

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

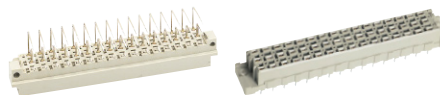
Page

Technical characteristics types D and E **03.10**

Type D connectors **03.11**



Type E connectors **03.15**



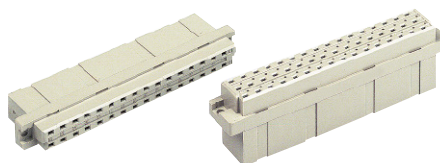
Pin shrouds for type E **03.20**



Application examples type E **03.21**

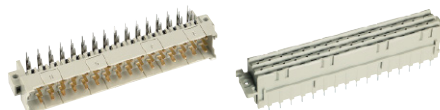
Technical characteristics piggyback connectors **03.22**

Piggyback connectors **03.23**



Technical characteristics types F, F9, FM and 2F **03.26**

Type F connectors **03.27**



Pin shrouds for type F **03.36**

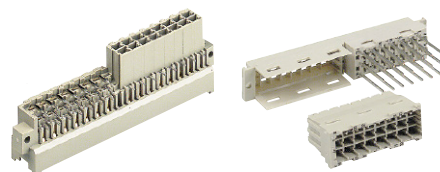


Application examples type F **03.38**

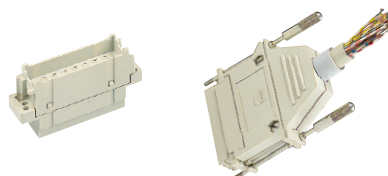
Type F9 connectors **03.41**



Type FM connectors **03.42**



Type 2F connectors **03.44**



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	6 A max.
see current carrying capacity chart	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
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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	- 55 °C ... + 125 °C
The higher temperature limit includes the local ambient and heating effects of the contacts under load	- 40 °C ... + 105 °C for press-in connectors

Degree of protection for crimp terminal according to DIN 40 050	IP20
------------------------------------------------------------------------	------

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 Angled solder pins 1 x 1 mm for pcb connections Ø 1.6 ± 0.1 mm Solder lugs Crimp terminal 0.09-1.5 mm ² 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	32 way ≤ 40 N 48 way ≤ 75 N
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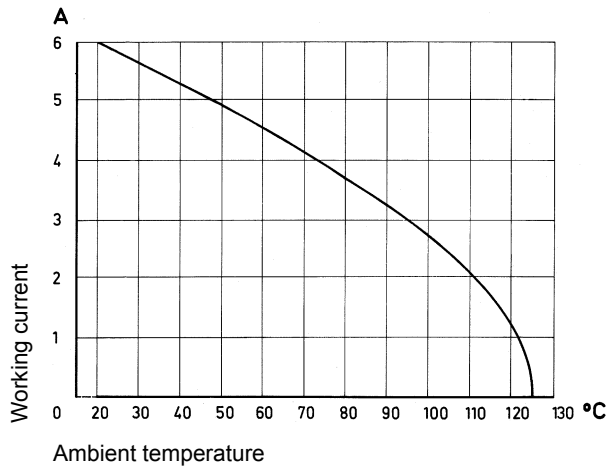
Materials	
Mouldings	Thermoplastic resin, glass-fibre filled, UL 94-V0
Contacts	Copper alloy
Contact surface	
Contact zone	Selectively gold plated according to performance level ¹⁾

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

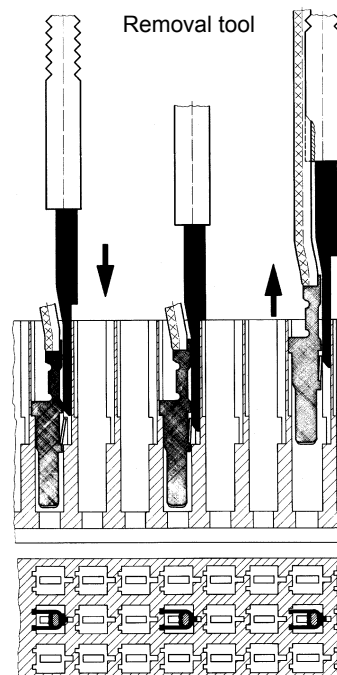


Fitting the crimp contacts

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

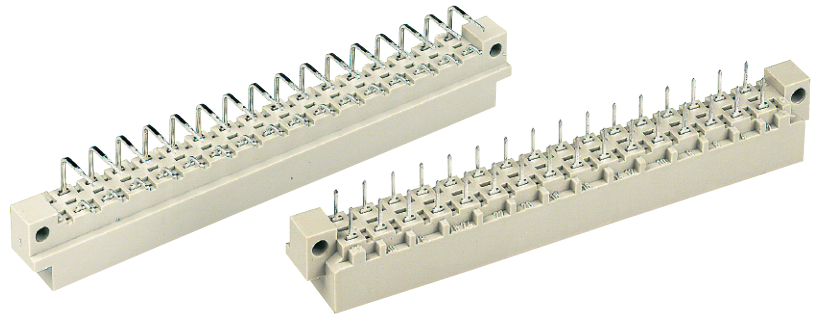
The removal tool is inserted into a slot on the termination side of the respective crimp cavity. This action compresses the contact retaining spring therefore the contact can then be easily withdrawn using a light pull on the wire. This action will cause no damage to the contact/wire which can be repositioned/refitted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



DIN Power up to 6 A

Number of contacts

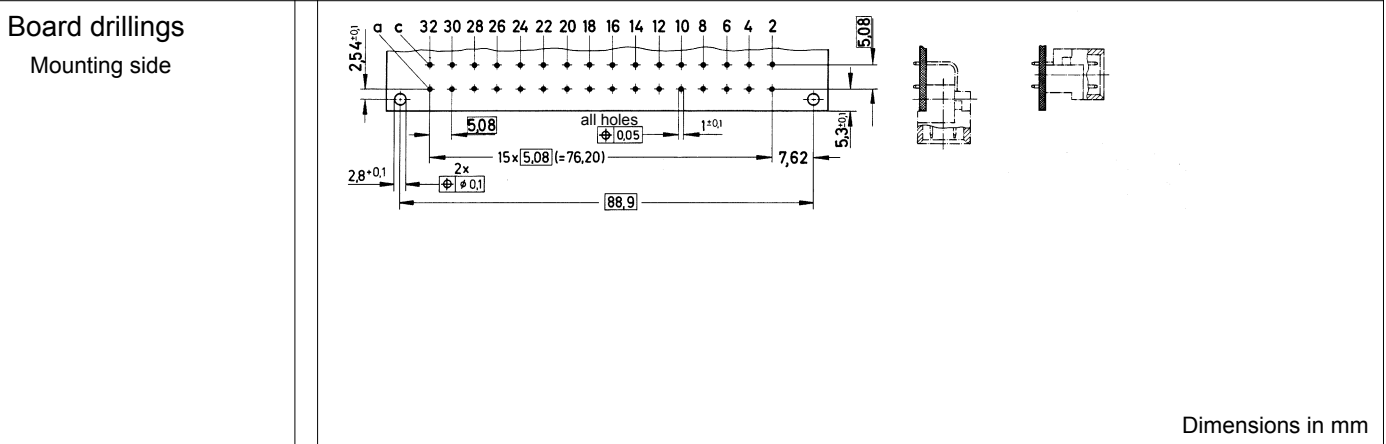
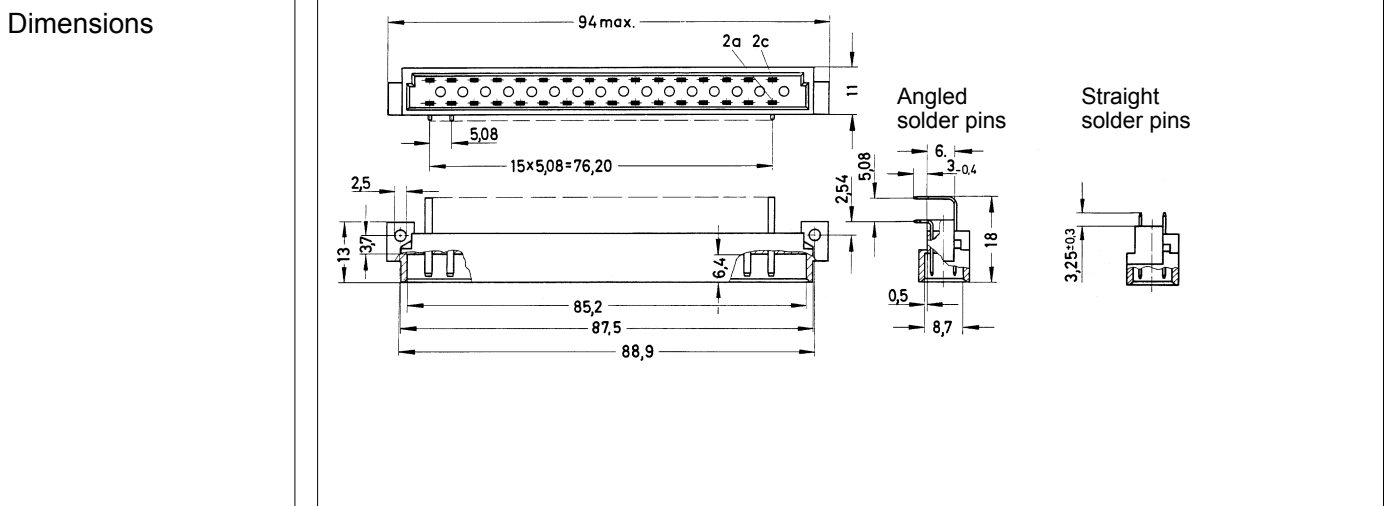
32



Male connectors

Identification	No. of contacts	Contact arrangement	Part number	Performance levels according to IEC 60603-2. Explanation chapter 00		
				3	2	1
Male connector with angled solder pins THR	32		09 04 132 7921	09 04 132 6921 09 04 332 6921 ^{b)} 09 04 632 6921 ^{c)}	09 04 132 2921	
	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		

