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Calibration laboratory No. 2202 accredited by the Czech Accreditation Institute according ISO/IEC 17025:2017

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CERTIFICATE OF CALIBRATION

6011-KL-L0558-22

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: June 17, 2022

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User:

Measuring instrument: Multifunction calibrator
Manufacturer: MEATEST Brno
Type: 9010
Serial number: 750511

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: June 9 to June 17, 2022

Calibrated by:

Michal Marek

Jiří Streit

Head of department:

Jiří Streit



Metrological traceability:	Measurements are traceable to (inter)national standards.
Measurement standards used:	Reference multimeter Fluke 8508A, S/N 328370412, Cert. of Cal. 6011-KL-E0005-22. Current shunt ČMI, S/N CMI/20A/3/14, Cert. of Cal. 6011-KL-E0011-20. LCR meter Keysight E4980A, S/N MY46312534, Cert. of Cal. 6011-KL-E0017-21. Power analyzer Applied Precision 3961E, S/N 1092080151, Cert. of Cal. 6011-KL-E0049-21. Counter Pendulum CNT-81, S/N SM783671, Cert. of Cal. 6011-KL-E0029-20. Multifunction calibrator Fluke 5720A, S/N 7465206, Cert. of Cal. 6011-KL-E0002-22. AC Measurement Standard Fluke 5790A, S/N 9170033, Cert. of Cal. 6011-KL-E0053-21 HP 436A S/N 2709U05783 + HP8481A S/N 2702A71656, Cert. Of. Cal. 1013-KL-10009-21 Electrometer Keithley 6517B, S/N 1272999, Cert. of Cal. 6011-KL-E0024-21
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-C042, 611-MP-C097, 611-MP-C130 and 611-MP-C030.
Place of calibration:	Czech metrology institute, Regional Inspectorate Brno, Okružní 31, 638 00 Brno
Ambient conditions:	<i>The average ambient conditions during the measurement were as follows:</i> Air temperature: $23.1^{\circ}\text{C} \pm 0.7^{\circ}\text{C}$ Relative humidity: $47\% \pm 15\%$
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, according to User manual rev. 25. The measurement uncertainty is not included in calculation of % of specification.

The standard uncertainty of measurement has been determined in accordance with JCGM 100:2008 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.

Tables of results:

DC Voltage

Range	Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
Passive mode						
20 mV	0.000 00 mV	-0.000 10 mV	-0.10 μ V	$\pm 3.00 \mu$ V	-3%	0.24 μ V
	10.000 00 mV	10.000 64 mV	0.64 μ V	$\pm 5.20 \mu$ V	12%	0.29 μ V
	-10.000 00 mV	-9.999 46 mV	0.54 μ V	$\pm 5.20 \mu$ V	10%	0.26 μ V
	19.000 00 mV	19.000 58 mV	0.58 μ V	$\pm 7.18 \mu$ V	8%	0.44 μ V
	-19.000 00 mV	-18.999 21 mV	0.80 μ V	$\pm 7.18 \mu$ V	11%	0.44 μ V
200 mV	20.000 1 mV	20.000 16 mV	0.06 μ V	$\pm 3.9 \mu$ V	2%	0.46 μ V
	-20.000 1 mV	-19.999 37 mV	0.73 μ V	$\pm 3.9 \mu$ V	19%	0.45 μ V
	100.000 0 mV	99.999 53 mV	-0.47 μ V	$\pm 7.5 \mu$ V	-6%	0.64 μ V
	-100.000 0 mV	-99.999 24 mV	0.76 μ V	$\pm 7.5 \mu$ V	10%	0.66 μ V
	190.000 0 mV	189.998 99 mV	-1.01 μ V	$\pm 11.6 \mu$ V	-9%	1.19 μ V
	-190.000 0 mV	-189.999 33 mV	0.67 μ V	$\pm 11.6 \mu$ V	6%	1.19 μ V
Active mode						
20 mV	0.000 00 mV	0.001 30 mV	1.30 μ V	$\pm 20.00 \mu$ V	6%	0.17 μ V
	10.000 00 mV	10.001 33 mV	1.33 μ V	$\pm 22.20 \mu$ V	6%	0.27 μ V
	-10.000 00 mV	-9.999 34 mV	0.66 μ V	$\pm 22.20 \mu$ V	3%	0.28 μ V
	19.000 00 mV	19.000 96 mV	0.96 μ V	$\pm 24.18 \mu$ V	4%	0.45 μ V
	-19.000 00 mV	-18.999 26 mV	0.74 μ V	$\pm 24.18 \mu$ V	3%	0.45 μ V
200 mV	20.000 1 mV	20.000 57 mV	0.47 μ V	$\pm 20.9 \mu$ V	2%	0.47 μ V
	-20.000 1 mV	-19.999 62 mV	0.48 μ V	$\pm 20.9 \mu$ V	2%	0.46 μ V
	100.000 0 mV	100.000 16 mV	0.16 μ V	$\pm 24.5 \mu$ V	1%	0.64 μ V
	-100.000 0 mV	-99.999 00 mV	1.00 μ V	$\pm 24.5 \mu$ V	4%	0.65 μ V
	190.000 0 mV	189.999 67 mV	-0.33 μ V	$\pm 28.6 \mu$ V	-1%	1.20 μ V
	-190.000 0 mV	-189.999 33 mV	0.67 μ V	$\pm 28.6 \mu$ V	2%	1.19 μ V
2 V	0.200 001 V	0.200 001 5 V	0.5 μ V	$\pm 17 \mu$ V	3%	1.3 μ V
	-0.200 001 V	-0.199 997 4 V	3.6 μ V	$\pm 17 \mu$ V	21%	1.3 μ V
	1.000 000 V	0.999 992 9 V	-7.1 μ V	$\pm 45 \mu$ V	-16%	4.1 μ V
	-1.000 000 V	-0.999 991 8 V	8.2 μ V	$\pm 45 \mu$ V	18%	4.1 μ V
	1.900 000 V	1.899 984 8 V	-15.2 μ V	$\pm 77 \mu$ V	-20%	7.3 μ V
	-1.900 000 V	-1.899 986 0 V	14.0 μ V	$\pm 77 \mu$ V	18%	7.3 μ V
20 V	2.000 01 V	2.000 005 V	-5 μ V	$\pm 110 \mu$ V	-4%	12 μ V
	4.000 00 V	3.999 977 V	-23 μ V	$\pm 180 \mu$ V	-13%	18 μ V
	6.000 00 V	5.999 962 V	-38 μ V	$\pm 250 \mu$ V	-15%	25 μ V
	8.000 00 V	7.999 959 V	-41 μ V	$\pm 320 \mu$ V	-13%	31 μ V
	10.000 00 V	9.999 946 V	-54 μ V	$\pm 390 \mu$ V	-14%	37 μ V
	12.000 00 V	11.999 942 V	-58 μ V	$\pm 460 \mu$ V	-13%	43 μ V
	14.000 00 V	13.999 923 V	-77 μ V	$\pm 530 \mu$ V	-15%	50 μ V
	16.000 00 V	15.999 912 V	-88 μ V	$\pm 600 \mu$ V	-15%	56 μ V
	18.000 00 V	17.999 902 V	-98 μ V	$\pm 670 \mu$ V	-15%	62 μ V
	19.000 00 V	18.999 892 V	-108 μ V	$\pm 705 \mu$ V	-15%	65 μ V
	-2.000 01 V	-1.999 997 V	13 μ V	$\pm 110 \mu$ V	12%	12 μ V
	-4.000 00 V	-3.999 980 V	20 μ V	$\pm 180 \mu$ V	11%	18 μ V
	-6.000 00 V	-5.999 978 V	23 μ V	$\pm 250 \mu$ V	9%	25 μ V
	-8.000 00 V	-7.999 947 V	53 μ V	$\pm 320 \mu$ V	17%	31 μ V
	-10.000 00 V	-9.999 944 V	56 μ V	$\pm 390 \mu$ V	14%	37 μ V
	-12.000 00 V	-11.999 929 V	71 μ V	$\pm 460 \mu$ V	15%	43 μ V
	-14.000 00 V	-13.999 921 V	79 μ V	$\pm 530 \mu$ V	15%	50 μ V
	-16.000 00 V	-15.999 916 V	84 μ V	$\pm 600 \mu$ V	14%	56 μ V
	-18.000 00 V	-17.999 903 V	97 μ V	$\pm 670 \mu$ V	14%	62 μ V
	-19.000 00 V	-18.999 910 V	90 μ V	$\pm 705 \mu$ V	13%	65 μ V

DC Voltage - continue

Range	Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
200 V	20.000 1 V	19.999 84 V	-0.26 mV	±1.1 mV	-24%	0.15 mV
	-20.000 1 V	-19.999 95 V	0.15 mV	±1.1 mV	14%	0.15 mV
	90.000 0 V	89.998 86 V	-1.14 mV	±4.0 mV	-28%	0.47 mV
	-90.000 0 V	-89.999 14 V	0.87 mV	±4.0 mV	21%	0.47 mV
	100.000 0 V	99.998 59 V	-1.41 mV	±4.5 mV	-32%	0.51 mV
280 V	-100.000 0 V	-99.998 86 V	1.14 mV	±4.5 mV	26%	0.51 mV
	200.000 0 V	199.997 10 V	-2.90 mV	±8.9 mV	-33%	2.09 mV
	-200.000 0 V	-199.997 46 V	2.54 mV	±8.9 mV	29%	2.09 mV
	280.000 0 V	279.995 5 V	-4.5 mV	±12.3 mV	-37%	2.4 mV
	-280.000 0 V	-279.995 5 V	4.5 mV	±12.3 mV	37%	2.4 mV
1000 V	300.000 V	299.996 5 V	-3.5 mV	±22 mV	-16%	2.5 mV
	-300.000 V	-299.995 7 V	4.3 mV	±22 mV	20%	2.5 mV
	900.000 V	899.995 0 V	-5.0 mV	±52 mV	-10%	5.3 mV
	-900.000 V	-899.993 6 V	6.4 mV	±52 mV	12%	5.2 mV
	1000.000 V	999.996 5 V	-3.5 mV	±57 mV	-6%	5.7 mV
	-1000.000 V	-999.995 6 V	4.4 mV	±57 mV	8%	5.7 mV



