

DEMO-Kalibrierschein DEMO Calibration Certificate

Protokollnummer
Certificate Ref

12345678.2f

Kalibrierstelle
Calibration Center

ZES ZIMMER Electronic Systems GmbH
Tabaksmühlenweg 30 - D-61440 Oberursel
Tel. ++49(0)6171 628750 FAX ++49(0)617152086

Gegenstand
Product

4 - channel power meter

Hersteller
Manufacturer

ZES ZIMMER Electronic Systems GmbH

Hersteller Anschrift
Address

Tabaksmühlenweg 30 - D-61440 Oberursel

Geräte Typ
Instrument type

LMG450

Geräte Seriennummer
Ser. number

12345678

Auftraggeber
Customer

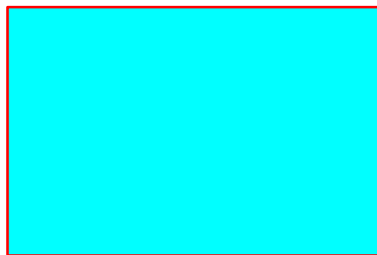
Customer
street
town

Anzahl der Seiten
Number of pages

10

Datum der Protokollerstellung
Date of issue

Tue Sep 30 13:14:43 2003



Stempel/stamp

Do. 18. Sep 2003

Datum der Kalibrierung
date of calibration

DS

Prüfer/test engineer

Dieser Kalibrierschein ist ab dem Kalibrierdatum 12 Monate gültig. Die Gültigkeit erlischt vorzeitig, wenn am Gerät Änderungen vorgenommen werden.
This calibration certificate is valid for 12 moth from `date of calibration`. Validity expires if changens at the device are done.

Das Kalibrierte Meßgerät wurde gemäß dem nachfolgenden Meßprotokoll kalibriert und entspricht den Herstellerspezifikationen.
Das Kalibrierintervall beträgt 12 Monate.
ZES bestätigt, dass die verwendeten Referenzgeräte auf Normale der Physikalisch- Technischen Bundesanstalt (PTB) oder des deutschen Kalibrierdienstes (DKD) rückführbar sind. Diese Kalibrierung erfüllt die Anforderungen der ISO9000.
Der Kalibrierschein erfüllt die Kriterien nach EN45001.

*The calibrated instrument has been calibrated like shown in the following calibration protocol and meets the manufacturer specifications
The recalibration interval is 12 months.
ZES certifies, that the used reference devices are traceable to the national standard laboratory Physikalisch- Technische Bundesanstalt (PTB) or the german calibration service (DKD). This calibration sheet meets the requirements of ISO9000 and the EN45001.*

Referenz /Reference

Bezeichnung /Object	Typ /Model	Serien-Nr. /Serial number	Hersteller /Manufacturer
Leistungsmessgerät	LMG95	04750202	ZES ZIMMER
Kalibrator	5500A	6280015	FLUKE

Bedingungen /Conditions

Temperatur /temperature	23°C±2°C
Luftfeuchte /humidity	60%±10%
Leistungsfaktor /power factor	1.0

Verfahren /Process

Zur Kalibrierung erfolgt die Vorgabe der Sollwerte (z.B. Strom, Spannung, Phasenverschiebung, Leistung, Meßzeit) von unseren Kalibratoren. Die Eingangsgrößen werden an das Meßobjekt angelegt und parallel von unseren Referenzgeräten gemessen. Im automatisierten Meßablauf liest ein Computer alle benötigten Größen von den Referenzgeräten und dem zu kalibrierenden Objekt ein. Die Meßwerte werden nach Einbeziehen von eventuellen Skalierungsfaktoren auf einem Datenträger gespeichert.

*Our calibrators generate the target values (like voltage, current, phase shift, power, measurement time.)
The values are measured by the object, which has to be calibrated, and our reference measurement devices
In an automatic test bench a computer reads in all values from the calibration object and the reference device. The values are scaled, if necessary, and then stored on a data medium.*

Meßunsicherheit / uncertainty of measurement

+- (ppm of measuring value + ppm of measuring range)	
Voltage	(30 + 70)
Current	(30 + 70)
Power	(50 + 70)
Energy	(uncertainty of P + 25 ppm of measuring value)

Measurement accuracies are valid for:

1. Sinusoidal voltages and currents.
2. Ambient temperature 20 ... 25°C
3. Instrument warm-up time 1h
4. Power range is product of voltage range
and current range for $0 < PF \leq 1$

Beschreibung der Spaltenüberschriften /legend for coloumn headers

'cal.-ident':	calibration identifier	'uut':	reading of unit under test
'source signal':	set value of signal source	'abs. error':	absolute error = (uut - reference)
'ranges':	set measuring ranges	'rel error':	relative error in % = (uut - reference)*100/reference
'reference':	true value of input	'exploitation':	used part (exploitation) of admissible error in % = (abs. error * 100) / (%reading + %range_pk)

