

## 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

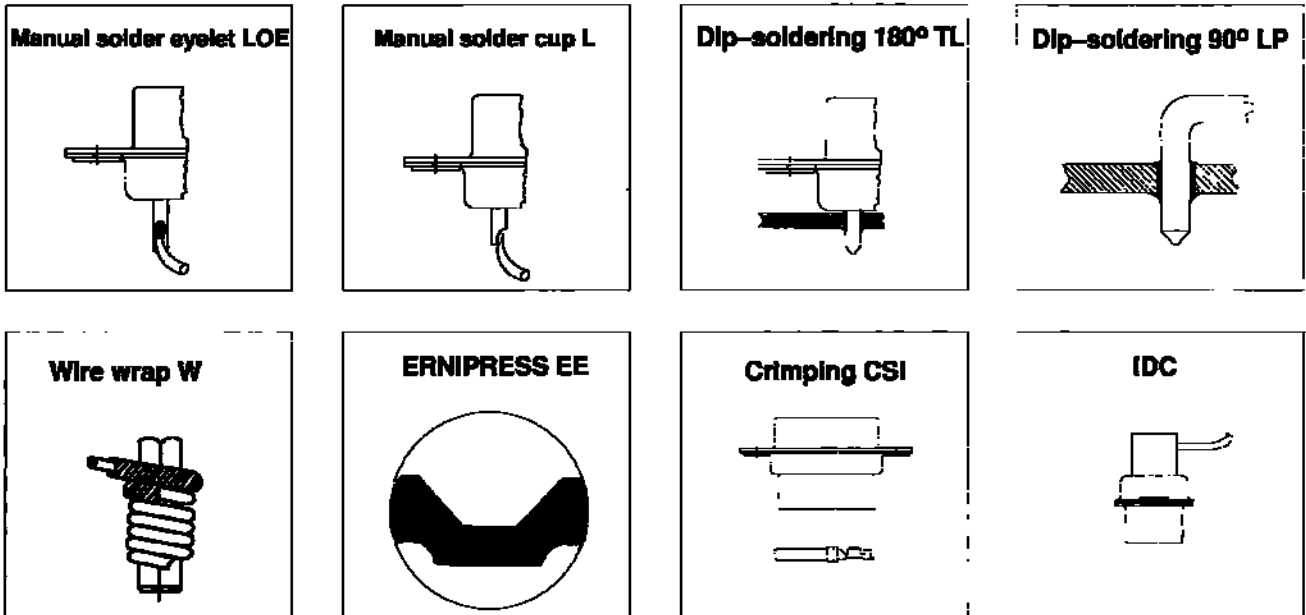
For series TMC connectors ERNI has a wide range of accessories available.

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



D-Sub

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**

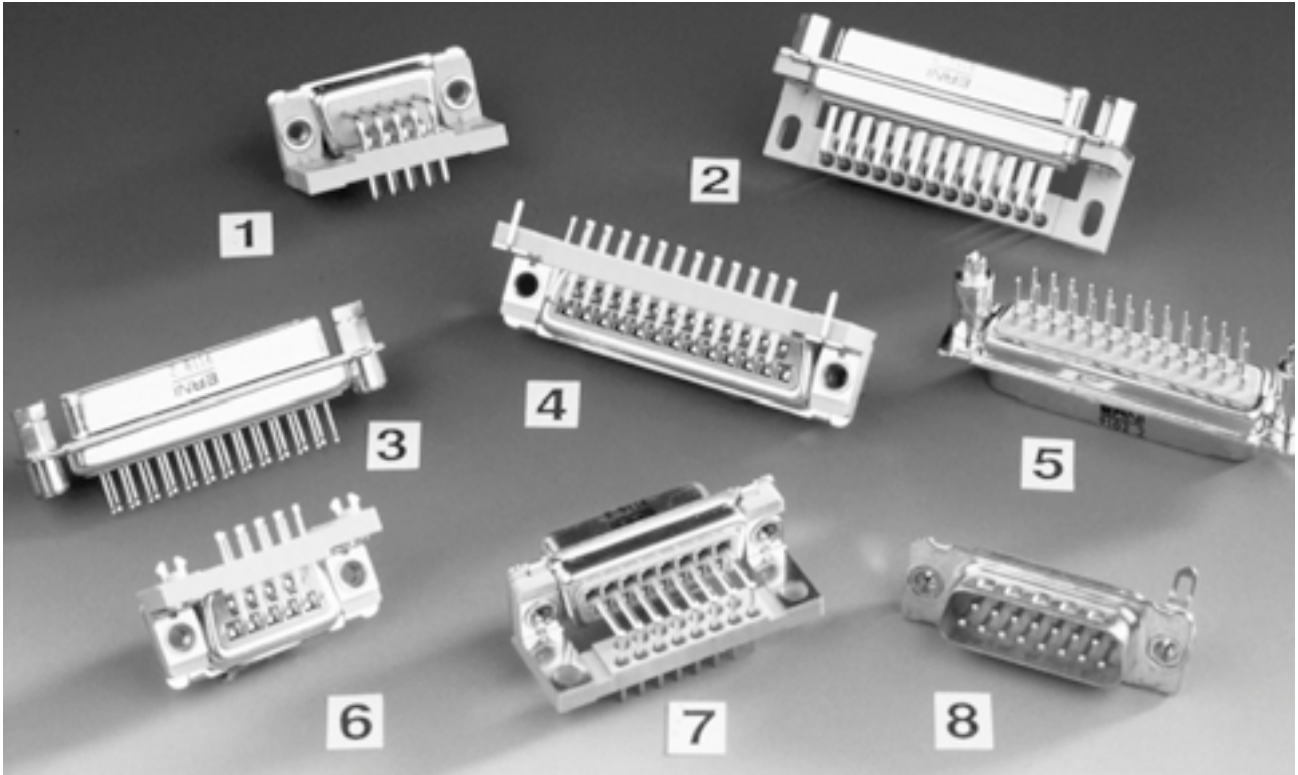
Performance level **107** and **101** connectors are available on request.

