

Trapezoidal-Connectors Series TMC

Subminiature-D Connectors

to DIN 41 652/IEC 807-3



General

Series **TMC** connectors are available in 5 different housing sizes with 9, 15, 25, 37 and 50 pins. In applications these connectors are frequently used for interface connections.

Owing to the various sizes of housing series TMC connectors match virtually any application.

Wires can be connected by manual soldering, insulation displacement and crimping. For use on PC boards there are versions with straight or angled pins for machine soldering. For versions with straight pins there is also the solderless press-fit technique (ERNIPRESS).

You can find ordering details for connectors with crimp termination and ERNIPRESS on separate data sheets.

Accessories

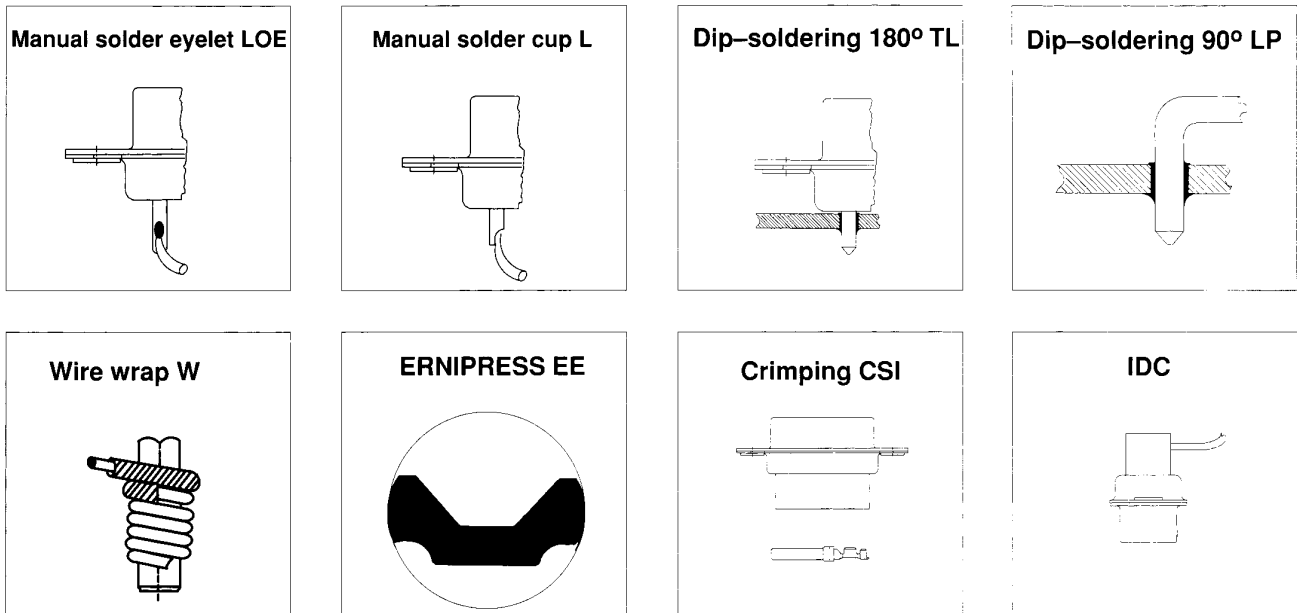
For series TMC connectors ERNI has a wide range of accessories available.

No matter whether the important criterion is easy assembly, different types of mounting, electromagnetic compatibility, locking devices or connector housings, you will find attractive solutions at ERNI.

Main features

- Indirect mating system
- International approval certificates such as UL and CSA
- 5 housing sizes with 9, 15, 25, 37 and 50 pins
- Accessories integrated into the connector
- Tinned metal housing
- Laminated ground contact on the male housings for optimal screening
- 3 different connector housing types available
- Various types of termination available
- Solid contacts on the male connectors with tinned manual soldering termination

Termination



For **ERNIPRESS**, crimping and insulation displacement (**IDC**) there are separate data sheets available.

Performance Levels

207 to DIN 41 652/IEC 807-3
MIL-C-24308, CCTU 08-14
and IEC-Recommendation 48 B
200 mating cycles
Contact zone gold-plated
terminal zone tinned

201 as for version 207 but
terminal zone gold-plated

107 to DIN 41 652/IEC 807-3
MIL-C-24308, CCTU 08-14
and IEC-Recommendation 48 B
500 mating cycles
Contact zone gold-plated
terminal zone tinned

101 as for version 107 but
terminal zone gold-plated

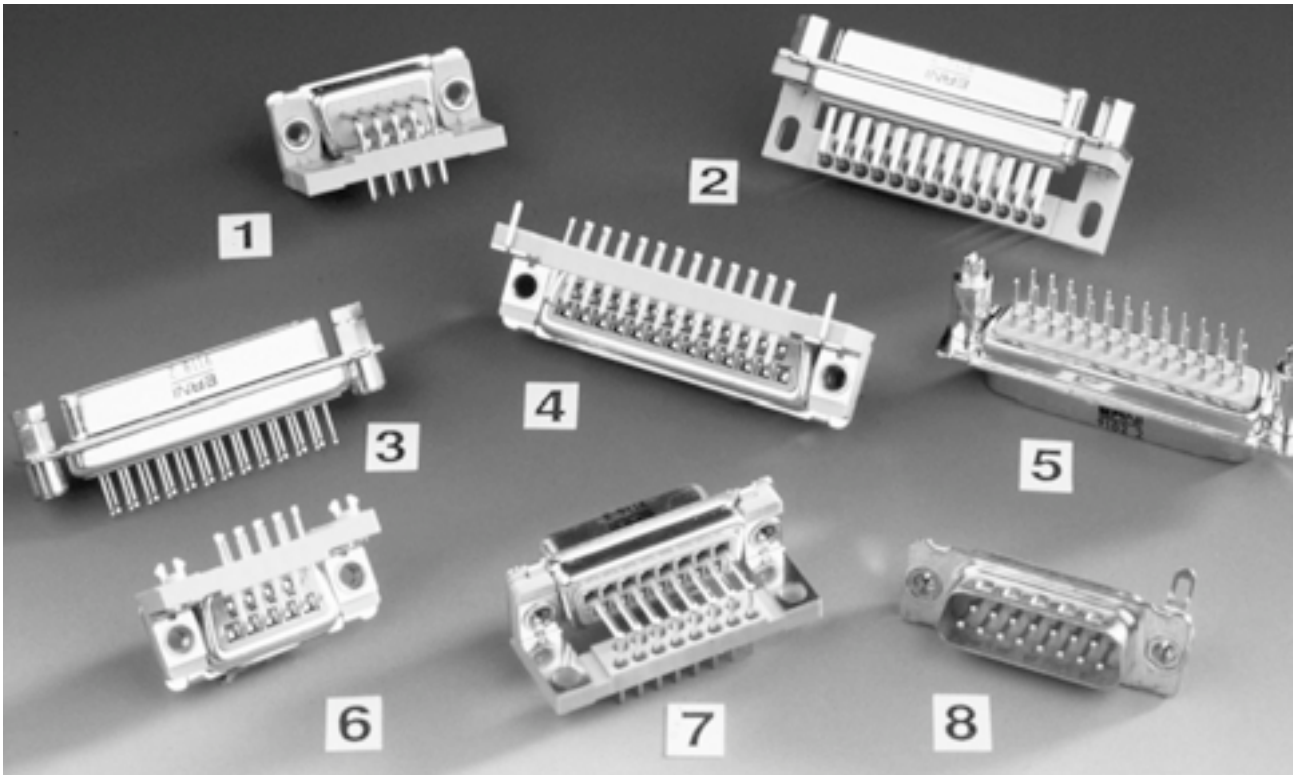
Performance level **107** and **101** connectors are available on request.

