

# Data sheet

Order No.: 1786420

Type: IC 2,5/ 4-G-5,08

PCB header



The figure shows a 10-position version of the product

## 1 Main features



- |                         |                     |                        |                     |
|-------------------------|---------------------|------------------------|---------------------|
| • No. of pos.           | 4                   | • Nominal current      | 12 A                |
| • Nominal cross section | 2.5 mm <sup>2</sup> | • Nominal voltage      | 320 V               |
| • Color                 | green (6021)        | • Connection direction | 0 °                 |
| • Pitch                 | 5.08 mm             | • Type of packaging    | packed in cardboard |
| • Mounting type         | Wave soldering      |                        |                     |

## 2 Your advantages

- ✓ Maximum flexibility when it comes to device design – one header for connectors with different connection technologies
- ✓ Easy PCB replacement thanks to plug-in modules
- ✓ Well-known mounting principle allows worldwide use
- ✓ Inverted header with socket contacts for touch-proof device outputs or PCB/PCB connections



Make sure you always use the latest documentation.

It can be downloaded at: [phoenixcontact.net/product/1786420](https://phoenixcontact.net/product/1786420)

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1786420 IC 2,5/ 4-G-5,08

4 3D model in PDF can be activated (Acrobat Reader only)



**1786420 IC 2,5/ 4-G-5,08****5 General Technical Data****5.1 item properties**

|  |                  |
|--|------------------|
| Order No.  | 1786420          |
| Type   | IC 2,5/ 4-G-5,08 |
| Plug-in system                                   | CLASSIC COMBICON |
| Product type                                     | PCB header       |
| Type of contact                                  | Female connector |
| Range of articles                                | IC 2,5/...-G     |
| Pitch  | 5.08 mm          |
| Number of positions                              | 4                |
| Number of levels                                 | 1                |
| Number of connections                            | 4                |
| Number of potentials                             | 4                |
| Mounting type                                    | Wave soldering   |
| Connection direction of the connector to the PCB | 0 °              |
| Pin layout                                       | Linear pinning   |
| Solder pins per potential                        | 2                |
| Type   | Inverted         |

**1786420 IC 2,5/ 4-G-5,08****6 Mounting****6.1 Flange mounting**

|                 |         |
|-----------------|---------|
| Type of locking | without |
| Mounting flange | without |

