



Kalibrierschein / Calibration certificate



Deutsche
Akkreditierungsstelle
D-K-15070-01-01

erstellt durch das Kalibrierlaboratorium
issued by the calibration laboratory

Testo Industrial Services GmbH
Gewerbestr. 3
79199 Kirchzarten

Kalibrierzeichen
Calibration mark

MUSTER
D-K- 15070-01-01
2021-06

Gegenstand <i>Object</i>	Leistungsmessgerät
Hersteller <i>Manufacturer</i>	ZES ZIMMER Electronic Systems
Typ <i>Type</i>	LMG610
Fabrikat/Serien-Nr. <i>Serial no.</i>	12345
Equipment Nr. <i>Equipment no.</i>	12345678
Prüfmittel Nr. <i>Test equipment no.</i>	1234567
Auftraggeber <i>Customer</i>	Mustermann GmbH DE-12345 Musterhausen
Auftragsnummer <i>Order no.</i>	654321

Dieser Kalibrierschein dokumentiert die metrologische Rückführbarkeit auf das Internationale Einheitensystem (SI). Die DAkkS ist Unterzeichner der multilateralen Übereinkommen der European co-operation for Accreditation (EA) und der International Laboratory Accreditation Cooperation (ILAC) zur gegenseitigen Anerkennung der Kalibrierscheine. Die Messergebnisse beziehen sich nur auf den kalibrierten Gegenstand. Das Laboratorium gibt keine Empfehlung über das Kalibrierintervall. Für die Festlegung und Einhaltung von Fristen zur Wiederholung der Kalibrierung ist der Benutzer verantwortlich.

This calibration certificate documents the metrological traceability to the International System of Units (SI). The DAkkS is signatory to the multilateral agreements of the European co-operation for Accreditation (EA) and of the International Laboratory Accreditation Cooperation (ILAC) for the mutual recognition of calibration certificates. The measurement results refer only to the calibration object. The laboratory does not make any recommendation about the calibration interval. The user is obliged to have the object recalibrated at appropriate intervals.

Datum der Kalibrierung 14.06.2021
Date of calibration

Datum der Rekalibrierung 14.06.2022
Date of re-calibration

Konformitätsaussage Messwert(e) innerhalb der zulässigen Abweichung¹⁾.
Conformity Measured value(s) within the Allowed deviation¹⁾.

Detaillierte Informationen auf Seite 15 Messwert(e) ausserhalb der zulässigen Abweichung¹⁾.
Detailed information see page 15 Measured value(s) beyond the Allowed deviation¹⁾.

Dieser Kalibrierschein darf nur vollständig und unverändert weiterverbreitet werden. Auszüge oder Änderungen bedürfen der Genehmigung des ausstellenden Kalibrierlaboratoriums.
This calibration certificate may not be reproduced other than in full except with the permission of the issuing laboratory.

V 6.12 / DE

Datum der Ausstellung
Date of issue

Leiter des Kalibrierlaboratoriums
Head of the calibration laboratory

Freigabe des Kalibrierscheins durch
Approval of the certificate of calibration by

22.02.2022

Max Mustermann

Max Mustermann

Kalibrierschein vom Calibration certificate dated 22.02.2022

Kalibriergegenstand (KG) Calibration object

Gegenstand Object Leistungsmessgerät
 Inventar Nr. Inventory no. 123456
 Standort Location ---

Kalibrierverfahren Calibration procedure

Die Kalibrierung erfolgte in Anlehnung an VDI/VDE/DGQ/DKD 2622 „Kalibrieren von Messmitteln für elektrische Größen“, Blatt 24.1 "Leistungsmessgeräte im Gleichstrom- und Niederfrequenzbereich", Mai 2019.
 The calibration was performed following VDI/VDE/DGQ/DKD 2622 'Calibration of measuring equipment for electrical quantities', sheet 24.1 'DC and LF power meter', May 2019.

Verwendete Kalibrierprozedur Used calibration procedure E:ZIMMER:LMG610:6105,5700.cor,5220,5520:VISA / Rev.:4.3

Umgebungsbedingungen Ambient conditions

Temperatur Temperature (23 ± 3) °C
 Relative Luftfeuchte Relative humidity (20...70) %

Messeinrichtungen Measuring equipment

Referenz Reference	Rückführung Traceability	Rekal. Next cal.	Zertifikats Nr. Certificate-no.	Eq.-Nr. EQ-no.
Transconductance Amplifier 5220A	15070-01-01	2021-09	E135983	11098270
Frequenznormal 910R	GPS locked	---	Support device	11846061
Electrical Power Standard 6105A	15070-01-01	2021-10	E137731	13411466
Multifunction Calibrator 5700A	15070-01-01	2021-09	E135985	13488517
Transconductance Amplifier 52120A	15070-01-01	2022-02	E148542	13961641
Waveform Generator 33220A	15070-01-01	2021-09	E134485	14145279

Referenzzertifikate sind auf www.primasonline.com abrufbar Reference certificates are available at www.primasonline.com

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Bereich Range	Referenzwert (Normal) Reference value	Messbedingung Measuring condition	Angezeigter Wert KG Indicated value UUT	Zulässige Abweichung Allowed deviation	Ausnutzung der zul. Abw. in % Utilization of Allowed deviation %	Messunsicher- heit ($k=2$) Measuring uncertainty ($k=2$)
Nullpunktgleich wurde durchgeführt.						
Firmwarestand: firmware version: 2.003-R49909						
Geräteeinstellung device settings						
Filter off						
Bandwith full						
Cycletime 0.5						
Processing Dual Path						

Channel 1 ("L60-CH-A2")						
Gleichspannung DC voltage						
U*						
Sync: Wideband / U1						
6V	-2.999990V		-3.00031V	±0.005399V	6% pass	9.5 · 10 ⁻⁶
6V	0.000000V		0.00000V	±0.0048V	0% pass	5.8 μV
6V	3.000014V		3.00027V	±0.0054V	5% pass	9.7 · 10 ⁻⁶
12V	6.000021V		6.00047V	±0.0108V	4% pass	9.3 · 10 ⁻⁶
25V	12.50004V		12.5011V	±0.0225V	5% pass	9.3 · 10 ⁻⁶
25V	-12.50002V		-12.5014V	±0.0225V	6% pass	9.3 · 10 ⁻⁶
50V	25.00016V		25.0022V	±0.045V	5% pass	12 · 10 ⁻⁶
100V	60.00012V		60.0023V	±0.092V	2% pass	12 · 10 ⁻⁶
200V	10.00000V		9.9974V	±0.16199V	2% pass	13 · 10 ⁻⁶
200V	30.00015V		29.9989V	±0.166V	1% pass	12 · 10 ⁻⁶
200V	60.00012V		60.0015V	±0.172V	1% pass	12 · 10 ⁻⁶
200V	-59.99975V		-60.0113V	±0.17199V	7% pass	12 · 10 ⁻⁶
200V	90.00009V		90.0033V	±0.178V	2% pass	12 · 10 ⁻⁶
200V	-89.99972V		-90.0124V	±0.17799V	7% pass	12 · 10 ⁻⁶
200V	130.0000V		130.006V	±0.186V	3% pass	13 · 10 ⁻⁶
200V	-129.9997V		-130.015V	±0.1859V	8% pass	13 · 10 ⁻⁶
400V	250.0007V		250.018V	±0.37V	5% pass	12 · 10 ⁻⁶
800V	400.0002V		400.030V	±0.72V	4% pass	12 · 10 ⁻⁶
1600V	599.9996V		600.019V	±1.3999V	1% pass	12 · 10 ⁻⁶
3.2kV	0.999998kV		1.00005kV	±0.002759kV	2% pass	14 · 10 ⁻⁶
Sync: Narrow 15kHz / U1						
6V	-2.999990V		-3.00021V	±0.005399V	4% pass	9.4 · 10 ⁻⁶
6V	0.000000V		0.00000V	±0.0048V	0% pass	5.8 μV
6V	3.000014V		3.00019V	±0.0054V	3% pass	9.6 · 10 ⁻⁶

