

# PTSM 0,5/ 4-HV-2,5-THR R32 - PCB header



1778573

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PCB headers, nominal cross section: 0.5 mm<sup>2</sup>, color: black, nominal current: 6 A, rated voltage (III/2): 160 V, contact surface: Tin, type of contact: Pin, number of potentials: 4, number of rows: 1, number of positions: 4, number of connections: 4, product range: PTSM 0,5/-HV-THR, pitch: 2.5 mm, mounting: THR soldering, pin layout: Linear pinning, solder pin [P]: 2 mm, number of solder pins per potential: 1, plug-in system: COMBICON PTSM, Pin connector pattern alignment: Standard, locking: without, mounting: without, type of packaging: 32 mm wide tape

## Your advantages

- Designed for integration into the SMT soldering process
- Supplied in tape-on-reel packing according to IEC 60286-3 for automated mounting
- Vertical connection enables multi-row arrangement on the PCB

## Commercial Data

|                                      |                    |
|--------------------------------------|--------------------|
| Item number                          | 1778573            |
| Packing unit                         | 330 pc             |
| Minimum order quantity               | 330 pc             |
| Sales Key                            | AAA                |
| Product Key                          | AAATPD             |
| Catalog Page                         | Page 59 (C-1-2013) |
| GTIN                                 | 4046356529747      |
| Weight per Piece (including packing) | 2.057 g            |
| Weight per Piece (excluding packing) | 1.932 g            |
| Customs tariff number                | 85366930           |
| Country of origin                    | CN                 |

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## Technical Data

### Product properties

|                           |                                            |
|---------------------------|--------------------------------------------|
| Type                      | Component suitable for through hole reflow |
| Product line              | COMBICON Connectors XS                     |
| Product type              | PCB headers                                |
| Product family            | PTSM 0,5/...-HV-THR                        |
| Number of positions       | 4                                          |
| Pitch                     | 2.5 mm                                     |
| Number of connections     | 4                                          |
| Number of rows            | 1                                          |
| Mounting flange           | without                                    |
| Number of potentials      | 4                                          |
| Pin layout                | Linear pinning                             |
| Solder pins per potential | 1                                          |

### Electrical properties

|                             |        |
|-----------------------------|--------|
| Nominal current $I_N$       | 6 A    |
| Nominal voltage $U_N$       | 160 V  |
| Degree of pollution         | 3      |
| Contact resistance          | 3 mΩ   |
| Rated voltage (III/3)       | 50 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)        | 160 V  |
| Rated surge voltage (II/2)  | 2.5 kV |

### Mounting

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

### Processing notes

|                                  |                       |
|----------------------------------|-----------------------|
| Process                          | Reflow/wave soldering |
| Moisture Sensitive Level         | MSL 1                 |
| Classification temperature $T_c$ | 260 °C                |
| Solder cycles in the reflow      | 3                     |

### 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                                                                         |
| Surface characteristics | Tin-plated                                                                       |

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1778573

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|                                             |                        |
|---------------------------------------------|------------------------|
| Metal surface contact area (top layer)      | Tin (3 - 5 µm Sn)      |
| Metal surface contact area (middle layer)   | Nickel (1.3 - 3 µm Ni) |
| Metal surface soldering area (top layer)    | Tin (3 - 5 µm Sn)      |
| Metal surface soldering area (middle layer) | Nickel (1.3 - 3 µm Ni) |

## Material data - housing

|                                        |              |
|----------------------------------------|--------------|
| Color (Housing)                        | black (9005) |
| Insulating material                    | LCP          |
| Insulating material group              | IIIa         |
| CTI according to IEC 60112             | 175          |
| Flammability rating according to UL 94 | V0           |

## Material data – actuating element

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

## Dimensions

|                       |         |
|-----------------------|---------|
| Dimensional drawing   |         |
| Pitch                 | 2.5 mm  |
| Width [w]             | 11.7 mm |
| Height [h]            | 9.5 mm  |
| Length [l]            | 5 mm    |
| Installed height      | 7.5 mm  |
| Solder pin length [P] | 2 mm    |

## PCB design

|             |         |
|-------------|---------|
| Pin spacing | 2.50 mm |
|-------------|---------|

## Mechanical tests

### Test for conductor damage and slackening

|               |                     |
|---------------|---------------------|
| Specification | IEC 60999-1:1999-11 |
| Result        | Test passed         |

