

## Connectors DIN 41612/IEC 60603-2 and completions



**ERNI**-electronic components  
quality assessed according to CECC 75101-801



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## General information

The DIN 41612/IEC 60603-2 connector family consists of 13 basic sizes and many complementary versions. It was developed for use in 19" rack systems in accordance with **DIN 41494**. The large number of different sizes and the efficient connection techniques have made it possible to install these connectors for an extremely wide range of applications. Typical areas of application:

- Connection between plug-in card and back-panel wiring
- Connection between two PCB's arranged one above the other
- Connection to peripheral equipment with connector housings as accessories
- As periphery connectors for external interfaces from the wiring side

## Early make/last break

For the connectors size B, C, Q, R, D, E and F 0,8 mm early make/last break male contacts can be loaded in any position in rows a, b, c, d, e and z.

The early make/last break of the high current connectors size H11 and H15 have a length of 3,5 mm (1,5 mm on request). Other lengths of early make/last break contacts on request.

## Pre-centering

For applications with early make/last break contacts the male connector insulators with pre-centering ensures even more reliable mating.

The insulators of the female connectors have a recess at an appropriate point. The dimensions of these versions do not conform to the specifications of DIN 41612/IEC 60603-2. The ordering details are not listed in this data sheet but they can be supplied on request.

**Male connectors with pre-centering do not fit female connectors without a pre-centering recess.**

## Main features

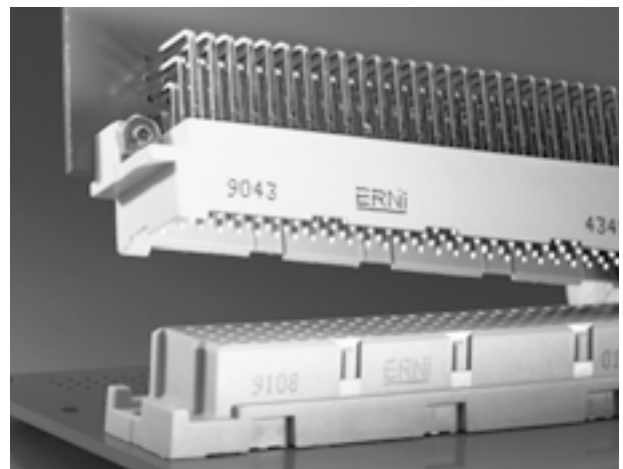
- Two piece printed circuit board connectors
- International approvals, such as UL or CSA
- 13 connector sizes with the same plug-in and mounting conditions
- Additional connector sizes complementing the DIN 41612/IEC 60603-2
- Different coding available
- Up to 160 pins/contacts
- Two to five row connectors possible
- Various termination types available
- 2.54 mm (1/10") basic pitch
- Early make/last break contacts available on request
- Wide range of accessories
- Complete interface system available
- All female connectors mentioned in this data sheet have **dual sided female contact spring**.

This contact principle even offers a max. security in contacting and remaining contact resistance in extreme situations.

## Approval certificates

**UL** All male and female connectors of this data sheet are approved by the American approvals authority „Underwriters Laboratories Inc.“ File Nr. E 84703.

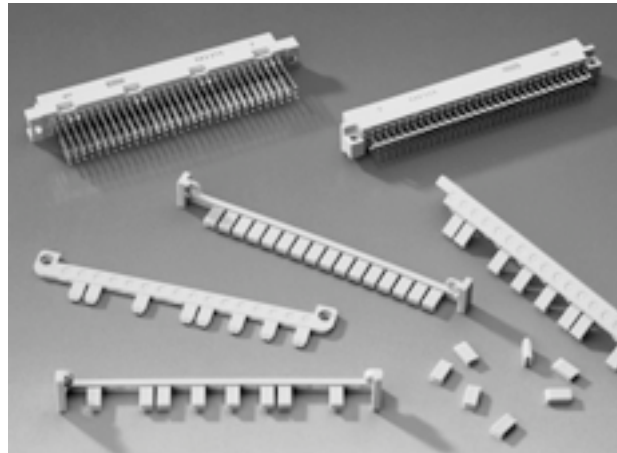
**CSA** For all our male and female connectors we have the recognition of the „Canadian Standard Association“ under the File Nr. LR 62504.



## Codings

Various coding systems are available for the connectors contained in this data sheet.

- Integrated coding with coding wedges. In this case coding wedges are fitted into the female connectors and the male connectors are provided with corresponding recesses.
- Integrated coding with coding pins. In this case coding pins are inserted into the female connectors and holes are drilled in the male connectors in the coding positions.
- Coding with coding strips. These coding strips are mounted together with the connector. For ERNI coding strips no extra modular space is required in the 19" rack system.

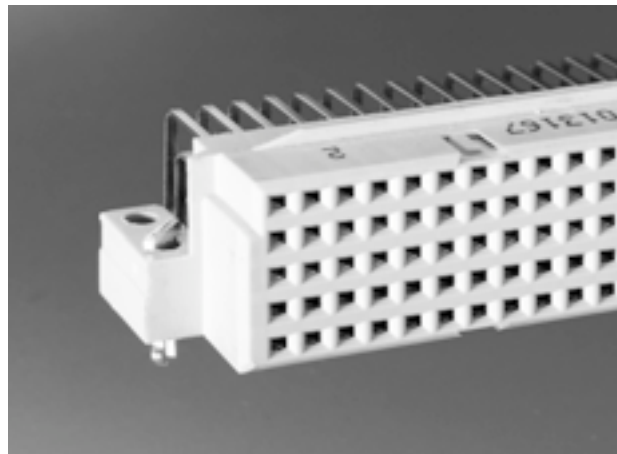


## Retentive clip

For efficient mounting of the right angle connectors ERNI offers a retentive clip.

These clips are installed to the connector by ERNI. The connectors are attached to the pc board with this clip, which locks into the drillholes on the pc board, max. thickness of pcb = 1,6 mm.

Since the clips can also be soldered, plated-through PCB holes are recommended in such applications. Connectors with retentive clips are available upon request.



## Wiring accessories

The ERNI connector housing range together with the ERNI interface connector system offers optimum protection for all plug-in interfaces for DIN 41612/IEC 60603-2 connectors. The range is dimensioned for the 19" rack system. Suitable variants are available for virtually every type of connector. Whether you intend to use a short type B/2 connector or a 64-pin insulation displacement connector, the ERNI range offers you the ideal housing.

- **KSG 173** Size: B, C, D, E, M, H11, H15, Q, R, E160, TE160, RD128
- **KSG 193** Size: B/2, C/2, Q/2, R/2
- **KSG 203** Size: F, Fi
- **KSG 253** Size: C (IDC)
- **KSG 204** Size: F, Fi

The connector housings are prepared for a maximum of 3 cable outlets and are fitted with strain-relief clamps. A metal-plated version for screening purposes is also available. For plug-in interfaces on the front or back panel of the rack ERNI has developed guide elements and guide frames in collaboration with well-known users. These elements permit exact guidance for correct mating and provide robust screw locking. In addition you can fit a coding device.



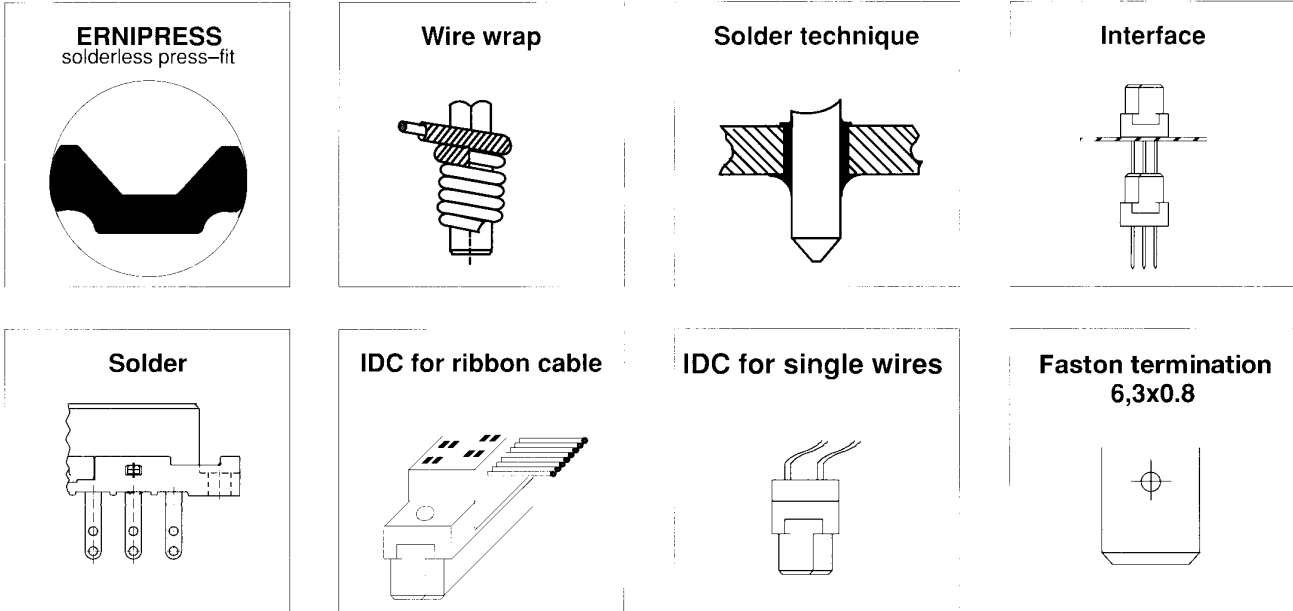
## Electrical and mechanical data

Type		<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>H</b>
Reversed Type		<b>Q</b>	<b>R</b>				
Max. number of contacts		64	96	32	48	48	11 15
Contract row designation of male and female connectors		ab	abc	ac	ace	zbd	b zd
Temperature range		- 65° ... + 125°C					
Permissible humidity		Annual average ≤ 80%, max. 100%					
Creepage (Cr) and clearance (Cl) in mm	Contact to ground	Cr	1.8		1.8	6.0	8.0
		Cl	1.6		1.6	3.5	4.5
	Contact to contact within a row between a row	Cr	1.2		3.0	3.0	8.0
		Cl	1.2		3.0	1.6	4.5
		Cr	1.2		3.0	3.0	8.0
		Cl	1.2	3.0	3.0 (1.6)*	1.6	4.5
Current rating at ambient temperature	A						
	+20°C (293K)		4.0		5.5		20.0
	+70°C (343K)		2.0		4.0		15.0
	+100°C (373K)		1.0		2.5		10.0
Test voltage, 50Hz, 1min							
Contact/contact	Vrms	1000		1550		1550	3100
Contact/ground	Vrms	1550		1550		2500	3100
Contact resistance	mΩ	≤ 20			≤ 15		≤ 8
Insulation resistance	Ω			≥ 10 <sup>12</sup>	at 100 VDC		
Shock and vibration proofness				no contact breakdown at 20g and 10...2000Hz			
Housing material of male and female connectors				PBT 30 % GV PC 30 % GV			
Comparative creepage figure to DIN IEC 112	PBT PC			CTI 275 / CTI 175 M CTI 150-175 / CTI 100 M			
Service life to DIN 41 612, Part 5				Performance level 1 ≥ 500 Mating-cycles Performance level 2 ≥ 400 Mating-cycles			
Mating and withdrawal force for the assembled connectors	N	64pin.60	96pin.90	32pin.40	48pin.60	48pin.75	15pin.90
			64pin.60		32pin.40	32pin.50	11pin.80
Withdrawal force per contact (test blade)	N		≥ 0.15			≥ 0.2	
Inflammability of the plastic	PBT	Polybutylenterephthalat non flammable as per UL 94 V-0					
	PC	Polycarbonat non flammable as per UL 94 V-1					

\* The type E male connector terminations are either available with a 5.08 mm or a 2.54 mm grid.

The technical data for the 7 high-voltage contacts correspond to size H15, where as the 24 signal contacts are identical to type F.

## Termination technics



Connectors with termination techniques ERNIPRESS and IDC can be found in the corresponding data sheets.

### Performance level

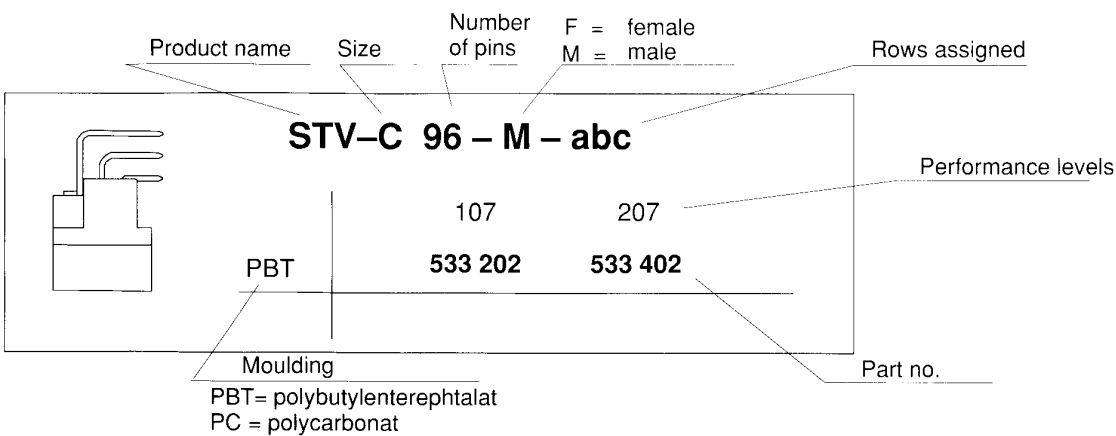
**107** Conforms to the requirements as per  
DIN 41612/IEC 60603-2  
performance level 1  
500 mating cycles  
Contact zone gold-plated  
Terminal zone tin-plated

**207** Conforms to the requirements as per  
DIN 41612/IEC 60603-2  
performance level 2  
400 mating cycles  
Contact zone gold-plated  
Terminal zone tin-plated

