

## S2L 3.50/20/90F 3.5SN OR BX

**Weidmüller Interface GmbH & Co. KG**

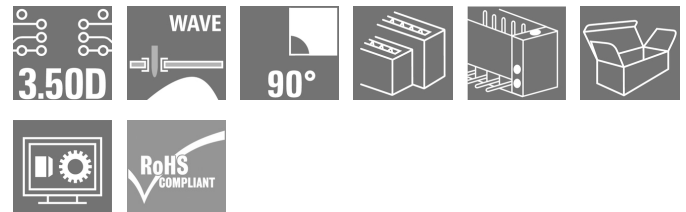
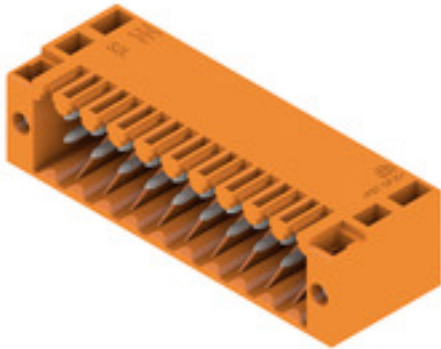
Klingenbergstraße 26

D-32758 Detmold

Germany

www.weidmueller.com

### Product image



Angled, two-tier pin header available as closed-sided or with flange (open-sided pin headers on request). Pin headers with 3.5mm pins are designed for wave soldering and are packaged in a box. They can be screwed on to the PCB. The pin headers provide space for labelling and can be coded.

### General ordering data

|              |  |
|--------------|--|
| Version      | PCB plug-in connector, male header, Flange, THT solder connection, 3.50 mm, Number of poles: 20, 90°, Solder pin length (l): 3.5 mm, tinned, orange, Box |
| Order No.    | <a href="#">1728540000</a>   |
| Type         | S2L 3.50/20/90F 3.5SN OR BX  |
| GTIN (EAN)   | 4032248036868  |
| Qty.         | 42 pc(s).  |
| Product data | IEC: 250 V / 10 A<br>UL: 150 V / 10 A  |
| Packaging    | Box  |

Creation date March 12, 2024 11:38:02 AM CET

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## Technical data

### Dimensions and weights

|                          |            |                 |            |
|--------------------------|------------|-----------------|------------|
| Depth                    | 14.2 mm    | Depth (inches)  | 0.559 inch |
| Height                   | 14 mm      | Height (inches) | 0.551 inch |
| Height of lowest version | 10.5 mm    | Width           | 42 mm      |
| Width (inches)           | 1.654 inch | Net weight      | 7.5 g      |

### System specifications

|  |  |                     |  |
|--|--|---------------------|--|
| Product family                               | OMNIMATE Signal - series B2L/S2L 3.50 - 2-row    |                     |  |
| Type of connection                           | Board connection                                 |                     |  |
| Mounting onto the PCB                        | THT solder connection                            |                     |  |
| Pitch in mm (P)                              | 3.5 mm   |                     |  |
| Pitch in inches (P)                          | 0.138 "  |                     |  |
| Outgoing elbow                               | 90°  |                     |  |
| Number of poles                              | 20   |                     |  |
| Number of solder pins per pole               | 1  |                     |  |
| Solder pin length (l)                        | 3.5 mm   |                     |  |
| Solder pin dimensions                        | d = 1.0 mm, Octagonal                            |                     |  |
| Solder eyelet hole diameter (D)              | 1.3 mm   |                     |  |
| Solder eyelet hole diameter tolerance (D)+   | 0,1 mm   |                     |  |
| L1 in mm                                     | 31.5 mm  |                     |  |
| L1 in inches                                 | 1.24 "   |                     |  |
| Number of rows                               | 1  |                     |  |
| Pin series quantity                          | 2  |                     |  |
| Touch-safe protection acc. to DIN VDE 57 106 | finger-safe unplugged/ back-of-hand-safe plugged |                     |  |
| Touch-safe protection acc. to DIN VDE 0470   | IP20 plugged/ IP10 unplugged                     |                     |  |
| Can be coded                                 | Yes  |                     |  |
| Plugging force/pole, max.                    | 5 N  |                     |  |
| Pulling force/pole, max.                     | 4 N  |                     |  |
| Tightening torque                            | Torque type                                      | Mounting screw, PCB |  |
|  | Usage information                                | Tightening torque   | min. 0.1 Nm<br>max. 0.15 Nm  |
|  |  | Recommended screw   | Part number<br><a href="#">PTSC KA 2.2X4.5</a><br><a href="#">WN1412</a> |

