



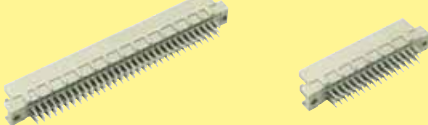






Connectors with press-in termination

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Solderless termination for connectors has proven to be reliable for decades. Today the use of press-in connectors encompasses all fields of electrical and electronical applications.

Pressing of electrical components, mainly connectors, is characterised through the matching of the connector pin and the plated through hole of the pcb. Whereas the desired electrical characteristics can be attained relatively independant from the design of the press-in zone, the mechanical characteristics of the press-in zone are crucial for the reliable assembly of connectors where pcb's have different surfaces.

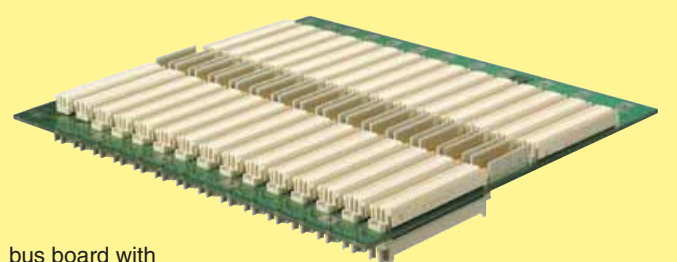
Although the scope of requirements at the press-in process is generally defined in time-tested specifications, the novel press-in zones should offer an optimal handling and a reliable termination. Essentially, this is guaranteed through the design of the press-in zone and the meticulous observance of tolerances. HARTING has been using FEM simulations for the calculation and optimisation of press-in zones for a long period of time. This expertise allows us to simulate various pcb configurations very accurate.

The processing of press-in connectors can be divided into 3 phases, containing both mechanical and metallurgical operations:

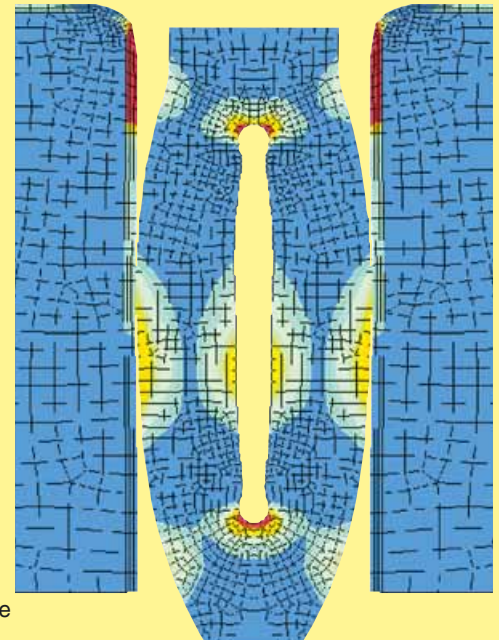
1. Centering and placing of the termination pins

The centering of connectors before pressing is important in order to prevent damage to the pcb and the termination pins. Centering can be omitted when connectors are pressed using a flat rock die.

HARTING offers insert blocks for male connectors to make the centering of connectors unnecessary.

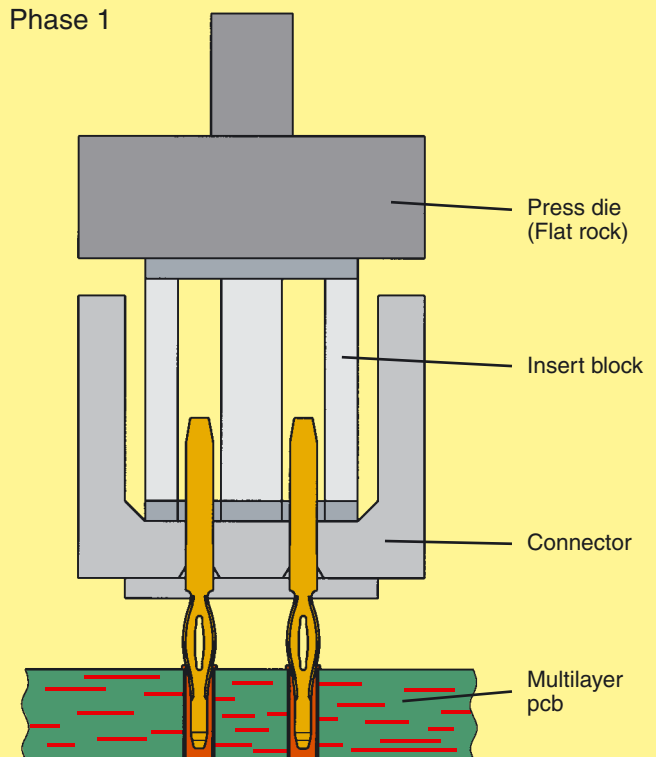


bus board with press-in connectors



FEM simulation of the needle eye press-in zone

Phase 1



2. Pressing in the pins

In the press-in process the insertion force is continuously transformed into compression force. The resulting friction frees the contacting bars of insulating films. Superfluous plating (tin) is transferred within the plated through hole. A gas-tight connection of fresh non-oxidised metal surfaces is obtained.

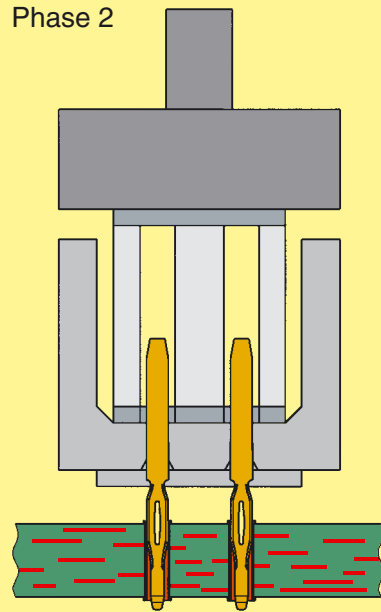
3. Obtaining the final position

The press-in operation should be terminated as soon as the connector obtains its final position on the pcb to avoid unnecessary compressive stress. The press-in machines of HARTING feature automatic termination of the press-in operation independent of pcb thickness and surface properties.

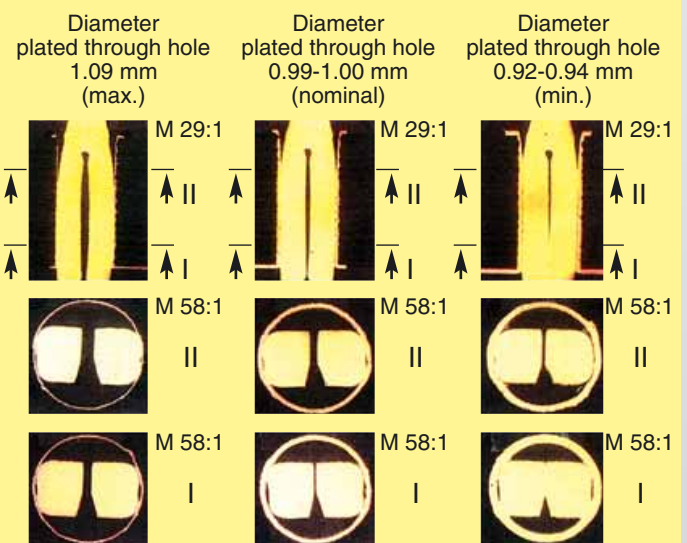
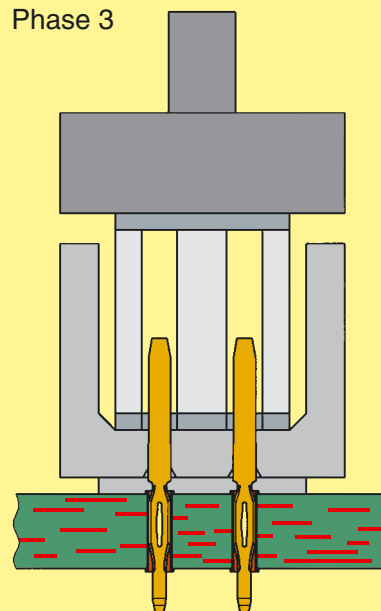
The entire dynamic press-in process is characterised through changes of the press-in force that can be statistically evaluated. HARTING records the changes of force with the help of special software. This is an important step towards permanent process control and documented manufacturing data.

The **harpress**®-zone is based on the industry renowned needle eye technology. Its special design allows for compensation of tolerances of pcb surface properties (eg. superfluous tin plating). The excessive material is displaced within the plated through hole, whereby a gas-tight and corrosion resistant electrical connection is assured.

Phase 2



Phase 3



Cross section of a pcb 2.4 mm thick with various hole diameters

Due to the high deformation resistance and resilience of **harpress**® contacts, they can be easily and repeatedly removed in case of repairs without impairment to their functioning.

harpress® is extremely versatile and offers a reliable electrical contact, therefore it is especially well suited for applications with these surfaces.

Please contact us for detailed test reports.

