

# 14. har-flex® Connectors



The continuous scalability by an even number of contacts, i.e. from 6 to 100, of the HARTING's har-flex® mezzanine connector series is a special feature forming an ideal basis for customized applications. The advantage is clearly evident considering that the connector is always optimized to suit specific applications on the device PCB, while also covering the medium- and small-scale volume range that is typical for the production of industrial devices.

## Application profile:

CONNECTION TYPE		ENVIRONMENT		APPLICATION						
Board to Board	Cable/Wire to Board	IP20	IP65 / IP67	Data	Signal	Power	high performance			
							Data transfer rate	Shielding	Number of contacts, contact density	Voltage, working current
Cable termination			PCB termination			Application standard				
<i>Han-Quick Lock®</i>	<i>IDC</i>	<i>Crimp</i>	<i>THT</i>	<i>SMC</i>	<i>SMT</i>	 SCSI				
<i>Screw</i>	<i>Cage clamp</i>	<i>Axial screw</i>	<i>Press-in</i>							
Housing integration										
<i>Separate housing</i>		<i>Integrated housing</i>								

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## *har-flex*® CONNECTORS

With *har-flex*®, HARTING has developed a general-purpose PCB connector series for internal and external Device Connectivity. The continuous scalability by an even number of contacts, i.e. from 6 to 100, of the HARTING's *har-flex*® mezzanine connector series is a special feature forming an ideal basis for customized applications. The advantage is clearly evident considering that the connector is always optimized to suit specific applications on the device PCB, while also covering the medium- and small-scale volume range that is typical for the production of industrial devices.

This flexibility is new – HARTING turns an individual design into a standard component. No special tooling changes are needed for customer-specific solutions, thus HARTING can realize a short delivery time.

## PRODUCT DIVERSITY

The *har-flex*® product range with SMT termination technology is based on a 1.27 mm grid. With its diverse variants, HARTING provides connectivity solutions for many different board-to-board and cable-to-board applications. For example, two straight connectors are used for the mezzanine application, two angled connectors for PCBs on one level, and a combination allows the well-known pairing of mother and daughter cards. By using an IDC flat band cable, two PCBs with large space between can be connected.



Cable-to-Board

Mother-to-Daughtercard

Extender-Card

Mezzanine

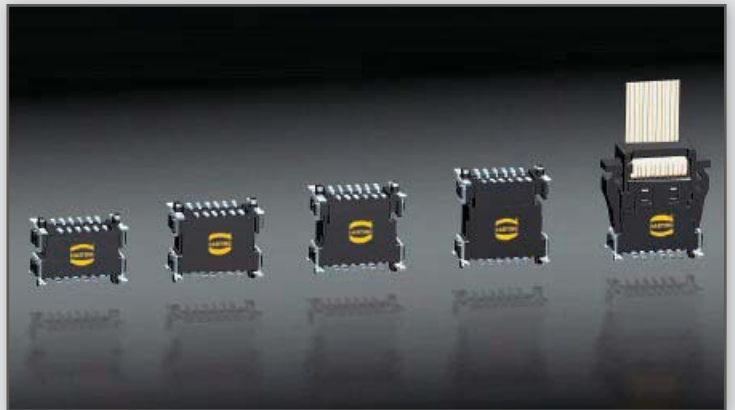
## Many pin count options

HARTING has developed a modular tooling concept which offers a broad choice of configurations between 6 and 100 poles in even numbered positions. This flexibility in the choice of number of contacts, combined with high density contact spacing, allow the designer to maximize the use of PCB real estate, thereby achieving overall space savings and cost efficiencies.



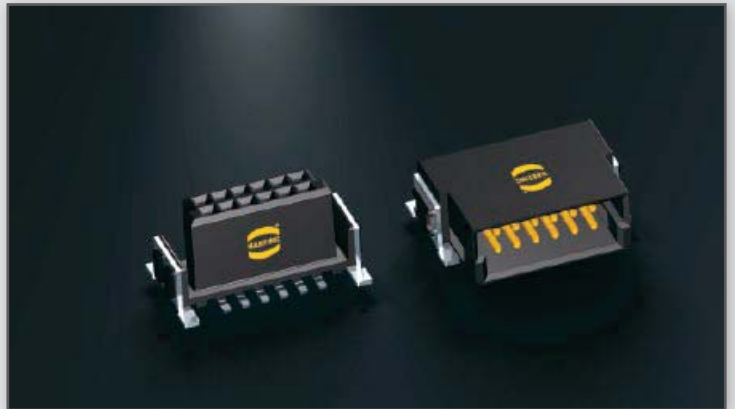
## Flexible board-to-board distances

HARTING covers mezzanine applications with a range of straight versions for four different stacking heights that can be used to interconnect PCBs arranged in parallel stacks with spacing between 8.0 mm and 13.8 mm. Additional stacking heights are in development. For applications requiring larger spacing between boards HARTING offers compatible cable assemblies terminated with insulation displacement technology.



## Robust design

The special SMT fixing ensures a robust and enduring connection to the PCB and helps to absorb mechanical stress on the solder contacts resulting from insertion and removal forces.



## Automated processing features

The *har-flex*® SMT connectors meet the highest demands in terms of their processing capabilities. Special blister packaging provides protection during shipping and handling, while the "pick and place" pads enable automated assembly of the PCBs. The temperature resistant materials of the insulating body, in combination with consistent testing of the coplanarity of contacts, ensure reliable soldering capabilities of the connectors in the reflow process.



Number of contacts 6, 8, 10 ... 96, 98, 100

Connector pitch 1.27 mm x 1.27 mm [0.050" x 0.050"]

Clearance and creepage distance  
 Board connectors (SMT) min. 0.4 mm  
 Cable connectors (IDC)  
 AWG 30/1 (solid) min. 0.35 mm  
 AWG 30/7 (stranded) min. 0.4 mm

Test voltage  $U_{r.m.s.}$  500 V  
 Contact resistance < 25 mΩ  
 Insulation resistance > 10 GΩ

Insertion and withdrawal force approx. 0.5 N / contact

Working temperature range  
 for connectors: - 55 °C ... + 125 °C  
 for flat cable assembly: depends on cable type  
 The higher temperature limit includes the local ambient and heating effects of the contacts under load  
 Temperature during reflow soldering (acc. to ECA/IPC/JEDEC J-STD-075 Level PSL R0) min. 150 s > 217 °C min. 30 s > 240 °C

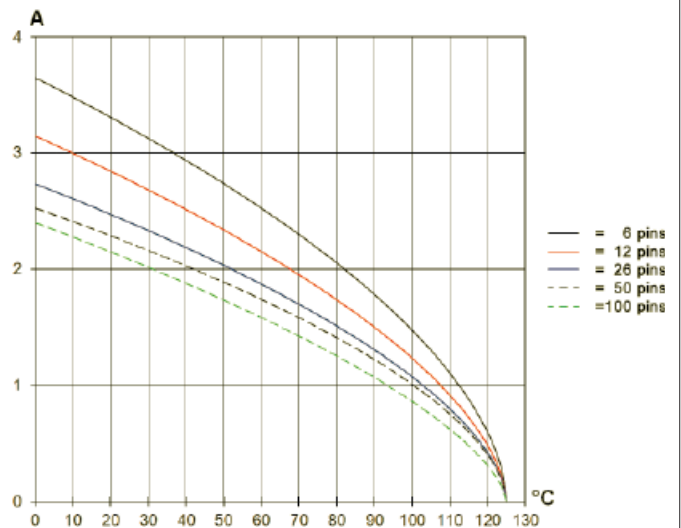
Electrical termination  
 Board connectors SMT (Surface Mount Technology)  
 Cable connectors IDC (Insulation Displacement Connection)

Materials  
 Moulding material LCP  
 UL approval UL 94-V0  
 CTI value (Comparative Tracking Index) 175  
 Contacts base material Copper alloy  
 Contact surface  
 Mating side  
 Board connectors Au over PdNi (acc. performance level)  
 Cable connectors Au over PdNi (acc. performance level)  
 Termination side  
 Board connectors (SMT) Sn  
 Cable connectors (IDC) Sn

**Current carrying capacity acc. to IEC 60512-5-2**

The current carrying capacity is limited by maximum temperature of materials for inserts and contacts including terminals. The current capacity-curve is valid for continuous, not interrupted current-loaded contacts of connectors when simultaneous power on all contacts is given, without exceeding the maximum temperature.

Control and test procedures according to DIN IEC 60512-5-2.



Derating curve at  $I_{max} * 0.8$  (IEC 60512-5-2)

**Durability**

**Performance level 1** (recommended for majority of applications)

Initial 250 mating cycles, 10 days gas test (25 °C/75 % r.h.) using H<sub>2</sub>S 10 ppb, NO<sub>2</sub> 200 ppb, CL<sub>2</sub> 10 ppb, SO<sub>2</sub> 200 ppb. Measurement of contact resistance. The remaining 250 mating cycles are subject to measurement of contact resistance and visual inspection. Visual inspection. No abrasion of the contact finish through to the base material. No functional impairment.

Part number definition:

**Performance level 2**

Initial 125 mating cycles, 4 days gas test (25 °C/75% r.h.) using H<sub>2</sub>S 10 ppb, NO<sub>2</sub> 200 ppb, CL<sub>2</sub> 10 ppb, SO<sub>2</sub> 200 ppb. Measurement of contact resistance. The remaining 125 mating cycles are subject to measurement of contact resistance and visual inspection. Visual inspection. No abrasion of the contact finish through to the base material. No functional impairment.

Part number definition:

**Performance level S4**

Defined contact surface of min. 0.06 μm Au over 0.7+0.2 μm PdNi.

Part number definition:

harflex

**Working voltage acc. to IEC 60664-1**

The working voltage depends on user specific operational conditions. Depending on the installation category, the degree of pollution and the entire electrical environment, the working voltage is different. The standard IEC 60664-1 specifies, in general, the minimum insulation distances for equipment. But it can also be used to determine the maximum working voltage with given requirements.

The following table shows the most common conditions applicable for the har-flex® connectors and exemplary calculations for the working voltage. For installation category, degree of pollution and other requirements which are not shown in the table we refer to the IEC 60664-1.

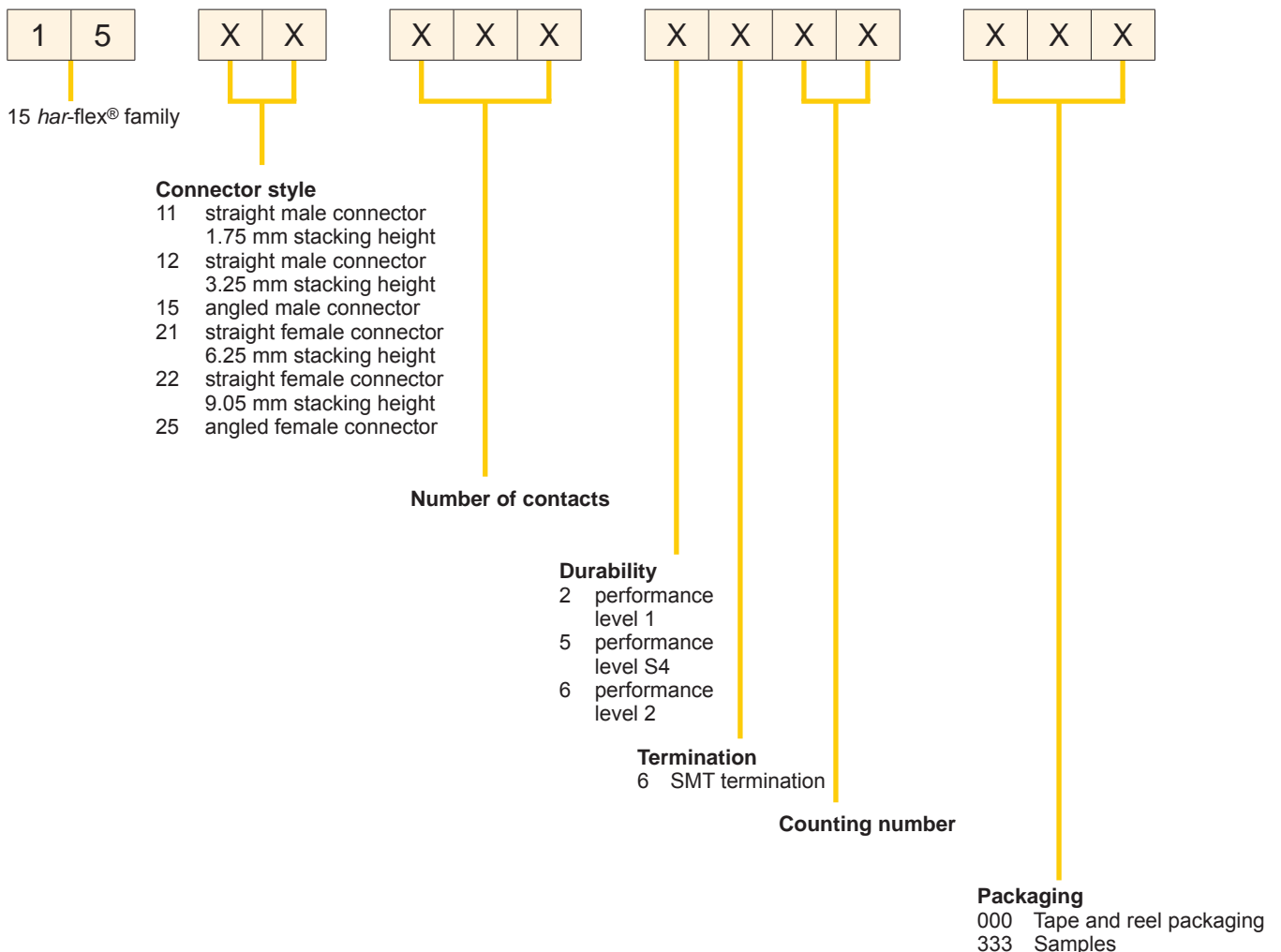
Clearance / Creepage distance	0.4 mm			
CTI-Value	< 400			
Isolation group	III a/b			
Electrical field type	Case A (Inhomogeneous field)		Case B (Homogeneous field)	
Installation category	I	II	I	II
Degree of pollution	1	1	1	1
<b>Working voltage max.</b>	<b>150 V</b>	<b>100 V</b>	<b>150 V</b>	<b>150 V</b>

**Explanations:**

- CTI value and isolation group are fixed values by the har-flex® connector characteristics.
- Installation category I: Equipment is intended for use only in appliances or installation parts, in which no overvoltages can occur. Equipment in this installation category is normally operated at extra low voltage.
- Installation category II: Equipment is intended for use in installations or parts of installations, in which lightning overvoltages need not be considered. Overvoltages caused by switching must be taken into account.
- Pollution degree 1: No pollution or only dry, non-conductive pollution occurs. The pollution has no influence.
- Pollution degree 2: Only non-conductive pollution occurs. A temporary conductive caused by condensation must be expected occasionally.

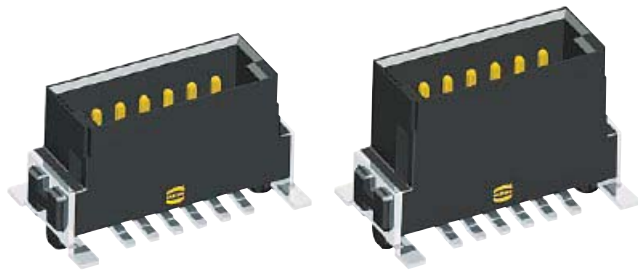
**Part number definition**

The har-flex® part numbers have 14 digits and are based on the following scheme:



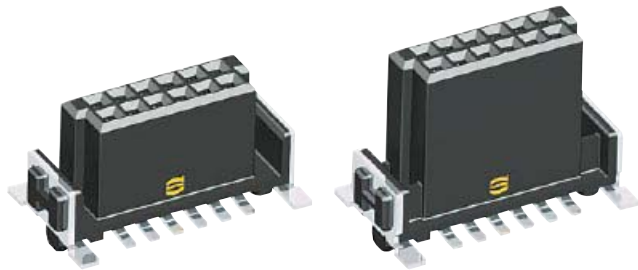
### Stacking heights of straight connector versions

The har-flex® connectors cover mezzanine applications with a range of straight versions for four different stacking heights that can be used to interconnect PCBs arranged in parallel stacks with spacing between 8.0 mm and 13.8 mm.



Male 1.75 mm

Male 3.25 mm



Female 6.25 mm

Female 9.05 mm

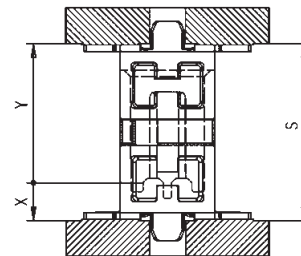
Due to the wiping lengths of 1.5 mm, these four connectors cover the distance of 8 mm to 13.8 mm continuously.

14 mm				
13 mm				
12 mm				
11 mm				
10 mm				
9 mm				
8 mm				
stacking heights	male 1.75 mm female 6.25 mm	male 3.25 mm female 6.25 mm	male 1.75 mm female 9.05 mm	male 3.25 mm female 9.05 mm
PCB distance	8 mm - 9.5 mm	9.5 mm - 11 mm	10.8 mm - 12.3 mm	12.3 mm - 13.8 mm
part numbers	15 11 ... 15 21 ...	15 12 ... 15 21 ...	15 11 ... 15 22 ...	15 12 ... 15 22 ...

### Mating options

#### Mezzanine connection

straight female



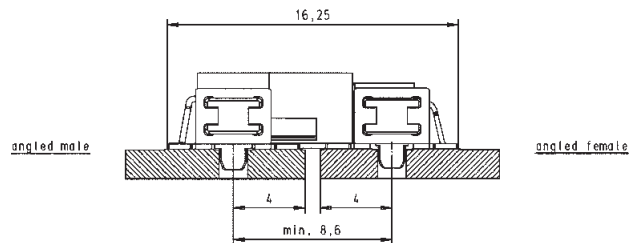
straight male

3.25	9.05	12.3	13.8
1.75	9.05	10.8	12.3
3.25	6.25	9.5	11
1.75	6.25	8	9.5
X	Y	Smin	* Smax

\* Smax = Smin + 1.5 wiping length with additional contact overlap security

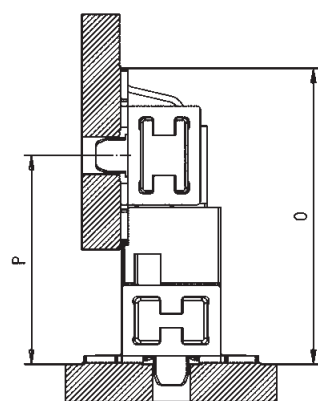
#### Extender Card connection

EXTENDER CARD CONFIGURATION

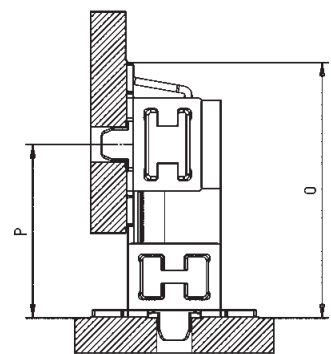


#### Mother-to-Daughtercard connection

angled female



angled male



straight male

3.25	10.25	14.08
1.75	8.75	12.58
X	P min.	O

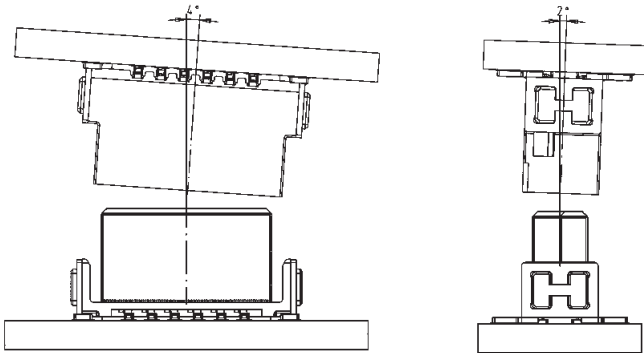
straight female

9.05	10.5	14.33
6.25	7.7	11.53
Y	P min.	O

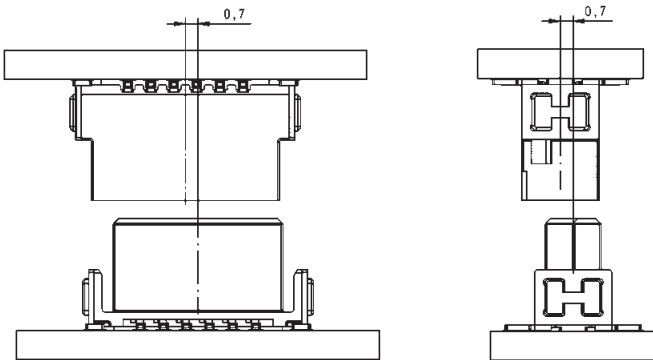


Mating conditions

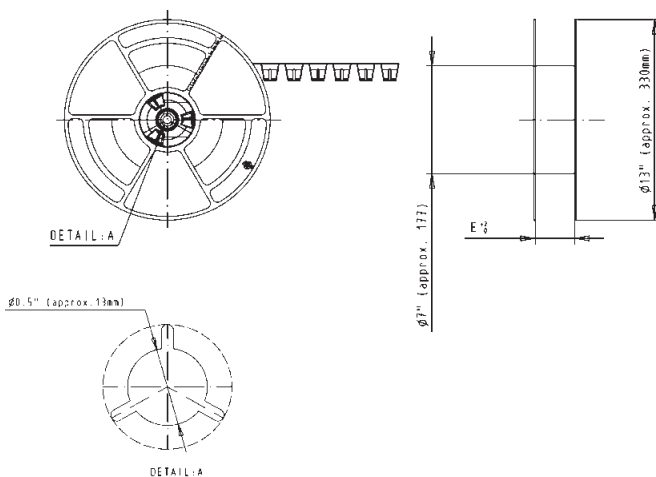
Inclination



Mismatching



Tape acc. to IEC 60286-3

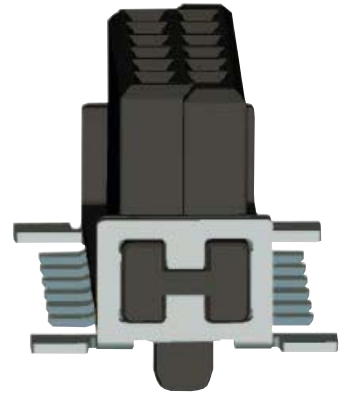


Tape dimensions:	E
poles 6 to 12	24.4
poles 14 to 20	32.4
poles 22 to 40	44.4
poles 42 to 56	56.4
poles 58 to 80	72.4
poles 82 to 100	88.4

SMT processing notes

The har-flex® SMT connectors meet the highest demands in terms of their processing capabilities.

The connectors are delivered in a tape and reel packaging optimized for automatic assembly machines. A vacuum cover enables the automatic assembly with a vacuum nozzle.



The insulation body material is high temperature resistant, and due to the black colour a secure camera recognition is ensured.

For a reliable SMT solder process, the termination pins are 100 % checked for coplanarity.

Process / Moisture Sensitivity

During the reflow solder process, the connector has to resist extreme variations in temperature. Connectors consist in general of both plastic and metal parts, which have a different behaviour during the solder process. The Process Sensivity and also the Moisture Sensivity are tested according the ECA/IPC/JEDEC J-STD-075 specification.

Process Sensivity:

**PSL** means Process Sensivity Level. PSL is a rating used to identify a component that is solder process sensitive. Damages of the connector after three times soldering are not permitted (e.g. melted edges).

Moisture Sensivity:

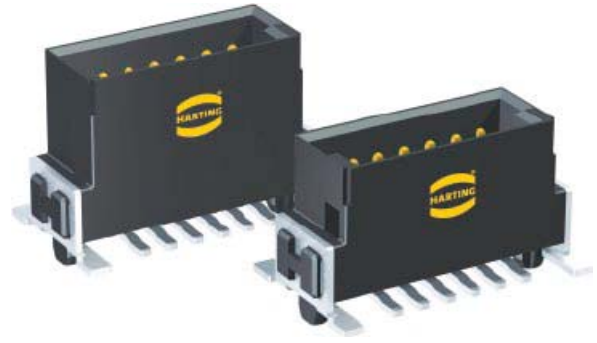
**MSL** means Moisture Sensivity Level. MSL is a rating indicating a component's susceptibility to damage due to absorbed moisture during storage. Damages of the connector after storage in damp heat and three times soldering are not permitted (e.g. blisters).

