

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.

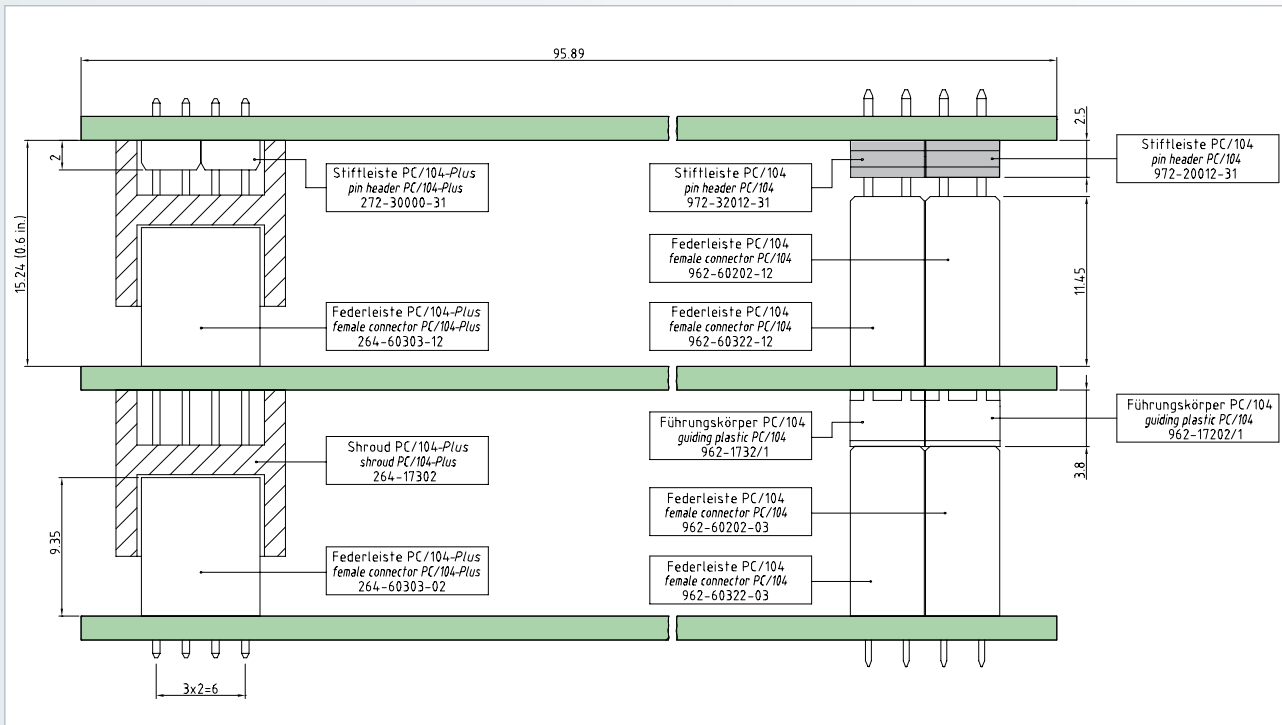
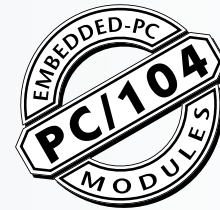
PC/104 and PC/104-Plus connector

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.



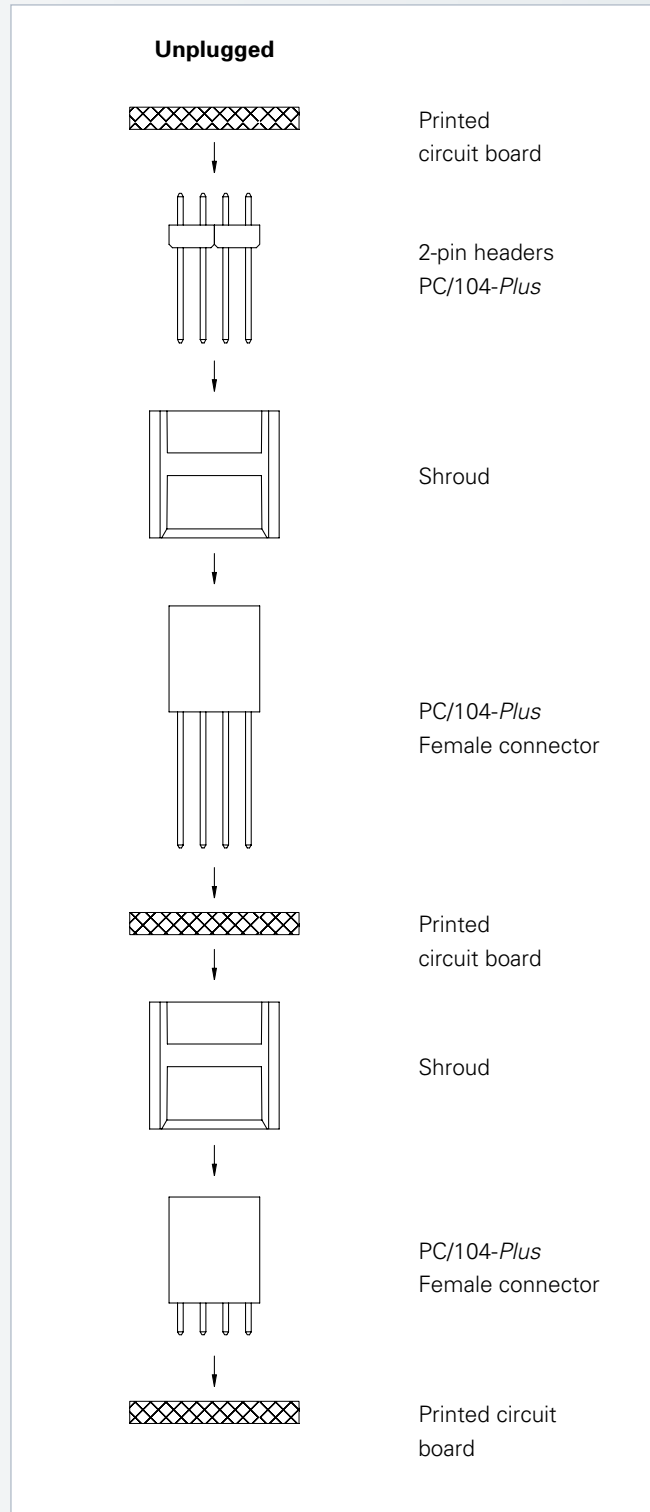
PC/104 and PC/104-Plus press-fit connectors from ept offer various advantages:

- 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.

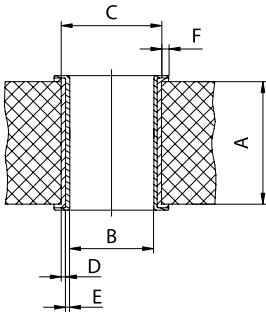


Technical specifications

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 ⁸ MΩ		
Engaging force per pin	max. 0.9 N	max. 1.5 N	max. 1.8 N
Separating force per pin	min. 0.6 N	min. 0.3 N	min. 1 N
Insertion force per pin	max. 80 N		
Insulator material	PBT, UL 94V-0		
Contact	Copper alloy		
Contact surface	Au		
Environment/ approvals	RoHS compliant/UL (file: E130314)		

Hole specifications

		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 + 0.09/-0.00 mm	Ø 1 + 0.09/-0.00 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 + 0.09/-0.00 mm	Ø 1 + 0.09/-0.00 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 more than 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 + 0.09/-0.00 mm	Ø 1 + 0.09/-0.04 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 + 0.09/-0.02 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

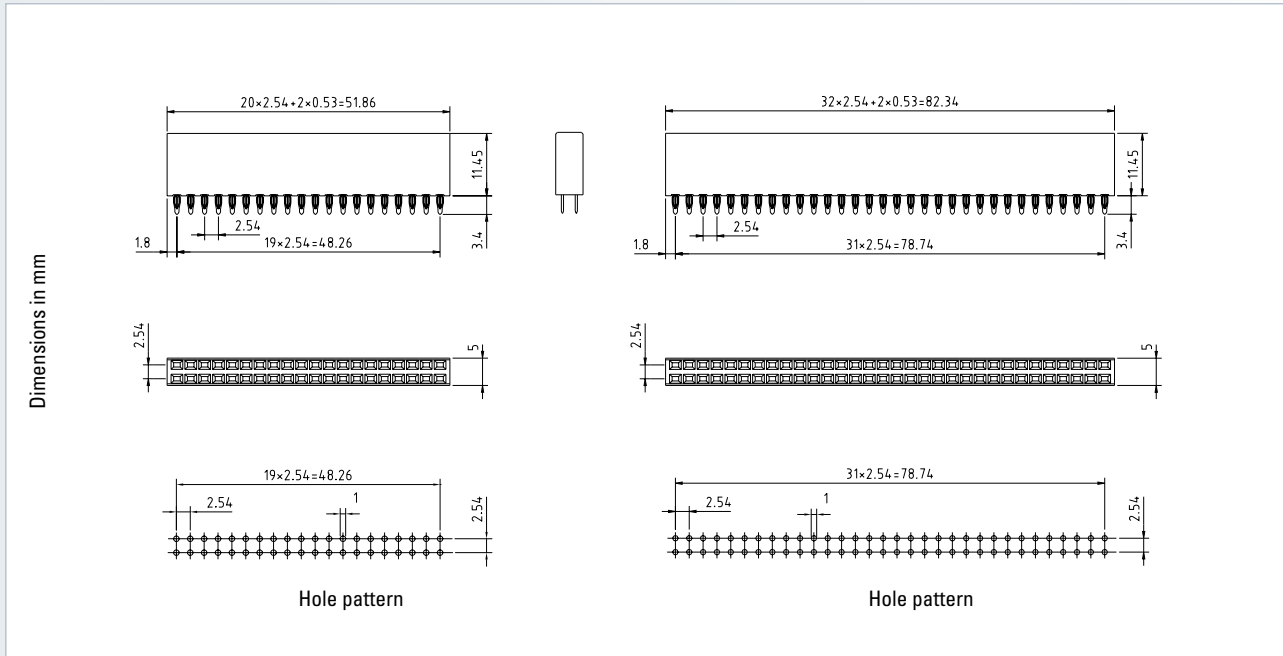


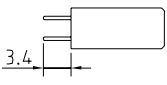
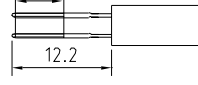
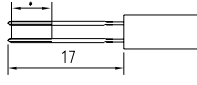
*OSP = Organic Solderability Preservative