Benefits of the press-in technology

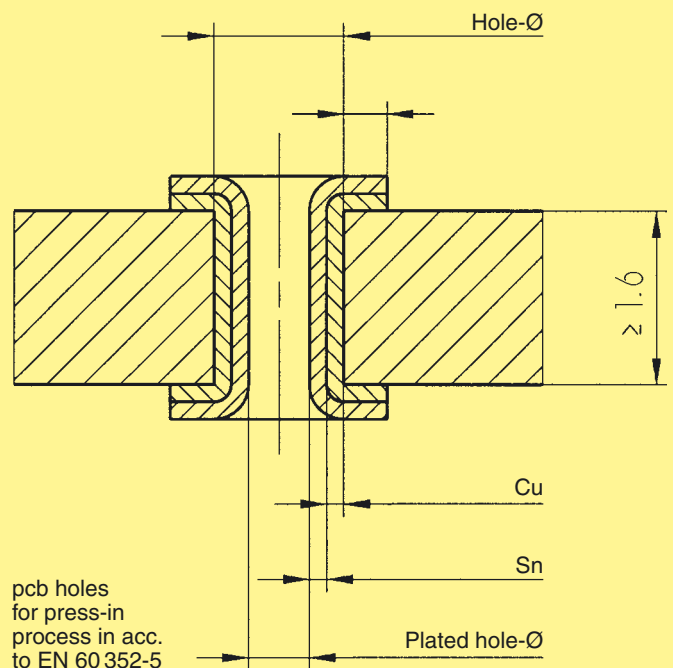
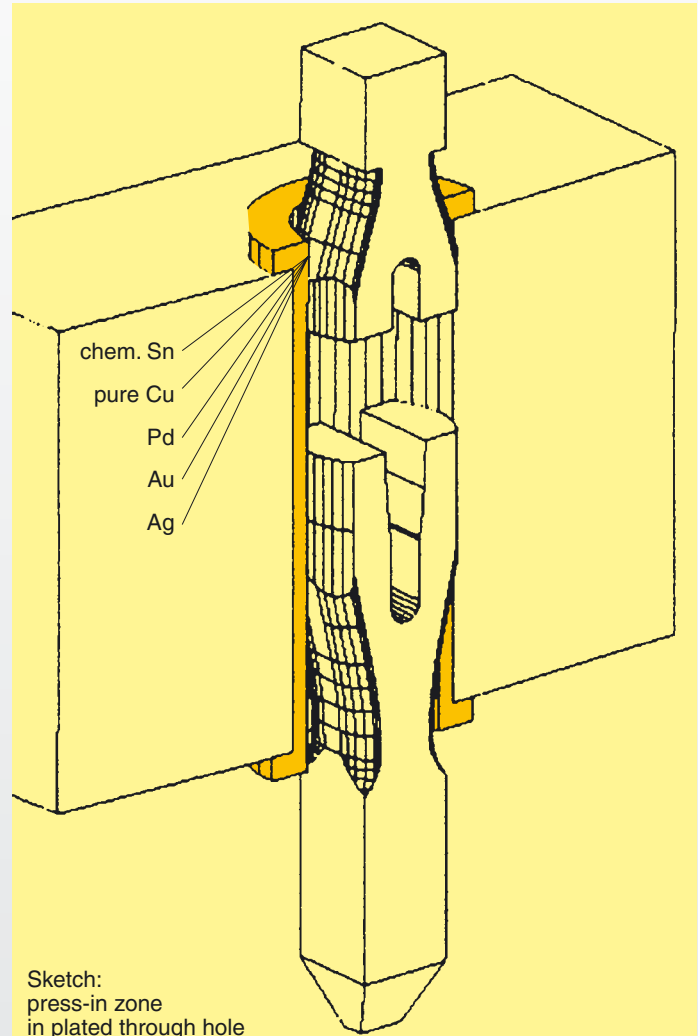
- Thermal shocks associated with the soldering process and the risk of the board malfunction are avoided.
- No need for the subsequent cleaning of the assembled pcb's
- Additional wrap connections are made possible by using connectors with long pins
- Unlimited and efficient processing of partially gold-plated pins for rear I/O - manual soldering is no longer necessary!

Recommended configuration of plated through holes

In addition to the hot-air-level (HAL) pcb surfaces are getting more important. Due to their different properties, such as mechanical strength and coefficient of friction we recommend the following configuration of pcb through holes.

<i>Tin-lead plated PCB (HAL)</i> acc. EN 60 352-5	Hole-Ø	1.15±0.025 mm
	Cu	min. 25 µm
	Sn	max. 15 µm
	Plated hole-Ø	0.94-1.09 mm
<i>Chemical tin-plated PCB</i>	Hole-Ø	1.15±0.025 mm
	Cu	min. 25 µm
	Sn	min. 0.8 µm
	Plated hole-Ø	1.00-1.10 mm
<i>Au / Ni plated PCB</i>	Hole-Ø	1.15±0.025 mm
	Cu	min. 25 µm
	Ni	3-7 µm
	Au	0.05-0.12 µm
	Plated hole-Ø	1.00-1.10 mm
<i>Silver plated PCB</i>	Hole-Ø	1.15±0.025 mm
	Cu	min. 25 µm
	Ag	0.1-0.3 µm
	Plated hole-Ø	1.00-1.10 mm
<i>OSP copper plated PCB</i>	Hole-Ø	1.15±0.025 mm
	Cu	min. 25 µm
	Plated hole-Ø	1.00-1.10 mm

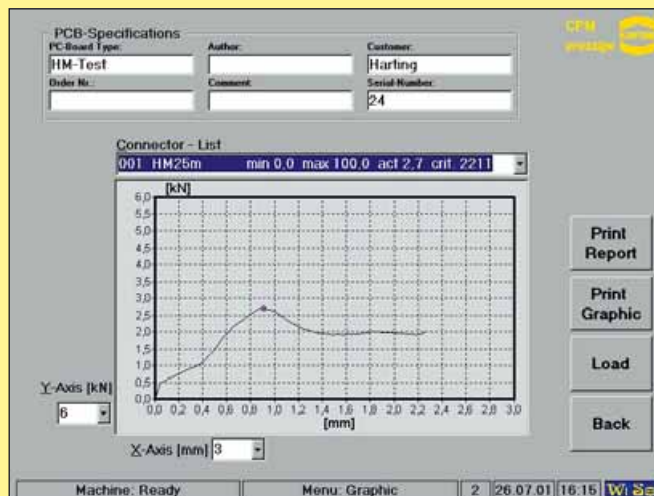
PCB board thickness: ≥ 1,6 mm



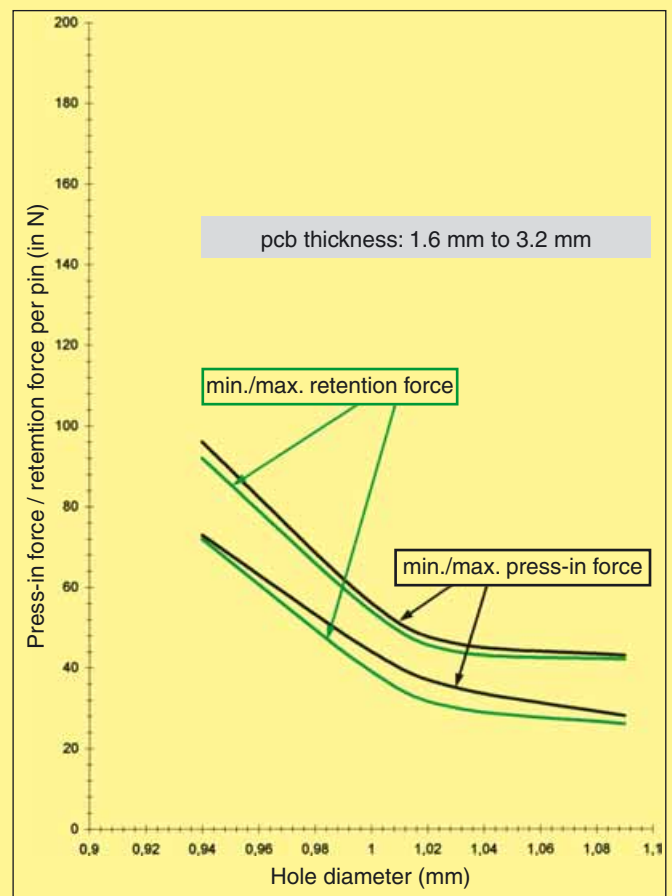
Quality control of the press-in termination

The press-in force correlates with the diameter of the plated through hole and with the friction coefficient of the surface; therefore it can be used for a continuous monitoring of the process.

The retention force, as an indirect measure of the normal force, serves to qualify the process or random tests



HARTING assists you with the most advanced quality assurance methods beyond the usual scope.



Typical press-in and retention forces for the har-press

The automatic press-in machines of HARTING feature a graphical user interface for monitoring the process and the quality of the press-in termination (see chapter 30).



