



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



CALIBRATION-CERTIFICATE

Certificate number 57357P10301

Page 1 of 25

Applicant

Instrument	WT500 Power Analyzer	
	Manufacturer	Yokogawa
	Type	760203-F/EC
	Serial number	91P308823
	Inventory number	CCE_1_540
	ID numbers used standards	CSE820 CSE976 CSE981 CSE965
	Procedure	CALWT500_40A_40A_40A_NoExt Version: 1 of 15-11-2011
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.	
Environmental conditions	Temperature	(22.8 ± 1) °C
	Relative Humidity	(45 ± 4) %rh
Date of Calibration	01-dec-15	
Result	The results of the calibration are shown on the next pages. The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k such that the coverage probability corresponds to approximately 95%. The standard uncertainty of measurement has been determined in accordance with the EA4/02. The long term stability of the calibrated object is not included in the reported expanded uncertainty measurement.	
Traceability	The measurements have been executed using standards for which the traceability to (inter)national standards has been demonstrated towards the RvA.	
Date	01-dec-15	
Name	N. el Morabit	
Function	Calibration Engineer	

E L E M E N T 1

Voltage Calibration DC

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V	15.000	14.998	0.002	V DC	-0.014
15V	-15.000	-14.997	0.002	V DC	-0.018
100V	100.00	99.99	0.01	V DC	-0.007
100V	-100.00	-99.98	0.01	V DC	-0.018
150V	150.00	149.98	0.01	V DC	-0.011
150V	-150.00	-149.97	0.01	V DC	-0.018

Voltage Calibration AC RMS 10 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V	100.000	99.986	0.011	V AC	-0.014
150V	150.00	149.98	0.03	V AC	-0.014

Voltage Calibration AC RMS 60 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V	15.000	14.998	0.001	V AC	-0.013
30V	30.000	29.996	0.002	V AC	-0.015
60V	60.000	59.992	0.002	V AC	-0.014
100V	100.00	99.98	0.01	V AC	-0.017
150V	150.00	149.98	0.01	V AC	-0.014
300V	300.00	299.97	0.02	V AC	-0.012
600V	600.00	599.97	0.03	V AC	-0.004
1000V	1.0000	1.0001	0.0001	kV AC	0.013

Voltage Calibration AC RMS 1 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V	100.00	99.99	0.01	V AC	-0.008
150V	150.00	149.99	0.02	V AC	-0.007

Voltage Calibration AC RMS 10 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V	100.00	100.00	0.03	V AC	-0.005
150V	150.00	150.00	0.04	V AC	0.002

Voltage Calibration AC RMS 50 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V	100.00	100.15	0.07	V AC	0.147
150V	100.00	100.19	0.07	V AC	0.190

Voltage Calibration AC RMS 100 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V	15.000	15.030	0.014	V AC	0.201
100V	100.00	100.05	0.05	V AC	0.048
150V	100.00	100.21	0.05	V AC	0.213

Voltage Calibration Linearity DC

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V	1.00	1.00	0.01	V DC	-0.028
100V	-1.00	-1.00	0.01	V DC	0.040
100V	10.00	10.00	0.01	V DC	0.001
100V	-10.00	-10.00	0.01	V DC	0.007
100V	50.00	49.99	0.01	V DC	-0.015
100V	-50.00	-49.99	0.01	V DC	-0.018
100V	110.00	109.99	0.01	V DC	-0.014
100V	-110.00	-109.99	0.01	V DC	-0.008

Voltage Calibration Linearity at AC RMS 60 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V	1.00	1.00	0.01	V AC	-0.006
100V	10.00	10.00	0.01	V AC	-0.008
100V	50.00	49.99	0.01	V AC	-0.012
100V	110.00	109.99	0.01	V AC	-0.012

