



YOKOGAWA

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



CALIBRATION-CERTIFICATE

Certificate number 58025M10234
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Applicant

Example

Instrument

AC POWER CALIBRATOR
Manufacturer Yokogawa
Type LS3300-F
Serial number 91IT830327
Inventory number CCE_5_67
ID numbers used standards CSE1006 CSE1034 CSE979
Procedure QIS_LS3300 Version: 1 of 29-09-2017

Calibration method

The LS3300 was calibrated using a digital Voltmeter and a Reference Power Meter combined with a current Sensor
The output frequency was calibrated using a frequency counter

Environmental conditions

Temperature (23.5 ± 1) °C
Relative Humidity (57 ± 4) %rh

Date of Calibration

29 September 2017

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 2 such that the coverage probability corresponds to approximately 95%.
The standard uncertainty of measurement has been determined in accordance with the EA4/02:2013.
The long term stability of the calibrated object is not included in the reported expanded uncertainty measurement.
This certificate of calibration is issued in compliance with ISO/IEC 17025:2005

Traceability

The measurements have been executed using standards for which the traceability to (inter)national standards has been demonstrated towards the RvA.

Date

29 September 2017

Name

E.J. Kroon

Function

Manager European Standards Laboratory

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Example

Frequency Calibration

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
60 Hz	60.000	60.000	0.002	Hz	0.000
400 Hz	400.000	400.000	0.002	Hz	0.000
1 kHz	1.0000	1.0000	0.0002	kHz	0.000

Voltage Calibration

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1 V 60 Hz	1.00000	1.00001	0.00018	V AC	0.001
1 V 400 Hz	1.00000	1.00002	0.00018	V AC	0.002
1 V 1 kHz	1.00000	1.00005	0.00013	V AC	0.005
10 V 60 Hz	10.0000	10.0001	0.0008	V AC	0.001
10 V 400 Hz	10.0000	10.0002	0.0008	V AC	0.002
10 V 1 kHz	10.0000	10.0004	0.0006	V AC	0.004
30 V 60 Hz	30.0000	30.0005	0.0021	V AC	0.002
30 V 400 Hz	30.0000	30.001	0.005	V AC	0.004
30 V 1 kHz	30.0000	30.002	0.005	V AC	0.007
100 V 60 Hz	50.0000	50.001	0.004	V AC	0.003
100 V 400 Hz	50.0000	50.002	0.011	V AC	0.005
100 V 1 kHz	50.0000	50.003	0.011	V AC	0.007
100 V 60 Hz	100.0000	100.006	0.009	V AC	0.006
100 V 400 Hz	100.0000	100.004	0.017	V AC	0.004
100 V 1 kHz	100.0000	100.006	0.017	V AC	0.006
300 V 60 Hz	300.0000	300.025	0.027	V AC	0.008
300 V 400 Hz	300.0000	300.02	0.06	V AC	0.006
300 V 1 kHz	300.0000	300.03	0.06	V AC	0.009
1000 V 60 Hz	1000.0000	1000.05	0.11	V AC	0.005
1000 V 400 Hz	1000.0000	1000.09	0.13	V AC	0.009
1000 V 1 kHz	1000.0000	1000.10	0.13	V AC	0.010

Current Calibration

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
30 mA 60 Hz	20.0000	20.004	0.012	mA AC	0.022
30 mA 400 Hz	20.0000	20.003	0.024	mA AC	0.015
30 mA 1 kHz	20.0000	20.002	0.024	mA AC	0.009
100 mA 60 Hz	100.0000	100.01	0.12	mA AC	0.013
100 mA 400 Hz	100.0000	100.00	0.04	mA AC	0.003
100 mA 1 kHz	100.0000	99.99	0.04	mA AC	-0.010
1 A 60 Hz	1.00000	1.00013	0.00025	A AC	0.013
1 A 400 Hz	1.00000	1.0000	0.0006	A AC	0.003
1 A 1 kHz	1.00000	1.0000	0.0006	A AC	-0.005
10 A 60 Hz	5.00000	5.0005	0.0006	A AC	0.011
10 A 400 Hz	5.00000	5.0000	0.0029	A AC	0.000
10 A 1 kHz	5.00000	4.9995	0.0029	A AC	-0.009
10 A 60 Hz	10.00000	10.0013	0.0011	A AC	0.013
10 A 400 Hz	10.00000	10.0000	0.012	A AC	0.001
10 A 1 kHz	10.00000	9.999	0.012	A AC	-0.008
50 A 60 Hz	50.00000	50.0000	0.04	A AC	0.008
50 A 400 Hz	50.00000	50.0000	0.06	A AC	-0.009
50 A 1 kHz	50.00000	49.99	0.06	A AC	-0.022