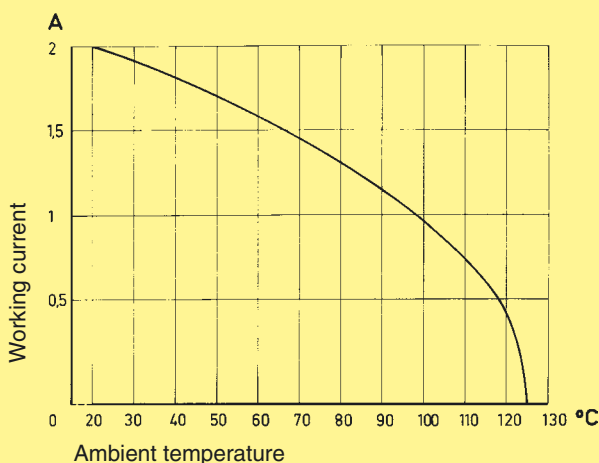
X-ray photo of a pressed-in connector

Number of contacts	32-96
Contact spacing (mm)	2.54
Working current see current carrying capacity chart	2 A max.
Clearance	≥ 1.2 mm
Creepage	≥ 1.2 mm
Working voltage The working voltage also depends on the clearance and creepage dimensions of the pcb itself and the associated wiring	according to the safety regulations of the equipment Explanations see chapter 00
Test voltage $U_{r.m.s.}$	1 kV
Contact resistance	≤ 15 m Ω
Insulation resistance	$\geq 10^{12}$ Ω
Temperature range The upper temperature is limited by the property of the pcb material	- 40 °C ... + 105 °C
Electrical termination Male and female connectors Diameter of pcb plated through holes pcb thickness Recommended pcb holes for press-in process in acc. to EN 60 352-5 ²⁾	Compliant press-in terminations 0.94-1.09 mm ≥ 1.6 mm
Insertion and withdrawal force	32pol. ≤ 30 N 48pol. ≤ 45 N 64pol. ≤ 60 N 96pol. ≤ 90 N
Materials Mouldings Contacts	Thermoplastic resin, glass-fibre filled, UL 94-V0 Copper alloy
Contact surface Contact zone	Plated according to performance level ¹⁾

Current carrying capacity

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, non 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 60 512



¹⁾ Explanation of performance levels see chapter 00

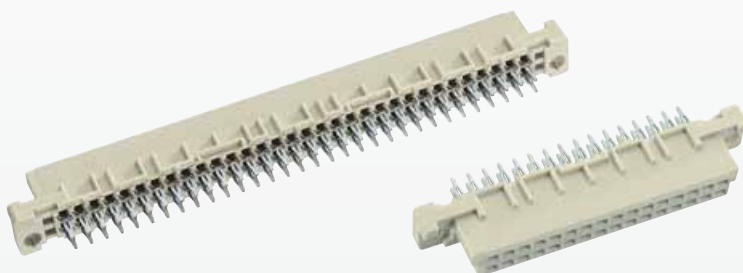
²⁾ for details see page 04.04

Mating conditions see chapter 00

Tooling see chapter 30

Number of contacts

64, 32

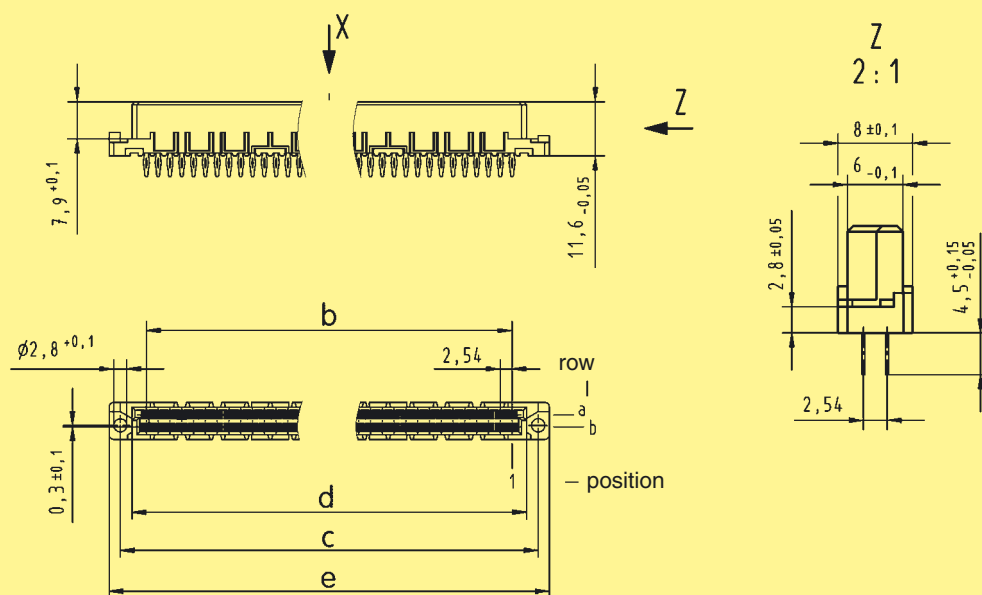


Female connectors

Identification	Number of contacts	Contact arrangement	Part No. 3	Performance levels according to IEC 60 603-2. Explanation chapter 00 2	1
Female connector with press-in terminations 4.5 mm					
Type B	64		Performance level 3 on request	09 02 264 6850	Performance level 1 on request
Type 2B	32			09 22 232 6850	

Press-in technology

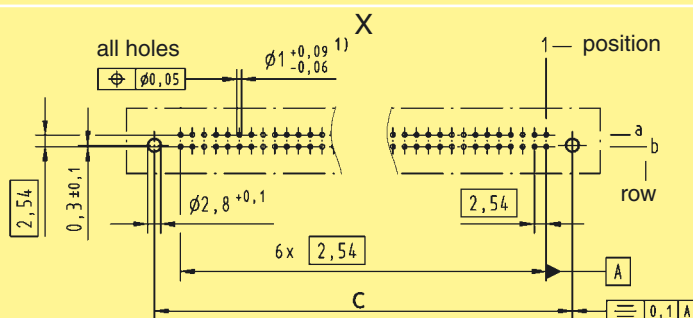
Dimensions



	b	c	d	e
Type B	31 x 2,54 (= 78.74)	90 ± 0.1	85 - 0.2	94.9 ± 0.1
Type 2B	15 x 2,54 (= 38.1)	50 ± 0.1	44.4 - 0.2	54.9 ± 0.1