DC Current

Range	Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
200 μ A	0.000 0 μ A	-0.001 3 μ A	-1.3 nA	± 20.0 nA	-6%	0.6 nA
	10.000 0 μ A	9.998 7 μ A	-1.3 nA	± 25.0 nA	-5%	0.9 nA
	-10.000 0 μ A	-10.000 1 μ A	-0.1 nA	± 25.0 nA	0%	0.9 nA
	100.000 0 μ A	99.998 3 μ A	-1.7 nA	± 70.0 nA	-2%	4.0 nA
	-100.000 0 μ A	-99.998 9 μ A	1.1 nA	± 70.0 nA	2%	4.0 nA
	190.000 0 μ A	189.997 7 μ A	-2.3 nA	± 115.0 nA	-2%	7.3 nA
	-190.000 0 μ A	-189.998 2 μ A	1.8 nA	± 115.0 nA	2%	7.3 nA
2 mA	0.200 001 mA	0.199 998 mA	-3 nA	± 156 nA	-2%	5 nA
	-0.200 001 mA	-0.200 001 mA	0 nA	± 156 nA	0%	5 nA
	1.000 000 mA	0.999 990 mA	-10 nA	± 380 nA	-3%	18 nA
	-1.000 000 mA	-0.999 998 mA	2 nA	± 380 nA	1%	18 nA
	1.900 000 mA	1.899 989 mA	-11 nA	± 632 nA	-2%	32 nA
	-1.900 000 mA	-1.899 997 mA	3 nA	± 632 nA	0%	32 nA
20 mA	2.000 01 mA	1.999 93 mA	-0.08 μ A	± 0.90 μ A	-9%	0.05 μ A
	-2.000 01 mA	-2.000 01 mA	0.00 μ A	± 0.90 μ A	0%	0.05 μ A
	10.000 00 mA	9.999 89 mA	-0.11 μ A	± 2.10 μ A	-5%	0.18 μ A
	-10.000 00 mA	-9.999 99 mA	0.01 μ A	± 2.10 μ A	1%	0.18 μ A
	19.000 00 mA	18.999 81 mA	-0.19 μ A	± 3.45 μ A	-6%	0.32 μ A
	-19.000 00 mA	-18.999 92 mA	0.08 μ A	± 3.45 μ A	2%	0.32 μ A
200 mA	20.000 1 mA	19.999 8 mA	-0.3 μ A	± 9.0 μ A	-4%	1.1 μ A
	-20.000 1 mA	-20.000 4 mA	-0.3 μ A	± 9.0 μ A	-3%	1.1 μ A
	40.000 0 mA	39.999 5 mA	-0.5 μ A	± 12.0 μ A	-5%	1.7 μ A
	-40.000 0 mA	-40.000 0 mA	0.0 μ A	± 12.0 μ A	0%	1.7 μ A
	60.000 0 mA	59.999 6 mA	-0.4 μ A	± 15.0 μ A	-3%	2.3 μ A
	-60.000 0 mA	-59.999 8 mA	0.2 μ A	± 15.0 μ A	1%	2.3 μ A
	80.000 0 mA	79.999 3 mA	-0.7 μ A	± 18.0 μ A	-4%	3.0 μ A
	-80.000 0 mA	-79.999 9 mA	0.1 μ A	± 18.0 μ A	0%	3.0 μ A
	100.000 0 mA	99.999 3 mA	-0.7 μ A	± 21.0 μ A	-3%	3.6 μ A
	-100.000 0 mA	-100.000 0 mA	0.0 μ A	± 21.0 μ A	0%	3.6 μ A
	120.000 0 mA	119.999 1 mA	-0.9 μ A	± 24.0 μ A	-4%	4.2 μ A
	-120.000 0 mA	-119.999 6 mA	0.4 μ A	± 24.0 μ A	2%	4.2 μ A
	140.000 0 mA	139.999 0 mA	-1.0 μ A	± 27.0 μ A	-4%	4.9 μ A
	-140.000 0 mA	-139.999 7 mA	0.3 μ A	± 27.0 μ A	1%	4.9 μ A
	160.000 0 mA	159.999 4 mA	-0.6 μ A	± 30.0 μ A	-2%	5.5 μ A
	-160.000 0 mA	-159.999 3 mA	0.7 μ A	± 30.0 μ A	2%	5.5 μ A
	180.000 0 mA	179.999 1 mA	-0.9 μ A	± 33.0 μ A	-3%	6.2 μ A
	-180.000 0 mA	-179.999 6 mA	0.4 μ A	± 33.0 μ A	1%	6.2 μ A
	190.000 0 mA	189.999 1 mA	-0.9 μ A	± 34.5 μ A	-3%	6.5 μ A
	-190.000 0 mA	-189.999 6 mA	0.4 μ A	± 34.5 μ A	1%	6.5 μ A
2 A	0.200 001 A	0.199 990 A	-11 μ A	± 170 μ A	-7%	19 μ A
	-0.200 001 A	-0.200 005 A	-4 μ A	± 170 μ A	-3%	18 μ A
	1.000 000 A	0.999 970 A	-30 μ A	± 330 μ A	-9%	59 μ A
	-1.000 000 A	-0.999 991 A	9 μ A	± 330 μ A	3%	59 μ A
	1.900 000 A	1.899 987 A	-13 μ A	± 510 μ A	-2%	105 μ A
	-1.900 000 A	-1.900 028 A	-28 μ A	± 510 μ A	-6%	105 μ A
20 A	2.000 01 A	2.000 07 A	0.06 mA	± 2.50 mA	3%	0.20 mA
	-2.000 01 A	-2.000 58 A	-0.57 mA	± 2.50 mA	-23%	0.20 mA
	10.000 00 A	10.000 28 A	0.28 mA	± 4.50 mA	6%	0.80 mA
	-10.000 00 A	-10.001 39 A	-1.39 mA	± 4.50 mA	-31%	0.80 mA
	19.000 00 A	19.000 53 A	0.53 mA	± 6.75 mA	8%	1.49 mA
	-19.000 00 A	-19.002 11 A	-2.11 mA	± 6.75 mA	-31%	1.49 mA

