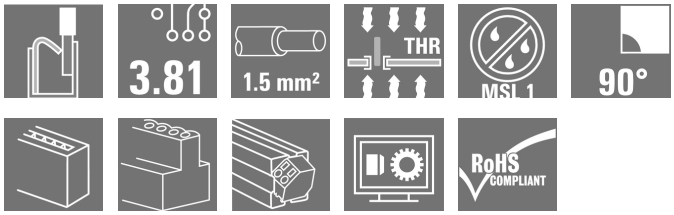
# LSF-SMT 3.81/02/90 1.5SN BK TU

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

www.weidmueller.com

## Product image






PCB terminal for fully automatic assembly in reflow soldering (SMT), with PUSH IN conductor connection system. Conductor inserted and slider operated in same direction (TOP). Packed in box or as tape on reel. Pin lengths optimised at 1.5 mm or 3.5 mm.

### General ordering data

| | |
|---|---|
| Version | Printed circuit board terminals, 3.81 mm, Number of poles: 2, 90°, Solder pin length (l): 1.5 mm, black, PUSH IN with actuator, Clamping range, max. : 1.5 mm², Tube |
| Order No. | 1869360000 |
| Type | LSF-SMT 3.81/02/90 1.5SN BK TU |
| GTIN (EAN) | 4032248445035 |
| Qty. | 69 pc(s). |
| Product data | IEC: 320 V / 17.5 A / 0.2 - 1.5 mm²<br>UL: 300 V / 12 A / AWG 28 - AWG 14 |
| Packaging | Tube |

Creation date September 16, 2022 7:53:31 PM CEST

# LSF-SMT 3.81/02/90 1.5SN BK TU

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

www.weidmueller.com

## Technical data

### Dimensions and weights

| | | | |
|---|---|---|---|
| Depth | 14.75 mm | Depth (inches) | 0.581 inch |
| Height | 10 mm | Height (inches) | 0.394 inch |
| Height of lowest version | 8.5 mm | Width | 8.01 mm |
| Width (inches) | 0.315 inch | Net weight | 1.623 g |

### Temperatures

| | |
|---|---|
| Continuous operating temp., max. | 120 °C |

### System parameters

| | | | |
|---|---|---|---|
| Product family | OMNIMATE Signal - series LSF | Wire connection method | PUSH IN with actuator |
| Mounting onto the PCB | THT/THR solder connection | Conductor outlet direction | 90° |
| Pitch in mm (P) | 3.81 mm | Pitch in inches (P) | 0.15 inch |
| Number of poles | 2 | Pin series quantity | 1 |
| Fitted by customer | No | Solder pin length (l) | 1.5 mm |
| Solder pin length tolerance | 0 / -0.3 mm | Solder pin dimensions | 0.35 x 0.8 mm |
| Solder pin dimensions = d tolerance | 0 / -0.1 mm | Solder eyelet hole diameter (D) | 1.1 mm |
| Solder eyelet hole diameter tolerance (D) | + 0,1 mm | Number of solder pins per pole | 2 |
| Stripping length | 8 mm | L1 in mm | 3.81 mm |
| L1 in inches | 0.15 inch | Touch-safe protection acc. to DIN VDE 0470 | IP 20 |
| Touch-safe protection acc. to DIN VDE 57 106 | Safe from finger touch | Protection degree | IP20 |
| Volume resistance | 1.60 mΩ | | |

### 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 | Copper alloy |
| Layer structure of solder connection | 4...6 µm Sn matt | Storage temperature, min. | -40 °C |
| Storage temperature, max. | 70 °C | Operating temperature, min. | -50 °C |
| Operating temperature, max. | 120 °C | Temperature range, installation, min. | -30 °C |
| Temperature range, installation, max. | 120 °C | | |

### Conductors suitable for connection

| | |
|---|---|
| Clamping range, min. | 0.13 mm² |
| Clamping range, max. | 1.5 mm² |
| Wire connection cross section AWG, min. | AWG 28 |
| Wire connection cross section AWG, max. | AWG 14 |
| Solid, min. H05(07) V-U | 0.2 mm² |
| Solid, max. H05(07) V-U | 1.5 mm² |
| Flexible, min. H05(07) V-K | 0.2 mm² |
| Flexible, max. H05(07) V-K | 1.5 mm² |
| w. plastic collar ferrule, DIN 46228 pt 4, min. | 0.25 mm² |
| w. plastic collar ferrule, DIN 46228 pt 4, max. | 0.75 mm² |

