

# 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

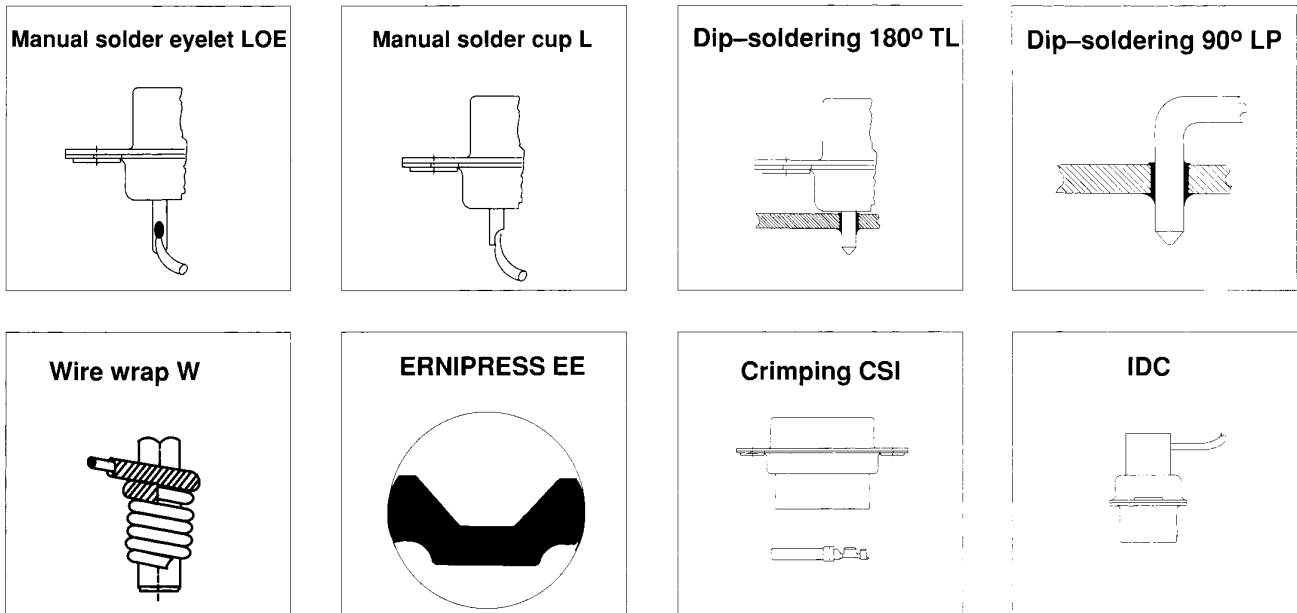
For series TMC connectors ERNI has a wide range of accessories available.

