



YOKOGAWA

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



CALIBRATION-CERTIFICATE

Example

Certificate number 59355M10089
Page 1 of 4

Applicant	<i>Applicant</i> <i>Applicant</i> <i>Applicant</i>	
Instrument	Digital Power Meter WT500 Manufacturer Yokogawa Type 760203-F/C1/C7/G5/EC Serial number C2WB04019V Inventory number CCE_1_1197 ID numbers used standards CSE1034 CSE1073 Procedure WT500_01_1197E1 Version: 1 of 21-05-2021	
Calibration method	The calibration is performed at the permanent laboratory in Amersfoort. The Energy reading of the instrument was compared to the Yokogawa Reference Energy System. The Total Harmonic distortion is for frequencies <= 400 Hz lower than 0.1% The THD was measured by using a 1 MHz band wide.	
Environmental conditions	Temperature	(23.6 ± 1.0) °C
	Relative Humidity	(54 ± 4) %rh
Date of Calibration	21 May 2021	
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 EA-4/02M: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 17025:2017 The reported results do only apply to the instrument calibrated.	
Traceability	The measurements have been executed using standards for which the traceability to (inter)national standards has been demonstrated towards the RvA.	
Date	21 May 2021	
Name	E.J. Kroon	
Function	Manager European Standards Laboratory	

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Example

Energy Calibration PF=1 50 Hz 600 V Range Constant 00 V

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1 A 1 min	6.667	6.666	0.005	Wh	-0.012
1 A 2 min	13.333	13.332	0.005	Wh	-0.012
1 A 5 min	33.333	33.330	0.007	Wh	-0.011
1 A 10 min	66.667	66.660	0.010	Wh	-0.011
2 A 1 min	13.333	13.331	0.011	Wh	-0.017
2 A 2 min	26.667	26.662	0.011	Wh	-0.017
2 A 5 min	66.667	66.655	0.014	Wh	-0.017
2 A 10 min	133.333	133.310	0.021	Wh	-0.017
5 A 1 min	33.333	33.332	0.027	Wh	-0.003
5 A 2 min	66.667	66.652	0.029	Wh	-0.022
5 A 5 min	166.67	166.63	0.04	Wh	-0.023
5 A 10 min	333.33	333.26	0.05	Wh	-0.022
10 A 1 min	66.67	66.66	0.05	Wh	-0.018
10 A 2 min	133.33	133.31	0.05	Wh	-0.017
10 A 5 min	333.33	333.28	0.07	Wh	-0.016
10 A 10 min	666.67	666.56	0.11	Wh	-0.016
20 A 1 min	133.33	133.31	0.11	Wh	-0.017
20 A 2 min	266.67	266.62	0.12	Wh	-0.017
20 A 5 min	666.67	666.55	0.17	Wh	-0.017
20 A 10 min	1333.33	1333.11	0.29	Wh	-0.017
40 A 1 min	266.67	266.63	0.21	Wh	-0.014
40 A 2 min	533.33	533.26	0.23	Wh	-0.014
40 A 5 min	1333.33	1333.17	0.29	Wh	-0.012
40 A 10 min	2666.7	2666.4	0.4	Wh	-0.011

Energy Calibration PF=1 50 Hz 300 V Range Constant 240 V

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1 A 1 min	4.000	3.999	0.003	Wh	-0.020
1 A 2 min	8.000	7.998	0.003	Wh	-0.021
1 A 5 min	20.000	19.996	0.004	Wh	-0.021
1 A 10 min	40.000	39.992	0.006	Wh	-0.021
2 A 1 min	8.0000	7.9982	0.0027	Wh	-0.023
2 A 2 min	16.000	15.996	0.007	Wh	-0.023
2 A 5 min	40.000	39.991	0.008	Wh	-0.023
2 A 10 min	80.000	79.982	0.009	Wh	-0.023
5 A 1 min	20.000	19.995	0.016	Wh	-0.025
5 A 2 min	40.000	39.989	0.017	Wh	-0.028
5 A 5 min	100.000	99.973	0.023	Wh	-0.027
5 A 10 min	200.00	199.95	0.04	Wh	-0.027
10 A 1 min	40.00	39.99	0.03	Wh	-0.025
10 A 2 min	80.00	79.98	0.03	Wh	-0.025
10 A 5 min	200.00	199.95	0.04	Wh	-0.025
10 A 10 min	400.00	399.90	0.06	Wh	-0.025
20 A 1 min	80.00	79.99	0.06	Wh	-0.016
20 A 2 min	160.00	159.96	0.07	Wh	-0.026
20 A 5 min	400.00	399.90	0.10	Wh	-0.026
20 A 10 min	800.00	799.79	0.16	Wh	-0.026
40 A 1 min	160.00	159.96	0.13	Wh	-0.025
40 A 2 min	320.00	319.93	0.14	Wh	-0.022
40 A 5 min	800.00	799.82	0.19	Wh	-0.022
40 A 10 min	1600.0	1599.7	0.3	Wh	-0.022



