



**YOKOGAWA**

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



## CALIBRATION-CERTIFICATE

Certificate number 57360M10155  
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Applicant

Instrument WT3000T Digital Power Analyzer  
Manufacturer Yokogawa  
Type 760303-03-SV-D/G6/DT/EC/C7/C5/Z  
Serial number 91S101855  
Inventory number CCE\_1\_ 542  
ID numbers used standards CSE959 CSE960 CSE963 CSE973 PSE845  
Procedure WT3000T\_CAL1 Version: 1 of 11-11-2015

Calibration method The Powermeter was compared to the Yokogawa Primary 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  $(22.9 \pm 1) ^\circ\text{C}$   
Relative Humidity  $(41 \pm 4) \% \text{rh}$

Date of Calibration 04-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 04-dec-15  
Name E.J. Kroon  
Function Manager European Standards Laboratory

**Element 1**

**Power Calibration 53 Hz 100 V & 1 A range PF = Inductive**

Range	Applied	Measured	±Uncertainty	Unit	Deviation %/VA
100 V 1A PF=1	100.000	100.000	0.004	W	0.0001
100V 1A PF=0.5	50.000	50.001	0.004	W	0.0007
100 V 1A PF=0.05	5.000	5.001	0.003	W	0.0009
100 V 1A PF=0.02	2.000	2.001	0.003	W	0.0009
100 V 1A PF=0.01	1.000	1.001	0.003	W	0.0008
100 V 1A PF=0.001	0.100	0.101	0.003	W	0.0009
80 V 1A PF=1	80.000	80.001	0.004	W	0.0009
80V 1A PF=0.5	40.000	40.001	0.003	W	0.0006
80 V 1A PF=0.05	4.0000	4.0006	0.0027	W	0.0008
80 V 1A PF=0.02	1.6000	1.6007	0.0027	W	0.0009
80 V 1A PF=0.01	0.8000	0.8005	0.0027	W	0.0006
80 V 1A PF=0.001	0.0800	0.0803	0.0027	W	0.0004
60 V 0.8A PF=1	48.000	48.002	0.003	W	0.0031
60V 0.8A PF=0.5	24.0000	24.0010	0.0021	W	0.0021
60 V 0.8A PF=0.05	2.4000	2.4006	0.0017	W	0.0012
60 V 0.8A PF=0.02	0.9600	0.9604	0.0017	W	0.0008
60 V 0.8A PF=0.01	0.4800	0.4804	0.0017	W	0.0008
60 V 0.8A PF=0.001	0.0480	0.0485	0.0017	W	0.0010
40 V 0.5A PF=1	20.0000	20.0006	0.0020	W	0.0030
40 V 0.5A PF=0.5	10.0000	10.0004	0.0012	W	0.0020
40 V 0.5A PF=0.05	1.0000	1.0002	0.0008	W	0.0010
40 V 0.5A PF=0.02	0.4000	0.4002	0.0008	W	0.0010
40 V 0.5A PF=0.01	0.2000	0.2002	0.0008	W	0.0010
40 V 0.5A PF=0.001	0.0200	0.0201	0.0008	W	0.0005

**Voltage Calibration 53 Hz 100 Volt Range**

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100 V	100.000	100.000	0.003	V	0.0000

**Current Calibration 53 Hz 1 A Range**

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1 Amp	1.00000	1.00000	0.00003	A	0.0001