The har-flex® connectors are rated with **PSL R0** and **MSL 1**. This is the maximum possible rating in both categories. The har-flex® connector resists three times soldering at the following conditions without damages:

- min. 150 s beyond 217 °C (liquidus temperature, the melting point of the solder paste)
- min. 30 s beyond classification temperature (240 °C / 245 °C for har-flex®)
- Temperature solder profile according to ECA/IPC/JEDEC J-STD-075
- For MSL test, a storage of 168 hours at 85 °C and 85 % rel. humidity was carried out

As the result, the har-flex® connectors are not process sensitive and not moisture sensitive according to ECA/IPC/JEDEC J-STD-075.





Male connectors, straight

Identification	No. of contacts	Part number	Dimensions in mm						
			A	B	C	D	E	F	G
Male connector, straight, stacking heights 1.75 / 3.25 mm	6	15 1 . 006 . 601 ...	2.54	6.96	8.89	5.76	4.76	6.56	1.05
	8	15 1 . 008 . 601 ...	3.81	8.23	10.16	7.03	6.03	7.83	1.69
	10	15 1 . 010 . 601 ...	5.08	9.50	11.43	8.30	7.30	9.10	2.32
	12	15 1 . 012 . 601 ...	6.35	10.77	12.70	9.57	8.57	10.37	2.96
	14	15 1 . 014 . 601 ...	7.62	12.04	13.97	10.84	9.84	11.64	3.59
	16	15 1 . 016 . 601 ...	8.89	13.31	15.24	12.11	11.11	12.91	4.23
	18	15 1 . 018 . 601 ...	10.16	14.58	16.51	13.38	12.38	14.18	4.48
	20	15 1 . 020 . 601 ...	11.43	15.85	17.78	14.65	13.65	15.45	5.50
	22	15 1 . 022 . 601 ...	12.70	17.12	19.05	15.92	14.92	16.72	6.13
	24	15 1 . 024 . 601 ...	13.97	18.39	20.32	17.19	16.19	17.99	6.77
	26	15 1 . 026 . 601 ...	15.24	19.66	21.59	18.46	17.46	19.26	7.40
	28	15 1 . 028 . 601 ...	16.51	20.93	22.86	19.73	18.73	20.53	8.04
	30	15 1 . 030 . 601 ...	17.78	22.20	24.13	21.00	20.00	21.80	8.67
	32	15 1 . 032 . 601 ...	19.05	23.47	25.40	22.27	21.27	23.07	9.31
	34	15 1 . 034 . 601 ...	20.32	24.74	26.67	23.54	22.54	24.34	9.94
	36	15 1 . 036 . 601 ...	21.59	26.01	27.94	24.81	23.81	25.61	10.58
	38	15 1 . 038 . 601 ...	22.86	27.28	29.21	26.08	25.08	26.88	11.21
	40	15 1 . 040 . 601 ...	24.13	28.55	30.48	27.35	26.35	28.15	11.85
	42	15 1 . 042 . 601 ...	25.40	29.82	31.75	28.62	27.62	29.42	12.48
	44	15 1 . 044 . 601 ...	26.67	31.09	33.02	29.89	28.89	30.69	13.12
	46	15 1 . 046 . 601 ...	27.94	32.36	34.29	31.16	30.16	31.96	13.75
	48	15 1 . 048 . 601 ...	29.21	33.63	35.56	32.43	31.43	33.23	14.39
	50	15 1 . 050 . 601 ...	30.48	34.90	36.83	33.70	32.70	34.50	15.02
	52	15 1 . 052 . 601 ...	31.75	36.17	38.10	34.97	33.97	35.77	15.66
	54	15 1 . 054 . 601 ...	33.02	37.44	39.37	36.24	35.24	37.04	16.29
	56	15 1 . 056 . 601 ...	34.29	38.71	40.64	37.51	36.51	38.31	16.93
	58	15 1 . 058 . 601 ...	35.56	39.98	41.91	38.78	37.78	39.58	17.56
	60	15 1 . 060 . 601 ...	36.83	41.25	43.18	40.05	39.05	40.85	18.20
	62	15 1 . 062 . 601 ...	38.10	42.52	44.45	41.32	40.32	42.12	18.83
	64	15 1 . 064 . 601 ...	39.37	43.79	45.72	42.59	41.59	43.39	19.47
	66	15 1 . 066 . 601 ...	40.64	45.06	46.99	43.86	42.86	44.66	20.10
	68	15 1 . 068 . 601 ...	41.91	46.33	48.26	45.13	44.13	45.93	20.74
	70	15 1 . 070 . 601 ...	43.18	47.60	49.53	46.40	45.40	47.20	21.37
	72	15 1 . 072 . 601 ...	44.45	48.87	50.80	47.67	46.67	48.47	22.01
	74	15 1 . 074 . 601 ...	45.72	50.14	52.07	48.94	47.94	49.74	22.64
	76	15 1 . 076 . 601 ...	46.99	51.41	53.34	50.21	49.21	51.01	23.28
	78	15 1 . 078 . 601 ...	48.26	52.68	54.61	51.48	50.48	52.28	23.91
	80	15 1 . 080 . 601 ...	49.53	53.95	55.88	52.75	51.75	53.55	24.55
	82	15 1 . 082 . 601 ...	50.80	55.22	57.15	54.02	53.02	54.82	25.18
	84	15 1 . 084 . 601 ...	52.07	56.49	58.42	55.29	54.29	56.09	25.82
	86	15 1 . 086 . 601 ...	53.34	57.76	59.69	56.56	55.56	57.36	26.45
	88	15 1 . 088 . 601 ...	54.61	59.03	60.96	57.83	56.83	58.63	27.09
	90	15 1 . 090 . 601 ...	55.88	60.30	62.23	59.10	58.10	59.90	27.72
	92	15 1 . 092 . 601 ...	57.15	61.57	63.50	60.37	59.37	61.17	28.36
	94	15 1 . 094 . 601 ...	58.42	62.84	64.77	61.64	60.64	62.44	28.99
	96	15 1 . 096 . 601 ...	59.69	64.11	66.04	62.91	61.91	63.71	29.63
	98	15 1 . 098 . 601 ...	60.96	65.38	67.31	64.18	63.18	64.98	30.26
	100	15 1 . 100 . 601 ...	62.23	66.65	68.58	65.45	64.45	66.25	30.90

Please insert digit for stacking height

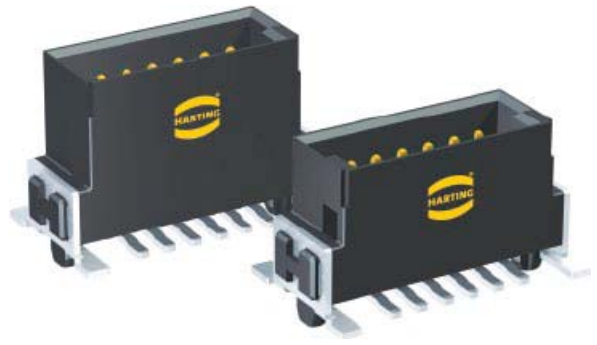
1.75 mm ▶ 1  
3.25 mm ▶ 2

for performance level 1  
for performance level S4  
for performance level 2

2  
5  
6

333  
000

for samples  
for 280 pieces on reel



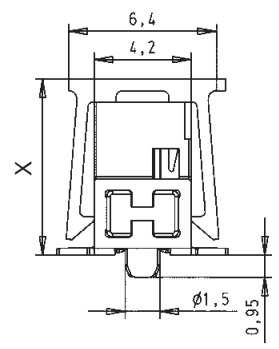
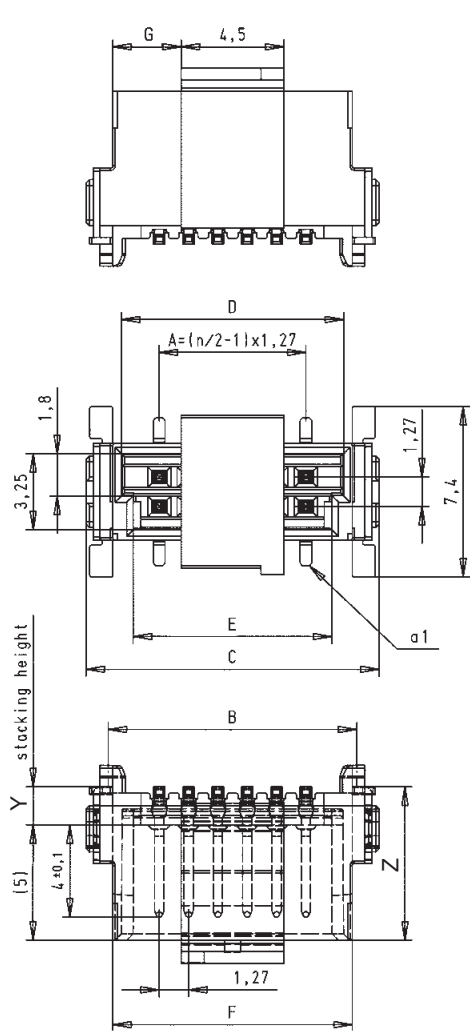
Male connectors, straight

Identification

Drawing

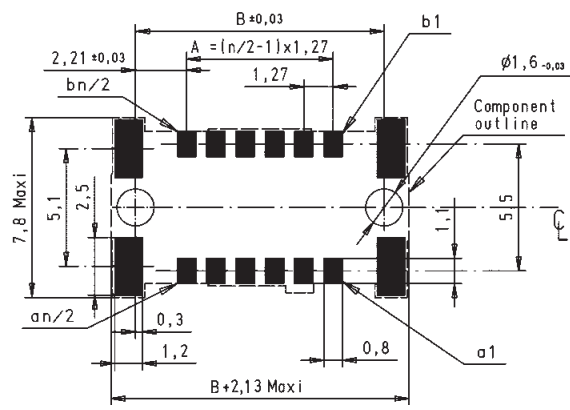
Dimensions in mm

Dimensions



stacking height Y	height with vacuum cover X	unmated height Z
1.75	7.6	6.6
3.25	9.1	8.1

PCB layout





Female connectors, straight

Identification	No. of contacts	Part number	Dimensions in mm					
			A	B	C	D	E	G
Female connector, straight, stacking heights 6.25 / 9.05 mm	6	15 2 . 006 . 601 ...	2.54	6.96	8.89	5.56	4.56	1.19
	8	15 2 . 008 . 601 ...	3.81	8.23	10.16	6.83	5.83	1.19
	10	15 2 . 010 . 601 ...	5.08	9.50	11.43	8.10	7.10	2.46
	12	15 2 . 012 . 601 ...	6.35	10.77	12.70	9.37	8.37	2.46
	14	15 2 . 014 . 601 ...	7.62	12.04	13.97	10.64	9.64	3.73
	16	15 2 . 016 . 601 ...	8.89	13.31	15.24	11.91	10.91	3.73
	18	15 2 . 018 . 601 ...	10.16	14.58	16.51	13.18	12.18	5.00
	20	15 2 . 020 . 601 ...	11.43	15.85	17.78	14.45	13.45	5.00
	22	15 2 . 022 . 601 ...	12.70	17.12	19.05	15.72	14.72	6.27
	24	15 2 . 024 . 601 ...	13.97	18.39	20.32	16.99	15.99	6.27
	26	15 2 . 026 . 601 ...	15.24	19.66	21.59	18.26	17.26	7.54
	28	15 2 . 028 . 601 ...	16.51	20.93	22.86	19.53	18.53	7.54
	30	15 2 . 030 . 601 ...	17.78	22.20	24.13	20.80	19.80	8.81
	32	15 2 . 032 . 601 ...	19.05	23.47	25.40	22.07	21.07	8.81
	34	15 2 . 034 . 601 ...	20.32	24.74	26.67	23.34	22.34	10.08
	36	15 2 . 036 . 601 ...	21.59	26.01	27.94	24.61	23.61	10.08
	38	15 2 . 038 . 601 ...	22.86	27.28	29.21	25.88	24.88	11.35
	40	15 2 . 040 . 601 ...	24.13	28.55	30.48	27.15	26.15	11.35
	42	15 2 . 042 . 601 ...	25.40	29.82	31.75	28.42	27.42	12.62
	44	15 2 . 044 . 601 ...	26.67	31.09	33.02	29.69	28.69	12.62
	46	15 2 . 046 . 601 ...	27.94	32.36	34.29	30.96	29.96	13.89
	48	15 2 . 048 . 601 ...	29.21	33.63	35.56	32.23	31.23	13.89
	50	15 2 . 050 . 601 ...	30.48	34.90	36.83	33.50	32.50	15.16
	52	15 2 . 052 . 601 ...	31.75	36.17	38.10	34.77	33.77	15.16
	54	15 2 . 054 . 601 ...	33.02	37.44	39.37	36.04	35.04	16.43
	56	15 2 . 056 . 601 ...	34.29	38.71	40.64	37.31	36.31	16.43
	58	15 2 . 058 . 601 ...	35.56	39.98	41.91	38.58	37.58	17.70
	60	15 2 . 060 . 601 ...	36.83	41.25	43.18	39.85	38.85	17.70
	62	15 2 . 062 . 601 ...	38.10	42.52	44.45	41.12	40.12	18.97
	64	15 2 . 064 . 601 ...	39.37	43.79	45.72	42.39	41.39	18.97
	66	15 2 . 066 . 601 ...	40.64	45.06	46.99	43.66	42.66	20.24
	68	15 2 . 068 . 601 ...	41.91	46.33	48.26	44.93	43.93	20.24
	70	15 2 . 070 . 601 ...	43.18	47.60	49.53	46.20	45.20	21.51
	72	15 2 . 072 . 601 ...	44.45	48.87	50.80	47.47	46.47	21.51
	74	15 2 . 074 . 601 ...	45.72	50.14	52.07	48.74	47.74	22.78
	76	15 2 . 076 . 601 ...	46.99	51.41	53.34	50.01	49.01	22.78
	78	15 2 . 078 . 601 ...	48.26	52.68	54.61	51.28	50.28	24.05
	80	15 2 . 080 . 601 ...	49.53	53.95	55.88	52.55	51.55	24.05
	82	15 2 . 082 . 601 ...	50.80	55.22	57.15	53.82	52.82	25.32
	84	15 2 . 084 . 601 ...	52.07	56.49	58.42	55.09	54.09	25.32
	86	15 2 . 086 . 601 ...	53.34	57.76	59.69	56.36	55.36	26.59
	88	15 2 . 088 . 601 ...	54.61	59.03	60.96	57.63	56.63	26.59
	90	15 2 . 090 . 601 ...	55.88	60.30	62.23	58.90	57.90	27.86
	92	15 2 . 092 . 601 ...	57.15	61.57	63.50	60.17	59.17	27.86
	94	15 2 . 094 . 601 ...	58.42	62.84	64.77	61.44	60.44	29.13
	96	15 2 . 096 . 601 ...	59.69	64.11	66.04	62.71	61.71	29.13
	98	15 2 . 098 . 601 ...	60.96	65.38	67.31	63.98	62.98	30.40
	100	15 2 . 100 . 601 ...	62.23	66.65	68.58	65.25	64.25	30.40

Please insert digit for stacking height

6.25 mm ▶ 1  
9.05 mm ▶ 2

for performance level 1  
for performance level S4  
for performance level 2

2  
5  
6

333  
000

for samples  
for 280 pieces on reel



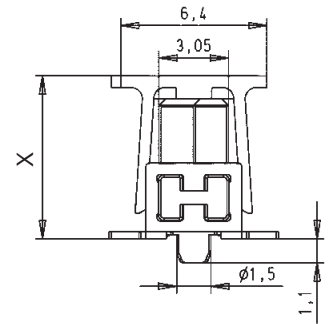
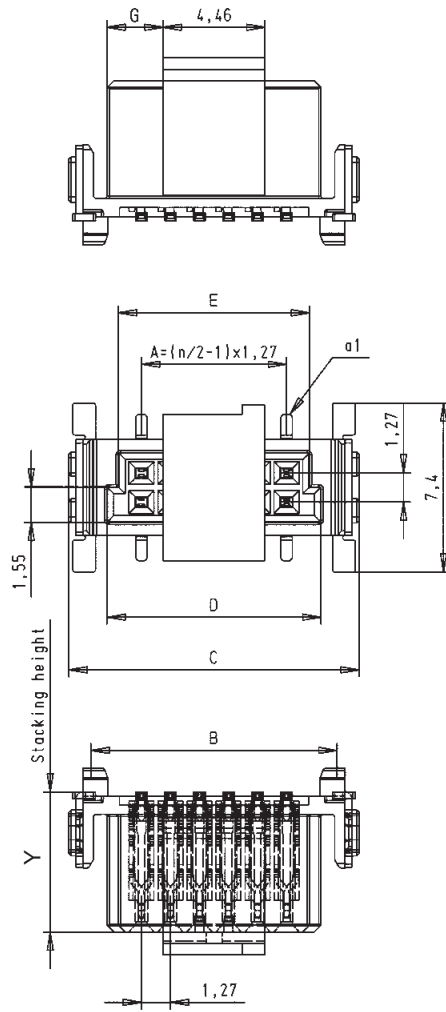
Female connectors, straight

Identification

Drawing

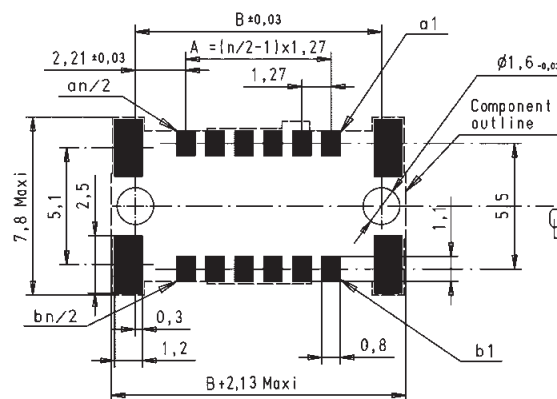
Dimensions in mm

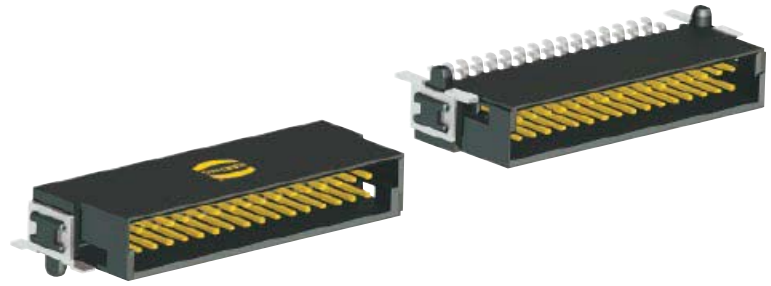
Dimensions



stacking height Y	height with vacuum cover X
6.25	7.1
9.05	9.9

PCB layout

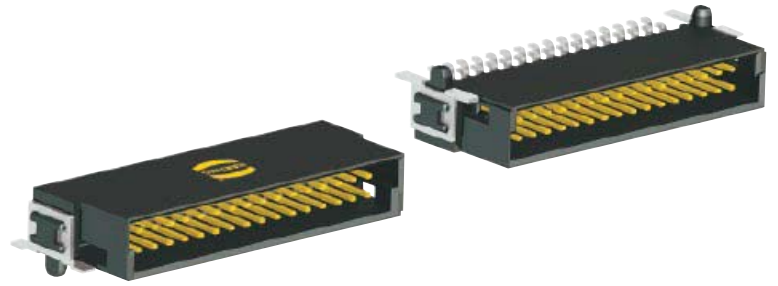




Male connectors, angled

Identification	No. of contacts	Part number	Dimensions in mm				
			A	B	C	D	E
Male connector, angled	6	15 15 006 . 601 ...	2.54	6.96	8.89	5.76	4.76
	8	15 15 008 . 601 ...	3.81	8.23	10.16	7.03	6.03
	10	15 15 010 . 601 ...	5.08	9.50	11.43	8.30	7.30
	12	15 15 012 . 601 ...	6.35	10.77	12.70	9.57	8.57
	14	15 15 014 . 601 ...	7.62	12.04	13.97	10.84	9.84
	16	15 15 016 . 601 ...	8.89	13.31	15.24	12.11	11.11
	18	15 15 018 . 601 ...	10.16	14.58	16.51	13.38	12.38
	20	15 15 020 . 601 ...	11.43	15.85	17.78	14.65	13.65
	22	15 15 022 . 601 ...	12.70	17.12	19.05	15.92	14.92
	24	15 15 024 . 601 ...	13.97	18.39	20.32	17.19	16.19
	26	15 15 026 . 601 ...	15.24	19.66	21.59	18.46	17.46
	28	15 15 028 . 601 ...	16.51	20.93	22.86	19.73	18.73
	30	15 15 030 . 601 ...	17.78	22.20	24.13	21.00	20.00
	32	15 15 032 . 601 ...	19.05	23.47	25.40	22.27	21.27
	34	15 15 034 . 601 ...	20.32	24.74	26.67	23.54	22.54
	36	15 15 036 . 601 ...	21.59	26.01	27.94	24.81	23.81
	38	15 15 038 . 601 ...	22.86	27.28	29.21	26.08	25.08
	40	15 15 040 . 601 ...	24.13	28.55	30.48	27.35	26.35
	42	15 15 042 . 601 ...	25.40	29.82	31.75	28.62	27.62
	44	15 15 044 . 601 ...	26.67	31.09	33.02	29.89	28.89
	46	15 15 046 . 601 ...	27.94	32.36	34.29	31.16	30.16
	48	15 15 048 . 601 ...	29.21	33.63	35.56	32.43	31.43
	50	15 15 050 . 601 ...	30.48	34.90	36.83	33.70	32.70
	52	15 15 052 . 601 ...	31.75	36.17	38.10	34.97	33.97
	54	15 15 054 . 601 ...	33.02	37.44	39.37	36.24	35.24
	56	15 15 056 . 601 ...	34.29	38.71	40.64	37.51	36.51
	58	15 15 058 . 601 ...	35.56	39.98	41.91	38.78	37.78
	60	15 15 060 . 601 ...	36.83	41.25	43.18	40.05	39.05
	62	15 15 062 . 601 ...	38.10	42.52	44.45	41.32	40.32
	64	15 15 064 . 601 ...	39.37	43.79	45.72	42.59	41.59
	66	15 15 066 . 601 ...	40.64	45.06	46.99	43.86	42.86
	68	15 15 068 . 601 ...	41.91	46.33	48.26	45.13	44.13
	70	15 15 070 . 601 ...	43.18	47.60	49.53	46.40	45.40
	72	15 15 072 . 601 ...	44.45	48.87	50.80	47.67	46.67
	74	15 15 074 . 601 ...	45.72	50.14	52.07	48.94	47.94
	76	15 15 076 . 601 ...	46.99	51.41	53.34	50.21	49.21
	78	15 15 078 . 601 ...	48.26	52.68	54.61	51.48	50.48
80	15 15 080 . 601 ...	49.53	53.95	55.88	52.75	51.75	
82	15 15 082 . 601 ...	50.80	55.22	57.15	54.02	53.02	
84	15 15 084 . 601 ...	52.07	56.49	58.42	55.29	54.29	
86	15 15 086 . 601 ...	53.34	57.76	59.69	56.56	55.56	
88	15 15 088 . 601 ...	54.61	59.03	60.96	57.83	56.83	
90	15 15 090 . 601 ...	55.88	60.30	62.23	59.10	58.10	
92	15 15 092 . 601 ...	57.15	61.57	63.50	60.37	59.37	
94	15 15 094 . 601 ...	58.42	62.84	64.77	61.64	60.64	
96	15 15 096 . 601 ...	59.69	64.11	66.04	62.91	61.91	
98	15 15 098 . 601 ...	60.96	65.38	67.31	64.18	63.18	
100	15 15 100 . 601 ...	62.23	66.65	68.58	65.45	64.45	

