

# 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

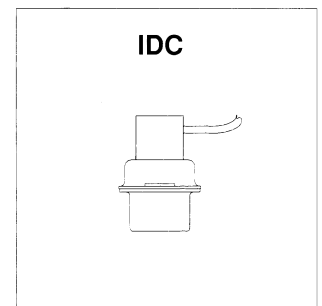
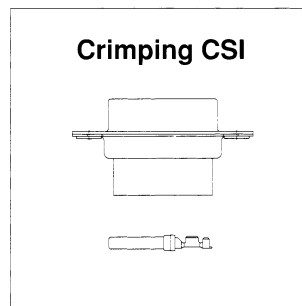
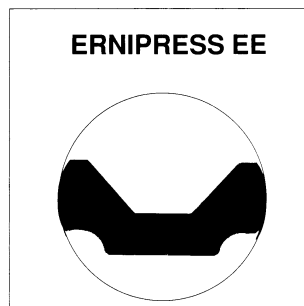
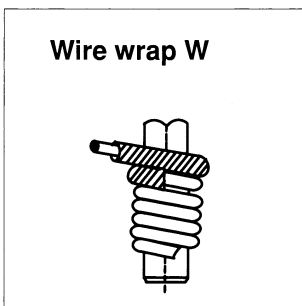
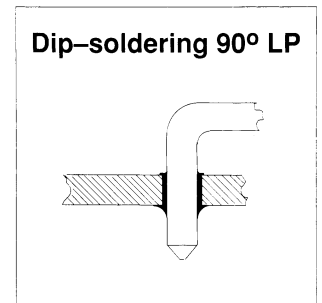
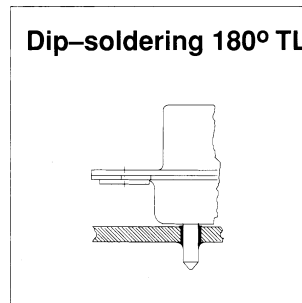
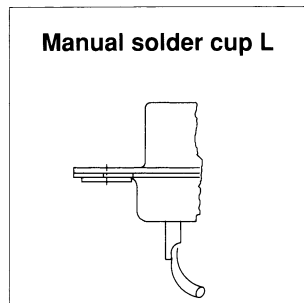
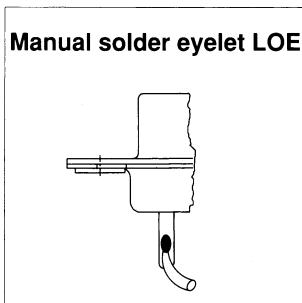
For series TMC connectors ERNI has a wide range of accessories available.

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**

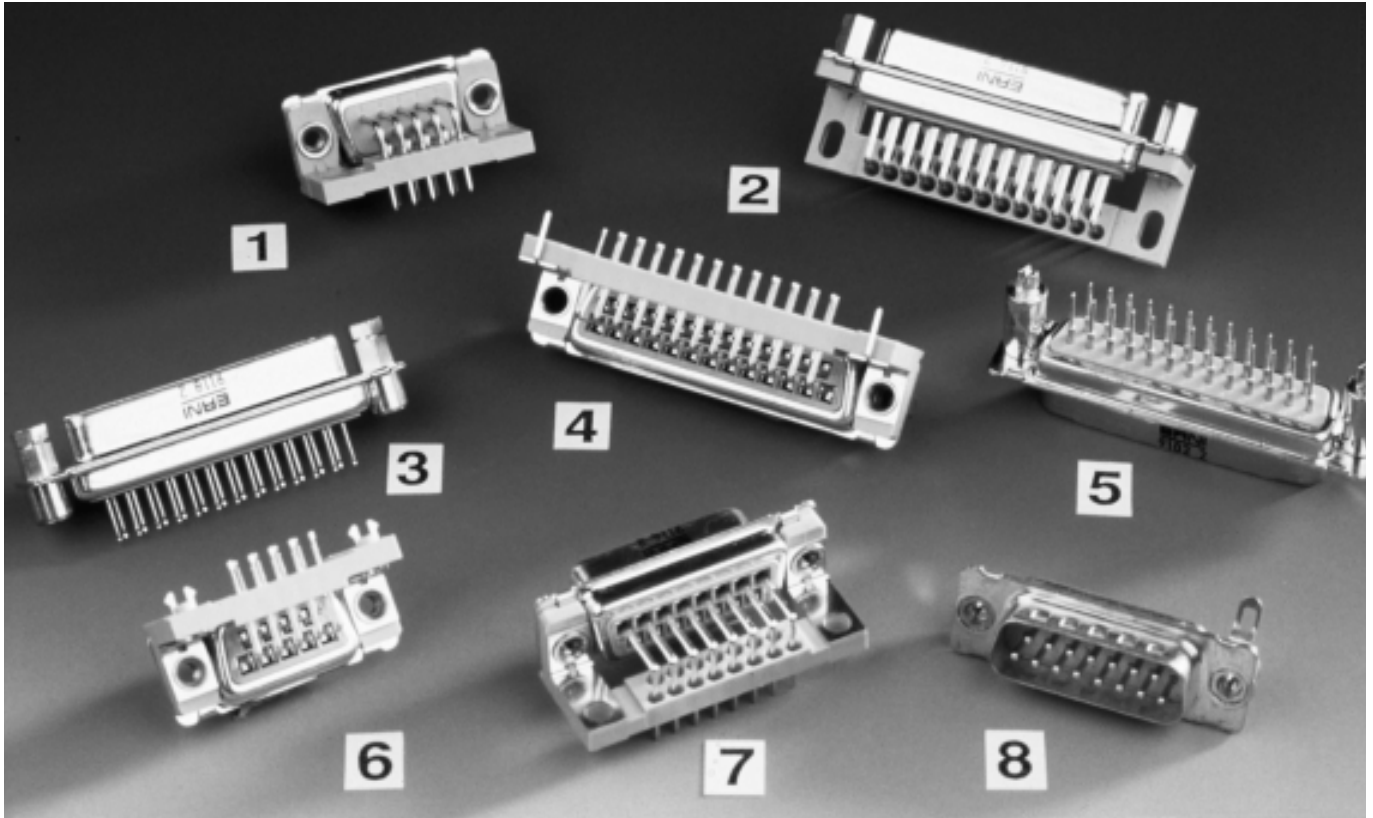
Performance level **107** and **101** connectors are available on request.