# LSF-SMT 3.81/02/90 1.5SN BK TU

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

www.weidmueller.com

## Technical data

| | | | |
|---|---|---|---|
| w. wire end ferrule, DIN 46228 pt 1, min. | 0.25 mm² | | |
| w. wire end ferrule, DIN 46228 pt 1, max. | 1.5 mm² | | |
| Clampable conductor | Cross-section for conductor connection | Type | fine-wired |
| | | nominal | 0.25 mm² |
| | wire end ferrule | Stripping length | nominal 10 mm |
| | | Recommended wire-end ferrule | H0,25/12 HBL |
| | Cross-section for conductor connection | Type | fine-wired |
| | | nominal | 0.34 mm² |
| | wire end ferrule | Stripping length | nominal 10 mm |
| | | Recommended wire-end ferrule | H0,34/12 TK |
| | Cross-section for conductor connection | Type | fine-wired |
| | | nominal | 0.5 mm² |
| | wire end ferrule | Stripping length | nominal 10 mm |
| | | Recommended wire-end ferrule | H0,5/14 OR |
| | Cross-section for conductor connection | Type | fine-wired |
| | | nominal | 0.75 mm² |
| | wire end ferrule | Stripping length | nominal 10 mm |
| | | Recommended wire-end ferrule | H0,75/14T HBL |
| Reference text | Length of ferrules is to be chosen depending on the product and the rated voltage., The outside diameter of the plastic collar should not be larger than the pitch (P) | | |

### Rated data acc. to IEC

| | | | |
|---|---|---|---|
| tested acc. to standard | IEC 60664-1, IEC 61984 | Rated current, min. number of poles (Tu=20°C) | 17.5 A |
| Rated current, max. number of poles (Tu=20°C) | 16 A | Rated current, min. number of poles (Tu=40°C) | 17.5 A |
| Rated current, max. number of poles (Tu=40°C) | 14 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 80 A |

### Rated data acc. to CSA

| | | | |
|---|---|---|---|
| Institute (CSA) | | Certificate No. (CSA) | 200039-1664286 |
| 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 |
| Wire cross-section, AWG, min. | AWG 28 | Wire cross-section, AWG, max. | AWG 14 |
| Reference to approval values | Specifications are maximum values, details - see approval certificate. | | |

# LSF-SMT 3.81/02/90 1.5SN BK TU

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

www.weidmueller.com

## Technical data

### Rated data acc. to UL 1059

| | | | |
|---|---|---|---|
| Institute (cURus) |  | Certificate No. (cURus) | 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) | 12 A | Rated current (Use group D / UL 1059) | 10 A |
| Wire cross-section, AWG, min. | AWG 28 | Wire cross-section, AWG, max. | AWG 14 |
| Reference to approval values | Specifications are maximum values, details - see approval certificate. | | |

### Packing

| | | | |
|---|---|---|---|
| Packaging | Tube | VPE length | 559 mm |
| VPE width | 21 mm | VPE height | 16 mm |
| Surface resistance | Rs = $10^9$ - $10^{12}$ Ω | | |

### Classifications

| | | | |
|---|---|---|---|
| ETIM 6.0 | EC002643 | ETIM 7.0 | EC002643 |
| ETIM 8.0 | EC002643 | ECLASS 9.0 | 27-44-04-01 |
| ECLASS 9.1 | 27-44-04-01 | ECLASS 10.0 | 27-44-04-01 |
| ECLASS 11.0 | 27-46-01-01 | ECLASS 12.0 | 27-46-01-01 |

### 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 | • Additional push button colours on request<br>• Operating force of slider max. 40 N<br>• Rated current related to rated cross-section & min. No. of poles.<br>• Wire end ferrule with plastic collar to DIN 46228/4<br>• Wire end ferrule without plastic collar to DIN 46228/1<br>• P on drawing = pitch<br>• 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.<br>• Crimping shape "A" for wire end ferrules with PZ 6/5 crimping tool recommended.<br>• Long term storage of the product with average temperature of 50 °C and average humidity 70%, 36 months |

