

## LLF 7.50/09/90V 5.0SN BK BX

**Weidmüller Interface GmbH & Co. KG**

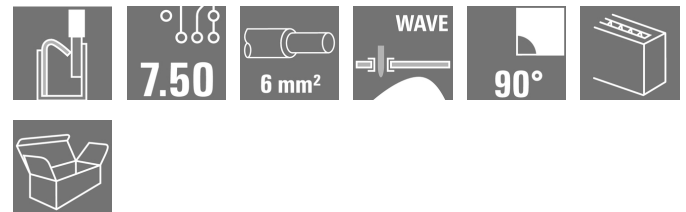
Klingenbergstraße 26

D-32758 Detmold

Germany

www.weidmueller.com

### Product image



similar to illustration

**The sturdy, direct connection for extreme current and voltage requirements in all power electronics applications such as solar inverters, frequency converters, servo-controllers and power supplies.**

### General ordering data

Version	Printed circuit board terminals, 7.50 mm, Number of poles: 9, 90°, Solder pin length (l): 5 mm, tinned, black, PUSH IN with actuator, Clamping range, max. : 6 mm <sup>2</sup> , Box
Order No.	<a href="#">2472150000</a>
Type	LLF 7.50/09/90V 5.0SN BK BX
GTIN (EAN)	4050118550078
Qty.	30 pc(s).
Product data	IEC: 1000 V / 41 A / 0.5 - 6 mm <sup>2</sup> UL: 600 V / 35 A / AWG 24 - AWG 8
Packaging	Box

Creation date March 9, 2023 9:20:37 PM CET

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## Technical data

## Dimensions and weights

Depth	22.07 mm	Depth (inches)	0.869 inch
Height	36.55 mm	Height (inches)	1.439 inch
Height of lowest version	31.55 mm	Width	68.5 mm
Width (inches)	2.697 inch	Net weight	32.425 g

## Temperatures

Operating temperature, min.	-40 °C	Operating temperature, max.	120 °C
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## System parameters

Product family	OMNIMATE Power - series LL	Wire connection method	PUSH IN with actuator
Mounting onto the PCB	THT solder connection	Conductor outlet direction	90°
Pitch in mm (P)	7.5 mm	Pitch in inches (P)	0.295 inch
Number of poles	9	Pin series quantity	1
Fitted by customer	No	Number of rows	1
Solder pin length (l)	5 mm	Solder pin dimensions	d = 1.5 mm
Solder eyelet hole diameter (D)	2 mm	Solder eyelet hole diameter tolerance (D)	+ 0,1 mm
Number of solder pins per pole	1	Stripping length	12 mm
L1 in mm	60 mm	L1 in inches	2.36 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		

## Material data

Insulating material	Wemid (PA)	Colour	black
Colour chart (similar)	RAL 9011	Insulating material group	I
UL 94 flammability rating	V-0	Contact material	E-Cu
Contact surface	tinned	Layer structure of solder connection	4...10 μ Sn matt
Storage temperature, min.	-40 °C	Storage temperature, max.	70 °C
Operating temperature, min.	-40 °C	Operating temperature, max.	120 °C

## Conductors suitable for connection

Clamping range, min.	0.25 mm <sup>2</sup>
Clamping range, max.	6 mm <sup>2</sup>
Wire connection cross section AWG, min.	AWG 24
Wire connection cross section AWG, max.	AWG 8
Solid, min. H05(07) V-U	0.5 mm <sup>2</sup>
Solid, max. H05(07) V-U	6 mm <sup>2</sup>
Stranded, min. H07V-R	0.5 mm <sup>2</sup>
Flexible, min. H05(07) V-K	0.5 mm <sup>2</sup>
Flexible, max. H05(07) V-K	6 mm <sup>2</sup>
w. plastic collar ferrule, DIN 46228 pt 4, 0.25 mm <sup>2</sup> min.	
w. plastic collar ferrule, DIN 46228 pt 4, 6 mm <sup>2</sup> max.	
w. wire end ferrule, DIN 46228 pt 1, 0.25 mm <sup>2</sup> min.	
w. wire end ferrule, DIN 46228 pt 1, 6 mm <sup>2</sup> max.	