### 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.

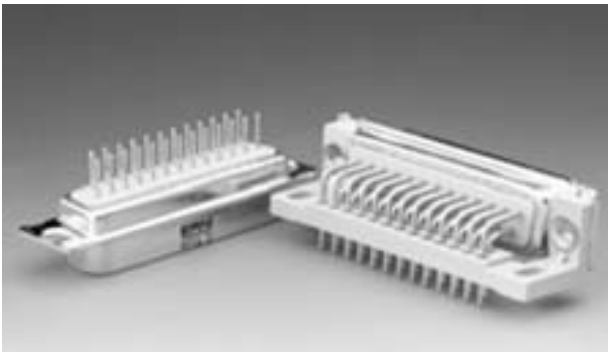
### **Ground eyelet** (on request) (see fig. 8)

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.

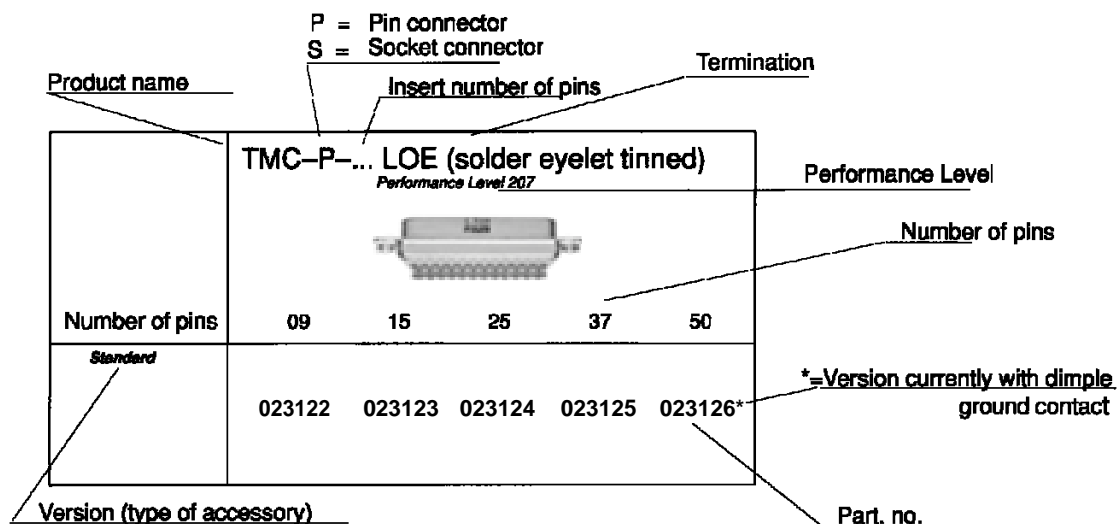
With this guide frame the connectors can be screwed or riveted onto pc boards.

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

## 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 <sub>rms</sub>		1000 V <sub>rms</sub>
Contact resistance	≤ 2,5 mΩ		≤ 10 mΩ
Insulation resistance	≥ 10 <sup>14</sup> 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 $\pm 0,3$	B (P) $+0,2$	C $\pm 0,2$	D (P) $+0,2$	E $\pm 0,3$	F $\pm 0,2$	G $+0,3$	H $\pm 0,3$	J $\pm 0,2$	K max.	L max.	M $\pm 0,2$
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

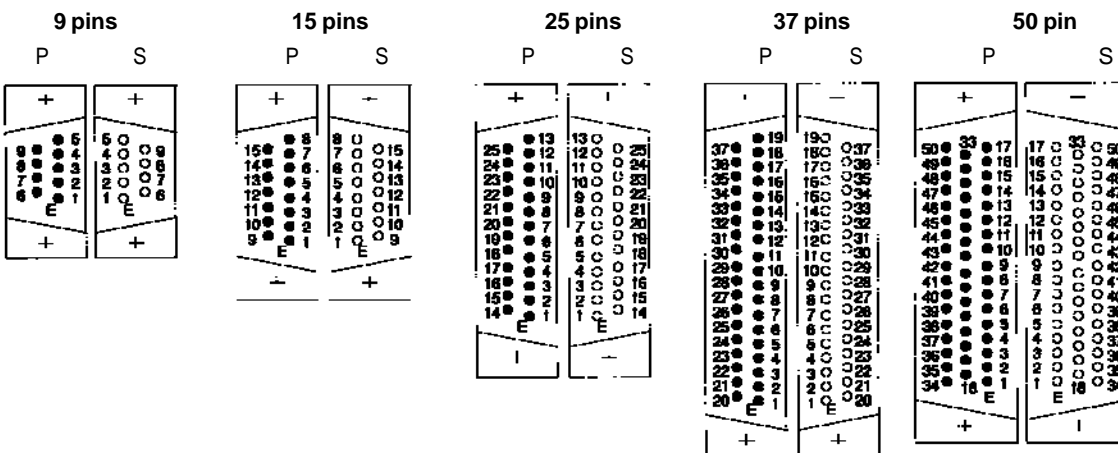
Socket connectors (S)

