



Český metrologický institut

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Calibration laboratory No. 2202 accredited by the Czech Accreditation Institute according ISO/IEC 17025:2005

Laboratory: Regional Inspectorate Brno, Okružní 31, 638 00 Brno
Department of DC/LF Electrical Quantities, tel.: +420 545 555 208, fax +420 545 555 183

CERTIFICATE OF CALIBRATION

6011-KL-L0100-19

This certificate is consistent with the capabilities that are included in Appendix C of the MRA drawn up by the International Committee for Weights and Measures (CIPM). Under the MRA, all participating institutes recognize the validity of each other's calibration and measurement certificates for the quantities, ranges and measurement uncertainties specified in Appendix C (for details see www.bipm.org).

Date of issue: February 14, 2019

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User:

Measuring instrument:	Multifunction calibrator	Current coil
Manufacturer:	MEATEST Brno	
Type:	M143	140-50
Serial number:	671381	413486

The results of the calibration have been obtained following the procedures reported in this Certificate and are reported only to the date, place and conditions of the calibration.

Date of calibration: February 7 to February 11, 2019

Calibrated by:

Jiří STREIT



Director of Regional Inspectorate Brno:

Radovan WIECEK

Measurement standards used: Reference multimeter Fluke 8508A, S/N 863148332, Cert. of Cal. 6011-KL-E0005-18.
Current shunt ČMI, S/N CMI/20A/2/14, Cert. of Cal. 6011-KL-E0088-17.
Counter Pendulum CNT-81, S/N SM783671, Cert. of Cal. 6011-KL-E0025-18.
Clamp meter UNI-T, type UT209, S/N 1110284726, cert. of cal. 6011-KL-E0006-18.

Standards used are traceable to (inter)national standards.

Calibration procedure: Calibrated instrument has been compared with standards listed above. The current ranges 20 A were calibrated by measurement the drop of voltage on current shunt ČMI. The calibration has been made according to the Calibrating Procedure No. 611-MP-C097 and 611-MP-C130.

Ambient conditions: *The average ambient conditions during the measurement were as follows:*
Air temperature: $23.0^{\circ}\text{C} \pm 0.7^{\circ}\text{C}$
Relative humidity: $45\% \pm 15\%$

Measurement results: The measurement results are given in the Tables of results.
The instrument has not been adjusted.
The results marked "!!!" are out of specification reported by manufacturer.
The 1-year specification are reported in the table of results.
The measurement uncertainty is not included in calculation of % of specification.

Uncertainty of measurement: The standard uncertainty of measurement has been determined in accordance with EA-4/02 document. The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k corresponding to a coverage probability of approximately 95 %, which for normal distribution corresponds to a coverage factor $k = 2$.

The uncertainties reported in the table of results are valid after rounding up to two valid numbers.

Note: *Set Value* is the value set on the calibrator.
Measured value is the value measured on the output terminals of the calibrator.
Difference is calculated as Measured value - Set Value

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Tables of results:

DC Voltage

Range	Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
10 mV	0.000 0 mV	0.002 47 mV	2.47 μ V	$\pm 7.00 \mu$ V	35%	0.17 μ V
	1.000 0 mV	1.002 68 mV	2.68 μ V	$\pm 7.50 \mu$ V	36%	0.22 μ V
	-1.000 0 mV	-0.997 71 mV	2.29 μ V	$\pm 7.50 \mu$ V	31%	0.21 μ V
	10.000 0 mV	10.001 38 mV	1.38 μ V	$\pm 12.00 \mu$ V	12%	0.26 μ V
	-10.000 0 mV	-9.999 00 mV	1.00 μ V	$\pm 12.00 \mu$ V	8%	0.28 μ V
100 mV	20.000 mV	19.999 4 mV	-0.6 μ V	$\pm 9.0 \mu$ V	-7%	0.5 μ V
	-20.000 mV	-19.999 9 mV	0.1 μ V	$\pm 9.0 \mu$ V	1%	0.5 μ V
	100.000 mV	99.997 4 mV	-2.6 μ V	$\pm 17.0 \mu$ V	-15%	0.6 μ V
	-100.000 mV	-100.000 0 mV	0.0 μ V	$\pm 17.0 \mu$ V	0%	0.6 μ V
1 V	0.200 00 V	0.199 999 V	-1 μ V	$\pm 22 \mu$ V	-5%	1 μ V
	-0.200 00 V	-0.199 998 V	2 μ V	$\pm 22 \mu$ V	9%	1 μ V
	1.000 00 V	1.000 005 V	5 μ V	$\pm 70 \mu$ V	7%	4 μ V
	-1.000 00 V	-1.000 003 V	-3 μ V	$\pm 70 \mu$ V	-4%	4 μ V
10 V	1.000 1 V	1.000 10 V	0.00 mV	± 0.11 mV	0%	0.01 mV
	2.000 0 V	2.000 01 V	0.01 mV	± 0.17 mV	6%	0.01 mV
	3.000 0 V	3.000 01 V	0.01 mV	± 0.23 mV	4%	0.02 mV
	4.000 0 V	4.000 02 V	0.02 mV	± 0.29 mV	7%	0.02 mV
	5.000 0 V	5.000 03 V	0.03 mV	± 0.35 mV	9%	0.02 mV
	6.000 0 V	6.000 04 V	0.04 mV	± 0.41 mV	10%	0.02 mV
	7.000 0 V	7.000 05 V	0.05 mV	± 0.47 mV	11%	0.03 mV
	8.000 0 V	8.000 08 V	0.08 mV	± 0.53 mV	15%	0.03 mV
	9.000 0 V	9.000 09 V	0.09 mV	± 0.59 mV	15%	0.03 mV
	10.000 0 V	10.000 11 V	0.11 mV	± 0.65 mV	17%	0.04 mV
	-1.000 1 V	-1.000 10 V	0.00 mV	± 0.11 mV	0%	0.01 mV
	-2.000 0 V	-2.000 00 V	0.00 mV	± 0.17 mV	0%	0.01 mV
	-3.000 0 V	-3.000 00 V	0.00 mV	± 0.23 mV	0%	0.02 mV
	-4.000 0 V	-4.000 00 V	0.00 mV	± 0.29 mV	0%	0.02 mV
	-5.000 0 V	-5.000 01 V	-0.01 mV	± 0.35 mV	-3%	0.02 mV
	-6.000 0 V	-6.000 03 V	-0.03 mV	± 0.41 mV	-7%	0.02 mV
	-7.000 0 V	-7.000 04 V	-0.04 mV	± 0.47 mV	-9%	0.03 mV
	-8.000 0 V	-8.000 06 V	-0.06 mV	± 0.53 mV	-11%	0.03 mV
	-9.000 0 V	-9.000 07 V	-0.07 mV	± 0.59 mV	-12%	0.03 mV
	-10.000 0 V	-10.000 09 V	-0.09 mV	± 0.65 mV	-14%	0.04 mV
100 V	20.000 V	20.000 1 V	0.1 mV	± 2.2 mV	5%	0.2 mV
	-20.000 V	-20.000 1 V	-0.1 mV	± 2.2 mV	-5%	0.2 mV
	100.000 V	100.002 2 V	2.2 mV	± 7.0 mV	31%	0.5 mV
	-100.000 V	-100.001 8 V	-1.8 mV	± 7.0 mV	-26%	0.5 mV
1000 V	200.00 V	200.016 V	16.0 mV	± 40 mV	40%	2 mV
	-200.00 V	-200.002 V	-2.0 mV	± 40 mV	-5%	2 mV
	1000.00 V	1000.017 V	17.0 mV	± 120 mV	14%	6 mV
	-1000.00 V	-1000.011 V	-11.0 mV	± 120 mV	-9%	6 mV