Board drillings

Mounting side



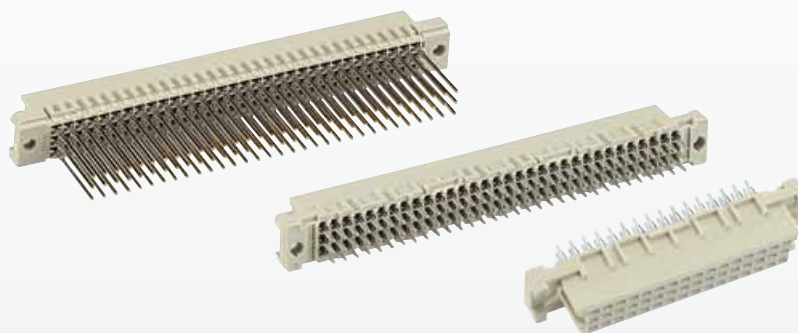
Dimensions in mm

Other contact arrangements on request

¹⁾ refer to recommended configuration of pcb holes, see page 04.04

Number of contacts

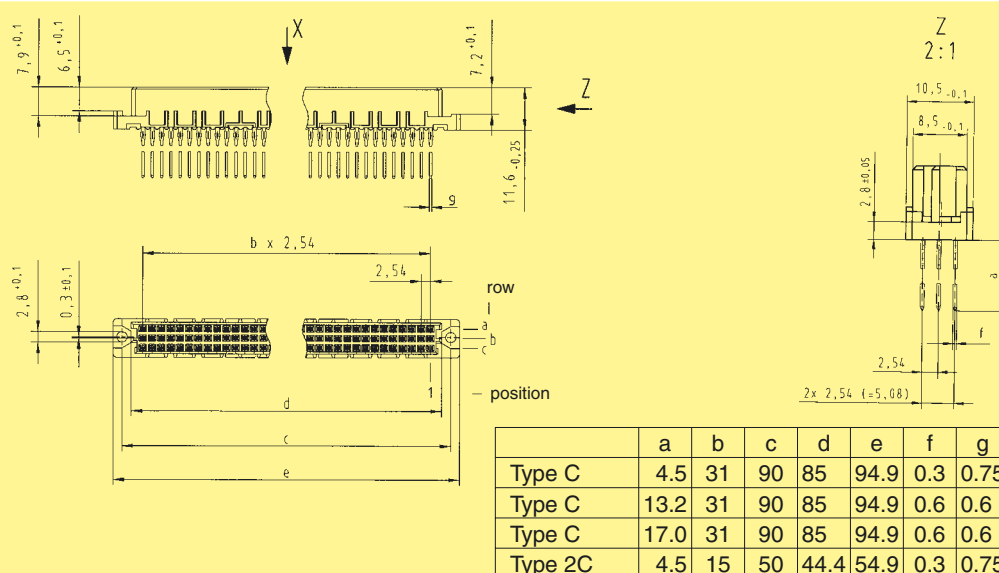
96, 64, 48, 32



Female connectors

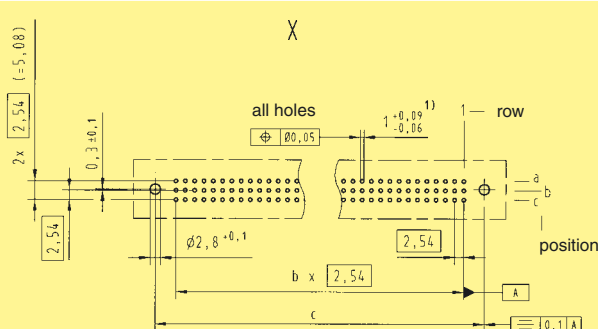
Identification	Number of contacts	Contact arrangement	Part No.	Performance levels according to IEC 60 603-2.	Explanation chapter 00
			3	2	1
Female connector Type C with press-in terminations 4.5 mm	96		09 03 296 7850	09 03 296 6850 09 03 796 6850 ^{c)}	09 03 296 2850
	64		09 03 264 7850	09 03 264 6850	09 03 264 2850
	32		09 03 232 7850	09 03 232 6850	09 03 232 2850
	13.2 mm			09 03 296 6851 09 03 296 6861*	
	64			09 03 264 6851 09 03 264 6861*	
	17 mm			09 03 296 6852 09 03 296 6862*	
Female connector Type 2C with press-in terminations 4.5 mm	48			09 23 248 6850	

Dimensions



Board drillings

Mounting side



Dimensions in mm

* Wrap posts for interfacing selectively gold plated (performance level 3)
Other contact arrangements on request

¹⁾ refer to recommended configuration of pcb holes, see page 04.04

^{c)} Connectors with coding see chapter 01

Number of contacts

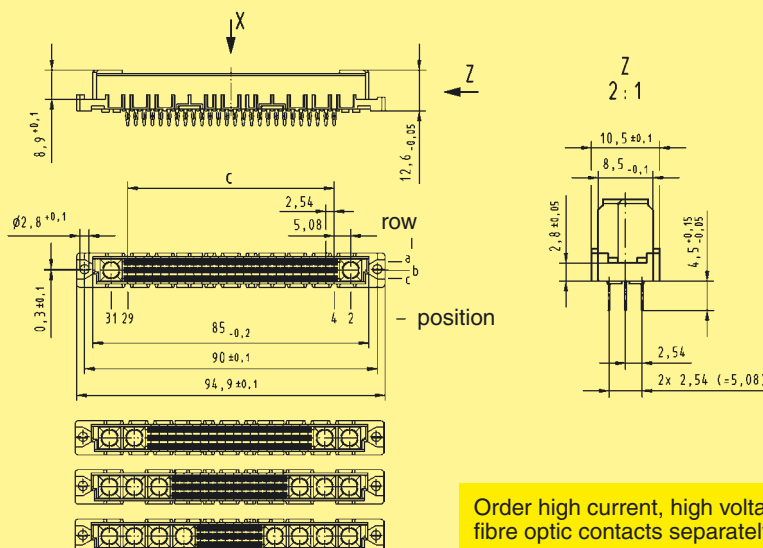
78+2, 60+4
42+6, 24+8



Female connectors

Identification	Number of contacts	Contact arrangement	Part No.	Performance levels according to IEC 60 603-2. Explanation chapter 00	
			3	2	1
Female connector with press-in terminations 4.5 mm (without special contacts)	78 + 2		Performance level 3 on request	09 03 278 6850	Performance level 1 on request
	60 + 4			09 03 260 6850	
	42 + 6			09 03 242 6850	
	24 + 8			09 03 224 6850	

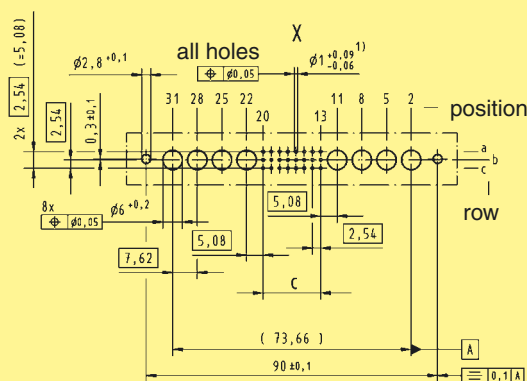
Dimensions



Order high current, high voltage, coaxial and fibre optic contacts separately, see chapter 01

Board drillings

Mounting side



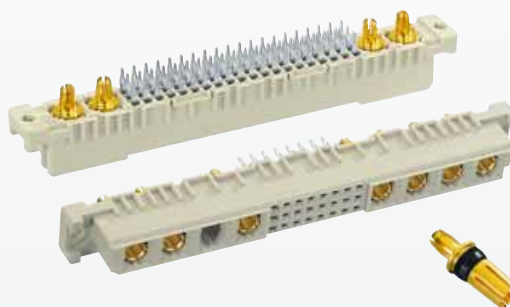
Type	c
78 + 2	25 x 2.54 = 63.5
60 + 4	19 x 2.54 = 48.26
42 + 6	13 x 2.54 = 33.02
24 + 8	7 x 2.54 = 17.78

Dimensions
in mm

Other contact arrangements on request

¹⁾ refer to recommended configuration of pcb holes, see page 04.04

78+2, 60+4
42+6, 24+8



Identification	Number of contacts	Contact arrangement	Part No.	Performance levels according to IEC 60 603-2. Explanation chapter 00		
			3	2	1	
Female connector with press-in terminations 4.5 mm (without special contacts)*	78 + 2		Performance level 3 on request	09 03 278 6830	Performance level 1 on request	
	60 + 4			09 03 260 6830		
	42 + 6			09 03 242 6830		
	24 + 8			09 03 224 6830		
High current female contact with press-in termination			09 03 000 6250			
40 A						

Technical drawings of the 24-pin connector showing dimensions and views.

Top view dimensions:

- Overall height: 8.9 ± 0.1
- Pin pitch: 2.54
- Pin spacing: 5.08
- Row and position labels

Front view dimensions:

- Overall length: 94.9 ± 0.1
- Pin length: 31.29
- Pin length: 4.2
- Central section length: 85.0 ± 0.2
- Pin pitch: 2.54
- Pin spacing: 5.08

Side view dimensions:

- Overall height: 12.6 ± 0.05
- Pin pitch: 2.54
- Pin spacing: 5.08

Bottom view dimensions:

- Overall width: 10.5 ± 0.1
- Pin pitch: 8.5 ± 0.1
- Pin spacing: 2.8 ± 0.05
- Pin length: 4.5 ± 0.05
- Pin pitch: 2.54
- Pin spacing: $2 \times 2.54 (= 5.08)$

Order high current, high voltage fibre optic contacts separately,

Technical drawing of a plate with 12 holes. The drawing includes the following dimensions and specifications:

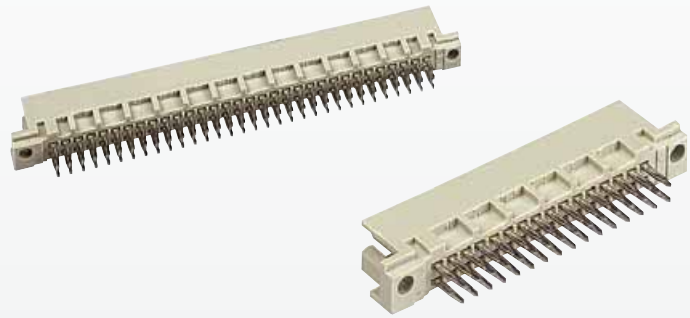
- Overall Dimensions:**
 - Width: $24 \pm 0,08$
 - Height: $73,66$
- Hole Specifications:**
 - All holes: $\phi 2,8^{+0,1}_{-0,05}$
 - Specific hole: $\phi 1^{+0,09}_{-0,06}$
 - Specific hole: $\phi 0,05$
 - Specific hole: $\phi 0,05$
- Positioning and Spacing:**
 - Distance from left edge to first hole: $24 \pm 0,08$
 - Distance between holes: $2,54$
 - Distance from last hole to right edge: $2,54$
 - Distance from left edge to center of first hole: $0,34 \pm 0,1$
 - Distance from center of first hole to center of last hole: $73,66$
 - Distance from center of last hole to right edge: $2,54$
- Other Dimensions:**
 - Distance from left edge to center of hole 8: $8x$
 - Distance from center of hole 8 to center of hole 11: $5,08$
 - Distance from center of hole 11 to center of hole 13: $5,08$
 - Distance from center of hole 13 to center of hole 15: $2,54$
 - Distance from center of hole 15 to center of hole 17: $7,62$
 - Distance from center of hole 17 to center of hole 19: $5,08$
 - Distance from center of hole 19 to center of hole 21: $2,54$
 - Distance from center of hole 21 to center of hole 23: $5,08$
 - Distance from center of hole 23 to center of hole 25: $2,54$
 - Distance from center of hole 25 to center of hole 27: $5,08$
 - Distance from center of hole 27 to center of hole 29: $2,54$
 - Distance from center of hole 29 to center of hole 31: $5,08$
- Labels:**
 - all holes
 - position
 - row
 - A