Geräte Typ: LMG45
Instrument type

Geräte Seriennummer: 12345678
ser. number

Protokollnummer: 12345678.2f
Certificate Ref

Meßwerte von Kanal 1 bei 53 Hz *measured values of channel 1 at 53 Hz H*

cal.-ident	source signal	ranges	reference	uut	abs. error	rel. error	exploitation
U-0a	6.000V	6.0000V	5.998870E+0V	+5.9996E+00V	0.000730V	0.012169 %	1.973%
U-0b	1.200V	6.0000V	1.199300E+0V	+1.2002E+00V	0.000900V	0.075044 %	3.284%
U-1a	12.500V	12.5000V	12.49700E+0V	+12.498E+00V	0.001000V	0.008002 %	1.333%
U-1b	2.500V	12.5000V	2.498410E+0V	+2.5000E+00V	0.001590V	0.063640 %	2.891%
U-2a	25.000V	25.0000V	24.99690E+0V	+24.999E+00V	0.002100V	0.008401 %	1.400%
U-2b	5.000V	25.0000V	4.997830E+0V	+5.0005E+00V	0.002670V	0.053423 %	2.427%
U-3a	60.000V	60.0000V	59.99460E+0V	+59.996E+00V	0.001400V	0.002334 %	0.437%
U-3b	12.000V	60.0000V	11.99620E+0V	+12.000E+00V	0.003800V	0.031677 %	1.696%
U-4a	130.000V	130.0000V	129.9850E+0V	+129.98E+00V	-0.00500V	-0.00384 %	0.757%
U-4b	26.000V	130.0000V	25.99450E+0V	+25.996E+00V	0.001500V	0.005770 %	0.331%
U-5a	250.000V	250.0000V	249.9770E+0V	+249.98E+00V	0.003000V	0.001200 %	0.230%
U-5b	50.000V	250.0000V	49.98170E+0V	+49.995E+00V	0.013300V	0.026610 %	1.477%
U-6a	400.000V	400.0000V	399.9700E+0V	+399.99E+00V	0.020000V	0.005000 %	0.833%
U-6b	80.000V	400.0000V	79.96650E+0V	+80.017E+00V	0.050500V	0.063151 %	2.869%
U-7a	600.000V	600.0000V	599.9260E+0V	+600.03E+00V	0.104000V	0.017335 %	2.363%
U-7b	120.000V	600.0000V	119.9390E+0V	+120.05E+00V	0.111000V	0.092547 %	3.226%
I-0a	0.600A	0.6000A	599.9970E-3A	+599.95E-03A	-0.00004A	-0.00783 %	0.315%
I-0b	0.120A	0.6000A	120.0010E-3A	+120.14E-03A	0.000139A	0.115832 %	1.070%
I-1a	1.200A	1.2000A	1.200020E+0A	+1.1995E+00A	-0.00052A	-0.04333 %	2.096%
I-1b	0.240A	1.2000A	240.0150E-3A	+239.85E-03A	-0.00016A	-0.06874 %	0.787%
I-2a	2.500A	2.5000A	2.499810E+0A	+2.4979E+00A	-0.00191A	-0.07640 %	4.244%
I-2b	0.500A	2.5000A	500.0370E-3A	+499.97E-03A	-0.00006A	-0.01339 %	0.181%
I-3a	5.000A	5.0000A	4.999620E+0A	+4.9977E+00A	-0.00192A	-0.03840 %	2.258%
I-3b	1.000A	5.0000A	1.000140E+0A	+999.27E-03A	-0.00087A	-0.08698 %	1.260%
I-4a	9.000A	10.0000A	8.999600E+0A	+8.9983E+00A	-0.00130A	-0.01444 %	0.807%
I-4b	1.800A	10.0000A	1.800280E+0A	+1.7971E+00A	-0.00318A	-0.17663 %	2.405%
I-5a	9.000A	16.0000A	8.999420E+0A	+8.9983E+00A	-0.00112A	-0.01244 %	0.398%
I-5b	1.800A	16.0000A	1.800290E+0A	+1.7974E+00A	-0.00289A	-0.16053 %	1.145%
Se-0a	0.120V	0.1200A	119.7450E-3A	+119.72E-03A	-0.00002A	-0.02087 %	1.690%
Se-0b	0.024V	0.1200A	23.96080E-3A	+23.922E-03A	-0.00003A	-0.16193 %	3.540%
Se-1a	0.250V	0.2500A	249.4520E-3A	+249.44E-03A	-0.00001A	-0.00481 %	0.400%
Se-1b	0.050V	0.2500A	49.89550E-3A	+49.874E-03A	-0.00002A	-0.04309 %	0.977%
Se-2a	0.500V	0.5000A	499.9020E-3A	+499.96E-03A	0.000058A	0.011602 %	0.966%
Se-2b	0.100V	0.5000A	99.70740E-3A	+99.723E-03A	0.000016A	0.015646 %	0.354%
Se-3a	1.000V	1.0000A	999.8870E-3A	+999.88E-03A	-0.00000A	-0.00070 %	0.058%
Se-3b	0.200V	1.0000A	199.5020E-3A	+199.45E-03A	-0.00005A	-0.02606 %	0.591%
Se-4a	2.000V	2.0000A	1.999700E+0A	+1.9999E+00A	0.000200A	0.010002 %	0.833%
Se-4b	0.400V	2.0000A	399.9990E-3A	+400.06E-03A	0.000061A	0.015250 %	0.346%
Se-5a	4.000V	4.0000A	3.999320E+0A	+3.9998E+00A	0.000480A	0.012002 %	1.000%
Se-5b	0.800V	4.0000A	799.8970E-3A	+800.18E-03A	0.000283A	0.035380 %	0.803%
P-0a	6.000V / 1.200A	6.0000V / 1.2000A	7.198570E+0W	+7.1960E+00W	-0.00257W	-0.03570 %	0.950%
P-0b	2.683V / 0.537A	6.0000V / 1.2000A	1.440430E+0W	+1.4410E+00W	0.000570W	0.039572 %	0.235%
P-1a	12.500V / 1.200A	12.5000V / 1.2000A	14.99650E+0W	+14.989E+00W	-0.00750W	-0.05001 %	1.379%
P-1b	5.590V / 0.537A	12.5000V / 1.2000A	3.001090E+0W	+3.0005E+00W	-0.00059W	-0.01966 %	0.121%
P-2a	25.000V / 1.200A	25.0000V / 1.2000A	29.99650E+0W	+29.986E+00W	-0.01050W	-0.03500 %	0.965%
P-2b	11.180V / 0.537A	25.0000V / 1.2000A	6.003070E+0W	+6.0015E+00W	-0.00157W	-0.02615 %	0.162%
P-3a	60.000V / 1.200A	60.0000V / 1.2000A	71.99460E+0W	+71.946E+00W	-0.04860W	-0.06750 %	2.174%
P-3b	26.833V / 0.537A	60.0000V / 1.2000A	14.40910E+0W	+14.404E+00W	-0.00510W	-0.03539 %	0.261%

