

CERTIFICATE OF ACCREDITATION

In terms of section 22(2) (b) of the Accreditation for Conformity Assessment, Calibration and Good Laboratory Practice Act, 2006 (Act 19 of 2006), read with sections 23(1), (2) and (3) of the said Act, I hereby certify that:-

MONTECH CALIBRATION SERVICES (PTY) LTD

Co. Reg. No.: 2014/182132/07

ELECTRICAL DCLF CALIBRATION LABORATORY

Accreditation Number: **CAL 071-01-00**

is a South African National Accreditation System Accredited Calibration laboratory provided that all SANAS conditions and requirements are complied with

This certificate is valid as per the scope as stated in the accompanying scope of accreditation Annexure "A", bearing the above accreditation number for

DC LOW FREQUENCY METROLOGY

The facility is accredited in accordance with the recognised International Standard

ISO/IEC 17025:2017

The accreditation demonstrates technical competency for a defined scope and the operation of a laboratory quality management system

While this certificate remains valid, the Accredited Facility named above is authorised to use the relevant SANAS accreditation symbol to issue facility reports and/or certificates

Mr F Osman
Acting Chief Executive Officer

Effective Date: 10 March 2026
Certificate Expires: 09 March 2031

ANNEXURE A

SCOPE OF ACCREDITATION
DC LOW FREQUENCY METROLOGY

Accreditation Number: CAL 071-01-00

<p>Permanent Address of Laboratory: Montech Calibration Services (Pty) Ltd Electrical DCLF Calibration Laboratory 77 Fabriek Street Strydompark Randburg Gauteng 2169</p> <p>Postal Address: Postnet Suite 266 Private Bag X21 Bryanston 2021</p> <p>Tel: 011 464 5071 Cell: 072 779 4076 E-mail: Info@moncal.co.za seola@moncal.co.za</p>		<p>Technical Signatories: Mrs S Targett Mr C Rabulanyana</p> <p>Nominated Representative: Mrs S Targett</p> <p>Issue No.: 03 Date of Issue: 10 March 2026 Expiry Date: 09 March 2031</p>		
ITEM	MEASURED QUANTITY OR TYPE OF GAUGE OR INSTRUMENT AND RANGE OF MEASURED QUANTITY	NOMINAL FREQUENCY	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	METHOD / PROCEDURE
1	DC Voltage (up to 1 100 V)			
1.1	DC voltage sources			
1.1.2	Low values (≤ 10 V) Multifunction calibrator			
	0 mV to 10 mV	DC	0,005 mV	Multifunction Calibrator and Multimeter, Direct Comparison
	10 mV to 100 mV	DC	$2 \cdot 10^{-4} \cdot U$	
	0,1 V to 10 V	DC	$1 \cdot 10^{-5} \cdot U$	
1.1.3	Intermediate values (> 10 V to 1 100 V) Multifunction calibrator			
	100 V to 1 000 V	DC	$6 \cdot 10^{-6} \cdot U$	Multifunction Calibrator and Multimeter, Direct Comparison

Original Date of Accreditation: 07 October 2024

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The CMC, expressed as an expanded uncertainty of measurement, is stated as the standard uncertainty of measurement multiplied by a coverage factor $k = 2$, corresponding to a confidence level of approximately 95%

Accreditation Manager

ANNEXURE A

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Date of Issue: 10 March 2026

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1.2	DC voltage meters			
1.2.1	Very low value (≤ 1 mV) Digital Multimeter, nano voltmeters			
	0 mV to 1 mV		0,004 mV	Multifunction Calibrator and Multimeter, Direct Comparison
1.2.2	Intermediate values (> 1 mV to 1100 V) Digital multimeters, nano voltmeters			
	1 mV to 10 mV 10 mV to 100 mV 0,1 V to 1 000 V		0,004 mV $5 \cdot 10^{-5} \cdot U$ $7 \cdot 10^{-5} \cdot U$	Multifunction Calibrator and Multimeter, Direct Comparison
2	DC resistance			
2.1	DC resistance standards and sources.			
2.1.2	Intermediate values ($> 1\Omega$ to 1 M Ω) Fixed resistor, resistance box, multifunction calibrator			
	1 Ω to 10 Ω 10 Ω to 100 Ω 100 Ω to 100 k Ω 100 k Ω to 1 M Ω		$6 \cdot 10^{-4} \cdot R$ $6 \cdot 10^{-4} \cdot R$ $2 \cdot 10^{-4} \cdot R$ $2 \cdot 10^{-4} \cdot R$	Multifunction Calibrator and Multimeter, Direct Comparison
2.1.3	High values (> 1 M Ω) Fixed resistor, resistance box, multifunction calibrator			
	1 M Ω to 10 M Ω 10 M Ω to 100 M Ω		$7 \cdot 10^{-4} \cdot R$ $5 \cdot 10^{-3} \cdot R$	Multifunction Calibrator and Multimeter, Direct Comparison