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DC Current

Range	Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
200 μ A	0.000 μ A	-0.001 0 μ A	-1.0 nA	± 20.0 nA	-5%	0.6 nA
	10.000 μ A	10.000 8 μ A	0.8 nA	± 25.0 nA	3%	0.9 nA
	-10.000 μ A	-9.999 5 μ A	0.5 nA	± 25.0 nA	2%	0.9 nA
	100.000 μ A	99.999 1 μ A	-0.9 nA	± 70.0 nA	-1%	4.0 nA
	-100.000 μ A	-99.998 3 μ A	1.7 nA	± 70.0 nA	2%	4.0 nA
	190.000 μ A	189.998 6 μ A	-1.4 nA	± 115.0 nA	-1%	7.3 nA
	-190.000 μ A	-189.998 5 μ A	1.5 nA	± 115.0 nA	1%	7.3 nA
2 mA	0.200 01 mA	0.200 006 mA	-4 nA	± 150 nA	-3%	5 nA
	-0.200 01 mA	-0.200 008 mA	2 nA	± 150 nA	1%	5 nA
	1.000 00 mA	0.999 981 mA	-19 nA	± 350 nA	-5%	18 nA
	-1.000 00 mA	-0.999 984 mA	16 nA	± 350 nA	5%	18 nA
	1.900 00 mA	1.899 978 mA	-22 nA	± 575 nA	-4%	32 nA
	-1.900 00 mA	-1.899 984 mA	16 nA	± 575 nA	3%	32 nA
20 mA	2.000 1 mA	2.000 04 mA	-0.06 μ A	± 0.90 μ A	-7%	0.05 μ A
	-2.000 1 mA	-2.000 02 mA	0.08 μ A	± 0.90 μ A	9%	0.05 μ A
	10.000 0 mA	9.999 64 mA	-0.36 μ A	± 2.10 μ A	-17%	0.18 μ A
	-10.000 0 mA	-9.999 63 mA	0.37 μ A	± 2.10 μ A	18%	0.18 μ A
	19.000 0 mA	18.999 42 mA	-0.58 μ A	± 3.45 μ A	-17%	0.32 μ A
	-19.000 0 mA	-18.999 44 mA	0.56 μ A	± 3.45 μ A	16%	0.32 μ A
200 mA	20.001 mA	20.000 5 mA	-0.5 μ A	± 9.0 μ A	-6%	1.1 μ A
	-20.001 mA	-20.000 6 mA	0.4 μ A	± 9.0 μ A	4%	1.1 μ A
	40.000 mA	40.000 8 mA	0.8 μ A	± 12.0 μ A	7%	1.7 μ A
	-40.000 mA	-39.999 4 mA	0.6 μ A	± 12.0 μ A	5%	1.7 μ A
	60.000 mA	60.001 5 mA	1.5 μ A	± 15.0 μ A	10%	2.3 μ A
	-60.000 mA	-59.999 2 mA	0.8 μ A	± 15.0 μ A	5%	2.3 μ A
	80.000 mA	80.001 8 mA	1.8 μ A	± 18.0 μ A	10%	3.0 μ A
	-80.000 mA	-79.999 4 mA	0.6 μ A	± 18.0 μ A	3%	3.0 μ A
	100.000 mA	100.002 4 mA	2.4 μ A	± 21.0 μ A	11%	3.6 μ A
	-100.000 mA	-99.999 7 mA	0.3 μ A	± 21.0 μ A	1%	3.6 μ A
	120.000 mA	120.003 1 mA	3.1 μ A	± 24.0 μ A	13%	4.2 μ A
	-120.000 mA	-119.999 9 mA	0.1 μ A	± 24.0 μ A	0%	4.2 μ A
	140.000 mA	140.003 8 mA	3.8 μ A	± 27.0 μ A	14%	4.9 μ A
	-140.000 mA	-140.000 1 mA	-0.1 μ A	± 27.0 μ A	0%	4.9 μ A
	160.000 mA	160.004 5 mA	4.5 μ A	± 30.0 μ A	15%	5.5 μ A
	-160.000 mA	-160.000 5 mA	-0.5 μ A	± 30.0 μ A	-2%	5.5 μ A
	180.000 mA	180.005 0 mA	5.0 μ A	± 33.0 μ A	15%	6.2 μ A
	-180.000 mA	-180.000 7 mA	-0.7 μ A	± 33.0 μ A	-2%	6.2 μ A
	190.000 mA	190.005 1 mA	5.1 μ A	± 34.5 μ A	15%	6.5 μ A
	-190.000 mA	-190.000 9 mA	-0.9 μ A	± 34.5 μ A	-3%	6.5 μ A
2 A	0.200 01 A	0.200 023 A	13 μ A	± 130 μ A	10%	18 μ A
	-0.200 01 A	-0.199 991 A	19 μ A	± 130 μ A	15%	18 μ A
	1.000 00 A	1.000 043 A	43 μ A	± 250 μ A	17%	59 μ A
	-1.000 00 A	-0.999 997 A	3 μ A	± 250 μ A	1%	59 μ A
	1.900 00 A	1.900 098 A	98 μ A	± 385 μ A	25%	105 μ A
	-1.900 00 A	-1.900 053 A	-53 μ A	± 385 μ A	-14%	105 μ A
20 A	2.000 1 A	2.000 09 A	-0.01 mA	± 4.00 mA	0%	0.20 mA
	-2.000 1 A	-1.999 96 A	0.14 mA	± 4.00 mA	4%	0.20 mA
	10.000 0 A	9.999 27 A	-0.73 mA	± 12.00 mA	-6%	0.80 mA
	-10.000 0 A	-9.999 24 A	0.76 mA	± 12.00 mA	6%	0.80 mA
	19.000 0 A	18.998 44 A	-1.56 mA	± 21.00 mA	-7%	1.49 mA
	-19.000 0 A	-18.999 80 A	0.20 mA	± 21.00 mA	1%	1.49 mA