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**

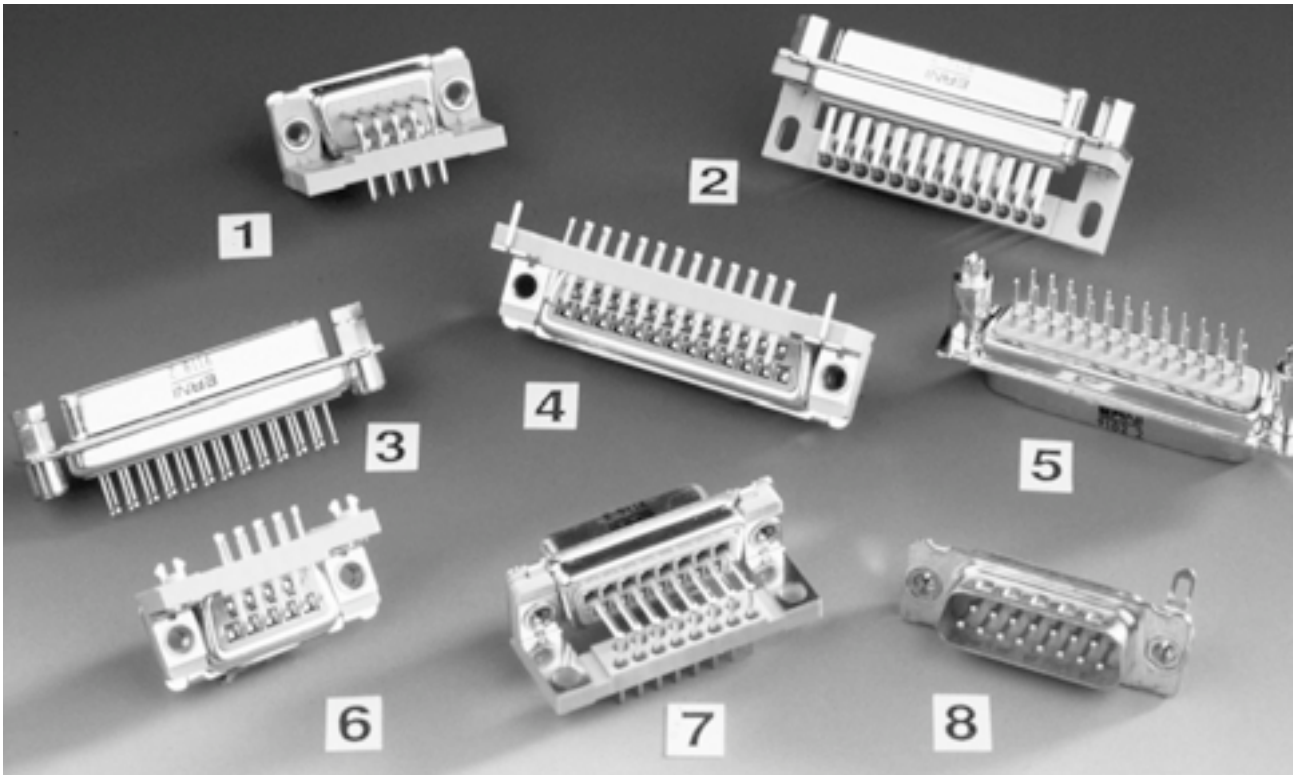
Performance level **107** and **101** connectors are available on request.

### 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.

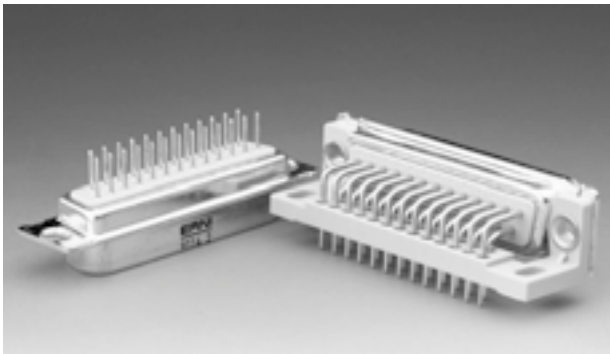
### **Ground eyelet (on request)** (see fig. 8)

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.

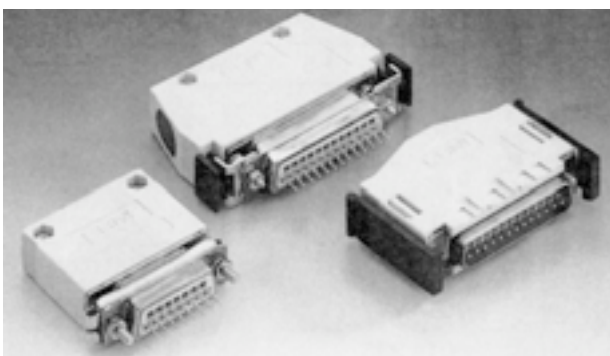


## Guide frame for angled connectors

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.

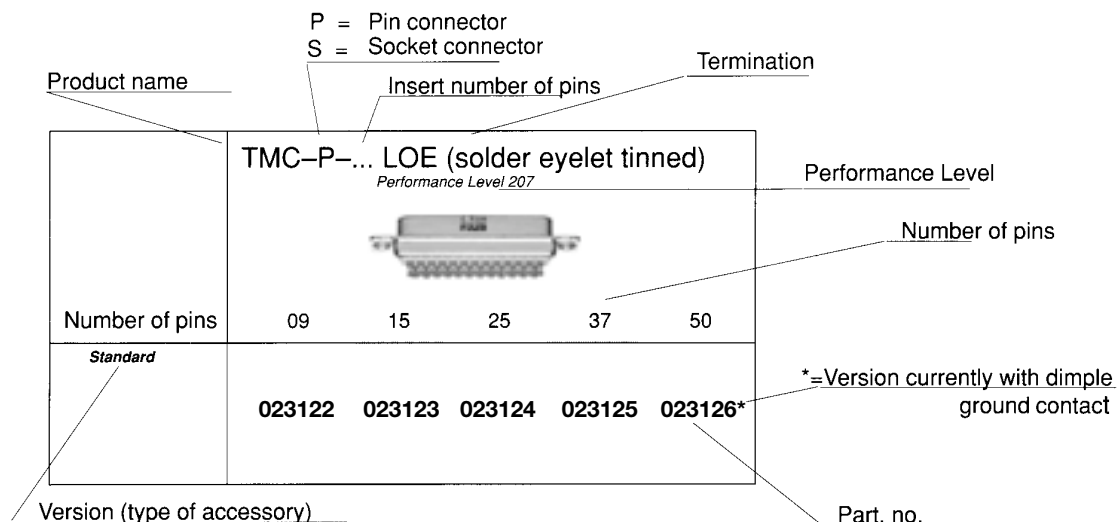
- **KSG 183 housing with engagement locking**
- **KSG 184 housing with slide locking**
- **KSG 185 housing with engagement and/or screw locking, integrated coding**

