



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

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
Certificate No.

30211

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Page 1 of 10 pages
Pagina 1 de 10 pagine

KALIBRIER – ZERTIFIKAT CERTIFICAT D’ÉTALONNAGE CERTIFICATE OF CALIBRATION

Instrument
Instrument
Instrument

System DMM

Hersteller
Fabricant
Manufacturer

Datron

Typ
Type
Model

1281

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

19346-4

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

30. März 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).

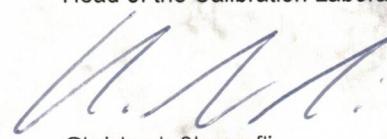
Messresultate, Messunsicherheiten mit Vertrauensbereich und Messverfahren sind auf den folgenden Seiten aufgeführt und sind Teil des Zertifikats.
Les résultats, les incertitudes avec le niveau de confiance et les méthodes de mesure sont donnés aux pages suivantes et font partie du certificat.
The measurements, 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 • Kalibrierung

Dietikon, 31. März 2021

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


Christoph Stampfli



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| | | | |
|-------------------|-----------------|---|--------------------------------------|
| <u>Testreport</u> | Certificate | : | SCS 30211 |
| 368175 | Unit under Test | : | Datron 1281 System DMM |
| | Serial No | : | 19346-4 |
| | Customer | : | Maximilian Heddergott, 5432 Neuenhof |
| | Inventory No | : | |
| | Date | : | 30.03.2021 |
| | Operator | : | D. Malic |

TRACEABILITY INFORMATION

| Instruments used: | Serial No: | Inventory No: | Cal Due Date: |
|-------------------|------------|---------------|---------------|
| Fluke Hart 2626-S | A79867 | LAB-432A | 27.05.2021 |
| Fluke 5205A | 384'0002 | LAB-104 | 23.04.2021 |
| Fluke FTE-1505 | 22 | LAB-118 | 24.02.2022 |
| Tettex 3274/KM | 128573 | LAB-121 | 27.02.2022 |
| Tettex 3275/KM | 128578 | LAB-122 | 27.02.2022 |
| Tettex 3276/KM | 128'583 | LAB-123 | 27.02.2022 |
| Tettex 3277/KM | 128'588 | LAB-124 | 27.02.2022 |
| Elcal AG A40 | TRC 1 | LAB-139 | 04.06.2024 |
| Fluke A40-010mA | 4435009 | LAB-139a | 23.04.2025 |
| Fluke A40-100mA | 5150006 | LAB-139e | 23.04.2025 |
| Fluke A40-1A | 4415006 | LAB-139i | 23.04.2025 |
| Fluke 792A | 5170001 | LAB-143 | 29.04.2023 |
| Fluke 792A-7004 | 5170001 | LAB-143b | 30.06.2021 |
| Fluke 742-100kOhm | 485'1231 | LAB-145 | 27.02.2023 |
| Fluke 742-1MOhm | 497'6290 | LAB-146 | 01.03.2023 |
| Fluke 742-10MOhm | 504'6237 | LAB-147 | 02.03.2023 |
| Fluke 742-10kOhm | 539'5003 | LAB-149 | 27.02.2023 |
| Fluke 742-10hm | 5495019 | LAB-150 | 27.02.2023 |
| Fluke 742-1kOhm | 587'0008 | LAB-151 | 27.02.2023 |
| Fluke 742-10Ohm | 646'0001 | LAB-160 | 27.02.2023 |
| Fluke 742-100Ohm | 692'0006 | LAB-168 | 27.02.2023 |
| MI 9331/100M | 1100022 | LAB-297 | 25.02.2023 |
| MI 4310HR | 1100046 | LAB-298a | 25.02.2022 |
| Fluke 5720A | 6815201 | LAB-433 | 06.04.2021 |

All listed result are direct traceable to the Swiss Federal Office 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
 368175

| | | |
|-----------------|---|--------------------------------------|
| Certificate | : | SCS 30211 |
| Unit under Test | : | Datron 1281 System DMM |
| Serial No | : | 19346-4 |
| Customer | : | Maximilian Heddergott, 5432 Neuenhof |
| Inventory No | : | |
| Date | : | 30.03.2021 |
| Operator | : | D. Malic |

| TEST | UUT RANGE | SYSTEM INDICATED | SYSTEM ACTUAL | MODIFIER | ERROR | EXP. (%) | M UNCERT | F |
|------|-----------|------------------|---------------|----------|-------|----------|----------|---|
|------|-----------|------------------|---------------|----------|-------|----------|----------|---|

Datron 1281: Closed Loop Verification

All Tests as per Manual (850090 Issue 4) 360 Days Normal Mode Specs

Actual Ambient Temp. $23.4 \pm 0.5^\circ\text{C}$ / Humidity 26.6%

Marginal limit 75% of UUT Tol.