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Bereich Range	Referenzwert (Normal) Reference value	Messbedingung Measuring condition	Angezeigter Wert KG Indicated value UUT	Zulässige Abweichung Allowed deviation	Ausnutzung der zul. Abw. in % Utilization of Allowed deviation %	Messunsicher- heit ($k=2$) Measuring uncertainty ($k=2$)
12V	6.000021V		6.00037 V	±0.0108V	3% pass	9.2 · 10 ⁻⁶
25V	12.50004 V		12.5009 V	±0.0225V	4% pass	9.3 · 10 ⁻⁶
25V	-12.50002 V		-12.5010 V	±0.0225V	4% pass	9.3 · 10 ⁻⁶
50V	25.00016 V		25.0019 V	±0.045V	4% pass	12 · 10 ⁻⁶
100V	60.00012 V		60.0030 V	±0.092V	3% pass	12 · 10 ⁻⁶
200V	10.00000 V		9.9989 V	±0.16199V	1% pass	12 · 10 ⁻⁶
200V	30.00015 V		30.0001V	±0.166V	0% pass	13 · 10 ⁻⁶
200V	60.00012 V		60.0026 V	±0.172V	1% pass	12 · 10 ⁻⁶
200V	-59.99975 V		-60.0096 V	±0.17199V	6% pass	12 · 10 ⁻⁶
200V	90.00009 V		90.0043 V	±0.178V	2% pass	12 · 10 ⁻⁶
200V	-89.99972 V		-90.0111V	±0.17799V	6% pass	12 · 10 ⁻⁶
200V	130.0000 V		130.007 V	±0.186V	4% pass	13 · 10 ⁻⁶
200V	-129.9997 V		-130.014 V	±0.1859V	8% pass	13 · 10 ⁻⁶
400V	250.0007 V		250.017 V	±0.37V	4% pass	12 · 10 ⁻⁶
800V	400.0002 V		400.031V	±0.72V	4% pass	12 · 10 ⁻⁶
1600V	599.9996 V		600.021 V	±1.3999V	2% pass	12 · 10 ⁻⁶
3.2kV	0.999998 kV		1.00005 kV	±0.002759kV	2% pass	14 · 10 ⁻⁶
Wechselspannung AC voltage						
U*						
Sync: Wideband / U1						
6V	3.000000 V	50 Hz	3.00024 V	±0.0015V	16% pass	0.12 · 10 ⁻³
6V	3.000010 V	1 kHz	3.00026 V	±0.00225V	11% pass	58 · 10 ⁻⁶
6V	3.000000 V	10 kHz	2.99998 V	±0.0045V	0% pass	58 · 10 ⁻⁶
6V	3.000000 V	100 kHz	3.00296 V	±0.03V	10% pass	0.45 · 10 ⁻³
6V	3.000000 V	1 MHz	3.00691 V	±0.075V	9% pass	7.4 · 10 ⁻³
12V	6.000000 V	50 Hz	6.00052 V	±0.003V	17% pass	0.12 · 10 ⁻³
12V	6.000015 V	1 kHz	6.00051 V	±0.0045V	11% pass	54 · 10 ⁻⁶
12V	6.000015 V	10 kHz	5.99997 V	±0.009V	1% pass	54 · 10 ⁻⁶
12V	6.000000 V	100 kHz	6.00583 V	±0.06V	10% pass	0.45 · 10 ⁻³
12V	6.000000 V	1 MHz	6.01311 V	±0.15V	9% pass	7.4 · 10 ⁻³
25V	12.50000 V	50 Hz	12.5012 V	±0.00625V	19% pass	0.12 · 10 ⁻³
25V	12.50001 V	1 kHz	12.5013 V	±0.00937V	13% pass	52 · 10 ⁻⁶
25V	12.50000 V	10 kHz	12.5001 V	±0.01875V	0% pass	52 · 10 ⁻⁶
25V	12.50000 V	100 kHz	12.5113 V	±0.125V	9% pass	0.45 · 10 ⁻³
25V	12.50000 V	1 MHz	12.5265 V	±0.3125V	8% pass	7.4 · 10 ⁻³
50V	25.00000 V	50 Hz	25.0027 V	±0.0125V	22% pass	0.13 · 10 ⁻³
50V	25.00000 V	1 kHz	25.0030 V	±0.01875V	16% pass	0.13 · 10 ⁻³
50V	25.00000 V	10 kHz	25.0007 V	±0.0375V	2% pass	0.13 · 10 ⁻³
50V	25.00000 V	100 kHz	25.0272 V	±0.25V	11% pass	1.0 · 10 ⁻³
50V	25.00000 V	500 kHz	25.1682 V	±0.625V	27% pass	7.6 · 10 ⁻³
100V	60.00000 V	50 Hz	60.0057 V	±0.026V	22% pass	0.13 · 10 ⁻³
100V	60.00000 V	1 kHz	60.0056 V	±0.039V	15% pass	0.13 · 10 ⁻³
100V	60.00000 V	10 kHz	59.9991 V	±0.078V	1% pass	0.13 · 10 ⁻³
100V	60.00000 V	100 kHz	60.0474 V	±0.52V	9% pass	1.0 · 10 ⁻³
100V	60.00000 V	300 kHz	60.2762 V	±1.3V	21% pass	2.7 · 10 ⁻³
200V	130.0000 V	50 Hz	130.013 V	±0.053V	24% pass	0.13 · 10 ⁻³
200V	130.0000 V	1 kHz	130.013 V	±0.0795V	16% pass	0.13 · 10 ⁻³
200V	130.0000 V	10 kHz	129.999 V	±0.159V	1% pass	0.13 · 10 ⁻³
200V	130.0000 V	100 kHz	130.098 V	±1.06V	9% pass	1.0 · 10 ⁻³