Number of pins	A $\pm 0,3$	B (S) $-0,2$	C $\pm 0,2$	D (S) $-0,2$	E $\pm 0,3$	F $\pm 0,2$	G $-0,3$	H $\pm 0,3$	J $\pm 0,2$	K max.	L max.	M $\pm 0,2$
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)

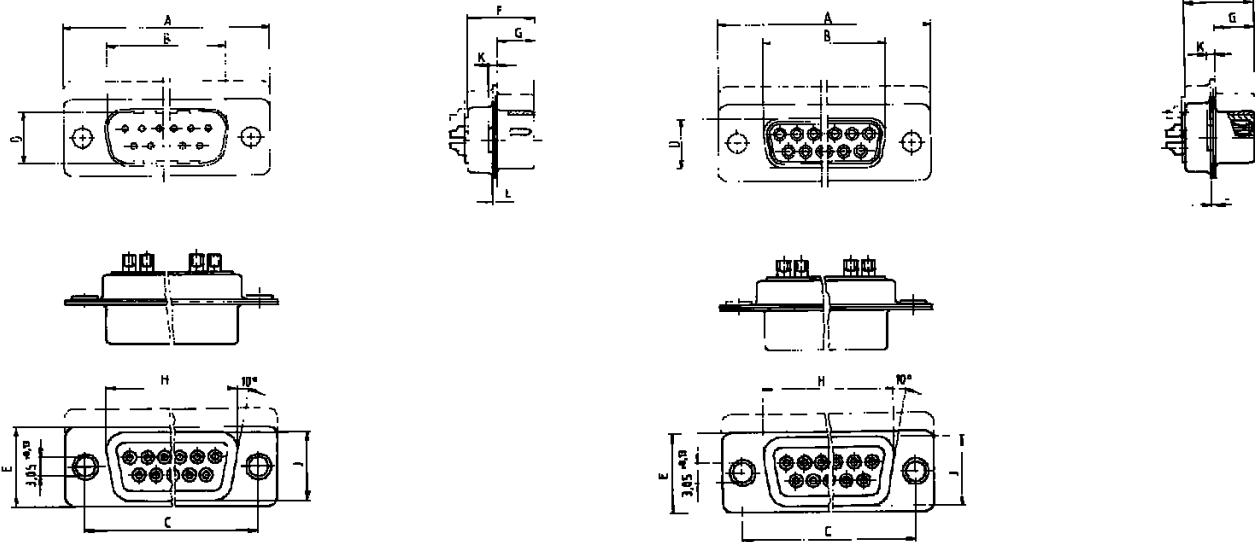


## TMC with manual soldering termination


### Dimensional drawings



Male connector

Female connector



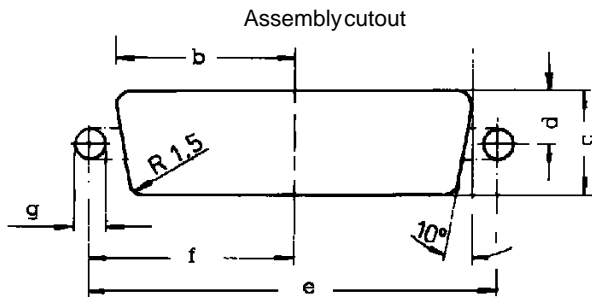
### Ordering details

		<b>Female connectors</b>
		<b>TMC-S-....L (solder cup tinned)</b> <i>Performance Level 207</i>
		
<b>Number of pins</b>		09    15    25    37    50
<i>Standard</i>		<i>Standard version</i> 004617   004620   004613   004926   004615

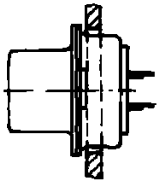
	<b>TMC-P-....L (solder cup gold-plated)</b> <i>Performance Level 207</i>	<b>TMC-S-....L (solder cup gold-plated)</b> <i>Performance Level 207</i>
		
<b>Number of pins</b>	09    15    25    37    50	09    15    25    37    50
<i>Standard</i>	<i>Standard version</i> 023127   023128   023129   023130  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

## Assembly details

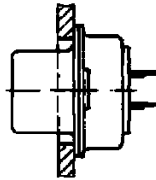
TMC with manual solder termination



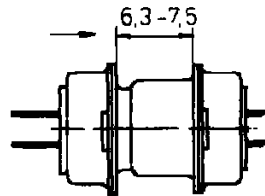
Front assembly



Rear assembly



Zone of reliable contact



Number of pins	Assembly	a ±0,13	b ±0,13	c ±0,13	d ±0,13	e ±0,1	f ±0,1	g ±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			