AC Voltage

Range	Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
20 mV	10.000 00 mV; 45 Hz	9.969 3 mV	-30.7 μ V	$\pm 50.0 \mu$ V	-61%	8.8 μ V
	10.000 00 mV; 400 Hz	9.968 7 mV	-31.3 μ V	$\pm 50.0 \mu$ V	-63%	8.7 μ V
	10.000 00 mV; 1 kHz	9.968 9 mV	-31.1 μ V	$\pm 50.0 \mu$ V	-62%	8.7 μ V
	10.000 00 mV; 10 kHz	9.971 1 mV	-28.9 μ V	$\pm 50.0 \mu$ V	-58%	8.7 μ V
	10.000 00 mV; 50 kHz	9.972 7 mV	-27.3 μ V	$\pm 200.0 \mu$ V	-14%	11.3 μ V
	19.000 00 mV; 45 Hz	18.997 3 mV	-2.7 μ V	$\pm 68.0 \mu$ V	-4%	13.3 μ V
	19.000 00 mV; 400 Hz	18.997 1 mV	-2.9 μ V	$\pm 68.0 \mu$ V	-4%	13.3 μ V
	19.000 00 mV; 1 kHz	18.996 9 mV	-3.1 μ V	$\pm 68.0 \mu$ V	-4%	13.3 μ V
	19.000 00 mV; 10 kHz	18.999 9 mV	-0.1 μ V	$\pm 68.0 \mu$ V	0%	13.3 μ V
	19.000 00 mV; 50 kHz	18.999 6 mV	-0.4 μ V	$\pm 290.0 \mu$ V	0%	15.6 μ V
200 mV	20.000 1 mV; 45 Hz	19.997 3 mV	-2.8 μ V	$\pm 100 \mu$ V	-3%	9.5 μ V
	100.000 0 mV; 45 Hz	99.995 7 mV	-4.3 μ V	$\pm 180 \mu$ V	-2%	26.6 μ V
	100.000 0 mV; 400 Hz	99.999 2 mV	-0.8 μ V	$\pm 180 \mu$ V	0%	26.6 μ V
	100.000 0 mV; 1 kHz	99.998 4 mV	-1.6 μ V	$\pm 180 \mu$ V	-1%	26.6 μ V
	100.000 0 mV; 10 kHz	100.016 2 mV	16.2 μ V	$\pm 180 \mu$ V	9%	26.6 μ V
	100.000 0 mV; 50 kHz	100.031 6 mV	31.6 μ V	$\pm 600 \mu$ V	5%	33.3 μ V
	190.000 0 mV; 45 Hz	189.998 1 mV	-2.0 μ V	$\pm 270 \mu$ V	-1%	50.6 μ V
	190.000 0 mV; 400 Hz	190.002 5 mV	2.5 μ V	$\pm 270 \mu$ V	1%	50.5 μ V
	190.000 0 mV; 1 kHz	190.000 5 mV	0.5 μ V	$\pm 270 \mu$ V	0%	50.5 μ V
	190.000 0 mV; 10 kHz	190.023 0 mV	22.9 μ V	$\pm 270 \mu$ V	8%	50.5 μ V
	190.000 0 mV; 50 kHz	190.018 4 mV	18.4 μ V	$\pm 870 \mu$ V	2%	63.2 μ V
2 V	0.200 001 V; 45 Hz	0.199 996 V	-5 μ V	$\pm 170 \mu$ V	-3%	22 μ V
	1.000 000 V; 45 Hz	0.999 995 V	-5 μ V	$\pm 370 \mu$ V	-1%	60 μ V
	1.000 000 V; 400 Hz	1.000 014 V	14 μ V	$\pm 370 \mu$ V	4%	60 μ V
	1.000 000 V; 1 kHz	1.000 009 V	9 μ V	$\pm 370 \mu$ V	3%	60 μ V
	1.000 000 V; 10 kHz	1.000 004 V	4 μ V	$\pm 370 \mu$ V	1%	60 μ V
	1.000 000 V; 50 kHz	0.999 953 V	-47 μ V	$\pm 3000 \mu$ V	-2%	102 μ V
	1.900 000 V; 45 Hz	1.899 976 V	-24 μ V	$\pm 595 \mu$ V	-4%	115 μ V
	1.900 000 V; 400 Hz	1.900 004 V	4 μ V	$\pm 595 \mu$ V	1%	115 μ V
	1.900 000 V; 1 kHz	1.899 998 V	-2 μ V	$\pm 595 \mu$ V	0%	115 μ V
	1.900 000 V; 10 kHz	1.899 942 V	-58 μ V	$\pm 595 \mu$ V	-10%	115 μ V
	1.900 000 V; 50 kHz	1.899 673 V	-327 μ V	$\pm 4800 \mu$ V	-7%	194 μ V
20 V	2.000 01 V; 45 Hz	1.999 97 V	-0.04 mV	± 1.20 mV	-4%	0.19 mV
	2.000 01 V; 400 Hz	2.000 00 V	-0.01 mV	± 1.20 mV	-1%	0.19 mV
	2.000 01 V; 1 kHz	2.000 03 V	0.02 mV	± 1.20 mV	2%	0.19 mV
	2.000 01 V; 10 kHz	2.000 42 V	0.41 mV	± 1.20 mV	34%	0.19 mV
	2.000 01 V; 50 kHz	2.000 95 V	0.94 mV	± 14.00 mV	7%	0.51 mV
	5.000 00 V; 45 Hz	5.000 00 V	0.00 mV	± 1.95 mV	0%	0.28 mV
	5.000 00 V; 400 Hz	5.000 06 V	0.06 mV	± 1.95 mV	3%	0.28 mV
	5.000 00 V; 1 kHz	5.000 06 V	0.06 mV	± 1.95 mV	3%	0.28 mV
	5.000 00 V; 10 kHz	5.000 67 V	0.67 mV	± 1.95 mV	34%	0.28 mV
	5.000 00 V; 50 kHz	5.001 03 V	1.03 mV	± 20.00 mV	5%	0.78 mV
	10.000 00 V; 45 Hz	10.000 05 V	0.05 mV	± 3.20 mV	1%	0.60 mV
	10.000 00 V; 400 Hz	10.000 12 V	0.12 mV	± 3.20 mV	4%	0.60 mV
	10.000 00 V; 1 kHz	10.000 06 V	0.06 mV	± 3.20 mV	2%	0.59 mV
	10.000 00 V; 10 kHz	10.000 82 V	0.82 mV	± 3.20 mV	26%	0.59 mV
	10.000 00 V; 50 kHz	10.000 52 V	0.52 mV	± 30.00 mV	2%	1.64 mV

AC Voltage - continue

Range	Set value		Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
20 V	15.000 00 V;	45 Hz	15.000 02 V	0.02 mV	±4.45 mV	0%	0.89 mV
	15.000 00 V;	400 Hz	15.000 17 V	0.17 mV	±4.45 mV	4%	0.89 mV
	15.000 00 V;	1 kHz	15.000 05 V	0.05 mV	±4.45 mV	1%	0.89 mV
	15.000 00 V;	10 kHz	15.000 88 V	0.88 mV	±4.45 mV	20%	0.89 mV
	15.000 00 V;	50 kHz	14.999 40 V	-0.60 mV	±40.00 mV	-1%	2.46 mV
	19.000 00 V;	45 Hz	18.999 96 V	-0.04 mV	±5.45 mV	-1%	1.13 mV
	19.000 00 V;	400 Hz	19.000 26 V	0.26 mV	±5.45 mV	5%	1.13 mV
	19.000 00 V;	1 kHz	19.000 05 V	0.05 mV	±5.45 mV	1%	1.13 mV
	19.000 00 V;	10 kHz	19.000 88 V	0.88 mV	±5.45 mV	16%	1.13 mV
	19.000 00 V;	50 kHz	18.998 36 V	-1.64 mV	±48.00 mV	-3%	3.12 mV
200 V	20.000 1 V;	45 Hz	20.000 3 V	0.2 mV	±10.4 mV	2%	1.2 mV
	90.000 0 V;	45 Hz	90.000 9 V	0.9 mV	±29.3 mV	3%	6.0 mV
	90.000 0 V;	400 Hz	90.001 5 V	1.5 mV	±29.3 mV	5%	6.0 mV
	90.000 0 V;	1 kHz	90.000 5 V	0.5 mV	±29.3 mV	2%	6.0 mV
	90.000 0 V;	10 kHz	89.996 8 V	-3.2 mV	±29.3 mV	-11%	6.0 mV
	100.000 0 V;	45 Hz	100.000 4 V	0.4 mV	±32.0 mV	1%	6.7 mV
	100.000 0 V;	400 Hz	100.001 5 V	1.5 mV	±32.0 mV	5%	6.7 mV
	100.000 0 V;	1 kHz	100.000 1 V	0.1 mV	±32.0 mV	0%	6.7 mV
	100.000 0 V;	10 kHz	99.995 3 V	-4.7 mV	±32.0 mV	-15%	6.7 mV
	190.000 0 V;	45 Hz	189.996 3 V	-3.7 mV	±69.0 mV	-5%	12.7 mV
	190.000 0 V;	400 Hz	189.997 1 V	-2.9 mV	±69.0 mV	-4%	12.7 mV
	190.000 0 V;	1 kHz	189.994 9 V	-5.1 mV	±69.0 mV	-7%	12.7 mV
	190.000 0 V;	10 kHz	189.985 8 V	-14.2 mV	±69.0 mV	-21%	12.7 mV
	200.000 0 V;	45 Hz	199.996 2 V	-3.8 mV	±72.0 mV	-5%	13.3 mV
280 V	200.000 0 V;	400 Hz	199.996 9 V	-3.1 mV	±72.0 mV	-4%	13.3 mV
	200.000 0 V;	1 kHz	199.994 3 V	-5.7 mV	±72.0 mV	-8%	13.3 mV
	200.000 0 V;	10 kHz	199.984 1 V	-15.9 mV	±72.0 mV	-22%	13.3 mV
	240.000 0 V;	45 Hz	239.993 V	-6.8 mV	±84.0 mV	-8%	19 mV
	240.000 0 V;	400 Hz	239.994 V	-6.3 mV	±84.0 mV	-8%	19 mV
	240.000 0 V;	1 kHz	239.991 V	-9.1 mV	±84.0 mV	-11%	19 mV
	250.000 V;	45 Hz	249.992 V	-8 mV	±87.0 mV	-9%	45 mV
	750.000 V;	45 Hz	749.990 V	-10 mV	±400 mV	-3%	91 mV
1000 V	750.000 V;	400 Hz	750.034 V	34 mV	±400 mV	8%	73 mV
	750.000 V;	1 kHz	749.978 V	-22 mV	±400 mV	-5%	73 mV
	1000.000 V;	45 Hz	999.988 V	-12 mV	±505 mV	-2%	122 mV
	1000.000 V;	400 Hz	1000.048 V	48 mV	±505 mV	9%	98 mV
	1000.000 V;	1 kHz	999.976 V	-24 mV	±505 mV	-5%	98 mV