### 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.

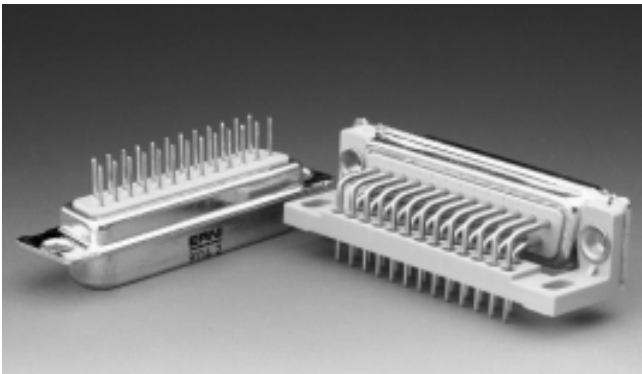
### **Ground eyelet (on request)** (see fig. 8)

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.

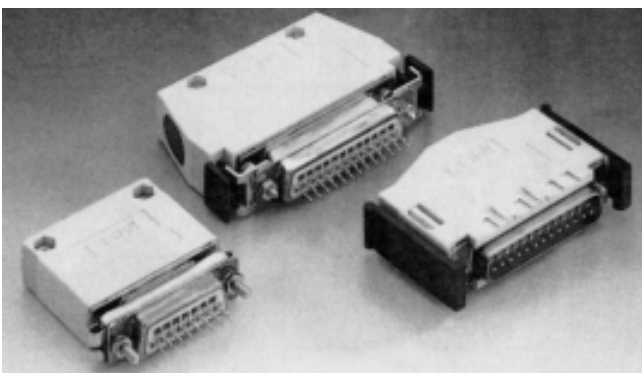


## Guide frame for angled connectors

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.

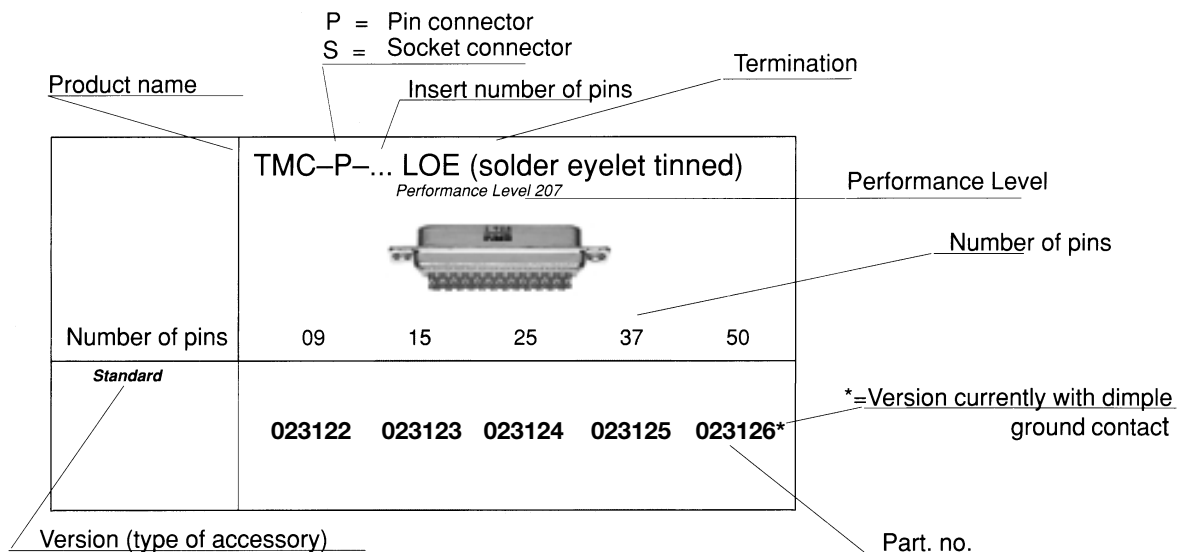
- **KSG 183 housing with engagement locking**
- **KSG 184 housing with slide locking**
- **KSG 185 housing with engagement and/or screw locking, integrated coding**