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

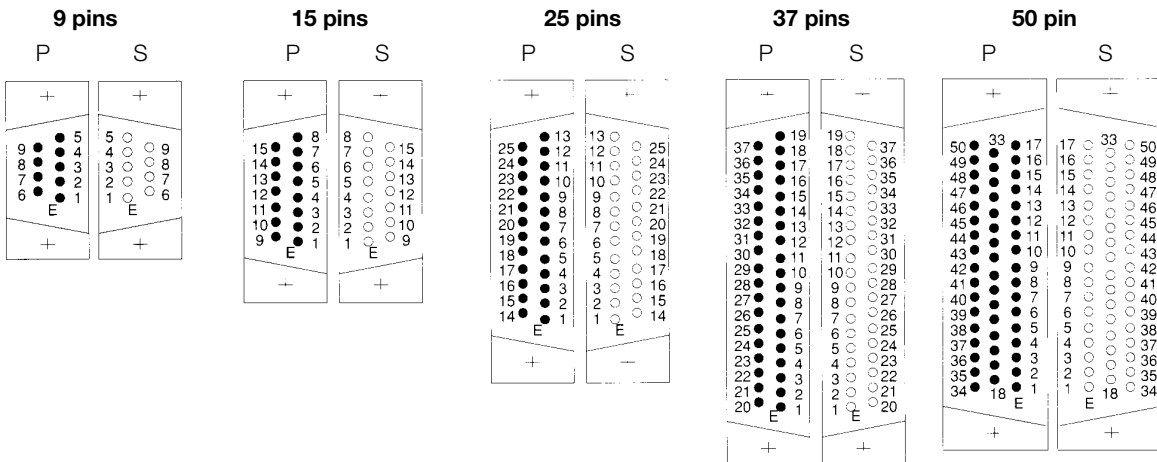
Socket connectors (S)

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)