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

PC/104

Female connector



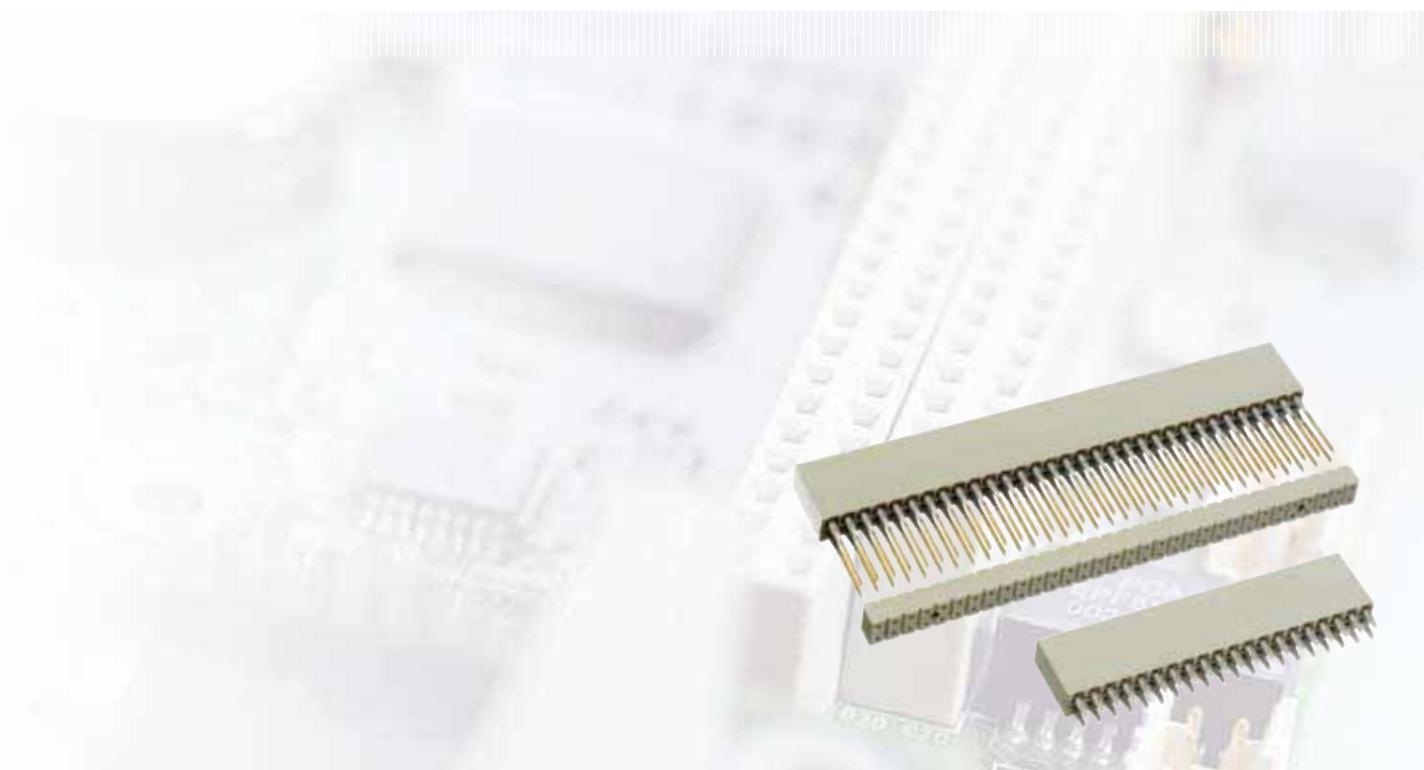
No. of contacts	Performance level	Press-fit technology		
		Termination length		
				
Part number				
40	II	962-60206-03	962-60206-12	962-60206-17
40	III	962-60202-03	962-60202-12	962-60202-17
64	II	962-60326-03	962-60326-12	962-60326-17
64	III	962-60322-03	962-60322-12	962-60322-17

Accessories

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

Note

- *Bar mating zone Ni, A
- Aa contact length of 12.2 mm a guiding lock is scope of delivery

