

# CDDC 1,5/ 9-PV-3,5 - Direct connector

1016520

<https://www.phoenixcontact.com/us/products/1016520>

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PCB direct plug, nominal cross section: 1.5 mm<sup>2</sup>, color: green, nominal current: 8 A, rated voltage (III/2): 160 V, number of potentials: 18, number of rows: 2, number of positions: 9, number of connections: 18, product range: CDDC 1,5/...-PV, pitch: 3.5 mm, connection method: Crimp connection, mounting: SKEDD - Direct plug-in technology, conductor/PCB connection direction: 90 °, pin layout: Linear pinning, plug-in system: SKEDD, locking: Snap-in locking, mounting method: Latching flange, type of packaging: packed in cardboard

## Your advantages

- SKEDD direct plug-in technology enables flexible positioning on the PCB
- Reduced component and process costs: simple insertion by hand and vibration-resistant connection
- Contacts arranged in a double row enable high packing density in a compact area
- Wide range of applications, thanks to suitability for PCBs with chemically tin-plated or Hot Air Leveling (HAL) surface
- Cost-effective connection of crimped conductors in large quantities
- Tools for manual and automatic crimping available as an option

## Commercial data

|                                      |                                |
|--------------------------------------|--------------------------------|
| Item number                          | 1016520                        |
| Packing unit                         | 100 pc                         |
| Minimum order quantity               | 100 pc                         |
| Note                                 | Made to order (non-returnable) |
| Sales key                            | AA02                           |
| Product key                          | AABDAA                         |
| GTIN                                 | 4055626498324                  |
| Weight per piece (including packing) | 4.13 g                         |
| Weight per piece (excluding packing) | 4 g                            |
| Customs tariff number                | 85472000                       |
| Country of origin                    | DE                             |

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## Technical data

### Product properties

|                       |                       |
|-----------------------|-----------------------|
| Product type          | PCB direct plug       |
| Product family        | CDDC 1,5/..-PV        |
| Product line          | COMBICON Connectors S |
| Number of positions   | 9                     |
| Pitch                 | 3.5 mm                |
| Number of connections | 18                    |
| Number of rows        | 2                     |
| Number of potentials  | 18                    |
| Mounting type         | Latching flange       |
| Pin layout            | Linear pinning        |

### Electrical properties

#### Properties

|                             |        |
|-----------------------------|--------|
| Nominal current $I_N$       | 8 A    |
| Nominal voltage $U_N$       | 160 V  |
| Contact resistance          | 1.5 mΩ |
| Rated voltage (III/3)       | 160 V  |
| Rated surge voltage (III/3) | 2.5 kV |
| Rated voltage (III/2)       | 160 V  |
| Rated surge voltage (III/2) | 2.5 kV |
| Rated voltage (II/2)        | 320 V  |
| Rated surge voltage (II/2)  | 2.5 kV |

### Connection data

#### Connection technology

|                       |                     |
|-----------------------|---------------------|
| Connector system      | SKEDD               |
| Nominal cross section | 1.5 mm <sup>2</sup> |

#### Interlock

|               |                 |
|---------------|-----------------|
| Locking type  | Snap-in locking |
| Mounting type | Latching flange |

#### Conductor connection

|  |  |
|--|--|
| Connection method  | Crimp connection                             |
| Connection direction of the conductor to plug-in direction | 0 °  |
| Conductor cross-section flexible                           | 0.14 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> |
| Conductor cross-section AWG                                | 26 ... 16                                    |

### Mounting

|               |                                   |
|---------------|-----------------------------------|
| Mounting type | SKEDD - Direct plug-in technology |
|---------------|-----------------------------------|

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|            |                |
|------------|----------------|
| Pin layout | Linear pinning |
|------------|----------------|

## Material specifications

### Material data - contact

|  |          |
|--|----------|
| Metal surface contact area (top layer) | Tin (Sn) |
|--|----------|

### 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       |

### Material data – actuating element

|   |        |
|---|--------|
| 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

|                     |  |
|---------------------|--|
| Note on the contact | The information on the basic material and the finish properties of the crimp contacts is to be found in the E-Shop in the technical data for the respective crimp contact. |
| Note on application | All laboratory tests are performed in combination with the crimp contacts specified as accessories.  |
| Note on application | The current depends on the crimp contact and conductor cross-section used.   |
| Note on application | The corresponding crimp contacts are to be found in the "Accessories" tab.   |
| Note on application | The crimp contacts may only be processed with approved crimping tools.   |

