

PC/104, PC/104-*Plus*,
VarPol connectors

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PC/104 and PC/104-Plus

Simply stack it – with ept press-fit technology

PC/104 is a standard for PC-compatible modules which are intermateable to set up a complete computing system. The PC/104 ensures complete hardware and software compatibility, is extremely compact (96 mm x 90 mm), and comes with a standardized PC/104 Bus (ISA). Due to this standardization, different PC/104 cards can be combined to implement a defined task.

Based on PC/104, many different boards are offered such as:

- Complete single-board computers
- I/O boards for digital or analog I/O
- Boards for CAN, Profibus, LON, Ethernet
- PCMCIA boards

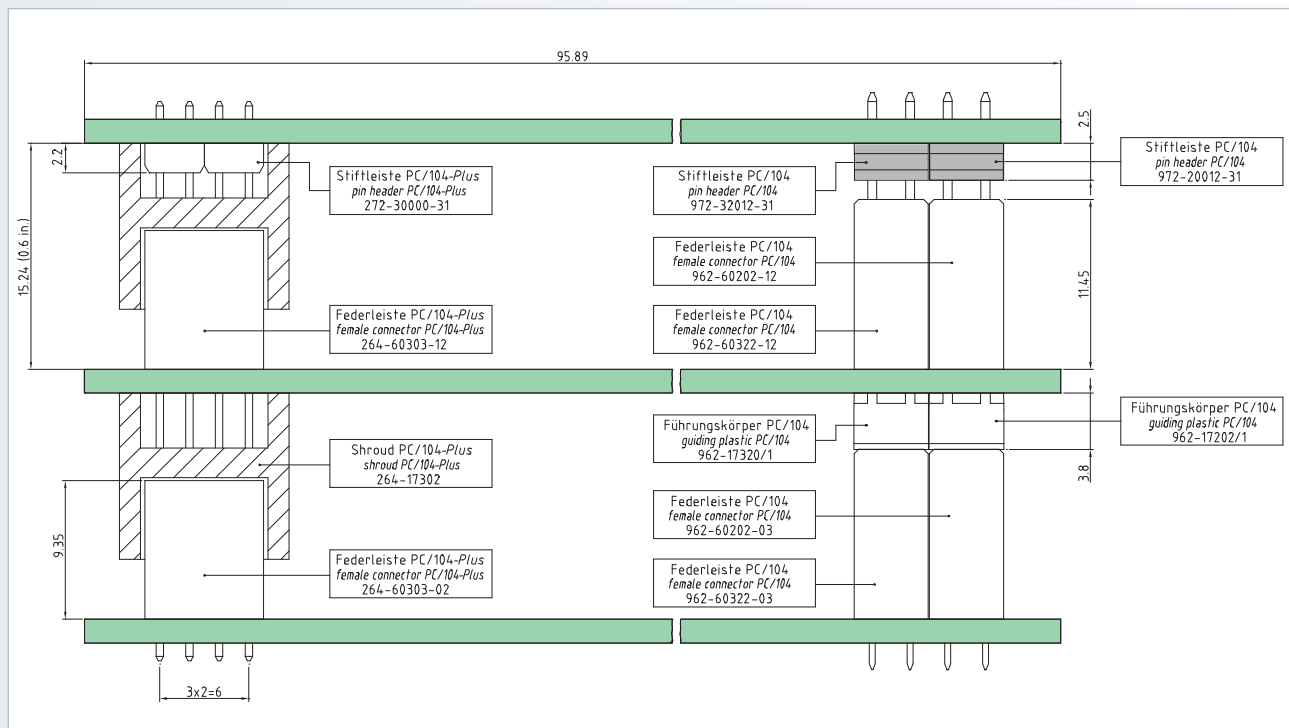
Since more powerful components are available, the PC/104 systems had to be supplemented with a faster bus system. The PC/104 system was supplemented with the PCI bus and thus it was further developed. This supplement is described in the PC/104-Plus specification.

PC/104 and PC/104-Plus connector

While the PC/104 bus comprises two connectors with 40 and 64 pins which can be placed side-by-side and a grid size of 2.54 mm, the PC/104-Plus features 120 pins with a distance of 2.00 mm.

By using connectors with long pins in press-fit technology, several boards can be stacked on top of each other (see

figure). The clearances specified by the PC/104 consortium are ensured by using spacers and shrouds. The additional use of spacing bolts is therefore not required.



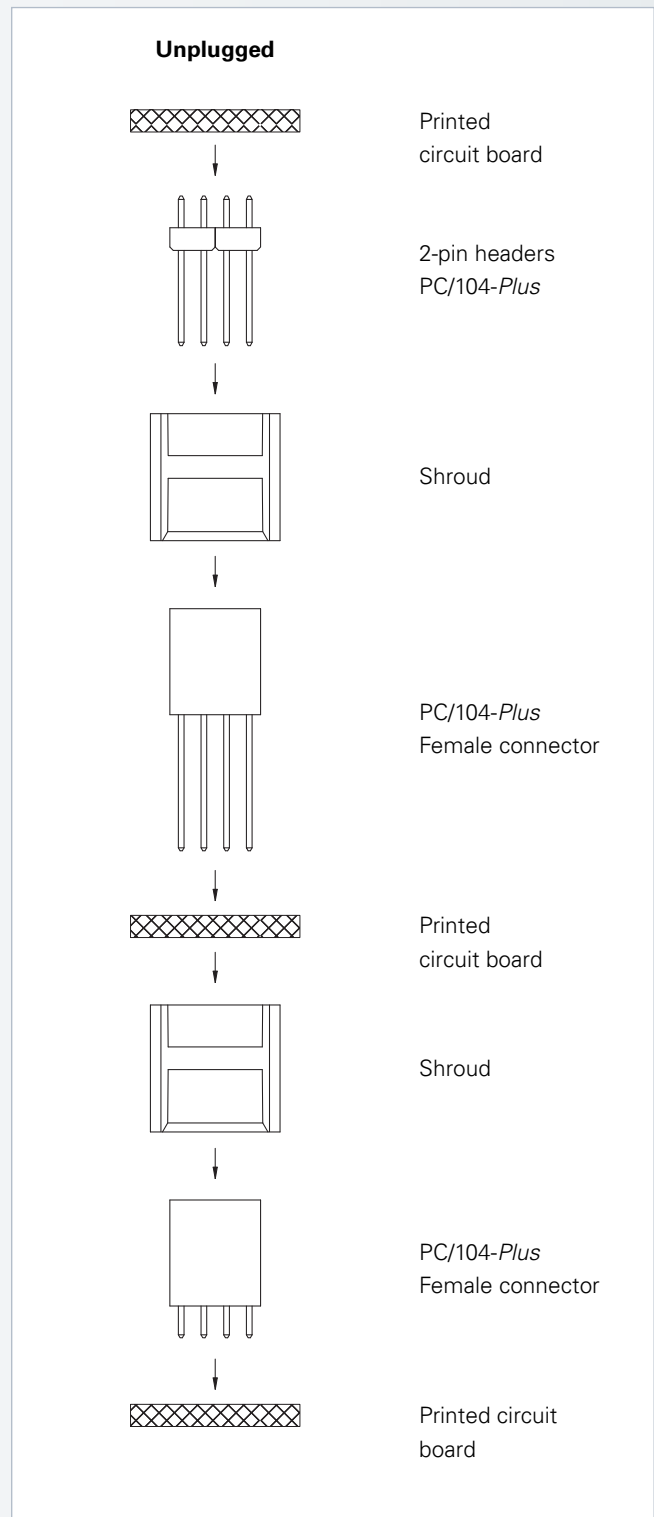
PC/104 and PC/104-Plus press-fit connectors from ept offer various advantages:

