



Connectors DIN 41612/IEC 60603-2 and completions



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

Table Of Contents

General information	110
Electrical and mechanical data	112
Termination techniques	113
Application	114
Size B	115
Ordering details	116
Size C	119
Orderings details	120
Example of an application	123
Size Q	124
Orderings details	125
Size R	126
Orderings details	127
Example of an application	129
Size D	130
Orderings details	131
Size E	132
Orderings details	133
Example of an application	135
Size F	136
Orderings details	137
Example of an application	139
Size H11	140
Orderings details	141
Size H15	142
Orderings details	143
Size H7/F24	144
Orderings details	145
Mounting hole pattern, PCB	146
Common dimensions for all sizes of the connector family as per DIN 41612/IEC 60603-2	149
Mounting dimensions of the connectors	150
Clearances and creepage distances	151
ERcom - The new DIN 41612/IEC 60603-2 Female connector generation	152
Electrical and mechanical data	153
Mateable coding strip	154
New contact design for the female contact	154
ERcom – Type C with mateable coding and integrated fixing support with solder pin or press-fit termination	155
Ordering information	156
ERcom – Type CD with solder pin or press-fit termination	157
ERcom – Type E with solder pin or press-fit termination	158
Economical and reliable press-in technology	159
Press-in equipment for female connectors	159
High-density multi-pin connectors	160
Electrical and mechanical characteristics of the connectors	161
Size E 160	163
Ordering details	164
Size TE 160	165
Ordering details for size TE 160	166
Dimensional drawings for size TE 160	166
Size CD 128	167
Ordering details size CD 128	168
Dimensional drawings size CD 128	168
Size RD 128	169



Table Of Contents

Ordering details for size RD 128	170
Dimensional drawings for size RD 128	170
High density solution with DIN 41612/IEC 60603-2 connectors for 19" rack system	172
High density solution with DIN 41612/IEC 60603-2 connectors for metric rack system	174
Eurocard Center Connector	176
Dimensions and ordering information	177
Applications	179
Connectors Type M DIN 41612 / IEC 60603-2	181
Electrical And Mechanical Specifications	182
Electrical And Mechanical Characteristics	183
Standard Male Connectors for Daughtercards	184
Ordering Information	185
Standard Female Connectors for Backplanes	186
Ordering Information	187
Ordering Information - Pressfit	189
Special Contacts, Electrical and Mechanical Specifications	192
Coaxial Contacts For DIN Daughter Card Connectors	193
Coaxial Contacts For DIN Backplane Connectors	193
Special Contacts, Coaxial and High Power	193
Tooling	195
Coding Systems	196
Insulation Displacement Connector (IDC)	197
Electrical and mechanical characteristics	198
Female connectors size C, 64 and 96-pin	199
Ordering details	200
Ordering details for flat ribbon cables and accessories	201
Ordering details tools	201
System technology	202
ERmet connectors for the industrial CompactPCI bus	203
Short Connectors	204
Termination techniques	205
Electrical and mechanical data	207
Type B/2	208
Ordering details	209
Type C/2	210
Ordering details	211
Application examples for cable housing KSG 193	213
Type E 80	214
Ordering details	215
Type Q/2	216
Ordering details	217
Type R/2	218
Ordering details	219
Type B/3	220
Ordering details	221
Type C/3	222
Ordering details	223
Type Q/3	224
Ordering details	225
Type R/3	226
Ordering details	227
Mounting hole pattern	228
Innovations	230
Type F according to DIN 41 612/IEC 60603-2	231

Table Of Contents

Dimensional drawings	232
Connectors for the crimp snap-in technique	233
Electrical and mechanical data	234
Female connector housing size C/2, 48 contact cavities	235
Female connector housing size C, 96 contact cavities	235
Female connector housing size E 160, 160 contact cavities	236
Crimp contacts for female connector housings	237
The interface connector system from ERNI for the front panel and wiring sides	238
Assembly tools	239
ERNIPRESS - DIN 41612/IEC 60603-2 Press-fit connectors	240
Benefits of ERNIPRESS	241
Insertion and retention forces	243
PSB drillhole pattern	244
Wiring accessories / Codings	246
Types of termination on ERNI connectors	247
Electrical and Mechanical Characteristics	248
Size B / Size B/2 / Size B/3	250
Ordering informations	251
Size C / Size C/2 / Size C/3	252
Ordering informations	253
Size CD 128 - Connector with 4 rows of contacts, each with up to 32 contacts	255
Size M acc. to DIN 41612/IEC 60603-2	255
Ordering informations	257
Size H 11 - Mating and mounting conditions acc. to DIN 41612/IEC 60603-2	260
Size H 15 acc. to DIN 41612/IEC 60603-2	261
Size E 160 - Same design as size E acc. to DIN 41612/IEC 60603-2	262
Guide frame for mounting on PC Boards with connectors size C, R, CD 128, RD 128, E 160, TE 160	263
Size Q 7 / Size Q/2 / Size Q/3	264
Ordering details	265
Size R / Size R/2 / Size R/3	266
Ordering informations	267
Application example	269
Size RD 128 - Reversed style with 4 rows of contacts, each with up to 32 contacts	270
Size TE 160 - Reversed style of size E 160	271
Size D acc. to DIN 41 612/IEC 60603-2	272
Size E acc. to DIN 41 612/IEC 60603-2	273
Size F acc. to DIN 41 612/IEC 60603-2	274
Application example	275
Press-in tools	276
Ordering informations	277
Innovations	278
Plug-in connectors with right-angled press-in terminations	279
Mounting hole pattern	281
Electrical and mechanical data	282
Size B / Size B/2 / Size B/3	284
Size C / Size C/2 / Size C/3	285
Size E 160 - Same design as size E as per DIN 41 612/IEC 60603-2	286
Size Q / Size Q/2 / Size Q/3	287
Size R / Size R/2 / Size R/3	288
Size RD 128 - Reversed style with 4 rows of contacts, each with up to 32 contacts	289
Size TE 160 - Reversed style of size E 160	290
Press-in tools	291
Male type C Pressfit Connector acc. DIN 41612/IEC 60603-2	292
Dimensional drawing	293



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.

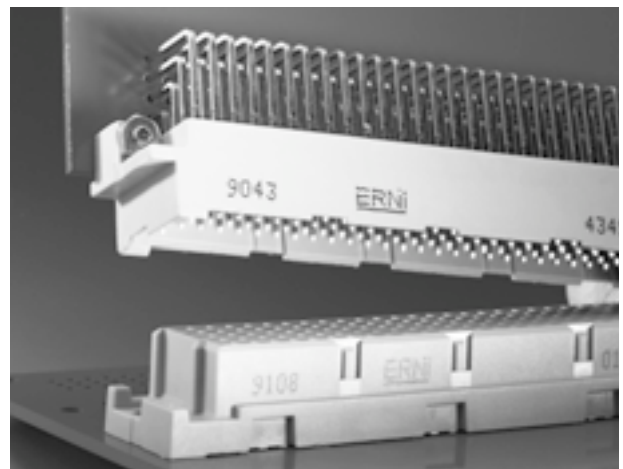
Main features

- Two piece printed circuit board connectors
- International approvals, such as UL or CSA
- 13 connector sizes with the same plugin 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.

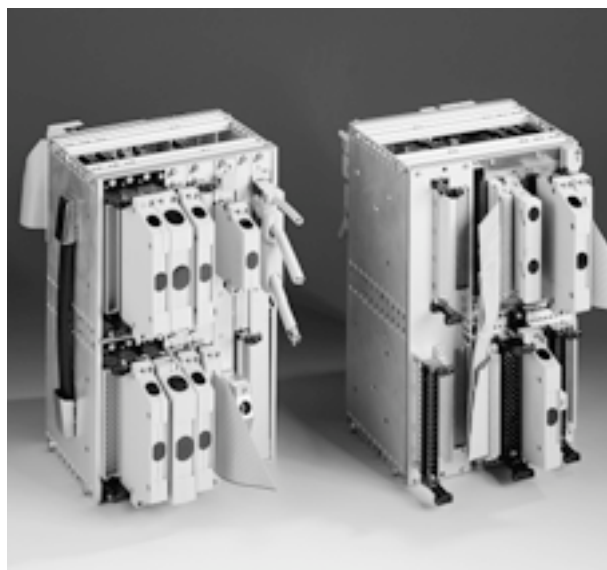
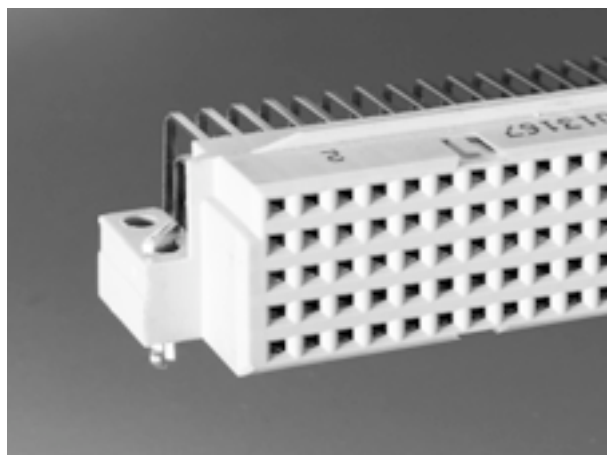
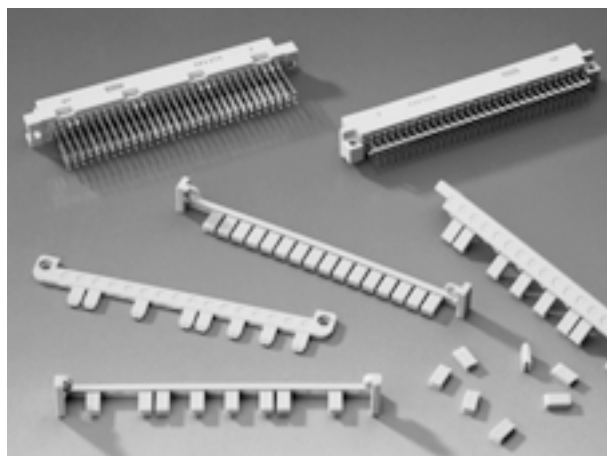
Since the clips can also be soldered, plated-through PCB holes are recommended in such applications. Connectors with retentive clips are available upon request.

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.





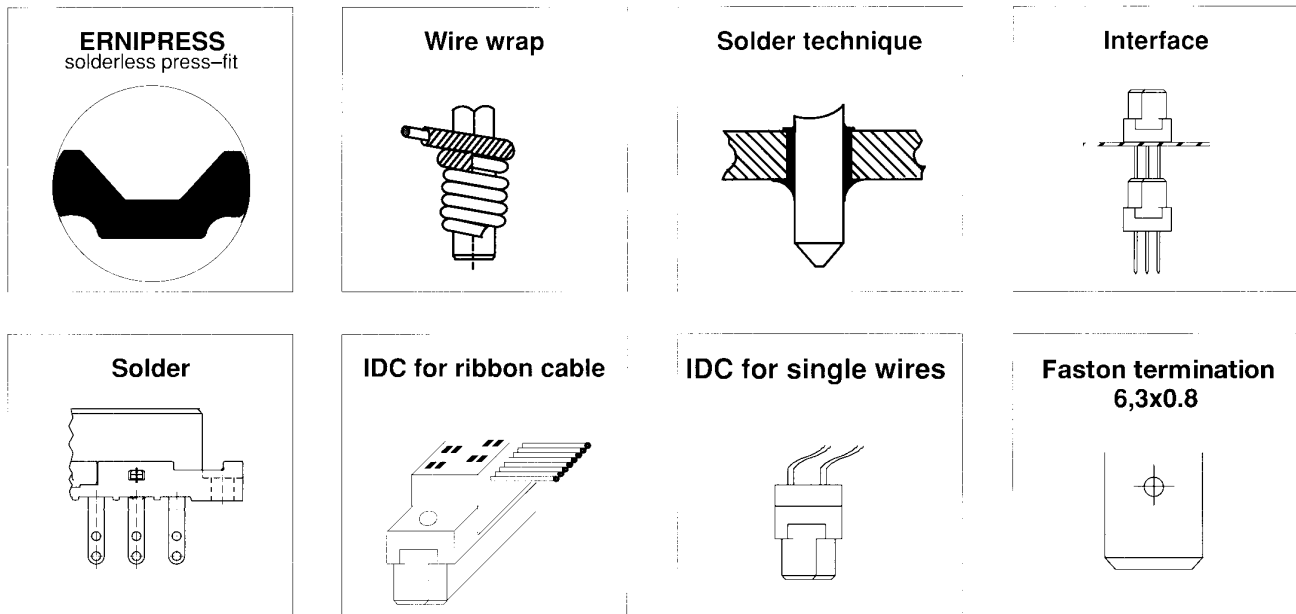
Electrical and mechanical data

Type			B	C	D	E	F	H
Reversed Type			Q	R				
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 ¹²	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 creepagefigure 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			64pin.60	96pin.90 64pin.60 32pin.30	32pin.40	48pin.60 32pin.40	48pin.75 32pin.50	15pin.90 11pin.80
Withdrawal force per contact (test blade)	N			≥ 0.15			≥ 0.2	
Inflammability of the plastic	PBT PC			Polybutylenterephthalat non flammable as per UL 94 V-0 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