## Dimensions

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|                     |  |         |
|---------------------|--|---------|
| Dimensional drawing |  |         |
| Pitch               |  | 3.5 mm  |
| Width [w]           |  | 38.8 mm |
| Height [h]          |  | 19.6 mm |
| Length [l]          |  | 13 mm   |
| Installed height    |  | 16 mm   |

|             |         |
|-------------|---------|
| PCB design  |         |
| Pin spacing | 7.00 mm |

## Mechanical tests

|   |  |
|---|--|
| Tensile strength of crimp connections                                       |  |
| Result  | Test passed                              |
| Conductor cross-section/conductor type/tractive force setpoint/actual value | 0.14 mm <sup>2</sup> / flexible / > 18 N |

|                                     |             |
|-------------------------------------|-------------|
| Insertion and withdrawal forces     |             |
| Result                              | Test passed |
| No. of cycles                       | 25          |
| Insertion strength per pos. approx. | 4 N         |
| Withdraw strength per pos. approx.  | 3 N         |

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

|                   |                       |
|-------------------|-----------------------|
| 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 |
|--------|-------------|

## Electrical tests

### Thermal test | Test group C

|                            |                       |
|----------------------------|-----------------------|
| Specification              | IEC 60512-5-1:2002-02 |
| Tested number of positions | 16                    |

### Insulation resistance

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

### 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)                       | 160 V               |
| Rated surge voltage (III/3)                            | 2.5 kV              |
| minimum clearance value - non-homogenous field (III/3) | 1.5 mm              |
| minimum creepage distance (III/3)                      | 2 mm                |
| Rated insulation voltage (III/2)                       | 160 V               |
| Rated surge voltage (III/2)                            | 2.5 kV              |
| minimum clearance value - non-homogenous field (III/2) | 1.5 mm              |
| minimum creepage distance (III/2)                      | 1.5 mm              |
| Rated insulation voltage (II/2)                        | 320 V               |
| Rated surge voltage (II/2)                             | 2.5 kV              |
| minimum clearance value - non-homogenous field (II/2)  | 1.5 mm              |
| minimum creepage distance (II/2)                       | 1.6 mm              |

## Environmental and real-life conditions

### Durability test

|  |                       |
|--|-----------------------|
| Specification                                | IEC 60512-9-1:2010-03 |
| Impulse withstand voltage at sea level       | 2.95 kV               |
| Contact resistance $R_1$                     | 1.5 mΩ                |
| Contact resistance $R_2$                     | 1.6 mΩ                |
| Insertion/withdrawal cycles                  | 25                    |
| Insulation resistance, neighboring positions | > 5 MΩ                |

### 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 | 1.39 kV   |

### Vibration test

|               |                       |
|---------------|-----------------------|
| Specification | IEC 60068-2-6:2007-12 |
|---------------|-----------------------|

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|                        |  |
|------------------------|--|
| Frequency              | 10 - 150 - 10 Hz                         |
| Sweep speed            | 1 octave/min                             |
| Amplitude              | 0.35 mm (10 Hz ... 60.1 Hz)              |
| Acceleration           | 50 m/s <sup>2</sup> (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    | 300 m/s <sup>2</sup>              |
| 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)         | -55 °C ... 105 °C (dependent on the derating curve) |

## Ambient conditions

|   |   |
|---|---|
| Ambient temperature (operation)         | -55 °C ... 105 °C (dependent on the derating curve) |
| Ambient temperature (storage/transport) | -40 °C ... 70 °C                                    |
| Relative humidity (storage/transport)   | 30 % ... 70 %                                       |
| Ambient temperature (assembly)          | -5 °C ... 100 °C                                    |

## Packaging specifications

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

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## Drawings

Diagram



Type: CDDC 1,5/...-PV-3,5

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1016520>

|  <b>cULus Recognized</b><br>Approval ID: E60425-20160718 |                       |                       |                   |                             |
|---|-----------------------|-----------------------|-------------------|-----------------------------|
|   | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $\text{mm}^2$ |
| B   | 150 V                 | 8 A                   | 26 - 16           | -                           |
| D   | 300 V                 | 8 A                   | 26 - 16           | -                           |

|  <b>VDE approval of drawings</b><br>Approval ID: 40044617 |                       |                       |                   |                             |
|--|-----------------------|-----------------------|-------------------|-----------------------------|
|  | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $\text{mm}^2$ |
| keine  | 160 V                 | 8 A                   | -                 | 0.14 - 1.5                  |

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27460202 |
| ECLASS-15.0 | 27460202 |

### ETIM

|           |          |
|-----------|----------|
| ETIM 10.0 | EC002638 |
|-----------|----------|

### 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 | 0.031 kg CO2e |
|---------|---------------|

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