- The female connectors are pressed in by means of a simple flat rock press-fit tool
- No additional costs due to complex manual soldering
- No reworking at the rear mating zone (solder bridges, solder splashes)
- Less inspection overhead
- Lower engaging and separating forces; therefore bending of the rear mating zone is prevented
- When female connectors with rear mating zone are pressed in, a guiding block is pushed up from below. This offers the following advantages:
 - No bending of the rear mating zone
 - Serves as spacer so that the clearance of 0.6" is achieved when the modules are plugged in
 - Serves as support tool when pressing in and prevents that the strip lines between the through connections are damaged.

The shroud is reliably fixed on the PCB by additional press in of the shroud housing onto the rear mating zone.

Customer-specific solutions

Within the scope of PC/104 and PC/104-Plus applications, upon request ept also offers various customer-specific solutions with 2.0 mm and 2.54 mm grid.

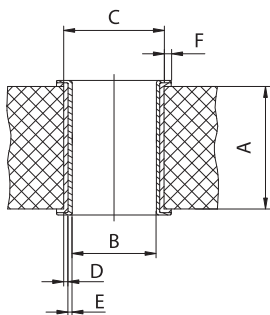


Technical specifications

Technical specifications	VarPol connectors		
	PC/104	PC/104-Plus	Socket connectors
Operating temperature range	– 55 °C to + 125 °C		
Current carrying capacity	max. 1.9 A	max. 1.7 A	max. 1 A
Operational voltage	150 V	100 V	100 V
Contact resistance	< 20 mΩ	< 20 mΩ	< 10 mΩ
Creepages and clearances	1.2 mm	min. 0.5 mm	> 0.6 mm
Insulation resistance	> 10 ⁶ MΩ		
Durability	Performance level II		
	Performance level III		
Engaging force per pin	max. 0.9 N	max. 1.5 N	max. 1.8 N
Seperating force per pin	min. 0.6 N	min. 0.3 N	min. 1 N
Insertion force per pin	max. 80 N		
Insulator material	PBT glass filled, UL 94 V-0		
Contact	Copper alloy		
Environment/ approvals	RoHS compliant/UL (file: E130314)		

Hole specifications

Plated through-hole according to IEC 60352-5

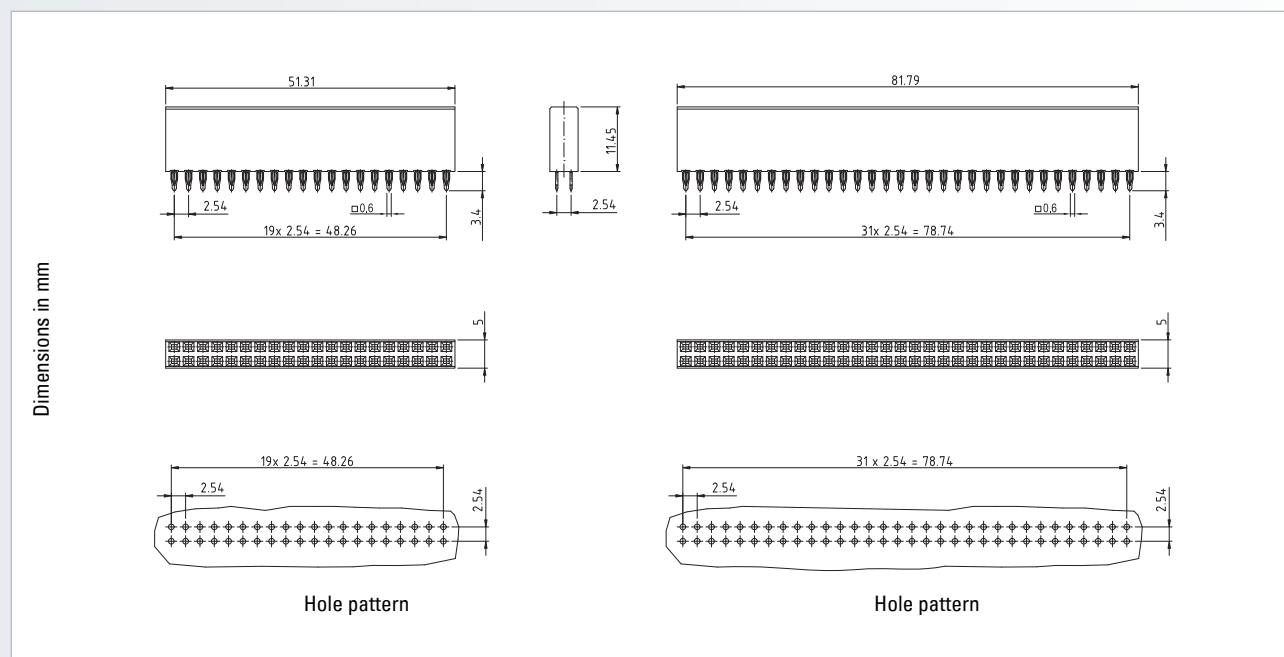
		PC/104-Plus	PC/104, socket connector, VarPol	
		Nominal hole		
		Ø 0.85 mm	Ø 1.0 mm	
	imm. Sn printed circuit boards			
	A	PCB thickness	min. 1.4 mm	min. 1.4 mm
	B	Plated hole	Ø 0.85 + 0.10/- 0.05 mm	Ø 1 + 0.09/- 0.06 mm
	C	Drill hole	1.0 ± 0.025 mm	1.15 ± 0.025 mm
	D	Cu plating	min. 25 µm	min. 25 µm
	E	imm. Sn plating	max. 1.5 µm	max. 1.5 µm
	F	Annular ring	min. 0.1 mm	min. 0.1 mm
	Ni, Au printed circuit boards			
	A	PCB thickness	min. 1.4 mm	min. 1.4 mm
	B	Plated hole	Ø 0.85 + 0.10/- 0.05 mm	Ø 1 + 0.09/- 0.06 mm
	C	Drill hole	1.0 ± 0.025 mm	1.15 ± 0.025 mm
	D	Cu plating	min 25 µm	min. 25 µm
	E	Ni, Au plating	0.05 – 0.2 µm Au over 2.5 – 5µm Ni	0.05 – 0.2 µm Au over 2.5 – 5 µm Ni
	F	Annular ring	min. 0.1 mm	min. 0.1 mm
	pure Cu printed circuit boards			
	A	PCB thickness	min. 1.4 mm	min. 1.4 mm
	B	Plated hole	Ø 0.85 + 0.10/- 0.05 mm	Ø 1 + 0.09/- 0.06 mm
	C	Drill hole	1.0 ± 0.025 mm	1.15 ± 0.025 mm
	D	Cu plating	min. 25 µm	min. 25 µm
	E	OSP*	e. g. GLICOAT-SMD (F2) with 0.12 – 0.15 µm	e. g. GLICOAT-SMD (F2) with 0.12 – 0.15 µm
	F	Annular ring	min. 0.1 mm	min. 0.1 mm
	HAL Sn printed circuit boards			
	A	PCB thickness	min. 1.4 mm	min. 1.4 mm
	B	Plated hole	Ø 0.85 + 0.10/- 0.05 mm	Ø 1 + 0.09/- 0.06 mm
	C	Drill hole	1.0 ± 0.025 mm	1.15 ± 0.025 mm
	D	Cu plating	min. 25 µm	min. 25 µm
	E	HAL Sn	5 – 15 µm	5 – 15 µm
F	Annular ring	min. 0.1 mm	min. 0.1 mm	