Current Calibration DC

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
500mA	500.0	500.1	0.3	mA DC	0.028
500mA	-500.0	-500.0	0.4	mA DC	0.002
5A	5.0000	5.0002	0.0009	A DC	0.004
5A	-5.0000	-4.9994	0.0013	A DC	-0.013

Current Calibration AC RMS at 10 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
5A	5.0000	4.9997	0.0021	A AC	-0.006

Current Calibration AC RMS at 60 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
500mA	500.00	500.06	0.02	mA AC	0.011
1A	1.0000	1.0000	0.0001	A AC	-0.002
2A	2.0000	2.0001	0.0002	A AC	0.003
5A	5.0000	5.0002	0.0003	A AC	0.005
10A	10.000	9.999	0.001	A AC	-0.006
20A	18.000	18.002	0.006	A AC	0.011
40A	18.000	18.000	0.006	A AC	0.003

Current Calibration AC RMS at 1 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1A	1.0000	1.0003	0.0004	A AC	0.026
5A	5.0000	5.0004	0.0021	A AC	0.007
40A	18.00	18.00	0.04	A AC	-0.005

Current Calibration AC RMS at 10 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1A	1.0000	0.9997	0.0009	A AC	-0.027
5A	5.000	4.996	0.008	A AC	-0.072

Current Calibration AC RMS at 100 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1A	1.0000	0.9939	0.0007	A AC	-0.606
5A	5.000	4.971	0.018	A AC	-0.582

Current Calibration Linearity DC

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
5A	0.0500	0.0500	0.0001	A DC	-0.039
5A	-0.0500	-0.0499	0.0001	A DC	-0.193
5A	0.5000	0.5003	0.0004	A DC	0.061
5A	-0.5000	-0.4996	0.0005	A DC	-0.082
5A	2.5000	2.5003	0.0005	A DC	0.011
5A	-2.5000	-2.4995	0.0002	A DC	-0.020
5A	5.5000	5.5001	0.0007	A DC	0.003
5A	-5.5000	-5.4995	0.0010	A DC	-0.010

Current Calibration Linearity at AC RMS 60 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
5A	0.0500	0.0500	1999998.0000	A AC	-0.034
5A	0.5000	0.5000	0.0001	A AC	0.007
5A	2.5000	2.5002	0.0001	A AC	0.006
5A	5.5000	5.5002	0.0003	A AC	0.004

Power Calibration DC

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V 5A	75.00	74.99	0.02	W	-0.010
15V 5A	-75.00	-75.00	0.02	W	0.002
100V 5A	500.00	499.94	0.14	W	-0.012
100V 5A	-500.00	-499.94	0.10	W	-0.012
150V 5A	0.7500	0.7499	0.0002	kW	-0.013
150V 5A	-0.7500	-0.7498	0.0001	kW	-0.020
100V 500mA	50.00	50.02	0.04	W	0.041
100V 500mA	-50.00	-49.99	0.04	W	-0.014

Power Calibration AC RMS at 10 Hz pf=1

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 5A	500.00	500.04	0.27	W	0.007

Power Calibration AC RMS at 60 Hz pf=1

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V 5A	75.00	75.00	0.02	W	0.002
30V 5A	150.00	149.99	0.02	W	-0.006
60V 5A	300.00	299.99	0.02	W	-0.005
100V 5A	500.00	499.97	0.06	W	-0.007
150V 5A	0.7500	0.7499	0.0001	kW	-0.010
300V 5A	1.5000	1.4999	0.0003	kW	-0.004
600V 5A	3.0000	3.0003	0.0003	kW	0.009
1000V 5A	5.0000	5.0012	0.0004	kW	0.024
100V 500mA	50.000	50.003	0.003	W	0.006
100V 1A	100.00	99.99	0.01	W	-0.011
100V 2A	200.00	199.99	0.02	W	-0.007
100V 5A	500.00	499.97	0.06	W	-0.006
100V 10A	1.0000	0.9999	0.0001	kW	-0.015
100V 20A	1.8000	1.7998	0.0001	kW	-0.011
100V 40A	1.8000	1.7996	0.0001	kW	-0.020