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**Technical data**

Clampable conductor	Cross-section for conductor connection	Type	fine-wired
		nominal	0.5 mm <sup>2</sup>
wire end ferrule		Stripping length	nominal 14 mm
		Recommended wire-end ferrule	<a href="#">H0.5/18 OR</a>
Clampable conductor	Cross-section for conductor connection	Type	fine-wired
		nominal	1 mm <sup>2</sup>
wire end ferrule		Stripping length	nominal 15 mm
		Recommended wire-end ferrule	<a href="#">H1.0/18 GE</a>
Clampable conductor	Cross-section for conductor connection	Type	fine-wired
		nominal	1.5 mm <sup>2</sup>
wire end ferrule		Stripping length	nominal 15 mm
		Recommended wire-end ferrule	<a href="#">H1.5/18D SW</a>
		Stripping length	nominal 12 mm
		Recommended wire-end ferrule	<a href="#">H1.5/12</a>
Clampable conductor	Cross-section for conductor connection	Type	fine-wired
		nominal	0.75 mm <sup>2</sup>
wire end ferrule		Stripping length	nominal 14 mm
		Recommended wire-end ferrule	<a href="#">H0.75/18 W</a>
Clampable conductor	Cross-section for conductor connection	Type	fine-wired
		nominal	2.5 mm <sup>2</sup>
wire end ferrule		Stripping length	nominal 14 mm
		Recommended wire-end ferrule	<a href="#">H2.5/19D BL</a>
		Stripping length	nominal 12 mm
		Recommended wire-end ferrule	<a href="#">H2.5/12</a>
Clampable conductor	Cross-section for conductor connection	Type	fine-wired
		nominal	4 mm <sup>2</sup>
wire end ferrule		Stripping length	nominal 12 mm
		Recommended wire-end ferrule	<a href="#">H4.0/12</a>
		Stripping length	nominal 14 mm
		Recommended wire-end ferrule	<a href="#">H4.0/20D GR</a>
Clampable conductor	Cross-section for conductor connection	Type	fine-wired
		nominal	6 mm <sup>2</sup>
wire end ferrule		Stripping length	nominal 14 mm
		Recommended wire-end ferrule	<a href="#">H6.0/20 SW</a>
		Stripping length	nominal 12 mm
		Recommended wire-end ferrule	<a href="#">H6.0/12</a>

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)

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## Technical data


### Rated data acc. to IEC

tested acc. to standard	In accordance with IEC 60947-7-1	Rated current, min. number of poles (Tu=20°C)	41 A
Rated current, max. number of poles (Tu=20°C)	35 A	Rated current, min. number of poles (Tu=40°C)	41 A
Rated current, max. number of poles (Tu=40°C)	30 A	Rated voltage for surge voltage class / pollution degree II/2	1,000 V
Rated voltage for surge voltage class / pollution degree III/2	1,000 V	Rated voltage for surge voltage class / pollution degree III/3	1,000 V
Rated impulse voltage for surge voltage class/ pollution degree II/2	8 kV	Rated impulse voltage for surge voltage class/ pollution degree III/2	8 kV
Rated impulse voltage for surge voltage class/ contamination degree III/3	8 kV		

### Rated data acc. to CSA

Rated voltage (Use group B / CSA)	600 V	Rated voltage (Use group C / CSA)	600 V
Rated voltage (Use group D / CSA)	600 V	Rated current (Use group B / CSA)	35 A
Rated current (Use group C / CSA)	35 A	Rated current (Use group D / CSA)	5 A
Wire cross-section, AWG, min.	AWG 24	Wire cross-section, AWG, max.	AWG 8

### Rated data acc. to UL 1059

Institute (cURus)		Certificate No. (cURus)	E60693
Rated voltage (Use group B / UL 1059)	600 V	Rated voltage (Use group C / UL 1059)	600 V
Rated voltage (Use group D / UL 1059)	600 V	Rated current (Use group B / UL 1059)	35 A
Rated current (Use group C / UL 1059)	35 A	Rated current (Use group D / UL 1059)	5 A
Wire cross-section, AWG, min.	AWG 24	Wire cross-section, AWG, max.	AWG 8
Reference to approval values	Specifications are maximum values, details - see approval certificate.		