AC Current

Range	Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
200 μ A	100.000 0 μ A; 45 Hz	99.976 9 μ A	-23.1 nA	± 300.0 nA	-8%	41.2 nA
	100.000 0 μ A; 400 Hz	99.982 2 μ A	-17.8 nA	± 300.0 nA	-6%	41.2 nA
	100.000 0 μ A; 1 kHz	99.981 4 μ A	-18.6 nA	± 300.0 nA	-6%	41.2 nA
	100.000 0 μ A; 5 kHz	99.982 0 μ A	-18.1 nA	± 500.0 nA	-4%	46.8 nA
	190.000 0 μ A; 45 Hz	189.980 4 μ A	-19.6 nA	± 435.0 nA	-5%	62.5 nA
	190.000 0 μ A; 400 Hz	189.990 9 μ A	-9.1 nA	± 435.0 nA	-2%	62.5 nA
	190.000 0 μ A; 1 kHz	189.988 8 μ A	-11.3 nA	± 435.0 nA	-3%	62.5 nA
	190.000 0 μ A; 5 kHz	189.982 3 μ A	-17.7 nA	± 770.0 nA	-2%	71.8 nA
2 mA	0.200 001 mA; 45 Hz	0.199 945 mA	-56 nA	± 470 nA	-12%	125 nA
	1.000 000 mA; 45 Hz	0.999 864 mA	-136 nA	± 1150 nA	-12%	229 nA
	1.000 000 mA; 400 Hz	0.999 930 mA	-70 nA	± 1150 nA	-6%	229 nA
	1.000 000 mA; 1 kHz	0.999 946 mA	-54 nA	± 1150 nA	-5%	229 nA
	1.000 000 mA; 5 kHz	0.999 996 mA	-4 nA	± 3000 nA	0%	467 nA
	1.900 000 mA; 45 Hz	1.899 752 mA	-248 nA	± 1915 nA	-13%	346 nA
	1.900 000 mA; 400 Hz	1.899 874 mA	-126 nA	± 1915 nA	-7%	346 nA
	1.900 000 mA; 1 kHz	1.899 907 mA	-93 nA	± 1915 nA	-5%	346 nA
20 mA	1.900 000 mA; 5 kHz	1.899 929 mA	-71 nA	± 4800 nA	-1%	714 nA
	2.000 01 mA; 45 Hz	1.998 83 mA	-1.18 μ A	± 3.00 μ A	-39%	1.00 μ A
	2.000 01 mA; 400 Hz	1.999 12 mA	-0.89 μ A	± 3.00 μ A	-30%	1.00 μ A
	2.000 01 mA; 1 kHz	1.999 50 mA	-0.51 μ A	± 3.00 μ A	-17%	1.00 μ A
	2.000 01 mA; 5 kHz	2.000 35 mA	0.34 μ A	± 14.00 μ A	2%	2.51 μ A
	5.000 00 mA; 45 Hz	4.997 85 mA	-2.15 μ A	± 4.50 μ A	-48%	1.31 μ A
	5.000 00 mA; 400 Hz	4.998 61 mA	-1.39 μ A	± 4.50 μ A	-31%	1.31 μ A
	5.000 00 mA; 1 kHz	4.999 55 mA	-0.45 μ A	± 4.50 μ A	-10%	1.31 μ A
	5.000 00 mA; 5 kHz	5.001 14 mA	1.14 μ A	± 20.00 μ A	6%	3.30 μ A
	10.000 00 mA; 45 Hz	9.996 15 mA	-3.85 μ A	± 7.00 μ A	-55%	1.82 μ A
	10.000 00 mA; 400 Hz	9.997 76 mA	-2.24 μ A	± 7.00 μ A	-32%	1.82 μ A
	10.000 00 mA; 1 kHz	9.999 59 mA	-0.41 μ A	± 7.00 μ A	-6%	1.82 μ A
	10.000 00 mA; 5 kHz	10.002 23 mA	2.23 μ A	± 30.00 μ A	7%	4.64 μ A
	15.000 00 mA; 45 Hz	14.994 45 mA	-5.56 μ A	± 9.50 μ A	-58%	2.34 μ A
	15.000 00 mA; 400 Hz	14.996 68 mA	-3.32 μ A	± 9.50 μ A	-35%	2.34 μ A
	15.000 00 mA; 1 kHz	14.999 53 mA	-0.47 μ A	± 9.50 μ A	-5%	2.34 μ A
	15.000 00 mA; 5 kHz	15.002 75 mA	2.75 μ A	± 40.00 μ A	7%	6.00 μ A
	19.000 00 mA; 45 Hz	18.993 06 mA	-6.94 μ A	± 11.50 μ A	-60%	2.76 μ A
	19.000 00 mA; 400 Hz	18.995 91 mA	-4.09 μ A	± 11.50 μ A	-36%	2.76 μ A
	19.000 00 mA; 1 kHz	18.999 35 mA	-0.65 μ A	± 11.50 μ A	-6%	2.76 μ A
	19.000 00 mA; 5 kHz	19.002 72 mA	2.72 μ A	± 48.00 μ A	6%	7.09 μ A
200 mA	20.000 1 mA; 45 Hz	19.986 4 mA	-13.7 μ A	± 30.0 μ A	-46%	10.0 μ A
	100.000 0 mA; 45 Hz	99.990 1 mA	-10.0 μ A	± 70.0 μ A	-14%	18.2 μ A
	100.000 0 mA; 400 Hz	99.994 9 mA	-5.2 μ A	± 70.0 μ A	-7%	18.2 μ A
	100.000 0 mA; 1 kHz	99.995 1 mA	-4.9 μ A	± 70.0 μ A	-7%	18.2 μ A
	100.000 0 mA; 5 kHz	99.998 7 mA	-1.3 μ A	± 300.0 μ A	0%	46.4 μ A
	190.000 0 mA; 45 Hz	189.991 7 mA	-8.3 μ A	± 115.0 μ A	-7%	27.6 μ A
	190.000 0 mA; 400 Hz	190.001 7 mA	1.7 μ A	± 115.0 μ A	2%	27.6 μ A
	190.000 0 mA; 1 kHz	190.001 2 mA	1.2 μ A	± 115.0 μ A	1%	27.6 μ A
200 mA	190.000 0 mA; 5 kHz	190.002 5 mA	2.5 μ A	± 480.0 μ A	1%	70.9 μ A

AC Current - continue

Range	Set value		Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
2 A	0.200 001 A;	45 Hz	0.199 946 A	-55 μ A	$\pm 340 \mu$ A	-16%	96 μ A
	1.000 000 A;	45 Hz	0.999 765 A	-235 μ A	$\pm 900 \mu$ A	-26%	242 μ A
	1.000 000 A;	400 Hz	0.999 832 A	-168 μ A	$\pm 900 \mu$ A	-19%	242 μ A
	1.000 000 A;	1 kHz	0.999 875 A	-125 μ A	$\pm 900 \mu$ A	-14%	242 μ A
	1.900 000 A;	45 Hz	1.899 590 A	-410 μ A	$\pm 1530 \mu$ A	-27%	407 μ A
	1.900 000 A;	400 Hz	1.899 697 A	-303 μ A	$\pm 1530 \mu$ A	-20%	407 μ A
	1.900 000 A;	1 kHz	1.899 768 A	-232 μ A	$\pm 1530 \mu$ A	-15%	407 μ A
20 A	2.000 01 A;	45 Hz	1.999 56 A	-0.45 mA	± 8.00 mA	-6%	1.45 mA
	10.000 00 A;	45 Hz	9.999 05 A	-0.95 mA	± 16.00 mA	-6%	4.08 mA
	10.000 00 A;	120 Hz	9.998 32 A	-1.68 mA	± 16.00 mA	-10%	4.08 mA
	10.000 00 A;	400 Hz	9.993 23 A	-6.77 mA	± 16.00 mA	-42%	4.08 mA
	19.000 00 A;	45 Hz	18.998 34 A	-1.66 mA	± 25.00 mA	-7%	7.04 mA
	19.000 00 A;	120 Hz	18.997 15 A	-2.85 mA	± 25.00 mA	-11%	7.04 mA
	19.000 00 A;	400 Hz	18.986 97 A	-13.03 mA	± 25.00 mA	-52%	7.04 mA



Resistance (4-wire)

Range	Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
Fixed mode						
100 Ω	0.0002 Ω	0.000 2 Ω	0.00 m Ω	± 0.50 m Ω	0%	0.1 m Ω
	1.0032 Ω	1.003 2 Ω	0.05 m Ω	± 0.50 m Ω	9%	0.1 m Ω
	10.1034 Ω	10.1033 0 Ω	-0.13 m Ω	± 2.00 m Ω	-6%	0.2 m Ω
100 Ω	101.0022 Ω	101.001 7 Ω	-0.5 m Ω	± 4.0 m Ω	-12%	0.8 m Ω
1 k Ω	0.999851 k Ω	0.999 847 k Ω	-4 m Ω	± 15 m Ω	-28%	8 m Ω
10 k Ω	10.01032 k Ω	10.010 30 k Ω	-0.02 Ω	± 0.15 Ω	-13%	0.08 Ω
100 k Ω	99.99698 k Ω	99.996 4 k Ω	-0.58 Ω	± 1.50 Ω	-39%	0.8 Ω
Variable mode						
100 Ω	0.0000 Ω	0.000 4 Ω	0.4 m Ω	± 2 m Ω	18%	0.1 m Ω
	1.0000 Ω	1.000 4 Ω	0.4 m Ω	± 2 m Ω	19%	0.1 m Ω
	10.0000 Ω	10.001 1 Ω	1.1 m Ω	± 5 m Ω	22%	0.2 m Ω
33 Ω	30.0000 Ω	30.001 6 Ω	1.6 m Ω	± 10 m Ω	17%	0.3 m Ω
100 Ω	100.00 Ω	100.000 6 Ω	0.6 m Ω	± 32 m Ω	2%	0.8 m Ω
330 Ω	190.00 Ω	189.992 Ω	-8 m Ω	± 28 m Ω	-29%	2 m Ω
	300.00 Ω	299.995 Ω	-5 m Ω	± 42 m Ω	-11%	3 m Ω
1 k Ω	1.000 0 k Ω	0.999 987 k Ω	-13 m Ω	± 133 m Ω	-10%	8 m Ω
3.3 k Ω	1.900 0 k Ω	1.899 940 k Ω	-60 m Ω	± 277 m Ω	-22%	14 m Ω
	3.000 0 k Ω	2.999 95 k Ω	-0.05 Ω	± 0.42 Ω	-12%	0.03 Ω
10 k Ω	10.000 k Ω	10.000 06 k Ω	0.06 Ω	± 1.33 Ω	5%	0.08 Ω
33 k Ω	19.000 k Ω	18.999 93 k Ω	-0.07 Ω	± 2.77 Ω	-2%	0.15 Ω
	30.000 k Ω	30.000 2 k Ω	0.2 Ω	± 4.20 Ω	5%	0.3 Ω
100 k Ω	100.00 k Ω	100.001 6 k Ω	1.6 Ω	± 13.30 Ω	12%	0.8 Ω
330 k Ω	190.00 k Ω	190.002 7 k Ω	2.7 Ω	± 27.70 Ω	10%	1.5 Ω
	300.00 k Ω	300.000 0 k Ω	0 Ω	± 42.00 Ω	0%	3 Ω
1 M Ω	1.000 0 M Ω	1.000 05 M Ω	0.05 k Ω	± 0.15 k Ω	32%	0.01 k Ω

