

Von der Schweizerischen Akkreditierungsstelle akkreditierte Kalibrierstelle
Laboratoire d'étalonnage accrédité par le Service d'Accréditation Suisse
Calibration Laboratory accredited by the Swiss Accreditation Service

S Akkreditierungs-Nr.
C No. d'accréditation
S Accreditation No. **SCS 0002**

The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Zertifikat Nr.
No. du certificat 32230
Certificate No.

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KALIBRIER – ZERTIFIKAT CERTIFICAT D'ÉTALONNAGE CERTIFICATE OF CALIBRATION

Instrument
Instrument
Instrument

Calibrator

Hersteller
Fabricant
Manufacturer

FLUKE

Typ
Type
Model

5442A

Serien- / Inventar-Nr.
No. de série- / inventaire
Serial- / Inv. No.

4595203

n/a

Kunde
Client
Customer

Maximilian Heddergott, 5432 Neuenhof

Auftragsnummer
No. de la commande
Order No.

n/a

Bemerkungen
Remarques
Remarks

n/a

Datum der Kalibrierung
Date de l'étalonnage
Date of calibration

07. Dezember 2021

Dieses Kalibrierzertifikat dokumentiert die Rückverfolgbarkeit auf nationale Normale zur Darstellung der physikalischen Einheiten (SI).
Ce certificat d'étalonnage confirme le raccordement aux étalons nationaux qui matérialisent les grandeurs physiques (SI).
This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).

Messresultate, Messunsicherheiten mit Vertrauensbereich und Messverfahren sind auf den folgenden Seiten aufgeführt und sind Teil des Zertifikats.
Les résultats, les incertitudes avec le niveau de confiance et les méthodes de mesure sont donnés aux pages suivantes et font partie du certificat.
The measurements, the uncertainties with confidence probability and calibration methods are given on the following pages and are part of the certificate.

Stempel und Datum
Timbre et Date
Stamp and date

ELCAL
Messgeräte • Service • Kalibration

Dietikon, 07. Dezember 2021

Leiter der Kalibrierstelle
Chef du laboratoire d'étalonnage
Head of the Calibration Laboratory



Christoph Stampfli

Dieses Kalibrierzertifikat darf ohne die schriftliche Zustimmung des Laboratoriums nicht auszugsweise vervielfältigt werden.
Ce certificat ne doit pas être reproduit, sinon en entier, sans l'autorisation écrite du laboratoire.
This calibration certificate shall not be reproduced except in full, without written approval of the laboratory.

<u>Testreport</u> 387273	Certificate	: SCS 32230
	Unit under Test	: FLUKE 5442A Calibrator
	Serial No	: 4595203
	Customer	: Maximilian Heddergott, 5432 Neuenhof
	Inventory No	: n/a
	Date	: 07.12.2021
	Operator	: D. Malic

TRACEABILITY INFORMATION

Instruments used:	Serial No:	Inventory No:	Cal Due Date:
FLUKE 5026A-S	A52176	LAB-195A	10.06.2022
Fluke 8588A	462275256	LAB-100	03.06.2022
Fluke 752A	319'5027	LAB-115	26.02.2022
Fluke 732B	9702701	LAB-318	07.10.2022

All listed result are direct traceable to the Swiss Federal Institute of Metrology, as far as listed in the uncertainty table of the SCS Certificate. Measurements beyond the current accreditation are marked with *.

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approx 95%.

SUMMARY OF LAST RECORDED CAL DATA

This certificate records the calibration status.
Points where %Tol exceeds the adjustment threshold are marked with a "M".
Points where %Tol exceeds the specification limit are marked with a "F".
The calibration status is calculated neglecting the measurement uncertainty.

Number of Test Marginal:	0
Number of Test Failed:	0

Testreport
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Date : 07.12.2021
Operator : D. Malic

TEST RANGE	UUT INDICATED	SYSTEM ACTUAL	MODIFIER	ERROR	ERROR (%TOL)	EXP. M	UNCERT F
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Actual Ambient Temp. 23.3 ±0.5°C / Humidity 25.6%

Marginal limit 50% of UUT Tol.

FLUKE 5442A/B: C/L VDC Verification Ver V 4.0

All Tests refer to UUT 360 Days Specifications as per User Manual

DC Volt Accuracy Test:

Test @ Divider Output Terminals:

2.20V Range:

1	2.2	2.000000V	1.9999987V	0.65 ppm	6	6.4uV
2	2.2	-2.000000V	-1.9999986V	0.70 ppm	6	6.4uV
3	2.2	1.000000V	1.00000042V	-0.42 ppm	4	3.4uV
4	2.2	-1.000000V	-0.99999919V	0.81 ppm	7	3.4uV
5	2.2	0.242000V	0.2420001V	-0.41 ppm	3	1.3uV
6	2.2	-0.242000V	-0.24199996V	0.17 ppm	1	1.3uV

0.220V Range: (Zero Compensated)

7	0.22	0.2000000V	0.20000032V	-1.60 ppm	11	1.0uV
8	0.22	-0.2000000V	-0.199999992V	0.04 ppm	0	1.0uV
9	0.22	0.1000000V	0.100000259V	-2.59 ppm	15	550nV
10	0.22	-0.1000000V	-0.100000037V	-0.37 ppm	2	550nV
11	0.22	0.0242000V	0.024200066V	-2.73 ppm	8	220nV
12	0.22	-0.0242000V	-0.024200021V	-0.87 ppm	3	220nV
13	0.22	0.0000000V	-0.00000030V	-100 %	59	120nV

