



YOKOGAWA

European Standards Laboratory
Yokogawa Europe Solutions B.V.
Amersfoort, The Netherlands



CALIBRATION-CERTIFICATE

Certificate number 58520P10137
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Example

Applicant Example Certificate

Instrument	760902 High Accuracy Element 5A
	Manufacturer Yokogawa
	Type 760902
	Serial number C2VA06059V
	Inventory number CCE_1_1045
	ID numbers used standards CSE820 CSE976 CSE981 CSE965 CSE1029
	Procedure CALWT5000_5A Version: 1 of 22-01-2019

Calibration method	The Powermeter was compared to the Yokogawa Power Calibration System via a phantom technique. During the calibration the distortion of the applied voltage and current were below 0.1 %. Before calibration the device was powered on for at least 12 hours.
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Environmental conditions	Temperature (23.1 ± 1) °C
	Relative Humidity (42 ± 4) %rh

Date of Calibration	06 February 2019
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Result	<p>The results of the calibration are shown on the next pages.</p> <p>The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor 2 such that the coverage probability corresponds to approximately 95 %.</p> <p>The standard uncertainty of measurement has been determined in accordance with the EA-4/02 M:2013.</p> <p>The long term stability of the calibrated object is not included in the reported expanded uncertainty measurement.</p> <p>This certificate of calibration is issued in compliance with ISO/IEC 17025:2005</p>
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Traceability	The measurements have been executed using standards for which the traceability to (inter)national standards has been demonstrated towards the RvA.
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Date	06 February 2019
Name	E.J. Kroon
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1 MHz Line filter set for frequencies < 50 kHz

Voltage Calibration DC

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1.5V	1.50000	1.50009	0.00001	V DC	0.006
1.5V	-1.50000	-1.50006	0.00002	V DC	0.004
3V	3.00000	3.00016	0.00005	V DC	0.005
3V	-3.00000	-3.00020	0.00005	V DC	0.007
6V	6.00000	6.00037	0.00012	V DC	0.006
6V	-6.00000	-6.00047	0.00012	V DC	0.008
10V	10.0000	10.0001	0.0002	V DC	0.001
10V	-10.0000	-10.0002	0.0002	V DC	0.002
15V	15.0000	15.0003	0.0002	V DC	0.002
15V	-15.0000	-15.0005	0.0002	V DC	0.003
30V	30.0000	30.0007	0.0007	V DC	0.002
30V	-30.0000	-30.0011	0.0008	V DC	0.004
60V	60.0000	60.0021	0.0016	V DC	0.003
60V	-60.0000	-60.0038	0.0015	V DC	0.006
100V	110.000	109.998	0.002	V DC	-0.002
100V	-110.000	-109.999	0.002	V DC	-0.001
100V	100.000	99.998	0.002	V DC	-0.002
100V	-100.000	-99.999	0.002	V DC	-0.001
100V	50.000	50.000	0.002	V DC	-0.001
100V	-50.000	-50.000	0.002	V DC	0.000
100V	10.000	10.000	0.002	V DC	0.000
100V	-10.000	-10.001	0.002	V DC	0.007
100V	1.000	0.999	0.002	V DC	-0.100
100V	-1.000	-1.001	0.002	V DC	0.100
150V	150.000	150.008	0.005	V DC	0.005
150V	-150.000	-150.014	0.005	V DC	0.009
300V	300.000	300.018	0.008	V DC	0.006
300V	-300.000	-300.026	0.008	V DC	0.009
600V	600.000	600.040	0.016	V DC	0.007
600V	-600.000	-600.055	0.016	V DC	0.009
1000V	1.0000	1.0000	0.0002	kV DC	0.001
1000V	-1.0000	-1.0000	0.0002	kV DC	0.003

Voltage Calibration 10 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1.5V	1.50000	1.49982	0.00024	V AC	-0.012
3V	3.0000	2.9996	0.0004	V AC	-0.014
6V	6.0000	5.9992	0.0012	V AC	-0.013
10V	10.0000	10.0001	0.0012	V AC	0.001
15V	15.0000	14.9975	0.0026	V AC	-0.016
30V	30.000	29.996	0.005	V AC	-0.014
60V	60.000	60.008	0.011	V AC	0.013
100V	100.000	100.004	0.013	V AC	0.004