### Material data

|                                       |                                  |                                       |        |
|---------------------------------------|----------------------------------|---------------------------------------|--------|
| Insulating material                   | PBT                              | Colour                                | orange |
| Colour chart (similar)                | RAL 2000                         | Insulating material group             | IIIa   |
| Comparative Tracking Index (CTI)      | ≥ 200                            | UL 94 flammability rating             | V-0    |
| Contact material                      | Cu-alloy                         | Contact surface                       | tinned |
| Layer structure of solder connection  | 2...3 µm Ni / 5...7 µm Sn glossy | Storage temperature, min.             | -40 °C |
| Storage temperature, max.             | 70 °C                            | Operating temperature, min.           | -50 °C |
| Operating temperature, max.           | 100 °C                           | Temperature range, installation, min. | -30 °C |
| Temperature range, installation, max. | 100 °C                           |                                       |        |

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**Technical data**


**Rated data acc. to IEC**

|   |                        |   |                  |
|---|------------------------|---|------------------|
| tested acc. to standard   | IEC 60664-1, IEC 61984 | Rated current, min. number of poles (Tu=20°C)                         | 10 A             |
| Rated current, max. number of poles (Tu=20°C)                             | 10 A                   | Rated current, min. number of poles (Tu=40°C)                         | 9 A              |
| Rated current, max. number of poles (Tu=40°C)                             | 8.5 A                  | Rated voltage for surge voltage class / pollution degree II/2         | 250 V            |
| Rated voltage for surge voltage class / pollution degree III/2            | 125 V                  | Rated voltage for surge voltage class / pollution degree III/3        | 80 V             |
| Rated impulse voltage for surge voltage class/ pollution degree II/2      | 2.5 kV                 | Rated impulse voltage for surge voltage class/ pollution degree III/2 | 2.5 kV           |
| Rated impulse voltage for surge voltage class/ contamination degree III/3 | 2.5 kV                 | Short-time withstand current resistance                               | 3 x 1s with 77 A |

**Rated data acc. to CSA**

|                                   |   |                                   |                |
|-----------------------------------|---|-----------------------------------|----------------|
| Institute (CSA)                   |  | Certificate No. (CSA)             | 200039-1488444 |
| Rated voltage (Use group B / CSA) | 150 V   | Rated current (Use group B / CSA) | 5 A            |
| Reference to approval values      | Specifications are maximum values, details - see approval certificate.            |                                   |                |

**Rated data acc. to UL 1059**

|                                       |   |                                       |        |
|---------------------------------------|---|---------------------------------------|--------|
| Institute (UR)                        |  | Certificate No. (UR)                  | E60693 |
| Rated voltage (Use group B / UL 1059) | 150 V   | Rated voltage (Use group C / UL 1059) | 50 V   |
| Rated current (Use group B / UL 1059) | 10 A  | Rated current (Use group C / UL 1059) | 10 A   |
| Reference to approval values          | Specifications are maximum values, details - see approval certificate.              |                                       |        |

**Packing**

|           |        |            |        |
|-----------|--------|------------|--------|
| Packaging | Box    | VPE length | 351 mm |
| VPE width | 137 mm | VPE height | 25 mm  |

