Laboratory	**Fare Labs Pvt. Ltd., D-18, Infocity, Phase-II, Sector-33, Gurgaon, Haryana**		
Accreditation Standard	**ISO/IEC 17025: 2005**		
Certificate Number	**CC-2739**	**Page**	**1 of 15**
Validity	**22.06.2018 to 21.06.2020**	**Last Amended on**	**14.03.2019**

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
	ELECTRO-TECHNICAL CALIBRATION			
I.	**SOURCE**			
1.	DC Voltage #	1 mV to 100 mV 100 mV to 10 V 10 V to 1000 V	0.15 % to 0.004 % 0.004 % to 0.002 % 0.002 % to 0.0025 %	Using Fluke 5522 A/ 5080A By Direct Method
2.	AC Voltage #	**50 Hz to 10 kHz** 1 mV to 300 mV 300 mV to 30 V 30 V to 1000 V	 0.73 % to 0.02 % 0.02 % to 0.031 % 0.031 % to 0.037 %	Using Fluke 5522 A/ 5080A By Direct Method
3.	DC Current #	10 µA to 300 µA 300 µA to 190 mA 190 mA to 1A 1 A to 20 A	0.25 % to 0.036 % 0.036 % to 0.015 % 0.015 % to 0.035 % 0.035 % to 0.13 %	Using Fluke 5522 A/ 5080A By Direct Method
		20A to 100A 100A to 1000A	3.28 % to 1.0 % 1.0 % to 0.61 %	Using Fluke 5522 A/ 5080A/5500A With Coil By Direct Method
4.	AC Current #	**45 Hz to 1 kHz** 33 µA to 330 µA 330 µA to 20 mA 20 mA to 1 A 1 A to 20 A	 0.49 % to 0.21 % 0.21 % to 0.12 % 0.12 % to 0.07 % 0.07 % to 0.48 %	Using Fluke 5522 A/ 5080A By Direct Method
		50 Hz 20 A to 100 A 100 A to 1000 A	 3.23 % to 1.0 % 1.0 % to 0.61 %	Using Fluke 5522 A/ 5080A/5500A With Coil By Direct Method

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Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
5.	DC Resistance [#] (2 Wire)	1 Ω to 3 kΩ 3 kΩ to 300 kΩ 300 kΩ to 3 MΩ 3 MΩ to 290 MΩ 290 MΩ to 1GΩ	0.01 % to 0.004 % 0.004 % 0.004 % to 0.007 % 0.007 % to 0.6 % 0.6 % to 1.75 %	Using Fluke 5522 A/ 5080A By Direct Method
		1 GΩ to 10 GΩ 10 GΩ to 18.14 GΩ	1.3 % 1.3 % to 3.54 %	Using Fluke 5080 A By Direct method
6.	High Resistance[#] at 500 V (for insulation Tester)	100 kΩ to 10MΩ 10 MΩ to 1 GΩ 1 GΩ to 10 GΩ 10 GΩ to 18.14 GΩ	0.50 % to 0.52 % 0.52 % to 1.25 % 1.25 % to 1.33 % 1.33 % to 3.20 %	Using Fluke 5080 A By Direct method
7.	Frequency [#]	10 Hz to 100 kHz	0.1 % to 0.006 %	Using Fluke 5522 A By Direct method
8.	DC Capacitance[#]	220 nF to1 µF 1 µF to 100 µF	0.26 % to 0.41 % 0.41 % to 0.63 %	Using Fluke 5522 A By Direct method
9.	Oscilloscope[#]			
	Amplitude	DC: 1.25 mV to 100 V @1MΩ Square Wave @1 MΩ 1 kHz to 10 kHz 5 mV to 100 V	3.69 % to 0.12 % 1.0 % to 0.6 %	Using Fluke 5522 A by Direct method
	Time base	10 ns to 5 s	0.58 % to 0.12 %	
	Bandwidth	Up to 1GHz	8.1 %	

