ACCREDITATION CERTIFICATE

LB-CAL-002

Emirates **I**nternational **A**ccreditation **C**entre

has accredited

DANWAY CALIBRATION & MEASUREMENTS LABORATORY

Al Quoz Industrial area, Dubai-United Arab Emirates

In accordance with the requirements of

ISO/IEC 17025:2017

General requirements for the competence of testing and calibration laboratories

to undertake the calibration in the attached accreditation scope

This Accreditation is invalid without the attached accreditation scope and shall remain in force within the validity period printed below, subject to continuing compliance with the requirements of the accreditation criteria.

Validity: 10-01-2022 to 29-06-2024

Initial Accreditation Date: 30/06/2003

CHIEF EXECUTIVE OFFICER
APPROVAL

مـركـز الإمـارات الـعـالـمـي لـلاعـتـمـاد
Emirates International Accreditation Centre

Accreditation Scope
LB-CAL-002

Danway Calibration & Measurements Laboratory

Al Quoz Industrial area, Dubai-United Arab Emirates

Date: 10-01-2022 **Valid to: 29-06-2024**

Accreditation History			
Scope	**Issue No.**	**Details**	**Date**
Dimensional	12	Renewal accreditation and modification in Calibration field name & in CMC Values	10-01-2022
Mass & Balance		Renewal accreditation	
Pressure		Renewal accreditation	
Temperature		Renewal accreditation	
Force		Renewal accreditation and modification in Calibration field name & in Range values	
Electrical	4	Renewal accreditation	
Humidity		Renewal accreditation	
Time		Renewal accreditation	
Dimensional	11	The certificate validity was extended for 6 months from 30-06-2021 up to 29-12-2021	30-06-2021
Mass & Balance			
Pressure			
Temperature			
Force			
Electrical	3		
Humidity			
Time			
Mass & Balance	10	Scope presentation have all changed to avoid overlapping of ranges in addition to modification in CMC Values	09-07-2020
Pressure			
Force		Slight modification to methods and ranges	

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Danway Calibration & Measurements Laboratory

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Accreditation History			
Scope	**Issue No.**	**Details**	**Date**
Dimensional	10	Change the description of Dial gauges under calibration field	29-9-2019
Temperature		Revising the wording of calibration method based on customer's request	
Dimensional	9	Renewal accreditation and first issuance under the name of EIAC (which was formerly known as DAC)	20-01-2019
Mass & Balance		Renewal accreditation, Modification in the CMC Values and first issuance under the name of EIAC (which was formerly known as DAC)	
Pressure	9	Renewal accreditation, extension in scope and first issuance under the name of EIAC	20-01-2019
Temperature		Renewal accreditation and first issuance under the name of EIAC	
Force		Renewal accreditation, Modification in the CMC Values and first issuance under the name of EIAC (which was formerly known as DAC)	
Electrical	2	Renewal accreditation and first issuance under the name of EIAC	
Humidity			
Time			
Dimensional	8	Extension in scope	8-5-2018
Mass & Balance		no change	
Pressure		no change	
Temperature		Extension in scope	
Force		no change	
Electrical	1	Granted accreditation from Dubai Accreditation Center 'DAC'	
Humidity			
Time			

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Accreditation Scope
Dimensional Calibration
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Calibration Field/ Measuring Quality	Calibration Method	Range and Specification	Calibration Measurement Capability (CMC)*	Location
All Types of Calipers Digital Vernier Dial	DCML-D/WI-001 Based on BS EN ISO 13385-1 For determining error of indicated size Comparison with gauge blocks/calliper checker	0 mm to 300 mm	26 µm	Laboratory
		300 mm to 600 mm	30 µm	
External Micrometer	DCML-D/WI-002 based on ISO 3611 For determining error of indicated size Comparison with gauge blocks	0 mm to 25 mm	2.5 µm	Laboratory
Dial gauges (Digital & analogue)	DCML-D/WI-003 based on ISO 463 / JIS B 7503 For determining error of indicated displacement, Comparison with dial gauge calibrator	0 mm to 100 mm	4 µm	Laboratory