**101** Same as for version 107 but terminal zone gold-plated

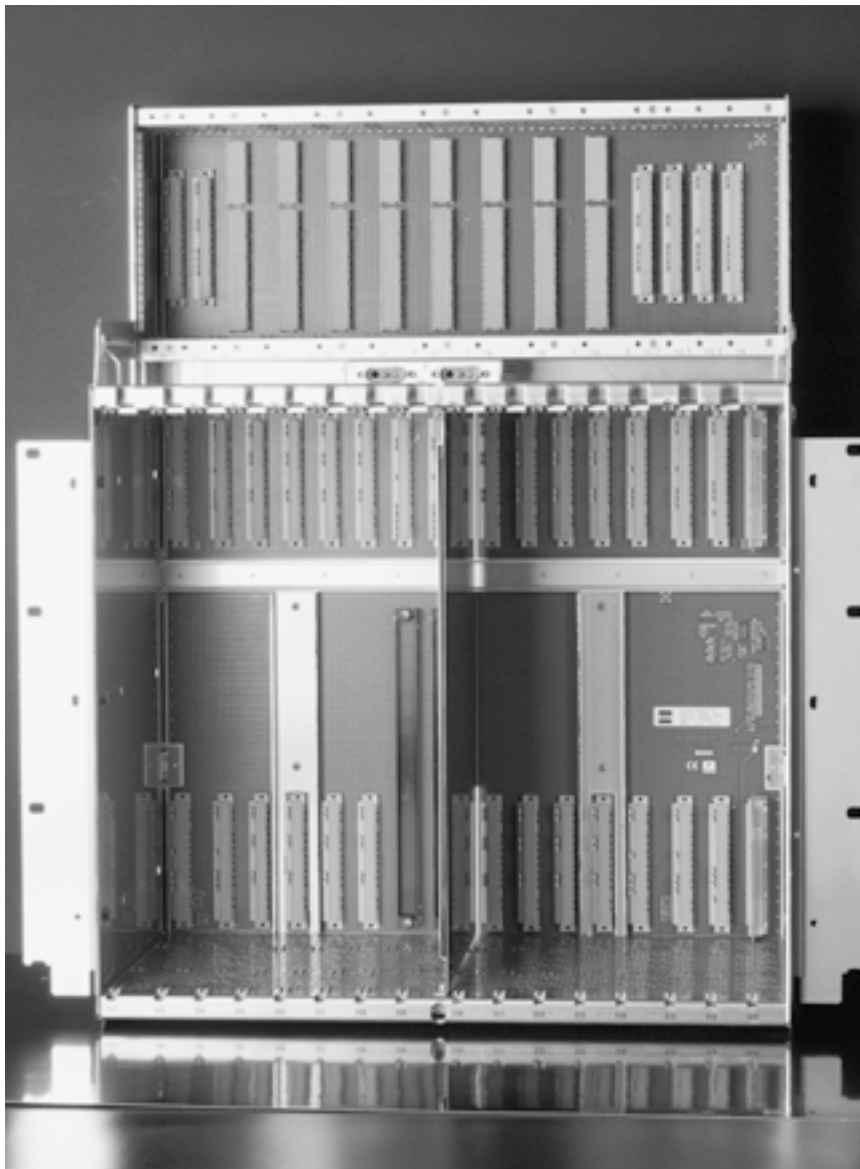
**201** Same as for version 207 but terminal zone gold-plated

### Example of how to order





## Application



# Size B

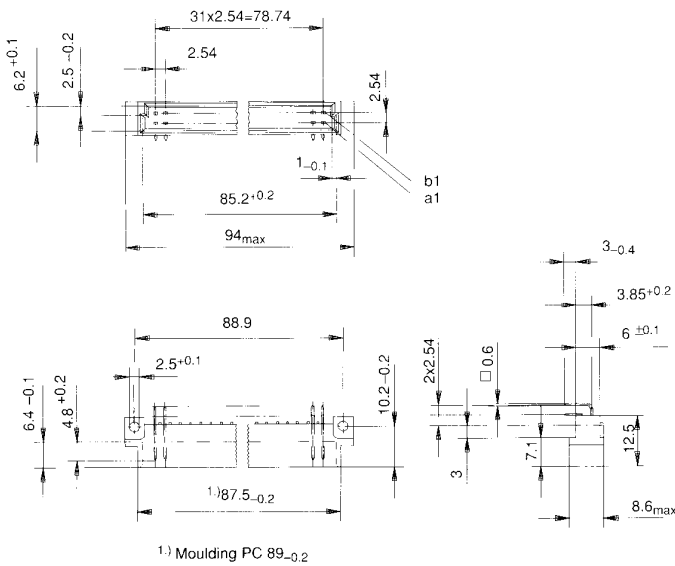
as per DIN 41612/IEC 60603-2



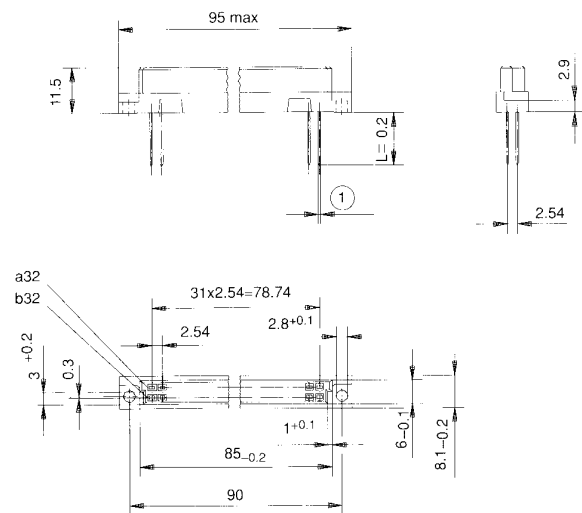
DIN 41612

## Dimensional drawings

Male connector



Female connector



① connectors for dip soldering are available with terminations of 0.25x0.7mm or 0.6x0.6. Wire-wrap terminations 0.6x0.6mm..

## Ordering details

### Male connector size B

as per DIN 41612/IEC 60603-2, maximum two rows loaded, maximum 64 contacts

	STV-B 32-M-a	
	107	207
PBT	<b>533208</b>	
	STV-B 32-M-ab 2,4,6...32	
	107	207
PBT	<b>533207</b>	<b>533407</b>
	STV-B 64-M-ab	
	107	207
PBT	<b>533206</b>	<b>533406</b>

	STV-B 64-M-ab	
	107	207
PBT	<b>414377</b>	<b>414378</b>
	STV-B 64-M-ab	
	107	207
PBT	<b>414379</b>	<b>414380</b>

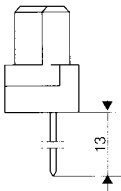
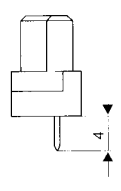
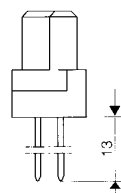
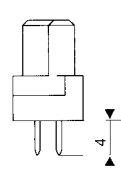
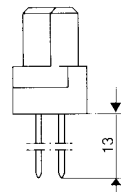
Other types of terminations such as solder eyelets or partially loaded connectors are available on request. Male connectors with early make/last break contacts can be loaded in any position.

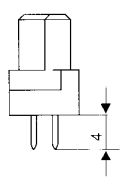
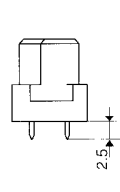


## Orderings details

### Female connector size B

as per DIN 41612/IEC 60603-2, maximum two rows loaded, maximum 64 contacts

	<b>STV-B 32-F-a</b> 107      207 PBT <b>543214</b>
	<b>STV-B 32-F-a</b> <i>Termination cross section</i> $\square$ <b>0.6x0.6mm</b> 107      207 PBT <b>543218</b>
	<b>STV-B 32-F-ab 2,4,6...32</b> 107      207 PBT <b>543213</b> <b>543413</b>
	<b>STV-B 32-F-ab 2,4,6...32</b> <i>Termination cross section</i> $\square$ <b>0.6x0.6mm</b> 107      207 PBT <b>543217</b> <b>543417</b>
	<b>STV-B 64-F-ab</b> 107      207 PBT <b>543212</b> <b>543412</b>

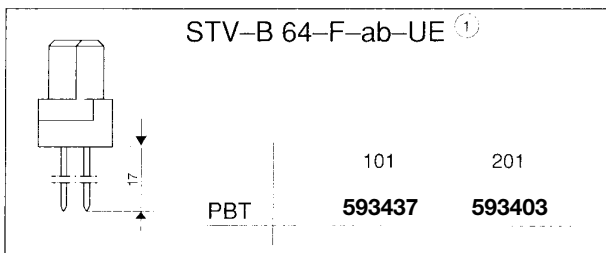
	<b>STV-B 64-F-ab</b> <i>Termination cross section</i> $\square$ <b>0.25x0.7mm</b> 107      207 PBT <b>594079</b> <b>594080</b>
	<b>STV-B 64-F-ab</b> <i>Termination cross section</i> $\square$ <b>0.25x0.7mm</b> 107      207 PBT <b>004982</b> <b>003441</b>

Additional versions e. g. terminations for solder eyelets are available on request.

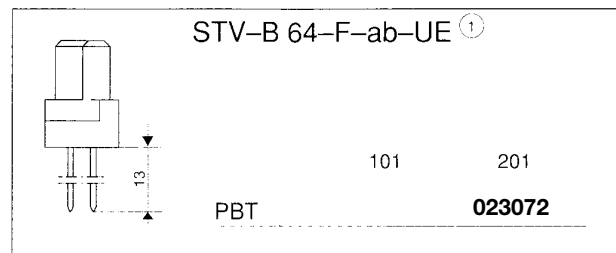
## Orderings details

### Female connector size B

as per DIN 41612/IEC 60603-2 with gold-plated transfer zone ①



① Entire length of contacts nickel-plated, transfer zone (5 mm) solid-gold plated.



Female connectors with a termination length of 15 mm with a hard gold-plated transfer zone are available on request.

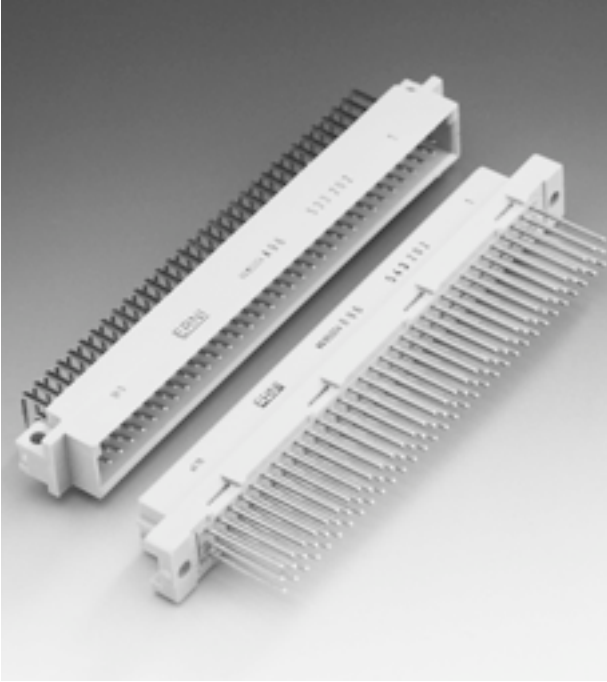
### Example of an application



Male and female connectors of the size B connectors can be used with our cable housings series KSG 173. However an adapter is required. With the necessary guide parts and guide frames of the KSG interface system a connection from the front panel and the wiring field side can be realized in the 19" chassis.

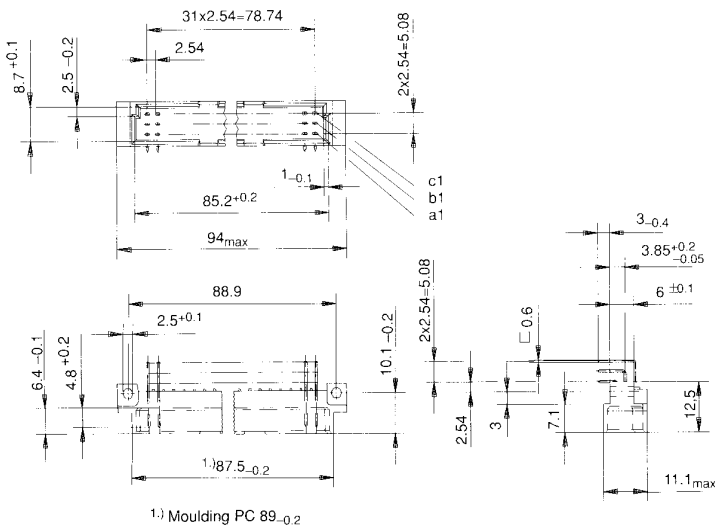
# Size C

as per DIN 41612/IEC 60603-2



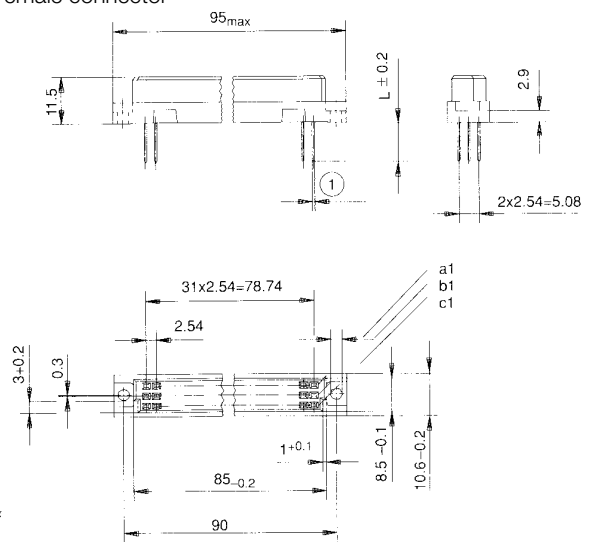
## Dimensional drawings

Male connector



1) Moulding PC 89-0.2

Female connector



① connectors for dip soldering are available with terminations of 0.25x0.7mm or 0.6x0.6. Wire-wrap-terminations 0.6x0.6mm.

## Orderings details

### Male connector size C

as per DIN 41612/IEC 60603-2 maximum three rows loaded, maximum 96 contacts

	STV-C 32-M-a			
	107	207		
PBT	<b>533204</b>			
	STV-C 32-M-ac 2,4,6...32			
	107	207		
PBT	<b>533203</b>	<b>533403</b>		
	STV-C 32-M-ac 2,4,6...32			
	107	207		
PBT	<b>414400</b>	<b>414401</b>		
	STV-C 32-M-ac 2,4,6...32			
	107	207		
PBT	<b>414403</b>	<b>414404</b>		
	STV-C 48-M-abc 2,4,6...32			
	107	207		
PBT	<b>533223</b>	<b>533423</b>		
	STV-C 64-M-ac			
	107	207		
PBT	<b>533201</b>	<b>533401</b>		
	STV-C 64-M-ac <i>Male connector with integral mounting pegs</i>			
	107	207		
PBT		<b>004413</b>		

	STV-C 64-M-ac			
	107	207		
PBT	<b>414406</b>	<b>414407</b>		
	STV-C 64-M-ac			
	107	207		
PBT	<b>414409</b>	<b>414410</b>		
	STV-C 96-M-abc			
	107	207		
PBT	<b>533202</b>	<b>533402</b>		
	STV-C 96-M-abc <i>Male connector with integral mounting pegs</i>			
	107	207		
PBT		<b>434325</b>		
	STV-C 96-M-abc			
	107	207		
PBT	<b>414412</b>	<b>414413</b>		
	STV-C 96-M-abc			
	107	207		
PBT	<b>414415</b>	<b>414416</b>		

Additional versions e. g. terminations for solder eyelets available on request.