Geräte Typ: LMG45
Instrument type

Geräte Seriennummer: 123456789
ser. number

Protokollnummer: 12345678.2f
Certificate Ref

Meßwerte von Kanal 1 bei 53 Hz measured values of channel 1 at 53 Hz

P-4a	130.000V / 1.200A	130.0000V / 1.2000A	155.9840E+0W	+155.86E+00W	-0.12400W	-0.07949 %	2.737%
P-4b	58.138V / 0.537A	130.0000V / 1.2000A	31.21930E+0W	+31.208E+00W	-0.01130W	-0.03619 %	0.289%
P-5a	250.000V / 1.200A	250.0000V / 1.2000A	299.9770E+0W	+299.84E+00W	-0.13700W	-0.04567 %	1.522%
P-5b	111.803V / 0.537A	250.0000V / 1.2000A	60.03650E+0W	+60.027E+00W	-0.00950W	-0.01582 %	0.121%
P-6a	400.000V / 1.200A	400.0000V / 1.2000A	479.9700E+0W	+479.79E+00W	-0.18000W	-0.03750 %	1.034%
P-6b	178.885V / 0.537A	400.0000V / 1.2000A	96.05550E+0W	+95.999E+00W	-0.05650W	-0.05882 %	0.364%
P-7a	600.000V / 1.200A	600.0000V / 1.2000A	719.9270E+0W	+719.18E+00W	-0.74700W	-0.10376 %	2.223%
P-7b	268.328V / 0.537A	600.0000V / 1.2000A	144.0720E+0W	+144.12E+00W	0.048000W	0.033317 %	0.156%
P-8a	250.000V / 0.600A	250.0000V / 0.6000A	149.9900E+0W	+149.89E+00W	-0.10000W	-0.06667 %	2.222%
P-8b	111.803V / 0.268A	250.0000V / 0.6000A	29.95920E+0W	+29.935E+00W	-0.02420W	-0.08077 %	0.620%
P-9a	250.000V / 1.200A	250.0000V / 1.2000A	299.9830E+0W	+299.79E+00W	-0.19300W	-0.06433 %	2.144%
P-9b	111.803V / 0.537A	250.0000V / 1.2000A	60.03930E+0W	+60.050E+00W	0.010700W	0.017822 %	0.137%
P-10a	250.000V / 2.500A	250.0000V / 2.5000A	624.9030E+0W	+624.33E+00W	-0.57300W	-0.09169 %	3.161%
P-10b	111.803V / 1.118A	250.0000V / 2.5000A	124.9890E+0W	+124.90E+00W	-0.08900W	-0.07120 %	0.569%
P-11a	250.000V / 5.000A	250.0000V / 5.0000A	1.249810E+3W	+1.2491E+03W	-0.71000W	-0.05680 %	1.958%
P-11b	111.803V / 2.236A	250.0000V / 5.0000A	249.9680E+0W	+249.59E+00W	-0.37800W	-0.15121 %	1.209%
P-12a	250.000V / 9.000A	250.0000V / 10.0000A	2.249730E+3W	+2.2491E+03W	-0.63000W	-0.02800 %	0.884%
P-12b	111.803V / 4.025A	250.0000V / 10.0000A	449.9250E+0W	+449.28E+00W	-0.64500W	-0.14335 %	1.036%
P-13a	250.000V / 9.000A	250.0000V / 16.0000A	2.249670E+3W	+2.2491E+03W	-0.57000W	-0.02533 %	0.434%
P-13b	111.803V / 4.025A	250.0000V / 16.0000A	449.9120E+0W	+449.37E+00W	-0.54200W	-0.12046 %	0.443%
E-0a	6.000V / 1.200A / 30s	6.0000V / 1.2000A	59.98600E-3Wh	+59.884E-03Wh	-0.00010Wh	-0.17004 %	4.527%
E-0b	2.683V / 0.537A / 30s	6.0000V / 1.2000A	12.00370E-3Wh	+11.998E-03Wh	-0.00000Wh	-0.04748 %	0.283%