Power Calibration AC RMS at 1 kHz pf=1

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 5A	500.00	499.99	0.20	W	-0.003
150V 5A	0.7500	0.7500	0.0004	kW	0.002
100V 1A	100.00	100.01	0.05	W	0.015
100V 40A	1.8000	1.8001	0.0025	kW	0.003

Power Calibration AC RMS at 10 kHz pf=1

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 5A	500.00	499.91	0.29	W	-0.017
100V 1A	100.00	100.00	0.06	W	0.002
100V 40A	1.0000	1.0004	0.0021	kW	0.039

Power Calibration AC RMS at 50 kHz pf=1

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 1A	100.00	100.20	0.12	W	0.197

Power Calibration AC RMS at 100 kHz pf=1

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V 5A	75.00	73.25	0.17	W	-2.338
100V 5A	500	486	3	W	-2.803
150V 5A	0.500	0.487	0.003	kW	-2.530
100V 1A	100.0	100.2	0.3	W	0.225

Power Calibration Linearity DC PF=1 at constant 5 A

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 5A	5.00	5.00	0.01	W	0.030
100V 5A	-5.00	-4.99	0.01	W	-0.197
100V 5A	50.00	50.02	0.02	W	0.034
100V 5A	-50.00	-49.99	0.01	W	-0.015
100V 5A	250.00	250.02	0.02	W	0.009
100V 5A	-250.00	-249.99	0.02	W	-0.002
100V 5A	550.00	550.02	0.05	W	0.004
100V 5A	-550.00	-550.00	0.03	W	-0.001

Power Calibration Linearity DC PF=1 at constant 100 V

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 5A	5.00	5.00	0.01	W	0.086
100V 5A	-5.00	-4.99	0.01	W	-0.228
100V 5A	50.00	50.01	0.04	W	0.025
100V 5A	-50.00	-49.98	0.04	W	-0.045
100V 5A	250.00	250.02	0.02	W	0.008
100V 5A	-250.00	-249.96	0.02	W	-0.015
100V 5A	550.00	550.00	0.05	W	-0.001
100V 5A	-550.00	-549.90	0.03	W	-0.019

Power Calibration Linearity 60 Hz PF=1 at constant 5 A

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 5A	5.00	5.00	0.01	W	0.075
100V 5A	50.00	50.00	0.01	W	-0.001
100V 5A	250.00	249.98	0.02	W	-0.007
100V 5A	550.00	549.96	0.05	W	-0.007

Power Calibration Linearity 60 Hz PF=1 at constant 100 V

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 5A	5.00	5.00	0.01	W	-0.007
100V 5A	50.00	50.00	0.01	W	-0.005
100V 5A	250.00	249.98	0.02	W	-0.009
100V 5A	550.00	549.96	0.05	W	-0.007

Power Calibration 60Hz PF=0 lagging

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V 1A	0.00	0.00	0.01	W	-
100V 1A	0.00	0.01	0.01	W	-
150V 1A	0.0000	0.0000	0.0000	kW	-

Power Calibration 60Hz PF=0 Leading

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V 1A	0.00	0.00	0.01	W	-
100V 1A	0.00	-0.01	0.01	W	-
150V 1A	0.0000	0.0000	0.0000	kW	-

E L E M E N T 2

Voltage Calibration DC

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V	15.000	14.999	0.001	V DC	-0.004
15V	-15.000	-14.999	0.001	V DC	-0.006
100V	100.00	99.99	0.01	V DC	-0.007
100V	-100.00	-99.99	0.01	V DC	-0.008
150V	150.00	149.99	0.01	V DC	-0.005
150V	-150.00	-149.99	0.01	V DC	-0.004