## Orderings details

### Female connector size C

as per DIN 41612/IEC 60603-2 maximum three rows loaded, maximum 96 contacts

	<b>STV-C 32-F-a</b> 107      207 PBT <b>543204</b>
	<b>STV-C 32-F-ac 2,4,6...32</b> 107      207 PBT <b>543203*</b> <b>543403</b>
	<b>STV-C 32-F-ac 2,4,6...32</b> <i>Termination cross section</i> □ <b>0.25x0.7mm</b> 107      207 PBT <b>004985</b> <b>004767</b>
	<b>STV-C 32-F-ac 2,4,6...32</b> <i>Termination cross section</i> □ <b>0.25x0.7mm</b> 107      207 PBT <b>004984</b> <b>023071</b>
	<b>STV-C 48-F-abc 2,4,6...32</b> 107      207 PBT <b>594668</b>

	<b>STV-C 64-F-ac</b> 107      207 PBT <b>543201</b> <b>543401</b>
	<b>STV-C 64-F-ac</b> <i>Termination cross section</i> □ <b>0.25x0.7mm</b> 107      207 PBT <b>594076</b> <b>594834</b>
	<b>STV-C 64-F-ac</b> <i>Termination cross section</i> □ <b>0.25x0.7mm with integral mounting pegs</b> 107      207 PBT <b>033590</b>
	<b>STV-C 64-F-ac</b> <i>Termination cross section</i> □ <b>0.25x0.7mm</b> 107      207 PBT <b>433012</b> <b>594971</b>

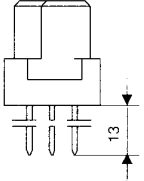
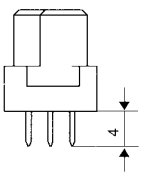
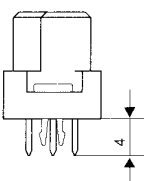
Additional versions e. g. terminations for solder eyelets are available on request.

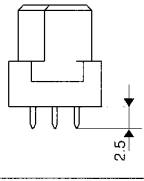


## Orderings details

### Female connector size C

as per DIN 41612/IEC 60603-2, maximum three rows loaded, maximum 96 contacts

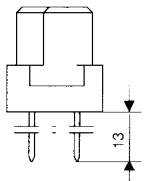
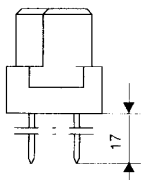
 <p><b>STV-C 96-F-abc</b></p> <table border="1"> <tr> <td></td> <td>107</td> <td>207</td> </tr> <tr> <td>PBT</td> <td><b>543202</b></td> <td><b>543402</b></td> </tr> </table>		107	207	PBT	<b>543202</b>	<b>543402</b>
	107	207				
PBT	<b>543202</b>	<b>543402</b>				
 <p><b>STV-C 96-F-abc</b> Termination cross section <math>\square</math> 0.25x0.7mm</p> <table border="1"> <tr> <td></td> <td>107</td> <td>207</td> </tr> <tr> <td>PBT</td> <td><b>594073</b></td> <td><b>594833</b></td> </tr> </table>		107	207	PBT	<b>594073</b>	<b>594833</b>
	107	207				
PBT	<b>594073</b>	<b>594833</b>				
 <p><b>STV-C 96-F-abc</b> Termination cross section <math>\square</math> 0.25x0.7mm with integral mounting pegs</p> <table border="1"> <tr> <td></td> <td>107</td> <td>207</td> </tr> <tr> <td>PBT</td> <td></td> <td><b>033228</b></td> </tr> </table>		107	207	PBT		<b>033228</b>
	107	207				
PBT		<b>033228</b>				

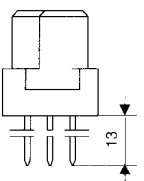
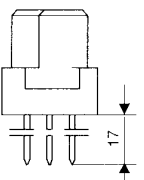
 <p><b>STV-C 96-F-abc</b> Termination cross section <math>\square</math> 0.25x0.7mm</p> <table border="1"> <tr> <td></td> <td>107</td> <td>207</td> </tr> <tr> <td>PBT</td> <td><b>004983</b></td> <td><b>003664</b></td> </tr> </table>		107	207	PBT	<b>004983</b>	<b>003664</b>
	107	207				
PBT	<b>004983</b>	<b>003664</b>				

Additional versions e. g. terminations for solder eyelets and other lengths of terminations e. g. 10 mm are available on request.

### Female connector size C

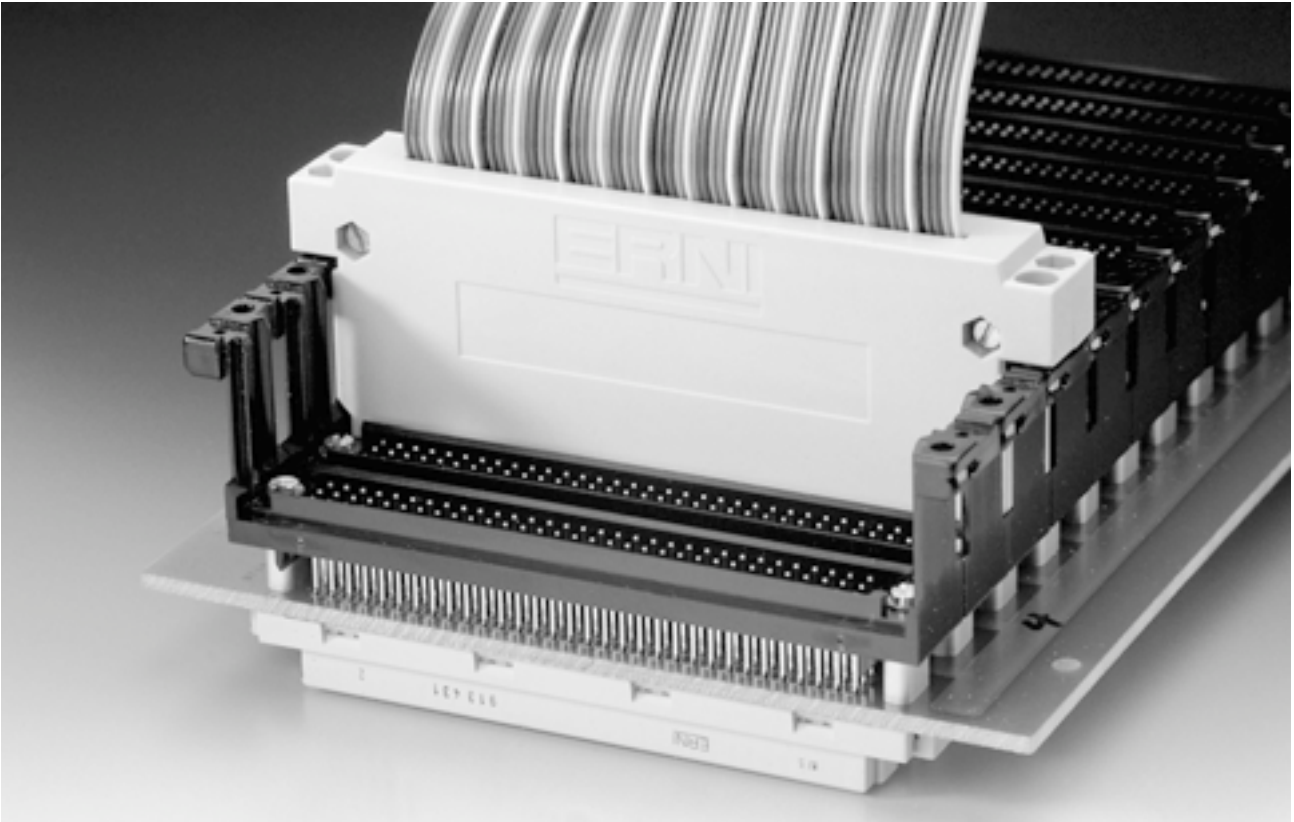
as per DIN 41612/IEC 60603-2 with gold-plated transfer zone ①

 <p><b>STV-C 64-F-ac UE</b> ①</p> <table border="1"> <tr> <td></td> <td>101</td> <td>201</td> </tr> <tr> <td>PBT</td> <td></td> <td><b>013962</b></td> </tr> </table>		101	201	PBT		<b>013962</b>
	101	201				
PBT		<b>013962</b>				
 <p><b>STV-C 64-F-ac UE</b> ①</p> <table border="1"> <tr> <td></td> <td>101</td> <td>201</td> </tr> <tr> <td>PBT</td> <td><b>593441</b></td> <td><b>593405</b></td> </tr> </table>		101	201	PBT	<b>593441</b>	<b>593405</b>
	101	201				
PBT	<b>593441</b>	<b>593405</b>				

 <p><b>STV-C 96-F-abc UE</b> ①</p> <table border="1"> <tr> <td></td> <td>101</td> <td>201</td> </tr> <tr> <td>PBT</td> <td></td> <td><b>013905</b></td> </tr> </table>		101	201	PBT		<b>013905</b>
	101	201				
PBT		<b>013905</b>				
 <p><b>STV-C 96-F-abc UE</b> ①</p> <table border="1"> <tr> <td></td> <td>101</td> <td>201</td> </tr> <tr> <td>PBT</td> <td><b>593443</b></td> <td><b>593406</b></td> </tr> </table>		101	201	PBT	<b>593443</b>	<b>593406</b>
	101	201				
PBT	<b>593443</b>	<b>593406</b>				

① Entire length of contacts nickel-plated, transfer zone (5 mm) solid-gold plated.

## Example of an application



DIN 41612

For female connectors with hard gold plated transfer zone terminations, ERNI offers a specific guide frame for the design in the wiring field or on the front panel in a chassis.

For ordering details regarding the ERNI interface system please refer to the data sheet titled „Mateable wiring transfer system“.

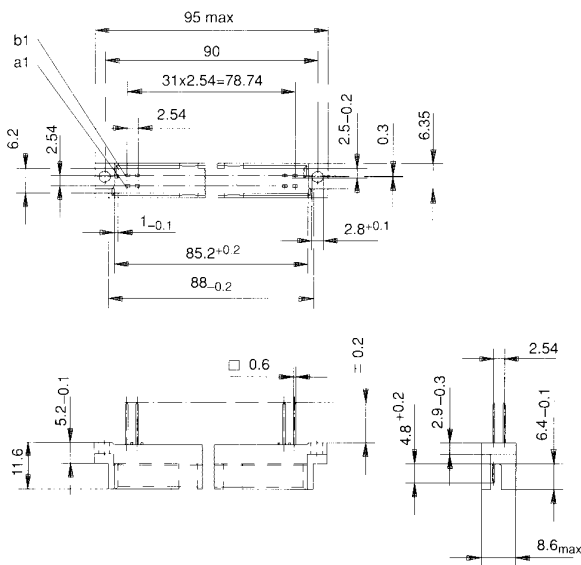
# Size Q

inverse size as per DIN 41612/IEC 60603-2

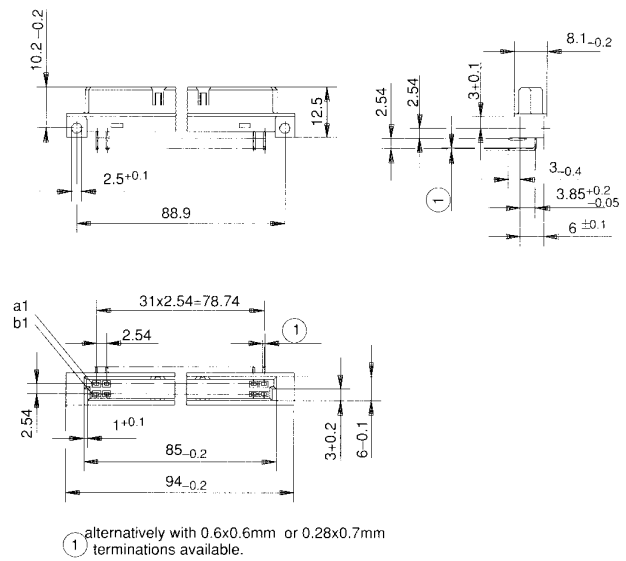


## Dimensional drawings

Male connector



Female connector





## Orderings details

### Male connector size Q

as per DIN 41612/IEC 60603-2, maximum two rows loaded, maximum 64 contacts

	STV-Q 32-M-ab 2,4,6...32	
	Termination cross section <b>0.6x0.6mm</b>	
	STV-Q 64-M-ab	
	Termination cross section <b>0.6x0.6mm</b>	
	107	207
PBT	<b>593924</b>	<b>593925</b>
	107	207
PBT	<b>593927</b>	<b>593928</b>

	STV-Q 32-M-ab 2,4,6...32	
	Termination cross section <b>0.6x0.6mm</b>	
	STV-Q 64-M-ab	
	Termination cross section <b>0.6x0.6mm</b>	
	107	207
PBT	<b>593930</b>	<b>593931</b>
	107	207
PBT	<b>593933</b>	<b>593934</b>

Male connectors with early make/last break contacts can be loaded in any position.  
Further versions on request.

### Female connector size Q

as per DIN 41612/IEC 60603-2, maximum two rows loaded, maximum 64 contacts

	STV-Q 32-F-ab 2,4,6...32	
	Termination cross section <b>0.28x0.7mm</b> . No cover plate, insulator on bottom side open.	
	107	207
PBT	<b>023038</b>	

	STV-Q 64-F-ab	
	Termination cross section <b>0.28x0.7mm</b> . No cover plate, insulator on bottom side open.	
	107	207
PBT	<b>004514</b>	

Female connectors of the size Q can be coded also with coding wedges. The coding positions on the male connectors are removed with a special pair of pliers. On the same positions on the female connectors coding wedges are inserted.

Further versions on request.

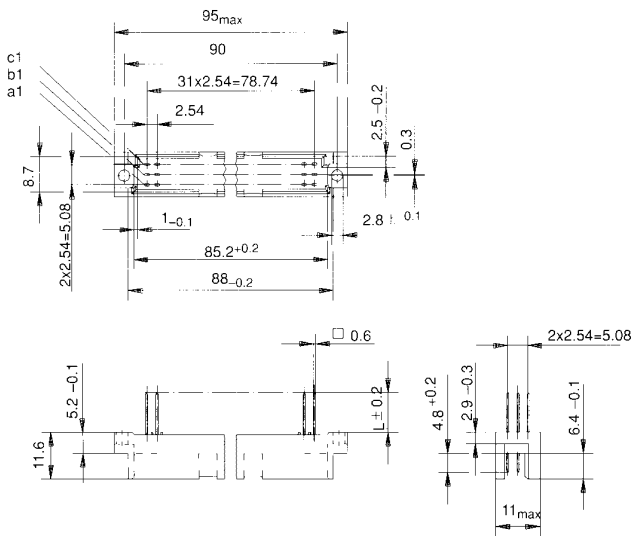
# Size R

inverse size as per DIN 41612/IEC 60603-2

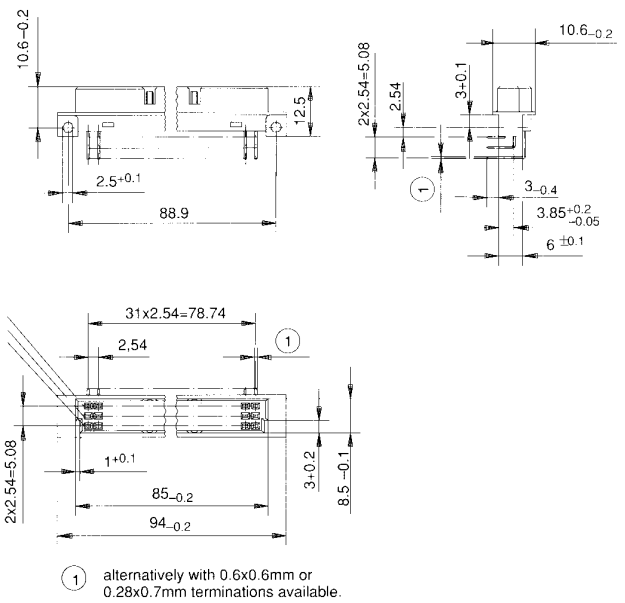


## Dimensional drawings

Male connector



Female connector





## Orderings details

### Male connector size R

as per DIN 41612/IEC 60603-2, maximum three rows loaded, maximum 96 contacts

	<b>STV-R 32-M-ac 2,4,6...32</b> PBT	107 <b>304221</b>	207 <b>304421</b>
	<b>STV-R 32-M-ac 2,4,6...32</b> <i>Termination cross section 0.6x0.6mm</i> PBT	107 <b>304225</b>	207 <b>304425</b>
	<b>STV-R 64-M-ac</b> PBT	107 <b>334210</b>	207 <b>334410</b>
	<b>STV-R 64-M-ac</b> <i>Termination cross section 0.6x0.6mm</i> PBT	107 <b>334214</b>	207 <b>334414</b>
	<b>STV-R 64-M-ac</b> <i>Termination cross section 0.6x0.6mm with integral mounting pegs</i> PBT	107 <b>043331</b>	207

Male connectors with early make/last break contacts can be loaded in any position.

