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SECTION 6

PC104 AND PC104PLUS CONNECTORS

Numerous manufacturers now use these standards for system architecture. This has promoted the triumphant march of the "personal computer" to be carried over into the field of industrial production, in the form of IPCs (industrial personal computers).

Prerequisite for this was an adaptation of these well-known "office world" systems to the requirements and conditions prevailing in industrial production environments.

Among the most important development goals incorporated into the specifications were

- a compact form-factor of about 90 mm x 96 mm (3.6 x 3.8 inches) for individual, low-profile function modules,
- a universal, self-building bus system to achieve superior modularity and compatibility,
- the definition of a robust, reliable connector system capable of replacing the edge connectors common to the PC world,
- reduced power requirements for modules.

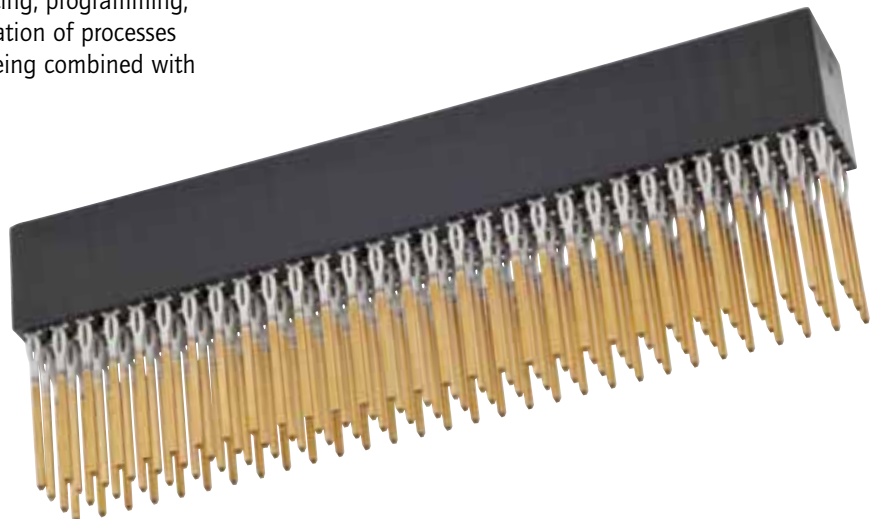
Realization of these goals has made it possible for today's industrial PCs to be deployed in the operating, programming, visualization, long-term archival and simulation of processes – and beyond this – they are capable of being combined with conventional industrial controllers or PLCs.

Specification-compliant bus connectors play a key role in PC104 and PC104plus system architecture interconnections.

In order to form a 104-pole ISA bus, the standard defines two, two-row connectors having a 2.54 mm contact grid; one connector with 64 contacts, the other with 40 contacts. These connectors must be located on the circuit board at prescribed positions.

In order to achieve a self-building system through the stacking of modules, these connectors are designed as "stack-through" and "non-stack-through" (terminating) connectors.

Stack through connectors have 12.2 mm and 17.0 mm long contacts and they function both as a pin connector and as a socket connector for signals routed from level-to-level in the module stack.





Press-fit contacts are the preferred technology for circuit board stack-through connectors. Terminating connectors with short contacts are used on the first stack level. These are often available either as solder or press-fit versions.

The PC104plus specification defines a connector for implementing a PCI bus. It is a 4 x 30 positions connector with a 2.00 mm contact grid pattern.

Because of the smaller grid spacing and increased contact density exhibited by these connectors, the specification describes an additional shroud that is to be plugged onto the circuit board's underside. This shroud stabilizes the stack-through contacts and ensures they are properly guided when modules are stacked.

PC104 and PC104plus connectors are specified to be compatible so that a mix of modules, compliant with either specification, can be used together in a single system configuration— which is often the case.

CONEC uses for its PC104 and PC104plus connectors a flexible press fit termination. This Eye of the needle design preserves the circuit board during the press-fit process and it ensures good retention force for the mounted component.