Voltage Calibration AC RMS 10 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V	100.000	99.989	0.010	V AC	-0.011
150V	150.00	149.99	0.03	V AC	-0.007

Voltage Calibration AC RMS 60 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V	15.000	14.999	0.001	V AC	-0.005
30V	30.000	29.997	0.002	V AC	-0.010
60V	60.000	59.996	0.002	V AC	-0.006
100V	100.00	99.99	0.01	V AC	-0.006
150V	150.00	149.99	0.01	V AC	-0.008
300V	300.00	299.99	0.02	V AC	-0.004
600V	600.00	600.02	0.02	V AC	0.004
1000V	1.0000	1.0002	0.0001	kV AC	0.021

Voltage Calibration AC RMS 1 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V	100.00	100.00	0.01	V AC	0.002
150V	150.00	150.00	0.02	V AC	0.003

Voltage Calibration AC RMS 10 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V	100.00	100.01	0.03	V AC	0.006
150V	150.00	150.01	0.04	V AC	0.008

Voltage Calibration AC RMS 50 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V	100.00	100.14	0.07	V AC	0.139
150V	100.00	100.18	0.08	V AC	0.184

Voltage Calibration AC RMS 100 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V	15.000	15.028	0.014	V AC	0.190
100V	100.00	100.04	0.05	V AC	0.035
150V	100.00	100.20	0.05	V AC	0.200

Voltage Calibration Linearity DC

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V	1.00	1.00	0.01	V DC	0.030
100V	-1.00	-1.00	0.01	V DC	-0.020
100V	10.00	10.00	0.01	V DC	0.003
100V	-10.00	-10.00	0.01	V DC	0.006
100V	50.00	49.99	0.01	V DC	-0.012
100V	-50.00	-50.00	0.01	V DC	0.002
100V	110.00	109.99	0.01	V DC	-0.006
100V	-110.00	-109.99	0.01	V DC	-0.008

Voltage Calibration Linearity at AC RMS 60 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V	1.00	1.00	0.01	V AC	-0.006
100V	10.00	10.00	0.01	V AC	-0.007
100V	50.00	50.00	0.01	V AC	-0.003
100V	110.00	109.99	0.01	V AC	-0.011

Current Calibration DC

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
500mA	500.0	500.2	0.3	mA DC	0.039
500mA	-500.0	-500.0	0.4	mA DC	-0.006
5A	5.0000	5.0004	0.0009	A DC	0.008
5A	-5.0000	-4.9989	0.0013	A DC	-0.021

Current Calibration AC RMS at 10 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
5A	5.0000	4.9997	0.0021	A AC	-0.005

Current Calibration AC RMS at 60 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
500mA	500.00	500.06	0.02	mA AC	0.011
1A	1.0000	1.0000	0.0001	A AC	0.005
2A	2.0000	2.0000	0.0001	A AC	0.000
5A	5.0000	5.0003	0.0003	A AC	0.006
10A	10.000	9.999	0.001	A AC	-0.006
20A	18.000	18.002	0.006	A AC	0.010
40A	18.000	18.001	0.006	A AC	0.005

Current Calibration AC RMS at 1 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1A	1.0000	1.0003	0.0004	A AC	0.033
5A	5.0000	5.0006	0.0021	A AC	0.013
40A	18.00	18.00	0.04	A AC	0.005

Current Calibration AC RMS at 10 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1A	1.0000	0.9999	0.0009	A AC	-0.010
5A	5.000	4.997	0.008	A AC	-0.057

Current Calibration AC RMS at 100 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1A	1.0000	0.9951	0.0008	A AC	-0.487
5A	5.000	4.985	0.019	A AC	-0.296