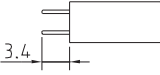

* OSP = Organic Solderability Preservatives

PC/104, PC/104-Plus, VarPol connector

PC/104

Female connector



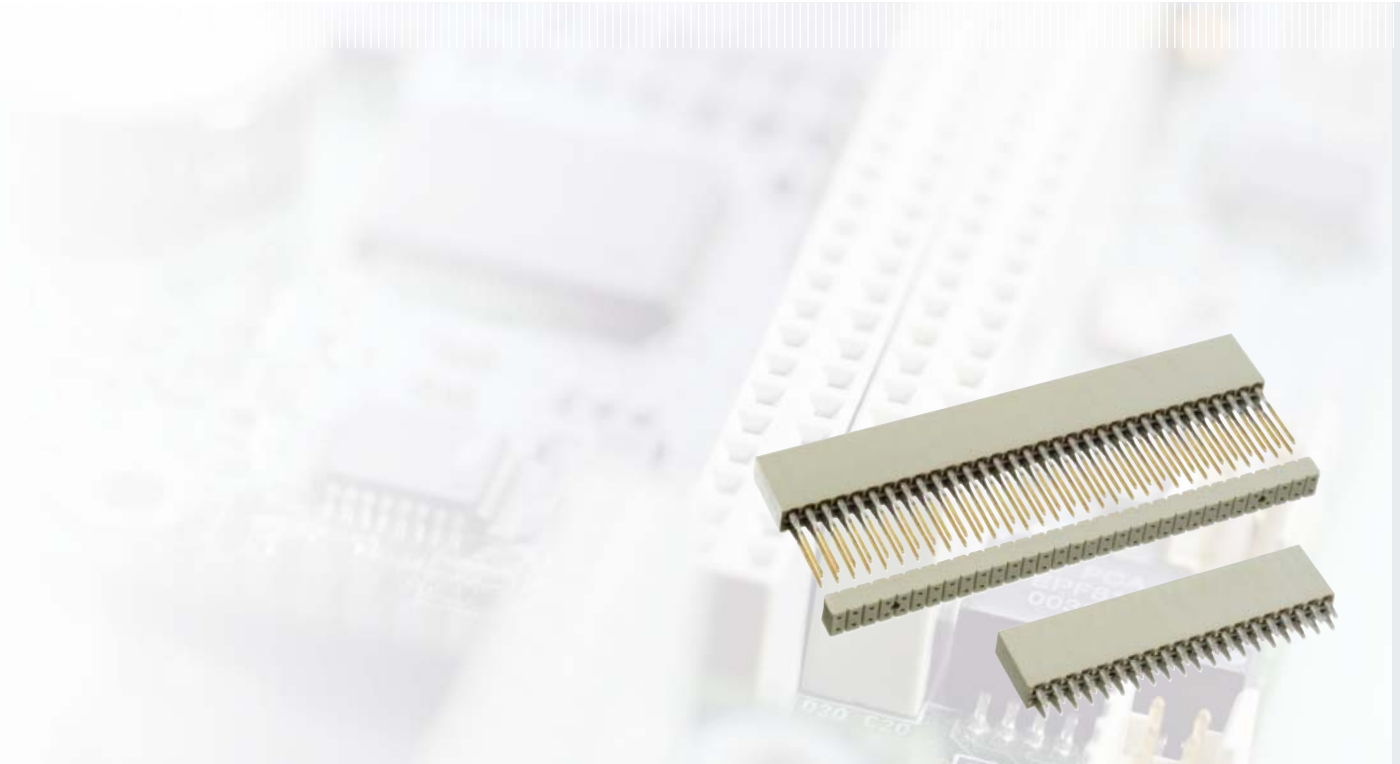
No. of contacts	Performance level	Press-fit technology	
		Termination length	
			
Part number			
40	II	962-60206-03	962-60206-12
40	III	962-60202-03	962-60202-12
64	II	962-60326-03	962-60326-12
64	III	962-60322-03	962-60322-12

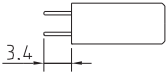
Accessories

- Guiding block (see page 174)
- Press-fit tool (see page 214)
- Support tool (see page 215)

Note

- * Rear mating zone
- At a contact length of 12.2 mm a guiding block is scope of delivery

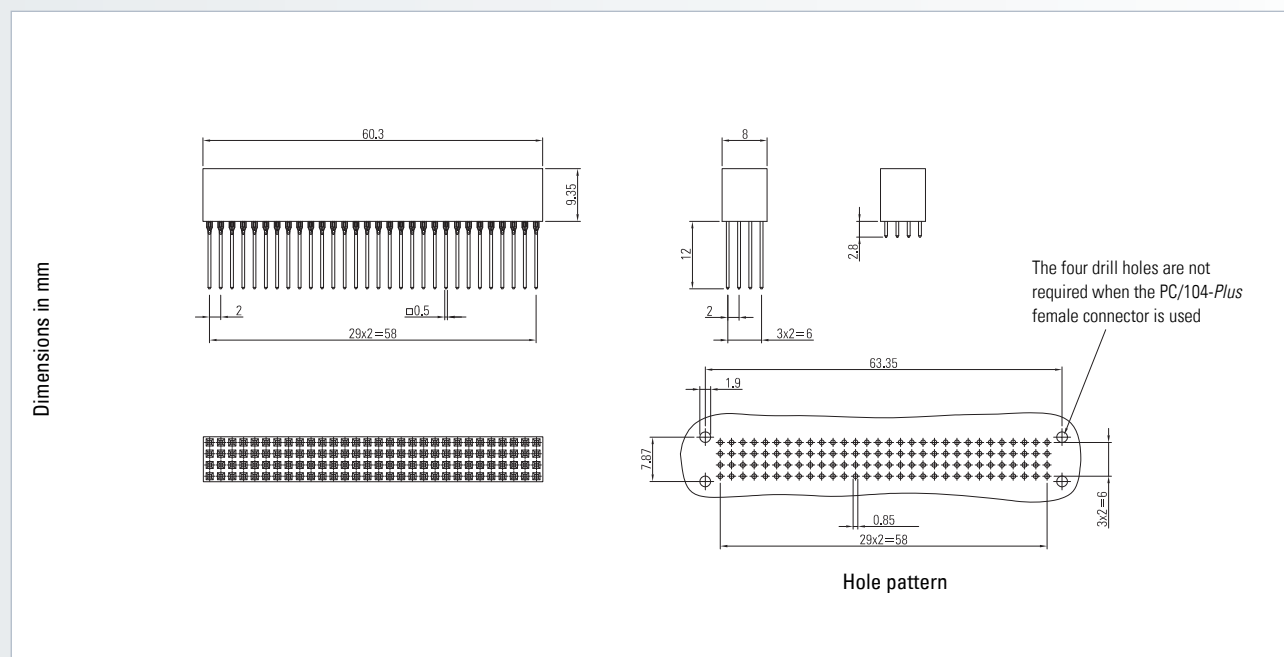


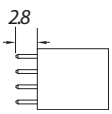
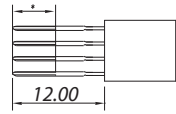
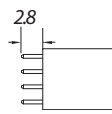
No. of contacts	Performance level	Solder technology
		Termination length
		