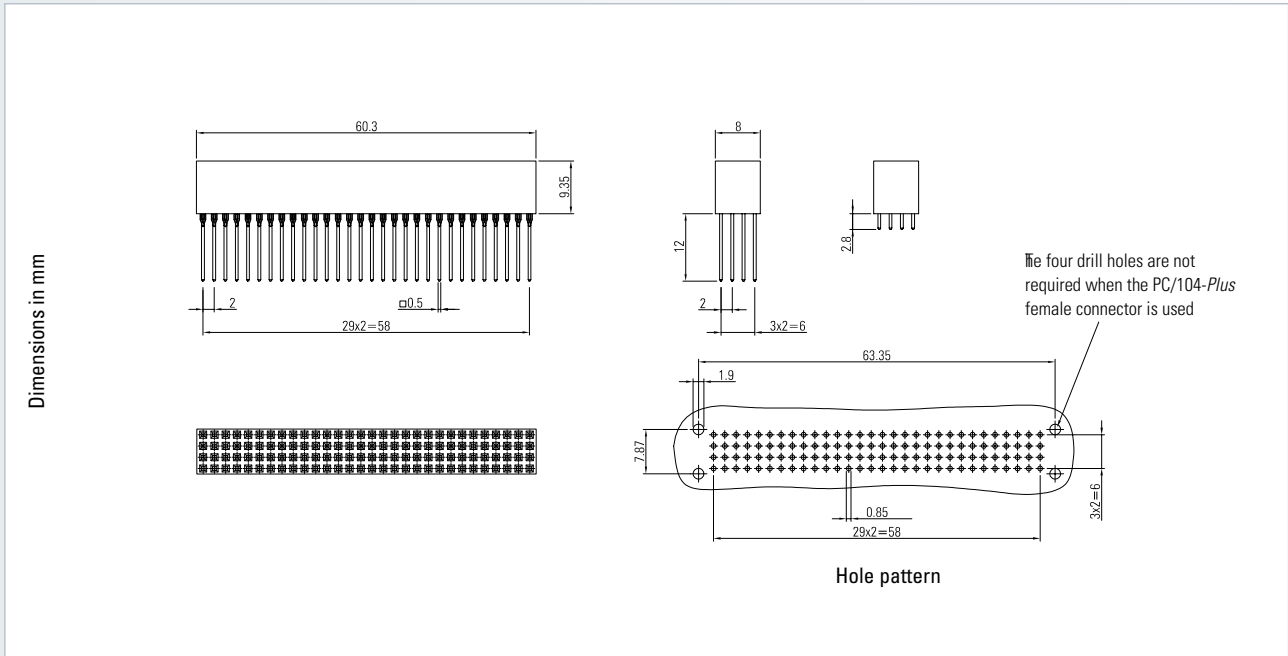


No. of contacts	Performance level	Solder technology
		Termination length
Part number		
40	II	962-40206-03
40	III	962-40202-03
64	II	962-40326-03
64	III	962-40322-03

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

PC/104-Plus

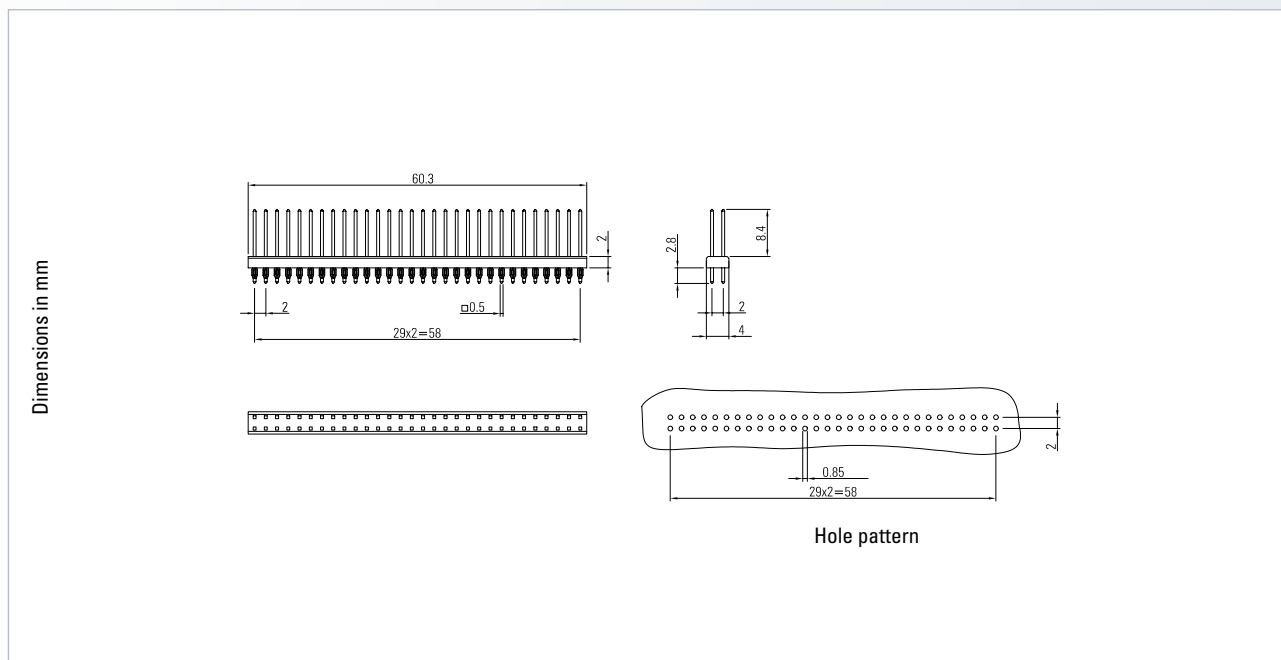
Female connector

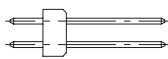


	Press-fit technology – Performance level III		Solder technology – Performance level III
	Termination length		
No. of contacts			
	Part number		
120	264-60303-02	264-60303-12	264-40303-02

- Accessories**
- Press-fit tool (see page 214)
 - Support tool (see page 215)
 - Shroud (see page 174)
- On request**
- Other contact numbers