TECHNICAL DATA

PC104 Connectors

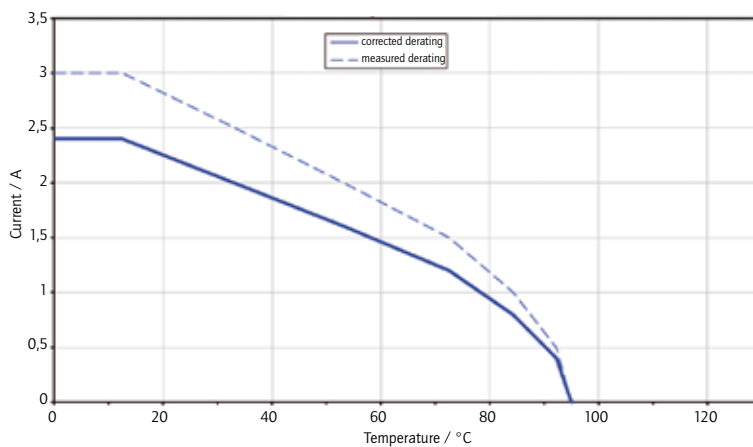
Materials	
Insulator	PBT, GF, UL94 V-0
Contacts	Copper alloy

Electrical Characteristics	
Current rating	2.2 A in acc. to IEC 60512-5-2
Contact resistance	< 20 mΩ
Working temperature	-55°C to +95°C

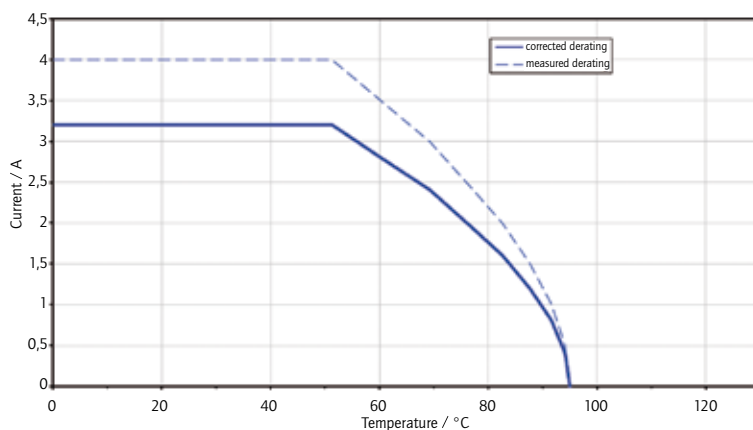
Mechanical characteristics	
Mating force	max. 0.9 N/Pin with test Pin Ø 0.6 mm
Withdrawal force	min. 0.3 N/Pin with test Pin Ø 0.6 mm
Press-in force	max. 80 N/Pin
PCB thickness	1.6 mm
Creepage distance	min. 1.2 mm

Technical alterations are subjects to change without notice.

Derating curve 100-pos. connector – all contacts loaded



Derating curve 64-pos. connector – contacts loaded in acc. to PC104 specification



TECHNICAL DATA

PC104plus Connectors

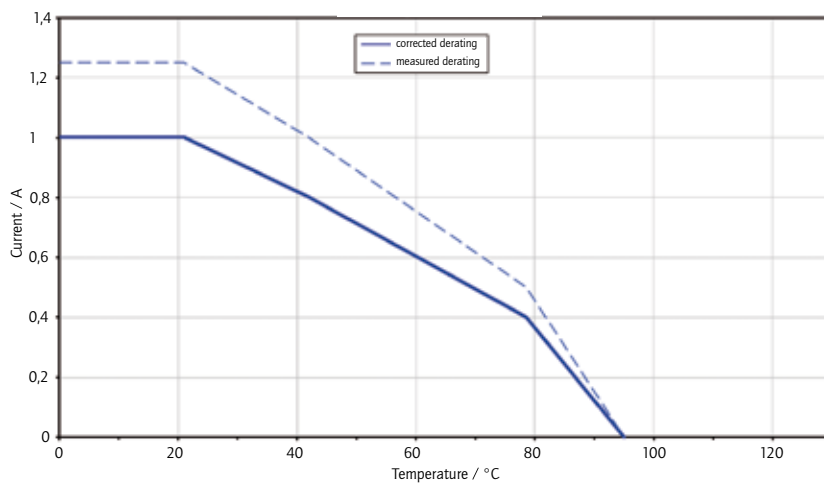
Materials	
Insulator	PBT, GF, UL94 V-0
Contacts	Copper alloy

Electrical Characteristics	
Current rating	1 A ref. IEC 60512-5-2
Contact resistance	< 20 mΩ
Working temperature	-55°C to +95°C