Voltage Calibration 60 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1.5V	1.5000	1.4999	0.0005	V AC	-0.008
3V	3.0000	3.0002	0.0004	V AC	0.005
6V	6.0000	6.0006	0.0009	V AC	0.011
10V	10.0000	10.0000	0.0006	V AC	0.000
15V	15.0000	15.0008	0.0011	V AC	0.005
30V	30.0000	30.0012	0.0022	V AC	0.004
60V	60.0000	60.0003	0.0004	V AC	0.005
100V	110.0000	109.998	0.007	V AC	-0.002
100V	100.0000	100.0000	0.007	V AC	0.000
100V	50.0000	50.001	0.004	V AC	0.002
100V	10.0000	10.004	0.002	V AC	0.039
100V	1.0000	1.007	0.006	V AC	0.679
150V	150.0000	150.010	0.010	V AC	0.007
300V	300.0000	300.021	0.019	V AC	0.007
600V	600.0000	600.04	0.04	V AC	0.006
1000V	1.0000	1.0000	0.0002	kV AC	0.000

Voltage Calibration 1 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1.5V	1.5000	1.5002	0.0006	V AC	0.013
3V	3.0000	3.0007	0.0005	V AC	0.023
6V	6.0000	6.0013	0.0009	V AC	0.022
10V	10.0000	10.0013	0.0006	V AC	0.013
15V	15.0000	15.0012	0.0011	V AC	0.008
30V	30.0000	30.0025	0.0022	V AC	0.008
60V	60.0000	60.005	0.004	V AC	0.009
100V	100.0000	100.003	0.007	V AC	0.003
150V	150.0000	150.017	0.010	V AC	0.011
300V	300.0000	300.037	0.019	V AC	0.012
600V	600.0000	600.06	0.04	V AC	0.010
1000V	1.0000	1.0001	0.0002	kV AC	0.007

Voltage Calibration 10 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1.5V	1.50000	1.50178	0.00022	V AC	0.119
3V	3.0000	3.0030	0.0004	V AC	0.099
6V	6.0000	6.0051	0.0008	V AC	0.084
10V	10.0000	10.0061	0.0013	V AC	0.061
15V	15.0000	15.0036	0.0018	V AC	0.024
30V	30.0000	30.008	0.014	V AC	0.026
60V	60.0000	60.005	0.010	V AC	0.009
100V	100.0000	100.008	0.015	V AC	0.008
150V	150.0000	149.993	0.020	V AC	-0.004
300V	300.0	300.1	0.4	V AC	0.027
600V	600.0	600.0	0.4	V AC	0.002



Voltage Calibration 50 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1.5V	1.5000	1.5027	0.0003	V AC	0.181
3V	3.0000	3.0048	0.0006	V AC	0.159
6V	6.0000	6.0074	0.0012	V AC	0.123
10V	10.0000	10.0095	0.0020	V AC	0.095
15V	15.000	15.008	0.004	V AC	0.052
30V	30.000	30.012	0.008	V AC	0.040
60V	60.000	60.044	0.011	V AC	0.073
100V	100.000	100.038	0.025	V AC	0.038

Voltage Calibration 100 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1.5V	1.5000	1.5059	0.0006	V AC	0.394
3V	3.0000	3.0109	0.0009	V AC	0.362
6V	6.0000	6.0155	0.0028	V AC	0.258
10V	10.000	10.023	0.004	V AC	0.235
15V	15.000	15.021	0.007	V AC	0.143
30V	30.000	30.040	0.012	V AC	0.134
60V	60.00	60.03	0.07	V AC	0.053
100V	100.00	100.04	0.10	V AC	0.041