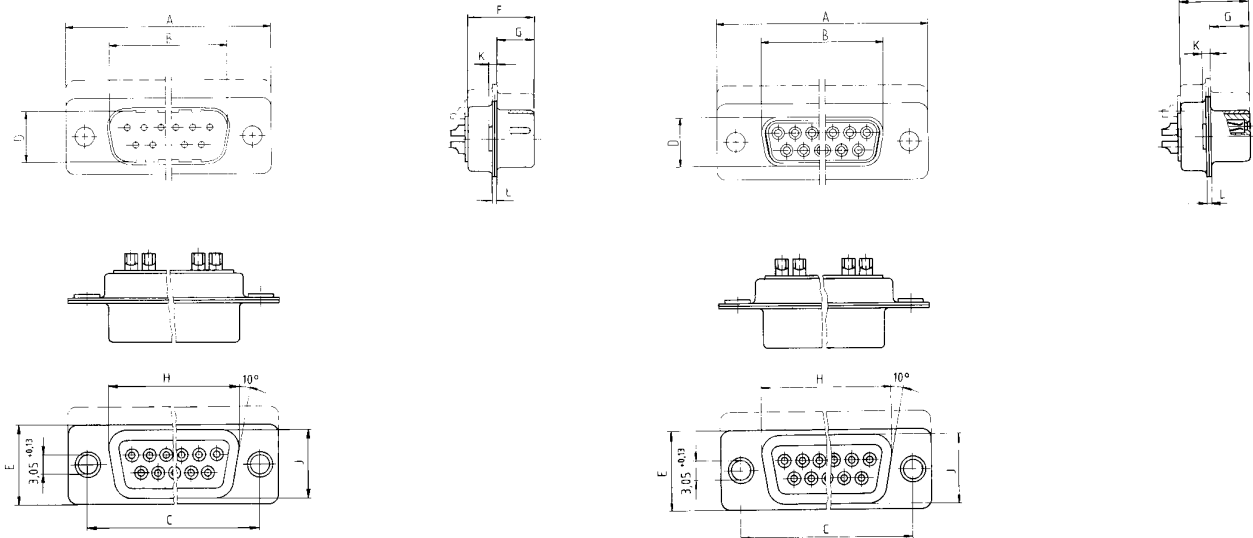


## TMC with manual soldering termination



### Dimensional drawings

Male connector

Female connector

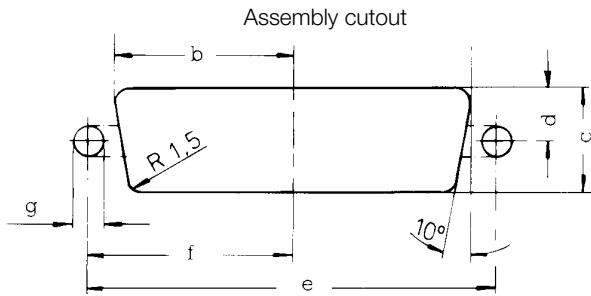


### Ordering details

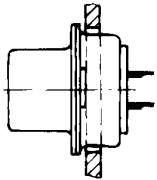
		<b>Female connectors</b>				
		TMC-S-....L (solder cup tinned) <i>Performance Level 207</i>				
						
Number of pins		09	15	25	37	50
<i>Standard</i>		<i>Standard version</i>				
		<b>004617</b>	<b>004620</b>	<b>004613</b>	<b>004926</b>	<b>004615</b>
	TMC-P-....L (solder cup gold-plated) <i>Performance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

## Assembly details

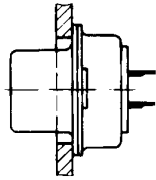
### TMC with manual solder termination



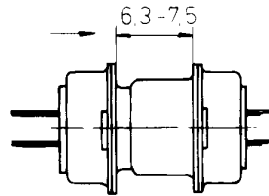
Front assembly



Rear assembly



Zone of reliable contact



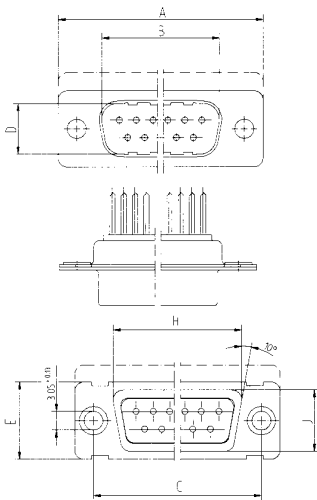
Number of pins	Assembly	a $\pm 0,13$	b $\pm 0,13$	c $\pm 0,13$	d $\pm 0,13$	e $\pm 0,1$	f $\pm 0,1$	g $\pm 0,1$
9	Front	22,2	11,1	13,0	6,5	25	12,5	3,1
	Rear	20,5	10,25	11,4	5,7			
15	Front	30,5	15,25	13,0	6,5	33,3	16,65	3,1
	Rear	28,8	14,4	11,4	5,7			
25	Front	44,3	22,15	13,0	6,5	47	23,5	3,1
	Rear	42,5	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			



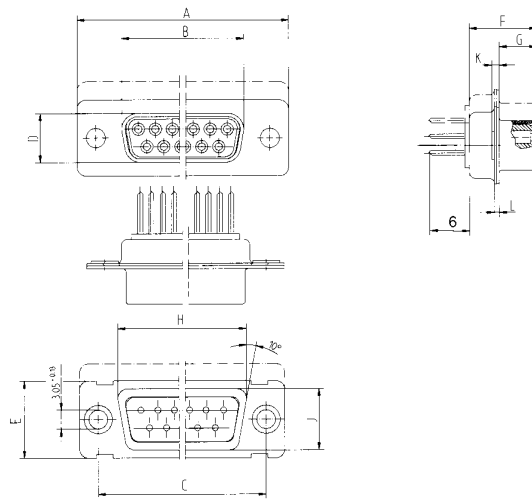
## TMC with straight dip-solder termination