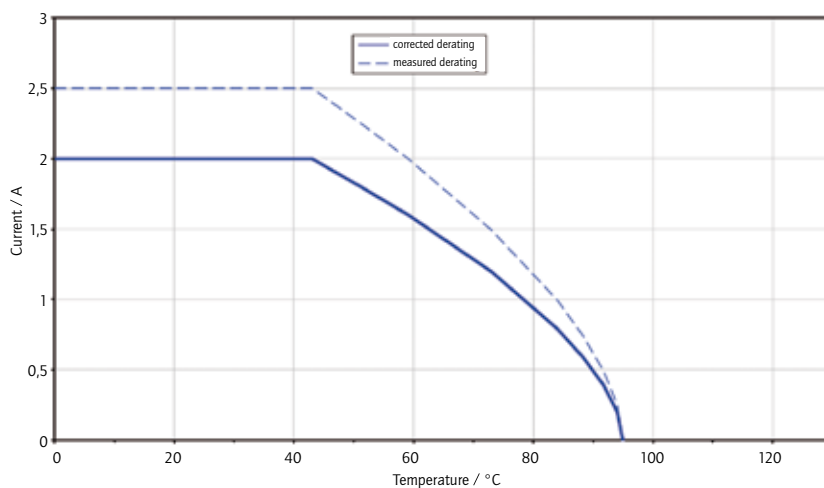
Mechanical characteristics	
Mating force	max. 1.5 N / Pin with test Pin Ø 0.5 mm
Withdrawal force	min. 0.3 N / Pin with test Pin Ø 0.5 mm
Press-in force	max. 80 N / Pin
PCB thickness	1.4 mm
Creepage distance	min. 0.6 mm

Technical alterations are subjects to change without notice.

Derating curve 120-pos. connector – all contacts loaded

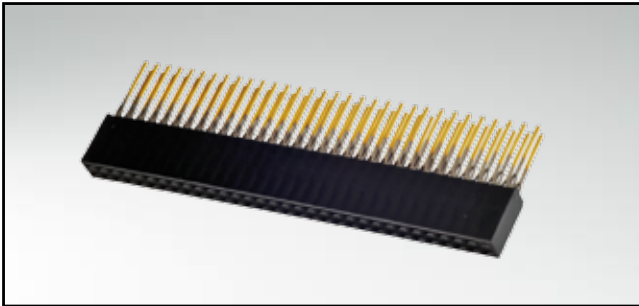


Derating curve 120-pos. connector – contacts loaded in acc. to PC104 specification



PC104 STACK-THROUGH VERSION

Female connector – straight – press fit contact – contact length 12.2 mm

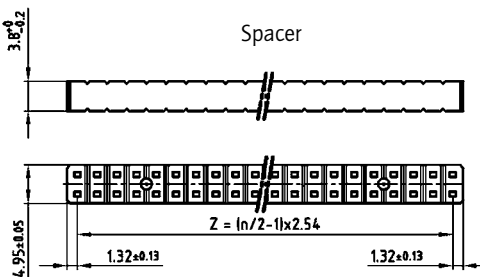
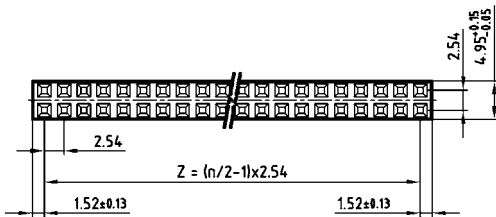
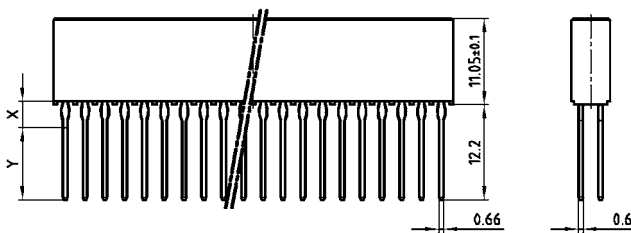


RoHS compliant

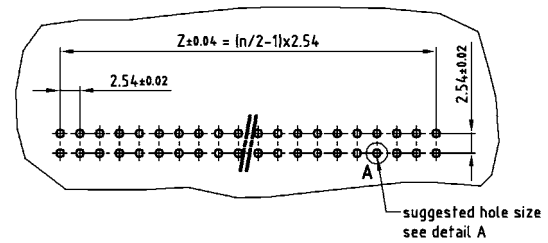
DESCRIPTION

- Standard version for PC104 module height 15.0 mm
- Flexible press fit design
- Double beam contacts
- 40/64/100 positions version (further versions on request)
- Quality class 3 and alternative quality class 2 available on request
- Delivered as a set with "spacer"

