Akkreditiertes Kalibrierlaboratorium nach
DIN EN ISO 17025

KSW
Kalibrierservice
Wozniak

Kalibrierzertifikat-Nr.: 141922

Calibration certificate no.

Kalibrierdatum *Date of calibration*	29. Apr. 2014
Nummer *Number*	112292-MY41021726
Gegenstand *Item*	Multimeter
Hersteller *Manufacturer*	Agilent
Typ *Type*	34401A
ID-Nr. *ID-No.*	2012020
Serien-Nr. *Serial No.*	MY41021726
Auftraggeber *Customer*	Muster GmbH Hauptstrasse 10 Berlin, D 11111
Justierungen *Adjustments*	FOUND-LEFT
Kalibrierergebnis *Result of calibration*	PASS
Seiten *Extent of the certificate*	5

Dieser Kalibrierschein dokumentiert, dass der genannte Gegenstand nach firmeninternen Vorgaben geprüft und gemessen wurde. Die Messwerte lagen im Regelfall mit einer Wahrscheinlichkeit von annähernd 95% im zugeordneten Werteintervall (Erweiterte Messunsicherheit mit $k = 2$).
Die Kalibrierung erfolgte mit Messmitteln und Normalen, die direkt oder indirekt durch Ableitung mittels anerkannter Kalibriertechniken rückgeführt sind auf Normale der PTB / DAkkS oder anderer nationaler / internationaler Standards zur Darstellung der physikalischen Einheiten in Übereinstimmung mit dem Internationalen Einheitensystem (SI).
Dieser Kalibrierschein darf nur vollständig und unverändert weiterverbreitet werden. Kalibrierscheine ohne Signifizierung sind ungültig.
Für die Einhaltung einer angemessenen Frist zur Wiederholung der Kalibrierung ist der Benutzer verantwortlich.

This calibration certificate documents, that the named item is tested and measured in compliance to in our company defined specifications.
Measurement results are located usually in the corresponding interval with a probability of approx. 95% (coverage factor k = 2).
Calibration is performed with test equipment and standards directly or indirectly traceable by means of approved calibration techniques to the PTB/DAkkS or other national/international standards, which realize the physical units of measurement according to the International System of Units (SI).
This calibration certificate may not be reproduced other than in full. Calibration certificates without signatures are not valid.
The user is obliged to have the item recalibrated at appropriate intervals.

Ausstellungsdatum
Date 29.04.2014

Jürgen Wozniak
Laborleitung
Head of laboratory

Marcus Henselmann
Bearbeiter
Responsible person

Siegel
Seal

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MUSTER

TEMPERATURE: 23,00 °C

HUMIDITY: 45 %

PROCEDURE NAME: HP 34401A: (1 year) CAL VER IEEE /5700,5725,5193

PROCEDURE REV.: $Revision: 1.5 $

Note: Any Test Uncertainty Ratio (TUR) that is less than four to one will appear under the "TUR" heading on the data record. If the TUR meets or exceeds four to one, the field is left blank.

REMARKS: Bei Anlieferung in der Toleranz.

Standards Used

Serial-No.	Description	Cal Date	Certificate-No.	Due Date
L0551274	PHILIPS PM 5193 Funktionsgenerator	27.09.2013	KSW4001015	27.09.2014
6125307	FLUKE 5720A Multifunktionskalibrator	31.12.2013	3973-D-K-15115-0	30.04.2014
5295009	FLUKE 5725A Amplifier	31.12.2013	3974-D-K-15115-0	30.04.2014

Test Results

Test Description	True Value	Test Result	Lower limit	Upper limit	Units	TUR
SELF-TEST						
Self-Test						Pass
ZERO OFFSET TESTS (Front Inputs)						
10mA DC Range						
0.00000 mA		0.00002	-0.00200	0.00200	mA	Pass
100mA DC Range						
0.0000 mA		0.0001	-0.0050	0.0050	mA	Pass
1A DC Range						
0.000000 A		-0.000004	-0.000100	0.000100	A	Pass
3A DC Range						
0.000000 A		0.000001	-0.000600	0.000600	A	Pass
100mV DC Range						
0.0000 mV		0.0007	-0.0035	0.0035	mV	Pass
1V DC Range						
0.000000 V		0.000000	-0.000007	0.000007	V	Pass
10V DC Range						
0.00000 V		-0.00000	-0.00005	0.00005	V	Pass
100V DC Range						
0.0000 V		0.0000	-0.0006	0.0006	V	Pass
1000V DC Range						
0.000 V		0.000	-0.010	0.010	V	Pass
100 Ohm Range, 2-Wire						
0.0000 Ohm		0.0000	-0.2040	0.2040	Ω	Pass
1 kOhm Range, 2-Wire						
0.000000 kOhm		0.000000	-0.000210	0.000210	kΩ	Pass
10 kOhm Range, 2-Wire						
0.00000 kOhm		0.00001	-0.00030	0.00030	kΩ	Pass
100 kOhm Range, 2-Wire						
0.0000 kOhm		0.0001	-0.0012	0.0012	kΩ	Pass
1 MOhm Range, 2-Wire						
0.000000 MOhm		0.000000	-0.000010	0.000010	MΩ	Pass
10 MOhm Range, 2-Wire						
0.00000 MOhm		0.00001	-0.00010	0.00010	MΩ	Pass
100 MOhm Range, 2-Wire						
0.0000 MOhm		0.0000	-0.0100	0.0100	MΩ	Pass