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Accreditation Scope
Dimensional Calibration
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Calibration Field/ Measuring Quality	Calibration Method	Range and Specification	Calibration Measurement Capability (CMC)*	Location
LVDT with Indicator	DCML-D/WI-003 For determining error of indicated displacement, Comparison with dial gauge calibrator	0 mm to 100 mm	8 µm	Laboratory
Tapes and Scales Calibrator	DCML-D/WI-005 In-house method based on manufacturer's Guide For determining error of indicated displacement, Comparison with reference measuring tape	0 mm to 1000 mm	0.4 mm	Laboratory/ Customer Premises
Calibration of Scales (Steel Rules)	DCML-D/WI-004 Measurement of line spacing using length measuring machine equipped with optical magnification unit.	0 mm to 1000 mm	0.67 mm	Laboratory

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Dimensional Calibration
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Calibration Field/ Measuring Quality	Calibration Method	Range and Specification	Calibration Measurement Capability (CMC)*	Location
Steel Tapes	DCML-D/WI-004 Measurement of line spacing using length measuring machine equipped with optical magnification unit. Stitching is carried out after length of 1 m.	0 m to 5 m	1.5 mm	Laboratory
		5 m to 10 m	2.2 mm	
		10 m to 20 m	3.0 mm	
Test Sieves Aperture Size	DCML-D/WI-008 Based on ISO 3310-1 / BS 410-1 For determining aperture size Using Profile Projector	0.02 mm to 125 mm	11 µm	Laboratory

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مـركـز الإمـارات الـعـالـمـي لـلاعـتـمـاد
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Accreditation Scope
Mass and Balance Calibration
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Calibration Field/ Measuring Quality	Calibration Method	Range and Specification	Calibration Measurement Capability (CMC)*	Location
Top loading weighing scale	ASTM E898-88 :2020	0 to 210 g	0.0005 g	Customer Premises
		>210 g to 410 g	0.001 g	
		> 410 g to 2 kg	0.01 g	
		>2 kg to 6 kg	0.04 g	
		>6 kg to 15 kg	0.1 g	
		>15 kg to 32 kg	0.2 g	
		>32 kg to 60 kg	0.6 g	
		>60 kg to 100 kg	5 g	
		>100 kg to 150 kg	50 g	
		>150 kg to 500 kg	0.12 kg	
		>500 kg to 1000 kg	0.2 kg	
		>1000 kg to 5000 kg	1.5 kg	
M1 Mass calibration	OIML R 111 -1 :2004	50000 g	0.8 g	Laboratory
		20000 g	0.3 g	

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Calibration Field/ Measuring Quality	Calibration Method	Range and Specification	Calibration Measurement Capability (CMC)*	Location
M1 Mass calibration	OIML R 111 -1 :2004	10000 g	0.16 g	Laboratory
		5000 g	0.08 g	
		2000 g	0.03 g	
		1000 g	016 mg	
		500 g	08 mg	
		200 g	3 mg	
		100 g	1.6 mg	
		50 g	1 mg	
		20 g	0.8 mg	
		10 g	0.6 mg	
		5 g	0.5 mg	
		2 g	0.4 mg	
		1 g	0.3 mg	

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Calibration Field/ Measuring Quality	Calibration Method	Range and Specification	Calibration Measurement Capability (CMC)*	Location
Mass Calibration	Standard Weights as per OIML R111-1 : 2004	500 kg	25 g	Laboratory
Conventional Mass		1000 kg	50 g	
Truck Scales	DCML-M/WI-010 in accordance to Euramet cg 18 v4 :2015	0 to 20 ton	22 kg	Customer Premises
		> 20 ton to 40 ton	32 kg	
		> 40 ton to 60 ton	45 kg	
Truck Scales	DCML-M/WI-010 in accordance to Euramet cg 18 v4 :2015	> 60 ton to 80 ton	56 kg	Customer Premises
		> 80 ton to 100 ton	65 kg	
		> 100 ton to 120 ton	73 kg	
Batching Plants: Calibration of concrete and Asphalt batching plants, Hopper scale and Tank scale	ASTM C94/C94M :2021 & NIST Handbook 44 :2018	0 to 1000 kg	0.082 kg	
		>1000 to 5000 kg	1.2 kg	
		>5000 kg to 16.5 ton	5.8 kg	

