

# IPC 16/ 4-GF-10,16 - PCB header

1969632

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PCB headers, nominal cross section: 16 mm<sup>2</sup>, color: green, nominal current: 76 A, rated voltage (III/2): 1000 V, contact surface: Ag, contact connection type: Socket, number of potentials: 4, number of rows: 1, number of positions: 4, number of connections: 4, product range: IPC 16/-GF, pitch: 10.16 mm, mounting: Wave soldering, pin layout: Linear pinning, solder pin [P]: 4 mm, number of solder pins per potential: 3, plug-in system: COMBICON PC 16, Pin connector pattern alignment: Standard, locking: Screw locking mechanism, mounting method: Threaded flange, type of packaging: packed in cardboard

## Your advantages

- Well-known mounting principle allows worldwide use
- Maximum flexibility when it comes to device design – one header for connectors with different connection technologies
- Inverted header with socket contacts for touch-proof device outputs or PCB/PCB connections
- Screwable flange for superior mechanical stability
- Integrated double steel spring provides additional safety in the event of temperature and power fluctuations

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 1969632       |
| Packing unit                         | 50 pc         |
| Minimum order quantity               | 50 pc         |
| Sales key                            | AA05          |
| Product key                          | AAESCB        |
| GTIN                                 | 4017918943875 |
| Weight per piece (including packing) | 19.2 g        |
| Weight per piece (excluding packing) | 17.73 g       |
| Customs tariff number                | 85366930      |
| Country of origin                    | PL            |

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## Technical data

### Product properties

|                           |                        |
|---------------------------|------------------------|
| Product type              | PCB headers            |
| Product family            | IPC 16/..-GF           |
| Product line              | COMBICON Connectors XL |
| Type                      | Inverted               |
| Number of positions       | 4                      |
| Pitch                     | 10.16 mm               |
| Number of connections     | 4                      |
| Number of rows            | 1                      |
| Number of potentials      | 4                      |
| Mounting type             | Threaded flange        |
| Pin layout                | Linear pinning         |
| Solder pins per potential | 3                      |

### Electrical properties

#### Properties

|                             |                |
|-----------------------------|----------------|
| Nominal current $I_N$       | 76 A           |
| Nominal voltage $U_N$       | 1000 V         |
| Contact resistance          | 0.3 m $\Omega$ |
| Rated voltage (III/3)       | 1000 V         |
| Rated surge voltage (III/3) | 8 kV           |
| Rated voltage (III/2)       | 1000 V         |
| Rated surge voltage (III/2) | 8 kV           |
| Rated voltage (II/2)        | 1000 V         |
| Rated surge voltage (II/2)  | 6 kV           |

### Mounting

|               |                |
|---------------|----------------|
| Mounting type | Wave soldering |
| Pin layout    | Linear pinning |

#### Flange

|                   |        |
|-------------------|--------|
| Tightening torque | 0.3 Nm |
|-------------------|--------|

#### Attachment on the PCB

|                   |                      |
|-------------------|----------------------|
| Tightening torque | 0.3 Nm               |
| Screw             | 1705449 DFK-PC 16-SS |

### Material specifications

#### Material data - contact

|                  |  |
|------------------|--|
| Note             | WEEE/RoHS-compliant, free of whiskers according to IEC 60068-2-82/JEDEC JESD 201 |
| Contact material | Cu alloy   |

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|  |                          |
|--|--------------------------|
| Surface characteristics                  | completely silver-plated |
| Metal surface contact area (top layer)   | Silver (4 µm - 8 µm Ag)  |
| Metal surface soldering area (top layer) | Silver (4 µm - 8 µm Ag)  |

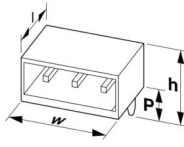
## Material data - housing

|   |              |
|---|--------------|
| Color (Housing)   | 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       |

## Notes

|                    |  |
|--------------------|--|
| 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. |
|--------------------|--|

## Dimensions

|                       |  |
|-----------------------|--|
| Dimensional drawing   |  |
| Pitch                 | 10.16 mm   |
| Width [w]             | 58.4 mm  |
| Height [h]            | 17.6 mm  |
| Length [l]            | 32.05 mm   |
| Installed height      | 13.6 mm  |
| Solder pin length [P] | 4 mm   |
| Pin dimensions        | 0.8 x 1.2 mm   |