### Repeated connection and disconnection

|               |                     |
|---------------|---------------------|
| Specification | IEC 60999-1:1999-11 |
| Result        | Test passed         |

### Pull-out test

|                                                                             |                             |
|-----------------------------------------------------------------------------|-----------------------------|
| Specification                                                               | IEC 60999-1:1999-11         |
| Conductor cross section/conductor type/tractive force setpoint/actual value | 0.14 mm² / solid / > 10 N   |
|                                                                             | 0.2 mm² / flexible / > 10 N |
|                                                                             | 0.5 mm² / solid / > 20 N    |

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|  |                              |
|--|------------------------------|
|  | 0.75 mm² / flexible / > 30 N |
|--|------------------------------|

## Insertion and withdrawal forces

|                                     |             |
|-------------------------------------|-------------|
| Result                              | Test passed |
| No. of cycles                       | 10          |
| Insertion strength per pos. approx. | 5 N         |
| Withdraw strength per pos. approx.  | 4 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 |
| Result        | Test passed           |

## Electrical tests

### Thermal test | Test group C

|                            |                       |
|----------------------------|-----------------------|
| Specification              | IEC 60512-5-1:2002-02 |
| Tested number of positions | 8                     |

### Insulation resistance

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

### Temperature cycles

|               |                     |
|---------------|---------------------|
| Specification | IEC 60999-1:1999-11 |
| Result        | Test passed         |

### Air clearances and creepage distances |

|                                        |                     |
|----------------------------------------|---------------------|
| Specification                          | IEC 60664-1:2007-04 |
| Insulating material group              | IIIa                |
| Comparative tracking index (IEC 60112) | CTI ≥175 to <400    |
| Rated insulation voltage (III/3)       | 50 V                |
| Rated surge voltage (III/3)            | 2.5 kV              |

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|                                                        |        |
|--------------------------------------------------------|--------|
| minimum clearance value - non-homogenous field (III/3) | 1.5 mm |
| minimum creepage distance (III/3)                      | 1.9 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)                      | 1.6 mm |
| Rated insulation voltage (II/2)                        | 160 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

### 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) |
| Sweep speed            | 5g (60.1 Hz ... 150 Hz)     |
| Test duration per axis | 2.5 h                       |

### Durability test

|                                        |                       |
|----------------------------------------|-----------------------|
| Specification                          | IEC 60512-9-1:2010-03 |
| Impulse withstand voltage at sea level | 2.95 kV               |
| Contact resistance R <sub>1</sub>      | 3 mΩ                  |
| Contact resistance R <sub>2</sub>      | 4 mΩ                  |
| Insertion/withdrawal cycles            | 10                    |

### 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                    | 100 °C/168 h                                                              |
| Power-frequency withstand voltage | 1.39 kV                                                                   |

### Ambient conditions

|                                         |                                                     |
|-----------------------------------------|-----------------------------------------------------|
| Ambient temperature (operation)         | -40 °C ... 100 °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                                    |