Geräte Typ: LMG45
Instrument type

Geräte Seriennummer: 12345678
ser. number

Protokollnummer: 12345678.2f
Certificate Ref

Meßwerte von Kanal 2 bei 53 Hz *measured values of channel 2 at 53 Hz*

cal.-ident	source signal	ranges	reference	uut	abs. error	rel. error	exploitation
U-0a	6.000V	6.0000V	5.998870E+0V	+5.9996E+00V	0.000730V	0.012169 %	1.973%
U-0b	1.200V	6.0000V	1.199300E+0V	+1.2001E+00V	0.000800V	0.066706 %	2.919%
U-1a	12.500V	12.5000V	12.49700E+0V	+12.498E+00V	0.001000V	0.008002 %	1.333%
U-1b	2.500V	12.5000V	2.498410E+0V	+2.4999E+00V	0.001490V	0.059638 %	2.709%
U-2a	25.000V	25.0000V	24.99690E+0V	+24.998E+00V	0.001100V	0.004401 %	0.733%
U-2b	5.000V	25.0000V	4.997830E+0V	+5.0005E+00V	0.002670V	0.053423 %	2.427%
U-3a	60.000V	60.0000V	59.99460E+0V	+59.995E+00V	0.000400V	0.000667 %	0.125%
U-3b	12.000V	60.0000V	11.99620E+0V	+12.000E+00V	0.003800V	0.031677 %	1.696%
U-4a	130.000V	130.0000V	129.9850E+0V	+129.98E+00V	-0.00500V	-0.00384 %	0.757%
U-4b	26.000V	130.0000V	25.99450E+0V	+26.000E+00V	0.005500V	0.021158 %	1.216%
U-5a	250.000V	250.0000V	249.9770E+0V	+249.98E+00V	0.003000V	0.001200 %	0.230%
U-5b	50.000V	250.0000V	49.98170E+0V	+49.997E+00V	0.015300V	0.030611 %	1.700%
U-6a	400.000V	400.0000V	399.9700E+0V	+400.00E+00V	0.030000V	0.007501 %	1.250%
U-6b	80.000V	400.0000V	79.96650E+0V	+80.021E+00V	0.054500V	0.068154 %	3.096%
U-7a	600.000V	600.0000V	599.9260E+0V	+600.01E+00V	0.084000V	0.014002 %	1.909%
U-7b	120.000V	600.0000V	119.9390E+0V	+120.04E+00V	0.101000V	0.084209 %	2.936%
I-0a	0.600A	0.6000A	599.9970E-3A	+600.01E-03A	0.000013A	0.002167 %	0.087%
I-0b	0.120A	0.6000A	120.0010E-3A	+120.19E-03A	0.000189A	0.157499 %	1.456%
I-1a	1.200A	1.2000A	1.200020E+0A	+1.1996E+00A	-0.00042A	-0.03499 %	1.693%
I-1b	0.240A	1.2000A	240.0150E-3A	+239.68E-03A	-0.00033A	-0.13957 %	1.598%
I-2a	2.500A	2.5000A	2.499810E+0A	+2.4985E+00A	-0.00131A	-0.05240 %	2.911%
I-2b	0.500A	2.5000A	500.0370E-3A	+499.17E-03A	-0.00086A	-0.17338 %	2.343%
I-3a	5.000A	5.0000A	4.999620E+0A	+4.9982E+00A	-0.00142A	-0.02840 %	1.670%
I-3b	1.000A	5.0000A	1.000140E+0A	+998.33E-03A	-0.00181A	-0.18097 %	2.623%
I-4a	9.000A	10.0000A	8.999600E+0A	+8.9987E+00A	-0.00090A	-0.01000 %	0.559%
I-4b	1.800A	10.0000A	1.800280E+0A	+1.7978E+00A	-0.00248A	-0.13775 %	1.875%
I-5a	9.000A	16.0000A	8.999420E+0A	+8.9984E+00A	-0.00102A	-0.01133 %	0.362%
I-5b	1.800A	16.0000A	1.800290E+0A	+1.7977E+00A	-0.00259A	-0.14386 %	1.026%
Se-0a	0.120V	0.1200A	119.7450E-3A	+119.73E-03A	-0.00001A	-0.01252 %	1.014%
Se-0b	0.024V	0.1200A	23.96080E-3A	+23.929E-03A	-0.00003A	-0.13271 %	2.901%
Se-1a	0.250V	0.2500A	249.4520E-3A	+249.45E-03A	-0.00000A	-0.00080 %	0.066%
Se-1b	0.050V	0.2500A	49.89550E-3A	+49.871E-03A	-0.00002A	-0.04910 %	1.113%
Se-2a	0.500V	0.5000A	499.9020E-3A	+499.93E-03A	0.000028A	0.005601 %	0.466%
Se-2b	0.100V	0.5000A	99.70740E-3A	+99.740E-03A	0.000033A	0.032696 %	0.741%
Se-3a	1.000V	1.0000A	999.8870E-3A	+999.83E-03A	-0.00005A	-0.00570 %	0.475%
Se-3b	0.200V	1.0000A	199.5020E-3A	+199.48E-03A	-0.00002A	-0.01102 %	0.250%
Se-4a	2.000V	2.0000A	1.999700E+0A	+1.9998E+00A	0.000100A	0.005001 %	0.416%
Se-4b	0.400V	2.0000A	399.9990E-3A	+400.03E-03A	0.000031A	0.007750 %	0.176%
Se-5a	4.000V	4.0000A	3.999320E+0A	+3.9994E+00A	0.000080A	0.002000 %	0.166%
Se-5b	0.800V	4.0000A	799.8970E-3A	+800.05E-03A	0.000153A	0.019127 %	0.434%
P-0a	6.000V / 1.200A	6.0000V / 1.2000A	7.198570E+0W	+7.1964E+00W	-0.00217W	-0.03014 %	0.802%
P-0b	2.683V / 0.537A	6.0000V / 1.2000A	1.440430E+0W	+1.4407E+00W	0.000270W	0.018744 %	0.111%
P-1a	12.500V / 1.200A	12.5000V / 1.2000A	14.99650E+0W	+14.987E+00W	-0.00950W	-0.06334 %	1.747%
P-1b	5.590V / 0.537A	12.5000V / 1.2000A	3.001090E+0W	+3.0006E+00W	-0.00049W	-0.01632 %	0.101%
P-2a	25.000V / 1.200A	25.0000V / 1.2000A	29.99650E+0W	+29.980E+00W	-0.01650W	-0.05500 %	1.517%
P-2b	11.180V / 0.537A	25.0000V / 1.2000A	6.003070E+0W	+6.0003E+00W	-0.00277W	-0.04614 %	0.286%
P-3a	60.000V / 1.200A	60.0000V / 1.2000A	71.99460E+0W	+71.970E+00W	-0.02460W	-0.03416 %	1.100%
P-3b	26.833V / 0.537A	60.0000V / 1.2000A	14.40910E+0W	+14.394E+00W	-0.01510W	-0.10479 %	0.775%