Approval Certificates

UL All male and female connectors from this data sheet are approved by the American certification authority „Underwriters Laboratories Inc.“.
File no. E 84703

CSA All types are listed by the Canadian certification authority „Canadian Standards Association“.
File Nr. LR 62503 and LR 62504.

Integrated Accessories



Riveted nut (see fig. 1)

On the version with riveted nut there is a nut riveted into the mounting flanges of the connector so that it cannot twist. The thread is available as a M3 and 4/40" version. This facilitates fitting into housings or front panels.

Threaded bolt (see fig. 2)

To ensure secure connector locking, a screw locking device is frequently used with threaded bolts. TMC connectors from ERNI are available with riveted threaded bolts. These hexagon bolts are available with internal threads of M3 and 4/40". For the user it means there is no need for loose accessories.

Spacer bolt (see fig. 3)

Due to the design of the TMC connectors a spacer is required for vertical assembly on pc boards. These parts are supplied by ERNI as individual accessories.

Ground pin (see fig. 4)

The additional ground pin is designed for connecting up to the pc board chassis contact for example.

Spacer bolt with mounting clip (on request)

(see fig. 5)

These spacer bolts can be snapped into the mounting holes on the pc board. If the holes are plated-through there will also be a solder joint.

Ground clip (see fig. 6)

For screening contact there are angled ERNI TMC connector ground clips available. These clips are soldered into the mounting holes on the pc board, thus creating a firm chassis connection.

Ground bar (see fig. 7)

Ground bars on angled connectors are attached to the guide frame on the pc board. This makes it possible to make connection with chassis conductors on the pc board.

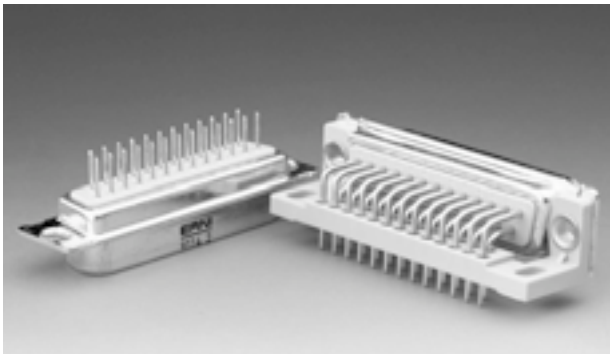
Ground eyelet (on request) (see fig. 8)

With the ground lug the chassis contact can be soldered on.



Tinned metal housings and laminated ground contacts

The metal housings on the TMC connectors (standard versions) from ERNI are tinned so as to achieve better contact for the chassis connection. Specially punched grooves on the metal protective collar of the male connectors ensure reliable contact. Together with the ERNI connector housings in the metallized version and grounding accessories on the connectors an optimal electromagnetically compatible application is achieved.



Solid punched male contacts

Due to a special manufacturing process we are in a position to offer solid punched male contacts. These versions have a tinned terminal zone and are suitable for a current-carrying capacity of up to 7.5 A.

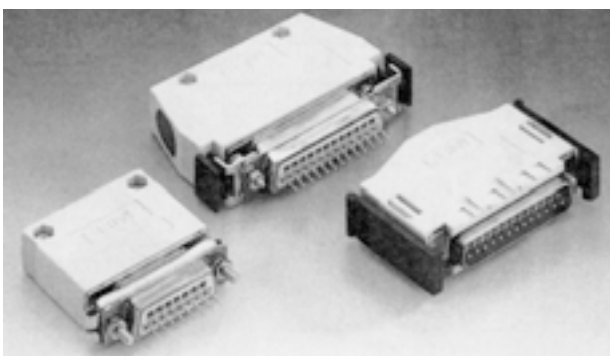


Guide frame for angled connectors

For mounting purposes and better guidance of angled TMC connectors with pins for dip-soldering the standard versions are equipped with a guide frame made of plastic.

With this guide frame the connectors can be screwed or riveted onto pc boards.

Versions with a guide frame and mounting clip are clipped into the pc boards and soldered in place.



Connector housings for TMC connectors

ERNI has also developed connector housings for series TMC interface connectors.

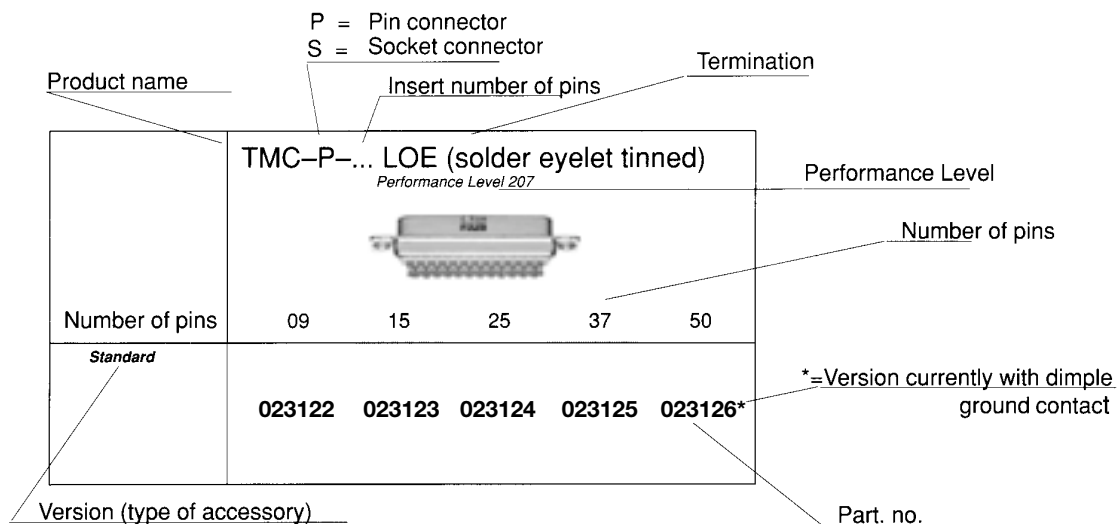
- **KSG 183 housing with engagement locking**
- **KSG 184 housing with slide locking**
- **KSG 185 housing with engagement and/or screw locking, integrated coding**

These two-shell connector housings are also available in metallized versions. Together with the ERNI TMC connectors, which have laminated ground contacts, screening is optimized.