Current Calibration DC

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
5mA	5.0000	4.9996	0.0023	mA DC	-0.008
5mA	-5.0000	-5.0011	0.0020	mA DC	0.022
10mA	10.0000	9.9999	0.0025	mA DC	-0.001
10mA	-10.0000	-10.0017	0.0020	mA DC	0.017
20mA	20.0000	19.9982	0.0017	mA DC	-0.009
20mA	-20.0000	-20.0007	0.0010	mA DC	0.003
50mA	50.0000	49.999	0.009	mA DC	-0.002
50mA	-50.0000	-50.015	0.008	mA DC	0.030
100mA	100.0000	100.013	0.010	mA DC	0.013
100mA	-100.0000	-100.030	0.011	mA DC	0.030
200mA	200.0000	200.020	0.012	mA DC	0.010
200mA	-200.0000	-200.042	0.012	mA DC	0.021
500mA	0.50000	0.49992	0.00002	A DC	-0.016
500mA	-0.50000	-0.49999	0.00002	A DC	-0.002
1A	1.10000	1.09996	0.00019	A DC	-0.003
1A	1.00000	0.99995	0.00008	A DC	-0.005
1A	0.50000	0.49996	0.00002	A DC	-0.008
1A	0.10000	0.10000	0.00002	A DC	-0.004
1A	0.01000	0.00999	0.00002	A DC	-0.100
1A	-1.10000	-1.10015	0.00008	A DC	0.014
1A	-1.00000	-1.00003	0.00006	A DC	0.003
1A	-0.50000	-0.50004	0.00002	A DC	0.008
1A	-0.10000	-0.10002	0.00002	A DC	0.024
1A	-0.01000	-0.01001	0.00002	A DC	0.068
2A	2.00000	1.99978	0.00010	A DC	-0.011
2A	-2.00000	-1.99996	0.00027	A DC	-0.002
5A	5.00000	4.9988	0.0009	A DC	-0.024
5A	-5.00000	-4.9992	0.0008	A DC	-0.017

Current Calibration AC at 10 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
5mA	5.0000	5.0003	0.0019	mA AC	0.007
10mA	10.0000	10.0016	0.0025	mA AC	0.016
20mA	20.0000	20.0000	0.004	mA AC	0.002
50mA	50.0000	50.004	0.006	mA AC	0.008
100mA	100.0000	100.012	0.021	mA AC	0.012
200mA	200.0000	200.02	0.04	mA AC	0.008
500mA	0.50000	0.49997	0.00010	A AC	-0.006
1A	1.00000	1.00002	0.00008	A AC	0.002

Current Calibration AC at 60 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
5mA	5.0000	5.0001	0.0006	mA AC	0.002
10mA	10.0000	10.0007	0.0016	mA AC	0.007
20mA	20.0000	19.9986	0.0029	mA AC	-0.007
50mA	50.0000	50.0000	0.006	mA AC	0.000
100mA	100.0000	100.009	0.013	mA AC	0.009
200mA	200.0000	200.006	0.015	mA AC	0.003
500mA	0.50000	0.49998	0.00006	A AC	-0.004
1A	1.10000	1.10001	0.00005	A AC	0.001
1A	1.00000	0.99999	0.00005	A AC	-0.001
1A	0.50000	0.49999	0.00005	A AC	-0.001
1A	0.10000	0.09999	0.00002	A AC	-0.006
1A	0.01000	0.01000	0.00002	A AC	-0.015
2A	2.00000	1.99984	0.00012	A AC	-0.008
5A	5.0000	4.9999	0.0004	A AC	-0.003

Current Calibration AC at 1 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
5mA	5.0000	5.0009	0.0013	mA AC	0.017
10mA	10.0000	10.0021	0.0025	mA AC	0.021
20mA	20.0000	20.002	0.005	mA AC	0.009
50mA	50.0000	50.007	0.011	mA AC	0.014
100mA	100.0000	100.020	0.015	mA AC	0.020
200mA	200.0000	200.04	0.04	mA AC	0.018
500mA	0.50000	0.50000	0.00005	A AC	0.000
1A	1.00000	1.00005	0.00007	A AC	0.005
2A	2.00000	1.99982	0.00015	A AC	-0.009
5A	5.0000	5.0001	0.0004	A AC	0.002

Current Calibration AC at 10 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
5mA	5.0000	5.000	0.007	mA AC	-0.004
10mA	10.0000	10.002	0.009	mA AC	0.017
20mA	20.0000	20.000	0.012	mA AC	-0.001
50mA	50.0000	50.017	0.022	mA AC	0.035
100mA	100.0000	100.04	0.04	mA AC	0.040
200mA	200.0000	200.06	0.07	mA AC	0.029
500mA	0.50000	0.50034	0.00006	A AC	0.069
1A	1.00000	1.00072	0.00007	A AC	0.072
2A	2.00000	2.00129	0.00022	A AC	0.065
5A	5.0000	5.0017	0.0003	A AC	0.035

