

## Capacidades de Medición y Calibración (CMC)

**Laboratorio de Corriente Continua y Alterna**

**Publicadas en la base de datos KCDB 2.0 del BIPM**

( [https://www.bipm.org/kcdb/cmc/search?domain=PHYSICS&areaId=2&keywords=&specificPart.branch=-1&specificPart.service=-1&specificPart.subService=-1&specificPart.individualService=-1&\\_countries=1&countries=17&publicDateFrom=&publicDateTo=&unit=-1&minValue=&ma](https://www.bipm.org/kcdb/cmc/search?domain=PHYSICS&areaId=2&keywords=&specificPart.branch=-1&specificPart.service=-1&specificPart.subService=-1&specificPart.individualService=-1&_countries=1&countries=17&publicDateFrom=&publicDateTo=&unit=-1&minValue=&ma) )

| Servicio de calibración o medición           |                               |                                          | Intervalo de medición |              |          | Especificaciones |                | Incertidumbre expandida |          |                     |                           |                                          | Patrón de referencia utilizado en la calibración |                        | Identificador de servicio |
|----------------------------------------------|-------------------------------|------------------------------------------|-----------------------|--------------|----------|------------------|----------------|-------------------------|----------|---------------------|---------------------------|------------------------------------------|--------------------------------------------------|------------------------|---------------------------|
| Magnitud                                     | Equipo                        | Método de medición                       | Valor mínimo          | Valor máximo | Unidades | Parámetro        | Valor          | Valor                   | Unidades | Factor de Cobertura | Probabilidad de cobertura | ¿La incertidumbre expandida es relativa? | Patrón                                           | Fuente de trazabilidad |                           |
| Fuentes de Tensión DC: valores fijos         | Referencias de tensión DC     | Oposición serie                          | 1.018                 | 1.018        | V        | Temperatura      | 23.0 °C        | 2,3                     | µV/V     | 2                   | 95,45%                    | Si                                       | Referencia de tensión DC (Zener)                 | BIPM                   | INM-L03-01                |
|                                              |                               |                                          |                       |              |          | Presión          | 751 hPa        |                         |          |                     |                           |                                          |                                                  |                        |                           |
|                                              |                               |                                          |                       |              |          |                  |                |                         |          |                     |                           |                                          |                                                  |                        |                           |
| Fuentes de Tensión DC: valores fijos         | Referencias de tensión DC     | Oposición serie                          | 10                    | 10           | V        | Temperatura      | 23.0 °C        | 1,3                     | µV/V     | 2                   | 95,45%                    | Si                                       | Referencia de tensión DC (Zener)                 | BIPM                   | INM-L03-02                |
|                                              |                               |                                          |                       |              |          | Presión          | 751 hPa        |                         |          |                     |                           |                                          |                                                  |                        |                           |
|                                              |                               |                                          |                       |              |          |                  |                |                         |          |                     |                           |                                          |                                                  |                        |                           |
| Fuentes de Tensión DC: valores bajos         | Calibradores multifunción     | Comparación directa                      | 0,001                 | 10           | V        | Temperatura      | 23.0 °C        | 9.3E-8 a 4.9E-5         | V        | 2                   | 95,45%                    | No                                       | Multímetro, nanovoltímetro                       | CENAM - METAS          | INM-L03-03                |
|                                              |                               |                                          |                       |              |          |                  |                |                         |          |                     |                           |                                          |                                                  |                        |                           |
|                                              |                               |                                          |                       |              |          |                  |                |                         |          |                     |                           |                                          |                                                  |                        |                           |
| Fuentes de Tensión DC: valores intermedios   | Calibradores multifunción     | Comparación directa                      | >10                   | 1000         | V        | Temperatura      | 23.0 °C        | 4.9E-5 a 8.8E-3         | V        | 2                   | 95,45%                    | No                                       | Multímetro                                       | CENAM - METAS          | INM-L03-04                |
|                                              |                               |                                          |                       |              |          |                  |                |                         |          |                     |                           |                                          |                                                  |                        |                           |
|                                              |                               |                                          |                       |              |          |                  |                |                         |          |                     |                           |                                          |                                                  |                        |                           |
| Medidores de Tensión DC: valores intermedios | Multímetros y nanovoltímetros | comparación utilizando divisor resistivo | 1                     | < 200        | mV       | Temperatura      | 23.0 °C        | 1.2E-5 a 1.9E-3         | mV       | 2                   | 95,45%                    | No                                       | Multímetro y resistencias patrón                 | CENAM - METAS - BIPM   | INM-L03-05                |