Type	c
78 + 2	$25 \times 2.54 = 63.5$
60 + 4	$19 \times 2.54 = 48.26$
42 + 6	$13 \times 2.54 = 33.02$
24 + 8	$7 \times 2.54 = 17.78$

* Pre-loaded with special contacts on request

Number of contacts

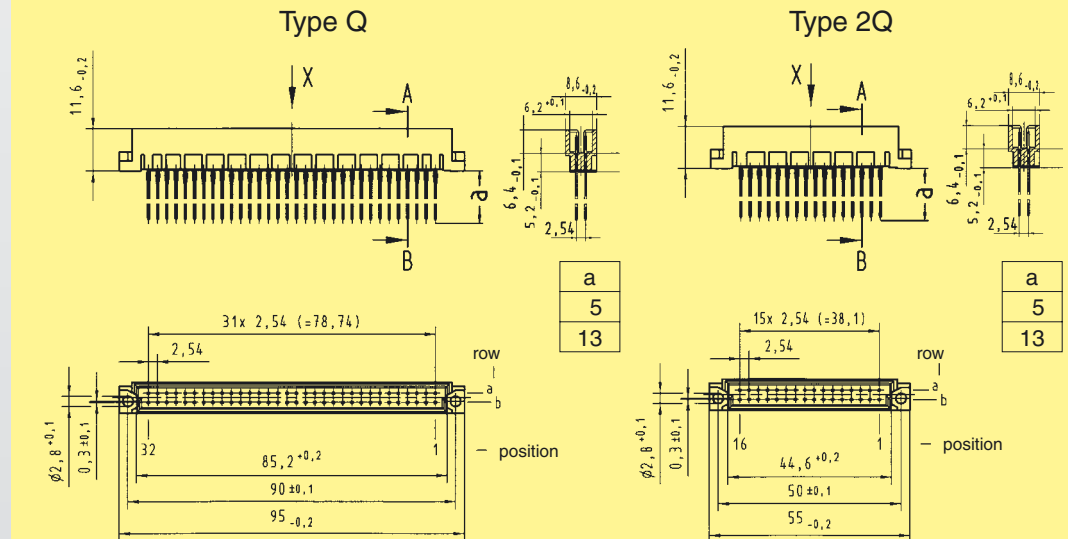
64, 32



Male connectors

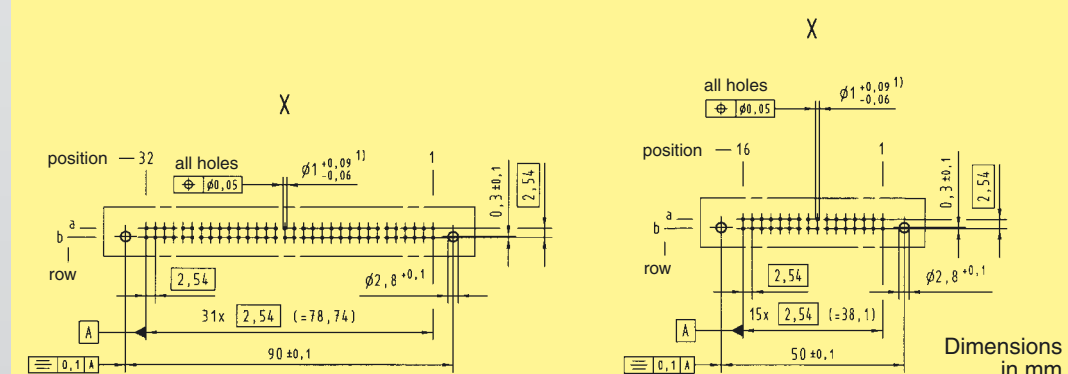
Identification	Number of contacts	Contact arrangement	Part No.	Performance levels according to IEC 60 603-2.	Explanation chapter 00
			3	2	1
Male connector Type Q with press-in terminations 5.0 mm	64 62 + 2▲		09 72 164 7904 09 72 164 7954	09 72 164 6904 09 72 164 6954	performance level 1 or special gold plating on request
13 mm	64 62 + 2▲		09 72 164 7985 09 72 164 7974* 09 72 164 7995	09 72 164 6985 09 72 164 6974* 09 72 164 6995	
Male connector Type 2Q with press-in terminations 5.0 mm	32 30 + 2▲		09 27 132 7904 09 27 132 7954	09 27 132 6904 09 27 132 6954	
13 mm	32 30 + 2▲		09 27 132 7985 09 27 132 7995	09 27 132 6985 09 27 132 6995	

Dimensions



Board drillings

Mounting side

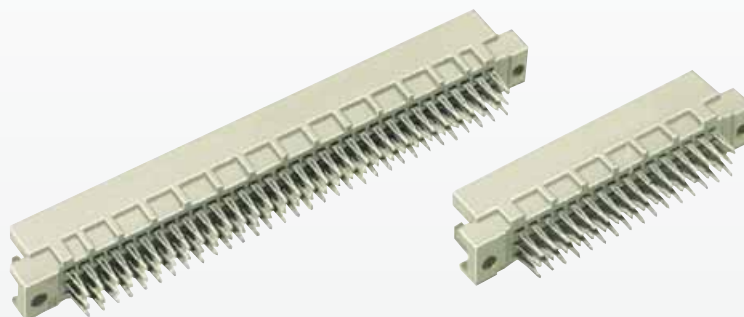


▲ Male connectors with 2 leading contacts (0.8 mm) pos. a1 and a32/a16
• Wrap posts for interfacing selectively gold plated (performance level 3)
1) refer to recommended configuration of pcb holes, see page 04.04

Other contact arrangements as well with lagging pins on request

Number of contacts

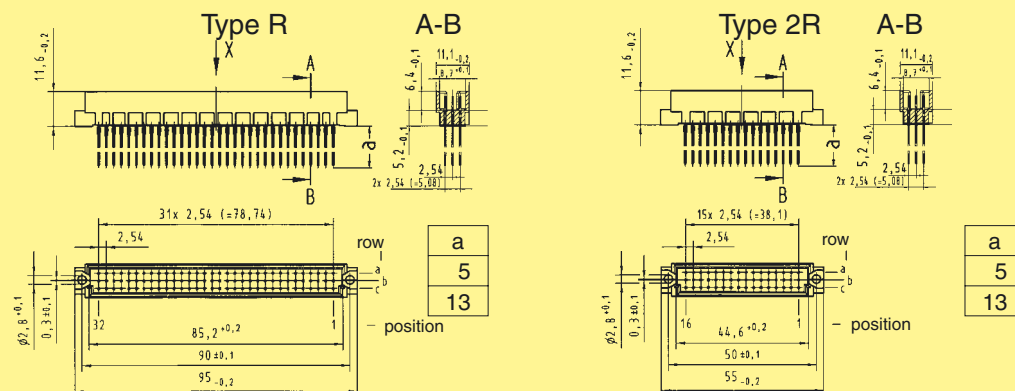
96, 64,
48, 32



Male connectors

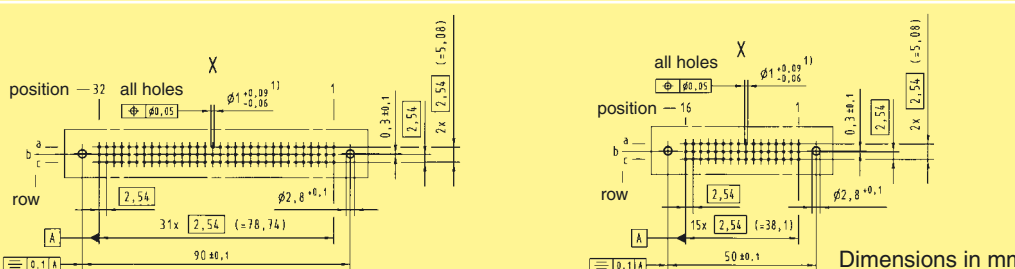
Identification	Number of contacts	Contact arrangement	Part No. 3	Performance levels according to IEC 60 603-2. 2	Explanation chapter 00 1
Male connector Type R with press-in terminations 5.0 mm	96 94 + 2▲		09 73 196 7904 09 73 196 7954	09 73 196 6904 09 73 196 6954	performance level 1 or special gold plating on request
13 mm	64		09 73 164 7904	09 73 164 6904	
	96 94 + 2▲		09 73 196 7985 09 73 196 7974* 09 73 196 7995	09 73 196 6985 09 73 196 6974* 09 73 196 6995	
	64		09 73 164 7985 09 73 164 7974*	09 73 164 6985 09 73 164 6974*	
Male connector Type 2R with press-in terminations 5.0 mm	48 46 + 2▲		09 28 148 7904 09 28 148 7954	09 28 148 6904 09 28 148 6954	
13 mm	32		09 28 132 7904	09 28 132 6904	
	48 46 + 2▲		09 28 148 7985 09 28 148 7995	09 28 148 6985 09 28 148 6995	
	32		09 28 132 7985	09 28 132 6985	