DIN Power up to 6 A



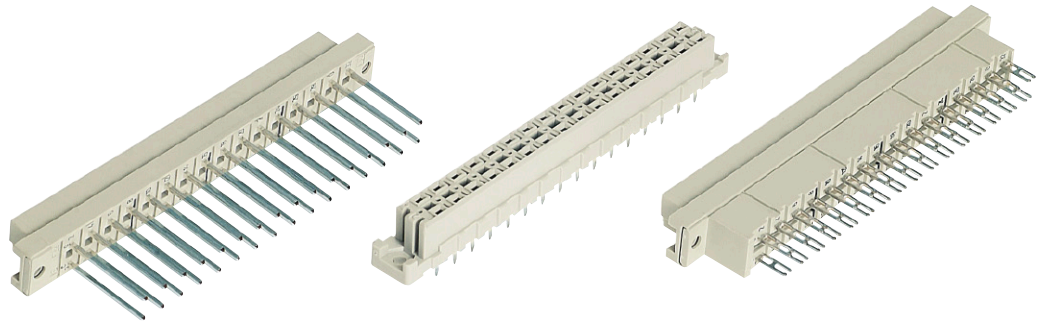
Dimensions in mm

▲ Male connectors with 2 leading contacts [(0.8 mm) pos. a2 and a3]
Other contact arrangements on request

^{b)} Connectors with snap-in clips see chapter 00
^{c)} Connectors with coding see chapter 00
^{d)} CTI > 400

Number of contacts

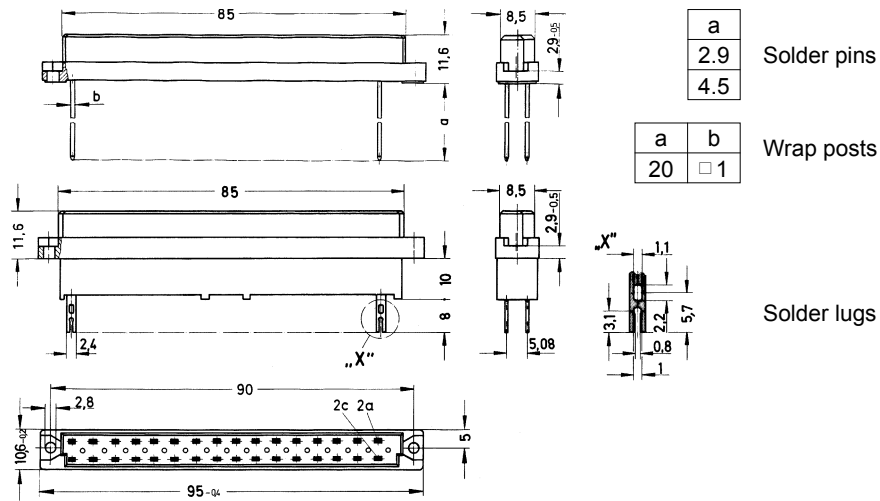
32



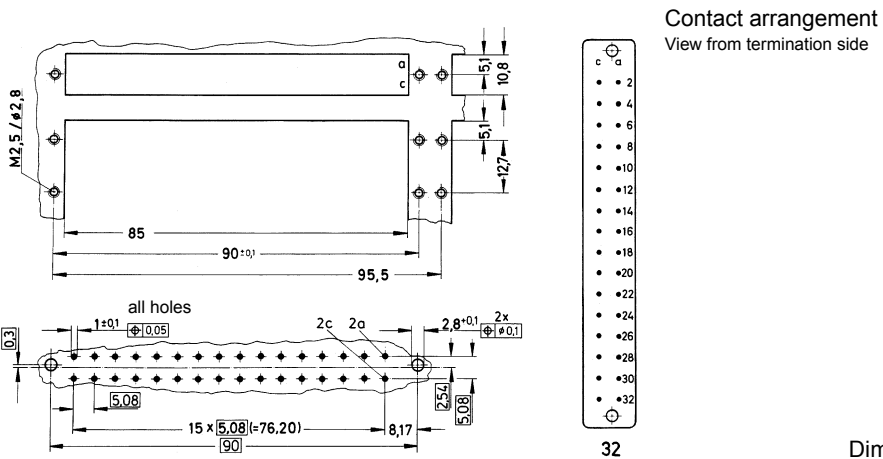
Female connectors

Identification	No. of contacts	Contact arrangement	Part number	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 04 332 6831 ^{b)} 09 04 732 6831 ^{c)}	09 04 232 2831	
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

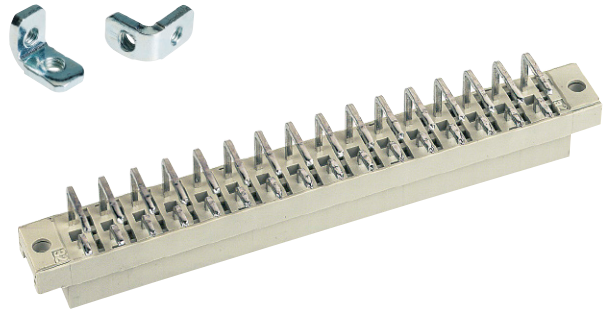


DIN Power
up to 6 A

^{b)} Connectors with snap-in clips see chapter 00
^{c)} Connectors with coding see chapter 00

Number of contacts

32



Female connectors

Identification	No. of contacts	Contact arrangement	Part number	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 2826
Dimensions					
Fixing bracket Metal			09 06 000 9912 ¹⁾		
Board drillings Mounting side					

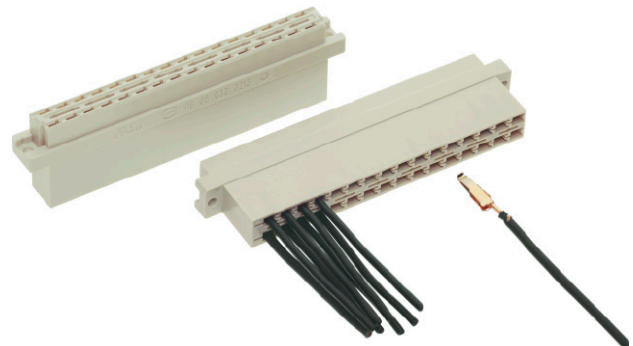
¹⁾ order 2 pieces for one connector

DIN Power up to 6 A

Dimensions in mm

Number of contacts

max. 32



Female connectors

Identification	No. of contacts	Part number	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 number	Performance levels according to IEC 60603-2. Explanation chapter 00
Female crimp FC contacts			2
Bandoliered contacts (approx. 2,500 pieces)	1	09 06 000 6484	1
	2	09 06 000 6481	
	3	09 06 000 6482	
Bandoliered contacts (approx. 250 pieces)	1	09 06 000 7484	1
	2	09 06 000 7481	
	3	09 06 000 7482	
Individual contacts ¹⁾	1	09 06 000 8484	1
	2	09 06 000 8481	
	3	09 06 000 8482	
Female contacts with solder lugs ²⁾ (lockable)			
			09 06 000 6420

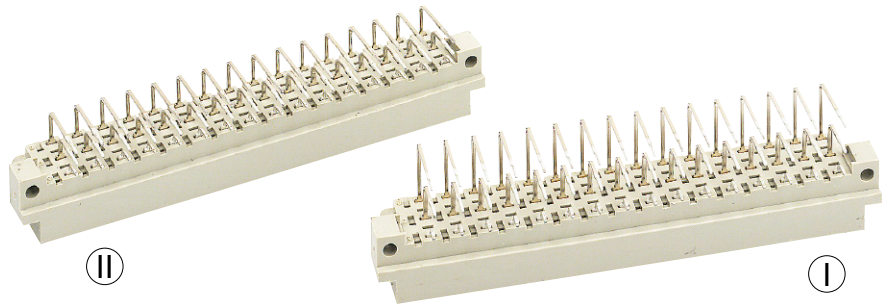
Identification	Wire gauge mm ²	AWG	Insulation ø mm	Identification
FC 1	1	0.09 - 0.25	28 - 24	0.7 - 1.5
FC 2	2	0.14 - 0.56	26 - 20	0.8 - 2.0
FC 3	3	0.5 - 1.5	20 - 16	1.6 - 2.8
3.5 + 0.5 mm of insulation is stripped from the wires to be crimped				
For the fabrication in line with the specification please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

DIN Power up to 6 A

1) Packaging unit 1,000 pieces
 2) Solder contacts must not be used together with shell housing A. Special contact surface: 2 µm gold.
 3) Connectors with coding see chapter 00
 4) Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Number of contacts

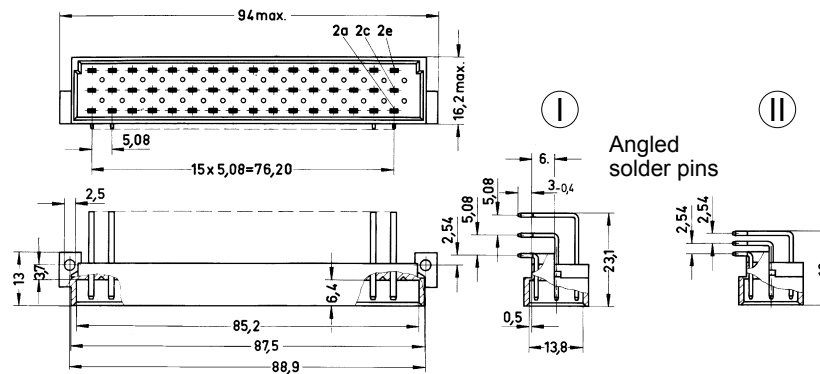
48



Male connectors

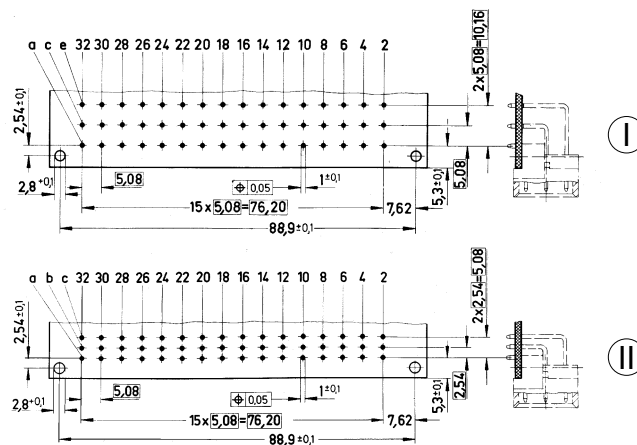
Identification	No. of contacts	Contact arrangement	Part number	Performance levels according to IEC 60603-2. Explanation chapter 00		
				3	2	1
Male connector with angled solder pins Row separation termination side 5.08 mm ① Row separation termination side 2.54 mm ② THR	48		09 05 148 7921	09 05 148 6921 09 05 348 6921 ^{b)} 09 05 648 6921 ^{c)} 09 05 848 6921 ^{b)c)}	09 05 148 2921 09 05 648 2921 ^{c)}	
	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

