

**SL-SMT 3.50/19/135F 3.2SN BK BX**
**Weidmüller Interface GmbH & Co. KG**

Klingenbergstraße 26

D-32758 Detmold

Germany

www.weidmueller.com

**Product image**


Similar to illustration

**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, Flange, THT/THR solder connection, 3.50 mm, Number of poles: 19, 135°, Solder pin length (l): 3.2 mm, tinned, black, Box |
| Order No.    | <a href="#">1003690000</a>                                                                                                                                   |
| Type         | SL-SMT 3.50/19/135F 3.2SN BK BX                                                                                                                              |
| GTIN (EAN)   | 4032248700318                                                                                                                                                |
| Qty.         | 24 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                    | 13.2 mm | Depth (inches)  | 0.52 inch  |
| Height                   | 16.2 mm | Height (inches) | 0.638 inch |
| Height of lowest version | 13 mm   | Net weight      | 6.14 g     |
| Width                    | 73.5 mm | Width (inches)  | 2.894 inch |

**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                             | 135°                                |                     |             |                                                           |
| Number of poles                            | 19                                  |                     |             |                                                           |
| Number of solder pins per pole             | 1                                   |                     |             |                                                           |
| Solder pin length (l)                      | 3.2 mm                              |                     |             |                                                           |
| Solder pin dimensions                      | d = 1.2 mm, Octagonal               |                     |             |                                                           |
| Solder eyelet hole diameter (D)            | 1.3 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                                   | 63 mm                               |                     |             |                                                           |
| L1 in inches                               | 2.48 inch                           |                     |             |                                                           |
| Number of rows                             | 1                                   |                     |             |                                                           |
| Pin series quantity                        | 1                                   |                     |             |                                                           |
| Volume resistance                          | ≤5 mΩ                               |                     |             |                                                           |
| Plugging force/pole, max.                  | 10 N                                |                     |             |                                                           |
| Pulling force/pole, max.                   | 8 N                                 |                     |             |                                                           |
| Tightening torque                          | Torque type                         | Mounting screw, PCB |             |                                                           |
|                                            | Usage information                   | Tightening torque   | min.        | 0.1 Nm                                                    |
|                                            |                                     |                     | max.        | 0.15 Nm                                                   |
|                                            |                                     | Recommended screw   | Part number | <a href="#">PTSC KA 2.2X4.5</a><br><a href="#">WN1412</a> |

**Material data**

|                                       |                                  |                                       |                                  |
|---------------------------------------|----------------------------------|---------------------------------------|----------------------------------|
| Insulating material                   | LCP GF                           | Colour                                | black                            |
| Colour chart (similar)                | RAL 9011                         | Insulating material group             | IIla                             |
| Comparative Tracking Index (CTI)      | ≥ 175                            | Moisture Level (MSL)                  | 1                                |
| UL 94 flammability rating             | V-0                              | Contact material                      | CuSn                             |
| Contact surface                       | tinned                           | Layer structure of solder connection  | 2...4 µm Ni / 5...8 µm Sn glossy |
| Layer structure of plug contact       | 2...4 µm Ni / 5...8 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, max. number of poles  
(Tu=20°C)

12 A

Rated current, max. number of poles  
(Tu=40°C)

10 A

Rated voltage for surge voltage class /  
pollution degree III/2

160 V

Rated impulse voltage for surge voltage  
class/ pollution degree II/2

2.5 kV

Rated impulse voltage for surge voltage  
class/ contamination degree III/3

2.5 kV

Rated current, min. number of poles  
(Tu=20°C)

15 A

Rated current, min. number of poles  
(Tu=40°C)

13 A

Rated voltage for surge voltage class /  
pollution degree II/2

320 V

Rated voltage for surge voltage class /  
pollution degree III/3

160 V

Rated impulse voltage for surge voltage  
class/ pollution degree III/2

2.5 kV

**Rated data acc. to CSA**

Rated voltage (Use group B / CSA)

300 V

Rated current (Use group B / CSA)

10 A

Rated voltage (Use group D / CSA)

300 V

Rated current (Use group D / CSA)

10 A

**Rated data acc. to UL 1059**

Institute (UR)



Certificate No. (UR)

E60693

Rated voltage (Use group B / UL 1059)

300 V

Rated current (Use group B / UL 1059)

10 A

Rated voltage (Use group D / UL 1059)

300 V

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

0

VPE width

0

VPE height

0

**Classifications**

ETIM 6.0

EC002637

ETIM 7.0

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

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[www.weidmueller.com](http://www.weidmueller.com)**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>• Gold-plated contact surfaces on request</li><li>• Rated current related to rated cross-section &amp; min. No. of poles.</li><li>• Diameter of solder eyelet <math>D = 1.4 \pm 0.1 \text{ mm}</math></li><li>• Solder eyelet diameter <math>D = 1.5 \pm 0.1 \text{ mm}</math>, from 9 poles</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>• Long term storage of the product with average temperature of 50 °C and average humidity 70%, 36 months</li></ul> |