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AUX Source Calibration

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
500 mV 60 Hz	500.00	500.00	0.0008	mA AC	0.001
500 mV 400 Hz	500.00	500.01	0.18	mA AC	0.002
500 mV 1 kHz	500.00	500.02	0.18	mA AC	0.005
5 V 60 Hz	5.0000	5.0000	0.0008	A AC	0.000
5 V 400 Hz	5.0000	5.0000	0.0008	A AC	0.000
5 V 1 kHz	5.0000	5.0001	0.0008	A AC	0.001

Power Calibration Power Factor 1

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
30 V & 1 A 60 Hz	30.000	30.006	0.010	W	0.019
30 V & 1 A 400 Hz	30.000	30.004	0.024	W	0.013
30 V & 1 A 1 kHz	30.000	30.005	0.024	W	0.016
100 V & 1 A 60 Hz	100.00	100.02	0.04	W	0.017
100 V & 1 A 400 Hz	100.00	100.01	0.06	W	0.012
100 V & 1 A 1 kHz	100.00	100.02	0.06	W	0.015
300 V & 1 A 60 Hz	300.00	300.06	0.07	W	0.019
300 V & 1 A 400 Hz	300.0	300.0	0.3	W	0.014
300 V & 1 A 1 kHz	300.0	300.0	0.3	W	0.016
1000 V & 1 A 60 Hz	1000.00	1000.23	0.23	W	0.023
1000 V & 1 A 400 Hz	1000.00	1000.17	0.07	W	0.017
1000 V & 1 A 1 kHz	1000.00	1000.10	0.07	W	0.010
100 V & 100 mA 60 Hz	10.000	10.000	0.018	W	0.003
100 V & 100 mA 400 Hz	10.000	10.005	0.029	W	0.045
100 V & 100 mA 1 kHz	10.000	10.005	0.029	W	0.053
100 V & 10 A 60 Hz	0.50000	0.50007	0.00011	kW	0.014
100 V & 10 A 400 Hz	0.5000	0.5000	0.0004	kW	0.005
100 V & 10 A 1 kHz	0.5000	0.5000	0.0004	kW	-0.003
100 V & 10 A 60 Hz	1.0000	1.0001	0.0003	kW	0.014
100 V & 10 A 400 Hz	1.0000	1.0001	0.0004	kW	0.006
100 V & 10 A 1 kHz	1.0000	1.0000	0.0004	kW	-0.002
100 V & 50 A 60 Hz	2.0000	2.0002	0.0013	kW	0.010
100 V & 50 A 400 Hz	2.000	2.000	0.003	kW	-0.003
100 V & 50 A 1 kHz	2.000	2.000	0.003	kW	-0.013

AUX Power Calibration Power Factor 1

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100V & 500 mV 60 Hz	50.000	50.002	0.020	W	0.003
100V & 500 mV 400 Hz	50.000	50.004	0.020	W	0.009
100V & 500 mV 1 kHz	50.000	50.009	0.020	W	0.019
100V & 5 V 60 Hz	500.00	500.01	0.24	W	0.003
100V & 5 V 400 Hz	500.00	500.05	0.24	W	0.010
100V & 5 V 1 kHz	500.00	500.09	0.24	W	0.019

Calibration Phase at 60 Hz (Current at -90 deg)

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100 V & 1 A	90.000	90.002	0.010	°	0.002 nc
300 V & 1 A	90.000	90.003	0.010	°	0.003 nc
100 V & 10 A 5 A input	90.000	90.004	0.010	°	0.004 nc
100 V & 10 A	90.000	90.002	0.010	°	0.002 nc
100 V & 5 V AUX	90.000	90.000	0.010	°	0.000 nc

Measurements which are **not** covered by the RvA-accreditation K164 are marked as **nc**, but are traceable to (inter)national standards.