Current Calibration Linearity DC

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
5A	0.0500	0.0504	0.0001	A DC	0.802
5A	-0.0500	-0.0496	0.0001	A DC	-0.873
5A	0.5000	0.5008	0.0004	A DC	0.155
5A	-0.5000	-0.4993	0.0005	A DC	-0.148
5A	2.5000	2.5007	0.0004	A DC	0.026
5A	-2.5000	-2.4992	0.0002	A DC	-0.032
5A	5.5000	5.5005	0.0008	A DC	0.009
5A	-5.5000	-5.4991	0.0010	A DC	-0.017

Current Calibration Linearity at AC RMS 60 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
5A	0.0500	0.0500	0.0001	A AC	-0.002
5A	0.5000	0.5000	0.0001	A AC	0.006
5A	2.5000	2.5002	0.0001	A AC	0.008
5A	5.5000	5.5003	0.0003	A AC	0.005

Power Calibration DC

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V 5A	75.00	75.02	0.02	W	0.023
15V 5A	-75.00	-75.00	0.02	W	0.000
100V 5A	500.00	500.02	0.14	W	0.004
100V 5A	-500.00	-500.00	0.10	W	-0.001
150V 5A	0.7500	0.7500	0.0002	kW	0.001
150V 5A	-0.7500	-0.7500	0.0001	kW	-0.002
100V 500mA	50.00	50.05	0.04	W	0.106
100V 500mA	-50.00	-49.97	0.04	W	-0.057

Power Calibration AC RMS at 10 Hz pf=1

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 5A	500.00	500.06	0.27	W	0.012

Power Calibration AC RMS at 60 Hz pf=1

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V 5A	75.00	75.00	0.02	W	0.003
30V 5A	150.00	150.00	0.01	W	-0.001
60V 5A	300.00	300.00	0.02	W	0.001
100V 5A	500.00	499.99	0.06	W	-0.002
150V 5A	0.7500	0.7500	0.0001	kW	0.003
300V 5A	1.5000	1.5000	0.0003	kW	0.003
600V 5A	3.0000	3.0005	0.0003	kW	0.015
1000V 5A	5.0000	5.0015	0.0004	kW	0.029
100V 500mA	50.000	50.008	0.003	W	0.016
100V 1A	100.00	100.00	0.01	W	-0.002
100V 2A	200.00	200.00	0.02	W	-0.002
100V 5A	500.00	500.00	0.06	W	0.000
100V 10A	1.0000	0.9999	0.0001	kW	-0.006
100V 20A	1.8000	1.7999	0.0001	kW	-0.006
100V 40A	1.8000	1.7998	0.0001	kW	-0.009

Power Calibration AC RMS at 1 kHz pf=1

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 5A	500.00	500.03	0.20	W	0.005
150V 5A	0.7500	0.7501	0.0004	kW	0.014
100V 1A	100.00	100.02	0.04	W	0.019
100V 40A	1.8000	1.8003	0.0025	kW	0.016

Power Calibration AC RMS at 10 kHz pf=1

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 5A	500.00	499.95	0.29	W	-0.009
100V 1A	100.00	100.02	0.06	W	0.022
100V 40A	1.0000	1.0005	0.0021	kW	0.047

Power Calibration AC RMS at 50 kHz pf=1

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 1A	100.00	100.22	0.12	W	0.221

Power Calibration AC RMS at 100 kHz pf=1

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V 5A	75.00	73.17	0.17	W	-2.438
100V 5A	500	485	3	W	-2.908
150V 5A	0.500	0.486	0.003	kW	-2.769
100V 1A	100.0	100.4	0.3	W	0.355

Power Calibration Linearity DC PF=1 at constant 5 A

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 5A	5.00	5.00	0.01	W	0.060
100V 5A	-5.00	-5.00	0.01	W	0.021
100V 5A	50.00	50.01	0.02	W	0.021
100V 5A	-50.00	-50.01	0.01	W	0.027
100V 5A	250.00	250.04	0.02	W	0.017
100V 5A	-250.00	-250.04	0.02	W	0.015
100V 5A	550.00	550.10	0.05	W	0.018
100V 5A	-550.00	-550.09	0.03	W	0.016