**Approvals**

Approvals



|                       |         |
|-----------------------|---------|
| ROHS                  | Conform |
| UL File Number Search | E60693  |

**Downloads**

|                                             |                                                 |
|---------------------------------------------|-------------------------------------------------|
| Approval/Certificate/Document of Conformity | <a href="#">Declaration of the Manufacturer</a> |
| Engineering Data                            | <a href="#">STEP</a>                            |
| Engineering Data                            | <a href="#">EPLAN, WSCAD</a>                    |

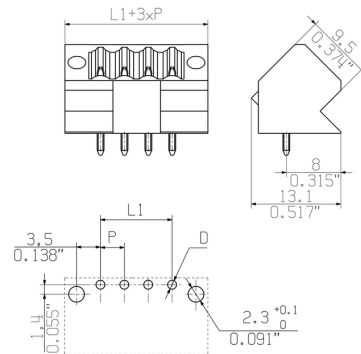
## SL-SMT 3.50/19/135F 3.2SN BK BX

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# Drawings

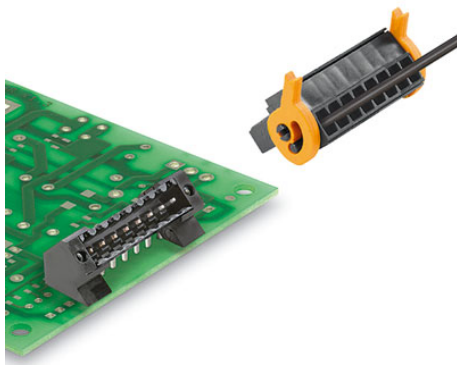
## Dimensional drawing



LAYOUT FINISHED HOLES

Similar to illustration

## Example of use



## Rev.

## Material data

| System characteristic values                                 |  | together with counterpart | BL 3.5                    |
|--------------------------------------------------------------|--|---------------------------|---------------------------|
| Pitch <b>P</b>                                               |  | mm/inch                   | 3.5/0.138                 |
| Number of rows                                               |  |                           | 1                         |
| Dielectric strength (r.m.s withstand voltage)                |  | kV                        | >2.2                      |
| Mechanical operating cycles                                  |  | acc.to IEC512             | 25                        |
| Plug in force (max.)                                         |  | N/Pole                    | 10                        |
| Pull out force (max.)                                        |  | N/Pole                    | 10                        |
| Through resistance (typical)                                 |  | m Ohm                     | 4.5                       |
| Operating temperatur range                                   |  | °C                        | -20..100                  |
| Degree of protection acc. to VDE 0106 (plugged/unplugged)    |  |                           | finger safe/back of hands |
| Degree of protection acc. to DIN EN 60529(plugged/unplugged) |  |                           | IP20/IP10                 |
| Solder pin length <b>L</b>                                   |  | mm/inch                   | 3.2/0.126                 |
| PCB hole diameter <b>D</b> (wave soldering)                  |  | mm/inch                   | 1.3+0.1/0.51+0.004        |
| PCB hole diameter <b>D</b> (reflow soldering)                |  | mm/inch                   | n.a.                      |
| Resistance to soldering heat acc. to DIN IEC 60512-6         |  | °C/sec                    | -                         |
| Resistance to soldering heat acc. to EN 61760-1              |  | °C/sec                    | 290/30                    |
| Solderability classification acc. to EN 61760-1              |  |                           | class A                   |
| Solder connection type                                       |  |                           | Reflow                    |
| Solder pin diameter <b>d</b> (max.)                          |  | mm/inch                   | 1.2/0.047                 |

## Application notes

| IEC 664-1 / VDE0110 (4.97) rated data          |                 |              |              |             |
|------------------------------------------------|-----------------|--------------|--------------|-------------|
| Rated cross section acc. to EN 60999           | mm <sup>2</sup> | n.a.         |              |             |
| Rated current @ 20°C ambient (together with)   | A               | 16.8 (BL3.5) |              |             |
| Rated current @ 40°C ambient (together with)   | A               | 14.4 (BL3.5) |              |             |
| <b>Overvoltage category / Pollution degree</b> |                 | <b>III/3</b> | <b>III/2</b> | <b>II/2</b> |
| Rated voltage                                  | V               | 160          | 160          | 250         |
| Rated impulse voltage                          | kV              | 2.5          | 2.5          | 2.5         |