Electrical and mechanical data

Versions	TMC-male connectors to Performance Levels 207 and 201	TMC-female connectors to Performance Levels 201	TMC-female connectors to Performance Level 207
Numbers of pins	2-rows of 9, 15, 25, 37 and 3-rows of 50 contacts		
Temperature range	-65°...+125° C		
Permissible humidity	Annual average ≤ 80%, max. 100%		
Creepage and clearance	≥ 1,0 mm		
Working current	7,5 A max.		5 A max.
Test voltage	1250 V _{rms}		1000 V _{rms}
Contact resistance	≤ 2,5 mΩ		≤ 10 mΩ
Insulation resistance	≥ 10 ¹⁴ Ω		
Shock and vibration proofness	No discontinuity at 20 g and 10...2000 Hz		
Shock proofness	up to 50 g		
Metal protective collar	Tinned steel MR St 4, 1+1 μm Ni, 8±2 μm SN		
Moulding	PBT 30% GV		
Inflammability of the plastic	Non flammable as per UL 94 V-0		
Comperative creepagefigure to DIN IEC 112 for PBT	CTI 275 / CTI 175 M		
Service life	Performance Level 2 ≥ 250 mating-cycles		
Contact force perfemale element	0,4 N		

Example of how to order



Dimension tables

Pin connectors (P)

Number of pins	A ±0,3	B (P) +0,2	C ±0,2	D (P) +0,2	E ±0,3	F ±0,2	G +0,3	H ±0,3	J ±0,2	K max.	L max.	M ±0,2
9	30,8	16,8	25	8,3	12,5	10,8	5,8	19,3	10,8	1,5	1,1	7,2
15	39,1	25,1	33,3	8,3	12,5	10,8	5,8	27,5	10,8	1,5	1,1	7,2
25	53	38,9	47	8,3	12,5	10,8	5,8	41,3	10,8	1,5	1,1	7,2
37	69,3	55,3	63,5	8,3	12,5	10,8	5,8	57,7	10,8	1,5	1,1	7,2
50	67	52,7	61,1	11,0	15,4	10,8	5,8	55,3	13,6	1,5	1,1	8,7

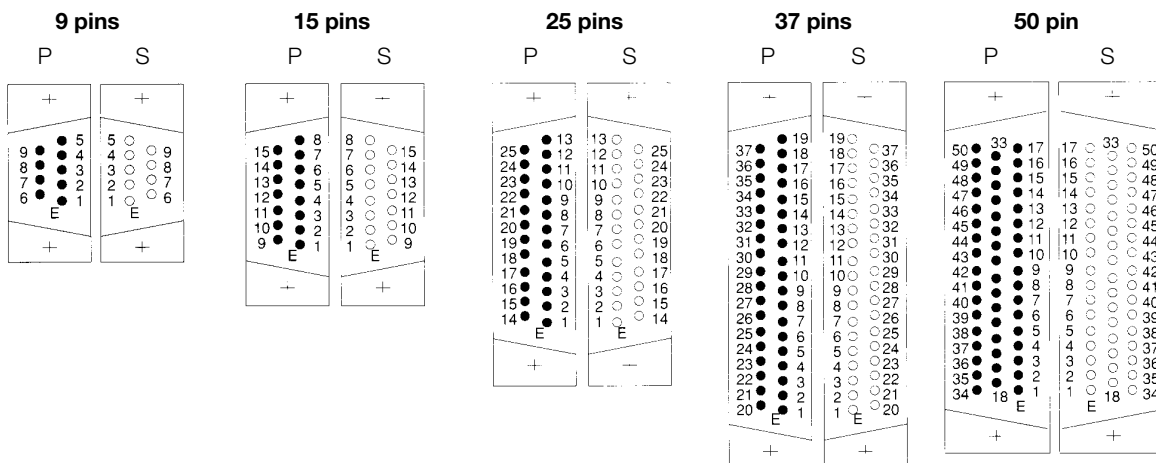
Socket connectors (S)

Number of pins	A ±0,3	B (S) -0,2	C ±0,2	D (S) -0,2	E ±0,3	F ±0,2	G -0,3	H ±0,3	J ±0,2	K max.	L max.	M ±0,2
9	30,8	16,4	25	8,0	12,5	11,0	6,3	19,3	10,8	1,5	1,1	7,2
15	39,1	24,7	33,3	8,0	12,5	11,0	6,3	27,5	10,8	1,5	1,1	7,2
25	53	38,5	47	8,0	12,5	11,0	6,3	41,3	10,8	1,5	1,1	7,2
37	69,3	54,9	63,5	8,0	12,5	11,0	6,3	57,7	10,8	1,5	1,1	7,2
50	67	52,5	61,1	10,8	15,4	11,0	6,3	55,3	13,6	1,5	1,1	8,7

Termination for the versions listed in this data sheet

- Loe = Solder eyelet tinned (male connector)
- L = Solder cup
- TL = Straight solder pin termination for print assembly
- LP = Angled solder pin termination for print assembly (with and without guide frame)
- W = Wire-wrap termination

Contact identification (wiring side)