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

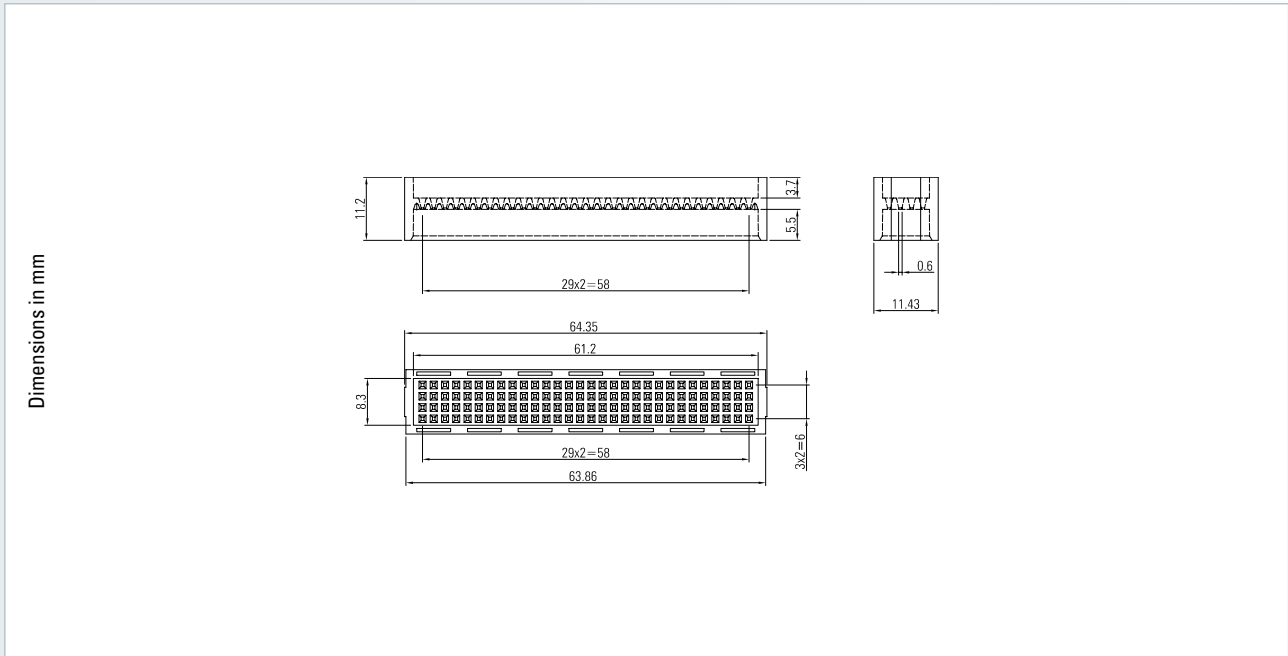
Accessories
– Press-fit tool (see page 214)
– Support tool (see page 215)
On request
– Other lengths
– Other contact numbers



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

PC/104, PC/104-Plus

Accessories



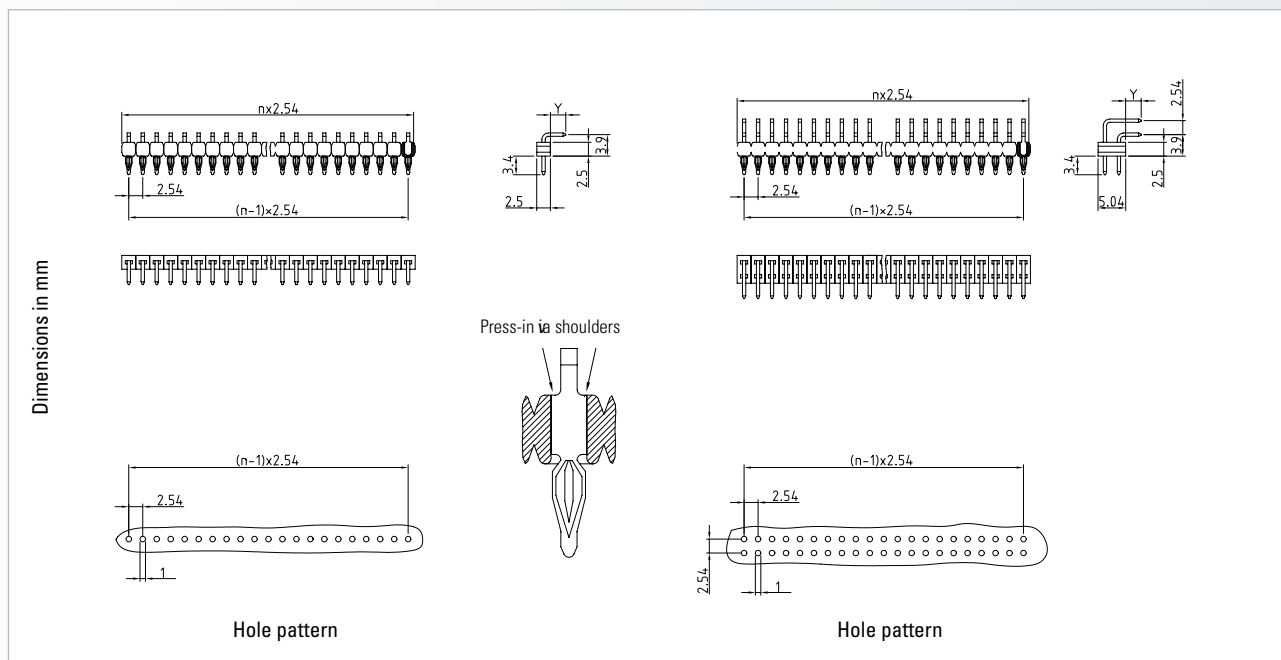
	PC/104	PC/104-Plus	
	Guiding block	Shroud	Spacer
No. of contacts			
	Part number		
40	962-17202/1	-	-
64	962-17322/1	-	-
120	-	264-17302	264-16302