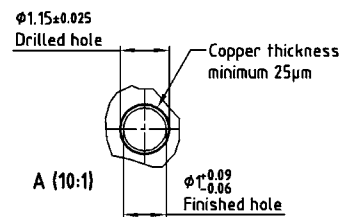
PRODUCT DRAWING



PCB-hole pattern



Quality Class	Plating		
	Mating Area	Post Area "X"	Post Area "Y"
3	0.25 µm Au	1.3 µm Sn 100 matt	0.10 µm Au
2	0.40 µm Au	1.3 µm Sn 100 matt	0.25 µm Au



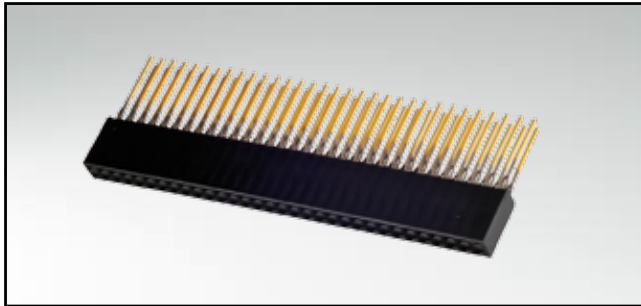
ORDER DATA

(Dim. = mm)

Number of positions	Quality class 3	Quality class 2
40	49-000023	49-000022
64	49-000103	49-000102
100	49-000143	49-000142

PC104 STACK-THROUGH VERSION

Female connector – straight – press fit contact – contact length 17 mm

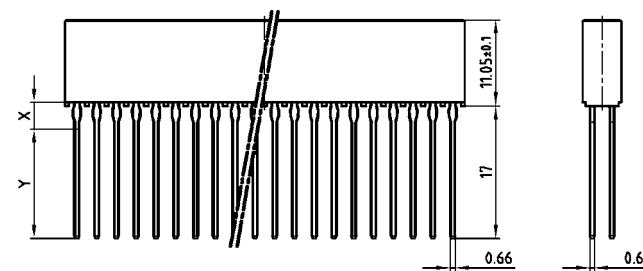


RoHS compliant

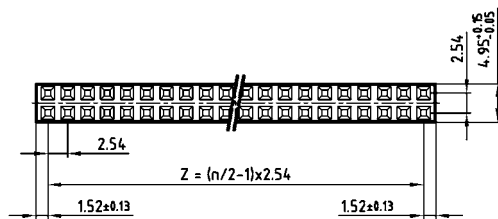
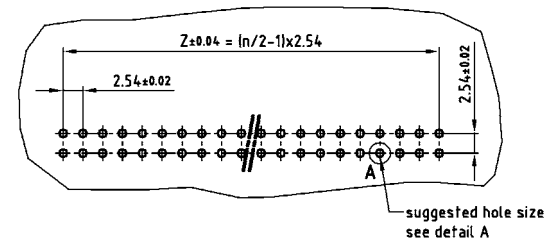
DESCRIPTION

- Special contact length to achieve higher module stacks
- Flexible press fit design
- Double beam contacts
- 40/64/100 positions version (further versions on request)
- Quality class 3 and alternative quality class 2 available on request
- Delivered as a set with "spacer"

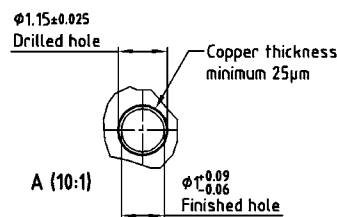
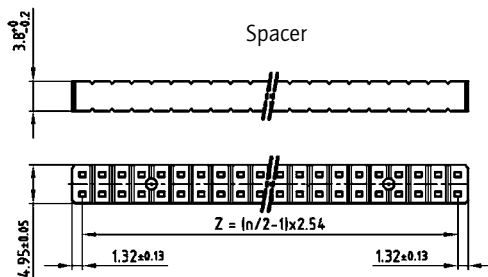
PRODUCT DRAWING