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Accreditation Scope
Pressure Calibration
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Calibration Field/ Measuring Quality	Calibration Method	Range and Specification	Calibration Measurement Capability (CMC)*	Location
Analogue or digital Pressure gauges of class up to 0.1% Using pressure comparator. Medium : Gas	Work instruction DCML-P/WI-001 based on DKD R 6-1 and BS EN 837-1	-95 kPa up to 0 kPa	0.2 kPa	Laboratory/ Customer Premises
		0 kPa Up to 2000 kPa	1 kPa	
		> 2 MPa Up To 7 MPa	7 kPa	
Analogue or digital Pressure gauges of class up to 0.1% Using Dead weight tester. Medium : Oil		0.3 MPa Up to 6 MPa	0.11 % of Reading.	Laboratory
		> 6 MPa Up to 120 MPa	0.04 % of Reading	
Analogue or digital Pressure gauges of class up to 0.1% Using Reference gauge Medium : Oil		0 MPa Up to 70 MPa	0.13% of Reading	Laboratory/ Customer Premises

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Accreditation Scope
Temperature Calibration
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Calibration Field/ Measuring Quality	Calibration Method	Range and Specification	Calibration Measurement Capability (CMC)*	Location
Liquid-in-glass thermometers	DCML-T/WI-001	-30 °C up to 125 °C	0.2 °C	Laboratory
Digital thermometer with PRT or NTC sensor	DCML-T/WI 001 * minimum temperature= ambient - 40 °C	-30 °C* up to 300 °C	0.2 °C	Laboratory
		-20 °C* up to 300 °C	0.3 °C	Customer Premises
		30 °C to 300 °C	0.2 °C	Laboratory
		300 °C to 500 °C	1.9 °C	
Digital thermometer with TC sensor	DCML-T/WI 001 * minimum temperature = ambient - 40 °C	-20 °C* to 300 °C	0.8 °C	Laboratory/ Customer Premises
		30 °C to 300 °C	0.7 °C	Laboratory
		300 °C to 500 °C	2.0 °C	
Calibration of thermometer with built in sensors and mercury maximum minimum thermometers	DCML-T/ WI 005	10 °C up to 60 °C	0.5 °C	Laboratory

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Temperature Calibration
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Calibration Field/ Measuring Quality	Calibration Method	Range and Specification	Calibration Measurement Capability (CMC)*	Location
Climatic Chamber (9 points)	DCML-T/WI-002 DKD-R5-7	30 °C up to 180 °C	1.1 °C	Laboratory/ Customer Premises
Measuring location in climatic chamber	DCML-T/WI-002 & DKD-R 5-7 method C	30 °C to 180 °C	1.1 °C	Laboratory/ Customer Premises
Water bath, incubators (5 points)	DCML-T/WI-002 DKD-R5-7	5 °C up to 95 °C	1 °C	
Freezer / Chiller (9 points)	DCML-T/WI-002 DKD-R5-7	-30 °C up to 95 °C	1.1 °C	
Measuring location in freezer or chiller	DCML-T/WI-002 & DKD-R 5-7 method C	-30 °C to 95 °C	1.1 °C	
Measuring location in Furnace (1 point)	DCML-T/WI-002 DKD-R5-7 (Muffle Furnace)	30 °C up to 180 °C	1.1 °C	
		180 °C up to 300 °C	1.3 °C	
		300 °C up to 800 °C	4.0 °C	
		800 °C up to 1100 °C	9.0 °C	
Calibration of infrared thermometers	DCML-T/ WI 004	-35 °C up to 100 °C	1 °C	Laboratory
		100 °C up to 150 °C	2 °C	

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Calibration Field/ Measuring Quality	Calibration Method	Range and Specification	Calibration Measurement Capability (CMC)*	Location
Temperature Indicators Calibration by Electrical Simulation				
Type K thermocouple	DCML-E/WI-007	-200 °C to -100 °C	0.50 K	laboratory/ customer premises
		-100 °C to 1372 °C	0.36 K	
Type J thermocouple	DCML-E/WI-007	-210 °C to -50 °C	0.30 K	
		-50 °C to 1200 °C	0.40 K	
Type T thermocouple	DCML-E/WI-007	-200 °C to 100 °C	0.40 K	
		100 °C to 400 °C	0.30 K	
Type R thermocouple	DCML-E/WI-007	-50 °C to 50 °C	2,0 K	
		50 °C to 250 °C	1.4 K	
		250 °C to 1768 °C	1.2 K	
Type S thermocouple	DCML-E/WI-007	-50 °C to 500 °C	1.8 K	
		500 °C to 1768 °C	1.2 K	