### Packing

Packaging	Box	VPE length	295 mm
VPE width	211 mm	VPE height	48 mm

### Type tests

Test: Durability of markings	Test	mark of origin, type identification, type of material, pitch, durability
	Evaluation	available

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## Technical data

Test: Clampable cross section	Standard	IEC 60999-1 section 7 and 9.1 / 11.99, IEC 60947-1 section 8.2.4.5.1 / 03.11	
	Conductor type	Type of conductor and conductor cross-section	solid 0.5 mm <sup>2</sup>
		Type of conductor and conductor cross-section	stranded 0.5 mm <sup>2</sup>
		Type of conductor and conductor cross-section	solid 6 mm <sup>2</sup>
		Type of conductor and conductor cross-section	stranded 6 mm <sup>2</sup>
		Type of conductor and conductor cross-section	AWG 24/19
		Type of conductor and conductor cross-section	AWG 24/1
		Type of conductor and conductor cross-section	AWG 10/1
		Type of conductor and conductor cross-section	AWG 10/19
		Type of conductor and conductor cross-section	H07V-K10
Evaluation	passed		

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**Technical data**

Test for damage to and accidental loosening of conductors

Standard	IEC 60999-1 section 9.4 / 11.99, IEC 60999-1 section 9.5 / 11.99	
Requirement	0.3 kg	
Conductor type	Type of conductor and conductor cross-section	H05V-K0.5
	Type of conductor and conductor cross-section	H05V-U0.5
Evaluation	passed	
Requirement	0.7 kg	
Conductor type	Type of conductor and conductor cross-section	H07V-K2.5
	Type of conductor and conductor cross-section	H07V-U2.5
Evaluation	passed	
Requirement	0.9 kg	
Conductor type	Type of conductor and conductor cross-section	H07V-K4
	Type of conductor and conductor cross-section	H07V-U4.0
Evaluation	passed	
Requirement	1.4 kg	
Conductor type	Type of conductor and conductor cross-section	H07V-K6
	Type of conductor and conductor cross-section	H07V-U6
Evaluation	passed	

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**Technical data**

Pull-out test	Standard	DIN EN 60999-1 section 9.5 / 12.00		
	Requirement	≥20 N		
	Conductor type	Type of conductor and conductor cross-section	H05V-K0.5	
		Type of conductor and conductor cross-section	H05V-U0.5	
	Evaluation	passed		
	Requirement	≥50 N		
	Conductor type	Type of conductor and conductor cross-section	H07V-K2.5	
		Type of conductor and conductor cross-section	H07V-U2.5	
	Evaluation	passed		
	Requirement	≥60 N		
	Conductor type	Type of conductor and conductor cross-section	H07V-K4	
		Type of conductor and conductor cross-section	H07V-U4.0	
	Evaluation	passed		
	Requirement	≥80 N		
	Conductor type	Type of conductor and conductor cross-section	H07V-K6	
		Type of conductor and conductor cross-section	H07V-U6	
	Evaluation	passed		

**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

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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>• Rated current related to rated cross-section &amp; min. No. of poles.</li> <li>• Wire end ferrule without plastic collar to DIN 46228/1</li> <li>• Wire end ferrule with plastic collar to DIN 46228/4</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>• The test point can only be used as potential-pickup point.</li> <li>• The single-position PCB terminal block can be used for voltages up to 1500 V (DC) and 1000 V (AC). The relevant device standard and the appropriate required clearances and creepage distances should be observed in the application</li> <li>• Long term storage of the product with average temperature of 50 °C and average humidity 70%, 36 months</li> </ul>

## Approvals

Approvals



UL File Number Search	UL Website
Certificate No. (cURus)	E60693

## Downloads

Approval/Certificate/Document of Conformity	<a href="#">Declaration of the Manufacturer</a>
Engineering Data	<a href="#">CAD data – STEP</a>
Product Change Notification	<a href="#">20210909 Color Change of Actuator to LLF(S) and LUF(S) Family</a> <a href="#">20210909 LLF(S) und LUF(S) Familie - Farbänderung des Betätigungselementes</a> <a href="#">20220603 Change OMNIMATE® Power LLF 7.5090</a> <a href="#">20220603 Technische Änderung OMNIMATE® Power LLF 7.5090</a>
User Documentation	<a href="#">QR-Code product handling video</a> <a href="#">Assembly instruction Montageanleitung LLF LUF EN DE</a>
Catalogues	<a href="#">Catalogues in PDF-format</a>

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Catalogue status 03.03.2023 / We reserve the right to make technical changes.