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2.2	DC resistance meters			
2.2.1	Low values ($\leq 1 \Omega$) Micro-ohm meter, multimeter, resistance bridge			
	1 Ω		0,01 Ω	Multifunction Calibrator and Multimeter, Direct Comparison
2.2.2	Intermediate values ($> 1 \Omega$ to 1G Ω) ohm meter, Multimeter, resistance bridge			
	10 Ω 10 Ω to 1 k Ω 1 k Ω to 100 k Ω 100 k Ω to 1 M Ω 1 M Ω to 10 M Ω 10 M Ω to 100 M Ω		6 \cdot 10 ⁻⁵ •R 6 \cdot 10 ⁻⁵ •R 5 \cdot 10 ⁻⁵ •R 5 \cdot 10 ⁻⁴ •R 5 \cdot 10 ⁻⁵ •R 5 \cdot 10 ⁻³ •R	Multifunction Calibrator and Multimeter, Direct Comparison
3	DC current (up to 100 A)			
3.1	DC current sources.			
3.1.1	Low values ($\leq 0,1$ mA) Current generator, Multifunction calibrator.			
	0 mA 0,1 mA	DC DC	0,5 μ A 0,1 μ A	Multifunction Calibrator and Multimeter, Direct Comparison
3.1.2	Intermediate values ($> 0,1$ mA to 20 A) Current generator, multifunction calibrator			
	0,1 mA to 1 mA 1 mA to 100 mA 0,1 A to 1 A 1 A to 2 A 2 A to 10 A	DC DC DC DC DC	0.2 μ A 2 \cdot 10 ⁻⁴ •I 2 \cdot 10 ⁻⁴ •I 6 \cdot 10 ⁻⁴ •I 4 \cdot 10 ⁻³ •I	Multifunction Calibrator and Multimeter, Direct Comparison

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3.2	DC current meters.			
3.2.1	Low Values ($\leq 0,1$ mA) pico ammeter, nano ammeter, multimeter			
	0 mA 0,1 mA		0,2 μ A $2 \cdot 10^{-5} \cdot I$	Multifunction Calibrator and Multimeter, Direct Comparison
3.2.2	Intermediate values ($> 0,1$ mA to 20 A) multimeter, current meter			
	0,1 mA to 1 mA 1 mA to 1 mA 10 mA to 100 mA 0,1 A to 10 A		$2 \cdot 10^{-4} \cdot I$ $3 \cdot 10^{-5} \cdot I$ $2 \cdot 10^{-5} \cdot I$ $4 \cdot 10^{-4} \cdot I$	Multifunction Calibrator and Multimeter, Direct Comparison
4	Impedance (up to 200 kHz range)			
4.2.4	Meters, capacitance bridge, LCR meter			
	1 nF 1 nF to 10 nF 10 nF to 1 μ F 1 μ F to 100 μ F 100 μ F to 1 mF	50 Hz	2 % 1 % 1 % 1 % 1 %	Multifunction Calibrator and Multimeter, Direct Comparison
5	AC voltage (up to the MHz range)			
5.2	Sources, Multifunction calibrator			
5.2.1	1 mV 10 mV to 10 mV 10 mV to 100 mV 0,1 V to 10 V 10 V to 100 V 100 V to 750 V	40 Hz to 50 kHz 40 Hz 40 Hz to 1 kHz 1 kHz to 50 kHz 40 Hz 40 Hz to 1 kHz 1 kHz to 50 kHz 50 kHz to 100 kHz 40 Hz 40 Hz to 1 kHz 1 kHz to 50 kHz 50 kHz to 100 kHz 1 kHz 1 kHz to 20 kHz 50 Hz to 1 kHz	0,03 mV $4 \cdot 10^{-3} \cdot I$ $1 \cdot 10^{-3} \cdot I$ $5 \cdot 10^{-3} \cdot U$ $3 \cdot 10^{-3} \cdot U$ $2 \cdot 10^{-4} \cdot U$ $8 \cdot 10^{-4} \cdot U$ $5 \cdot 10^{-3} \cdot U$ $2 \cdot 10^{-3} \cdot U$ $5 \cdot 10^{-4} \cdot U$ $2 \cdot 10^{-3} \cdot U$ $5 \cdot 10^{-3} \cdot U$ $6 \cdot 10^{-4} \cdot U$ $2 \cdot 10^{-3} \cdot U$ $5 \cdot 10^{-3} \cdot U$	Multifunction Calibrator and Multimeter, Direct Comparison