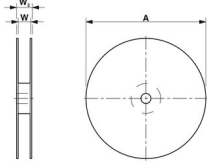
## Packaging specifications

# PTSM 0,5/ 4-HV-2,5-THR R32 - PCB header

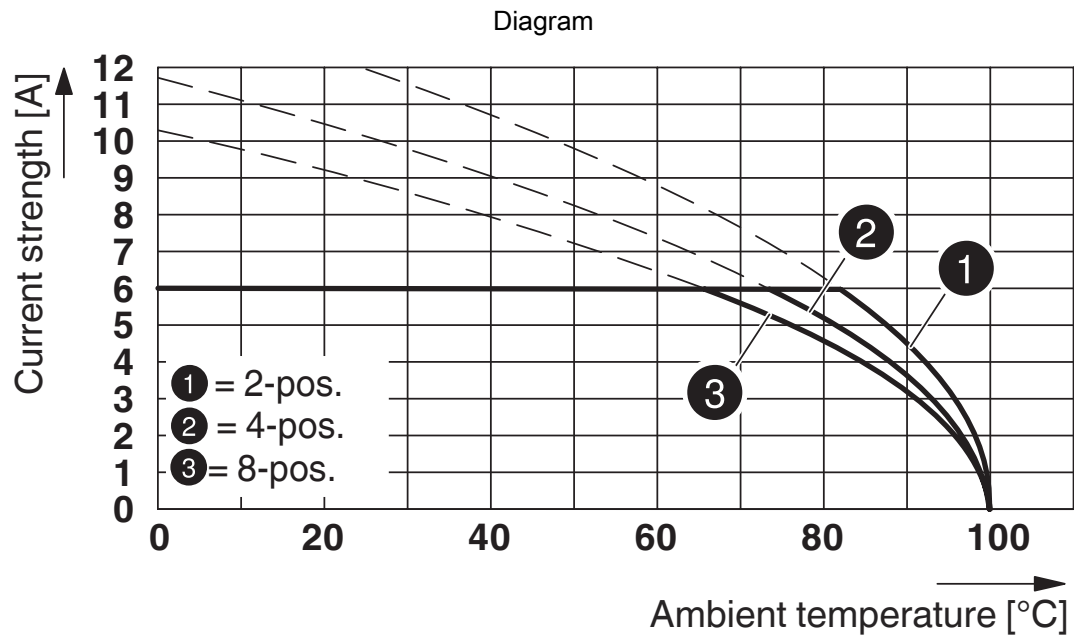


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|                             |                                                                                    |
|-----------------------------|------------------------------------------------------------------------------------|
| Dimensional drawing         |  |
| Type of packaging           | 32 mm wide tape                                                                    |
| [W] tape width              | 32 mm                                                                              |
| [W2] coil overall dimension | 38.4 mm                                                                            |
| [A] coil diameter           | 330 mm                                                                             |
| Outer packaging type        | Transparent-Bag                                                                    |
| ESD level                   | (D) electrostatically conductive                                                   |
| Specification               | DIN EN 61340-5-1 (VDE 0300-5-1): 2008-07                                           |

## Drawings



Derating curve for: PTSM 0,5/...-P-2,5 with PTSM 0,5/...-HV-2,5-THR R...

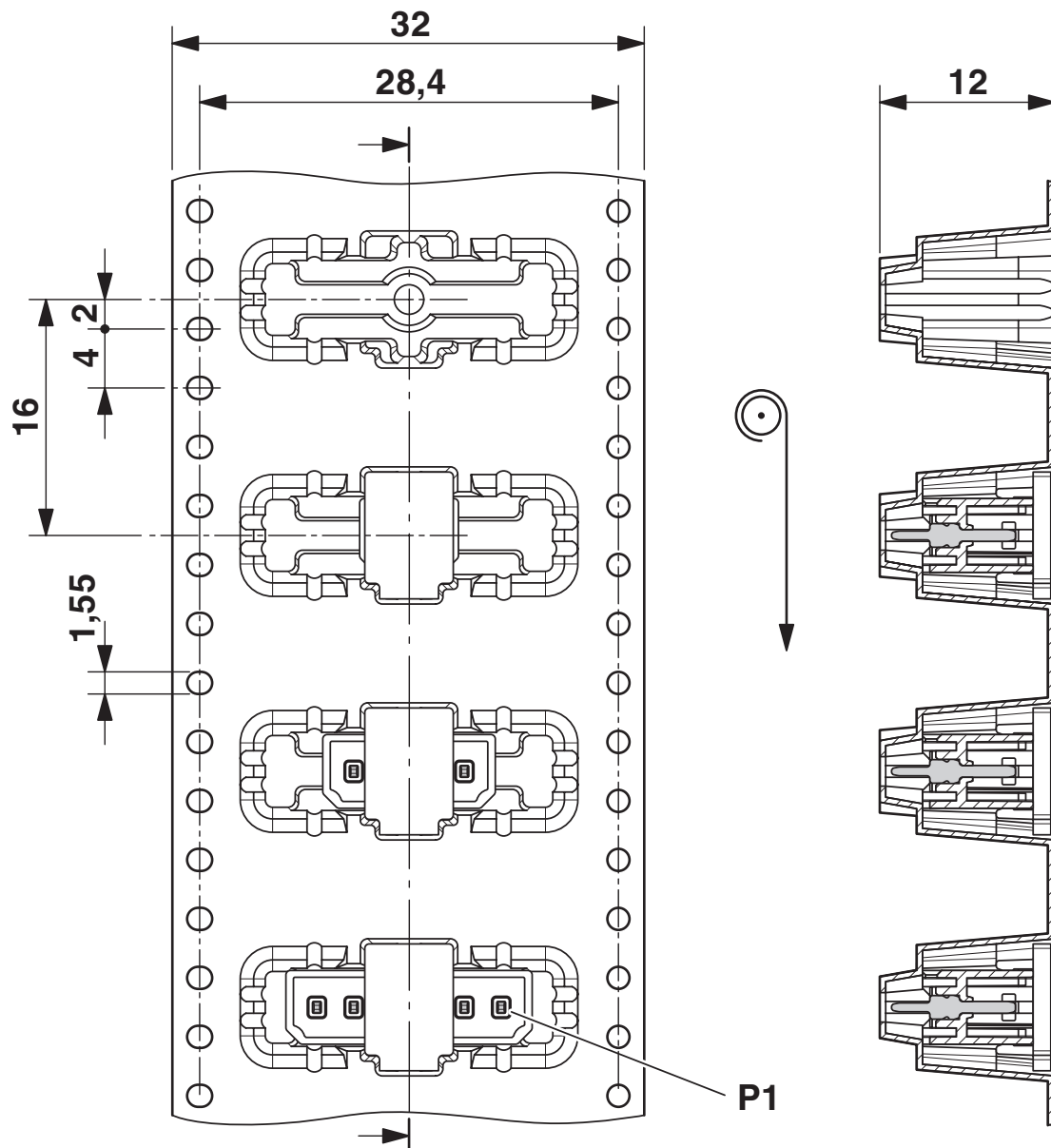
# PTSM 0,5/ 4-HV-2,5-THR R32 - PCB header