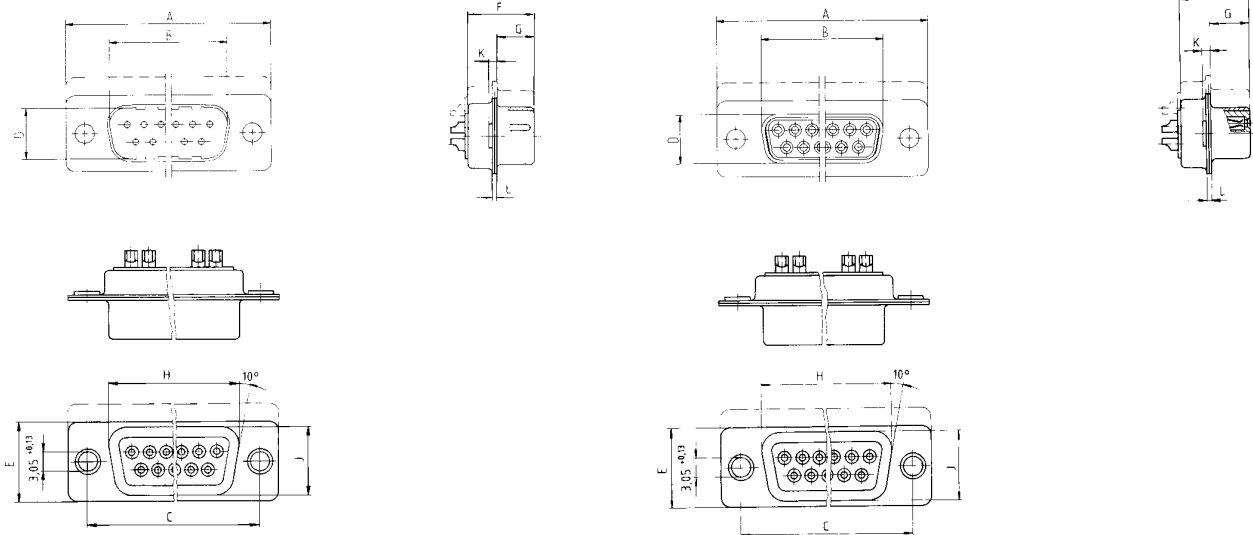


TMC with manual soldering termination




Dimensional drawings

Male connector

Female connector

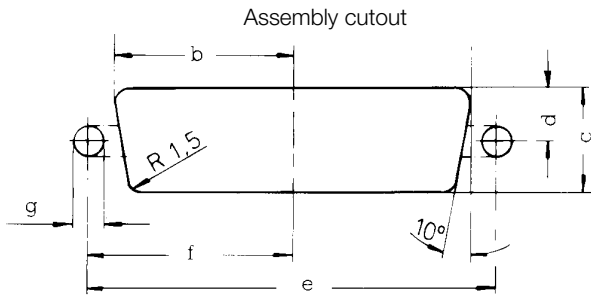


Ordering details

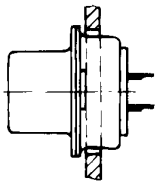
		Female connectors				
		TMC-S-....L (solder cup tinned) <i>Performance Level 207</i>				
						
Number of pins		09	15	25	37	50
<i>Standard</i>		<i>Standard version</i>				
		004617	004620	004613	004926	004615
	TMC-P-....L (solder cup gold-plated) <i>Performance Level 207</i>	TMC-S-....L (solder cup gold-plated) <i>Performance Level 207</i>				
						
Number of pins	09 15 25 37 50	09	15	25	37	50
<i>Standard</i>	<i>Standard version</i>	<i>Standard version</i>				
	023127 023128 023129 023130 023131*	004125	013522	013635	004633	013844

Assembly details

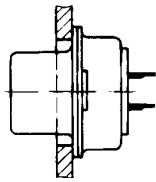
TMC with manual solder termination



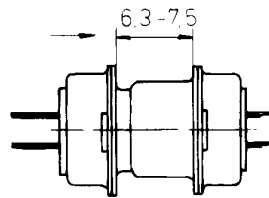
Front assembly



Rear assembly



Zone of reliable contact

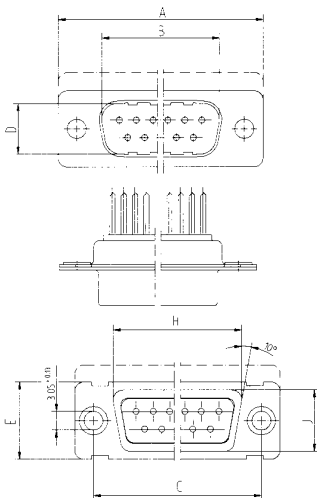


Number of pins	Assembly	a $\pm 0,13$	b $\pm 0,13$	c $\pm 0,13$	d $\pm 0,13$	e $\pm 0,1$	f $\pm 0,1$	g $\pm 0,1$
9	Front	22,2	11,1	13,0	6,5	25	12,5	3,1
	Rear	20,5	10,25	11,4	5,7			
15	Front	30,5	15,25	13,0	6,5	33,3	16,65	3,1
	Rear	28,8	14,4	11,4	5,7			
25	Front	44,3	22,15	13,0	6,5	47	23,5	3,1
	Rear	42,5	21,25	11,4	5,7			
37	Front	60,7	30,35	13,0	6,5	63,5	31,75	3,1
	Rear	59,1	29,55	11,4	5,7			
50	Front	58,3	29,15	15,8	7,9	61,1	30,55	3,1
	Rear	56,3	28,15	14,1	7,05			

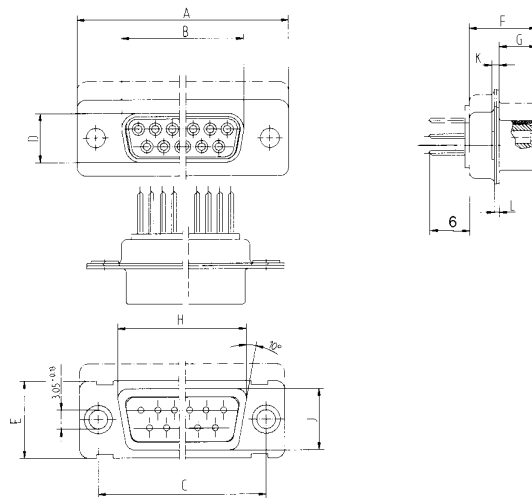
TMC with straight dip-solder termination

Dimensional drawings

Male connector

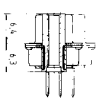


Female connector



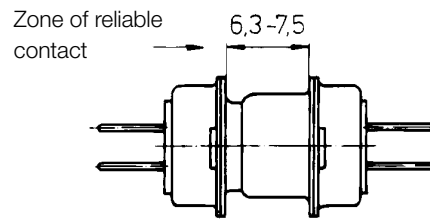
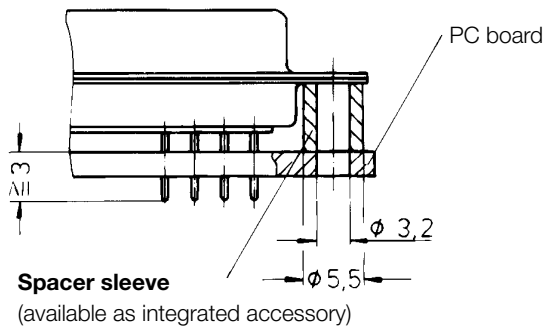
Dimensional drawings