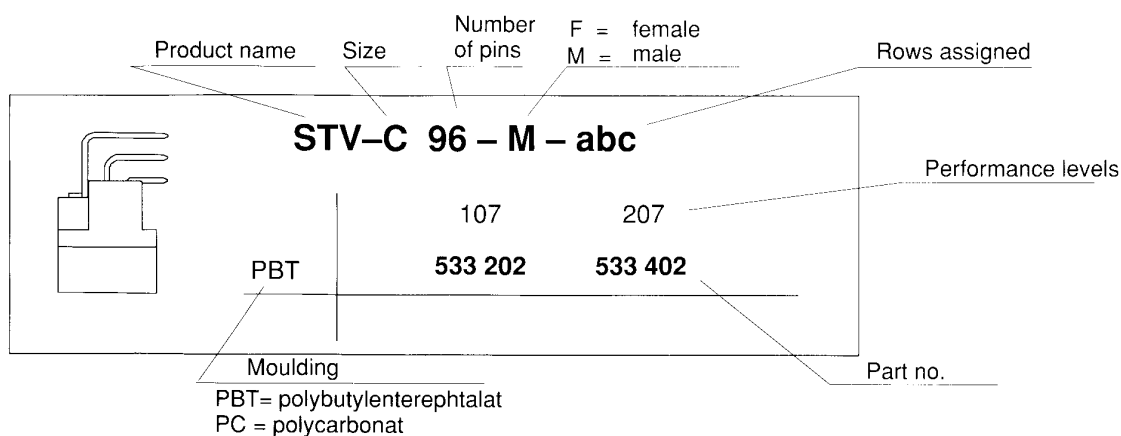
107 Conforms to the requirements as per
DIN 41612/IEC 60603-2
performance level 1
500 mating cycles
Contact zone gold-plated
Terminal zone tin-plated

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

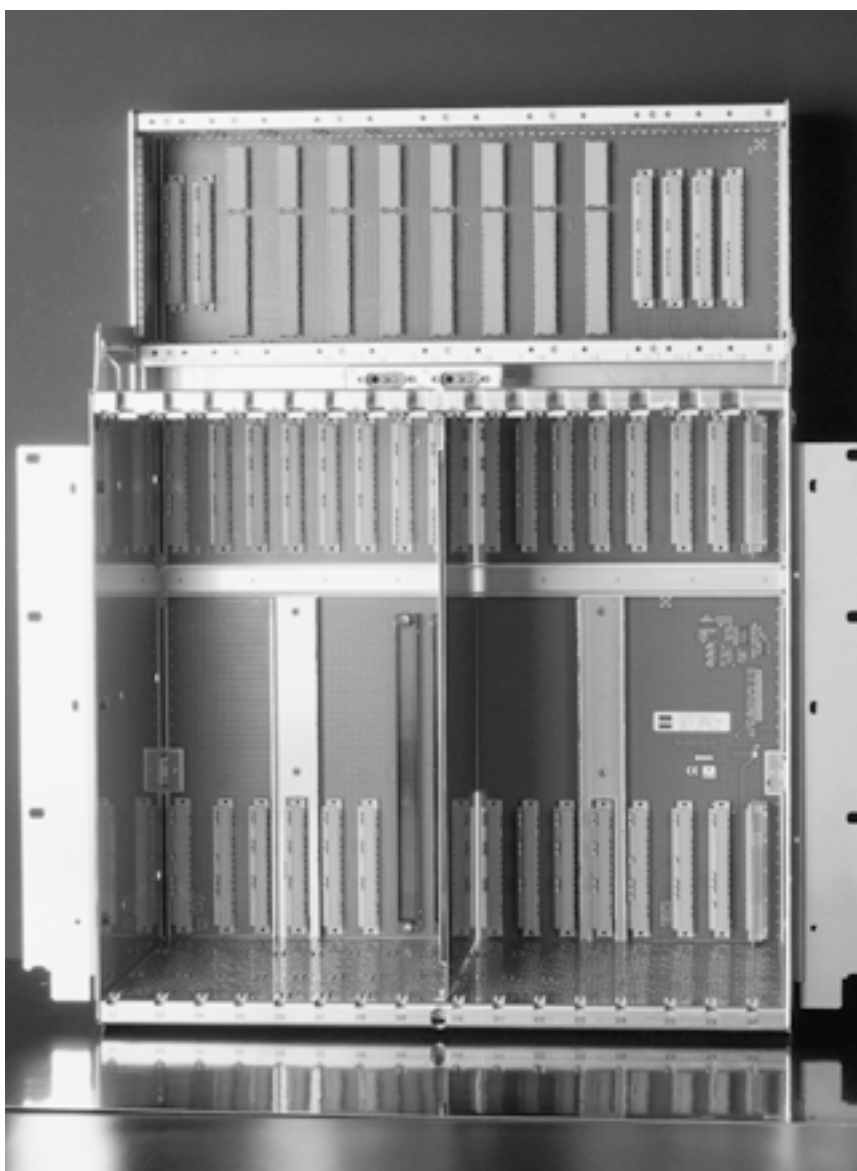
101 Same as for version 107 but terminal zone gold-plated

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

Example of how to order



Application



Size B

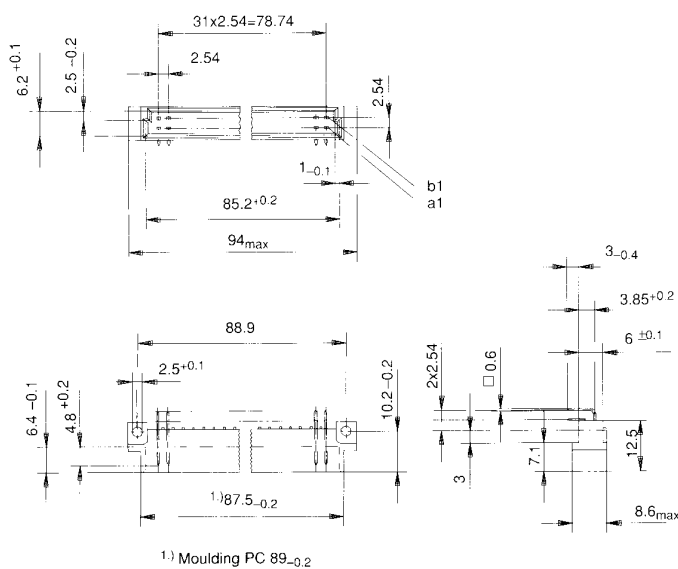
as per DIN 41612/IEC 60603-2



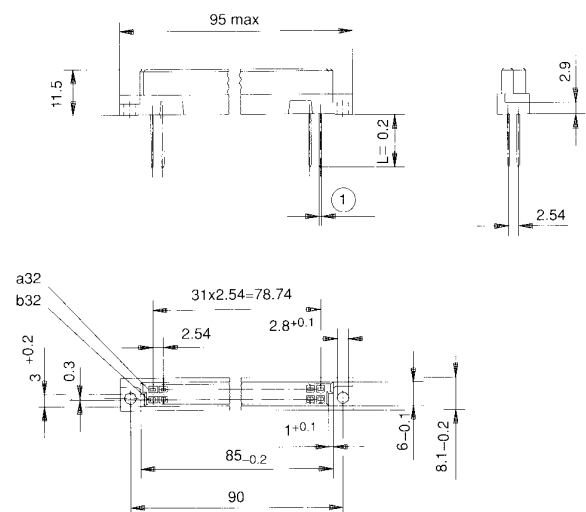
DIN 41612

Dimensional drawings

Male connector



Female connector

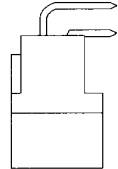
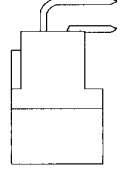


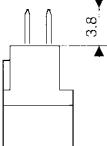
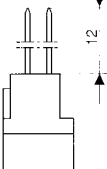
① connectors for dip soldering are available with terminations of $0.25 \times 0.7 \text{ mm}$ or 0.6×0.6 . Wire-wrap terminations $0.6 \times 0.6 \text{ mm}$.

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

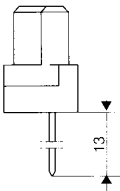
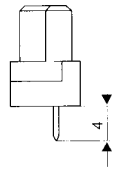
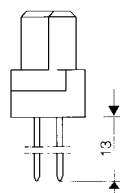
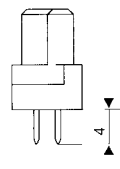
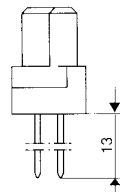
	STV-B 64-M-ab	
	PBT	107 207 414377 414378
	STV-B 64-M-ab	
	PBT	107 207 414379 414380

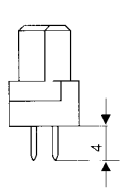
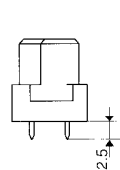
Other types of terminations such as solder eyelets or partially loaded connectors are available on request. Male connectors with early make/last break contacts can be loaded in any position.

Orderings details

Female connector size B

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

	STV-B 32-F-a			
		107	207	
	PBT	543214		
	STV-B 32-F-a			
	Termination cross section		0.6x0.6mm	
		107	207	
	PBT	543218		
	STV-B 32-F-ab 2,4,6...32			
		107	207	
	PBT	543213	543413	
	STV-B 32-F-ab 2,4,6...32			
	Termination cross section		0.6x0.6mm	
		107	207	
	PBT	543217	543417	
	STV-B 64-F-ab			
		107	207	
	PBT	543212	543412	

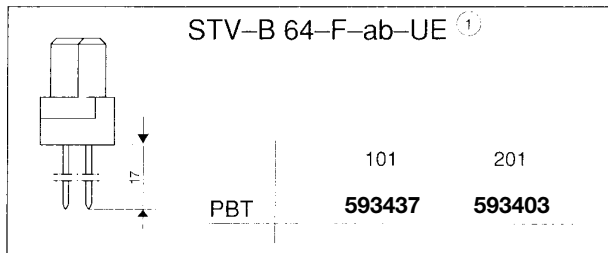
	STV-B 64-F-ab			
	Termination cross section		0.25x0.7mm	
		107	207	
	PBT	594079	594080	
	STV-B 64-F-ab			
	Termination cross section		0.25x0.7mm	
		107	207	
	PBT	004982	003441	

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

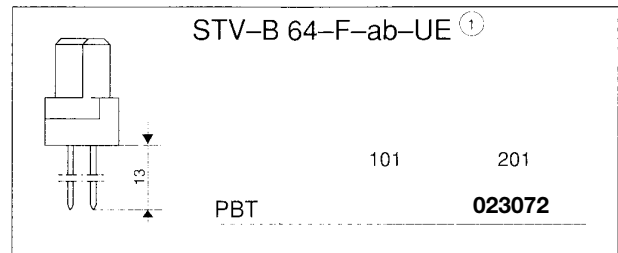
Orderings details

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.