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AC Voltage

Range	Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
10 mV	1.000 0 mV; 20 Hz	1.000 5 mV	0.5 μ V	$\pm 27.0 \mu$ V	2%	5.4 μ V
	1.000 0 mV; 45 Hz	1.000 0 mV	0.0 μ V	$\pm 27.0 \mu$ V	0%	5.5 μ V
	1.000 0 mV; 120 Hz	1.001 0 mV	1.0 μ V	$\pm 27.0 \mu$ V	4%	6.1 μ V
	1.000 0 mV; 400 Hz	1.000 0 mV	0.0 μ V	$\pm 27.0 \mu$ V	0%	5.4 μ V
	1.000 0 mV; 1 kHz	0.998 9 mV	-1.1 μ V	$\pm 32.0 \mu$ V	-3%	5.4 μ V
	1.000 0 mV; 2 kHz	0.996 5 mV	-3.5 μ V	$\pm 32.0 \mu$ V	-11%	5.4 μ V
	10.000 0 mV; 20 Hz	9.998 9 mV	-1.1 μ V	$\pm 45.0 \mu$ V	-2%	8.7 μ V
	10.000 0 mV; 45 Hz	9.999 1 mV	-0.9 μ V	$\pm 45.0 \mu$ V	-2%	8.7 μ V
	10.000 0 mV; 120 Hz	9.998 5 mV	-1.5 μ V	$\pm 45.0 \mu$ V	-3%	8.9 μ V
	10.000 0 mV; 400 Hz	9.999 5 mV	-0.5 μ V	$\pm 45.0 \mu$ V	-1%	8.7 μ V
	10.000 0 mV; 1 kHz	9.995 1 mV	-4.9 μ V	$\pm 50.0 \mu$ V	-10%	8.7 μ V
	10.000 0 mV; 2 kHz	9.991 8 mV	-8.2 μ V	$\pm 50.0 \mu$ V	-16%	8.7 μ V
100 mV	20.000 mV; 20 Hz	19.997 6 mV	-2.4 μ V	$\pm 70 \mu$ V	-3%	13.8 μ V
	20.000 mV; 45 Hz	19.997 5 mV	-2.5 μ V	$\pm 70 \mu$ V	-4%	13.9 μ V
	20.000 mV; 120 Hz	19.996 7 mV	-3.3 μ V	$\pm 70 \mu$ V	-5%	13.9 μ V
	20.000 mV; 400 Hz	19.998 8 mV	-1.2 μ V	$\pm 70 \mu$ V	-2%	13.8 μ V
	20.000 mV; 1 kHz	19.997 8 mV	-2.2 μ V	$\pm 100 \mu$ V	-2%	13.8 μ V
	20.000 mV; 2 kHz	19.999 2 mV	-0.8 μ V	$\pm 100 \mu$ V	-1%	13.8 μ V
	100.000 mV; 20 Hz	99.996 9 mV	-3.1 μ V	$\pm 150 \mu$ V	-2%	23.3 μ V
	100.000 mV; 45 Hz	99.996 7 mV	-3.3 μ V	$\pm 150 \mu$ V	-2%	23.3 μ V
	100.000 mV; 120 Hz	99.993 7 mV	-6.3 μ V	$\pm 150 \mu$ V	-4%	23.3 μ V
	100.000 mV; 400 Hz	100.002 3 mV	2.3 μ V	$\pm 150 \mu$ V	2%	23.3 μ V
	100.000 mV; 1 kHz	99.998 2 mV	-1.8 μ V	$\pm 220 \mu$ V	-1%	23.3 μ V
	100.000 mV; 2 kHz	99.994 2 mV	-5.8 μ V	$\pm 220 \mu$ V	-3%	23.3 μ V
1 V	0.200 00 V; 20 Hz	0.199 988 V	-12 μ V	$\pm 150 \mu$ V	-8%	31 μ V
	0.200 00 V; 45 Hz	0.199 980 V	-20 μ V	$\pm 150 \mu$ V	-13%	31 μ V
	0.200 00 V; 120 Hz	0.199 978 V	-22 μ V	$\pm 150 \mu$ V	-15%	31 μ V
	0.200 00 V; 400 Hz	0.199 994 V	-6 μ V	$\pm 150 \mu$ V	-4%	31 μ V
	0.200 00 V; 1 kHz	0.199 999 V	-1 μ V	$\pm 240 \mu$ V	0%	31 μ V
	0.200 00 V; 2 kHz	0.200 015 V	15 μ V	$\pm 240 \mu$ V	6%	31 μ V
	1.000 00 V; 20 Hz	0.999 967 V	-33 μ V	$\pm 550 \mu$ V	-6%	60 μ V
	1.000 00 V; 45 Hz	0.999 949 V	-51 μ V	$\pm 550 \mu$ V	-9%	60 μ V
	1.000 00 V; 120 Hz	0.999 947 V	-53 μ V	$\pm 550 \mu$ V	-10%	60 μ V
	1.000 00 V; 400 Hz	0.999 994 V	-6 μ V	$\pm 550 \mu$ V	-1%	60 μ V
	1.000 00 V; 1 kHz	0.999 986 V	-14 μ V	$\pm 800 \mu$ V	-2%	60 μ V
	1.000 00 V; 2 kHz	0.999 982 V	-18 μ V	$\pm 800 \mu$ V	-2%	60 μ V
10 V	1.000 1 V; 20 Hz	1.000 08 V	-0.02 mV	± 1.00 mV	-2%	0.07 mV
	1.000 1 V; 45 Hz	0.999 98 V	-0.12 mV	± 1.00 mV	-12%	0.07 mV
	1.000 1 V; 120 Hz	0.999 99 V	-0.11 mV	± 1.00 mV	-11%	0.07 mV
	1.000 1 V; 400 Hz	1.000 08 V	-0.02 mV	± 1.00 mV	-2%	0.07 mV
	1.000 1 V; 1 kHz	1.000 22 V	0.12 mV	± 3.70 mV	3%	0.07 mV
	1.000 1 V; 2 kHz	1.000 37 V	0.27 mV	± 3.70 mV	7%	0.07 mV
	3.000 0 V; 20 Hz	2.999 94 V	-0.06 mV	± 2.00 mV	-3%	0.17 mV
	3.000 0 V; 45 Hz	2.999 83 V	-0.17 mV	± 2.00 mV	-9%	0.17 mV
	3.000 0 V; 120 Hz	2.999 83 V	-0.17 mV	± 2.00 mV	-9%	0.17 mV
	3.000 0 V; 400 Hz	3.000 01 V	0.01 mV	± 2.00 mV	1%	0.17 mV
	3.000 0 V; 1 kHz	3.000 15 V	0.15 mV	± 5.10 mV	3%	0.17 mV
	3.000 0 V; 2 kHz	3.000 35 V	0.35 mV	± 5.10 mV	7%	0.17 mV

