

## LLFS 7.50/12/90V 5.0SN BK BX

**Weidmüller Interface GmbH & Co. KG**

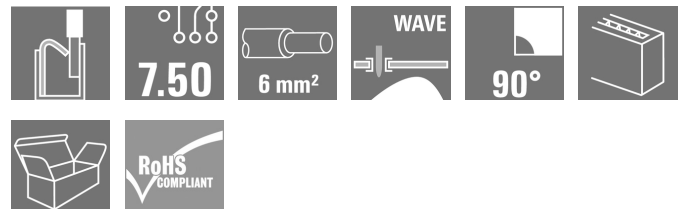
Klingenbergstraße 26

D-32758 Detmold

Germany

www.weidmueller.com

### Product image



**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: 12, 90°, Solder pin length (l): 5 mm, tinned, black, PUSH IN without actuator, Clamping range, max. : 6 mm <sup>2</sup> , Box
Order No.	<a href="#">2473100000</a>
Type	LLFS 7.50/12/90V 5.0SN BK BX
GTIN (EAN)	4050118658415
Qty.	20 pc(s).
Product data	IEC: 1000 V / 41 A / 0.5 - 6 mm <sup>2</sup> UL: 600 V / 37 A / AWG 24 - AWG 8
Packaging	Box

Creation date December 4, 2023 1:07:42 PM CET

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## Technical data

## Dimensions and weights

Depth	20.05 mm	Depth (inches)	0.789 inch
Height	30.56 mm	Height (inches)	1.203 inch
Height of lowest version	25.56 mm	Width	91 mm
Width (inches)	3.583 inch	Net weight	48.5 g

## System parameters

Product family	OMNIMATE Power - series LL	Wire connection method	PUSH IN without 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	12	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	82.5 mm	L1 in inches	3.245 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
Insulation strength	$\geq 10^8 \Omega$	UL 94 flammability rating	V-0
Contact material	E-Cu	Contact surface	tinned
Layer structure of solder connection	4...10 $\mu$ 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>
Solid, min. H05(07) V-U	0.5 mm <sup>2</sup>
Solid, max. H05(07) V-U	6 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, min.	0.25 mm <sup>2</sup>
w. plastic collar ferrule, DIN 46228 pt 4, max.	6 mm <sup>2</sup>
w. wire end ferrule, DIN 46228 pt 1, min.	0.25 mm <sup>2</sup>
w. wire end ferrule, DIN 46228 pt 1, max.	6 mm <sup>2</sup>

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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>	
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>	
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>	
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>	
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>	
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>	
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)	34 A	Rated current, min. number of poles (Tu=40°C)	37 A
Rated current, max. number of poles (Tu=40°C)	29 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)	37 A
Rated current (Use group C / CSA)	37 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)	37 A
Rated current (Use group C / UL 1059)	37 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	220 mm
VPE width	215 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		
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	≥50 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	≥60 N		
Conductor type	Type of conductor and conductor cross-section	H07V-K6	
	Type of conductor and conductor cross-section	H07V-U6	
Evaluation	passed		
Requirement	≥80 N		
Conductor type	Type of conductor and conductor cross-section	H07V-K6	
Conductor type	Type of conductor and conductor cross-section	H07V-U6	
Evaluation	passed		

**Classifications**

ETIM 6.0	EC002643	ETIM 7.0	EC002643
ETIM 8.0	EC002643	ETIM 9.0	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	ECLASS 13.0	27460101

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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 maximum humidity 70%, 36 months</li> </ul>

### Approvals

Approvals



ROHS	Conform
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="#">Change of locking system to LLFS 7.50/90 - DE</a> <a href="#">Change of locking system to LLFS 7.50/90 - EN</a> <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="#">20220112 Änderung der LLFS Abdeckplatte</a> <a href="#">20220112 Change of Cover Plate to LLFS 90</a>
User Documentation	<a href="#">Assembly instruction_Montageanleitung_LLFS_LUFS_EN_DE</a>
Catalogues	<a href="#">Catalogues in PDF-format</a>

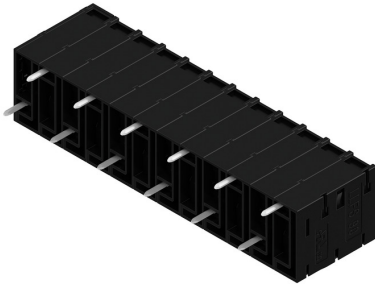
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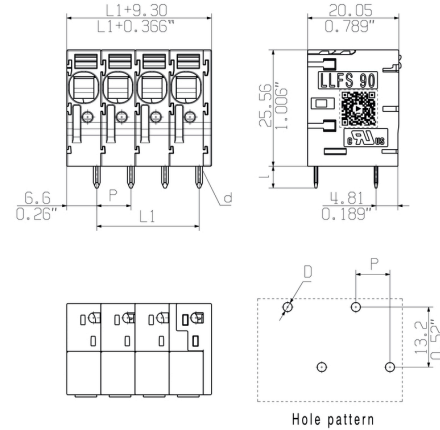
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**Drawings**