PC/104-Plus shroud



PC/104 guiding block



No. of contacts	Y	Press-fit technology	
		Termination length	
max. 54	1-row		
		Part number	
		2.8	981-nn010-b1
		5.6	981-nn011-b1
max. 108	2-row	7.8	981-nn012-b1
		10.6	981-nn013-b1
		2.8	982-nn010-b1
	5.6	982-nn011-b1	

Accessories

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

Note

Surfaces Δ side (b)
 $b \geq 0.80 \text{ mm } \Delta$ on 1.27 mm Ni
 $b \geq 0.15 \text{ mm } \Delta$ on 1.27 mm Ni

Ordering note

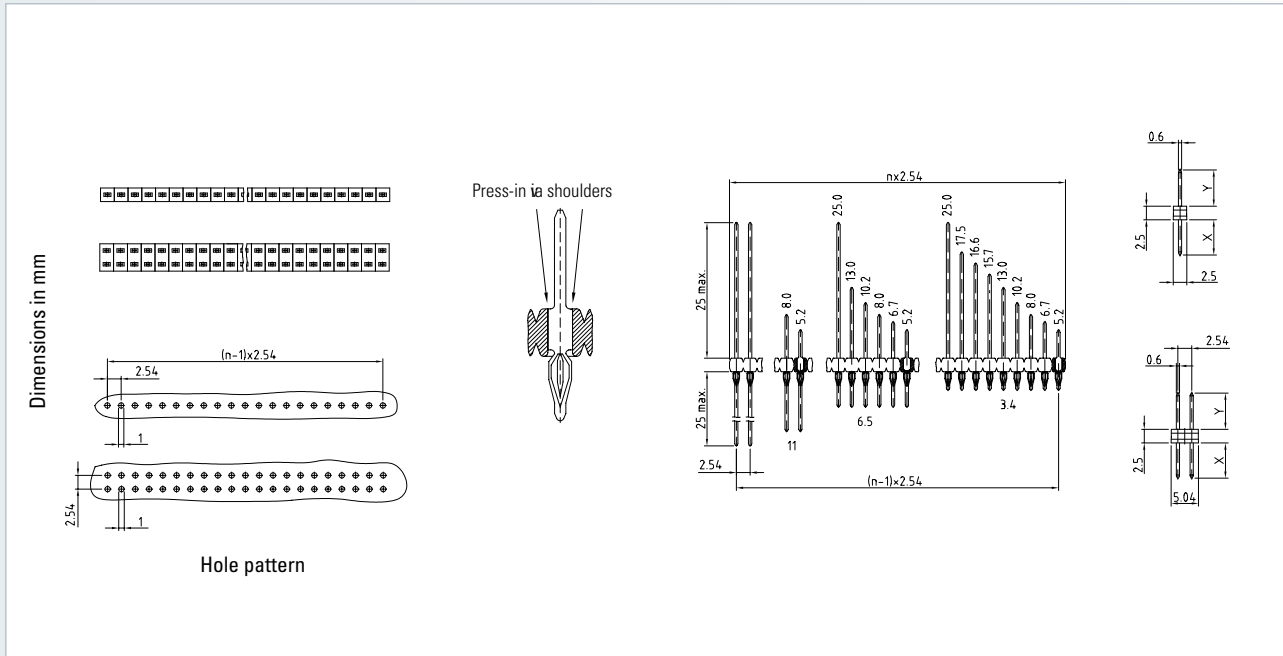
nn = no. of contacts/row
 b = surface Δ side



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VarPol connectors

Straight pin header



No. of contacts	Y	Press-fit technology			
		Termination length			
		Part number			
max. 54	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	—
		15.7	971-nn026-b1*	—	—
		16.6	971-nn006-b1*	—	—
		17.5	971-nn018-b1*	—	—
		25.0	971-nn019-b1*	971-nn029-ba	—

Accessories – Press-fit tool (see page 214) – Support tool (see page 215)	Note Surfaces Yside (b) a $\pm 0.80 \mu\text{m}$ on 1.27 μm Ni b $\pm 0.15 \mu\text{m}$ on 1.27 μm Ni Surfaces Xside (interface zone a) a $\pm 0.80 \mu\text{m}$ on 1.27 μm Ni a $\pm 0.15 \mu\text{m}$ on 1.27 μm Ni
On request – Other pin lengths	Ordering note nn = no. of contacts/row b = surface Yside a = surface Xside 1 if X ≥ 3 mm (no interface zone), surface a cannot be selected