**7 Material properties****7.1 Material of metal parts**

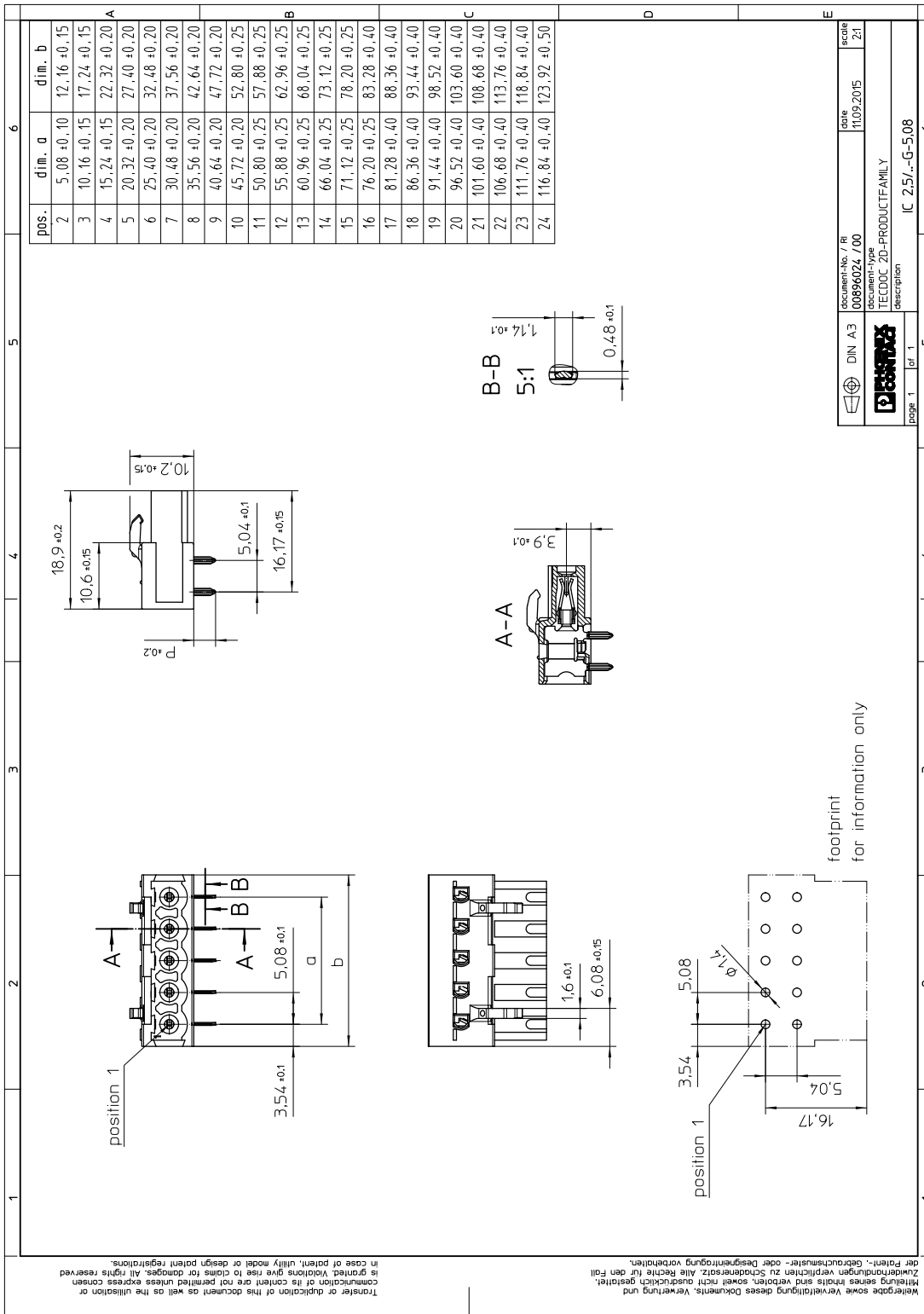
|   |   |
|---|---|
| Note  | WEEE/RoHS-compliant, whisker-free acc. to IEC 60068-2-82/JEDEC JESD 201 |
| Contact material  | Cu alloy  |
| Surface contact area  | Tin (4 - 8 µm Sn)   |
| Soldering area surface  | Tin (4 - 8 µm Sn)   |
| Surface characteristics   | Tin-plated  |
| <b>Insulating material data</b>                                   | <b>Housing</b>  |
| Color   | green (6021)  |
| Insulating material   | PA  |
| Insulating material group   | I   |
| CTI according to IEC 60112  | 600   |
| Flammability rating according to UL 94                            | V0  |
| Glow wire flammability index GWFI according to EN 60695-2-12      | 850   |
| Glow wire ignition temperature GWIT according to EN 60695-2-13    | 775   |
| Temperature for the ball pressure test according to EN 60695-10-2 | 125 °C  |

**1786420 IC 2,5/ 4-G-5,08****8 Dimensions****8.1 Dimensions for the product**

|                             |          |
|-----------------------------|----------|
| Length                      | 18.9 mm  |
| Width                       | 22.32 mm |
| Height (without solder pin) | 10.2 mm  |
| Total height                | 13.7 mm  |
| Solder pin [P]              | 3.5 mm   |

1786420 IC 2,5/ 4-G-5,08

9 Series drawing



**1786420 IC 2,5/ 4-G-5,08****10 Product notes****10.1 General information**

Notes on operation

In accordance with IEC 61984, COMBICON connectors have no switching power (COC). During designated use, they must not be plugged in or disconnected when carrying voltage or under load.