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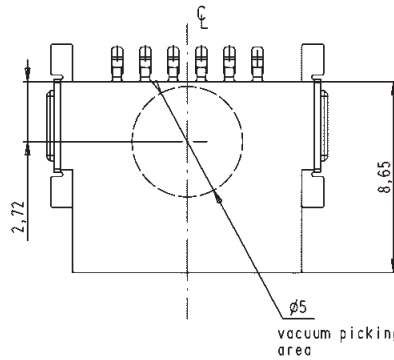
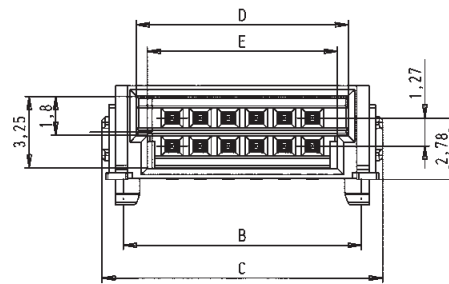
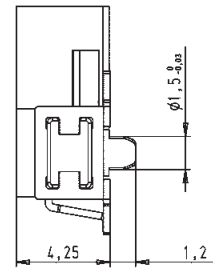
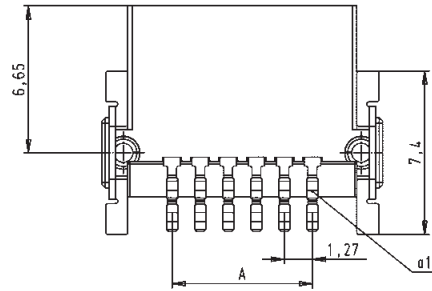
Male connectors, angled

Identification

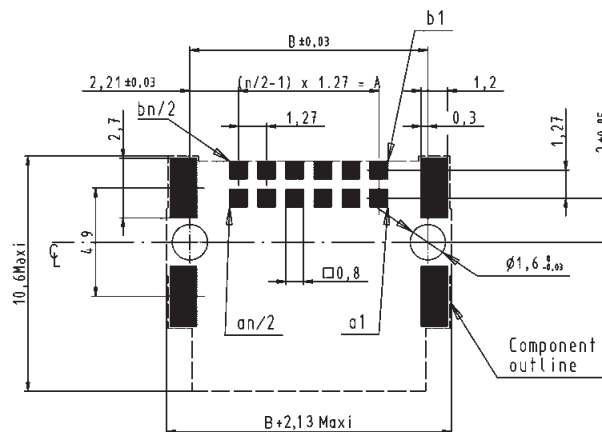
Drawing

Dimensions in mm

Dimensions



PCB layout





Female connectors, angled

Identification	No. of contacts	Part number	Dimensions in mm				
			A	B	C	D	E
Female connector, angled	6	15 25 006 . 601 ...	2.54	6.96	8.89	5.56	4.56
	8	15 25 008 . 601 ...	3.81	8.23	10.16	6.83	5.83
	10	15 25 010 . 601 ...	5.08	9.50	11.43	8.10	7.10
	12	15 25 012 . 601 ...	6.35	10.77	12.70	9.37	8.37
	14	15 25 014 . 601 ...	7.62	12.04	13.97	10.64	9.64
	16	15 25 016 . 601 ...	8.89	13.31	15.24	11.91	10.91
	18	15 25 018 . 601 ...	10.16	14.58	16.51	13.18	12.18
	20	15 25 020 . 601 ...	11.43	15.85	17.78	14.45	13.45
	22	15 25 022 . 601 ...	12.70	17.12	19.05	15.72	14.72
	24	15 25 024 . 601 ...	13.97	18.39	20.32	16.99	15.99
	26	15 25 026 . 601 ...	15.24	19.66	21.59	18.26	17.26
	28	15 25 028 . 601 ...	16.51	20.93	22.86	19.53	18.53
	30	15 25 030 . 601 ...	17.78	22.20	24.13	20.80	19.80
	32	15 25 032 . 601 ...	19.05	23.47	25.40	22.07	21.07
	34	15 25 034 . 601 ...	20.32	24.74	26.67	23.34	22.34
	36	15 25 036 . 601 ...	21.59	26.01	27.94	24.61	23.61
	38	15 25 038 . 601 ...	22.86	27.28	29.21	25.88	24.88
	40	15 25 040 . 601 ...	24.13	28.55	30.48	27.15	26.15
	42	15 25 042 . 601 ...	25.40	29.82	31.75	28.42	27.42
	44	15 25 044 . 601 ...	26.67	31.09	33.02	29.69	28.69
	46	15 25 046 . 601 ...	27.94	32.36	34.29	30.96	29.96
	48	15 25 048 . 601 ...	29.21	33.63	35.56	32.23	31.23
	50	15 25 050 . 601 ...	30.48	34.90	36.83	33.50	32.50
	52	15 25 052 . 601 ...	31.75	36.17	38.10	34.77	33.77
	54	15 25 054 . 601 ...	33.02	37.44	39.37	36.04	35.04
	56	15 25 056 . 601 ...	34.29	38.71	40.64	37.31	36.31
	58	15 25 058 . 601 ...	35.56	39.98	41.91	38.58	37.58
	60	15 25 060 . 601 ...	36.83	41.25	43.18	39.85	38.85
	62	15 25 062 . 601 ...	38.10	42.52	44.45	41.12	40.12
	64	15 25 064 . 601 ...	39.37	43.79	45.72	42.39	41.39
	66	15 25 066 . 601 ...	40.64	45.06	46.99	43.66	42.66
	68	15 25 068 . 601 ...	41.91	46.33	48.26	44.93	43.93
	70	15 25 070 . 601 ...	43.18	47.60	49.53	46.20	45.20
	72	15 25 072 . 601 ...	44.45	48.87	50.80	47.47	46.47
	74	15 25 074 . 601 ...	45.72	50.14	52.07	48.74	47.74
	76	15 25 076 . 601 ...	46.99	51.41	53.34	50.01	49.01
	78	15 25 078 . 601 ...	48.26	52.68	54.61	51.28	50.28
80	15 25 080 . 601 ...	49.53	53.95	55.88	52.55	51.55	
82	15 25 082 . 601 ...	50.80	55.22	57.15	53.82	52.82	
84	15 25 084 . 601 ...	52.07	56.49	58.42	55.09	54.09	
86	15 25 086 . 601 ...	53.34	57.76	59.69	56.36	55.36	
88	15 25 088 . 601 ...	54.61	59.03	60.96	57.63	56.63	
90	15 25 090 . 601 ...	55.88	60.30	62.23	58.90	57.90	
92	15 25 092 . 601 ...	57.15	61.57	63.50	60.17	59.17	
94	15 25 094 . 601 ...	58.42	62.84	64.77	61.44	60.44	
96	15 25 096 . 601 ...	59.69	64.11	66.04	62.71	61.71	
98	15 25 098 . 601 ...	60.96	65.38	67.31	63.98	62.98	
100	15 25 100 . 601 ...	62.23	66.65	68.58	65.25	64.25	

har-flex

for performance level 1  
for performance level S4  
for performance level 2

2  
5  
6

333  
000

for samples  
for 560 pieces on reel





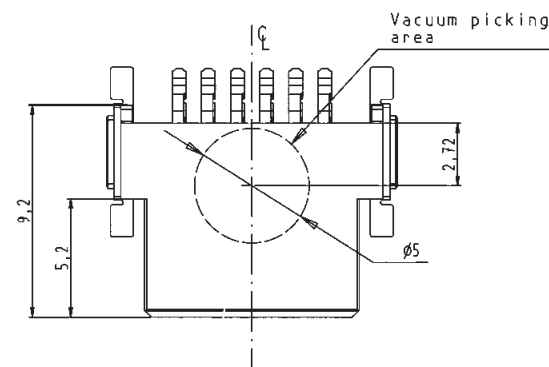
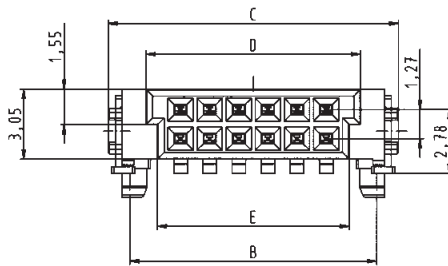
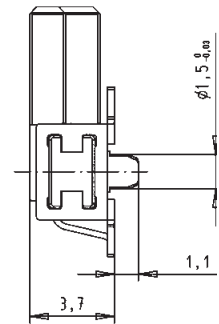
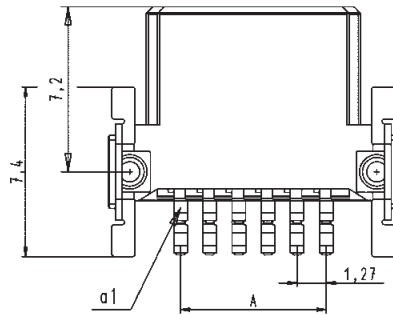
Female connectors, angled

Identification

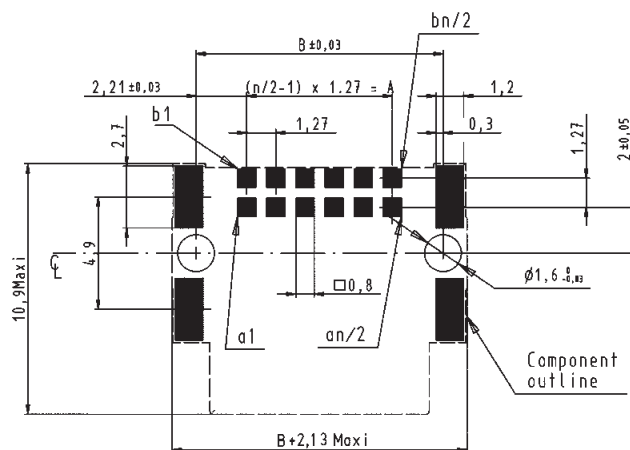
Drawing

Dimensions in mm

Dimensions



PCB layout

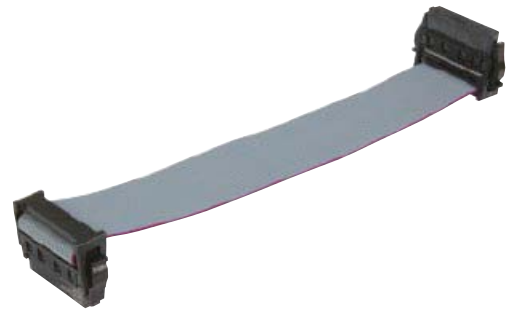




Cable assemblies

Identification	Part number	Drawing	Dimensions in mm
<p><b>Cable assembly har:flex®</b>                      Cable: Flat cable, AWG 30,                      0.635 mm pitch                      Wiring: 1:1                      Connectors with strain relief</p>			
<p><b>6 poles</b>    Length: L = 0.1 m                      L = 0.2 m                      L = 0.5 m</p>	<p>33 15 243 0100 001                      33 15 243 0200 002                      33 15 243 0500 003</p>		
<p><b>12 poles</b>    Length: L = 0.1 m                      L = 0.2 m                      L = 0.5 m</p>	<p>33 15 243 0100 004                      33 15 243 0200 005                      33 15 243 0500 006</p>		
<p><b>26 poles</b>    Length: L = 0.1 m                      L = 0.2 m                      L = 0.5 m</p>	<p>33 15 243 0100 007                      33 15 243 0200 008                      33 15 243 0500 009</p>		
<p><b>32 poles</b>    Length: L = 0.1 m                      L = 0.2 m                      L = 0.5 m</p>	<p>33 15 243 0100 010                      33 15 243 0200 011                      33 15 243 0500 012</p>		

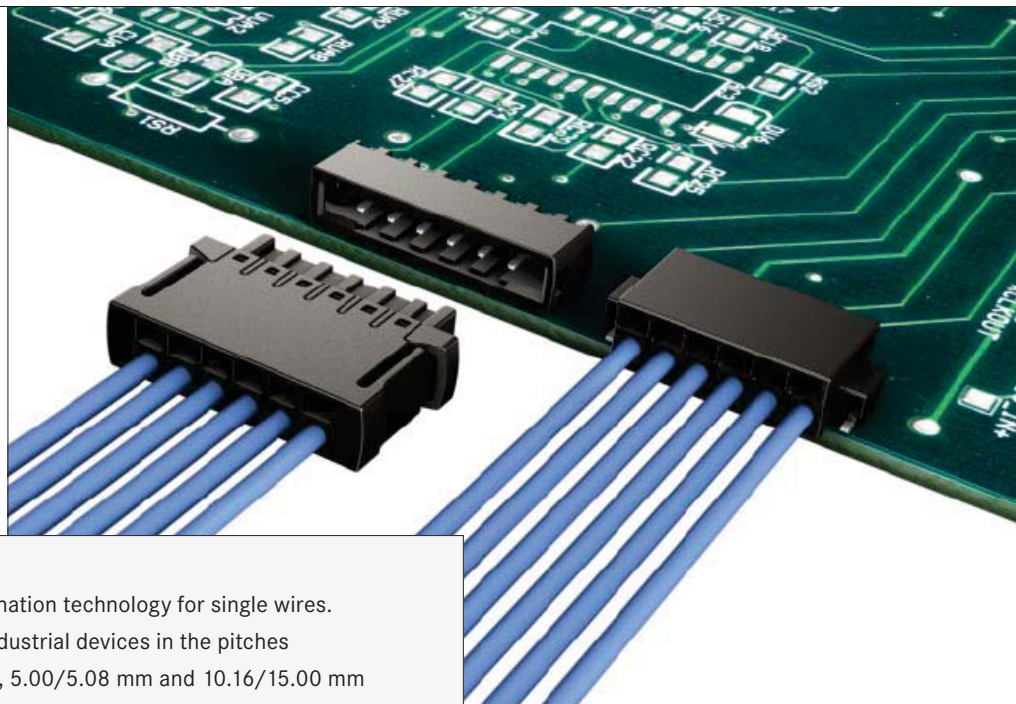
har-flex



Cable assemblies

Identification		Part number	Drawing	Dimensions in mm
<b>50 poles</b>	Length: L = 0.1 m	33 15 243 0100 013		
	L = 0.2 m	33 15 243 0200 014		
	L = 0.5 m	33 15 243 0500 015		
<b>68 poles</b>	Length: L = 0.1 m	33 15 243 0100 122		
	L = 0.2 m	33 15 243 0200 122		
	L = 0.5 m	33 15 243 0500 122		
<b>80 poles</b>	Length: L = 0.1 m	33 15 243 0100 123		
	L = 0.2 m	33 15 243 0200 123		
	L = 0.5 m	33 15 243 0500 123		
<b>100 poles</b>	Length: L = 0.1 m	33 15 243 0100 124		
	L = 0.2 m	33 15 243 0200 124		
	L = 0.5 m	33 15 243 0500 124		

# 15. har-flexicon® Connectors



har-flexicon® is the robust PCB termination technology for single wires. Components for the termination of industrial devices in the pitches of 1.27 mm, 2.54 mm, 3.50/3.81 mm, 5.00/5.08 mm and 10.16/15.00 mm are available.

All components are particularly suited for reflow- and wave-soldering on the PCB and offer field assembly with PushIn, insulation displacement and screw termination for single wires.

### Application profile:

CONNECTION TYPE		ENVIRONMENT		APPLICATION						
Board to Board	Cable/Wire to Board	IP20	IP65 / IP67	Data	Signal	Power	high performance			
				Data transfer rate	Shielding	Number of contacts, contact density	Voltage, working current			
Cable termination			PCB termination			Application standard				
Han-Quick Lock®	IDC	Crimp	THT	SMC	SMT	SCSI				
Screw	Cage clamp / PushIn	Axial screw	Press-in	Housing integration						
				Separate housing	Integrated housing					

## Contents

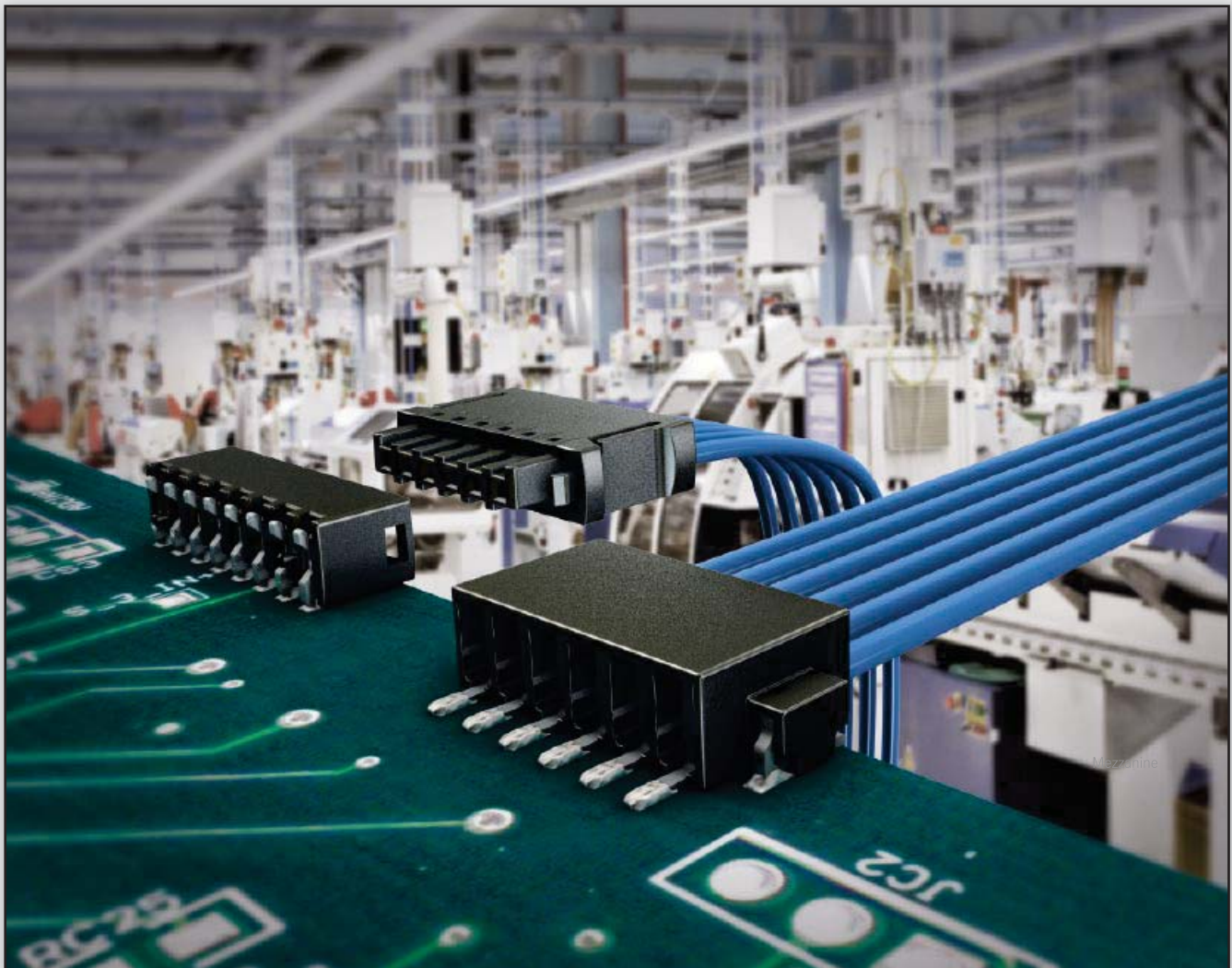
Page

<i>har-flexicon</i> ® connector system – introduction .....	<b>15.02</b>
Pitches 1.27 mm / 2.54 mm	
PCB connectors female with IDC termination .....	<b>15.04</b>
PCB terminal blocks with push-in-spring-cage termination .....	<b>15.06</b>
PCB connectors female with push-in-spring-cage termination .....	<b>15.08</b>
PCB connectors male .....	<b>15.10</b>
Pitches 3.50 mm / 3.81 mm	
PCB terminal blocks with push-in-spring-cage termination .....	<b>15.12</b>
PCB terminal blocks with screw termination .....	<b>15.14</b>
PCB connectors female with push-in-spring-cage termination .....	<b>15.16</b>
PCB connectors female with screw termination .....	<b>15.20</b>
PCB connectors male .....	<b>15.22</b>
Pitches 5.00 mm / 5.08 mm	
PCB terminal blocks with push-in-spring-cage termination .....	<b>15.28</b>
PCB terminal blocks with screw termination .....	<b>15.32</b>
PCB connectors female with push-in-spring-cage termination .....	<b>15.36</b>
PCB connectors female with screw termination .....	<b>15.40</b>
PCB connectors male .....	<b>15.42</b>
Pitches 10.16 mm / 15.00 mm	
PCB terminal blocks with screw termination .....	<b>15.48</b>

### *har-flexicon*® CONNECTORS

Innovative device connectivity technology for all lifelines of industrial devices - it routes power, data and signals through the side of the device to the PCB.

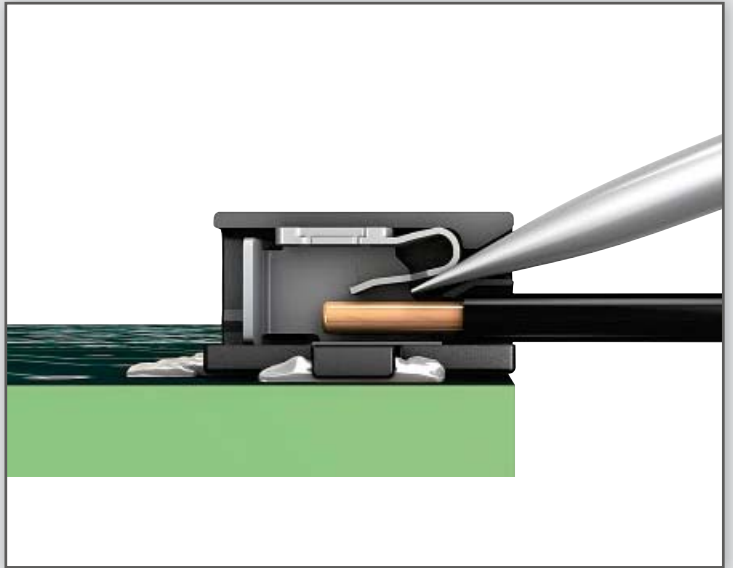
HARTING *har-flexicon*® in the pitches 1.27 mm and 2.54 mm is the miniature SMD connector for the rapid connection of single wires and provides a perfect link between the periphery and PCBs in industrial devices. HARTING is thereby continuing along the path already taken with the *har-flex*® of rethinking and methodically optimizing device connectivity technology.





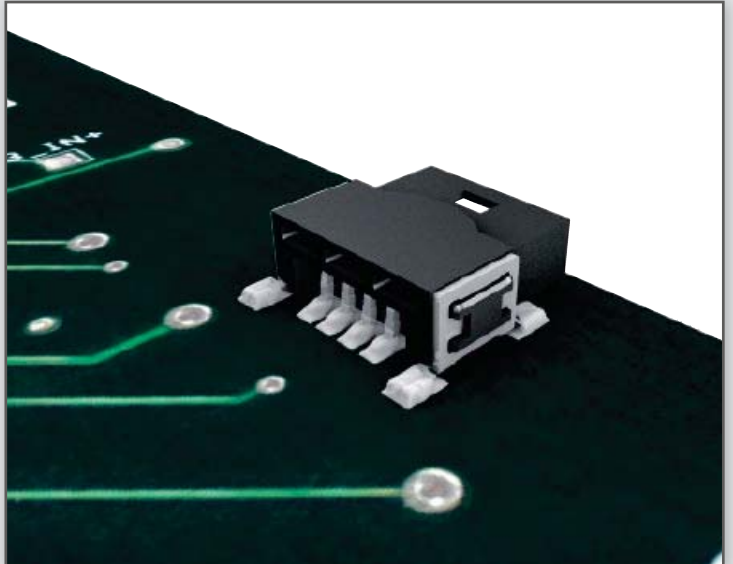
## RAPID CONNECTION OF INDIVIDUAL WIRES

*har-flexicon*<sup>®</sup> is very easy and quick to use for the smallest of designs. This, in conjunction with a precise cable manager, is what the IDC and the push-in spring-cage termination technology guarantees.