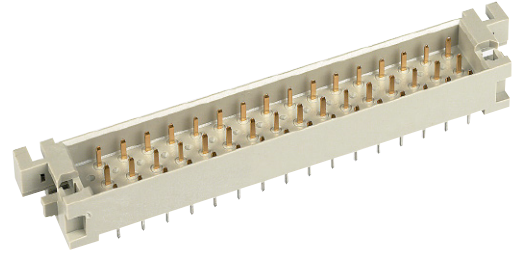
▲ Male connectors with 2 leading contacts [(0.8 mm) pos. a2 and a32]
Other contact arrangements on request

^{b)} Connectors with snap-in clips see chapter 00
^{c)} Connectors with coding see chapter 00
^{d)} CTI > 400

Number of contacts

48

Interface connector I



Identification	No. of contacts	Part number	Drawing	Dimensions in mm
Interface connector I with solder pins 0.6 x 0.6 mm	48	Performance level 2 acc. to IEC 60 603-2 09 05 048 6924 ^{f)}		
Panel cut out Board drillings Mounting side				

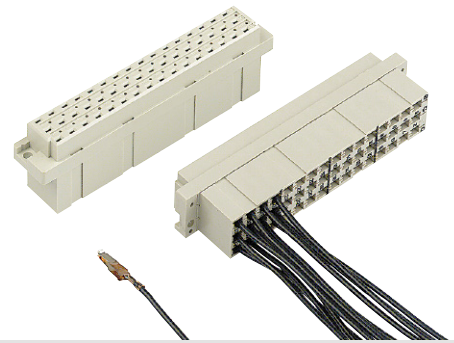
DIN Power
up to 6 A

03
16

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

Number of contacts

max. 48



Female connectors

Identification	No. of contacts	Part number	Drawing	Dimensions in mm
Female connector for crimp contacts Order contacts separately	48	09 05 048 3202 ¹⁾ 09 05 548 3202 ^{c)}	<p>85, 84, 11,6, 14,8, 13,6, 2,9, 15,1, 15,7, 90±0,1, 2,8^{+0,1}, 2e, 2c, 2a, 5,08, 15 x 5,08 = 76,20, 8,17, 95-0,4, 5, 15,1</p> <p>View from termination side</p> <p>Shell housing 09 05 048 0501 see chapter 20</p>	

DIN Power up to 6 A

Identification	Identification Wire gauge	Part number	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

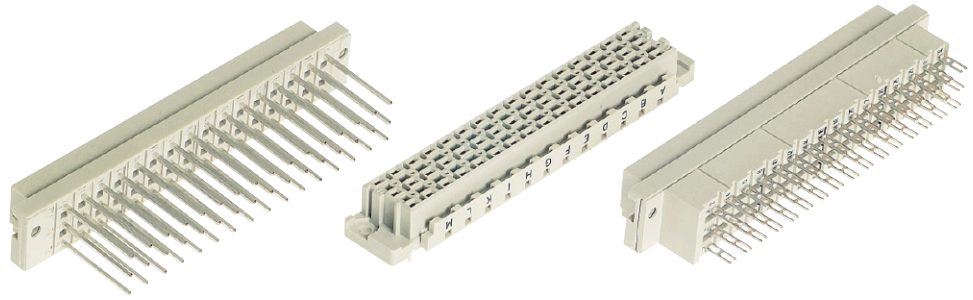
FC	Wire gauge mm ²	AWG	Insulation ø mm	Identification
FC 1	0.09 - 0.25	28 - 24	0.7 - 1.5	<p>Bandoliered contacts</p> <p>Individual contacts</p>
FC 2	0.14 - 0.56	26 - 20	0.8 - 2.0	
FC 3	0.5 - 1.5	20 - 16	1.6 - 2.8	
3.5 + 0.5 mm of insulation is stripped from the wires to be crimped For the fabrication 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				

^{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

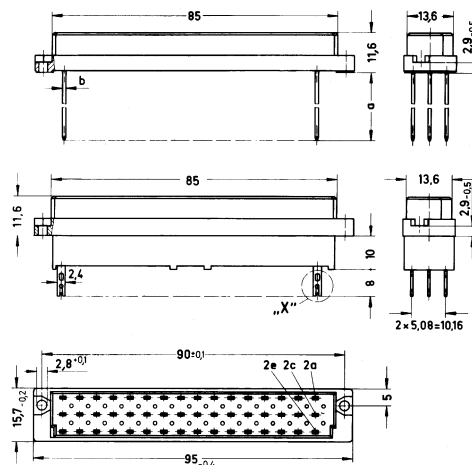
48



Female connectors

Identification	No. of contacts	Contact arrangement	Part number 3	Performance levels according to IEC 60603-2. Explanation chapter 00 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 05 748 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 2851 [•]

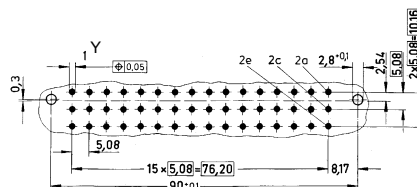
Dimensions



a	b	
2.9	0.8 x 0.53	Solder pins
4.5	0.8 x 0.53	Wrap posts
20	□ 1	Press-in pins
4.5	0.6 x 0.6	
11.5	0.6 x 0.6	

Solder lugs

Board drillings
Mounting side



	Y
Solder	1 ± 0.1
Press-in	see recommendation page 00.25

Dimensions in mm

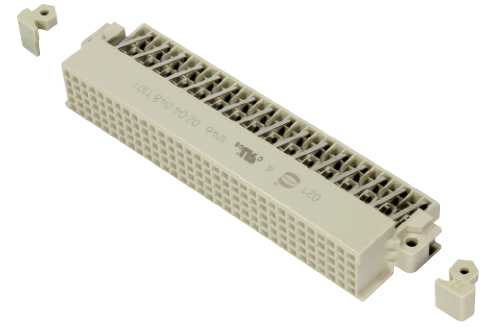
• Wrap posts for interfacing selectively gold plated (performance level 2)
^{b)} Connectors with snap-in clips see chapter 00
^{c)} Connectors with coding see chapter 00

DIN Power up to 6 A

Number of contacts

48

Female connectors

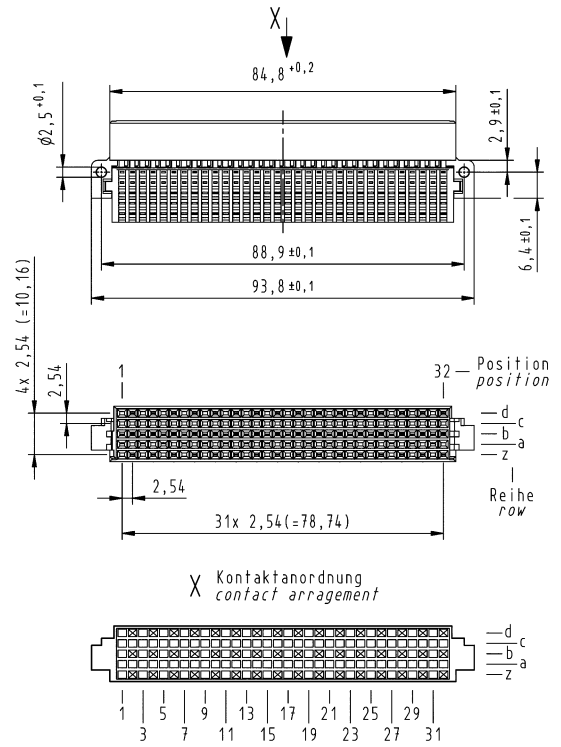


Identification	Part number	Drawing	Dimensions in mm
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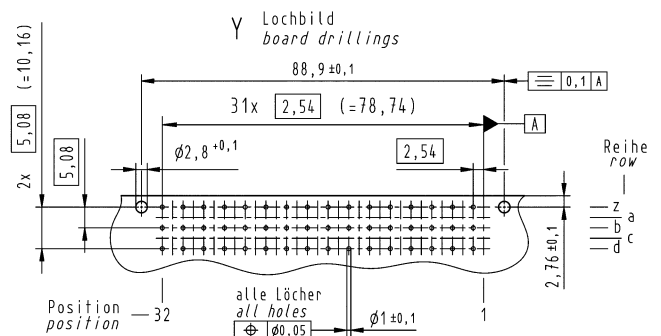
Female connector
with angled
solder pins

Performance
level 1

02 04 048 1101



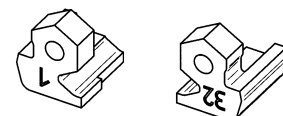
Board drillings
Mounting side



Fixing bracket

Position 1
Position 32

02 09 000 0018
02 09 000 0017



Dimensions in mm

DIN Power
up to 6 A

Number of contacts

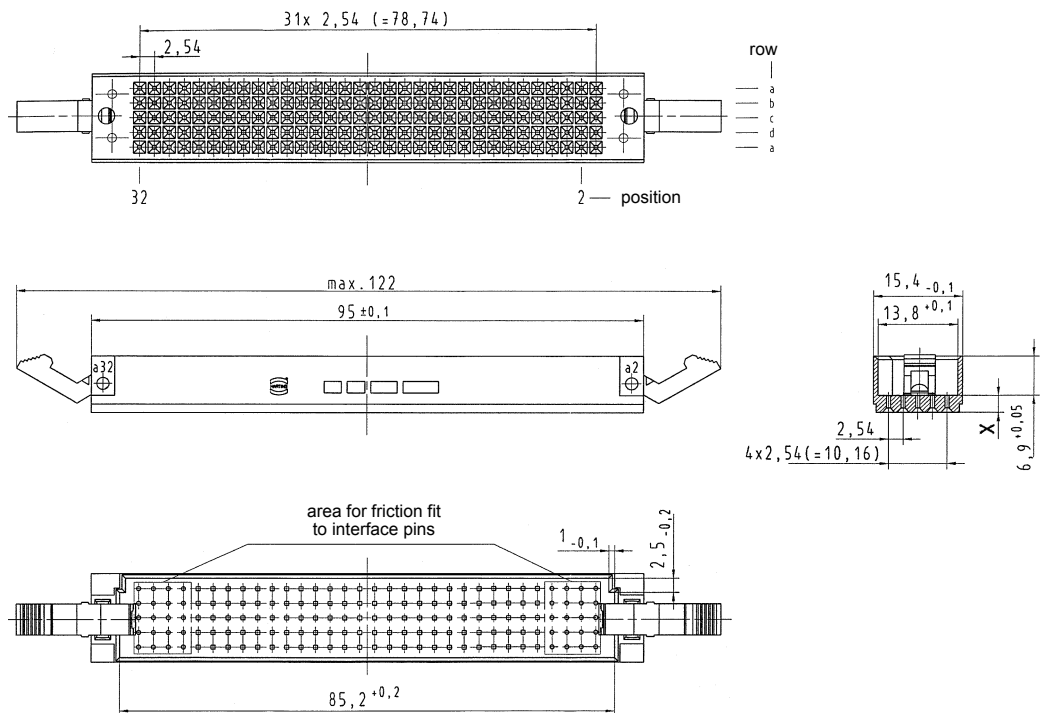
48



Pin shrouds for type E with press-in pins

Identification	pcb-thickness + 0.2 / - 0.3	Dimension X - 0.1	Part number
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 ^{f)}
I with locking levers	3.4	3.0	09 05 000 9922
II without locking levers	3.4	3.0	09 05 000 9912 ^{f)}
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 ^{f)}