**11 Application****12 Packaging information**

|                    |                     |
|--------------------|---------------------|
| Type of packaging  | packed in cardboard |
| Pieces per package | 50                  |

**12.1 Temperature limit values**

|   |   |
|---|---|
| Ambient temperature (storage/transport) | -40 °C ... 70 °C                                    |
| Ambient temperature (assembly)          | -5 °C ... 100 °C                                    |
| Ambient temperature (operation)         | -40 °C ... 100 °C (dependent on the derating curve) |

**1786420 IC 2,5/ 4-G-5,08****13 Mechanical tests****13.1 Visual examination**

|                    |                       |
|--------------------|-----------------------|
| Specification      | IEC 61984:2008-10     |
| Visual examination | Test passed           |
| Specification      | IEC 60512-1-1:2002-02 |

**13.2 Dimensional test**

|                  |                       |
|------------------|-----------------------|
| Dimensional test | Test passed           |
| Specification    | IEC 60512-1-2:2002-02 |

**13.3 Resistance of marking**

|                       |                        |
|-----------------------|------------------------|
| Resistance of marking | Test passed            |
| Specification         | IEC 60068-2-70:1995-12 |

**13.4 Polarization and coding**

|                         |                        |
|-------------------------|------------------------|
| Polarization and coding | Test passed            |
| Specification           | IEC 60512-13-5:2006-02 |
| Test force              | 20 N                   |

**13.5 Contact retention in insert**

|  |                        |
|--|------------------------|
| Contact holder in insert<br>Requirements >20 N | Test passed            |
| Specification                                  | IEC 60512-15-1:2008-05 |

**1786420 IC 2,5/ 4-G-5,08****14 Insertion and withdrawal forces**

| Insertion and withdrawal force      |             |
|-------------------------------------|-------------|
| Specification                       | Test passed |
| No. of cycles                       | 25          |
| Insertion strength per pos. approx. | 8 N         |
| Withdraw strength per pos. approx.  | 6 N         |

**1786420 IC 2,5/ 4-G-5,08****15 Electrical tests**

|   |                            |
|---|----------------------------|
| Rated current / conductor cross section | 12 A / 2.5 mm <sup>2</sup> |
| Rated insulation voltage (III/2)        | 320 V                      |
| Rated surge voltage (III/2)             | 4 kV                       |
| Contact resistance                      | 1.2 mΩ                     |
| Degree of pollution                     | 2                          |

**15.1 Air and creepage distances**

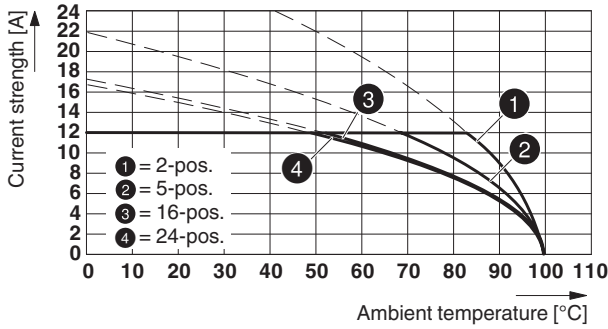
|   |                     |       |        |
|---|---------------------|-------|--------|
| Component   | PCB header          |       |        |
| Specification   | IEC 60664-1:2007-04 |       |        |
| Mains type  | unearthed mains     |       |        |
| Insulating material group   | I                   |       |        |
| Comparative tracking index (IEC 60112:2003-01)                    | CTI 600             |       |        |
| Rated insulation voltage  | 320 V               | 320 V | 630 V  |
| Rated surge voltage   | 4 kV                | 4 kV  | 4 kV   |
| Degree of pollution   | 3                   | 2     | 2      |
| Overvoltage category  | III                 | III   | II     |
| Minimum clearance case A (inhomogeneous field)                    | 3 mm                | 3 mm  | 3 mm   |
| Minimum value of the creepage path requirement in acc. with table | 4 mm                | 3 mm  | 3.2 mm |