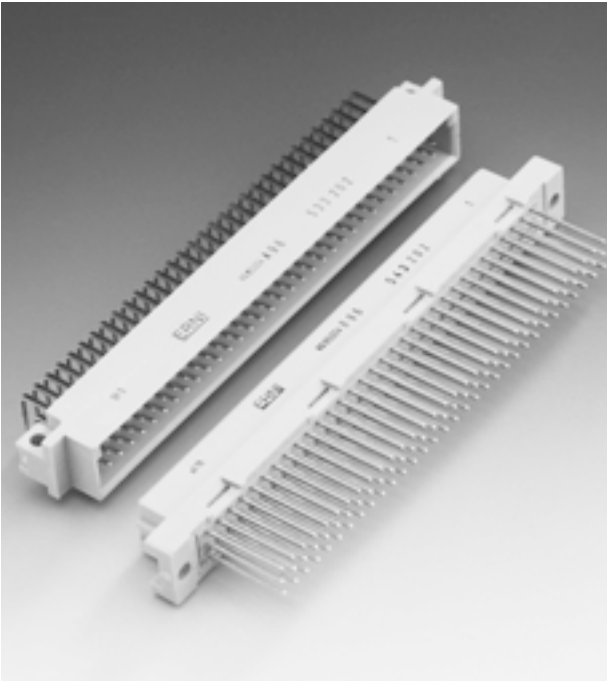
Example of an application



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

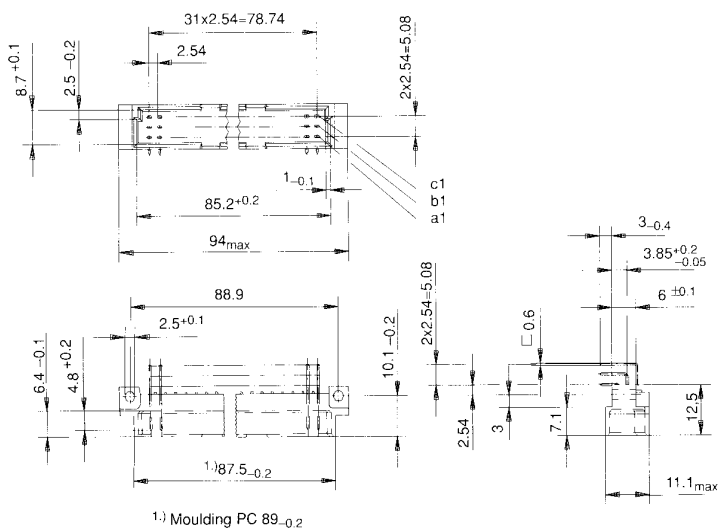
as per DIN 41612/IEC 60603-2



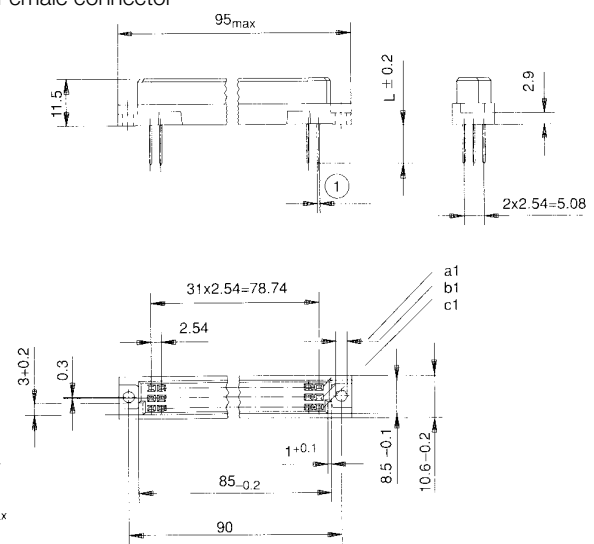
DIN 41612

Dimensional drawings

Male connector



Female connector

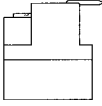
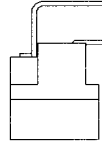
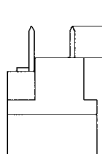
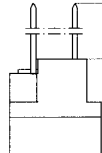
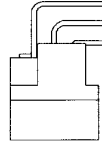
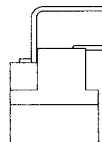
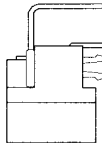


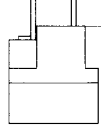
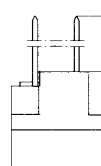
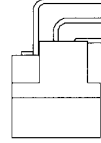
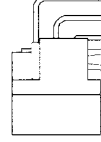
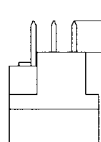
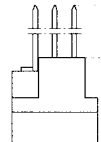
① connectors for dip soldering are available with terminations of 0.25x0.7mm or 0.6x0.6mm. Wire-wrap-terminations 0.6x0.6mm.

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

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

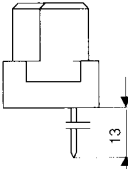
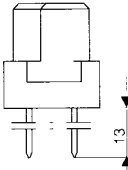
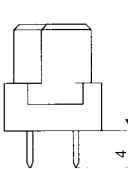
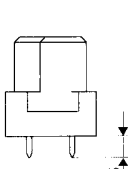
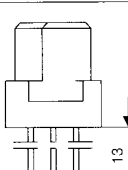
Additional versions e. g. terminations for solder eyelets available on request.

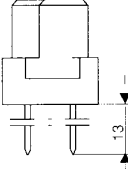
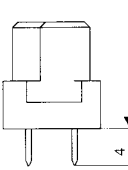
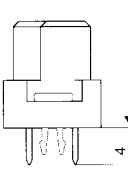
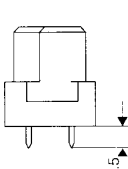


Orderings details

Female connector size C

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

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

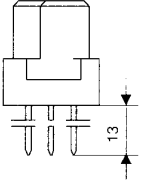
	STV-C 64-F-ac 107 207 PBT 543201 543401
	STV-C 64-F-ac <i>Termination cross section $\square$ 0.25x0.7mm</i> 107 207 PBT 594076 594834
	STV-C 64-F-ac <i>Termination cross section $\square$ 0.25x0.7mm with integral mounting pegs</i> 107 207 PBT 033590
	STV-C 64-F-ac <i>Termination cross section $\square$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

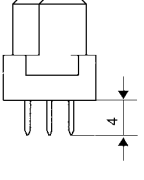
Additional versions e. g. terminations for solder eyelets are available on request.

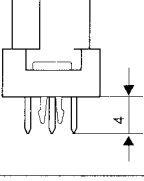
Orderings details

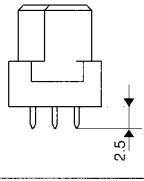
Female connector size C

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

 STV-C 96-F-abc			
		107	207
PBT	543202	543402	

 STV-C 96-F-abc Termination cross section $\square$ 0.25x0.7mm			
		107	207
PBT	594073	594833	

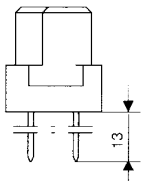
 STV-C 96-F-abc Termination cross section $\square$ 0.25x0.7mm with integral mounting pegs			
		107	207
PBT		033228	

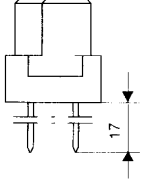
 STV-C 96-F-abc Termination cross section $\square$ 0.25x0.7mm			
		107	207
PBT	004983	003664	

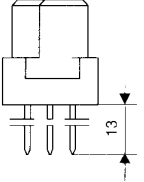
Additional versions e. g. terminations for solder eyelets and other lengths of terminations e. g. 10 mm are available on request.

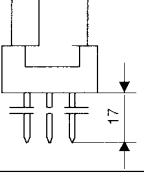
Female connector size C

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

 STV-C 64-F-ac UE ①			
		101	201
PBT		013962	

 STV-C 64-F-ac UE ①			
		101	201
PBT	593441	593405	

 STV-C 96-F-abc UE ①			
		101	201
PBT		013905	

 STV-C 96-F-abc UE ①			
		101	201
PBT	593443	593406	

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“.

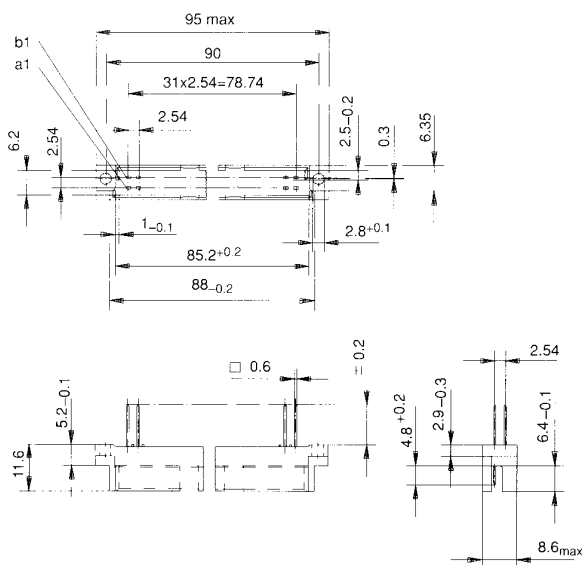
Size Q

inverse size as per DIN 41612/IEC 60603-2

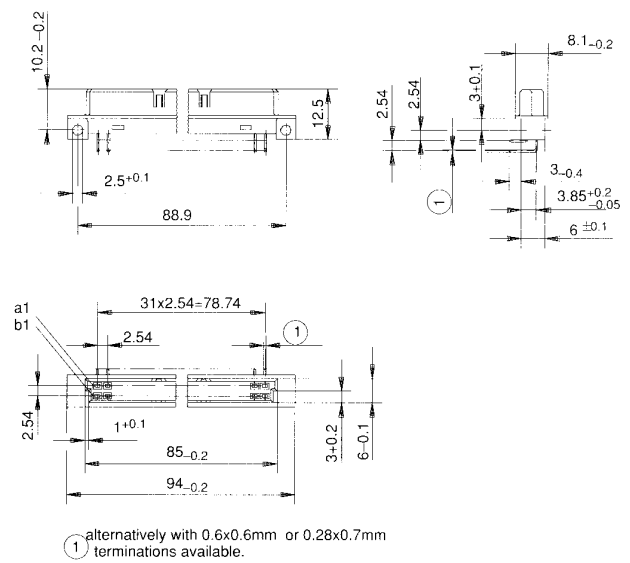


Dimensional drawings

Male connector



Female connector

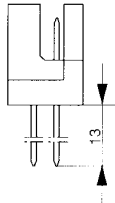
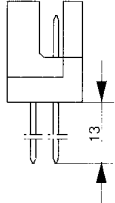


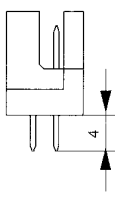
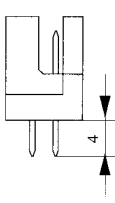


Orderings details

Male connector size Q

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

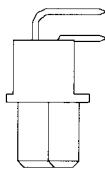
		STV-Q 32-M-ab 2,4,6...32	
		Termination cross section 0.6x0.6mm	
PBT	107	207	
	593924	593925	
		STV-Q 64-M-ab	
		Termination cross section 0.6x0.6mm	
PBT	107	207	
	593927	593928	

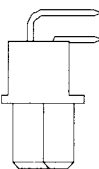
		STV-Q 32-M-ab 2,4,6...32	
		Termination cross section 0.6x0.6mm	
PBT	107	207	
	593930	593931	
		STV-Q 64-M-ab	
		Termination cross section 0.6x0.6mm	
PBT	107	207	
	593933	593934	

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 0.28x0.7mm . No cover plate, insulator on bottom side open.	
PBT	107	207	
		023038	

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

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.

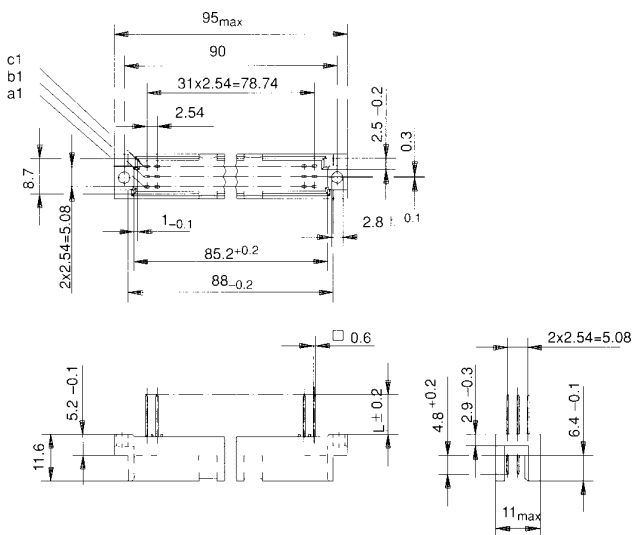
Size R

inverse size as per DIN 41612/IEC 60603-2

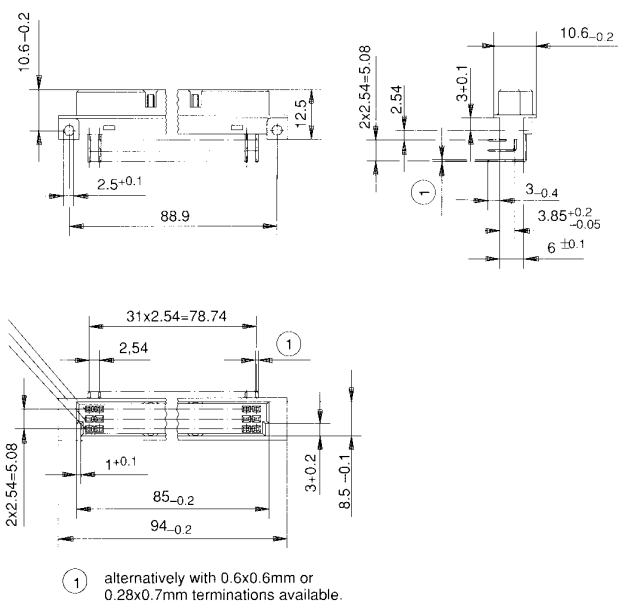


Dimensional drawings

Male connector



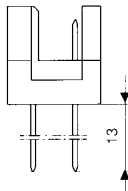
Female connector

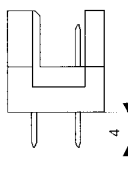


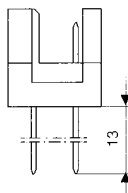
Orderings details

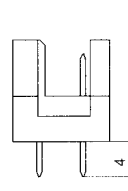
Male connector size R

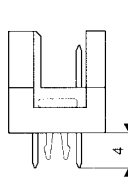
as per DIN 41612/IEC 60603-2, maximum three rows loaded, maximum 96 contacts