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AC Voltage - continue

Range	Set value		Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
10 V	5.000 0 V;	20 Hz	4.999 93 V	-0.07 mV	±3.00 mV	-2%	0.28 mV
	5.000 0 V;	45 Hz	4.999 78 V	-0.22 mV	±3.00 mV	-7%	0.28 mV
	5.000 0 V;	120 Hz	4.999 76 V	-0.24 mV	±3.00 mV	-8%	0.28 mV
	5.000 0 V;	400 Hz	5.000 03 V	0.03 mV	±3.00 mV	1%	0.28 mV
	5.000 0 V;	1 kHz	5.000 19 V	0.19 mV	±6.50 mV	3%	0.28 mV
	5.000 0 V;	2 kHz	5.000 41 V	0.41 mV	±6.50 mV	6%	0.28 mV
	7.000 0 V;	20 Hz	6.999 93 V	-0.07 mV	±4.00 mV	-2%	0.39 mV
	7.000 0 V;	45 Hz	6.999 74 V	-0.26 mV	±4.00 mV	-7%	0.39 mV
	7.000 0 V;	120 Hz	6.999 72 V	-0.28 mV	±4.00 mV	-7%	0.39 mV
	7.000 0 V;	400 Hz	7.000 05 V	0.05 mV	±4.00 mV	1%	0.39 mV
	7.000 0 V;	1 kHz	7.000 21 V	0.21 mV	±7.90 mV	3%	0.39 mV
	7.000 0 V;	2 kHz	7.000 42 V	0.42 mV	±7.90 mV	5%	0.39 mV
	10.000 0 V;	20 Hz	9.999 93 V	-0.07 mV	±5.50 mV	-1%	0.60 mV
	10.000 0 V;	45 Hz	9.999 68 V	-0.32 mV	±5.50 mV	-6%	0.60 mV
	10.000 0 V;	120 Hz	9.999 63 V	-0.37 mV	±5.50 mV	-7%	0.60 mV
	10.000 0 V;	400 Hz	10.000 10 V	0.10 mV	±5.50 mV	2%	0.60 mV
	10.000 0 V;	1 kHz	10.000 18 V	0.18 mV	±10.00 mV	2%	0.60 mV
	10.000 0 V;	2 kHz	10.000 29 V	0.29 mV	±10.00 mV	3%	0.60 mV
100 V	20.000 V;	45 Hz	20.000 4 V	0.4 mV	±20.0 mV	2%	1.2 mV
	20.000 V;	120 Hz	20.000 4 V	0.4 mV	±20.0 mV	2%	1.2 mV
	20.000 V;	400 Hz	20.000 3 V	0.3 mV	±20.0 mV	2%	1.2 mV
	20.000 V;	1 kHz	20.002 2 V	2.2 mV	±44.0 mV	5%	1.2 mV
	100.000 V;	45 Hz	100.008 9 V	8.9 mV	±60.0 mV	15%	6.7 mV
	100.000 V;	120 Hz	100.001 3 V	1.3 mV	±60.0 mV	2%	6.7 mV
	100.000 V;	400 Hz	100.000 0 V	0.0 mV	±60.0 mV	0%	6.7 mV
	100.000 V;	1 kHz	100.002 9 V	2.9 mV	±100.0 mV	3%	6.7 mV
1000 V	200.00 V;	45 Hz	200.005 V	5.0 mV	±340 mV	1%	13 mV
	200.00 V;	120 Hz	200.006 V	6.0 mV	±340 mV	2%	13 mV
	200.00 V;	400 Hz	200.013 V	13.0 mV	±340 mV	4%	13 mV
	200.00 V;	1 kHz	200.020 V	20 mV	±500 mV	4%	13 mV
	1000.00 V;	45 Hz	1000.145 V	145 mV	±900 mV	16%	122 mV
	1000.00 V;	120 Hz	999.990 V	-10 mV	±900 mV	-1%	98 mV
	1000.00 V;	400 Hz	1000.001 V	1 mV	±900 mV	0%	98 mV
	1000.00 V;	1 kHz	1000.068 V	68 mV	±1300 mV	5%	98 mV