|                                              |                               |                                          |                       |              |          | Frecuencia       | 50 Hz a 1 MHz  |                         |          |                     |                           |                                          |                                                  |                        |                           |
|                                              |                               |                                          |                       |              |          |                  |                |                         |          |                     |                           |                                          |                                                  |                        |                           |
| Medidores de tensión AC                      | Multímetros                   | Comparación directa                      | 0,002                 | 1000         | V        | Temperatura      | 23.0 °C        | 4.2E-6 a 7.9E-2         | V        | 2                   | 95,45%                    | No                                       | Calibrador multifunción                          | CENAM - METAS          | INM-L03-29                |
|                                              |                               |                                          |                       |              |          | Frecuencia       | 50 Hz a 1 MHz  |                         |          |                     |                           |                                          |                                                  |                        |                           |
|                                              |                               |                                          |                       |              |          |                  |                |                         |          |                     |                           |                                          |                                                  |                        |                           |
| Fuentes de corriente AC                      | Calibradores multifunción     | Comparación directa                      | 0,001                 | 2.2          | A        | Temperatura      | 23.0 °C        | 4.8E-7 a 7.6E-3         | A        | 2                   | 95,45%                    | No                                       | Multímetro                                       | CENAM - METAS          | INM-L03-30                |
|                                              |                               |                                          |                       |              |          | Frecuencia       | 50 Hz a 5 kHz  |                         |          |                     |                           |                                          |                                                  |                        |                           |
|                                              |                               |                                          |                       |              |          |                  |                |                         |          |                     |                           |                                          |                                                  |                        |                           |
| Medidores de corriente AC                    | Multímetros                   | Comparación directa                      | 0,001                 | 2,2          | A        | Temperatura      | 23.0 °C        | 1.7E-7 a 1.1E-3         | A        | 2                   | 95,45%                    | No                                       | Calibrador multifunción                          | CENAM - METAS          | INM-L03-31                |
|                                              |                               |                                          |                       |              |          | Frecuencia       | 50 Hz a 5 kHz  |                         |          |                     |                           |                                          |                                                  |                        |                           |
|                                              |                               |                                          |                       |              |          |                  |                |                         |          |                     |                           |                                          |                                                  |                        |                           |
| Fuentes de tensión AC                        | Calibradores multifunción     | Sustitución                              | 0,002                 | 100          | V        | Temperatura      | 23.0 °C        | 4.2E-6 a 6.9E-3         | V        | 2                   | 95,45%                    | No                                       | Calibrador multifunción y Multímetro             | CENAM - METAS          | INM-L03-32                |
|                                              |                               |                                          |                       |              |          | Frecuencia       | 50 Hz a 20 kHz |                         |          |                     |                           |                                          |                                                  |                        |                           |
|                                              |                               |                                          |                       |              |          |                  |                |                         |          |                     |                           |                                          |                                                  |                        |                           |
| Fuentes de corriente AC                      | Calibradores multifunción     | Sustitución                              | 0,001                 | 2,2          | A        | Temperatura      | 23.0 °C        | 4.3E-7 a 6.5E-3         | A        | 2                   | 95,45%                    | No                                       | Calibrador multifunción y Multímetro             | CENAM - METAS          | INM-L03-33                |
|                                              |                               |                                          |                       |              |          | Frecuencia       | 50 Hz a 5 kHz  |                         |          |                     |                           |                                          |                                                  |                        |                           |
|                                              |                               |                                          |                       |              |          |                  |                |                         |          |                     |                           |                                          |                                                  |                        |                           |