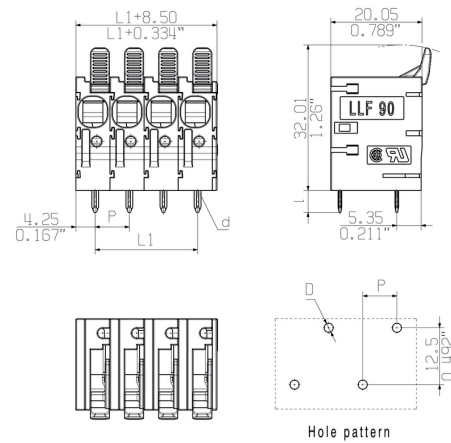
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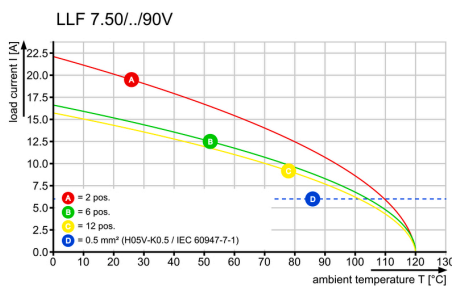
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Drawings

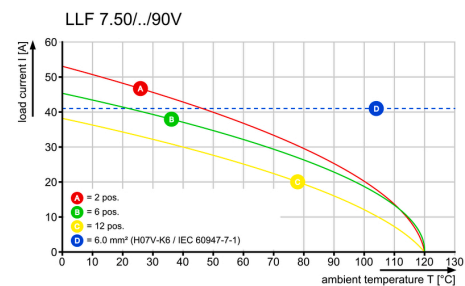
Dimensional drawing



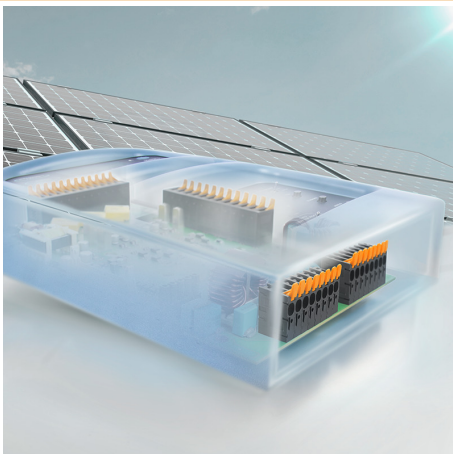
Derating curve



Derating curve

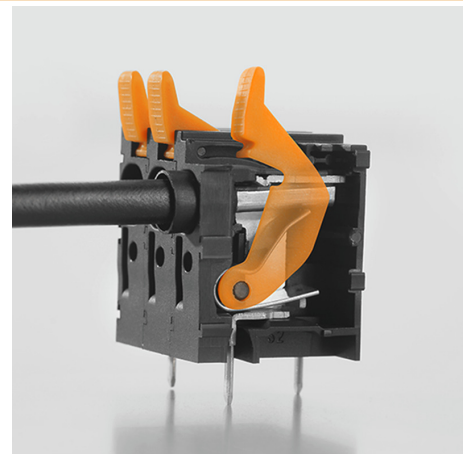


Product benefits



Power up to UL 600 V  
 Offset solder pins

Product benefits



Tool-free wiring  
 Top contact security

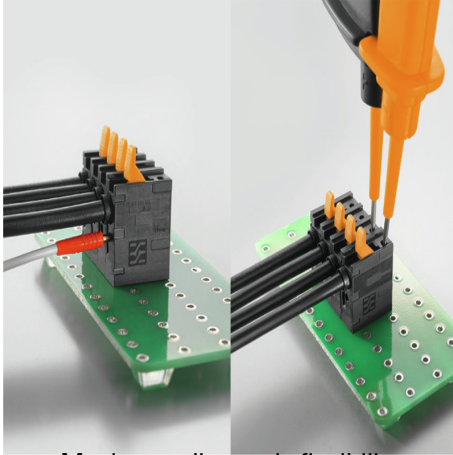
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**Drawings**