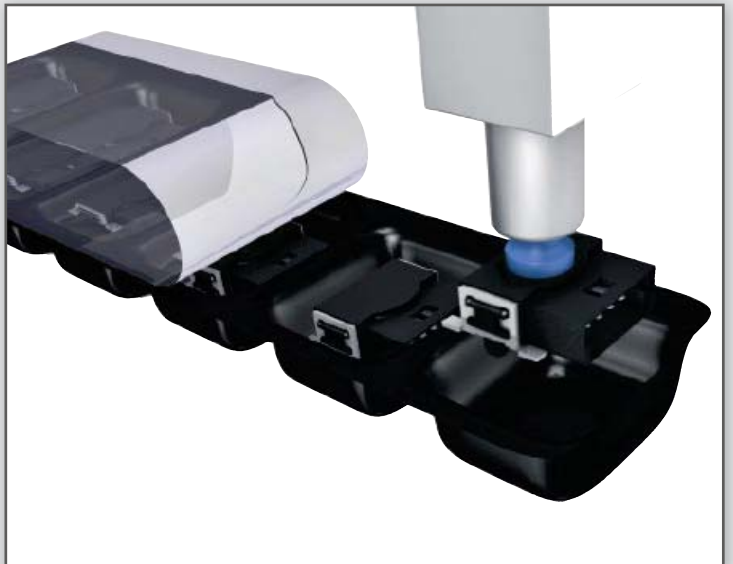
## ROBUST SMD DESIGN

The large-area SMT fixings of *har-flexicon*<sup>®</sup> provide a sturdy connection to the PCB. Insertion and withdrawal forces can be absorbed in order to take the pressure off solder contacts on the connection side.



## FULLY AUTOMATIC PROCESSING

The use of reflow and SMD-solderable components in automated mount and soldering processes simplifies, and hence optimizes, the production of PCBs.

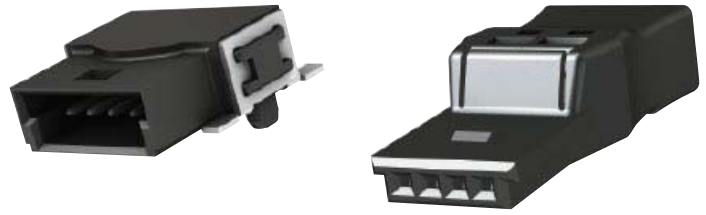






PCB connectors with IDC termination  
for SMT reflow soldering  
pitch 1.27 mm

Identification	No. of contacts	Part number	Packaging unit (pieces)
PCB connectors with IDC termination			
Female	4	14 31 041 0301 000	50
Male	4	14 11 041 0002 ...	560
Screw driver, 1.5 x 40		14 99 000 0002	



PCB connectors with IDC termination  
for SMT reflow soldering  
pitch 1.27 mm

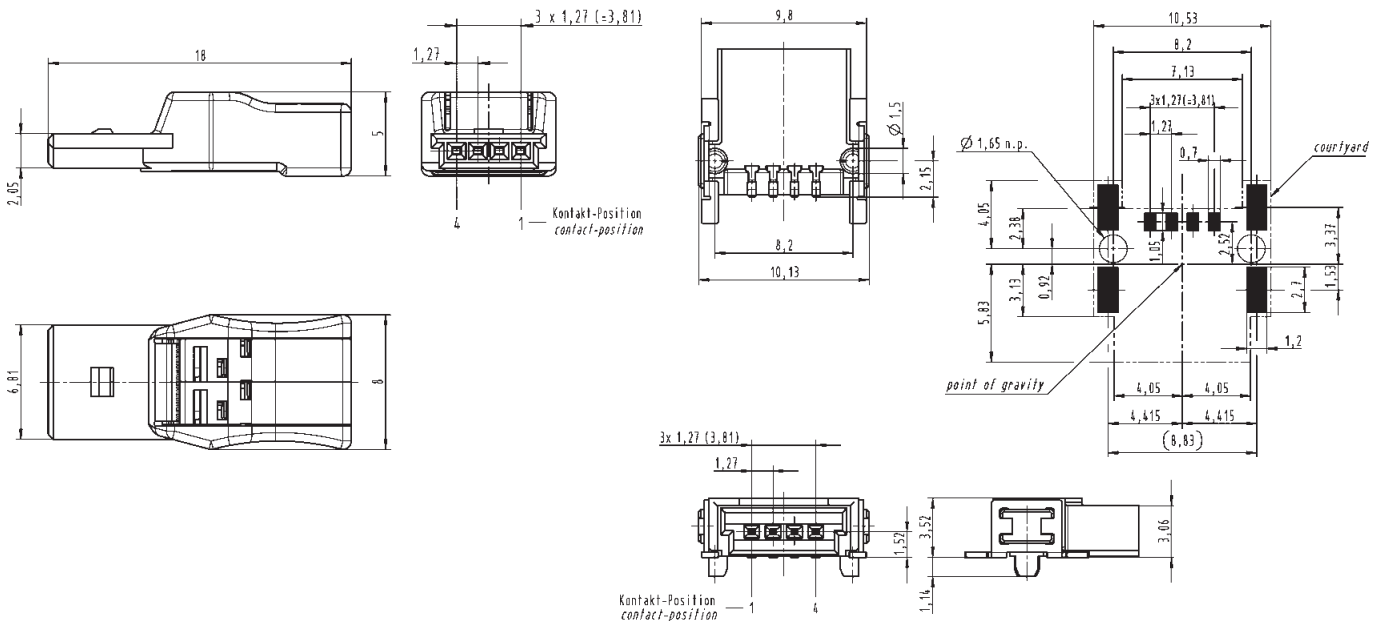
Drawing

Dimensions in mm

Dimensions

female

male



### Technical characteristics

#### Technical data

Rated current 2 A  
Pitch 1.27 mm

Surge voltage category /  
pollution degree

III/3	III/2	II/2
–	–	16 V
–	–	0.5 kV

Rated voltage

Rated surge voltage

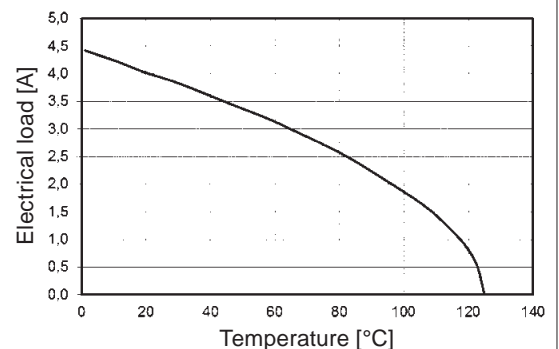
#### Material data

Group of insulation material III a  
Type of insulation material LCP  
Flammability rating per UL 94 V0  
Operating temperature -40 °C ... +125 °C  
Contact material Copper alloy  
Contact plating Nickel plated  
UL approval (E 102079)

#### Conductor data

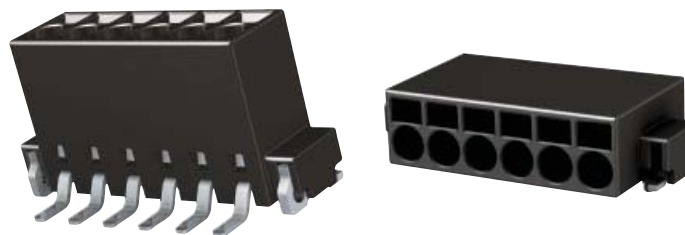
Connection technology wire IDC termination  
Conductor size solid / stranded – / 0.05 - 0.14 mm<sup>2</sup>  
Conductor size AWG 28 - 26  
Stripping length 0 mm  
Conductor diameter max. 1 mm

#### Derating



Tested with AWG 26/19

PCB terminal blocks,  
vertical/horizontal  
with push-in-spring-cage termination  
for SMT reflow soldering  
pitch 2.54 mm

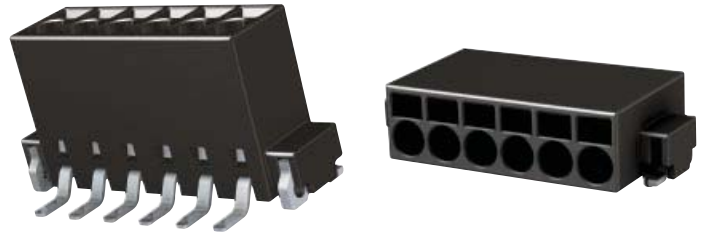


Identification	No. of contacts	Part number	Packaging unit (pieces)
PCB terminal blocks, vertical/horizontal with push-in-spring-cage termination			vertical / horizontal
	2	14 01 021 310 . . .	250 / 500
	3	14 01 031 310 . . .	250 / 500
	4	14 01 041 310 . . .	250 / 500
	5	14 01 051 310 . . .	250 / 500
	6	14 01 061 310 . . .	250 / 500
	7	14 01 071 310 . . .	250 / 500
	8	14 01 081 310 . . .	250 / 500
	9	14 01 091 310 . . .	250 / 500
	10	14 01 101 310 . . .	250 / 500
	11	14 01 111 310 . . .	250 / 500
	12	14 01 121 310 . . .	250 / 500

Please insert digit for

- vertical ► 1
- horizontal ► 2

PCB terminal blocks,  
vertical/horizontal  
with push-in-spring-cage termination  
for SMT reflow soldering  
pitch 2.54 mm



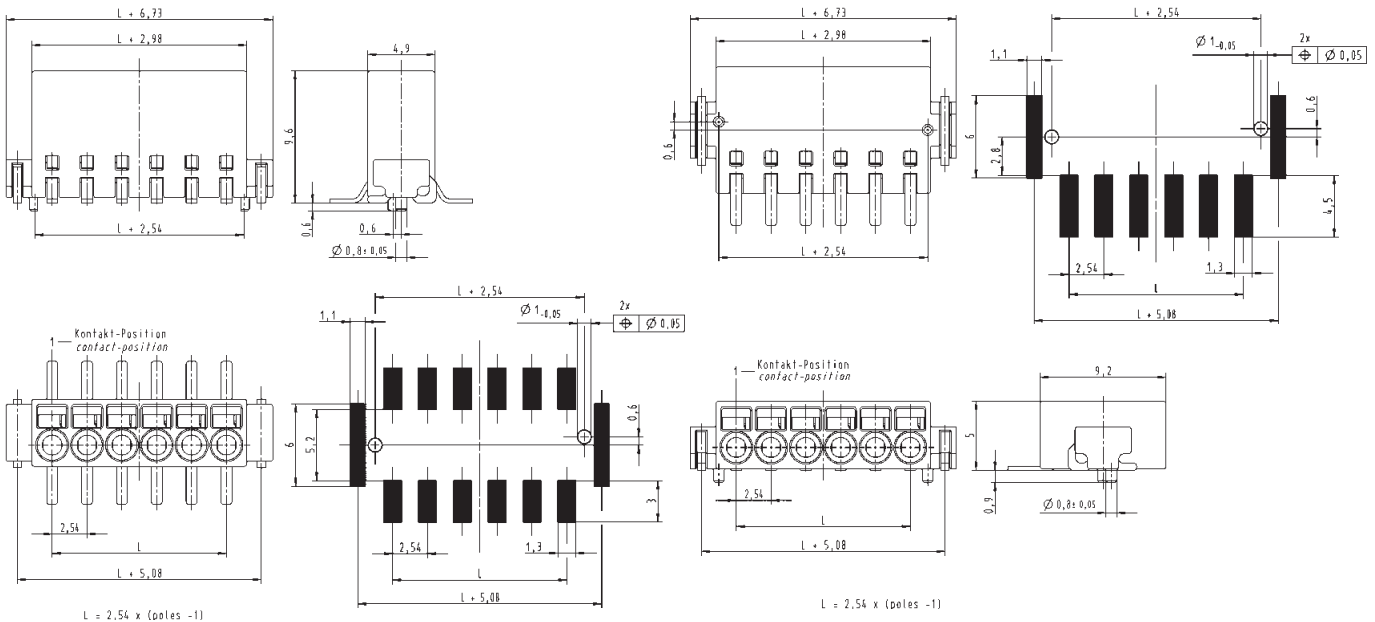
Drawing

Dimensions in mm

Dimensions

vertical

horizontal



Technical characteristics

Technical data

Rated current 6 A  
Pitch 2.54 mm

Surge voltage category /  
pollution degree

III/3	III/2	II/2
32 V	160 V	160 V
2.5 kV	2.5 kV	2.5 kV

Rated voltage

Rated surge voltage

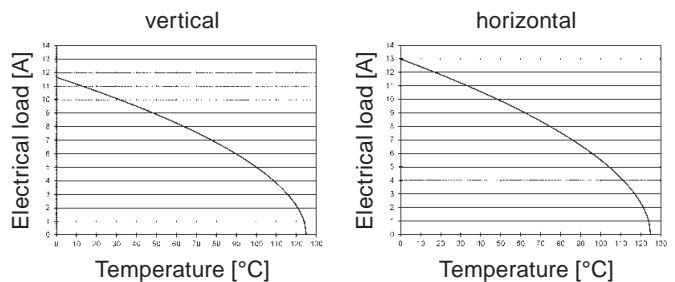
Material data

Group of insulation material III a  
Type of insulation material LCP  
Flammability rating per UL 94 V0  
Operating temperature -40 °C ... +125 °C  
Contact material copper alloy  
Contact plating tin plated  
UL approval (E 102079)

Conductor data

Connection technology wire push-in-spring-cage termination  
Conductor size solid / stranded 0.14 - 0.5 / 0.2 - 0.5 mm<sup>2</sup>  
stranded with ferrules 0.25 - 0.34 mm<sup>2</sup>  
without plastic sleeve  
Conductor size AWG 24 - 20  
Stripping length 6 mm

Derating



Tested with AWG 20

Tested with AWG 20

PCB connectors female,  
vertical  
with push-in-spring-cage termination  
pitch 2.54 mm



Identification	No. of contacts	Part number	Packaging unit (pieces)
PCB connectors female, vertical with push-in-spring-cage termination			
	2	14 31 021 3101 000	100
	3	14 31 031 3101 000	100
	4	14 31 041 3101 000	100
	5	14 31 051 3101 000	75
	6	14 31 061 3101 000	75
	7	14 31 071 3101 000	75
	8	14 31 081 3101 000	50
	9	14 31 091 3101 000	50
	10	14 31 101 3101 000	50
	11	14 31 111 3101 000	25
	12	14 31 121 3101 000	25

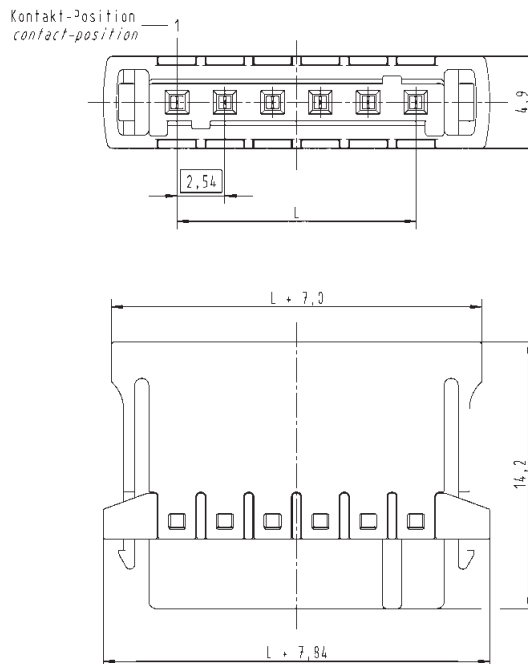
PCB connectors female,  
vertical  
with push-in-spring-cage termination  
pitch 2.54 mm



Drawing

Dimensions in mm

Dimensions



L = pitch x (poles - 1)

### Technical characteristics

#### Technical data

Rated current 6 A  
Pitch 2.54 mm

Surge voltage category /  
pollution degree

	III/3	III/2	II/2
Rated voltage	32 V	160 V	160 V
Rated surge voltage	2.5 kV	2.5 kV	2.5 kV

Rated voltage

Rated surge voltage

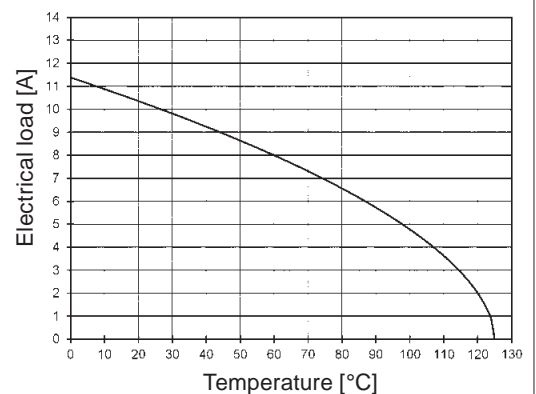
#### Material data

Group of insulation material III a  
Type of insulation material LCP  
Flammability rating per UL 94 V0  
Operating temperature -40 °C ... +125 °C  
Contact material copper alloy  
Contact plating tin plated  
 UL approval (E 102079)

#### Conductor data

Connection technology wire push-in-spring-cage termination  
Conductor size solid / stranded 0.14 - 0.5 / 0.2 - 0.5 mm<sup>2</sup>  
stranded with ferrules 0.25 - 0.34 mm<sup>2</sup>  
without plastic sleeve  
Conductor size AWG 24 - 20  
Stripping length 6 mm

#### Derating



Tested with AWG 20



PCB connectors male,  
vertical/horizontal  
for SMT reflow soldering  
pitch 2.54 mm

Identification	No. of contacts	Part number	Packaging unit (pieces)
PCB connectors male, vertical/horizontal			vertical / horizontal
	2	14 11 021 300 . . .	500 / 600
	3	14 11 031 300 . . .	500 / 600
	4	14 11 041 300 . . .	500 / 600
	5	14 11 051 300 . . .	500 / 600
	6	14 11 061 300 . . .	500 / 600
	7	14 11 071 300 . . .	500 / 600
	8	14 11 081 300 . . .	500 / 600
	9	14 11 091 300 . . .	500 / 600
	10	14 11 101 300 . . .	500 / 600
	11	14 11 111 300 . . .	500 / 600
	12	14 11 121 300 . . .	500 / 600

Please insert digit for

- vertical ► 1
- horizontal ► 2



PCB connectors male, vertical/horizontal for SMT reflow soldering pitch 2.54 mm



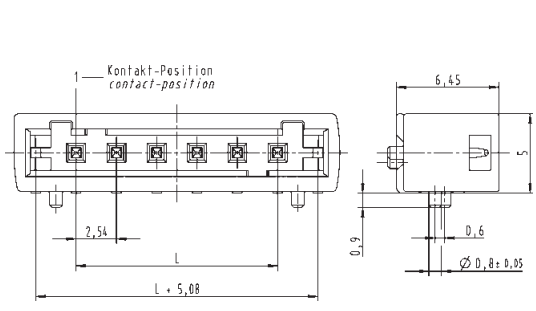
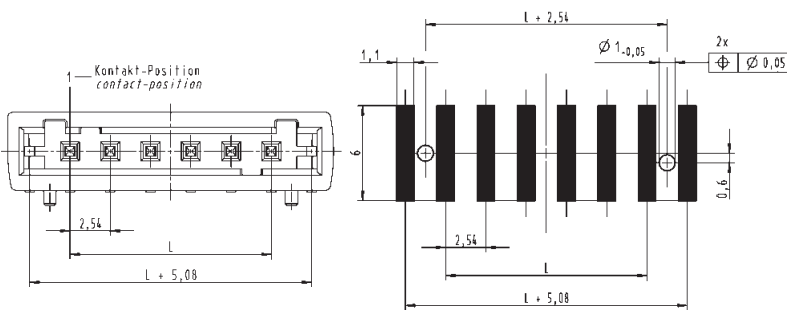
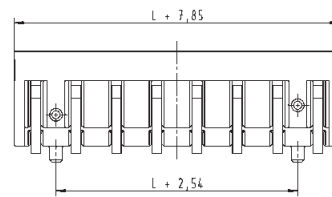
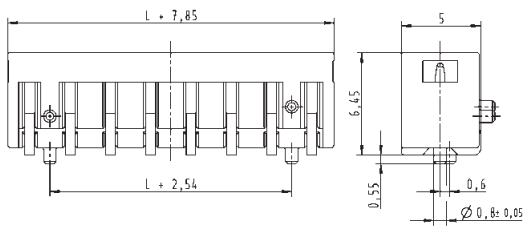
Drawing

Dimensions in mm

Dimensions

vertical

horizontal



L = pitch x (poles - 1)

Technical characteristics

Technical data

Rated current 6 A  
Pitch 2.54 mm

Surge voltage category / pollution degree

III/3	III/2	II/2
32 V	160 V	160 V
2.5 kV	2.5 kV	2.5 kV

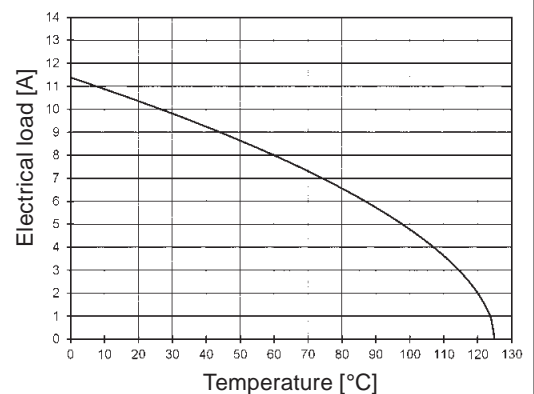
Rated voltage

Rated surge voltage

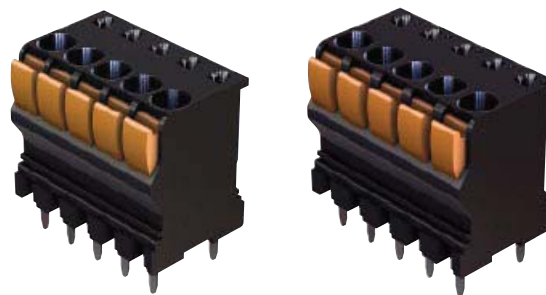
Material data

Group of insulation material III a  
Type of insulation material LCP  
Flammability rating per UL 94 V0  
Operating temperature -40 °C ... +125 °C  
Contact material copper alloy  
Contact plating tin plated  
UL approval (E 102079)

Derating



Tested with AWG 20



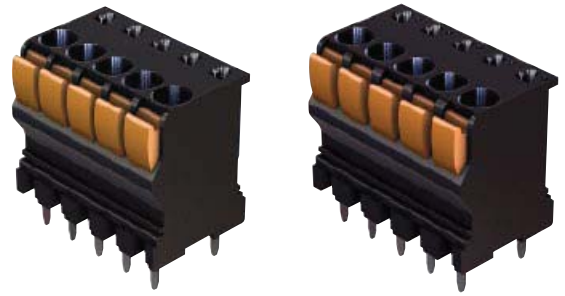
PCB terminal blocks,  
vertical with push-in-spring-cage termination  
for reflow soldering  
pitch 3.50 / 3.81 mm

Identification	No. of contacts	Part number	Packaging unit (pieces)
PCB terminal blocks, vertical with push-in-spring-cage termination			
	2	14 02 021 . 101 ...	100
	3	14 02 031 . 101 ...	100
	4	14 02 041 . 101 ...	75
	5	14 02 051 . 101 ...	75
	6	14 02 061 . 101 ...	50
	7	14 02 071 . 101 ...	50
	8	14 02 081 . 101 ...	50
	9	14 02 091 . 101 ...	50
	10	14 02 101 . 101 ...	50
	11	14 02 111 . 101 ...	50
	12	14 02 121 . 101 ...	50
	13	14 02 131 . 101 ...	50
	14	14 02 141 . 101 ...	50
	15	14 02 151 . 101 ...	50
	16	14 02 161 . 101 ...	50

