

Types D, E, F, FM, 2F, F9, interface connectors I/U

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DIN Power
up to 6 A

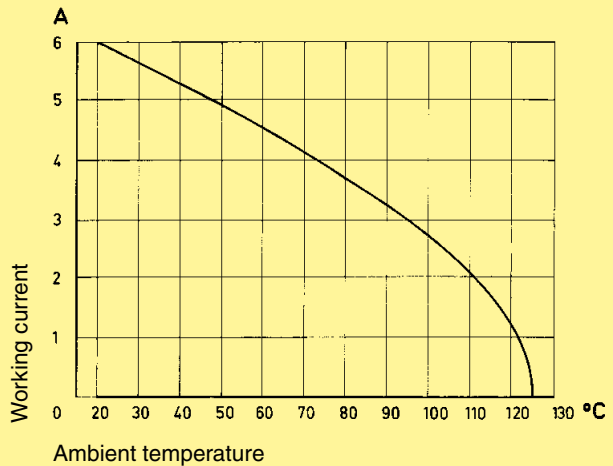
Number of contacts	Type D	32
	Type E	48
Contact spacing (mm)	Type D	5,08
	Type E	male connector 5.08 x 5.08
		male connector 2.54 x 5.08
		female connector 5.08 x 5.08
Working current	see current carrying capacity chart	6 A max.
		1 A max. for female connector type E angled
Clearance	Types D and E	≥ 3.0 mm
	Type E male connector row separation 2.54 mm	≥ 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 mΩ
		≤ 20 mΩ for female connector type E angled
Insulation resistance		≥ 10 ¹² Ω for standard articles
		≥ 10 ¹¹ Ω for special NFF articles (with part-no. ending 222)
Temperature range	The higher temperature limit includes the local ambient and heating effects of the contacts under load	– 55 °C ... + 125 °C
		– 40 °C ... + 105 °C for press-in connectors
Degree of protection for crimp terminal according to DIN 40 050		IP 20
Electrical termination	Solder pins for pcb connections Ø 1.0 ± 0.1 mm according to IEC 60 326-3	
	Wrap posts 1 x 1 mm diagonal 1.34-1.45 mm	
PCB thickness	Angled solder pins 1 x 1 mm for pcb connections	
	Ø 1.6 ± 0.1 mm	
Recommended PCB holes for press-in technology	Solder lugs	
	Crimp terminal 0.09-1.5 mm ²	
Compliant press-in terminations		≥ 1.6 mm
		see recommendation page 00.25 in acc. to EN 60 352-5
Insertion and withdrawal force	32 way ≤ 40 N	
	48 way ≤ 75 N	
Materials	Mouldings	Thermoplastic resin, glass-fibre filled, UL 94-V0
	Contacts	Copper alloy
Contact surface	Contact zone	Selectively gold plated according to performance level ¹⁾

¹⁾ Explanation of performance levels see chapter 00

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

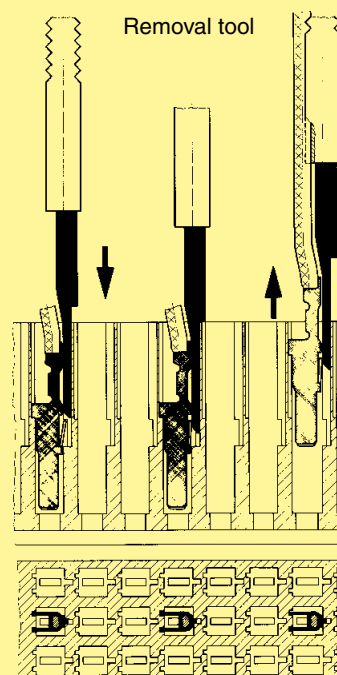


Fitting the crimp contacts

After crimping the wires onto the contacts with the help of a crimping tool or an automatic crimping machine the contacts should be correctly oriented and inserted into the cavities of the connector moulding in the required configuration. They snap into position and are firmly held in place. A light pull on the wire assures the correct tensile strength of the contact. When using stranded wires with a gauge below 0.37 mm² an insertion tool is necessary.

Removing the crimp contacts

The removal tool is inserted into a slot on the termination side of the respective crimp cavity. This action compresses the contact retaining spring therefore the contact can then be easily withdrawn using a light pull on the wire. This action will cause no damage to the contact/wire which can be repositioned/refitted as necessary. The drawing demonstrates the crimp removal procedure (max. 5x).



Number of contacts

32



Male connectors

Identification	Number of contacts	Contact arrangement	Part No.	Performance levels according to IEC 60603-2. Explanation chapter 00	
			3	2	1
Male connector with angled solder pins	SMC	32	09 04 132 7921	09 04 132 6921 09 04 132 6921 222 ^{f)} 09 04 332 6921 ^{b)} 09 04 632 6921 ^{c)}	09 04 132 2921 09 04 132 2921 222 ^{f)}
		32		09 04 332 6919 ^{b)d)}	
		30 + 2▲		09 04 132 6951 09 04 632 6951 ^{c)}	09 04 632 2951 ^{c)}
Male connector with straight solder pins	32		09 04 132 6922		
	30 + 2▲		09 04 132 6952		
Dimensions					
Board drillings Mounting side					

Dimensions in mm

Dimensions in mm

▲ Male connectors with 2 leading contacts [(0.8 mm) pos. a2 and a32]

Other contact arrangements on request

b) Connectors with snap-in clips see chapter 00

c) Connectors with coding see chapter 00

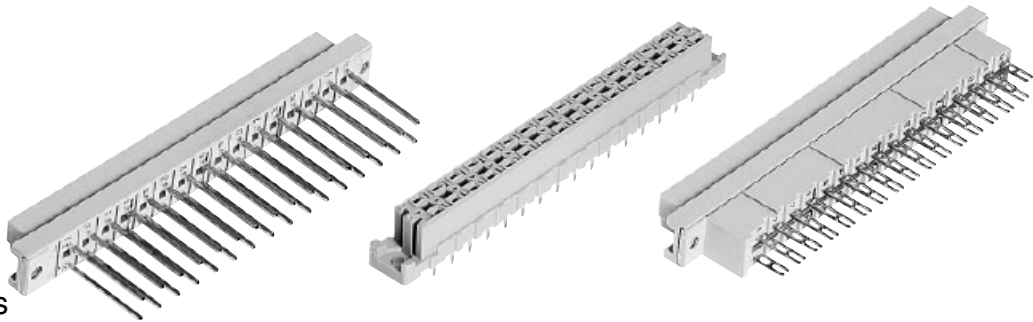
d) CTI > 400

f) Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Number of contacts

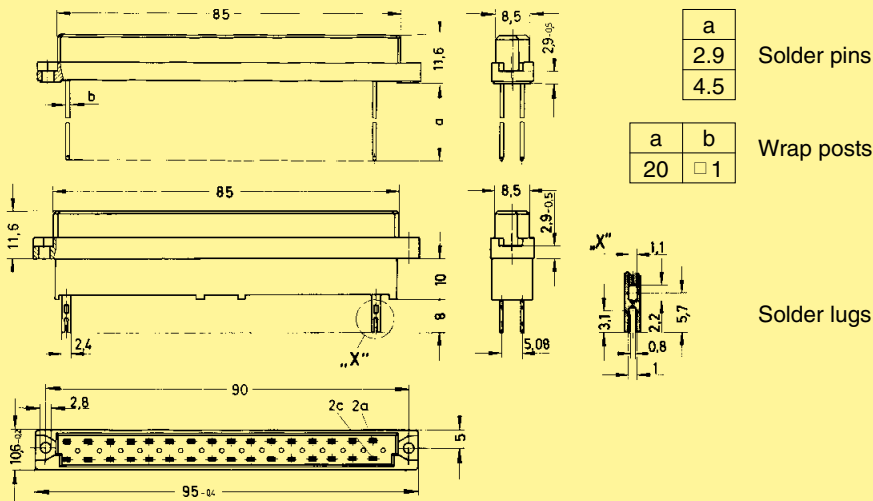
32

Female connectors

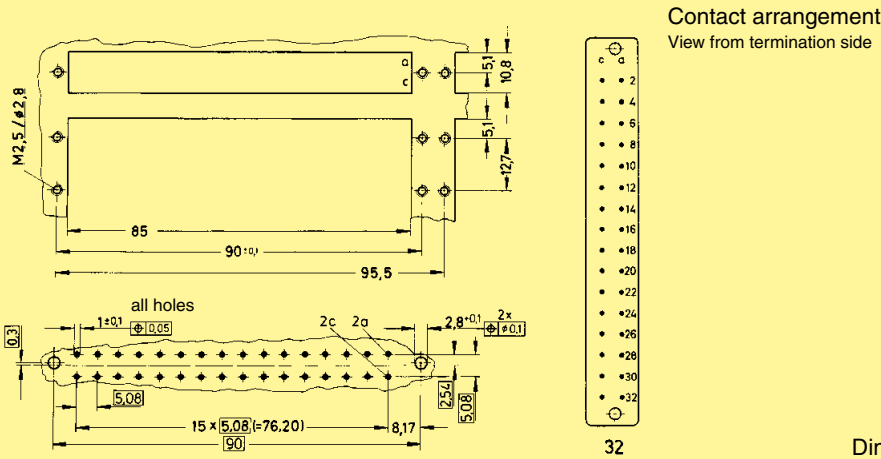


Identification	Number of contacts	Contact arrangement	Part No.	Performance levels according to IEC 60603-2. Explanation chapter 00		
			3	2	1	
Female connector with solder pins 2.9 mm	32		09 04 232 7832	09 04 232 6832 09 04 732 6832 ^{c)}	09 04 232 2832	
Female connector with solder pins 4.5 mm	32		09 04 232 7831	09 04 232 6831 09 04 232 6831 222 ^{f)} 09 04 332 6831 ^{b)} 09 04 732 6831 ^{c)}	09 04 232 2831 09 04 232 2831 222 ^{f)}	
Female connector with wrap posts 20 mm	32		09 04 232 7821	09 04 232 6821 09 04 732 6821 ^{c)}	09 04 232 2821	
Female connector with solder lugs	32		09 04 232 7823	09 04 232 6823	09 04 232 2823	

Dimensions



Panel cut out



^{b)} Connectors with snap-in clips see chapter 00
^{c)} Connectors with coding see chapter 00
^{f)} Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Number of contacts

32



Female connectors

Identification	Number of contacts	Contact arrangement	Part No.	Performance levels according to IEC 60603-2. Explanation chapter 00	
				2	1
Female connector with angled solder pins 1 x 1 mm	32			09 04 232 6826 09 04 232 6826 222 ^{f)}	09 04 232 2826
Dimensions					
Fixing bracket Metal			09 06 000 9912 ¹⁾		
Board drillings Mounting side					