Dimensions



Board drillings

Mounting side



Dimensions in mm

▲ Male connectors with 2 leading contacts (0.8 mm) pos. a1 and a32/a16

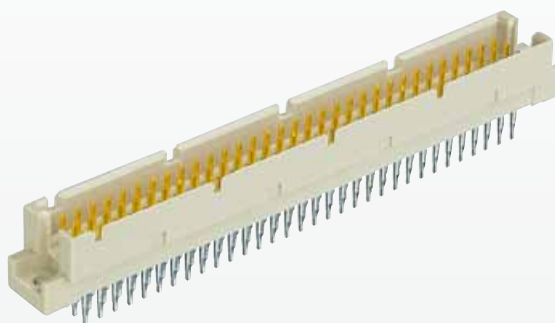
• Wrap posts for interfacing selectively gold plated (performance level 3)

1) refer to recommended configuration of pcb holes, see page 04.04

Other contact arrangements also
with lagging pins on request

Number of contacts

96, 64

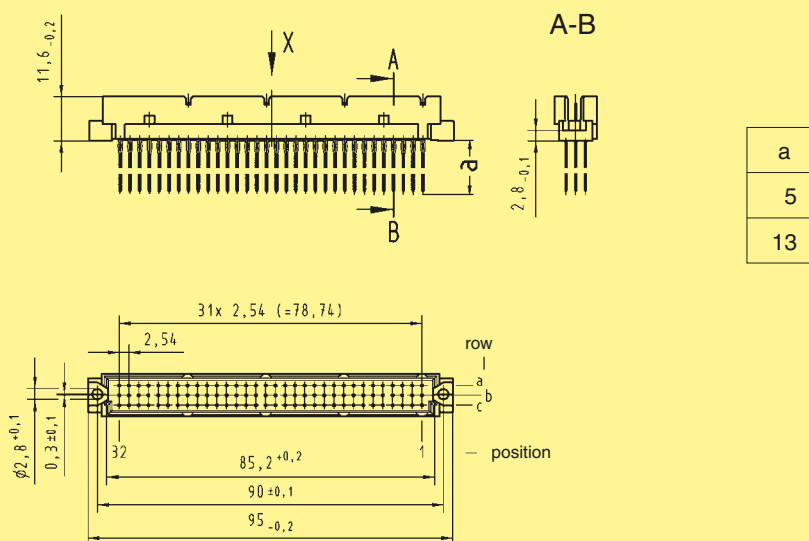


Male connectors

Identification	Number of contacts	Contact arrangement	Part No. 3	Performance levels according to IEC 60 603-2. 2	Explanation chapter 00 1
Male connector with press-in terminations 5.0 mm	96		performance level 3 or special gold plating on request	performance level 2 or special gold plating on request	09 79 196 2950
	64				09 79 164 2950
13 mm	96				09 79 196 2961*

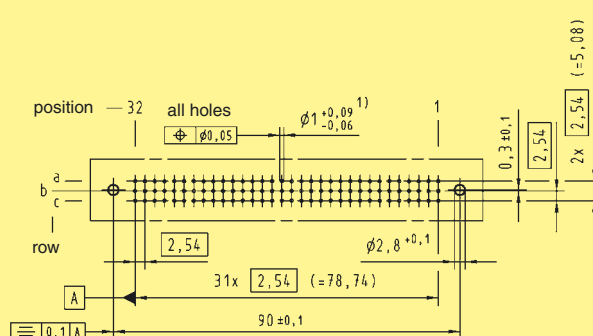
Press-in
technology

Dimensions



Board drillings

Mounting side



Dimensions in mm

* Wrap posts for interfacing selectively gold plated (performance level 2)

¹⁾ refer to recommended configuration of pcb holes, see page 04.04

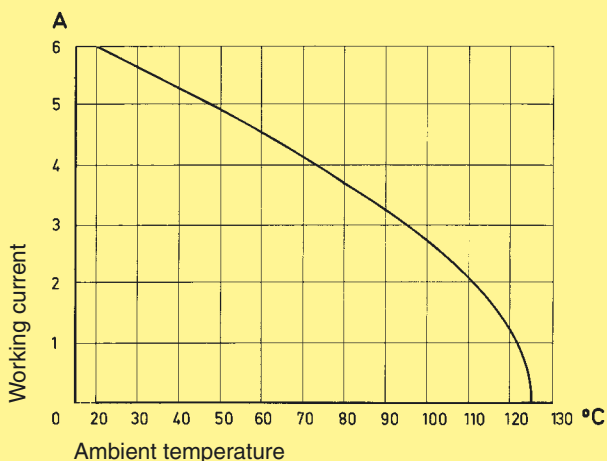
Other contact arrangements also
with lagging pins on request

Number of contacts	32, 48
Contact spacing (mm)	5.08
Working current see current carrying capacity chart	6 A max. for unpressed connectors*
Clearance	≥ 1.6 mm
Creepage	≥ 3.0 mm
Working voltage The working voltage also depends on the clearance and creepage dimensions of the pcb itself and the associated wiring	according to the safety regulations of the equipment Explanations see chapter 00
Test voltage $U_{r.m.s.}$	1.55 kV
Contact resistance	≤ 15 m Ω
Insulation resistance	$\geq 10^{12}$ Ω
Temperature range The upper temperature is limited by the property of the pcb material	-40 °C ... $+105$ °C
Electrical termination Female connectors Diameter of pcb plated through holes pcb thickness Recommended pcb holes for press-in process in acc. EN 60 352-5 ¹⁾	Compliant press-in terminations 0.94-1.09 mm ≥ 1.6 mm
Insertion and withdrawal force	32pol. ≤ 50 N 48pol. ≤ 75 N
Materials Mouldings Contacts	Thermoplastic resin, glass-fibre filled, UL 94-V0 Copper alloy
Contact surface Contact zone	Plated according to performance level ²⁾

Current carrying capacity

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, non 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 60 512



¹⁾ Details see page 04.04

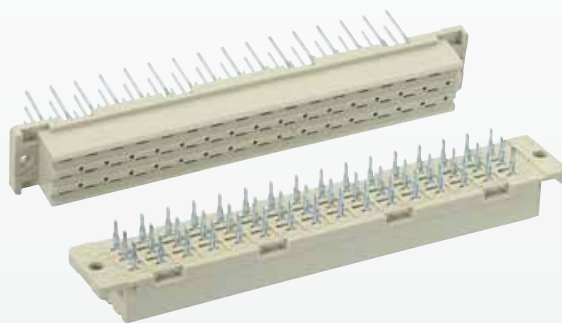
²⁾ Explanation of performance levels see chapter 00

Mating conditions see chapter 00

* Is limited by the property of the pbc material to 4 A max. if the connector is pressed-in.
Tooling see chapter 30

Number of contacts

48, 32



Female connectors

Identification	Number of contacts	Contact arrangement	Part No.	Performance levels according to IEC 60 603-2. Explanation chapter 00				
			3	2	1			
Female connector “low profile“ with press-in terminations 5.5 mm	48		09 06 248 7832	09 06 248 6832	performance level 1 or special gold plating on request			
	32		09 06 232 7832	09 06 232 6832				
	32		09 06 232 7892	09 06 232 6892				
Female connector “low profile“ with press-in terminations 13 mm	48		09 06 248 7837	09 06 248 6837				
	32		09 06 232 7837	09 06 232 6837				
	32		09 06 232 7897	09 06 232 6897				
Dimensions	<div><table><tr><td>a</td></tr><tr><td>5.5</td></tr><tr><td>13.0</td></tr></table></div>					a	5.5	13.0
a								
5.5								
13.0								
Board drillings Mounting side	<div></div>							
Dimensions in mm								

Dimensions in mm

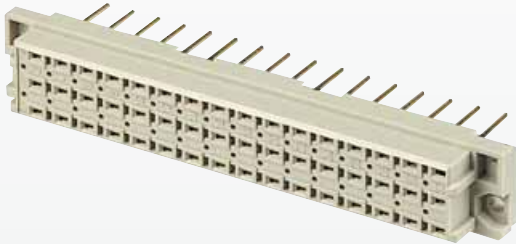
Selectively or fully gold plated wrap posts on request

Other contact arrangements on request

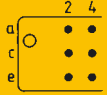
¹⁾ refer to recommended configuration of pcb holes, see page 04.04