Dimensions



Dimensions in mm

¹⁾ order 2 pieces per connector

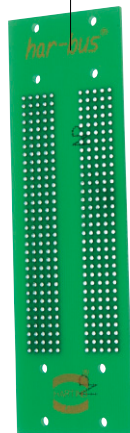
^{f)} Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Application 1

Female connector
09 05 248 6851



Backplane



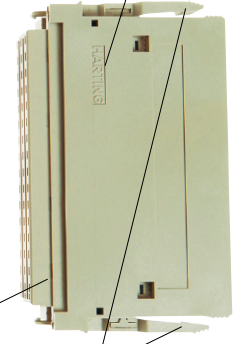
Pin shroud
09 05 000 9912



Fixing brackets
09 03 000 9921



Shell housing C
09 05 048 0501



Female connector
with crimp contacts
09 05 048 3202

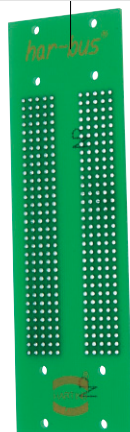
Locking lever
left 09 02 000 9902
right 09 02 000 9903

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

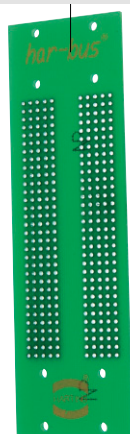


Application 3

Female connector
09 05 248 6851



Backplane



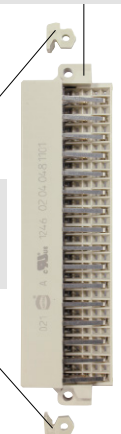
Pin shroud
09 05 000 9912



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

DIN Power
up to 6 A

Number of contacts	16, 32, 48
Working current see current carrying capacity chart	6 A max.
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 mΩ
Insulation resistance	≥ 10 ¹² Ω for standard articles

Termination	Crimp terminal 0.09-1.5 mm ²
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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.

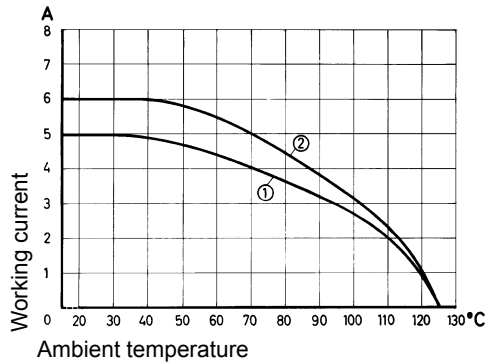
After crimping they can be easily inserted into the chambers of the connector body with the aid of an insertion tool. Insertion errors can be simply rectified with the use of a removal tool.

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.

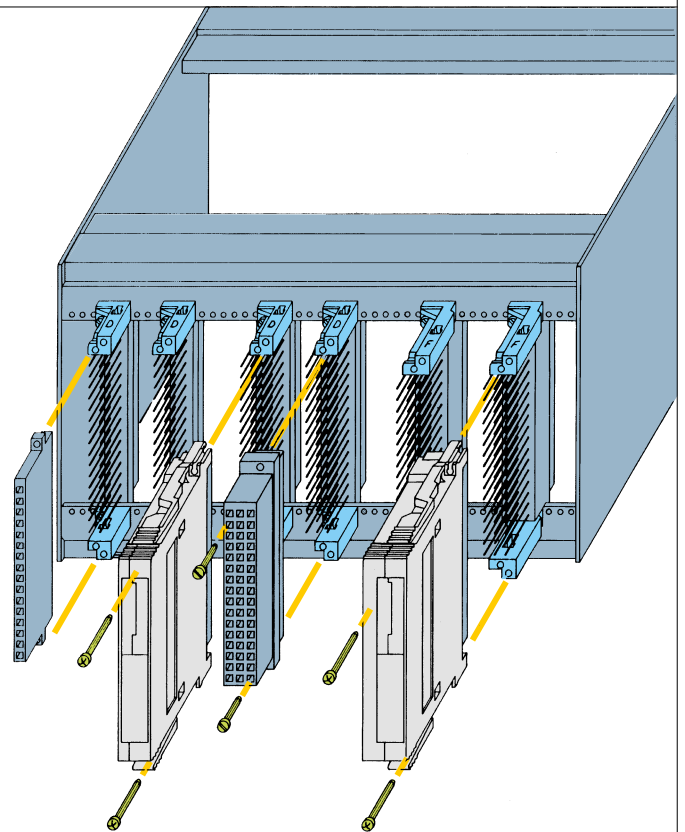
Current carrying capacity

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



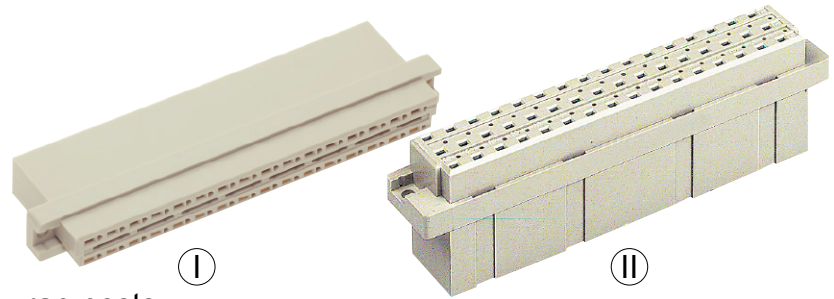
① with shell housing ② without shell housing



DIN Power up to 6 A

Number of contacts

max. 48



Piggyback connectors for 1 x 1 mm wrap posts

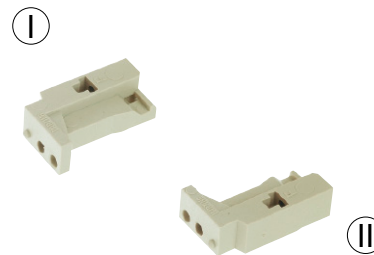
Identification	No. of contacts	Part number	Drawing	Dimensions in mm
Piggyback connector for crimp contacts Order contacts separately (I)	16	09 04 016 3201 ^{f)}		
	32	09 04 032 3215 ^{f)}		
	48	09 05 048 3204 ^{f)}		

DIN Power up to 6 A

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

Number of contacts

max. 48



Accessories

Identification	No. of contacts	Part number	Drawing	Dimensions in mm																
Female FC crimp contacts individual contacts ¹⁾ FC1 FC2 FC3 Bandoliered contacts (approx. 2,500 pcs.) FC1 FC2 FC3		09 06 000 6464 09 06 000 6461 09 06 000 6462 09 06 000 6454 09 06 000 6451 09 06 000 6452	<table border="1"> <thead> <tr> <th>Identi- fication</th> <th>Wire gauge mm²</th> <th>AWG</th> <th>Insulations ø mm</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.09-0.25</td> <td>28-24</td> <td>0.7-1.5</td> </tr> <tr> <td>2</td> <td>0.14-0.56</td> <td>26-20</td> <td>0.8-2.0</td> </tr> <tr> <td>3</td> <td>0.50-1.50</td> <td>20-16</td> <td>1.6-2.8</td> </tr> </tbody> </table> <p>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</p>	Identi- fication	Wire gauge mm ²	AWG	Insulations ø mm	1	0.09-0.25	28-24	0.7-1.5	2	0.14-0.56	26-20	0.8-2.0	3	0.50-1.50	20-16	1.6-2.8	
Identi- fication	Wire gauge mm ²	AWG	Insulations ø mm																	
1	0.09-0.25	28-24	0.7-1.5																	
2	0.14-0.56	26-20	0.8-2.0																	
3	0.50-1.50	20-16	1.6-2.8																	

**Mateable with
1 x 1 mm wrap posts**

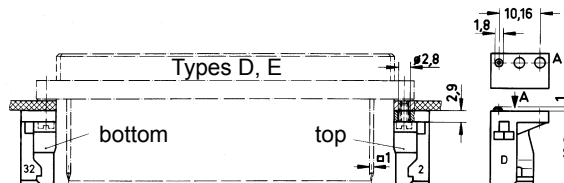


Distance fixing brackets for female connectors

Type D
Type E

top (pos. 2)
09 04 000 9907^{f)}

 bottom (pos. 32)
09 04 000 9906^{f)}

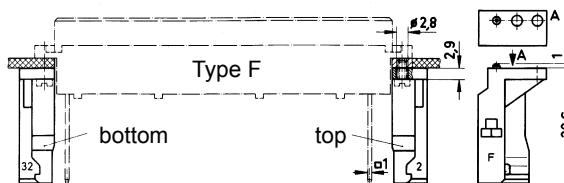


Type F



top (pos. 2)
09 06 000 9936^{f)}

 bottom (pos. 32)
09 06 000 9937^{f)}



¹⁾ Packaging unit 1,000 pieces

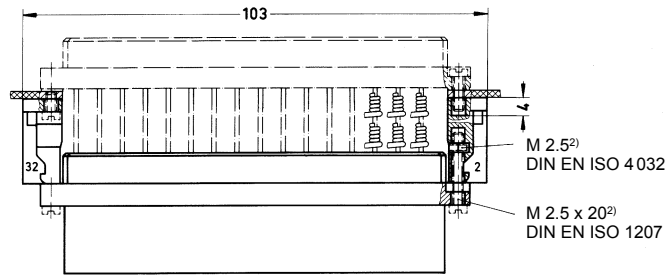
^{f)} Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Identification