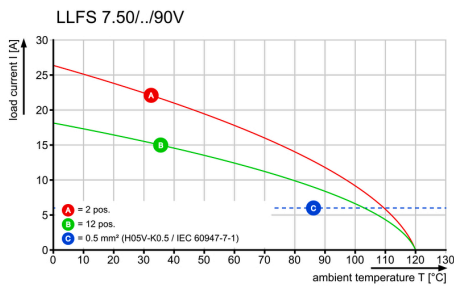
**Product image**



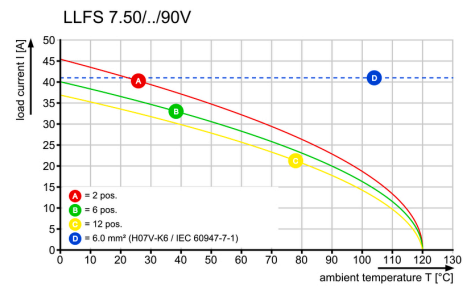
**Dimensional drawing**



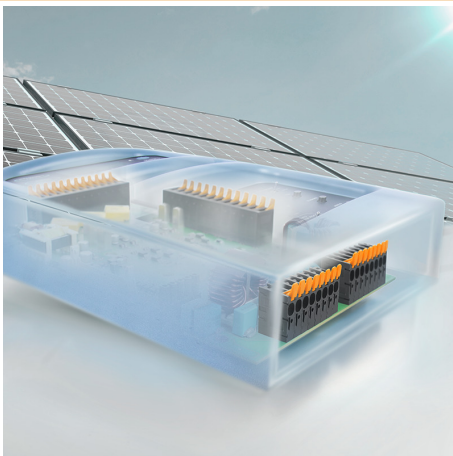
**Derating curve**



**Derating curve**

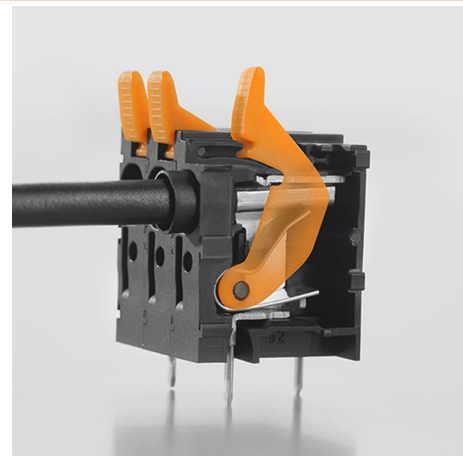


**Product benefits**



Power up to UL 600 V  
 Offset solder pins

**Product benefits**



Tool-free wiring  
 Top contact security

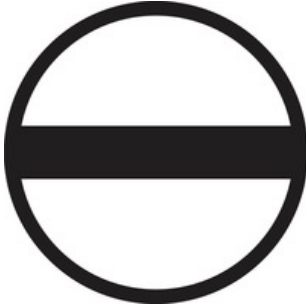
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## Accessories

### Slotted screwdriver

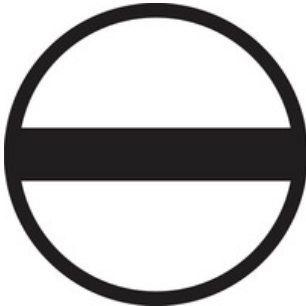


VDE insulated slot-head screwdriver, SDI DIN 7437, ISO 2380/2, drive output acc. to DIN 5264, ISO 2380/1. SoftFinish grip

#### General ordering data

Type	SDIS 0.5X3.0X100	Version
Order No.	<a href="#">9008380000</a>	Screwdriver, Screwdriver
GTIN (EAN)	4032248056347	
Qty.	1 pc(s).	

### Slotted screwdriver



Slotted screwdriver with rounded blade SD DIN 5265, ISO 2380/2, output to DIN 5264, ISO 2380/1. ChromTop tip, SoftFinish grip

#### General ordering data

Type	SDS 0.5X3.0X80	Version
Order No.	<a href="#">9008320000</a>	Screwdriver, Screwdriver
GTIN (EAN)	4032248056262	
Qty.	1 pc(s).	