### Dimensional drawings

Male connector

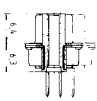


Female connector



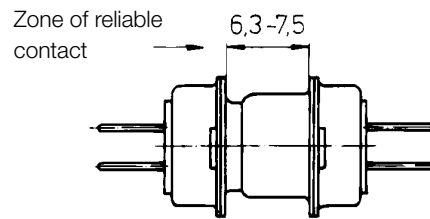
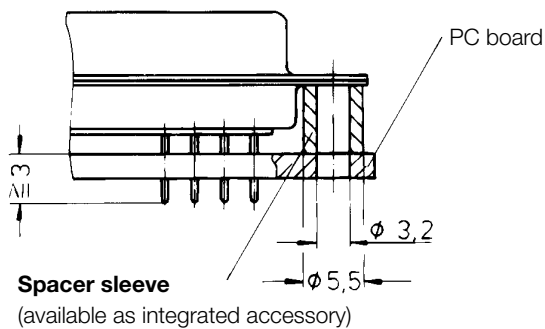
### Dimensional drawings

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

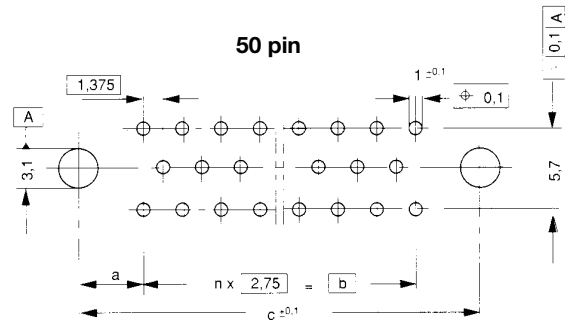
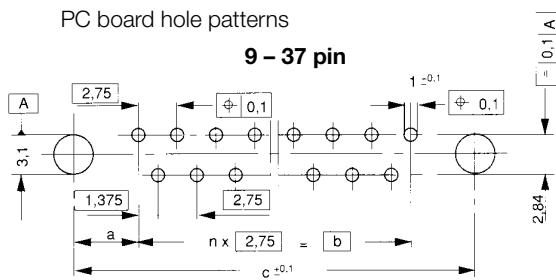
	Male connectors					Female connectors				
	TMC-P-....TL <i>Performance Level 207</i>					TMC-S-....TL <i>Performance Level 207</i>				
Number of pins	09	15	25	37	50	09	15	25	37	50
<b>Threaded bolt and sleeve</b>	Version with threaded bolt 4/40 and sleeve M3 as accessories					Version with threaded bolt 4/40 and sleeve M3 as accessories				
	<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>013641</b>

### Assembly details

TMC with straight dip-solder termination



PC board hole patterns



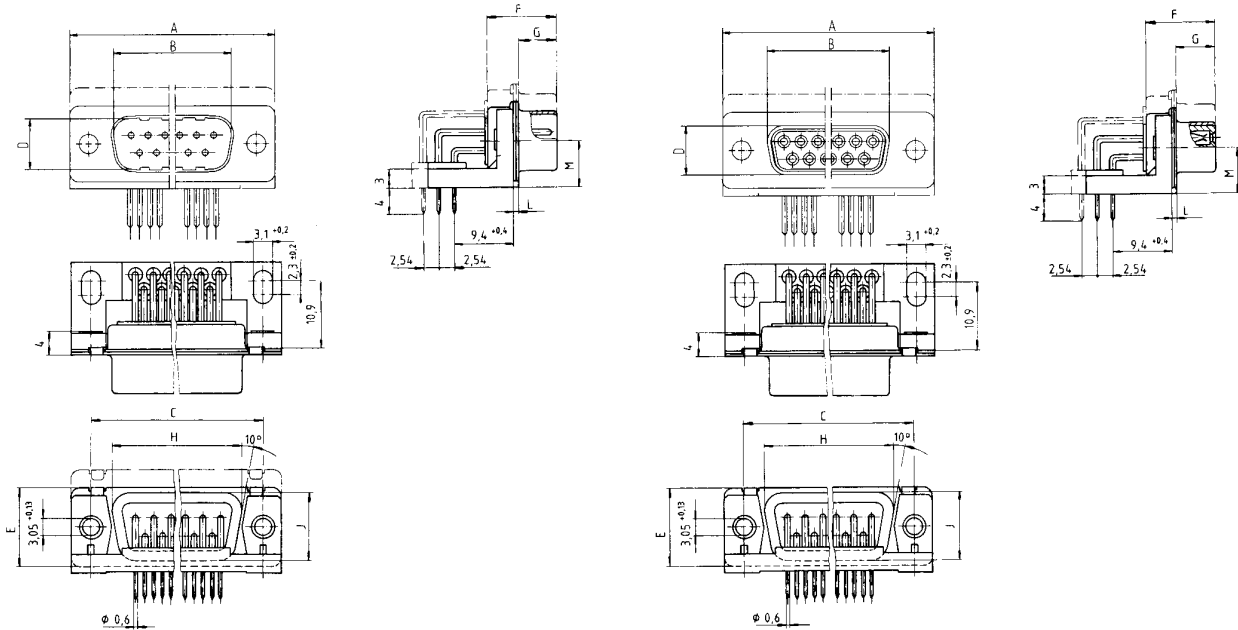
Number of pins	a	b	c	n
9	7	11	25	4
15	7,025	19,25	33,3	7
25	7	33	47	12
37	7	49,5	63,5	18
50	8,55	44	61,1	16