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 <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 ±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)

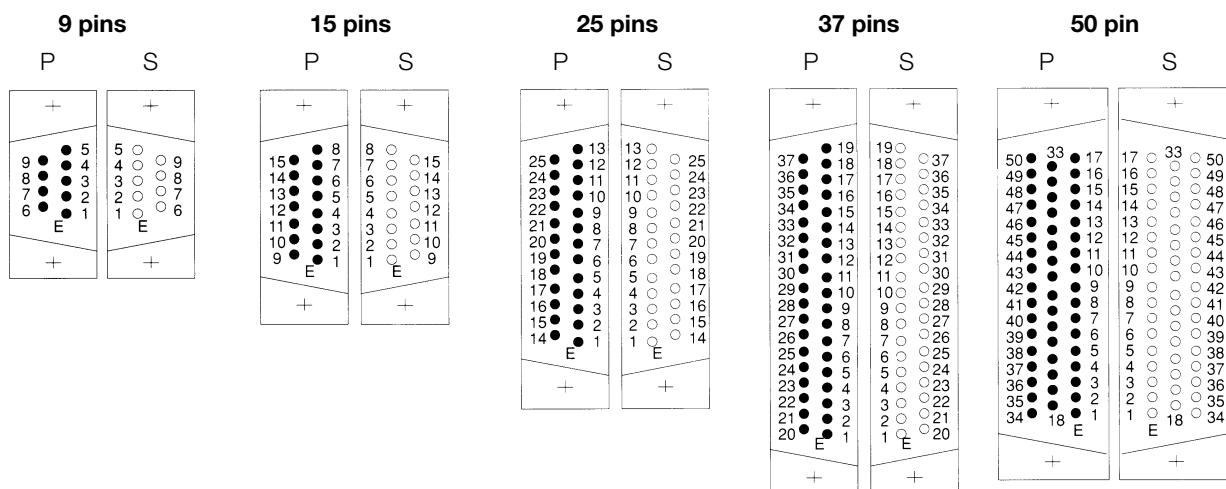
L = Solder cup

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)