Geräte Typ: LMG45
Instrument type

Geräte Seriennummer: 12345678
ser. number

Protokollnummer: 12345678.2f
Certificate Ref

Meßwerte von Kanal 2 bei 53 Hz *measured values of channel 2 at 53 Hz*

P-4a	130.000V / 1.200A	130.0000V / 1.2000A	155.9840E+0W	+155.93E+00W	-0.05400W	-0.03461 %	1.192%
P-4b	58.138V / 0.537A	130.0000V / 1.2000A	31.21930E+0W	+31.202E+00W	-0.01730W	-0.05541 %	0.442%
P-5a	250.000V / 1.200A	250.0000V / 1.2000A	299.9770E+0W	+299.82E+00W	-0.15700W	-0.05233 %	1.744%
P-5b	111.803V / 0.537A	250.0000V / 1.2000A	60.03650E+0W	+60.005E+00W	-0.03150W	-0.05246 %	0.403%
P-6a	400.000V / 1.200A	400.0000V / 1.2000A	479.9700E+0W	+479.77E+00W	-0.20000W	-0.04166 %	1.149%
P-6b	178.885V / 0.537A	400.0000V / 1.2000A	96.05550E+0W	+96.042E+00W	-0.01350W	-0.01405 %	0.087%
P-7a	600.000V / 1.200A	600.0000V / 1.2000A	719.9270E+0W	+719.59E+00W	-0.33700W	-0.04681 %	1.002%
P-7b	268.328V / 0.537A	600.0000V / 1.2000A	144.0720E+0W	+143.95E+00W	-0.12200W	-0.08468 %	0.397%
P-8a	250.000V / 0.600A	250.0000V / 0.6000A	149.9900E+0W	+149.98E+00W	-0.01000W	-0.00666 %	0.222%
P-8b	111.803V / 0.268A	250.0000V / 0.6000A	29.95920E+0W	+29.934E+00W	-0.02520W	-0.08411 %	0.646%
P-9a	250.000V / 1.200A	250.0000V / 1.2000A	299.9830E+0W	+299.83E+00W	-0.15300W	-0.05100 %	1.700%
P-9b	111.803V / 0.537A	250.0000V / 1.2000A	60.03930E+0W	+60.021E+00W	-0.01830W	-0.03048 %	0.234%
P-10a	250.000V / 2.500A	250.0000V / 2.5000A	624.9030E+0W	+624.47E+00W	-0.43300W	-0.06929 %	2.389%
P-10b	111.803V / 1.118A	250.0000V / 2.5000A	124.9890E+0W	+124.82E+00W	-0.16900W	-0.13521 %	1.081%
P-11a	250.000V / 5.000A	250.0000V / 5.0000A	1.249810E+3W	+1.2492E+03W	-0.61000W	-0.04880 %	1.682%
P-11b	111.803V / 2.236A	250.0000V / 5.0000A	249.9680E+0W	+249.59E+00W	-0.37800W	-0.15121 %	1.209%
P-12a	250.000V / 9.000A	250.0000V / 10.0000A	2.249730E+3W	+2.2492E+03W	-0.53000W	-0.02355 %	0.743%
P-12b	111.803V / 4.025A	250.0000V / 10.0000A	449.9250E+0W	+449.38E+00W	-0.54500W	-0.12113 %	0.875%
P-13a	250.000V / 9.000A	250.0000V / 16.0000A	2.249670E+3W	+2.2491E+03W	-0.57000W	-0.02533 %	0.434%
P-13b	111.803V / 4.025A	250.0000V / 16.0000A	449.9120E+0W	+449.50E+00W	-0.41200W	-0.09157 %	0.337%
E-0a	6.000V / 1.200A / 30s	6.0000V / 1.2000A	59.98600E-3Wh	+59.898E-03Wh	-0.00008Wh	-0.14670 %	3.905%
E-0b	2.683V / 0.537A / 30s	6.0000V / 1.2000A	12.00370E-3Wh	+11.995E-03Wh	-0.00000Wh	-0.07247 %	0.432%