1786420 IC 2,5/ 4-G-5,08

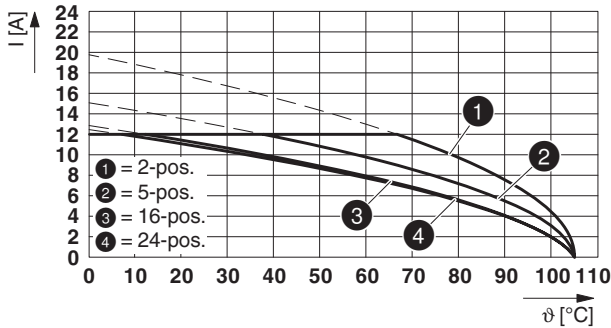
16 Current carrying capacity/derating curves

|                         |   |
|-------------------------|---|
| Specification           | IEC 61984:2008-10                             |
| Note                    | Representation based on IEC 60512-5-2:2002-02 |
| Note                    | For number of positions, see diagram          |
| Reduction factor        | 0.8   |
| Conductor cross section | 2.5 mm <sup>2</sup>                           |

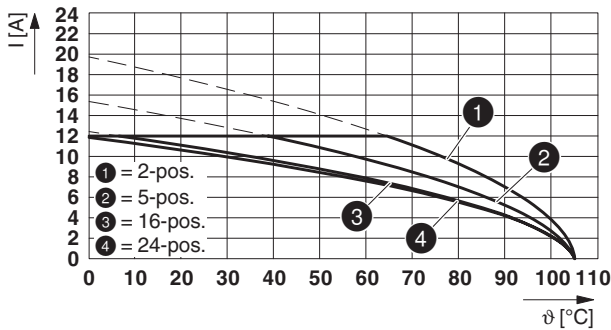
Type: IC 2,5/...-G-5,08 with MSTBA 2,5/...-G-5,08