**Classifications**

|             |             |             |             |
|-------------|-------------|-------------|-------------|
| ETIM 6.0    | EC002637    | ETIM 7.0    | EC002637    |
| ETIM 8.0    | EC002637    | ETIM 9.0    | EC002637    |
| ECLASS 9.0  | 27-44-04-02 | ECLASS 9.1  | 27-44-04-02 |
| ECLASS 10.0 | 27-44-04-02 | ECLASS 11.0 | 27-46-02-01 |
| ECLASS 12.0 | 27-46-02-01 | ECLASS 13.0 | 27-46-02-01 |

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**Technical data****Important note**

|                |   |
|----------------|---|
| IPC conformity | Conformity: The products are developed, manufactured and delivered according international recognized standards and norms and comply with the assured properties in the data sheet resp. fulfill decorative properties in accordance with IPC-A-610 "Class 2". Further claims on the products can be evaluated on request.  |
| Notes          | <ul style="list-style-type: none"> <li>• Additional variants on request</li> <li>• Gold-plated contact surfaces on request</li> <li>• Spacing between rows: see hole layout</li> <li>• Rated current related to rated cross-section &amp; min. No. of poles.</li> <li>• Diameter of solder eyelet <math>D = 1.3 + 0.1</math> mm</li> <li>• P on drawing = pitch</li> <li>• Rated data refer only to the component itself. Clearance and creepage distances to other components are to be designed in accordance with the relevant application standards.</li> <li>• For additional mechanical support for male connectors with screw flange (...F), we recommend an additional cable gland with fastening screws (sheet metal screw ISO 1481-ST 2.2x4.5 C or ISO 7049-ST 2.2x4.5 C – see Accessories). Cable gland only permitted before soldering.</li> <li>• In accordance with IEC 61984, OMNIMATE-connectors are connectors without breaking capacity (COC). During designated use, connectors are not allowed to be engaged or disengaged when live or under load</li> <li>• Long term storage of the product with average temperature of 50 °C and maximum humidity 70%, 36 months</li> </ul> |

**Approvals**

Approvals



|                       |            |
|-----------------------|------------|
| ROHS                  | Conform    |
| UL File Number Search | UL Website |
| Certificate No. (UR)  | E60693     |

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**Technical data****Downloads**

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|   |   |
|---|---|
| Approval/Certificate/Document of Conformity | <a href="#">Declaration of the Manufacturer</a>   |
| Engineering Data                            | <a href="#">CAD data – STEP</a>   |
| Catalogues                                  | <a href="#">Catalogues in PDF-format</a>  |
| Brochures                                   | <a href="#">FL DRIVES EN</a><br><a href="#">MB DEVICE MANUF. EN</a><br><a href="#">FL DRIVES DE</a><br><a href="#">FL BUILDING SAFETY EN</a><br><a href="#">FL APPL LED LIGHTING EN</a><br><a href="#">FLIndustr.CONTROLS EN</a><br><a href="#">FL MACHINE SAFETY EN</a><br><a href="#">FL HEATING ELECTR EN</a><br><a href="#">FL APPL INVERTER EN</a><br><a href="#">FL_BASE_STATION_EN</a><br><a href="#">FL ELEVATOR EN</a><br><a href="#">FL POWER SUPPLY EN</a><br><a href="#">FL 72H SAMPLE SER EN</a><br><a href="#">PO OMNIMATE EN</a><br><a href="#">PO OMNIMATE EN</a> |

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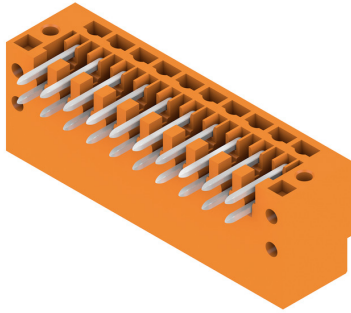
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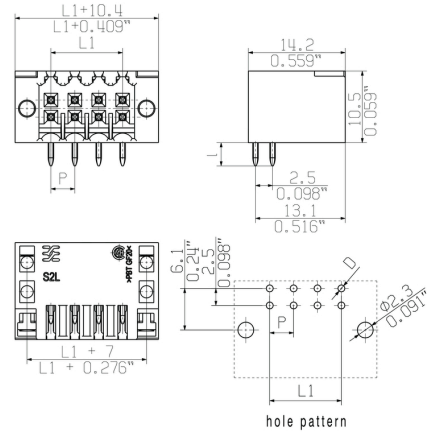
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**Drawings**