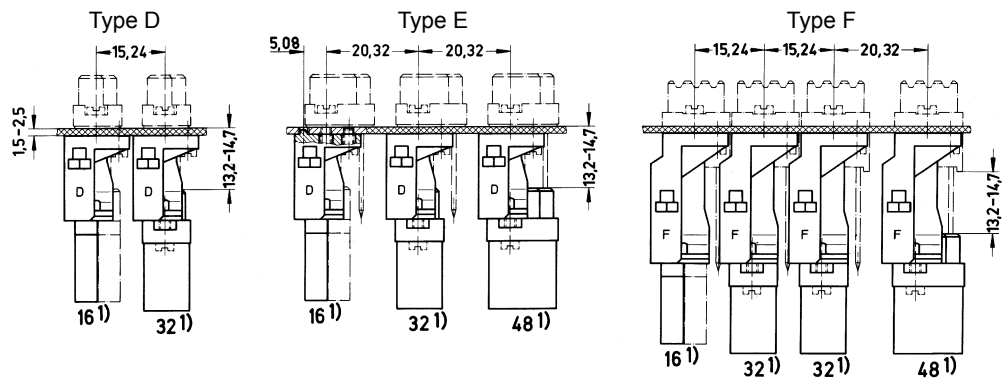
Drawing

Dimensions in mm

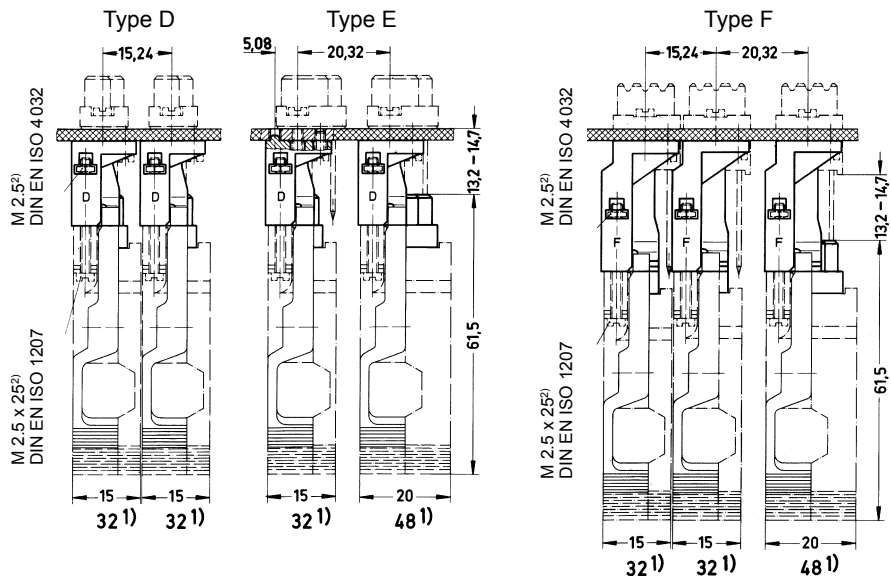
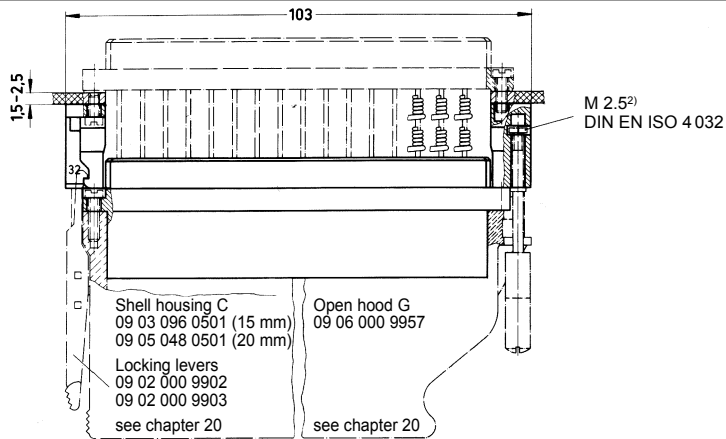
Mounting examples
of piggyback
connectors



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 mΩ

Insulation resistance

≥ 10¹² Ω for standard articles
≥ 10¹¹ Ω for special NFF articles
(with part-no. ending 222)

Temperature range

– 55 °C ... + 125 °C

The higher temperature limit includes the local ambient and heating effects of the contacts under load
During reflow soldering

– 40 °C ... + 105 °C
for press-in connector

max. + 240 °C for 15 s
for THR connectors

Electrical termination

Solder pins for pcb connections Ø 1 ± 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 mm²
Angled solder pins 1 x 1 mm for pcb connections Ø 1.6 ± 0.1 mm
Solder lugs
Compliant press-in terminations
pcb thickness
Recommended pcb holes for press-in technology
≥ 1.6 mm
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
Copper alloy

Contacts

Contact surface

Contact zone

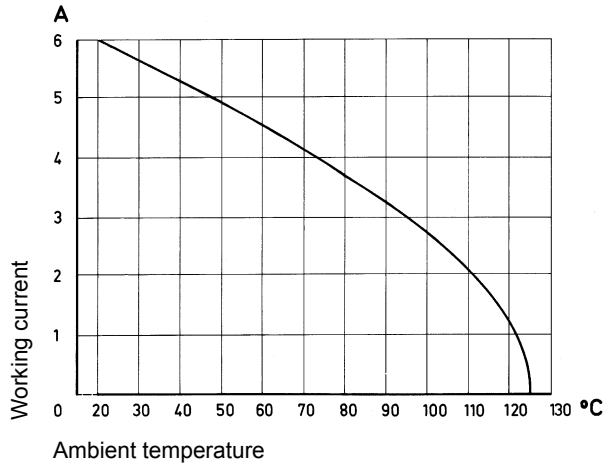
Selectively plated according to performance level¹⁾

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

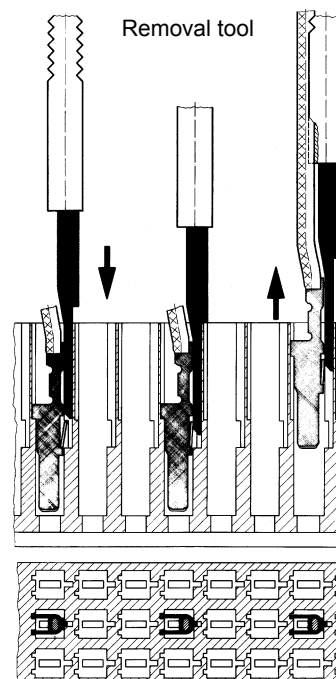


Fitting the crimp contacts

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.

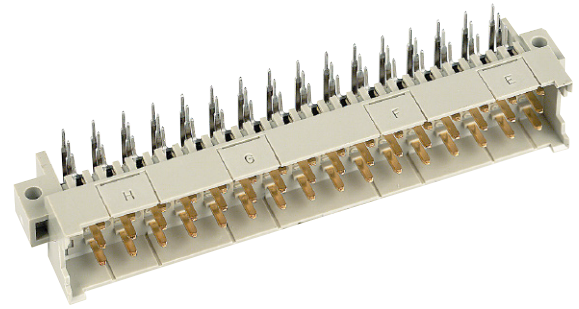
Removing the crimp contacts

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

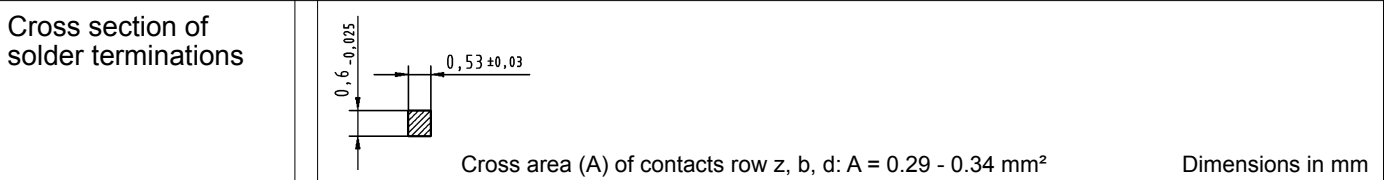
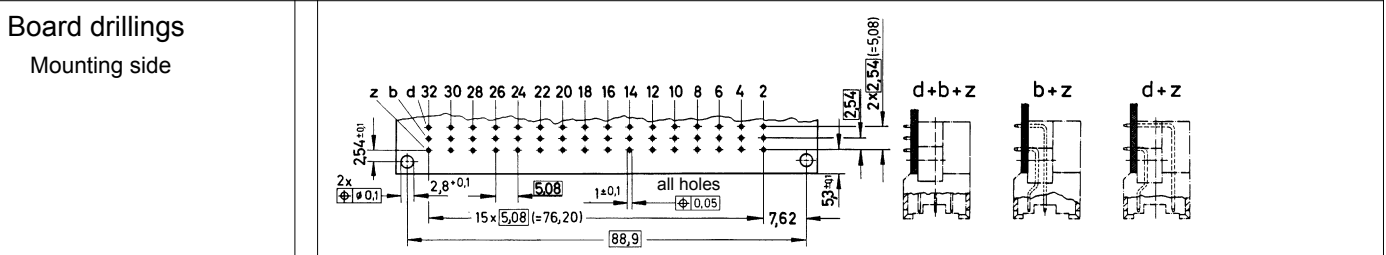
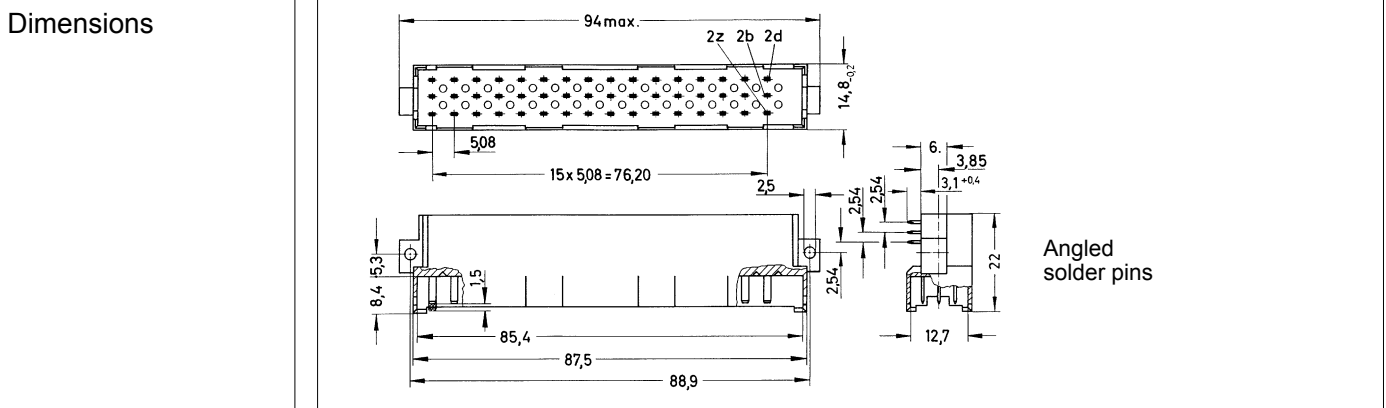
48, 32