## PCB design

|               |          |
|---------------|----------|
| Pin spacing   | 10.16 mm |
| Hole diameter | 1.7 mm   |

## Mechanical tests

### Visual inspection

|               |                       |
|---------------|-----------------------|
| Specification | IEC 60512-1-1:2002-02 |
| Result        | Test passed           |

### Dimension check

|               |                       |
|---------------|-----------------------|
| Specification | IEC 60512-1-2:2002-02 |
|---------------|-----------------------|

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|   |                        |
|---|------------------------|
| Result                                      | Test passed            |
| Resistance of inscriptions                  |                        |
| Specification                               | IEC 60068-2-70:1995-12 |
| Result                                      | Test passed            |
| Polarization and coding                     |                        |
| Specification                               | IEC 60512-13-5:2006-02 |
| Result                                      | Test passed            |
| Contact holder in insert                    |                        |
| Specification                               | IEC 60512-15-1:2008-05 |
| Contact holder in insert Requirements >20 N | Test passed            |
| Insertion and withdrawal forces             |                        |
| Specification                               | IEC 60512-13-2:2006-02 |
| Result                                      | Test passed            |
| No. of cycles                               | 50                     |
| Insertion strength per pos. approx.         | 12 N                   |
| Withdraw strength per pos. approx.          | 11 N                   |

## Electrical tests

### Thermal test | Test group C

|                            |                       |
|----------------------------|-----------------------|
| Specification              | IEC 60512-5-1:2002-02 |
| Tested number of positions | 9                     |

### Insulation resistance

|  |                       |
|--|-----------------------|
| Specification                                | IEC 60512-3-1:2002-02 |
| Insulation resistance, neighboring positions | > 5 M $\Omega$        |

### Air clearances and creepage distances |

|  |                     |
|--|---------------------|
| Specification  | IEC 60664-1:2007-04 |
| Insulating material group                              | I                   |
| Comparative tracking index (IEC 60112)                 | CTI 600             |
| Rated insulation voltage (III/3)                       | 1000 V              |
| Rated surge voltage (III/3)                            | 8 kV                |
| minimum clearance value - non-homogenous field (III/3) | 8 mm                |
| minimum creepage distance (III/3)                      | 12.5 mm             |
| Rated insulation voltage (III/2)                       | 1000 V              |
| Rated surge voltage (III/2)                            | 8 kV                |
| minimum clearance value - non-homogenous field (III/2) | 8 mm                |
| minimum creepage distance (III/2)                      | 8 mm                |
| Rated insulation voltage (II/2)                        | 1000 V              |
| Rated surge voltage (II/2)                             | 6 kV                |
| minimum clearance value - non-homogenous field (II/2)  | 5.5 mm              |
| minimum creepage distance (II/2)                       | 5.5 mm              |

## Environmental and real-life conditions

### Durability test

|  |                       |
|--|-----------------------|
| Specification                                | IEC 60512-9-1:2010-03 |
| Impulse withstand voltage at sea level       | 9.8 kV                |
| Contact resistance $R_1$                     | 0.3 m $\Omega$        |
| Contact resistance $R_2$                     | 0.3 m $\Omega$        |
| Insertion/withdrawal cycles                  | 50                    |
| Insulation resistance, neighboring positions | > 5 M $\Omega$        |

### Climatic test

|                                   |   |
|-----------------------------------|---|
| Specification                     | ISO 6988:1985-02  |
| Corrosive stress                  | 0.2 dm <sup>3</sup> SO <sub>2</sub> on 300 dm <sup>3</sup> /40 °C/1 cycle |
| Thermal stress                    | 105 °C/168 h  |
| Power-frequency withstand voltage | 4.26 kV   |

### Vibration test

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

### Shocks

|                 |                                   |
|-----------------|-----------------------------------|
| Specification   | IEC 60068-2-27:2008-02            |
| Pulse shape     | Semi-sinusoidal                   |
| Acceleration    | 30g                               |
| Shock duration  | 18 ms                             |
| Test directions | X-, Y- and Z-axis (pos. and neg.) |

### Railway application: Shocks

|                 |                                   |
|-----------------|-----------------------------------|
| Acceleration    | 30g                               |
| Shock duration  | 18 ms                             |
| Test directions | X-, Y- and Z-axis (pos. and neg.) |

