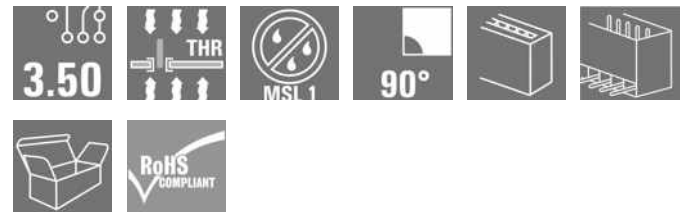


SL-SMT 3.50/21/90G 1.5SN BK BX

Weidmüller Interface GmbH & Co. KG
Klingenbergstraße 26
D-32758 Detmold
Germany

www.weidmueller.com

Product image



High-temperature-resistant male header, 3.50 mm pitch.

- **Plugging direction parallel (90°), straight 180° or angled (135°) to PCB**
- **Housing variants: closed side (G), screw flange (F), solder flange (LF) or snap-on solder flange (RF)**
- **Optimised for the SMT process**
- **Pin length 3.2 mm universal for all soldering methods**
- **Pin length 1.5 mm optimised for reflow soldering methods**
- **Packed either in a box (BX) or tape-on-reel (RL)**
- **Male header can be coded**

General ordering data

| | |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Version | PCB plug-in connector, male header, closed side, THT/THR solder connection, 3.50 mm, Number of poles: 21, 90°, Solder pin length (l): 1.5 mm, tinned, black, Box |
| Order No. | 1761732001 |
| Type | SL-SMT 3.50/21/90G 1.5SN BK BX |
| GTIN (EAN) | 4032248132324 |
| Qty. | 20 pc(s). |
| Product data | IEC: 320 V / 15 A UL: 300 V / 10 A |
| Packaging | Box |

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Technical data
Dimensions and weights

| | | | |
|--------------------------|------------|-----------------|------------|
| Depth | 11.1 mm | Depth (inches) | 0.437 inch |
| Height | 9 mm | Height (inches) | 0.354 inch |
| Height of lowest version | 7.5 mm | Width | 74.9 mm |
| Width (inches) | 2.949 inch | Net weight | 6.4 g |

Temperatures

| | | | |
|-----------------------------|--------|-----------------------------|--------|
| Operating temperature, min. | -50 °C | Operating temperature, max. | 100 °C |
|-----------------------------|--------|-----------------------------|--------|

System specifications

| | | | |
|----------------------------------------------|--------------------------------------------------|--------------------------------------------|------------------------------|
| Product family | OMNIMATE Signal - series BL/SL 3.50 | Type of connection | Board connection |
| Mounting onto the PCB | THT/THR solder connection | Pitch in mm (P) | 3.5 mm |
| Pitch in inches (P) | 0.138 inch | Outgoing elbow | 90° |
| Number of poles | 21 | Number of solder pins per pole | 1 |
| Solder pin length (l) | 1.5 mm | Solder pin length tolerance | 0 / -0.3 mm |
| Solder pin dimensions | d = 1.2 mm, Octagonal | Solder pin dimensions = d tolerance | 0 / -0,03 mm |
| Solder eyelet hole diameter (D) | 1.4 mm | Solder eyelet hole diameter tolerance (D)+ | 0,1 mm |
| Outside diameter of solder pad | 2.3 mm | Template aperture diameter | 2.1 mm |
| L1 in mm | 70 mm | L1 in inches | 2.756 inch |
| Number of rows | 1 | Pin series quantity | 1 |
| Touch-safe protection acc. to DIN VDE 57 106 | finger-safe plugged/ back-of-hand-safe unplugged | Touch-safe protection acc. to DIN VDE 0470 | IP20 plugged/ IP10 unplugged |
| Volume resistance | ≤5 mΩ | Can be coded | Yes |
| Plugging force/pole, max. | 6 N | Pulling force/pole, max. | 6 N |

Material data

| | | | |
|---------------------------------------|----------|---------------------------------------|---------------------------|
| Insulating material | LCP GF | Colour | black |
| Colour chart (similar) | RAL 9011 | Insulating material group | IIIa |
| Comparative Tracking Index (CTI) | ≥ 175 | Moisture Level (MSL) | 1 |
| UL 94 flammability rating | V-0 | Contact material | CuSn |
| Contact surface | tinned | Layer structure of plug contact | 2...3 μm Ni / 5...7 μm Sn |
| 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 |