	Male connector	Female connector
	<p>TMC-P-....TL Performance Level 207</p>	<p>TMC-S-....TL Performance Level 207</p>
Number of pins	09 15 25 37 50	09 15 25 37 50
Standard	<p>Standard version</p> <p>023132 023133 023019 023134 023135*</p>	<p>Standard version</p> <p>003552 003553 003554 003555 013920</p>
<p>Riveted nut and sleeve</p>	<p>Version with riveted nut and sleeve M3 as accessories</p> <p>023136 023137 023138 023139 023140*</p>	<p>Version with riveted nut and sleeve M3 as accessories</p> <p>003634 013052 003625 013702 013897</p>
	<p>Version with riveted nut and sleeve 4/40 as accessories</p> <p>023141 023142 023143 023144 023145*</p>	<p>Version with riveted nut and sleeve 4/40 as accessories</p> <p>003633 013551 003626 013701 013898</p>
<p>Threaded bolt and sleeve</p>	<p>Version with threaded bolt and sleeve M3 as accessories</p> <p>023146 023147 023148 023149 023150*</p>	<p>Version with threaded bolt and sleeve M3 as accessories</p> <p>003635 013550 003628 013700 013892</p>
	<p>Version with threaded bolt and sleeve 4/40 as accessories</p> <p>023151 023152 023153 023154 023155*</p>	<p>Version with threaded bolt and sleeve 4/40 as accessories</p> <p>003636 013549 003627 013699 013893</p>

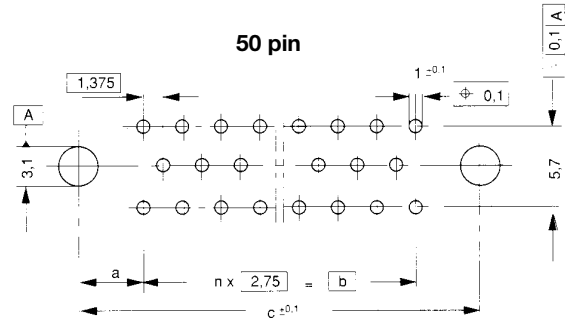
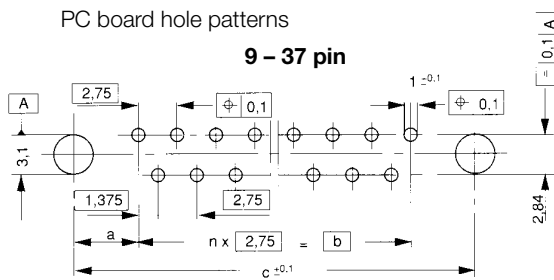
	Male connectors					Female connectors				
	TMC-P-....TL <i>Performance Level 207</i>					TMC-S-....TL <i>Performance Level 207</i>				
Number of pins	09	15	25	37	50	09	15	25	37	50
Threaded bolt and sleeve	Version with threaded bolt 4/40 and sleeve M3 as accessories					Version with threaded bolt 4/40 and sleeve M3 as accessories				
	023156	023157	023158	023159	023160*	013032	013033	013029	013034	013641

Assembly details

TMC with straight dip-solder termination



PC board hole patterns



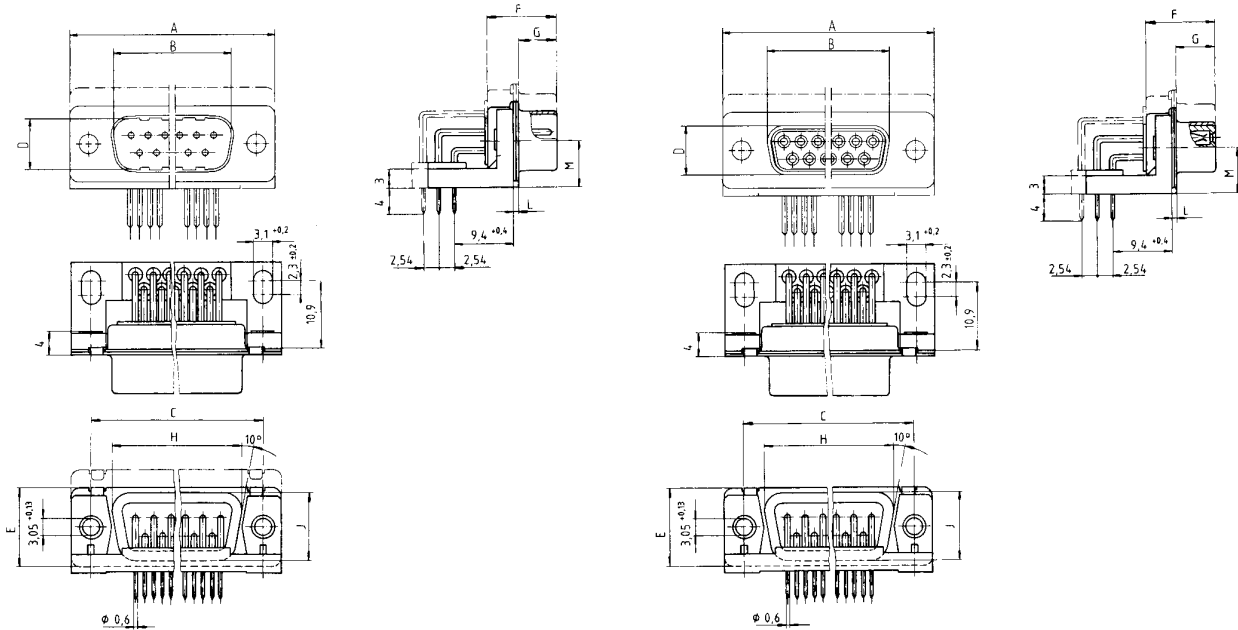
Number of pins	a	b	c	n
9	7	11	25	4
15	7,025	19,25	33,3	7
25	7	33	47	12
37	7	49,5	63,5	18
50	8,55	44	61,1	16

TMC with straight dip-solder termination (with guide frame)

Dimensional drawings

Male connector

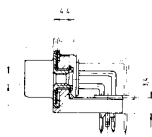
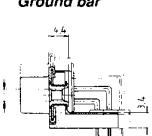
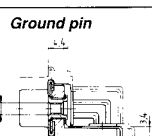
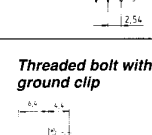
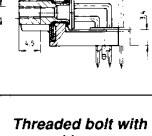
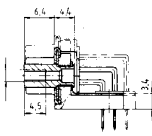
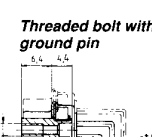
Female connector