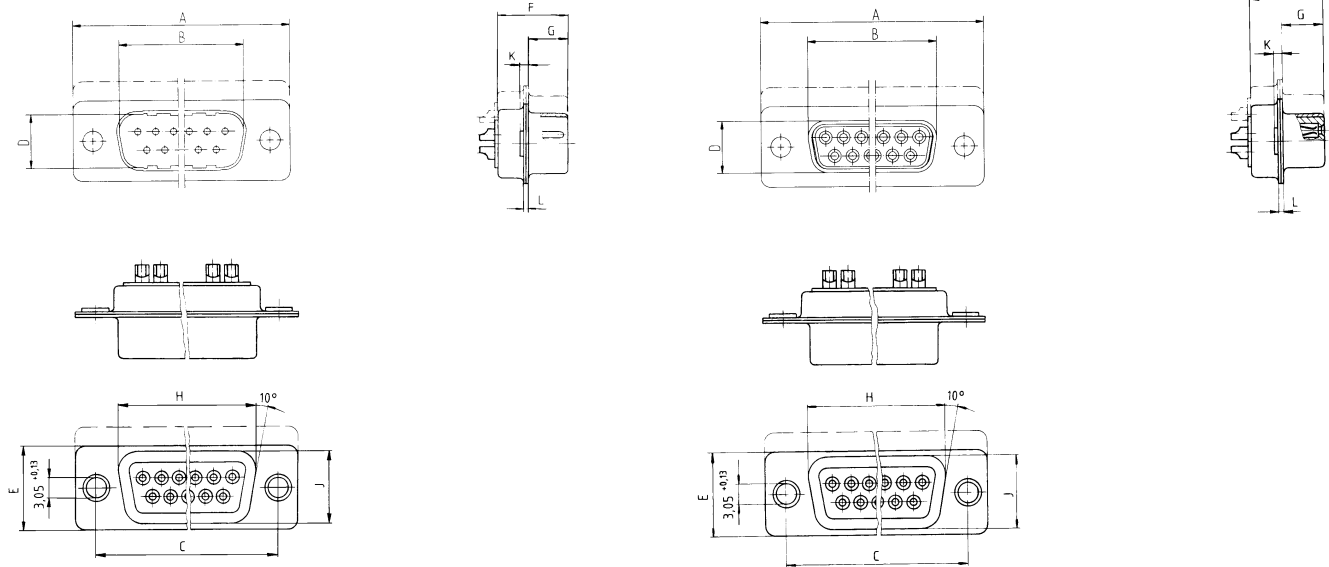


# TMC with manual soldering termination

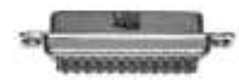
## Dimensional drawings



Male connector

Female connector



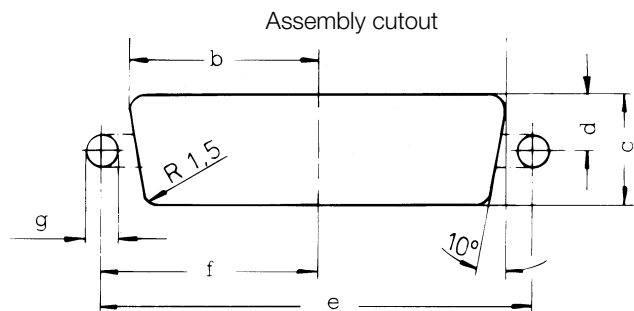
## Ordering details

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

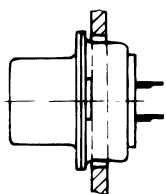
Number of pins	<b>TMC-P-....L (solder cup gold-plated)</b> <i>Performance Level 207</i>	<b>TMC-S-....L (solder cup gold-plated)</b> <i>Performance Level 207</i>
<i>Standard</i>	 09    15    25    37    50 <i>Standard version</i> 023127   023128   023129   023130   023131*	 09    15    25    37    50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

## Assembly details

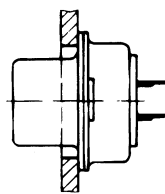
### TMC with manual solder termination



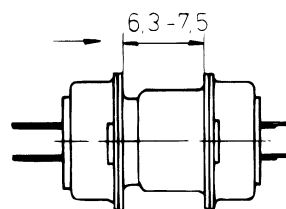
Front assembly



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			

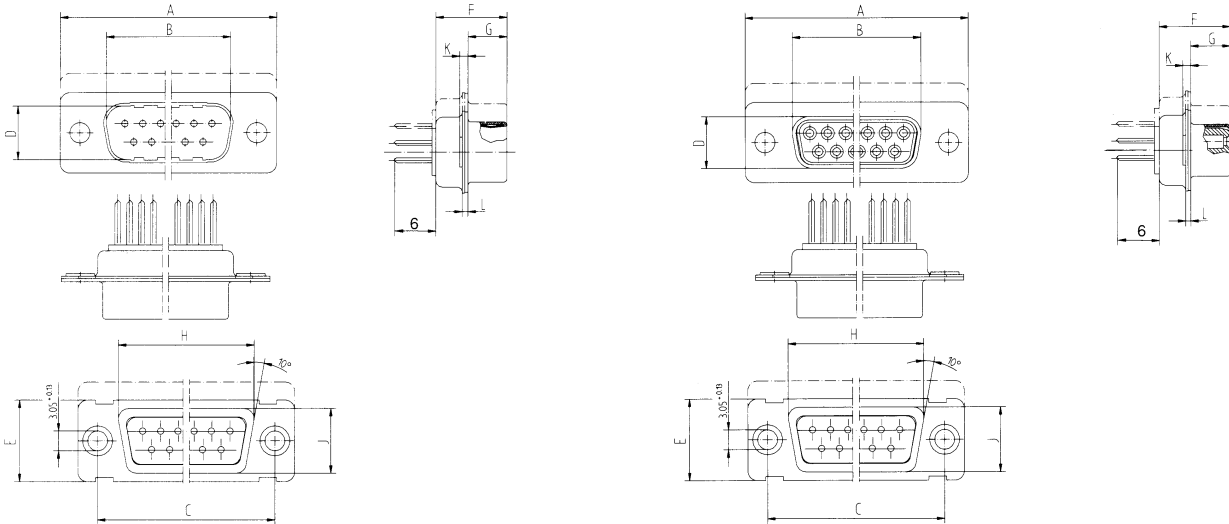


# TMC with straight dip-solder termination

## Dimensional drawings

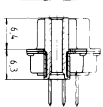
Male connector

Female connector



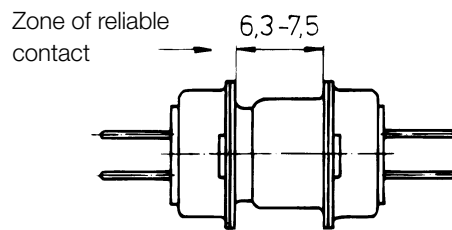
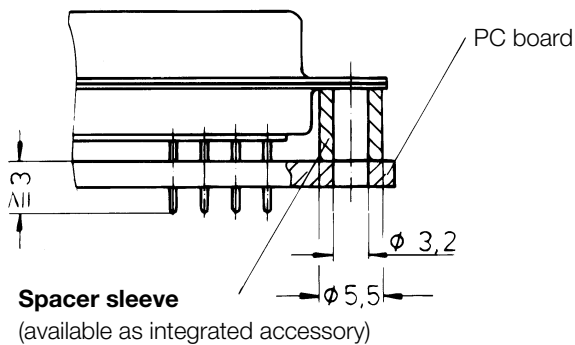
## Dimensional drawings