	<b>STV-R 96-M-abc</b> PBT	107 <b>334211</b>	207 <b>334411</b>
	<b>STV-R 96-M-abc</b> <i>Termination cross section 0.6x0.6mm</i> PBT	107 <b>334215</b>	207 <b>334415</b>
	<b>STV-R 96-M-abc</b> <i>Termination cross section 0.6x0.6mm with integral mounting pegs</i> PBT	107 <b>033592</b>	207

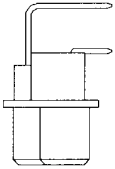
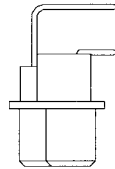
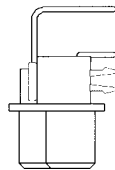
The connectors of the size R can be coded also with coding wedges. The coding positions on the male connectors are removed with a special pair of pliers. On the pertinent positions on the female connectors coding wedges are inserted.

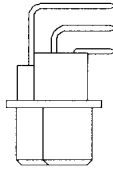
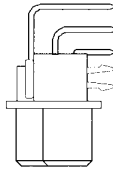
Further versions on request.

## Orderings details

### Female connector size R

as per DIN 41612/IEC 60603-2, maximum three rows loaded, maximum 96 contacts

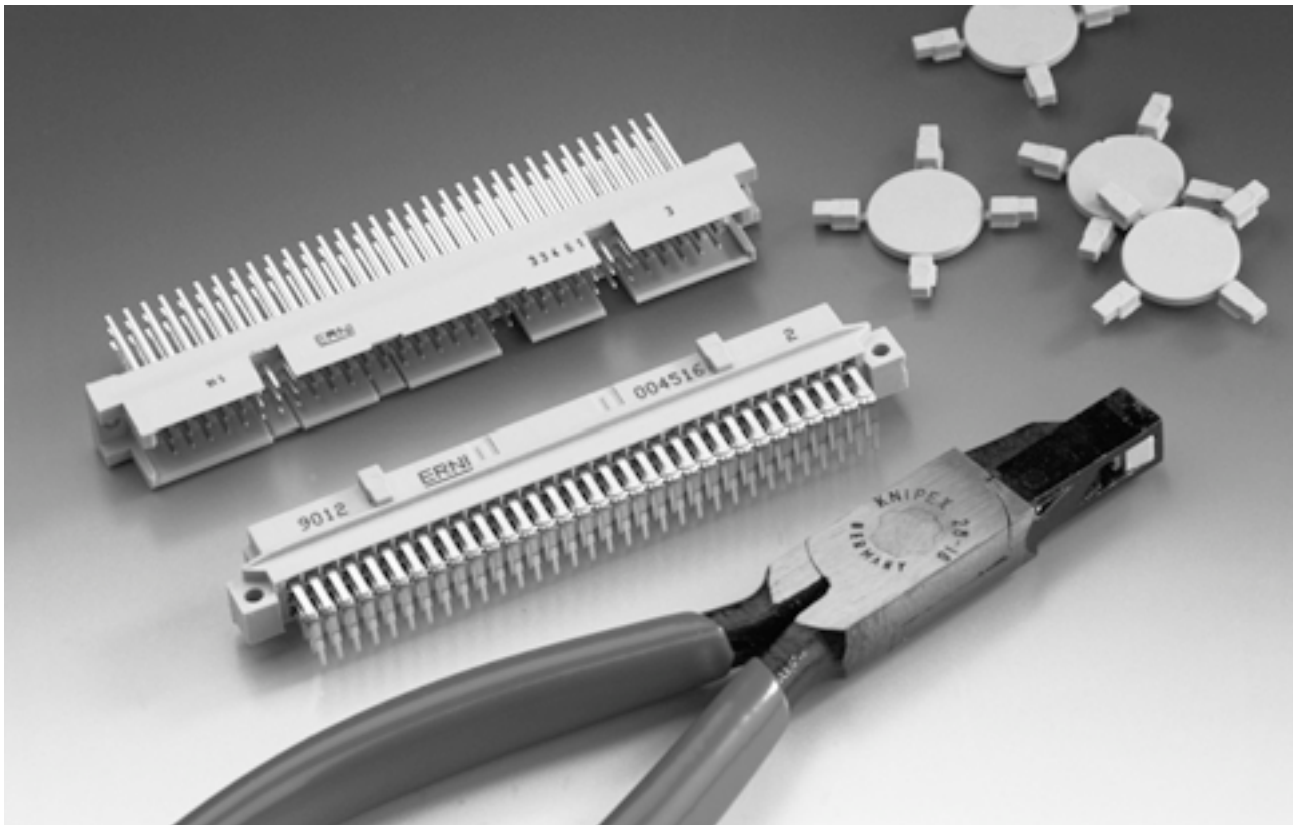
	<p><b>STV-R 32-F-ac 2,4,6...32</b>  <i>Termination cross section 0.28x0.7mm. No cover plate, insulator on bottom side open.</i></p> <table border="0"> <tr> <td style="border-right: 1px solid black; padding-right: 10px;">PBT</td> <td style="padding-right: 10px;">107</td> <td>207</td> </tr> <tr> <td style="border-right: 1px solid black;"></td> <td></td> <td><b>023039</b></td> </tr> </table>	PBT	107	207			<b>023039</b>
PBT	107	207					
		<b>023039</b>					
	<p><b>STV-R 64-F-ac</b>  <i>Termination cross section 0.28x0.7mm. No cover plate, insulator on bottom side open.</i></p> <table border="0"> <tr> <td style="border-right: 1px solid black; padding-right: 10px;">PBT</td> <td style="padding-right: 10px;">107</td> <td>207</td> </tr> <tr> <td style="border-right: 1px solid black;"></td> <td></td> <td><b>004519</b></td> </tr> </table>	PBT	107	207			<b>004519</b>
PBT	107	207					
		<b>004519</b>					
	<p><b>STV-R 64-F-ac</b>  <i>Termination cross section 0.28x0.7mm. No cover plate, insulator on bottom side open. With integral mounting pegs</i></p> <table border="0"> <tr> <td style="border-right: 1px solid black; padding-right: 10px;">PBT</td> <td style="padding-right: 10px;">107</td> <td>207</td> </tr> <tr> <td style="border-right: 1px solid black;"></td> <td></td> <td><b>023503</b></td> </tr> </table>	PBT	107	207			<b>023503</b>
PBT	107	207					
		<b>023503</b>					

	<p><b>STV-R 96-F-abc</b>  <i>Termination cross section 0.28x0.7mm. No cover plate, insulator on bottom side open.</i></p> <table border="0"> <tr> <td style="border-right: 1px solid black; padding-right: 10px;">PBT</td> <td style="padding-right: 10px;">107</td> <td>207</td> </tr> <tr> <td style="border-right: 1px solid black;"></td> <td></td> <td><b>004516</b></td> </tr> </table>	PBT	107	207			<b>004516</b>
PBT	107	207					
		<b>004516</b>					
	<p><b>STV-R 96-F-abc</b>  <i>Termination cross section 0.28x0.7mm. No cover plate, insulator on bottom side open. With integral mounting pegs</i></p> <table border="0"> <tr> <td style="border-right: 1px solid black; padding-right: 10px;">PBT</td> <td style="padding-right: 10px;">107</td> <td>207</td> </tr> <tr> <td style="border-right: 1px solid black;"></td> <td></td> <td><b>023784</b></td> </tr> </table>	PBT	107	207			<b>023784</b>
PBT	107	207					
		<b>023784</b>					

For applications with size R female and size C male connectors we provide the reverse female connector with mirror-inverted printing. Please contact the ERNI sales office for further information.

Further versions on request.

## Example of an application



DIN 41612

The reverse connectors of the sizes Q and R are provided with integral coding. With a pair of pliers the coding positions on the male connectors are removed. On the same positions on the female connectors coding tabs are inserted.

With this coding system a max. of 70 coding possibilities are possible.

The ordering information for the coding tabs and the pair of pliers you will find in the data sheet „Coding“.



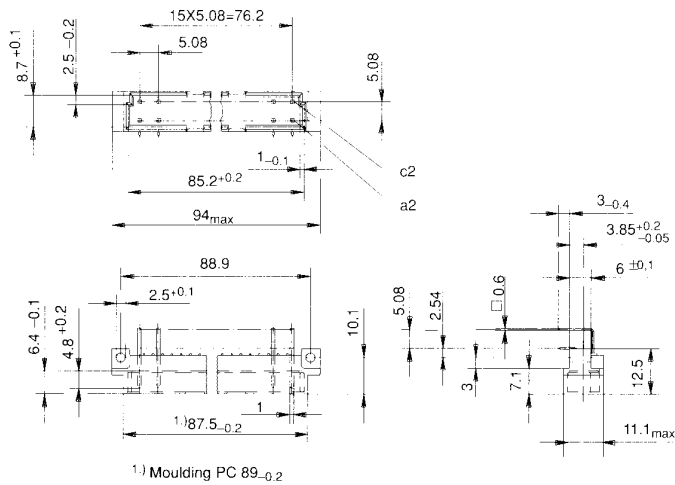
# Size D

as per DIN 41612/IEC 60603-2

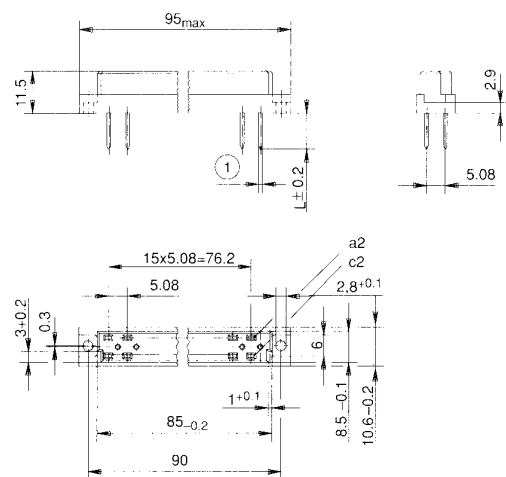


## Dimensional drawings

Male connector



Female connector



① connectors for dip soldering are available with terminations of 1x1mm or 0.6x0.6. Wire-wrap-terminations 1x1mm.

## Orderings details

### Male connector size D

as per DIN 41612/IEC 60603-2, maximum two rows loaded, maximum 32 contacts

	STV-D 32-M-ac 2,4,6...32	
	PBT	107 207 <b>533210 533410</b>
	STV-D 32-M-ac 2,4,6...32 Termination cross section 1x1mm	
	PC	107 207 <b>563024 563025</b>

	STV-D 32-M-ac 2,4,6...32 Termination cross section 1x1mm	
	PC	101 201 <b>563021</b>

Male connectors with early make/last break contacts can be loaded in any position.

Further versions on request.

### Female connector size D

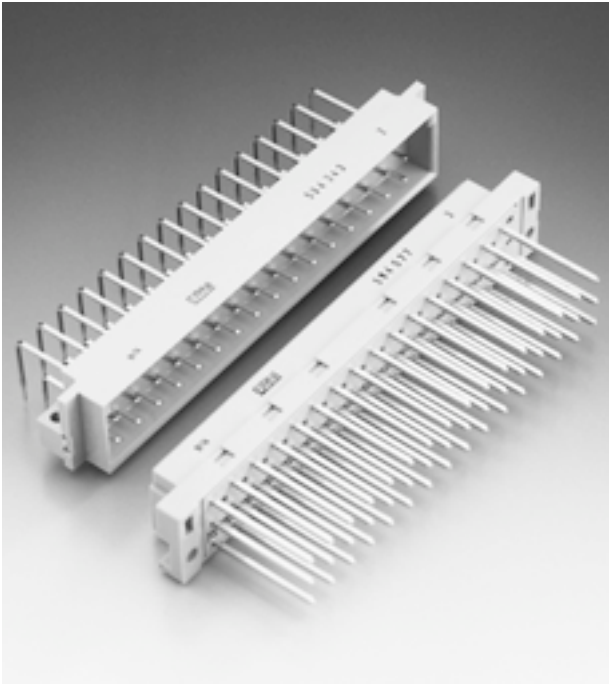
as per DIN 41612/IEC 60603-2, maximum two rows loaded, maximum 32 contacts

	STV-D 32-F-ac 2,4,6...32	
	PBT	107 207 <b>594566 594567</b>
	STV-D 32-F-ac 2,4,6...32 Termination cross section 0,6x2,0mm for solder eyelet	
	PBT	107 207 <b>033426</b>

	STV-D 32-F-ac 2,4,6...32 Termination cross section 1x1mm	
	PBT	107 207 <b>594569 594570</b>
	STV-D 32-F-ac 2,4,6...32 Termination cross section 0,6x0,6mm	
	PBT	107 207 <b>033428</b>
	STV-D 32-F-ac 2,4,6...32 Termination cross section 1,2x0,6mm	
	PBT	107 207 <b>033579</b>

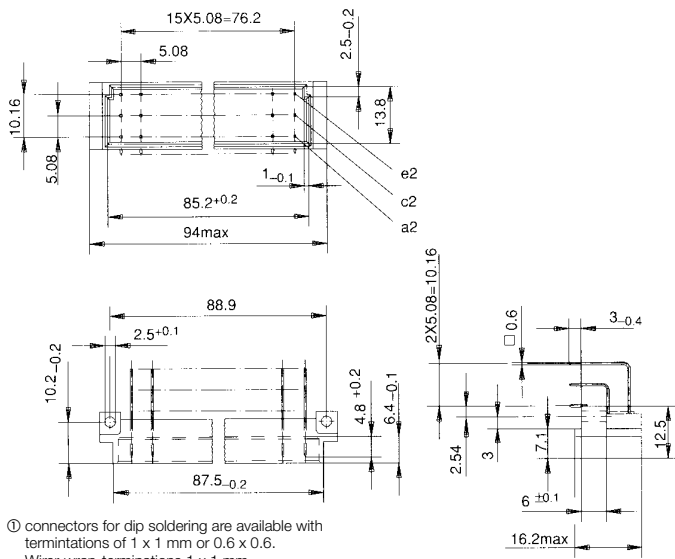
# Size E

as per DIN 41612/IEC 60603-2



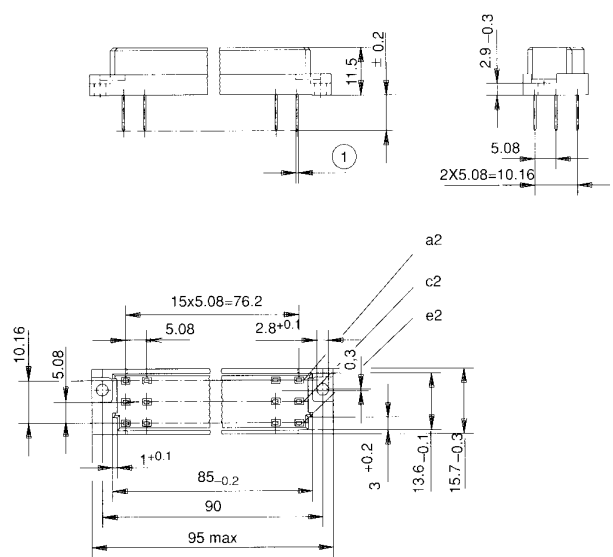
## Dimensional drawings

Male connector



① connectors for dip soldering are available with terminations of 1 x 1 mm or 0.6 x 0.6. Wire-wrap-terminations 1 x 1 mm.