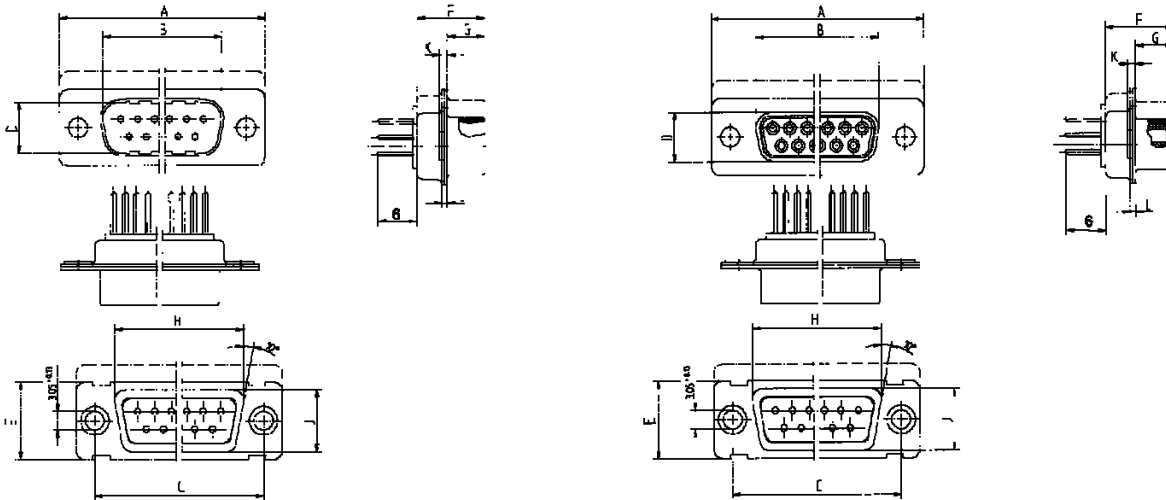


## TMC with straight dip-solder termination

### Dimensional drawings

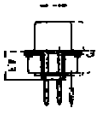
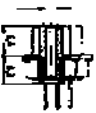
Male connector


Female connector



### Dimensional drawings

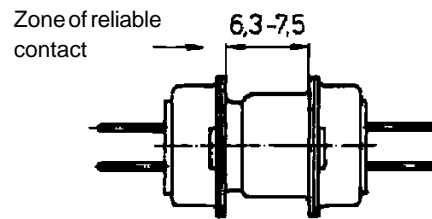
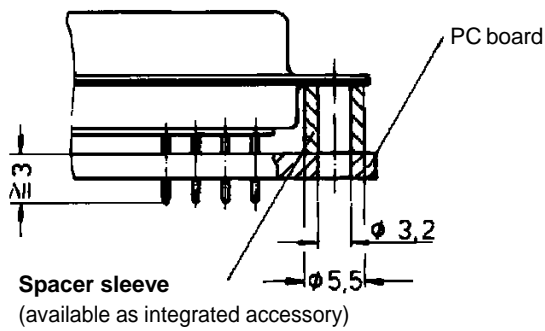
	Male connector					Female connector				
	<b>TMC-P-....TL</b> <i>Performance Level 207</i>					<b>TMC-S-....TL</b> <i>Performance Level 207</i>				
<b>Number of pins</b>	09	15	25	37	50	09	15	25	37	50
<b>Standard</b>	<i>Standard version</i>					<i>Standard version</i>				
	023132	023133	023019	023134	023135*	003552	003553	003554	003555	013920

<b>Riveted nut and sleeve</b> 	<i>Version with riveted nut and sleeve M3 as accessories</i>					<i>Version with riveted nut and sleeve M3 as accessories</i>				
	023136	023137	023138	023139	023140*	003634	013052	003625	013702	013897
<b>Threaded bolt and sleeve</b> 	<i>Version with riveted nut and sleeve 4/40 as accessories</i>					<i>Version with riveted nut and sleeve 4/40 as accessories</i>				
	023141	023142	023143	023144	023145*	003633	013551	003626	013701	013898
	<i>Version with threaded bolt and sleeve M3 as accessories</i>					<i>Version with threaded bolt and sleeve M3 as accessories</i>				
	023146	023147	023148	023149	023150*	003635	013550	003628	013700	013892
	<i>Version with threaded bolt and sleeve 4/40 as accessories</i>					<i>Version with threaded bolt and sleeve 4/40 as accessories</i>				
	023151	023152	023153	023154	023155*	003636	013549	003627	013699	013893

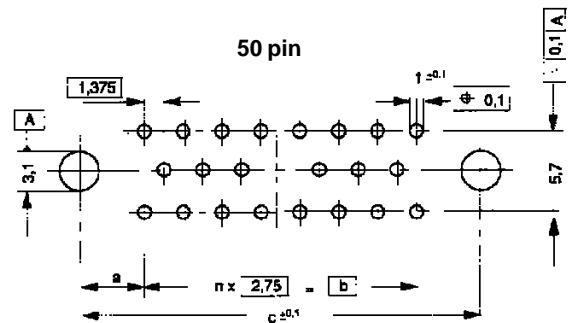
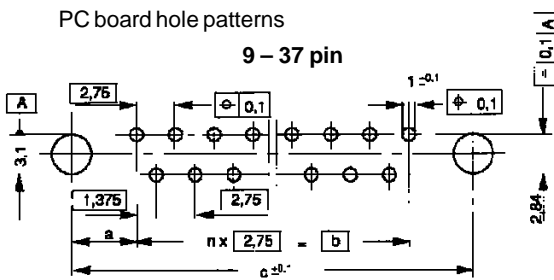
	Male connectors					Female connectors				
	TMC-P-....TL <i>Performance Level 207</i>					TMC-S-....TL <i>Performance Level 207</i>				
Number of pins	09	15	25	37	50	09	15	25	37	50
<i>Threaded bolt and sleeve</i>	<i>Version with threaded bolt 4/40 and sleeve M3 as accessories</i>					<i>Version with threaded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