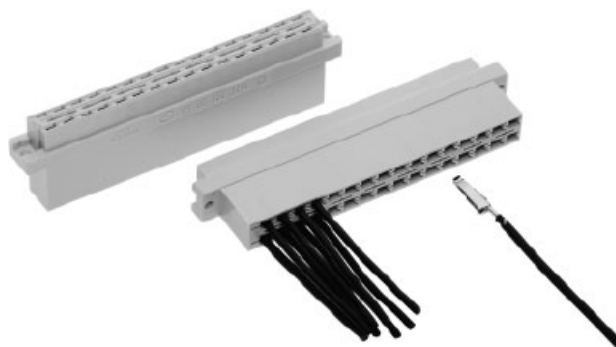
DIN Power
up to 6 A

Dimensions in mm

03
13^{f)} Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

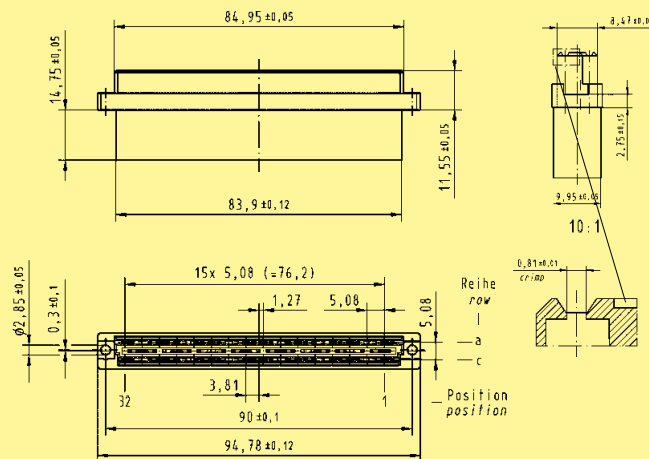
Number of contacts

max. 32



Female connectors

Identification	Number of contacts	Part No.	Drawing	Dimensions in mm
Female connector for crimp contacts Order contacts separately				
	32	09 04 032 3213 ^{f)}		
	32	09 04 532 3213 ^{c)} f)		
Shell housing 09 03 096 0501 see chapter 20				



Identification	Identification Wire gauge	Part No.	Performance levels according to IEC 60603-2. Explanation chapter 00
		2	1
Female crimp FC contacts			
Bandoliered contacts (approx. 2,500 pieces)	1	09 06 000 6484	09 06 000 6474
	2	09 06 000 6481	09 06 000 6471
	3	09 06 000 6482	09 06 000 6472
Bandoliered contacts (approx. 250 pieces)	1	09 06 000 7484	09 06 000 7474
	2	09 06 000 7481	09 06 000 7471
	3	09 06 000 7482	09 06 000 7472
Individual contacts ¹⁾	1	09 06 000 8484	09 06 000 8474
	2	09 06 000 8481	09 06 000 8471
	3	09 06 000 8482	09 06 000 8472
Female contacts with solder lugs ²⁾ (lockable)			09 06 000 6420

Identification	Wire gauge mm ²	AWG	Insulation ø mm	Identification
FC 1	1	0.09 - 0.25	28 - 24	0.7 - 1.5
FC 2	2	0.14 - 0.56	26 - 20	0.8 - 2.0
FC 3	3	0.5 - 1.5	20 - 16	1.6 - 2.8
3.5 + 0.5 mm of insulation is stripped from the wires to be crimped				
For the fabrication in line with the specification please use exclusively crimp tools approved by HARTING (see DIN EN 60352-2)				
Insertion, removal and crimping tools see chapter 30				
Bandoliered contacts				
Individual contacts				

1) Packaging unit 1,000 pieces

2) Solder contacts must not be used together with shell housing A. Special contact surface: 2 µm gold.

c) Connectors with coding see chapter 00

f) Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Number of contacts

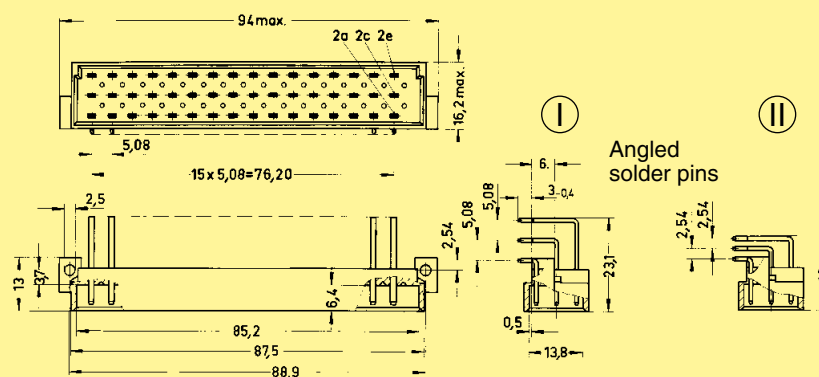
48



Male connectors

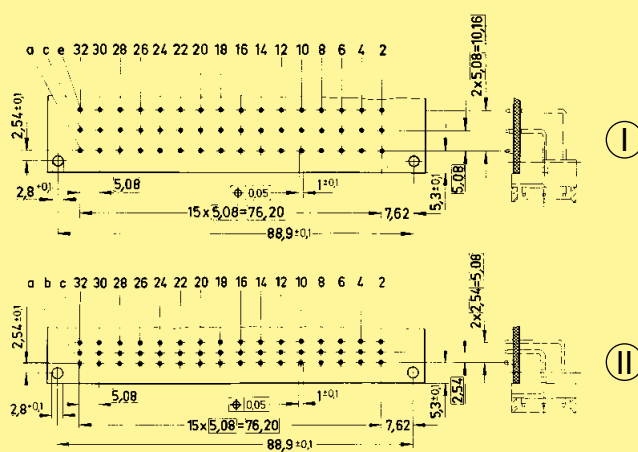
Identification	Number of contacts	Contact arrangement	Part No.	Performance levels according to IEC 60603-2. Explanation chapter 00		
			3	2	1	
Male connector with angled solder pins Row separation termination side 5.08 mm (I) Row separation termination side 2.54 mm (II) SMC	48		09 05 148 7921	09 05 148 6921 09 05 148 6921 222 ^{f)} 09 05 348 6921 ^{b)} 09 05 648 6921 ^{c)} 09 05 848 6921 ^{b)c)}	09 05 148 2921 09 05 148 2921 222 ^{f)} 09 05 648 2921 ^{c)}	DIN Power up to 6 A
	46 + 2▲			09 05 148 6951		
	48		09 05 148 7931	09 05 148 6931 09 05 348 6931 ^{b)} 09 05 648 6931 ^{c)}	09 05 148 2931	
	48			09 05 148 6920 ^{d)} 09 05 348 6920 ^{b)d)}		
	46 + 2▲			09 05 148 6961		

Dimensions



Board drillings

Mounting side



Dimensions in mm

▲ Male connectors with 2 leading contacts [(0.8 mm) pos. a2 and a32]

Other contact arrangements on request

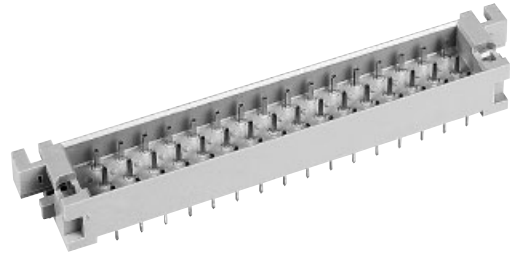
b) Connectors with snap-in clips see chapter 00

c) Connectors with coding see chapter 00

d) CTI > 400

f) Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

48



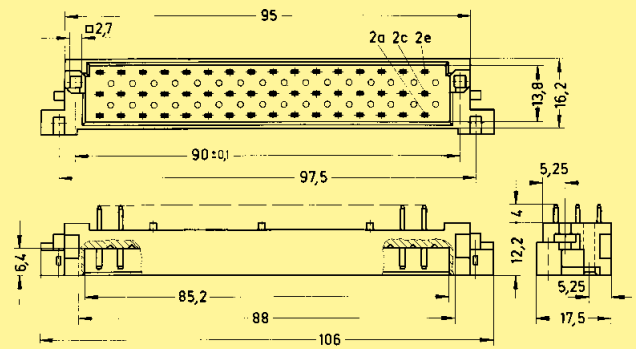
Identification

Part No.

Dimensions in mm

48

09 05 048 6924^{f)}



Technical drawing of a mechanical part, likely a bracket or support, showing dimensions and a cross-section.

Dimensions:

- Overall width: 106.5
- Main body width: 85.2
- Slot width: 10.2
- Flange width: 16.4
- Flange thickness: 5.35
- Central hole diameter: 10.2
- Flange thickness (bottom): 17.78
- Flange thickness (top): 5.35

Notes:

- M2,5/ø2,8 (Screw size)
- 90:0.1 (Tolerance)

Technical drawing of a 15x508-76,20 plate. The drawing shows a rectangular plate with a grid of 15 columns and 20 rows of holes. The overall dimensions are 15 x (508 ± 0,01) x (76,20 ± 0,01). The hole pitch is 25,4 mm. The plate has a thickness of 3 mm. The drawing includes a detail view of the hole and a reference to M 2.5 DIN EN ISO 4032.

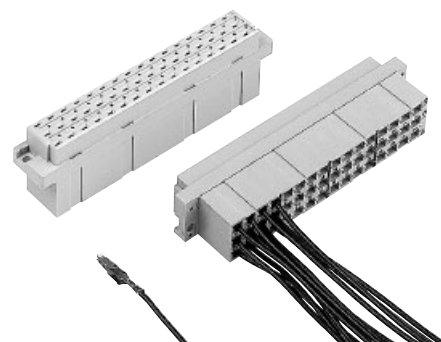
Dimensions and specifications:

- Overall width: 15 x (508 ± 0,01)
- Overall height: 76,20 ± 0,01
- Hole pitch: 25,4 mm
- Plate thickness: 3 mm
- Reference: M 2.5 DIN EN ISO 4032

Number of contacts

max. 48

Female connectors



Identification	Number of contacts	Part No.	Drawing	Dimensions in mm
Female connector for crimp contacts Order contacts separately	48	09 05 048 3202 ¹⁾ 09 05 548 3202 ²⁾	Contact arrangement View from termination side Shell housing 09 05 048 0501 see chapter 20	