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TEST	RANGE	UUT INDICATED	SYSTEM ACTUAL	MODIFIER	ERROR	ERROR (%TOL)	EXP. M UNCERT F
1000V Range:							
Test @ Main Output Terminals:							
14	1000	900.000000V	900.00051V		-0.57 ppm	9	5.1mV
15	1000	-900.000000V	-899.9981700V		2.03 ppm	32	5.0mV
16	1000	500.000000V	500.0003900V		-0.78 ppm	12	3.3mV
17	1000	-500.000000V	-499.9995800V		0.84 ppm	12	3.2mV
18	1000	300.000000V	300.0003200V		-1.07 ppm	15	2.4mV
19	1000	-300.000000V	-299.9998400V		0.53 ppm	7	2.3mV
275V Range:							
20	275	247.500000V	247.4996900V		1.25 ppm	17	2.1mV
21	275	-247.500000V	-247.4995400V		1.86 ppm	25	2.1mV
22	275	100.000000V	99.9999650V		0.35 ppm	4	490uV
23	275	-100.000000V	-99.9997190V		2.81 ppm	35	490uV
24	275	30.250000V	30.2500220V		-0.73 ppm	7	180uV
25	275	-30.250000V	-30.2498950V		3.47 ppm	34	180uV
22V Range:							
26	22	20.000000V	19.9999780V		1.10 ppm	16	64uV
27	22	-20.000000V	-19.9999510V		2.45 ppm	36	64uV
28	22	10.000000V	9.9999996V		0.04 ppm	1	34uV
29	22	-10.000000V	-9.9999899V		1.01 ppm	14	34uV
30	22	11.220000V	11.2200022V		-0.20 ppm	3	38uV
31	22	-11.220000V	-11.2199842V		1.41 ppm	20	38uV
10V Range:							
32	10	9.000000V	9.0000016V		-0.18 ppm	3	31uV
33	10	-9.000000V	-8.9999916V		0.93 ppm	13	31uV
34	10	5.000000V	5.0000033V		-0.66 ppm	9	19uV
35	10	-5.000000V	-4.9999972V		0.56 ppm	7	19uV
36	10	2.500000V	2.5000030V		-1.20 ppm	14	12uV
37	10	-2.500000V	-2.4999997V		0.12 ppm	1	12uV

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TEST	RANGE	UUT INDICATED	SYSTEM ACTUAL	MODIFIER	ERROR ERROR	EXP. M (%TOL) UNCERT F
DC Volt Linearity Test (360 Days Specs)						

Test @ Main Output Terminals:						
10V Range:						
38	10	9.500000V	9.5000014V		-0.15 ppm	2 33uV
39	10	9.000000V	9.0000019V		-0.21 ppm	3 31uV
40	10	8.500000V	8.5000030V		-0.35 ppm	5 30uV
41	10	8.000000V	8.0000032V		-0.40 ppm	6 28uV
42	10	7.500000V	7.5000036V		-0.48 ppm	7 27uV
43	10	7.000000V	7.0000040V		-0.57 ppm	8 25uV
44	10	6.500000V	6.5000035V		-0.54 ppm	7 24uV
45	10	6.000000V	6.0000037V		-0.62 ppm	8 22uV
46	10	5.500000V	5.5000039V		-0.71 ppm	10 21uV
47	10	5.000000V	5.0000042V		-0.84 ppm	11 19uV
48	10	4.500000V	4.5000041V		-0.91 ppm	12 18uV
49	10	4.000000V	4.0000037V		-0.92 ppm	12 16uV
50	10	3.500000V	3.5000035V		-1.00 ppm	13 15uV
51	10	3.000000V	3.0000033V		-1.10 ppm	14 13uV
52	10	2.500000V	2.5000038V		-1.52 ppm	18 12uV
53	10	2.000000V	2.0000030V		-1.50 ppm	17 10uV
54	10	1.500000V	1.5000038V		-2.53 ppm	26 4.9uV
55	10	-1.500000V	-1.4999995V		0.33 ppm	3 4.9uV
56	10	-2.000000V	-1.9999992V		0.40 ppm	4 6.4uV
57	10	-2.500000V	-2.4999990V		0.40 ppm	5 12uV
58	10	-3.000000V	-2.9999993V		0.23 ppm	3 13uV
59	10	-3.500000V	-3.4999994V		0.17 ppm	2 15uV
60	10	-4.000000V	-3.9999990V		0.25 ppm	3 16uV
61	10	-4.500000V	-4.4999971V		0.64 ppm	8 18uV
62	10	-5.000000V	-4.9999966V		0.68 ppm	9 19uV
63	10	-5.500000V	-5.4999966V		0.62 ppm	8 21uV
64	10	-6.000000V	-5.9999966V		0.57 ppm	8 22uV
65	10	-6.500000V	-6.4999960V		0.62 ppm	8 24uV
66	10	-7.000000V	-6.9999952V		0.69 ppm	10 25uV
67	10	-7.500000V	-7.4999947V		0.71 ppm	10 27uV
68	10	-8.000000V	-7.9999942V		0.73 ppm	10 28uV
69	10	-8.500000V	-8.4999940V		0.71 ppm	10 30uV
70	10	-9.000000V	-8.9999925V		0.83 ppm	12 31uV
71	10	-9.500000V	-9.4999924V		0.80 ppm	11 33uV

End of FLUKE 5442A/B: C/L VDC Verification Ver V 4.0