**Fecha de actualización: 2025-05-15**

**INM-L03-03**

DC voltage sources: low values

|                    | Absolute expanded uncertainty |
|--------------------|-------------------------------|
| 1 mV to 10 mV      | 0.000093 mV to 0.00062 mV     |
| > 10 mV to < 20 mV | 0.00093 mV to 0.0014 mV       |
| 20 mV to < 200 mV  | 0.00059 mV to 0.0020 mV       |
| 0.2 V to < 2 V     | 0.0000021 V to 0.000012 V     |
| 2 V to 10 V        | 0.000014 V to 0.000049 V      |

**INM-L03-04**

DC voltage sources: intermediate values

|                  | Absolute expanded uncertainty |
|------------------|-------------------------------|
| > 10 V to < 20 V | 0.000049 V to 0.000095 V      |
| 20 V to < 200 V  | 0.00014 V to 0.0014 V         |
| 200 V to 1000 V  | 0.0017 V to 0.0088 V          |

**INM-L03-05**

DC voltage meters: intermediate values

|                   | Absolute expanded uncertainty |
|-------------------|-------------------------------|
| 1 mV to < 2 mV    | 0.000012 mV to 0.000023 mV    |
| 2 mV to < 20 mV   | 0.000025 mV to 0.00023 mV     |
| 20 mV to < 200 mV | 0.00022 mV to 0.0019 mV       |

**INM-L03-06**

DC voltage meters: intermediate values

|                   | Absolute expanded uncertainty |
|-------------------|-------------------------------|
| 0.02 V to 0.2 V   | 0.00000057 V to 0.0000019 V   |
| > 0.2 V to 2 V    | 0.0000017 V to 0.000011 V     |
| > 2 V to 10 V     | 0.000010 V to 0.000038 V      |
| > 10 V to 20 V    | 0.000040 V to 0.000076 V      |
| > 20 V to 200 V   | 0.00014 V to 0.0011 V         |
| > 200 V to 1000 V | 0.0017 V to 0.0075 V          |

**INM-L03-07**

DC resistance standards and sources: low values

|              | Relative expanded uncertainty / ( $\mu\Omega/\Omega$ ) |
|--------------|--------------------------------------------------------|
| 0.1 $\Omega$ | 0.77                                                   |
| 1 $\Omega$   | 0.70                                                   |

**INM-L03-08**

DC resistance standards and sources: intermediate values

|                | Relative expanded uncertainty / ( $\mu\Omega/\Omega$ ) |
|----------------|--------------------------------------------------------|
| 10 $\Omega$    | 0.77                                                   |
| 100 $\Omega$   | 1.2                                                    |
| 1 k $\Omega$   | 0.70                                                   |
| 10 k $\Omega$  | 0.21                                                   |
| 100 k $\Omega$ | 0.48                                                   |

**INM-L03-10**

DC resistance standards and sources: high values

|                 | Relative expanded uncertainty / ( $\mu\Omega/\Omega$ ) |
|-----------------|--------------------------------------------------------|
| 10 M $\Omega$   | 4.6                                                    |
| 100 M $\Omega$  | 20                                                     |
| 1000 M $\Omega$ | 145                                                    |



**INM-L03-12**

DC resistance standards and sources: intermediate values

|                                   | Absolute expanded uncertainty                |
|-----------------------------------|----------------------------------------------|
| > 1 $\Omega$ to 10 $\Omega$       | 0.000024 $\Omega$ to 0.000086 $\Omega$       |
| > 10 $\Omega$ to 100 $\Omega$     | 0.00012 $\Omega$ to 0.00076 $\Omega$         |
| > 0.1 k $\Omega$ to 1 k $\Omega$  | 0.0000012 k $\Omega$ to 0.0000079 k $\Omega$ |
| >1 k $\Omega$ to 10 k $\Omega$    | 0.000012 k $\Omega$ to 0.000076 k $\Omega$   |
| > 10 k $\Omega$ to 100 k $\Omega$ | 0.00012 k $\Omega$ to 0.00076 k $\Omega$     |
| > 0.1 M $\Omega$ to 1 M $\Omega$  | 0.0000017 M $\Omega$ to 0.000014 M $\Omega$  |

**INM-L03-13**

DC resistance standards and sources: high values

|                                   | Absolute expanded uncertainty              |
|-----------------------------------|--------------------------------------------|
| > 1 M $\Omega$ to 10 M $\Omega$   | 0.000021 M $\Omega$ to 0.000092 M $\Omega$ |
| > 10 M $\Omega$ to 100 M $\Omega$ | 0.0011 M $\Omega$ to 0.0033 M $\Omega$     |
| > 0.1 G $\Omega$ to 1 G $\Omega$  | 0.00010 G $\Omega$ to 0.00014 G $\Omega$   |

