

SL-SMT 3.50/20/135F 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: 20, 135°, Solder pin length (l): 3.2 mm, tinned, black, Box
Order No.	1003700000
Type	SL-SMT 3.50/20/135F 3.2SN BK BX
GTIN (EAN)	4032248700325
Qty.	24 pc(s).
Product data	IEC: 320 V / 15 A 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	Width	77 mm
Width (inches)	3.031 inch	Net weight	7.3 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 inch			
Outgoing elbow	135°			
Number of poles	20			
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	66.5 mm			
L1 in inches	2.618 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	PTSC KA 2.2X4.5 WN1412

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	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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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

Packing

Packaging	Box	VPE length	338 mm
VPE width	130 mm	VPE height	20 mm

Classifications

ETIM 6.0	EC002637	ETIM 7.0	EC002637
ETIM 8.0	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

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+0.1mm • Solder eyelet diameter D = 1.5 + 0.1 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. • Long term storage of the product with average temperature of 50 °C and average humidity 70%, 36 months

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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
Engineering Data	EPLAN, WSCAD
Catalogues	Catalogues in PDF-format
Brochures	FL DRIVES EN
	MB SMT EN
	FL DRIVES DE
	MB DEVICE MANUF. EN
	FL BUILDING SAFETY EN
	FL APPL LED LIGHTING EN
	FL INDUSTR.CONTROLS EN
	FL MACHINE SAFETY EN
	FL HEATING ELECTR EN
	FL APPL INVERTER EN
	FL BASE STATION EN
	FL ELEVATOR EN
	FL POWER SUPPLY EN
White paper surface mount technology	FL 72H SAMPLE SER EN
	PO OMNIMATE EN
	PO OMNIMATE EN
	Download Whitepaper

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Drawings

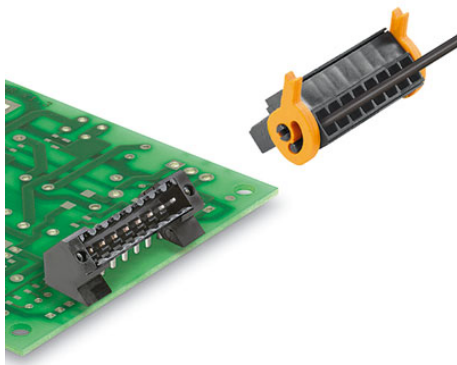
Dimensional drawing



LAYOUT FINISHED HOLES

Similar to illustration

Example of use



Rev.

Material data

Insulation material type	LCP
Insulation material colors	black
Insulation material flammability class	UL94
Insulation resistance	MOhm
Contact base material	CuSn
Contact plating (mating end)	see order sheet
Contact plating (solder end)	see order sheet

System characteristic values

together with counterpart

BL 3.5

Pitch P	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	1)
Pull out force (max.)	N/Pole	10	1)
Through resistance (typical)	m Ohm	4.5	
Operating temperatur range	°C	-20..100	2)
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 L	mm/inch	3.2/0.126	
PCB hole diameter D (wave soldering)	mm/inch	1.3+0.1/0.51+0.004	3)
PCB hole diameter D (reflow soldering)	mm/inch	n.a.	4)
Resistance to soldering heat acc. to DIN IEC 60512-6	°C/sec	-	5)
Resistance to soldering heat acc. to EN 61760-1	°C/sec	290/30	6)
Solderability classification acc. to EN 61760-1		class A	
Solder connection type		Reflow	
Solder pin diameter d (max.)	mm/inch	1.2/0.047	

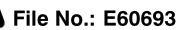
Application notes

Coding possibility	yes/no	yes (accessory)
Joinable without loss of pitch	yes/no	no
Manual assembly of modules	yes/no	no
Max. number of poles	n	24

IEC 664-1 / VDE0110 (4.97) rated data

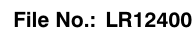
Rated cross section acc. to EN 60999	mm ²	n.a.	
Rated current @ 20°C ambient (together with)	A	16.8 (BL3.5)	7)
Rated current @ 40°C ambient (together with)	A	14.4 (BL3.5)	7)
Overvoltage category / Pollution degree		III/3 III/2 II/2	
Rated voltage	V	160 160 250	
Rated impulse voltage	kV	2.5 2.5 2.5	

UL 1059 rated data



Rated voltage	V	300	-	300
Rated current	A	10	-	10
AWG wire range (field wiring / factory wiring)		n.a.		

CSA C22.2 rated data



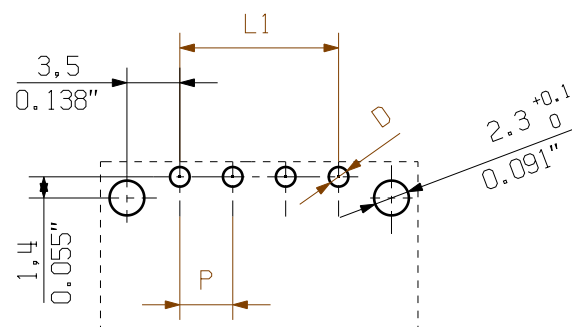
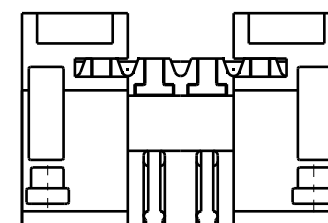
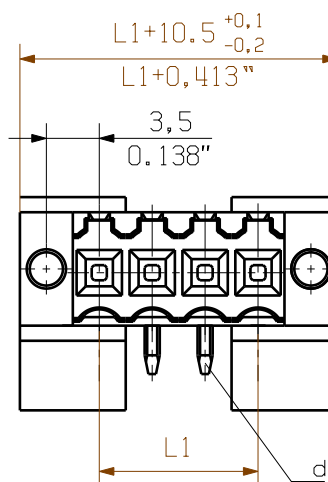
Rated voltage	300	-	300
Rated current	10	-	10
AWG wire range (field wiring / factory wiring)	n.a.		

Packaging

cardbox

Downloads

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
n	L1 [mm]	L1 [Inch]

STIFTLAENGE L	TOLERANZ
3,2	0,1
	-0,3

- 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 with 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.

 METRIC TOLERANCES: X. = ±0.3 X.X = ±0.1 X.XX = ±0.05					CAT.NO.: . . .	
	39056/5 07.07.08 HELIS_MA		01	Weidmüller  C 42538 01 DRAWING NO. SHEET 02 OF 03 SHEET		
	MODIFICATION					
		DATE	NAME	SL SMT 3.5/.. /135F STIFTELEISTE PIN HEADER		
	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

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.