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

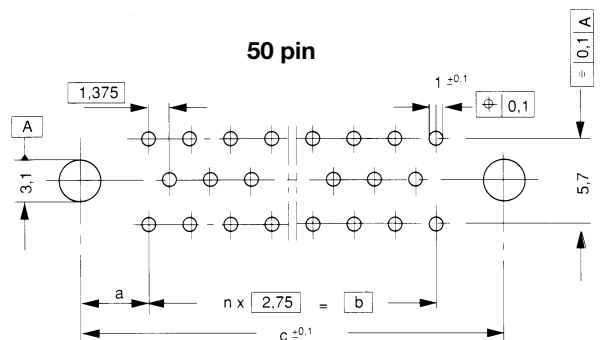
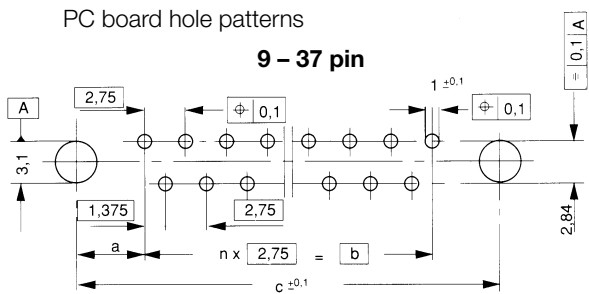
	Male connectors					Female connectors				
	TMC-P-....TL <i>Performance Level 207</i>					TMC-S-....TL <i>Performance Level 207</i>				
Number of pins	09	15	25	37	50	09	15	25	37	50
<b>Threaded bolt and sleeve</b>	<i>Version with threaded bolt 4/40 and sleeve M3 as accessories</i>					<i>Version with threaded bolt 4/40 and sleeve M3 as accessories</i>				
	<b>023156</b>	<b>023157</b>	<b>023158</b>	<b>023159</b>	<b>023160*</b>	<b>013032</b>	<b>013033</b>	<b>013029</b>	<b>013034</b>	<b>003641</b>

### Assembly details

TMC with straight dip-solder termination



PC board hole patterns



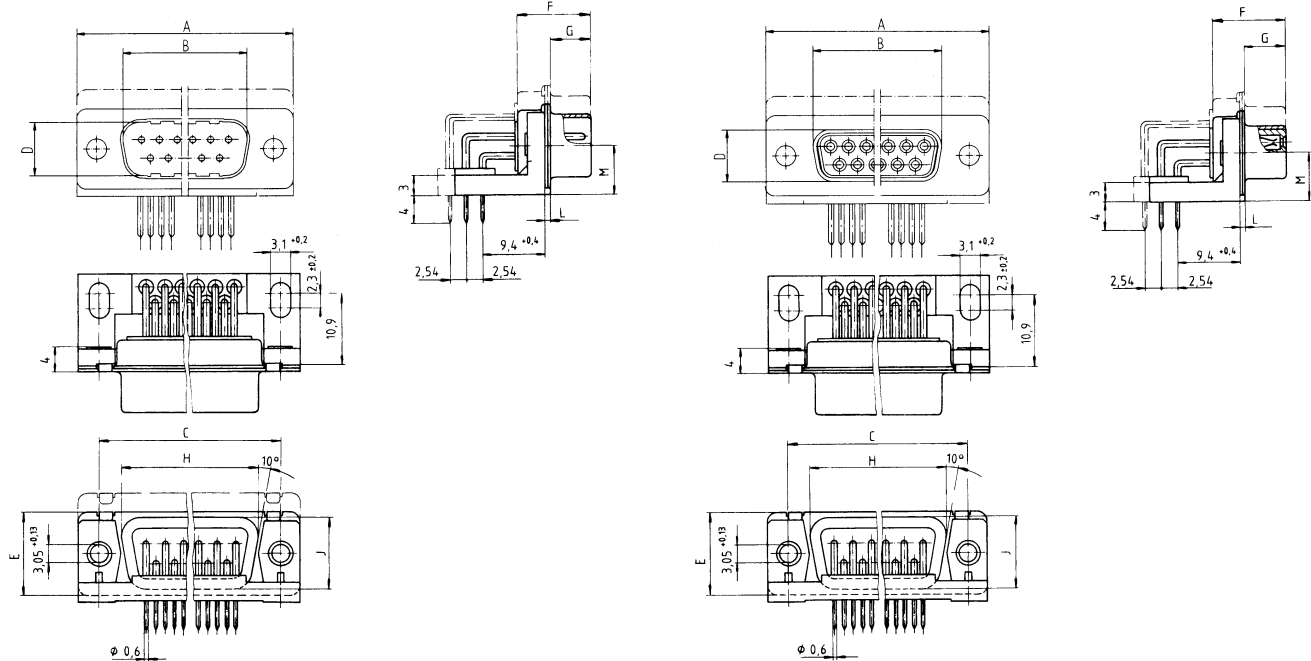
Number of pins	a	b	c	n
9	7	11	25	4
15	7,025	19,25	33,3	7
25	7	33	47	12
37	7	49,5	63,5	18
50	8,55	44	61,1	16

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

## Dimensional drawings

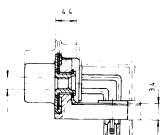
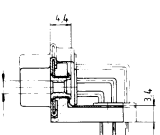
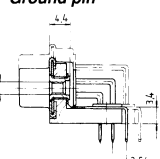
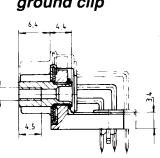
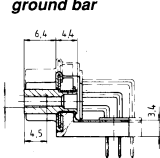
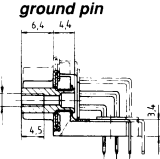
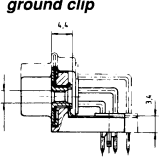
Male connector