Frequency

	Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
	10.000 Hz	9.999 88 Hz	-0.12 mHz	±0.5 mHz	-24%	0.12 mHz
1000.000 Hz		999.987 6 Hz	-0.0124 Hz	±0.050 Hz	-25%	0.0050 Hz
10.000 kHz		9.999 88 kHz	-0.12 Hz	±0.50 Hz	-24%	0.08 Hz
20.000 kHz		19.999 75 kHz	-0.25 Hz	±1.00 Hz	-25%	0.10 Hz
50.000 kHz		49.999 37 kHz	-0.63 Hz	±2.50 Hz	-25%	0.12 Hz
100.000 kHz		99.998 75 kHz	-1.25 Hz	±5.00 Hz	-25%	0.50 Hz
1000.000 kHz		999.987 5 kHz	-12.5 Hz	±50.00 Hz	-25%	5.0 Hz

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AC Current

Range	Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
200 μ A	100.000 μ A; 20 Hz	99.994 5 μ A	-5.5 nA	± 270.0 nA	-2%	45.8 nA
	100.000 μ A; 45 Hz	99.990 8 μ A	-9.2 nA	± 270.0 nA	-3%	45.8 nA
	100.000 μ A; 120 Hz	99.991 8 μ A	-8.2 nA	± 270.0 nA	-3%	45.8 nA
	100.000 μ A; 300 Hz	99.992 1 μ A	-7.9 nA	± 270.0 nA	-3%	45.8 nA
	100.000 μ A; 1 kHz	99.993 4 μ A	-6.6 nA	± 400.0 nA	-2%	45.8 nA
	190.000 μ A; 20 Hz	189.992 2 μ A	-7.8 nA	± 495.0 nA	-2%	69.4 nA
	190.000 μ A; 45 Hz	189.986 0 μ A	-14.0 nA	± 495.0 nA	-3%	69.4 nA
	190.000 μ A; 120 Hz	189.987 3 μ A	-12.7 nA	± 495.0 nA	-3%	69.4 nA
	190.000 μ A; 300 Hz	189.988 1 μ A	-11.9 nA	± 495.0 nA	-2%	69.4 nA
	190.000 μ A; 1 kHz	189.988 6 μ A	-11.4 nA	± 580.0 nA	-2%	69.4 nA
2 mA	0.200 01 mA; 45 Hz	0.200 034 mA	24 nA	± 400 nA	6%	100 nA
	1.000 00 mA; 20 Hz	1.000 030 mA	30 nA	± 1200 nA	3%	274 nA
	1.000 00 mA; 45 Hz	0.999 994 mA	-6 nA	± 1200 nA	-1%	274 nA
	1.000 00 mA; 120 Hz	1.000 000 mA	0 nA	± 1200 nA	0%	274 nA
	1.000 00 mA; 300 Hz	1.000 005 mA	5 nA	± 1200 nA	0%	274 nA
	1.000 00 mA; 1 kHz	1.000 014 mA	14 nA	± 1400 nA	1%	274 nA
	1.900 00 mA; 20 Hz	1.900 036 mA	36 nA	± 2100 nA	2%	415 nA
	1.900 00 mA; 45 Hz	1.899 978 mA	-22 nA	± 2100 nA	-1%	415 nA
	1.900 00 mA; 120 Hz	1.899 996 mA	-4 nA	± 2100 nA	0%	415 nA
	1.900 00 mA; 300 Hz	1.899 996 mA	-4 nA	± 2100 nA	0%	415 nA
	1.900 00 mA; 1 kHz	1.899 979 mA	-21 nA	± 2300 nA	-1%	415 nA
20 mA	2.000 1 mA; 20 Hz	2.000 37 mA	0.27 μ A	± 2.40 μ A	11%	0.63 μ A
	2.000 1 mA; 45 Hz	2.000 22 mA	0.12 μ A	± 2.40 μ A	5%	0.63 μ A
	2.000 1 mA; 120 Hz	2.000 24 mA	0.14 μ A	± 2.40 μ A	6%	0.63 μ A
	2.000 1 mA; 300 Hz	2.000 16 mA	0.06 μ A	± 2.40 μ A	3%	0.63 μ A
	2.000 1 mA; 1 kHz	1.999 89 mA	-0.21 μ A	± 6.00 μ A	-4%	0.63 μ A
	5.000 0 mA; 20 Hz	5.000 13 mA	0.13 μ A	± 4.50 μ A	3%	1.11 μ A
	5.000 0 mA; 45 Hz	4.999 93 mA	-0.07 μ A	± 4.50 μ A	-2%	1.11 μ A
	5.000 0 mA; 120 Hz	4.999 97 mA	-0.03 μ A	± 4.50 μ A	-1%	1.11 μ A
	5.000 0 mA; 300 Hz	4.999 95 mA	-0.05 μ A	± 4.50 μ A	-1%	1.11 μ A
	5.000 0 mA; 1 kHz	4.999 79 mA	-0.21 μ A	± 9.00 μ A	-2%	1.11 μ A
	10.000 0 mA; 20 Hz	10.000 04 mA	0.04 μ A	± 8.00 μ A	1%	1.83 μ A
	10.000 0 mA; 45 Hz	9.999 69 mA	-0.31 μ A	± 8.00 μ A	-4%	1.83 μ A
	10.000 0 mA; 120 Hz	9.999 76 mA	-0.24 μ A	± 8.00 μ A	-3%	1.83 μ A
	10.000 0 mA; 300 Hz	9.999 75 mA	-0.25 μ A	± 8.00 μ A	-3%	1.83 μ A
	10.000 0 mA; 1 kHz	9.999 74 mA	-0.26 μ A	± 14.00 μ A	-2%	1.83 μ A
	15.000 0 mA; 20 Hz	15.000 00 mA	0.00 μ A	± 11.50 μ A	0%	2.64 μ A
	15.000 0 mA; 45 Hz	14.999 50 mA	-0.50 μ A	± 11.50 μ A	-4%	2.64 μ A
	15.000 0 mA; 120 Hz	14.999 60 mA	-0.40 μ A	± 11.50 μ A	-3%	2.64 μ A
	15.000 0 mA; 300 Hz	14.999 61 mA	-0.39 μ A	± 11.50 μ A	-3%	2.64 μ A
	15.000 0 mA; 1 kHz	14.999 61 mA	-0.39 μ A	± 19.00 μ A	-2%	2.64 μ A
	19.000 0 mA; 20 Hz	18.999 98 mA	-0.02 μ A	± 14.30 μ A	0%	3.10 μ A
	19.000 0 mA; 45 Hz	18.999 36 mA	-0.64 μ A	± 14.30 μ A	-4%	3.10 μ A
	19.000 0 mA; 120 Hz	18.999 53 mA	-0.47 μ A	± 14.30 μ A	-3%	3.10 μ A
	19.000 0 mA; 300 Hz	18.999 51 mA	-0.49 μ A	± 14.30 μ A	-3%	3.10 μ A
	19.000 0 mA; 1 kHz	18.999 29 mA	-0.71 μ A	± 23.00 μ A	-3%	3.10 μ A

