

Laboratory **QA Tech (A Division of GMP Technical Solutions Pvt. Ltd.), L-73, Verna Industrial Estate, Verna Salcette, Goa**

Accreditation Standard **ISO/IEC 17025:2005**

Discipline **Electro-Technical Calibration** Issue Date **09.02.2015**

Certificate Number **C-0867** Valid Until **08.02.2017**

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Quantity Measured / Instrument	Range/ Frequency	* Calibration Measurement Capability (\pm)	Remarks
<u>SOURCE</u>			
1. DC VOLTAGE^{\$}	10 mV to 100 mV 100 mV to 10 V 10 V to 100 V	0.07 % to 0.01 % 0.01 % to 0.007 % 0.007 %	Using WIKA CED 7000 by Direct Method
2. DC CURRENT^{\$}	4 mA to 100 mA	0.05 % to 0.01 %	Using WIKA CED 7000 by Direct Method
3. RESISTANCE^{\$}	5 Ω to 400 Ω 400 Ω to 4 k Ω 4 k Ω to 100 M Ω	0.4 % to 0.005 % 0.005 % to 0.01 % 0.15 %	Using WIKA CED 7000 by Direct Method Using Zeal Decade Box by Direct Method
4. FREQUENCY^{\$}	5 Hz to 10 kHz	0.09 % to 0.3%	Using WIKA CEP 6000 by Direct Method
5. TEMPERATURE SIMULATION^{\$} (Temperature Indicator, Controller , Recorder) RTD-100/ 1000 Ω	(-)200$^{\circ}$C to 800 $^{\circ}$C	0.08 $^{\circ}$C	Using WIKA CED 7000 by Simulation / Direct Method
THERMOCOUPLE			
TYPE E	(-)250 $^{\circ}$C to 1000 $^{\circ}$C	0.08 $^{\circ}$C to 0.12$^{\circ}$C	
TYPE J	(-)210 $^{\circ}$C to 1200 $^{\circ}$C	0.1 $^{\circ}$C to 0.14$^{\circ}$C	
TYPE K	(-)200 $^{\circ}$C to 1372 $^{\circ}$C	0.1 $^{\circ}$C to 0.15$^{\circ}$C	
TYPE N	(-)200 $^{\circ}$C to 1300 $^{\circ}$C	0.15 $^{\circ}$C to 0.21$^{\circ}$C	
TYPE R	0 $^{\circ}$C to 1750 $^{\circ}$C	1 $^{\circ}$C to 0.9$^{\circ}$C	
TYPE S	0 $^{\circ}$C to 1750 $^{\circ}$C	1 $^{\circ}$C to 0.84$^{\circ}$C	
TYPE T	(-)250 $^{\circ}$C to 400 $^{\circ}$C	0.1 $^{\circ}$C to 0.13$^{\circ}$C	
TYPE B	600 $^{\circ}$C to 1800 $^{\circ}$C	0.85 $^{\circ}$C to 0.9$^{\circ}$C	

Shally Sharma
Convenor

Avijit Das
Program Manager

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Quantity Measured / Instrument	Range/ Frequency	* Calibration Measurement Capability (±)	Remarks
6. AC VOLTAGE*	50 Hz 20 mV to 1000 V	1.5 % to 0.6 %	Using Zeal MFC by Direct Method
7. DC VOLTAGE*	20 mV to 1000 V	1.0 % to 0.7 %	Using Zeal MFC by Direct Method
8. AC CURRENT*	50 Hz 20 mA to 10 A	1.5 % to 0.7 %	Using Zeal MFC by Direct Method
9. DC CURRENT*	4mA to 20mA	0.15 % to 0.03 %	Using WIKA CEP 6000 by Direct Method
	20 mA to 10 A	0.8 % to 0.6 %	Using Zeal MFC by Direct Method
10. DIGITAL TIMER/ CLOCK*	15 s to 1 hrs 1 hrs to 24 hrs	0.9 s 0.9 s	Using ROBIC/SC-505 by Comparison Method
11. TEMPERATURE SIMULATION♣ (Temperature Indicator, Controller, Recorder) RTD PT-100/ PT-1000	(-)200°C to 800°C	0.08°C to 0.15°C	Using WIKA CEP 6000 by Direct Method
THERMOCOUPLE			
TYPE R	0°C to 1750°C	1.7°C to 0.8°C	Using WIKA CEP 6000 by Direct Method
TYPE T	(-)200°C to 400°C	0.1°C to 0.13°C	
TYPE J	(-)210°C to 1200°C	0.1°C to 0.14°C	
TYPE B	600°C to 1800°C	1.75°C to 2.1°C	
TYPE E	(-)250°C to 1000°C	0.1°C to 0.12°C	
TYPE S	0°C to 1750°C	1°C to 0.85°C	
TYPE K	(-)200°C to 1372°C	0.1°C to 0.15°C	
TYPE N	(-)200°C to 1300°C	0.15°C to 0.21°C	