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
10.	Temperature Simulation#			
	RTD Pt100	(-) 200 °C to 800 °C	0.29 °C	Using Fluke 5522 A by Direct method
	Thermocouple			
	J-Type	(-) 200 °C to 1200 °C	0.32 °C	
	K-Type	(-) 200 °C to 1200 °C	0.49 °C	
	R-Type	0 °C to 1750 °C	1.00 °C	
	S-Type	0 °C to 1750 °C	1.04 °C	
	T-Type	(-) 200 °C to 400 °C	0.73 °C	
	N-Type	(-) 200 °C to 1300 °C	0.47 °C	
11.	DC Power #	**1.5 V to 600 V** **0.1 A to 20 A** 0.15 W to 12 kW	0.05 % to 0.1 %	Using Fluke 5522 A/ 5080 A by Direct method
12.	AC Power #	**@ 50 Hz** **40 V to 600 V** **0.01 A to 20 A** **±0.25 to U.P.F** 0.1 W to 12 kW	0.15 % to 1.2 %	Using Fluke 5522 A/ 5080 A by Direct method
13.	Power Factor #	**@50 Hz** ±0.1 to U.P.F	0.006	Using Fluke 5522 A/ 5080 A by Direct method
II.	**MEASURE**			
1.	DC Voltage #	1mV to 100 mV 100 mV to 1000 V	0.052 % to 0.0016 % 0.0016 % to 0.0012 %	Using Fluke 8508 A/ 8846A by Direct Method
2.	DC Current #	1 µA to 1mA 1 mA to 200 mA 200 mA to 2 A 2 A to 20 A	0.69 % to 0.0063 % 0.0063 % to 0.009 % 0.009 % to 0.025 % 0.025 % to 0.052 %	Using Fluke 8508 A/ 8846A by Direct method

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
3.	AC Voltage #	**50 Hz to 1 kHz** 1 mV to 100 mV 100 mV to 1 V 1 V to 1000 V	 0.50 % to 0.019 % 0.019 % to 0.013 % 0.013 % to 0.032 %	Using Fluke 8508 A/ 8846A by Direct Method
		1 kHz to 20 kHz 1 mV to 100 mV 100 mV to 1 V 1 V to 100 V	 0.98 % to 0.049 % 0.049 % to 0.03 % 0.03 % to 0.031 %	Using Fluke 8508 A/ 8846A by Direct Method
4.	AC Current #	**50 Hz to 5 kHz** 33 µA to 100 µA 100 µA to 200 mA 200 mA to 2 A 2 A to 20 A	 0.2 % to 0.14 % 0.14 % 0.14 % to 0.15 % 0.15 % to 0.30 %	Using Fluke 8508 A/ 8846A by Direct method
5.	DC Resistance# (2 Wire & 4 Wire)	1 Ω to 10 Ω 10 Ω to 100 MΩ 100 MΩ to 1 GΩ 1 GΩ to 10 GΩ	0.013 % to 0.004 % 0.004 % to 0.029 % 0.029 % to 0.34 % 0.34 %	Using Fluke 8508 A/ 8846A by Direct method Using Fluke 8508 A by Direct method
6.	Frequency #	10 Hz to 1 MHz	0.08 % to 0.013 %	Using Fluke 8846 A by Direct method

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
7.	Temperature Simulation#			
	RTD (Pt 100)	(-) 200 °C to 500 °C	0.05 °C	Using Fluke 8508 A by Direct method
	Thermocouple			Using Fluke 5522 A by Direct method
	J-Type	(-) 200 °C to 1200 °C	0.4 °C	
	K-Type	(-) 200 °C to 1370 °C	0.5 °C	
	R-Type	0 °C to 1750 °C	0.9 °C	
	S-Type	0 °C to 1750 °C	0.9 °C	
	T-Type	(-) 200 °C to 400 °C	0.74 °C	
	N-Type	(-) 200 °C to 1300 °C	0.5 °C	
8.	Power Energy ♣ (1 φ & 3 φ)	**50 Hz** **40 V to 440 V** **1 A to 120 A** **±0.5 P.F. to U.P.F.**		
		40 W to 53 kW- U.P.F	2 %	Using Fluke 1732 Energy Logger by Direct/ Comparison Method
		20 W to 26 kW-0.5 P.F	2 %	