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400V	250.0000 V	50 Hz	250.026 V	±0.105V	25% pass	0.12 · 10 ⁻³
400V	250.0000 V	500 Hz	250.025 V	±0.1575V	16% pass	0.12 · 10 ⁻³
400V	250.0000 V	1 kHz	250.027 V	±0.1575V	17% pass	0.12 · 10 ⁻³
800V	400.0000 V	50 Hz	400.036 V	±0.2V	18% pass	0.12 · 10 ⁻³
800V	400.0000 V	500 Hz	400.038 V	±0.3V	13% pass	0.12 · 10 ⁻³
800V	400.0000 V	1 kHz	400.041V	±0.3V	14% pass	0.12 · 10 ⁻³
1600V	600.0000 V	50 Hz	600.036 V	±0.38V	10% pass	0.12 · 10 ⁻³
1600V	600.0000 V	500 Hz	600.040 V	±0.57V	7% pass	0.12 · 10 ⁻³
1600V	600.0000 V	1 kHz	600.042 V	±0.57V	7% pass	0.12 · 10 ⁻³
3.2kV	1.000006 kV	50 Hz	1.00003 kV	±0.00074kV	3% pass	72 · 10 ⁻⁶
3.2kV	1.000003 kV	500 Hz	1.00002 kV	±0.00111kV	1% pass	72 · 10 ⁻⁶
3.2kV	1.000016 kV	1 kHz	1.00002 kV	±0.00111kV	0% pass	72 · 10 ⁻⁶
Sync: Narrow 15kHz / U1						
6V	3.000000 V	50 Hz	3.00005 V	±0.0015V	3% pass	0.12 · 10 ⁻³
6V	3.000010 V	1 kHz	3.00013 V	±0.00225V	5% pass	58 · 10 ⁻⁶
6V	3.000000 V	10 kHz	2.99991 V	±0.0045V	2% pass	58 · 10 ⁻⁶
12V	6.000000 V	50 Hz	6.00033 V	±0.003V	11% pass	0.12 · 10 ⁻³
12V	6.000015 V	1 kHz	6.00035 V	±0.0045V	8% pass	54 · 10 ⁻⁶
12V	6.000015 V	10 kHz	5.99987 V	±0.009V	2% pass	54 · 10 ⁻⁶
25V	12.50000 V	50 Hz	12.5009 V	±0.00625V	15% pass	0.12 · 10 ⁻³
25V	12.50001 V	1 kHz	12.5010 V	±0.00937V	11% pass	52 · 10 ⁻⁶
25V	12.50000 V	10 kHz	12.4999 V	±0.01875V	0% pass	52 · 10 ⁻⁶
50V	25.00000 V	50 Hz	25.0024 V	±0.0125V	19% pass	0.13 · 10 ⁻³
50V	25.00000 V	1 kHz	25.0027 V	±0.01875V	15% pass	0.13 · 10 ⁻³
50V	25.00000 V	10 kHz	25.0004 V	±0.0375V	1% pass	0.13 · 10 ⁻³
100V	60.00000 V	50 Hz	60.0051 V	±0.026V	20% pass	0.13 · 10 ⁻³
100V	60.00000 V	1 kHz	60.0051 V	±0.039V	13% pass	0.13 · 10 ⁻³
100V	60.00000 V	10 kHz	59.9985 V	±0.078V	2% pass	0.13 · 10 ⁻³
200V	130.0000 V	50 Hz	130.011 V	±0.053V	22% pass	0.13 · 10 ⁻³
200V	130.0000 V	1 kHz	130.012 V	±0.0795V	16% pass	0.13 · 10 ⁻³
200V	130.0000 V	10 kHz	129.998 V	±0.159V	1% pass	0.13 · 10 ⁻³
400V	250.0000 V	50 Hz	250.023 V	±0.105V	22% pass	0.12 · 10 ⁻³
400V	250.0000 V	500 Hz	250.026 V	±0.1575V	17% pass	0.12 · 10 ⁻³
400V	250.0000 V	1 kHz	250.028 V	±0.1575V	18% pass	0.12 · 10 ⁻³
800V	400.0000 V	50 Hz	400.038 V	±0.2V	19% pass	0.12 · 10 ⁻³
800V	400.0000 V	500 Hz	400.040 V	±0.3V	13% pass	0.12 · 10 ⁻³
800V	400.0000 V	1 kHz	400.042 V	±0.3V	14% pass	0.12 · 10 ⁻³
1600V	600.0000 V	50 Hz	600.045 V	±0.38V	12% pass	0.12 · 10 ⁻³
1600V	600.0000 V	500 Hz	600.041 V	±0.57V	7% pass	0.12 · 10 ⁻³
1600V	600.0000 V	1 kHz	600.043 V	±0.57V	8% pass	0.12 · 10 ⁻³
3.2kV	1.000006 kV	50 Hz	1.00002 kV	±0.00074kV	2% pass	72 · 10 ⁻⁶
3.2kV	1.000003 kV	500 Hz	1.00002 kV	±0.00111kV	1% pass	72 · 10 ⁻⁶
3.2kV	1.000016 kV	1 kHz	1.00001 kV	±0.00111kV	0% pass	72 · 10 ⁻⁶
Frequenz Frequency						
U* ("full band")						
	50.00000 Hz	5 V	49.9998 Hz	±0.0025Hz	7% pass	20 · 10 ⁻⁶
	1.000000 kHz	5 V	1.00000 kHz	±0.00005kHz	8% pass	21 · 10 ⁻⁶

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	10.00000 kHz	5 V	10.0000 kHz	± 0.0005 kHz	8% pass	$21 \cdot 10^{-6}$
	50.00000 kHz	5 V	49.9998 kHz	± 0.0025 kHz	8% pass	$20 \cdot 10^{-6}$
Gleichspannung DC voltage						
USensor						
Sync: Wideband / U1						
250mV	250.0005 mV		250.009 mV	± 0.25 mV	3% pass	$15 \cdot 10^{-6}$
500mV	500.0010 mV		499.938 mV	± 0.5 mV	13% pass	$13 \cdot 10^{-6}$
1V	1.000002 V		0.99998 V	± 0.001 V	2% pass	$12 \cdot 10^{-6}$
2V	2.000014 V		2.00002 V	± 0.002 V	0% pass	$10 \cdot 10^{-6}$
4V	4.000015 V		4.00007 V	± 0.004 V	1% pass	$12 \cdot 10^{-6}$
Sync: Narrow 15kHz / U1						
250mV	250.0005 mV		250.009 mV	± 0.25 mV	3% pass	$15 \cdot 10^{-6}$
500mV	500.0010 mV		499.944 mV	± 0.5 mV	11% pass	$12 \cdot 10^{-6}$
1V	1.000002 V		0.99998 V	± 0.001 V	2% pass	$12 \cdot 10^{-6}$
2V	2.000014 V		2.00002 V	± 0.002 V	0% pass	$10 \cdot 10^{-6}$
4V	4.000015 V		4.00008 V	± 0.004 V	2% pass	$12 \cdot 10^{-6}$
Wechselspannung AC voltage						
USensor						
Sync: Wideband / U1						
250mV	250.0000 mV	50 Hz	250.009 mV	± 0.075 mV	12% pass	$0.16 \cdot 10^{-3}$
250mV	250.0000 mV	1 kHz	250.009 mV	± 0.1125 mV	8% pass	$0.16 \cdot 10^{-3}$
250mV	250.0000 mV	10 kHz	249.985 mV	± 0.225 mV	7% pass	$0.16 \cdot 10^{-3}$
500mV	500.0000 mV	50 Hz	500.012 mV	± 0.15 mV	8% pass	$0.16 \cdot 10^{-3}$
500mV	500.0000 mV	1 kHz	500.009 mV	± 0.225 mV	4% pass	$0.16 \cdot 10^{-3}$
500mV	500.0000 mV	10 kHz	500.167 mV	± 0.45 mV	37% pass	$0.16 \cdot 10^{-3}$
1V	1.000006 V	50 Hz	1.00004 V	± 0.0003 V	11% pass	$68 \cdot 10^{-6}$
1V	0.999999 V	1 kHz	1.00004 V	± 0.000449 V	9% pass	$68 \cdot 10^{-6}$
1V	1.000002 V	10 kHz	1.00035 V	± 0.0009 V	39% pass	$68 \cdot 10^{-6}$
2V	2.000000 V	50 Hz	2.00010 V	± 0.0006 V	17% pass	$0.16 \cdot 10^{-3}$
2V	2.000000 V	1 kHz	2.00009 V	± 0.0009 V	9% pass	$0.16 \cdot 10^{-3}$
2V	2.000000 V	10 kHz	2.00070 V	± 0.0018 V	39% pass	$0.16 \cdot 10^{-3}$
4V	4.000000 V	50 Hz	4.00018 V	± 0.0012 V	15% pass	$0.16 \cdot 10^{-3}$
4V	3.999995 V	1 kHz	4.00017 V	± 0.001799 V	9% pass	$72 \cdot 10^{-6}$
4V	3.999990 V	10 kHz	4.00139 V	± 0.003599 V	39% pass	$72 \cdot 10^{-6}$
Sync: Narrow 15kHz / U1						
250mV	250.0000 mV	50 Hz	250.010 mV	± 0.075 mV	13% pass	$0.16 \cdot 10^{-3}$
250mV	250.0000 mV	1 kHz	250.007 mV	± 0.1125 mV	7% pass	$0.16 \cdot 10^{-3}$
250mV	250.0000 mV	10 kHz	249.984 mV	± 0.225 mV	7% pass	$0.16 \cdot 10^{-3}$
500mV	500.0000 mV	50 Hz	500.009 mV	± 0.15 mV	6% pass	$0.16 \cdot 10^{-3}$
500mV	500.0000 mV	1 kHz	500.008 mV	± 0.225 mV	4% pass	$0.16 \cdot 10^{-3}$
500mV	500.0000 mV	10 kHz	500.175 mV	± 0.45 mV	39% pass	$0.16 \cdot 10^{-3}$
1V	1.000006 V	50 Hz	1.00004 V	± 0.001 V	3% pass	$68 \cdot 10^{-6}$
1V	0.999999 V	1 kHz	1.00004 V	± 0.000449 V	10% pass	$68 \cdot 10^{-6}$
1V	1.000002 V	10 kHz	1.00036 V	± 0.0009 V	40% pass	$68 \cdot 10^{-6}$