PCB-hole pattern



Quality Class	Plating		
	Mating Area	Post Area "X"	Post Area "Y"
3	0.25 µm Au	1.3 µm Sn 100 matt	0.10 µm Au
2	0.40 µm Au	1.3 µm Sn 100 matt	0.25 µm Au



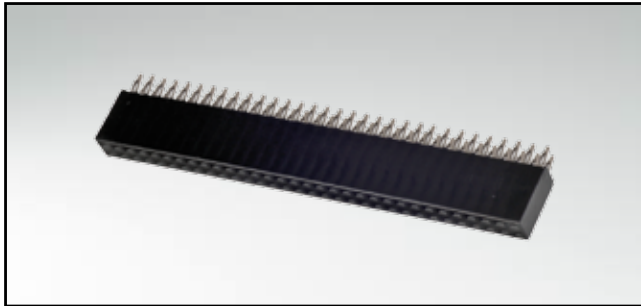
ORDER DATA

(Dim. = mm)

Number of positions	Quality class 3	Quality class 2
40	49-000033	49-000032
64	49-000113	49-000112
100	49-000153	49-000152

PC104 Non-Stack-Through Version

Female connector – straight – press fit contact – contact length 3.4 mm

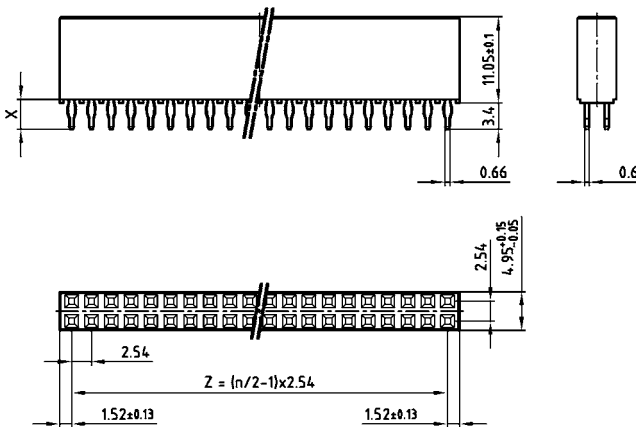


RoHS compliant

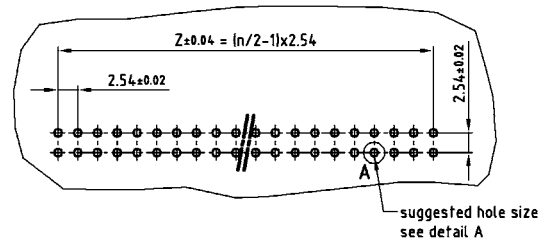
DESCRIPTION

- Flexible press fit design
- Double beam contacts
- 40/64/100 positions version (further versions on request)
- Quality class 3 and alternative quality class 2 available on request

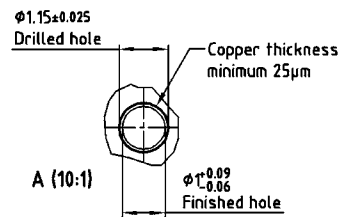
PRODUCT DRAWING



PCB-hole pattern



Quality Class	Plating	
	Mating Area	Post Area "X"
3	Underplate min. 1.3 µm Ni 0.25 µm Au	1.3 µm Sn 100 matt
2	0.40 µm Au	1.3 µm Sn 100 matt



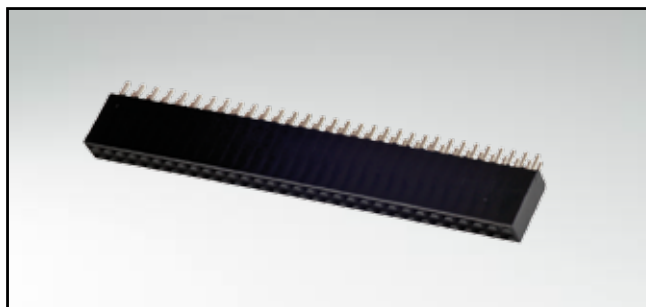
ORDER DATA

(Dim. = mm)

Number of positions	Quality class 3	Quality class 2
40	49-000013	49-000012
64	49-000093	49-000092
100	49-000133	49-000132