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**Product benefits**

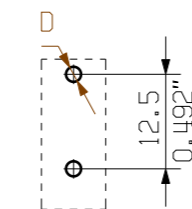
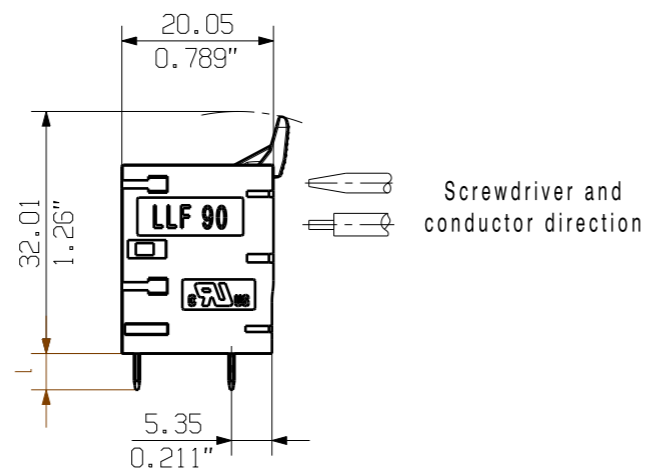
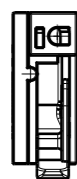
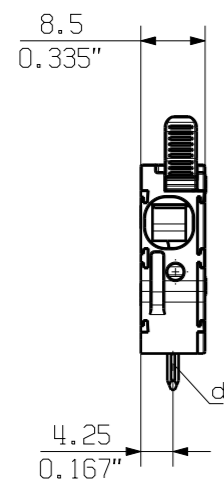


Maximum diagnosis flexibility  
Easily accessible test point

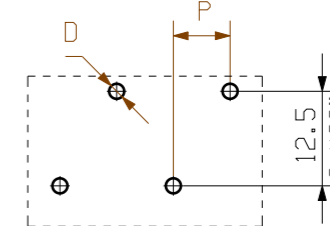
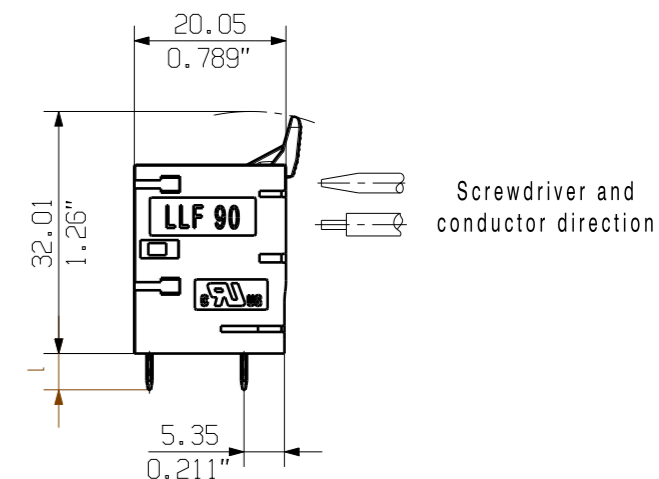
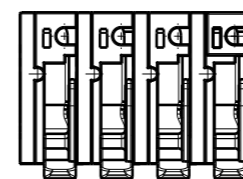
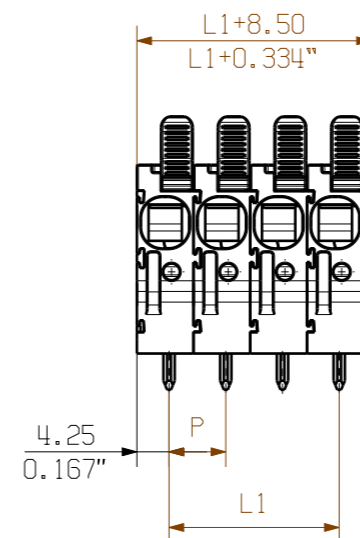
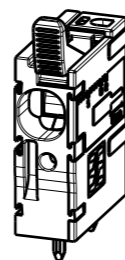
General customer drawing, topical version only if required

