

**SL-SMT 3.50/16/180RF 1.5SN BK BX****Weidmüller Interface GmbH & Co. KG**

Klingenbergstraße 26

D-32758 Detmold

Germany

[www.weidmueller.com](http://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, Clip-on flange, THT/THR solder connection, 3.50 mm, Number of poles: 16, 180°, Solder pin length (l): 1.5 mm, tinned, black, Box |
| Order No.    | <a href="#">1291450000</a>   |
| Type         | SL-SMT 3.50/16/180RF 1.5SN BK BX   |
| GTIN (EAN)   | 4050118085518  |
| Qty.         | 50 pc(s).  |
| Product data | IEC: 320 V / 15 A<br>UL: 300 V / 10 A  |
| Packaging    | Box  |

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## Technical data

## Dimensions and weights

|                          |            |                 |            |
|--------------------------|------------|-----------------|------------|
| Depth                    | 7.4 mm     | Depth (inches)  | 0.291 inch |
| Height                   | 12.6 mm    | Height (inches) | 0.496 inch |
| Height of lowest version | 11.1 mm    | Width           | 62.85 mm   |
| Width (inches)           | 2.474 inch | Net weight      | 4.072 g    |

## 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 "  | Outgoing elbow                             | 180°                         |
| Number of poles                              | 16   | 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                                     | 52.5 mm  | L1 in inches                               | 2.067 "                      |
| 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                      | Cu-alloy    |
| Contact surface                       | tinned   | Layer structure of solder connection  | 2...3 μm Ni |
| 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                 |   |        |

## Rated data acc. to CSA

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

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**Technical data****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

88 mm

VPE width

82 mm

VPE height

78 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

ECLASS 14.0

27-46-02-01

**Environmental Product Compliance**

REACH SVHC

/

RoHS Compliance Status

Compliant without exemption

**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.
- 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
- Long term storage of the product with average temperature of 50 °C and maximum humidity 70%, 36 months

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[www.weidmueller.com](http://www.weidmueller.com)**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](#)  
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[FL POWER SUPPLY EN](#)  
[FL 72H SAMPLE SER EN](#)  
[PO OMNIMATE EN](#)White paper surface mount technology [Download Whitepaper](#)

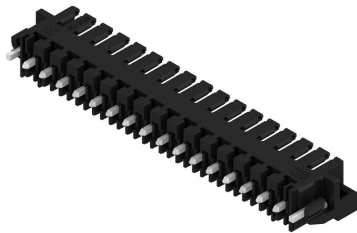
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# Drawings

## Product image



## Dimensional drawing



## Dimensional drawing



## Dimensional drawing



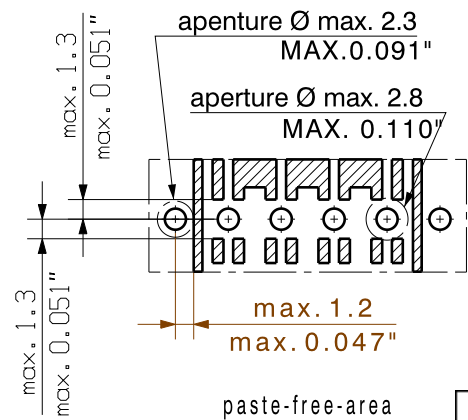
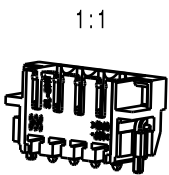
## Example of use



## Example of use





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|    |         |           |           |
|----|---------|-----------|-----------|
| 24 | 80,50   | 3,169     | +/- 0.2   |
| 23 | 77,00   | 3,031     |           |
| 22 | 73,50   | 2,894     |           |
| 21 | 70,00   | 2,756     |           |
| 20 | 66,50   | 2,618     |           |
| 19 | 63,00   | 2,480     |           |
| 18 | 59,50   | 2,343     |           |
| 17 | 56,00   | 2,205     |           |
| 16 | 52,50   | 2,067     |           |
| 15 | 49,00   | 1,929     |           |
| 14 | 45,50   | 1,791     | +/- 0.15  |
| 13 | 42,00   | 1,654     |           |
| 12 | 38,50   | 1,516     |           |
| 11 | 35,00   | 1,378     |           |
| 10 | 31,50   | 1,240     | +/- 0.1   |
| 9  | 28,00   | 1,102     |           |
| 8  | 24,50   | 0,965     |           |
| 7  | 21,00   | 0,827     |           |
| 6  | 17,50   | 0,689     |           |
| 5  | 14,00   | 0,551     |           |
| 4  | 10,50   | 0,413     |           |
| 3  | 7,00    | 0,276     |           |
| 2  | 3,50    | 0,138     |           |
| n  | L1 [mm] | L1 [Inch] | tolerance |

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 to VDE 0110. The current-carrying capacity and pitch tolerance is to be determined according to DIN IEC 326 part 3 very fine.

|   |                              |                   |                 |   |                |  |
|---|------------------------------|-------------------|-----------------|---|----------------|--|
| <b>GENERAL TOLERANCE:</b><br><b>DIN ISO 2768-mK</b>                                   | 99546/5<br>08.12.17 HELIS_MA |                   | 00              | <b>Weidmüller</b>  | Cat.no.: .     |  |
|   | <b>RoHS COMPLIANT</b>        |                   |                 |   | <b>3 34146</b> |  |
|  | <b>Modification</b>          |                   |                 | Drawing no.   |                |  |
|   | <b>Sheet 05 of 05 sheets</b> |                   |                 | Issue no.   |                |  |
| <b>Scale: 2:1</b>   | <b>Drawn</b>                 | <b>Date</b>       | <b>Name</b>     | <b>SL-SMT 3.50/./180...</b><br><b>STIFTELEISTE</b><br><b>MALE HEADER</b>                                |                |  |
| <b>Supersedes: .</b>  | <b>Responsible</b>           | <b>28.11.2007</b> | <b>HELIS_MA</b> |   |                |  |
|   | <b>Checked</b>               | <b>05.01.2018</b> | <b>AMANN_A</b>  |   |                |  |
|   | <b>Approved</b>              | <b>08.12.2017</b> | <b>HERTEL_S</b> | <b>Product file: SL-SMT 3.50</b>  |                |  |
|   |                              | <b>LANG_T</b>     |                 | <b>7312</b>   |                |  |

## 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.

We reserve the right to make technical changes.

## 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.