Female connector

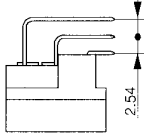
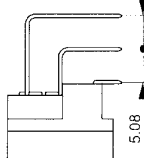




## Orderings details

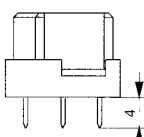

### Male connector size E

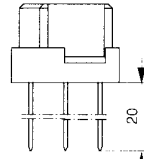
as per DIN 41612/IEC 60603-2, maximum three rows loaded, maximum 48 contacts

 <p>STV-E 48-M-ace 2,4,6...32 Grid dimension between the rows <b>2.54mm</b></p>		
	107	207
PBT	<b>594799</b>	<b>594800</b>
 <p>STV-E 48-M-ace 2,4,6...32 Grid dimension between the rows <b>5.08mm</b></p>		
	107	207
PBT	<b>594802</b>	<b>594343</b>

### Female connector size E

as per DIN 41612/IEC 60603-2, maximum three rows loaded, maximum 48 contacts

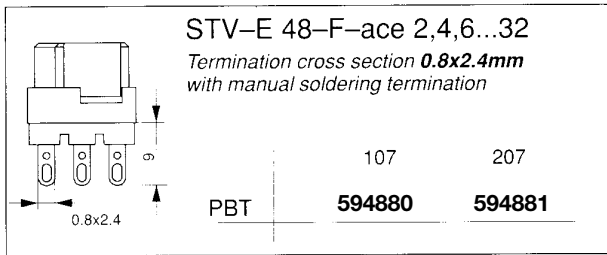
 <p>STV-E 48-F-ace 2,4,6...32 Termination cross section <b>1x1mm</b></p>		
	107	207
PBT	<b>594578</b>	<b>594579</b>
 <p>Termination cross section <b>0.6x0.6mm</b></p>		
	107	207
PBT		<b>on request</b>

 <p>STV-E 48-F-ace 2,4,6...32 Termination cross section <b>1x1mm</b></p>		
	107	207
PBT	<b>594575</b>	<b>594576</b>

## Orderings details

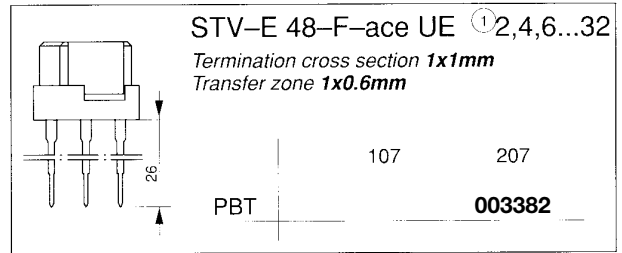
### Male connector size E

as per DIN 41612/IEC60603-2,  
maximum three rows loaded, maximum 48 contacts



### Female connector size E

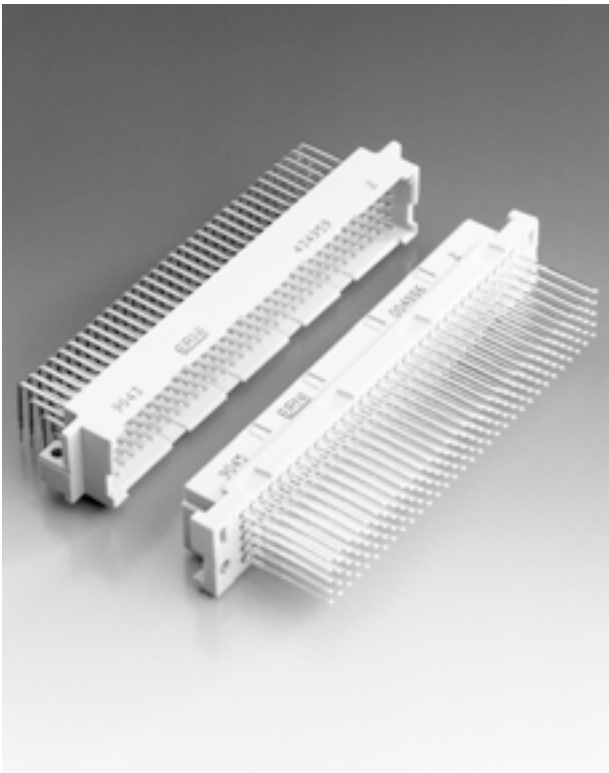
as per DIN 41612/IEC60603-2,  
with gold-plated transfer zone ①



① Entire length of contacts nickel-plated,  
transfer zone (5 mm) solid-gold plated.

Further versions on request.

## Addition to the range



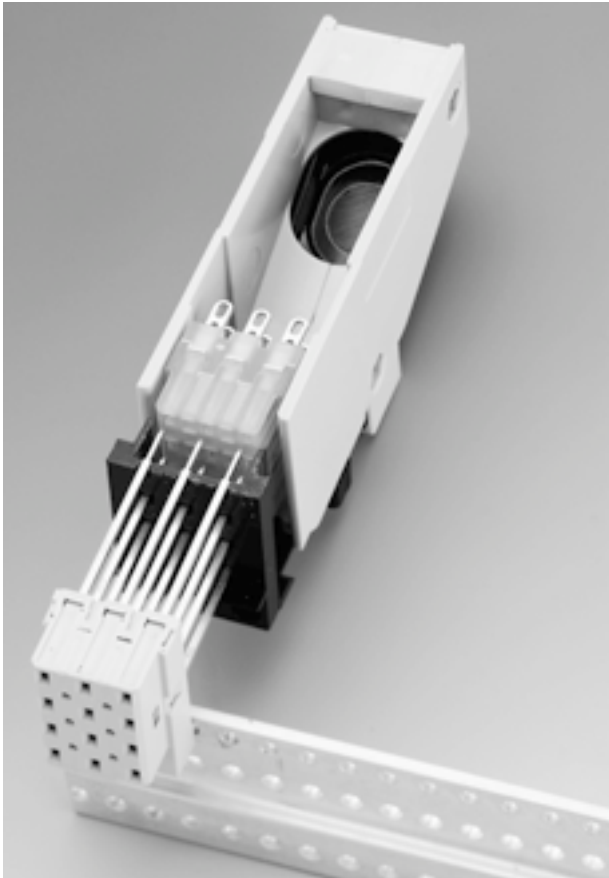
Type E connectors are fitted with contacts in the rows a, c, e in order to achieve large clearances and creepage distances. Rows b and d are not fitted with contacts in the conventional version.

However, there are many applications in which this large clearance and creepage distance is not necessary but instead the user requires higher packaging density. For such applications ERNI developed the type E 160 some years ago. The dimensions of the moulding are those of size E but contacts are fitted in all 5 rows at 2.54 mm pitch.

This development led to a high-density connector with mating and installation conditions in accordance with DIN 41612/IEC 60603-2.

Thus the user has all the advantages of the DIN 41612/IEC 60603-2 connector which is used worldwide. If a enlarged application is required, then the combination of two E 160 connectors plus one of ERNI's Eurocard Center connectors can provide 320 signal connections with 5 dedicated mixed contacts (power, coax, and/or fiber optics) or a total of 362 signal connections on a double Eurocard.

## Example of an application



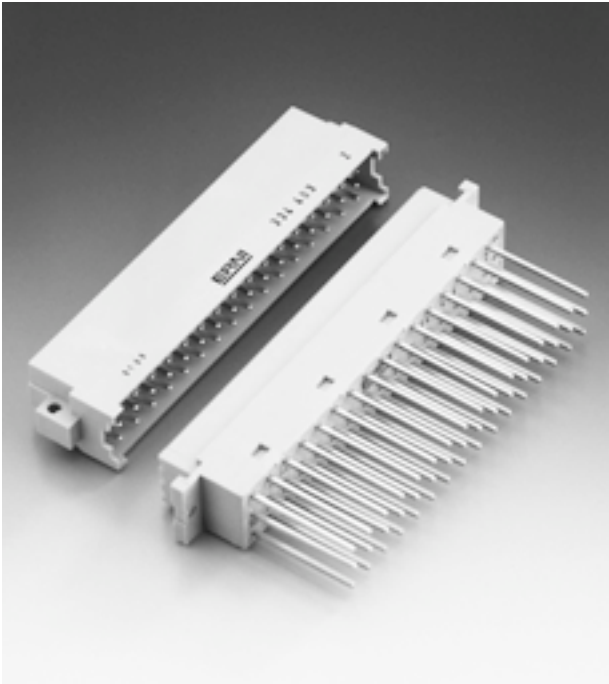
DIN 41612

The ERNI interface system offers a complete range of accessories for type E connectors as well. Size E male and female connectors fit in the series KSG-173 connector housings. Various guide elements are supplied for installation on the frontal panel, the guide elements and frames permit connection from the wiring side of 19" rack. With ERNI connector housings insertion and withdrawal is achieved by use of an integral mounting screw.

All individual metal parts around the connector housing are securely fitted to prevent short circuits during removal. For applications where protection against incorrect mating is necessary, a coding system is available. For information on use and ordering details, please refer to the data sheet „Mateable Wiring Transfer System“ or consult our sales department.

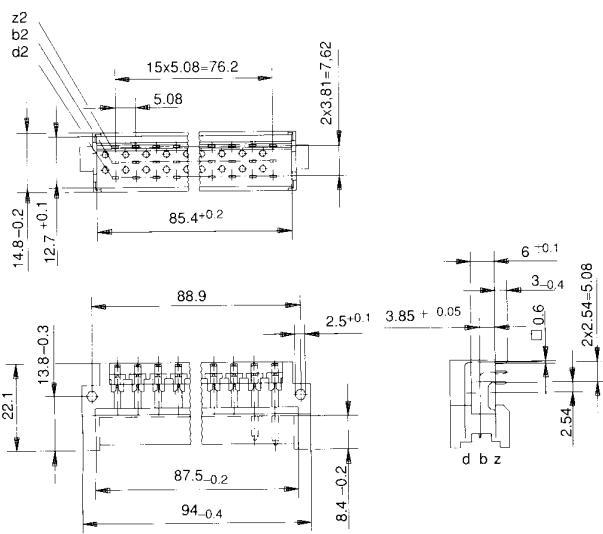
# Size F

as per DIN 41612/IEC 60603-2

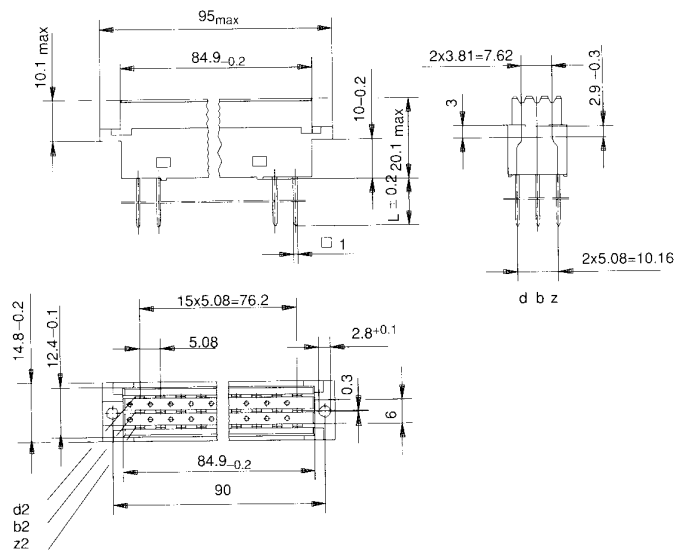


## Dimensional drawings

Male connector



Female connector



## Orderings details

### Male connector size F

as per DIN 41612/IEC 60603-2, maximum three rows loaded, maximum 48 contacts

<p><b>STV-F 32-M-zd 2,4,6...32</b> Grid dimension between the row <b>5.08mm</b></p>			
PC		107	207
		<b>303284</b>	<b>303484</b>
<p><b>STV-F 32-M-zb 2,4,6...32</b> Grid dimension between the row <b>2.54mm</b></p>			
PC		107	207
		<b>303283</b>	<b>303483</b>

<p><b>STV-F 32-M-zb-zd 2,4,6...32</b> Grid dimension between the row contacts area <b>3.81mm</b> termination area <b>5.08mm</b></p>			
PC		107	207
		<b>303091</b>	<b>303491</b>
<p><b>STV-F 48-M-zbd 2,4,6...32</b> Grid dimension between the row <b>2.54mm</b></p>			
PC		107	207
		<b>334203</b>	<b>334403</b>

Male connectors with early make/last break contacts can be loaded in any position.  
Further versions on request.

### Female connector size F

as per DIN 41612/IEC 60603-2, maximum three rows loaded, maximum 48 contacts

<p><b>STV-F 32-F-zd 2,4,6...32</b> Termination cross section <b>1x1mm</b></p>			
PC		107	207
		<b>314204</b>	<b>314404</b>
<p><b>STV-F 32-F-zd 2,4,6...32</b> Termination cross section <b>1x1mm</b></p>			
PC		107	207
		<b>314025</b>	<b>314425</b>
<p><b>STV-F 32-F-zd 2,4,6...32</b></p>			
PC		107	207
		<b>314047</b>	<b>314447</b>

<p><b>STV-F 32-F-zb 2,4,6...32</b> Termination cross section <b>1x1mm</b></p>			
PC		107	207
		<b>313289</b>	<b>313489</b>
<p><b>STV-F 32-F-zb 2,4,6...32</b> Termination cross section <b>1x1mm</b></p>			
PC		107	207
		<b>314221</b>	<b>314421</b>
<p><b>STV-F 32-F-zb 2,4,6...32</b></p>			
PC		107	207
		<b>314045</b>	<b>314445</b>

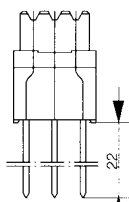
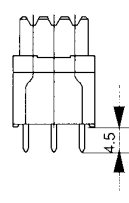
Further versions on request.