Test Results

Test Description	True Value	Test Result	Lower limit	Upper limit	Units	TUR
100 Ohm Range, 4-Wire						
0.0000 Ohm		0.0003	-0.0040	0.0040	Ω	Pass
1 kOhm Range, 4-Wire						
0.000000 kOhm		0.000000	-0.000010	0.000010	kΩ	Pass
10 kOhm Range, 4-Wire						
0.00000 kOhm		0.00000	-0.00010	0.00010	kΩ	Pass
100 kOhm Range, 4-Wire						
0.0000 kOhm		0.0000	-0.0010	0.0010	kΩ	Pass
1 MOhm Range, 4-Wire						
0.000000 MOhm		-0.000000	-0.000010	0.000010	MΩ	Pass
10 MOhm Range, 4-Wire						
0.00000 MOhm		-0.00000	-0.00010	0.00010	MΩ	Pass
100 MOhm Range, 4-Wire						
0.0000 MOhm		-0.0000	-0.0100	0.0100	MΩ	Pass
ZERO OFFSET TESTS (Rear Inputs)						
10mA DC Range						
0.00000 mA		-0.00019	-0.00200	0.00200	mA	Pass
100mA DC Range						
0.0000 mA		-0.0001	-0.0050	0.0050	mA	Pass
1A DC Range						
0.000000 A		-0.000013	-0.000100	0.000100	A	Pass
3A DC Range						
0.000000 A		-0.000017	-0.000600	0.000600	A	Pass
100mV DC Range						
0.0000 mV		0.0007	-0.0035	0.0035	mV	Pass
1V DC Range						
0.000000 V		0.000001	-0.000007	0.000007	V	Pass
10V DC Range						
0.00000 V		0.00000	-0.00005	0.00005	V	Pass
100V DC Range						
0.0000 V		0.0000	-0.0006	0.0006	V	Pass
1000V DC Range						
0.000 V		-0.000	-0.010	0.010	V	Pass
100 Ohm Range, 2-Wire						
0.0000 Ohm		0.0000	-0.2040	0.2040	Ω	Pass
1 kOhm Range, 2-Wire						
0.000000 kOhm		0.000000	-0.000210	0.000210	kΩ	Pass
10 kOhm Range, 2-Wire						
0.00000 kOhm		0.00000	-0.00030	0.00030	kΩ	Pass
100 kOhm Range, 2-Wire						
0.0000 kOhm		0.0001	-0.0012	0.0012	kΩ	Pass
1 MOhm Range, 2-Wire						
0.000000 MOhm		0.000000	-0.000010	0.000010	MΩ	Pass
10 MOhm Range, 2-Wire						
0.00000 MOhm		0.00000	-0.00010	0.00010	MΩ	Pass
100 MOhm Range, 2-Wire						
0.0000 MOhm		0.0000	-0.0100	0.0100	MΩ	Pass
100 Ohm Range, 4-Wire						
0.0000 Ohm		0.0001	-0.0040	0.0040	Ω	Pass
1 kOhm Range, 4-Wire						
0.000000 kOhm		0.000000	-0.000010	0.000010	kΩ	Pass
10 kOhm Range, 4-Wire						
0.00000 kOhm		0.00000	-0.00010	0.00010	kΩ	Pass
100 kOhm Range, 4-Wire						
0.0000 kOhm		0.0000	-0.0010	0.0010	kΩ	Pass
1 MOhm Range, 4-Wire						
0.000000 MOhm		0.000000	-0.000010	0.000010	MΩ	Pass
10 MOhm Range, 4-Wire						
0.00000 MOhm		0.00000	-0.00010	0.00010	MΩ	Pass
100 MOhm Range, 4-Wire						
0.0000 MOhm		0.0001	-0.0100	0.0100	MΩ	Pass