Prior to Calibration UUT stored Variables:

UUT Programmed IDN\$:

Datron Instruments, 1281, 19346-4 , 890144-03.12

UUT Programmed PUD\$:

#263 Datron Instruments 1281 Self Cal Digital Multimeter

UUT Programmed EXT_DUE\$:

"15.02.19"

DC Voltage Accuracy Test:

UUT Settings: Filter=On, Guard=Lcl, Range=Manual

200mV Range:

| | | | | | | | |
|---|-----|--------------|---------------|-----------|-----------|----|-------|
| 1 | 200 | 49.99994mV | 50.000000mV | Rel._Zero | -1.16 ppm | 11 | 850nV |
| 2 | 200 | 99.99986mV | 100.000000mV | Rel._Zero | -1.40 ppm | 16 | 1.2uV |
| 3 | 200 | 189.99988mV | 190.000000mV | Rel._Zero | -0.62 ppm | 8 | 1.8uV |
| 4 | 200 | -49.99975mV | -50.000000mV | Rel._Zero | -5.04 ppm | 46 | 850nV |
| 5 | 200 | -99.99973mV | -100.000000mV | Rel._Zero | -2.68 ppm | 30 | 1.2uV |
| 6 | 200 | -189.99985mV | -190.000000mV | Rel._Zero | -0.77 ppm | 10 | 1.8uV |

2V Range:

| | | | | | | | |
|----|---|--------------|---------------|-----------|-----------|----|-------|
| 7 | 2 | 0.50000032V | 0.500000000V | Rel._Zero | 0.64 ppm | 8 | 2.8uV |
| 8 | 2 | 1.00000078V | 1.000000000V | Rel._Zero | 0.78 ppm | 12 | 4.8uV |
| 9 | 2 | 1.90000140V | 1.900000000V | Rel._Zero | 0.74 ppm | 12 | 8.4uV |
| 10 | 2 | -0.49999960V | -0.500000000V | Rel._Zero | -0.80 ppm | 11 | 2.8uV |
| 11 | 2 | -0.99999954V | -1.000000000V | Rel._Zero | -0.46 ppm | 7 | 4.8uV |
| 12 | 2 | -1.89999954V | -1.900000000V | Rel._Zero | -0.24 ppm | 4 | 8.4uV |

20V Range:

| | | | | | | | |
|----|----|--------------|---------------|--|-----------|----|------|
| 13 | 20 | 4.9999986V | 5.00000000V | | -0.28 ppm | 4 | 18uV |
| 14 | 20 | 9.9999988V | 10.00000000V | | -0.12 ppm | 2 | 33uV |
| 15 | 20 | 19.0000042V | 19.00000000V | | 0.22 ppm | 4 | 62uV |
| 16 | 20 | -5.0000048V | -5.00000000V | | 0.96 ppm | 14 | 18uV |
| 17 | 20 | -10.0000096V | -10.00000000V | | 0.96 ppm | 15 | 33uV |
| 18 | 20 | -19.0000244V | -19.00000000V | | 1.28 ppm | 21 | 62uV |



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Certificate : SCS 30211
 Unit under Test : Datron 1281 System DMM
 Serial No : 19346-4
 Customer : Maximilian Heddergott, 5432 Neuenhof
 Inventory No :
 Date : 30.03.2021
 Operator : D. Malic

| TEST | RANGE | UUT INDICATED | SYSTEM ACTUAL | MODIFIER | ERROR | EXP. (%) | M |
|------|-------|---------------|---------------|----------|--------|----------|---|
| | | | | | (%TOL) | UNCERT | F |

200V Range:

| | | | | | | |
|----|-----|--------------|---------------|-----------|---|-------|
| 19 | 200 | 49.999986V | 50.0000000V | -0.28 ppm | 2 | 250uV |
| 20 | 200 | 99.999984V | 100.0000000V | -0.16 ppm | 1 | 450uV |
| 21 | 200 | 189.999958V | 190.0000000V | -0.22 ppm | 2 | 810uV |
| 22 | 200 | -50.000020V | -50.0000000V | 0.40 ppm | 3 | 250uV |
| 23 | 200 | -99.999998V | -100.0000000V | -0.02 ppm | 0 | 450uV |
| 24 | 200 | -189.999950V | -190.0000000V | -0.26 ppm | 3 | 810uV |

1000V Range:

| | | | | | | |
|----|------|--------------|---------------|-----------|----|-------|
| 25 | 1000 | 199.99984V | 200.0000000V | -0.80 ppm | 7 | 850uV |
| 26 | 1000 | 500.00048V | 500.000000V | 0.96 ppm | 9 | 3.5mV |
| 27 | 1000 | 1000.00004V | 1000.000000V | 0.04 ppm | 0 | 6.5mV |
| 28 | 1000 | -199.99980V | -200.0000000V | -1.00 ppm | 8 | 850uV |
| 29 | 1000 | -500.00072V | -500.0000000V | 1.44 ppm | 13 | 3.5mV |
| 30 | 1000 | -1000.00000V | -1000.000000V | 0.00 ppm | 0 | 6.5mV |

DC Voltage Linearity Test:

