Specifications of Process calibrator for thermocouple calibration furnace.

E&I Lab T03. Rev.00

Sl. No.	BHEL Requirement		Offered by Supplier	Remarks
1.	**Process calibrator for thermocouple calibration furnace.**			
2	Purpose: Used in calibration of thermocouples and RTD's along with thermocouple calibration furnace.			
3	It shall be used in source mode and Measurement mode.			
	The specifications of the instrument shall be as follows.			
I	**Measurement mode:**			
4	**D.C. Voltage**			
4.1	Range	0-40V with minimum three ranges at mV and V		
4.2	Accuracy	0.03% for all ranges		
4.3	Resolution	1 µV at lowest range and 1 mV at highest range		
5	**D.C. Current**			
5.1	Range	0-110mA with minimum two ranges		
5.2	Accuracy	±0.03% for all ranges		
5.3	Resolution	1 µA at lowest range and 10 µA at highest range		
6.	**Resistance**			
6.1	Range	0-10K Ω with minimum three ranges at Ω and KΩ		
6.2	Accuracy	0.05% up to 1000 Ω and 0.1% there after		
6.3	Resolution	0.01 Ω at lowest range and 1 Ω at highest range		
II	**Source mode**			
7	**DC Voltage**			

7.1	Range	0-10V with minimum three ranges at mV and V		
7.2	Accuracy	0.03% for low ranges and max0.06% for higher range.		
7.3	Resolution	1 µV at lowest range and 1 mV at highest range		
8	**DC Current**			
8.1	Range	0-20mA		
8.2	Accuracy	±0.03% for entire range		
8.3	Resolution	Max. 10µA		
9	**Resistance**			
9.1	Range	0-400 Ω		
9.2	Accuracy	0.03%		
9.3	Resolution	0.01 Ω		
III	**Measurement and Source mode**			
10	**PT100**			
10.1	Range	-200-800 °C.		
10.2	Accuracy	±0.3°C		
10.3	Resolution	+/-1.0°C		
11	**J type thermocouple**			
11.1	Range	-200-1200 °C		
11.2	Accuracy	Not more than ±0.9°C for entire range		
11.3	Resolution	0.1°C		
12	**K type thermocouple**			
12.1	Range	-200-1370 °C		
12.2	Accuracy	±0.5°C for the range -50 to 950 °C.		
12.3	Resolution	0.1°C		
13	**T type thermocouple**			
13.1	Range	-250-400 °C		

13.2	Accuracy	±0.3°C for the range 0 to 400 °C.		
13.3	Resolution	0.1°C		
14	**R type thermocouple**			
14.1	Range	-20-1760 °C		
14.2	Accuracy	±1.0°C for the range 400 to 1760 °C.		
14.3	Resolution	Max.1 °C		
15	**S type thermocouple**			
15.1	Range	-20-1760 °C		
15.2	Accuracy	±0.9°C for the range 400 to 1400°C.		
15.3	Resolution	Max.1 °C		
	The instrument shall have following features.			
16	The instrument shall have provision for cold junction compensation.			
17	The instrument shall have provision for source and measure of 4-20mA transmitters			
18	The instrument shall have provision for 24V DC loop power for 2 wire transmitters			
19	There shall be a provision for simultaneous display of source and measure.			
20	4 point calibration certificate traceable to national/international standards			
21	Operating temperature: -5°C to 45°C			
22	Chargeable battery with charger or battery cell option or both are preferable.			
23	Protective case for easy carrying of the instrument and two sets of measuring leads.			

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24	Suppliers who have supplied earlier of the same instrument only should quote. a) Supplier shall indicate the contact details of customer		
25	Acceptance of Equipment: The instrument shall be accepted by BHEL upon satisfactory demonstration of all its features and performance at BHEL.		