Current Calibration AC at 50 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
5mA	5.000	5.000	0.007	mA AC	0.000
10mA	10.000	10.002	0.009	mA AC	0.019
20mA	20.000	20.000	0.012	mA AC	0.001
50mA	50.000	50.017	0.022	mA AC	0.034
100mA	100.00	100.04	0.04	mA AC	0.040
200mA	200.00	200.06	0.07	mA AC	0.029
500mA	0.50000	0.50034	0.00006	A AC	0.068
1A	1.00000	1.00072	0.00007	A AC	0.072
2A	2.00000	2.00127	0.00022	A AC	0.064

Current Calibration AC at 100 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
5mA	5.000	5.000	0.007	mA AC	-0.002
10mA	10.000	10.002	0.009	mA AC	0.018
20mA	20.000	20.000	0.012	mA AC	0.001
50mA	50.000	50.017	0.022	mA AC	0.035
100mA	100.00	100.04	0.04	mA AC	0.039
200mA	200.00	200.06	0.07	mA AC	0.029
500mA	0.50000	0.50034	0.00006	A AC	0.068
1A	1.00000	1.00071	0.00007	A AC	0.071
2A	2.00000	2.00128	0.00022	A AC	0.064

External Current Calibration DC. For current 1000mV/A is set.

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1V	1.00000	1.00002	0.00008	A DC	0.002
1V	-1.00000	-1.00003	0.00005	A DC	0.003

External Current Calibration 10 Hz. For current 1000mV/A is set.

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1V	1.00000	0.99991	0.00012	A AC	-0.009

External Current Calibration 60 Hz. For current 1000mV/A is set.

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
50mV	50.000	49.981	0.012	mA AC	-0.038
100mV	100.000	99.989	0.012	mA AC	-0.011
200mV	200.000	199.981	0.017	mA AC	-0.010
500mV	500.000	499.948	0.026	mA AC	-0.010
1V	1.00000	0.99990	0.00013	A AC	-0.010
2V	2.00000	1.99985	0.00018	A AC	-0.008
5V	5.00000	5.00466	0.00020	A AC	0.093

External Current Calibration 1 kHz. For current 1000mV/A is set.

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
50mV	50.000	49.989	0.011	mA AC	-0.022
100mV	100.000	99.992	0.012	mA AC	-0.008
200mV	200.000	199.982	0.011	mA AC	-0.009
500mV	500.000	499.979	0.023	mA AC	-0.004
1V	1.00000	1.00003	0.00012	A AC	0.003
2V	2.00000	2.00002	0.00009	A AC	0.001
5V	5.00000	5.00503	0.00022	A AC	0.101

External Current Calibration 10 kHz. For current 1000mV/A is set.

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
50mV	50.000	49.990	0.012	mA AC	-0.020
200mV	200.000	200.006	0.009	mA AC	0.003
1V	1.00000	1.00077	0.00008	A AC	0.077
2V	2.00000	2.00162	0.00012	A AC	0.081
5V	5.00000	5.00883	0.00025	A AC	0.177

External Current Calibration 50 kHz. For current 1000mV/A is set.

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
50mV	50.000	50.019	0.010	mA AC	0.039
200mV	200.000	200.010	0.011	mA AC	0.005
1V	1.00000	1.00097	0.00008	A AC	0.097
2V	2.00000	2.00161	0.00009	A AC	0.080
5V	5.00000	5.00540	0.00024	A AC	0.108

External Current Calibration 100 kHz. For current 1000mV/A is set.

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
50mV	50.000	50.015	0.018	mA AC	0.030
200mV	200.000	199.988	0.016	mA AC	-0.006
1V	1.00000	1.00150	0.00011	A AC	0.150
5V	5.00000	5.0076	0.0003	A AC	0.152