DIN Power
up to 6 A

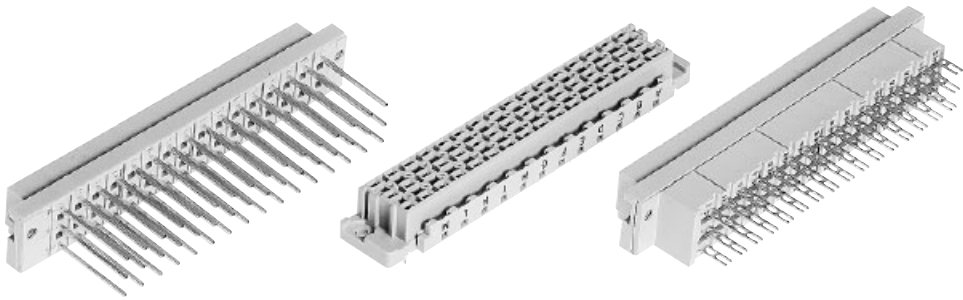
Identification	Identification Wire gauge	Part No.	Performance levels according to IEC 60603-2. Explanation chapter 00
Female crimp FC contacts		2	1
Bandoliered contacts (approx. 2,500 pieces)	1 2 3	09 06 000 6484 09 06 000 6481 09 06 000 6482	09 06 000 6474 09 06 000 6471 09 06 000 6472
Bandoliered contacts (approx. 250 pieces)	1 2 3	09 06 000 7484 09 06 000 7481 09 06 000 7482	09 06 000 7474 09 06 000 7471 09 06 000 7472
Individual contacts ¹⁾	1 2 3	09 06 000 8484 09 06 000 8481 09 06 000 8482	09 06 000 8474 09 06 000 8471 09 06 000 8472
Female contacts with solder lugs ²⁾ (lockable)			09 06 000 6420
FC 1 FC 2 FC 3	1 2 3	Wire gauge mm ² AWG 0.09 - 0.25 28 - 24 0.14 - 0.56 26 - 20 0.5 - 1.5 20 - 16 Insulation ø mm 0.7 - 1.5 0.8 - 2.0 1.6 - 2.8	Identification Bandoliered contacts Individual contacts
		3.5 + 0.5 mm of insulation is stripped from the wires to be crimped For the fabrication in line with the specification please use exclusively crimp tools approved by HARTING (see DIN EN 60352-2) Insertion, removal and crimping tools see chapter 30	

^{c)} Connectors with coding see chapter 00
^{f)} Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

¹⁾ Packaging unit 1,000 pieces
²⁾ Solder contacts must not be used together with shell housing A. Special contact surface: 2 µm gold.

Number of contacts

48

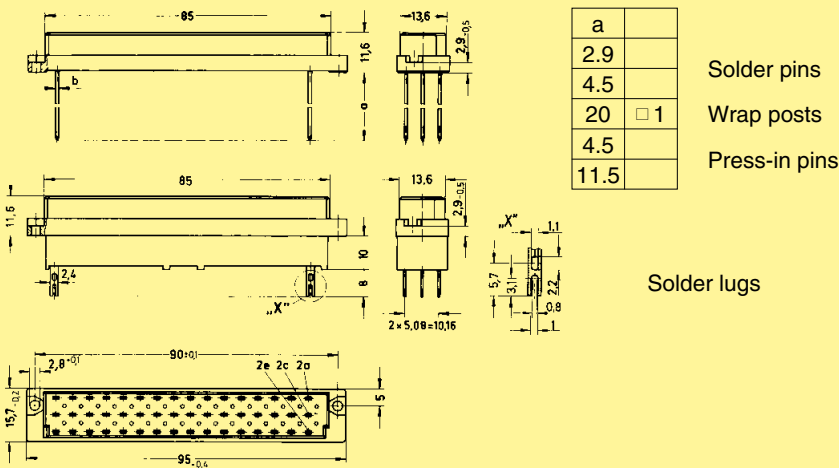


Female connectors

DIN Power
up to 6 A

Identification	Number of contacts	Contact arrangement	Part No.	Performance levels according to IEC 60603-2. Explanation chapter 00		
			3	2	1	
Female connector with solder pins 2.9 mm	48		09 05 248 7832	09 05 248 6832	09 05 248 2832	
4.5 mm	48			09 05 248 6831 09 05 348 6831 ^{b)} 09 05 748 6831 ^{c)} 09 05 848 6831 ^{b)c)}	09 05 248 2831 09 05 248 2831 222 ^{f)} 09 05 748 2831 ^{c)}	
Female connector with wrap posts 20 mm	48		09 05 248 7821	09 05 248 6821	09 05 248 2821	
Female connector with solder lugs	48		09 05 248 7823	09 05 248 6823	09 05 248 2823	
Female connector with press-in pins 4.5 mm	48				09 05 248 2854	
11.5 mm	48			09 05 248 6851* 09 05 248 6851 222 ^{*f)}	09 05 248 2851*	

Dimensions



Board drillings
Mounting side



Dimensions in mm

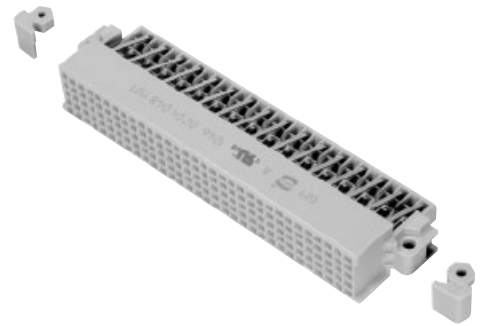
• Wrap posts for interfacing selectively gold plated (performance level 2)
b) Connectors with snap-in clips see chapter 00
c) Connectors with coding see chapter 00
f) Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

DIN 41 612 · Type E

Number of contacts

48

Female connectors



Identification	Part No.	Drawing	Dimensions in mm
Female connector with angled solder pins	Performance level 1 02 04 048 1101	X Kontaktanordnung contact arrangement	DIN Power up to 6 A
Board drillings Mounting side		Y Lochbild board drillings	
Fixing bracket Position 1 Position 32	02 09 000 0018 02 09 000 0017		03 19

Dimensions in mm

DIN Power
up to 6 A

03
19

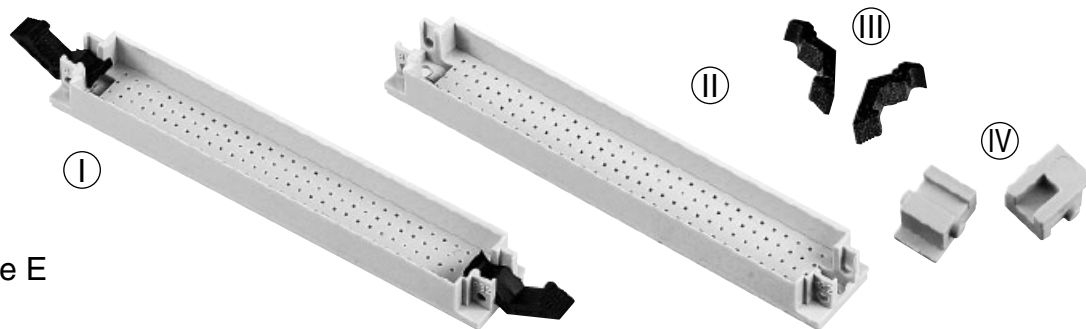
Pin shroud



Number of contacts

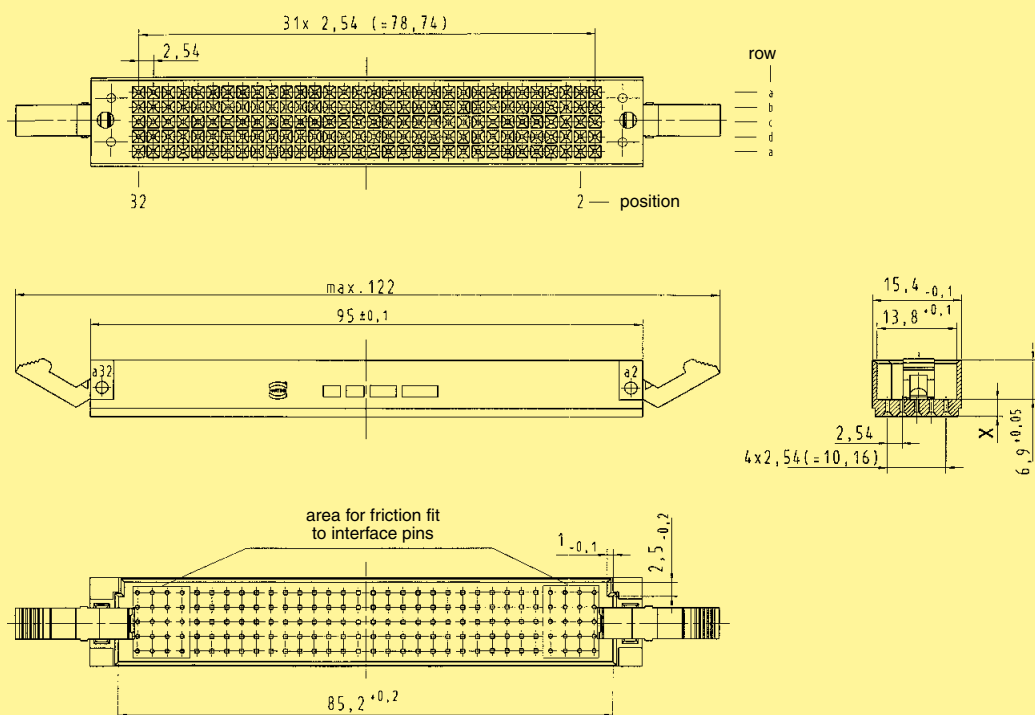
48

Pin shrouds for type E
with press-in pins



Identification	pcb-thickness + 0.2 / - 0.3	Dimension X - 0.1	Part No.
Pin shrouds			
I with locking levers	2.8	3.6	09 05 000 9924
II without locking levers	2.8	3.6	09 05 000 9914 ¹⁾
I with locking levers	3.4	3.0	09 05 000 9922
II without locking levers	3.4	3.0	09 05 000 9912 ¹⁾
III Locking lever for female connector type E ¹⁾			09 03 000 9914
IV Fixing brackets for shell housing C ¹⁾			09 03 000 9921 ¹⁾

Dimensions



Dimensions in mm

¹⁾ order 2 pieces per connector

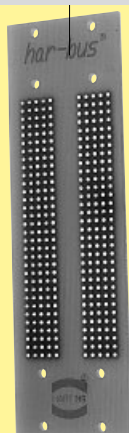
²⁾ Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Application 1

Female connector
09 05 248 6851



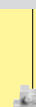
Backplane



Pin shroud
09 05 000 9912



Fixing brackets
09 03 000 9921



Shell housing C
09 05 048 0501



Female connector
with crimp contacts
09 05 048 3202



Locking lever
left 09 02 000 9902
right 09 02 000 9903

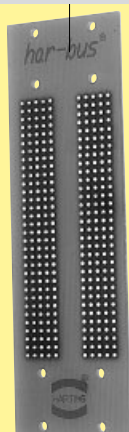


Application 2

Female connector
09 05 248 6851



Backplane



Pin shroud
09 05 000 9912



Locking lever
09 03 000 9914



Female connector
for crimp contacts
09 05 048 3202



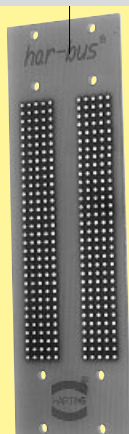
DIN Power
up to 6 A

Application 3

Female connector
09 05 248 6851



Backplane



Pin shroud
09 05 000 9912



Locking lever
09 03 000 9914



Female connector
02 04 048 1101



Fixing brackets
Pos. 32 02 09 000 0017
Pos. 1 02 09 000 0018



Number of contacts 16, 32, 48

Working current 6 A max.
see current carrying capacity chart

Clearance

16 ways ≥ 1.6 mm
32, 48 ways ≥ 1.6 mm

Creepage

16 ways ≥ 1.6 mm
32, 48 ways ≥ 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

Contact resistance ≤ 20 m Ω

Insulation resistance $\geq 10^{12}$ Ω for standard articles

Termination Crimp terminal
0.09-1.5 mm²

Materials

Mouldings and hoods Thermoplastic resin,
glass-fibre filled
Contacts Copper alloy

Piggyback connectors for interfacing with female connectors with wrap posts 1 x 1 mm

The problem of interfacing systems designed for the distribution or collection of electronic signals can be overcome by the use of piggyback connectors. Designed to be mounted on the rear of DIN 41 612 type wire wrap female connectors (1 x 1 mm posts) these piggyback elements can be used to terminate input and output cables.