E L E M E N T 2

Energy Calibration PF=1 50 Hz 600 V Range Constant 400 V

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1 A 1 min	6.667	6.669	0.005	Wh	0.029
1 A 2 min	13.333	13.337	0.005	Wh	0.030
1 A 5 min	33.333	33.344	0.007	Wh	0.031
1 A 10 min	66.667	66.688	0.010	Wh	0.031
2 A 1 min	13.333	13.337	0.011	Wh	0.028
2 A 2 min	26.667	26.673	0.011	Wh	0.024
2 A 5 min	66.667	66.684	0.014	Wh	0.026
2 A 10 min	133.333	133.369	0.021	Wh	0.027
5 A 1 min	33.333	33.346	0.027	Wh	0.039
5 A 2 min	66.667	66.679	0.029	Wh	0.019
5 A 5 min	166.67	166.70	0.04	Wh	0.019
5 A 10 min	333.33	333.40	0.05	Wh	0.020
10 A 1 min	66.67	66.68	0.05	Wh	0.023
10 A 2 min	133.33	133.37	0.05	Wh	0.024
10 A 5 min	333.33	333.42	0.07	Wh	0.025
10 A 10 min	666.67	666.83	0.11	Wh	0.025
20 A 1 min	133.33	133.37	0.11	Wh	0.028
20 A 2 min	266.67	266.73	0.12	Wh	0.024
20 A 5 min	666.67	666.84	0.17	Wh	0.026
20 A 10 min	1333.33	1333.68	0.29	Wh	0.026
40 A 1 min	266.67	266.71	0.21	Wh	0.017
40 A 2 min	533.33	533.43	0.23	Wh	0.018
40 A 5 min	1333.33	1333.61	0.29	Wh	0.021
40 A 10 min	2666.7	2667.3	0.4	Wh	0.022

Energy Calibration PF=1 50 Hz 300 V Range Constant 240 V

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1 A 1 min	4.000	4.001	0.003	Wh	0.022
1 A 2 min	8.000	8.002	0.003	Wh	0.022
1 A 5 min	20.000	20.005	0.004	Wh	0.023
1 A 10 min	40.000	40.009	0.006	Wh	0.022
2 A 1 min	8.0000	8.0017	0.0027	Wh	0.021
2 A 2 min	16.000	16.003	0.007	Wh	0.021
2 A 5 min	40.000	40.009	0.008	Wh	0.021
2 A 10 min	80.000	80.017	0.009	Wh	0.021
5 A 1 min	20.000	20.003	0.016	Wh	0.015
5 A 2 min	40.000	40.006	0.017	Wh	0.015
5 A 5 min	100.000	100.014	0.023	Wh	0.014
5 A 10 min	200.00	200.03	0.04	Wh	0.017
10 A 1 min	40.00	40.01	0.03	Wh	0.017
10 A 2 min	80.00	80.01	0.03	Wh	0.017
10 A 5 min	200.00	200.03	0.04	Wh	0.016
10 A 10 min	400.00	400.07	0.06	Wh	0.016
20 A 1 min	80.00	80.01	0.06	Wh	0.015
20 A 2 min	160.00	160.03	0.07	Wh	0.016
20 A 5 min	400.00	400.07	0.10	Wh	0.016
20 A 10 min	800.00	800.14	0.16	Wh	0.017
40 A 1 min	160.00	160.02	0.13	Wh	0.013
40 A 2 min	320.00	320.03	0.14	Wh	0.009
40 A 5 min	800.00	800.09	0.19	Wh	0.011
40 A 10 min	1600.0	1600.2	0.3	Wh	0.011