Male connectors

Identification	No. of contacts	Contact arrangement	Performance levels according to IEC 60603-2. Explanation chapter 00		
			Part number 3	2	1
Male connector with angled solder pins ¹⁾	48		09 06 148 7901	09 06 148 6901	09 06 148 2901
				09 06 148 6901 222 ^{f)}	09 06 148 2901 222 ^{f)}
	32		09 06 132 7901 09 06 332 7901 ^{b)}	09 06 148 6951 ^{d)}	09 06 348 2951 ^{b)d)}
				09 06 132 6901	09 06 132 2901
	47 + 1		09 06 132 7931	09 06 132 6931	09 06 132 2931
	31 + 1		09 06 132 7921	09 06 132 6931 222 ^{f)}	09 06 332 2931 ^{b)}
2 leading contacts (positions b 2 + b 32)	46 + 2		09 06 148 6921 09 06 348 6921 ^{b)}	09 06 148 6925	09 06 148 2921
				09 06 132 6921	09 06 132 2921
				09 06 148 6925 222 ^{f)}	09 06 148 2925

DIN Power up to 6 A



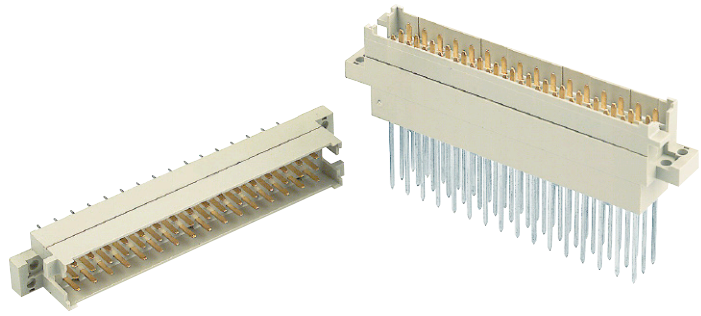
03
27

Other contact arrangements on request
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

Number of contacts

48, 32



Interface connectors I

Identification	No. of contacts	Contact arrangement	Part number	Drawing	Dimensions in mm
Interface connector I with solder pins ¹⁾ 0.6 x 0.6 mm	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	48		09 06 048 2903 ^{f)}		
	48		09 06 048 2963 ^{f)}		
	32		09 06 032 2903 ^{f)}		
Panel cut out					

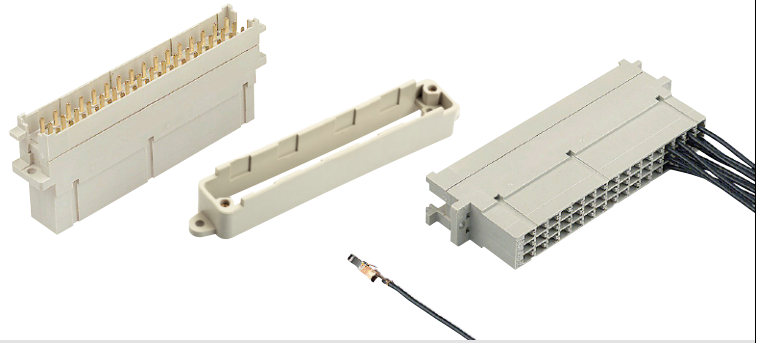
DIN Power up to 6 A

03-28

* Acc. to IEC 60 603-2, performance level 2 on request
¹⁾ With shroud coding, see also chapter 00
^{f)} Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Number of contacts

48



Interface connector I

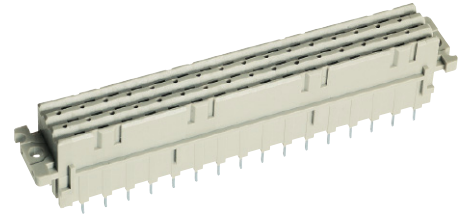
Identification	No. of contacts	Part number	Drawing	Dimensions in mm
<p>Interface connector I utilising female crimp contacts¹⁾</p> <p>Order crimp contacts separately see page 03.33</p>	48	<p>Performance level 1 acc. to IEC 60 603-2</p> <p>09 06 048 2906^{f)}</p>	<p>5,08 90 2z 2b 2d 2,8 0,3 2x3,81=7,62 15 x 5,08 = 76,20 8,17 95-0,4 84 20 14,8 12,7 12,3 2,9-0,3 38 8-0,3 14,8-0,2 85,4</p> <p>Contact arrangement View from termination side</p> <p>32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 PP 99 2z</p> <p>„X“</p>	<p>M2,5/ø 2,8 7,5 15,5 7,5 15,24 85 90±0,1 95,5</p>
<p>Shell housing see chapter 20</p>				
<p>Panel cut out</p>				
<p>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.</p>		09 06 001 9964	<p>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±0,1 112±0,1 94,45±0,1 90±0,1 97,5±0,1 101,15±0,1</p> <p>Inkl. Einpressmutter M2,5 incl. insert nut M2,5</p> <p>M2,5 ø 2,8 ± 0,1</p>	

DIN Power up to 6 A

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

Number of contacts

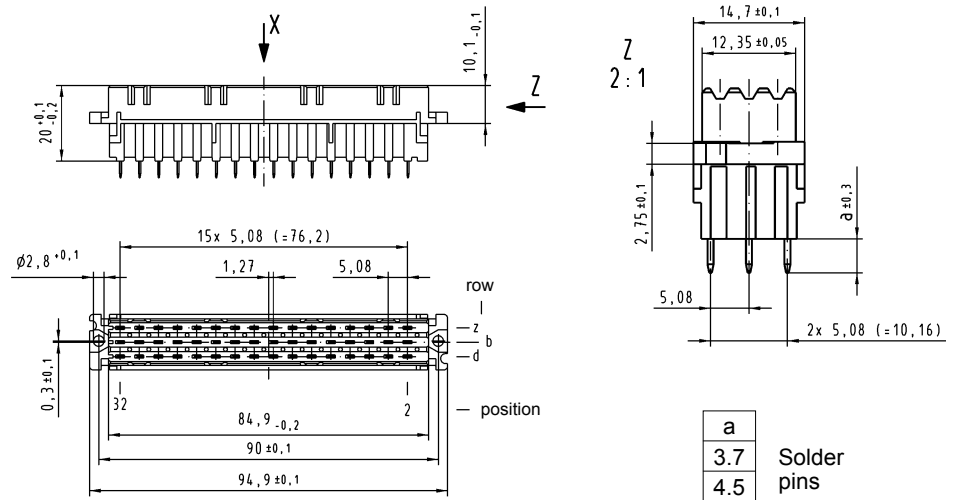
48, 32



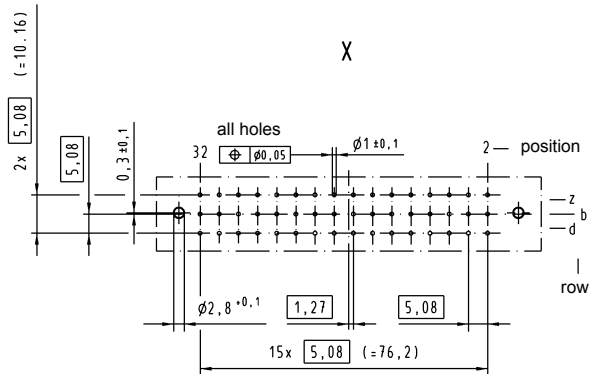
Female connectors

Identification	No. of contacts	Contact arrangement	Part number	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 2835
	32			09 06 232 6835 09 06 232 2835
	32			09 06 232 6845 09 06 232 2845

Dimensions



Board drillings
Mounting side



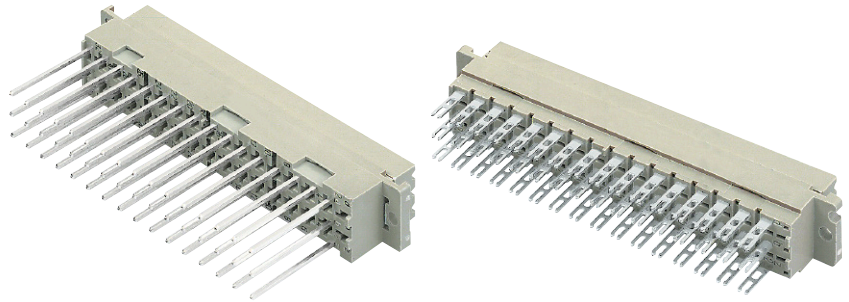
Dimensions in mm

DIN Power up to 6 A

¹⁾ With shroud coding, see also chapter 00

Number of contacts

48, 32



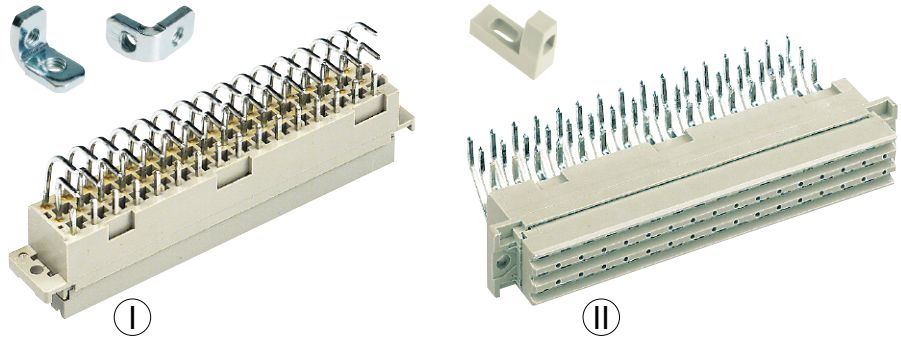
Female connectors

Identification	No. of contacts	Contact arrangement	Performance levels according to IEC 60 603-2. Explanation chapter 00		
			Part number 3	2	1
Female connector with wrap posts 22 mm	48		09 06 248 7821	09 06 248 6821	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 2843
Dimensions					
Panel cut out					

DIN Power up to 6 A

Number of contacts

48, 32



Female connectors

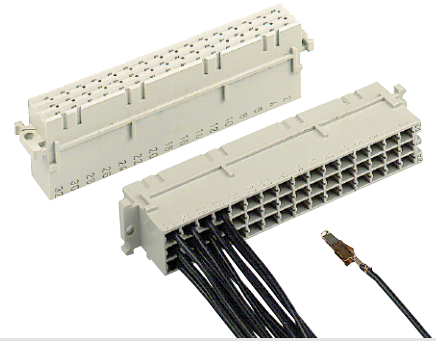
Identification	No. of contacts	Contact arrangement	Part number 3	Performance levels according to IEC 60 603-2. Explanation chapter 00	
				2	1
Female connector with angled solder pins 1 x 1 mm	48		Performance level 3 on request	09 06 248 6826	Performance level 1 on request
	32			09 06 232 6826	
	48			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