**Product image**



**Dimensional drawing**



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**Accessories**

**Coding elements**



**Only connects what is supposed to be connected: the right connection at the right place.**

Coding elements and locking devices clearly assign connecting elements during the manufacturing process and operation

The coding elements and locking devices are inserted prior to assembly or during the cable assembly phase. The Weidmüller alternative: configure online using the variant configurator to precode prior to delivery.

Incorrect assembly on the circuit board and incorrect plugging of connecting elements is no longer possible. The advantage: no troubleshooting during manufacture and no operational errors by the user.

**General ordering data**

| Type       | B2L/S2L 3.50 KO BK BX      | Version  | Product data | Packaging |
|------------|----------------------------|--|--------------|-----------|
| Order No.  | <a href="#">1849740000</a> | PCB plug-in connector, Accessories, Coding element, black, Number  |              | Box       |
| GTIN (EAN) | 4032248378203              | of poles: 1  |              |           |
| Qty.       | 100 pc(s).                 |  |              |           |
| Type       | B2L/S2L 3.50 KO OR BX      | Version  | Product data | Packaging |
| Order No.  | <a href="#">1849730000</a> | PCB plug-in connector, Accessories, Coding element, orange, Number |              | Box       |
| GTIN (EAN) | 4032248378197              | of poles: 1  |              |           |
| Qty.       | 100 pc(s).                 |  |              |           |

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# Accessories

## LED Light guides



### Effective: the link between LED and front panel.

Floodlight indicators allow users to monitor the switching states without requiring a special design: optical plastic directs the light from standard LEDs around a bend into the connectors or through the front plate.

The fibre-optic elements are simply clipped behind the relevant 90° bend male connectors (90° outlet direction). Versions with different incoming light beam heights achieve maximum light efficiency for LEDs with different designs or heights.

The advantages compared to conventional solutions:

- No additional LED circuit board required behind the front panel
- No "long-legged" LEDs with separate mounting required
- Bent fibre-optic cable line for maximum light efficiency
- Uncomplicated front plate bore holes due to circular shape of outgoing light beam
- Easy to maintain correct clearance and creepage distance
- Can be partitioned for smaller pole numbers

The result: simplified manufacturing process, reduced costs and simplified design

## General ordering data

| Type       | S2L/S2C 3.5 FLA 20/10      | Version   | Product data | Packaging |
|------------|----------------------------|---|--------------|-----------|
| Order No.  | <a href="#">1699580000</a> | PCB plug-in connector, Accessories, Flood-light display, Transparent, |              | Box       |
| GTIN (EAN) | 4008190891350              | Number of poles: 10   |              |           |
| Qty.       | 100 pc(s).                 |   |              |           |

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**Accessories**

**Additional accessories**



**No task is too small when creating the perfect solution.** br />

Connections form just one part of the overall process. Small details are often the key to the perfect solution in applications where potentials are tested, grouped or even isolated.