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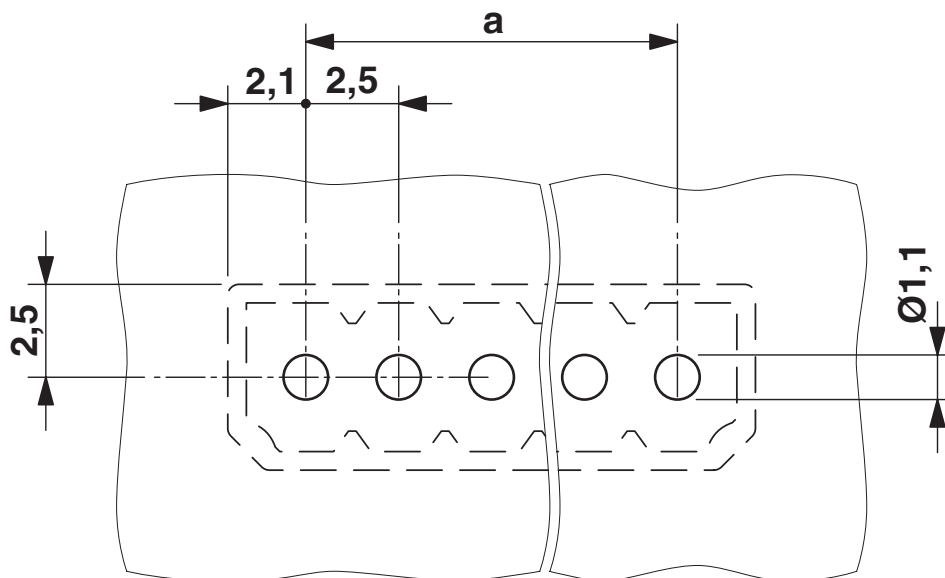
<https://www.phoenixcontact.com/in/products/1778573>