Part number		
40	II	962-40206-03
40	III	962-40202-03
64	II	962-40326-03
64	III	962-40322-03

PC/104, PC/104-Plus, VarPol connector

PC/104-Plus

Female connector



No. of contacts	Press-fit technology – Performance level III		Solder technology – Performance level III
	Termination length		
			
Part number			
120	264-60303-02	264-60303-12	264-40303-02

Accessories

- Press-fit tool (see page 214)
- Support tool (see page 215)
- Shroud (see page 174)

On request

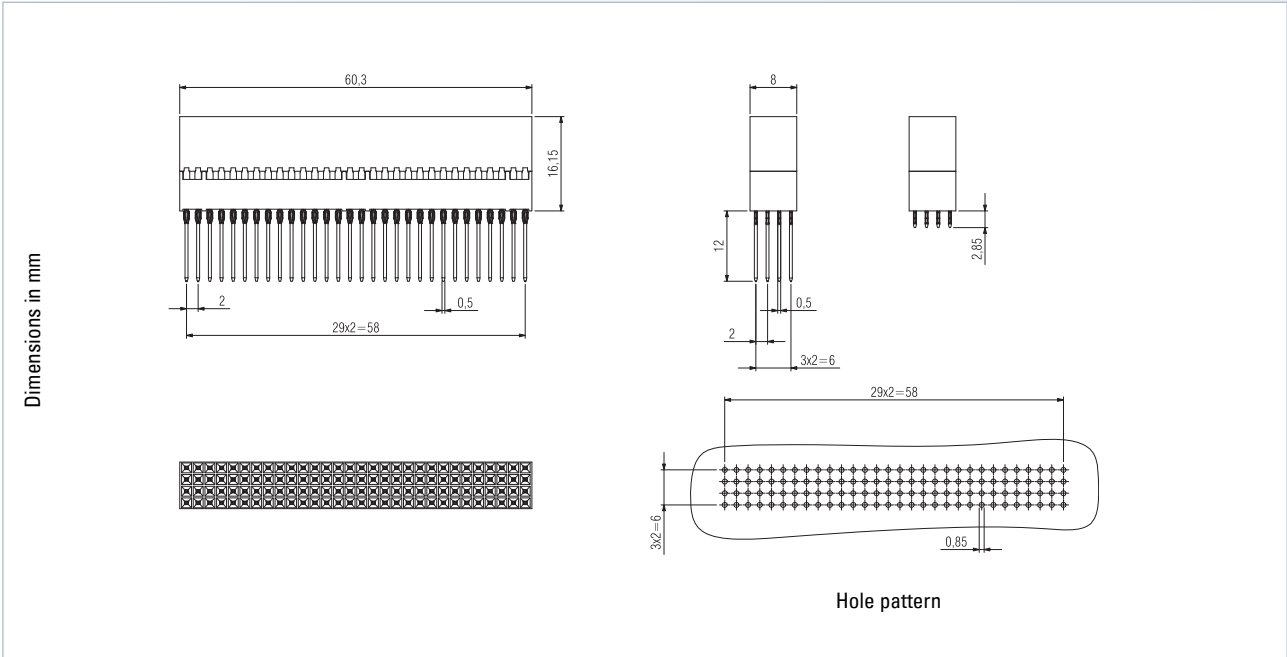
- Other contact numbers


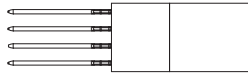
Note

- * Rear mating zone performance level III



PC/104, PC/104-Plus, VarPol connector
22 mm PC/104-Plus
 Female connector



No. of contacts	Press-fit technology – Performance level III	
	Termination length	
		
Part number		
120	264-61303-02	264-61303-12

Accessories

- Press-fit tool (see page 214)
- Support tool (see page 215)
- Shroud (see page 174)

On request

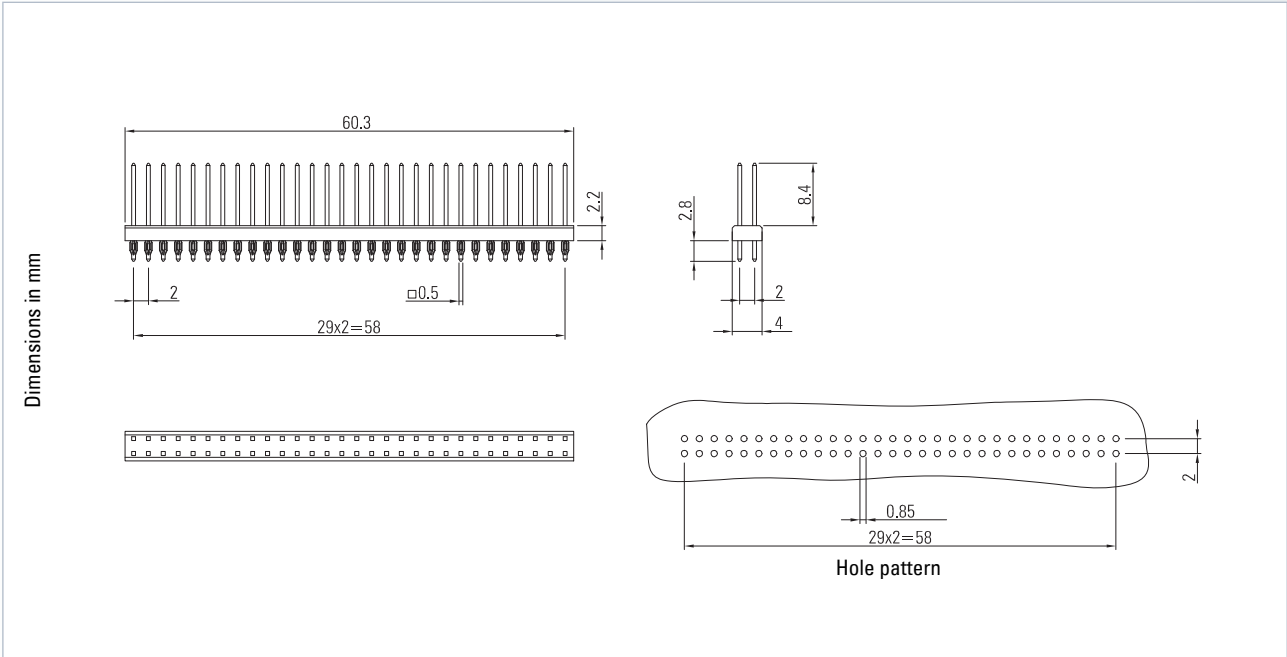
- Other contact numbers

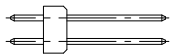
Note

- * Rear mating zone performance level III



For 22 mm Board-to-Board Distance!