**Assembly details**

TMC with straight dip-solder termination



PC board hole patterns



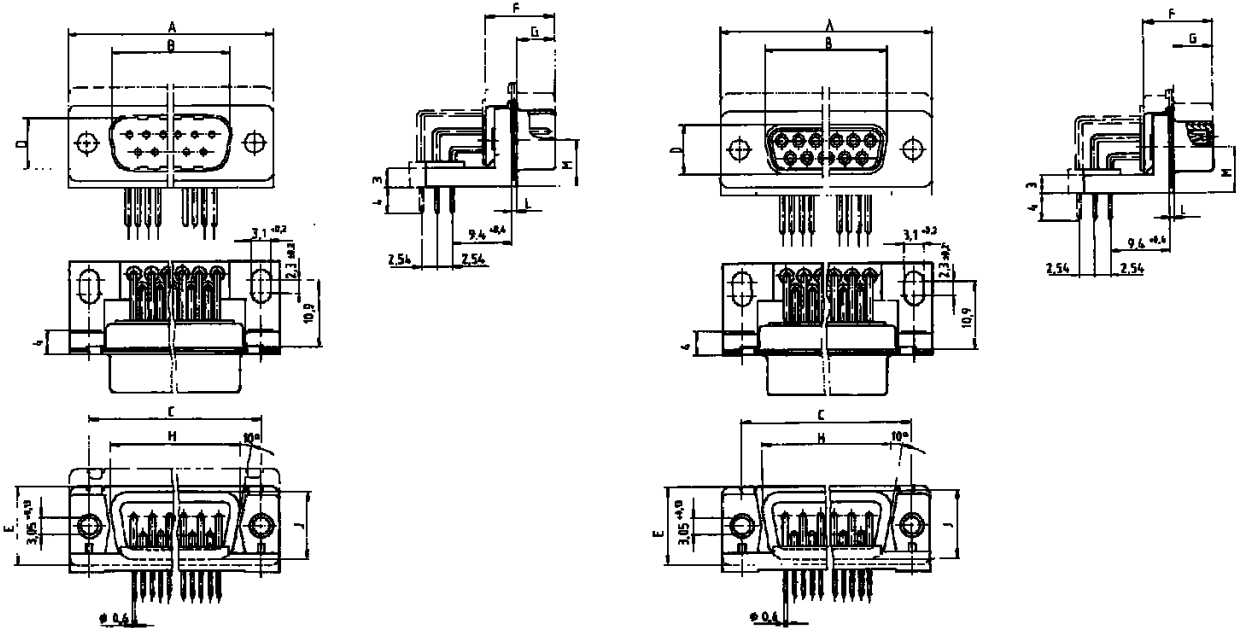
Number of pins	a	b	c	n
9	7	11	25	4
15	7,025	19,25	33,3	7
25	7	33	47	12
37	7	49,5	63,5	18
50	8,55	44	61,1	16

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

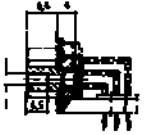
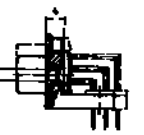
**Dimensional drawings**

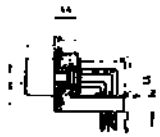

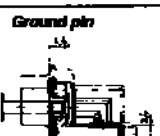
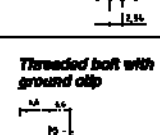
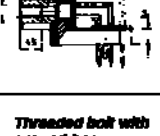
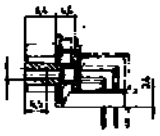

Male connector

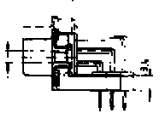
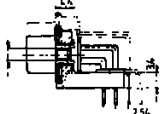
Female connector



**Ordering details**

	Male connectors	Female connectors
	<b>TMC-P-....LP (with guide frame)</b> <i>Performance Level 207</i>	<b>TMC-S-....LP (with guide frame)</b> <i>Performance Level 207</i>
<b>Number of pins</b>	09 15 25 37 50	09 15 25 37 50
<b>Standard</b>	<i>Standard version</i> 023166 023167 023168 023169 023170*	<i>Standard version</i> 003644 004154 003643 004153 013922
<b>Threaded bolt</b> 	<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
<b>Riveted nut</b> 	<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