Distance fixing brackets are fitted to provide either a latching or screw fixing facility over the two level wire wrap plane.

The female crimp contacts used in these versions are designed for 1 x 1 mm posts.

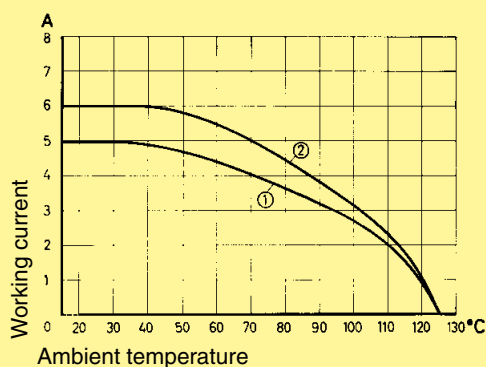
After crimping they can be easily inserted into the chambers of the connector body with the aid of an insertion tool. Insertion errors can be simply rectified with the use of a removal tool.

2 and 3 row piggyback connectors can be mounted in shell housings C and open hood G. Security is provided by either latches or screws to the distance fixing brackets.

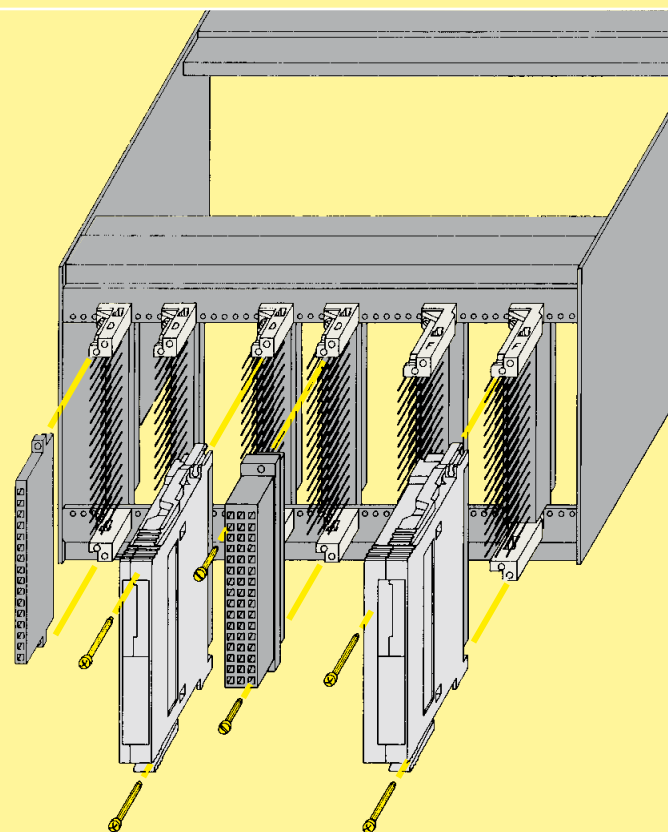
Current carrying capacity

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

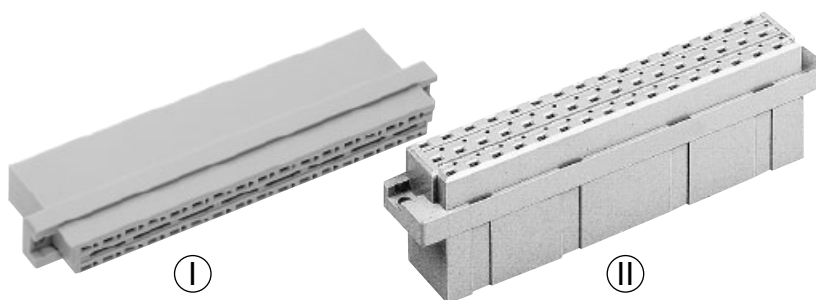


① with shell housing ② without shell housing



Number of contacts

max. 48



Piggyback connectors for 1 x 1 mm wrap posts

Identification	Number of contacts	Part No.	Drawing	Dimensions in mm
Piggyback connector for crimp contacts Order contacts separately I	16	09 04 016 3201 ¹⁾		
	32	09 04 032 3215 ¹⁾		
	48	09 05 048 3204 ¹⁾		

DIN Power up to 6 A

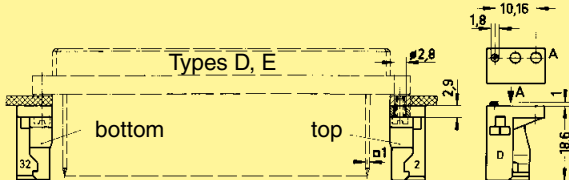
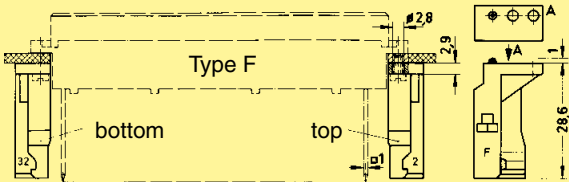
¹⁾ Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Number of contacts

max. 48



Accessories

Identification	Number of contacts	Part No.	Drawing	Dimensions in mm
Female FC crimp contacts				
individual contacts ¹⁾	FC1	09 06 000 6464	Identi- fication	Wire gauge mm ²
	FC2	09 06 000 6461		AWG
	FC3	09 06 000 6462		Insulations ø mm
Bandoliered contacts			1	0.09-0.25
	FC1	09 06 000 6454	2	0.14-0.56
(approx. 2,500 pcs.)	FC2	09 06 000 6451	3	0.50-1.50
	FC3	09 06 000 6452		
			3.5 + 0.5 mm of insulation is stripped from the wires to be crimped.	
			For the fabrication in line with the specification please use exclusively crimp tools approved by HARTING (see DIN EN 60352-2)	
			Crimping tools see chapter 30	
				
Distance fixing brackets for female connectors				
Type D		top (pos. 2)		
Type E		09 04 000 9907 ¹⁾		
		bottom (pos. 32)		
		09 04 000 9906 ¹⁾		
Type F		top (pos. 2)		
I		09 06 000 9936 ¹⁾		
II		bottom (pos. 32)		
		09 06 000 9937 ¹⁾		

DIN Power
up to 6 A

¹⁾ Packaging unit 1,000 pieces
²⁾ Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

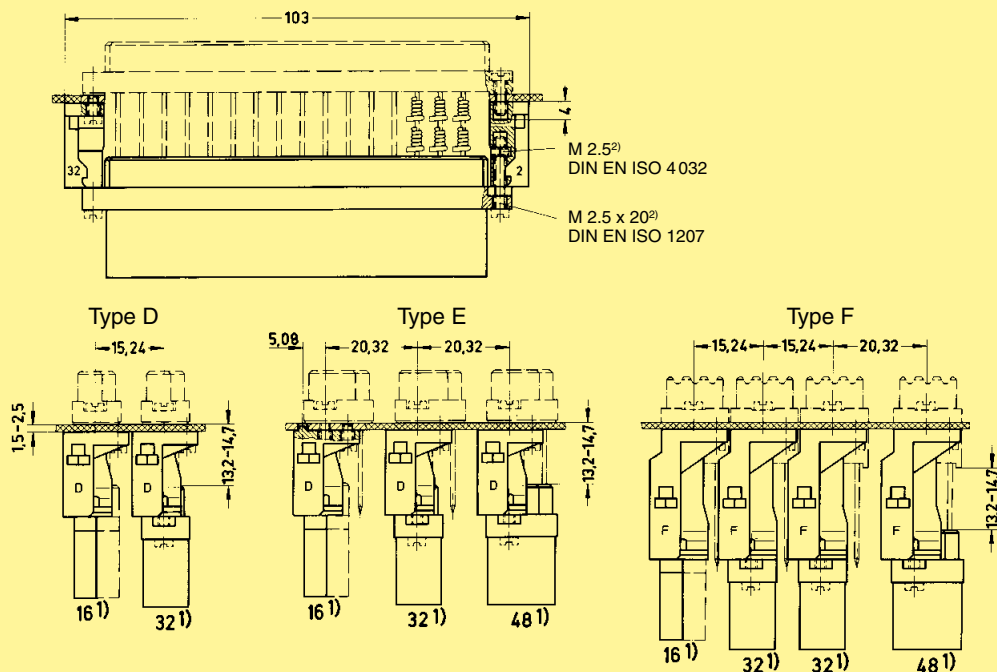
Identification

Mounting examples
of piggyback
connectors

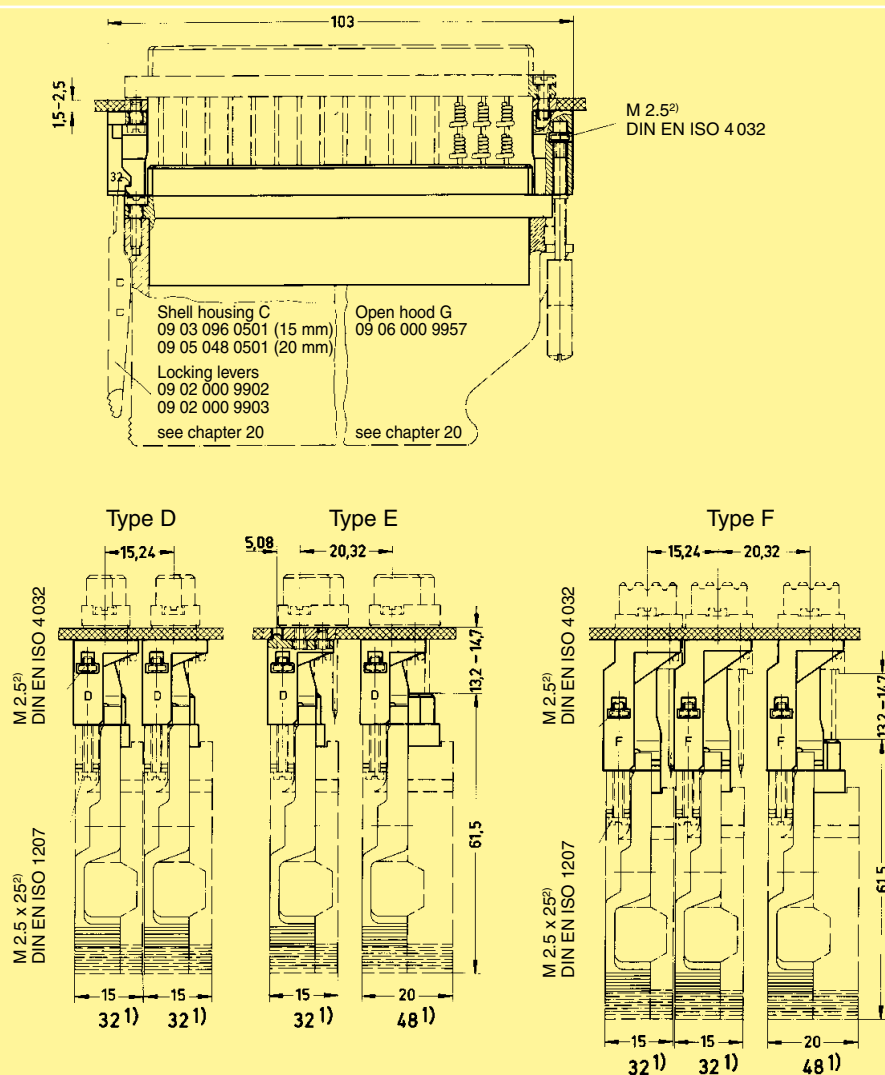
Drawing

Dimensions in mm

without housings



with housings



DIN Power
up to 6 A

¹) Number of contacts piggyback connector
²) Doesn't belong to the scope of supply