Simulation of RTD - type Pt385 (ITS 90, $R_0 = 100 \Omega$)

Applied value	Indicated value	Difference	Spec.	Percent of spec.	Expanded uncertainty
-200.0 $^{\circ}\text{C}$	-199.99 $^{\circ}\text{C}$	0.02 $^{\circ}\text{C}$	± 0.05 $^{\circ}\text{C}$	30%	0.02 $^{\circ}\text{C}$
-25.0 $^{\circ}\text{C}$	-24.98 $^{\circ}\text{C}$	0.02 $^{\circ}\text{C}$	± 0.08 $^{\circ}\text{C}$	28%	0.02 $^{\circ}\text{C}$
0.0 $^{\circ}\text{C}$	0.03 $^{\circ}\text{C}$	0.03 $^{\circ}\text{C}$	± 0.08 $^{\circ}\text{C}$	38%	0.02 $^{\circ}\text{C}$
25.0 $^{\circ}\text{C}$	24.98 $^{\circ}\text{C}$	-0.02 $^{\circ}\text{C}$	± 0.10 $^{\circ}\text{C}$	-17%	0.02 $^{\circ}\text{C}$
50.0 $^{\circ}\text{C}$	49.98 $^{\circ}\text{C}$	-0.02 $^{\circ}\text{C}$	± 0.10 $^{\circ}\text{C}$	-20%	0.02 $^{\circ}\text{C}$
100.0 $^{\circ}\text{C}$	99.98 $^{\circ}\text{C}$	-0.02 $^{\circ}\text{C}$	± 0.10 $^{\circ}\text{C}$	-18%	0.03 $^{\circ}\text{C}$
500.0 $^{\circ}\text{C}$	499.97 $^{\circ}\text{C}$	-0.03 $^{\circ}\text{C}$	± 0.15 $^{\circ}\text{C}$	-21%	0.07 $^{\circ}\text{C}$
800.0 $^{\circ}\text{C}$	799.98 $^{\circ}\text{C}$	-0.02 $^{\circ}\text{C}$	± 0.18 $^{\circ}\text{C}$	-9%	0.10 $^{\circ}\text{C}$

Resistance (2-wire - output Hi and Lo)

Range	Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
Fixed mode						
10 Ω	0.62878 Ω	0.615 7 Ω	-13.1 m Ω	± 25 m Ω	-52%	0.1 m Ω
	1.63178 Ω	1.620 2 Ω	-11.6 m Ω	± 25 m Ω	-46%	0.1 m Ω
	10.73250 Ω	10.721 5 Ω	-11.0 m Ω	± 30 m Ω	-37%	0.2 m Ω
100 Ω	101.63130 Ω	101.632 6 Ω	1.2 m Ω	± 30 m Ω	4%	0.8 m Ω
1 k Ω	1.00048 k Ω	1.000 471 k Ω	-9 m Ω	± 40 m Ω	-22%	8 m Ω
10 k Ω	10.01094 k Ω	10.010 87 k Ω	-0.07 Ω	± 0.2 Ω	-34%	1.01 Ω
100 k Ω	99.99761 k Ω	99.997 1 k Ω	-0.5 Ω	± 1.5 Ω	-35%	20.1 Ω
1 M Ω	1.00091 M Ω	1.000 91 M Ω	0.00 k Ω	± 0.03 k Ω	-3%	100.01 k Ω
10 M Ω	9.95760 M Ω	9.95660 0 M Ω	-1.00 k Ω	± 5.0 k Ω	-20%	1000.1 k Ω
100 M Ω	100.36910 M Ω	100.378 2 M Ω	9.1 k Ω	± 100 k Ω	9%	13.8 k Ω
1000 M Ω	1000.92600 M Ω	1001.760 0 M Ω	834.0 k Ω	± 2502 k Ω	33%	3.1 k Ω
Variable mode						
10 Ω	2.00000 Ω	1.995 2 Ω	-4.8 m Ω	± 33 m Ω	-15%	0.2 m Ω
	5.00000 Ω	4.995 1 Ω	-4.9 m Ω	± 34 m Ω	-15%	0.2 m Ω
	10.00 Ω	9.996 5 Ω	-3.5 m Ω	± 35 m Ω	-10%	0.2 m Ω
33 Ω	30.00 Ω	29.995 8 Ω	-4.2 m Ω	± 40 m Ω	-11%	0.3 m Ω
100 Ω	100.00 Ω	99.994 8 Ω	-5.2 m Ω	± 62 m Ω	-8%	0.8 m Ω
300 Ω	190.00 Ω	190.000 Ω	0 m Ω	± 58 m Ω	0%	2 m Ω
	300.00 Ω	300.002 Ω	2 m Ω	± 72 m Ω	3%	2 m Ω
1 k Ω	1.000 0 k Ω	0.999 984 k Ω	-16 m Ω	± 163 m Ω	-10%	8 m Ω
3.3 k Ω	1.900 0 k Ω	1.899 933 k Ω	-67 m Ω	± 307 m Ω	-22%	14 m Ω
	3.000 0 k Ω	2.999 97 k Ω	-0.03 Ω	± 0.45 Ω	-8%	0.03 Ω
10 k Ω	10.000 k Ω	10.000 07 k Ω	0.07 Ω	± 1.36 Ω	5%	0.08 Ω
33 k Ω	19.000 k Ω	18.999 92 k Ω	-0.08 Ω	± 2.80 Ω	-3%	0.15 Ω
	30.000 k Ω	30.000 2 k Ω	0.1 Ω	± 4.23 Ω	4%	0.3 Ω
100 k Ω	100.00 k Ω	100.001 4 k Ω	1.4 Ω	± 13.33 Ω	11%	0.8 Ω
330 k Ω	190.00 k Ω	190.001 0 k Ω	1.0 Ω	± 27.70 Ω	4%	1.4 Ω
	300.00 k Ω	299.999 k Ω	-1 Ω	± 42.00 Ω	-2%	3 Ω
1 M Ω	1.000 0 M Ω	1.000 05 M Ω	0.05 k Ω	± 0.15 k Ω	33%	0.01 k Ω
3.3 M Ω	1.900 0 M Ω	1.899 96 M Ω	-0.04 k Ω	± 0.60 k Ω	-7%	0.02 k Ω
	3.000 0 M Ω	2.999 9 M Ω	-0.1 k Ω	± 0.93 k Ω	-11%	0.1 k Ω
10 M Ω	10.000 M Ω	9.999 6 M Ω	-0.4 k Ω	± 3.03 k Ω	-15%	0.2 k Ω
33 M Ω	19.000 M Ω	18.995 7 M Ω	-4.4 k Ω	± 38.30 k Ω	-11%	0.3 k Ω
	30.000 M Ω	29.989 8 M Ω	-10.2 k Ω	± 60.30 k Ω	-17%	11.0 k Ω
100 M Ω	100.00 M Ω	100.059 0 M Ω	59.0 k Ω	± 200.30 k Ω	29%	16.2 k Ω
1000 M Ω	190.00 M Ω	190.111 1 M Ω	111.1 k Ω	± 573.00 k Ω	19%	19.0 k Ω
	300.00 M Ω	299.981 8 M Ω	-18.2 k Ω	± 903.00 k Ω	-2%	151.9 k Ω
	1000.00 M Ω	1001.081 6 M Ω	1081.6 k Ω	± 10010 k Ω	11%	501.1 k Ω

Capacitance (Cs-D, Variable mode, $U_{meas} = 1.00\text{ V}$, 2-wire, GND OFF)