PC104 NON-STACK-THROUGH VERSION

Female connector – straight – solder pin – contact length 3.4 mm

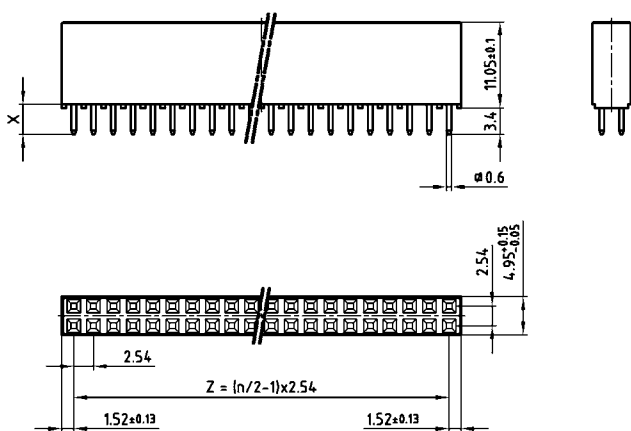


RoHS compliant

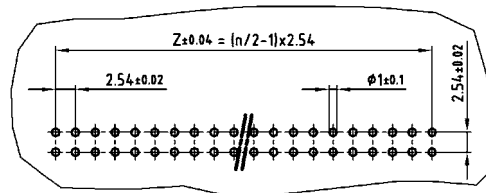
DESCRIPTION

- Double beam contacts
- 40/64/100 positions version (further versions on request)
- Quality class 3 and alternative quality class 2 available on request

PRODUCT DRAWING



PCB-hole pattern



Quality Class	Plating	
	Mating Area	Post Area "X"
3	0.25 μ m Au	1.3 μ m Sn 100 matt
2	0.40 μ m Au	1.3 μ m Sn 100 matt

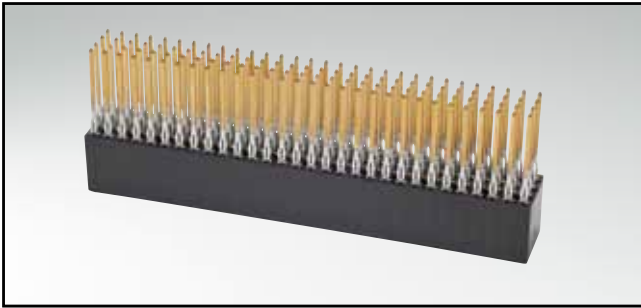
ORDER DATA

(Dim. = mm)

Number of positions	Quality class 3	Quality class 2
40	49-000043	49-000042
64	49-000123	49-000122
100	49-000163	49-000162

PC104PLUS STACK-THROUGH VERSION

Female connector – straight – press fit contact – contact length 12.2 mm

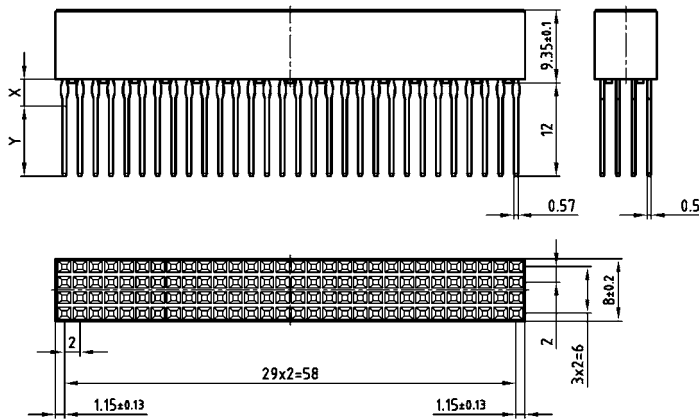


RoHS compliant

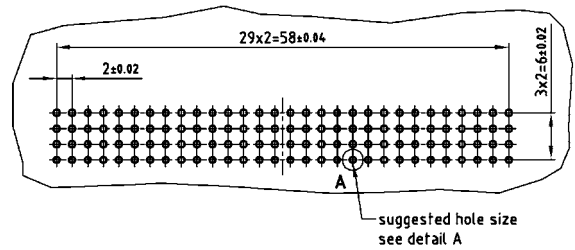
DESCRIPTION

- Flexible press fit design
- Double beam contacts
- Standard version 120 positions
- Quality class 3 and alternative quality class 2 available on request