### Ambient conditions

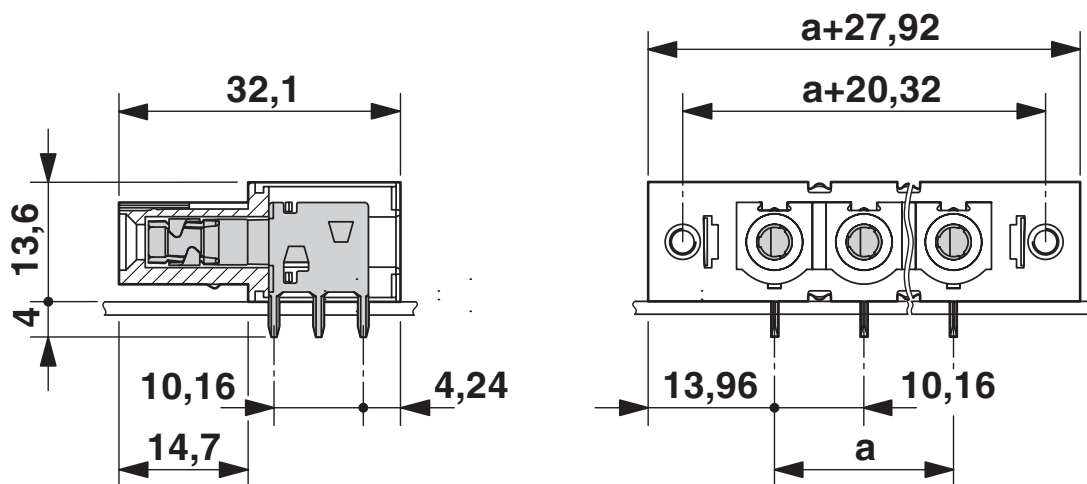
|   |   |
|---|---|
| Ambient temperature (storage/transport) | -40 °C ... 70 °C                                    |
| Relative humidity (storage/transport)   | 30 % ... 70 %                                       |
| Ambient temperature (assembly)          | -5 °C ... 100 °C                                    |
| Ambient temperature (operation)         | -40 °C ... 105 °C (dependent on the derating curve) |

## Packaging specifications

|                   |                     |
|-------------------|---------------------|
| Type of packaging | packed in cardboard |
|-------------------|---------------------|