No. of contacts	Press-fit technology – Performance level III
	Termination length
	
Part number	
60	272-30000-31

Accessories <ul style="list-style-type: none">– Press-fit tool (see page 214)– Support tool (see page 215)
On request <ul style="list-style-type: none">– Other lengths– Other contact numbers

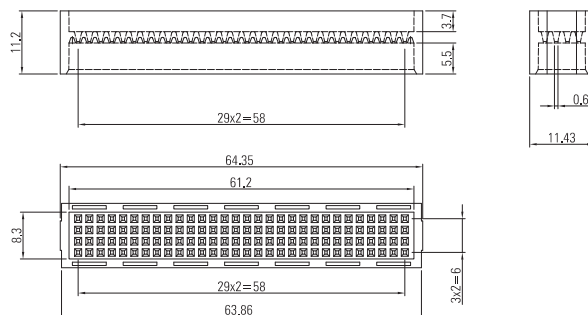




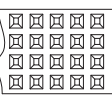
PC/104, PC/104-Plus, VarPol connector

PC/104, PC/104-Plus

Accessories

Dimensions in mm



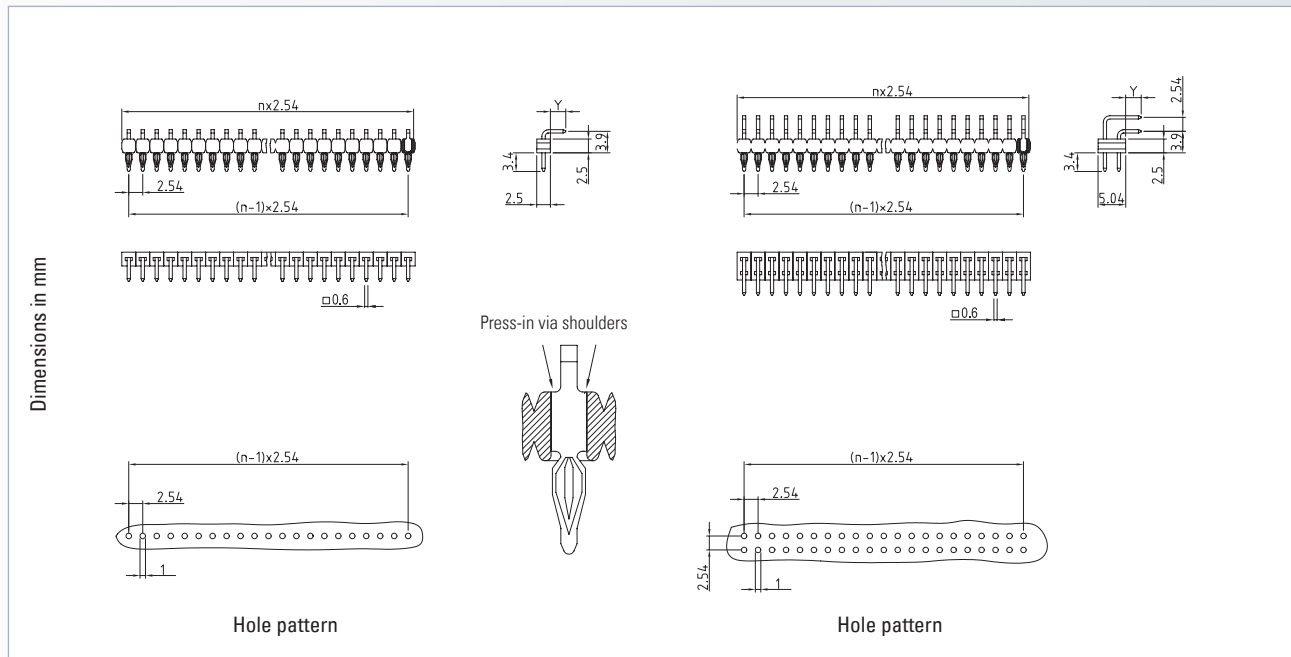
No. of contacts	PC/104	PC/104-Plus	
	Guiding block	Shroud	Spacer
			
Part number			
40	962-17202/1	—	—
64	962-17322/1	—	—
120	—	264-17302	264-16302



PC/104-Plus shroud



PC/104 guiding block



No. of contacts		Y	Press-fit technology
			Termination length
			Part number
max. 36	1-row	2.8	981-nn010-b1
		5.6	981-nn011-b1
		7.8	981-nn012-b1
		10.6	981-nn013-b1
max. 108	2-row	2.8	982-nn010-b1
		5.6	982-nn011-b1

Accessories

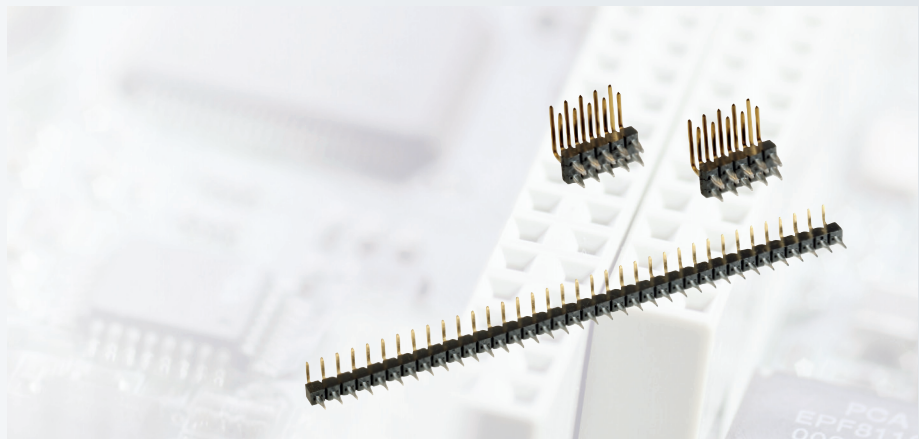
- Press-fit tool (see page 214)
- Support tool (see page 215)