Geräte Typ: LMG45
Instrument type

Geräte Seriennummer: 12345678
ser. number

Protokollnummer: 12345678.2f
Certificate Ref

Meßwerte von Kanal 3 bei 53 Hz *measured values of channel 3 at 53 Hz*

cal.-ident	source signal	ranges	reference	uut	abs. error	rel. error	exploitation
U-0a	6.000V	6.0000V	5.998870E+0V	+6.0002E+00V	0.001330V	0.022171 %	3.594%
U-0b	1.200V	6.0000V	1.199300E+0V	+1.2001E+00V	0.000800V	0.066706 %	2.919%
U-1a	12.500V	12.5000V	12.49700E+0V	+12.500E+00V	0.003000V	0.024006 %	4.000%
U-1b	2.500V	12.5000V	2.498410E+0V	+2.5002E+00V	0.001790V	0.071646 %	3.254%
U-2a	25.000V	25.0000V	24.99690E+0V	+25.003E+00V	0.006100V	0.024403 %	4.066%
U-2b	5.000V	25.0000V	4.997830E+0V	+5.0006E+00V	0.002770V	0.055424 %	2.518%
U-3a	60.000V	60.0000V	59.99460E+0V	+60.004E+00V	0.009400V	0.015668 %	2.937%
U-3b	12.000V	60.0000V	11.99620E+0V	+12.000E+00V	0.003800V	0.031677 %	1.696%
U-4a	130.000V	130.0000V	129.9850E+0V	+130.00E+00V	0.015000V	0.011540 %	2.272%
U-4b	26.000V	130.0000V	25.99450E+0V	+25.995E+00V	0.000500V	0.001923 %	0.110%
U-5a	250.000V	250.0000V	249.9770E+0V	+250.02E+00V	0.043000V	0.017202 %	3.307%
U-5b	50.000V	250.0000V	49.98170E+0V	+49.997E+00V	0.015300V	0.030611 %	1.700%
U-6a	400.000V	400.0000V	399.9700E+0V	+400.04E+00V	0.070000V	0.017501 %	2.916%
U-6b	80.000V	400.0000V	79.96650E+0V	+80.017E+00V	0.050500V	0.063151 %	2.869%
U-7a	600.000V	600.0000V	599.9260E+0V	+600.05E+00V	0.124000V	0.020669 %	2.818%
U-7b	120.000V	600.0000V	119.9390E+0V	+120.04E+00V	0.101000V	0.084209 %	2.936%
I-0a	0.600A	0.6000A	599.9970E-3A	+600.00E-03A	0.000003A	0.000500 %	0.020%
I-0b	0.120A	0.6000A	120.0010E-3A	+119.45E-03A	-0.00055A	-0.45916 %	4.244%
I-1a	1.200A	1.2000A	1.200020E+0A	+1.2005E+00A	0.000480A	0.039999 %	1.935%
I-1b	0.240A	1.2000A	240.0150E-3A	+240.31E-03A	0.000295A	0.122909 %	1.407%
I-2a	2.500A	2.5000A	2.499810E+0A	+2.4990E+00A	-0.00081A	-0.03240 %	1.800%
I-2b	0.500A	2.5000A	500.0370E-3A	+499.58E-03A	-0.00045A	-0.09139 %	1.235%
I-3a	5.000A	5.0000A	4.999620E+0A	+4.9988E+00A	-0.00082A	-0.01640 %	0.964%
I-3b	1.000A	5.0000A	1.000140E+0A	+998.56E-03A	-0.00158A	-0.15797 %	2.289%
I-4a	9.000A	10.0000A	8.999600E+0A	+8.9984E+00A	-0.00120A	-0.01333 %	0.745%
I-4b	1.800A	10.0000A	1.800280E+0A	+1.7975E+00A	-0.00278A	-0.15442 %	2.102%
I-5a	9.000A	16.0000A	8.999420E+0A	+8.9989E+00A	-0.00052A	-0.00577 %	0.185%
I-5b	1.800A	16.0000A	1.800290E+0A	+1.7977E+00A	-0.00259A	-0.14386 %	1.026%
Se-0a	0.120V	0.1200A	119.7450E-3A	+119.77E-03A	0.000025A	0.020878 %	1.690%
Se-0b	0.024V	0.1200A	23.96080E-3A	+23.984E-03A	0.000023A	0.096825 %	2.117%
Se-1a	0.250V	0.2500A	249.4520E-3A	+249.52E-03A	0.000068A	0.027260 %	2.268%
Se-1b	0.050V	0.2500A	49.89550E-3A	+49.932E-03A	0.000036A	0.073153 %	1.659%
Se-2a	0.500V	0.5000A	499.9020E-3A	+500.01E-03A	0.000108A	0.021604 %	1.800%
Se-2b	0.100V	0.5000A	99.70740E-3A	+99.786E-03A	0.000079A	0.078831 %	1.786%
Se-3a	1.000V	1.0000A	999.8870E-3A	+1.0000E+00A	0.000113A	0.011301 %	0.941%
Se-3b	0.200V	1.0000A	199.5020E-3A	+199.55E-03A	0.000048A	0.024060 %	0.545%
Se-4a	2.000V	2.0000A	1.999700E+0A	+1.9998E+00A	0.000100A	0.005001 %	0.416%
Se-4b	0.400V	2.0000A	399.9990E-3A	+400.10E-03A	0.000101A	0.025250 %	0.573%
Se-5a	4.000V	4.0000A	3.999320E+0A	+3.9998E+00A	0.000480A	0.012002 %	1.000%
Se-5b	0.800V	4.0000A	799.8970E-3A	+800.19E-03A	0.000293A	0.036630 %	0.832%
P-0a	6.000V / 1.200A	6.0000V / 1.2000A	7.198570E+0W	+7.2019E+00W	0.003330W	0.046259 %	1.231%
P-0b	2.683V / 0.537A	6.0000V / 1.2000A	1.440430E+0W	+1.4422E+00W	0.001770W	0.122880 %	0.732%
P-1a	12.500V / 1.200A	12.5000V / 1.2000A	14.99650E+0W	+15.005E+00W	0.008500W	0.056680 %	1.563%
P-1b	5.590V / 0.537A	12.5000V / 1.2000A	3.001090E+0W	+3.0070E+00W	0.005910W	0.196928 %	1.221%
P-2a	25.000V / 1.200A	25.0000V / 1.2000A	29.99650E+0W	+30.016E+00W	0.019500W	0.065008 %	1.793%
P-2b	11.180V / 0.537A	25.0000V / 1.2000A	6.003070E+0W	+6.0099E+00W	0.006830W	0.113775 %	0.705%
P-3a	60.000V / 1.200A	60.0000V / 1.2000A	71.99460E+0W	+72.017E+00W	0.022400W	0.031113 %	1.002%
P-3b	26.833V / 0.537A	60.0000V / 1.2000A	14.40910E+0W	+14.421E+00W	0.011900W	0.082587 %	0.611%

Geräte Typ: LMG45
Instrument type

Geräte Seriennummer: 12345678
ser. number

Protokollnummer: 12345678.2f
Certificate Ref

Meßwerte von Kanal 3 bei 53 Hz *measured values of channel 3 at 53Hz*

P-4a	130.000V / 1.200A	130.0000V / 1.2000A	155.9840E+0W	+156.02E+00W	0.036000W	0.023079 %	0.794%
P-4b	58.138V / 0.537A	130.0000V / 1.2000A	31.21930E+0W	+31.237E+00W	0.017700W	0.056696 %	0.453%
P-5a	250.000V / 1.200A	250.0000V / 1.2000A	299.9770E+0W	+300.04E+00W	0.063000W	0.021002 %	0.700%
P-5b	111.803V / 0.537A	250.0000V / 1.2000A	60.03650E+0W	+60.064E+00W	0.027500W	0.045805 %	0.352%
P-6a	400.000V / 1.200A	400.0000V / 1.2000A	479.9700E+0W	+480.23E+00W	0.260000W	0.054170 %	1.494%
P-6b	178.885V / 0.537A	400.0000V / 1.2000A	96.05550E+0W	+96.207E+00W	0.151500W	0.157721 %	0.978%
P-7a	600.000V / 1.200A	600.0000V / 1.2000A	719.9270E+0W	+720.47E+00W	0.543000W	0.075424 %	1.616%
P-7b	268.328V / 0.537A	600.0000V / 1.2000A	144.0720E+0W	+144.30E+00W	0.228000W	0.158254 %	0.742%
P-8a	250.000V / 0.600A	250.0000V / 0.6000A	149.9900E+0W	+150.11E+00W	0.120000W	0.080005 %	2.666%
P-8b	111.803V / 0.268A	250.0000V / 0.6000A	29.95920E+0W	+30.008E+00W	0.048800W	0.162888 %	1.251%
P-9a	250.000V / 1.200A	250.0000V / 1.2000A	299.9830E+0W	+300.12E+00W	0.137000W	0.045669 %	1.522%
P-9b	111.803V / 0.537A	250.0000V / 1.2000A	60.03930E+0W	+60.101E+00W	0.061700W	0.102766 %	0.791%
P-10a	250.000V / 2.500A	250.0000V / 2.5000A	624.9030E+0W	+624.66E+00W	-0.24300W	-0.03888 %	1.340%
P-10b	111.803V / 1.118A	250.0000V / 2.5000A	124.9890E+0W	+124.86E+00W	-0.12900W	-0.10320 %	0.825%
P-11a	250.000V / 5.000A	250.0000V / 5.0000A	1.249810E+3W	+1.2495E+03W	-0.31000W	-0.02480 %	0.855%
P-11b	111.803V / 2.236A	250.0000V / 5.0000A	249.9680E+0W	+249.61E+00W	-0.35800W	-0.14321 %	1.145%
P-12a	250.000V / 9.000A	250.0000V / 10.0000A	2.249730E+3W	+2.2495E+03W	-0.23000W	-0.01022 %	0.322%
P-12b	111.803V / 4.025A	250.0000V / 10.0000A	449.9250E+0W	+449.28E+00W	-0.64500W	-0.14335 %	1.036%
P-13a	250.000V / 9.000A	250.0000V / 16.0000A	2.249670E+3W	+2.2494E+03W	-0.27000W	-0.01200 %	0.205%
P-13b	111.803V / 4.025A	250.0000V / 16.0000A	449.9120E+0W	+449.45E+00W	-0.46200W	-0.10268 %	0.377%
E-0a	6.000V / 1.200A / 30s	6.0000V / 1.2000A	59.98600E-3Wh	+59.914E-03Wh	-0.00007Wh	-0.12002 %	3.195%
E-0b	2.683V / 0.537A / 30s	6.0000V / 1.2000A	12.00370E-3Wh	+12.009E-03Wh	0.000005Wh	0.044153 %	0.263%