	STV-R 32-M-ac 2,4,6...32	
	107	207
PBT	304221	304421

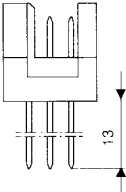
	STV-R 32-M-ac 2,4,6...32	
Termination cross section 0.6x0.6mm		
	107	207
PBT	304225	304425

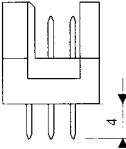
	STV-R 64-M-ac	
	107	207
PBT	334210	334410

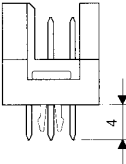
	STV-R 64-M-ac	
Termination cross section 0.6x0.6mm		
	107	207
PBT	334214	334414

	STV-R 64-M-ac	
Termination cross section 0.6x0.6mm with integral mounting pegs		
	107	207
PBT		043331

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

	STV-R 96-M-abc		
		107	207
PBT	334211	334411	

	STV-R 96-M-abc		
	<i>Termination cross section 0.6x0.6mm</i>		
		107	207
PBT	334215	334415	

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

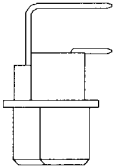
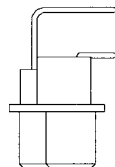
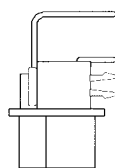
The connectors of the size R can be coded also with coding wedges. The coding positions on the male connectors are removed with a special pair of pliers. On the pertinent positions on the female connectors coding wedges are inserted.

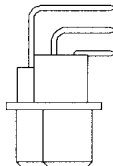
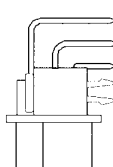
Further versions on request.

Orderings details

Female connector size R

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

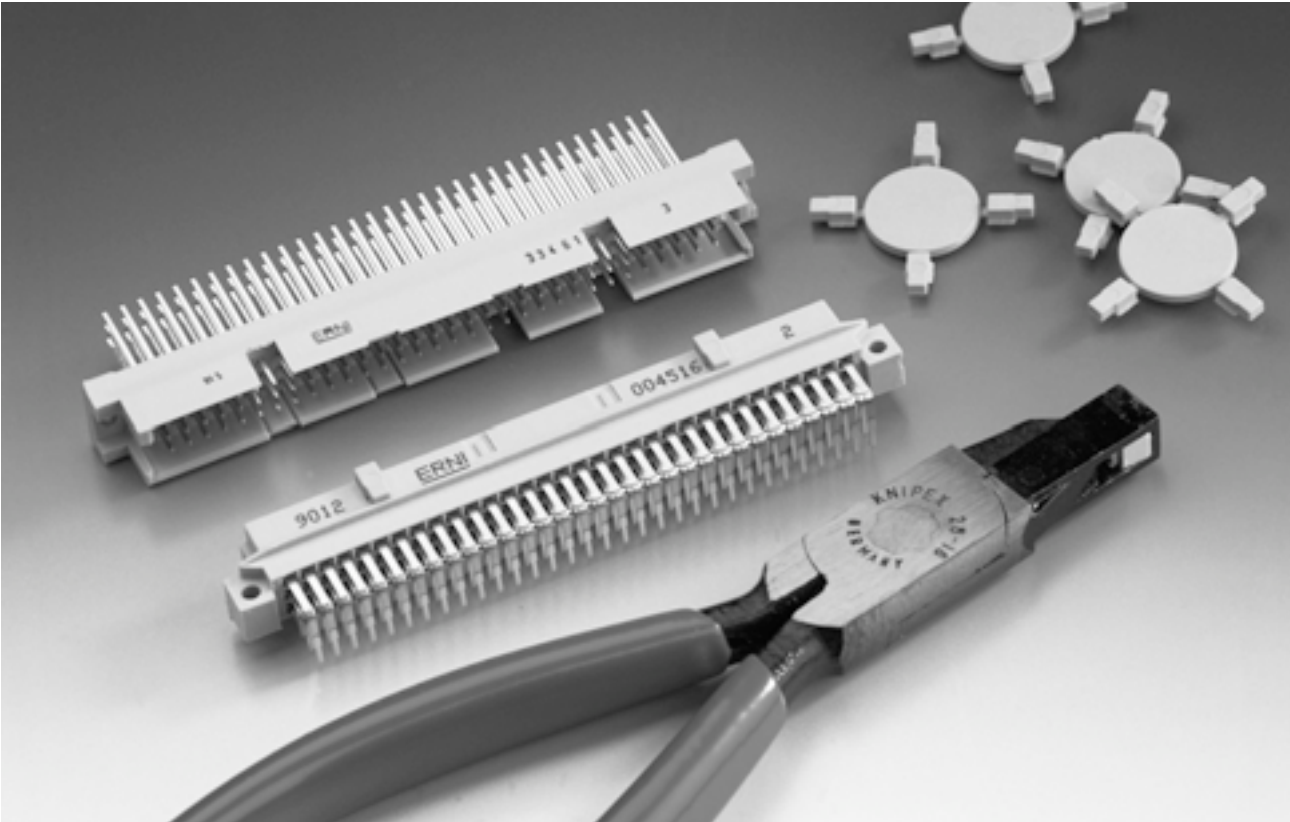
	STV-R 32-F-ac 2,4,6...32	
	Termination cross section 0.28x0.7mm . No cover plate, insulator on bottom side open.	
	STV-R 64-F-ac	
	Termination cross section 0.28x0.7mm . No cover plate, insulator on bottom side open.	
	STV-R 64-F-ac	
	Termination cross section 0.28x0.7mm . No cover plate, insulator on bottom side open. With integral mounting pegs	

	STV-R 96-F-abc	
	Termination cross section 0.28x0.7mm . No cover plate, insulator on bottom side open.	
	STV-R 96-F-abc	
	Termination cross section 0.28x0.7mm . No cover plate, insulator on bottom side open. With integral mounting pegs	

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“.

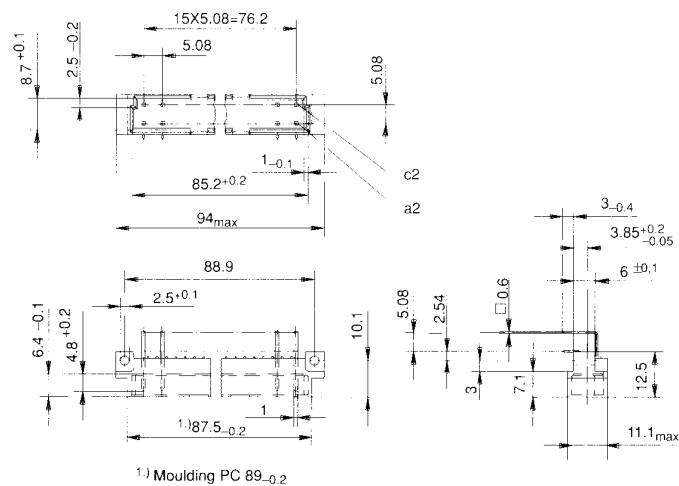
Size D

as per DIN 41612/IEC 60603-2

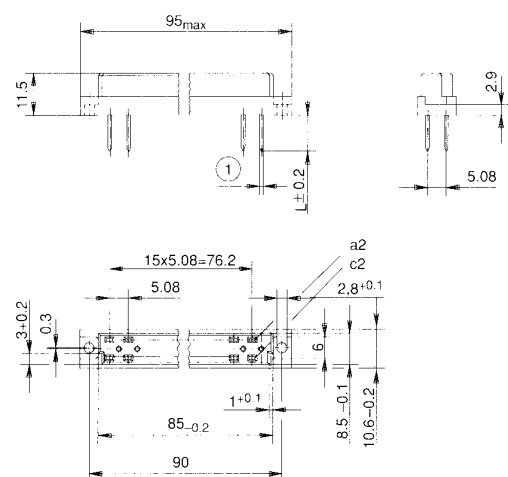


Dimensional drawings

Male connector



Female connector

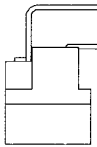


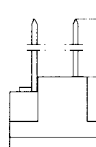
① connectors for dip soldering are available with terminations of 1x1mm or 0.6x0.6. Wire-wrap-terminations 1x1mm.

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	
		107	207
PBT		533210	533410
		STV-D 32-M-ac 2,4,6...32	
		107	207
PC		563024	563025

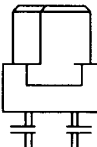
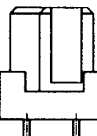
		STV-D 32-M-ac 2,4,6...32	
		101	201
PC		563021	

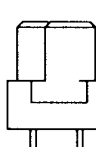
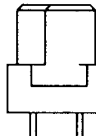
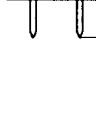
Male connectors with early make/last break contacts can be loaded in any position.

Further versions on request.

Female connector size D

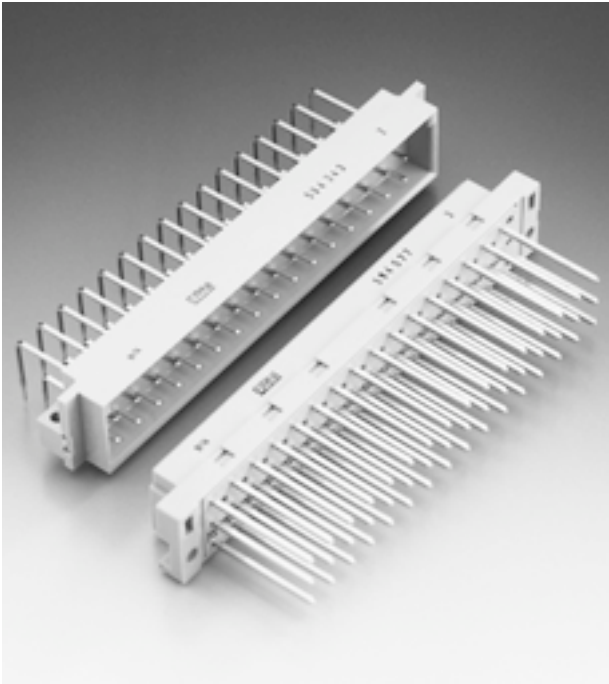
as per DIN 41612/IEC 60603-2, maximum two rows loaded, maximum 32 contacts

		STV-D 32-F-ac 2,4,6...32	
		107	207
PBT		594566	594567
		STV-D 32-F-ac 2,4,6...32	
		107	207
PBT		033426	

		STV-D 32-F-ac 2,4,6...32	
		107	207
PBT		594569	594570
		STV-D 32-F-ac 2,4,6...32	
		107	207
PBT		033428	
		STV-D 32-F-ac 2,4,6...32	
		107	207
PBT		033579	