Number of contacts

Type F	48, 32
Type FM	45
Type 2F	max. 24
Type F9	max. 9

Contact spacing (mm)	5.08
----------------------	------

Working current	6 A max.
see current carrying capacity chart	

Clearance	≥ 1.6 mm
-----------	---------------

Creepage	≥ 3.0 mm
----------	---------------

Working voltage

The working voltage also depends on the clearance and creepage dimensions on 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-contact) 2.5 kV (contact-ground)
---------------------------	--

Contact resistance	≤ 15 m Ω
Insulation resistance	$\geq 10^{12}$ Ω for standard articles $\geq 10^{11}$ Ω for special NFF articles (with part-no. ending 222)

Temperature range	- 55 °C ... + 125 °C - 40 °C ... + 105 °C for press-in connector
The higher temperature limit includes the local ambient and heating effects of the contacts under load	
During reflow soldering	
	max. + 240 °C for 15 s for SMC connectors

Electrical termination	Solder pins for pcb connections $\varnothing 1 \pm 0.1$ mm according to IEC 60 326-3 Wrap posts 1 x 1 mm diagonal 1.34-1.45 mm Crimp terminal 0.09-1.5 mm ² Angled solder pins 1 x 1 mm for pcb connections $\varnothing 1.6 \pm 0.1$ mm Solder lugs Compliant press-in terminations
pcb thickness	≥ 1.6 mm
Recommended pcb holes for press-in technology	See recommendation page 00.25 in acc. to EN 60 352-5

Insertion and withdrawal force	48 way ≤ 75 N 45 way ≤ 70 N 32 way ≤ 50 N 24 way ≤ 37 N
--------------------------------	--

Materials

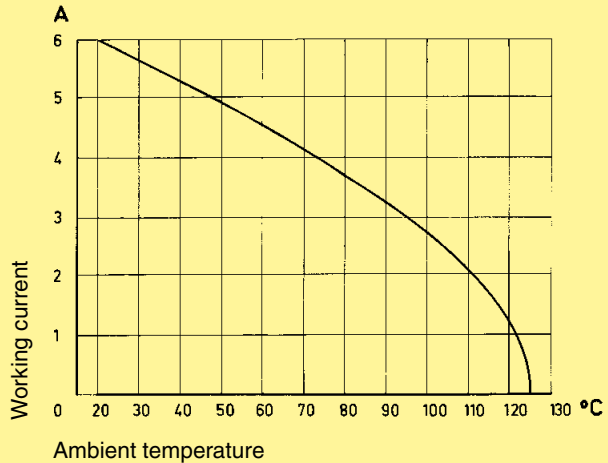
Mouldings	Thermoplastic resin, glass-fibre filled, UL 94-V0
Contacts	Copper alloy
Contact surface	Selectively plated according to performance level ¹⁾
Contact zone	

¹⁾ Explanation of performance levels see chapter 00

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

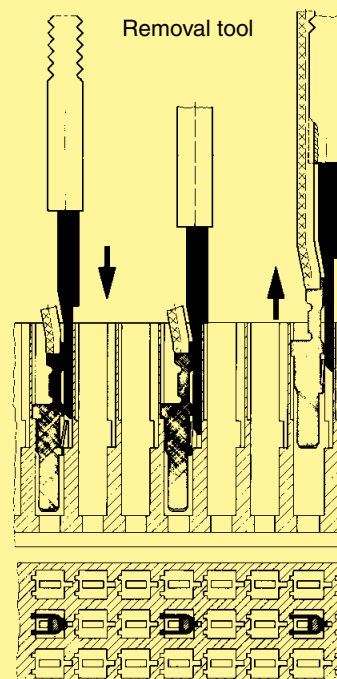


Fitting the crimp contacts

After crimping the wires onto the contacts with the help of a crimping tool or an automatic crimping machine the contacts should be correctly oriented and inserted into the cavities of the connector moulding in the required configuration. They snap into position and are firmly held in place. A light pull on the wire assures the correct tensile strength of the contact. When using stranded wires with a gauge below 0.37 mm² an insertion tool is necessary.

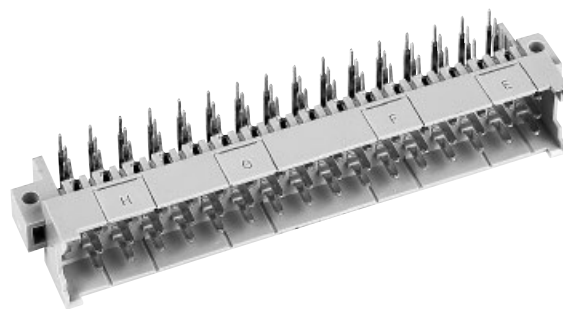
Removing the crimp contacts

The removal tool is inserted into a slot on the termination side of the respective crimp cavity. This action compresses the contact retaining spring therefore the contact can then be easily withdrawn using a light pull on the wire. This action will cause no damage to the contact/wire which can be repositioned/refitted as necessary. The drawing demonstrates the crimp removal procedure (max. 5x).



Number of contacts

48, 32

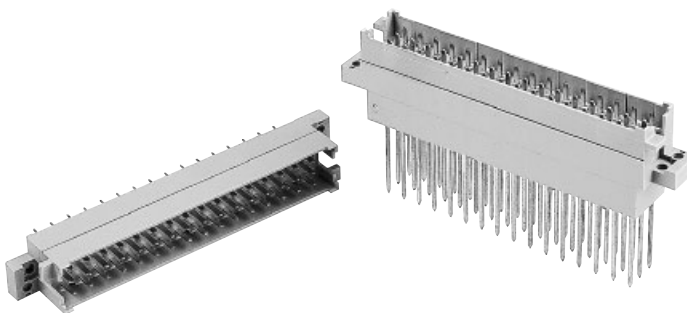


Male connectors

Identification	Number of contacts	Contact arrangement	Part No.	Performance levels according to IEC 60603-2. Explanation chapter 00		
			3	2	1	
Male connector with angled solder pins ¹⁾	48		09 06 148 7901	09 06 148 6901 09 06 148 6901 222 ^{f)} 09 06 348 6901 ^{b)} 09 06 348 6901 222 ^{b)f)}	09 06 148 2901 09 06 148 2901 222 ^{f)}	DIN Power up to 6 A
	48			09 06 148 6951 ^{d)} 09 06 348 6951 ^{b)d)}	09 06 348 2951 ^{b)d)}	
	32		09 06 132 7901 09 06 332 7901 ^{b)}	09 06 132 6901 09 06 132 6901 222 ^{f)}	09 06 132 2901	
	32		09 06 132 7931	09 06 132 6931 09 06 132 6931 222 ^{f)} 09 06 332 6931 ^{b)}	09 06 132 2931 09 06 332 2931 ^{b)}	
	47 + 1			09 06 148 6921 09 06 348 6921 ^{b)}	09 06 148 2921	
	31 + 1		09 06 132 7921	09 06 132 6921	09 06 132 2921	
2 leading contacts (positions b 2 + b 32)	46 + 2			09 06 148 6925 09 06 148 6925 222 ^{f)}	09 06 148 2925	
Dimensions						
Board drillings Mounting side						
Cross section of solder terminations	Cross area (A) of contacts row z, b, d: A = 0.29 - 0.34 mm² Dimensions in mm					

¹⁾ With shroud coding, see also chapter 00^{b)} Connectors with snap-in clips see chapter 00^{d)} CTI > 400^{f)} Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

48, 32



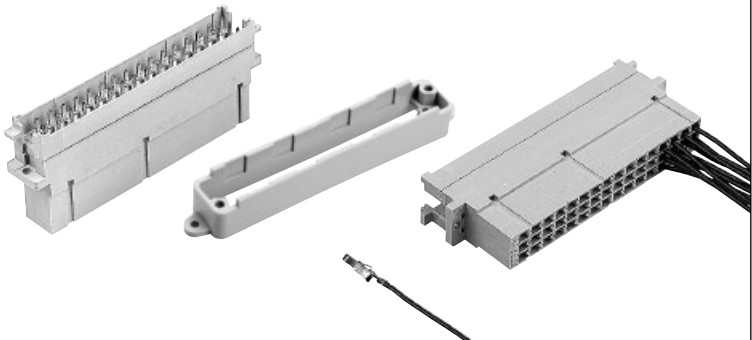
Identification	Number of contacts	Contact arrangement	Part No.	Drawing	Dimensions in mm
Interface connector I with solder pins ¹⁾ 0.6 x 0.6 mm			Performance level 1*		
	48		09 06 048 2905 ^{f)}		
	32		09 06 032 2905 ^{f)}		
	32		09 06 032 2941 ^{f)}		
Board drillings Mounting side					
Interface connector I with wrap posts ¹⁾ 1 x 1 mm			Performance level 1*		
without nut	48		09 06 048 2903 ^{f)}		
with nut	48		09 06 048 2963 ^{f)}		
without nut	32		09 06 032 2903 ^{f)}		
				Contact arrangement View from termination side	
Panel cut out					