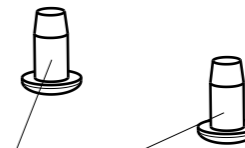
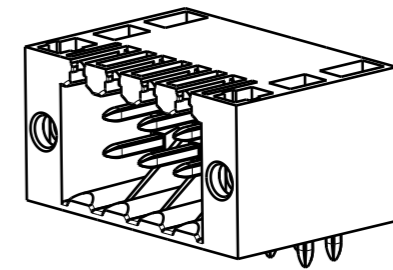
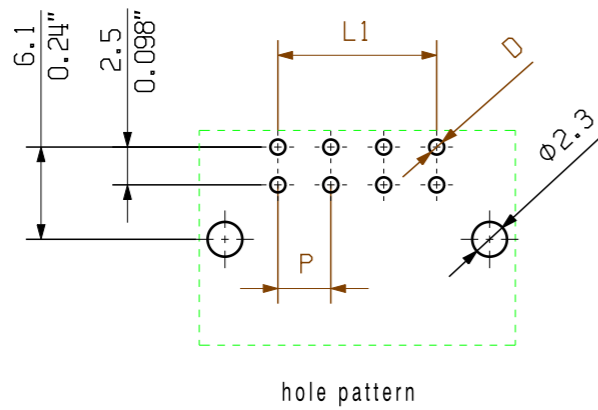
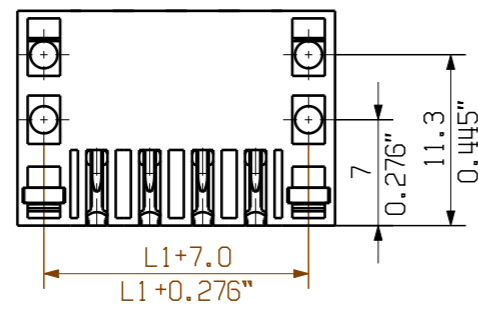
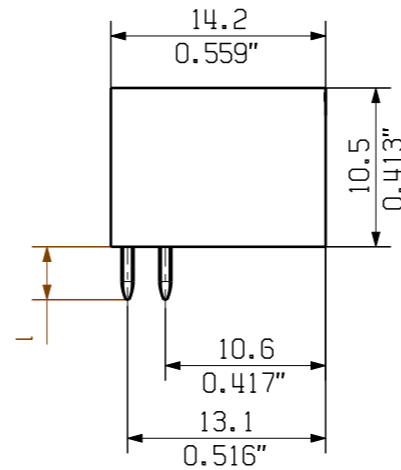
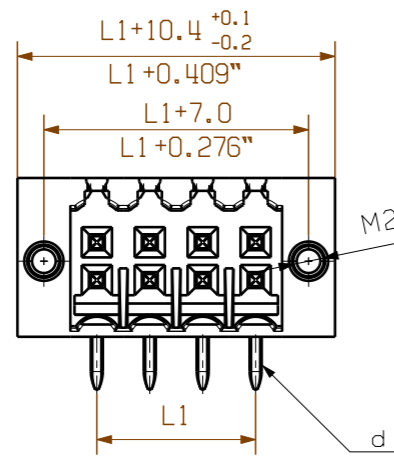
A system is not a system without small but useful details:

- Test plugs - ensure reliable pick-up from diagnostic sockets
- Cross-connectors - ensure a stable electrical distribution contact directly at the connection
- Compartment partition elements - divide a large number of male connectors into several separate socket connector channels
- Locks and clips - optional vibration-resistant clip-on connection or mounting for male and female connectors

In tandem with the manufacturing process and application - more accessories = smaller workload

**General ordering data**

| Type       | PTSC KA 2.2X4.5 WN1412     | Version   | Product data |
|------------|----------------------------|---|--------------|
| Order No.  | <a href="#">1610740000</a> | PCB plug-in connector, Accessories, Mounting screw, Number of |              |
| GTIN (EAN) | 4008190039523              | poles: 1  |              |
| Qty.       | 100 pc(s).                 |   |              |