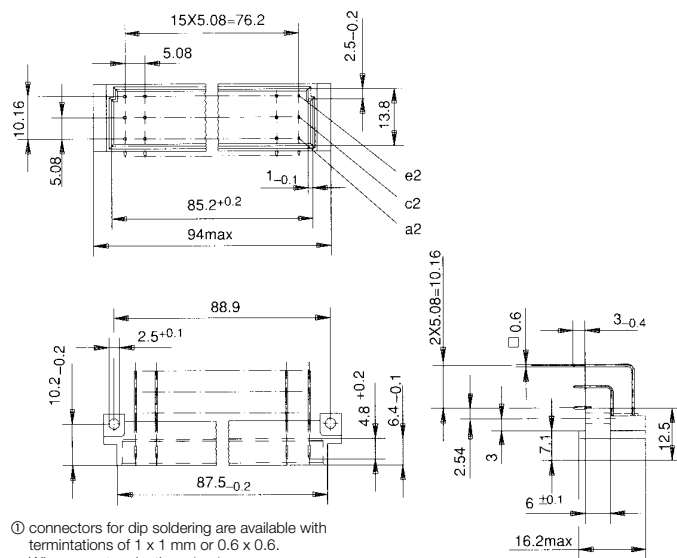
Size E

as per DIN 41612/IEC 60603-2

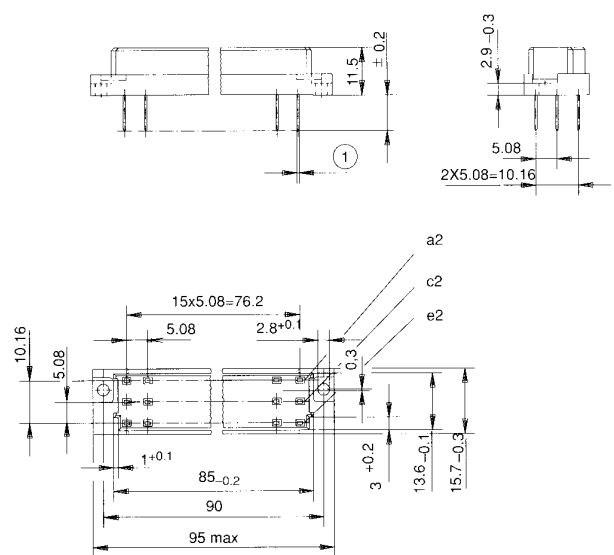


Dimensional drawings

Male connector



Female connector

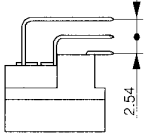


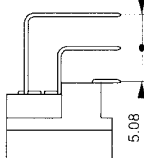


Orderings details

Male connector size E

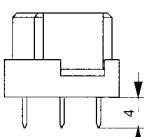
as per DIN 41612/IEC 60603-2, maximum three rows loaded, maximum 48 contacts

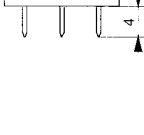
		
STV-E 48-M-ace 2,4,6...32 Grid dimension between the rows 2.54mm		
	107	207
PBT	594799	594800

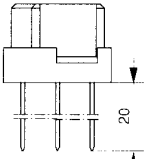
		
STV-E 48-M-ace 2,4,6...32 Grid dimension between the rows 5.08mm		
	107	207
PBT	594802	594343

Female connector size E

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

		
STV-E 48-F-ace 2,4,6...32 Termination cross section 1x1mm		
	107	207
PBT	594578	594579

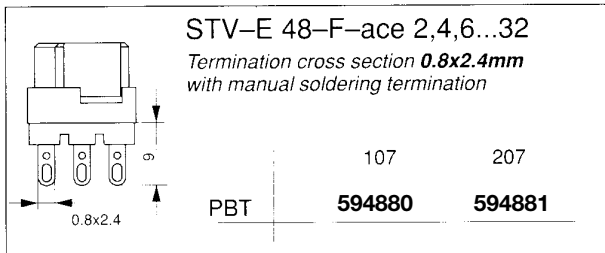
		
Termination cross section 0.6x0.6mm		
	107	207
PBT	on request	

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

Orderings details

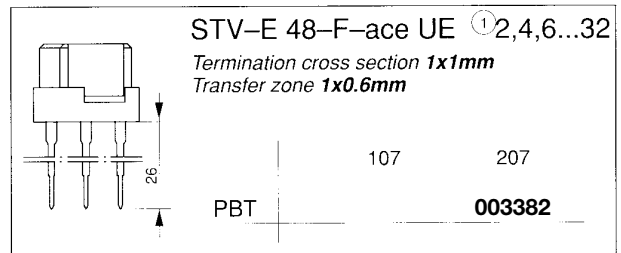
Male connector size E

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



Female connector size E

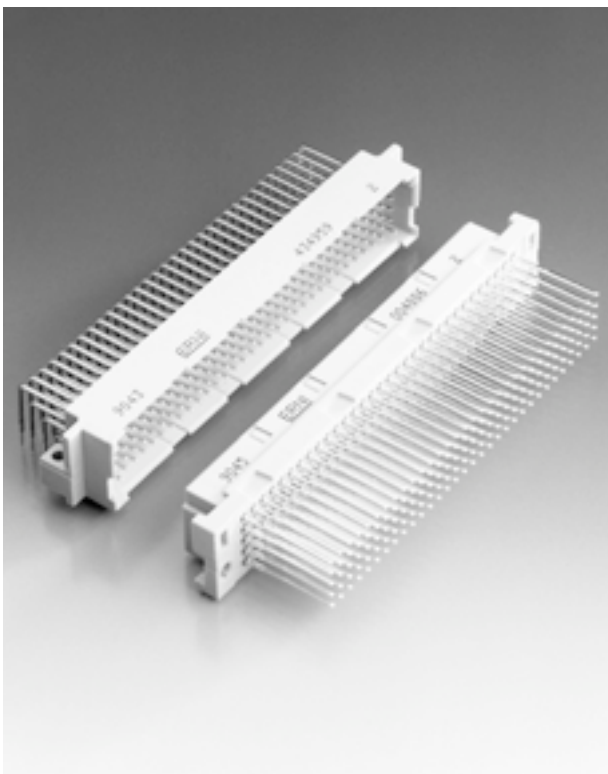
as per DIN 41612/IEC60603-2,
with gold-plated transfer zone ①



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

Further versions on request.

Addition to the range



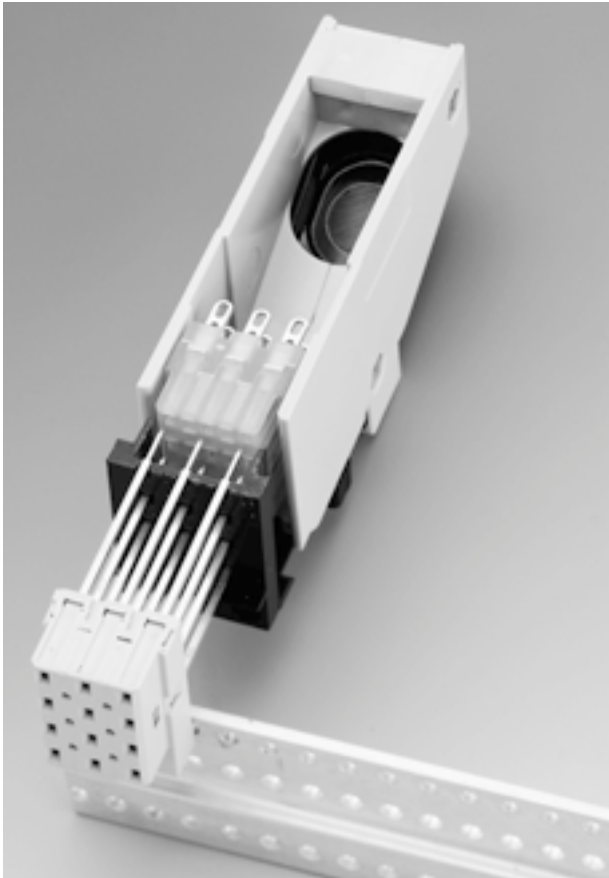
Type E connectors are fitted with contacts in the rows a, c, e in order to achieve large clearances and creepage distances. Rows b and d are not fitted with contacts in the conventional version.

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



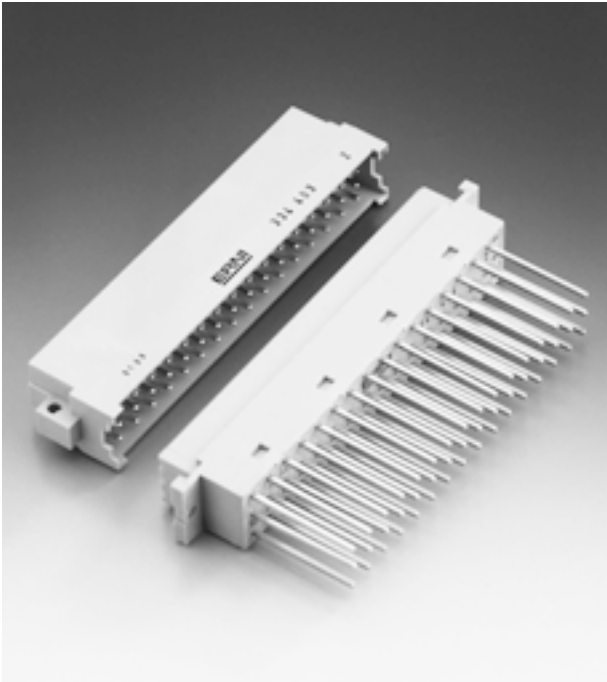
DIN 41612

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.

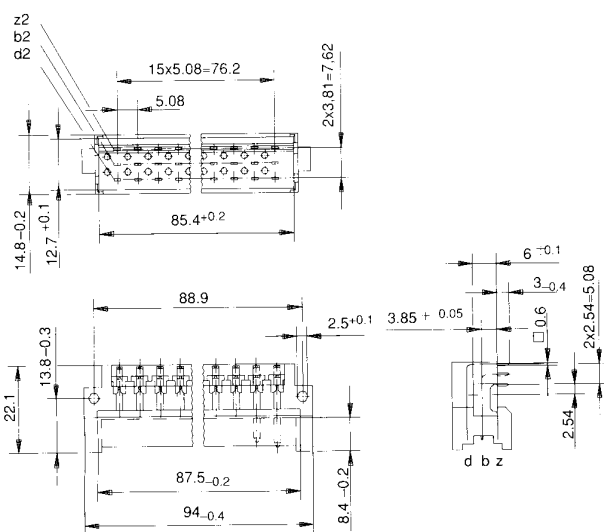
Size F

as per DIN 41612/IEC 60603-2

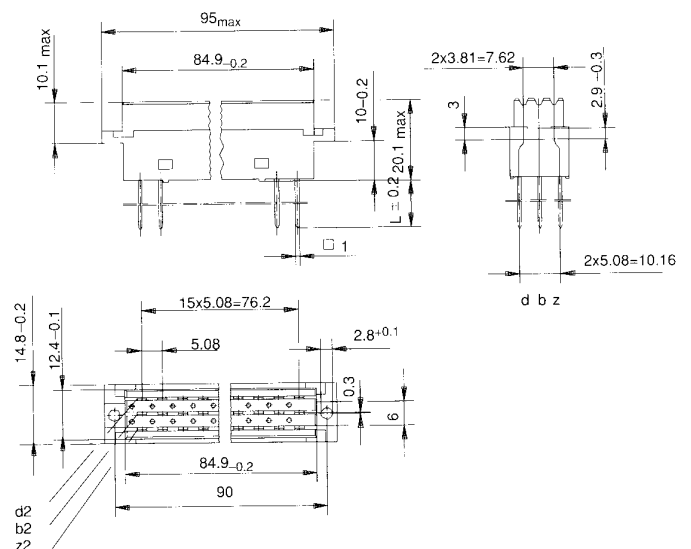


Dimensional drawings

Male connector



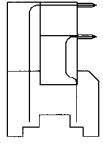
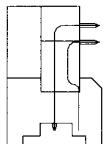
Female connector

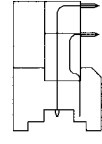
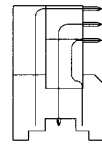


Orderings details

Male connector size F

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

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

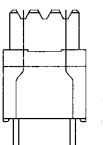
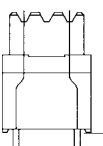
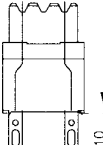
		STV-F 32-M-zb-zd 2,4,6...32 <i>Grid dimension between the row contacts area 3.81mm termination area 5.08mm</i>	
PC	107	207	
	303091	303491	
		STV-F 48-M-zbd 2,4,6...32 <i>Grid dimension between the row 2.54mm</i>	
PC	107	207	
	334203	334403	

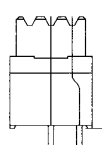
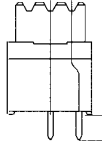
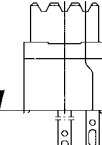
Male connectors with early make/last break contacts can be loaded in any position.

Further versions on request.