Note

Surfaces Y side:
b = 2: performance level II
b = 3: performance level III

Ordering note

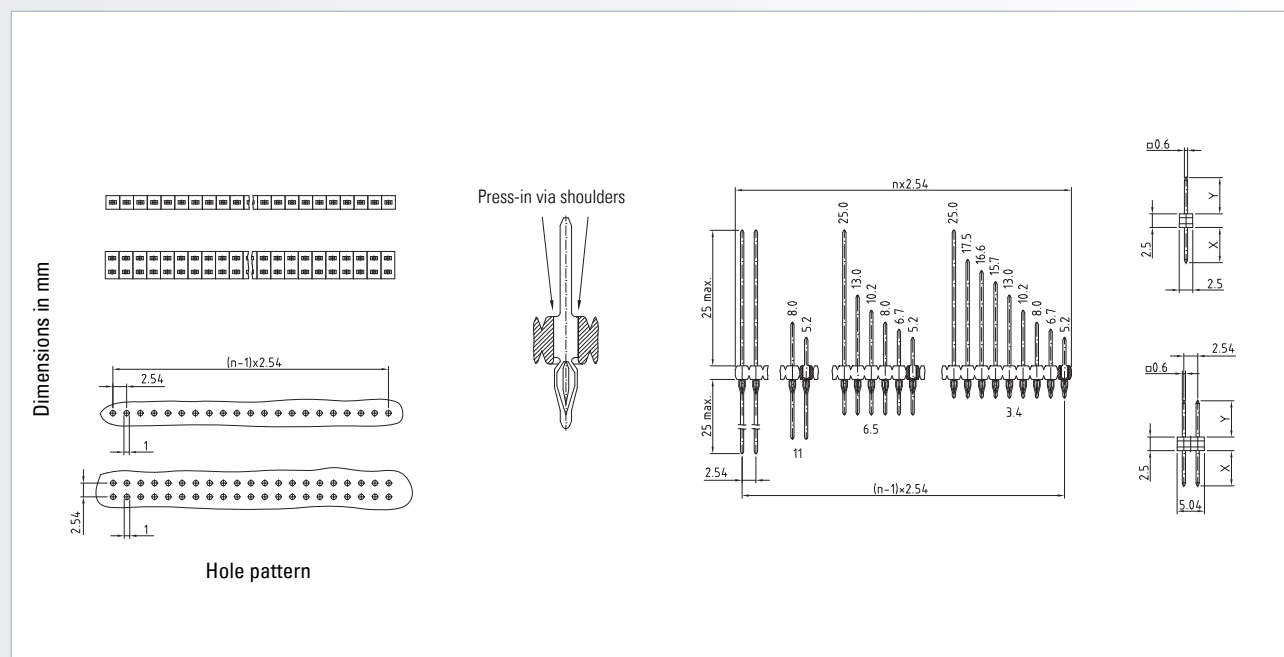
nn = no. of contacts/row
b = surface Y side

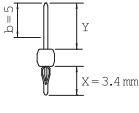
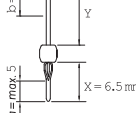
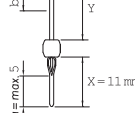


PC/104, PC/104-Plus, VarPol connector

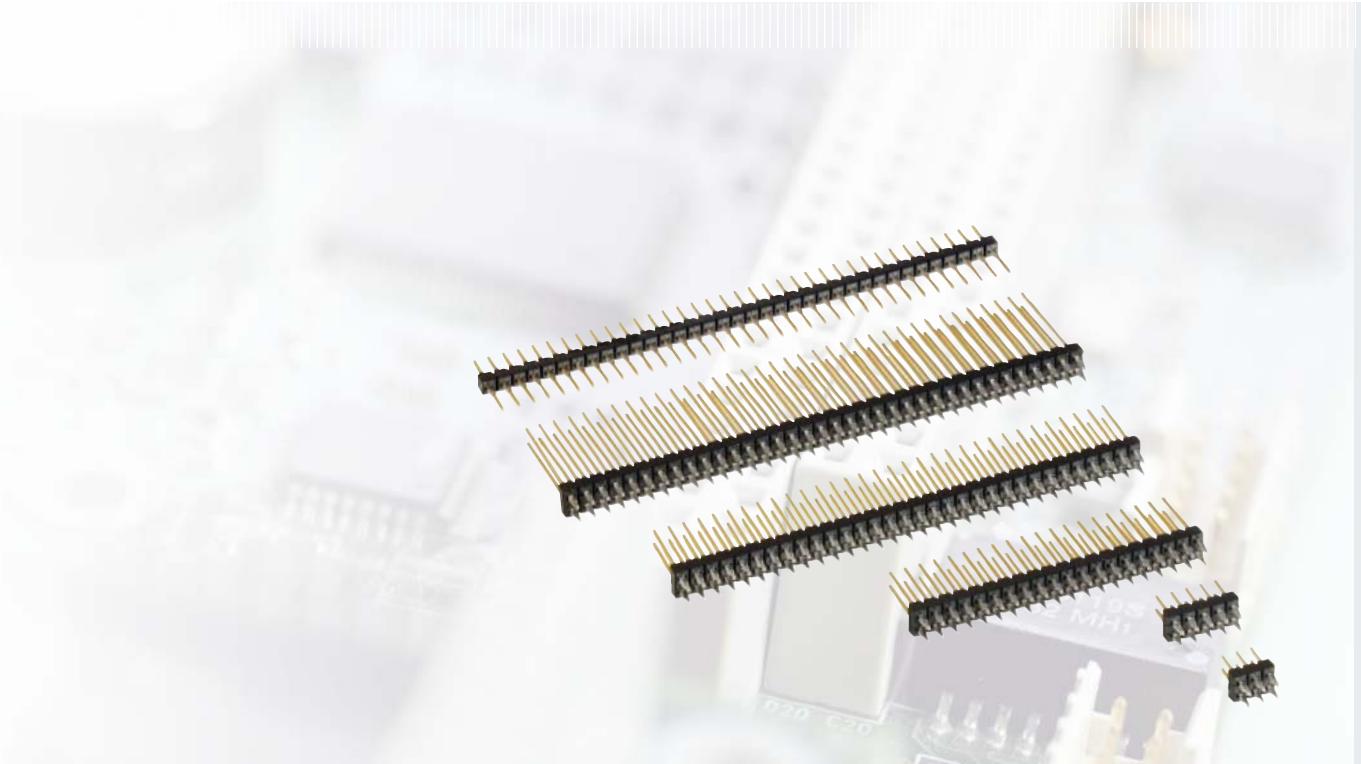
VarPol connectors

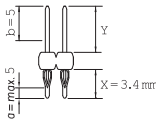
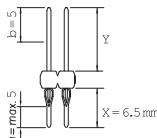
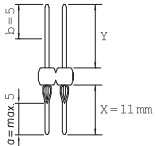
Straight pin header



No. of contacts		Y	Press-fit technology		
			Termination length		
					
Part number					
max. 36	1-row	5.2	971-nn010-b1*	971-nn020-ba	971-nn050-ba
		6.7	971-nn009-b1*	971-nn039-ba	—
		8.0	971-nn011-b1*	971-nn021-ba	971-nn051-ba
		10.2	971-nn012-b1*	971-nn022-ba	—
		13.0	971-nn013-b1*	971-nn023-ba	971-nn053-ba
		15.7	971-nn026-b1*	—	—
		16.6	971-nn006-b1*	—	—
		17.5	971-nn018-b1*	—	—
		25.0	971-nn019-b1*	971-nn029-ba	—

Accessories <ul style="list-style-type: none"> Press-fit tool (see page 214) Support tool (see page 215) 	Note <p>Surfaces Y side (b) b = 2: performance level II b = 3: performance level III</p> <p>Surfaces X side (interface zone a) a = 2: performance level II a = 3: performance level III</p>
On request <ul style="list-style-type: none"> Other pin lengths 	Ordering note <p>nn = no. of contacts/row b = surface Y side a = surface X side 1* if X = 3.4 mm (no interface zone), surface a cannot be selected</p>