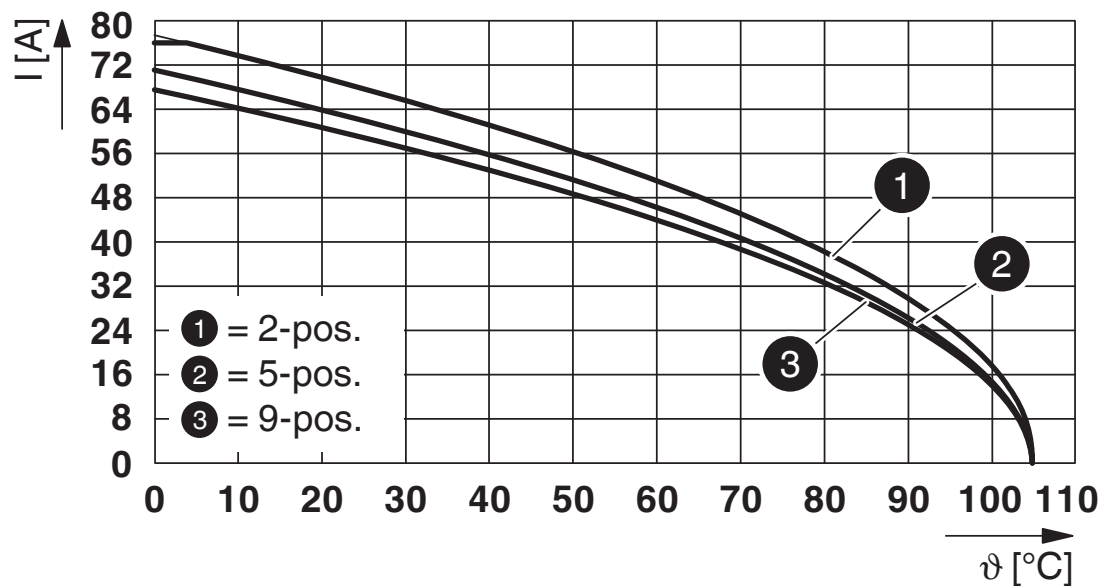
## Drawings

Dimensional drawing



The figure shows the 3-pos. version

Diagram



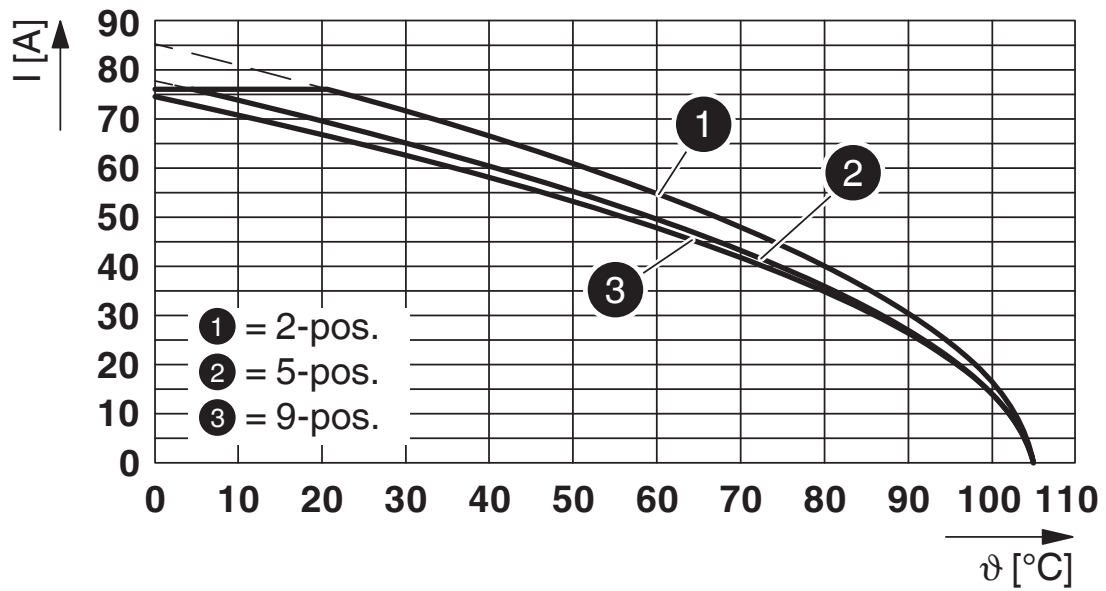
Type: IPC 16/...-STF-10,16 with IPC 16/...-GF-10,16

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Diagram



Type: ISPC 16/...-STF-10,16 with IPC 16/...-GF-10,16

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1969632>

|  <b>cULus Recognized</b><br>Approval ID: E60425-20040202 |                       |                       |                   |                             |
|---|-----------------------|-----------------------|-------------------|-----------------------------|
|   | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $\text{mm}^2$ |
| B   | 300 V                 | 66 A                  | -                 | -                           |
| C   | 300 V                 | 66 A                  | -                 | -                           |
| D   | 600 V                 | 5 A                   | -                 | -                           |

|  <b>VDE approval of drawings</b><br>Approval ID: 40055586 |                       |                       |                   |                             |
|--|-----------------------|-----------------------|-------------------|-----------------------------|
|  | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $\text{mm}^2$ |
| keine  | 1000 V                | 76 A                  | -                 | -                           |

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27460201 |
| ECLASS-15.0 | 27460201 |

### ETIM

|           |          |
|-----------|----------|
| ETIM 10.0 | EC002637 |
|-----------|----------|

### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 21.0 | 39121400 |
|-------------|----------|

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## Environmental product compliance

### EU RoHS

|   |                    |
|---|--------------------|
| Fulfills EU RoHS substance requirements | Yes, No exemptions |
|---|--------------------|

### China RoHS

|  |  |
|--|--|
| Environment friendly use period (EFUP) | EFUP-E                                   |
|  | No hazardous substances above the limits |

### EU REACH SVHC

|                                     |                            |
|-------------------------------------|----------------------------|
| REACH candidate substance (CAS No.) | No substance above 0.1 wt% |
|-------------------------------------|----------------------------|

### EF3.1 Climate Change

|         |               |
|---------|---------------|
| CO2e kg | 0.153 kg CO2e |
|---------|---------------|

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