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AC Current - continue

Range	Applied	value	Indicated value	Difference	Spec.	Percent of spec.	Expanded uncertainty
200 mA	20.001 mA; 45 Hz		20.001 7 mA	0.7 μ A	$\pm 24.0 \mu$ A	3%	6.3 μ A
	100.000 mA; 20 Hz		99.997 6 mA	-2.4 μ A	$\pm 80.0 \mu$ A	-3%	18.3 μ A
	100.000 mA; 45 Hz		99.995 5 mA	-4.5 μ A	$\pm 80.0 \mu$ A	-6%	18.3 μ A
	100.000 mA; 120 Hz		99.996 8 mA	-3.2 μ A	$\pm 80.0 \mu$ A	-4%	18.3 μ A
	100.000 mA; 300 Hz		99.996 8 mA	-3.2 μ A	$\pm 80.0 \mu$ A	-4%	18.3 μ A
	100.000 mA; 1 kHz		99.994 7 mA	-5.3 μ A	$\pm 140.0 \mu$ A	-4%	18.3 μ A
	190.000 mA; 20 Hz		189.994 6 mA	-5.4 μ A	$\pm 143.0 \mu$ A	-4%	31.0 μ A
	190.000 mA; 45 Hz		189.991 5 mA	-8.5 μ A	$\pm 143.0 \mu$ A	-6%	31.0 μ A
	190.000 mA; 120 Hz		189.992 9 mA	-7.1 μ A	$\pm 143.0 \mu$ A	-5%	31.0 μ A
	190.000 mA; 300 Hz		189.992 4 mA	-7.6 μ A	$\pm 143.0 \mu$ A	-5%	31.0 μ A
	190.000 mA; 1 kHz		189.986 8 mA	-13.2 μ A	$\pm 230.0 \mu$ A	-6%	31.0 μ A
2 A	0.200 01 A; 45 Hz		0.199 911 A	-99 μ A	$\pm 300 \mu$ A	-33%	80 μ A
	1.000 00 A; 20 Hz		0.999 728 A	-272 μ A	$\pm 1100 \mu$ A	-25%	242 μ A
	1.000 00 A; 45 Hz		0.999 705 A	-295 μ A	$\pm 1100 \mu$ A	-27%	242 μ A
	1.000 00 A; 120 Hz		0.999 720 A	-280 μ A	$\pm 1100 \mu$ A	-25%	242 μ A
	1.000 00 A; 300 Hz		0.999 653 A	-347 μ A	$\pm 1100 \mu$ A	-32%	242 μ A
	1.000 00 A; 1 kHz		0.999 392 A	-608 μ A	$\pm 2500 \mu$ A	-24%	242 μ A
	1.900 00 A; 20 Hz		1.899 552 A	-448 μ A	$\pm 2000 \mu$ A	-22%	475 μ A
	1.900 00 A; 45 Hz		1.899 559 A	-441 μ A	$\pm 2000 \mu$ A	-22%	475 μ A
	1.900 00 A; 120 Hz		1.899 587 A	-413 μ A	$\pm 2000 \mu$ A	-21%	475 μ A
	1.900 00 A; 300 Hz		1.899 499 A	-501 μ A	$\pm 2000 \mu$ A	-25%	475 μ A
	1.900 00 A; 1 kHz		1.899 054 A	-946 μ A	$\pm 3850 \mu$ A	-25%	475 μ A
20 A	2.000 1 A; 45 Hz		1.999 67 A	-0.43 mA	± 7.00 mA	-6%	1.63 mA
	10.000 0 A; 20 Hz		9.998 72 A	-1.28 mA	± 23.00 mA	-6%	5.12 mA
	10.000 0 A; 45 Hz		9.999 08 A	-0.92 mA	± 23.00 mA	-4%	5.10 mA
	10.000 0 A; 120 Hz		9.998 95 A	-1.05 mA	± 23.00 mA	-5%	5.10 mA
	10.000 0 A; 300 Hz		9.997 27 A	-2.73 mA	± 23.00 mA	-12%	5.10 mA
	10.000 0 A; 1 kHz		9.989 10 A	-10.90 mA	± 35.00 mA	-31%	5.10 mA
	19.000 0 A; 20 Hz		19.000 35 A	0.35 mA	± 41.00 mA	1%	9.00 mA
	19.000 0 A; 45 Hz		19.000 10 A	0.10 mA	± 41.00 mA	0%	8.80 mA
	19.000 0 A; 120 Hz		18.998 87 A	-1.13 mA	± 41.00 mA	-3%	8.80 mA
	19.000 0 A; 300 Hz		18.994 55 A	-5.45 mA	± 41.00 mA	-13%	8.81 mA
	19.000 0 A; 1 kHz		18.979 24 A	-20.76 mA	± 57.50 mA	-36%	8.80 mA

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Resistance (2-wire - output Hi and Lo)

Range	Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
10 Ω	9.994 9 Ω	9.996 8 Ω	1.9 m Ω	± 55.0 m Ω	3%	0.1 m Ω
100 Ω	100.032 Ω	100.032 1 Ω	0.1 m Ω	± 50 m Ω	0%	0.8 m Ω
1 k Ω	1.000 25 k Ω	1.000 276 k Ω	26 m Ω	± 200 m Ω	13%	8 m Ω
10 k Ω	10.006 9 k Ω	10.007 24 k Ω	0.34 Ω	± 2.0 Ω	17%	0.08 Ω
100 k Ω	99.944 k Ω	99.944 4 k Ω	0.4 Ω	± 20 Ω	2%	0.8 Ω
1 M Ω	0.999 55 M Ω	0.999 56 M Ω	0.01 k Ω	± 0.20 k Ω	5%	0.01 k Ω
10 M Ω	10.005 7 M Ω	10.006 1 M Ω	0.4 k Ω	± 5.0 k Ω	8%	0.2 k Ω
100 M Ω	100.589 M Ω	100.657 1 M Ω	68.1 k Ω	± 503 k Ω	14%	13.8 k Ω