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Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
	MECHANICAL CALIBRATION			
I.	**WEIGHTS**			
1.	Conventional Mass[$] Calibration of E2 Class and coarser	1 mg 2 mg 5 mg 10 mg 20 mg 50 mg 100 mg 200 mg 500 mg 1 g 2 g 5 g 10 g 20 g 50 g 100 g 200 g	0.003 mg 0.003 mg 0.003 mg 0.003 mg 0.003 mg 0.004 mg 0.005 mg 0.006 mg 0.008 mg 0.010 mg 0.012 mg 0.016 mg 0.020 mg 0.025 mg 0.030 mg 0.05 mg 0.10 mg	Using Standard Weights of Accuracy Class E1 and Precision Balances (Readability: 0.001 mg/ 0.01 mg/0.1 mg) as per OIML R 111 (2004)
	Calibration of F2 Class and coarser	500 g 1 kg	2.5 mg 5.0 mg	Using Standard Weights of Accuracy Class F1 and Precision Balances (Readability: 0.001 mg/ 0.01 mg/0.1 mg) Based on OIML R 111 (2004)

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
II.	**WEIGHING SCALE AND BALANCE**			
1.	Calibration of Electronic Weighing Balance of Class-I And Coarser [#] Readability: 0.001 mg Readability: 0.01 mg Readability: 0.1 mg	 0 to 50 g 0 to 40 g 40 g to 200 g	 0.009 mg 0.07 mg 0.15 mg	Using Standard Weights of Accuracy Class (E1 & E2) as per OIML R 76-1 (2006)
	Calibration of Electronic Weighing Balance of Class-II And Coarser[#] Readability: 1 mg	0 to 1 kg	2.5 mg	Using Standard Weights of Accuracy Class (E2 & F1) as per OIML R 76-1 (2006)
	Calibration of Electronic Weighing Balance of Class-III and Coarser[#] Readability: 1 mg	10 g to 10 kg	300 m g	Using Standard Weights of Accuracy Class (F1& M1) as per OIML R 76-1 (2006)
	Calibration of Electronic Weighing Balance of Class-II And coarser[#] Readability: 1 g	0 to 50 kg	5 g	Using Standard Weights of Accuracy Class (F1 & M1) as per OIML R 76-1 (2006)

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
	Calibration of Electronic Weighing Balance of Class-II And coarser[#] Readability: 10 g	200 g to 300 kg	14 g	Using Standard Weights of Accuracy Class (M1) as per OIML R 76-1 (2006)
III.	**VOLUME**			
1.	Piston Operated Micropipette [$]	1 µl to 10 µl > 10 µl to 100 µl > 100 µl to 1000 µl > 1 ml to 10 ml	0.02 µl 0.04 µl 0.08 µl 0.01 ml	Using Precision Balances (Readability: 0.001 mg/0.01mg) and Double Distilled Water of known Density By Gravimetric Method Based on ISO 8655-6
2.	Glassware [$] (Pipettes/Burettes/ Measuring Cylinder / Graduated Jar/ Volumetric Flask/ Beaker)	1 ml to 500 ml	0.004 ml to 0.050 ml	Using Precision Balances (Readability: 0.01 mg/0.1mg/ 1 mg) and Double Distilled Water of known Density By Gravimetric Method Based on ISO 4787-2010

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
3.	Storage Tank (by Electro-Optical distance ranging) [#] Tank with Dia. Of>5m	20 kl to 6500 kl	0.2%	Total Station (Resolution Linear Measurement= 1 mm, Horizontal and Vertical Angle=2" Arc resolution) As per OIML 71 & ISO 7507-5: 2005
IV.	**DENSITY AND VISCOSITY**			
1.	Hydrometers [$]	0.640 g/ml to 0.800 g/ml 0.800 g/ml to 1.000 g/ml 1.000 g/ml to 1.250 g/ml 1.250 g/ml to 1.450 g/ml 1.450 g/ml to 1.650 g/ml 1.650 g/ml to 1.850 g/ml 1.900 g/ml to 1.950 g/ml	0.0008 g/ml 0.0009 g/ml 0.001 g/ml 0.001 g/ml 0.001 g/ml 0.001 g/ml 0.001 g/ml	Using Standard Hydrometers & Liquids of Appropriate densities as per IS: 3104 (Part II)
2.	Viscometer Constant [$] (Glass Capillary Viscometers)	(0.001 to 0.01) mm^2/s^2 (0.01 to 0.05) mm^2/s^2 (0.05 to 3) mm^2/s^2 (3.0 to 30) mm^2/s^2 (30 to 100) mm^2/s^2	0.27 % 0.30 % 0.47 % 0.47 % 0.60 %	Using Direct Flow Viscometers at 20 °C to 100 °C Procedure based on ASTM D446
3.	Kinematic Viscosity of Newtonian Liquids [$]	(1 to 10) mm^2/s (10 to 30) mm^2/s (30 to 300) mm^2/s (300 to 3000) mm^2/s (3,000 to 30,000) mm^2/s (30,000 to70,000) mm^2/s	0.27 % 0.35 % 0.36 % 0.47 % 0.54 % 0.60 %	Using Standard Viscometers at 20 °C to 100 °C based on ASTM D445