Please insert digit for

- pitch 3.50 mm ▶ 4
- pitch 3.81 mm ▶ 5

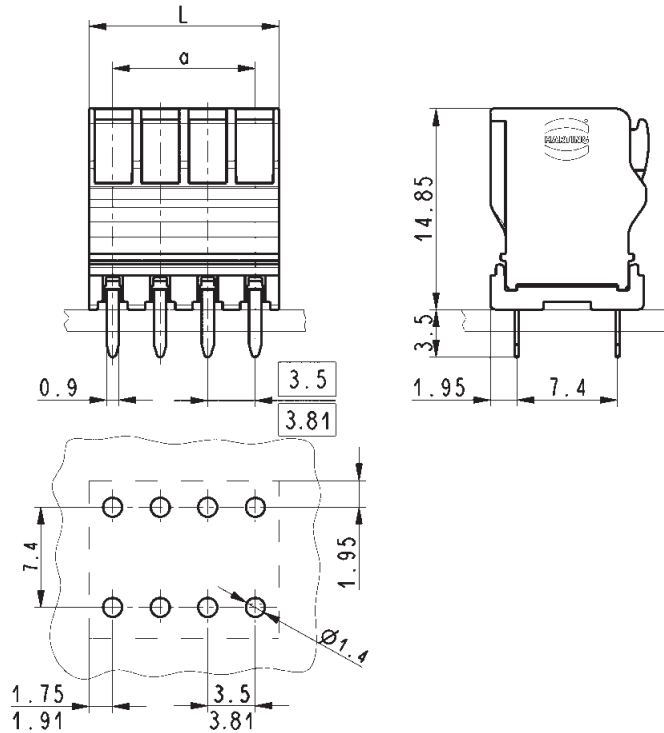
PCB terminal blocks,  
vertical with push-in-spring-cage  
termination for reflow soldering  
pitch 3.50 / 3.81 mm



Drawing

Dimensions in mm

Dimensions



L = pitch x poles  
a = pitch x (poles - 1)

Technical characteristics

Technical data

Rated current 10 A  
Pitch 3.50 mm / 3.81 mm

Surge voltage category /  
pollution degree

III/3	III/2	II/2
220 V	300 V	600 V
4 kV	4 kV	4 kV

Rated voltage

Rated surge voltage

Material data

Group of insulation material I  
Type of insulation material PA / PPA  
Flammability rating per UL 94 V0  
Operating temperature -40 °C ... +110 °C  
Contact material copper alloy  
Contact plating tin plated  
UL approval (E 102079)



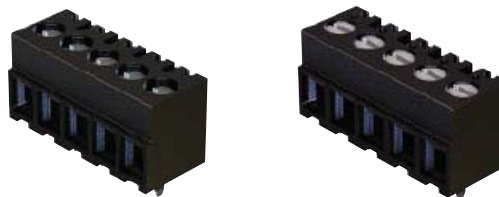
Conductor and solder pin data

Connection technology wire push-in-spring-cage  
termination  
Conductor size solid / stranded 0.14 - 1.5 / 0.14 - 1.5 mm<sup>2</sup>  
stranded with ferrules 0.50 - 1.5 / 0.10 - 1.5 mm<sup>2</sup>  
without / with plastic sleeve  
Conductor size AWG 30 - 16  
Stripping length 9 - 10 mm  
Solder pin: drilled hole diameter 1.4 mm

Approval data (UL)

Use group	B	C	D
Rated voltage	300 V	–	300 V
Rated current	10 A	–	10 A

PCB terminal blocks,  
horizontal with screw termination  
for reflow soldering  
pitch 3.50 / 3.81 mm



Identification	No. of contacts	Part number	Packaging unit (pieces)
PCB terminal blocks, horizontal with screw termination			
	2	14 02 021 . 402 ...	100
	3	14 02 031 . 402 ...	100
	4	14 02 041 . 402 ...	75
	5	14 02 051 . 402 ...	75
	6	14 02 061 . 402 ...	50
	7	14 02 071 . 402 ...	50
	8	14 02 081 . 402 ...	50
	9	14 02 091 . 402 ...	50
	10	14 02 101 . 402 ...	50
	11	14 02 111 . 402 ...	50
	12	14 02 121 . 402 ...	50

Please insert digit for

- pitch 3.50 mm ▶ 4
- pitch 3.81 mm ▶ 5

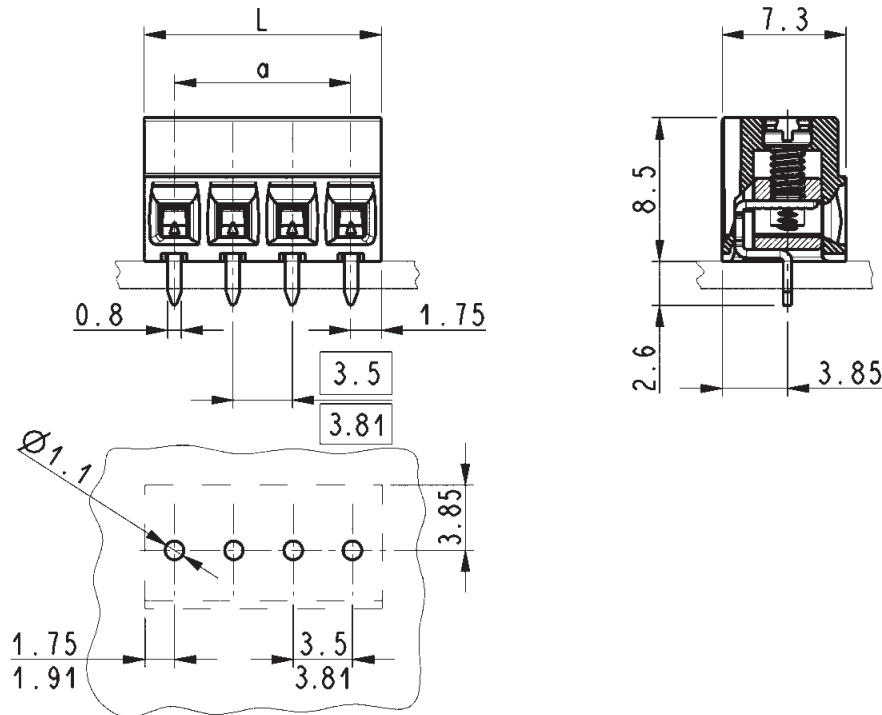
PCB terminal blocks,  
horizontal with screw termination  
for reflow soldering  
pitch 3.50 / 3.81 mm



Drawing

Dimensions in mm

Dimensions



L = pitch x poles  
a = pitch x (poles - 1)

## Technical characteristics

### Technical data

Rated current 12 A  
Pitch 3.50 mm / 3.81 mm

Surge voltage category /  
pollution degree

	III/3	III/2	II/2
Rated voltage	150 V	150 V	300 V
Rated surge voltage	2.5 kV	2.5 kV	2.5 kV

### Conductor and solder pin data

Connection technology wire screw termination  
Conductor size solid / stranded 0.05 - 1.5 / 0.05 - 1 mm<sup>2</sup>  
stranded with ferrules without / with plastic sleeve 0.50 - 1 / 0.10 - 1 mm<sup>2</sup>  
Conductor size AWG 28 - 16  
Screw thread M2  
Tightening torque 0.2 - 0,25 Nm  
Stripping length 5 - 6 mm  
Solder pin: drilled hole diameter 1.1 mm

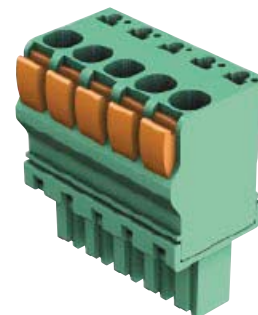
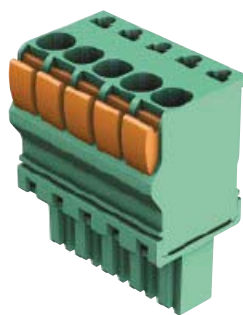
### Material data

Group of insulation material I  
Type of insulation material PA / PPA  
Flammability rating per UL 94 V0  
Operating temperature -40 °C ... +110 °C  
Contact material copper alloy  
Contact plating tin plated  
UL approval (E 102079)



### Approval data (UL)

Use group	B	C	D
Rated voltage	300 V	–	300 V
Rated current	12 A	–	12 A

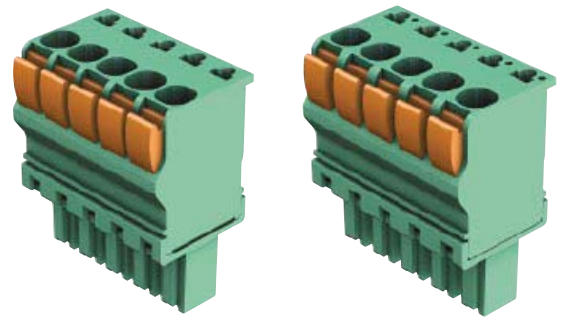


PCB connectors female,  
horizontal  
with push-in-spring-cage termination  
pitch 3.50 / 3.81 mm

Identification	No. of contacts	Part number	Packaging unit (pieces)
PCB connectors female, horizontal with push-in-spring-cage termination	2	14 31 021 . 102 000	300
	3	14 31 031 . 102 000	200
	4	14 31 041 . 102 000	150
	5	14 31 051 . 102 000	150
	6	14 31 061 . 102 000	100
	7	14 31 071 . 102 000	100
	8	14 31 081 . 102 000	100
	9	14 31 091 . 102 000	100
	10	14 31 101 . 102 000	100
	11	14 31 111 . 102 000	100
	12	14 31 121 . 102 000	100
	13	14 31 131 . 102 000	50
	14	14 31 141 . 102 000	50
	15	14 31 151 . 102 000	50
	16	14 31 161 . 102 000	50
	17	14 31 171 . 102 000	50
	18	14 31 181 . 102 000	50
	19	14 31 191 . 102 000	50
	20	14 31 201 . 102 000	50
	21*	14 31 211 . 102 000	25
	22*	14 31 221 . 102 000	25
	23*	14 31 231 . 102 000	25
	24*	14 31 241 . 102 000	25
	25*	14 31 251 . 102 000	25
	Please insert digit for		
	pitch 3.50 mm ▶ 4		
	pitch 3.81 mm ▶ 5		
15	Coding keys	14 95 000 0050 000	120
16			

\* Pitch 3.50 mm only available with 2-20 contacts

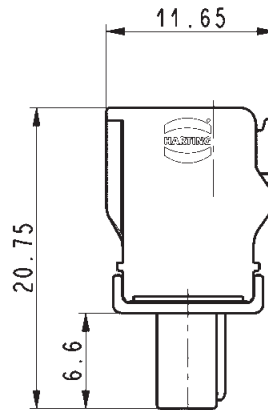
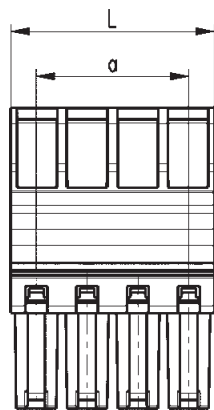
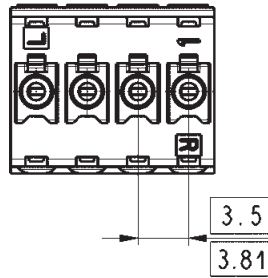
PCB connectors female,  
horizontal  
with push-in-spring-cage termination  
pitch 3.50 / 3.81 mm



Drawing

Dimensions in mm

Dimensions



L = pitch x poles  
a = pitch x (poles - 1)

### Technical characteristics

#### Technical data

Rated current 11 A  
Pitch 3.50 mm / 3.81 mm

Surge voltage category /  
pollution degree

III/3	III/2	II/2
150 V	150 V	300 V
2.5 kV	2.5 kV	2.5 kV

Rated voltage

Rated surge voltage

#### Material data

Group of insulation material I  
Type of insulation material PA / PPA  
Flammability rating per UL 94 V0  
Operating temperature -40 °C ... +110 °C  
Contact material copper alloy  
Contact plating tin plated  
UL approval (E 102079)



#### Conductor data

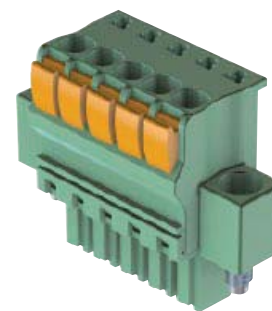
Connection technology wire push-in-spring-cage termination  
Conductor size solid / stranded 0.14 - 1.5 / 0.14 - 1.5 mm<sup>2</sup>  
stranded with ferrules  
without / with plastic sleeve 0.50 - 1.5 / 0.10 - 1.5 mm<sup>2</sup>  
Conductor size AWG 30 - 14  
Stripping length 9 - 10 mm

#### Approval data (UL)

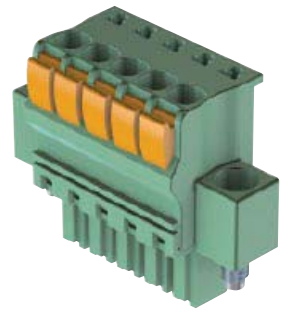
Use group	B	C	D
Rated voltage	300 V	-	-
Rated current	solid	9 A	-
	stranded	11 A	-



PCB connectors female with screw flange,  
horizontal  
with push-in-spring-cage termination  
pitch 3.50 / 3.81 mm



Identification	No. of contacts	Part number	Packaging unit (pieces)
PCB connectors female with screw flange, horizontal with push-in-spring-cage termination	2	14 31 021 . 106 000	300
	3	14 31 031 . 106 000	200
	4	14 31 041 . 106 000	150
	5	14 31 051 . 106 000	150
	6	14 31 061 . 106 000	100
	7	14 31 071 . 106 000	100
	8	14 31 081 . 106 000	100
	9	14 31 091 . 106 000	100
	10	14 31 101 . 106 000	100
	11	14 31 111 . 106 000	100
	12	14 31 121 . 106 000	100
	13	14 31 131 . 106 000	50
	14	14 31 141 . 106 000	50
	15	14 31 151 . 106 000	50
	16	14 31 161 . 106 000	50
	17	14 31 171 . 106 000	50
	18	14 31 181 . 106 000	50
	19	14 31 191 . 106 000	50
	20	14 31 201 . 106 000	50
	21	14 31 211 . 106 000	50
	22	14 31 221 . 106 000	50
	Please insert digit for pitch 3.50 mm ▶ 4 pitch 3.81 mm ▶ 5		
15 Coding keys		14 95 000 0050 000	120

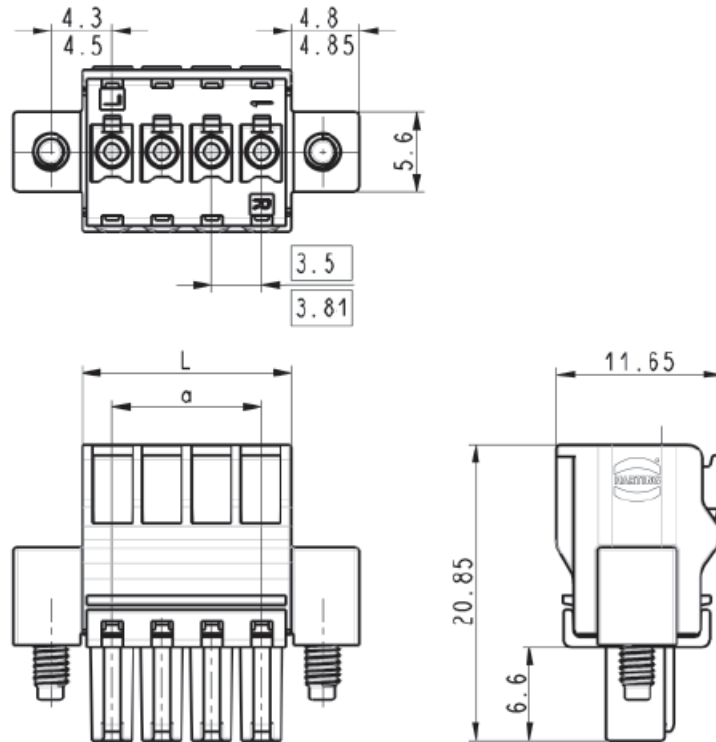


PCB connectors female with screw flange,  
horizontal  
with push-in-spring-cage termination  
pitch 3.50 / 3.81 mm

Drawing

Dimensions in mm

Dimensions



L = (pitch x poles) + 0.7 mm  
a = pitch x (poles - 1)

## Technical characteristics

### Technical data

Rated current 11 A  
Pitch 3.50 mm / 3.81 mm

Surge voltage category /  
pollution degree

III/3	III/2	II/2
150 V	150 V	300 V
2.5 kV	2.5 kV	2.5 kV

Rated voltage

Rated surge voltage

### Material data

Group of insulation material I  
Type of insulation material PA / PPA  
Flammability rating per UL 94 V0  
Operating temperature -40 °C ... +110 °C  
Contact material copper alloy  
Contact plating tin plated  
 UL approval (E 102079)  
Screw flange M2.5

### Conductor data

Connection technology wire push-in-spring-cage  
termination

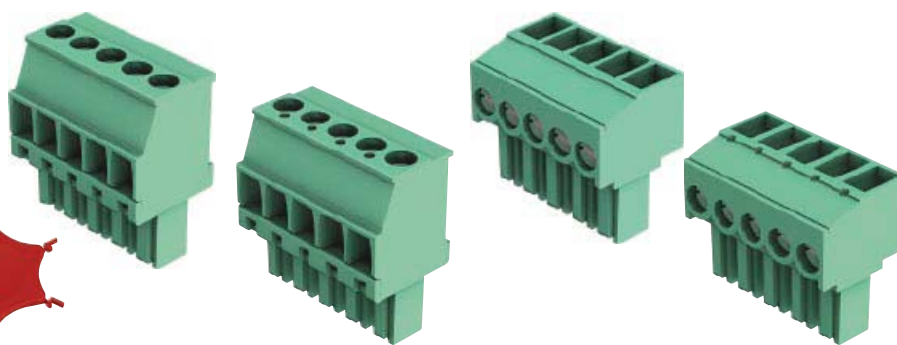
Conductor size solid / stranded 0.14 - 1.5 / 0.14 - 1.5 mm<sup>2</sup>  
stranded with ferrules  
without / with plastic sleeve 0.50 - 1.5 / 0.10 - 1.5 mm<sup>2</sup>

Conductor size AWG 30 - 14  
Stripping length 9 - 10 mm

### Approval data (UL)

Use group	B	C	D
Rated voltage	300 V	-	-
Rated current	solid	9 A	-
	stranded	11 A	-

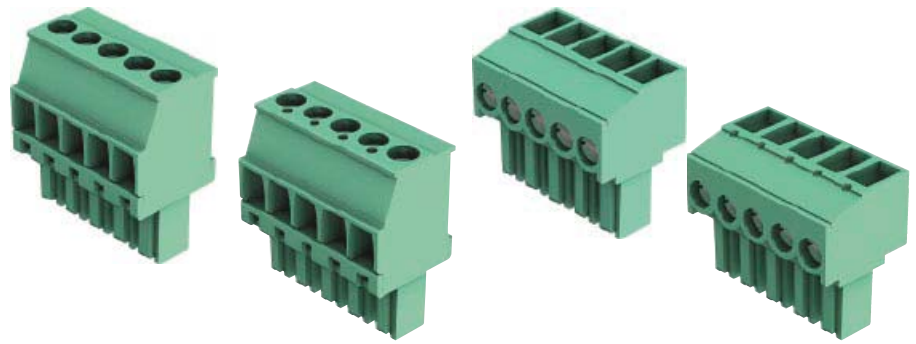
PCB connectors female,  
vertical/horizontal  
with screw termination  
pitch 3.50 / 3.81 mm



Identification	No. of contacts	Part number	Packaging unit (pieces)
PCB connectors female, vertical/horizontal with screw termination	2	14 31 021 . 40 . 000	300
	3	14 31 031 . 40 . 000	200
	4	14 31 041 . 40 . 000	150
	5	14 31 051 . 40 . 000	150
	6	14 31 061 . 40 . 000	100
	7	14 31 071 . 40 . 000	100
	8	14 31 081 . 40 . 000	100
	9	14 31 091 . 40 . 000	100
	10	14 31 101 . 40 . 000	100
	11	14 31 111 . 40 . 000	100
	12	14 31 121 . 40 . 000	100
	13	14 31 131 . 40 . 000	50
	14	14 31 141 . 40 . 000	50
	15	14 31 151 . 40 . 000	50
	16	14 31 161 . 40 . 000	50
	17*	14 31 171 . 40 . 000	50
	18*	14 31 181 . 40 . 000	50
	19*	14 31 191 . 40 . 000	50
	20*	14 31 201 . 40 . 000	50
	21*	14 31 211 . 40 . 000	25
	22*	14 31 221 . 40 . 000	25
	23*	14 31 231 . 40 . 000	25
	24*	14 31 241 . 40 . 000	25
	25*	14 31 251 . 40 . 000	25
	Please insert digit for		
pitch 3.50 mm ▶	4		
pitch 3.81 mm ▶	5		
vertical ▶	1		
horizontal ▶	2		
15	Coding keys	14 95 000 0050 000	120
20			

\* Pitch 3.81 mm (vertical) only available with 2-16 contacts

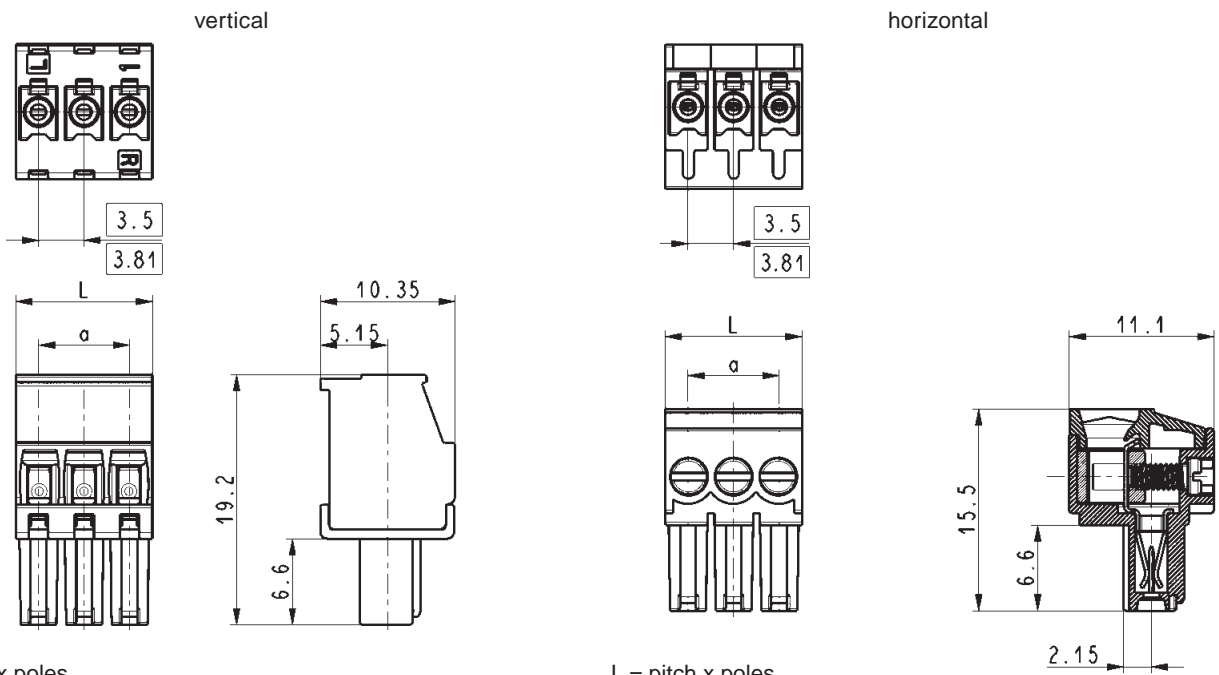
PCB connectors female, vertical/horizontal with screw termination pitch 3.50 / 3.81 mm



Drawing

Dimensions in mm

Dimensions



L = pitch x poles  
a = pitch x (poles - 1)

L = pitch x poles  
a = pitch x (poles - 1)

Technical characteristics

Technical data

Rated current 10 A  
Pitch 3.50 mm / 3.81 mm

Surge voltage category / pollution degree	III/3	III/2	II/2
Rated voltage	150 V	150 V	300 V
Rated surge voltage	2.5 kV	2.5 kV	2.5 kV

