



**YOKOGAWA**

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



**CALIBRATION-CERTIFICATE**

*Certificate number*  
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*Example*

Applicant

*Applicant*  
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Instrument

WT3000T Digital Power Analyzer  
Manufacturer Yokogawa  
Type 760303--03-SV-F/G6/DT/C12/EC/C7/Z  
Serial number *Serial number*  
Inventory number *Inventory number*  
ID numbers used standards CSE308 CSE959 CSE960 CSE956 CSE963 CSE1026 CSE973  
Procedure WT3000T\_CAL4 Version: 1 of 27-03-2017

Calibration method

The calibration is performed at the permanent laboratory in Amersfoort.  
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 (23.5 ± 1.0) °C  
Relative Humidity (54 ± 4) %rh

Date of Calibration

*Period of Calibration*

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

*Date*

Name

*Name*

Function

*Function*

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The Raad voor Accreditatie is member of the European Co-operation for Accreditation (EA) and is one of the signatories to the ILAC Mutual Recognition Arrangements (MRA) for the mutual recognition of calibration Certificates.

This certificate is issued provided neither the Yokogawa Standards Laboratory nor the Raad voor Accreditatie assumes any liability. Reproduction of the complete certificate is permitted. Parts of the certificate may only be reproduced after written permission of Yokogawa. Calibration certificates without signature are not valid

Example

**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	0.005	W	0.0000
100V 1A PF=0.5	50.000	50.001	0.003	W	0.0006
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	0.0012
100 V 1A PF=0.01	1.000	1.001	0.003	W	0.0013
100 V 1A PF=0.001	0.100	0.101	0.003	W	0.0009
80 V 1A PF=1	80.000	79.999	0.004	W	-0.0015
80V 1A PF=0.5	40.0000	40.0000	0.0028	W	0.0000
80 V 1A PF=0.05	4.0000	4.0007	0.0025	W	0.0009
80 V 1A PF=0.02	1.6000	1.6007	0.0025	W	0.0009
80 V 1A PF=0.01	0.8000	0.8008	0.0025	W	0.0010
80 V 1A PF=0.001	0.0800	0.0808	0.0025	W	0.0010
60 V 0.8A PF=1	48.0000	47.9988	0.0017	W	-0.0025
60V 0.8A PF=0.5	24.0000	23.9996	0.0015	W	-0.0008
60 V 0.8A PF=0.05	2.4000	2.4006	0.0015	W	0.0012
60 V 0.8A PF=0.02	0.9600	0.9605	0.0015	W	0.0010
60 V 0.8A PF=0.01	0.4800	0.4805	0.0015	W	0.0010
60 V 0.8A PF=0.001	0.0480	0.0485	0.0015	W	0.0010
40 V 0.5A PF=1	20.0000	19.9972	0.0009	W	-0.0140
40 V 0.5A PF=0.5	10.0000	9.9987	0.0007	W	-0.0065
40 V 0.5A PF=0.05	1.0000	1.0000	0.0007	W	0.0000
40 V 0.5A PF=0.02	0.4000	0.4001	0.0007	W	0.0005
40 V 0.5A PF=0.01	0.2000	0.2002	0.0007	W	0.0010
40 V 0.5A PF=0.001	0.0200	0.0203	0.0007	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	0.0001

**Current Calibration 53 Hz 1 A Range**

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1 Amp	1.00000	1.00000	0.00004	A	-0.0002