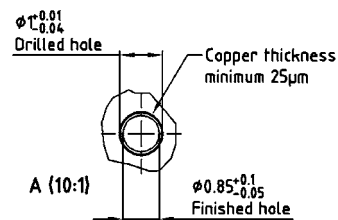
PRODUCT DRAWING



PCB-hole pattern



Quality Class	Plating		
	Mating Area	Post Area "X"	Post Area "Y"
3	0.25 µm Au	1.3 µm Sn 100 matt	0.10 µm Au
2	0.40 µm Au	1.3 µm Sn 100 matt	0.25 µm Au



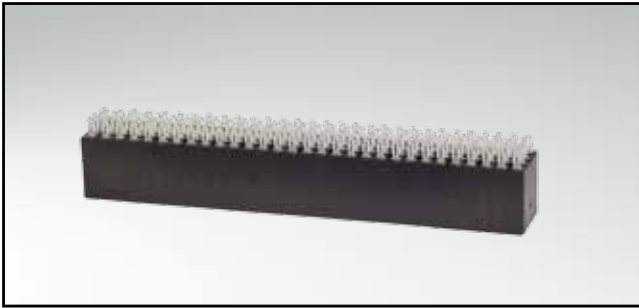
ORDER DATA

(Dim. = mm)

Number of positions	Quality class 3	Quality class 2
120	49-100023	49-100022

PC104PLUS NON-STACK-THROUGH VERSION

Female connector – straight – press fit contact – contact length 3.0 mm

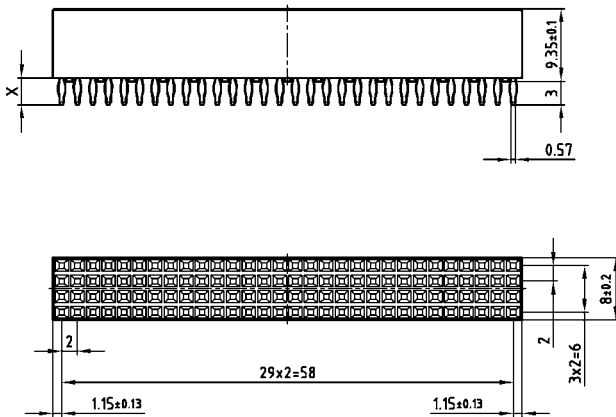


RoHS compliant

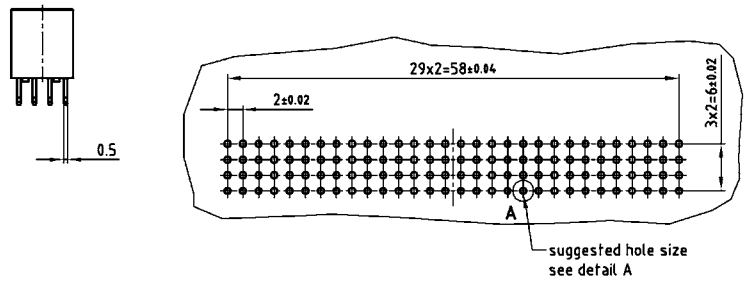
DESCRIPTION

- Flexible press fit design
- Double beam contacts
- Standard version 120-position
- Quality class 3 and alternative quality class 2 available on request

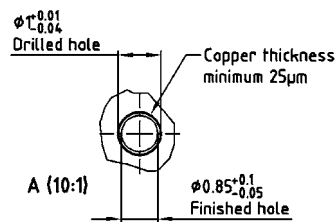
PRODUCT DRAWING



PCB-hole pattern



Quality Class	Plating	
	Mating Area	Post Area "X"
3	Underplate min. 1.3 µm Ni 0.25 µm Au	1.3 µm Sn 100 matt
2	0.40 µm Au	1.3 µm Sn 100 matt



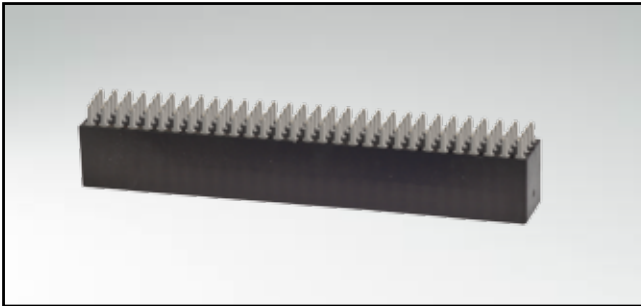
ORDER DATA

(Dim. = mm)