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
<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

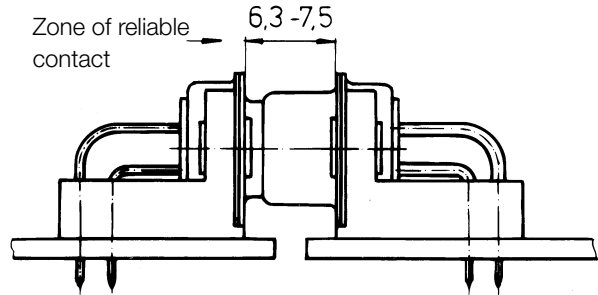
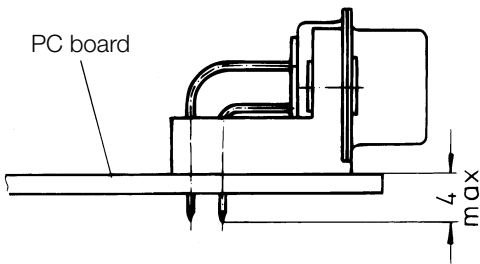
	<b>Male connectors</b>	<b>Female connectors</b>
	<b>TMC-P-....LP</b> <i>Performance Level 207</i>	<b>TMC-S-....LP</b> <i>Performance Level 207</i>
<b>Number of pins</b>	09    15    25    37    50	09    15    25    37    50
<b>Ground clip</b> 	<i>Version with ground clip as accessory</i>  <b>023191  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

	Male connectors	Female connectors
	<b>TMC-P-....LP</b> Performance Level 207	<b>TMC-S-....LP</b> 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 <b>013966 023240 023241 023242 023243*</b>	Version with riveted nut M3 and ground bar as accessories <b>013965 023275 003605 023276 004869</b>
	Version with riveted nut 4/40 and ground bar as accessories <b>023244 023245 023246 023247 023248*</b>	Version with riveted nut 4/40 and ground bar as accessories <b>003581 013542 013834 023277 023278</b>
<b>Riveted nut with ground pin</b> 	Version with riveted nut M3 and ground pin as accessories <b>023294 023295 023296 023297 023298*</b>	Version with riveted nut M3 and ground pin as accessories <b>003579 013014 023307 004448 023308</b>
	Version with riveted nut 4/40 and ground pin as accessories <b>023299 023300 023301 023302 023303*</b>	Version with riveted nut 4/40 and ground pin as accessories <b>003580 023309 003603 023310 023311</b>

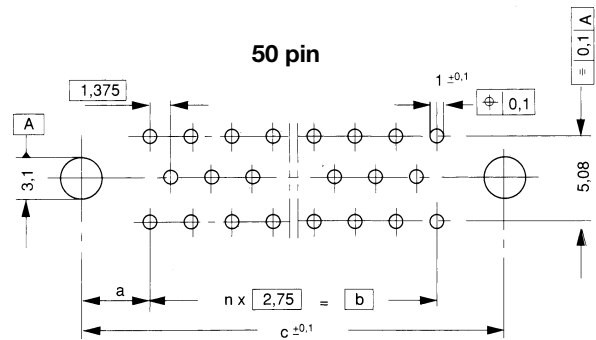
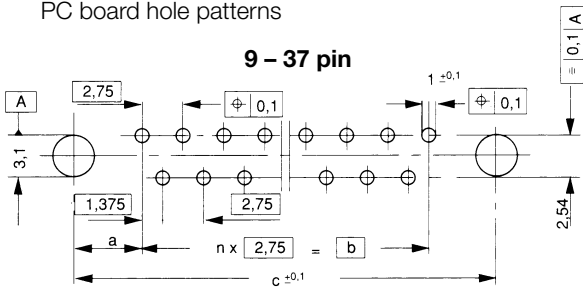
For further accessories and other combination options please consult ERNI's local office sales.

### Assembly details

TMC with straight dip-solder termination



PC board hole patterns



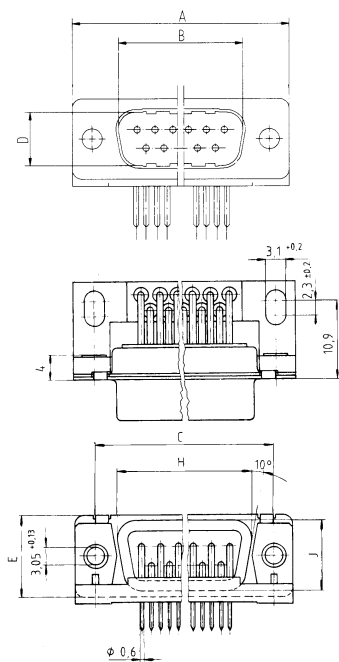
Number of pins	a	b	c	n
9	7	11	25	4
15	7,025	19,25	33,3	7
25	7	33	47	12
37	7	49,5	63,5	18
50	8,55	44	61,1	16