**INM-L03-14**

DC resistance standards and sources: multiple ranges

|                                   | Absolute expanded uncertainty                |
|-----------------------------------|----------------------------------------------|
| 0.1 $\Omega$ to 1 $\Omega$        | 0.0000055 $\Omega$ to 0.000015 $\Omega$      |
| > 1 $\Omega$ to 10 $\Omega$       | 0.000030 $\Omega$ to 0.000088 $\Omega$       |
| > 10 $\Omega$ to 100 $\Omega$     | 0.00014 $\Omega$ to 0.00078 $\Omega$         |
| > 0.1 k $\Omega$ to 1 k $\Omega$  | 0.0000014 k $\Omega$ to 0.0000080 k $\Omega$ |
| >1 k $\Omega$ to 10 k $\Omega$    | 0.000013 k $\Omega$ to 0.000077 k $\Omega$   |
| > 10 k $\Omega$ to 100 k $\Omega$ | 0.00014 k $\Omega$ to 0.00077 k $\Omega$     |
| > 0.1 M $\Omega$ to 1 M $\Omega$  | 0.0000018 M $\Omega$ to 0.000015 M $\Omega$  |
| > 1 M $\Omega$ to 10 M $\Omega$   | 0.000021 M $\Omega$ to 0.000093 M $\Omega$   |
| > 10 M $\Omega$ to 100 M $\Omega$ | 0.0012 M $\Omega$ to 0.0034 M $\Omega$       |
| > 0.1 G $\Omega$ to 1 G $\Omega$  | 0.00011 G $\Omega$ to 0.00015 G $\Omega$     |

**INM-L03-15**

DC resistance meters: low values

|              | Relative expanded uncertainty / ( $\mu\Omega/\Omega$ ) |
|--------------|--------------------------------------------------------|
| 0.1 $\Omega$ | 5,0                                                    |
| 1 $\Omega$   | 0,80                                                   |

**INM-L03-16**

DC resistance meters: intermediate values

|                | Relative expanded uncertainty / ( $\mu\Omega/\Omega$ ) |
|----------------|--------------------------------------------------------|
| 10 $\Omega$    | 1,6                                                    |
| 100 $\Omega$   | 1,5                                                    |
| 1 k $\Omega$   | 2,6                                                    |
| 10 k $\Omega$  | 0,91                                                   |
| 100 k $\Omega$ | 1,2                                                    |
| 1 M $\Omega$   | 12                                                     |
| 10 M $\Omega$  | 4,6                                                    |
| 100 M $\Omega$ | 27                                                     |
| 1 G $\Omega$   | 59                                                     |

**INM-L03-17**

DC current sources: low values

|                            | Absolute expanded uncertainty      |
|----------------------------|------------------------------------|
| 10 $\mu$ A to < 20 $\mu$ A | 0.00050 $\mu$ A to 0.00057 $\mu$ A |
| 20 $\mu$ A to 100 $\mu$ A  | 0.00058 $\mu$ A to 0.0013 $\mu$ A  |

**INM-L03-18**

DC current sources: intermediate values

|                              | Absolute expanded uncertainty    |
|------------------------------|----------------------------------|
| 100 $\mu$ A to < 200 $\mu$ A | 0.0013 $\mu$ A to 0.0022 $\mu$ A |
| 0.2 mA to 1 mA               | 0.0000056 mA to 0.000012 mA      |
| > 1 mA to < 2 mA             | 0.000018 mA to 0.000027 mA       |
| 2 mA to < 20 mA              | 0.000061 mA to 0.00024 mA        |
| 20 mA                        | 0.0015 mA                        |
| > 20 mA to < 200 mA          | 0.0017 mA to 0.0077 mA           |
| 0.2 A to < 2 A               | 0.000066 A to 0.00040 A          |
| 2 A                          | 0.0012 A                         |
| >2 A to < 20 A               | 0.0054 A to 0.013 A              |

**INM-L03-19**

DC current sources: intermediate values

|               | Absolute expanded uncertainty |
|---------------|-------------------------------|
| 0.2 A to 1 A  | 0.000043 A to 0.00013 A       |
| > 1 A to < 2A | 0.00015 A to 0.00031 A        |



**INM-L03-21**

DC current meters: low values

|                                        | Absolute expanded uncertainty                  |
|----------------------------------------|------------------------------------------------|
| 10 $\mu\text{A}$ to < 20 $\mu\text{A}$ | 0.00018 $\mu\text{A}$ to 0.00021 $\mu\text{A}$ |
| 20 $\mu\text{A}$ to 100 $\mu\text{A}$  | 0.00022 $\mu\text{A}$ to 0.00070 $\mu\text{A}$ |

**INM-L03-22**

DC current meters: intermediate values

|                                          | Absolute expanded uncertainty                |
|------------------------------------------|----------------------------------------------|
| 100 $\mu\text{A}$ to < 200 $\mu\text{A}$ | 0.0007 $\mu\text{A}$ to 0.0013 $\mu\text{A}$ |
| 0.2 mA to 1 mA                           | 0.0000015 mA to 0.0000051 mA                 |
| > 1 mA to < 2 mA                         | 0.000014 mA to 0.000021 mA                   |
| 2 mA to < 20 mA                          | 0.000022 mA to 0.00013 mA                    |
| 20 mA                                    | 0.00015 mA                                   |
| > 20 mA to < 200 mA                      | 0.00063 mA to 0.0021 mA                      |
| 200 mA                                   | 0.0022 mA                                    |