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Calibration Field/ Measuring Quality	Calibration Method	Range and Specification	Calibration Measurement Capability (CMC)*	Location
Temperature Indicators Calibration by Electrical Simulation				
Type B thermocouple	DCML-E/WI-007	300 °C to 800 °C	3.0 K	laboratory/ customer premises
		800 °C to 1820 °C	1.6 K	
Type E thermocouple	DCML-E/WI-007	-200 °C to 0 °C	0.40 K	
		0 °C to 1000 °C	0.24 K	
Type N thermocouple	DCML-E/WI-007	-200 °C to 0 °C	0.80 K	
		0 °C to 600 °C	0.30 K	
		600 °C to 1300 °C	0.40 K	
PT 100	DCML-E/WI-007	-140 °C to 50 °C	0.50 K	
		50 °C to 850 °C	0,41 K +1,8mK/K*T	

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Accreditation Scope
Force Calibration
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Calibration Field/ Measuring Quality	Calibration Method	Range and Specification	Calibration Measurement Capability (CMC)*	Location
Calibration of Force measuring devices (soil testing rings, proving rings or load cells with indicator)	Work Instruction No : DCML-F/WI-002 based on BS 1377-1	200 N up to 200 kN in Compression	1.0 %	Laboratory
Verification / Calibration of testing machines	BS EN ISO 7500-1 & ASTM E4	100 kN up to 3000 kN in Compression	0.30 %	Customer Premises
		0.2 kN up to 100 kN in Compression and Tension	0.18 %	
		10 N up to 200 N in Compression and Tension	0.10 %	
Verification/ Calibration of Poing Load Testers	Work Instruction DCML-F/WI-001 Based on ISO 7500-1	1 kN up to 100 kN in Compression	1.0 %	Laboratory/ Customer Premises
Calibration of Pull out and Pull off Tester	DCML-F/WI-003 based on ASTM C900	0.2 kN up to 100 kN in Tension	0.3 %	Laboratory

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Force Calibration
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Calibration Field/ Measuring Quality	Calibration Method	Range and Specification	Calibration Measurement Capability (CMC)*	Location
CBR and Marshall Testing Machines	Work Instruction DCML-F/WI-001 Based on ISO 7500-1 & ASTM E4	0.2 kN up to 100 kN in Compression	0.3 %	Laboratory/ Customer Premises
Calibration of force and load measuring devices with indicator for industrial applications	DCML-F/WI-006 based on standard calibration of BS8422	100 N up to 100 kN in Compression and Tension	1.0 %	Laboratory
		100 kN up to 1 MN in Compression and Tension	1.3 %	
Calibration of Hydraulic Jack with indicator	DCML-F/WI-004	0.2 kN ≤ up to ≤ 100 kN in Compression	0.6 %	Laboratory
		100 kN ≤ up to ≤ 1 MN in Compression	1.0 %	
Compression Testing Machines for Concrete	DCML-F/WI-007 based on BS EN 12390-4 Performance Test (Stability Verification)	200 kN and 2000 kN Alignment of Upper Machine Platen	N/A	Customer Premises

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Accreditation Scope
Electrical Calibration
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Issue no.: 04 **Date: 10-01-2022** **Valid to: 29-06-2024**

Calibration Field/ Measuring Quality	Calibration Method	Range and Specification	Calibration Measurement Capability (CMC)*	Location
Calibration of Source				
DC Voltage meter	Work Instruction DCML-E/WI-001 (Based on Euramet calibration guide for the calibration of multimeters-cg-15)	0 mV to 200 mV	18 µV	Laboratory/ Customer premises
		> 200 mV up to 2 V	1 mV	
		> 2 V up to 20 V	16 mV	
		>20 V up to 200 V	16 mV	
		> 200 V to 1050 V	0.11 V	
DC Current Meter	Work Instruction DCML-E/WI-001 (Based on Euramet calibration guide for the calibration of multimeters-cg-15)	0 µA to 200 µA	64 nA	
		> 0.2 mA to 2 mA	1.1 µA	
		> 2 mA to 20 mA	3.5 µA	
		> 20 mA to 200 mA	0.04 mA	
		> 0.2 A to 2 A	1.6 mA	
		2 A to 22 A	21 mA	