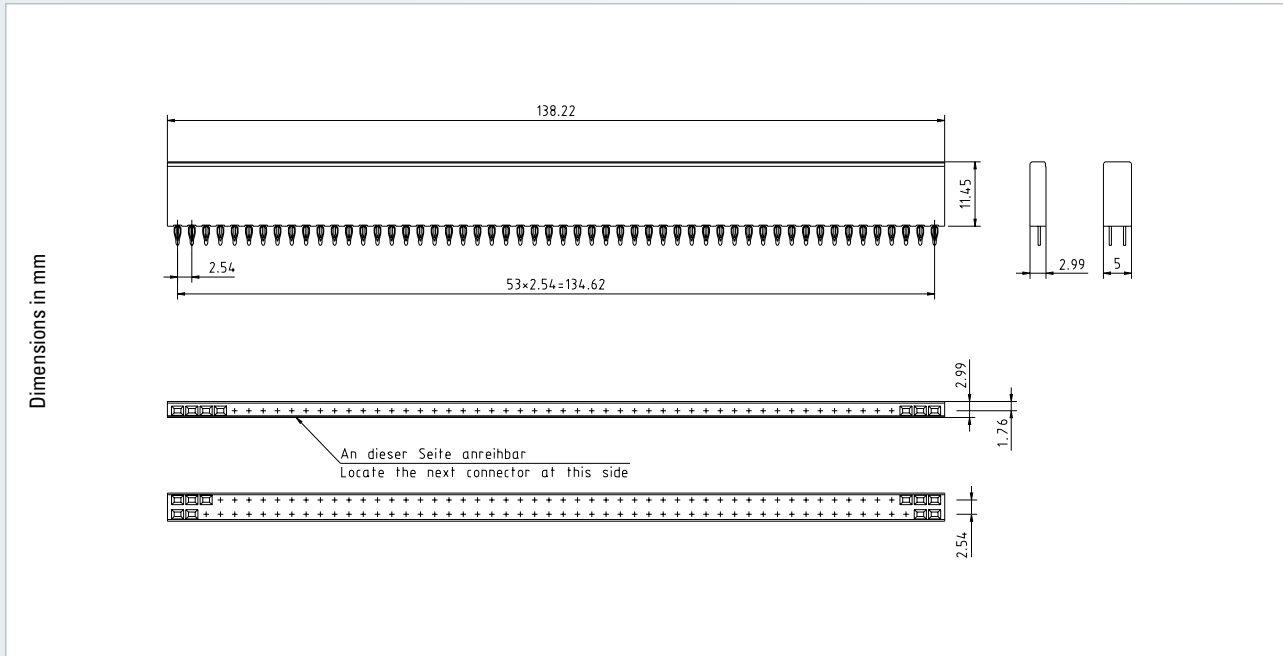
No. of contacts	Y	Press-fit technology			
		Termination length			
		Part number			
max. 108	2-row	5.2	972-nn010-b1*	972-nn020-ba	972-nn050-ba
		6.7	972-nn009-b1*	972-nn039-ba	–
		8.0	972-nn011-b1*	972-nn021-ba	972-nn051-ba
		10.2	972-nn012-b1*	972-nn022-ba	–
		13.0	972-nn013-b1*	972-nn023-ba	–
		15.7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

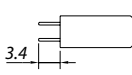
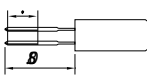
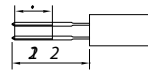
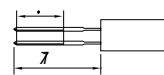
Accessories – Press-fit tool (see page 214) – Support tool (see page 215)	Note Surfaces Yside (b) b ±0.80 mm Δ on 1.27 μm Ni b ±0.15 mm Δ on 1.27 μm Ni Surfaces Xside (interface zone a) a ±0.80 mm Δ on 1.27 μm Ni a ±0.15 mm Δ on 1.27 μm Ni
On request – Other pin lengths	Ordering note nn = no. of contacts/row b = surface Yside a = surface Xside 1 f X34 mm (no interface zone), surface a cannot b 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. 54	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

- 2-row guide lock 962-17nn2/1 (see page 174)
- Press-fit tool (see page 214)
- Support tool (see page 215)

Note

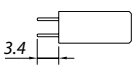
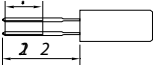
- *Plug-in zone Ni,A
- nn = no. of contacts/row

Ordering note

- Example for female connector:
2-row, 100 contacts performance level II, post length 31 mm
- Example for guide lock: 2-row, 100 contacts