**INM-L03-24**

DC current meters: intermediate values

|                            | Absolute expanded uncertainty  |
|----------------------------|--------------------------------|
| 100 $\mu$ A to 200 $\mu$ A | 0.011 $\mu$ A to 0.015 $\mu$ A |
| > 0.2 mA to 2 mA           | 0.000016 mA to 0.000078 mA     |
| > 2 mA to 20 mA            | 0.00013 mA to 0.00075 mA       |
| > 20 mA to 100 mA          | 0.0018 mA to 0.0053 mA         |
| > 100 mA to 200 mA         | 0.0055 mA to 0.012 mA          |
| > 0.2 A to 1 A             | 0.000031 A to 0.000094 A       |
| > 1 A to 2 A               | 0.00011 A to 0.00026 A         |
| > 2 A to 20 A              | 0.0052 A to 0.0093 A           |

**INM-L03-25**

Impedance (up to the MHz range): Capacitance

|                   | Absolute expanded uncertainty |
|-------------------|-------------------------------|
| 0.1 nF to < 10 nF | 0.00012 nF to 0.012 nF        |
| 10 nF to 1000 nF  | 0.0058 nF to 0.59 nF          |

**INM-L03-26**

Impedance (up to the MHz range): Capacitance

|                                         | Absolute expanded uncertainty                |
|-----------------------------------------|----------------------------------------------|
| 1 $\mu\text{F}$ to < 50 $\mu\text{F}$   | 0.00059 $\mu\text{F}$ to 0.034 $\mu\text{F}$ |
| 50 $\mu\text{F}$ to < 500 $\mu\text{F}$ | 0.060 $\mu\text{F}$ to 0.61 $\mu\text{F}$    |
| 500 $\mu\text{F}$ to 1000 $\mu\text{F}$ | 5.8 $\mu\text{F}$ to 12 $\mu\text{F}$        |

**INM-L03-27**

Impedance (up to the MHz range): Capacitance

|                     | Absolute expanded uncertainty |
|---------------------|-------------------------------|
| 0.1 mF to 0.74 mF   | 0.000025 mF to 0.000051 mF    |
| > 0.74 mF to 7.4 mF | 0.000051 mF to 0.00030 mF     |
| > 7.4 mF to 74 mF   | 0.00041 mF to 0.0029 mF       |
| > 74 mF to 110 mF   | 0.0057 mF to 0.0074 mF        |

AC voltage: sources

[illegible]

## INM-L03-29

AC voltage: meters

|                   | 50 Hz to 1 kHz          | > 1 kHz to 20 kHz       | > 20 kHz to 50 kHz      | > 50 kHz to 100 kHz     | > 100 kHz to 300 kHz  | > 300 kHz to 500 kHz  | > 500 kHz to 1000 kHz |
|-------------------|-------------------------|-------------------------|-------------------------|-------------------------|-----------------------|-----------------------|-----------------------|
| 2 mV to < 2.2 mV  | 0.0042 mV               | 0.0042 mV               | 0.0045 mV               | 0.0062 mV               | 0.012 mV              | 0.023 mV              | 0.026 mV              |
| 2.2 mV to < 22 mV | 0.0042 mV to 0.0061 mV  | 0.0042 mV to 0.0061 mV  | 0.0045 mV to 0.0086 mV  | 0.0062 mV to 0.016 mV   | 0.012 mV to 0.033 mV  | 0.023 mV to 0.051 mV  | 0.026 mV to 0.079 mV  |
| 22 mV to < 220 mV | 0.0090 mV to 0.026 mV   | 0.0090 mV to 0.026 mV   | 0.012 mV to 0.052 mV    | 0.027 mV to 0.12 mV     | 0.040 mV to 0.22 mV   | 0.056 mV to 0.33 mV   | 0.10 mV to 0.64 mV    |
| 0.22 V to < 2.2 V | 0.000020 V to 0.00011 V | 0.000020 V to 0.00011 V | 0.000028 V to 0.00018 V | 0.000057 V to 0.00029 V | 0.00017 V to 0.0010 V | 0.00042 V to 0.0024 V | 0.00068 V to 0.0041 V |
| 2.2 V to < 22 V   | 0.00015 V to 0.0011 V   | 0.00015 V to 0.0011 V   | 0.00027 V to 0.0018 V   | 0.00044 V to 0.0026 V   | 0.0012 V to 0.0069 V  | 0.0042 V to 0.024 V   | 0.0065 V to 0.037 V   |
| 22 V to < 220 V   | 0.0018 V to 0.013 V     | 0.0018 V to 0.013 V     | 0.0028 V to 0.021 V     | 0.0059 V to 0.038 V     | -                     | -                     | -                     |
| 220 V to 1000 V   | 0.020 V to 0.079 V      | -                       | -                       | -                       | -                     | -                     | -                     |