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مـركـز الإمـارات الـعـالـمـي لـلاعـتـمـاد
Emirates International Accreditation Centre

Accreditation Scope
Electrical Calibration
LB-CAL-002

Danway Calibration & Measurements Laboratory

Al Quoz Industrial area, Dubai-United Arab Emirates

Issue no.: 04 **Date: 10-01-2022** **Valid to: 29-06-2024**

Calibration Field/ Measuring Quality	Calibration Method	Range and Specification	Calibration Measurement Capability (CMC)*	Location
Calibration of Source				
AC Voltage meter	Work Instruction DCML-E/WI-001	0 mV to 200 mV	0.41 mV	Laboratory/ Customer premises
		> 0.2 V to 2 V	2.2 mV	
		> 20 V to 200 V	0.17 V	
		> 200 V to 1050 V	1.2 V	
AC Current Meter	Work Instruction DCML-E/WI-001 (Based on Euramet calibration guide for the calibration of multimeters-cg-15)	0 µA to 200 µA	0.53 µA	Laboratory/ Customer premises
		> 0.2 mA to 2 mA	3.0 µA	
		> 2 mA to 20 mA	0.11 mA	
		> 20 mA to 200 mA	0.36 mA	
		> 0.2 A to 2 A	9.4 mA	
		> 2 A to 20 A	58 mA	
Resistance meter using Decade Resistance	Work Instruction DCML-E/WI-001 (Based on Euramet calibration guide for the calibration of multimeters-cg-15)	10 Ω	100 Mω	Laboratory/ Customer premises
		100 Ω	12 mΩ	
		1 kΩ	1 Ω	
		10 kΩ	1 Ω	
		100 kΩ	1.5 Ω	

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Calibration Field/ Measuring Quality	Calibration Method	Range and Specification	Calibration Measurement Capability (CMC)*	Location
Calibration of Source				
Resistance meter using Decade Resistance	Work Instruction DCML-E/WI-001 (Based on Euramet calibration guide for the calibration of multimeters-cg-15)	1 MΩ	1 kΩ	Laboratory/ Customer premises
		10 MΩ	71 kΩ	
		100 MΩ	4.1 M Ω	
		1 GΩ	0.12 GΩ	
Resistance meter using Simulated Resistance	Work Instruction DCML-E/WI-001 (Based on Euramet calibration guide for the calibration of multimeters-cg-15)	0 Ω to 400 Ω	0.37 Ω	Laboratory/ Customer premises
		0.4 KΩ to 4 KΩ	6.4 Ω	
		4 KΩ to 40 KΩ	17 Ω	
Capacitance meter	Work Instruction DCML-E/WI-001 (Based on Euramet calibration guide for the calibration of multimeters-cg-15)	1 nF @ 1 kHz	14 pF	Laboratory/ Customer premises
		10 nF @ 1 kHz	36 pF	
		20 nF @ 1 kHz	60 pF	
		50 nF @ 1 kHz	0.13 nF	

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Calibration of Source				
Capacitance meter	Work Instruction DCML-E/WI-001 (Based on Euramet calibration guide for the calibration of multimeters-cg-15)	100 nF @ 1 kHz	0.26 nF	Laboratory/ Customer premises
		200 nF @ 1 kHz	0.48 nF	
		500 nF @ 1 kHz	1.2 nF	
		1 µF @ 1 kHz	3 nF	
Digital Frequency meter	Work Instruction DCML-E/WI-001 (Based on Euramet calibration guide for the calibration of multimeters-cg-15)	0 Hz to 50 Hz	0.001 Hz	Laboratory/ Customer premises
		> 50 Hz to 200Hz	0.005Hz	
		> 200 Hz to 10kHz	0.001 kHz	
		> 2 10 kHz to 100kHz	0.002kHz	
		> 2 100 kHz to500 kHz	0.012kHz	
		> 500 kHz to 10 MHz	0.001MHz	
Digital period	Work Instruction DCML-E/WI-001 (Based on Euramet calibration guide for the calibration of multimeters-cg-15)	Upto100 ns	0.003ns	Laboratory/ Customer premises
		>100 ns to 10µs	0.001µs	
		>10µs to 100µs	0.002µs	