20V Range:

| | | | | | | |
|----|----|-------------|--------------|----------|---|-------|
| 31 | 20 | 0.1111110V | 0.11111100V | 0.00 ppm | 0 | 5.5uV |
| 32 | 20 | 1.1111112V | 1.11111100V | 0.18 ppm | 2 | 8.4uV |
| 33 | 20 | 2.2222220V | 2.22222200V | 0.00 ppm | 0 | 12uV |
| 34 | 20 | 3.3333338V | 3.33333300V | 0.24 ppm | 3 | 15uV |
| 35 | 20 | 4.4444456V | 4.44444400V | 0.36 ppm | 5 | 18uV |
| 36 | 20 | 5.5555570V | 5.55555500V | 0.36 ppm | 5 | 22uV |
| 37 | 20 | 6.6666684V | 6.66666600V | 0.36 ppm | 5 | 25uV |
| 38 | 20 | 7.7777802V | 7.77777700V | 0.41 ppm | 6 | 28uV |
| 39 | 20 | 8.8888918V | 8.88888800V | 0.43 ppm | 7 | 32uV |
| 40 | 20 | 10.0000038V | 9.99999900V | 0.48 ppm | 8 | 35uV |
| 41 | 20 | 11.1111158V | 11.11111100V | 0.43 ppm | 7 | 38uV |
| 42 | 20 | 12.2222278V | 12.22222200V | 0.47 ppm | 8 | 42uV |
| 43 | 20 | 13.3333400V | 13.33333300V | 0.53 ppm | 8 | 45uV |
| 44 | 20 | 14.4444510V | 14.44444400V | 0.48 ppm | 8 | 48uV |
| 45 | 20 | 15.5555634V | 15.55555500V | 0.54 ppm | 9 | 52uV |
| 46 | 20 | 16.6666740V | 16.66666600V | 0.48 ppm | 8 | 55uV |
| 47 | 20 | 17.7777866V | 17.77777700V | 0.54 ppm | 9 | 58uV |
| 48 | 20 | 18.8888984V | 18.88888800V | 0.55 ppm | 9 | 62uV |
| 49 | 20 | 19.9900094V | 19.98999900V | 0.52 ppm | 8 | 65uV |



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| | | |
|-----------------|---|--------------------------------------|
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| Unit under Test | : | Datron 1281 System DMM |
| Serial No | : | 19346-4 |
| Customer | : | Maximilian Heddergott, 5432 Neuenhof |
| Inventory No | : | |
| Date | : | 30.03.2021 |
| Operator | : | D. Malic |

| TEST | UUT RANGE | SYSTEM INDICATED | SYSTEM ACTUAL | MODIFIER | ERROR | EXP. (%TOL) | M UNCERT | F |
|------|--------------|---------------------|------------------|----------|-------|----------------|-------------|---|
|------|--------------|---------------------|------------------|----------|-------|----------------|-------------|---|

AC Voltage Linearity Test:

UUT Settings: Tfer, 100Hz Filter, Front Panel Input
Filter=On, Guard=Lcl, Range=Manual

20V Range:

| | | | | | | | |
|----|----|------------|-------------|--------|-----------|----|-------|
| 50 | 20 | 1.111028V | 1.1111100V | @_1kHz | -73.8 ppm | 24 | 98uV |
| 51 | 20 | 2.222328V | 2.2222200V | @_1kHz | 48.6 ppm | 22 | 140uV |
| 52 | 20 | 3.333308V | 3.3333300V | @_1kHz | -6.60 ppm | 3 | 180uV |
| 53 | 20 | 4.444332V | 4.4444400V | @_1kHz | -24.3 ppm | 14 | 230uV |
| 54 | 20 | 5.555384V | 5.5555500V | @_1kHz | -29.9 ppm | 18 | 270uV |
| 55 | 20 | 6.666418V | 6.6666600V | @_1kHz | -36.3 ppm | 23 | 320uV |
| 56 | 20 | 7.777518V | 7.7777700V | @_1kHz | -32.4 ppm | 21 | 360uV |
| 57 | 20 | 8.888590V | 8.8888800V | @_1kHz | -32.6 ppm | 21 | 410uV |
| 58 | 20 | 9.999656V | 9.9999900V | @_1kHz | -33.4 ppm | 22 | 450uV |
| 59 | 20 | 12.221770V | 12.2222200V | @_1kHz | -36.8 ppm | 25 | 540uV |
| 60 | 20 | 13.332838V | 13.3333300V | @_1kHz | -36.9 ppm | 25 | 580uV |
| 61 | 20 | 14.443910V | 14.4444400V | @_1kHz | -36.7 ppm | 26 | 630uV |
| 62 | 20 | 15.554976V | 15.5555500V | @_1kHz | -36.9 ppm | 26 | 670uV |
| 63 | 20 | 16.666048V | 16.6666600V | @_1kHz | -36.7 ppm | 26 | 720uV |
| 64 | 20 | 17.777114V | 17.7777700V | @_1kHz | -36.9 ppm | 26 | 760uV |
| 65 | 20 | 18.888214V | 18.8888800V | @_1kHz | -35.3 ppm | 25 | 810uV |
| 66 | 20 | 19.989322V | 19.9899900V | @_1kHz | -33.4 ppm | 24 | 850uV |