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

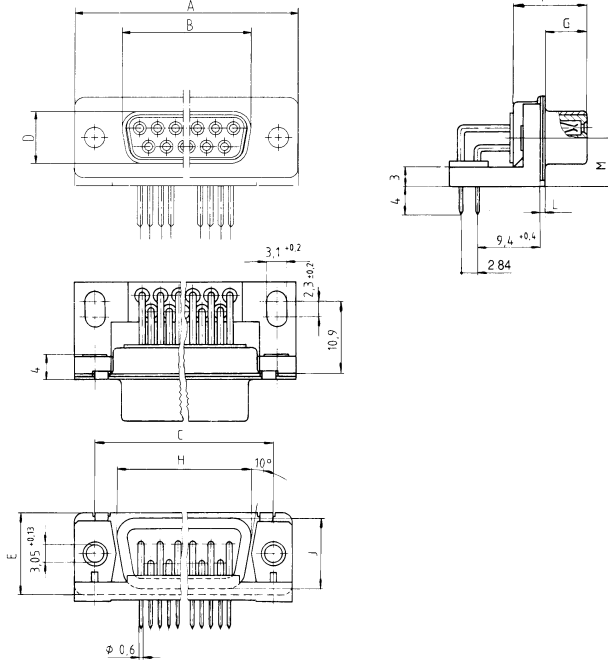
### TMC with angled dip-solder termination (solder pitch 2.84 mm)

#### Dimensional drawings

Male connector



Female connector

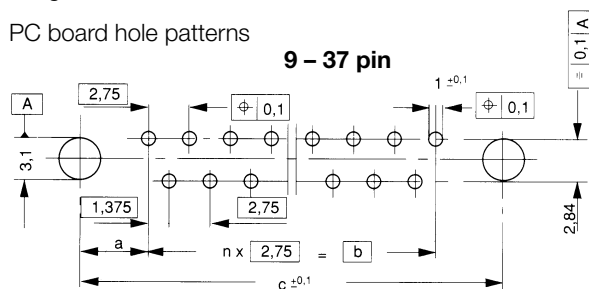


#### Ordering details about special version with solder pitch of 2.84 mm

	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
<i>Standard</i>	<i>Standard version</i>	<i>Standard version</i>
	<b>023312</b> <b>023314</b>	<b>023317</b> <b>023318</b> <b>023319</b> <b>023320</b>

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.

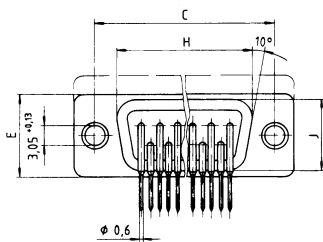
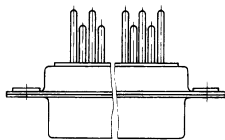
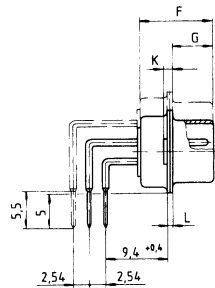
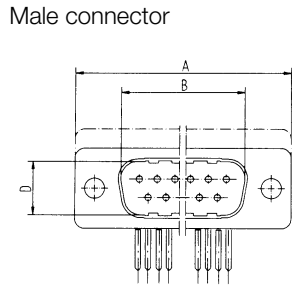
PC board hole patterns



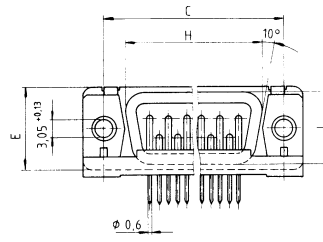
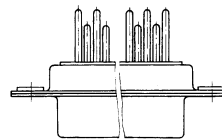
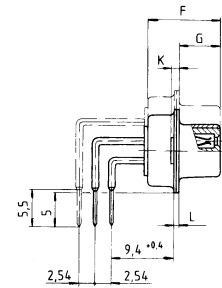
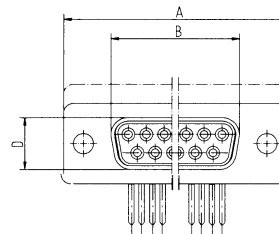
## TMC with angled dip-solder termination (without guide frame)

### Dimensional drawings

Male connector



Female connector



### Ordering details

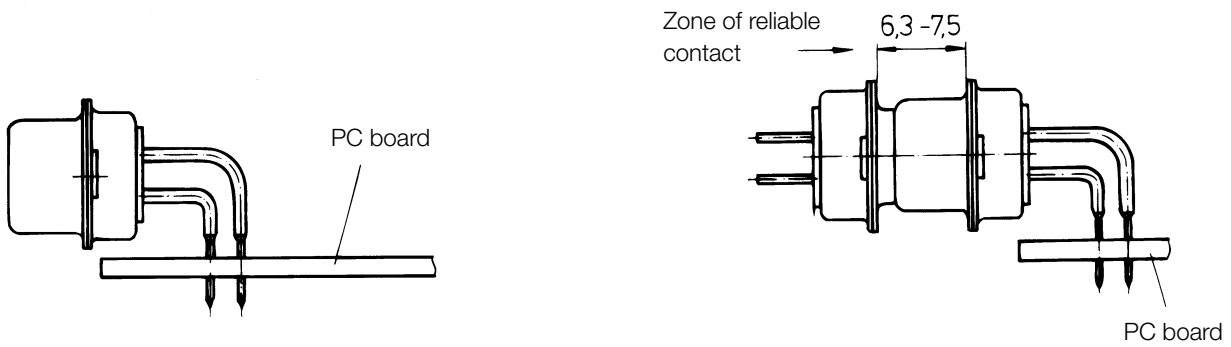
	Male connector	Female connector
	TMC-P-....LP (without guide frame) <i>Performance Level 207</i>	TMC-S-....LP (without guide frame) <i>Performance Level 207</i>
Number of pins	09    15    25    37    50	09    15    25    37    50
<i>Standard</i>	<i>Standard version</i> <b>023322   023323   023324   023325   023326*</b>	<i>Standard version</i> <b>013487   013525   013634   013714   013930</b>