**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	0.005	W	0.0000
100V 1A PF=0.5	50.000	50.000	0.003	W	-0.0003
100 V 1A PF=0.05	5.000	5.000	0.003	W	-0.0003
100 V 1A PF=0.02	2.000	2.000	0.003	W	-0.0003
100 V 1A PF=0.01	1.000	1.000	0.003	W	-0.0002
100 V 1A PF=0.001	0.100	0.100	0.003	W	-0.0004
80 V 1A PF=1	80.000	80.000	0.004	W	-0.0004
80V 1A PF=0.5	40.0000	39.9997	0.0028	W	-0.0004
80 V 1A PF=0.05	4.0000	3.9998	0.0025	W	-0.0002
80 V 1A PF=0.02	1.6000	1.5996	0.0025	W	-0.0005
80 V 1A PF=0.01	0.8000	0.7997	0.0025	W	-0.0004
80 V 1A PF=0.001	0.0800	0.0798	0.0025	W	-0.0003
60 V 0.8A PF=1	48.0000	47.9998	0.0017	W	-0.0004
60V 0.8A PF=0.5	24.0000	23.9996	0.0015	W	-0.0008
60 V 0.8A PF=0.05	2.4000	2.3999	0.0015	W	-0.0002
60 V 0.8A PF=0.02	0.9600	0.9599	0.0015	W	-0.0002
60 V 0.8A PF=0.01	0.4800	0.4797	0.0015	W	-0.0006
60 V 0.8A PF=0.001	0.0480	0.0479	0.0015	W	-0.0002
40 V 0.5A PF=1	20.0000	19.9995	0.0009	W	-0.0025
40 V 0.5A PF=0.5	10.0000	9.9996	0.0007	W	-0.0020
40 V 0.5A PF=0.05	1.0000	0.9999	0.0007	W	-0.0005
40 V 0.5A PF=0.02	0.4000	0.3999	0.0007	W	-0.0005
40 V 0.5A PF=0.01	0.2000	0.2000	0.0007	W	0.0000
40 V 0.5A PF=0.001	0.0200	0.0200	0.0007	W	0.0000

**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	0.00004	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	0.005	W	-0.0001
100V 1A PF=0.5	50.000	50.000	0.003	W	-0.0002
100 V 1A PF=0.05	5.000	5.000	0.003	W	-0.0002
100 V 1A PF=0.02	2.000	2.000	0.003	W	-0.0003
100 V 1A PF=0.01	1.000	1.000	0.003	W	-0.0001
100 V 1A PF=0.001	0.100	0.100	0.003	W	-0.0005
80 V 1A PF=1	80.000	80.000	0.004	W	0.0003
80V 1A PF=0.5	40.0000	40.0002	0.0028	W	0.0002
80 V 1A PF=0.05	4.0000	3.9998	0.0025	W	-0.0002
80 V 1A PF=0.02	1.6000	1.5998	0.0025	W	-0.0002
80 V 1A PF=0.01	0.8000	0.7998	0.0025	W	-0.0003
80 V 1A PF=0.001	0.0800	0.0799	0.0025	W	-0.0001
60 V 0.8A PF=1	48.0000	47.9991	0.0017	W	-0.0019
60V 0.8A PF=0.5	24.0000	23.9995	0.0015	W	-0.0010
60 V 0.8A PF=0.05	2.4000	2.3999	0.0015	W	-0.0002
60 V 0.8A PF=0.02	0.9600	0.9600	0.0015	W	0.0000
60 V 0.8A PF=0.01	0.4800	0.4799	0.0015	W	-0.0002
60 V 0.8A PF=0.001	0.0480	0.0478	0.0015	W	-0.0004
40 V 0.5A PF=1	20.0000	19.9988	0.0009	W	-0.0060
40 V 0.5A PF=0.5	10.0000	9.9993	0.0007	W	-0.0035
40 V 0.5A PF=0.05	1.0000	0.9998	0.0007	W	-0.0010
40 V 0.5A PF=0.02	0.4000	0.3999	0.0007	W	-0.0005
40 V 0.5A PF=0.01	0.2000	0.2000	0.0007	W	0.0000
40 V 0.5A PF=0.001	0.0200	0.0199	0.0007	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	0.0001

#### Current Calibration 53 Hz 1 A Range

Range	Applied	Measured	±Uncertainty	Unit	Deviation %
1 Amp	1.00000	1.00000	0.00004	A	-0.0002

Comments : After Adjustment

For information, the deviation for power is given as a percentage (in %) of the measured value to the applied value.  $\% = ((\text{Measured} - \text{Applied}) / \text{Applied Power}) \cdot 100\%$

For information, the deviation for Voltage and Current is given as a percentage (in %) of the measured value to the applied value.  $\% = ((\text{Measured} - \text{Applied}) / \text{Applied}) \cdot 100\%$