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

### Dimensional drawings

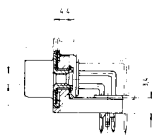
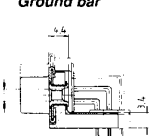
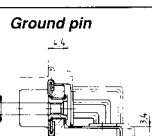
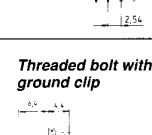
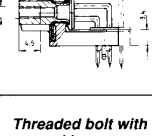
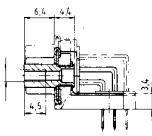
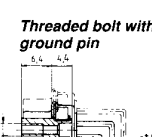
Male connector

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
<i>Standard</i>	<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

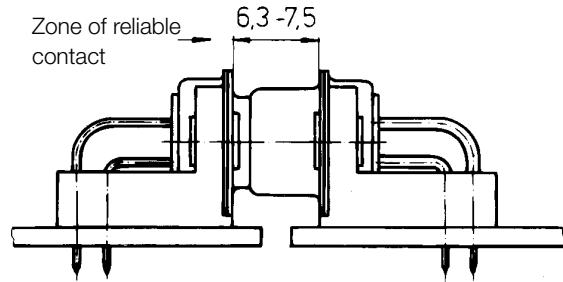
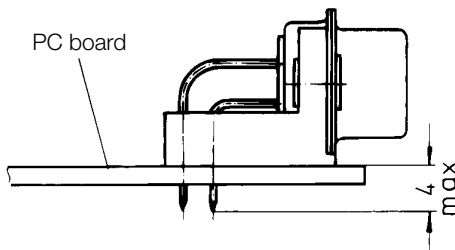
	Male connectors					Female connectors				
	TMC-P-...LP <i>Performance Level 207</i>					TMC-S-...LP <i>Performance Level 207</i>				
Number of pins	09	15	25	37	50	09	15	25	37	50
<b>Ground clip</b> 	<i>Version with ground clip as accessory</i>					<i>Version with ground clip as accessory</i>				
	<b>023191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

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

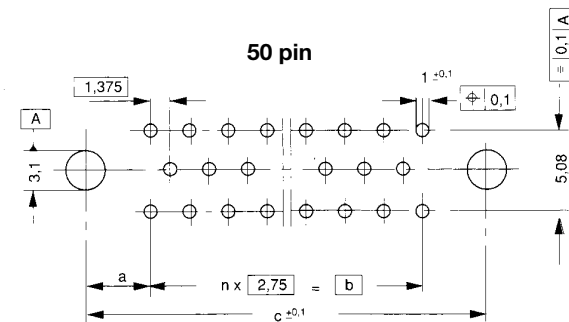
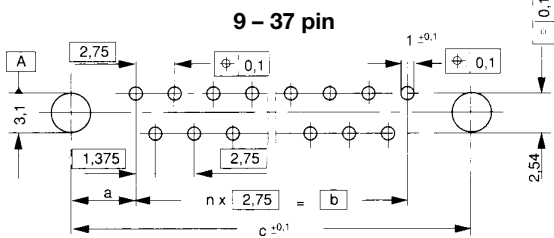
For further accessories and other combination options please consult ERNI's local office sales.