**Element 2**

**Power Calibration 53 Hz 100 V & 1 A range PF = Inductive**

Range	Applied	Measured	±Uncertainty	Unit	Deviation %/VA
100 V 1A PF=1	100.000	100.000	0.004	W	-0.0001
100V 1A PF=0.5	50.000	50.001	0.004	W	0.0009
100 V 1A PF=0.05	5.000	5.001	0.003	W	0.0013
100 V 1A PF=0.02	2.000	2.001	0.003	W	0.0013
100 V 1A PF=0.01	1.000	1.001	0.003	W	0.0014
100 V 1A PF=0.001	0.100	0.101	0.003	W	0.0012
80 V 1A PF=1	80.000	80.001	0.004	W	0.0013
80V 1A PF=0.5	40.000	40.001	0.003	W	0.0016
80 V 1A PF=0.05	4.0000	4.0011	0.0027	W	0.0014
80 V 1A PF=0.02	1.6000	1.6010	0.0027	W	0.0012
80 V 1A PF=0.01	0.8000	0.8010	0.0027	W	0.0013
80 V 1A PF=0.001	0.0800	0.0810	0.0027	W	0.0013
60 V 0.8A PF=1	48.000	48.002	0.003	W	0.0040
60V 0.8A PF=0.5	24.0000	24.0015	0.0021	W	0.0031
60 V 0.8A PF=0.05	2.4000	2.4007	0.0017	W	0.0015
60 V 0.8A PF=0.02	0.9600	0.9606	0.0017	W	0.0013
60 V 0.8A PF=0.01	0.4800	0.4806	0.0017	W	0.0013
60 V 0.8A PF=0.001	0.0480	0.0486	0.0017	W	0.0012
40 V 0.5A PF=1	20.0000	20.0009	0.0020	W	0.0045
40 V 0.5A PF=0.5	10.0000	10.0007	0.0012	W	0.0035
40 V 0.5A PF=0.05	1.0000	1.0004	0.0008	W	0.0020
40 V 0.5A PF=0.02	0.4000	0.4003	0.0008	W	0.0015
40 V 0.5A PF=0.01	0.2000	0.2005	0.0008	W	0.0025
40 V 0.5A PF=0.001	0.0200	0.0203	0.0008	W	0.0015

**Voltage Calibration 53 Hz 100 Volt Range**

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100 V	100.000	100.000	0.003	V	0.0000

**Current Calibration 53 Hz 1 A Range**

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1 Amp	1.00000	1.00000	0.00003	A	-0.0001

**Element 3**

**Power Calibration 53 Hz 100 V & 1 A range PF = Inductive**

Range	Applied	Measured	±Uncertainty	Unit	Deviation %/VA
100 V 1A PF=1	100.000	100.000	0.004	W	-0.0001
100V 1A PF=0.5	50.000	50.001	0.004	W	0.0006
100 V 1A PF=0.05	5.000	5.001	0.003	W	0.0008
100 V 1A PF=0.02	2.000	2.001	0.003	W	0.0009
100 V 1A PF=0.01	1.000	1.001	0.003	W	0.0008
100 V 1A PF=0.001	0.100	0.101	0.003	W	0.0010
80 V 1A PF=1	80.000	80.000	0.004	W	-0.0001
80V 1A PF=0.5	40.000	40.001	0.003	W	0.0006
80 V 1A PF=0.05	4.0000	4.0005	0.0027	W	0.0006
80 V 1A PF=0.02	1.6000	1.6007	0.0027	W	0.0009
80 V 1A PF=0.01	0.8000	0.8008	0.0027	W	0.0010
80 V 1A PF=0.001	0.0800	0.0806	0.0027	W	0.0008
60 V 0.8A PF=1	48.000	48.003	0.003	W	0.0052
60V 0.8A PF=0.5	24.0000	24.0017	0.0021	W	0.0035
60 V 0.8A PF=0.05	2.4000	2.4006	0.0017	W	0.0012
60 V 0.8A PF=0.02	0.9600	0.9604	0.0017	W	0.0008
60 V 0.8A PF=0.01	0.4800	0.4806	0.0017	W	0.0013
60 V 0.8A PF=0.001	0.0480	0.0484	0.0017	W	0.0008
40 V 0.5A PF=1	20.0000	20.0009	0.0020	W	0.0045
40 V 0.5A PF=0.5	10.0000	10.0006	0.0012	W	0.0030
40 V 0.5A PF=0.05	1.0000	1.0002	0.0008	W	0.0010
40 V 0.5A PF=0.02	0.4000	0.4002	0.0008	W	0.0010
40 V 0.5A PF=0.01	0.2000	0.2001	0.0008	W	0.0005
40 V 0.5A PF=0.001	0.0200	0.0202	0.0008	W	0.0010

**Voltage Calibration 53 Hz 100 Volt Range**

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
100 V	100.000	100.000	0.003	V	0.0000

**Current Calibration 53 Hz 1 A Range**

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1 Amp	1.00000	1.00000	0.00003	A	-0.0001

Comments :