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
4.	Flow Cup /Viscosity Cup $	25 mm^2/s to 150 mm^2/s	0.35 %	Using Standard Newtonian Liquids, time Measuring Device as per IS 3944
V.	**PRESSURE INDICATING DEVICES**			
1.	Hydraulic Pressure # (Digital/Analogue)	(0 to 70) bar (g)	15 kPa (0.15 bar)	Using Digital Pressure Gauge As per DKD-R 6-1
		(0 to 700) bar (g)	85 kPa (0.85 bar)	
2.	Pneumatic Pressure # (Digital/Analogue)	0 to 10 bar (g) (-) 1 bar (g) to 0 bar (g) 0 to 1 bar (g) 0 to 0.05 bar(g)	0.9 kPa 80 Pa 80 Pa 7 Pa	Using Digital Pressure Gauge DKD-R 6-1 Method for Calibration Pressure Gauge
VI.	**ACCELERATION AND SPEED**			
1.	Indicator of RPM Measurement ♣ (Non- Contact Type)	60 rpm to 10,000 rpm 10,000 rpm to 99000rpm	1.6 % rdg. 1.6 % rdg.	Using Digital Tachometer by Comparison method

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
	THERMAL CALIBRATION			
I.	**TEMPERATURE**			
1.	LIGT Thermometers of total and Partial Immersion Type[$]	(-) 80 °C to 50 °C > 50 °C to 300 °C	0.015 °C 0.013 °C	Using SPRT/Super Thermometer/ Alcohol Bath/ Water Bath/ Oil Bath by Comparison Calibration
2.	RTDs with and Without Indicator [$]	(-) 196 °C (-) 180 °C to (-) 80 °C (-) 80 °C to 660 °C	0.004 °C 0.02 °C 0.03 °C	Using SPRT/Super Thermometer /LN2 By Fixed Point Bath Using SPRT/Super Thermometer/Ultra Cooling/ Dry Well Bath by Comparison Method
3.	Thermocouples with and Without Indicator[$]	0 °C to 300 °C > 300 °C to 1200 °C	0.25 °C 0.54 °C	Using SPRT/Super Thermometer/ High Precision Dry Well Bath by Comparison Method Using Type-S/RTC / 6½ Digit DMM/ High Temperature Furnace by Comparison Method
4.	Calibration of Liquid Baths/ Dry Block Calibrators / Chamber/ Ovens (Estimation of Stability & Uniformity)[$]	(-) 180 °C to 300 °C > 300 °C to 660 °C	0.02 °C 0.05 °C	Using Two SSPRT/ Super Thermometer by Comparison Method