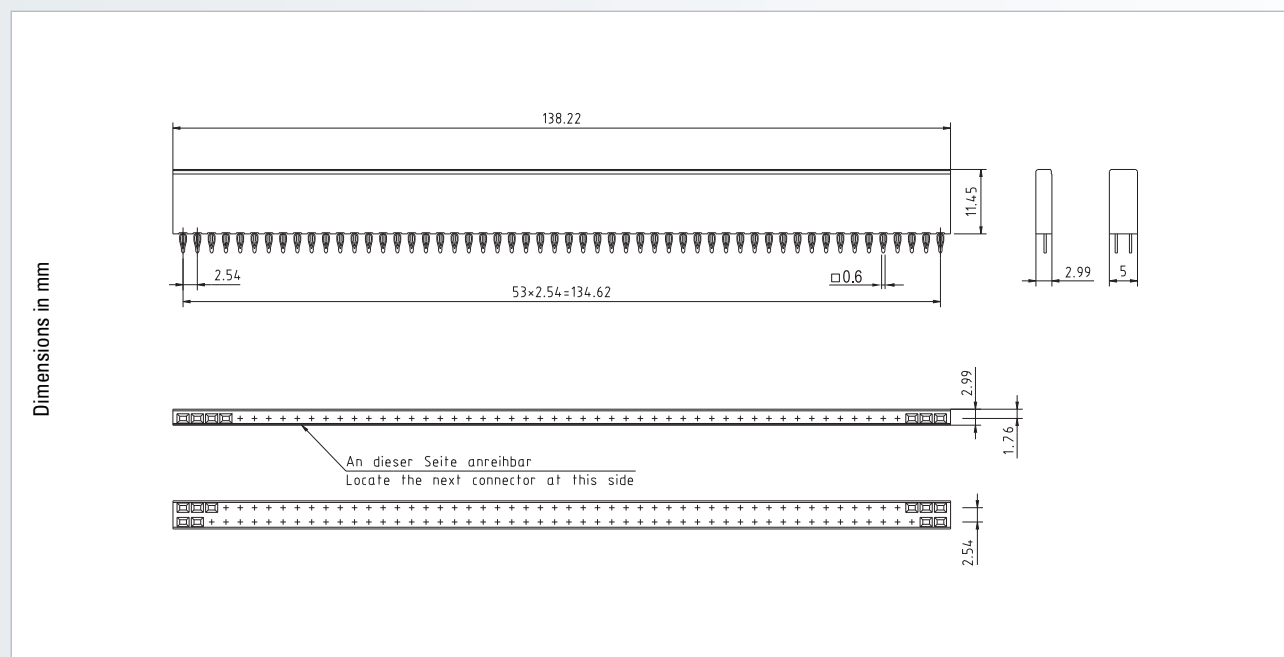
No. of contacts		Y	Press-fit technology		
			Termination length		
					
Part number					
max. 108	2-row	5.2	972-nn010-b1*	972-nn020-ba	972-nn050-ba
		6.7	972-nn009-b1*	972-nn039-ba	—
		8.0	972-nn011-b1*	972-nn021-ba	972-nn051-ba
		10.2	972-nn012-b1*	972-nn022-ba	—
		13.0	972-nn013-b1*	972-nn023-ba	972-nn053-ba
		15.7	972-nn026-b1*	—	—
		16.6	972-nn006-b1*	—	—
		17.5	972-nn018-b1*	—	—
25.0	972-nn019-b1*	972-nn029-ba	—		

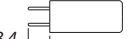
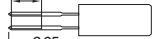

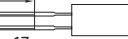
Accessories – Press-fit tool (see page 214) – Support tool (see page 215)	Note Surfaces Y side (b) b = 2: performance level II b = 3: performance level III	Surfaces X side (interface zone a) a = 2: performance level II a = 3: performance level III
	Ordering note nn = no. of contacts/row b = surface Y side a = surface X side 1* if X = 3.4 mm (no interface zone), surface a cannot be selected	

PC/104, PC/104-Plus, VarPol connector

VarPol connectors

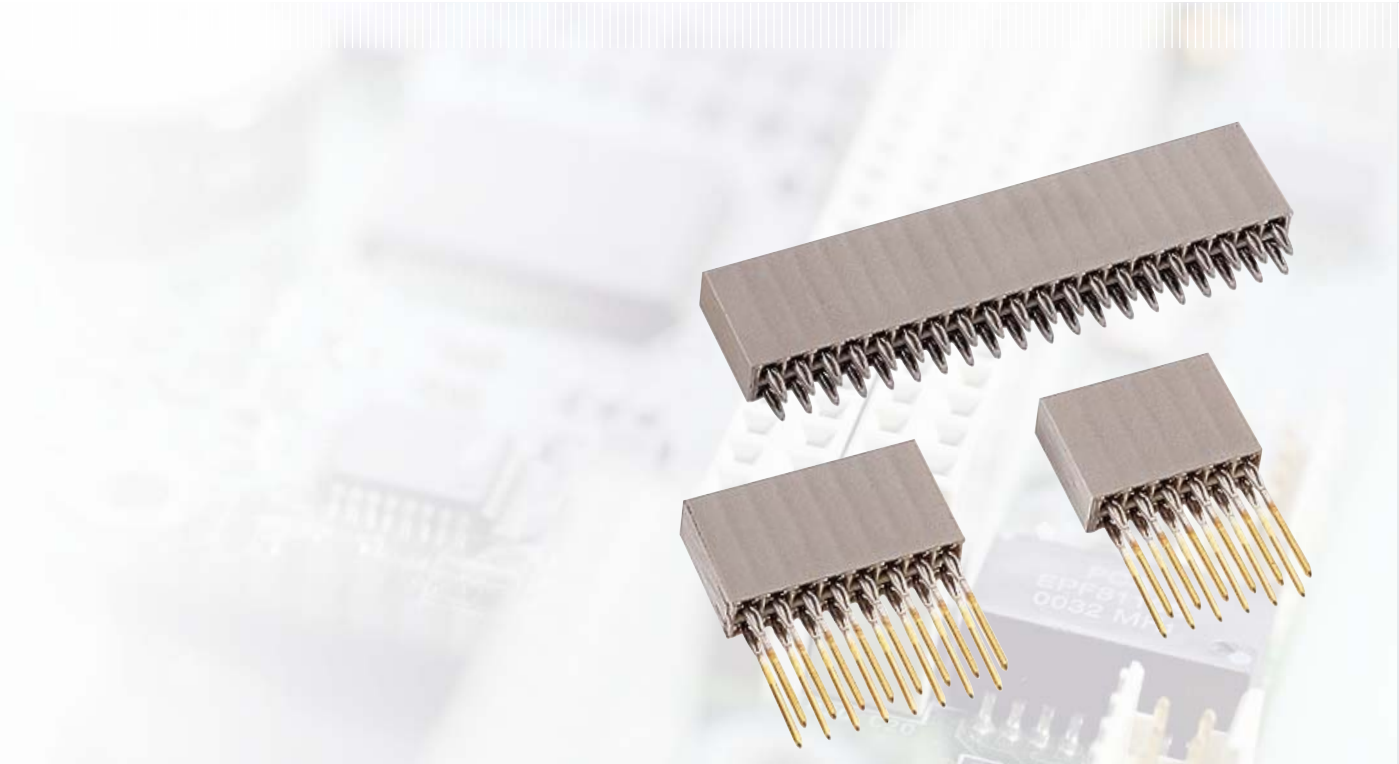
Female connector

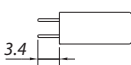
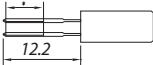