Power Calibration Linearity DC PF=1 at constant 100 V

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 5A	5.00	5.04	0.01	W	0.804
100V 5A	-5.00	-4.96	0.01	W	-0.788
100V 5A	50.00	50.05	0.04	W	0.102
100V 5A	-50.00	-49.95	0.04	W	-0.103
100V 5A	250.00	250.06	0.02	W	0.023
100V 5A	-250.00	-249.96	0.02	W	-0.018
100V 5A	550.00	550.05	0.05	W	0.010
100V 5A	-550.00	-549.90	0.03	W	-0.019

Power Calibration Linearity 60 Hz PF=1 at constant 5 A

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 5A	5.00	5.00	0.01	W	0.075
100V 5A	50.00	50.00	0.01	W	-0.001
100V 5A	250.00	250.00	0.02	W	0.001
100V 5A	550.00	550.00	0.05	W	0.000

Power Calibration Linearity 60 Hz PF=1 at constant 100 V

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 5A	5.00	5.00	0.01	W	-0.006
100V 5A	50.00	50.00	0.01	W	0.001
100V 5A	250.00	250.00	0.02	W	-0.002
100V 5A	550.00	550.00	0.05	W	0.000

Power Calibration 60Hz PF=0 lagging

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V 1A	0.00	0.00	0.01	W	-
100V 1A	0.00	0.00	0.01	W	-
150V 1A	0.0000	0.0000	0.0000	kW	-

Power Calibration 60Hz PF=0 Leading

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V 1A	0.00	0.00	0.01	W	-
100V 1A	0.00	-0.01	0.01	W	-
150V 1A	0.0000	0.0000	0.0000	kW	-

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Voltage Calibration DC

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V	15.000	15.000	0.002	V DC	-0.002
15V	-15.000	-15.000	0.001	V DC	0.000
100V	100.00	100.00	0.01	V DC	0.003
100V	-100.00	-99.99	0.01	V DC	-0.008
150V	150.00	150.00	0.01	V DC	0.002
150V	-150.00	-149.99	0.01	V DC	-0.005

Voltage Calibration AC RMS 10 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V	100.000	99.999	0.010	V AC	-0.001
150V	150.00	150.00	0.03	V AC	0.001

Voltage Calibration AC RMS 60 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V	15.000	15.000	0.002	V AC	-0.001
30V	30.000	29.999	0.002	V AC	-0.003
60V	60.000	59.999	0.002	V AC	-0.001
100V	100.00	99.99	0.01	V AC	-0.006
150V	150.00	149.99	0.01	V AC	-0.004
300V	300.00	300.00	0.02	V AC	-0.001
600V	600.00	600.04	0.03	V AC	0.007
1000V	1.0000	1.0002	0.0001	kV AC	0.023

Voltage Calibration AC RMS 1 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V	100.00	100.01	0.02	V AC	0.010
150V	150.00	150.01	0.02	V AC	0.006

Voltage Calibration AC RMS 10 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V	100.00	100.01	0.03	V AC	0.005
150V	150.00	150.01	0.04	V AC	0.008

Voltage Calibration AC RMS 50 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V	100.00	100.06	0.07	V AC	0.061
150V	100.00	100.10	0.07	V AC	0.101

Voltage Calibration AC RMS 100 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V	15.000	14.992	0.014	V AC	-0.055
100V	100.00	99.80	0.05	V AC	-0.203
150V	100.00	99.94	0.05	V AC	-0.062

Voltage Calibration Linearity DC

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V	1.00	1.00	0.01	V DC	-0.002
100V	-1.00	-1.00	0.01	V DC	0.020
100V	10.00	10.00	0.01	V DC	0.003
100V	-10.00	-10.00	0.01	V DC	-0.005
100V	50.00	50.00	0.01	V DC	0.005
100V	-50.00	-50.00	0.01	V DC	-0.001
100V	110.00	110.00	0.01	V DC	0.003
100V	-110.00	-110.00	0.01	V DC	0.001