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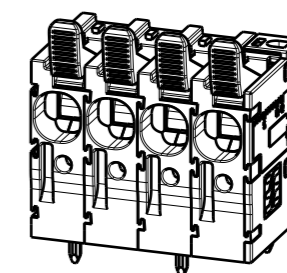
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Hole pattern



Hole pattern



P = 7.50  
0.295" (Pitch)  
D = Ø2 +0.1  
0.079"  
d = 1.5x0.8  
0.059"x0.031"  
l = 5.0 +0.2 -0.6  
0.197"

12	82.50	3.248
11	75.00	2.953
10	67.50	2.657
9	60.00	2.362
8	52.50	2.067
7	45.00	1.772
6	37.50	1.476
5	30.00	1.181
4	22.50	0.886
3	15.00	0.591
2	7.50	0.295
n Poles	L1 [mm]	L1 [inch]

For the mounting of PCBs, it should be noted that the rated data relates only to the PCB components alone.

The necessary creepage and clearance paths must be observed in connection with the respective applicant in accordance to IEC 664 / VDE 0110.

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

Weidmüller PCB components are tested to the DIN EN 61984 standard, and are valid for its field of application. Provided that the components 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: DIN ISO 2768-mK 	96880/3 02.08.17 DAMERIUS_A		00	Cat.no.: .		
	Modification				3 61339 06 Drawing no. Issue no.	
	Drawn	04.07.2016	KRECHT_M	LLF 7.50/.../90... LEITERPLATTENKLEMME PCB TERMINAL		
	Responsible		WRIGHT_ST			
Scale: 1/1	Checked	02.08.2017	HELIS_MA			Sheet 01 of 01 sheets
Supersedes: .	Approved		NOLTE_S			Product file: LLF 7.50

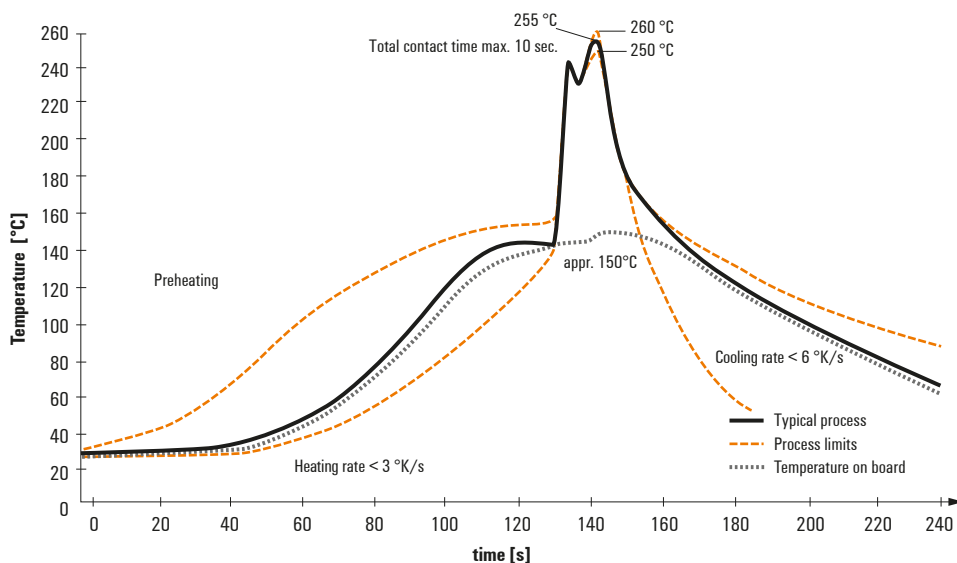
## Recommended wave soldering profiles

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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.