### 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

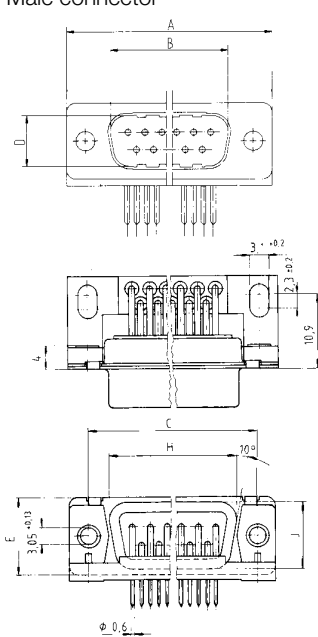


## Special version with solder pitch of 2.84 mm between the rows

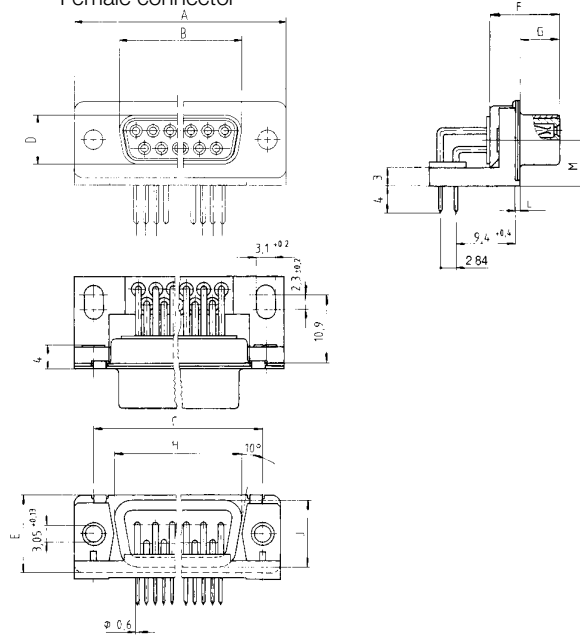
### TMC with angled dip-solder termination (solder pitch 2.84 mm)

#### Dimensional drawings

Male connector



Female connector

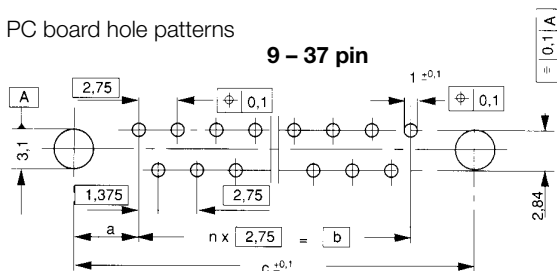


#### Ordering details about special version with solder pitch of 2.84 mm

	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
<b>Standard</b>	<i>Standard version</i> <b>023312</b> <b>023314</b>	<i>Standard version</i> <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.