Voltage Calibration Linearity at AC RMS 60 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V	1.00	1.00	0.01	V AC	-0.006
100V	10.00	10.00	0.01	V AC	-0.008
100V	50.00	50.00	0.01	V AC	-0.004
100V	110.00	110.00	0.01	V AC	-0.002

Current Calibration DC

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
500mA	500.0	500.2	0.3	mA DC	0.034
500mA	-500.0	-500.0	0.4	mA DC	-0.006
5A	5.0000	5.0005	0.0009	A DC	0.010
5A	-5.0000	-4.9993	0.0012	A DC	-0.014

Current Calibration AC RMS at 10 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
5A	5.0000	4.9999	0.0021	A AC	-0.002

Current Calibration AC RMS at 60 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
500mA	500.00	500.08	0.02	mA AC	0.015
1A	1.0000	1.0000	0.0001	A AC	0.004
2A	2.0000	2.0001	0.0001	A AC	0.005
5A	5.0000	5.0005	0.0003	A AC	0.010
10A	10.000	10.000	0.001	A AC	0.002
20A	18.000	18.003	0.006	A AC	0.015
40A	18.000	18.002	0.006	A AC	0.009

Current Calibration AC RMS at 1 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1A	1.0000	1.0004	0.0004	A AC	0.041
5A	5.0000	5.0009	0.0021	A AC	0.018
40A	18.00	18.00	0.04	A AC	0.006

Current Calibration AC RMS at 10 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1A	1.0000	1.0005	0.0009	A AC	0.049
5A	5.000	5.000	0.008	A AC	-0.007

Current Calibration AC RMS at 100 kHz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1A	1.0000	0.9977	0.0007	A AC	-0.235
5A	5.000	4.988	0.018	A AC	-0.242

Current Calibration Linearity DC

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
5A	0.0500	0.0503	0.0001	A DC	0.562
5A	-0.0500	-0.0497	0.0001	A DC	-0.555
5A	0.5000	0.5005	0.0004	A DC	0.094
5A	-0.5000	-0.4995	0.0005	A DC	-0.093
5A	2.5000	2.5005	0.0005	A DC	0.020
5A	-2.5000	-2.4995	0.0002	A DC	-0.020
5A	5.5000	5.5004	0.0007	A DC	0.008
5A	-5.5000	-5.4995	0.0010	A DC	-0.009

Current Calibration Linearity at AC RMS 60 Hz

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
5A	0.0500	0.0500	0.0001	A AC	-0.001
5A	0.5000	0.5000	0.0001	A AC	0.007
5A	2.5000	2.5003	0.0002	A AC	0.013
5A	5.5000	5.5005	0.0003	A AC	0.009

Power Calibration DC

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V 5A	75.00	75.01	0.01	W	0.018
15V 5A	-75.00	-75.01	0.02	W	0.018
100V 5A	500.00	500.06	0.14	W	0.012
100V 5A	-500.00	-500.02	0.10	W	0.004
150V 5A	0.7500	0.7501	0.0002	kW	0.017
150V 5A	-0.7500	-0.7500	0.0001	kW	0.005
100V 500mA	50.00	50.04	0.04	W	0.090
100V 500mA	-50.00	-49.98	0.04	W	-0.038

Power Calibration AC RMS at 10 Hz pf=1

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 5A	500.00	500.11	0.27	W	0.021