^{f)} Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

DIN 41 612 · complementary to type F

Number of contacts

48



Interface connector I

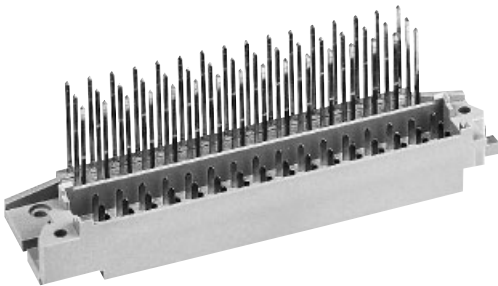
Identification	Number of contacts	Part No.	Drawing	Dimensions in mm
Interface connector I utilising female crimp contacts¹⁾ Order crimp contacts separately see page 03.31	48	Performance level 1 acc. to IEC 60 603-2 09 06 048 2906¹⁾	Drawing 5,08 90 2z 2b 2d 2,8 0,3 2x3,81=7,62 15 x 5,08 = 76,20 95 -0,4 8,17 12,7 12,3 20 14,8 84 85,4 14,8 -0,2 38 2,9 -0,3 8 -0,3 Contact arrangement View from termination side 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 PP-GR 2z „X“	
Shell housing see chapter 20			M2,5/2,8 7,5 15,5 7,5 15,24 85 90 ±0,1 95,5	
Panel cut out			max. 121 105 ±0,1 A A 18 ±0,1 3,7 ±0,1 112 ±0,1 94,45 ±0,1 90 ±0,1 97,5 ±0,1 101,15 ±0,1 inkl. Einpressmutter M2,5 incl. insert nut M2,5	
Shroud¹⁾ for screw-fixing of shell housing D20 plastic or D20 metallised . The shroud is assembled onto the Interface connector I and is screwfixed onto the pcb or to the rack.		09 06 001 9964	M2,5	

DIN Power up to 6 A

¹⁾ With shroud coding, see also chapter 00
¹⁾ Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Number of contacts

48



Interface connector U

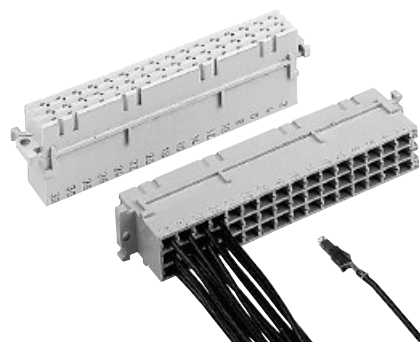
Identification	Number of contacts	Part No.	Drawing	Dimensions in mm
Interface connector U with wrap posts 1 x 1 mm	48	Performance level 1 acc. to IEC 60 603-2 09 06 048 2981 ¹⁾	Technical drawing of the connector showing side and top views with dimensions. The side view shows a length of 15x5,08=76,20 mm and a width of 101±0,2 mm. The top view shows a width of 94 mm and a height of 17,24 mm. The drawing also shows the contact arrangement and the mounting example.	Technical drawing of the connector showing side and top views with dimensions. The side view shows a length of 15x5,08=76,20 mm and a width of 101±0,2 mm. The top view shows a width of 94 mm and a height of 17,24 mm. The drawing also shows the contact arrangement and the mounting example.
Mounting example			Technical drawing of the connector showing side and top views with dimensions. The side view shows a length of 15x5,08=76,20 mm and a width of 101±0,2 mm. The top view shows a width of 94 mm and a height of 17,24 mm. The drawing also shows the contact arrangement and the mounting example.	Technical drawing of the connector showing side and top views with dimensions. The side view shows a length of 15x5,08=76,20 mm and a width of 101±0,2 mm. The top view shows a width of 94 mm and a height of 17,24 mm. The drawing also shows the contact arrangement and the mounting example.

¹⁾ Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Number of contacts

max. 48

Female connectors



Identification	Number of contacts	Part No.	Drawing	Dimensions in mm
Female connector for crimp contacts ¹⁾ Order contacts separately	48	09 06 248 3201 09 06 248 3201 222 ^{f)}	Contact arrangement View from termination side Shell housing see chapter 20	

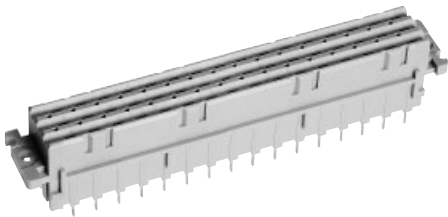
DIN Power
up to 6 A

Identification	Identification Wire gauge	Part No.	Performance levels according to IEC 60603-2. Explanation chapter 00
		2	1
Female crimp FC contacts			
Bandoliered contacts (approx. 2,500 pieces)	1	09 06 000 6484	09 06 000 6474
	2	09 06 000 6481	09 06 000 6471
	3	09 06 000 6482	09 06 000 6472
Bandoliered contacts (approx. 250 pieces)	1	09 06 000 7484	09 06 000 7474
	2	09 06 000 7481	09 06 000 7471
	3	09 06 000 7482	09 06 000 7472
Individual contacts ²⁾	1	09 06 000 8484	09 06 000 8474
	2	09 06 000 8481	09 06 000 8471
	3	09 06 000 8482	09 06 000 8472
Female contacts with solder lugs ³⁾ (lockable)			09 06 000 6420
FC 1	1	Wire gauge mm ² 0.09 - 0.25 AWG 28 - 24 Insulation ø mm 0.7 - 1.5	Identification
FC 2	2	0.14 - 0.56 26 - 20 0.8 - 2.0	Bandoliered contacts
FC 3	3	0.5 - 1.5 20 - 16 1.6 - 2.8	Individual contacts
		3.5 + 0.5 mm of insulation is stripped from the wires to be crimped	
		For the fabrication in line with the specification please use exclusively crimp tools approved by HARTING (see DIN EN 60352-2)	
		Insertion, removal and crimping tools see chapter 30	

¹⁾ With shroud coding, see also chapter 30²⁾ Packaging unit 1,000 pieces³⁾ Solder contacts must not be used together with shell housing A. Special contact surface: 2 µm gold.^{f)} Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Number of contacts

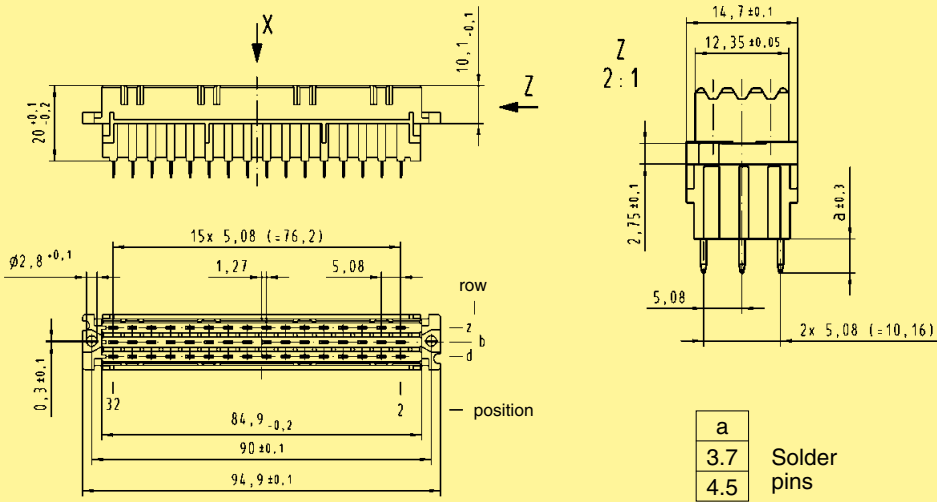
48, 32



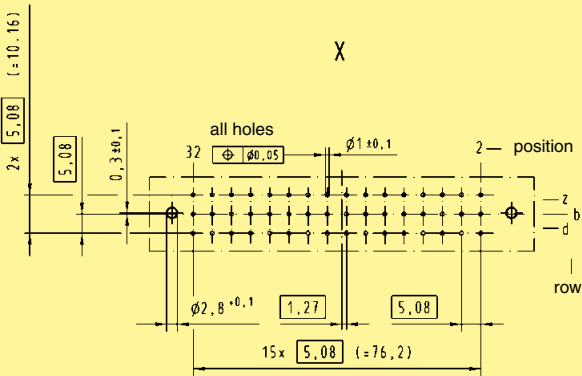
Female connectors

Identification	Number of contacts	Contact arrangement	Part No.	Performance levels according to IEC 60 603-2. Explanation chapter 00		
			3	2	1	
Female connector with solder pins 3.7 mm ¹⁾	48			09 06 248 6848	09 06 248 2848	
	32			09 06 232 6848	09 06 232 2848	
	32			09 06 232 6858		
Female connector with solder pins 4.5 mm ¹⁾	48		09 06 248 7835	09 06 248 6835 09 06 248 6835 222 ^{f)}	09 06 248 2835	
	32			09 06 232 6835	09 06 232 2835	
	32			09 06 232 6845	09 06 232 2845	

Dimensions



Board drillings
Mounting side



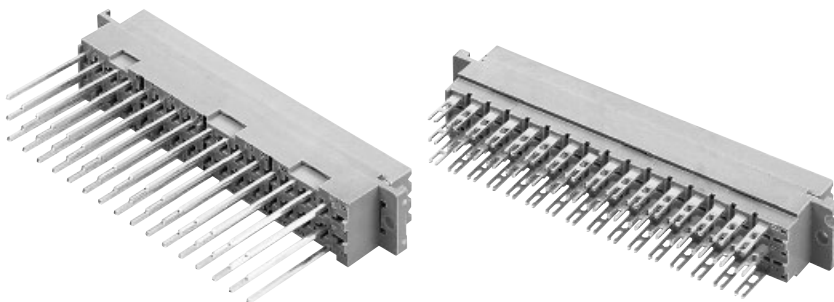
Dimensions in mm

¹⁾ With shroud coding, see also chapter 00
^{f)} Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

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 with wrap posts 22 mm		48		09 06 248 7821	09 06 248 6821 09 06 248 6821 222 ^{f)}	09 06 248 2821 09 06 248 2821 222 ^{f)}	
		32		09 06 232 7821	09 06 232 6821	09 06 232 2821	
		32		09 06 232 7831	09 06 232 6831	09 06 232 2831	
Female connector with solder lugs open solder lug 		48		09 06 248 7823	09 06 248 6823	09 06 248 2823	
		32		09 06 232 7823	09 06 232 6823	09 06 232 2823	
		32		09 06 232 7843	09 06 232 6843 09 06 232 6843 222 ^{f)}	09 06 232 2843	
Dimensions							
Panel cut out							
		Contact arrangement					
				View from termination side			
				Dimensions in mm			