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2 V	2.000000 V	50 Hz	2.00010 V	±0.0006V	17% pass	0.16 · 10 ⁻³
2 V	2.000000 V	1 kHz	2.00010 V	±0.0009V	11% pass	0.16 · 10 ⁻³
2 V	2.000000 V	10 kHz	2.00072 V	±0.0018V	40% pass	0.16 · 10 ⁻³
4 V	4.000000 V	50 Hz	4.00019 V	±0.0012V	16% pass	0.16 · 10 ⁻³
4 V	3.999995 V	1 kHz	4.00018 V	±0.001799V	10% pass	72 · 10 ⁻⁶
4 V	3.999990 V	10 kHz	4.00141V	±0.003599V	39% pass	72 · 10 ⁻⁶
Strommessung erfolgt über äquivalente Spannungseinkopplung am ISensor Kanal 1						
Gleichstromstärke DC current						
ISensor						
Sensor(1V=1A) Scale 1.0000						
Sync: Wideband / I1						
781.3mA	250.0005 mA		249.993 mA	±0.675mA	1% pass	12 · 10 ⁻⁶
1563mA	500.0010 mA		499.939 mA	±1.3504mA	5% pass	9.6 · 10 ⁻⁶
3.125A	1.000002 A		0.99996 A	±0.0027A	1% pass	10 · 10 ⁻⁶
6.25A	2.000014 A		1.99995 A	±0.0054A	1% pass	8.1 · 10 ⁻⁶
12.5A	4.000015 A		3.99991A	±0.0108A	1% pass	9.2 · 10 ⁻⁶
Sync: Narrow 15kHz / I1						
781.3mA	250.0005 mA		249.994 mA	±0.675mA	1% pass	11 · 10 ⁻⁶
1563mA	500.0010 mA		499.957 mA	±1.3504mA	3% pass	9.7 · 10 ⁻⁶
3.125A	1.000002 A		0.99997 A	±0.0027 A	1% pass	10 · 10 ⁻⁶
6.25 A	2.000014 A		1.99997 A	±0.0054 A	1% pass	8.1 · 10 ⁻⁶
12.5 A	4.000015 A		3.99991 A	±0.0108 A	1% pass	9.2 · 10 ⁻⁶
Wechselstromstärke AC current						
Sensor(1V=1A) Scale 1.0000						
Sync: Wideband / I1						
781.3mA	250.0000 mA	50 Hz	249.997 mA	±0.1812mA	2% pass	0.12 · 10 ⁻³
781.3mA	250.0000 mA	1 kHz	249.995 mA	±0.2718mA	2% pass	0.12 · 10 ⁻³
781.3mA	250.0000 mA	10 kHz	249.968 mA	±0.5437mA	6% pass	0.12 · 10 ⁻³
781.3mA	250.0000 mA	100 kHz	249.780 mA	±3.6252mA	6% pass	0.70 · 10 ⁻³
1563mA	500.0000 mA	50 Hz	499.985 mA	±0.3626mA	4% pass	0.12 · 10 ⁻³
1563mA	500.0000 mA	1 kHz	499.984 mA	±0.5439mA	3% pass	0.12 · 10 ⁻³
1563mA	500.0000 mA	10 kHz	500.111 mA	±1.0878mA	10% pass	0.12 · 10 ⁻³
1563mA	500.0000 mA	100 kHz	502.567 mA	±7.252mA	35% pass	0.70 · 10 ⁻³
3.125 A	1.000006 A	50 Hz	0.99997 A	±0.000725 A	5% pass	53 · 10 ⁻⁶
3.125 A	0.999999 A	1 kHz	0.99997 A	±0.001087 A	2% pass	53 · 10 ⁻⁶
3.125 A	1.000002 A	10 kHz	1.00023 A	±0.002175 A	10% pass	53 · 10 ⁻⁶
3.125 A	0.999990 A	100 kHz	1.00508 A	±0.014499 A	35% pass	0.14 · 10 ⁻³
6.25 A	2.000000 A	50 Hz	1.99995 A	±0.00145 A	4% pass	0.12 · 10 ⁻³
6.25 A	2.000000 A	1 kHz	1.99994 A	±0.002175 A	3% pass	0.12 · 10 ⁻³
6.25 A	2.000000 A	10 kHz	2.00045 A	±0.00435 A	10% pass	0.12 · 10 ⁻³
6.25 A	2.000000 A	100 kHz	2.01016 A	±0.029 A	35% pass	0.70 · 10 ⁻³
12.5 A	4.000000 A	50 Hz	3.99986 A	±0.0029 A	5% pass	0.12 · 10 ⁻³

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Bereich Range	Referenzwert (Normal) Reference value	Messbedingung Measuring condition	Angezeigter Wert KG Indicated value UUT	Zulässige Abweichung Allowed deviation	Ausnutzung der zul. Abw. in % Utilization of Allowed deviation %	Messunsicher- heit ($k=2$) Measuring uncertainty ($k=2$)
12.5 A	3.999995 A	1 kHz	3.99985 A	± 0.004349 A	3% pass	$56 \cdot 10^{-6}$
12.5 A	3.999990 A	10 kHz	4.00087 A	± 0.008699 A	10% pass	$56 \cdot 10^{-6}$
12.5 A	4.000000 A	100 kHz	4.02052 A	± 0.058 A	35% pass	$0.45 \cdot 10^{-3}$
Sync: Narrow 15kHz / I1						
781.3 mA	250.0000 mA	50 Hz	249.998 mA	± 0.1812 mA	1% pass	$0.12 \cdot 10^{-3}$
781.3 mA	250.0000 mA	1 kHz	249.995 mA	± 0.2718 mA	2% pass	$0.12 \cdot 10^{-3}$
781.3 mA	250.0000 mA	10 kHz	249.963 mA	± 0.5437 mA	7% pass	$0.12 \cdot 10^{-3}$
1563 mA	500.0000 mA	50 Hz	499.989 mA	± 0.3626 mA	3% pass	$0.12 \cdot 10^{-3}$
1563 mA	500.0000 mA	1 kHz	499.984 mA	± 0.5439 mA	3% pass	$0.12 \cdot 10^{-3}$
1563 mA	500.0000 mA	10 kHz	500.108 mA	± 1.0878 mA	10% pass	$0.12 \cdot 10^{-3}$
3.125 A	1.000006 A	50 Hz	0.99997 A	± 0.000725 A	5% pass	$53 \cdot 10^{-6}$
3.125 A	0.999999 A	1 kHz	0.99997 A	± 0.001087 A	3% pass	$53 \cdot 10^{-6}$
3.125 A	1.000002 A	10 kHz	1.00022 A	± 0.002175 A	10% pass	$53 \cdot 10^{-6}$
6.25 A	2.000000 A	50 Hz	1.99995 A	± 0.00145 A	4% pass	$0.12 \cdot 10^{-3}$
6.25 A	2.000000 A	1 kHz	1.99993 A	± 0.002175 A	3% pass	$0.12 \cdot 10^{-3}$
6.25 A	2.000000 A	10 kHz	2.00045 A	± 0.00435 A	10% pass	$0.12 \cdot 10^{-3}$
12.5 A	4.000000 A	50 Hz	3.99985 A	± 0.0029 A	5% pass	$0.12 \cdot 10^{-3}$
12.5 A	3.999995 A	1 kHz	3.99984 A	± 0.004349 A	4% pass	$56 \cdot 10^{-6}$
12.5 A	3.999990 A	10 kHz	4.00086 A	± 0.008699 A	10% pass	$56 \cdot 10^{-6}$
Gleichstromstärke DC current						
I*						
Sync: Wideband / I1						
14 mA	0.000000 mA		0.00000 mA	± 0.014 mA	0% pass	5.8 nA
14 mA	5.000020 mA		4.99895 mA	± 0.015 mA	7% pass	$37 \cdot 10^{-6}$
28 mA	10.00009 mA		9.9985 mA	± 0.03 mA	5% pass	$27 \cdot 10^{-6}$
56 mA	20.00024 mA		19.9968 mA	± 0.06 mA	6% pass	$28 \cdot 10^{-6}$
112 mA	40.00075 mA		39.9950 mA	± 0.12 mA	5% pass	$37 \cdot 10^{-6}$
224 mA	80.00174 mA		79.9916 mA	± 0.24 mA	4% pass	$30 \cdot 10^{-6}$
469 mA	150.0034 mA		149.953 mA	± 0.499 mA	10% pass	$44 \cdot 10^{-6}$
469 mA	-150.0039 mA		-150.059 mA	± 0.499 mA	11% pass	$62 \cdot 10^{-6}$
938 mA	300.0073 mA		299.940 mA	± 0.998 mA	7% pass	$67 \cdot 10^{-6}$
938 mA	-300.0098 mA		-300.040 mA	± 0.998 mA	3% pass	$67 \cdot 10^{-6}$
1875 mA	600.0215 mA		599.936 mA	± 1.995 mA	4% pass	$50 \cdot 10^{-6}$
1875 mA	-600.0243 mA		-600.049 mA	± 1.995 mA	1% pass	$50 \cdot 10^{-6}$
3.75 A	1.200045 A		1.19980 A	± 0.00399 A	6% pass	$50 \cdot 10^{-6}$
3.75 A	-1.200054 A		-1.20017 A	± 0.00399 A	3% pass	$56 \cdot 10^{-6}$
7.5 A	2.000064 A		1.99976 A	± 0.0079 A	4% pass	$47 \cdot 10^{-6}$
15 A	4.999530 A		4.99966 A	± 0.015999 A	1% pass	$0.10 \cdot 10^{-3}$
30 A	9.99880 A		9.9976 A	± 0.03699 A	3% pass	$0.10 \cdot 10^{-3}$
60 A	19.9981 A		20.000 A	± 0.0839 A	2% pass	$0.11 \cdot 10^{-3}$
120 A	32.0000 A		32.010 A	± 0.1398 A	7% pass	$0.42 \cdot 10^{-3}$
Sync: Narrow 15kHz / I1						
14 mA	0.000000 mA		0.00000 mA	± 0.014 mA	0% pass	5.8 nA
14 mA	5.000020 mA		4.99926 mA	± 0.015 mA	5% pass	$38 \cdot 10^{-6}$
28 mA	10.00009 mA		9.9996 mA	± 0.03 mA	1% pass	$27 \cdot 10^{-6}$
56 mA	20.00024 mA		19.9971 mA	± 0.06 mA	5% pass	$31 \cdot 10^{-6}$