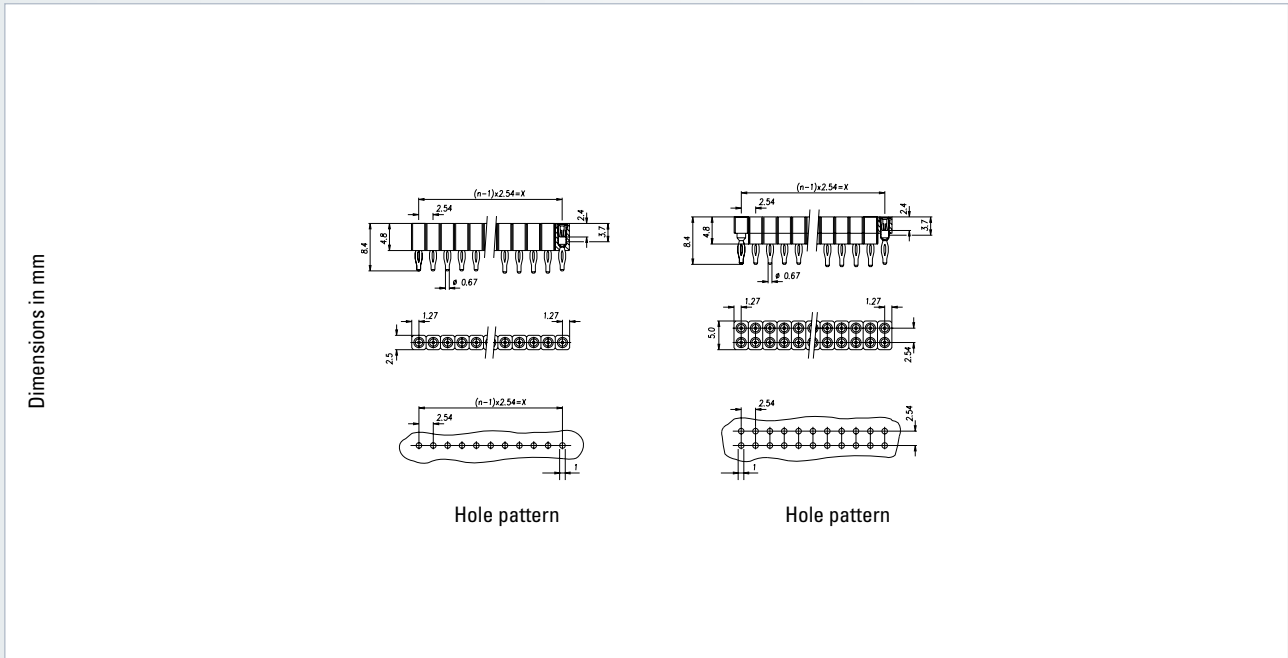
962-60506-03
962-17502/1



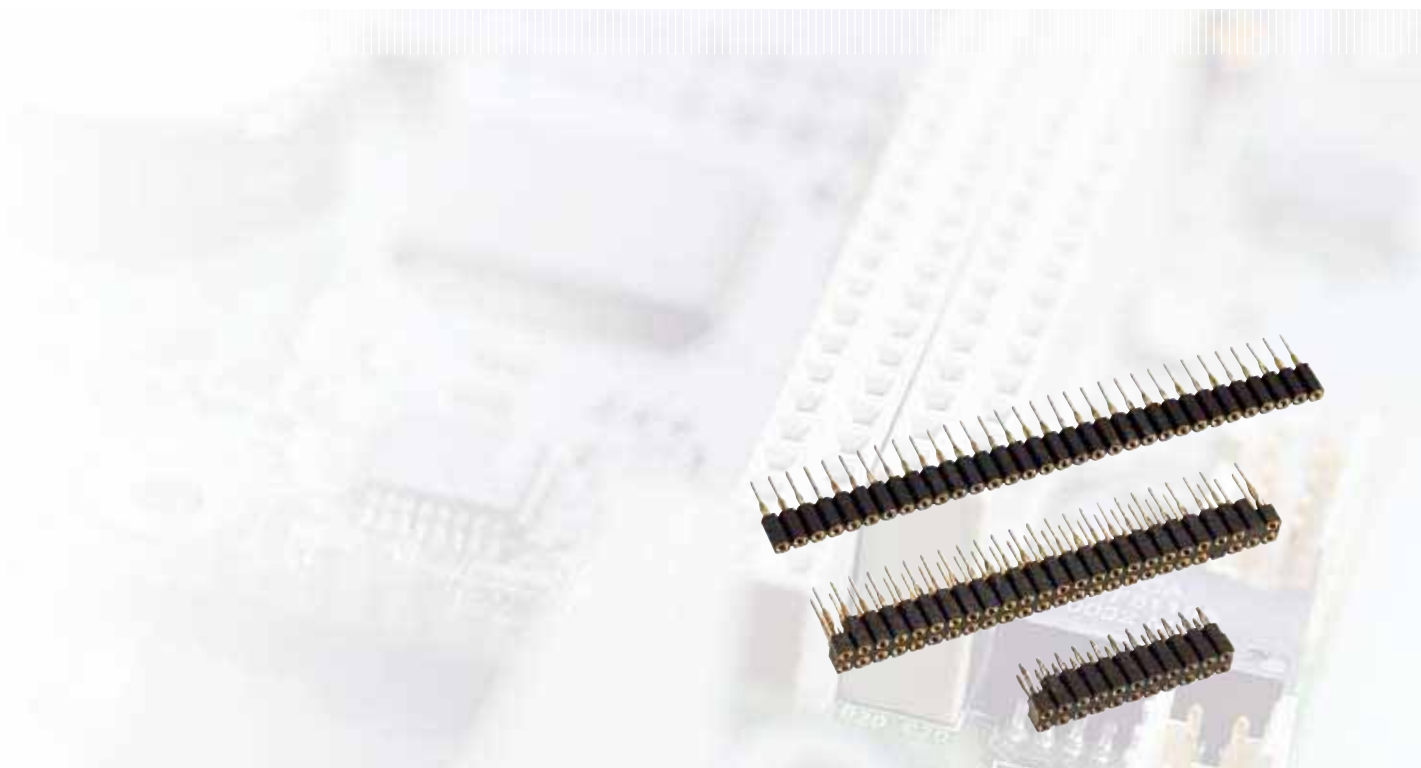
No. of contacts		Performance level	Solder technology	
			Termination length	
				
Part number				
max. 54	1-row	II	961-40nn6-03	961-40nn6-12
		III	961-40nn2-03	961-40nn2-12
max. 108	2-row	II	962-40nn6-03	962-40nn6-12
		III	962-40nn2-03	962-40nn2-12

<p>Note – nn = no. of contacts/row</p>	<p>Ordering note Example for female connector: 2-row, 100 contacts performance level II, post length 34 mm</p> <p style="text-align: right;">962-40506-03</p>
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PC/104, PC/104-Plus, VarPol connector
Socket connector



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



On request

- Press-fit tool
- Support tool

Note

- Bar mating zone Ni, A

Ordering note

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

936-66145