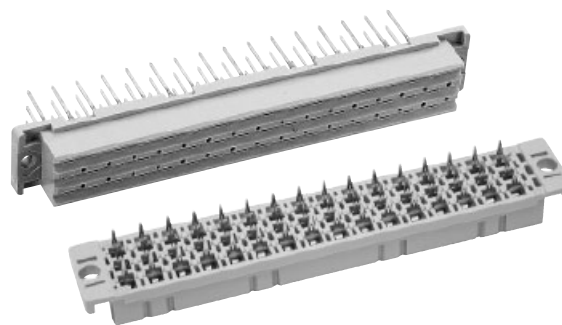
Dimensions in mm

Identification strips for female connectors with wrap posts 09 06 000 9939

^{f)} Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Number of contacts

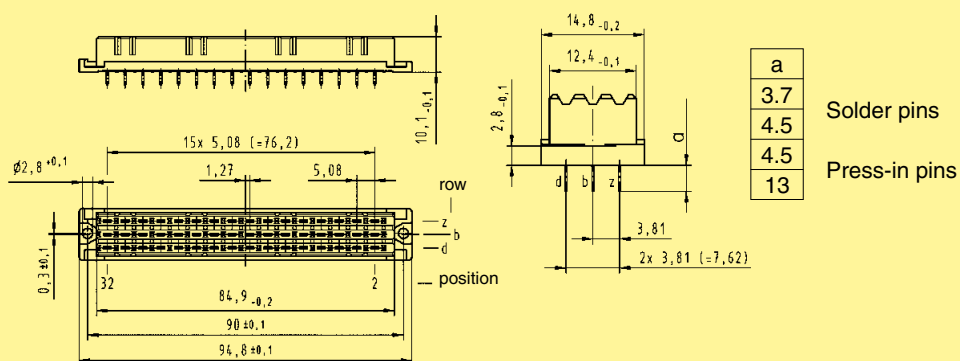
48, 32



Female connectors

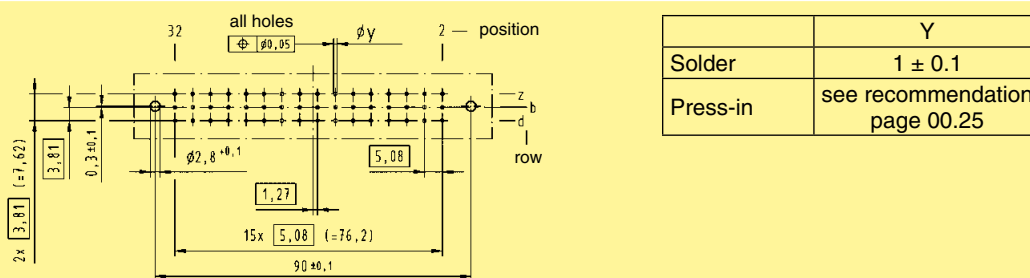
Identification	Number of contacts	Contact arrangement	Part No.	Performance levels according to IEC 60 603-2. Explanation chapter 00		
			3	2	1	
Female connector ¹⁾ "low profile" with solder pins 3.7 mm	48		09 06 248 7833	09 06 248 6833 09 06 248 6833 222 ^{f)}	09 06 248 2833 09 06 248 2833 222 ^{f)}	
	32			09 06 232 6833		
	32			09 06 232 6893		
Female connector ¹⁾ "low profile" with solder pins 4.5 mm	48			09 06 248 6834 09 06 248 6834 222 ^{f)}	09 06 248 2834	
	32			09 06 232 6834		
	32		09 06 232 7894	09 06 232 6894	09 06 232 2894	
Female connector ¹⁾ "low profile" with press-in pins 4.5 mm	48		09 06 248 7832	09 06 248 6832	09 06 248 2832 09 06 248 2832 222 ^{f)}	
	32			09 06 232 6832	09 06 232 2832	
	32			09 06 232 6892	09 06 232 2832 222 ^{f)}	
Female connector "low profile" with press-in pins 13 mm	48			09 06 248 6837 ^{w)} 09 06 248 6838*		
	32			09 06 232 6897 ^{w)}		

Dimensions



Board drillings

Mounting side



Dimensions in mm

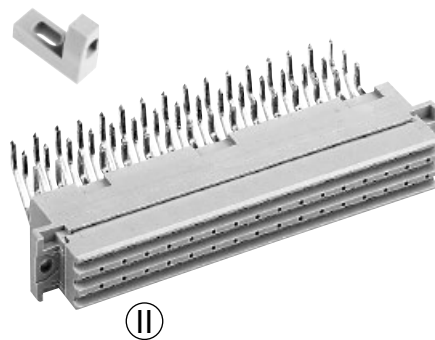
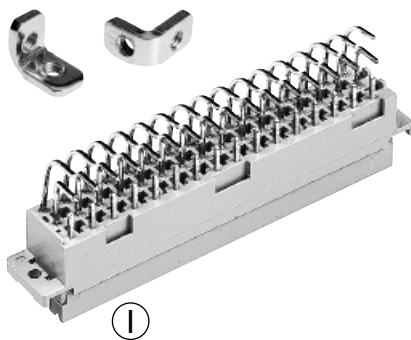
* Wrap posts for interfacing selectively gold plated (performance level 2)

¹⁾ With shroud coding, see also chapter 00^{f)} Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2^{w)} Wrap posts not for interfacing, no performance level

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 with angled solder pins 1 x 1 mm	48		Performance level 3 on request	09 06 248 6826	Performance level 1 on request
	32			09 06 232 6826	
	48			09 06 248 6836	
	32			09 06 232 6846	
	32			09 06 232 6836	
Dimensions					
Fixing bracket		Metal	09 06 000 9912 ¹⁾	for version	
		Plastic	09 06 000 9975 ¹⁾	for version	
Board drillings Mounting side					

DIN Power
up to 6 A

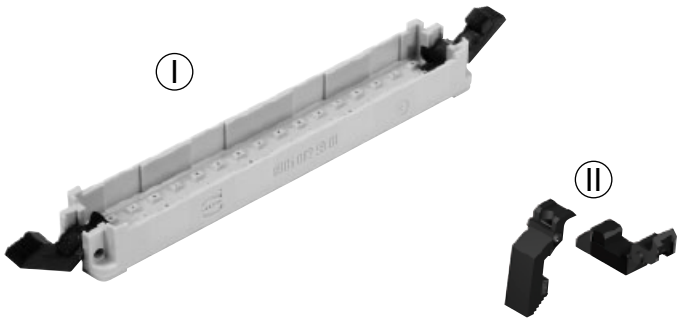
Pin shroud



Number of contacts

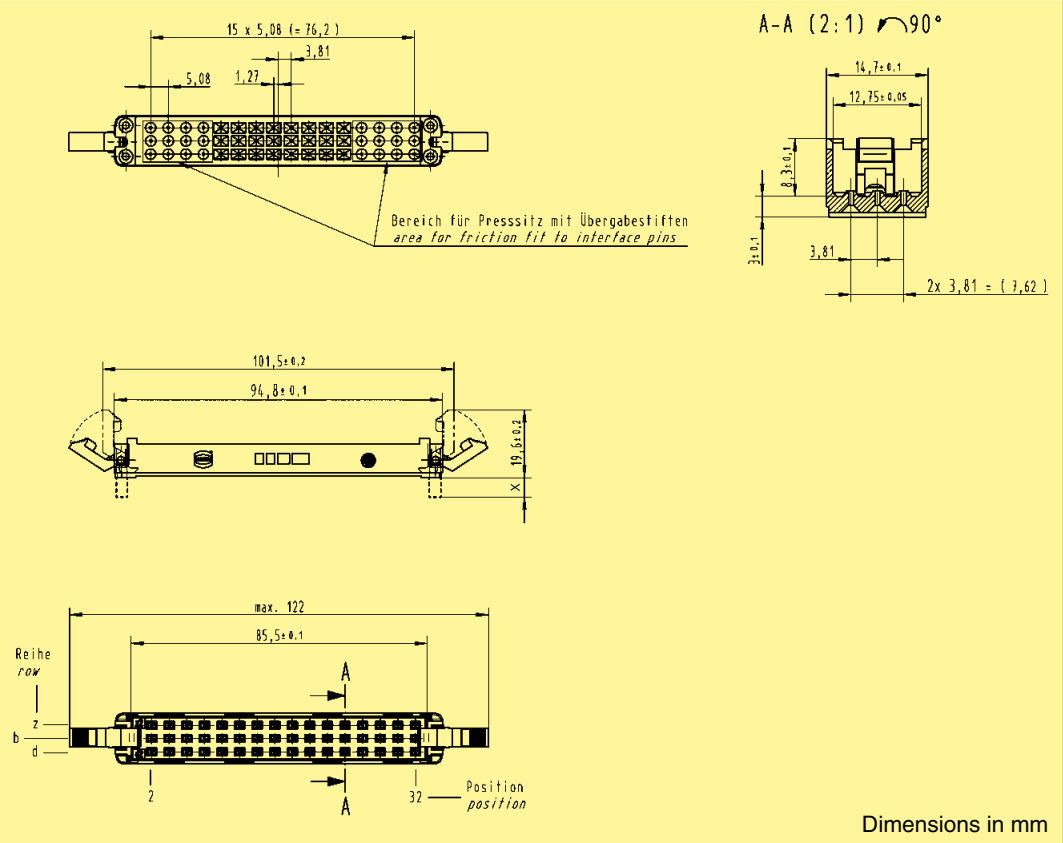
48

Pin shrouds
for type F “low profile”
with press-in pins 13 mm



Identification	pcb-thickness ± 10 %	Dimension X ± 0.1	Part No.
Pin shrouds			
I with locking levers ²⁾ and press-in fixing	1.6 - 2.4	1.6	09 06 002 9902
I without locking levers for screw fixing	1.6 - 2.4	1.6	09 06 002 9912
I with locking levers ²⁾ and press-in fixing	3.2 - 4.0	0	09 06 002 9901
I without locking levers for screw fixing	3.2 - 4.0	0	09 06 002 9911
II Locking lever for female connector type F ¹⁾			09 06 001 9946

Dimensions



Dimensions in mm

DIN Power
up to 6 A

03
36

¹⁾ order 2 pieces per connector
²⁾ Press-in tools see chapter 30

48



**DIN Power
up to 6 A**

Einpressmutter M2,5
press-in nut M2.5

15 x 5,08 = (76,2)

5,08 1,27 3,81

16,6

105,5

B

Einpressmutter M2,5
press-in nut M2.5

A-A (2:1) 90°

16,7 ± 0,1

12,75 ± 0,05

8,3 ± 0,1

3 ± 0,1

3,81

2 x 3,81 = (7,62)

B-B (2:1) 90°

5,8 ± 0,15

8,6 ± 0,05

Reihe
row

z

d

2

32

Position
position

03
37

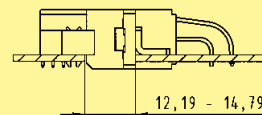
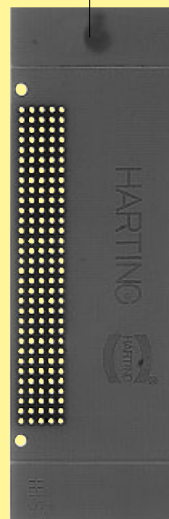
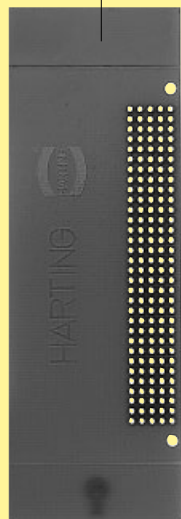
Application 1