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Bereich Range	Referenzwert (Normal) Reference value	Messbedingung Measuring condition	Angezeigter Wert KG Indicated value UUT	Zulässige Abweichung Allowed deviation	Ausnutzung der zul. Abw. in % Utilization of Allowed deviation %	Messunsicher- heit ($k=2$) Measuring uncertainty ($k=2$)
112 mA	40.00075 mA		39.9979 mA	±0.12 mA	2% pass	36 · 10 ⁻⁶
224 mA	80.00174 mA		79.9992 mA	±0.24 mA	1% pass	31 · 10 ⁻⁶
469 mA	150.0034 mA		149.963 mA	±0.499 mA	8% pass	48 · 10 ⁻⁶
469 mA	-150.0039 mA		-150.030 mA	±0.499 mA	5% pass	46 · 10 ⁻⁶
938 mA	300.0073 mA		299.980 mA	±0.998 mA	3% pass	68 · 10 ⁻⁶
938 mA	-300.0098 mA		-300.035 mA	±0.998 mA	3% pass	68 · 10 ⁻⁶
1875 mA	600.0215 mA		599.992 mA	±1.995 mA	1% pass	50 · 10 ⁻⁶
1875 mA	-600.0243 mA		-600.047 mA	±1.995 mA	1% pass	50 · 10 ⁻⁶
3.75 A	1.200045 A		1.19990 A	±0.00399 A	4% pass	59 · 10 ⁻⁶
3.75 A	-1.200054 A		-1.20017 A	±0.00399 A	3% pass	49 · 10 ⁻⁶
7.5 A	2.000064 A		1.99996 A	±0.0079 A	1% pass	46 · 10 ⁻⁶
15 A	4.999530 A		4.99960 A	±0.015999 A	0% pass	0.10 · 10 ⁻³
30 A	9.99880 A		9.9981 A	±0.03699 A	2% pass	0.10 · 10 ⁻³
60 A	19.9981 A		19.999 A	±0.0839 A	2% pass	0.11 · 10 ⁻³
120 A	32.0000 A		32.009 A	±0.1398 A	7% pass	0.42 · 10 ⁻³
Wechselstromstärke AC current						
I*						
Sync: Wideband / I1						
14 mA	4.999900 mA	40 Hz	5.00047 mA	±0.004949 mA	12% pass	91 · 10 ⁻⁶
14 mA	4.999897 mA	55 Hz	5.00044 mA	±0.003299 mA	16% pass	91 · 10 ⁻⁶
14 mA	4.999900 mA	1 kHz	5.00016 mA	±0.004949 mA	5% pass	90 · 10 ⁻⁶
14 mA	5.002200 mA	10 kHz	5.00115 mA	±0.0099 mA	11% pass	1.2 · 10 ⁻³
28 mA	9.99970 mA	40 Hz	10.0005 mA	±0.00989 mA	8% pass	76 · 10 ⁻⁶
28 mA	9.99970 mA	55 Hz	10.0005 mA	±0.00659 mA	12% pass	76 · 10 ⁻⁶
28 mA	9.99970 mA	1 kHz	10.0000 mA	±0.00989 mA	3% pass	75 · 10 ⁻⁶
28 mA	10.01000 mA	10 kHz	10.0013 mA	±0.0198 mA	44% pass	0.94 · 10 ⁻³
56 mA	19.99970 mA	40 Hz	20.0005 mA	±0.01979 mA	4% pass	68 · 10 ⁻⁶
56 mA	19.99968 mA	55 Hz	20.0004 mA	±0.01319 mA	5% pass	68 · 10 ⁻⁶
56 mA	19.99890 mA	1 kHz	19.9997 mA	±0.01979 mA	4% pass	68 · 10 ⁻⁶
56 mA	20.00930 mA	10 kHz	20.0014 mA	±0.0396 mA	20% pass	0.79 · 10 ⁻³
112 mA	19.99970 mA	40 Hz	20.0006 mA	±0.03659 mA	2% pass	68 · 10 ⁻⁶
112 mA	19.99968 mA	55 Hz	20.0004 mA	±0.02439 mA	3% pass	68 · 10 ⁻⁶
112 mA	19.99890 mA	1 kHz	19.9998 mA	±0.03659 mA	2% pass	68 · 10 ⁻⁶
112 mA	20.00930 mA	10 kHz	20.0015 mA	±0.0732 mA	11% pass	0.79 · 10 ⁻³
224 mA	49.99900 mA	40 Hz	50.0000 mA	±0.07469 mA	1% pass	90 · 10 ⁻⁶
224 mA	49.99897 mA	55 Hz	49.9995 mA	±0.04979 mA	1% pass	90 · 10 ⁻⁶
224 mA	49.99900 mA	1 kHz	49.9982 mA	±0.07469 mA	1% pass	90 · 10 ⁻⁶
224 mA	50.09900 mA	10 kHz	50.0236 mA	±0.14942 mA	51% pass	1.2 · 10 ⁻³
469 mA	99.9990 mA	40 Hz	99.999 mA	±0.1556 mA	0% pass	76 · 10 ⁻⁶
469 mA	99.9990 mA	55 Hz	99.999 mA	±0.1037 mA	0% pass	75 · 10 ⁻⁶
469 mA	99.9980 mA	1 kHz	99.997 mA	±0.1556 mA	1% pass	75 · 10 ⁻⁶
469 mA	100.1050 mA	10 kHz	100.056 mA	±0.3114 mA	16% pass	0.94 · 10 ⁻³
938 mA	200.0020 mA	40 Hz	199.996 mA	±0.3114 mA	2% pass	68 · 10 ⁻⁶
938 mA	200.0018 mA	55 Hz	199.995 mA	±0.2076 mA	4% pass	68 · 10 ⁻⁶
938 mA	199.9930 mA	1 kHz	199.990 mA	±0.3113 mA	1% pass	68 · 10 ⁻⁶
938 mA	200.0220 mA	5 kHz	200.020 mA	±0.6228 mA	0% pass	0.32 · 10 ⁻³
1875 mA	500.0000 mA	40 Hz	500.003 mA	±0.6375 mA	0% pass	0.29 · 10 ⁻³
1875 mA	500.0000 mA	55 Hz	499.997 mA	±0.425 mA	1% pass	0.29 · 10 ⁻³
1875 mA	499.9900 mA	1 kHz	499.994 mA	±0.6374 mA	1% pass	0.29 · 10 ⁻³