Dimensions in mm

Number of contacts

max. 48



Female connectors

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

Identification	Wire gauge	Part number	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	Wire gauge	Wire gauge mm ²	AWG	Insulation ø mm	Identification
FC 1	1	0.09 - 0.25	28 - 24	0.7 - 1.5	<p>Bandoliered contacts</p> <p>Individual contacts</p>
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					

DIN Power up to 6 A

¹⁾ With shroud coding, see also chapter 00

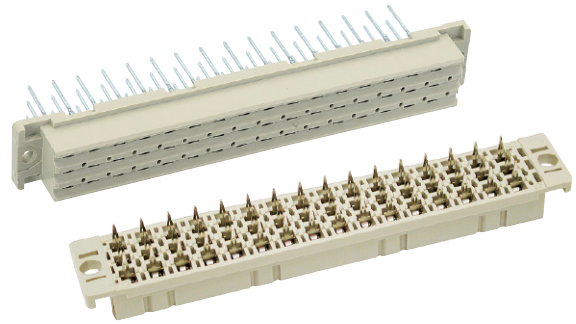
²⁾ Packaging unit 1,000 pieces

³⁾ 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

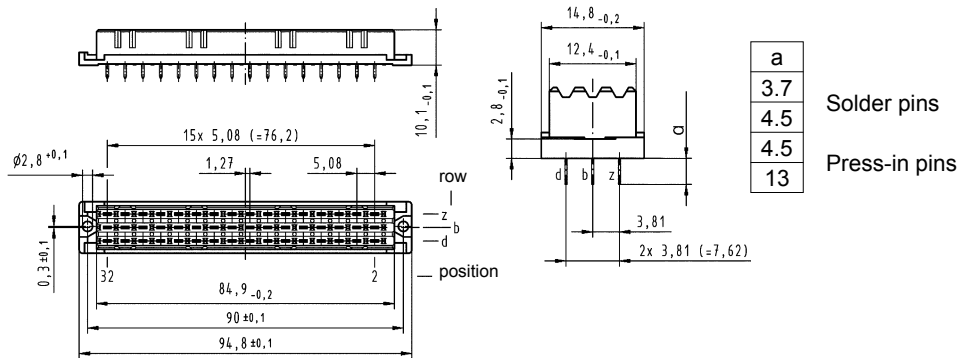


Female connectors

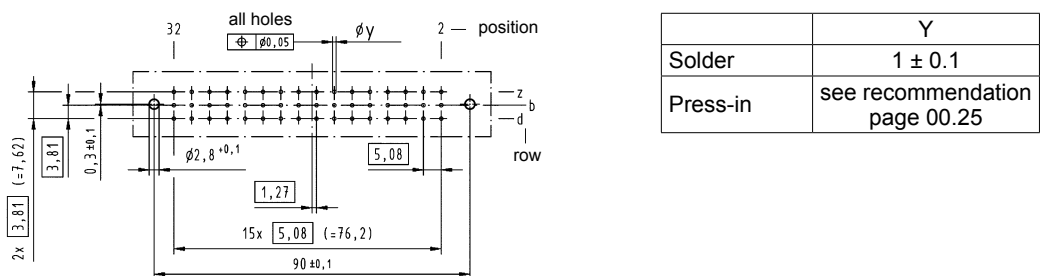
Identification	No. of contacts	Contact arrangement	Part number	Performance levels according to IEC 60 603-2. Explanation chapter 00		
				3	2	1
Female connector ¹⁾ "low profile" with solder pins 3.7 mm	48		09 06 248 7833	09 06 248 6833 09 06 248 6833 222 ^{f)}	09 06 248 2833 09 06 248 2833 222 ^{f)}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

DIN Power up to 6 A

Dimensions



Board drillings
Mounting side



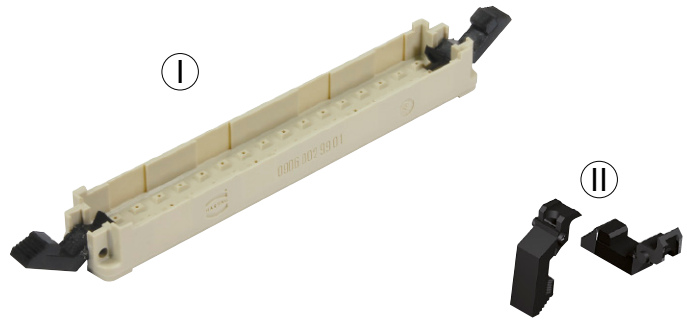
Dimensions in mm

* 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

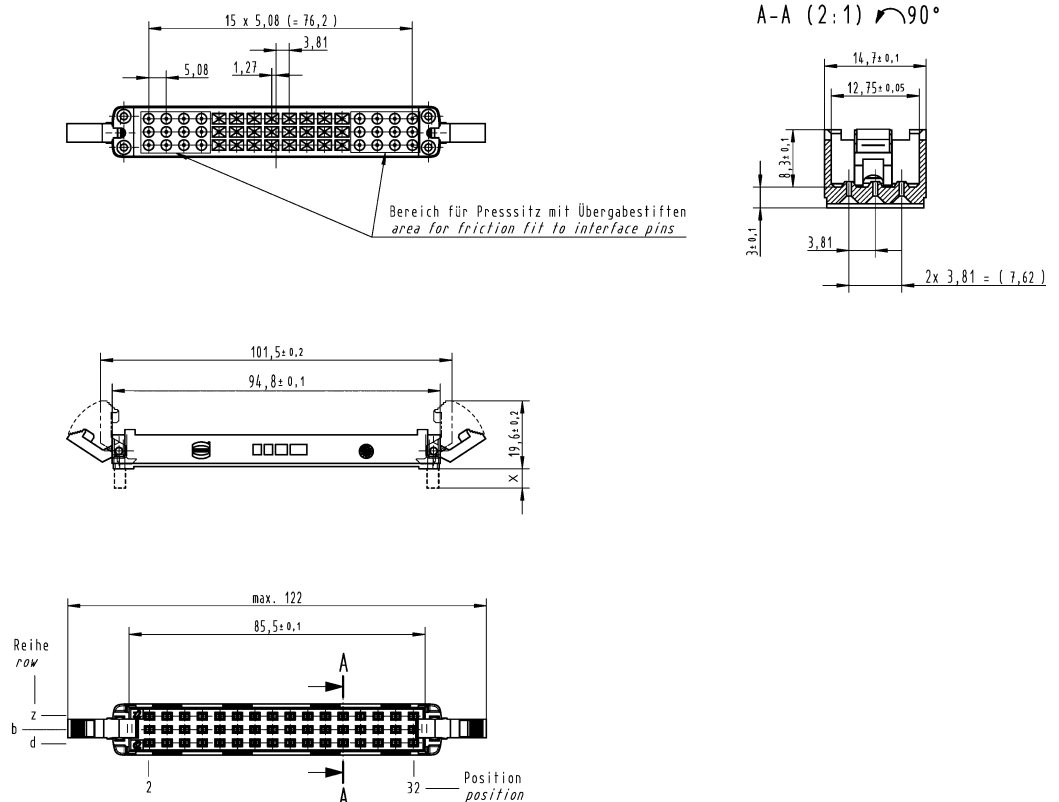
48

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



Identification	pcb-thickness ± 10 %	Dimension X ± 0.1	Part number
Pin shrouds			
Ⓚ with locking levers ²⁾ and press-in fixing	1.6 - 2.4	1.6	09 06 002 9902
Ⓚ without locking levers for screw fixing	1.6 - 2.4	1.6	09 06 002 9912
Ⓚ with locking levers ²⁾ and press-in fixing	3.2 - 4.0	0	09 06 002 9901
Ⓚ without locking levers for screw fixing	3.2 - 4.0	0	09 06 002 9911
Ⓛ 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

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 number
Pin shrouds suitable for shell housing D20			
without locking levers with press-in nuts	1.6 - 2.4	1.6	09 06 002 9922
without locking levers with press-in nuts	3.2 - 4.0	0	09 06 002 9921

DIN Power
up to 6 A

Dimensions

Technical drawings showing dimensions in mm:

- Top View:** Total length 105,5 mm. Pin pitch 5,08 mm. Pin width 1,27 mm. Pin spacing 3,81 mm. Total pin length 15 x 5,08 = 76,2 mm. End hole diameter 16,6 mm.
- Side View:** Shows the profile of the shroud with a height dimension 'a'.
- Front View:** Shows 48 pins in 2 rows (Reihe row). Row 1 starts at position 2, row 2 starts at position 32. Total length 97,5 ± 0,1 mm. Pin length 90 ± 0,1 mm. Pin spacing 85,5 ± 0,1 mm. Pin diameter 0,3 ± 0,1 mm. Pin height 8,6 ± 0,05 mm.
- Cross-section A-A (2:1) 90°:** Shows the internal structure with dimensions: 14,7 ± 0,1 mm (total width), 12,75 ± 0,05 mm (inner width), 8,3 ± 0,1 mm (height), 3 ± 0,1 mm (height), 3,81 mm (width), and 2 x 3,81 = 7,62 mm (width).
- Cross-section B-B (2:1) 90°:** Shows the internal structure with a height dimension of 5,8 ± 0,15 mm.