Ordering details

	Male connectors	Female connectors
	TMC-P-...LP (with guide frame) <i>Performance Level 207</i>	TMC-S-...LP (with guide frame) <i>Performance Level 207</i>
Number of pins	09 15 25 37 50	09 15 25 37 50
<i>Standard</i>	<i>Standard version</i> 023166 023167 023168 023169 023170*	<i>Standard version</i> 003644 004154 003643 004153 013922
Threaded bolt 	<i>Version with threaded bolt M3 as accessory</i> 023171 023172 023173 023174 023175*	<i>Version with threaded bolt M3 as accessory</i> 003599 013533 003622 013707 013894
	<i>Version with threaded bolt 4/40 as accessory</i> 023176 023177 023178 023179 023180*	<i>Version with threaded bolt 4/40 as accessory</i> 003598 013532 003621 013708 013895
Riveted nut 	<i>Version with riveted nut M3 as accessory</i> 023181 023182 023183 023184 023185*	<i>Version with riveted nut M3 as accessory</i> 003600 013535 003623 013710 013899
	<i>Version with riveted nut 4/40 as accessory</i> 023186 023187 023188 023189 023190*	<i>Version with riveted nut 4/40 as accessory</i> 003601 013534 003624 013709 013900



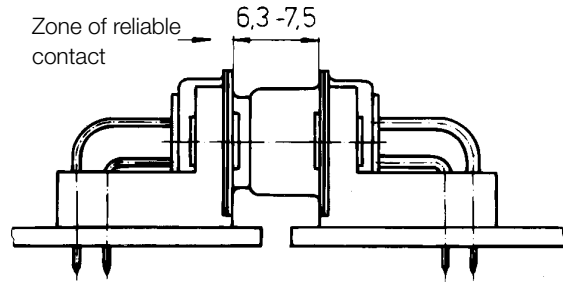
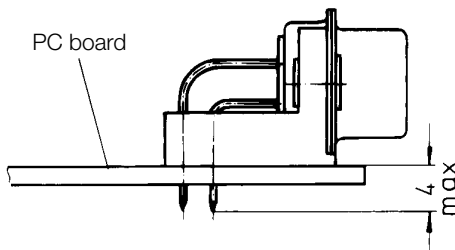
	Male connectors					Female connectors				
	TMC-P-...LP <i>Performance Level 207</i>					TMC-S-...LP <i>Performance Level 207</i>				
Number of pins	09	15	25	37	50	09	15	25	37	50
Ground clip 	<i>Version with ground clip as accessory</i>					<i>Version with ground clip as accessory</i>				
	023191	023192	023193	023194	023195*	023196	023197	023198	023199	023200
Ground bar 	<i>Version with ground bar as accessory</i>					<i>Version with ground bar as accessory</i>				
	023201	023202	023203	023204	023205*	023206	023207	023208	023209	023210
Ground pin 	<i>Version with ground pin as accessory</i>					<i>Version with ground pin as accessory</i>				
	023249	023250	023251	023252	023253*	023279	023280	023281	023282	023283
Threaded bolt with ground clip 	<i>Version with threaded bolt M3 and ground clip as accessories</i>					<i>Version with threaded bolt M3 and ground clip as accessories</i>				
	023211	023212	023213	023214	023215*	023254	023255	023256	023257	023258
	<i>Version with threaded bolt 4/40 and ground clip as accessories</i>					<i>Version with threaded bolt 4/40 and ground clip as accessories</i>				
	023216	023217	023218	023219	023220*	013973	434287	023259	023260	023261
Threaded bolt with ground bar 	<i>Version with treaded bolt M3 and ground bar as accessories</i>					<i>Version with treaded bolt M3 and ground bar as accessories</i>				
	023221	023222	023223	023224	023225*	023262	023263	023264	023265	023266
	<i>Version with treaded bolt 4/40 and ground bar as accessories</i>					<i>Version with treaded bolt 4/40 and ground bar as accessories</i>				
	023226	023227	023228	023229	023230*	003585	004225	003608	023367	023268
Threaded bolt with ground pin 	<i>Version with treaded bolt M3 and ground pin as accessories</i>					<i>Version with treaded bolt M3 and ground pin as accessories</i>				
	023284	023285	023286	023287	023288*	003584	013541	003464	023304	023305
	<i>Version with treaded bolt 4/40 and ground pin as accessories</i>					<i>Version with treaded bolt 4/40 and ground pin as accessories</i>				
	023289	023290	023291	023292	023293*	003583	004925	003606	023306	434705
Riveted nut with ground clip 	<i>Version with riveted nut M3 and ground clip as accessories</i>					<i>Version with riveted nut M3 and ground clip as accessories</i>				
	433196	023231	023232	023233	023234*	433197	023049	023082	023269	023270
	<i>Version with riveted nut 4/40 and ground clip as accessories</i>					<i>Version with riveted nut 4/40 and ground clip as accessories</i>				
	023235	023236	023237	023238	023239*	023104	023271	023272	023273	023274

	Male connectors	Female connectors
	TMC-P-....LP <i>Performance Level 207</i>	TMC-S-....LP <i>Performance Level 207</i>
Number of pins	09 15 25 37 50	09 15 25 37 50
Riveted nut with ground bar 	<i>Version with riveted nut M3 and ground bar as accessories</i> 013966 023240 023241 023242 023243	<i>Version with riveted nut M3 and ground bar as accessories</i> 013965 023275 003605 023276 004869
	<i>Version with riveted nut 4/40 and ground bar as accessories</i> 023244 023245 023246 023247 023248*	<i>Version with riveted nut 4/40 and ground bar as accessories</i> 003581 013542 013834 023277 023278
Riveted nut with ground pin 	<i>Version with riveted nut M3 and ground pin as accessories</i> 023294 023295 023296 023297 023298*	<i>Version with riveted nut M3 and ground pin as accessories</i> 003579 013014 023307 004448 023308
	<i>Version with riveted nut 4/40 and ground pin as accessories</i> 023299 023300 023301 023302 023298*	<i>Version with riveted nut 4/40 and ground pin as accessories</i> 003580 023309 003603 023310 023311

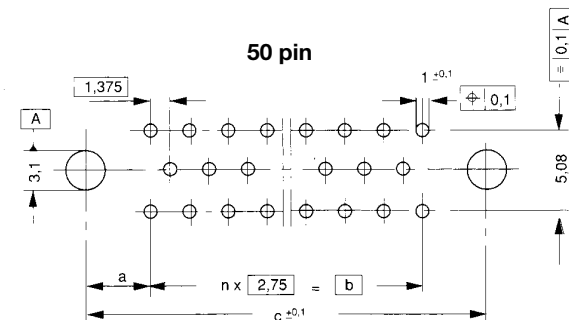
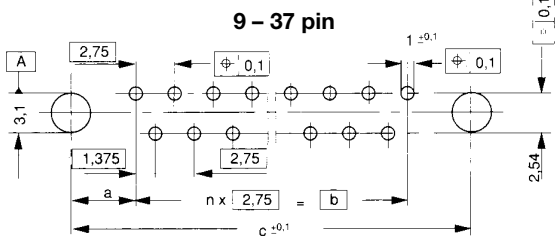
For further accessories and other combination options please consult ERNI's local office sales.