Test Results

Test Description	True Value	Test Result	Lower limit	Upper limit	Units	TUR
DC VOLTAGE						
100mV Range						
100.0000 mV		100.0006	99.9915	100.0085	mV	Pass
1V Range						
1.000000 V		1.000001	0.999953	1.000047	V	Pass
10V Range						
10.00000 V		9.99999	9.99960	10.00040	V	Pass
10V Range						
-10.00000 V		-10.00000	-10.00040	-9.99960	V	Pass
100V Range						
100.0000 V		100.0003	99.9949	100.0051	V	Pass
1000V Range						
1000.000 V		1000.000	999.945	1000.055	V	Pass
AC VOLTAGE						
100mV Range						
100.0000 mV @ 1 kHz		99.9682	99.9000	100.1000	mV	Pass
100.0000 mV @ 50 kHz		99.9568	99.8300	100.1700	mV	Pass
1V Range						
1.000000 V @ 20 Hz		0.999348	0.999100	1.000900	V	Pass
1.000000 V @ 1 kHz		1.000000	0.999100	1.000900	V	Pass
1.000000 V @ 50 kHz		1.000109	0.998300	1.001700	V	Pass
1.000000 V @ 100 kHz		0.999792	0.993200	1.006800	V	Pass
1.000000 V @ 300 kHz		0.996099	0.955000	1.045000	V	Pass
10V Range						
10.00000 V @ 1 kHz		9.99676	9.99100	10.00900	V	Pass
10.00000 V @ 50 kHz		10.00363	9.98300	10.01700	V	Pass
10.00000 V @ 10 Hz		9.99624	9.99100	10.00900	V	Pass
100mV Range						
10.0000 mV @ 1 kHz		9.9756	9.9540	10.0460	mV	Pass
100V Range						
100.0000 V @ 1 kHz		99.9436	99.9100	100.0900	V	Pass
100.0000 V @ 50 kHz		99.9648	99.9100	100.0900	V	Pass
750V Range						
750.000 V @ 1 kHz		749.691	749.325	750.675	V	Pass
750.000 V @ 50 kHz		750.048	749.325	750.675	V	Pass
FREQUENCY RESPONSE						
1.000000 V @ 20 Hz		0.999350	0.997600	1.002400	V	Pass
1.000000 V @ 20 kHz		0.999821	0.999200	1.000800	V	Pass
1.000000 V @ 100 kHz		0.999888	0.993200	1.006800	V	Pass
1.000000 V @ 300 kHz		0.996184	0.955000	1.045000	V	Pass
LINEARITY						
1.00000 V @ 1 kHz		0.99961	0.99650	1.00350	V	Pass
0.10000 V @ 1 kHz		0.10066	0.08700	0.11300	V	Pass
DC CURRENT						
10mA Range						
10.00000 mA		10.00021	9.99300	10.00700	mA	Pass
100mA Range						
100.0000 mA		100.0029	99.9450	100.0550	mA	Pass
1A Range						
1.000000 A		1.000025	0.998900	1.001100	A	Pass
3A Range						
2.000000 A		2.000038	1.995800	2.004200	A	Pass
AC CURRENT						
1A Range						
1.000000 A @ 1 kHz		0.999794	0.998600	1.001400	A	Pass
3A Range						

Test Results

Test Description	True Value	Test Result	Lower limit	Upper limit	Units	TUR
2.000000 A @ 1 kHz		1.998672	1.995200	2.004800	A	Pass
4-WIRE OHMS						
100 Ohm Range						
100.0000 Ohm	99.99973	99.9992	99.9857	100.0137	Ω	Pass
1 kOhm Range						
1.000000 kOhm	0.9999976	0.999995	0.999888	1.000108	kΩ	Pass
10 kOhm Range						
10.00000 kOhm	9.999925	9.99990	9.99883	10.00102	kΩ	Pass
100 kOhm Range						
100.0000 kOhm	99.99817	99.9980	99.9872	100.0092	kΩ	Pass
1 MOhm Range						
1.000000 MOhm	0.9999590	0.999956	0.999849	1.000069	MΩ	Pass
10 MOhm Range						
10.00000 MOhm	9.998979	9.99499	9.99488	10.00308	MΩ	Pass
100 MOhm Range						
100.0000 MOhm	100.00090	99.6210	99.1909	100.8109	MΩ	Pass
2-WIRE OHMS						
100 Ohm Range						
100.0000 Ohm	99.99973	99.9997	99.9857	100.0137	Ω	Pass
1 kOhm Range						
1.000000 kOhm	0.9999976	0.999994	0.999888	1.000108	kΩ	Pass
10 kOhm Range						
10.00000 kOhm	9.999925	9.99983	9.99883	10.00102	kΩ	Pass
100 kOhm Range						
100.0000 kOhm	99.99817	99.9985	99.9872	100.0092	kΩ	Pass
1 MOhm Range						
1.000000 MOhm	0.9999590	0.999958	0.999849	1.000069	MΩ	Pass
10 MOhm Range						
10.00000 MOhm	9.998979	9.99510	9.99488	10.00308	MΩ	Pass
100 MOhm Range						
100.0000 MOhm	100.00090	99.6197	99.1909	100.8109	MΩ	Pass
FREQUENCY						
100mV Range						
100.0000 Hz @ 100 mV		100.0019	99.9000	100.1000	Hz	Pass
1V Range						
100.0000 kHz @ 1 V		100.0012	99.9900	100.0100	kHz	Pass
V E R I F I C A T I O N C O M P L E T E						

***** End of Certificate *****