Daughtercard

Male connector
09 06 148 6901

Female connector
09 06 248 6826

Daughtercard



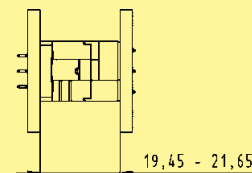
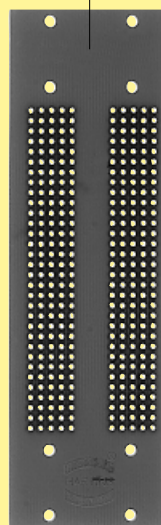
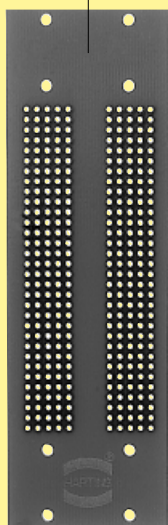
Application 2

Backplane

Male connector
09 06 048 2905

Female connector
09 06 248 2833

Backplane



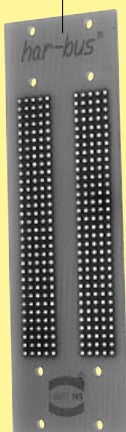
DIN Power
up to 6 A

Application 3

Female connector
09 06 248 6838



Backplane



Pin shroud
09 06 002 9921



Shell housing D20
09 06 048 0521



Female connector
with crimp contacts
09 06 248 3201

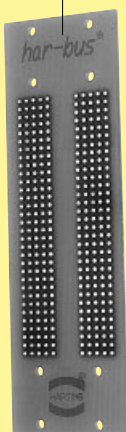
DIN Power
up to 6 A

Application 4

Female connector
09 06 248 6838



Backplane



Pin shroud
+ Locking lever
09 06 002 9901



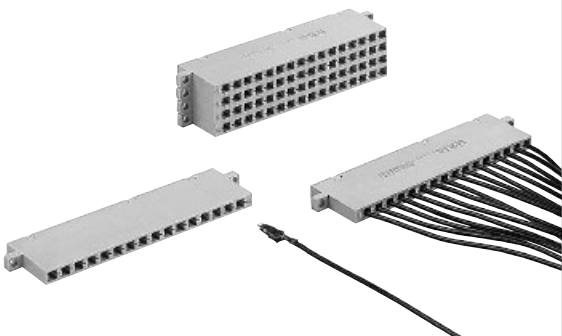
Female connector
for crimp contacts
09 06 248 3201



Number of contacts

64, 16

Universal adaptors



DIN Power
up to 6 A

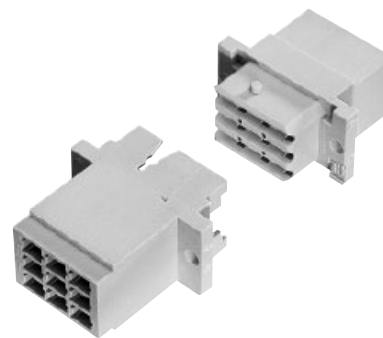
Identification	Number of contacts	Part No.	Drawing	Dimensions in mm
Universal adaptor utilising crimp contacts crimp contacts see page 03.31	4 x 4	09 06 016 3301 ¹⁾		
	16 x 1	09 06 016 3302 ¹⁾		
	16 x 4	09 06 064 3302 ¹⁾		
Panel cut out				

¹⁾ Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Number of contacts

max. 9

Female and male connectors

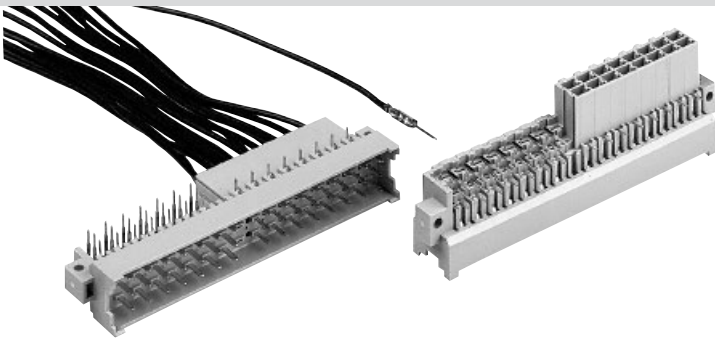


Identification	Number of contacts	Part No.	Drawing	Dimensions in mm
Female connector for crimp contacts Order contacts separately	9	09 06 209 3201		
Female crimp contacts		see page 03.31		
Male connector for crimp contacts Order contacts separately	9	09 06 109 3401		
Male crimp contacts		see page 03.44		

DIN Power
up to 6 A

Number of contacts

45



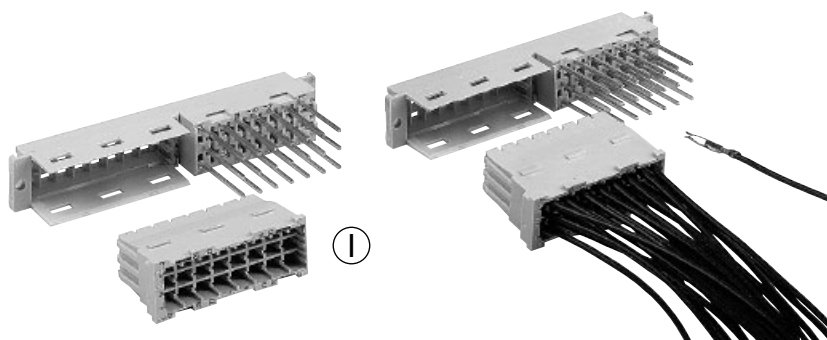
Male connectors

Identification	Number of contacts	Part No.	Drawing	Dimensions in mm
Male connector 29 angled solder pins 16 cavities for male crimp contacts crimp contacts see page 03.44	45	Performance level 1 acc. to IEC 60 603-2 09 06 145 2971		
Board drillings Mounting side				

1) A special 48 way version with 3 extra angled solder contacts at position 16 (rows d, b, z) can be supplied

Number of contacts

45



Female connectors

Identification	Number of contacts	Part No.	Drawing	Dimensions in mm
Female connector				
Female moulding with 21 wrap posts 22 mm	45	09 06 045 2871 ^{†)}	Performance level 1 acc. to IEC 60 603-2 Crimp moulding is supplied with the female moulding Latches View from termination side Contact arrangement	
with 21 solder pins 4.5 mm	45	09 06 045 2875 ^{†)}		
Crimp moulding for 24 female crimp contacts		09 06 024 3202 ^{†)}		
crimp contacts see page 03.31				
Panel cut out				
Removal tool for the crimp moulding		09 99 000 0172	The crimp moulding can be extracted with the help of the removal tool.	

DIN Power up to 6 A

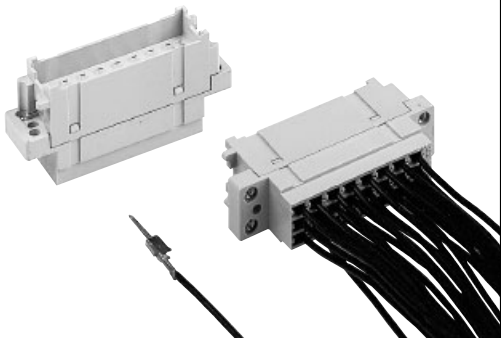
03
43

^{†)} Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Number of contacts

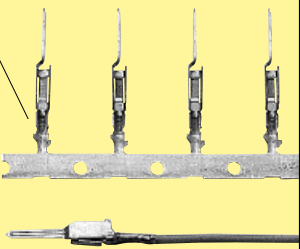
max. 24

Interface connector I



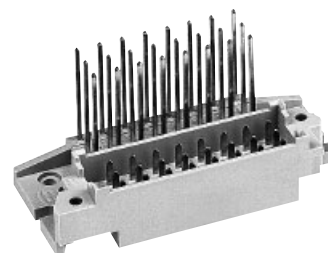
Identification	Number of contacts	Part No.	Drawing	Dimensions in mm
Interface connector I for male crimp contacts Order contacts separately	24	09 26 024 3411		

Identification	Identification Wire gauge	Part No.	Performance levels according to IEC 60603-2. Explanation chapter 00	
			2	1
Male crimp FC contacts				
Bandoliered contacts (approx. 2,500 pieces)	1	09 06 000 9564		09 06 000 9544
	2	09 06 000 9561		09 06 000 9541
	3	09 06 000 9562		09 06 000 9542
Bandoliered contacts (approx. 250 pieces)	2			09 06 000 5541
	3			09 06 000 5542
Individual contacts ¹⁾	1	09 06 000 9574		09 06 000 9554
	2	09 06 000 9571		09 06 000 9551
	3	09 06 000 9572		09 06 000 9552
FC 1 FC 2 FC 3	1 2 3	Wire gauge mm ² AWG Insulation ø mm	Identification	
		0.09 - 0.25 28 - 24 0.7 - 1.5	Bandoliered contacts	
		0.14 - 0.56 26 - 20 0.8 - 2.0	Individual contacts	
		0.5 - 1.5 20 - 16 1.6 - 2.8		
		3.5 + 0.5 mm of insulation is stripped from the wires to be crimped		
		For the fabrication in line with the specification please use exclusively crimp tools approved by HARTING (see DIN EN 60352-2)		
		Insertion, removal and crimping tools see chapter 30		



¹⁾ Packaging unit 1,000 pieces

max. 24

[illegible]

DIN Power
up to 6 A

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Number of contacts

max. 24

Female connectors



Identification	Number of contacts	Part No.	Drawing	Dimensions in mm
Female connector for crimp contacts Order contacts separately see page 03.31	24	09 26 024 3201 ¹⁾	Technical drawing of the female connector for crimp contacts. It includes front, side, and top views. Dimensions include: 44.4, 10.1, 15.2, 43.8, 12.4, 2.8_{-0.3}, 9.5, 12.7, 8.7, 5.08, 7x5.08=35.56, 8.49, 2d, 2b, 2z, 2.8^{+0.1}, 0.3, 2x3.81=7.62, 14.8_{-0.2}, 50±0.1, 54_{-0.2}, 7.2, 15, 44.8, 50±0.1, 54.5, 15.24, M2.5/42.8.	Pin configuration diagram for the 24-pin connector, showing a 4x6 grid with pins numbered 1 to 24.
Shell housing A with integrated fixing screws Supplied with: - Shell 2x - Locking screw 2x - Screw M3x10 2x - Nut M3 2x - Screw BZ 2.9x9.5 2x - Cable clamp 1x - Tension relief 1x		09 26 024 0401 ¹⁾	Technical drawing of the shell housing A with integrated fixing screws. It includes front, side, and top views. Dimensions include: max. 9.11, 17, 13.5, 1.5, 50, 53.4, 58.5, 60, 15, 8.6, M2.5.	
Open hood Supplied with: - Open hood 1x - Locking screw 2x - Screw BZ 2.2x9.5 2x - Cable tie 1x		09 26 000 9901 ¹⁾	Technical drawing of the open hood. It includes front, side, and top views. Dimensions include: 60, 53.4, 15, 8.6, M2.5, 2 x BZ 2.2 x 9.5 DIN ISO 1481.	

¹⁾ Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2