**INM-L03-30**

AC current: sources

|                   | 50 Hz to 1 kHz           | > 1 kHz to 2 kHz         | > 2 kHz to 5 kHz         |
|-------------------|--------------------------|--------------------------|--------------------------|
| 1 mA to < 2 mA    | 0.00048 mA to 0.00075 mA | 0.00055 mA to 0.00086 mA | 0.00055 mA to 0.00086 mA |
| 2 mA to < 20 mA   | 0.0025 mA to 0.0076 mA   | 0.0026 mA to 0.0084 mA   | 0.0026 mA to 0.0084 mA   |
| 20 mA to < 200 mA | 0.025 mA to 0.075 mA     | 0.025 mA to 0.083 mA     | 0.025 mA to 0.083 mA     |
| 0.2 A to < 2 A    | 0.00032 A to 0.0015 A    | 0.00032 A to 0.0017 A    | 0.00034 A to 0.0019 A    |
| 2 A to < 2.2 A    | 0.0036 A to 0.0038 A     | 0.0037 A to 0.0039 A     | 0.0071 A to 0.0076 A     |

**INM-L03-31**

AC current: meters

|                   | 50 Hz to 1 kHz           | > 1 kHz to 5 kHz         |
|-------------------|--------------------------|--------------------------|
| 1 mA to < 2.2 mA  | 0.00017 mA to 0.00031 mA | 0.00032 mA to 0.00056 mA |
| 2.2 mA to < 22 mA | 0.00063 mA to 0.0033 mA  | 0.0010 mA to 0.0052 mA   |
| 22 mA to < 220 mA | 0.0056 mA to 0.032 mA    | 0.0082 mA to 0.050 mA    |
| 0.22 A to < 2.2 A | 0.000095 A to 0.00062 A  | 0.00019 A to 0.0011 A    |

**INM-L03-32**

AC voltage: sources

|                   |                         |
|-------------------|-------------------------|
|                   | 50 Hz to 20 kHz         |
| 2 mV to < 2.2 mV  | 0.0042 mV               |
| 2.2 mV to < 22 mV | 0.0042 mV to 0.0061 mV  |
| 22 mV to < 220 mV | 0.0091 mV to 0.027 mV   |
| 0.22 V to < 2.2 V | 0.000021 V to 0.00012 V |
| 2.2 V to < 22 V   | 0.00016 V to 0.0012 V   |
| 22 V to 100 V     | 0.0019 V to 0.0069 V    |

**INM-L03-33**

AC current: sources

|                   | 50 Hz to 1 kHz           | > 1 kHz to 2 kHz         | > 2 kHz to 5 kHz         |
|-------------------|--------------------------|--------------------------|--------------------------|
| 1 mA to < 2 mA    | 0.00043 mA to 0.00066 mA | 0.00051 mA to 0.00079 mA | 0.00051 mA to 0.00079 mA |
| 2 mA to < 20 mA   | 0.0024 mA to 0.0067 mA   | 0.0025 mA to 0.0074 mA   | 0.0025 mA to 0.0074 mA   |
| 20 mA to < 200 mA | 0.024 mA to 0.066 mA     | 0.024 mA to 0.073 mA     | 0.024 mA to 0.073 mA     |
| 0.2 A to < 2 A    | 0.00030 A to 0.0013 A    | 0.00030 A to 0.0013 A    | 0.00032 A to 0.0015 A    |
| 2 A to < 2.2 A    | 0.0035 A to 0.0036 A     | 0.0035 A to 0.0037 A     | 0.0061 A to 0.0065 A     |

**INM-L03-34**

DC resistance standards and sources: low values

|                | Relative expanded uncertainty / ( $\mu\Omega/\Omega$ ) |
|----------------|--------------------------------------------------------|
| 0.001 $\Omega$ | 470                                                    |
| 0.01 $\Omega$  | 35                                                     |