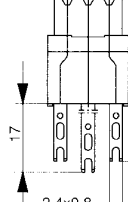


## Orderings details

### Female connector size F

as per DIN 41612/IEC 60603-2

		<b>STV-F 48-F-zbd 2,4,6...32</b> <i>Termination cross section 1x1mm</i>	
		107	207
PC		<b>344234</b>	<b>344434</b>
		<b>STV-F 48-F-zbd 2,4,6...32</b> <i>Termination cross section 1x1mm</i>	
		107	207
PC		<b>344265</b>	<b>344465</b>

		<b>STV-F 48-F-zbd 2,4,6...32</b> <i>Termination cross section 2.4x0.8mm with manual soldering termination</i>	
		107	207
PC		<b>344251</b>	<b>344451</b>

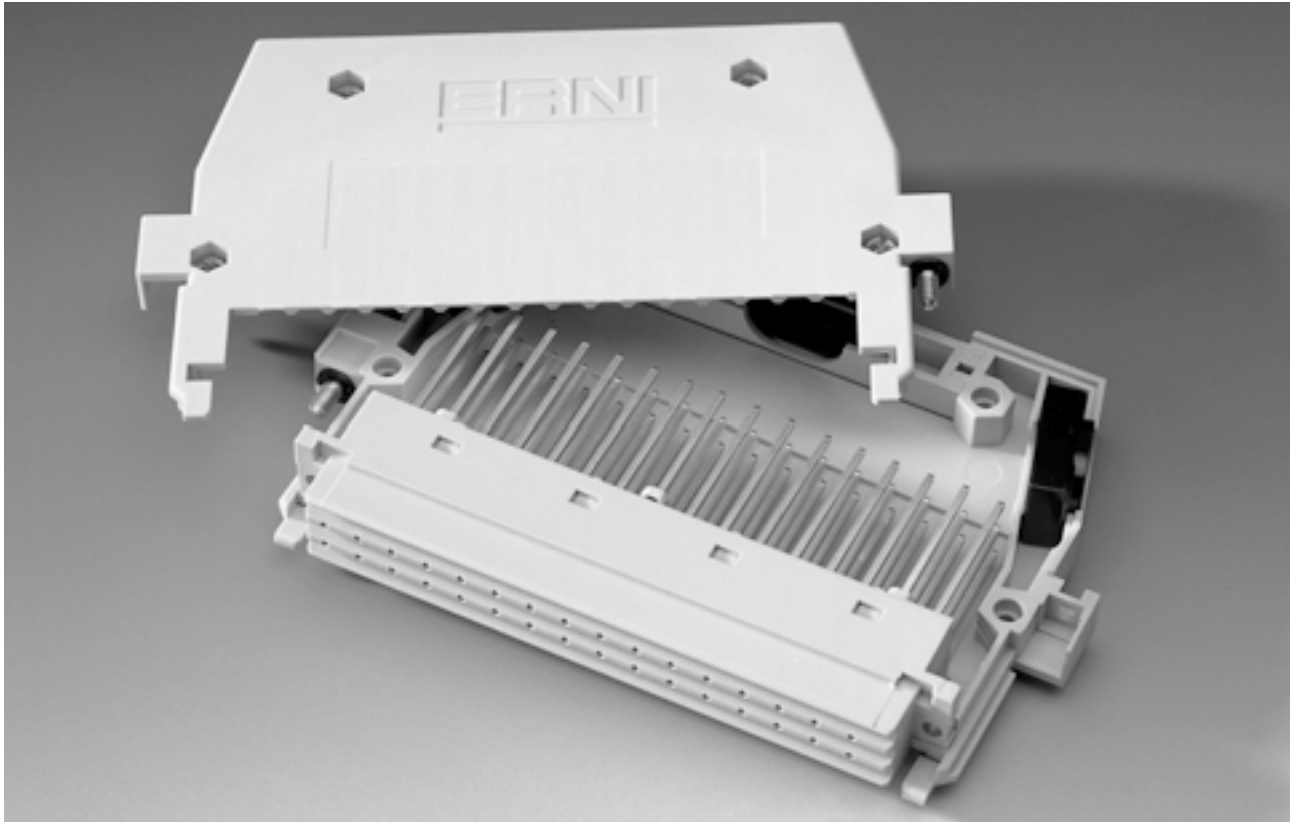
Size F connectors have integral coding by means of coding pins. The male connectors have pre-marked positions which require holes to be drilled. The coding pins from the male connectors can then be inserted into the complementary holes pre-drilled in the female connectors.

All size F male and female connectors are also available for use in **EX**-explosion protected equipment. The mouldings of these connectors are manufactured from creepage-proof material (CTI>600).

Please address any inquiries to our sales consultants.

Further versions on request.

## Example of an application



DIN 41612

The ERNI interface connector system also offers a complete range of accessories for size F connectors.

Size F female connectors fit into the series KSG-203 connector housings.

Various guide elements are available for installing these connectors on the front panel, the guide elements and frames permit connections from the wiring side of the 19" rack.

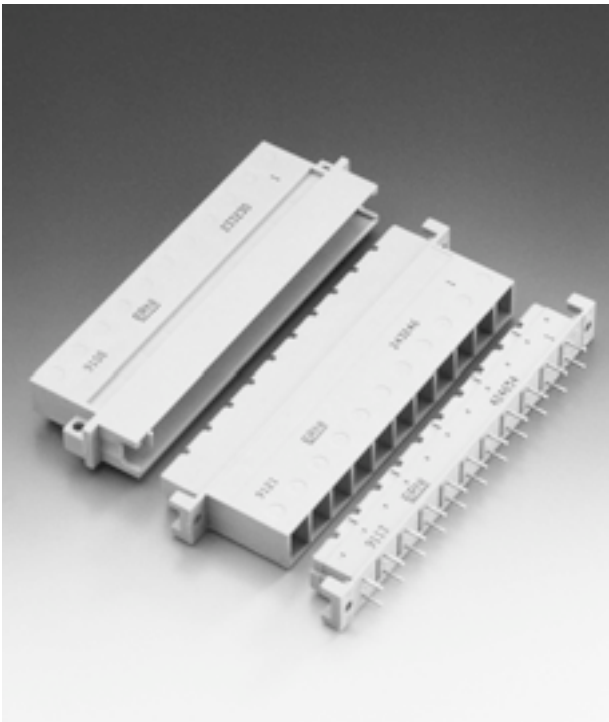
The slim design of size F connectors is maintained even when installed in an ERNI connector housing. The housings have an overall width of only 15 mm and therefore fit into the

3 x 5.08 mm (15.24 mm) module. With ERNI connector housings, insertion and withdrawal is achieved by the use of integral mounting screws.

All individual metal parts around the connector housing are securely fitted to prevent short circuits during removal. For applications where protection against incorrect mating is necessary, a coding system is available. For information on use and ordering details, please refer to the data sheet „Mateable Wiring Transfer System“ or consult our sales department.

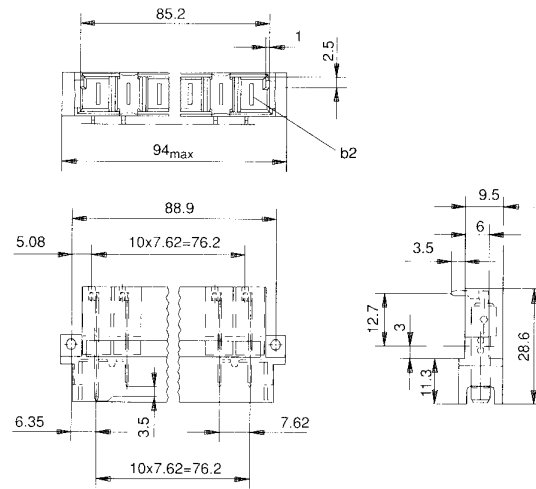
# Size H11

Mating-and mounting-conditions according to DIN 41612/IEC 60603-2

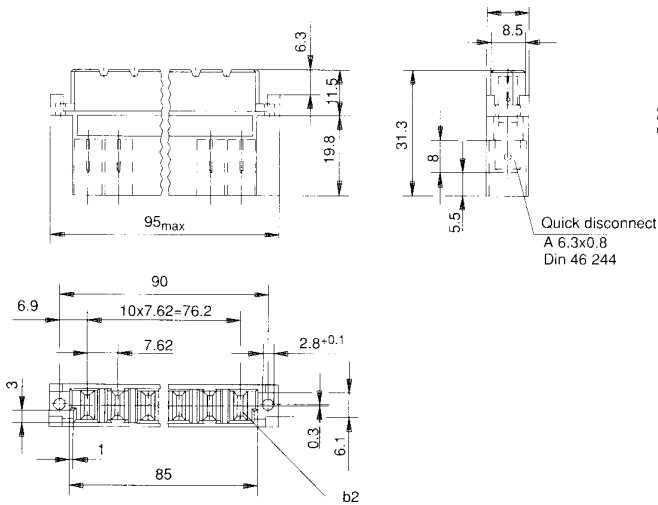


## Dimensional drawings

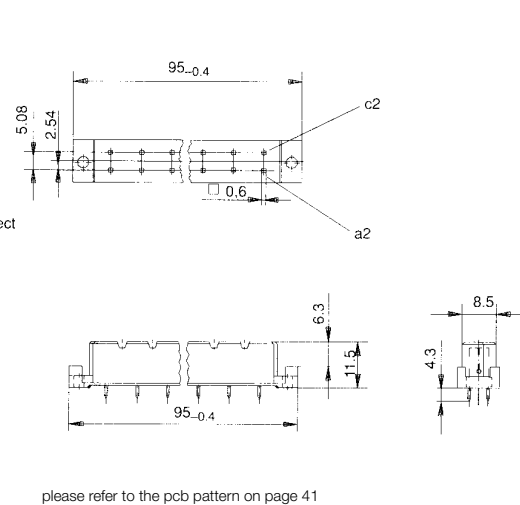
Male connector



Female connector  
with quick disconnect terminations



Female connector  
with dip solder terminations



please refer to the pcb pattern on page 41

## Orderings details

### Male connector size H11

Mating-and mounting-conditions according to DIN 41612/IEC 60603-2, one row loaded, maximum 11 contacts

	<b>STV-H 11-M VE 2<sup>①</sup></b> <i>Termination 6.3x0.8mm for quick disconnect connectors</i>	1	<b>233233</b>
	<b>STV-H 11-M VE 32<sup>①</sup></b> <i>Termination 6.3x0.8mm for quick disconnect connectors</i>	1	<b>233226</b>
	<b>STV-H 11-M VE 2+32<sup>①</sup></b> <i>Termination 6.3x0.8mm for quick disconnect connectors</i>	1	<b>233234</b>

	<b>STV-H 11-M VE 2<sup>①</sup></b> <i>solder terminations can be broken off <sup>②</sup></i>	1	<b>233232</b>
	<b>STV-H 11-M VE 32<sup>①</sup></b> <i>solder terminations can be broken off <sup>②</sup></i>	1	<b>233230</b>
	<b>STV-H 11-M VE 2+32<sup>①</sup></b> <i>solder terminations can be broken off <sup>②</sup></i>	1	<b>233235</b>

① VE...early make/last break contacts on position...  
Male connectors with early make/last break contacts can be loaded in any position.

② Solder terminations can be broken off at a score point.  
6,3 x 0,8 mm tab that remains can be used for quick disconnect connections.

Further versions on request.

### Female connector size H11

Mating-and mounting-conditions according to DIN 41612/IEC 60603-2, one row loaded, maximum 11 contacts

	<b>STV-H 11-F</b> <i>Termination 6.3x0.8mm for quick disconnect connectors</i>	1	<b>243246</b>
--	---	---	---------------

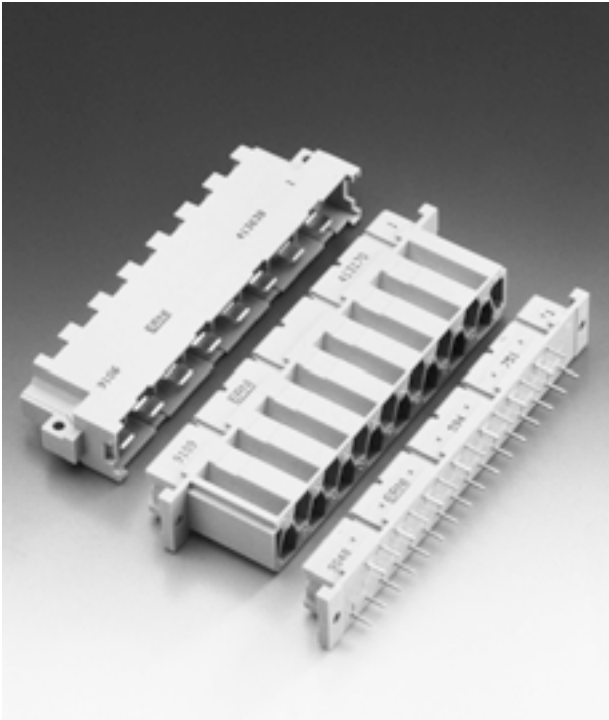
	<b>STV-H 11-F</b> <i>Termination cross section 0.6x0.6mm for dip soldering</i> <i>Grip dimension 5.08mm</i>	1	<b>424654</b>
--	---	---	---------------

The contacts of the size H11 are hard silver plated and correspond to the electrical and mechanical life span of the performance level 1.

Further versions on request.