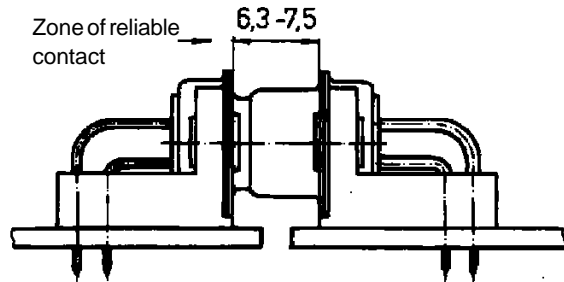
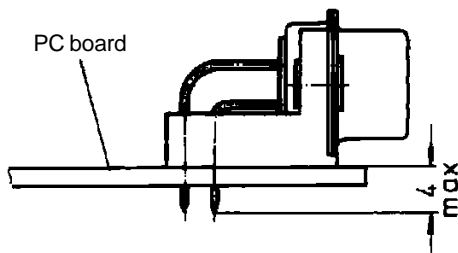
	<b>Male connectors</b>					<b>Female connectors</b>				
	<b>TMC-P-...LP</b> <i>Performance Level 207</i>					<b>TMC-S-...LP</b> <i>Performance Level 207</i>				
<b>Number of pins</b>	09	15	25	37	50	09	15	25	37	50
<b>Ground clip</b> 	<i>Version with ground clip as accessory</i>					<i>Version with ground clip as accessory</i>				
	023191	023192	023193	023194	023195*	023196	023197	023198	023199	023200
<b>Ground bar</b> 	<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
<b>Ground pin</b> 	<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
<b>Threaded bolt with ground clip</b> 	<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
<b>Threaded bolt with ground bar</b> 	<i>Version with threaded bolt M3 and ground bar as accessories</i>					<i>Version with threaded bolt M3 and ground bar as accessories</i>				
	023221	023222	023223	023224	023225*	023262	023263	023264	023265	023266
	<i>Version with threaded bolt 4/40 and ground bar as accessories</i>					<i>Version with threaded bolt 4/40 and ground bar as accessories</i>				
	023226	023227	023228	023229	023230*	003585	004225	003608	023367	023268
<b>Threaded bolt with ground pin</b> 	<i>Version with threaded bolt M3 and ground pin as accessories</i>					<i>Version with threaded bolt M3 and ground pin as accessories</i>				
	023284	023285	023286	023287	023288*	003584	013541	003464	023304	023305
	<i>Version with threaded bolt 4/40 and ground pin as accessories</i>					<i>Version with threaded bolt 4/40 and ground pin as accessories</i>				
	023289	023290	023291	023292	023293*	003583	004925	003606	023306	434705
<b>Riveted nut with ground clip</b> 	<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 Performance Level 207					TMC-S-....LP Performance Level 207				
Number of pins	09	15	25	37	50	09	15	25	37	50
<b>Riveted nut with ground bar</b> 	Version with riveted nut M3 and ground bar as accessories					Version with riveted nut M3 and ground bar as accessories				
	013966	023240	023241	023242	023243	013965	023275	003605	023276	004869
<b>Riveted nut with ground pin</b> 	Version with riveted nut 4/40 and ground bar as accessories					Version with riveted nut 4/40 and ground bar as accessories				
	023244	023245	023246	023247	023248*	003581	013542	013834	023277	023278
	Version with riveted nut M3 and ground pin as accessories					Version with riveted nut M3 and ground pin as accessories				
	023294	023295	023296	023297	023298*	003579	013014	023307	004448	023308
	Version with riveted nut 4/40 and ground pin as accessories					Version with riveted nut 4/40 and ground pin as accessories				
	023299	023300	023301	023302	023298*	003580	023309	003603	023310	023311

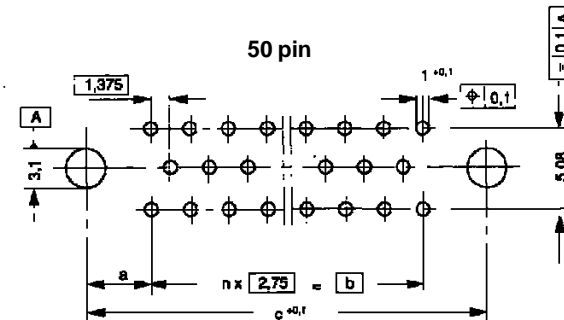
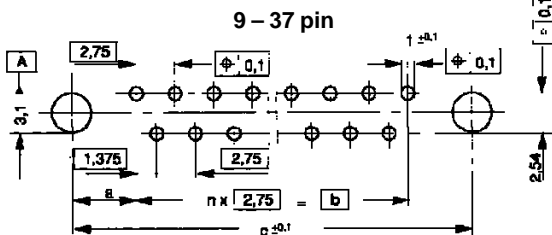
For further accessories and other combination options please consult ERNI's local office sales.