Geräte Typ: LMG45
Instrument type

Geräte Seriennummer: 12345678
ser. number

Protokollnummer: 12345678.2f
Certificate Ref

Meßwerte von Kanal 4 bei 53 Hz *measured values of channel 4 at 53 Hz*

cal.-ident	source signal	ranges	reference	uut	abs. error	rel. error	exploitation
U-0a	6.000V	6.0000V	5.998870E+0V	+5.9997E+00V	0.000830V	0.013836 %	2.243%
U-0b	1.200V	6.0000V	1.199300E+0V	+1.2002E+00V	0.000900V	0.075044 %	3.284%
U-1a	12.500V	12.5000V	12.49700E+0V	+12.498E+00V	0.001000V	0.008002 %	1.333%
U-1b	2.500V	12.5000V	2.498410E+0V	+2.4999E+00V	0.001490V	0.059638 %	2.709%
U-2a	25.000V	25.0000V	24.99690E+0V	+24.999E+00V	0.002100V	0.008401 %	1.400%
U-2b	5.000V	25.0000V	4.997830E+0V	+4.9998E+00V	0.001970V	0.039417 %	1.790%
U-3a	60.000V	60.0000V	59.99460E+0V	+59.995E+00V	0.000400V	0.000667 %	0.125%
U-3b	12.000V	60.0000V	11.99620E+0V	+11.999E+00V	0.002800V	0.023341 %	1.250%
U-4a	130.000V	130.0000V	129.9850E+0V	+129.98E+00V	-0.00500V	-0.00384 %	0.757%
U-4b	26.000V	130.0000V	25.99450E+0V	+25.996E+00V	0.001500V	0.005770 %	0.331%
U-5a	250.000V	250.0000V	249.9770E+0V	+249.97E+00V	-0.00700V	-0.00280 %	0.538%
U-5b	50.000V	250.0000V	49.98170E+0V	+49.994E+00V	0.012300V	0.024609 %	1.366%
U-6a	400.000V	400.0000V	399.9700E+0V	+400.00E+00V	0.030000V	0.007501 %	1.250%
U-6b	80.000V	400.0000V	79.96650E+0V	+80.007E+00V	0.040500V	0.050646 %	2.301%
U-7a	600.000V	600.0000V	599.9260E+0V	+600.01E+00V	0.084000V	0.014002 %	1.909%
U-7b	120.000V	600.0000V	119.9390E+0V	+120.02E+00V	0.081000V	0.067534 %	2.354%
I-0a	0.600A	0.6000A	599.9970E-3A	+599.18E-03A	-0.00081A	-0.13616 %	5.483%
I-0b	0.120A	0.6000A	120.0010E-3A	+119.32E-03A	-0.00068A	-0.56749 %	5.246%
I-1a	1.200A	1.2000A	1.200020E+0A	+1.1992E+00A	-0.00082A	-0.06833 %	3.306%
I-1b	0.240A	1.2000A	240.0150E-3A	+239.38E-03A	-0.00063A	-0.26456 %	3.029%
I-2a	2.500A	2.5000A	2.499810E+0A	+2.4977E+00A	-0.00211A	-0.08440 %	4.688%
I-2b	0.500A	2.5000A	500.0370E-3A	+498.47E-03A	-0.00156A	-0.31337 %	4.235%
I-3a	5.000A	5.0000A	4.999620E+0A	+4.9984E+00A	-0.00122A	-0.02440 %	1.435%
I-3b	1.000A	5.0000A	1.000140E+0A	+998.63E-03A	-0.00151A	-0.15097 %	2.188%
I-4a	9.000A	10.0000A	8.999600E+0A	+8.9999E+00A	0.000300A	0.003333 %	0.186%
I-4b	1.800A	10.0000A	1.800280E+0A	+1.7980E+00A	-0.00228A	-0.12664 %	1.724%
I-5a	9.000A	16.0000A	8.999420E+0A	+8.9993E+00A	-0.00012A	-0.00133 %	0.042%
I-5b	1.800A	16.0000A	1.800290E+0A	+1.7969E+00A	-0.00339A	-0.18830 %	1.344%
Se-0a	0.120V	0.1200A	119.7450E-3A	+119.75E-03A	0.000005A	0.004176 %	0.338%
Se-0b	0.024V	0.1200A	23.96080E-3A	+23.949E-03A	-0.00001A	-0.04924 %	1.076%
Se-1a	0.250V	0.2500A	249.4520E-3A	+249.49E-03A	0.000038A	0.015233 %	1.267%
Se-1b	0.050V	0.2500A	49.89550E-3A	+49.914E-03A	0.000018A	0.037077 %	0.841%
Se-2a	0.500V	0.5000A	499.9020E-3A	+499.99E-03A	0.000088A	0.017603 %	1.466%
Se-2b	0.100V	0.5000A	99.70740E-3A	+99.768E-03A	0.000061A	0.060778 %	1.377%
Se-3a	1.000V	1.0000A	999.8870E-3A	+1.0000E+00A	0.000113A	0.011301 %	0.941%
Se-3b	0.200V	1.0000A	199.5020E-3A	+199.58E-03A	0.000078A	0.039097 %	0.886%
Se-4a	2.000V	2.0000A	1.999700E+0A	+1.9999E+00A	0.000200A	0.010002 %	0.833%
Se-4b	0.400V	2.0000A	399.9990E-3A	+400.08E-03A	0.000081A	0.020250 %	0.460%
Se-5a	4.000V	4.0000A	3.999320E+0A	+3.9999E+00A	0.000580A	0.014502 %	1.208%
Se-5b	0.800V	4.0000A	799.8970E-3A	+800.16E-03A	0.000263A	0.032879 %	0.747%
P-0a	6.000V / 1.200A	6.0000V / 1.2000A	7.198570E+0W	+7.1911E+00W	-0.00747W	-0.10377 %	2.762%
P-0b	2.683V / 0.537A	6.0000V / 1.2000A	1.440430E+0W	+1.4376E+00W	-0.00283W	-0.19646 %	1.171%
P-1a	12.500V / 1.200A	12.5000V / 1.2000A	14.99650E+0W	+14.979E+00W	-0.01750W	-0.11669 %	3.218%
P-1b	5.590V / 0.537A	12.5000V / 1.2000A	3.001090E+0W	+2.9968E+00W	-0.00429W	-0.14294 %	0.886%
P-2a	25.000V / 1.200A	25.0000V / 1.2000A	29.99650E+0W	+29.964E+00W	-0.03250W	-0.10834 %	2.988%
P-2b	11.180V / 0.537A	25.0000V / 1.2000A	6.003070E+0W	+5.9951E+00W	-0.00797W	-0.13276 %	0.823%
P-3a	60.000V / 1.200A	60.0000V / 1.2000A	71.99460E+0W	+71.919E+00W	-0.07560W	-0.10500 %	3.382%
P-3b	26.833V / 0.537A	60.0000V / 1.2000A	14.40910E+0W	+14.387E+00W	-0.02210W	-0.15337 %	1.135%