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Calibration of Source				
Digital period	Work Instruction DCML-E/WI-001 (Based on Euramet calibration guide for the calibration of multimeters-cg-15)	>100µs to 1ms	0.001µs	Laboratory/ Customer premises
		>1ms to 100 ms	0.002ms	
		>100ms to 1s	0.001ms	
Clamp meter		1100 A AC @ 50 Hz	4.5 A	Laboratory/ Customer premises
		1100 A DC	3.7 A	
Tachometer		120000 RPM	1.8 RPM	Laboratory/ Customer premises

Calibration of Measure				
DC Voltage	Work instruction DCML-E/WI-002	0 mV to 100 mV	11 µV	Laboratory/ Customer premises
		> 100 mV to 1 V	1 mV	
		> 1 V to 10 V	1.1 mV	
		> 10 V to 100 V	8 mV	
		> 100 V to 1000 V	8.4 mV	

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Calibration Field/ Measuring Quality	Calibration Method	Range and Specification	Calibration Measurement Capability (CMC)*	Location
Calibration of Measure				
DC Current Measure	Work instruction DCML-E/WI-002	0 mA to 10 mA	8.5 µA	Laboratory/ Customer premises
		> 10 mA to 100 mA	6.4 µA	
		> 100 mA to 1 A	1.6 mA	
		> 1 A to 3 A	5 mA	
AC Voltage 50Hz	Work instruction DCML-E/WI-002	0 mV to 100 mV	0.12 mV	Laboratory/ Customer premises
		> 100 mV to 1 V	1 mV	
		> 1 V to 10 V	10 mV	
		>10 V to 100 V	0.1 V	
		>100 V to 500 V	0.5 V	
		>500 V to 750 V	0.79 V	
AC Current	Work instruction DCML-E/WI-002	0 A to 1 A (10 Hz to 5 kHz)	2 mA	Laboratory/ Customer premises
		> 1 A to 3 A (10 Hz to 5 kHz)	0.21 A	

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Electrical Calibration
LB-CAL-002

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Calibration Field/ Measuring Quality	Calibration Method	Range and Specification	Calibration Measurement Capability (CMC)*	Location
Calibration of Measure				
Resistance	Work instruction DCML-E/WI-002	0 Ω to 100 Ω	22 mΩ	Laboratory/ Customer premises
		> 100 Ω to 1 kΩ	1 Ω	
		> 1 kΩ to 10 kΩ	2 Ω	
		> 10 kΩ to 100 kΩ	21 Ω	
		> 100 kΩ to 1 MΩ	1 kΩ	
Insulation Tester Resistance	Work instruction DCML-E/WI-003 Based on Guide line TG 02-01 of SANAS	10 MΩ	1.2 kΩ	Laboratory/ Customer premises
		50 MΩ	14 kΩ	
		100 MΩ	14 kΩ	
		400 MΩ	0.12 MΩ	
		1 GΩ	0.58 MΩ	

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Calibration of Measure				
Insulation Tester Resistance	Work instruction DCML-E/WI-003 Based on Guide line TG 02-01 of SANAS	4 GΩ	1.2 MΩ	Laboratory/ Customer premises
		10 GΩ	5.3 MΩ	
		100 GΩ	12 MΩ	

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Accreditation Scope
Humidity Calibration
LB-CAL-002

Danway Calibration & Measurements Laboratory

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Calibration Field/ Measuring Quality	Calibration Method	Range and Specification	Calibration Measurement Capability (CMC)*	Location
Hygrometer	DCML-H/WI-00x	10°C to 60°C	0.2 K	Laboratory
		25%rH to 90%rH at 20°C to 30°C	2,5 % RH	
		25%rH to 90%rH at 30°C to 60°C	3,0 % RH	

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Accreditation Scope
Time Calibration
LB-CAL-002

Danway Calibration & Measurements Laboratory

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Issue no.: 04 **Date: 10-01-2022** **Valid to: 29-06-2024**

Calibration Field/ Measuring Quality	Calibration Method	Range and Specification	Calibration Measurement Capability (CMC)*	Location
Time	DCML-TI/WI-001 based on NIST Pub. 960-12:2009	0 up to 30 min	0.5 Sec	Laboratory and customer premises
		30 min up to 1 hour	0.81 Sec	

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