Type: IC 2,5/...-G-5,08 with MSTBV 2,5/...-G-5,08

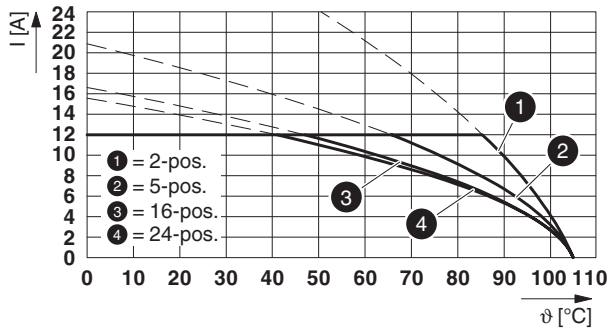


Type: IC 2,5/...-G-5,08 with MSTBVA 2,5/...-G-5,08

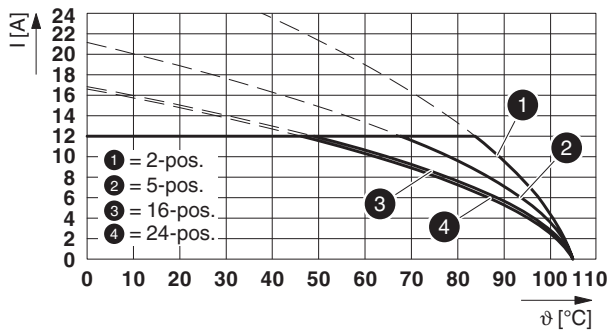


**1786420 IC 2,5/ 4-G-5,08**

Type: IC 2,5/...-G-5,08 with MSTBW 2,5/...-G-5,08



Type: IC 2,5/...-G-5,08 with MSTB 2,5/...-G-5,08



**1786420 IC 2,5/ 4-G-5,08****17 Environmental and durability tests****17.1 Vibration test**







|                        |                        |
|------------------------|------------------------|
| Specification          | IEC 60068-2-6:2007-12  |
| Result                 | Test passed            |
| Frequency              | 10 - 150 - 10 Hz       |
| Sweep speed            | 1 octave/min           |
| Amplitude              | 0.35 mm (10 - 60.1 Hz) |
| Acceleration           | 5 g (60.1 - 150 Hz)    |
| Test duration per axis | 2.5 h                  |
| Test directions        | X-, Y- and Z-axis      |
| Note                   |                        |

**17.2 Insulation resistance**

|  |                       |
|--|-----------------------|
| Specification                                | IEC 60512-3-1:2002-02 |
| Result                                       | Test passed           |
| Insulation resistance, neighboring positions | > 5 MΩ                |

## 1786420 IC 2,5/ 4-G-5,08

## 18 Approvals / Certificates

| CSA                       | Voltage [V] | Current [A] | Cross section [AWG] | Cross section [mm <sup>2</sup> ] |
|--|-------------|-------------|---------------------|----------------------------------|
| <b>Usegroup B</b>  |             |             |                     |                                  |
|  | 300 V       | 10 A        | -                   | -                                |
| <b>Usegroup D</b>  |             |             |                     |                                  |
|  | 300 V       | 10 A        | -                   | -                                |
| IECEE CB Scheme           | Voltage [V] | Current [A] | Cross section [AWG] | Cross section [mm <sup>2</sup> ] |
|  | 250 V       | 12 A        | -                   | -                                |
| EAC                       |             |             |                     |                                  |
| VDE Zeichengenehmigung    | Voltage [V] | Current [A] | Cross section [AWG] | Cross section [mm <sup>2</sup> ] |
|  | 250 V       | 12 A        | -                   | -                                |
| cULus Recognized          | Voltage [V] | Current [A] | Cross section [AWG] | Cross section [mm <sup>2</sup> ] |
| <b>Usegroup B</b>  |             |             |                     |                                  |
|  | 250 V       | 12 A        | -                   | -                                |
| <b>Usegroup D</b>  |             |             |                     |                                  |
|  | 300 V       | 10 A        | -                   | -                                |
| VDE Zeichengenehmigung  | Voltage [V] | Current [A] | Cross section [AWG] | Cross section [mm <sup>2</sup> ] |
|  | 250 V       | 12 A        | -                   | -                                |

**1786420 IC 2,5/ 4-G-5,08****19 Commercial Data**

|                    |  |
|--------------------|--|
| Order No.          | 1786420  |
| Type               | IC 2,5/ 4-G-5,08                                     |
| Pieces per package | 50   |
| Net weight         | 2.932 g  |
| GTIN               | 4017918042578  |
|                    | Information that applies locally, see link on page 1 |
|                    | Information that applies locally, see link on page 1 |