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Simulation of TC - type J (ITS 90, RJ = 0°C)

Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
-200.0 °C	-199.95 °C	0.05 °C	±0.6 °C	8%	0.04 °C
-25.0 °C	-24.95 °C	0.05 °C	±0.2 °C	25%	0.04 °C
0.0 °C	0.09 °C	0.09 °C	±0.2 °C	45%	0.04 °C
25.0 °C	25.06 °C	0.06 °C	±0.2 °C	30%	0.04 °C
50.0 °C	50.04 °C	0.04 °C	±0.2 °C	20%	0.04 °C
100.0 °C	100.04 °C	0.04 °C	±0.2 °C	20%	0.04 °C
500.0 °C	499.99 °C	-0.01 °C	±0.4 °C	-3%	0.04 °C
1000.0 °C	999.96 °C	-0.04 °C	±0.4 °C	-10%	0.04 °C
1200.0 °C	1199.96 °C	-0.04 °C	±0.4 °C	-10%	0.04 °C

Simulation of TC - type K (ITS 90, RJ = 0°C)

Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
-200.0 °C	-200.02 °C	-0.02 °C	±0.8 °C	-3%	0.06 °C
-25.0 °C	-24.97 °C	0.03 °C	±0.3 °C	10%	0.05 °C
0.0 °C	0.07 °C	0.07 °C	±0.3 °C	23%	0.05 °C
25.0 °C	25.03 °C	0.03 °C	±0.3 °C	10%	0.05 °C
50.0 °C	50.02 °C	0.02 °C	±0.3 °C	7%	0.05 °C
100.0 °C	100.02 °C	0.02 °C	±0.3 °C	7%	0.05 °C
500.0 °C	499.96 °C	-0.04 °C	±0.5 °C	-8%	0.06 °C
1000.0 °C	999.96 °C	-0.04 °C	±0.6 °C	-7%	0.06 °C
1370.0 °C	1369.95 °C	-0.05 °C	±0.7 °C	-7%	0.06 °C

Simulation of TC - type S (ITS 90, RJ = 0°C)

Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
-50.0 °C	-50.17 °C	-0.17 °C	±2.8 °C	-6%	0.17 °C
-25.0 °C	-25.03 °C	-0.03 °C	±2.5 °C	-1%	0.17 °C
0.0 °C	0.76 °C	0.76 °C	±2.1 °C	36%	0.17 °C
25.0 °C	25.73 °C	0.73 °C	±1.9 °C	38%	0.16 °C
50.0 °C	50.35 °C	0.35 °C	±1.8 °C	19%	0.16 °C
100.0 °C	100.29 °C	0.29 °C	±1.6 °C	18%	0.16 °C
500.0 °C	500.16 °C	0.16 °C	±1.3 °C	12%	0.16 °C
1000.0 °C	1000.09 °C	0.09 °C	±1.3 °C	7%	0.16 °C
1200.0 °C	1200.03 °C	0.03 °C	±1.3 °C	2%	0.16 °C
1500.0 °C	1500.00 °C	0.00 °C	±1.4 °C	0%	0.16 °C
1750.0 °C	1749.94 °C	-0.06 °C	±1.7 °C	-4%	0.16 °C

Simulation of TC - type B (ITS 90, RJ = 0°C)

Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
400.0 °C	400.77 °C	0.77 °C	±2.9 °C	27%	0.15 °C
600.0 °C	600.47 °C	0.47 °C	±2.0 °C	24%	0.15 °C
800.0 °C	800.36 °C	0.36 °C	±1.7 °C	21%	0.14 °C
1000.0 °C	1000.22 °C	0.22 °C	±1.4 °C	16%	0.14 °C
1200.0 °C	1200.15 °C	0.15 °C	±1.3 °C	12%	0.14 °C
1500.0 °C	1500.03 °C	0.03 °C	±1.3 °C	2%	0.14 °C
1800.0 °C	1799.98 °C	-0.02 °C	±1.4 °C	-1%	0.14 °C

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Simulation of TC - type R (ITS 90, RJ = 0°C)

Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
-50.0 °C	-49.74 °C	0.26 °C	±3.0 °C	9%	0.17 °C
-25.0 °C	-24.76 °C	0.24 °C	±2.6 °C	9%	0.17 °C
0.0 °C	0.91 °C	0.91 °C	±2.1 °C	43%	0.16 °C
25.0 °C	25.90 °C	0.90 °C	±1.9 °C	47%	0.17 °C
50.0 °C	50.35 °C	0.35 °C	±1.7 °C	21%	0.16 °C
100.0 °C	100.31 °C	0.31 °C	±1.5 °C	21%	0.16 °C
500.0 °C	500.19 °C	0.19 °C	±1.2 °C	16%	0.16 °C
1000.0 °C	1000.00 °C	0.00 °C	±1.1 °C	0%	0.16 °C
1200.0 °C	1199.98 °C	-0.02 °C	±1.2 °C	-2%	0.16 °C
1500.0 °C	1500.00 °C	0.00 °C	±1.3 °C	0%	0.16 °C
1750.0 °C	1749.95 °C	-0.05 °C	±1.6 °C	-3%	0.16 °C

Simulation of TC - type T (ITS 90, RJ = 0°C)

Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
-200.0 °C	-199.90 °C	0.10 °C	±0.8 °C	13%	0.06 °C
-25.0 °C	-24.92 °C	0.08 °C	±0.3 °C	27%	0.05 °C
0.0 °C	0.12 °C	0.12 °C	±0.3 °C	40%	0.05 °C
25.0 °C	25.09 °C	0.09 °C	±0.3 °C	30%	0.05 °C
50.0 °C	50.06 °C	0.06 °C	±0.3 °C	20%	0.05 °C
100.0 °C	100.05 °C	0.05 °C	±0.3 °C	17%	0.05 °C
400.0 °C	399.99 °C	-0.01 °C	±0.3 °C	-3%	0.05 °C