Test frequenc	Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
1 kHz	1.000 0 nF	1.002 5 nF	2.5 pF	$\pm 20.0\text{ pF}$	12%	2.0 pF
1 kHz	3.000 nF	3.002 4 nF	2.4 pF	$\pm 30.0\text{ pF}$	8%	3.0 pF
1 kHz	10.00 nF	10.003 nF	2.910 pF	$\pm 50.00\text{ pF}$	6%	10.001 pF
1 kHz	30.00 nF	29.996 nF	-0.004 nF	$\pm 0.15\text{ nF}$	-3%	0.030 nF
500 Hz	100.00 nF	99.780 nF	-0.220 nF	$\pm 0.50\text{ nF}$	-44%	0.100 nF
300 Hz	300.00 nF	300.205 nF	0.204 nF	$\pm 1.50\text{ nF}$	14%	0.300 nF
300 Hz	1.000 0 μF	1.000 11 μF	0.11 nF	$\pm 5.00\text{ nF}$	2%	1.00 nF
300 Hz	3.000 μF	3.001 4 μF	1.4 nF	$\pm 15.00\text{ nF}$	9%	3.0 nF
300 Hz	10.00 μF	10.006 μF	0.006 μF	$\pm 0.05\text{ \mu\text{F}}$	12%	0.010 μF
120 Hz	30.000 0 μF	30.010 43 μF	0.01 μF	$\pm 0.15\text{ \mu\text{F}}$	7%	0.07 μF
120 Hz	100.000 μF	100.013 0 μF	0.0 μF	$\pm 0.50\text{ \mu\text{F}}$	3%	0.4 μF
ramp	300.000 μF	299.65 μF	-353 nF	$\pm 1500\text{ nF}$	-24%	4.37 nF
ramp	1000.000 μF	999.24 μF	-756 nF	$\pm 5000\text{ nF}$	-15%	12.4 nF
ramp	10.000 00 mF	9.9686 mF	-31.4 μF	$\pm 70.0\text{ \mu\text{F}}$	-45%	0.050 μF
ramp	100.000 0 mF	99.926 mF	-74 μF	$\pm 1000\text{ \mu\text{F}}$	-7%	0.050 μF

Capacitance (Cs-D, Fixed mode, $U_{meas} = 1.00\text{ V}$, 2-wire, GND OFF)

Test frequenc	Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
1 kHz	0.750 3 nF	0.752 8 nF	2.5 pF	$\pm 12.5\text{ pF}$	20%	2.0 pF
1 kHz	10.33 nF	10.326 nF	0.710 pF	$\pm 35.00\text{ pF}$	2%	10.000 nF
500 Hz	100.69 nF	100.773 nF	85.500 pF	$\pm 250.000\text{ pF}$	34%	0.348 nF
300 Hz	1.025 2 μF	1.025 21 μF	0.01 nF	$\pm 2.5\text{ nF}$	0%	1.00 nF
300 Hz	10.01 μF	10.013 μF	3.030 nF	$\pm 35.00\text{ nF}$	9%	10.000 nF
120 Hz	101.063 μF	101.049 2 μF	-13.8 nF	$\pm 450\text{ nF}$	-3%	350.0 nF

HVR Option

Range	Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
100 k Ω	100.00 k Ω	99.984 5 k Ω	-15.6 Ω	$\pm 200\text{ \Omega}$	-8%	1.1 Ω
330 k Ω	190.00 k Ω	189.998 0 k Ω	-2.0 Ω	$\pm 380\text{ \Omega}$	-1%	1.5 Ω
1 M Ω	0.900 0 M Ω	0.899 99 M Ω	-0.01 k Ω	$\pm 2\text{ k\Omega}$	0%	0.01 k Ω
3.3 M Ω	1.900 0 M Ω	1.899 83 M Ω	-0.18 k Ω	$\pm 6\text{ k\Omega}$	-3%	0.02 k Ω
10 M Ω	9.000 M Ω	9.000 7 M Ω	0.7 k Ω	$\pm 27\text{ k\Omega}$	3%	0.2 k Ω
33 M Ω	19.000 M Ω	18.997 4 M Ω	-2.6 k Ω	$\pm 95\text{ k\Omega}$	-3%	0.3 k Ω
100 M Ω	90.00 M Ω	90.010 1 M Ω	10.1 k Ω	$\pm 450\text{ k\Omega}$	2%	13.3 k Ω
1000 M Ω	190.00 M Ω	190.053 0 M Ω	53.0 k Ω	$\pm 950\text{ k\Omega}$	6%	18.1 k Ω
	900.00 M Ω	900.052 2 M Ω	52.2 k Ω	$\pm 4500\text{ k\Omega}$	1%	451.2 k Ω
2 G Ω	1.900 0 G Ω	1.899 2 G Ω	-0.8 M Ω	$\pm 19\text{ M\Omega}$	-4%	1.0 M Ω
10 G Ω	9.000 0 G Ω	9.044 5 G Ω	44.5 M Ω	$\pm 90\text{ M\Omega}$	49%	5.1 M Ω
100 G Ω	97.83 G Ω	99.22 G Ω	1391 M Ω	$\pm 2935\text{ M\Omega}$	47%	55 M Ω

DC Power

	Set value	Measured value	Difference	Spec.	% of spec.	Expanded uncertainty
1.00 V; 10.00 mA;	10.000 00 mW	9.999 80 mW	-0.20 μ W	$\pm 2.1 \mu$ W	-9%	0.28 μ W
1.00 V; 100.00 mA;	100.00 00 mW	99.99 85 mW	-1.54 μ W	$\pm 21.0 \mu$ W	-7%	4.15 μ W
1.00 V; 1.00 A;	1.000 00 W	0.999 97 W	-0.03 mW	± 0.4 mW	-9%	0.12 mW
1.00 V; 10.00 A;	10.000 00 W	10.000 23 W	0.23 mW	± 3.5 mW	6%	1.15 mW
240.00 V; 10.00 mA;	2.400 000 W	2.399 962 W	-0.038 mW	± 0.510 mW	-7%	0.068 mW
240.00 V; 10.00 A;	2400.000 W	2400.080 W	0.080 W	± 0.900 W	9%	0.277 W

AC Power

$f_{\text{SET}} = 50.0 \text{ Hz}$

Power factor		Set value	Measured value	Difference	Spec.	% of spec.	Expanded uncertainty
$\cos \varphi = 1$	100V/2A;	200.00 W	200.008 4 W	8.4 mW	± 200.00 mW	4%	40.7 mW
	200V/20A;	4000.0 W	4000.008 W	8 mW	± 5500 mW	0%	809 mW
$\cos \varphi = 0.5 \text{ LA}$	100V/2 A;	100.00 W	100.023 6 W	23.6 mW	± 200.00 mW	12%	40.2 mW
	200V/20 A;	2000.0 W	2001.205 W	1205 mW	± 5500 mW	22%	1050 mW

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

Applied value	Indicated value	Difference	Spec.	Percent of spec.	Expanded uncertainty
-200.0 °C	-199.86 °C	0.14 °C	±0.30 °C	46%	0.04 °C
-25.0 °C	-24.94 °C	0.06 °C	±0.25 °C	26%	0.04 °C
0.0 °C	0.06 °C	0.06 °C	±0.25 °C	23%	0.04 °C
25.0 °C	25.06 °C	0.06 °C	±0.25 °C	26%	0.04 °C
50.0 °C	50.04 °C	0.04 °C	±0.25 °C	16%	0.04 °C
100.0 °C	100.04 °C	0.04 °C	±0.25 °C	16%	0.04 °C
500.0 °C	500.03 °C	0.03 °C	±0.18 °C	17%	0.04 °C
1000.0 °C	1000.01 °C	0.01 °C	±0.18 °C	5%	0.04 °C
1200.0 °C	1200.01 °C	0.01 °C	±0.18 °C	7%	0.04 °C

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

Applied value	Indicated value	Difference	Spec.	Percent of spec.	Expanded uncertainty
-200.0 °C	-199.88 °C	0.12 °C	±0.35 °C	34%	0.06 °C
-25.0 °C	-24.94 °C	0.06 °C	±0.25 °C	22%	0.05 °C
0.0 °C	0.05 °C	0.05 °C	±0.25 °C	19%	0.05 °C
25.0 °C	25.05 °C	0.05 °C	±0.25 °C	21%	0.05 °C
50.0 °C	50.04 °C	0.04 °C	±0.25 °C	14%	0.05 °C
100.0 °C	100.03 °C	0.03 °C	±0.25 °C	12%	0.05 °C
500.0 °C	500.01 °C	0.01 °C	±0.23 °C	5%	0.06 °C
1000.0 °C	1000.02 °C	0.02 °C	±0.23 °C	10%	0.06 °C
1370.0 °C	1370.02 °C	0.02 °C	±0.24 °C	7%	0.06 °C

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

Applied value	Indicated value	Difference	Spec.	Percent of spec.	Expanded uncertainty
-50.0 °C	-49.91 °C	0.09 °C	±0.90 °C	10%	0.16 °C
-25.0 °C	-24.79 °C	0.21 °C	±0.90 °C	23%	0.16 °C
0.0 °C	0.23 °C	0.23 °C	±0.90 °C	25%	0.16 °C
25.0 °C	25.25 °C	0.25 °C	±0.90 °C	28%	0.16 °C
50.0 °C	50.19 °C	0.19 °C	±0.90 °C	21%	0.16 °C
100.0 °C	100.17 °C	0.17 °C	±0.90 °C	19%	0.16 °C
500.0 °C	500.08 °C	0.08 °C	±0.49 °C	16%	0.16 °C
1000.0 °C	1000.08 °C	0.08 °C	±0.49 °C	17%	0.16 °C
1200.0 °C	1200.11 °C	0.11 °C	±0.49 °C	23%	0.16 °C
1500.0 °C	1500.11 °C	0.11 °C	±0.40 °C	28%	0.16 °C
1750.0 °C	1750.08 °C	0.08 °C	±0.40 °C	20%	0.16 °C