Power Calibration DC Constant 100 V

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 1A	100.000	99.988	0.011	W	-0.012
100V 1A	-100.000	-99.993	0.011	W	-0.007
100V 1A	50.000	49.993	0.002	W	-0.014
100V 1A	-50.000	-50.001	0.002	W	0.003
100V 1A	10.000	10.000	0.002	W	-0.001
100V 1A	-10.000	-10.002	0.002	W	0.017
100V 1A	1.000	0.999	0.002	W	-0.101
100V 1A	-1.000	-1.000	0.002	W	0.001
100V 500mA	50.0000	49.9902	0.0028	W	-0.020
100V 500mA	50.0000	49.9897	0.0028	W	-0.021
100V 1A	100.000	99.989	0.011	W	-0.011
100V 1A	-100.000	-99.993	0.011	W	-0.007
100V 5mA	500.000	499.995	0.002	mW	-0.001
100V 5mA	-500.000	-500.056	0.002	mW	0.011
100V 10mA	1.00000	1.00002	0.00002	W	0.002
100V 10mA	-1.00000	-1.00007	0.00002	W	0.007
100V 20mA	2.00000	1.99989	0.00002	W	-0.005
100V 20mA	-2.00000	-1.99998	0.00002	W	-0.001
100V 50mA	5.00000	5.00058	0.00008	W	0.012
100V 50mA	-5.00000	-5.00083	0.00008	W	0.017
100V 100mA	10.0000	10.0019	0.0002	W	0.019
100V 100mA	-10.0000	-10.0023	0.0002	W	0.023
100V 200mA	20.0000	20.0022	0.0015	W	0.011
100V 200mA	-20.0000	-20.0023	0.0014	W	0.011
100V 500mA	50.0000	49.9901	0.0028	W	-0.020
100V 500mA	-50.0000	-49.9976	0.0026	W	-0.005
100V 2A	200.000	199.982	0.015	W	-0.009
100V 2A	-200.000	-199.989	0.016	W	-0.006
100V 5A	500.00	499.88	0.11	W	-0.024
100V 5A	-500.00	-499.90	0.11	W	-0.020



Power Calibration DC Constant 1 A

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 1A	110.000	109.987	0.011	W	-0.012
100V 1A	-110.000	-109.988	0.012	W	-0.011
100V 1A	100.000	99.987	0.011	W	-0.013
100V 1A	-100.000	-99.989	0.011	W	-0.011
100V 1A	50.000	49.995	0.005	W	-0.010
100V 1A	-50.000	-49.995	0.009	W	-0.010
100V 1A	10.000	9.998	0.002	W	-0.017
100V 1A	-10.000	-9.999	0.002	W	-0.009
100V 1A	1.000	0.999	0.002	W	-0.105
100V 1A	-1.000	-1.000	0.002	W	0.005
10V 1A	10.0000	9.9989	0.0019	W	-0.011
10V 1A	-10.0000	-9.9991	0.0022	W	-0.009
15V 1A	15.0000	14.9994	0.0012	W	-0.004
15V 1A	-15.0000	-14.9992	0.0015	W	-0.005
30V 1A	30.0000	29.9984	0.0010	W	-0.005
30V 1A	-30.0000	-29.9986	0.0010	W	-0.005
60V 1A	60.000	59.997	0.006	W	-0.005
60V 1A	-60.000	-59.998	0.006	W	-0.004
100V 1A	100.000	99.989	0.011	W	-0.011
100V 1A	-100.000	-99.989	0.011	W	-0.011
150V 1A	150.000	149.995	0.016	W	-0.003
150V 1A	-150.000	-150.000	0.016	W	0.000
300V 1A	300.00	299.99	0.03	W	-0.003
300V 1A	-300.00	-299.99	0.03	W	-0.002
600V 1A	600.00	599.99	0.06	W	-0.002
600V 1A	-600.00	-600.00	0.06	W	-0.001
1000V 1A	1.00000	0.99990	0.00011	kW	-0.010
1000V 1A	-1.00000	-0.99995	0.00011	kW	-0.005

Power Calibration 10 Hz PF=1 constant 1 A

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V 1A	15.000	15.000	0.003	W	0.003
30V 1A	30.000	30.001	0.006	W	0.003
60V 1A	60.000	60.002	0.012	W	0.003
100V 1A	100.000	99.999	0.021	W	-0.001

Power Calibration 10 Hz PF=1 constant 100 V

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 500mA	50.000	49.999	0.008	W	-0.002

Power Calibration 60 Hz PF=1 constant 1 A

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1.5V 1A	1.5000	1.5002	0.0023	W	0.013
3V 1A	3.000	3.000	0.005	W	0.015
6V 1A	6.000	6.001	0.009	W	0.014
15V 1A	15.000	15.000	0.003	W	0.003
30V 1A	30.000	30.000	0.006	W	0.001
60V 1A	60.000	60.002	0.012	W	0.003
100V 1A	110.000	109.996	0.023	W	-0.004
100V 1A	100.000	99.998	0.021	W	-0.002
100V 1A	50.000	49.998	0.011	W	-0.004
100V 1A	10.000	10.000	0.002	W	0.000
100V 1A	1.000	1.000	0.002	W	-0.027
150V 1A	150.00	150.01	0.03	W	0.006
300V 1A	300.00	300.01	0.06	W	0.005
600V 1A	600.00	600.02	0.12	W	0.004
1000V 1A	1.00000	0.99999	0.00021	kW	-0.001