Conductor data

Connection technology wire screw termination  
Conductor size solid / stranded 0.05 - 1.5 / 0.05 - 1 mm<sup>2</sup>  
stranded with ferrules without / with plastic sleeve 0.50 - 1 / 0.10 - 1 mm<sup>2</sup>  
Conductor size AWG 30 - 14  
Screw thread M2  
Tightening torque 0.2 - 0.25 Nm  
Stripping length 5.0 - 6.0 mm

Material data

Group of insulation material I  
Type of insulation material PA / PPA  
Flammability rating per UL 94 V0  
Operating temperature -40 °C ... +110 °C  
Contact material copper alloy  
Contact plating tin plated  
UL approval (E 102079)

Approval data (UL)

Use group		B	C	D
Rated voltage		300 V	–	300 V
Rated current	vertical	10 A	–	10 A
	horizontal	11 A	–	11 A

PCB connectors male,  
vertical  
for wave soldering  
pitch 3.50 mm



Identification	No. of contacts	Part number	Packaging unit (pieces)
Connectors, male, vertical			
	2	14 13 021 4001 000	100
	3	14 13 031 4001 000	100
	4	14 13 041 4001 000	75
	5	14 13 051 4001 000	75
	6	14 13 061 4001 000	50
	7	14 13 071 4001 000	50
	8	14 13 081 4001 000	50
	9	14 13 091 4001 000	50
	10	14 13 101 4001 000	50
	11	14 13 111 4001 000	50
	12	14 13 121 4001 000	50
	Coding keys		14 95 000 0052 000

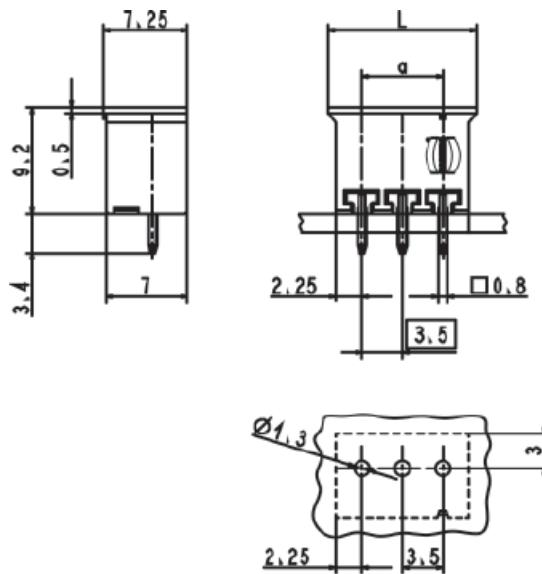


PCB connectors male,  
vertical  
for wave soldering  
pitch 3.50 mm

Drawing

Dimensions in mm

Dimensions



$$L = (\text{pitch} \times \text{poles}) + 2.3 \text{ mm}$$

$$a = \text{pitch} \times (\text{poles} - 1)$$

## Technical characteristics

### Technical data

Rated current 11 A  
Pitch 3.50 mm

Surge voltage category /  
pollution degree

	III/3	III/2	II/2
Rated voltage	150 V	150 V	300 V
Rated surge voltage	2.5 kV	2.5 kV	2.5 kV

### Material data

Group of insulation material I  
Type of insulation material PA  
Flammability rating per UL 94 V0  
Operating temperature -40 °C ... +110 °C  
Contact material copper alloy  
Contact plating tin plated  
UL approval (E 102079)



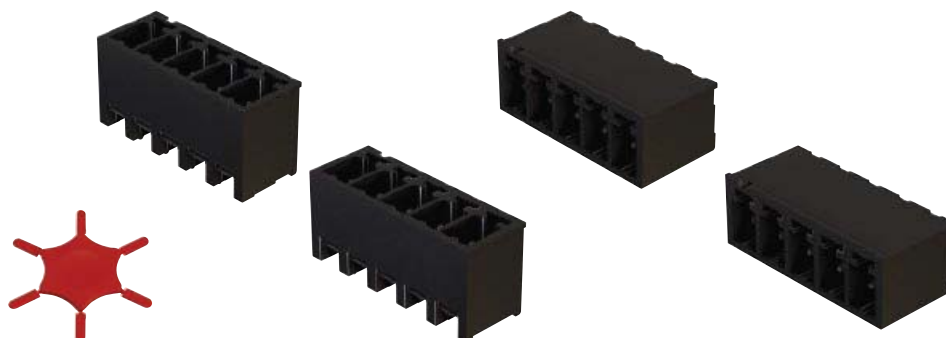
### Solder pin data

Solder pin: drilled hole diameter 1.3 mm

### Approval data (UL)

Use group	B	C	D
Rated voltage	300 V	–	300 V
Rated current	11 A	–	11 A

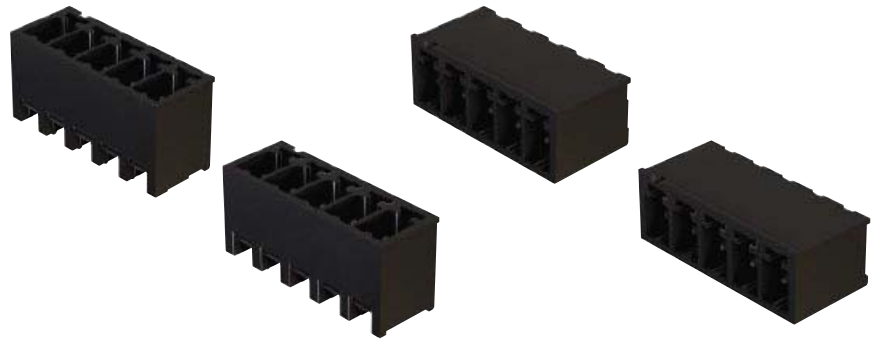
PCB connectors male,  
vertical/horizontal  
for reflow soldering  
pitch 3.50 / 3.81 mm



Identification	No. of contacts	Part number	Packaging unit (pieces)
Connectors, male, vertical/horizontal			
	2	14 12 021 . 00 . ...	100
	3	14 12 031 . 00 . ...	100
	4	14 12 041 . 00 . ...	75
	5	14 12 051 . 00 . ...	75
	6	14 12 061 . 00 . ...	50
	7	14 12 071 . 00 . ...	50
	8	14 12 081 . 00 . ...	50
	9	14 12 091 . 00 . ...	50
	10	14 12 101 . 00 . ...	50
	11	14 12 111 . 00 . ...	50
	12	14 12 121 . 00 . ...	50
	13	14 12 131 . 00 . ...	50
	14	14 12 141 . 00 . ...	50
	15	14 12 151 . 00 . ...	50
	16	14 12 161 . 00 . ...	50
	17	14 12 171 . 00 . ...	50
	18	14 12 181 . 00 . ...	50
	19	14 12 191 . 00 . ...	50
	20	14 12 201 . 00 . ...	50
	21	14 12 211 . 00 . ...	25
	22	14 12 221 . 00 . ...	25
	23	14 12 231 . 00 . ...	25
	24	14 12 241 . 00 . ...	25
	25	14 12 251 . 00 . ...	25
Please insert digit for			
pitch 3.50 mm ▶	4		
pitch 3.81 mm ▶	5		
vertical ▶	1		
horizontal ▶	2		
Coding keys		14 95 000 0052 000	120

har-flexicon



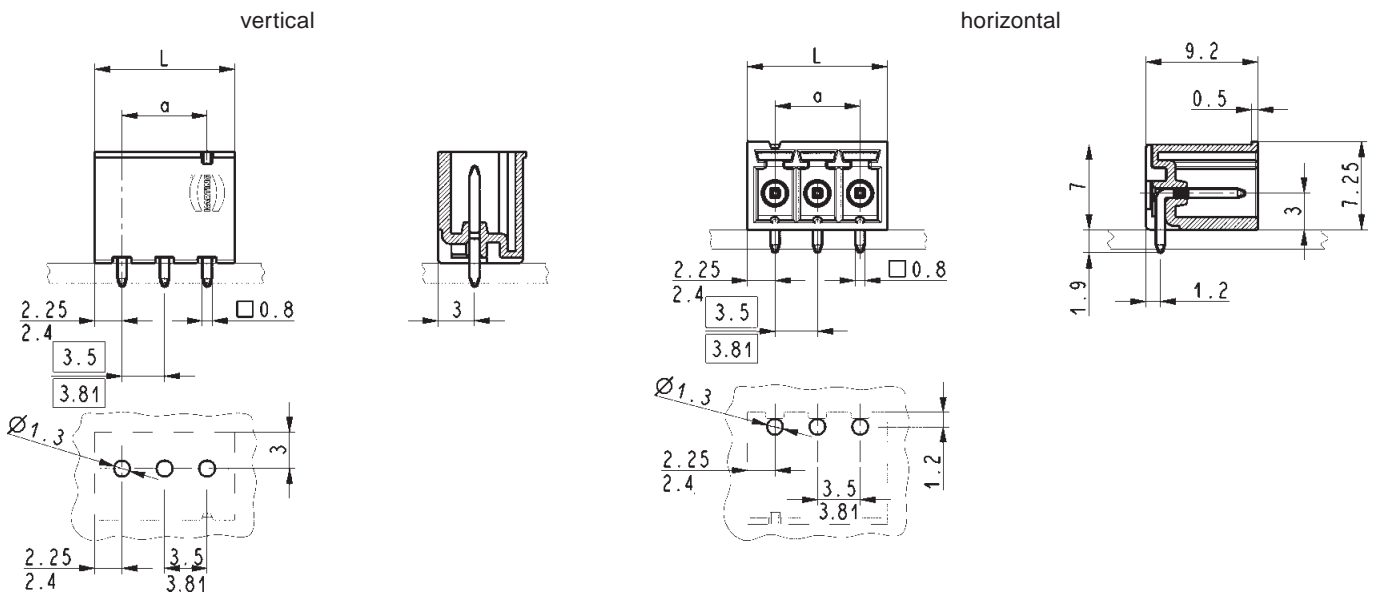


PCB connectors male, vertical/horizontal for reflow soldering pitch 3.50 / 3.81 mm

Drawing

Dimensions in mm

Dimensions



L = (pitch x poles) + 1 mm  
a = pitch x (poles - 1)

L = (pitch x poles) + 1 mm  
a = pitch x (poles - 1)

Technical characteristics

Technical data

Rated current 11 A  
Pitch 3.50 mm / 3.81 mm

Surge voltage category / pollution degree

III/3	III/2	II/2
150 V	150 V	300 V
2.5 kV	2.5 kV	2.5 kV

Rated voltage

Rated surge voltage

Material data

Group of insulation material I  
Type of insulation material PA / PPA  
Flammability rating per UL 94 V0  
Operating temperature -40 °C ... +110 °C  
Contact material copper alloy  
Contact plating tin plated  
UL approval (E 102079)



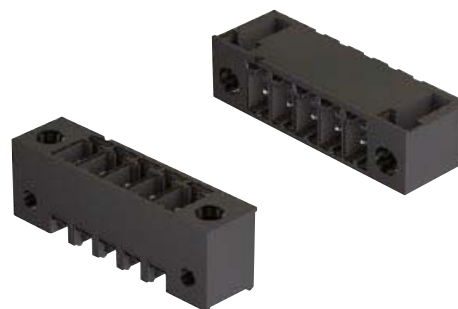
Solder pin data

Solder pin: drilled hole diameter 1.3 mm

Approval data (UL)

Use group	B	C	D
Rated voltage	300 V	–	300 V
Rated current	11 A	–	11 A

PCB connectors male  
with thread flange,  
vertical/horizontal  
for reflow soldering  
pitch 3.50 / 3.81 mm



Identification	No. of contacts	Part number	Packaging unit (pieces)
PCB connectors male with thread flange, vertical/horizontal	2	14 12 021 . 00 . ...	100
	3	14 12 031 . 00 . ...	100
	4	14 12 041 . 00 . ...	75
	5	14 12 051 . 00 . ...	75
	6	14 12 061 . 00 . ...	50
	7	14 12 071 . 00 . ...	50
	8	14 12 081 . 00 . ...	50
	9	14 12 091 . 00 . ...	50
	10	14 12 101 . 00 . ...	50
	11	14 12 111 . 00 . ...	50
	12	14 12 121 . 00 . ...	50
	13	14 12 131 . 00 . ...	50
	14	14 12 141 . 00 . ...	50
	15	14 12 151 . 00 . ...	50
	16	14 12 161 . 00 . ...	50
	17	14 12 171 . 00 . ...	50
	18	14 12 181 . 00 . ...	50
	19	14 12 191 . 00 . ...	50
	20	14 12 201 . 00 . ...	50
	21	14 12 211 . 00 . ...	25
	22	14 12 221 . 00 . ...	25
	Please insert digit for pitch 3.50 mm ▶ 4 pitch 3.81 mm ▶ 5  vertical ▶ 5 horizontal ▶ 6		
15 Coding keys 26		14 95 000 0052 000	120

for samples (1 piece)  
for a packaging unit

333  
000

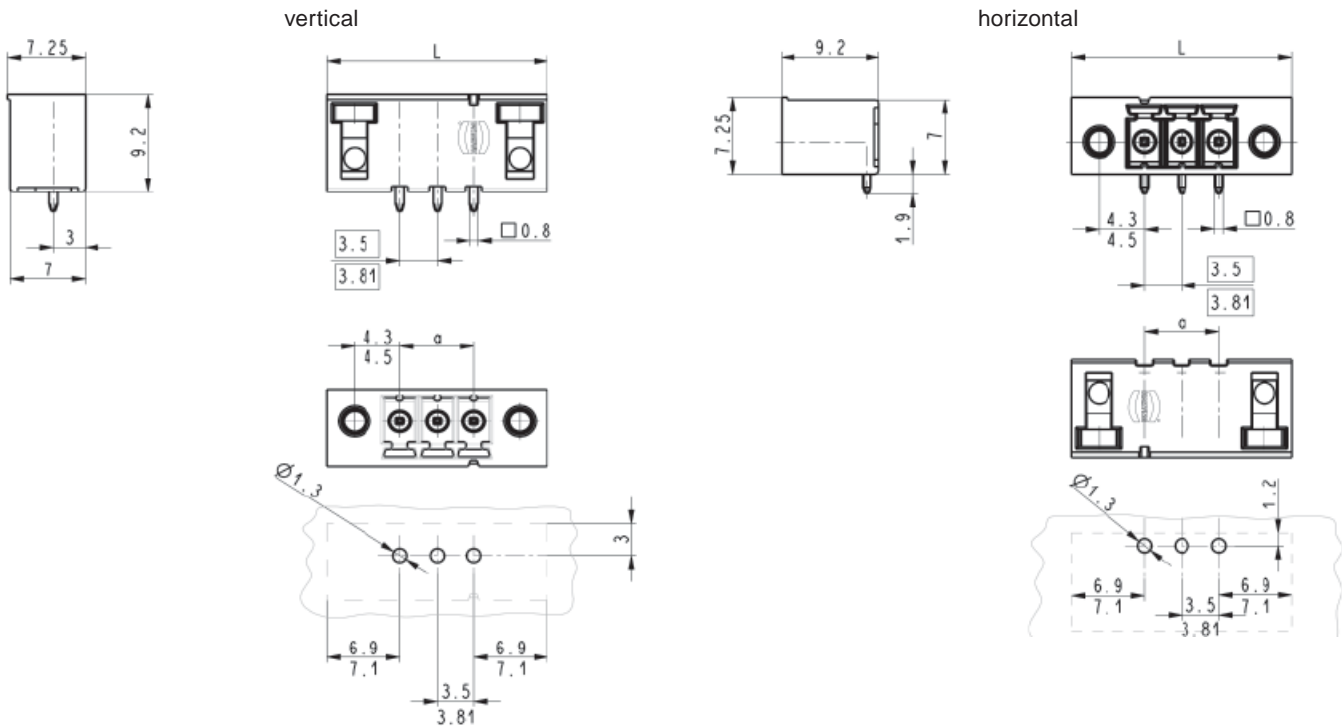
PCB connectors male  
with thread flange,  
vertical/horizontal  
for reflow soldering  
pitch 3.50 / 3.81 mm



Drawing

Dimensions in mm

Dimensions



Pitch 3.50 mm: L = (3.50 mm x poles) + 10.3 mm  
Pitch 3.81 mm: L = (3.81 mm x poles) + 10.39 mm  
a = pitch x (poles - 1)

Pitch 3.50 mm: L = (3.50 mm x poles) + 10.3 mm  
Pitch 3.81 mm: L = (3.81 mm x poles) + 10.39 mm  
a = pitch x (poles - 1)

Technical characteristics

Technical data

Rated current 11 A  
Pitch 3.50 mm / 3.81 mm

Surge voltage category / pollution degree	III/3	III/2	II/2
Rated voltage	150 V	150 V	300 V
Rated surge voltage	2.5 kV	2.5 kV	2.5 kV

Solder pin data

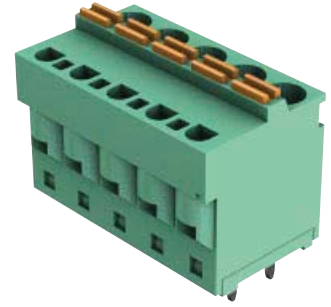
Solder pin: drilled hole diameter 1.3 mm

Material data

Group of insulation material I  
Type of insulation material PA / PPA  
Flammability rating per UL 94 V0  
Operating temperature -40 °C ... +110 °C  
Contact material copper alloy  
Contact plating tin plated  
 UL approval (E 102079)  
Thread flange M2.5

Approval data (UL)

Use group	B	C	D
Rated voltage	300 V	-	300 V
Rated current	11 A	-	11 A



PCB terminal blocks,  
vertical with push-in-spring-cage termination  
for wave soldering  
pitch 5.00 mm

Identification	No. of contacts	Part number	Packaging unit (pieces)
PCB terminal blocks, vertical with push-in-spring-cage termination	2	14 03 021 6101 000	300
	3	14 03 031 6101 000	200
	4	14 03 041 6101 000	150
	5	14 03 051 6101 000	150
	6	14 03 061 6101 000	100
	7	14 03 071 6101 000	100
	8	14 03 081 6101 000	100
	9	14 03 091 6101 000	100
	10	14 03 101 6101 000	100
	11	14 03 111 6101 000	100
	12	14 03 121 6101 000	100
	13	14 03 131 6101 000	50
	14	14 03 141 6101 000	50
	15	14 03 151 6101 000	50
	16	14 03 161 6101 000	50
	17	14 03 171 6101 000	50
	18	14 03 181 6101 000	50

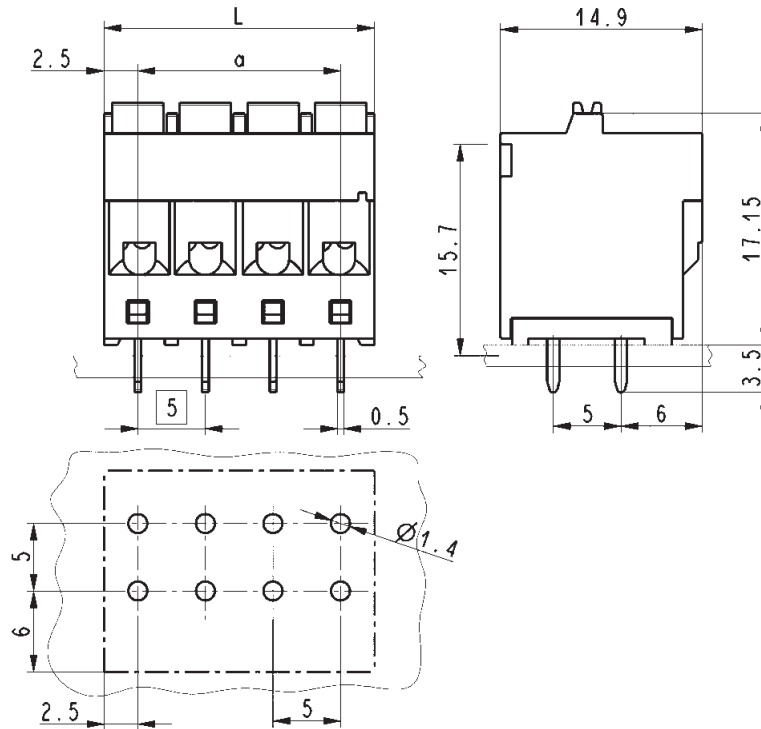


PCB terminal blocks,  
vertical with push-in-spring-cage termination  
for wave soldering  
pitch 5.00 mm

Drawing

Dimensions in mm

Dimensions



L = pitch x poles  
a = pitch x (poles - 1)

### Technical characteristics

#### Technical data

Rated current 12 A  
Pitch 5.00 mm

Surge voltage category /  
pollution degree

	III/3	III/2	II/2
Rated voltage	300 V	300 V	600 V
Rated surge voltage	4 kV	4 kV	4 kV

#### Material data

Group of insulation material I  
Type of insulation material PA  
Flammability rating per UL 94 V0  
Operating temperature -40 °C ... +110 °C  
Contact material copper alloy  
Contact plating tin plated  
UL approval (E 102079)



#### Conductor and solder pin data

Connection technology wire push-in-spring-cage termination  
Conductor size solid / stranded 0.2 - 2.5 / 0.2 - 2.5 mm<sup>2</sup>  
stranded with ferrules 0.5 - 2.5 / 0.5 - 2.5 mm<sup>2</sup>  
without / with plastic sleeve  
Conductor size AWG 30 - 12  
Stripping length 10 mm  
Solder pin: drilled hole diameter 1.4 mm

#### Approval data (UL)

Use group	B	C	D
Rated voltage	300 V	–	300 V
Rated current	12 A	–	12 A



PCB terminal blocks,  
vertical with push-in-spring-cage termination  
for reflow soldering  
pitch 5.00 mm

Identification	No. of contacts	Part number	Packaging unit (pieces)
PCB terminal blocks, stackable, vertical with push-in-spring-cage termination	2	14 02 021 6101 ...	100
	3	14 02 031 6101 ...	100
	4	14 02 041 6101 ...	75

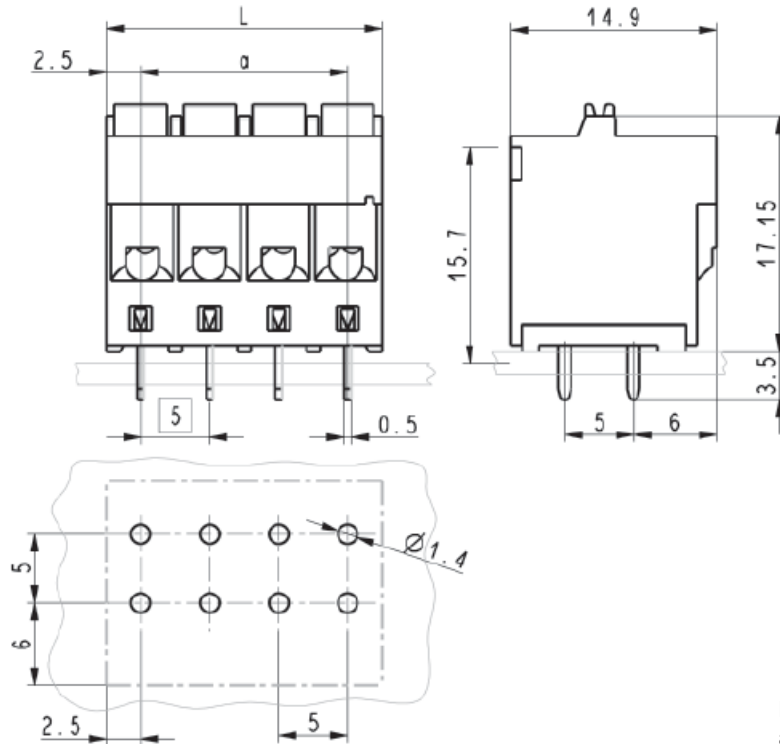


PCB terminal blocks,  
vertical with push-in-spring-cage  
termination for reflow soldering  
pitch 5.00 mm

Drawing

Dimensions in mm

Dimensions



L = pitch x poles  
a = pitch x (poles - 1)