**20 corresponding plugs**

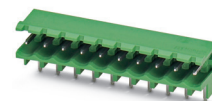
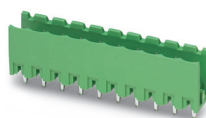
| Order No. | Type                     |
|-----------|--------------------------|
| 1898855   | DFK-MSTBA 2,5/ 4-G-5,08  |
| 1850453   | MSTBO 2,5/ 4-GL-5,08     |
| 1847123   | MSTBO 2,5/ 4-GR-5,08     |
| 1872486   | A-MSTBVA 2,5/ 4-G-5,08   |
| 1786190   | IC 2,5/ 4-ST-5,08        |
| 1735866   | MSTBW 2,5/ 4-G-5,08      |
| 1755752   | MSTBVA 2,5/ 4-G-5,08     |
| 1758034   | MSTBV 2,5/ 4-G-5,08      |
| 1759033   | MSTB 2,5/ 4-G-5,08       |
| 1902767   | MSTBA 2,5/ 4-G-5,08 THT  |
| 1902835   | MSTBVA 2,5/ 4-G-5,08 THT |
| 1899155   | DFK-MSTBVA 2,5/ 4-G-5,08 |
| 1845358   | MDSTBVA 2,5/ 4-G-5,08    |
| 1842089   | MDSTBA 2,5/ 4-G-5,08     |
| 1880326   | EMSTBA 2,5/ 4-G-5,08     |
| 1859535   | EMSTBVA 2,5/ 4-G-5,08    |
| 1873375   | FKIC 2,5/ 4-ST-5,08      |
| 1770960   | MSTBA 2,5/ 4-G-5,08-LA   |
| 1757268   | MSTBA 2,5/ 4-G-5,08      |
| 1770737   | MSTB 2,5/ 4-G-5,08-LA    |
| 1736755   | MDSTBV 2,5/ 4-G1-5,08    |
| 1736713   | MDSTB 2,5/ 4-G1-5,08     |
| 1767397   | SMSTBA 2,5/ 4-G-5,08     |
| 1769489   | SMSTB 2,5/ 4-G-5,08      |
| 1823862   | ICC 2,5/ 4-STZ-5,08      |

**21 Accessories**

| Description   | Order No. | Type    |
|---|-----------|---------|
| Coding profile, is inserted into the slot on the plug or inverted header, red insulating material | 1734634   | CP-MSTB |

## 1786420 IC 2,5/ 4-G-5,08

## 22 Combination tests

**IC 2,5/..-G**

IEC 61984

**MSTBA 2,5/..-G**

IEC 61984

**MSTBV 2,5/..-G**

IEC 61984

**MSTBVA 2,5/..-G**

IEC 61984

**MSTBW 2,5/..-G**

IEC 61984

**Mechanical tests (A)**

|   |                   |                   |                   |                    |
|---|-------------------|-------------------|-------------------|--------------------|
| Insertion/withdrawal force per position         | approx. 8 N / 6 N | approx. 9 N / 8 N | approx. 9 N / 8 N | approx. 10 N / 8 N |
| Polarization when inserted<br>Requirement >20 N | Test passed       | Test passed       | Test passed       | Test passed        |
| Contact holder in insert<br>Requirements >20 N  | Test passed       | Test passed       | Test passed       | Test passed        |

**Durability tests (B)**

|  |         |         |         |         |
|--|---------|---------|---------|---------|
| Contact resistance R <sub>1</sub> 1st level                          | 1.2 mΩ  | 2.3 mΩ  | 2.3 mΩ  | 1.3 mΩ  |
| Contact resistance R <sub>1</sub> 2nd level                          |         |         |         |         |
| Insertion/withdrawal cycles  | 25      | 25      | 25      | 25      |
| Contact resistance R <sub>2</sub>                                    | 1.2 mΩ  | 2.3 mΩ  | 2.4 mΩ  | 1.3 mΩ  |
| Rated impulse voltage at sea level<br>Voltage waveform ≥ (1.2/50 μs) | 4.8 kV  | 4.8 kV  | 4.8 kV  | 4.8 kV  |
| Power-frequency withstand voltage<br>Voltage waveform ≥ (50/60 Hz)   | 2.21 kV | 2.21 kV | 2.21 kV | 2.21 kV |

**Thermal tests (C)**

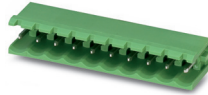
|  |                     |                     |                     |                     |
|--|---------------------|---------------------|---------------------|---------------------|
| Tested number of positions                         | 24                  | 24                  | 24                  | 24                  |
| Tested conductor cross section                     | 2.5 mm <sup>2</sup> | 2.5 mm <sup>2</sup> | 2.5 mm <sup>2</sup> | 2.5 mm <sup>2</sup> |
| Test current                                       | 12 A                | 12 A                | 12 A                | 12 A                |
| Upper limiting temperature<br>Requirements < 100°C | Test passed         | Test passed         | Test passed         | Test passed         |