Dimensions in mm

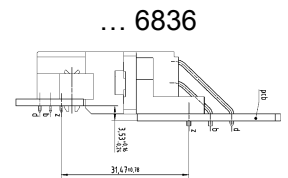
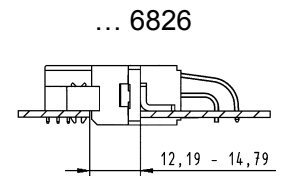
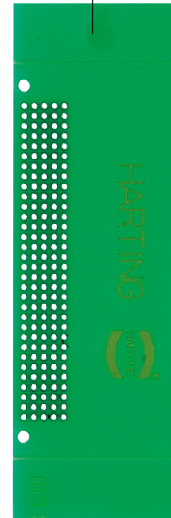
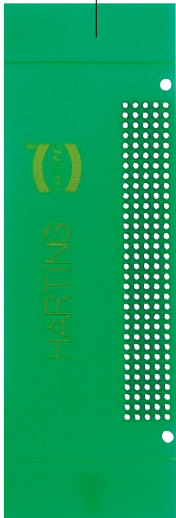
Application 1

Daughtercard

Male connector
09 06 148 6901

Female connector
09 06 248 6826
09 06 248 6836

Daughtercard



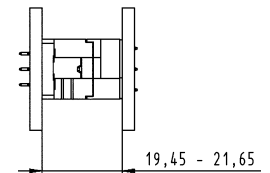
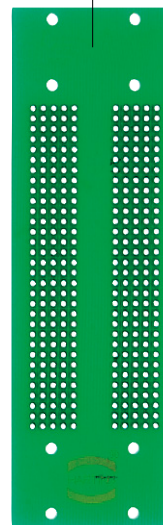
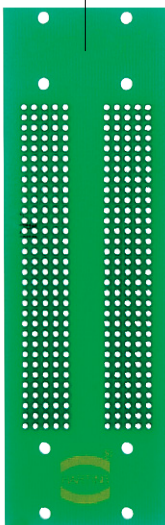
Application 2

Backplane

Male connector
09 06 048 2905

Female connector
09 06 248 2833

Backplane

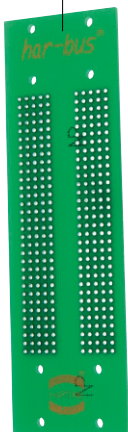


Application 3

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

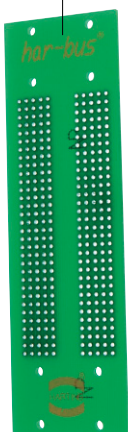
DIN Power
up to 6 A

Application 4

Female connector
09 06 248 6838



Backplane



Pin shroud
+ Locking lever
09 06 002 9901

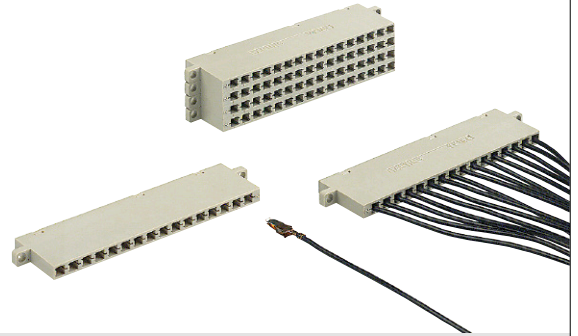


Female connector
for crimp contacts
09 06 248 3201



Number of contacts

64, 16



Universal adaptors

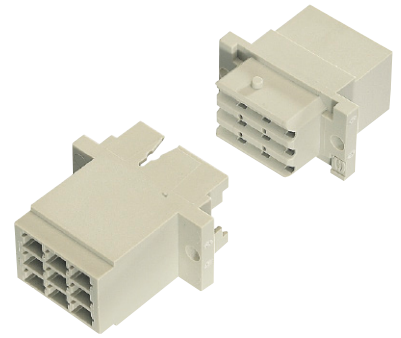
DIN Power
up to 6 A

Identification	No. of contacts	Part number	Drawing	Dimensions in mm
Universal adaptor utilising crimp contacts crimp contacts see page 03.33	4 x 4	09 06 016 3301 ^{f)}		
	16 x 1	09 06 016 3302 ^{f)}		
	16 x 4	09 06 064 3302 ^{f)}		
Panel cut out				

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

Number of contacts

max. 9



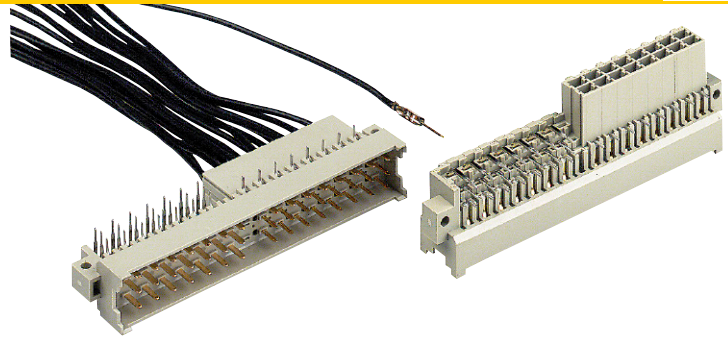
Female and male connectors

Identification	No. of contacts	Part number	Drawing	Dimensions in mm
Female connector for crimp contacts Order contacts separately	9	09 06 209 3201		
Female crimp contacts		see page 03.33		
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



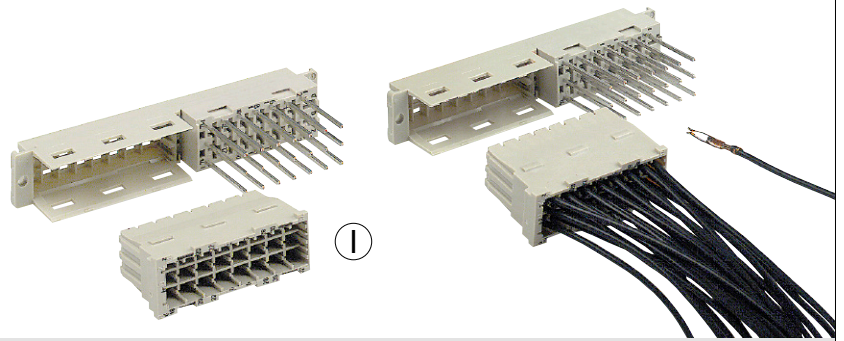
Male connectors

DIN Power
up to 6 A

Identification	No. of contacts	Part number	Drawing	Dimensions in mm
<p>Male connector</p> <p>29 angled solder pins</p> <p>16 cavities for male crimp contacts</p> <p>crimp contacts see page 03.44</p>	45	<p>Performance level 1 acc. to IEC 60 603-2</p> <p>09 06 145 2971</p>		
<p>Board drillings</p> <p>Mounting side</p>				<p>1) A special 48 way version with 3 extra angled solder contacts at position 16 (rows d, b, z) can be supplied</p>

Number of contacts

45



Female connectors

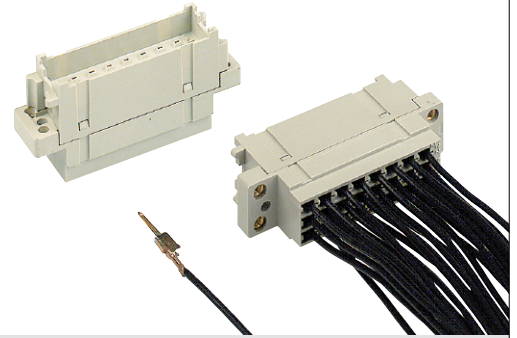
Identification	No. of contacts	Part number	Drawing	Dimensions in mm
<p>Female connector</p> <p>Female moulding with 21 wrap posts 22 mm</p> <p>with 21 solder pins 4.5 mm</p>	45	<p>Performance level 1 acc. to IEC 60 603-2</p> <p>09 06 045 2871^{f)}</p> <p>09 06 045 2875^{f)}</p>	<p>Latches</p> <p>Crimp moulding is supplied with the female moulding</p> <p>2.8^{+0.1}</p> <p>90^{±0.1}</p> <p>2d 2b 2z</p> <p>2x3.81=7.62</p> <p>5.08</p> <p>5.08</p> <p>7x5.08=35.56</p> <p>10.16</p> <p>6x5.08=30.48</p> <p>8.17</p> <p>95 max.</p> <p>0.3</p> <p>14.8^{-0.2}</p> <p>View from termination side</p>	<p>84,9</p> <p>10</p> <p>19,5</p> <p>13</p> <p>10</p> <p>22</p> <p>12,4</p> <p>2,9^{+0.03}</p> <p>5,08</p> <p>2 x 5,08 = 10,16</p>
<p>Crimp moulding for 24 female crimp contacts</p> <p>crimp contacts see page 03.33</p>	45	09 06 024 3202 ^{f)}		
<p>Panel cut out</p>				<p>M 2,5 / Ø 2,8</p> <p>85</p> <p>90^{±0.1}</p> <p>95,5</p> <p>8,2</p> <p>17</p> <p>8,2</p> <p>20,32</p>
<p>Removal tool for the crimp moulding</p>		09 99 000 0172	<p>20</p> <p>125</p>	<p>The crimp moulding can be extracted with the help of the removal tool.</p>

DIN Power up to 6 A

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

Number of contacts

max. 24



Interface connector I

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

Identification	Identification Wire gauge	Part number	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

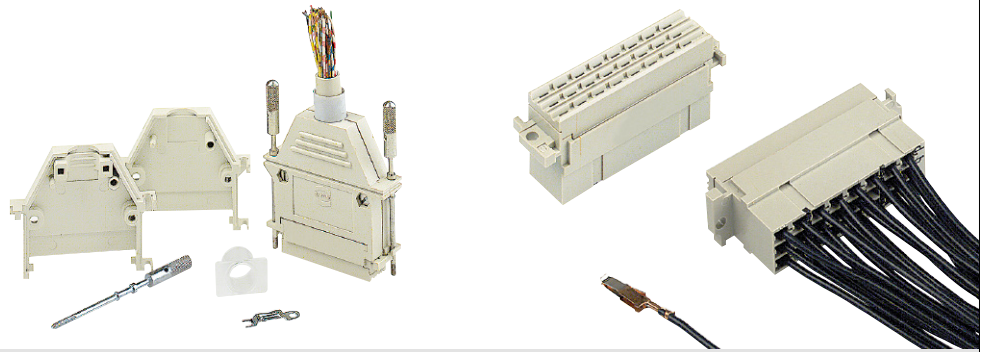
FC 1	FC 2	FC 3	Wire gauge mm ²	AWG	Insulation ø mm	Identification
			0.09 - 0.25	28 - 24	0.7 - 1.5	
			0.14 - 0.56	26 - 20	0.8 - 2.0	
			0.5 - 1.5	20 - 16	1.6 - 2.8	
3.5 + 0.5 mm of insulation is stripped from the wires to be crimped For the fabrication in line with the specification please use exclusively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

¹⁾ Packaging unit 1,000 pieces

DIN Power up to 6 A

Number of contacts

max. 24



Female connectors

Identification	No. of contacts	Part number	Drawing	Dimensions in mm
<p>Female connector for crimp contacts</p> <p>Order contacts separately see page 03.33</p>	24	09 26 024 3201 ^{f)}		
<p>Shell housing A with integrated fixing screws</p> <p>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</p>		09 26 024 0401 ^{f)}		
<p>Open hood</p> <p>Supplied with: Open hood 1x Locking screw 2x Screw BZ 2.2x9.5 2x Cable tie 1x</p>		09 26 000 9901 ^{f)}		

DIN Power up to 6 A

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