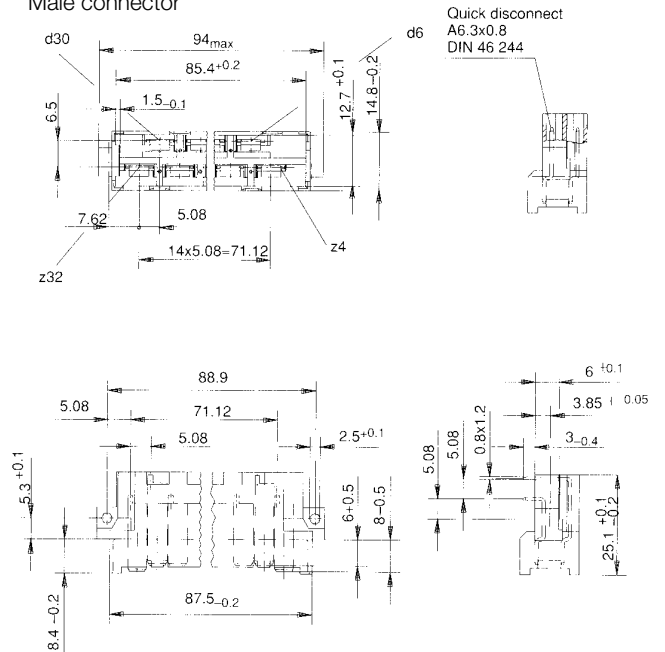
# Size H15

as per DIN 41612/IEC 60603-2

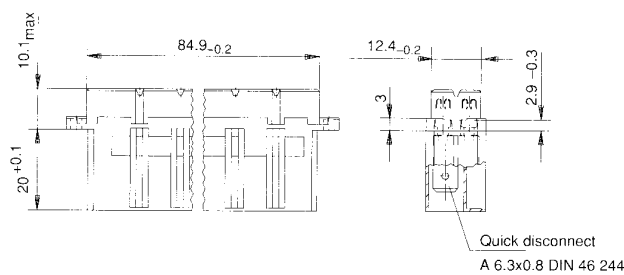


## Dimensional drawings

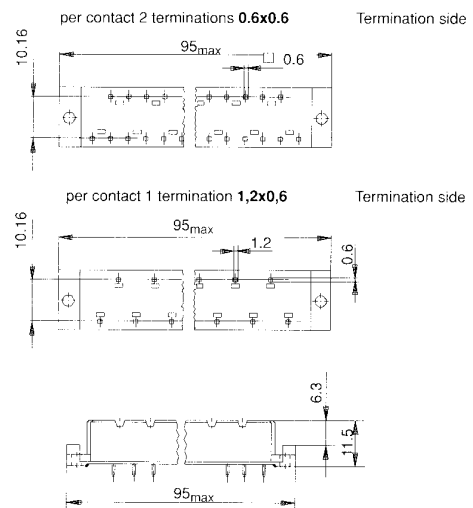
Male connector



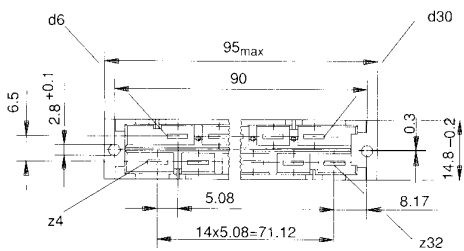
Female connector with quick disconnect termination



Female connector with dip solder termination



please refer to the pcb pattern on page 41



## Orderings details

### Male connector size H15

as per DIN 41612/IEC 60603-2, two rows loaded, maximum 15 contacts

	<b>STV-H 15-M zd</b> <i>Termination 6.3x0.8mm for quick disconnect connectors</i>	1 PC   <b>413637</b>
	<b>STV-H 15-M-zd VE z32</b> ① <i>Termination 6.3x0.8mm for quick disconnect connectors</i>	1 PC   <b>414574</b>
	<b>STV-H 15-M-zd VE z4+z32</b> ① <i>Termination 6.3x0.8mm for quick disconnect connectors</i>	1 PC   <b>413168</b>

	<b>STV-H 15-M -zd</b>	1 PBT   <b>413638</b>
	<b>STV-H 15-M-zd VE z32</b> ①	1 PBT   <b>414575</b>
	<b>STV-H 15-M -zd VE z4+z32</b> ①	1 PBT   <b>413169</b>

① VE...early make/last break contacts on position...  
 Male connectors with early make/last break contacts can be loaded in any position.

Further versions on request.

### Female connector size H15

as per DIN 41612/IEC 60603-2, two rows loaded, maximum 15 contacts

	<b>STV-H 15-F</b> <i>Termination 6.3x0.8mm for quick disconnect connectors</i>	1 PC   <b>413170</b>
	<b>STV-H 15-F</b> <i>Termination cross section 0.6x0.6mm for dip soldering</i>	1 PBT   <b>594751</b>

	<b>STV-H 15-F</b> <i>Termination cross section 1.2x0.6mm for dip soldering</i>	1 PBT   <b>594750</b>
--	---	--------------------------

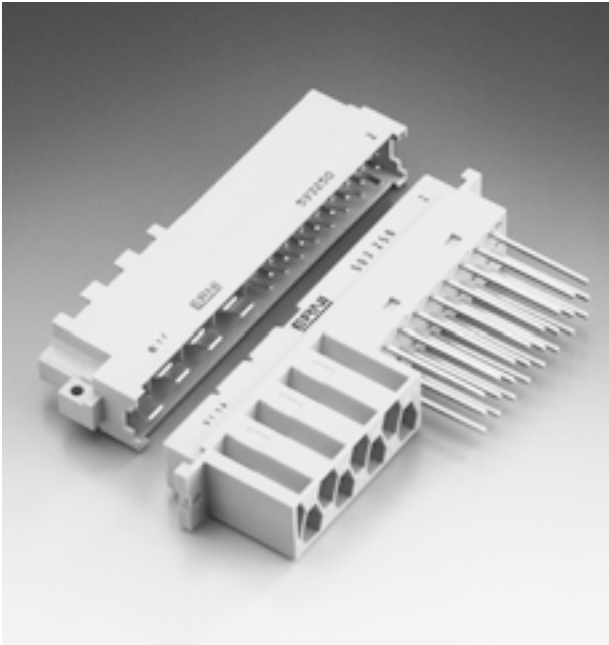
The contacts of the size H15 are hard silver plated and correspond to the electrical and mechanical life span of the performance level 1.

Further versions on request.

# Size H7/F24

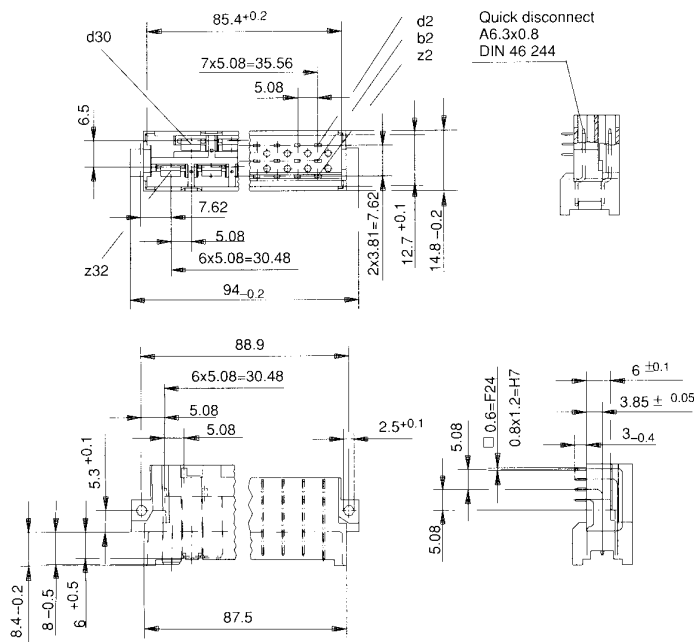
Combined connector

Mating-and mounting-conditions according to DIN 41612/IEC 60603-2

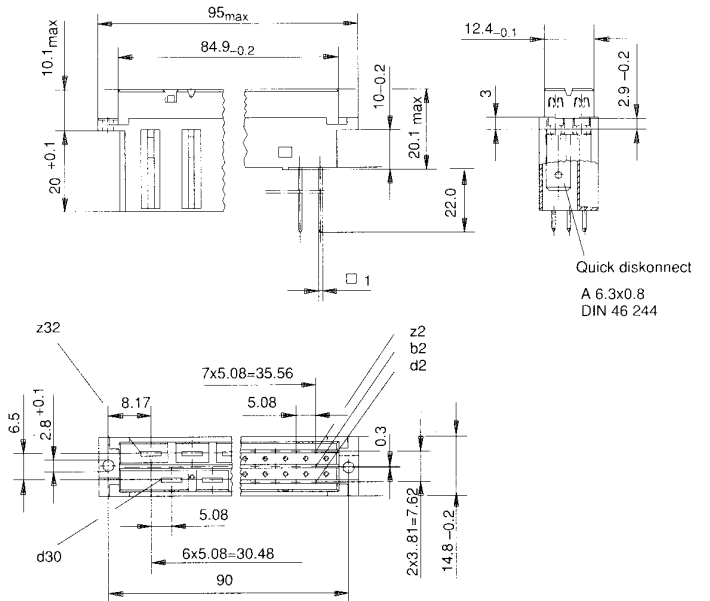


## Dimensional drawings

Male connector



Female connector



## Orderings details

### Male connector size H7/F24

Combined connector

Mating-and mounting-conditions according to DIN 41612/IEC 60603-2

	<b>STV-H 7/F24-M</b>	
	7 terminations <b>6.3x0.8mm</b> for quick disconnect 24 terminations for dip soldering	
PC	1	2
	<b>413639</b>	<b>593252</b>
	<b>STV-H 7/F24-M VE z2+z32<sup>①</sup></b>	
	7 terminations <b>6.3x0.8mm</b> for quick disconnect 24 terminations for dip soldering	
PC	1	2
	<b>413171</b>	<b>593248</b>

	<b>STV-H 7/F24-M</b>	
	7 terminations <b>6.3x0.8mm</b> for quick disconnect 24 terminations for dip soldering	
PC	1	2
	<b>413640</b>	<b>593254</b>
	<b>STV-H 7/F24-M VE z2+z 32<sup>①</sup></b>	
	7 terminations <b>6.3x0.8mm</b> for quick disconnect 24 terminations for dip soldering	
PC	1	2
	<b>413172</b>	<b>593250</b>

① VE...early make/last break contacts on position...  
Male connectors with early make/last break contacts can be loaded in any position.

Further versions on request.

### Female connector size H7/F24

Combined connector

Mating-and mounting-conditions according to DIN 41612/IEC 60603-2

	<b>STV-H 7/F24-F</b>	
	7 terminations <b>6.3x0.8mm</b> for quick disconnect 24 terminations for wire wrap cross section <b>1x1mm</b>	
PC	1	2
	<b>413173</b>	<b>593256</b>

Size H7/F24 connectors have integral coding by means of coding pins. The male connectors have drill centering recesses which require the complete hole to be drilled for coding pin loading. The coding pins from the male connectors can then be inserted into the complementary holes predrilled in the female connectors.

The 7 high-current contacts of H7/F24 connectors are hard silver-plated and their electrical and mechanical service life conforms to Performance Level 1. The 24 low level signal contacts are as described for size F. They are gold-plated in the mating zone in accordance with the stated Performance Level and are tin-plated in the terminal zone.

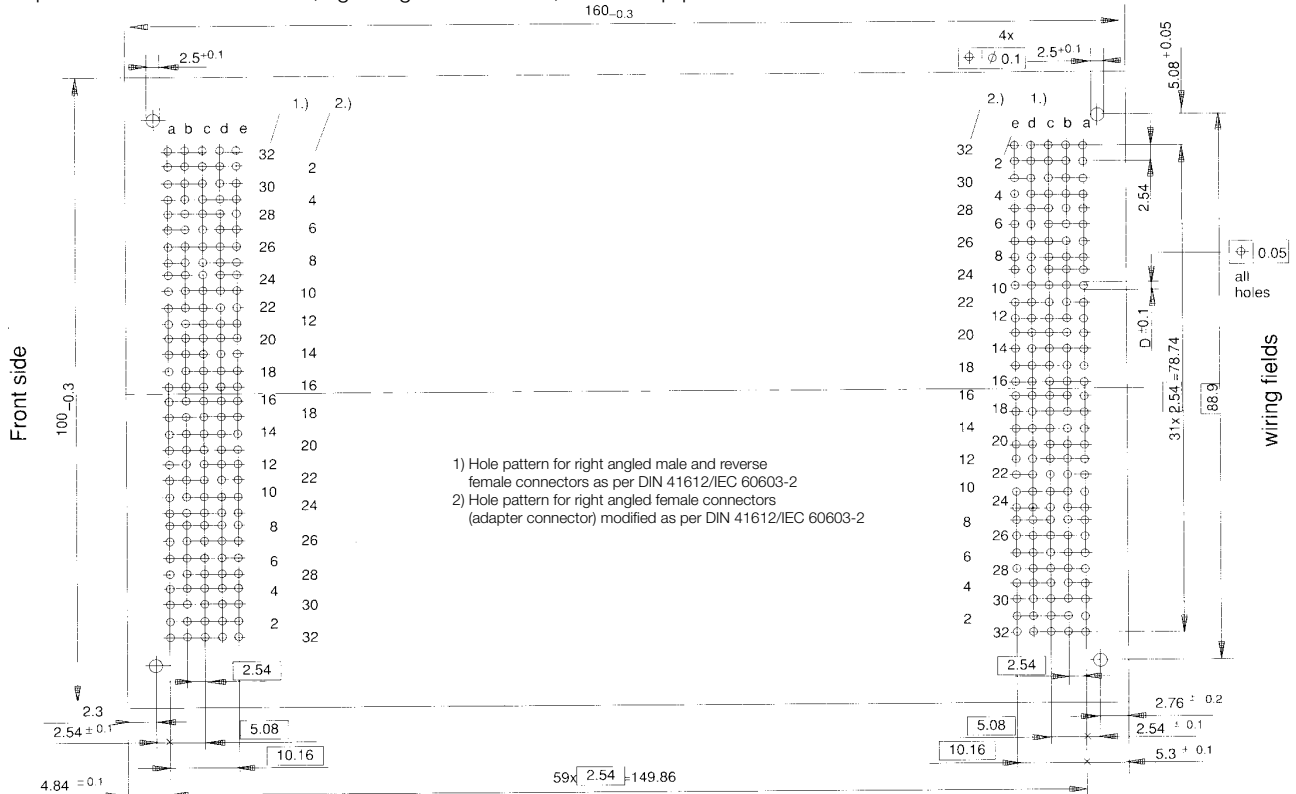
Further versions on request.