Female connector size F

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

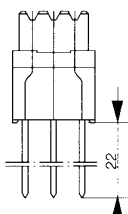
		STV-F 32-F-zd 2,4,6...32 <i>Termination cross section 1x1mm</i>	
PC	107	207	
	314204	314404	
		STV-F 32-F-zd 2,4,6...32 <i>Termination cross section 1x1mm</i>	
PC	107	207	
	314025	314425	
		STV-F 32-F-zd 2,4,6...32	
PC	107	207	
	314047	314447	

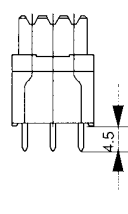
		STV-F 32-F-zb 2,4,6...32 <i>Termination cross section 1x1mm</i>	
PC	107	207	
	313289	313489	
		STV-F 32-F-zb 2,4,6...32 <i>Termination cross section 1x1mm</i>	
PC	107	207	
	314221	314421	
		STV-F 32-F-zb 2,4,6...32	
PC	107	207	
	314045	314445	

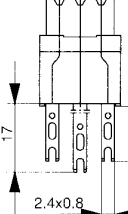
Further versions on request.

Orderings details

Female connector size F
as per DIN 41612/IEC 60603-2

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

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

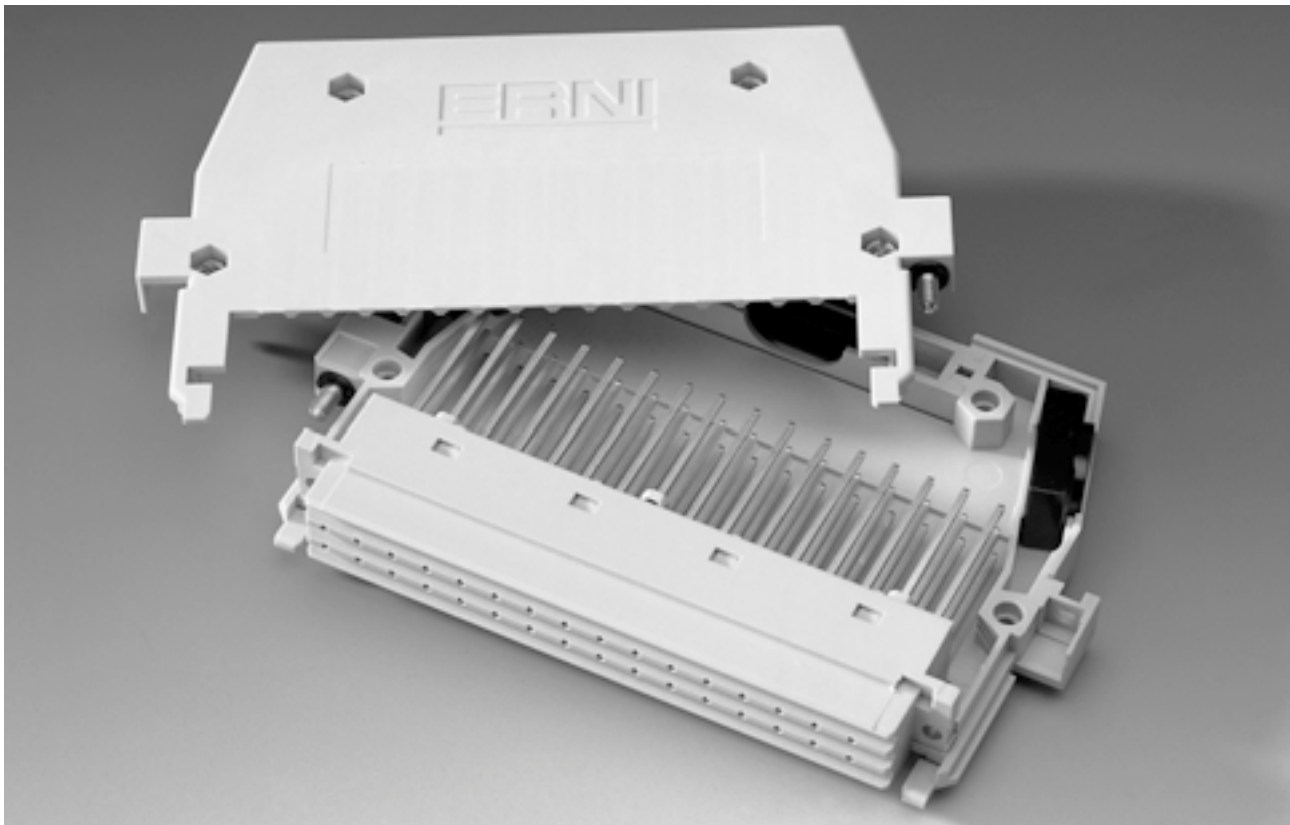
		STV-F 48-F-zbd 2,4,6...32 <i>Termination cross section 2.4x0.8mm with manual soldering termination</i>	
		107	207
PC		344251	344451

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



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.

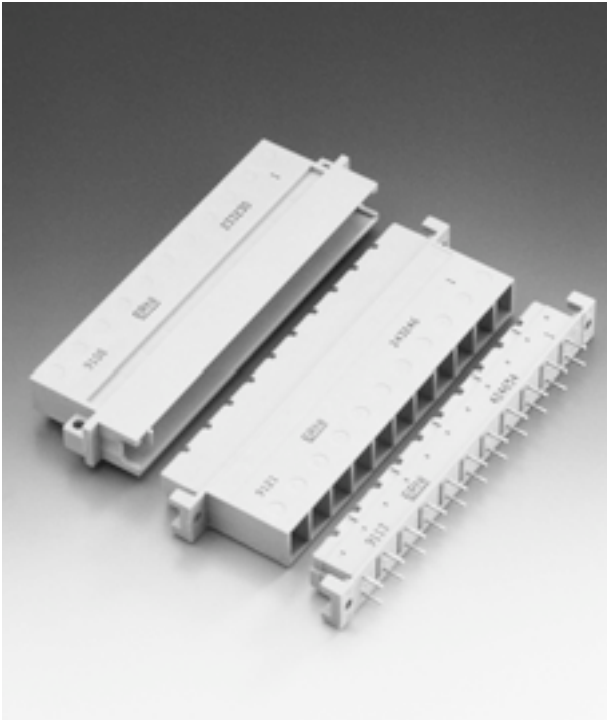
The slim design of size F connectors is maintained even when installed in an ERNI connector housing. The housings have an overall width of only 15 mm and therefore fit into the

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.

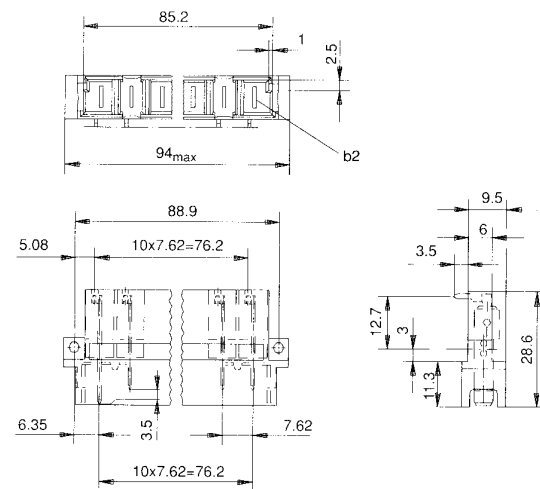
Size H11

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

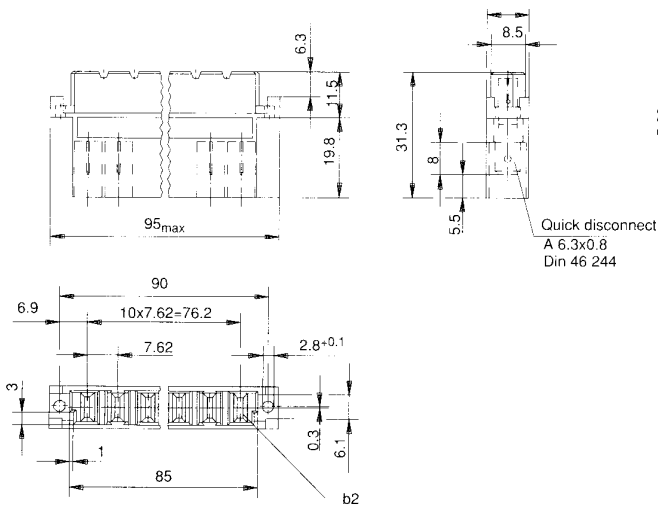


Dimensional drawings

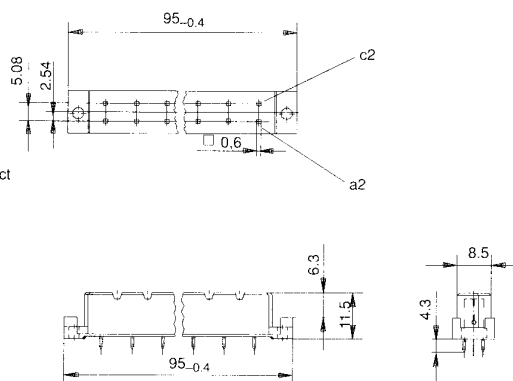
Male connector



Female connector
with quick disconnect terminations



Female connector
with dip solder terminations

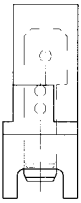
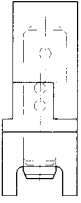
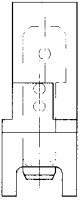


please refer to the pcb pattern on page 41

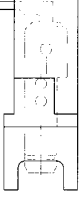
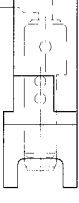
Orderings details

Male connector size H11

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

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

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

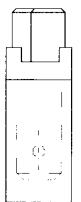
	STV-H 11-M VE 2^① <i>solder terminations can be broken off^②</i>	1	PC	233232
	STV-H 11-M VE 32^① <i>solder terminations can be broken off^②</i>	1	PC	233230
	STV-H 11-M VE 2+32^① <i>solder terminations can be broken off^②</i>	1	PC	233235

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

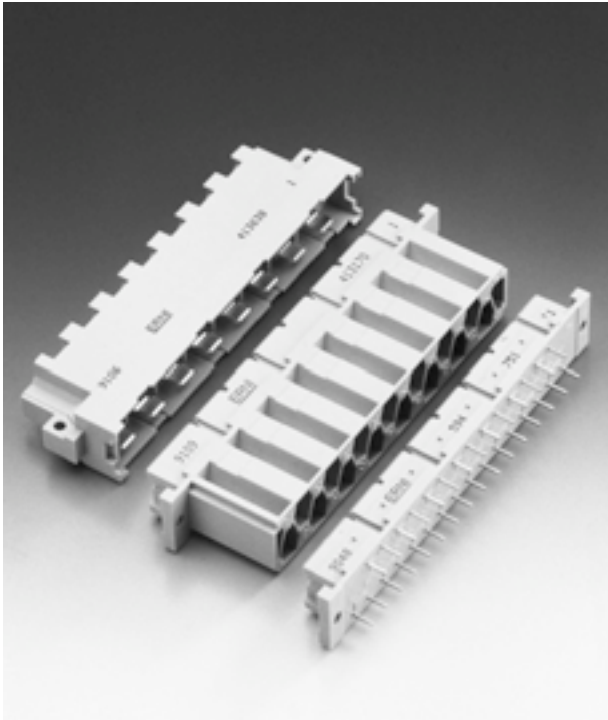
	STV-H 11-F <i>Termination 6.3x0.8mm for quick disconnect connectors</i>	1	PC	243246
---	---	---	----	---------------

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

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.