Power Calibration AC RMS at 60 Hz pf=1

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V 5A	75.00	75.01	0.02	W	0.018
30V 5A	150.00	150.01	0.02	W	0.010
60V 5A	300.00	300.03	0.02	W	0.011
100V 5A	500.00	500.05	0.06	W	0.009
150V 5A	0.7500	0.7500	0.0001	kW	0.006
300V 5A	1.5000	1.5002	0.0003	kW	0.013
600V 5A	3.0000	3.0007	0.0003	kW	0.024
1000V 5A	5.0000	5.0020	0.0004	kW	0.040
100V 500mA	50.000	50.015	0.003	W	0.029
100V 1A	100.00	100.01	0.01	W	0.014
100V 2A	200.00	200.02	0.02	W	0.008
100V 5A	500.00	500.06	0.06	W	0.012
100V 10A	1.0000	1.0001	0.0001	kW	0.006
100V 20A	1.8000	1.8001	0.0001	kW	0.008
100V 40A	1.8000	1.8000	0.0001	kW	-0.002

Power Calibration AC RMS at 1 kHz pf=1

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 5A	500.00	500.09	0.20	W	0.018
150V 5A	0.7500	0.7502	0.0004	kW	0.027
100V 1A	100.00	100.03	0.05	W	0.033
100V 40A	1.8000	1.8004	0.0025	kW	0.020

Power Calibration AC RMS at 10 kHz pf=1

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 5A	500.00	500.24	0.29	W	0.047
100V 1A	100.00	100.08	0.06	W	0.076
100V 40A	1.0000	1.0010	0.0021	kW	0.098

Power Calibration AC RMS at 50 kHz pf=1

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 1A	100.00	100.33	0.12	W	0.334

Power Calibration AC RMS at 100 kHz pf=1

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V 5A	75.00	73.06	0.17	W	-2.592
100V 5A	500	484	3	W	-3.115
150V 5A	0.500	0.485	0.003	kW	-3.008
100V 1A	100.0	100.4	0.3	W	0.355

Power Calibration Linearity DC PF=1 at constant 5 A

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 5A	5.00	5.01	0.01	W	0.150
100V 5A	-5.00	-5.00	0.01	W	0.015
100V 5A	50.00	50.01	0.02	W	0.024
100V 5A	-50.00	-50.01	0.01	W	0.027
100V 5A	250.00	250.08	0.02	W	0.030
100V 5A	-250.00	-250.07	0.02	W	0.029
100V 5A	550.00	550.16	0.05	W	0.030
100V 5A	-550.00	-550.16	0.04	W	0.029

Power Calibration Linearity DC PF=1 at constant 100 V

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 5A	5.06	5.03	0.01	W	0.528
100V 5A	-4.95	-4.98	0.01	W	-0.430
100V 5A	50.07	50.07	0.04	W	0.135
100V 5A	-49.94	-49.94	0.04	W	-0.112
100V 5A	250.09	250.09	0.02	W	0.038
100V 5A	-249.97	-249.97	0.02	W	-0.011
100V 5A	550.11	550.11	0.05	W	0.020
100V 5A	-549.95	-549.95	0.04	W	-0.010

Power Calibration Linearity 60 Hz PF=1 at constant 5 A

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 5A	5.00	5.00	0.01	W	0.075
100V 5A	50.01	50.01	0.01	W	0.015
100V 5A	250.03	250.03	0.02	W	0.012
100V 5A	550.06	550.06	0.05	W	0.011

Power Calibration Linearity 60 Hz PF=1 at constant 100 V

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V 5A	5.00	5.00	0.01	W	-0.005
100V 5A	50.00	50.01	0.01	W	0.014
100V 5A	250.00	250.02	0.02	W	0.009
100V 5A	550.00	550.06	0.05	W	0.010

Power Calibration 60Hz PF=0 lagging

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V 1A	0.00	0.00	0.01	W	-
100V 1A	0.00	0.00	0.01	W	-
150V 1A	0.0000	0.0000	0.0000	kW	-

Power Calibration 60Hz PF=0 Leading

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
15V 1A	0.00	0.00	0.01	W	-
100V 1A	0.00	0.00	0.01	W	-
150V 1A	0.0000	0.0000	0.0000	kW	-

Comments : No comment