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# Accessories

## Tools



- Stripping tools with automatic self-adjustment
- For flexible and solid conductors
- Ideally suitable for mechanical and plant engineering, railway and rail traffic, wind energy, robot technology, explosion protection as well as marine, offshore and ship building sectors
- Stripping length adjustable via end stop
- Automatic opening of clamping jaws after stripping
- No fanning-out of individual conductors
- Adjustable to diverse insulation thicknesses
- Double-insulated cables in two process steps without special adjustment
- No play in self-adjusting cutting unit
- Long service life
- Optimised ergonomic design

### General ordering data

Type	STRIPAX	Version
Order No.	<a href="#">9005000000</a>	Tools, Stripping and cutting tool
GTIN (EAN)	4008190072506	
Qty.	1 pc(s).	

## Additional accessories



### No task is too small when creating the perfect solution.

Connections form just one part of the overall process. Small details are often the key to the perfect solution in applications where potentials are tested, grouped or even isolated.

A system is not a system without small but essential details:

- Test plugs ensure reliable pick-up from diagnostic sockets

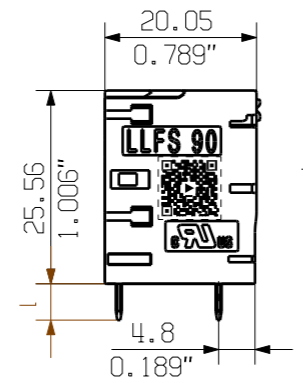
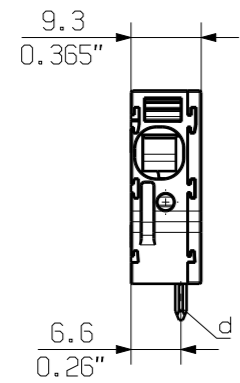
In tandem with the manufacturing process and application.

### General ordering data

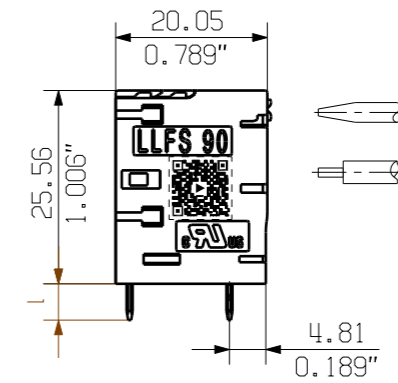
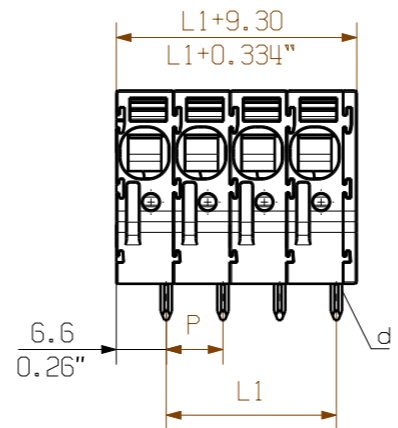
Type	PS 2.0 MC	Version	Product data	Packaging
Order No.	<a href="#">0310000000</a>	PCB plug-in connector, Accessories, Test plug, red, Number of poles: 1		Box
GTIN (EAN)	4008190000059			
Qty.	20 pc(s).			

General customer drawing, topical version only if required

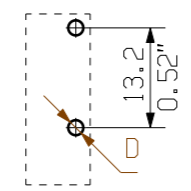
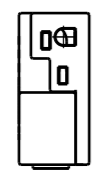
10



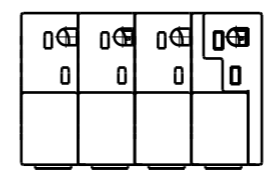
Screwdriver and conductor direction



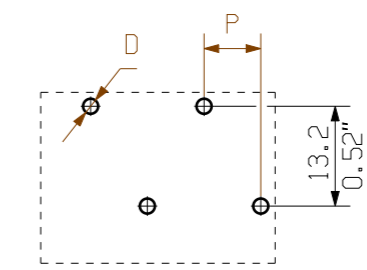
Screwdriver and conductor direction



Hole pattern

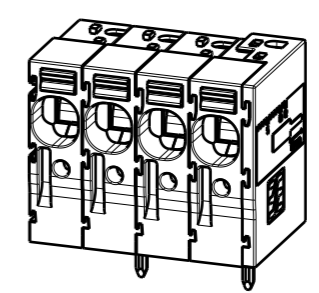
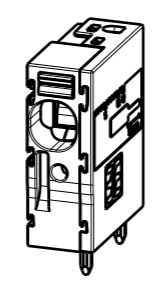


Pole: 1 2 3 4...



Pole: 1 2 3 4...