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Quantity Measured / Instrument	Range/ Frequency	* Calibration Measurement Capability (\pm)	Remarks
<u>MEASURE</u>			
1. DC VOLTAGE^{\$}	20 mV to 100 mV	0.21 % to 0.006 %	Using 6.5 DMM (8846A) by Direct Method
	100 mV to 10 V	0.006 % to 0.004 %	
	10 V to 100 V	0.004 % to 0.005 %	
	100 V to 1000 V	0.005 % to 0.006 %	
2. AC VOLTAGE^{\$}	50 Hz		Using 6.5 DMM(8846A) by Direct/Comparison Method
	20 mV to 100 mV	0.4 % to 0.1 %	
	100 mV to 100 V	0.1 %	
	100 V to 1000 V	0.1 %	
3. AC CURRENT^{\$}	50 Hz		Using 6.5 DMM(8846A) by Direct/Comparison Method
	20 mA to 100 mA	0.3 % to 0.13 %	
4. DC CURRENT^{\$}	100 mA to 10 A	0.13 % to 0.21 %	Using 6.5 DMM(8846A) by Direct Method
	4 mA to 100 mA	0.85 % to 0.08 %	
5. RESISTANCE^{\$}	100 mA to 10 A	0.08 % to 0.19 %	Using 6.5 DMM(8846A) by Direct/ Comparison Method
	5 Ω to 400 Ω	0.04 % to 0.004 %	
	400 Ω to 4 k Ω	0.004 % to 0.005 %	
	4 k Ω to 1 M Ω	0.005 % to 0.12 %	
6. FREQUENCY^{\$}	1 M Ω to 10 M Ω	0.12 % to 0.05 %	Using 6.5 DMM(8846A) by Direct Method
	10 M Ω to 100 M Ω	0.05 % to 0.95 %	
	5 Hz to 10 kHz	0.13 % to 0.012 %	

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Quantity Measured / Instrument	Range/ Frequency	* Calibration Measurement Capability (\pm)	Remarks
7. TEMPERATURE SIMULATION[§] (Temperature Indicator, Controller, Recorder)			
RTD-100 /1000Ω	(-)200°C to 800°C	0.015°C to 0.04°C	Using WIKA CED 7000 by Simulation / Direct Method
THERMOCOUPLE			
TYPE E	(-)250°C to 1000°C	0.06 °C to 0.1°C	Using WIKA CED 7000 by Simulation / Direct Method
TYPE J	(-)210°C to 1200°C	0.07 °C to 0.12°C	
TYPE K	(-)200°C to 1372°C	0.09 °C to 0.15°C	
TYPE N	(-)200°C to 1300°C	0.14 °C to 0.2°C	
TYPE R	0°C to 1750°C	0.8 °C to 0.9°C	
TYPE S	0 °C to 1750 °C	0.7 °C to 0.9°C	
TYPE T	(-)250 °C to 400 °C	0.09 °C to 0.1°C	
TYPE B	600 °C to 1800 °C	0.7 °C to 0.8°C	
8. STOP WATCH/ TIMER[§]	15 s to 1 Hrs 1 Hrs to 24 Hrs	0.8 s 0.8 s	Using ROBIC/ SC-505 by Comparison Method

* Measurement Capability is expressed as an uncertainty (\pm) at a confidence probability of 95%

[§]Only in Permanent Laboratory

*Only for Site Calibration

The laboratory is also capable for site calibration however, the uncertainty at site depends on the prevailing actual environmental conditions and master equipment used.

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