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

Applied value	Indicated value	Difference	Spec.	Percent of spec.	Expanded uncertainty
400.0 °C	400.50 °C	0.50 °C	±0.90 °C	55%	0.15 °C
600.0 °C	600.27 °C	0.27 °C	±0.90 °C	30%	0.14 °C
800.0 °C	800.24 °C	0.24 °C	±0.90 °C	27%	0.14 °C
1000.0 °C	1000.12 °C	0.12 °C	±0.54 °C	23%	0.14 °C
1200.0 °C	1200.08 °C	0.08 °C	±0.48 °C	16%	0.14 °C
1500.0 °C	1500.09 °C	0.09 °C	±0.48 °C	19%	0.14 °C
1800.0 °C	1800.05 °C	0.05 °C	±0.41 °C	13%	0.14 °C

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

Applied value	Indicated value	Difference	Spec.	Percent of spec.	Expanded uncertainty
-50.0 °C	-49.69 °C	0.31 °C	±0.96 °C	32%	0.16 °C
-25.0 °C	-24.70 °C	0.30 °C	±0.96 °C	31%	0.16 °C
0.0 °C	0.25 °C	0.25 °C	±0.96 °C	26%	0.16 °C
25.0 °C	25.30 °C	0.30 °C	±0.96 °C	31%	0.16 °C
50.0 °C	50.11 °C	0.11 °C	±0.96 °C	12%	0.16 °C
100.0 °C	100.13 °C	0.13 °C	±0.96 °C	14%	0.16 °C
500.0 °C	500.09 °C	0.09 °C	±0.44 °C	20%	0.16 °C
1000.0 °C	1000.07 °C	0.07 °C	±0.44 °C	17%	0.16 °C
1200.0 °C	1200.07 °C	0.07 °C	±0.39 °C	19%	0.16 °C
1500.0 °C	1500.09 °C	0.09 °C	±0.39 °C	23%	0.16 °C
1750.0 °C	1750.05 °C	0.05 °C	±0.39 °C	13%	0.16 °C

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

Applied value	Indicated value	Difference	Spec.	Percent of spec.	Expanded uncertainty
-200.0 °C	-199.94 °C	0.06 °C	±0.30 °C	21%	0.05 °C
-25.0 °C	-24.94 °C	0.06 °C	±0.26 °C	23%	0.05 °C
0.0 °C	0.04 °C	0.04 °C	±0.26 °C	16%	0.05 °C
25.0 °C	25.06 °C	0.06 °C	±0.21 °C	31%	0.05 °C
50.0 °C	50.04 °C	0.04 °C	±0.21 °C	19%	0.05 °C
100.0 °C	100.04 °C	0.04 °C	±0.21 °C	19%	0.05 °C
400.0 °C	400.01 °C	0.01 °C	±0.18 °C	5%	0.05 °C

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

Applied value	Indicated value	Difference	Spec.	Percent of spec.	Expanded uncertainty
-200.0 °C	-199.99 °C	0.01 °C	±0.45 °C	2%	0.05 °C
-25.0 °C	-24.96 °C	0.04 °C	±0.23 °C	18%	0.05 °C
0.0 °C	0.02 °C	0.02 °C	±0.23 °C	10%	0.05 °C
25.0 °C	25.04 °C	0.04 °C	±0.23 °C	19%	0.05 °C
50.0 °C	50.03 °C	0.03 °C	±0.23 °C	11%	0.05 °C
100.0 °C	100.02 °C	0.02 °C	±0.23 °C	7%	0.05 °C
500.0 °C	500.00 °C	0.00 °C	±0.19 °C	0%	0.05 °C
1000.0 °C	1000.01 °C	0.01 °C	±0.19 °C	4%	0.05 °C

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

Applied value	Indicated value	Difference	Spec.	Percent of spec.	Expanded uncertainty
-200.0 °C	-199.86 °C	0.14 °C	±0.45 °C	30%	0.05 °C
-25.0 °C	-24.94 °C	0.06 °C	±0.30 °C	20%	0.05 °C
0.0 °C	0.06 °C	0.06 °C	±0.30 °C	19%	0.05 °C
25.0 °C	25.07 °C	0.07 °C	±0.26 °C	27%	0.05 °C
50.0 °C	50.06 °C	0.06 °C	±0.26 °C	25%	0.05 °C
100.0 °C	100.05 °C	0.05 °C	±0.26 °C	20%	0.05 °C
500.0 °C	500.04 °C	0.04 °C	±0.26 °C	15%	0.05 °C
1000.0 °C	1000.04 °C	0.04 °C	±0.23 °C	16%	0.05 °C
1300.0 °C	1300.02 °C	0.02 °C	±0.23 °C	9%	0.05 °C

Multimeter:

DC Voltage

Range	Applied value	Indicated value	Difference	Spec.	Percent of spec.	Expanded uncertainty
12 mV	0.000 00 mV	-0.0015 1 mV	-1.51 μ V	$\pm 3.0 \mu$ V	-50%	0.2 μ V
	10.000 00 mV	9.997 3 mV	-2.7 μ V	$\pm 3.5 \mu$ V	-78%	0.1 μ V
	-10.000 00 mV	-10.002 3 mV	-2.3 μ V	$\pm 3.5 \mu$ V	-65%	0.1 μ V
120 mV	100.000 00 mV	99.995 mV	-5 μ V	$\pm 10.0 \mu$ V	-46%	1 μ V
	-100.000 00 mV	-99.999 mV	1 μ V	$\pm 10.0 \mu$ V	6%	1 μ V
1.2 V	1.000 000 0 V	0.999 98 V	-0.02 mV	± 0.1 mV	-21%	0.02 mV
	-1.000 000 0 V	-0.999 98 V	0.02 mV	± 0.1 mV	19%	0.02 mV
12 V	2.000 000 V	1.999 9 V	-0.1 mV	± 0.6 mV	-11%	0.1 mV
	-2.000 000 V	-2.000 0 V	0.0 mV	± 0.6 mV	6%	0.1 mV
	5.000 000 V	4.999 9 V	-0.1 mV	± 0.8 mV	-18%	0.1 mV
	-5.000 000 V	-4.999 9 V	0.1 mV	± 0.8 mV	11%	0.1 mV
	10.000 000 V	9.999 8 V	-0.2 mV	± 1.0 mV	-20%	0.1 mV
	-10.000 000 V	-9.999 8 V	0.2 mV	± 1.0 mV	22%	0.1 mV

DC Current:

Range	Applied value	Indicated value	Difference	Spec.	Percent of spec.	Expanded uncertainty
100 μ A	0.000 00 μ A	0.001 8 μ A	1.8 nA	± 20.0 nA	9%	0.1 nA
	50.000 00 μ A	50.001 9 μ A	1.9 nA	± 30.0 nA	6%	0.2 nA
	-50.000 00 μ A	-49.998 5 μ A	1.5 nA	± 30.0 nA	5%	0.2 nA
	100.000 00 μ A	100.002 1 μ A	2.1 nA	± 40.0 nA	5%	0.2 nA
	-100.000 00 μ A	-99.999 6 μ A	0.4 nA	± 40.0 nA	1%	0.2 nA
1 mA	500.000 00 μ A	500.006 μ A	6 nA	± 200 nA	3%	0.6 nA
	-500.000 00 μ A	-499.991 μ A	9 nA	± 200 nA	4%	0.7 nA
	700.000 00 μ A	700.003 μ A	3 nA	± 240 nA	1%	0.8 nA
	-700.000 00 μ A	-699.994 μ A	6 nA	± 240 nA	2%	0.8 nA
	1.000 00 mA	1.000 000 mA	0.000 μ A	$\pm 0.300 \mu$ A	0%	0.3 μ A
2.4 mA	-1.000 00 mA	-0.999 995 mA	0.005 μ A	$\pm 0.300 \mu$ A	2%	0.3 μ A
	0.000 00 mA	0.000 340 mA	0.340 μ A	$\pm 0.800 \mu$ A	42%	0.1 μ A
	0.100 00 mA	0.100 073 mA	0.073 μ A	$\pm 0.815 \mu$ A	9%	0.1 μ A
	-0.100 00 mA	-0.100 132 mA	-0.132 μ A	$\pm 0.815 \mu$ A	-16%	0.1 μ A
	0.500 00 mA	0.499 737 mA	-0.263 μ A	$\pm 0.875 \mu$ A	-30%	0.1 μ A
	-0.500 00 mA	-0.500 335 mA	-0.335 μ A	$\pm 0.875 \mu$ A	-38%	0.1 μ A
	1.000 00 mA	0.999 616 mA	-0.384 μ A	$\pm 0.950 \mu$ A	-40%	0.1 μ A
	-1.000 00 mA	-1.000 433 mA	-0.433 μ A	$\pm 0.950 \mu$ A	-46%	0.1 μ A
	1.500 00 mA	1.499 520 mA	-0.480 μ A	$\pm 1.025 \mu$ A	-47%	0.1 μ A
	-1.500 00 mA	-1.500 480 mA	-0.480 μ A	$\pm 1.025 \mu$ A	-47%	0.1 μ A
	2.000 00 mA	1.999 503 mA	-0.497 μ A	$\pm 1.100 \mu$ A	-45%	0.1 μ A
	-2.000 00 mA	-2.000 485 mA	-0.485 μ A	$\pm 1.100 \mu$ A	-44%	0.1 μ A
24 mA	5.000 00 mA	4.999 07 mA	-0.93 μ A	$\pm 1.55 \mu$ A	-60%	0.3 μ A
	-5.000 00 mA	-5.000 96 mA	-0.96 μ A	$\pm 1.55 \mu$ A	-62%	0.3 μ A
	10.000 00 mA	9.999 09 mA	-0.91 μ A	$\pm 2.30 \mu$ A	-39%	0.5 μ A
	-10.000 00 mA	-10.001 00 mA	-1.00 μ A	$\pm 2.30 \mu$ A	-43%	0.5 μ A
	15.000 00 mA	14.999 23 mA	-0.77 μ A	$\pm 3.05 \mu$ A	-25%	0.7 μ A
	-15.000 00 mA	-15.000 96 mA	-0.96 μ A	$\pm 3.05 \mu$ A	-32%	0.7 μ A
	20.000 00 mA	19.999 34 mA	-0.66 μ A	$\pm 3.80 \mu$ A	-17%	0.9 μ A
	-20.000 00 mA	-20.000 99 mA	-0.99 μ A	$\pm 3.80 \mu$ A	-26%	0.9 μ A
	24.000 00 mA	23.999 80 mA	-0.20 μ A	$\pm 4.40 \mu$ A	-5%	1.7 μ A
	-24.000 00 mA	-24.001 15 mA	-1.15 μ A	$\pm 4.40 \mu$ A	-26%	1.7 μ A