Technical characteristics

Technical data

Rated current 12 A  
Pitch 5.00 mm

Surge voltage category /  
pollution degree

III/3	III/2	II/2
300 V	300 V	600 V
4 kV	4 kV	4 kV

Rated voltage

Rated surge voltage

Material data

Group of insulation material I  
Type of insulation material PA / PPA  
Flammability rating per UL 94 V0  
Operating temperature -40 °C ... +110 °C  
Contact material copper alloy  
Contact plating tin plated  
UL approval (E 102079)



Conductor and solder pin data

Connection technology wire push-in-spring-cage  
termination  
Conductor size solid / stranded 0.2 - 2.5 / 0.2 - 2.5 mm<sup>2</sup>  
stranded with ferrules  
without / with plastic sleeve 0.5 - 2.5 / 0.5 - 2.5 mm<sup>2</sup>  
Conductor size AWG 30 - 12  
Stripping length 10 mm  
Solder pin: drilled hole diameter 1.4 mm

Approval data (UL)

Use group	B	C	D
Rated voltage	300 V	-	300 V
Rated current	12 A	-	12 A



PCB terminal blocks,  
horizontal with screw termination  
for reflow soldering  
pitch 5.00 mm

Identification	No. of contacts	Part number	Packaging unit (pieces)
PCB terminal blocks, horizontal with screw termination  for wire gauge 2.5 mm <sup>2</sup>	2	14 02 021 6404 ...	100
	3	14 02 031 6404 ...	100
	4	14 02 041 6404 ...	75
	5	14 02 051 6404 ...	75
	6	14 02 061 6404 ...	50
	7	14 02 071 6404 ...	50
	8	14 02 081 6404 ...	50



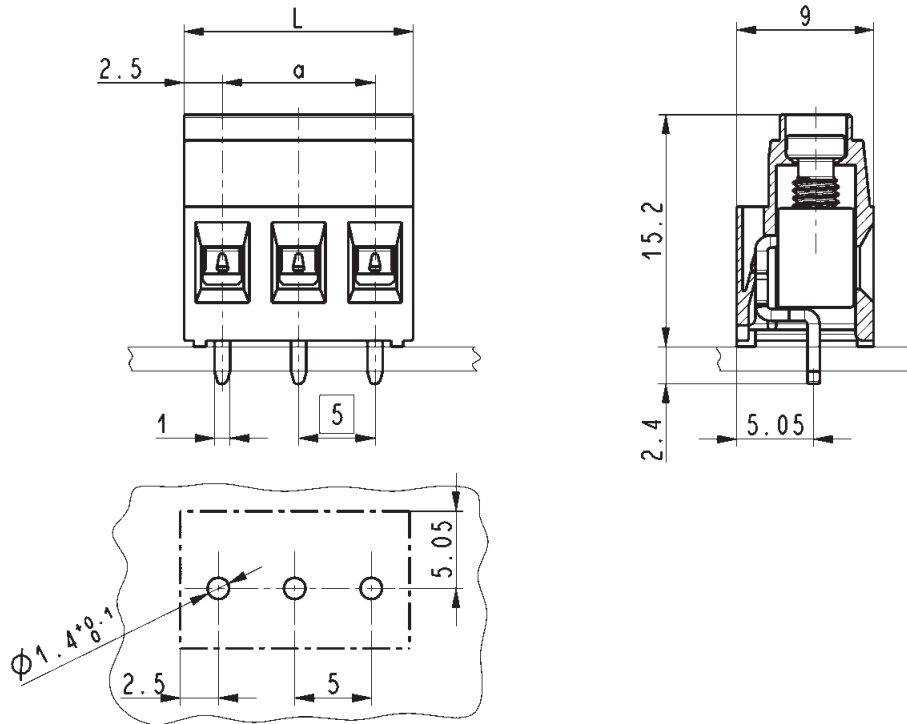


PCB terminal blocks,  
horizontal with screw termination  
for reflow soldering  
pitch 5.00 mm

Drawing

Dimensions in mm

Dimensions



L = pitch x poles  
a = pitch x (poles - 1)

### Technical characteristics

#### Technical data

Rated current 17.5 A  
Pitch 5.00 mm

Surge voltage category /  
pollution degree

III/3	III/2	II/2
300 V	300 V	600 V
4 kV	4 kV	4 kV

Rated voltage

Rated surge voltage

#### Material data

Group of insulation material I  
Type of insulation material PA / PPA  
Flammability rating per UL 94 V0  
Operating temperature -40 °C ... +110 °C  
Contact material copper alloy  
Contact plating tin plated  
UL approval (E 102079)



#### Conductor and solder pin data

Connection technology wire screw termination  
Conductor size solid / stranded 0.05 - 2.5 / 0.05 - 2.5 mm<sup>2</sup>  
stranded with ferrules without / with plastic sleeve 0.50 - 2.5 / 0.10 - 2.5 mm<sup>2</sup>  
Conductor size AWG 30 - 12  
Screw thread M3  
Tightening torque 0.5 - 0.6 Nm  
Stripping length 5.5 - 6.5 mm  
Solder pin: drilled hole diameter 1.4 mm

#### Approval data (UL)

Use group	B	C	D
Rated voltage	300 V	–	300 V
Rated current	17.5 A	–	17.5 A



PCB terminal blocks,  
horizontal with screw termination  
for reflow soldering  
pitch 5.00 mm

Identification	No. of contacts	Part number	Packaging unit (pieces)
PCB terminal blocks, horizontal with screw termination			
for wire gauge 1.5 mm <sup>2</sup>	2	14 02 021 6402 ...	100
	3	14 02 031 6402 ...	100
	4	14 02 041 6402 ...	75
	5	14 02 051 6402 ...	75
	6	14 02 061 6402 ...	50
	7	14 02 071 6402 ...	50
	8	14 02 081 6402 ...	50
	9	14 02 091 6402 ...	50
	10	14 02 101 6402 ...	50
	11	14 02 111 6402 ...	50
	12	14 02 121 6402 ...	50

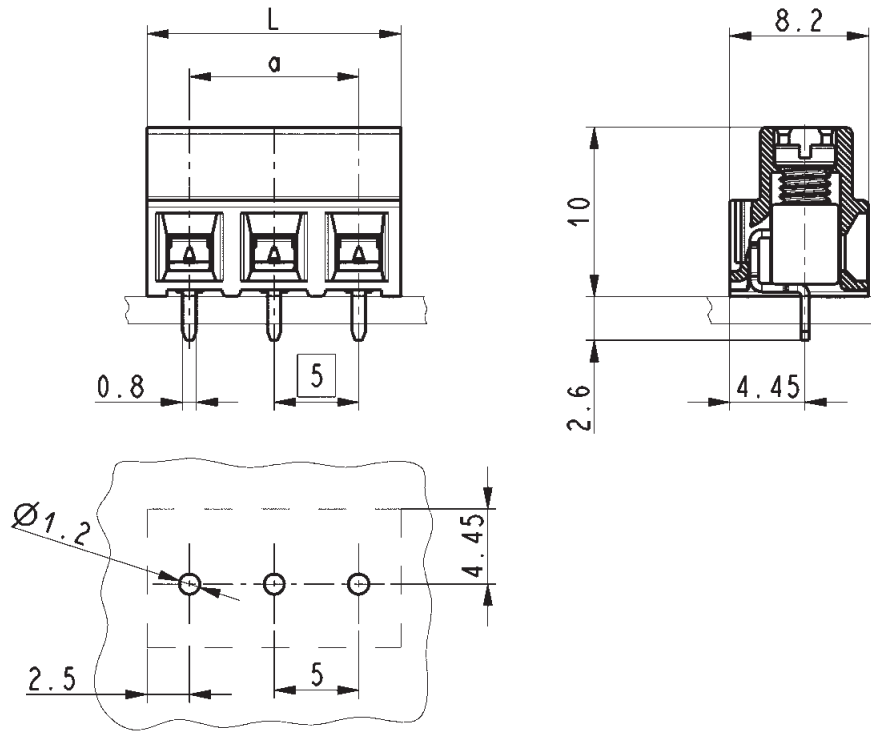


PCB terminal blocks,  
horizontal with screw termination  
for reflow soldering  
pitch 5.00 mm

Drawing

Dimensions in mm

Dimensions



L = pitch x poles  
a = pitch x (poles - 1)

Technical characteristics

Technical data

Rated current 13.5 A  
Pitch 5.00 mm

Surge voltage category /  
pollution degree

III/3	III/2	II/2
220 V	300 V	600 V
4 kV	4 kV	4 kV

Rated voltage

Rated surge voltage

Material data

Group of insulation material I  
Type of insulation material PA / PPA  
Flammability rating per UL 94 V0  
Operating temperature -40 °C ... +110 °C  
Contact material copper alloy  
Contact plating tin plated  
UL approval (E 102079)



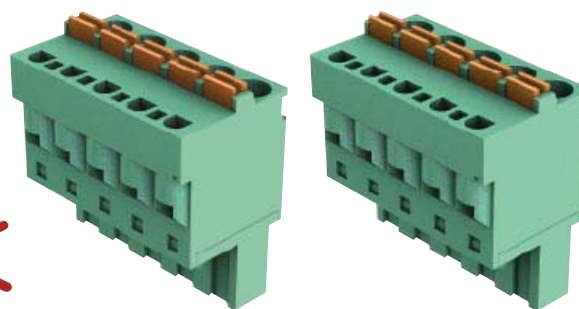
Conductor and solder pin data

Connection technology wire screw termination  
Conductor size solid / stranded 0.05 - 1.5 / 0.05 - 1.0 mm<sup>2</sup>  
stranded with ferrules without / with plastic sleeve 0.50 - 1.5 / 0.10 - 1.5 mm<sup>2</sup>  
Conductor size AWG 30 - 16  
Screw thread M3  
Tightening torque 0.5 - 0.6 Nm  
Stripping length 5.0 - 6.0 mm  
Solder pin: drilled hole diameter 1.2 mm

Approval data (UL)

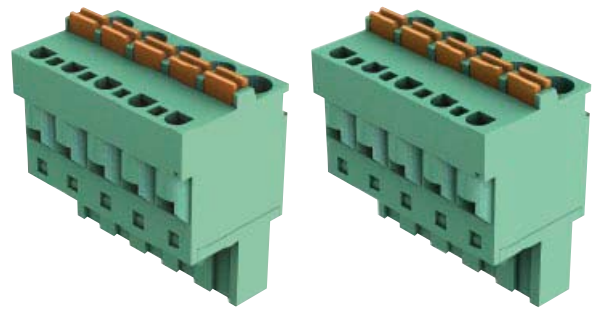
Use group	B	C	D
Rated voltage	300 V	-	300 V
Rated current	13.5 A	-	13.5 A

PCB connectors female,  
horizontal  
with push-in-spring-cage termination  
pitch 5.00 / 5.08 mm



Identification	No. of contacts	Part number	Packaging unit (pieces)
PCB connectors female, horizontal with push-in-spring-cage termination	2	14 31 021 . 102 000	300
	3	14 31 031 . 102 000	200
	4	14 31 041 . 102 000	150
	5	14 31 051 . 102 000	150
	6	14 31 061 . 102 000	100
	7	14 31 071 . 102 000	100
	8	14 31 081 . 102 000	100
	9	14 31 091 . 102 000	100
	10	14 31 101 . 102 000	100
	11	14 31 111 . 102 000	100
	12	14 31 121 . 102 000	100
	13	14 31 131 . 102 000	50
	14	14 31 141 . 102 000	50
	15	14 31 151 . 102 000	50
	16	14 31 161 . 102 000	50
	17	14 31 171 . 102 000	50
	18	14 31 181 . 102 000	50
	Please insert digit for pitch 5.00 mm ▶ 6 pitch 5.08 mm ▶ 7		
Coding keys		14 95 000 0052 000	120

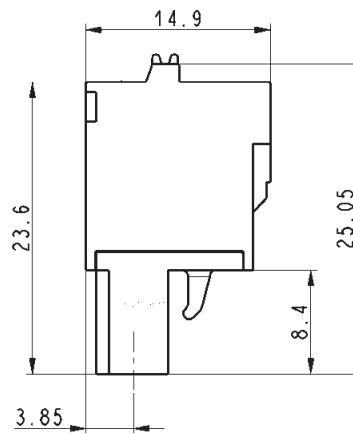
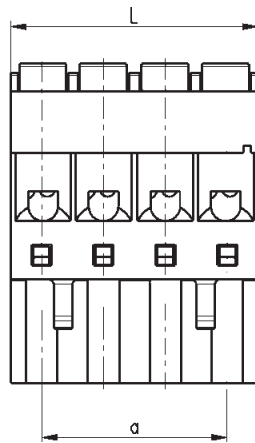
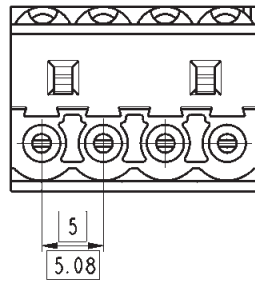
PCB connectors female,  
horizontal  
with push-in-spring-cage termination  
pitch 5.00 / 5.08 mm



Drawing

Dimensions in mm

Dimensions



L = pitch x poles  
a = pitch x (poles - 1)

## Technical characteristics

### Technical data

Rated current 12 A  
Pitch 5.00 mm / 5.08 mm

Surge voltage category /  
pollution degree

III/3	III/2	II/2
250 V	300 V	600 V
4 kV	4 kV	4 kV

Rated voltage

Rated surge voltage

### Material data

Group of insulation material I  
Type of insulation material PA / PPA  
Flammability rating per UL 94 V0  
Operating temperature -40 °C ... +110 °C  
Contact material copper alloy  
Contact plating tin plated  
UL approval (E 102079)



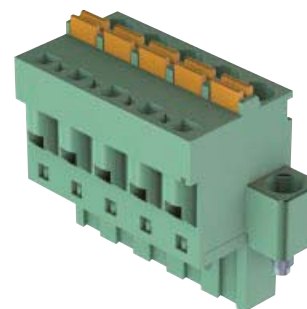
### Conductor data

Connection technology wire push-in-spring-cage termination  
Conductor size solid / stranded 0.2 - 2.5 / 0.2 - 2.5 mm<sup>2</sup>  
stranded with ferrules without / with plastic sleeve 0.5 - 2.5 / 0.5 - 2.5 mm<sup>2</sup>  
Conductor size AWG 30 - 12  
Stripping length 10 mm

### Approval data (UL)

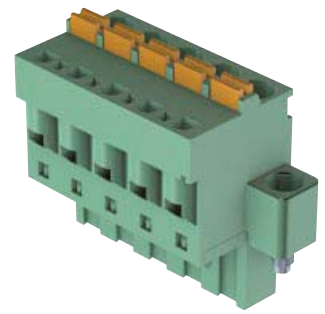
Use group	B	C	D
Rated voltage	300 V	–	300 V
Rated current	12 A	–	12 A

PCB connectors female  
with screw flange,  
horizontal  
with push-in-spring-cage termination  
pitch 5.08 mm



Identification	No. of contacts	Part number	Packaging unit (pieces)
PCB connectors female with screw flange, horizontal with push-in-spring-cage termination	2	14 31 021 7106 000	300
	3	14 31 031 7106 000	200
	4	14 31 041 7106 000	150
	5	14 31 051 7106 000	150
	6	14 31 061 7106 000	100
	7	14 31 071 7106 000	100
	8	14 31 081 7106 000	100
	9	14 31 091 7106 000	100
	10	14 31 101 7106 000	100
	11	14 31 111 7106 000	100
	12	14 31 121 7106 000	100
	13	14 31 131 7106 000	50
	14	14 31 141 7106 000	50
	15	14 31 151 7106 000	50
	16	14 31 161 7106 000	50
	17	14 31 171 7106 000	50
	18	14 31 181 7106 000	50
	Coding keys		14 95 000 0052 000

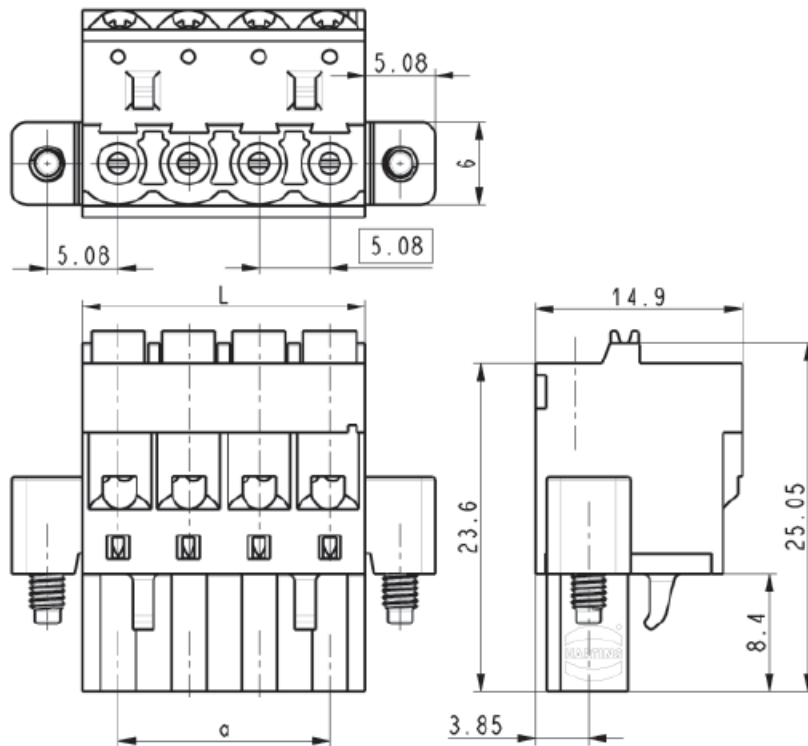
PCB connectors female  
with screw flange,  
horizontal  
with push-in-spring-cage termination  
pitch 5.08 mm



Drawing

Dimensions in mm

Dimensions



L = pitch x poles  
a = pitch x (poles - 1)

### Technical characteristics

#### Technical data

Rated current 12 A  
Pitch 5.08 mm

Surge voltage category /  
pollution degree

	III/3	III/2	II/2
Rated voltage	250 V	300 V	600 V
Rated surge voltage	4 kV	4 kV	4 kV

#### Material data

Group of insulation material I  
Type of insulation material PA / PPA  
Flammability rating per UL 94 V0  
Operating temperature -40 °C ... +110 °C  
Contact material copper alloy  
Contact plating tin plated  
 UL approval (E 102079)  
Screw flange M2.5

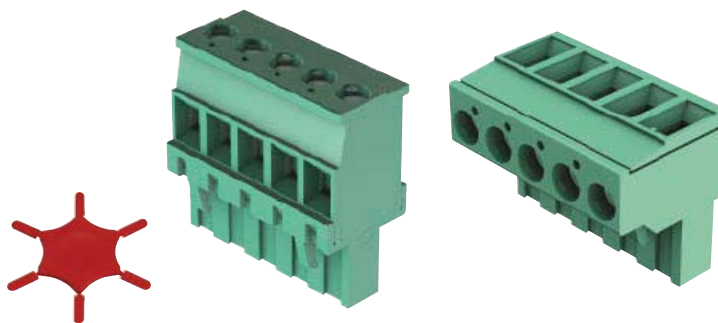
#### Conductor data

Connection technology wire push-in-spring-cage termination  
Conductor size solid / stranded 0.2 - 2.5 / 0.2 - 2.5 mm<sup>2</sup>  
stranded with ferrules 0.5 - 2.5 / 0.5 - 2.5 mm<sup>2</sup>  
without / with plastic sleeve  
Conductor size AWG 30 - 12  
Stripping length 10 mm

#### Approval data (UL)

Use group	B	C	D
Rated voltage	300 V	–	300 V
Rated current	12 A	–	12 A

PCB connectors female,  
vertical / horizontal  
with screw termination  
pitch 5.00 / 5.08 mm

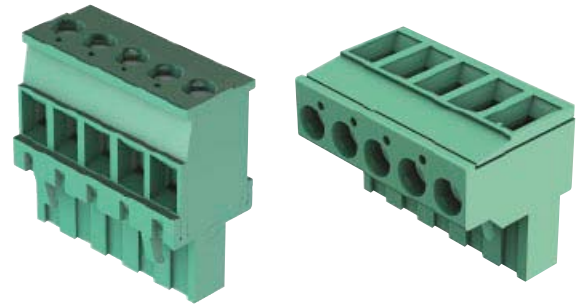


Identification	No. of contacts	Part number	Packaging unit (pieces)
PCB connectors female, vertical / horizontal with screw termination	2	14 31 021 . 40 . 000	300
	3	14 31 031 . 40 . 000	200
	4	14 31 041 . 40 . 000	150
	5	14 31 051 . 40 . 000	150
	6	14 31 061 . 40 . 000	100
	7	14 31 071 . 40 . 000	100
	8	14 31 081 . 40 . 000	100
	9	14 31 091 . 40 . 000	100
	10	14 31 101 . 40 . 000	100
	11	14 31 111 . 40 . 000	100
	12	14 31 121 . 40 . 000	100
	13	14 31 131 . 40 . 000	50
	14	14 31 141 . 40 . 000	50
	15	14 31 151 . 40 . 000	50
	16	14 31 161 . 40 . 000	50
	17	14 31 171 . 40 . 000	50
	18	14 31 181 . 40 . 000	50
	19	14 31 191 . 40 . 000	50
	20	14 31 201 . 40 . 000	50
	21	14 31 211 . 40 . 000	25
	22	14 31 221 . 40 . 000	25
	23	14 31 231 . 40 . 000	25
	24	14 31 241 . 40 . 000	25
	25	14 31 251 . 40 . 000	25
	Please insert digit for		
pitch 5.00 mm ▶	6		
pitch 5.08 mm ▶	7		
vertical* ▶	1		
horizontal ▶	2		
15 40	Coding keys	14 95 000 0052 000	120

\* Only available in 5.08 mm pitch



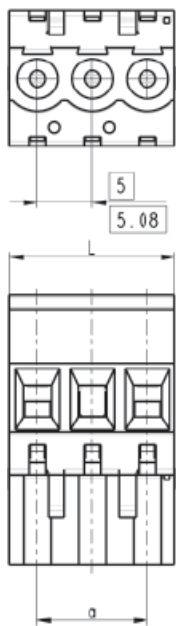
PCB connectors female,  
vertical / horizontal  
with screw termination  
pitch 5.00 / 5.08 mm



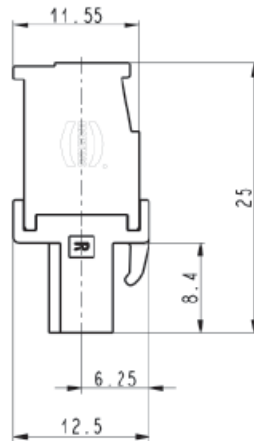
Drawing

Dimensions in mm

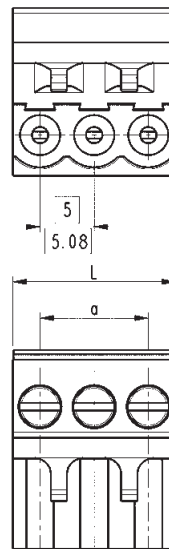
Dimensions



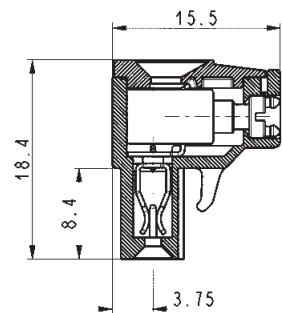
vertical



L = pitch x poles  
a = pitch x (poles - 1)



horizontal



L = pitch x poles  
a = pitch x (poles - 1)

Technical characteristics

Technical data

Rated current 15 A  
Pitch 5.00 mm / 5.08 mm

Surge voltage category /  
pollution degree

III/3	III/2	II/2
250 V	300 V	600 V
4 kV	4 kV	4 kV

Rated voltage

Rated surge voltage

Material data

Group of insulation material I  
Type of insulation material PA / PPA  
Flammability rating per UL 94 V0  
Operating temperature -40 °C ... +110 °C  
Contact material copper alloy  
Contact plating tin plated  
UL approval (E 102079)