Power Calibration 60 Hz PF=1 constant 100 V

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 20mA	2.0000	1.9998	0.0004	W	-0.008
100V 50mA	5.0000	5.0000	0.0010	W	0.001
100V 100mA	10.0000	10.0018	0.0022	W	0.018
100V 200mA	20.000	20.002	0.004	W	0.009
100V 500mA	50.000	49.999	0.008	W	-0.002
100V 1A	110.000	109.986	0.002	W	-0.013
100V 1A	50.000	50.003	0.008	W	0.007
100V 1A	10.000	10.001	0.002	W	0.009
100V 1A	1.000	1.000	0.002	W	-0.013
100V 2A	200.00	199.98	0.04	W	-0.010
100V 5A	500.00	500.00	0.10	W	0.001

Power Calibration 1 kHz PF=1 constant 1 A

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
6V 1A	6.0000	6.0019	0.0025	W	0.031
15V 1A	15.000	15.002	0.003	W	0.015
30V 1A	30.000	30.004	0.006	W	0.012
60V 1A	60.000	60.007	0.012	W	0.012
100V 1A	100.000	100.008	0.021	W	0.008
150V 1A	150.00	150.03	0.03	W	0.018
300V 1A	300.00	300.05	0.06	W	0.017
600V 1A	600.00	600.10	0.12	W	0.016
1000V 1A	1.00000	1.00009	0.00021	kW	0.009

Power Calibration 1 kHz PF=1 constant 100 V

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 10mA	1.0000	1.0003	0.0003	W	0.032
100V 50mA	5.0000	5.0011	0.0011	W	0.022
100V 100mA	10.0000	10.0025	0.0022	W	0.025
100V 200mA	20.000	20.004	0.004	W	0.021
100V 500mA	50.000	50.000	0.015	W	0.001
100V 2A	200.00	199.99	0.06	W	-0.003
100V 5A	500.00	500.04	0.10	W	0.007

Power Calibration 10 kHz PF=1 constant 1 A

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
6V 1A	6.0000	6.0084	0.0029	W	0.140
15V 1A	15.000	15.014	0.005	W	0.094
30V 1A	30.000	30.029	0.009	W	0.097
60V 1A	60.000	60.056	0.018	W	0.094
100V 1A	100.00	100.09	0.03	W	0.089

Power Calibration 10 kHz PF=1 constant 100 V

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 10mA	1.0000	1.0004	0.0009	W	0.043
100V 50mA	5.0000	5.0031	0.0012	W	0.062
100V 200mA	20.000	20.011	0.004	W	0.057
100V 500mA	50.000	50.043	0.015	W	0.086
100V 2A	200.00	200.16	0.06	W	0.079
100V 5A	500.00	500.26	0.15	W	0.052

Power Calibration 50 kHz PF=1 constant 1 A

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
6V 1A	6.000	6.008	0.011	W	0.128
15V 1A	15.000	15.021	0.009	W	0.143
30V 1A	30.000	30.043	0.018	W	0.142
60V 1A	60.00	60.09	0.04	W	0.152
100V 1A	100.00	100.15	0.06	W	0.149

Power Calibration 50 kHz PF=1 constant 100 V

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 50mA	5.000	5.009	0.003	W	0.176
100V 200mA	20.000	20.035	0.017	W	0.177
100V 500mA	50.000	50.064	0.015	W	0.129
100V 2A	200.00	200.32	0.12	W	0.161

Power Calibration 100 kHz PF=1 constant 1 A

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
6V 1A	6.000	5.993	0.006	W	-0.109
15V 1A	15.000	15.035	0.009	W	0.230
30V 1A	30.000	30.051	0.018	W	0.170
60V 1A	60.00	60.11	0.04	W	0.191
100V 1A	100.00	100.21	0.06	W	0.209

Power Calibration 100 kHz PF=1 constant 100 V

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 50mA	5.000	5.017	0.007	W	0.337
100V 100mA	10.000	10.033	0.010	W	0.328
100V 200mA	20.000	20.066	0.019	W	0.329
100V 500mA	50.00	50.08	0.12	W	0.166
100V 2A	200.00	200.73	0.13	W	0.364

For current 1V/A is set in the instrument. Constant 60 V

External Current Power Calibration DC.