**Assembly details**

TMC with straight dip-solder termination



PC board hole patterns



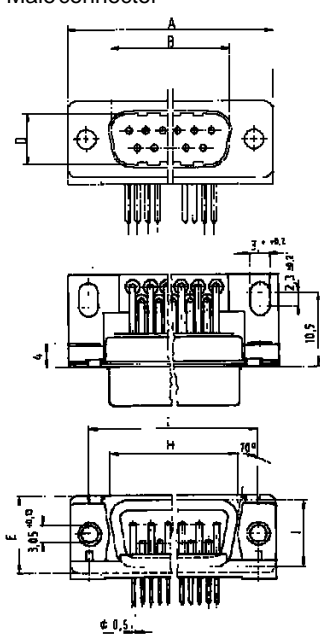
Number of pins	a	b	c	n
9	7	11	25	4
15	7,025	19,25	33,3	7
25	7	33	47	12
37	7	49,5	63,5	18
50	8,55	44	61,1	16

**Special version with solder pitch of 2.84 mm between the rows**

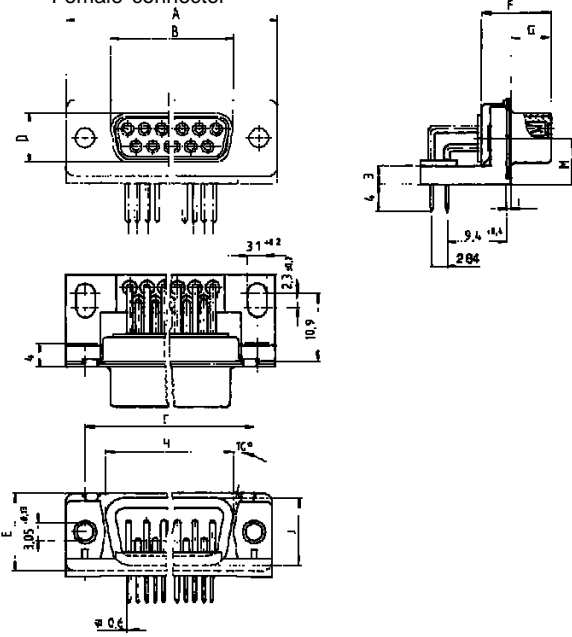
**TMC with angled dip-solder termination (solder pitch 2.84 mm)**

**Dimensional drawings**

Male connector



Female connector

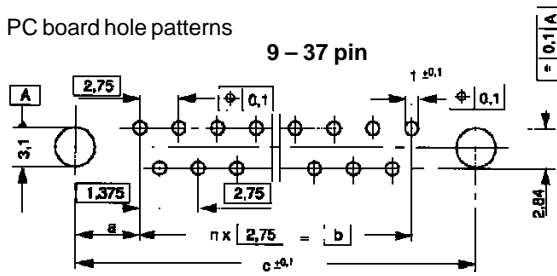


**Ordering details about special version with solder pitch of 2.84 mm**

	Male connector	Female connector
	TMC-P-...LP (with guide frame) Performance Level 207	TMC-S-...LP (with guide frame) Performance Level 207
Number of pins	09 15 25 37 50	09 15 25 37 50
Standard	Standard version 023312 023314	Standard version 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.

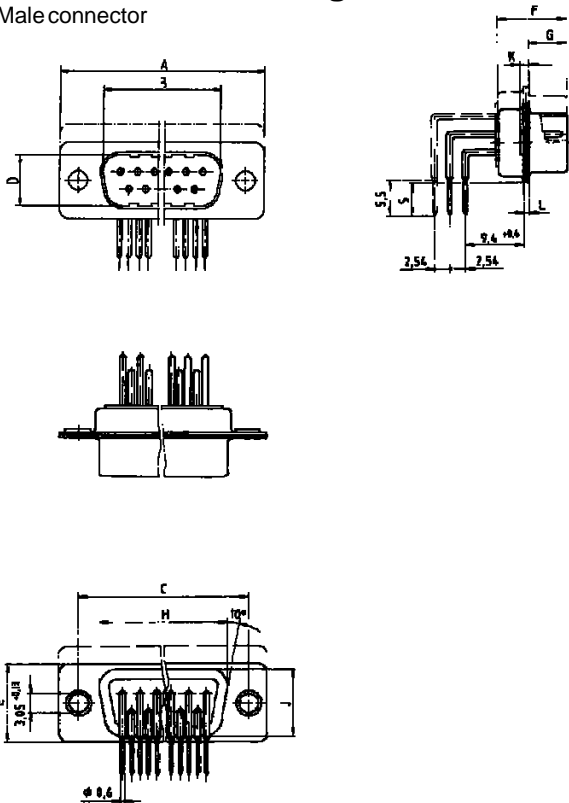
PC board hole patterns



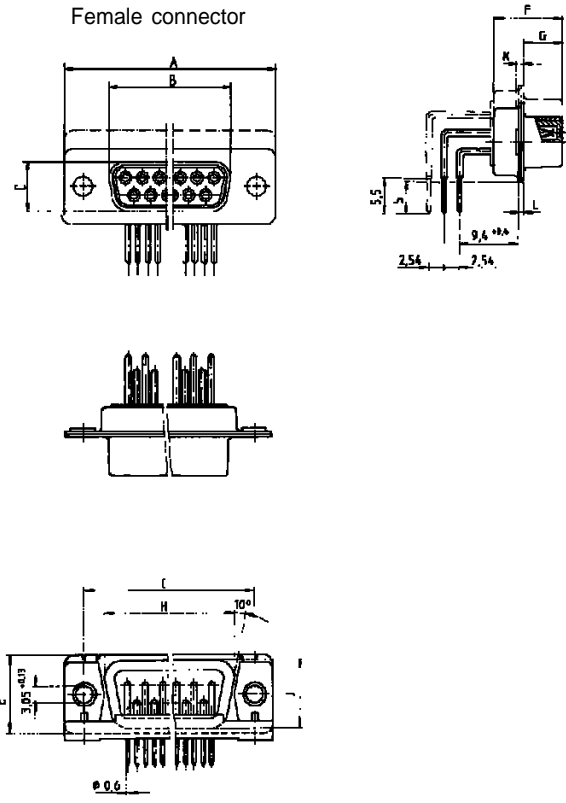
## TMC with angled dip-solder termination (without guide frame)