Assembly details

TMC with straight dip-solder termination



PC board hole patterns



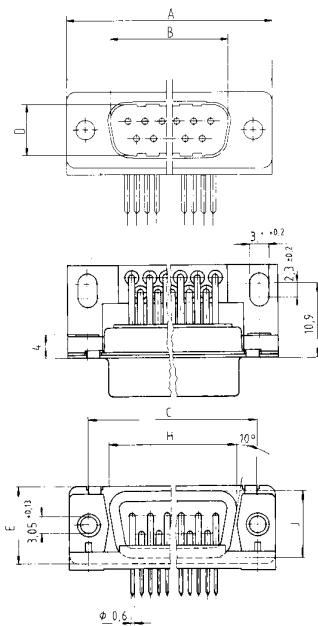
Number of pins	a	b	c	n
9	7	11	25	4
15	7,025	19,25	33,3	7
25	7	33	47	12
37	7	49,5	63,5	18
50	8,55	44	61,1	16

Special version with solder pitch of 2.84 mm between the rows

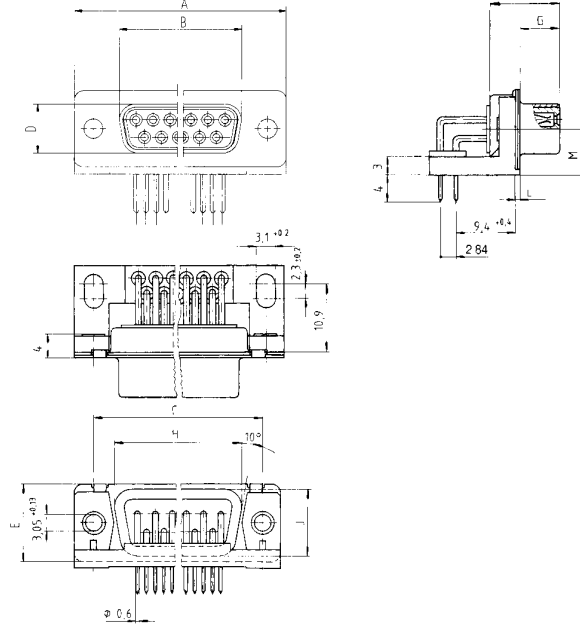
TMC with angled dip-solder termination (solder pitch 2.84 mm)

Dimensional drawings

Male connector



Female connector

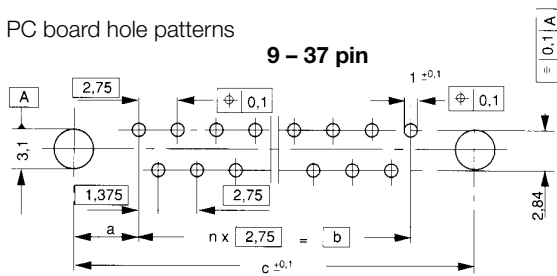


Ordering details about special version with solder pitch of 2.84 mm

	Male connector	Female connector
	TMC-P-...LP (with guide frame) <i>Performance Level 207</i>	TMC-S-...LP (with guide frame) <i>Performance Level 207</i>
Number of pins	09 15 25 37 50	09 15 25 37 50
Standard	<i>Standard version</i> 023312 023314	<i>Standard version</i> 023317 023318 023319 023320

Due to the wider pitch between the rows, there is more space for conductors on the PC board. The clearance and creepage ages are greater on these versions.

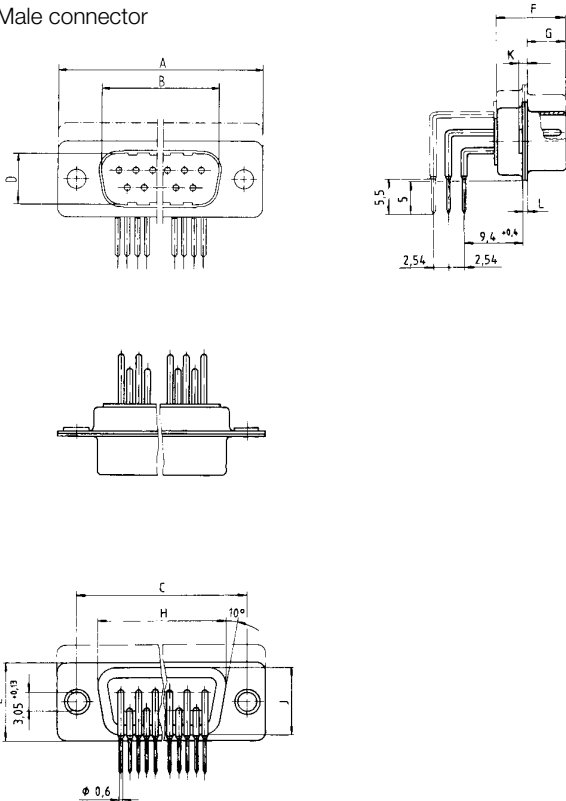
PC board hole patterns



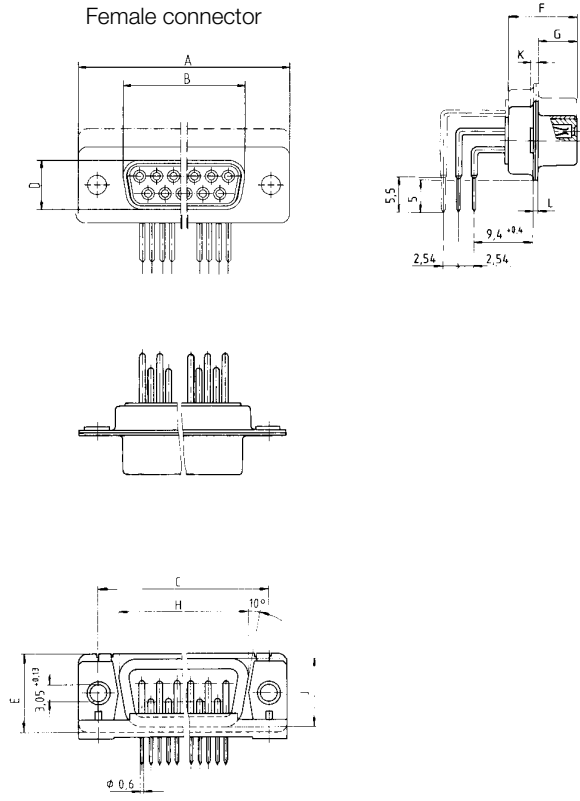
TMC with angled dip-solder termination (without guide frame)