# Mounting hole pattern, PCB

## Male – and female connectors

as per DIN 41612/IEC 60603-2, right angle terminations, view of equipment side



Size	Number of contacts	Rows occupied	Equipped with contacts	D [mm]
B,Q	64	ab	Fully loaded	1.0
B,Q	32	ab	Even numbered	1.0
C,R	96	abc	Fully loaded	1.0
C,R	64	ac	Fully loaded	1.0
C,R,D	32	ac	Even numbered	1.0
E	48	ace	Even numbered	1.0
E	48	abc	Even numbered	1.0
F	48	zbd	Even numbered	1.0
H11	11	e	2,5,8,11...23,26,29,32	1.6
H15	15	bd	b: 4,8,12,16,20,24,28,32 d: 6,10,14,18,22,26,30	1.6
E160, TE160*	160	abcde	Fully loaded	1.0
RD128*	128	abcd	Fully loaded	1.0

\* For the connectors size E160, TE160 and RD128 please refer to the data sheet titled „high-density multi-pin connectors“

# Mounting hole pattern, PCB

## Male – and female connectors

as per DIN 41612/IEC 60603-2, right angle terminations, view of equipment side

Female size B ①

Female size C

Male size Q ①

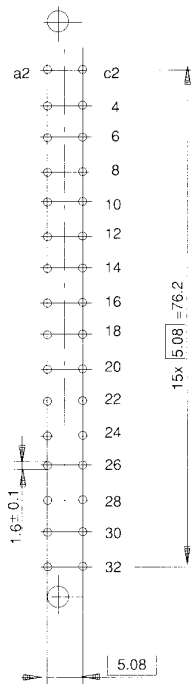
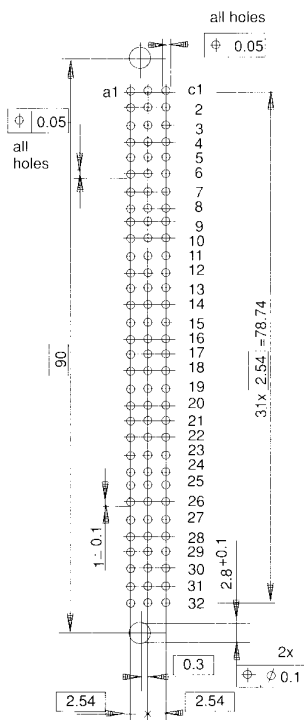
Male size R

Female size D

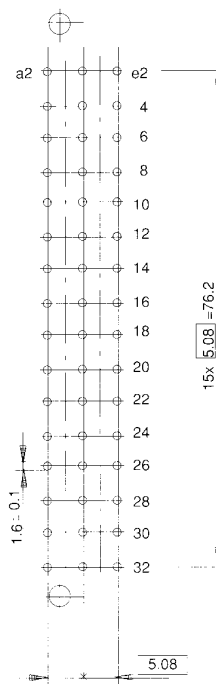
Female size E

Female size F

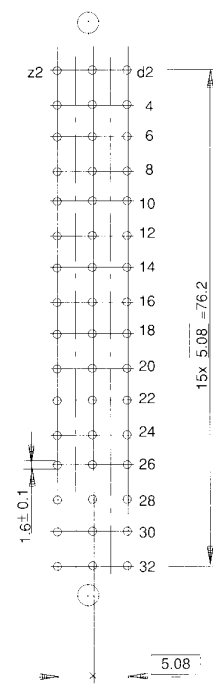
Hole pattern 1



remaining dimensions  
as per hole pattern 1



remaining dimensions  
as per hole pattern 1



remaining dimensions  
as per hole pattern 1

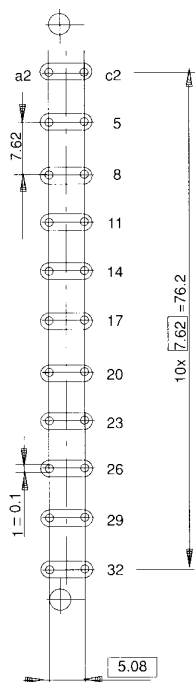
① For the sizes B and Q the rows a and b are required only.

## Mounting hole pattern, PCB

### Male – and female connectors

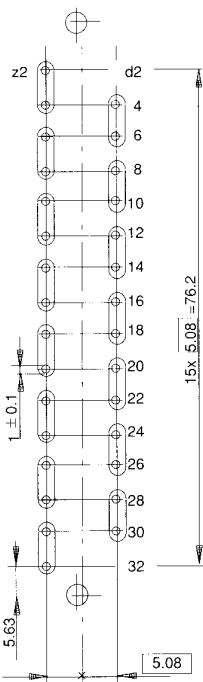
as per DIN 41612/IEC 60603-2, with straight terminations, view of equipment side

Female size H11



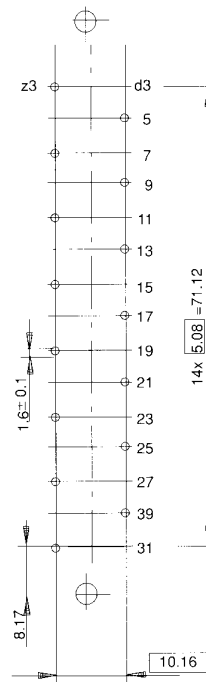
remaining dimensions  
as per hole pattern 1

Female size H15  
per contact 2 terminations



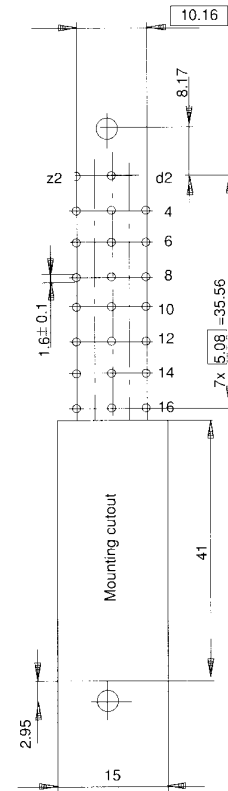
remaining dimensions  
as per hole pattern 1

Female size H11



remaining dimensions  
as per hole pattern 1

Female size H15  
per contact 2 terminations

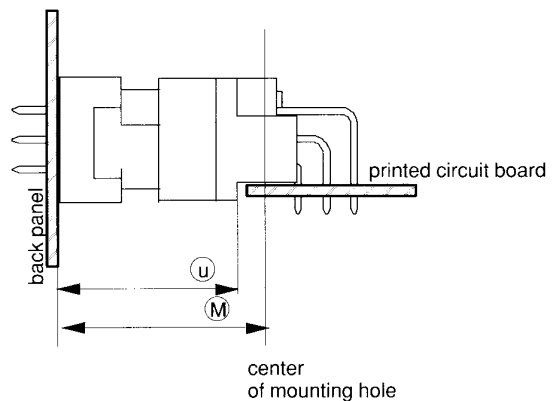


remaining dimensions  
as per hole pattern 1

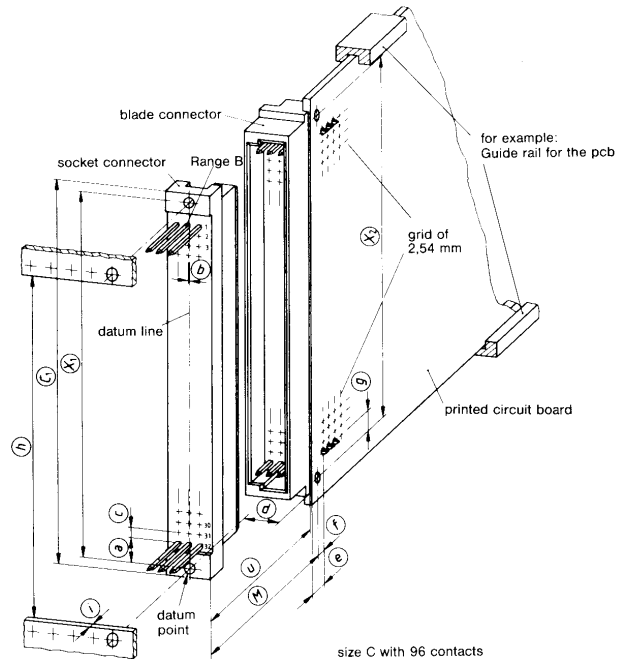
### Mating conditions (overlapping security)

see example size C

The connectors as per DIN 41612/IEC 60603-2 are produced so that the tolerance buildup, which can develop during installation, will not lead to any misalignment. On the mated pair it has to be ensured that the for each connector sizes permissible min. length of the male contact ist within the tolerance of  $\text{Ⓢ}=12.4 \text{ mm}$  till  $14.2 \text{ mm}$  in order to meet the current flow resistance.



## Common dimensions for all sizes of the connector family as per DIN 41612/IEC 60603-2



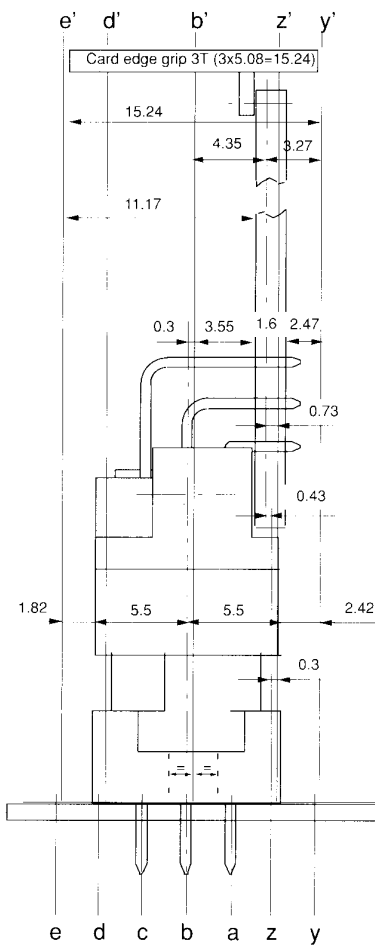
### Important dimensions

Letter of dimension	Dimensions mm	Explanation
C <sub>1</sub>	95	Maximum length of the connector assigned to the back panel
M	15.5 bis 17,3	Mating zone for reliable contact making
X <sub>1</sub>	90	Distance between the mounting holes of the connector assigned to the back panel
X <sub>2</sub>	88.9	Distance between the mounting holes of the connector assigned to the assembly
a	5.63	Distance between the reference point and centerline through contact no. 32 with regard to the connector assigned to the back panel
b	0.3	Distance between the reference line (line through the fixing holes) and centerline of row b (also called offset)
c	nx2.54	Pitch of the terminals of the connector assigned to the back panel)
d	3.55	Distance between the reference line and the component side of the PCB
e	5.3	Distance between the edge of the PCB and the first row of holes for terminals of the connector mounted on the assembly
f	2.54	Distance between the mounting holes and the first row of holes for terminals of the connector mounted on the assembly
g	5.08	Distance between the mounting holes and the holes for contacts no. 1 and no. 32 of the connector assigned to the assembly
h	85	Minimum length of the panel cutout or minimum distance between the mounting rails for the connector assigned to the back panel
i	2.5	Maximum thickness of mounting plate or mounting rails
u	12.4 bis 14.2	Mating zone for reliable contact making

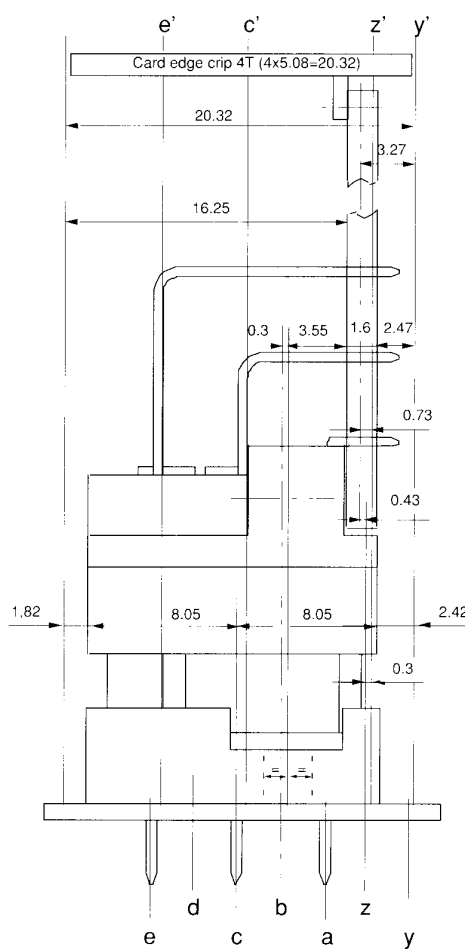
## Mounting dimensions of the connectors

in the module spacing of the 19" rack system

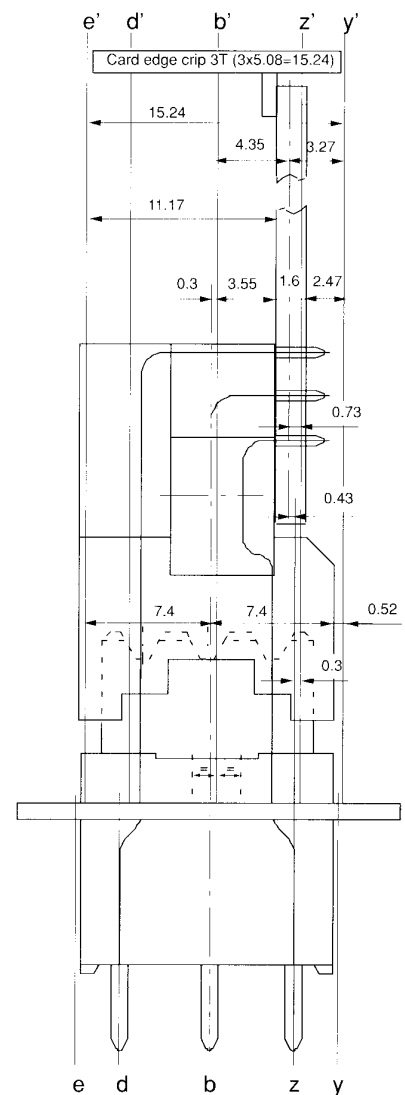
Exact position of the connectors in the **size C** module spacing



Exact position of the connectors in the **size E** module spacing



Exact position of the connectors in the **size F** module spacing



These drawings contain important dimensions for the use of DIN 41612/IEC 60603-2 connectors in 19" rack systems.

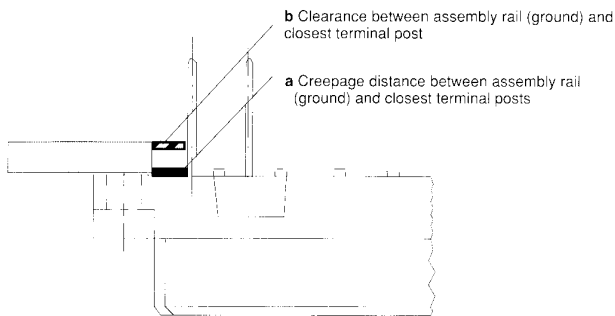
The mounting dimensions shown for size F connectors illustrates how the width of 3 x 5.08 mm is maintained by means of the pitch offset between mating side and soldering side. Thus size F connectors can still be mounted in the 3 x 5.08 mm module.

## Clearances and creepage distances

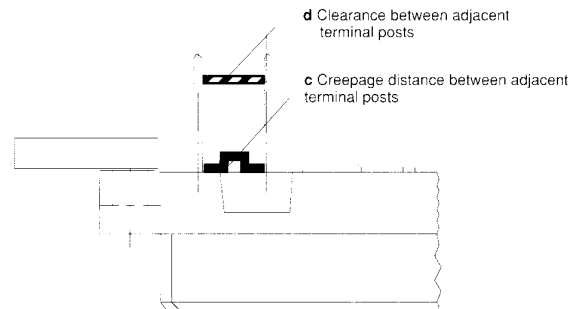
for DIN 41612/IEC 60603-2 male and female connectors

Two different creepage distances and clearances are always distinguished for connectors:

1. The distances a and b as the shortest creepage distance and clearance between assembly rail (chassis) and the closest terminal post.
2. The distances c and d as the shortest creepage distance and clearance between 2 adjacent terminal posts in unwrapped state.



All the values apply to the connectors prior to their termination to the printed circuit board. The influence of the wiring on the creepage distance and clearance must be taken into account.



## Minimum clearances and creepage distances according to IEC 60664

When calculating the minimum clearance and creepage distance for your application, the guidelines contained in IEC 60664 Parts 1 and 2, January 1989 issue are applicable. This standard contains the relevant values in tabular form.

### Calculation of minimum **clearance**:

The minimum clearance primarily depends on the following factors:

- Rated impulse voltage for clearances (depending on overvoltage category).
- Degree of contamination

This standard can be obtained from vde-verlag gmbh, Berlin 12 and Offenbach.

### Calculation of minimum **creepage** distance:

The minimum creepage distance is primarily dependent on the following factors:

- Rated voltage
- Degree of contamination
- CTI values (comparative tracking index) of the insulation material
- Shape of the moulding