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
60V 1V	60.000	60.005	0.007	W	0.008
60V 1V	-60.000	-60.006	0.007	W	0.010

External Current Power Calibration 10 Hz. PF=1.

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
60V 1V	10.000	10.003	0.002	W	0.031

External Current Power Calibration 60 Hz. PF=1.

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
60V 50mV	3.0000	2.9994	0.0007	W	-0.020
60V 100mV	6.0000	5.9998	0.0008	W	-0.003
60V 500mV	30.0000	29.9982	0.0020	W	-0.006
60V 200mV	12.0000	11.9991	0.0012	W	-0.008
60V 1V	60.000	59.999	0.007	W	-0.001
60V 5V	300.000	300.286	0.016	W	0.095
60V 10V	300.000	300.288	0.016	W	0.096

External Current Power Calibration 1 kHz. PF=1.

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
60V 50mV	3.0000	2.9994	0.0005	W	-0.018
60V 100mV	6.0000	6.0000	0.0006	W	0.000
60V 500mV	30.0000	30.0012	0.0015	W	0.004
60V 200mV	12.0000	12.0000	0.0008	W	0.000
60V 1V	60.000	60.005	0.007	W	0.009
60V 5V	300.000	300.329	0.020	W	0.110
60V 10V	300.000	300.330	0.019	W	0.110

External Current Power Calibration 10 kHz. PF=1.

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
60V 1V	60.000	60.057	0.006	W	0.094
60V 5V	300.000	300.581	0.026	W	0.194

External Current Power Calibration 50 kHz. PF=1.

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
60V 1V	60.000	60.078	0.006	W	0.130
60V 5V	300.00	300.41	0.04	W	0.136

External Current Power Calibration 100 kHz. PF=1.

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
60V 1V	60.000	60.134	0.013	W	0.224
60V 5V	300.00	300.66	0.07	W	0.221

Power Calibration 60Hz PF=0 lag. Constant 1 A

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V 1A	0.0000	0.0000	0.0009	W	-
100V 1A	0.000	0.001	0.006	W	-
150V 1A	0.000	0.002	0.008	W	-

Power Calibration 60Hz PF=0 Lead Constant 1 A

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V 1A	0.000	0.000	0.006	W	-
100V 1A	0.000	0.013	0.013	W	-
150V 1A	0.000	0.008	0.024	W	-

Power Calibration 1 kHz PF=0 lag

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 1A	0.00	0.03	0.12	W	-

Power Calibration 10 kHz PF=0 lag

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 1A	0.00	0.01	0.24	W	-

Power Calibration 50 kHz PF=0 lag

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 1A	0.0	0.0	0.7	W	-

Power Calibration 100 kHz PF=0 lag

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 1A	0.0	0.0	1.3	W	-

Power Calibration 1 kHz PF=0 lead

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 1A	0.00	-0.03	0.12	W	-

Power Calibration 10 kHz PF=0 lead

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 1A	0.00	-0.03	0.24	W	-

Power Calibration 50 kHz PF=0 lead

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 1A	0.0	-0.1	0.7	W	-

Power Calibration 100 kHz PF=0 lead

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 1A	0.0	-0.1	1.3	W	-

6th Voltage Harmonic (60 Hz) synchronized to 10 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V	100.000	99.996	0.007	V AC	-0.004

20th Voltage Harmonic (1 kHz) synchronized to 50 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V	100.000	100.001	0.007	V AC	0.001

25th Voltage Harmonic (10 kHz) synchronized to 400 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V	100.000	100.013	0.008	V AC	0.013

20th Voltage Harmonic (50 kHz) synchronized to 2.5 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V	100.000	100.015	0.008	V AC	0.015

6th Current Harmonic (60 Hz) synchronized to 10 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1A	1.00000	1.00006	0.00005	A AC	0.006

20th Current Harmonic (1 kHz) synchronized to 50 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1A	1.00000	1.00010	0.00007	A AC	0.010

25th Current Harmonic (10 kHz) synchronized to 400 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1A	1.00000	1.00075	0.00007	A AC	0.075

1st Power Harmonic synchronized to 60 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 1A	100.000	99.999	0.021	W	-0.001

Comments : No comment