Number of contacts

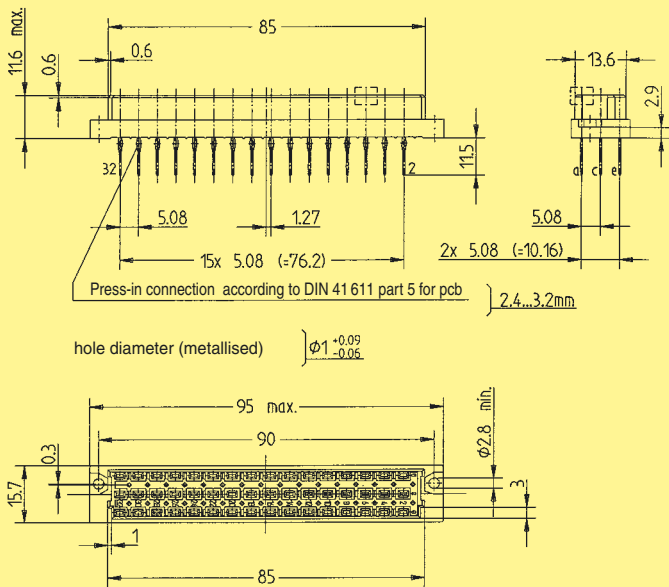
48



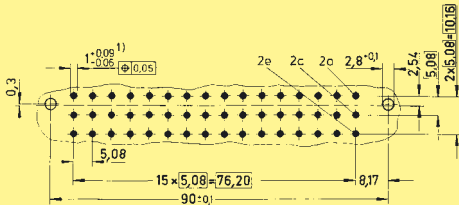
Female connectors

Identification	Number of contacts	Contact arrangement	Part No.	Performance levels according to IEC 60 603-2. Explanation chapter 00	
			3	2	1
Female connector with press-in terminations 11.5 mm	48		09 05 248 7851	09 05 248 6851	09 05 248 2851

Dimensions



Board drillings
Mounting side



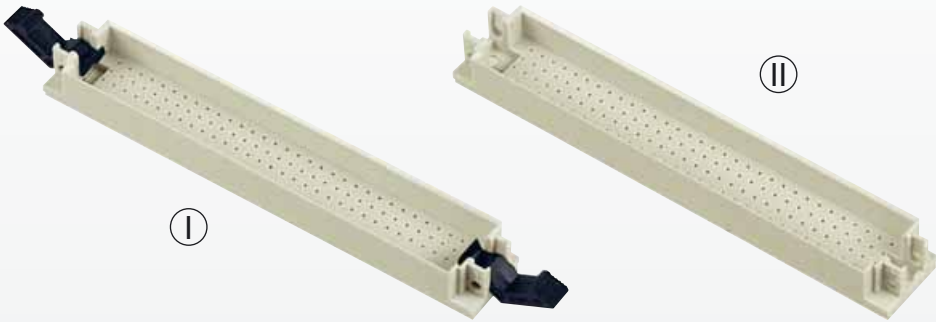
Dimensions in mm

1) refer to recommended configuration of pcb holes, see page 04.04

Pin shroud

Number of contacts

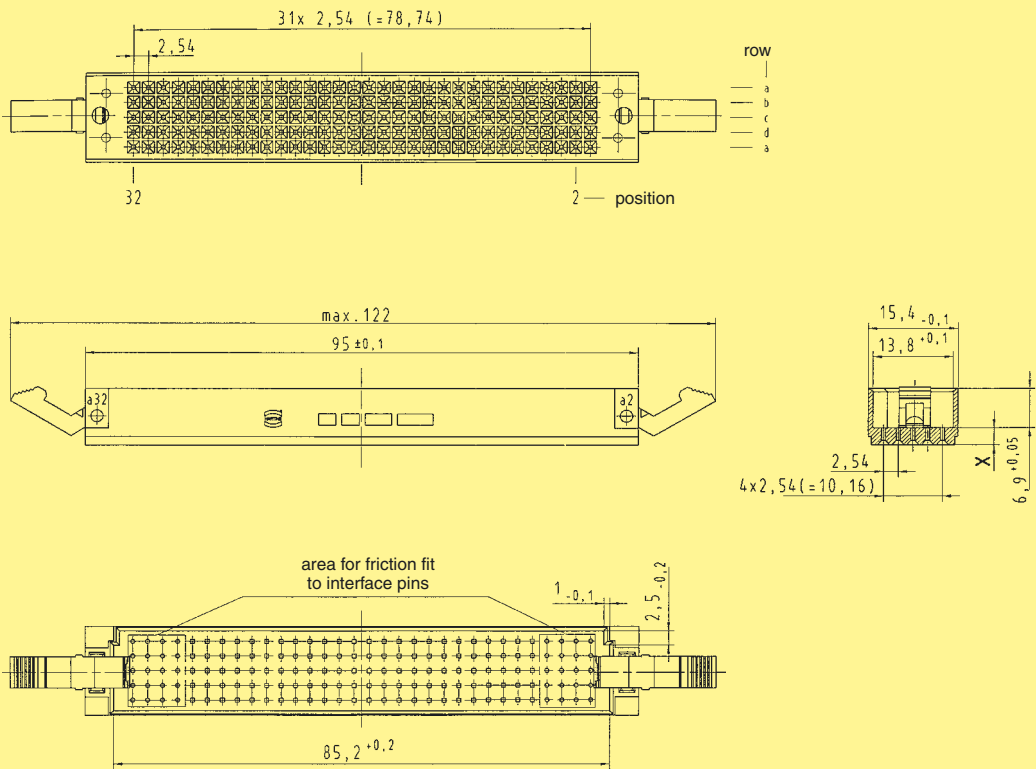
48



Pin shrouds

Identification	Number of contacts	Contact arrangement	Part No.	
Pin shrouds			pcb thickness (+ 0.2 / - 0.3 mm)	
Ⓘ with fixing brackets	48	a, c, e	09 05 000 9924	2.8
Ⓜ without fixing brackets			09 05 000 9914	2.8
Ⓘ with fixing brackets			09 05 000 9922	3.4
Ⓜ without fixing brackets			09 05 000 9912	3.4

Dimensions



pcb thickness	X
2.8 (+ 0.2 / - 0.3)	3.6 - 0.1
3.4 (+ 0.2 / - 0.3)	3.0 - 0.1

Dimensions in mm

Number of contacts 160

Contact spacing (mm) 2.54

Working current 1 A at 70 °C
and all contacts
are loaded

see current carrying capacity chart

Clearance and creepage distances*

minimal clearance and creepage distance		distance in mm	
		rows a, b, c	rows z, d
between two rows	clearance	1.2	1.2
	creepage	1.2	1.2
between two contacts (in a row)	clearance	1.2	1.0
	creepage	1.2	1.0

Working voltage

The working voltage also depends on the clearance and creepage dimensions of the pcb itself and the associated wiring according to the safety regulations of the equipment
Explanations see chapter 00

Test voltage $U_{r.m.s.}$ 1 kV

Contact resistance

rows a, b, c $\leq 20 \text{ m}\Omega$
rows z, d $\leq 30 \text{ m}\Omega$

Insulation resistance $\geq 10^{10} \Omega$ acc. to IEC 60 512-2

Temperature range $-55 \text{ }^{\circ}\text{C} \dots +125 \text{ }^{\circ}\text{C}$
acc. to IEC 60 512-11

Electrical termination

Male and female connectors Compliant press-in terminations
Diameter of pcb plated through holes 0.94 - 1.09 mm
pcb thickness $\geq 1.6 \text{ mm}$
Recommended pcb holes for press-in process acc. to EN 60 352-5¹⁾

Insertion and withdrawal force $\leq 160 \text{ N}$

Materials

Mouldings

- Liquid Cristal Polymer (LCP), for female connectors, UL 94-V0
- Thermoplastic resin, glass-fibre filled, for male connectors, UL 94-V0

Copper alloy

Contacts

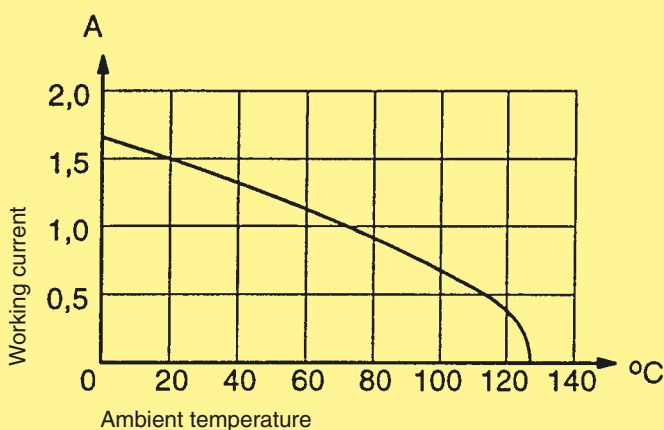
Contact surface

Contact zone Plated acc. to performance level²⁾

Current carrying capacity

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, non 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 60 512



harbus® 64 with switches

Deviating technical characteristics for the switching elements.