Multimeter:

Resistance: 4-wire, cable opt. 9000-60

Range	Applied value	Indicated value	Difference	Spec.	Percent of spec.	Expanded uncertainty
2 k Ω	0.000 000 Ω	0.000 Ω	0 m Ω	± 10 m Ω	1%	1 m Ω
	9.999 283 Ω	10.000 Ω	0 m Ω	± 12 m Ω	3%	1 m Ω
	99.996 53 Ω	99.998 Ω	2 m Ω	± 30 m Ω	6%	1 m Ω
	1000.002 0 Ω	1000.015 Ω	0.01 Ω	± 210 Ω	0%	0.01 Ω
	1899.998 3 Ω	1900.179 Ω	0.18 Ω	± 390 Ω	0%	0.08 Ω
20 k Ω	10000.269 Ω	10001.40 Ω	1 Ω	± 2050 Ω	0%	324 Ω
	18999.631 Ω	19001.58 Ω	2 Ω	± 3850 Ω	0%	597 Ω

Frequency $U_{rms} = 1$ V, sine

Applied value	Indicated value	Difference	Spec.	Percent of spec.	Expanded uncertainty
1.000 000 kHz	1.000 00 kHz	0.00 Hz	± 0.05 Hz	8%	0.01 Hz



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Temperature measurement -TC type J (ITS 90, RJ = 0°C)

Applied value	Equivalent value	Indicated value	Difference	Spec.	Percent of spec.	Expanded uncertainty
-200.0 °C	-7.890 48 mV	-200.12 °C	-0.12 °C	± 0.3 °C	-39%	0.05 °C
0.0 °C	0.000 00 mV	-0.04 °C	-0.04 °C	± 0.2 °C	-16%	0.04 °C
100.0 °C	5.268 92 mV	99.96 °C	-0.04 °C	± 0.2 °C	-17%	0.04 °C
1199.0 °C	69.495 93 mV	1198.93 °C	-0.07 °C	± 0.3 °C	-25%	0.04 °C

Temperature measurement -TC type K (ITS 90, RJ = 0°C)

Applied value	Equivalent value	Indicated value	Difference	Spec.	Percent of spec.	Expanded uncertainty
-199.0 °C	-5.876 05 mV	-199.20 °C	-0.20 °C	± 0.4 °C	-57%	0.07 °C
0.0 °C	0.000 00 mV	-0.05 °C	-0.05 °C	± 0.3 °C	-15%	0.05 °C
100.0 °C	4.096 23 mV	99.95 °C	-0.05 °C	± 0.3 °C	-14%	0.05 °C
1370.0 °C	54.818 57 mV	1369.86 °C	-0.14 °C	± 0.4 °C	-37%	0.06 °C

Temperature measurement -TC type S (ITS 90, RJ = 0°C)

Applied value	Equivalent value	Indicated value	Difference	Spec.	Percent of spec.	Expanded uncertainty
-48.0 °C	-0.227 58 mV	-48.46 °C	-0.46 °C	± 0.9 °C	-51%	0.20 °C
0.0 °C	0.000 00 mV	-0.36 °C	-0.36 °C	± 0.9 °C	-40%	0.17 °C
100.0 °C	0.645 91 mV	99.72 °C	-0.28 °C	± 0.9 °C	-31%	0.18 °C
1750.0 °C	18.503 26 mV	1749.70 °C	-0.30 °C	± 0.8 °C	-38%	0.16 °C

Temperature measurement -TC type R (ITS 90, RJ = 0°C)

Applied value	Equivalent value	Indicated value	Difference	Spec.	Percent of spec.	Expanded uncertainty
-47.0 °C	-0.215 20 mV	-47.70 °C	-0.70 °C	± 1.0 °C	-72%	0.21 °C
0.0 °C	0.000 00 mV	-0.36 °C	-0.36 °C	± 1.0 °C	-38%	0.17 °C
100.0 °C	0.647 40 mV	99.79 °C	-0.21 °C	± 1.0 °C	-21%	0.17 °C
1750.0 °C	20.877 03 mV	1749.74 °C	-0.26 °C	± 0.8 °C	-34%	0.13 °C

Temperature measurement -TC type T (ITS 90, RJ = 0°C)

Applied value	Equivalent value	Indicated value	Difference	Spec.	Percent of spec.	Expanded uncertainty
-199.0 °C	-5.587 15 mV	-199.16 °C	-0.16 °C	± 0.3 °C	-53%	0.06 °C
0.0 °C	0.000 00 mV	-0.04 °C	-0.04 °C	± 0.3 °C	-17%	0.05 °C
100.0 °C	4.278 52 mV	99.95 °C	-0.05 °C	± 0.2 °C	-23%	0.04 °C
400.0 °C	20.871 97 mV	399.95 °C	-0.05 °C	± 0.3 °C	-20%	0.03 °C

Temperature measurement -TC type E (ITS 90, RJ = 0°C)

Applied value	Equivalent value	Indicated value	Difference	Spec.	Percent of spec.	Expanded uncertainty
-200.0 °C	-8.824 58 mV	-200.08 °C	-0.08 °C	± 0.5 °C	-17%	0.04 °C
0.0 °C	0.000 00 mV	-0.03 °C	-0.03 °C	± 0.3 °C	-13%	0.04 °C
100.0 °C	6.318 93 mV	99.97 °C	-0.03 °C	± 0.3 °C	-13%	0.03 °C
999.0 °C	76.297 67 mV	998.94 °C	-0.06 °C	± 0.3 °C	-24%	0.03 °C

Temperature measurement -TC type N (ITS 90, RJ = 0°C)

Applied value	Equivalent value	Indicated value	Difference	Spec.	Percent of spec.	Expanded uncertainty
-199.0 °C	-3.980 38 mV	-199.28 °C	-0.28 °C	± 0.5 °C	-62%	0.10 °C
0.0 °C	0.000 00 mV	-0.07 °C	-0.07 °C	± 0.3 °C	-24%	0.08 °C
100.0 °C	2.774 12 mV	99.94 °C	-0.06 °C	± 0.4 °C	-17%	0.07 °C
1299.0 °C	47.476 75 mV	1298.89 °C	-0.11 °C	± 0.4 °C	-31%	0.06 °C

Temperature measurement -TC type B (ITS 90, RJ = 0°C)

Applied value	Equivalent value	Indicated value	Difference	Spec.	Percent of spec.	Expanded uncertainty
402.0 °C	0.794 68 mV	401.47 °C	-0.53 °C	± 0.9 °C	-60%	0.20 °C
1000.0 °C	4.834 34 mV	999.84 °C	-0.16 °C	± 0.5 °C	-29%	0.13 °C
1800.0 °C	13.591 30 mV	1799.78 °C	-0.22 °C	± 0.8 °C	-27%	0.15 °C

SCOPE option - HF Voltage (V_{rms})

Frequency	Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
10 MHz	10.000 mV	9.702 6 mV	-297.4 μ V	$\pm 427 \mu$ V	-70%	80.0 μ V
10 MHz	100.00 mV	97.666 6 mV	-2333.4 μ V	$\pm 2677 \mu$ V	-87%	600.0 μ V
10 MHz	0.8000 V	0.789 4 V	-10.7 mV	± 20 mV	-53%	5.0 mV
100 MHz	100.00 mV	98.412 mV	-1588 μ V	$\pm 3300 \mu$ V	-48%	650 μ V
100 MHz	0.8000 V	0.800 V	0 mV	± 26 mV	0%	6 mV
400 MHz	100.00 mV	100.747 mV	747 μ V	$\pm 3700 \mu$ V	20%	650 μ V
400 MHz	0.8000 V	0.794 V	-6 mV	± 29 mV	-22%	6 mV

SCOPE option - Non SIN voltage - N connector

	Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
	100.00 mV	100.01 mV	0.01 mV	± 0.35 mV	2%	0.06 mV
	1.00 V	1.000 1 V	0.1 mV	± 3.1 mV	2%	0.8 mV
	10.00 V	10.000 V	0 mV	± 30 mV	0%	1 mV

SCOPE option - Frequency (mode SIN, IV_{rms})

	Set value	Measured value	Difference	Spec.	Percent of spec.	Expanded uncertainty
	1.000 00 MHz	0.999 999 MHz	-1 Hz	± 25 Hz	-3%	5 Hz

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.