### Dimensional drawings

Male connector



Female connector



### Ordering details

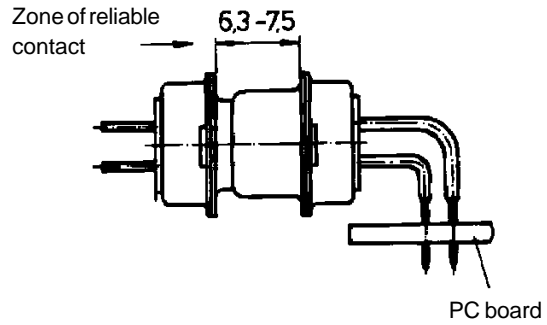
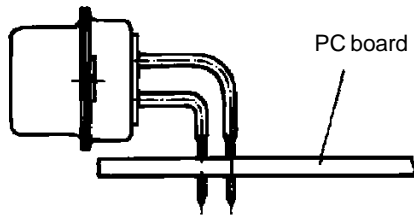
	Male connector	Female connector
	TMC-P-....LP (without guide frame) <i>Performance Level 207</i>	TMC-S-....LP (without guide frame) <i>Performance Level 207</i>
Number of pins	09    15    25    37    50	09    15    25    37    50
<i>Standard</i>	<i>Standard version:</i> 023322   023323   023324   023325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

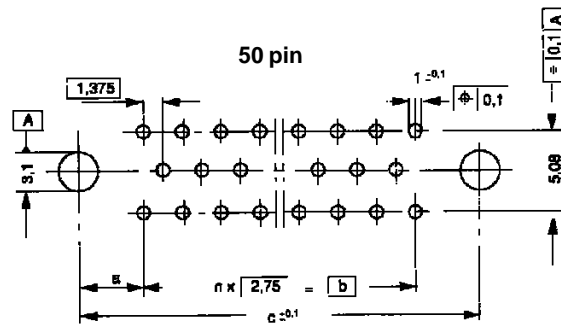
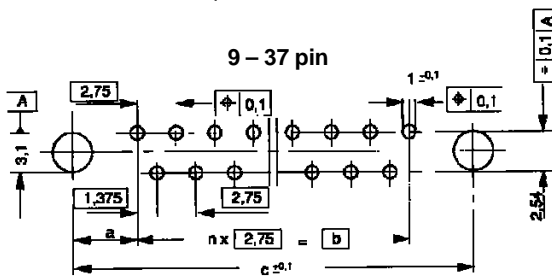
For assembly, an assembly comb is available on request.

## Assembly details

TMC with angled dip-soldered termination without guide frame



PC board hole patterns



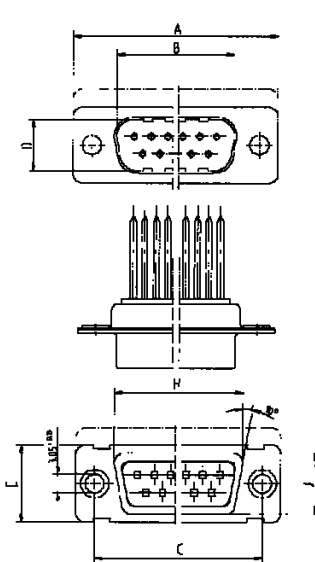
Number of pins	a	b	c	n
9	7	11	25	4
15	7,025	19,25	33,3	7
25	7	33	47	12
37	7	49,5	63,5	18
50	8,55	44	61,1	16



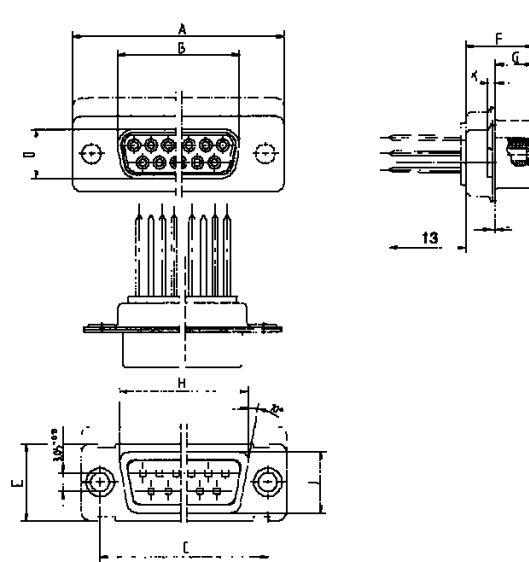
## TMC with wire wrap terminations

### Dimensional drawings



Male connector



Female connector







### Ordering details

	Male connector					Female connector				
	<b>TMC-P-...W</b> <i>Performance Level 201</i>					<b>TMC-S-...W</b> <i>Performance Level 201</i>				
										
Number of pins	09	15	25	37	50	09	15	25	37	50
<b>Standard</b>	<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

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