minimal clearance and creepage distance		distance in mm
		switching positions
between two rows	clearance	0.5
	creepage	0.7
between two contacts (in a row)	clearance	0.5
	creepage	0.7

Contact resistance

Switching elements $\leq 60 \text{ m}\Omega$

Insertion and withdrawal force

Complete connector $\leq 180 \text{ N}$

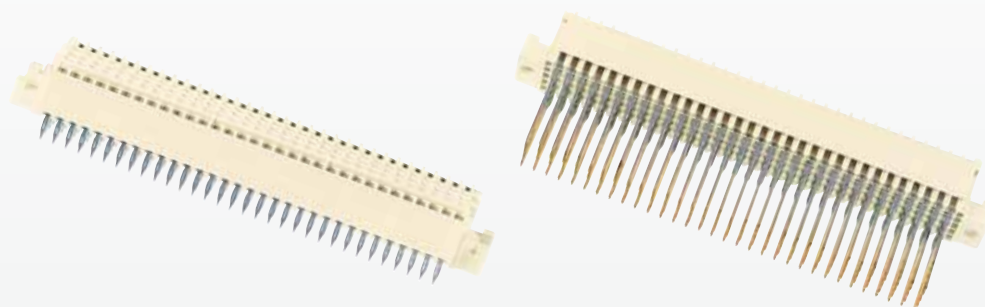
¹⁾ Details see page 04.04

²⁾ Explanation of performance levels see chapter 00

* for har-bus® 64 inverse male connectors see chapter 06
Tooling see chapter 30

Number of contacts

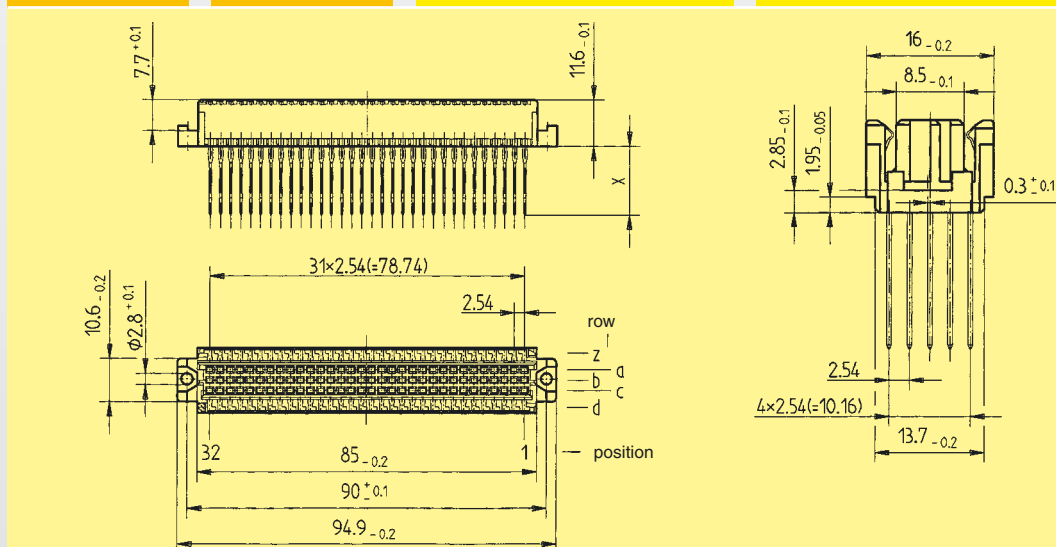
160



Female connectors

				Part No.	Performance levels according to IEC 61 076-4-113	
Identification		Number of contacts	Contact arrangement	Explanation chapter 00		
				2	1	
Female connectors, straight ²⁾ with press-in terminations						
		with 4.5/5 mm	160	z, a, b, c, d	02 02 160 2201	02 02 160 1201
		fixing flange 17 mm*	160	z, a, b, c, d	02 02 160 2301	02 02 160 1301
		with switches 4.5/5 mm	160	z, a, b, c, d	02 03 160 2201	
		without 5 mm	160	z, a, b, c, d	02 02 160 2202	02 02 160 1202
		fixing flange 17 mm*	160	z, a, b, c, d	02 02 160 2302	02 02 160 1302

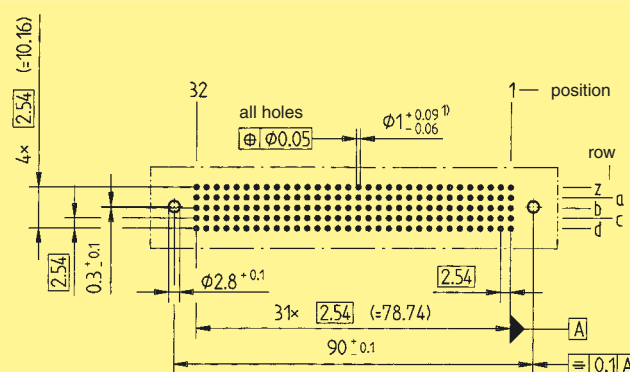
Dimensions



Part number	Dimension "X" for row				
	z	a	b	c	d
02 02 160 2201 / 02 02 160 1201	5.0	4.5	4.5	4.5	5.0
02 02 160 2301 / 02 02 160 1301	17.0	17.0	17.0	17.0	17.0
02 03 160 2201	5.0	4.5	4.5	4.5	5.0
02 02 160 2202 / 02 02 160 1202	5.0	5.0	5.0	5.0	5.0
02 02 160 2302 / 02 02 160 1302	17.0	17.0	17.0	17.0	17.0

Board drillings

Mounting side



Dimensions in mm

¹⁾ refer to recommended configuration of pcb holes, see page 04.04

²⁾ Additional components and informations see chapter 06

* selectively gold-plated

Number of contacts

160

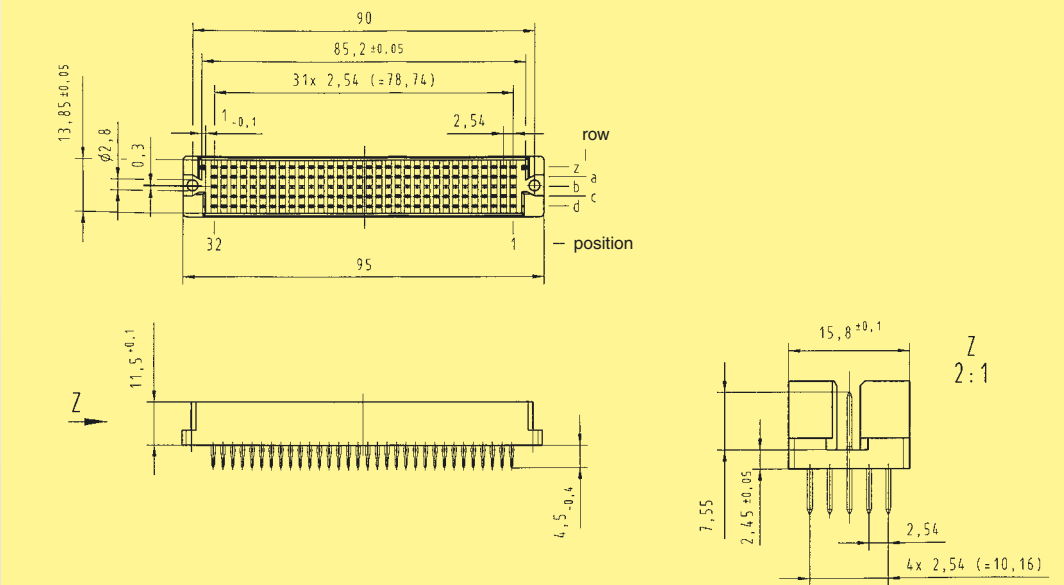


Male connectors

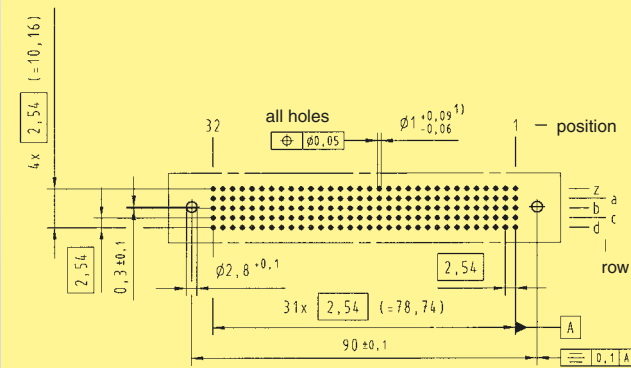
Part No. Performance levels according to IEC 61 076-4-113
Explanation chapter 00

Identification	Number of contacts	Contact arrangement	2	1
Male connectors, straight with press-in terminations	160	z, a, b, c, d	02 08 160 2601	02 08 160 1601

Dimensions



Board drillings
Mounting side



Dimensions in mm

¹⁾ refer to recommended configuration of pcb holes, see page 04.04
Additional components see chapter 06