Testreport
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| | | |
|-----------------|---|--------------------------------------|
| Certificate | : | SCS 30211 |
| Unit under Test | : | Datron 1281 System DMM |
| Serial No | : | 19346-4 |
| Customer | : | Maximilian Heddergott, 5432 Neuenhof |
| Inventory No | : | |
| Date | : | 30.03.2021 |
| Operator | : | D. Malic |

| TEST | RANGE | UUT INDICATED | SYSTEM ACTUAL | MODIFIER | ERROR % | EXP. (%TOL) | M UNCERT | F |
|------|-------|------------------|------------------|----------|------------|----------------|-------------|---|
|------|-------|------------------|------------------|----------|------------|----------------|-------------|---|

AC Voltage Accuracy Test:
200mV Range:

| | | | | | | | | |
|----|-----|-------------|--------------|---------|--------|-----|----|-------|
| 67 | 200 | 50.00012mV | 50.000000mV | @_1kHz | 2.40 | ppm | 1 | 9.0uV |
| 68 | 200 | 99.99860mV | 100.000000mV | @_1kHz | -14.0 | ppm | 6 | 15uV |
| 69 | 200 | 189.99792mV | 190.000000mV | @_1kHz | -10.9 | ppm | 5 | 26uV |
| 70 | 200 | 99.99394mV | 100.000000mV | @_10kHz | -60.6 | ppm | 25 | 15uV |
| 71 | 200 | 99.98714mV | 100.000000mV | @_20kHz | -0.013 | % | 27 | 15uV |
| 72 | 200 | 99.98326mV | 100.000000mV | @_50kHz | -0.017 | % | 19 | 21uV |

2V Range:

| | | | | | | | | |
|----|---|-------------|-------------|---------|--------|-----|----|-------|
| 73 | 2 | 0.4999746V | 0.50000000V | @_1kHz | -50.8 | ppm | 30 | 55uV |
| 74 | 2 | 0.9999352V | 1.00000000V | @_1kHz | -64.8 | ppm | 43 | 90uV |
| 75 | 2 | 1.89998778V | 1.90000000V | @_1kHz | -64.3 | ppm | 46 | 150uV |
| 76 | 2 | 0.9999128V | 1.00000000V | @_10kHz | -87.2 | ppm | 51 | 90uV |
| 77 | 2 | 0.99998062V | 1.00000000V | @_20kHz | -0.019 | % | 67 | 90uV |
| 78 | 2 | 0.99996862V | 1.00000000V | @_50kHz | -0.031 | % | 45 | 90uV |

10V Range:

| | | | | | | | | |
|----|----|------------|-------------|---------|--------|-----|----|-------|
| 79 | 20 | 2.000020V | 2.0000000V | @_1kHz | 10.0 | ppm | 4 | 160uV |
| 80 | 20 | 9.999654V | 10.0000000V | @_1kHz | -34.6 | ppm | 23 | 450uV |
| 81 | 20 | 18.999296V | 19.0000000V | @_1kHz | -37.1 | ppm | 26 | 810uV |
| 82 | 20 | 9.999764V | 10.0000000V | @_10kHz | -23.6 | ppm | 14 | 450uV |
| 83 | 20 | 9.999064V | 10.0000000V | @_20kHz | -93.6 | ppm | 32 | 450uV |
| 84 | 20 | 9.996970V | 10.0000000V | @_50kHz | -0.030 | % | 43 | 800uV |

200V Range:

| | | | | | | | | |
|----|-----|-----------|-------------|---------|--------|-----|----|-------|
| 85 | 200 | 20.00130V | 20.000000V | @_1kHz | 65.0 | ppm | 28 | 860uV |
| 86 | 200 | 99.99466V | 100.000000V | @_1kHz | -53.4 | ppm | 36 | 5.3mV |
| 87 | 200 | 99.99470V | 100.000000V | @_1kHz | -53.0 | ppm | 35 | 5.3mV |
| 88 | 200 | 99.98734V | 100.000000V | @_10kHz | -0.013 | % | 75 | 5.3mV |
| 89 | 200 | 99.98364V | 100.000000V | @_20kHz | -0.016 | % | 56 | 5.3mV |
| 90 | 200 | 99.97282V | 100.000000V | @_50kHz | -0.027 | % | 39 | 9.0mV |

1000V Range:

| | | | | | | | | |
|-----|------|-----------|-------------|----------|--------|-----|----|-------|
| 91 | 1000 | 199.9884V | 200.00000V | @_1kHz | -58.0 | ppm | 23 | 10mV |
| 92 | 1000 | 499.9902V | 500.00000V | @_1kHz | -19.6 | ppm | 10 | 37mV |
| 93 | 1000 | 999.9748V | 1000.00000V | @_1kHz | -25.2 | ppm | 2 | 70mV |
| 94 | 1000 | 999.9750V | 1000.00000V | @_1kHz | -25.0 | ppm | 2 | 140mV |
| 95 | 1000 | 999.9562V | 1000.00000V | @_10kHz | -43.8 | ppm | 3 | 140mV |
| 96 | 1000 | 999.8974V | 1000.00000V | @_20kHz | -0.010 | % | 7 | 150mV |
| 97 | 1000 | 999.8784V | 1000.00000V | @_30kHz | -0.012 | % | 8 | 150mV |
| 98 | 1000 | 999.8138V | 1000.00000V | @_50kHz | -0.019 | % | 10 | 150mV |
| 99 | 1000 | 999.7130V | 1000.00000V | @_70kHz | -0.029 | % | 15 | 150mV |
| 100 | 1000 | 999.3670V | 1000.00000V | @_100kHz | -0.063 | % | 34 | 150mV |