No. of contacts		Performance level	Press-fit technology			
			Termination length			
						
			Part number			
max. 40	1-row	II	961-60nn6-03	961-60nn6-07	961-60nn6-12	961-60nn6-17
		III	961-60nn2-03	961-60nn2-07	961-60nn2-12	961-60nn2-17
max. 108	2-row	II	962-60nn6-03	962-60nn6-07	962-60nn6-12	962-60nn6-17
		III	962-60nn2-03	962-60nn2-07	962-60nn2-12	962-60nn2-17

Accessories <ul style="list-style-type: none"> – 2-row guide block 962-17nn2/1 (see page 174) – Press-fit tool (see page 214) – Support tool (see page 215) 	Note <ul style="list-style-type: none"> – * Rear mating zone – nn = no. of contacts/row 	Ordering note <p>Example for female connector: 2-row, 100 contacts performance level II, post length 3.4 mm Example for guide block: 2-row, 100 contacts</p>	962-60506-03 962-17502/1
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PC/104, PC/104-Plus, VarPol connector
VarPol connectors
 Female connector

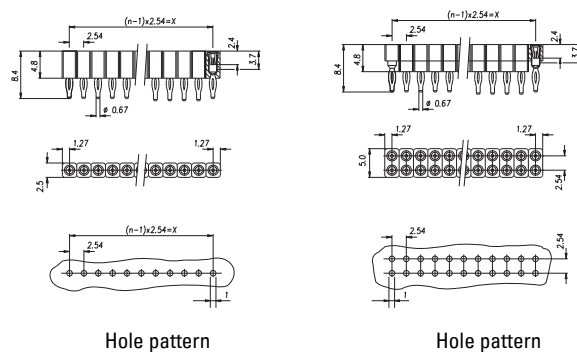


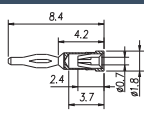
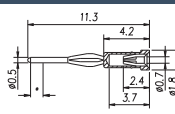
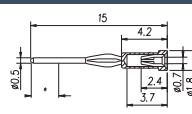
No. of contacts		Perform- ance level	Solder technology	
			Termination length	
				
Part number				
max. 40	1-row	II	961-40nn6-03	961-40nn6-12
		III	961-40nn2-03	961-40nn2-12
max. 108	2-row	II	962-40nn6-03	962-40nn6-12
		III	962-40nn2-03	962-40nn2-12

Note – nn = no. of contacts/row – * Rear mating zone	Ordering note Example for female connector: 2-row, 100 contacts performance level II, post length 3.4 mm <div>962-40506-03</div>
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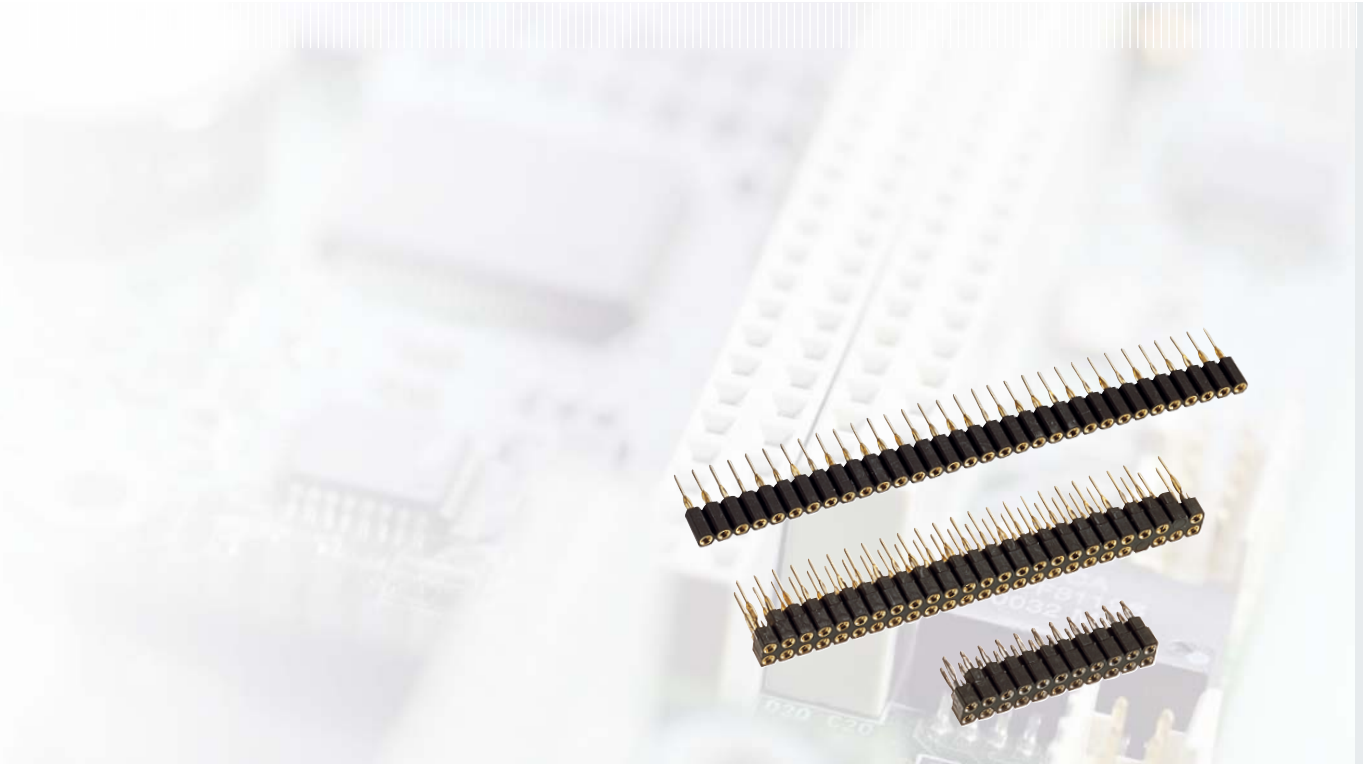
PC/104, PC/104-Plus, VarPol connector
Socket connector

Dimensions in mm



No. of contacts		Surface	Press-fit technology		
			Termination length		
					
Part number					
max. 32	1-row	5 µm Sn	930-61nn0	—	—
		0.25 µm Au	930-61nn4	930-66nn4	930-66nn5
max. 64	2-row	5 µm Sn	936-61nn0	—	—
		0.25 µm Au	936-61nn4	936-66nn4	936-66nn5

PC/104, PC/104-Plus, VarPol connector
Socket connector



On request

- Press-fit tool
- Support tool

Note

- * Rear mating zone Ni, Au

Ordering note

- nn = no. of contacts/row
- Example for female connector: 2-row, 28 contacts,
0.25 μ m Au, 15 mm termination length

936-66145