Number of positions	Quality class 3	Quality class 2
120	49-100013	49-100012

PC104PLUS NON-STACK-THROUGH VERSION

Female connector – straight – solder pin – contact length 3.0 mm

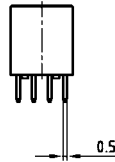
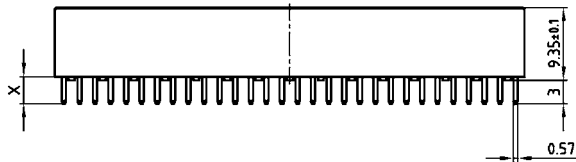


RoHS compliant

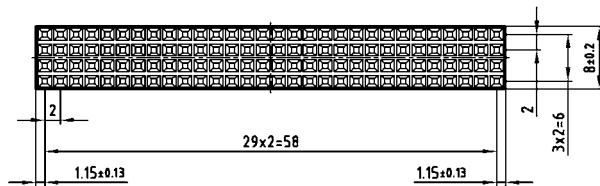
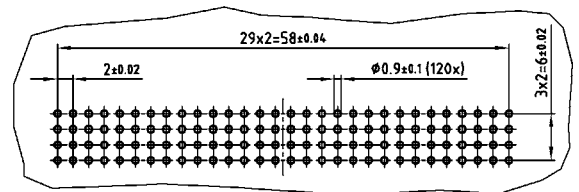
DESCRIPTION

- Double beam contacts
- Standard version 120-position
- Standard finishing quality class 2, alternative quality class 3

PRODUCT DRAWING



PCB-hole pattern



Quality Class	Plating	
	Mating Area	Post Area "X"
3	0.25 μm Au	1.3 μm Sn 100 matt
2	0.40 μm Au	1.3 μm Sn 100 matt

ORDER DATA

(Dim. = mm)

Number of positions	Quality class 3	Quality class 2
120	49-100003	49-100002

PC104 UND PC104PLUS ACCESSORIES

Spacer and interconnection housing "shroud"



RoHS compliant

DESCRIPTION

Spacer

- Can be ordered separately
- 40 / 64 / 100 positions version (further positions on request)

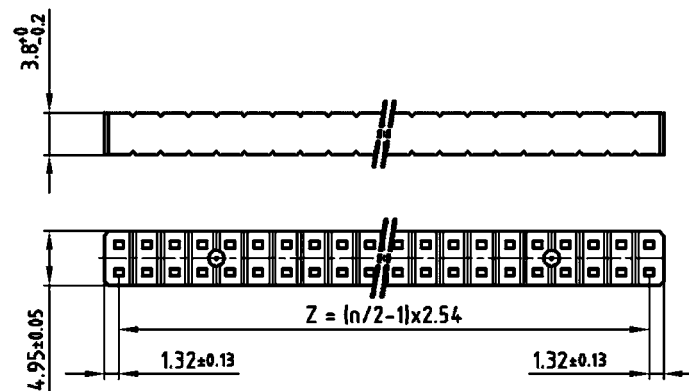
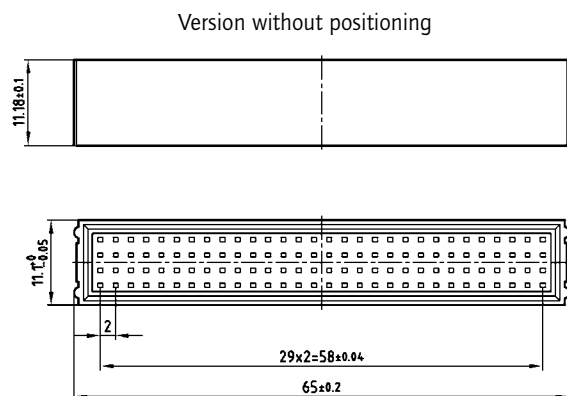
Interconnection housing (shroud)

- Specific shroud to stabilize and guide stack-through contacts
- Available with and without positioning
- Color is black (further colors on request)

PRODUCT DRAWING

Interconnection housing for PC104plus

Spacer for PC104



(Dim. = mm)

ORDER DATA

INTERCONNECTION HOUSING PC104PLUS		
No. of Pos.	Design	Part number
120	with positioning	49-100030
120	without positioning	49-100040

SPACER FOR PC104	
Number of positions	Part number
40	49-100080
64	49-100060
100	49-100050

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