Geräte Typ: LMG45
Instrument type

Geräte Seriennummer: 12345678
ser. number

Protokollnummer: 12345678.2f
Certificate Ref

Meßwerte von Kanal 4 bei 53 Hz *measured values of channel 4 at 53 Hz*

P-4a	130.000V / 1.200A	130.0000V / 1.2000A	155.9840E+0W	+155.82E+00W	-0.16400W	-0.10513 %	3.620%
P-4b	58.138V / 0.537A	130.0000V / 1.2000A	31.21930E+0W	+31.144E+00W	-0.07530W	-0.24119 %	1.927%
P-5a	250.000V / 1.200A	250.0000V / 1.2000A	299.9770E+0W	+299.62E+00W	-0.35700W	-0.11900 %	3.966%
P-5b	111.803V / 0.537A	250.0000V / 1.2000A	60.03650E+0W	+59.973E+00W	-0.06350W	-0.10576 %	0.814%
P-6a	400.000V / 1.200A	400.0000V / 1.2000A	479.9700E+0W	+479.49E+00W	-0.48000W	-0.10000 %	2.758%
P-6b	178.885V / 0.537A	400.0000V / 1.2000A	96.05550E+0W	+95.904E+00W	-0.15150W	-0.15772 %	0.978%
P-7a	600.000V / 1.200A	600.0000V / 1.2000A	719.9270E+0W	+719.30E+00W	-0.62700W	-0.08709 %	1.866%
P-7b	268.328V / 0.537A	600.0000V / 1.2000A	144.0720E+0W	+143.83E+00W	-0.24200W	-0.16797 %	0.787%
P-8a	250.000V / 0.600A	250.0000V / 0.6000A	149.9900E+0W	+149.83E+00W	-0.16000W	-0.10667 %	3.555%
P-8b	111.803V / 0.268A	250.0000V / 0.6000A	29.95920E+0W	+29.866E+00W	-0.09320W	-0.31109 %	2.389%
P-9a	250.000V / 1.200A	250.0000V / 1.2000A	299.9830E+0W	+299.62E+00W	-0.36300W	-0.12100 %	4.033%
P-9b	111.803V / 0.537A	250.0000V / 1.2000A	60.03930E+0W	+59.886E+00W	-0.15330W	-0.25533 %	1.965%
P-10a	250.000V / 2.500A	250.0000V / 2.5000A	624.9030E+0W	+624.19E+00W	-0.71300W	-0.11409 %	3.933%
P-10b	111.803V / 1.118A	250.0000V / 2.5000A	124.9890E+0W	+124.77E+00W	-0.21900W	-0.17521 %	1.401%
P-11a	250.000V / 5.000A	250.0000V / 5.0000A	1.249810E+3W	+1.2492E+03W	-0.61000W	-0.04880 %	1.682%
P-11b	111.803V / 2.236A	250.0000V / 5.0000A	249.9680E+0W	+249.56E+00W	-0.40800W	-0.16322 %	1.305%
P-12a	250.000V / 9.000A	250.0000V / 10.0000A	2.249730E+3W	+2.2495E+03W	-0.23000W	-0.01022 %	0.322%
P-12b	111.803V / 4.025A	250.0000V / 10.0000A	449.9250E+0W	+449.25E+00W	-0.67500W	-0.15002 %	1.084%
P-13a	250.000V / 9.000A	250.0000V / 16.0000A	2.249670E+3W	+2.2493E+03W	-0.37000W	-0.01644 %	0.281%
P-13b	111.803V / 4.025A	250.0000V / 16.0000A	449.9120E+0W	+449.45E+00W	-0.46200W	-0.10268 %	0.377%
E-0a	6.000V / 1.200A / 30s	6.0000V / 1.2000A	59.98600E-3Wh	+59.857E-03Wh	-0.00012Wh	-0.21505 %	5.725%
E-0b	2.683V / 0.537A / 30s	6.0000V / 1.2000A	12.00370E-3Wh	+11.974E-03Wh	-0.00003Wh	-0.24742 %	1.475%