Dimensional drawings

Male connector



Female connector



Ordering details

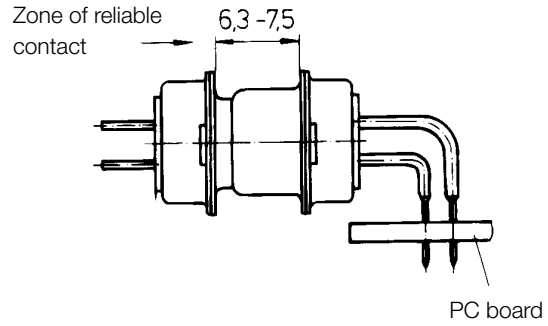
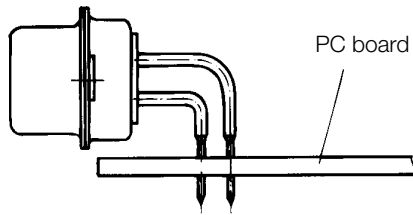
	Male connector	Female connector
	TMC-P-....LP (without guide frame) <i>Performance Level 207</i>	TMC-S-....LP (without guide frame) <i>Performance Level 207</i>
Number of pins	09 15 25 37 50	09 15 25 37 50
<i>Standard</i>	<i>Standard version</i> 023322 023323 023324 023325 023326*	<i>Standard version</i> 013487 013525 013624 013714 013930

Integrated accessories are also available on request for TMC connectors with angled terminals without guide frame.

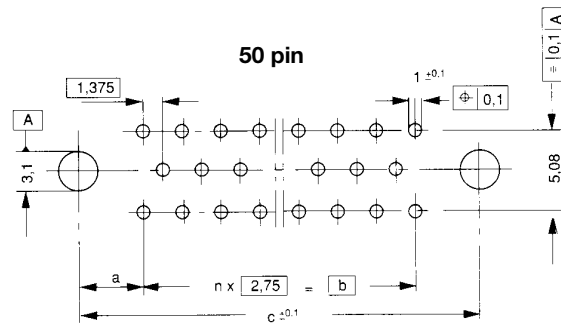
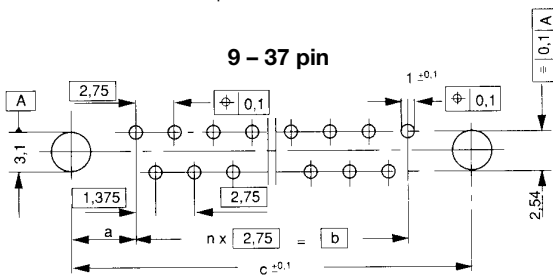
For assembly, an assembly comb is available on request.

Assembly details

TMC with angled dip-soldered termination without guide frame



PC board hole patterns

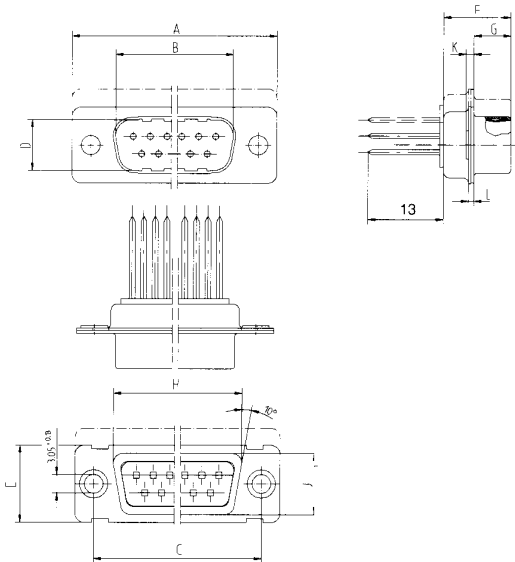


Number of pins	a	b	c	n
9	7	11	25	4
15	7,025	19,25	33,3	7
25	7	33	47	12
37	7	49,5	63,5	18
50	8,55	44	61,1	16

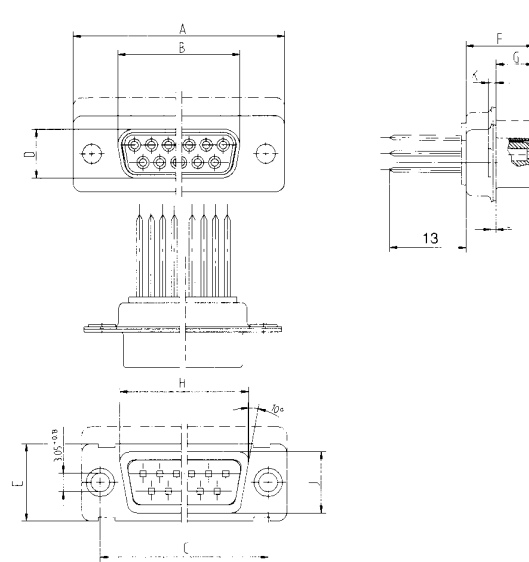
TMC with wire wrap terminations

Dimensional drawings



Male connector



Female connector







Ordering details

	Male connector					Female connector				
	TMC-P-...W <i>Performance Level 201</i> 					TMC-S-...W <i>Performance Level 201</i> 				
Number of pins	09	15	25	37	50	09	15	25	37	50
<i>Standard</i>	<i>Standard version</i>					<i>Standard version</i>				
	023327	023328	023329	023330	023331*	013492	013553	013632	013698	013928

Screw locking accessories (for all TMC standard version connectors)

Ordering details

Knurled screw 4/40" <i>Each set comprises 2 screws and retainers.</i>		Threaded bolt 4/40" <i>Each set comprises 2 threaded bolts, spring washers and nuts.</i>	
	<i>Set</i>		<i>Set for assembly without board</i>
	434830		434831
			<i>Set for assembly with board 2 mm thick</i>
			434832
			<i>Set for assembly with board 3 mm thick</i>
			434833

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