Hole pattern



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]

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"

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 60664-1 (VDE 0110). The current-carrying capacity and pitch tolerance is to be determined according to DIN IEC 60326-3 very fine.

Weidmüller PCB components are tested to the IEC 60947-7-4 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 Tolerances: <input type="checkbox"/> WN700144-W.. <input type="checkbox"/> WN 212010 <input checked="" type="checkbox"/> ISO 2768-mK		Tolerances ISO 8015	
Changes: EC00005454		1	
Mat. No. (SAP) 2473020000			
<b>Drawings Assembly</b>			
Drawn	Xiang, Keqin		
Responsible	Xiang, Keqin		
Approved	Xu, Shary		
		18.01.2022	
		<b>LLFS 7.50/.../90 ...</b>	
		PCB TERMINAL	
		LEITERPLATTENKLEMME	

**61340**  
Drawing no. 10  
Scale: 2:1 Sheet 2 / 4

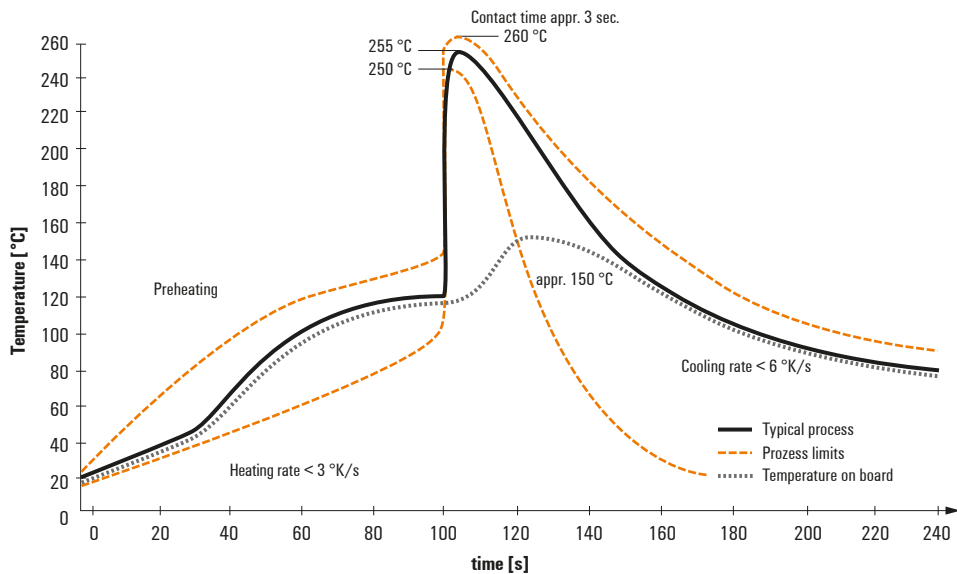
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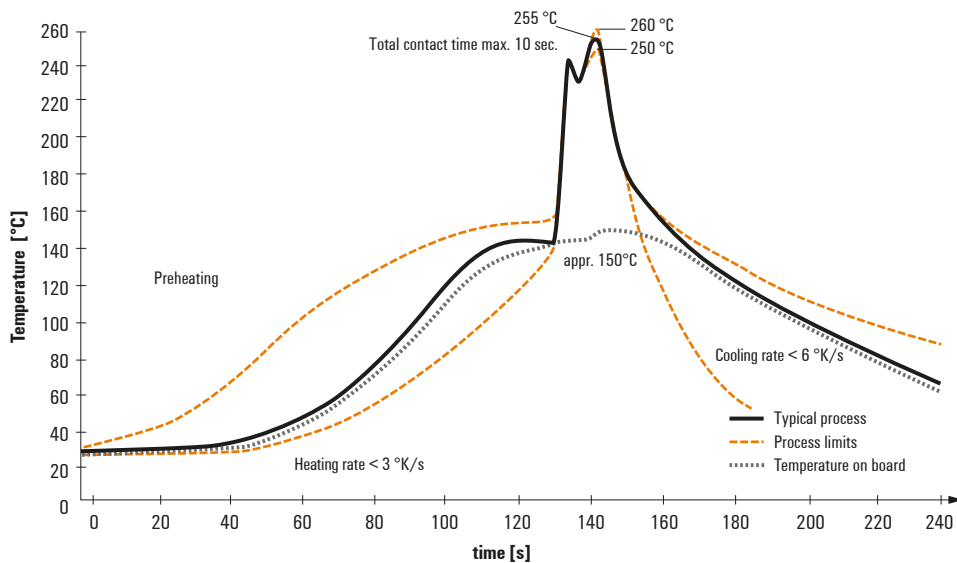
## Recommended wave soldering profiles

**Weidmüller Interface GmbH & Co. KG**  
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 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.