**Climatic tests (D)**

|  |   |   |   |   |
|--|---|---|---|---|
| Test sequence 1: low temperature storage                             | -40 °C/2 h  | -40 °C/2 h  | -40 °C/2 h  | -40 °C/2 h  |
| Test sequence 2: heat storage  | 100 °C/168 h  | 105 °C/168 h  | 105 °C/168 h  | 105 °C/168 h  |
| Test sequence 3: noxious gas storage<br>(ISO 6988)                   | 0.2 dm <sup>3</sup> SO <sub>2</sub> on 300 dm <sup>3</sup> /<br>40 °C/1 cycle | 0.2 dm <sup>3</sup> SO <sub>2</sub> on 300 dm <sup>3</sup> /<br>40 °C/1 cycle | 0.2 dm <sup>3</sup> SO <sub>2</sub> on 300 dm <sup>3</sup> /<br>40 °C/1 cycle | 0.2 dm <sup>3</sup> SO <sub>2</sub> on 300 dm <sup>3</sup> /<br>40 °C/1 cycle |
| Rated impulse voltage at sea level<br>Voltage waveform ≥ (1.2/50 μs) | 4.8 kV  | 4.8 kV  | 4.8 kV  | 4.8 kV  |
| Power-frequency withstand voltage<br>Voltage waveform ≥ (50/60 Hz)   | 2.21 kV   | 2.21 kV   | 2.21 kV   | 2.21 kV   |

**Environmental and endurance tests (E)**

|                      |  |   |   |   |
|----------------------|--|---|---|---|
| Specification        | IEC 61984:2008-10                      | IEC 61984:2008-10                             | IEC 61984:2008-10                             | IEC 61984:2008-10                             |
| Degree of protection | Finger safety with IP20<br>test finger | Back of hand safety with<br>IP10 access probe | Back of hand safety with<br>IP10 access probe | Back of hand safety with<br>IP10 access probe |

**1786420 IC 2,5/ 4-G-5,08****IC 2,5/..-G**

IEC 61984

**Mechanical tests (A)**

Insertion/withdrawal force per position

Polarization when inserted  
Requirement >20 NContact holder in insert  
Requirements >20 N**Durability tests (B)**Contact resistance R<sub>1</sub> 1st levelContact resistance R<sub>1</sub> 2nd level

Insertion/withdrawal cycles

Contact resistance R<sub>2</sub>Rated impulse voltage at sea level  
Voltage waveform ≥ (1.2/50 μs)Power-frequency withstand voltage  
Voltage waveform ≥ (50/60 Hz)**Thermal tests (C)**

Tested number of positions

Tested conductor cross section

Test current

Upper limiting temperature  
Requirements < 100°C**Climatic tests (D)**

Test sequence 1: low temperature storage

Test sequence 2: heat storage

Test sequence 3: noxious gas storage  
(ISO 6988)Rated impulse voltage at sea level  
Voltage waveform ≥ (1.2/50 μs)Power-frequency withstand voltage  
Voltage waveform ≥ (50/60 Hz)**Environmental and endurance tests (E)**

Specification

Degree of protection

**MSTB 2,5/..-G**

IEC 61984

approx. 10 N / 8 N

Test passed

Test passed

1.2 mΩ

25

1.3 mΩ

4.8 kV

2.21 kV

24

2.5 mm<sup>2</sup>

12 A

Test passed

-40 °C/2 h

105 °C/168 h

0.2 dm<sup>3</sup> SO<sub>2</sub> on 300 dm<sup>3</sup>/  
40 °C/1 cycle

4.8 kV

2.21 kV

IEC 61984:2008-10

Back of hand safety with  
IP10 access probe