Testreport
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| Customer | : | Maximilian Heddergott, 5432 Neuenhof |
| Inventory No | : | |
| Date | : | 30.03.2021 |
| Operator | : | D. Malic |

| TEST | RANGE | UUT INDICATED | SYSTEM ACTUAL | MODIFIER | ERROR | EXP. (%) | M UNCERT | F |
|------|-------|---------------|---------------|----------|-------|----------|----------|---|
|------|-------|---------------|---------------|----------|-------|----------|----------|---|

DC Current Linearity Test:

UUT Settings: Filter=On, Guard=Lcl, Range=Manual

200mA Range:

| | | | | | | | | |
|-----|-----|-------------|--------------|--|--------|-----|----|-------|
| 101 | 200 | 1.0000mA | 1.00000mA | | 0.00 | ppm | 0 | 870nA |
| 102 | 200 | 5.0000mA | 5.00000mA | | 0.00 | ppm | 0 | 1.1uA |
| 103 | 200 | 10.0000mA | 10.00000mA | | 4.00 | ppm | 2 | 1.3uA |
| 104 | 200 | 20.0000mA | 20.00000mA | | 2.00 | ppm | 1 | 1.8uA |
| 105 | 200 | 50.0000mA | 50.00000mA | | -0.40 | ppm | 0 | 3.2uA |
| 106 | 200 | 69.9999mA | 70.00000mA | | -1.14 | ppm | 1 | 4.1uA |
| 107 | 200 | 99.9999mA | 100.00000mA | | -0.80 | ppm | 1 | 5.5uA |
| 108 | 200 | 119.9998mA | 120.00000mA | | -1.50 | ppm | 1 | 6.5uA |
| 109 | 200 | 149.9998mA | 150.00000mA | | -1.47 | ppm | 1 | 7.9uA |
| 110 | 200 | 189.9997mA | 190.00000mA | | -1.37 | ppm | 1 | 9.8uA |
| 111 | 200 | -0.9995mA | -1.00000mA | | -0.046 | % | 51 | 870nA |
| 112 | 200 | -4.9996mA | -5.00000mA | | -88.0 | ppm | 34 | 1.1uA |
| 113 | 200 | -9.9995mA | -10.00000mA | | -48.0 | ppm | 27 | 1.3uA |
| 114 | 200 | -49.9996mA | -50.00000mA | | -8.40 | ppm | 7 | 3.2uA |
| 115 | 200 | -99.9997mA | -100.00000mA | | -3.20 | ppm | 3 | 5.5uA |
| 116 | 200 | -150.0000mA | -150.00000mA | | -0.27 | ppm | 0 | 7.9uA |
| 117 | 200 | -190.0002mA | -190.00000mA | | 1.26 | ppm | 1 | 9.8uA |

DC Current Accuracy Test:

200uA Range:

| | | | | | | | | |
|-----|-----|-------------|--------------|--|-------|-----|---|-------|
| 118 | 200 | 49.9997µA | 50.00000µA | | -6.80 | ppm | 6 | 9.1nA |
| 119 | 200 | 99.9993µA | 100.00000µA | | -6.60 | ppm | 6 | 11nA |
| 120 | 200 | 189.9989µA | 190.00000µA | | -6.00 | ppm | 6 | 15nA |
| 121 | 200 | -50.0002µA | -50.00000µA | | 4.80 | ppm | 4 | 9.1nA |
| 122 | 200 | -100.0004µA | -100.00000µA | | 4.20 | ppm | 4 | 11nA |
| 123 | 200 | -190.0012µA | -190.00000µA | | 6.32 | ppm | 6 | 15nA |

2mA Range:

| | | | | | | | | |
|-----|---|-------------|--------------|--|------|-----|---|------|
| 124 | 2 | 0.500000mA | 0.5000000mA | | 0.00 | ppm | 0 | 26nA |
| 125 | 2 | 1.000001mA | 1.0000000mA | | 0.60 | ppm | 1 | 44nA |
| 126 | 2 | 1.900002mA | 1.9000000mA | | 1.26 | ppm | 1 | 77nA |
| 127 | 2 | -0.500002mA | -0.5000000mA | | 4.00 | ppm | 3 | 26nA |
| 128 | 2 | -1.000005mA | -1.0000000mA | | 5.40 | ppm | 5 | 44nA |
| 129 | 2 | -1.900013mA | -1.9000000mA | | 7.05 | ppm | 7 | 77nA |