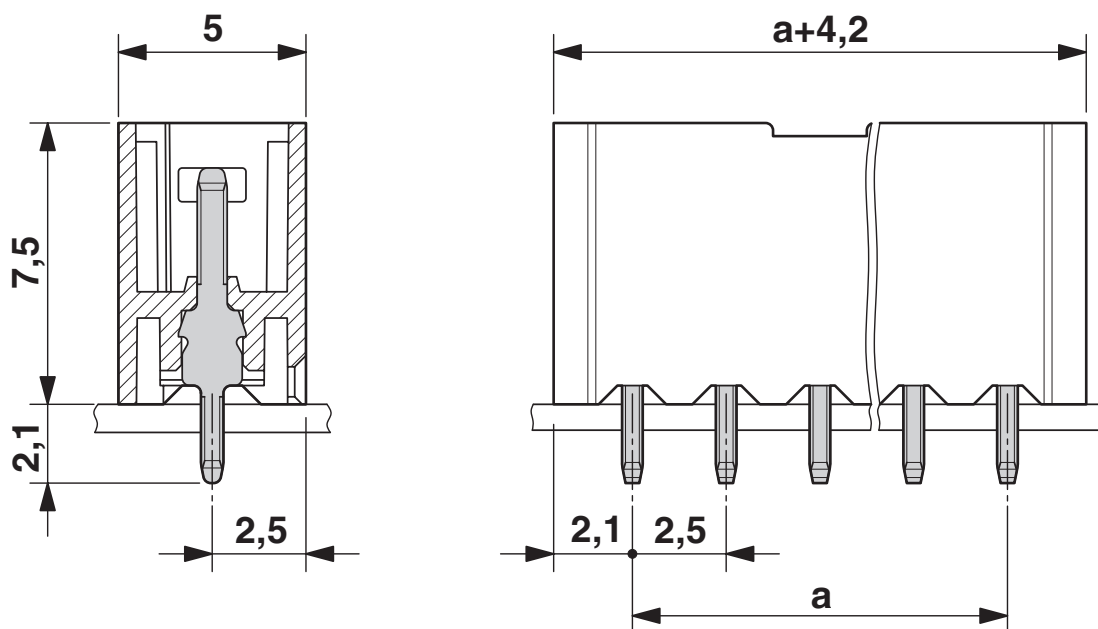
Dimensional drawing



Drilling plan/solder pad geometry



Dimensional drawing



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## Approvals



### UL Recognized

Approval ID: E118976-20130619

|  | Nominal Voltage $U_N$ | Nominal Current $I_N$ | Cross Section AWG | Cross Section $\text{mm}^2$ |
|--|-----------------------|-----------------------|-------------------|-----------------------------|
|  | 150 V                 | 5 A                   | -                 | -                           |



### EAC

Approval ID: B.01687



### cULus Recognized

Approval ID: E60425-20110108

|  | Nominal Voltage $U_N$ | Nominal Current $I_N$ | Cross Section AWG | Cross Section $\text{mm}^2$ |
|--|-----------------------|-----------------------|-------------------|-----------------------------|
|  | 150 V                 | 6 A                   | -                 | -                           |

# PTSM 0,5/ 4-HV-2,5-THR R32 - PCB header



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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-11.0 | 27460201 |
| ECLASS-12.0 | 27460201 |
| ECLASS-13.0 | 27460201 |

### ETIM

|          |          |
|----------|----------|
| ETIM 8.0 | EC002637 |
|----------|----------|

### UNSPSC

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

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## Environmental Product Compliance

|            |                                                         |
|------------|---------------------------------------------------------|
| China RoHS | Environmentally friendly use period: unlimited = EFUP-e |
|            | No hazardous substances above threshold values          |

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## Accessories

### PTSM 0,5/ 4-P-2,5 - Printed-circuit board connector

1778858

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PCB connector, nominal cross section: 0.5 mm<sup>2</sup>, color: black, nominal current: 6 A, rated voltage (III/2): 160 V, contact surface: Tin, type of contact: Socket, number of potentials: 4, number of rows: 1, number of positions: 4, number of connections: 4, product range: PTSM 0,5/...-P, pitch: 2.5 mm, connection method: Push-in spring connection, conductor/PCB connection direction: 0 °, plug-in system: COMBICON PTSM, locking: without, mounting: without, type of packaging: packed in cardboard

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### CAC-PTCM1015462/D - Cable

1084513

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Assembled PCB connector / Connecting cable with 2 printed circuit board connectors, rated current: 6 A, cable length: Free input (0.1 ... 3.0 m), Head 1: 4-position , pitch: 2.5 mm , Crimp connection , Socket, Color: white, Cable type:Individual litz wire, PVC, AWG 22, white, Head 2: 4-position, pitch: 2.5 mm , Crimp connection , Socket, Color: white, Cable type:Individual litz wire, PVC, AWG 20, white, Individual litz wire, PVC, AWG 22, white

# PTSM 0,5/ 4-HV-2,5-THR R32 - PCB header



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## CAC-PTCM1015462/1015244 - Assembled PCB connectors

1084535

<https://www.phoenixcontact.com/in/products/1084535>



Assembled PCB connector / Connecting cable with 2 printed circuit board connectors, rated current: 6 A, cable length: Free input (0.1 ... 3.0 m), Head 1: 4-position , pitch: 2.5 mm , Crimp connection , Socket, Color: white, Cable type:Individual litz wire, PVC, AWG 22, white, Head 2: 4-position, pitch: 2.5 mm , Crimp connection , Pin, Color: white, Cable type:Individual litz wire, PVC, AWG 20, white, Individual litz wire, PVC, AWG 22, white

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