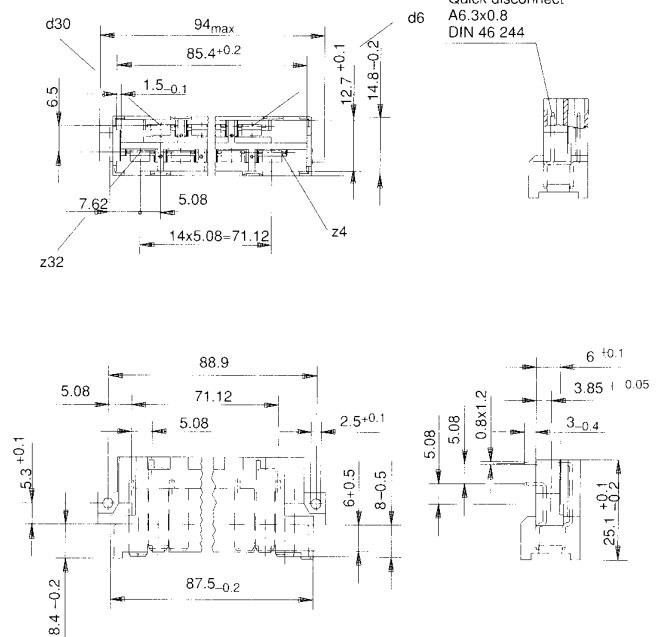
Size H15

as per DIN 41612/IEC 60603-2

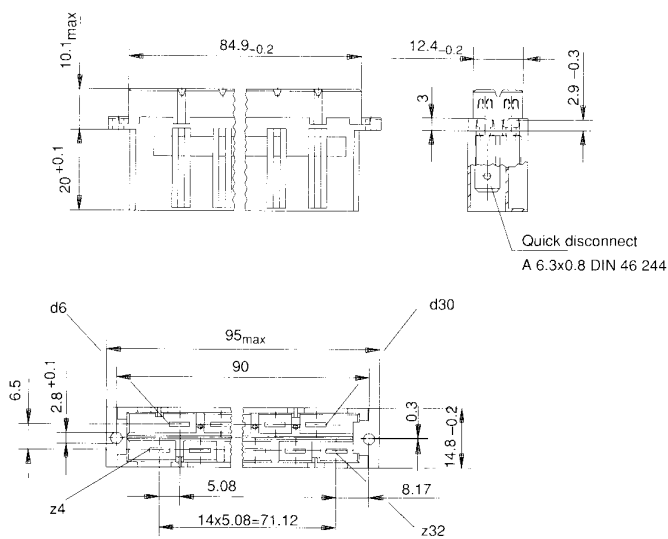


Dimensional drawings

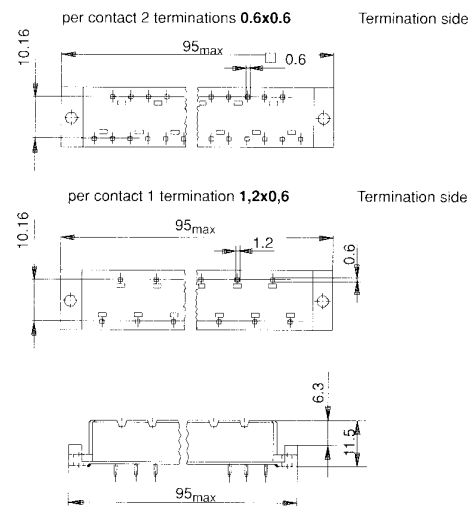
Male connector



Female connector
with quick disconnect termination



Female connector
with dip solder termination

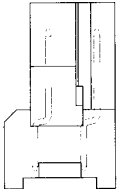
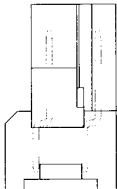
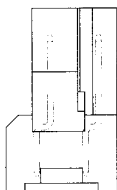


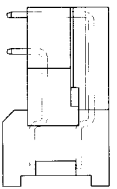
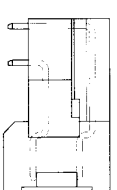
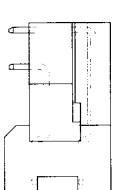
please refer to the pcb pattern on page 41

Orderings details

Male connector size H15

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

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

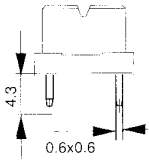
	STV-H 15-M -zd	
	PBT	
	1	413638
	STV-H 15-M-zd VE z32 ^①	
	PBT	
	1	414575
	STV-H 15-M -zd VE z4+z32 ^①	
	PBT	
	1	413169

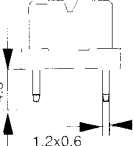
① VE...early make/last break contacts on position...
Male connectors with early make/last break contacts can be loaded in any position.

Further versions on request.

Female connector size H15

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

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

	STV-H 15-F	
	Termination cross section 1.2x0.6mm for dip soldering	
	PBT	1 594750

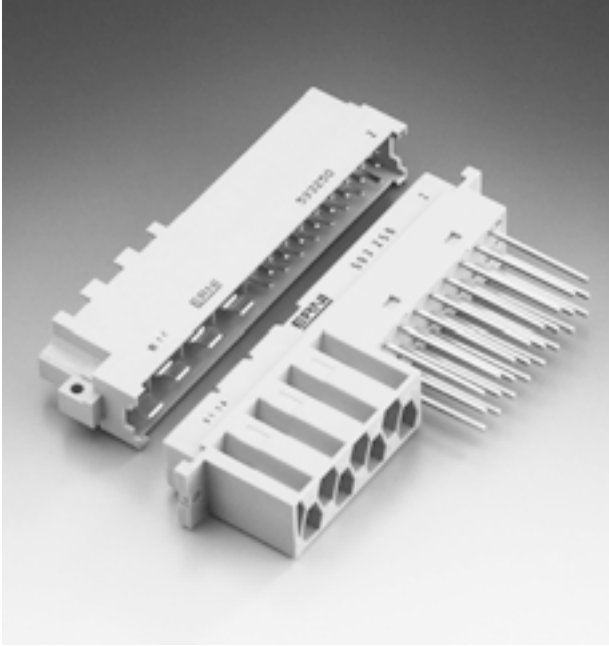
The contacts of the size H15 are hard silver plated and correspond to the electrical and mechanical life span of the performance level 1.

Further versions on request.

Size H7/F24

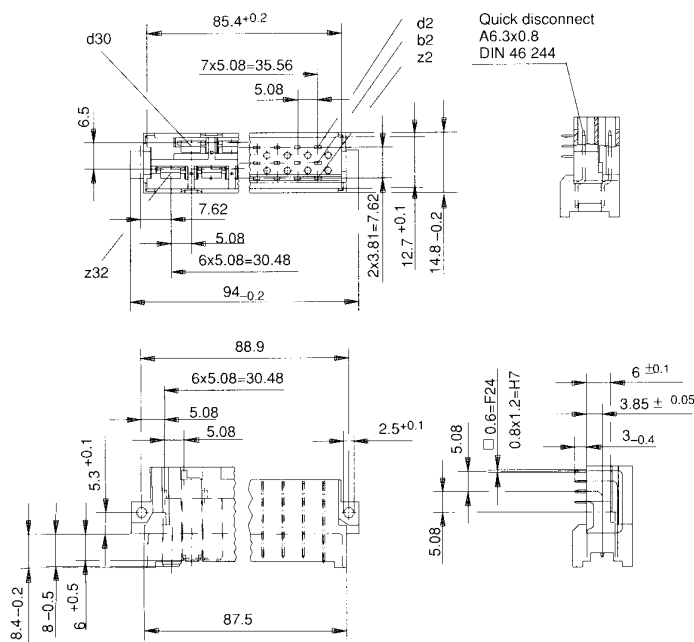
Combined connector

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

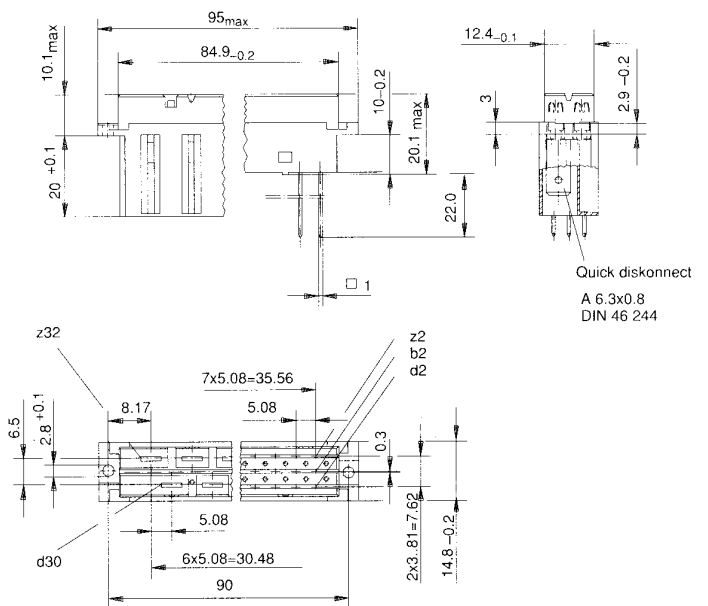


Dimensional drawings

Male connector



Female connector



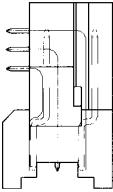


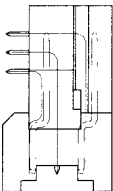
Orderings details

Male connector size H7/F24

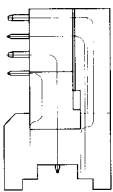
Combined connector

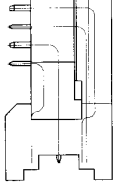
Mating-and mounting-conditions according to DIN 41612/IEC 60603-2

		STV-H 7/F24-M 7 terminations 6.3x0.8mm for quick disconnect 24 terminations for dip soldering	
PC	1	2	
	413639	593252	

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

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

		STV-H 7/F24-M 7 terminations 6.3x0.8mm for quick disconnect 24 terminations for dip soldering	
PC	1	2	
	413640	593254	

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

Further versions on request.

Female connector size H7/F24

Combined connector

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

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

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.

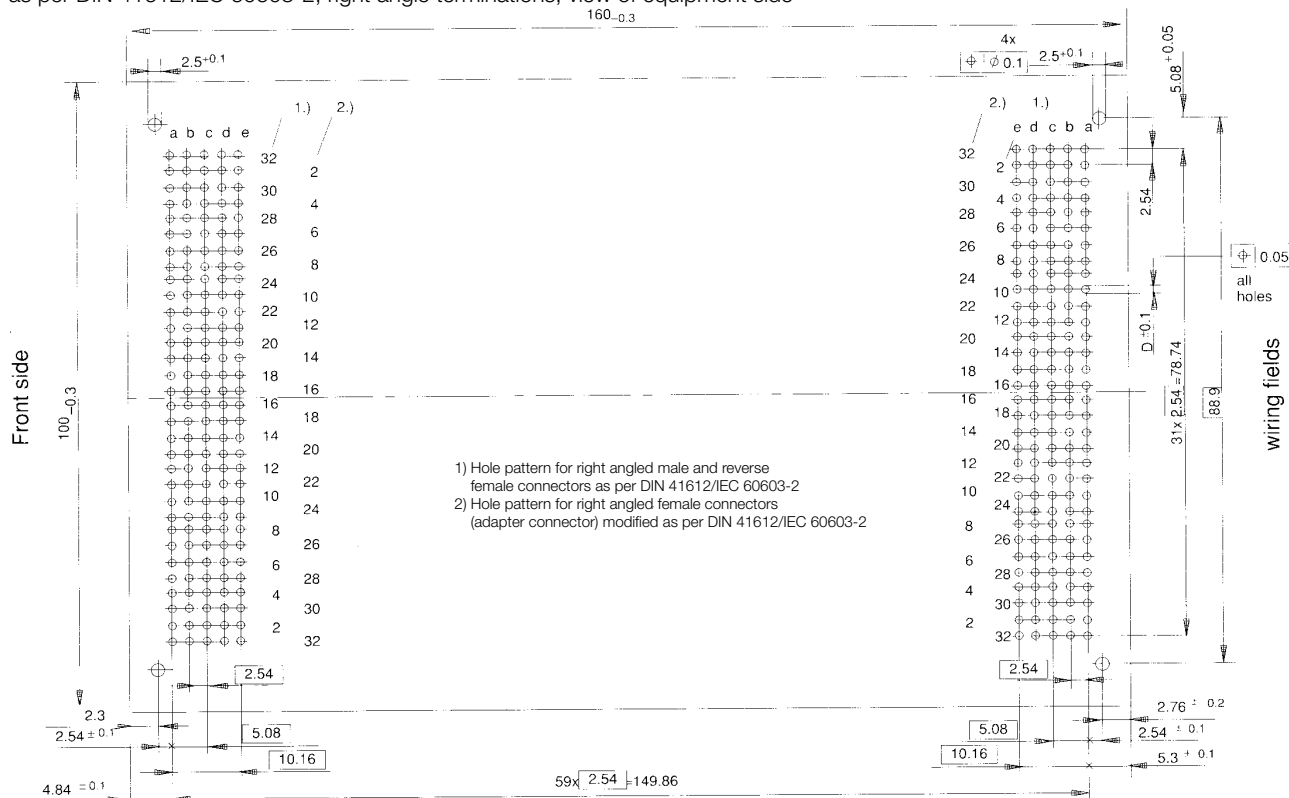
The 7 high-current contacts of H7/F24 connectors are hard silver-plated and their electrical and mechanical service life conforms to Performance Level 1. The 24 low level signal contacts are as described for size F. They are gold-plated in the mating zone in accordance with the stated Performance Level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