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5	AC voltage (up to the MHz range)			
5.2	AC voltage up to 1 100 V			
5.2.2	Meters, ac voltmeter, multimeter			
	1 mV to 10 mV	40 Hz to 1 kHz	$5 \cdot 10^{-4} \cdot U$	Measurement with AC/DC transfer standard
		1 kHz to 50 kHz	$5 \cdot 10^{-4} \cdot U$	
	1 mV to 10 mV	100 kHz	$5 \cdot 10^{-4} \cdot U$	
	10 mV to 100 mV	40 Hz to 1 Hz	$7 \cdot 10^{-5} \cdot U$	
		1 kHz to 10 kHz	$7 \cdot 10^{-5} \cdot U$	
		10 kHz to 50 kHz	$2 \cdot 10^{-4} \cdot U$	
		100 kHz	$7 \cdot 10^{-5} \cdot U$	
	0,1 V to 10 V	40 Hz to 1 kHz	$6 \cdot 10^{-4} \cdot U$	
		1 kHz to 10 kHz	$6 \cdot 10^{-4} \cdot U$	
		10 kHz to 50 kHz	$2 \cdot 10^{-4} \cdot U$	
		100 kHz	$6 \cdot 10^{-4} \cdot U$	
	10 V to 100 V	40 Hz to 1 kHz	$6 \cdot 10^{-4} \cdot U$	
		10 kHz to 20 kHz	$6 \cdot 10^{-4} \cdot U$	
	100 V to 750 V	50 Hz to 10 Hz	$4 \cdot 10^{-4} \cdot U$	
6	AC Current			
6.2	AC Current up to 100 A			
6.2.1	Sources, multifunction calibrator			
	10 mA to 100 mA	45 Hz to 5 kHz	$2 \cdot 10^{-3} \cdot I$	Multifunction Calibrator and Multimeter, Direct Comparison
	100 A to 2 A	40 Hz to 1 kHz	$2 \cdot 10^{-3} \cdot I$	
	2 A to 10 A	40 Hz to 1 kHz	$4 \cdot 10^{-3} \cdot I$	
6.2.2	Meters, ac ammeter, multimeter			
	10 mA to 100 mA	40 Hz to 10 kHz	$2 \cdot 10^{-3} \cdot I$	Multifunction Calibrator and Multimeter, Direct Comparison
	100 mA to 2 A	40 Hz to 1 kHz	$2 \cdot 10^{-3} \cdot I$	
	2 A to 10 A	45 Hz	$2 \cdot 10^{-2} \cdot I$	
		1 kHz	$9 \cdot 10^{-3} \cdot I$	
8	High voltage and current			
8.1	High DC voltage			
8.1.1	High Voltage Sources, DC Kilovolt Source			
	1 k V to 40 kV	DC	1,0 %	High voltage divider (HV probe) and Multimeter, Ratio Method

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8.3	AC High voltage			
8.3.1	Sources: High Voltage AC Source			
	1 kV to 28 kV	40 Hz to 60 Hz	1.0 %	High voltage divider (HV probe) and Multimeter, Ratio Method
8.6	AC high Current			
8.6.2	Meters: dedicated measurement set-up, current transducer			
	20 A 20 A to 500 A (clamp meter)	40 Hz to 60 Hz	2 % 1 %	Multifunction Calibrator and Current coil, Simulation Method
8.7	High DC current			
8.7.2	Meters, measurement set-up			
	20 A 20 A to 500 A (clamp meter)	DC	2 % 0,9 %	Multifunction Calibrator and Current coil, Simulation Method
Additional accreditation Parameters				
A	Thermometry Equipment (Electrical Simulation)			
	Source			
A1		- 250 °C to 100 °C - 100 °C to 2 000 °C	0,2 K 0,2 K	Multifunction Calibrator and Digital Thermometry, Direct Comparison
A2	Meter			
		- 250 °C to 100 °C - 100 °C to 2 000 °C	0,2 K 0,2 K	Multifunction Calibrator and Digital Thermometry, Direct Comparison
B	Meter: Frequency			
		40 Hz to 100 Hz 100 Hz to 100 kHz	$1 \cdot 10^{-3} \cdot f$ $1 \cdot 10^{-4} \cdot f$	Multifunction Calibrator and Current coil, Simulation Method
C	On-site calibration for all Parameters			

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ISSUED BY THE SOUTH AFRICAN NATIONAL ACCREDITATION SYSTEM

Accreditation Manager