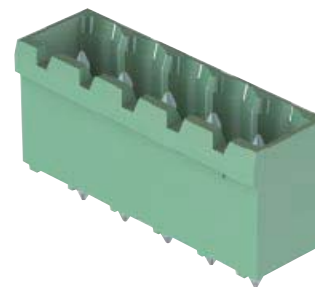
Conductor data

Connection technology wire screw termination  
Conductor size solid / stranded 0.05 - 2.5 / 0.05 - 2.5 mm<sup>2</sup>  
stranded with ferrules 0.50 - 2.5 / 0.10 - 2.5 mm<sup>2</sup>  
without / with plastic sleeve  
Conductor size AWG 30 - 12  
Screw thread M3  
Tightening torque 0.5 - 0.6 Nm  
Stripping length 6.0 - 7.5 mm

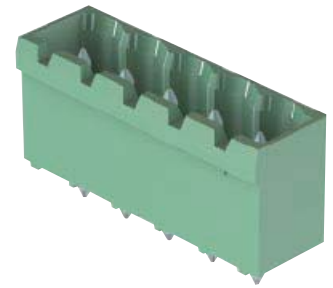
Approval data (UL)

Use group	B	C	D
Rated voltage	300 V	–	300 V
Rated current	15 A	–	15 A

PCB connectors male,  
vertical  
for wave soldering  
pitch 5.00 / 5.08 mm



Identification	No. of contacts	Part number	Packaging unit (pieces)
PCB connectors male, vertical			
	2	14 13 021 . 001 000	100
	3	14 13 031 . 001 000	100
	4	14 13 041 . 001 000	75
	5	14 13 051 . 001 000	75
	6	14 13 061 . 001 000	50
	7	14 13 071 . 001 000	50
	8	14 13 081 . 001 000	50
	9	14 13 091 . 001 000	50
	10	14 13 101 . 001 000	50
	11	14 13 111 . 001 000	50
	12	14 13 121 . 001 000	50
Please insert digit for pitch 5.00 mm ▶ 6 pitch 5.08 mm ▶ 7			
Coding keys		14 95 000 0051 000	120

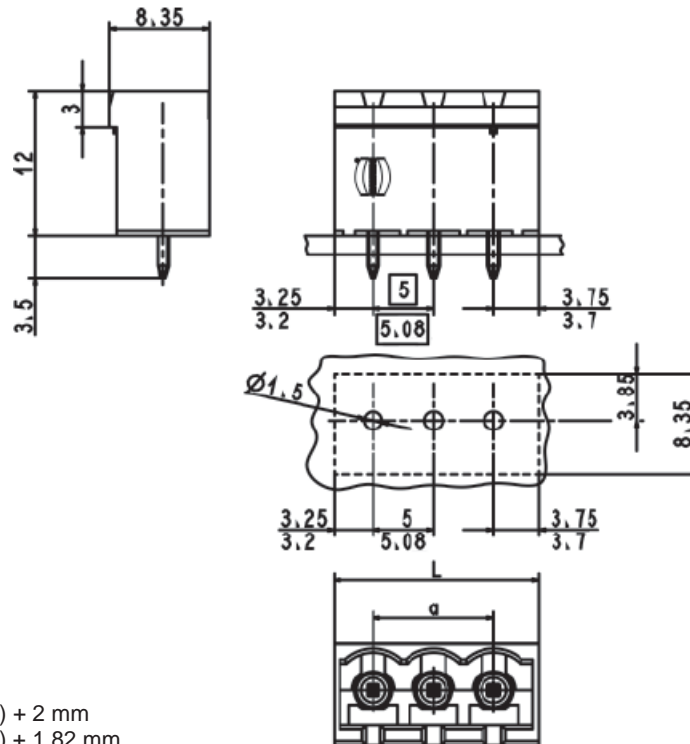


PCB connectors male,  
vertical  
for wave soldering  
pitch 5.00 / 5.08 mm

Drawing

Dimensions in mm

Dimensions



Pitch 5.00 mm:  $L = (\text{pitch} \times \text{poles}) + 2 \text{ mm}$   
Pitch 5.08 mm:  $L = (\text{pitch} \times \text{poles}) + 1,82 \text{ mm}$

## Technical characteristics

### Technical data

Rated current 15 A  
Pitch 5.00 mm / 5.08 mm

Surge voltage category /  
pollution degree

III/3	III/2	II/2
250 V	300 V	600 V
4 kV	4 kV	4 kV

Rated voltage

Rated surge voltage

### Material data

Group of insulation material I  
Type of insulation material PA  
Flammability rating per UL 94 V0  
Operating temperature -40 °C ... +110 °C  
Contact material copper alloy  
Contact plating tin plated  
UL approval (E 102079)



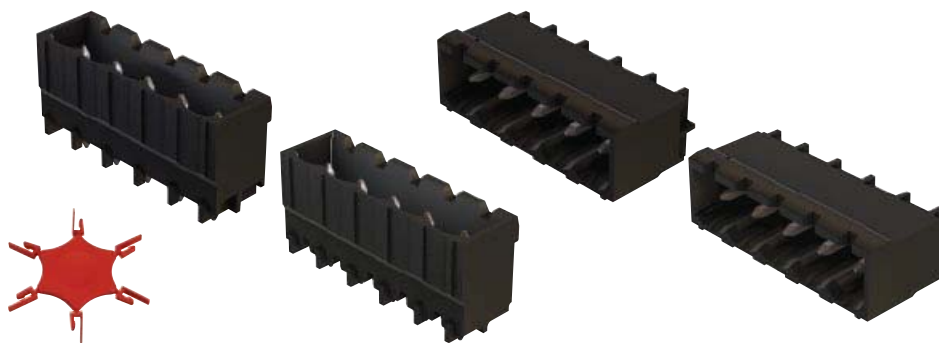
### Solder pin data

Solder pin: drilled hole diameter 1.5 mm

### Approval data (UL)

Use group	B	C	D
Rated voltage	300 V	–	300 V
Rated current	15 A	–	15 A

PCB connectors male,  
vertical/horizontal  
for reflow soldering  
pitch 5.00 / 5.08 mm



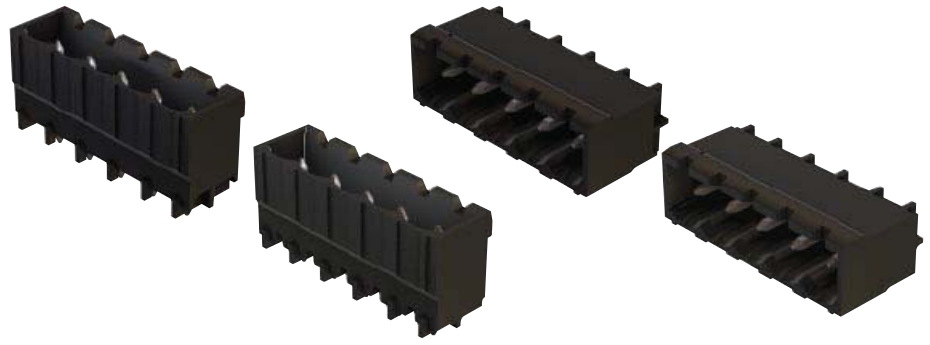
Identification	No. of contacts	Part number	Packaging unit (pieces)
PCB connectors male, vertical/horizontal	2	14 12 021 . 00 . ...	100
	3	14 12 031 . 00 . ...	100
	4	14 12 041 . 00 . ...	75
	5	14 12 051 . 00 . ...	75
	6	14 12 061 . 00 . ...	50
	7	14 12 071 . 00 . ...	50
	8	14 12 081 . 00 . ...	50
	9	14 12 091 . 00 . ...	50
	10	14 12 101 . 00 . ...	50
	11	14 12 111 . 00 . ...	50
	12	14 12 121 . 00 . ...	50
	13	14 12 131 . 00 . ...	50
	14	14 12 141 . 00 . ...	50
	15	14 12 151 . 00 . ...	50
	16	14 12 161 . 00 . ...	50
	17	14 12 171 . 00 . ...	50
	18	14 12 181 . 00 . ...	50
	19	14 12 191 . 00 . ...	50
	20*	14 12 201 . 00 . ...	50
	Please insert digit for		
pitch 5.00 mm ▶	6		
pitch 5.08 mm ▶	7		
vertical ▶	1		
horizontal ▶	2		
15 Coding keys		14 95 000 0051 000	120

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\* Not available in pitch 5.00 mm (horizontal)

for samples (1 piece)  
for a packaging unit



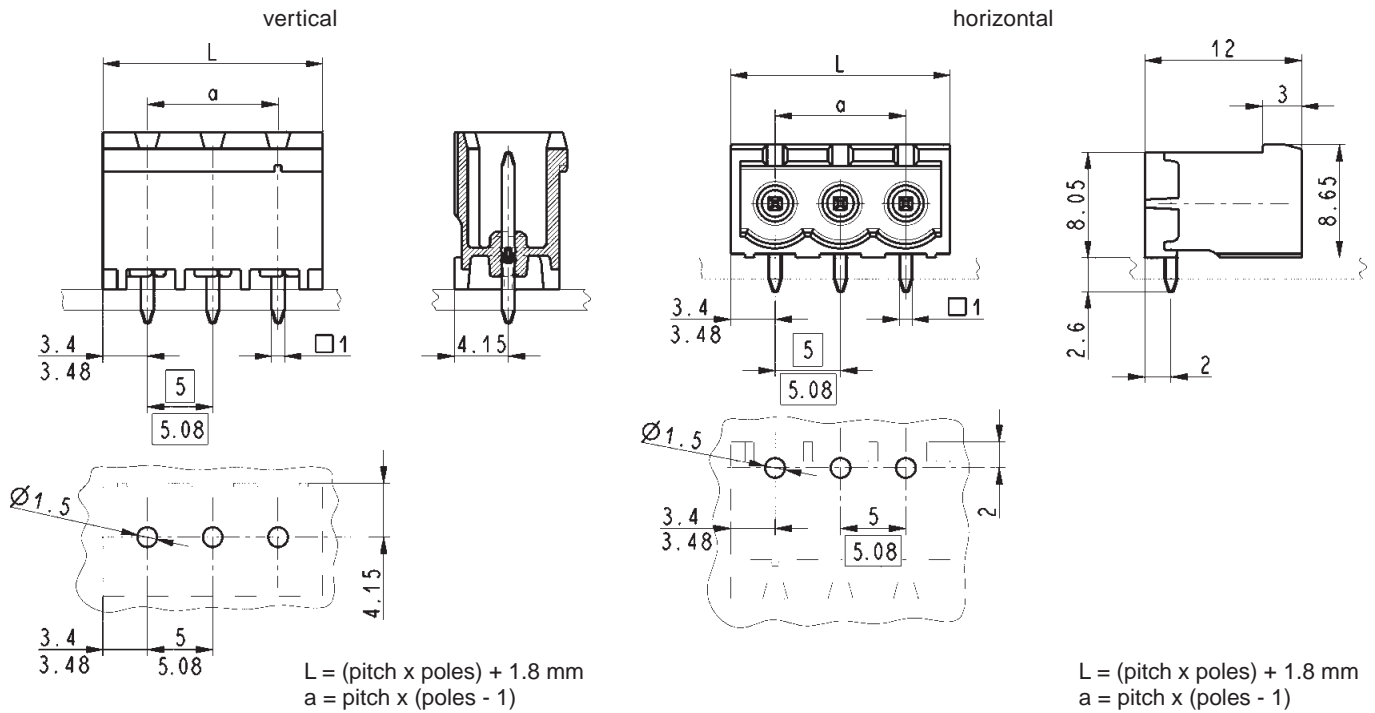


PCB connectors male, vertical/horizontal for reflow soldering pitch 5.00 / 5.08 mm

Drawing

Dimensions in mm

Dimensions



Technical characteristics

Technical data

Rated current 15 A  
Pitch 5.00 mm / 5.08 mm

Surge voltage category / pollution degree

	III/3	III/2	II/2
Rated voltage	250 V	300 V	600 V
Rated surge voltage	4 kV	4 kV	4 kV

Material data

Group of insulation material I  
Type of insulation material PA / PPA  
Flammability rating per UL 94 V0  
Operating temperature -40 °C ... +110 °C  
Contact material copper alloy  
Contact plating tin plated  
UL approval (E 102079)



Solder pin data

Solder pin: drilled hole diameter 1.5 mm

Approval data (UL)

Use group	B	C	D
Rated voltage	300 V	–	300 V
Rated current	15 A	–	15 A

PCB connectors male  
with thread flange,  
vertical/horizontal  
for reflow soldering  
pitch 5.08 mm



Identification	No. of contacts	Part number	Packaging unit (pieces)
PCB connectors male with thread flange, vertical/horizontal	2	14 12 021 700 . . .	100
	3	14 12 031 700 . . .	100
	4	14 12 041 700 . . .	75
	5	14 12 051 700 . . .	75
	6	14 12 061 700 . . .	50
	7	14 12 071 700 . . .	50
	8	14 12 081 700 . . .	50
	9	14 12 091 700 . . .	50
	10	14 12 101 700 . . .	50
	11	14 12 111 700 . . .	50
	12	14 12 121 700 . . .	50
	13	14 12 131 700 . . .	50
	14	14 12 141 700 . . .	50
	15	14 12 151 700 . . .	50
	16	14 12 161 700 . . .	50
	17	14 12 171 700 . . .	50
	18	14 12 181 700 . . .	50
	Please insert digit for		
vertical ▶	5		
horizontal ▶	6		
<b>15</b>	Coding keys	14 95 000 0051 000	120

har-flexicon

15  
46

for samples (1 piece)  
for a packaging unit

333  
000

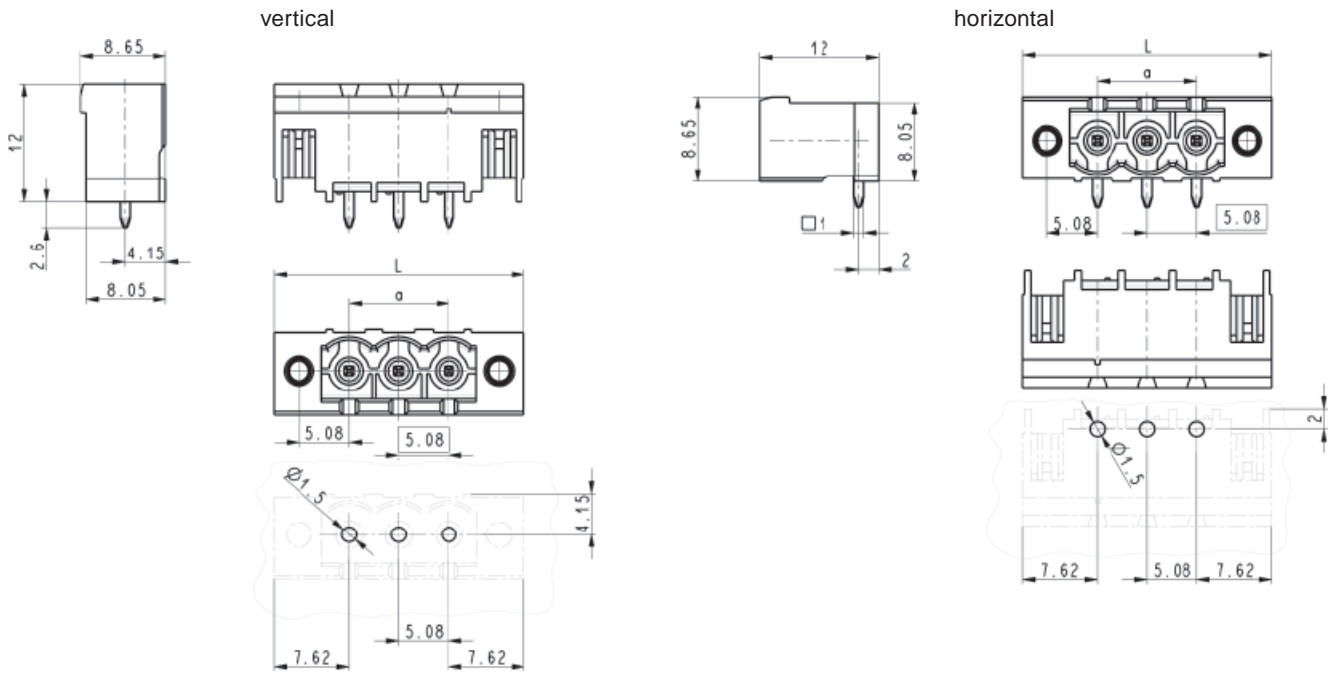
PCB connectors male  
with thread flange,  
vertical/horizontal  
for reflow soldering  
pitch 5.08 mm



Drawing

Dimensions in mm

Dimensions



L = pitch x (poles + 2)  
a = pitch x (poles - 1)

L = pitch x (poles + 2)  
a = pitch x (poles - 1)

Technical characteristics

Technical data

Rated current 15 A  
Pitch 5.08 mm

Surge voltage category / pollution degree	III/3	III/2	II/2
Rated voltage	250 V	300 V	600 V
Rated surge voltage	4 kV	4 kV	4 kV

Material data

Group of insulation material I  
Type of insulation material PA / PPA  
Flammability rating per UL 94 V0  
Operating temperature -40 °C ... +110 °C  
Contact material copper alloy  
Contact plating tin plated  
 UL approval (E 102079)  
Thread flange M2.5

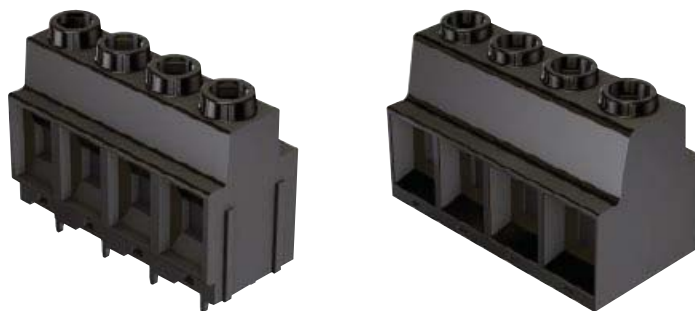
Solder pin data

Solder pin: drilled hole diameter 1.4 mm

Approval data (UL)

Use group	B	C	D
Rated voltage	300 V	–	300 V
Rated current	15 A	–	15 A

PCB terminal blocks,  
horizontal with screw termination  
10 mm<sup>2</sup> / 25 mm<sup>2</sup>  
for reflow soldering  
pitch 10.16 / 15.00 mm



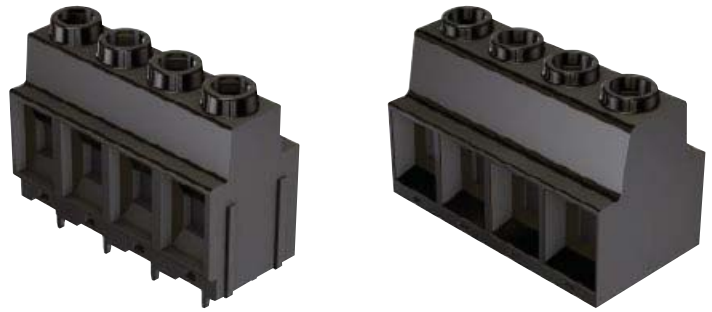
Identification	No. of contacts	Part number	Packaging unit (pieces)
PCB terminal blocks, stackable horizontal with screw termination			
For wire gauge 10 mm <sup>2</sup> Pitch 10.16 mm 600 V 60 A	2	14 02 022 5402 000	50
	3	14 02 032 5402 000	50
	4	14 02 042 5402 000	40
For wire gauge 25 mm <sup>2</sup> Pitch 15.00 mm 600 V 135 A	2	14 02 022 7402 000	50
	3	14 02 032 7402 000	40
	4	14 02 042 7402 000	30

Approval data (UL)

Use group		B	C	D
Rated voltage	Pitch 10.16 mm	300 V	300 V	600 V
	Pitch 15.00 mm	600 V	600 V	–
Rated current	Pitch 10.16 mm	60 A	60 A	60 A
	Pitch 15.00 mm	135 A	135 A	–



PCB terminal blocks,  
horizontal with screw termination  
10 mm<sup>2</sup> / 25 mm<sup>2</sup>  
for reflow soldering  
pitch 10.16 / 15.00 mm



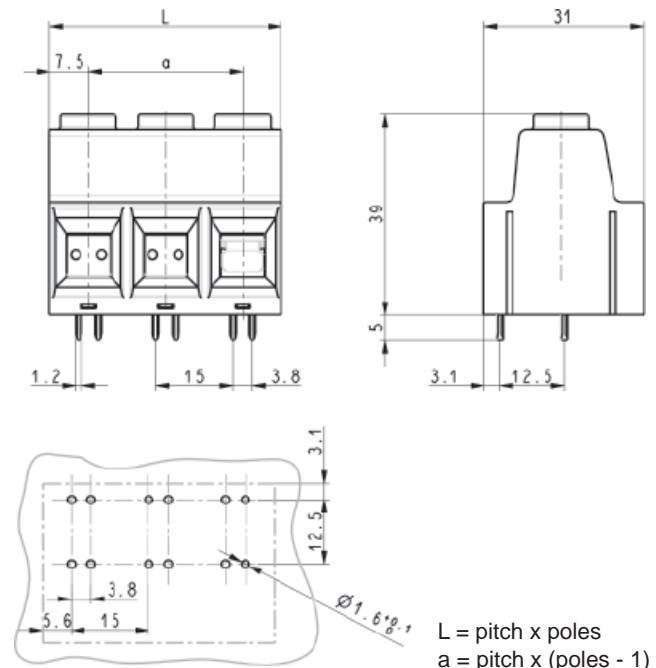
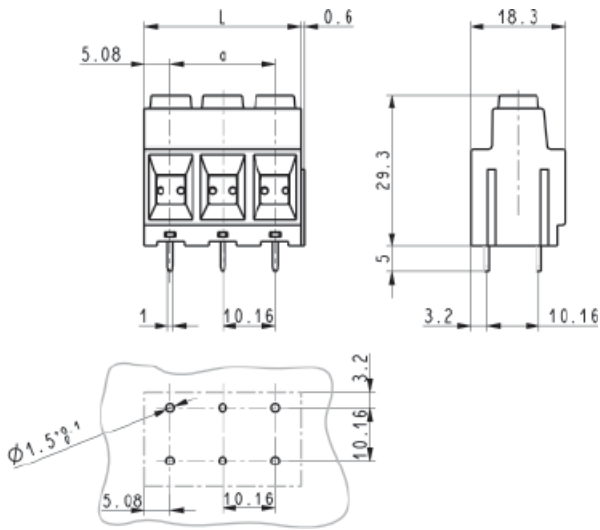
Drawing

Dimensions in mm

Dimensions

Pitch 10.16 mm

Pitch 15.00 mm



L = pitch x poles  
a = pitch x (poles - 1)

L = pitch x poles  
a = pitch x (poles - 1)

## Technical characteristics

### Technical data

Rated current 60 / 135 A  
Pitch 10.16 / 15.00 mm

Surge voltage category /  
pollution degree

III/3	III/2	II/2
1 kV	1 kV	1 kV
8 kV	8 kV	8 kV

Rated voltage

Rated surge voltage

### Material data

Group of insulation material I  
Type of insulation material PA / PPA  
Flammability rating per UL 94 V0  
Operating temperature -40 °C ... +110 °C  
Contact material copper alloy  
Contact plating tin plated  
UL approval (E 102079)



### Conductor and solder pin data

Connection technology wire  
Conductor size  
solid / stranded  
stranded with ferrules without / with plastic sleeve  
Conductor size AWG  
Screw thread  
Tightening torque  
Stripping length  
Solder pin: drilled hole diameter

Pitch 10.16 mm

screw termination

0.5 - 16 / 0.5 - 10 mm<sup>2</sup>

0.5 - 6 / 0.5 - 6 mm<sup>2</sup>

20 - 6

M4

1.2 - 1.5 Nm

11 mm

min. 1.5 mm

Pitch 15.00 mm

screw termination

0.5 - 35 / 0.5 - 25 mm<sup>2</sup>

0.5 - 16 / 0.5 - 16 mm<sup>2</sup>

20 - 1

M5

2.1 - 2.5 Nm

18 mm

min. 1.6 mm