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

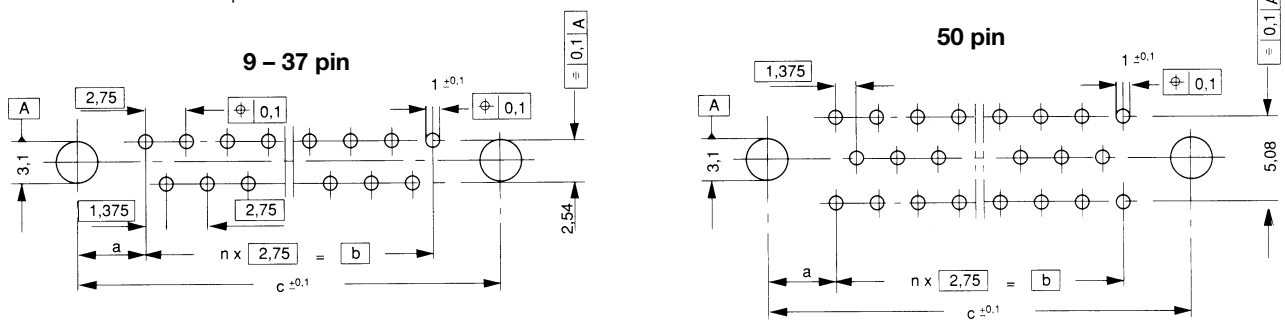
For assembly, an assembly comb is available on request.

## 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

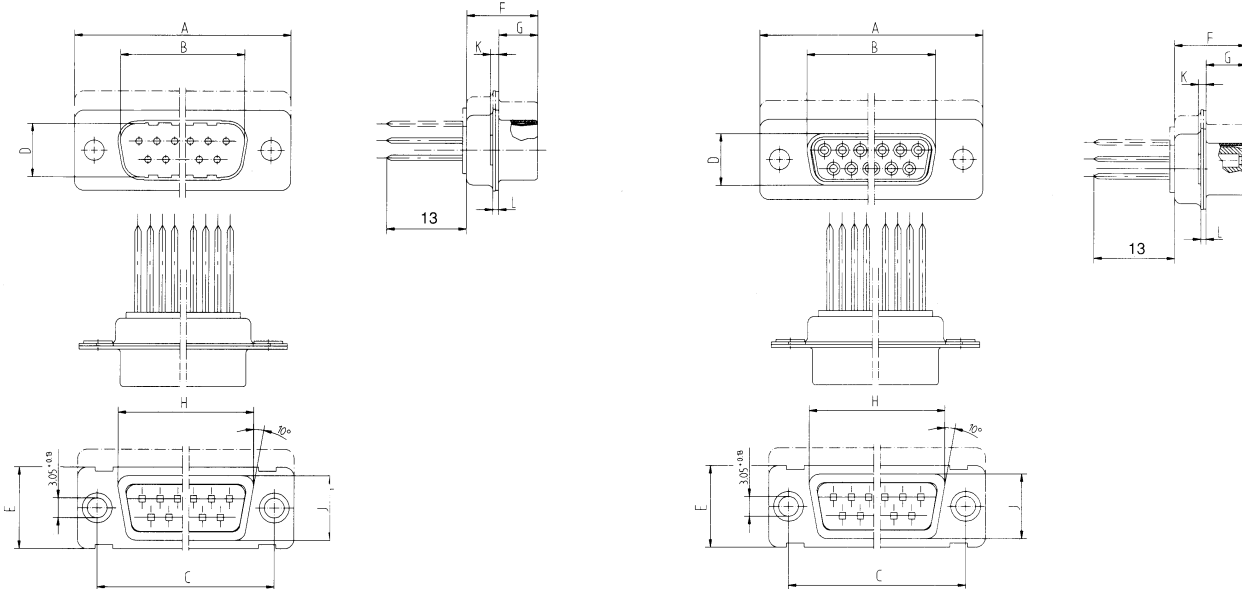


# TMC with wire wrap terminations



## 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
<i>Standard</i>	<i>Standard version</i>					<i>Standard version</i>				
	<b>023327</b>	<b>023328</b>	<b>023329</b>	<b>023330</b>	<b>023331*</b>	<b>013492</b>	<b>013553</b>	<b>01632</b>	<b>013698</b>	<b>013928</b>

## 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	  	Set for assembly without board <b>434831</b>
	<b>434830</b>		Set for assembly with board 2 mm thick <b>434832</b>
			Set for assembly with board 3 mm thick <b>434833</b>