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Bereich Range	Referenzwert (Normal) Reference value	Messbedingung Measuring condition	Angezeigter Wert KG Indicated value UUT	Zulässige Abweichung Allowed deviation	Ausnutzung der zul. Abw. in % Utilization of Allowed deviation %	Messunsicher- heit ($k=2$) Measuring uncertainty ($k=2$)
1875mA	499.9200 mA	5 kHz	500.018 mA	±1.2749mA	8% pass	0.36 · 10 ⁻³
3.75A	1.000020 A	40 Hz	1.00003 A	±0.001275A	0% pass	0.28 · 10 ⁻³
3.75A	1.000020 A	55 Hz	1.00002 A	±0.00085A	0% pass	0.28 · 10 ⁻³
3.75A	1.000000 A	1 kHz	0.99998 A	±0.001275A	1% pass	0.28 · 10 ⁻³
3.75A	0.999860 A	5 kHz	1.00001A	±0.002549A	6% pass	0.33 · 10 ⁻³
7.5A	2.000040 A	40 Hz	2.00007 A	±0.00255A	1% pass	0.27 · 10 ⁻³
7.5A	2.000037 A	55 Hz	2.00004 A	±0.0017A	0% pass	0.27 · 10 ⁻³
7.5A	1.999930 A	1 kHz	1.99992 A	±0.002549A	0% pass	0.27 · 10 ⁻³
7.5A	1.999620 A	5 kHz	2.00006 A	±0.005099A	9% pass	0.32 · 10 ⁻³
15A	4.99942 A	40 Hz	5.0015 A	±0.00524A	39% pass	0.44 · 10 ⁻³
15A	4.99961A	55 Hz	5.0009 A	±0.00349A	37% pass	0.37 · 10 ⁻³
15A	5.00069 A	1 kHz	5.0013 A	±0.00525A	11% pass	0.36 · 10 ⁻³
30A	9.99965 A	40 Hz	10.0006 A	±0.01349A	7% pass	0.34 · 10 ⁻³
30A	10.00036 A	55 Hz	10.0005 A	±0.01A	1% pass	0.34 · 10 ⁻³
30A	10.00227 A	1 kHz	10.0022 A	±0.0135A	1% pass	0.32 · 10 ⁻³
30A	10.01167 A	5 kHz	10.0241 A	±0.07301A	17% pass	1.6 · 10 ⁻³
60A	20.00018 A	40 Hz	20.0066 A	±0.033A	19% pass	0.30 · 10 ⁻³
60A	20.00019 A	55 Hz	20.0068 A	±0.026A	26% pass	0.30 · 10 ⁻³
60A	20.00440 A	1 kHz	20.0073 A	±0.033A	9% pass	0.30 · 10 ⁻³
60A	20.02496 A	5 kHz	20.0437 A	±0.15202A	12% pass	1.5 · 10 ⁻³
120A	32.0000 A	55 Hz	32.013 A	±0.0554A	23% pass	0.17 · 10 ⁻³
120A	32.0000 A	800 Hz	32.018 A	±0.1618A	11% pass	0.17 · 10 ⁻³
Sync: Narrow 15kHz / I1						
14 mA	4.999900 mA	40 Hz	5.00063 mA	±0.004949 mA	15% pass	0.12 · 10 ⁻³
14 mA	4.999897 mA	55 Hz	5.00055 mA	±0.005699 mA	11% pass	0.12 · 10 ⁻³
14 mA	4.999900 mA	1 kHz	5.00031 mA	±0.004949 mA	8% pass	0.12 · 10 ⁻³
14 mA	5.002200 mA	10 kHz	5.00141 mA	±0.0099 mA	8% pass	1.6 · 10 ⁻³
28 mA	9.99970 mA	40 Hz	10.0006 mA	±0.00989 mA	10% pass	97 · 10 ⁻⁶
28 mA	9.99970 mA	55 Hz	10.0006 mA	±0.01139 mA	8% pass	97 · 10 ⁻⁶
28 mA	9.99970 mA	1 kHz	10.0001 mA	±0.00989 mA	4% pass	97 · 10 ⁻⁶
28 mA	10.01000 mA	10 kHz	10.0015 mA	±0.0198 mA	43% pass	1.2 · 10 ⁻³
56 mA	19.99970 mA	40 Hz	20.0007 mA	±0.01979 mA	5% pass	87 · 10 ⁻⁶
56 mA	19.99968 mA	55 Hz	20.0006 mA	±0.02279 mA	4% pass	87 · 10 ⁻⁶
56 mA	19.99890 mA	1 kHz	19.9999 mA	±0.01979 mA	5% pass	87 · 10 ⁻⁶
56 mA	20.00930 mA	10 kHz	20.0018 mA	±0.0396 mA	19% pass	1.0 · 10 ⁻³
112 mA	19.99970 mA	40 Hz	20.0006 mA	±0.03659 mA	2% pass	87 · 10 ⁻⁶
112 mA	19.99968 mA	55 Hz	20.0005 mA	±0.03959 mA	2% pass	88 · 10 ⁻⁶
112 mA	19.99890 mA	1 kHz	19.9998 mA	±0.03659 mA	3% pass	87 · 10 ⁻⁶
112 mA	20.00930 mA	10 kHz	20.0018 mA	±0.0732 mA	10% pass	1.0 · 10 ⁻³
224 mA	49.99900 mA	40 Hz	50.0001 mA	±0.07469 mA	2% pass	0.12 · 10 ⁻³
224 mA	49.99897 mA	55 Hz	49.9997 mA	±0.08219 mA	1% pass	0.12 · 10 ⁻³
224 mA	49.99900 mA	1 kHz	49.9985 mA	±0.07469 mA	1% pass	0.12 · 10 ⁻³
224 mA	50.09900 mA	10 kHz	50.0243 mA	±0.14942 mA	50% pass	1.6 · 10 ⁻³
469 mA	99.9990 mA	40 Hz	99.999 mA	±0.1556 mA	0% pass	97 · 10 ⁻⁶
469 mA	99.9990 mA	55 Hz	99.998 mA	±0.1706 mA	1% pass	97 · 10 ⁻⁶
469 mA	99.9980 mA	1 kHz	99.997 mA	±0.1556 mA	1% pass	97 · 10 ⁻⁶
469 mA	100.1050 mA	10 kHz	100.055 mA	±0.3114 mA	16% pass	1.2 · 10 ⁻³
938 mA	200.0020 mA	40 Hz	199.996 mA	±0.3114 mA	2% pass	88 · 10 ⁻⁶
938 mA	200.0018 mA	55 Hz	199.994 mA	±0.3414 mA	2% pass	87 · 10 ⁻⁶

