linearised out put</td> </tr> <tr> <td>Cold junction compensation</td> <td>:</td> <td>For accurate and reliable temperature measurement compensation shall be available (for thermocouple inputs)</td> </tr> <tr> <td>Span</td> <td>:</td> <td>0 to 600 Deg C adjustable</td> </tr> <tr> <td>Accuracy</td> <td>:</td> <td>±0.4% at 23°C of span or better</td> </tr> <tr> <td>Output Indication</td> <td>:</td> <td>Built-in, Digital LCD to display multi parameter, Diagnostic information, bar graph for 0 – 100% indication.</td> </tr> </table>					Ambient temperature	:	- 40 to 85 °C	Input type	:	3 OR 4 -wire RTD Pt 100 to IEC 751 or Thermo-couple E, K, J, T as per IASC96.1 (As mentioned in Enquiry)	Output	:	2-wire 4-20 ma DC signal (with digital signal Super imposed) and shall conform to HART protocol.	Characteristics	:	Linearised out put	Cold junction compensation	:	For accurate and reliable temperature measurement compensation shall be available (for thermocouple inputs)	Span	:	0 to 600 Deg C adjustable	Accuracy	:	±0.4% at 23°C of span or better	Output Indication
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Revisions: Refer to record of revisions:		Prepared: MVRM	Approved: JGK	Date: 05.11.08																								

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COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED, It must not be used directly or indirectly in any way detrimental to the interest of the company.			Stability : ±0.25% of reading or 0.25°C, whichever is greater, for 60 months for RTDs. : ±0.5% of reading or 0.5°C, whichever is greater, for 60 months for TCs.					
			Output load : min 600 ohms at 24 V DC					
			Power supply : 12 to 45 V DC					
			I/O Isolation : Should be optically isolated from power circuit.					
			Electro-Magnetic Interface effect : Comply with IEC 801					
			Damping : Adjustable 0-60 seconds.					
			Configuration : By hand held Terminal. Vendor shall offer hand held terminal as an option giving complete details of model number. Vendor to quote price and its validity.					
			EMF correction : Transmitters to be used for RTD sensors shall be provided with RTD EMF correction features so that it shall detect and eliminate EMF errors which are the result of small voltage produced by RTD sensing elements.					
			Elevation & suppression : Facility to be provided for maximum zero elevation of 600% calibrated span & max. zero suppression for 500 % of URL					
			Ingress protection : IP67 or better.					
			3.2 <u>PHYSICAL SPECIFICATIONS:</u>					
			Process Connection : 1/2” - NTP Female					
			Electrical Connection : 1/2” - NTP Female. The terminal block shall be at the rear side of electronic housing, in such a way that the electronic circuitry will not be exposed to atmospheric condition while accessing the terminal block.					

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- Electronic Housing
- : Dual Compartment, Made of low copper Aluminum Alloy or better material
- Tag Plate Material
- : Stainless steel.
- Mounting
- : The transmitter shall be suitable for mounting on the instrument panel.
(The output cable from RTD shall be connected to the transmitter.)

3.3 LOCATION:

In the Instrument panel of the Lube Oil System of Pulveriser Gearbox, one of the Main auxiliaries of Coal Fired Boiler in a Thermal Power Station, with Dust laden, humid and hot weather.

4.0 IDENTIFICATION MARKINGS:

- a) The following minimum identification markings shall be stamped onto an identification tag/ label fixed to the transmitter.

-Manufacturers Type/model Number.
-Span limit and Range limit.
-Material of construction of process wetted part.
-Input signal
- b) A metal tag bearing relevant 12-digit material code shall be attached to each item.
- c) A metal tag bearing relevant KKS code (for identification by customer) shall be attached to each item, as given below:


TT for Oil supply line to Gearbox : HFC01 CT151 & 152
TT for Oil Tank : HFC01 CT153 & 154

5.0 PAINT COATING:

Manufacturer’s well proven paint coating shall be used if painting is done on any part.

6.0 INSPECTION AND TEST REQUIREMENTS:

- a) Calibration test certificate shall be furnished.
- b) Certificate for Explosion proof / Intrinsic safe / weather proof execution.
- c) Materials compliance certificate.

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7.0 GUARANTEE CERTIFICATE:

A guarantee certificate for 24 months of trouble free operation from date of shipment or 12 months from the date of commissioning whichever is less shall be furnished.

8.0 DOCUMENTS:

The following Technical Information / Documents shall be furnished.

a) Along with offer (2 copies each)

- Technical catalogues / literature.
- Drawing showing, mounting details.

b) After placement of order (10 copies each unless otherwise mentioned)

- Operation and Maintenance manual.
- Inspection and Test certificates (3 copies each)
- Guarantee certificate (3 copies each)
- Calibration details.


9.0 PACKING:

The material shall be properly packed to ensure that it is capable of withstanding transit risks without damage. An additional copy each of the test guarantee certificate shall be enclosed to the packing test along the consignment.

10.0 MARKING ON PACKING CASE:

The following details shall be marked on packing case.

1. Manufacturers name
2. BHEL purchase order number.
3. BHEL product standard number.

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11.0 SET POINTS FOR ADEQUATE, ALARM AND TRIP/ PUMP START/ STOP AND HEATER ON/ OFF:

11.1 The Lube oil temperature measuring TT's need to be calibrated for a temperature range of 0 – 100 Deg.C. The set points for the bearing temperature for Adequate, Very Low/ High Alarm, Low/ Oil heater “ON” & Adequate/ Oil heater “OFF” and Trip etc. are as follows:

1. HFC01 CT151 & 152:
 ADEQUATE MILL START: $\geq 30\text{Deg.C}$
 HIGH ALARM : $\geq 60\text{Deg.C}$
 VERY HIGH MILL TRIP : $\geq 65\text{Deg.C}$

2. HFC01 CT153 & 154:
 VERY LOW ALARM & PUMP STOP: $\leq 10\text{Deg.C}$
 ADEQUATE PUMP START : $\geq 10\text{Deg.C}$
 LOW- OIL HEATER “ON” : $\leq 30\text{Deg.C}$
 HIGH-OIL HEATER “OFF” : $\geq 36\text{Deg.C}$


11.2 Vendor to provide mA value corresponding to the °C of the set points as above.

11.3 Vendor to provide necessary technical help to the Lube Oil System supplier for installation of the transmitters on instrument panel and for testing as well.

12.0 Vendor to submit the checklist duly filled on page 6 of this standard at the time of quoting against our enquiry clearly indicating the relevant features of their offered Model w.r.t. BHEL standard.

13.0 MATERIAL CODE:

VAR NO.	DESCRIPTION	SET POINTS	MATL.CODE
01	SMART TYPE TEMPERATURE TRANSMITTER	As above	BA9753135017

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CHECK-LIST

SL. NO.	DESCRIPTION	VENDOR'S COMMENTS
1	Ambient temperature	
2	Input type	
3	Output	
4	Characteristics	
5	Span	
6	Accuracy	
7	Output Indication	
8	Stability	
9	Output load	
10	Power supply	
11	I/O Isolation	
12	Electro-Magnetic interface effect	
13	Damping	
14	Configuration	
15	EMF correction	
16	Elevation & suppression	
17	Ingress protection	
18	Process Connection	
19	Electrical Connection	
20	Electronic Housing	
21	Tag Plate Material	
22	Mounting	
23	Technical catalogues/Literature (2 copies)	
24	Drawing (showing mounting details)	

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