# LSF-SMT 3.81/02/90 1.5SN BK TU

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

www.weidmueller.com

## Technical data

### Approvals

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

### Downloads

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

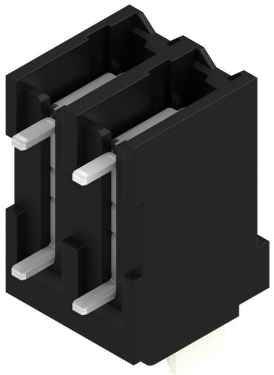
# LSF-SMT 3.81/02/90 1.5SN BK TU

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

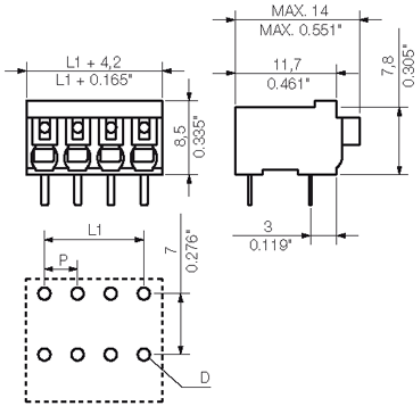
www.weidmueller.com

## Drawings

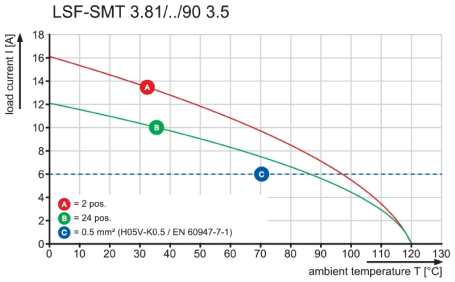
### Product image



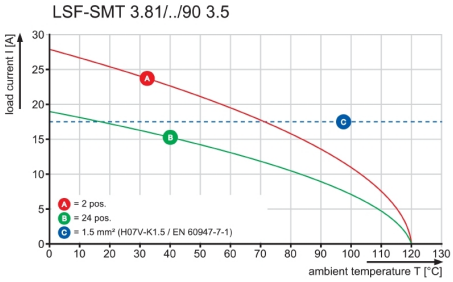
### Dimensional drawing




### Graph




### Graph

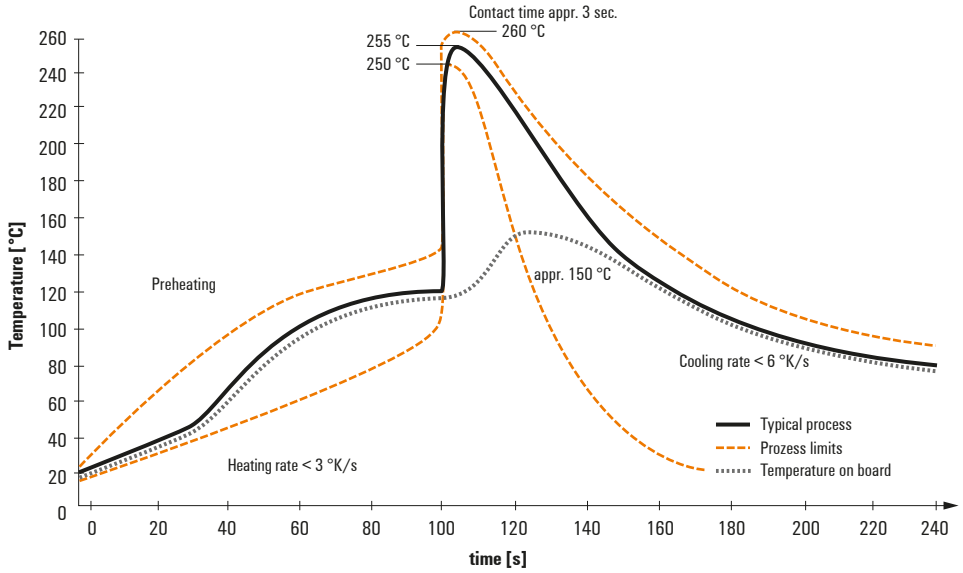


# Wave Solder Profile

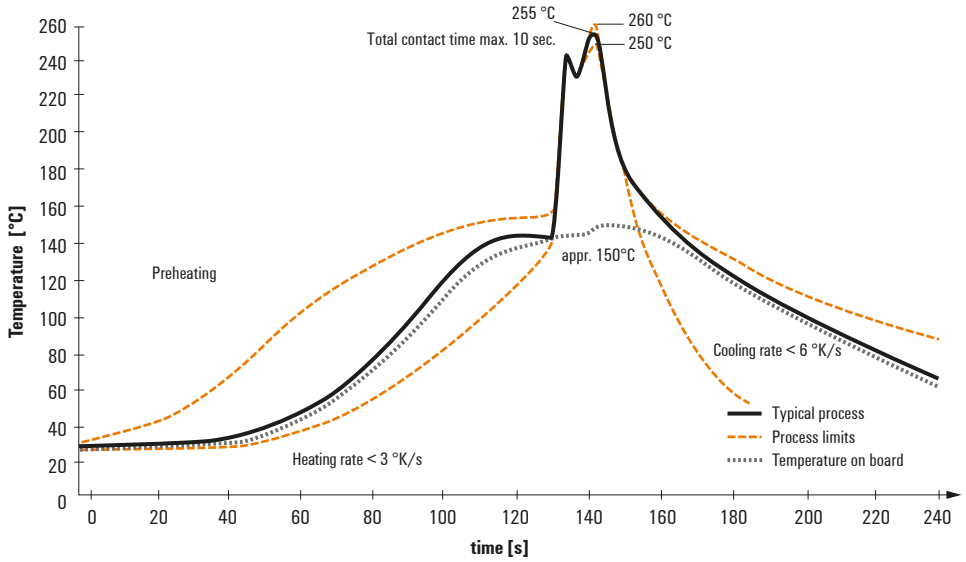