Rated data acc. to IEC

| | | | |
|---------------------------------------------------------------------------|------------------------|-----------------------------------------------------------------------|-------------------|
| tested acc. to standard | IEC 60664-1, IEC 61984 | Rated current, min. number of poles (Tu=20°C) | 15 A |
| Rated current, max. number of poles (Tu=20°C) | 12 A | Rated current, min. number of poles (Tu=40°C) | 13 A |
| Rated current, max. number of poles (Tu=40°C) | 10 A | Rated voltage for surge voltage class / pollution degree II/2 | 320 V |
| Rated voltage for surge voltage class / pollution degree III/2 | 160 V | Rated voltage for surge voltage class / pollution degree III/3 | 160 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 100 A |

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Technical data
Rated data acc. to CSA

Institute (CSA)



Certificate No. (CSA)

200039-1176845

Rated voltage (Use group B / CSA) 300 V

Rated voltage (Use group D / CSA) 300 V

Rated current (Use group B / CSA) 10 A

Rated current (Use group D / CSA) 10 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) 300 V

Rated voltage (Use group D / UL 1059) 300 V

Rated current (Use group B / UL 1059) 10 A

Rated current (Use group D / UL 1059) 10 A

Reference to approval values

Specifications are maximum values, details - see approval certificate.

Packing

| | | | |
|-----------|-------|------------|--------|
| Packaging | Box | VPE length | 127 mm |
| VPE width | 91 mm | VPE height | 40 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 | 27460201 |

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

- Gold-plated contact surfaces on request
- Rated current related to rated cross-section & min. No. of poles.
- Diameter of solder eyelet $D = 1.4 + 0.1 \text{ mm}$
- Solder eyelet diameter $D = 1.5 + 0.1 \text{ mm}$, from 9 poles
- P on drawing = pitch
- 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.
- Long term storage of the product with average temperature of 50 °C and maximum humidity 70%, 36 months

Creation date October 11, 2023 11:07:05 AM CEST

Catalogue status 30.09.2023 / We reserve the right to make technical changes.

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Data sheet

SL-SMT 3.50/21/90G 1.5SN BK BX

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Technical data

Approvals

Approvals



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

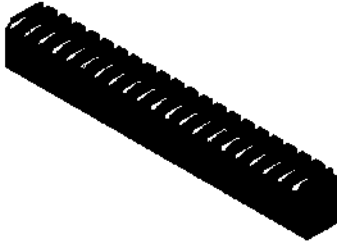
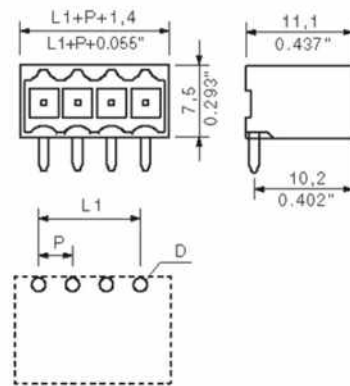
Downloads

| | |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Approval/Certificate/Document of Conformity | Declaration of the Manufacturer |
| Engineering Data | CAD data – STEP |
| Catalogues | Catalogues in PDF-format |
| Brochures | FL DRIVES EN MB SMT EN FL DRIVES DE MB DEVICE MANUF. EN FL BUILDING SAFETY EN FL APPL LED LIGHTING EN FLIndustr.CONTROLS EN FL MACHINE SAFETY EN FL HEATING ELECTR EN FL APPL INVERTER EN FL_BASE_STATION_EN FL ELEVATOR EN FL POWER SUPPLY EN FL 72H SAMPLE SER EN PO OMNIMATE EN PO OMNIMATE EN |
| White paper surface mount technology | Download Whitepaper |

Data sheet**SL-SMT 3.50/21/90G 1.5SN BK BX**

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Drawings**Product image****Dimensional drawing**