20mA Range:

| | | | | | | | | |
|-----|----|-------------|-------------|--|------|-----|----|-------|
| 130 | 20 | 5.00003mA | 5.00000mA | | 5.20 | ppm | 4 | 220nA |
| 131 | 20 | 10.00007mA | 10.00000mA | | 6.80 | ppm | 6 | 400nA |
| 132 | 20 | 19.00016mA | 19.00000mA | | 8.42 | ppm | 8 | 710nA |
| 133 | 20 | -5.00006mA | -5.00000mA | | 12.8 | ppm | 11 | 220nA |
| 134 | 20 | -10.00014mA | -10.00000mA | | 14.4 | ppm | 13 | 400nA |
| 135 | 20 | -19.00029mA | -19.00000mA | | 15.5 | ppm | 15 | 710nA |



Testreport
 368175

| | | |
|-----------------|---|--------------------------------------|
| Certificate | : | SCS 30211 |
| Unit under Test | : | Datron 1281 System DMM |
| Serial No | : | 19346-4 |
| Customer | : | Maximilian Heddergott, 5432 Neuenhof |
| Inventory No | : | |
| Date | : | 30.03.2021 |
| Operator | : | D. Malic |

| TEST | RANGE | UUT INDICATED | SYSTEM ACTUAL | MODIFIER | ERROR | EXP. (%) | M UNCERT | F |
|------|-------|---------------|---------------|----------|-------|----------|----------|---|
|------|-------|---------------|---------------|----------|-------|----------|----------|---|

1A Range:

| | | | | | | | |
|-----|---|------------|-------------|--|-----------|---|------|
| 136 | 2 | 0.199998A | 0.2000000A | | -11.0 ppm | 3 | 29uA |
| 137 | 2 | 0.499998A | 0.5000000A | | -4.80 ppm | 2 | 51uA |
| 138 | 2 | 0.999999A | 1.0000000A | | -0.80 ppm | 0 | 87uA |
| 139 | 2 | -0.200001A | -0.2000000A | | 7.00 ppm | 2 | 29uA |
| 140 | 2 | -0.500004A | -0.5000000A | | 8.00 ppm | 3 | 51uA |
| 141 | 2 | -1.000010A | -1.0000000A | | 10.0 ppm | 4 | 87uA |

AC Current Flatness Test:

 UUT Settings: Filter=On, Guard=Lcl, Range=Manual

200mA Range:

| | | | | | | | |
|-----|-----|-----------|------------|--------|-----------|----|-------|
| 142 | 200 | 9.999mA | 10.0000mA | @_1kHz | -80.0 ppm | 2 | 2.2uA |
| 143 | 200 | 30.002mA | 30.0000mA | @_1kHz | 80.0 ppm | 5 | 8.8uA |
| 144 | 200 | 50.005mA | 50.0000mA | @_1kHz | 0.010 % | 9 | 13uA |
| 145 | 200 | 60.006mA | 60.0000mA | @_1kHz | 0.011 % | 11 | 14uA |
| 146 | 200 | 70.009mA | 70.0000mA | @_1kHz | 0.013 % | 14 | 16uA |
| 147 | 200 | 80.011mA | 80.0000mA | @_1kHz | 0.013 % | 17 | 18uA |
| 148 | 200 | 90.012mA | 90.0000mA | @_1kHz | 0.014 % | 18 | 20uA |
| 149 | 200 | 110.015mA | 110.0000mA | @_1kHz | 0.014 % | 21 | 24uA |
| 150 | 200 | 120.016mA | 120.0000mA | @_1kHz | 0.014 % | 22 | 26uA |
| 151 | 200 | 130.018mA | 130.0000mA | @_1kHz | 0.014 % | 22 | 28uA |
| 152 | 200 | 140.020mA | 140.0000mA | @_1kHz | 0.014 % | 24 | 30uA |
| 153 | 200 | 150.021mA | 150.0000mA | @_1kHz | 0.014 % | 25 | 32uA |
| 154 | 200 | 170.024mA | 170.0000mA | @_1kHz | 0.014 % | 27 | 35uA |
| 155 | 200 | 190.028mA | 190.0000mA | @_1kHz | 0.015 % | 29 | 39uA |

AC Current Accuracy Test:

200uA Range:

| | | | | | | | |
|-----|-----|-----------|------------|---------|----------|----|------|
| 156 | 200 | 100.019µA | 100.0000µA | @_100Hz | 0.019 % | 27 | 31nA |
| 157 | 200 | 100.020µA | 100.0000µA | @_400Hz | 0.020 % | 29 | 31nA |
| 158 | 200 | 100.018µA | 100.0000µA | @_1kHz | 0.018 % | 25 | 31nA |
| 159 | 200 | 100.017µA | 100.0000µA | @_2kHz | 0.017 % | 25 | 47nA |
| 160 | 200 | 100.013µA | 100.0000µA | @_3kHz | 0.013 % | 18 | 47nA |
| 161 | 200 | 100.007µA | 100.0000µA | @_4kHz | 74.0 ppm | 11 | 47nA |
| 162 | 200 | 100.003µA | 100.0000µA | @_5kHz | 30.0 ppm | 4 | 47nA |