## Recommended wave solderding profiles

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

**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

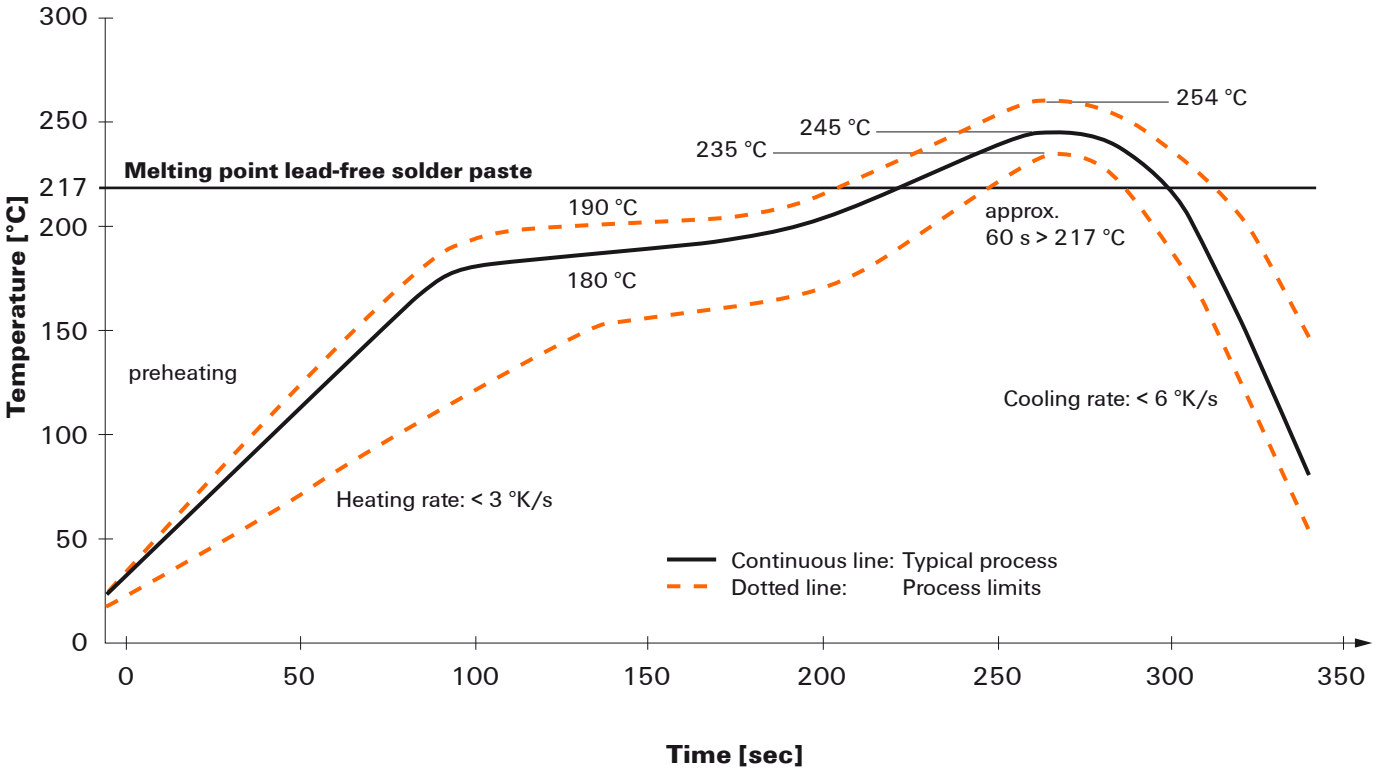
The single and double wave profiles each indicate the recommended operating range, including the maximum soldering temperature of 260°C. In practice, the maximum soldering temperature is quite often well below the above maximum profile.

We reserve the right to make technical changes.

# Reflow Solder Profile

## 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 ≤ +3K/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 ≥ -6K/s solder is cured. Board and components cool down while avoiding cold cracks.

We reserve the right to make technical changes.