L1 = 70.00 mm | P = 3.50 mm

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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 | BL SL 3.5 KO OR | Version | Product data | Packaging |
|------------|----------------------------|--------------------------------------------------------------------|--------------|-----------|
| Order No. | 1693430000 | PCB plug-in connector, Accessories, Coding element, orange, Number | | Box |
| GTIN (EAN) | 4008190867447 | of poles: 1 | | |
| Qty. | 100 pc(s). | | | |
| Type | BL SL 3.5 KO SW | Version | Product data | Packaging |
| Order No. | 1610100000 | PCB plug-in connector, Accessories, Coding element, black, Number | | Box |
| GTIN (EAN) | 4008190187637 | 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 | SL 3.5 FLA 2.3/1.75/8 | Version | Product data | Packaging |
|------------|----------------------------|-----------------------------------------------------------------------|--------------|-----------|
| Order No. | 1597640000 | PCB plug-in connector, Accessories, Flood-light display, Transparent, | | Box |
| GTIN (EAN) | 4008190011321 | Number of poles: 1 | | |
| Qty. | 25 pc(s). | | | |
| Type | SL 3.5 FLA 1.5/8 | Version | Product data | Packaging |
| Order No. | 1597510000 | PCB plug-in connector, Accessories, Flood-light display, Transparent, | | Box |
| GTIN (EAN) | 4008190127541 | Number of poles: 1 | | |
| Qty. | 50 pc(s). | | | |
| Type | SL 3.5 FLA 4.0/8 | Version | Product data | Packaging |
| Order No. | 1597530000 | PCB plug-in connector, Accessories, Flood-light display, Transparent, | | Box |
| GTIN (EAN) | 4008190075699 | Number of poles: 1 | | |
| Qty. | 50 pc(s). | | | |
| Type | SL 3.5 FLA 1.5/1.75/8 | Version | Product data | Packaging |
| Order No. | 1597630000 | PCB plug-in connector, Accessories, Flood-light display, Transparent, | | Box |
| GTIN (EAN) | 4008190148386 | Number of poles: 1 | | |
| Qty. | 50 pc(s). | | | |
| Type | SL 3.5 FLA 4.0/1.75/8 | Version | Product data | Packaging |
| Order No. | 1597650000 | PCB plug-in connector, Accessories, Flood-light display, Transparent, | | Box |
| GTIN (EAN) | 4008190027773 | Number of poles: 1 | | |
| Qty. | 50 pc(s). | | | |
| Type | SL 3.5 FLA 2.3/8 | Version | Product data | Packaging |
| Order No. | 1597520000 | PCB plug-in connector, Accessories, Flood-light display, Transparent, | | Box |
| GTIN (EAN) | 4008190120566 | Number of poles: 1 | | |
| Qty. | 50 pc(s). | | | |

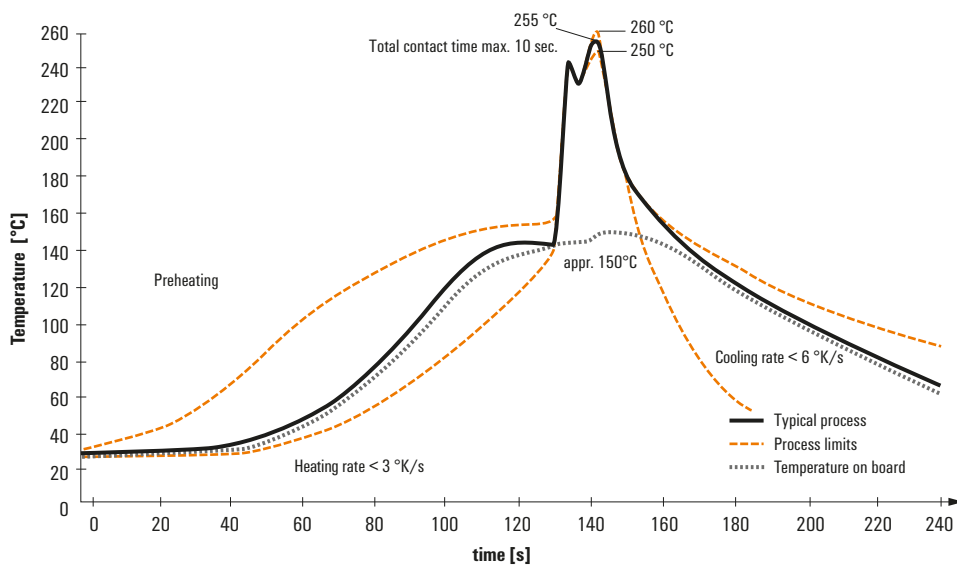
Recommended wave soldering profiles

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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.

Recommended reflow soldering profile

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Reflow soldering profile

The perfect soldering profile for SMT Surface Mount Technology is one the most exiting question in SMT production. But there are more than one correct answer: The diagram of temperature-on-time is related to processing features of solder paste and to maximum load of components.

We have to consider the following parameters:

- Time for pre heating
- Maximum temperature
- Time above melting point
- Time for cooling
- Maximum heating rate
- Maximum cooling rate

We recommend a typical solder profile with associated process limits. With preheating components and board are prepared smoothly for the solder phase. Heating rate is typically $\leq +3\text{K/s}$. In parallel the solder paste is ‚activated‘. The time above melting point of 217°C the paste gets liquid and components and boards begin to connect. The maximum temperature of 245°C to 254°C should stay between 10 and 40 seconds. In the cooling phase at $\geq -6\text{K/s}$ solder is cured. Board and components cool down while avoiding cold cracks.