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Bereich Range	Referenzwert (Normal) Reference value	Messbedingung Measuring condition	Angezeigter Wert KG Indicated value UUT	Zulässige Abweichung Allowed deviation	Ausnutzung der zul. Abw. in % Utilization of Allowed deviation %	Messunsicher- heit ($k=2$) Measuring uncertainty ($k=2$)
938mA	199.9930 mA	1 kHz	199.989 mA	±0.3113mA	1% pass	87 · 10 ⁻⁶
938mA	200.0220 mA	5 kHz	200.017 mA	±0.6228mA	1% pass	0.41 · 10 ⁻³
1875mA	500.0000 mA	40 Hz	500.000 mA	±0.6375mA	0% pass	0.37 · 10 ⁻³
1875mA	500.0000 mA	55 Hz	499.995 mA	±0.7125mA	1% pass	0.37 · 10 ⁻³
1875mA	499.9900 mA	1 kHz	499.992 mA	±0.6374mA	0% pass	0.37 · 10 ⁻³
1875mA	499.9200 mA	5 kHz	500.009 mA	±1.2749mA	7% pass	0.46 · 10 ⁻³
3.75A	1.000020 A	40 Hz	1.00003 A	±0.001275A	1% pass	0.36 · 10 ⁻³
3.75A	1.000020 A	55 Hz	1.00003 A	±0.001425A	1% pass	0.36 · 10 ⁻³
3.75A	1.000000 A	1 kHz	0.99998 A	±0.001275A	1% pass	0.36 · 10 ⁻³
3.75A	0.999860 A	5 kHz	1.00000 A	±0.002549A	5% pass	0.43 · 10 ⁻³
7.5A	2.000040 A	40 Hz	2.00006 A	±0.00255A	1% pass	0.35 · 10 ⁻³
7.5A	2.000037 A	55 Hz	2.00004 A	±0.00285A	0% pass	0.35 · 10 ⁻³
7.5A	1.999930 A	1 kHz	1.99991A	±0.002549A	1% pass	0.35 · 10 ⁻³
7.5A	1.999620 A	5 kHz	2.00003 A	±0.005099A	8% pass	0.41 · 10 ⁻³
15A	4.99942 A	40 Hz	5.0004 A	±0.00524 A	19% pass	0.50 · 10 ⁻³
15A	4.99961 A	55 Hz	5.0009 A	±0.00599A	22% pass	0.47 · 10 ⁻³
15A	5.00069 A	1 kHz	5.0012 A	±0.00525A	10% pass	0.46 · 10 ⁻³
30A	9.99965 A	40 Hz	10.0005 A	±0.01349A	6% pass	0.44 · 10 ⁻³
30A	10.00036 A	55 Hz	10.0005 A	±0.015A	1% pass	0.43 · 10 ⁻³
30A	10.00227 A	1 kHz	10.0020 A	±0.0135A	2% pass	0.41 · 10 ⁻³
30A	10.01167 A	5 kHz	10.0224 A	±0.07301A	15% pass	2.1 · 10 ⁻³
60A	20.00018 A	40 Hz	20.0065 A	±0.033A	19% pass	0.39 · 10 ⁻³
60A	20.00019 A	55 Hz	20.0069 A	±0.036A	19% pass	0.39 · 10 ⁻³
60A	20.00440 A	1 kHz	20.0075 A	±0.033A	9% pass	0.39 · 10 ⁻³
60A	20.02496 A	5 kHz	20.0395 A	±0.15202A	10% pass	1.9 · 10 ⁻³
Gleichstromleistung DC power						
U* / I* ("full band")						
10V / 100mA						
11.73 W	1.000000 W		0.99881 W	±0.010877 W	11% pass	0.24 · 10 ⁻³
10V / 1A						
93.75 W	10.00000 W		9.9998 W	±0.08757 W	0% pass	0.20 · 10 ⁻³
100V / 1A						
750 W	100.0000 W		99.997 W	±0.707 W	0% pass	0.21 · 10 ⁻³
100V / 10A						
6 kW	1.000000 kW		0.99982 kW	±0.00572 kW	3% pass	0.20 · 10 ⁻³
500V / 10A						
48 kW	5.000000 kW		4.99929 kW	±0.0448 kW	2% pass	0.20 · 10 ⁻³
1000V / 10A						
96 kW	10.00000 kW		9.9981 kW	±0.0896 kW	2% pass	0.20 · 10 ⁻³
1000V / 20A						
192 kW	20.00000 kW		20.0024 kW	±0.1792 kW	1% pass	0.20 · 10 ⁻³
1000V / 32A						
384 kW	32.00000 kW		32.0178 kW	±0.416 kW	4% pass	0.20 · 10 ⁻³
Wirkleistung AC power						

Kalibrierschein vom Calibration certificate dated 22.02.2022

Bereich Range	Referenzwert (Normal) Reference value	Messbedingung Measuring condition	Angezeigter Wert KG Indicated value UUT	Zulässige Abweichung Allowed deviation	Ausnutzung der zul. Abw. in % Utilization of Allowed deviation %	Messunsicher- heit ($k=2$) Measuring uncertainty ($k=2$)
U* / I* ("full band")						
5V / 10mA / 55Hz / 0° (PF 1.0)						
336mW	50.0000 mW		50.002 mW	±0.0411mW	5% pass	0.58 · 10 ⁻³
10V / 100mA / 55Hz / 0° (PF 1.0)						
11.73W	1.000000 W		1.00003 W	±0.001323W	3% pass	0.14 · 10 ⁻³
10V / 1A / 55Hz / 0° (PF 1.0)						
93.75W	10.00000 W		10.0008 W	±0.01087W	7% pass	0.13 · 10 ⁻³
100V / 1A / 55Hz / 0° (PF 1.0)						
750W	100.0000 W		100.011W	±0.09W	13% pass	0.12 · 10 ⁻³
100V / 10A / 55Hz / 0° (PF 1.0)						
6 kW	1.000000 kW		1.00007 kW	±0.00105kW	6% pass	0.12 · 10 ⁻³
500V / 10A / 55Hz / 0° (PF 1.0)						
48kW	5.000000 kW		5.00029 kW	±0.00705kW	4% pass	0.12 · 10 ⁻³
500V / 20A / 55Hz / 0° (PF 1.0)						
96kW	10.00000 kW		10.0022 kW	±0.0171kW	13% pass	0.13 · 10 ⁻³
1000V / 20A / 55Hz / 0° (PF 1.0)						
192kW	20.00000 kW		20.0062 kW	±0.0342kW	18% pass	0.13 · 10 ⁻³
1000V / 32A / 55Hz / 0° (PF 1.0)						
384 kW	32.00000 kW		32.0163 kW	±30.7632kW	0% pass	0.17 · 10 ⁻³
100V / 1A / 55Hz / -72.542° (PF 0.3)						
750W	30.0000 W	ind.	30.004 W	±0.0795W	5% pass	1.5 · 10 ⁻³
1000V / 20A / 55Hz / -72.542° (PF 0.3)						
192kW	6.00000 kW	ind.	6.0022 kW	±0.0321kW	7% pass	2.8 · 10 ⁻³
100V / 1A / 55Hz / -60° (PF 0.5)						
750W	50.0000 W	ind.	50.005 W	±0.0825W	6% pass	0.80 · 10 ⁻³
1000V / 20A / 55Hz / -60° (PF 0.5)						
192kW	10.00000 kW	ind.	10.0030 kW	±0.0327kW	9% pass	1.5 · 10 ⁻³
100V / 1A / 55Hz / -36.87° (PF 0.8)						
750W	80.0000 W	ind.	80.007 W	±0.087W	8% pass	0.36 · 10 ⁻³
1000V / 20A / 55Hz / -36.87° (PF 0.8)						
192 kW	16.00000 kW	ind.	16.0051 kW	±0.0336kW	15% pass	0.67 · 10 ⁻³
100V / 1A / 55Hz / 72.542° (PF 0.3)						
750W	30.0000 W	cap.	30.003 W	±0.0795W	4% pass	1.5 · 10 ⁻³
1000V / 20A / 55Hz / 72.542° (PF 0.3)						
192 kW	6.00000 kW	cap.	6.0015 kW	±0.0321 kW	5% pass	2.8 · 10 ⁻³
100V / 1A / 55Hz / 60° (PF 0.5)						
750W	50.0000 W	cap.	50.004 W	±0.0825W	5% pass	0.80 · 10 ⁻³
1000V / 20A / 55Hz / 60° (PF 0.5)						
192 kW	10.00000 kW	cap.	10.0029 kW	±0.0327 kW	9% pass	1.5 · 10 ⁻³
100V / 1A / 55Hz / 36.87° (PF 0.8)						
750W	80.0000 W	cap.	80.006 W	±0.087W	7% pass	0.36 · 10 ⁻³