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
5.	Calibration of High Temperature Furnace/ Dry Wells/ Dry Blocks/ Chambers Ovens (Estimation of Stability & Uniformity)[$]	> 100 °C to 1200 °C	0.50 °C	Using Two -S/N type T/C / 6½ Digit DMM/ Super DAQ by Comparison Method
6.	Indicator of Thermal Sources, Baths / DBC / Furnace [$]	(-) 180 °C to 300 °C > 300 °C to 660 °C > 300 °C to 1200 °C	0.02 °C 0.04 °C 0.50 °C	Using Two SPRT/ Super Thermometer by Comparison Method Using S/R Type T/C, 6½ Digit DMM by Comparison Method (Single Point Calibration)
7.	IR Thermometer / IR Gun/ Radiation Pyrometer / Thermal Imager [$]	(-) 15 °C to 120 °C >120 °C to 500 °C > 500 °C to 1300 °C	0.53 °C 1.50 °C 3.27 °C	Using IR-Calibrator/ Standard Pyrometer/ PRT/ 6½ Digit DMM By Comparison Method Using Spherical Blackbody Source/ Standard Pyrometer By Comparison Method
8.	IR Thermometer/ IR Gun/Radiation Pyrometer/ IR Detector/ Thermal Imagers/ Laser pointed IR Pyrometer [$]	>1300 °C to 2000 °C > 2000 °C to 2900 °C	3.89 °C 4.43 °C	Using High Temperature Blackbody Radiation Source/ IR-Radiation Thermometer By Comparison Method

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
9.	Blackbody Source/ IR Thermal Source/ Blackbody Cavity [$]	(-) 32 °C to 500 °C >500 °C to 1300 °C >1300 °C to 2900 °C	1.00 °C 3.00 °C 6.00 °C	Using Transfer Standard IR Pyrometers/ PRT/ 6½ Digit DMM By Transfer Standard Calibration Method
10.	Calibration of RTD/Thermocouple/ Temp. Recorders/ Indicators with Probes/Temp Gauge[♣]	(-) 95 °C to 660 °C 0 °C to 1200 °C	0.10 °C 1.00 °C	Using SPRT/Super – DQA Temperature Scanner / Dry Block Calibrators By Comparison Calibration Using S/R/N T/C, Super DQA, Temperature Scanner / Dry Block Calibrators By Comparison Method
11.	Indicator of Baths/ Dry Block Calibrators/ Furnace/ Chambers/ Ovens[♣] (Estimation of Stability & Uniformity)	(-) 30 °C to 600 °C 0 °C to 1200 °C	0.20 °C 0.80 °C	Using Two SSPRT/Super –DQA Thermometer/ Temperature Scanner by Comparison Method Using Two R/S Type T/C, Super- DAQ, Temperature Scanner By Comparison Method
12.	Indicator of Thermal Sources, Baths. DBC/ Furnace/ Chambers/ Ovens[♣] (Estimation of Stability & Uniformity)	> 300 °C to 600 °C > 600 °C to 1200 °C	0.10 °C 1.00 °C	Using S/R/N-Type T/C, Super DQA, Temperature Scanner / By Comparison Method

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
13.	Calibration of Thermal Sources/ Environmental Chambers/Furnaces/ Heating Chambers	(-) 80 °C to 300 °C	1.77 ^{0}C	Using RTDs/ Data Logger/ Super DAQ Calibrator
	Multi-Locations (Mapping) ♣	300 °C to 1200 °C	2.44 °C	Using N-Type T/C, Data Logger/ Super DAQ Calibrator (Multi-Point Calibration)
14.	Blackbody Source/ IR Thermal Source/ Blackbody Cavity Source ♣	(-) 32 °C to 500 °C > 500 °C to 1300 °C > 1300 °C to 3000 °C	1.50 °C 4.00 °C 7.00 °C	Using Transfer Standard IR Pyrometers By Transfer Standard Calibration
II.	**SPECIFIC HEAT & HUMIDITY**			
1.	Hygrometer/ Humidity Meter/ Digital Hygrometer / Thermo-Hygrometer/ Data Logger $	10% RH to 95% RH @ 25 °C 10 °C to 50°C @ 50% RH	0.44%RH 0.16 °C	Using Precision Standard Hydrometer/ Humidity Generator By Comparison Method
2.	Indicator of Humidity Chamber/ Environmental Chamber/ Humidity Generator #	10% RH to 95% RH @ 25 °C 10 °C to 50 °C @ 50% RH	0.5 %RH 0.20 °C	Using Precision Standard Hydrometer By Comparison Method (Single Point Calibration)

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
3.	Humidity Chamber/ Environmental Chamber/ Humidity Generator ♣	15% RH to 95% RH @25 °C 10 °C to 50 °C @ 50% RH	1%RH 0.30 °C	Using Standard Temperature & Humidity Data Recorders (Multi point calibration)

*** Measurement Capability is expressed as an uncertainty (±) 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.