Simulation of TC - type E (ITS 90, RJ = 0°C)

Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
-200.0 °C	-199.97 °C	0.03 °C	±0.6 °C	5%	0.05 °C
-25.0 °C	-24.94 °C	0.06 °C	±0.2 °C	30%	0.05 °C
0.0 °C	0.08 °C	0.08 °C	±0.2 °C	40%	0.05 °C
25.0 °C	25.06 °C	0.06 °C	±0.2 °C	30%	0.05 °C
50.0 °C	50.03 °C	0.03 °C	±0.2 °C	15%	0.05 °C
100.0 °C	100.02 °C	0.02 °C	±0.2 °C	10%	0.05 °C
500.0 °C	499.98 °C	-0.02 °C	±0.3 °C	-7%	0.05 °C
1000.0 °C	999.97 °C	-0.03 °C	±0.3 °C	-10%	0.05 °C

Simulation of TC - type N (ITS 90, RJ = 0°C)

Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
-200.0 °C	-199.81 °C	0.19 °C	±1.2 °C	16%	0.06 °C
-25.0 °C	-24.88 °C	0.12 °C	±0.5 °C	24%	0.05 °C
0.0 °C	0.18 °C	0.18 °C	±0.4 °C	45%	0.05 °C
25.0 °C	25.11 °C	0.11 °C	±0.4 °C	28%	0.05 °C
50.0 °C	50.09 °C	0.09 °C	±0.4 °C	23%	0.05 °C
100.0 °C	100.07 °C	0.07 °C	±0.4 °C	18%	0.05 °C
500.0 °C	499.98 °C	-0.02 °C	±0.5 °C	-4%	0.05 °C
1000.0 °C	999.98 °C	-0.02 °C	±0.6 °C	-3%	0.05 °C
1300.0 °C	1299.96 °C	-0.04 °C	±0.6 °C	-7%	0.05 °C

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50 turns current coil - DC Current

Range	Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
1000 A	10.000 0 A	10.000 28 A	0.28 mA	±32.00 mA	1%	2.07 mA
	-10.000 0 A	-9.999 98 A	0.02 mA	±32.00 mA	0%	2.07 mA
	20.000 A	20.001 1 A	1.1 mA	±68.0 mA	2%	4.1 mA
	-20.000 A	-19.998 9 A	1.1 mA	±68.0 mA	2%	4.1 mA
	50.000 A	50.001 8 A	1.8 mA	±160.0 mA	1%	10.3 mA
	-50.000 A	-49.999 3 A	0.7 mA	±160.0 mA	0%	10.3 mA
	100.000 A	100.003 9 A	3.9 mA	±320.0 mA	1%	58.2 mA
	-100.000 A	-100.000 1 A	-0.1 mA	±320.0 mA	0%	58.2 mA
	200.00 A	199.993 A	-7 mA	±900 mA	-1%	97 mA
	-200.00 A	-199.989 A	11 mA	±900 mA	1%	97 mA
	500.00 A	499.962 A	-38 mA	±2100 mA	-2%	211 mA
	-500.00 A	-499.962 A	38 mA	±2100 mA	2%	211 mA
	990.00 A	990.027 A	27 mA	±4455 mA	1%	399 mA
	-990.00 A	-990.023 A	-23 mA	±4455 mA	-1%	399 mA

All these measurements were made as direct measurement of the output current of calibrator in mode current coil. The measurement results were multiplied by 50, which is the multiplication factor of the current coil.

Functionality check of the current coil Meatest 140-50, S/N 413486

Multiply factor	Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
50x (20 A)	1000.00 A	1001 A	1 A	±3.2 A	31%	2 A
	-1000.00 A	-1001 A	-1 A	±3.2 A	-31%	2 A
25x (15 A)	375.00 A	375.1 A	0.1 A	±1.20 A	8%	0.3 A
	-375.00 A	-375.3 A	-0.3 A	±1.20 A	-25%	0.3 A

Coil was connected to the calibrator Meatest M143, S/N 671381. Current was measured by clamp meter UT209. The error of clamp meter was subtracted from the results.

All measurements on this page are outside of CAI accreditation.

All measurements on this page are outside of CMI capabilities included in Appendix C of the MRA.

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50 turns current coil -AC Current

Range	Set value	Measured value	Difference	Specifikace výrobce	Čerpání specif.	Expanded uncertainty
1000 A	10.000 0 A; 50 Hz	9.998 21 A	-1.79 mA	±38.00 mA	-5%	2.724 mA
	20.000 A; 50 Hz	19.991 9 A	-8.1 mA	±86.0 mA	-9%	22.1 mA
	50.000 A; 50 Hz	49.984 7 A	-15.3 mA	±205.0 mA	-7%	40.4 mA
	100.000 A; 50 Hz	99.977 2 A	-22.8 mA	±410.0 mA	-6%	181.1 mA
	200.00 A; 50 Hz	199.972 A	-28 mA	±1160 mA	-2%	266 mA
	500.00 A; 50 Hz	500.107 A	107 mA	±2650 mA	4%	511 mA
	990.00 A; 50 Hz	989.871 A	-129 mA	±5148 mA	-3%	923 mA
	500.00 A; 100 Hz	500.004 A	4 mA	±2650 mA	0%	509 mA

All these measurements were made as direct measurement of the output current of calibrator in mode current coil. The measurement results were multiplied by 50, which is the multiplication factor of the current coil.

Functionality check of the current coil Meatest 140-50, S/N 413486

Multiply factor	Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
50x (16 A)	800.00 A; 50 Hz	802 A	2 A	±4.3 A	47%	2 A
25x (15 A)	375.00 A; 50 Hz	375.6 A	0.6 A	±2.03 A	30%	0.3 A

Coil was connected to the calibrator Meatest M143, S/N 671381. Current was measured by clamp meter UT209. The error of clamp meter was subtracted from the results.

All measurements on this page are outside of CAI accreditation.

All measurements on this page are outside of CMI capabilities included in Appendix C of the MRA.

End of Certificate of Calibration.

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