2mA Range:

| | | | | | | | |
|-----|---|-----------|------------|---------|-----------|----|-------|
| 163 | 2 | 1.00017mA | 1.000000mA | @_100Hz | 0.017 % | 25 | 200nA |
| 164 | 2 | 1.00019mA | 1.000000mA | @_400Hz | 0.019 % | 27 | 200nA |
| 165 | 2 | 1.00016mA | 1.000000mA | @_1kHz | 0.016 % | 23 | 200nA |
| 166 | 2 | 1.00016mA | 1.000000mA | @_2kHz | 0.016 % | 22 | 360nA |
| 167 | 2 | 1.00010mA | 1.000000mA | @_3kHz | 0.010 % | 14 | 360nA |
| 168 | 2 | 1.00005mA | 1.000000mA | @_4kHz | 46.0 ppm | 7 | 360nA |
| 169 | 2 | 0.99998mA | 1.000000mA | @_5kHz | -16.0 ppm | 2 | 360nA |



Testreport
368175

| | | |
|-----------------|---|--------------------------------------|
| Certificate | : | SCS 30211 |
| Unit under Test | : | Datron 1281 System DMM |
| Serial No | : | 19346-4 |
| Customer | : | Maximilian Heddergott, 5432 Neuenhof |
| Inventory No | : | |
| Date | : | 30.03.2021 |
| Operator | : | D. Malic |

| TEST | RANGE | UUT INDICATED | SYSTEM ACTUAL | MODIFIER | ERROR | EXP. (%) | M |
|------|-------|---------------|---------------|----------|--------|----------|---|
| | | | | | (%TOL) | UNCERT | F |

20mA Range:

| | | | | | | | |
|-----|----|-----------|------------|---------|-----------|----|-------|
| 170 | 20 | 0.9999mA | 1.00000mA | @_100Hz | -80.0 ppm | 2 | 240nA |
| 171 | 20 | 10.0018mA | 10.00000mA | @_400Hz | 0.018 % | 26 | 1.8uA |
| 172 | 20 | 10.0015mA | 10.00000mA | @_1kHz | 0.015 % | 21 | 1.8uA |
| 173 | 20 | 10.0016mA | 10.00000mA | @_2kHz | 0.016 % | 22 | 2.8uA |
| 174 | 20 | 10.0009mA | 10.00000mA | @_3kHz | 92.0 ppm | 13 | 2.8uA |
| 175 | 20 | 10.0004mA | 10.00000mA | @_4kHz | 44.0 ppm | 6 | 2.8uA |
| 176 | 20 | 9.9998mA | 10.00000mA | @_5kHz | -18.0 ppm | 3 | 2.8uA |

200mA Range:

| | | | | | | | |
|-----|-----|-----------|------------|---------|----------|----|------|
| 177 | 200 | 100.017mA | 100.0000mA | @_100Hz | 0.017 % | 25 | 22uA |
| 178 | 200 | 100.017mA | 100.0000mA | @_400Hz | 0.017 % | 25 | 22uA |
| 179 | 200 | 100.013mA | 100.0000mA | @_1kHz | 0.013 % | 18 | 22uA |
| 180 | 200 | 100.013mA | 100.0000mA | @_2kHz | 0.013 % | 19 | 30uA |
| 181 | 200 | 100.008mA | 100.0000mA | @_3kHz | 80.0 ppm | 11 | 30uA |
| 182 | 200 | 100.002mA | 100.0000mA | @_4kHz | 24.0 ppm | 3 | 30uA |
| 183 | 200 | 100.000mA | 100.0000mA | @_5kHz | 0.00 ppm | 0 | 30uA |

1A Range:

| | | | | | | | |
|-----|---|----------|-----------|---------|-----------|----|-------|
| 184 | 1 | 0.99999A | 1.000000A | @_100Hz | -8.00 ppm | 1 | 340uA |
| 185 | 1 | 0.99993A | 1.000000A | @_400Hz | -68.0 ppm | 7 | 340uA |
| 186 | 1 | 0.99968A | 1.000000A | @_1kHz | -0.032 % | 32 | 340uA |
| 187 | 1 | 0.99970A | 1.000000A | @_2kHz | -0.030 % | 11 | 560uA |
| 188 | 1 | 0.99978A | 1.000000A | @_3kHz | -0.022 % | 8 | 560uA |
| 189 | 1 | 0.99987A | 1.000000A | @_4kHz | -0.013 % | 5 | 560uA |
| 190 | 1 | 1.00001A | 1.000000A | @_5kHz | 12.0 ppm | 0 | 560uA |

Resistance Verification:

UUT Settings: Filter=Off, Guard=Lcl, Range=Manual
Zero Adjustment for each Range

TRUE_10_Ohms Range Test:

| | | | | | | | |
|-----|----|------------|-------------|-----------|-------------|---|-------|
| 191 | 20 | -0.000002Ω | 0.0000000Ω | True_Ω_4W | -0.0000020Ω | 5 | 590nΩ |
| 192 | 20 | 1.000010Ω | 1.0000082Ω | True_Ω_4W | 1.40 ppm | 3 | 6.0uΩ |
| 193 | 20 | 10.000132Ω | 10.0001210Ω | True_Ω_4W | 1.06 ppm | 6 | 25uΩ |