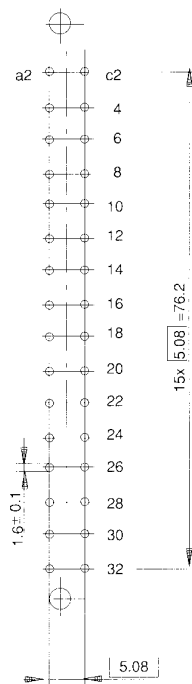
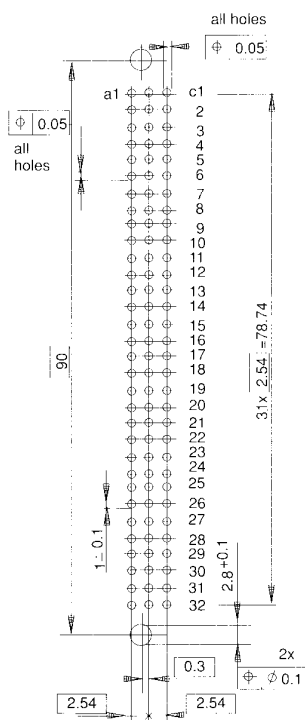
Male size R

Female size D

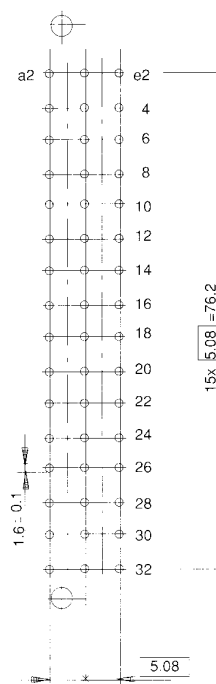
Female size E

Female size F

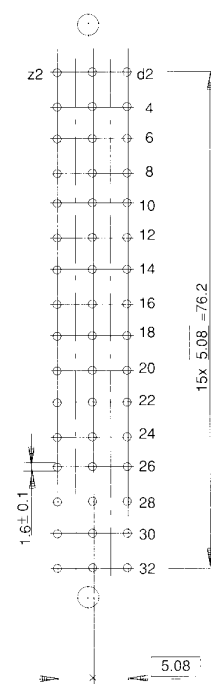
Hole pattern 1



remaining dimensions
as per hole pattern 1



remaining dimensions
as per hole pattern 1



remaining dimensions
as per hole pattern 1

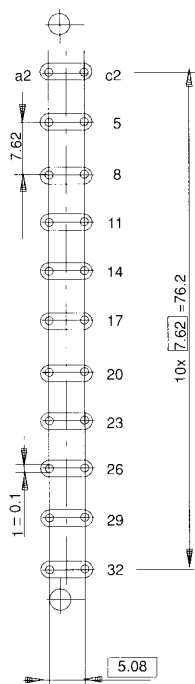
① For the sizes B and Q the rows a and b are required only.

Mounting hole pattern, PCB

Male – and female connectors

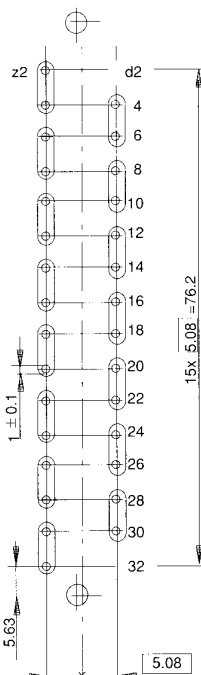
as per DIN 41612/IEC 60603-2, with straight terminations, view of equipment side

Female size H11



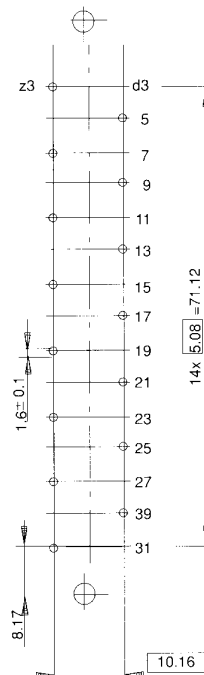
remaining dimensions
as per hole pattern 1

Female size H15
per contact 2 terminations



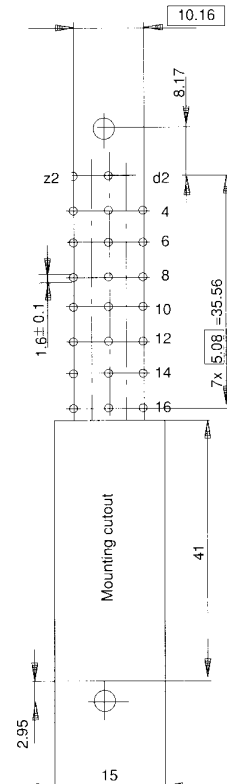
remaining dimensions
as per hole pattern 1

Female size H11



remaining dimensions
as per hole pattern 1

Female size H15
per contact 2 terminations

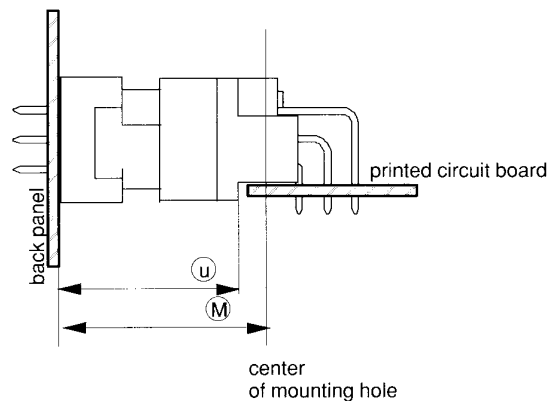


remaining dimensions
as per hole pattern 1

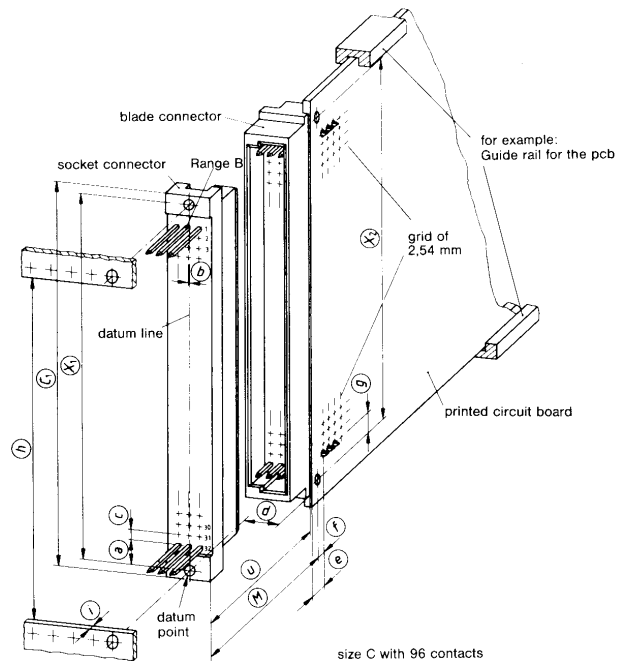
Mating conditions (overlapping security)

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 $\textcircled{U}$ =12.4 mm till 14.2 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



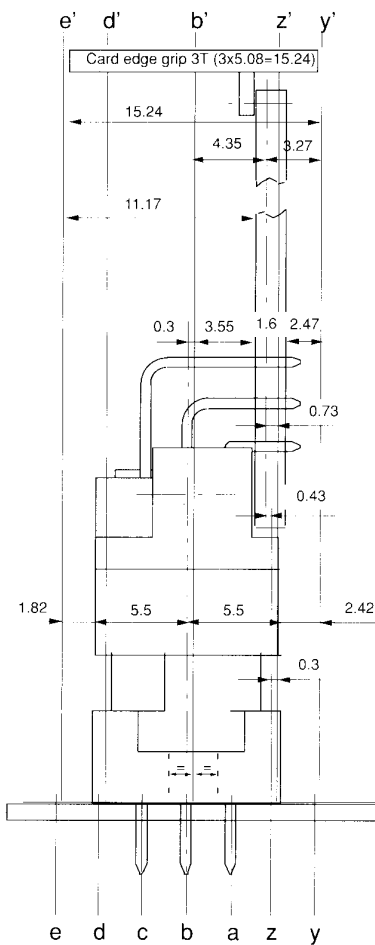
Important dimensions

Letter of dimension	Dimensions mm	Explanation
(C ₁)	95	Maximum length of the connector assigned to the back panel
(M)	15.5 bis 17,3	Mating zone for reliable contact making
(X ₁)	90	Distance between the mounting holes of the connector assigned to the back panel
(X ₂)	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

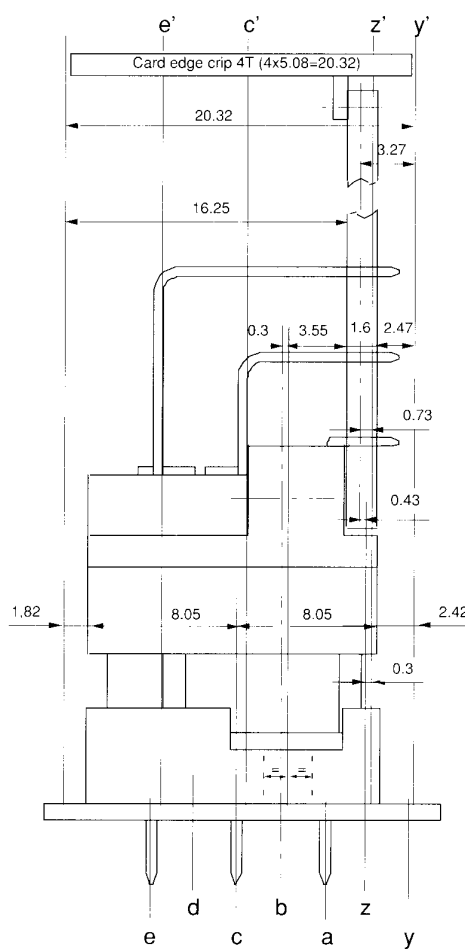
Mounting dimensions of the connectors

in the module spacing of the 19" rack system

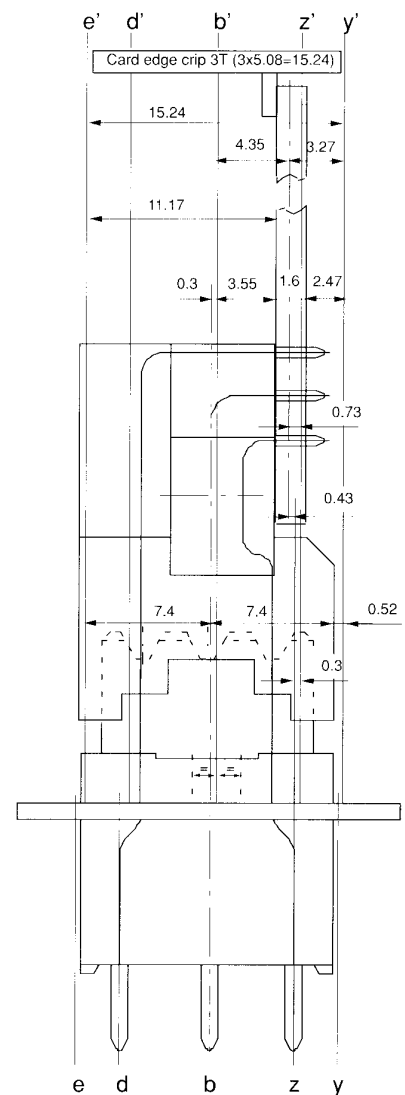
Exact position of the connectors
in the **size C** module spacing



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.

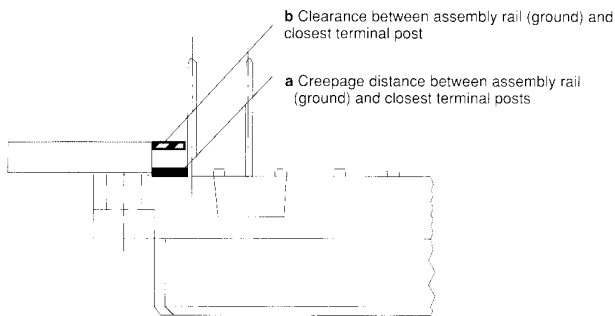
The mounting dimensions shown for size F connectors
illustrates how the width of 3 x 5.08 mm is maintained by
means of the pitch offset between mating side and soldering
side. Thus size F connectors can still be mounted in the
3 x 5.08 mm module.

Clearances and creepage distances

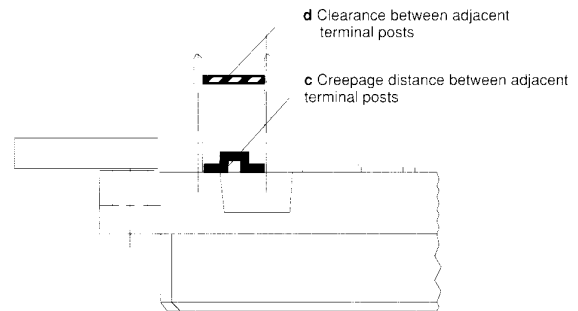
for DIN 41612/IEC 60603-2 male and female connectors

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