optional fixing screw  
order no.: 161074 0000

|    |                         |         |                              |
|----|-------------------------|---------|------------------------------|
| 46 | 77.0                    | +/-0.2  |                              |
| 44 | 73.5                    |         |                              |
| 42 | 70.0                    |         |                              |
| 40 | 66.5                    |         |                              |
| 38 | 63.0                    |         |                              |
| 36 | 59.5                    |         |                              |
| 34 | 56.0                    |         |                              |
| 32 | 52.5                    | +/-0.15 |                              |
| 30 | 49.0                    |         |                              |
| 28 | 45.5                    |         |                              |
| 26 | 42.0                    |         |                              |
| 24 | 38.5                    | +/-0.1  |                              |
| 22 | 35.0                    |         |                              |
| 20 | 31.5                    |         |                              |
| 18 | 28.0                    |         |                              |
| 16 | 24.5                    |         |                              |
| 14 | 21.0                    |         |                              |
| 12 | 17.5                    |         |                              |
| 10 | 14.0                    |         |                              |
| 8  | 10.5                    |         |                              |
| 6  | 7.0                     |         |                              |
| 4  | 3.5                     |         |                              |
| n  | Polzahl/<br>no of poles | L1      | Toleranz/<br>tolerance<br>L1 |

P = 3.50 Raster Pitch  
 D = Ø1,3<sup>+0.1</sup>  
 Ø0.051<sup>+0.1</sup>  
 d = 1mm oktogonal  
 0.039" octogonal

shown: S2L 3.50/08/90F

| pin length<br>l | tolerance   |
|-----------------|-------------|
| 3,5             | 0,2<br>-0,2 |
| 2,6             | 0,2<br>-0,2 |

For the mounting of PCBs, it should be noted that the rated data given in the catalogue relates only to the connection elements. The necessary creepage and clearance paths must be observed in connection with the respective applicant in accordance with VDE 0110. The current-carrying capacity and pitch tolerance is to be determined according to DIN IEC 326 part 3 very fine.

Weidmüller connectors are tested to the DIN VDE 0627 standard, and are valid for its field of application. Provided that the connectors are used to the intended purpose, all requirements with respect to the occurring of electrical, mechanical, thermic and corrosive stress will be satisfied.

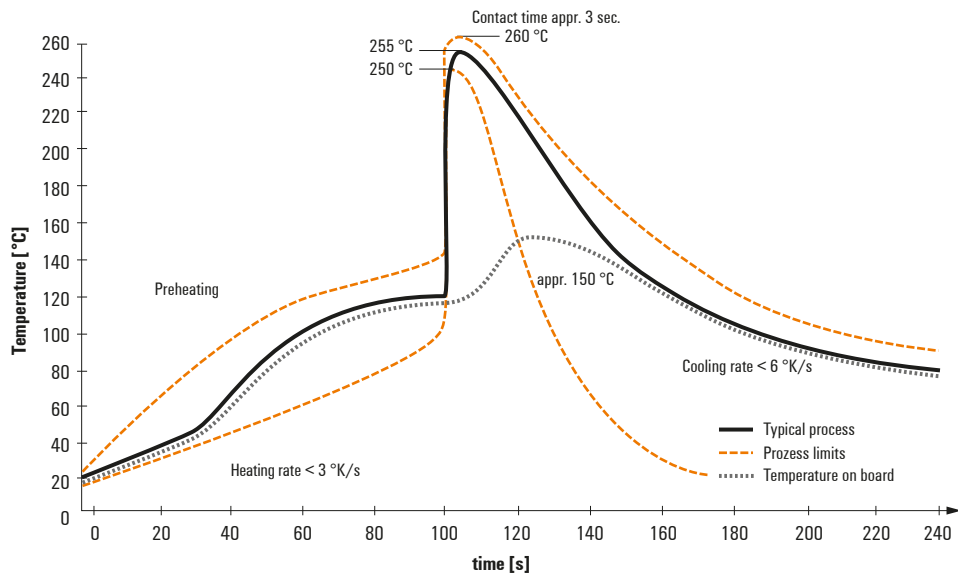
|                                       |            |   |  |   |            |          |             |  |         |         |            |          |          |  |        |
|---------------------------------------|------------|---|--|---|------------|----------|-------------|--|---------|---------|------------|----------|----------|--|--------|
| General tolerance:<br>DIN ISO 2768-mK |            | 98746/5<br>29.11.17 HELIS_MA 01   |  | Cat.no.: .  |            |          |             |  |         |         |            |          |          |  |        |
|                                       |            | Modification  |  |   |            |          |             |  |         |         |            |          |          |  |        |
|                                       |            | <table border="1"> <tr><td>Drawn</td><td>28.11.2008</td><td>HELIS_MA</td></tr> <tr><td>Responsible</td><td></td><td>AMANN_A</td></tr> <tr><td>Checked</td><td>04.12.2017</td><td>HELIS_MA</td></tr> <tr><td>Approved</td><td></td><td>LANG_T</td></tr> </table> |  | Drawn   | 28.11.2008 | HELIS_MA | Responsible |  | AMANN_A | Checked | 04.12.2017 | HELIS_MA | Approved |  | LANG_T |
| Drawn                                 | 28.11.2008 | HELIS_MA  |  |   |            |          |             |  |         |         |            |          |          |  |        |
| Responsible                           |            | AMANN_A   |  |   |            |          |             |  |         |         |            |          |          |  |        |
| Checked                               | 04.12.2017 | HELIS_MA  |  |   |            |          |             |  |         |         |            |          |          |  |        |
| Approved                              |            | LANG_T  |  |   |            |          |             |  |         |         |            |          |          |  |        |
| Scale: 5/1                            |            | Supersedes: .   |  | <b>S2L 3.50/.../...</b><br>STIFTLEISTE<br>MALE HEADER<br>Product file: S2L 3.50 |            |          |             |  |         |         |            |          |          |  |        |
|                                       |            |   |  |   |            | 7110     |             |  |         |         |            |          |          |  |        |