### UL 1059 rated data

**File No.: E60693**

### CSA C22.2 rated data

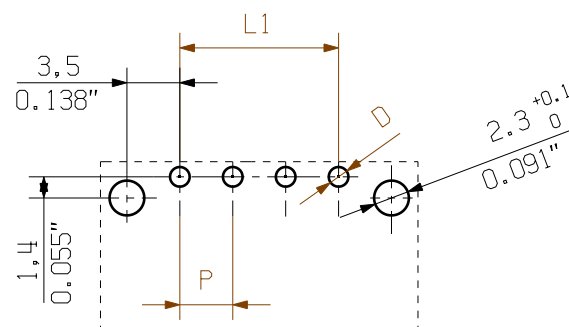
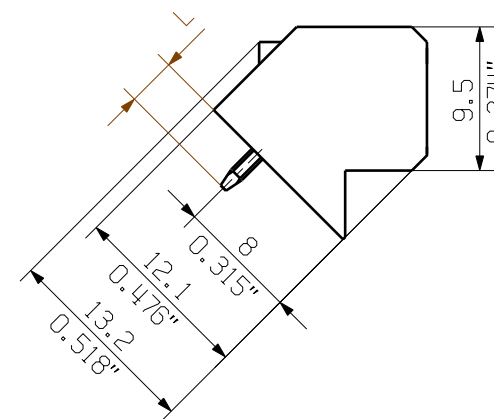
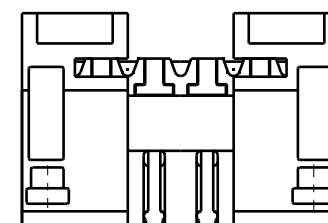

File No.: LR12400

## Packaging

cardbox

## Downloads

[www.weidmueller.de..](http://www.weidmueller.de..)



### LAYOUT FINISHED HOLES

|          |                |                  |
|----------|----------------|------------------|
| 24       | 80,50          | 3,169            |
| 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            |
| 13       | 42,00          | 1,654            |
| 12       | 38,50          | 1,516            |
| 11       | 35,00          | 1,378            |
| 10       | 31,50          | 1,240            |
| 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            |
| <b>n</b> | <b>L1 [mm]</b> | <b>L1 [Inch]</b> |

- 1) Without locking latches
- 2) Sum of ambient temperature and temperature rise
- 3) Recommendation for manual assembly
- 4) Recommendation for automatic assembly
- 5) Recommendation for wave soldering
- 6) Recommendation for reflow soldering
- 7) Referred to rated cross section and minimum pole number

n.a. = not applicable

Subject to technical changes

SHOWN: SL3.5/4/135F

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.

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.

|                                                                                                                                                                              |                              |            |           |                                                                                                                                                                                                  |                |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--|
| <div></div> <div>METRIC TOLERANCES:<br/>X. = ±0.3<br/>X.X = ±0.1<br/>X.XX = ±0.05</div> |                              |            |           |                                                                                                                                                                                                  | CAT.NO.: . . . |  |
|                                                                                                                                                                              | 39056/5<br>07.07.08 HELIS_MA |            | 01        | <div><b>Weidmüller</b> </div> <div>C 42538 01</div> <div>DRAWING NO. . . . .<br/>SHEET 02 OF 03 SHEET</div> |                |  |
|                                                                                                                                                                              | MODIFICATION                 |            |           |                                                                                                                                                                                                  |                |  |
| <div></div>                                                                             |                              | DATE       | NAME      | <div>SL SMT 3.5/.. /135F</div> <div>STIFTELEISTE</div> <div>PIN HEADER</div>                                                                                                                     |                |  |
|                                                                                                                                                                              | DRAWN                        | 04.07.2008 | HELIS_MA  |                                                                                                                                                                                                  |                |  |
|                                                                                                                                                                              | RESPONSIBLE                  |            | HERTEL_S  |                                                                                                                                                                                                  |                |  |
| SCALE: 2/1                                                                                                                                                                   | CHECKED                      | 07.07.2008 | HECKERT_M |                                                                                                                                                                                                  |                |  |
| SUPERSEDES: . . .                                                                                                                                                            | APPROVED                     |            | HECKERT_M | PRODUCT FILE: SL-SMT 3.5                                                                                                                                                                         |                |  |
|                                                                                                                                                                              |                              |            |           | 7312                                                                                                                                                                                             |                |  |

## Recommended wave soldering profiles

**Weidmüller Interface GmbH & Co. KG**  
Klingenbergstraße 16  
D-32758 Detmold  
Germany  
Fon: +49 5231 14-0  
Fax: +49 5231 14-292083  
[www.weidmueller.com](http://www.weidmueller.com)

### 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

**Weidmüller Interface GmbH & Co. KG**  
Klingenbergstraße 16  
D-32758 Detmold  
Germany  
Fon: +49 5231 14-0  
Fax: +49 5231 14-292083  
www.weidmueller.com



### 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.