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Bereich Range	Referenzwert (Normal) Reference value	Messbedingung Measuring condition	Angezeigter Wert KG Indicated value UUT	Zulässige Abweichung Allowed deviation	Ausnutzung der zul. Abw. in % Utilization of Allowed deviation %	Messunsicher- heit ($k=2$) Measuring uncertainty ($k=2$)
1000V / 20A / 55Hz / 36.87° (PF 0.8)						
192kW	16.00000 kW	cap.	16.0048 kW	±0.0336kW	14% pass	0.67 · 10 ⁻³
Blindleistung Reactive Power U* / I* ("full band")						
100V / 1A / 55Hz / -90°						
750 var	100.0000 var	ind.	100.009 var	±0.135 var	7% pass	0.12 · 10 ⁻³
1000V / 20A / 55Hz / -90°						
192 kvar	20.00000 kvar	ind.	20.0056 kvar	±0.0288 kvar	20% pass	0.13 · 10 ⁻³
100V / 1A / 55Hz / -60° (PF 0.5)						
750 var	86.6025 var	ind.	86.610 var	±0.203 var	4% pass	0.29 · 10 ⁻³
1000V / 20A / 55Hz / -60° (PF 0.5)						
192 kvar	17.32614 kvar	ind.	17.3259 kvar	±0.0452 kvar	1% pass	0.50 · 10 ⁻³
100V / 1A / 55Hz / -30°						
750 var	50.0000 var	ind.	50.005 var	±0.4223 var	1% pass	0.80 · 10 ⁻³
1000V / 20A / 55Hz / -30°						
192 kvar	10.00000 kvar	ind.	10.0030 kvar	±0.0953 kvar	3% pass	1.5 · 10 ⁻³
100V / 1A / 55Hz / 90°						
750 var	100.0000 var	ind.	100.009 var	±0.135 var	6% pass	0.12 · 10 ⁻³
1000V / 20A / 55Hz / 90°						
192 kvar	20.00000 kvar	ind.	20.0057 kvar	±0.0288 kvar	20% pass	0.13 · 10 ⁻³
100V / 1A / 55Hz / 60° (PF 0.5)						
750 var	86.6025 var	cap.	86.610 var	±0.2 var	4% pass	0.29 · 10 ⁻³
1000V / 20A / 55Hz / 60° (PF 0.5)						
192 kvar	17.32051 kvar	cap.	17.3263 kvar	±0.0452 kvar	13% pass	0.52 · 10 ⁻³
100V / 1A / 55Hz / 30°						
750 var	50.0000 var	cap.	50.005 var	±0.422 var	1% pass	0.80 · 10 ⁻³
1000V / 20A / 55Hz / 30°						
192 kvar	10.00000 kvar	cap.	10.0035 kvar	±0.0953 kvar	4% pass	1.5 · 10 ⁻³
Leistungsfaktor Power Factor U* / I*						
100V / 1A / 55Hz						
	1.000000		1.00000	±0.00225	0% pass	0.0000059
	0.800000	ind.	0.79999	±0.00195	0% pass	0.00027
	0.500000	ind.	0.50000	±0.0015	0% pass	0.00039
	0.300000	ind.	0.30000	±0.0012	0% pass	0.00043
	0.000000	ind.	0.00001	±0.00075	1% pass	0.00045
	0.800000	cap.	0.79999	±0.00195	0% pass	0.00027
	0.500000	cap.	0.49999	±0.0015	0% pass	0.00039
	0.300000	cap.	0.30000	±0.0012	0% pass	0.00043

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Bereich Range	Referenzwert (Normal) Reference value	Messbedingung Measuring condition	Angezeigter Wert KG Indicated value UUT	Zulässige Abweichung Allowed deviation	Ausnutzung der zul. Abw. in % Utilization of Allowed deviation %	Messunsicher- heit ($k=2$) Measuring uncertainty ($k=2$)
	0.000000	cap.	0.00001	± 0.00075	1% pass	0.00045
Phasenwinkel phase angle 100V / 1A / 55Hz						
	30.0000 °		29.999 °	$\pm 0.23^\circ$	0% pass	0.026 °
	60.0000 °		59.999 °	$\pm 0.1^\circ$	1% pass	0.026 °
	90.0000 °		90.000 °	$\pm 0.042^\circ$	1% pass	0.026 °
	120.0000 °		120.001 °	$\pm 0.09^\circ$	1% pass	0.026 °
	150.0000 °		150.000 °	$\pm 0.2^\circ$	0% pass	0.026 °

Messunsicherheit Measuring uncertainty

Angegeben ist die erweiterte Messunsicherheit, die sich aus der Standardmessunsicherheit durch Multiplikation mit dem Erweiterungsfaktor $k = 2$ ergibt. Sie wurde gemäß EA-4/02 M: 2013 ermittelt. Der Wert der Messgröße liegt mit einer Wahrscheinlichkeit von etwa 95 % im zugeordneten Werteintervall. Ein Anteil für die Langzeit-Instabilität ist nicht enthalten. Die dimensionslosen Anteile der Messunsicherheit sind als relative Messunsicherheiten bezogen auf den Messwert zu verstehen.

The expanded uncertainty of measurement corresponding to the measurement results is stated as the standard uncertainty of measurement multiplied by the coverage factor $k = 2$. This was determined in accordance with EA-4/02 M: 2013. Usually the true value is located in the corresponding interval with a probability of approximately 95%. The non-dimensional fractions of the measuring uncertainty are relative values in relation to the indicated value.

Bemerkungen Special remarks

Auf Grundlage des vorliegenden Verhältnisses von Toleranz zu Messunsicherheit erfolgt die Bewertung des Kalibriergegenstandes nach niedrigem Vertrauensniveau.

Kalibrierschein vom Calibration certificate dated 22.02.2022

Bewertung der Konformität Determination of conformity

Gesamtkonformität: Overall conformity:

Innerhalb der zulässigen Abweichung ¹⁾Measured value(s) within the allowed deviation ¹⁾

Zeichenerklärung zum Diagramm:
 ◆ blau = Normal (4Eck; μ/N normiert)
 ● grün = Kalibriergegenst. (Kreis; $\mu/(KG)$ normiert)
 | rot = \pm Zulässige Abweichung (normiert auf $\pm 100\%$)
 H schwarz = erw. Messunsicherheit für $k=2$ (normiert)

¹⁾ Die Konformitätsaussage erfolgt gemäß der Entscheidungsregel 'Vertrauensniveau 50' mit einer Konformitätswahrscheinlichkeit größer 50%. Zulässige Abweichung gemäß Herstellerangabe.

¹⁾ The statement of conformity is made according to the decision rule 'confidence level 50' with a probability of conformity greater than 50%. Allowed deviation in accordance with manufacturer.

Die Einhaltung der Spezifikation wird im Kalibrierzertifikat wie folgt angezeigt:

The compliance to specification is represented on the calibration certificate as follows:

Messwert und Messunsicherheit innerhalb der zulässigen Abweichung Measured value and measurement uncertainty within specification	pass	
Messwert innerhalb und Messunsicherheit außerhalb der zulässigen Abweichung. Measured value within and measurement uncertainty outside the specification.	pass	
Messwert außerhalb und Messunsicherheit innerhalb der zulässigen Abweichung Measured value outside and measurement uncertainty within the specification.	fail	
Messwert und Messunsicherheit außerhalb der zulässigen Abweichung Measured value and measurement uncertainty outside specification.	fail	

Ausnutzung der zulässigen Abweichung in % = |Abweichung| / Zulässige Abweichung

Utilization of allowed deviation % = |deviation| / allowed deviation

The German original text is valid in case of doubt.

- Ende des Kalibrierscheins -
 - End of the calibration certificate. -