TRUE_100_Ohms Range Test:

| | | | | | | | |
|-----|-----|------------|-------------|-----------|-----------|---|-------|
| 194 | 200 | 0.00000Ω | 0.000000Ω | True_Ω_4W | 0.000000Ω | 0 | 5.9uΩ |
| 195 | 200 | 10.00012Ω | 10.000121Ω | True_Ω_4W | -0.50 ppm | 2 | 26uΩ |
| 196 | 200 | 100.00167Ω | 100.001640Ω | True_Ω_4W | 0.34 ppm | 3 | 130uΩ |

TRUE_1k_Ohms Range Test:

| | | | | | | | |
|-----|---|-------------|--------------|-----------|--------------|----|-------|
| 197 | 2 | 0.0000000kΩ | 0.00000000kΩ | True_Ω_4W | 0.00000000kΩ | 0 | 58uΩ |
| 198 | 2 | 0.1000017kΩ | 0.10000164kΩ | True_Ω_4W | 0.60 ppm | 3 | 170uΩ |
| 199 | 2 | 1.0000203kΩ | 1.00001840kΩ | True_Ω_4W | 1.92 ppm | 19 | 1.9mΩ |



Testreport
368175

| | | |
|-----------------|---|--------------------------------------|
| Certificate | : | SCS 30211 |
| Unit under Test | : | Datron 1281 System DMM |
| Serial No | : | 19346-4 |
| Customer | : | Maximilian Heddergott, 5432 Neuenhof |
| Inventory No | : | |
| Date | : | 30.03.2021 |
| Operator | : | D. Malic |

| TEST | RANGE | UUT INDICATED | SYSTEM ACTUAL | MODIFIER | ERROR ERROR | EXP. (%TOL) | M UNCERT | F |
|-------------------------------------|-------|------------------|------------------|-----------|----------------|----------------|-------------|---|
| TRUE_10k_Ohms Range Test: | | | | | | | | |
| 200 | 20 | -0.000001kΩ | 0.0000000kΩ | True_Ω_4W | -0.0000010kΩ | 8 | 590uΩ | |
| 201 | 20 | 1.000016kΩ | 1.0000184kΩ | True_Ω_4W | -2.20 ppm | 11 | 2.5mΩ | |
| 202 | 20 | 10.000341kΩ | 10.0003440kΩ | True_Ω_4W | -0.32 ppm | 3 | 20mΩ | |
| TRUE_100k_Ohms Range Test: | | | | | | | | |
| 203 | 200 | 0.00001kΩ | 0.0000000kΩ | True_Ω_4W | 0.000010kΩ | 8 | 5.9mΩ | |
| 204 | 200 | 10.00036kΩ | 10.000344kΩ | True_Ω_4W | 1.40 ppm | 7 | 25mΩ | |
| 205 | 200 | 100.00617kΩ | 100.006070kΩ | True_Ω_4W | 1.00 ppm | 10 | 420mΩ | |
| 1M_Ohms Range Test: (Filt_On) | | | | | | | | |
| 206 | 2 | 0.0000000MΩ | 0.00000000MΩ | Ω_4W | 0.00000000MΩ | 0 | 58mΩ | |
| 207 | 2 | 0.1000056MΩ | 0.10000607MΩ | Ω_4W | -4.50 ppm | 11 | 430mΩ | |
| 208 | 2 | 1.0000033MΩ | 1.00000700MΩ | Ω_4W | -3.68 ppm | 22 | 2.5Ω | |
| 10M_Ohms Range Test: (Filt_On) | | | | | | | | |
| 209 | 20 | 0.000001MΩ | 0.0000000MΩ | Ω_4W | 0.0000010MΩ | 1 | 580mΩ | |
| 210 | 20 | 1.000037MΩ | 1.0000070MΩ | Ω_4W | 30.0 ppm | 16 | 2.8Ω | |
| 211 | 20 | 10.000685MΩ | 10.0004510MΩ | Ω_4W | 23.4 ppm | 51 | 83Ω | |
| HI_100M_Ohms Range Test: (Filt_Off) | | | | | | | | |
| 212 | 200 | 0.0000MΩ | 0.00000MΩ | Hi_Ω_2W | 0.00000MΩ | 0 | 58Ω | |
| 213 | 200 | 10.0012MΩ | 10.000451MΩ | Hi_Ω_2W | 78.9 ppm | 4 | 240Ω | |
| 214 | 200 | 99.9651MΩ | 99.98554MΩ | Hi_Ω_2W | -0.020 % | 43 | 1.3kΩ | |
| HI_1G_Ohms Range Test: (Filt Off) | | | | | | | | |
| 215 | 2 | 0.000000GΩ | 0.0000000GΩ | Hi_Ω_2W | 0.0000000GΩ | 0 | 580Ω | |
| 216 | 2 | 0.100151GΩ | 0.09998554GΩ | Hi_Ω_2W | 0.166 % | 8 | 2.8kΩ | |
| 217 | 2 | 0.996401GΩ | 0.9952000GΩ | Hi_Ω_2W | 0.121 % | 25 | 1.6MΩ | |

Past Calibration UUT stored Variables:

UUT Programmed PUD\$:
#234 CAL 31.Mar.2021 D. Malic ELCAL AG

UUT Programmed EXT_DUE\$:
"31Mar22 "

End of Datron 1281: C/L Main Verification