E L E M E N T 3

Energy Calibration PF=1 50 Hz 600 V Range Constant 400 V

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1 A 1 min	6.667	6.666	0.005	Wh	-0.009
1 A 2 min	13.333	13.332	0.005	Wh	-0.007
1 A 5 min	33.333	33.331	0.007	Wh	-0.006
1 A 10 min	66.667	66.663	0.010	Wh	-0.005
2 A 1 min	13.333	13.332	0.011	Wh	-0.010
2 A 2 min	26.667	26.664	0.011	Wh	-0.010
2 A 5 min	66.667	66.661	0.014	Wh	-0.008
2 A 10 min	133.333	133.322	0.021	Wh	-0.008
5 A 1 min	33.333	33.336	0.027	Wh	0.009
5 A 2 min	66.667	66.658	0.029	Wh	-0.013
5 A 5 min	166.67	166.65	0.04	Wh	-0.012
5 A 10 min	333.33	333.29	0.05	Wh	-0.012
10 A 1 min	66.67	66.66	0.05	Wh	-0.009
10 A 2 min	133.33	133.32	0.05	Wh	-0.008
10 A 5 min	333.33	333.31	0.07	Wh	-0.007
10 A 10 min	666.67	666.62	0.11	Wh	-0.007
20 A 1 min	133.33	133.32	0.11	Wh	-0.010
20 A 2 min	266.67	266.65	0.12	Wh	-0.006
20 A 5 min	666.67	666.63	0.17	Wh	-0.005
20 A 10 min	1333.33	1333.25	0.29	Wh	-0.006
40 A 1 min	266.67	266.65	0.21	Wh	-0.006
40 A 2 min	533.33	533.31	0.23	Wh	-0.004
40 A 5 min	1333.33	1333.30	0.29	Wh	-0.002
40 A 10 min	2666.7	2666.6	0.4	Wh	-0.001

Energy Calibration PF=1 50 Hz 300 V Range Constant 240 V

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1 A 1 min	4.000	4.000	0.003	Wh	-0.013
1 A 2 min	8.000	7.999	0.003	Wh	-0.014
1 A 5 min	20.000	19.997	0.004	Wh	-0.013
1 A 10 min	40.000	39.995	0.006	Wh	-0.014
2 A 1 min	8.0000	7.9989	0.0027	Wh	-0.014
2 A 2 min	16.000	15.998	0.007	Wh	-0.014
2 A 5 min	40.000	39.994	0.008	Wh	-0.014
2 A 10 min	80.000	79.989	0.009	Wh	-0.014
5 A 1 min	20.000	19.996	0.016	Wh	-0.020
5 A 2 min	40.000	39.993	0.017	Wh	-0.017
5 A 5 min	100.000	99.981	0.023	Wh	-0.019
5 A 10 min	200.00	199.96	0.04	Wh	-0.019
10 A 1 min	40.00	39.99	0.03	Wh	-0.015
10 A 2 min	80.00	79.99	0.03	Wh	-0.015
10 A 5 min	200.00	199.97	0.04	Wh	-0.015
10 A 10 min	400.00	399.94	0.06	Wh	-0.015
20 A 1 min	80.00	79.99	0.06	Wh	-0.016
20 A 2 min	160.00	159.98	0.07	Wh	-0.015
20 A 5 min	400.00	399.94	0.10	Wh	-0.015
20 A 10 min	800.00	799.88	0.16	Wh	-0.015
40 A 1 min	160.00	159.98	0.13	Wh	-0.013
40 A 2 min	320.00	319.96	0.14	Wh	-0.013
40 A 5 min	800.00	799.90	0.19	Wh	-0.013
40 A 10 min	1600.0	1599.8	0.3	Wh	-0.012

Comments : No comment

For information, the deviation is given as a percentage (in %) of the measured value to the applied value. % =((Measured-Applied)/Applied) · 100%