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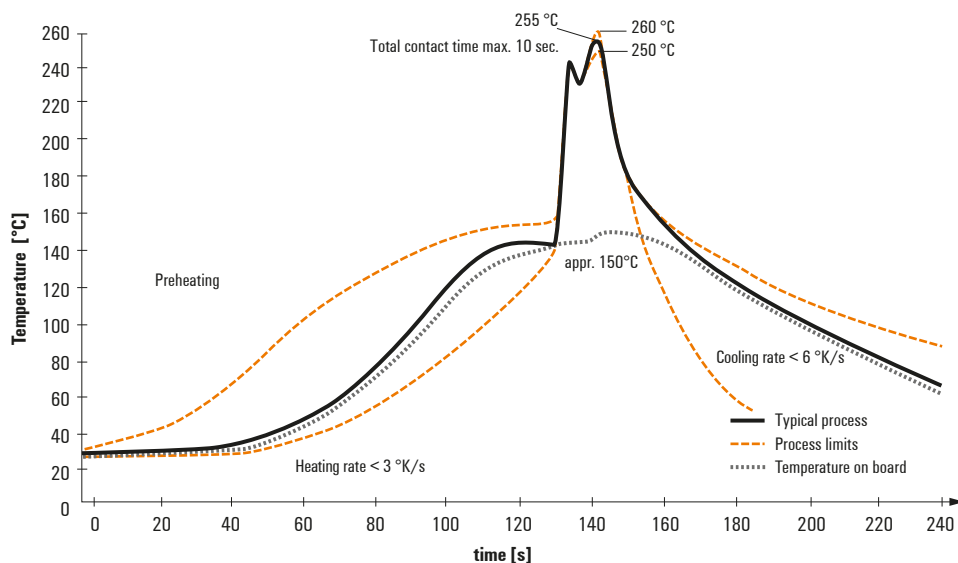
## Recommended wave soldering profiles

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### Single Wave:



### Double Wave:



### Wave soldering profiles

Wired connection elements should be processed in accordance with the DIN EN 61760-1 standard. We have included two recommendations for practical wave soldering profiles, with which Weidmüller PCB terminals and connectors are qualified.

When choosing a suitable profile for your application, the following factors also need to be considered:

- PCB thickness
- Proportion of Cu in the layers
- Single/double-sided assembly
- Product range
- Heating and cooling rates

The single and double wave profiles each indicate the recommended operating range, including the maximum soldering temperature of 260°C. In practice, the maximum soldering temperature is quite often well below the above maximum profile.