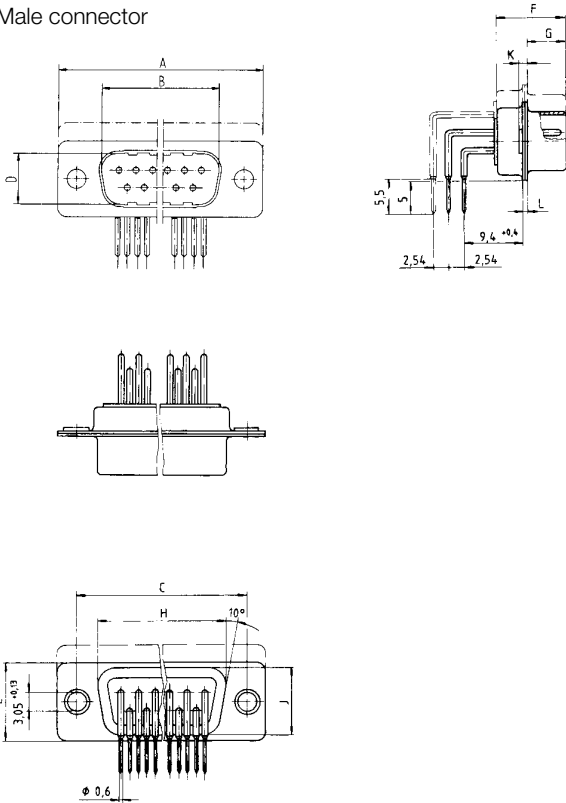
PC board hole patterns



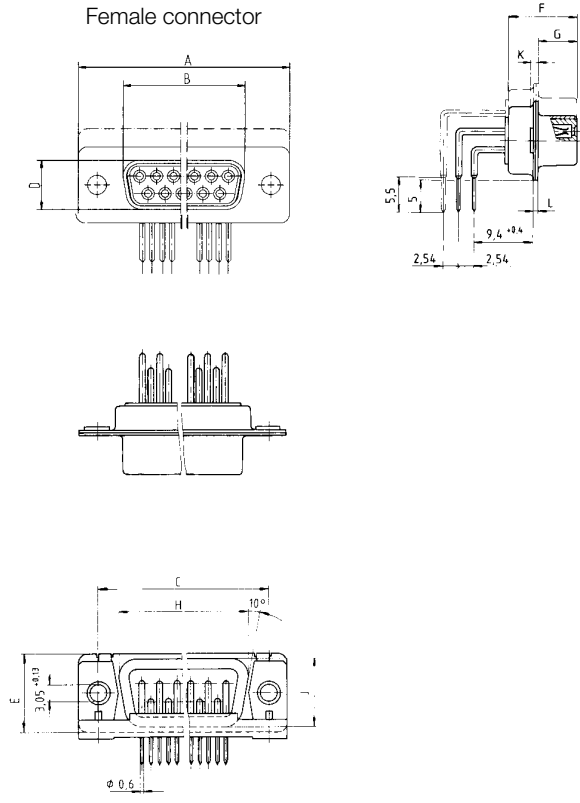
## TMC with angled dip-solder termination (without guide frame)

### Dimensional drawings

Male connector



Female connector



### Ordering details

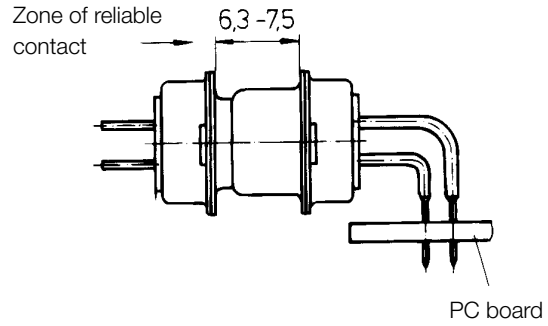
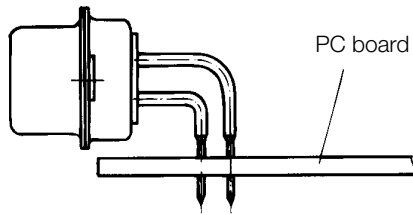
	Male connector	Female connector
	TMC-P-...LP (without guide frame) <i>Performance Level 207</i>	TMC-S-...LP (without guide frame) <i>Performance Level 207</i>
Number of pins	09    15    25    37    50	09    15    25    37    50
<i>Standard</i>	<i>Standard version</i> <b>023322   023323   023324   023325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

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

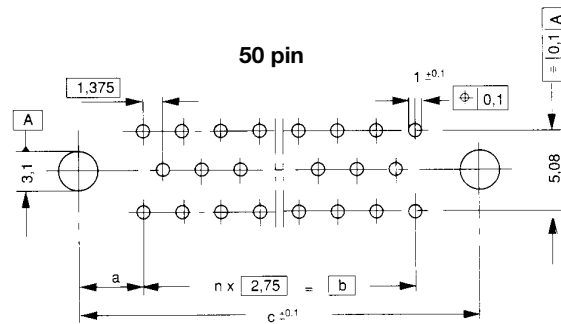
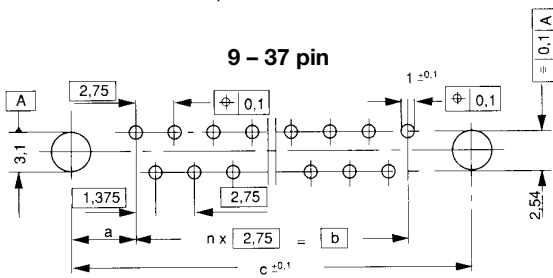
For assembly, an assembly comb is available on request.

## Assembly details

### TMC with angled dip-soldered termination without guide frame



PC board hole patterns



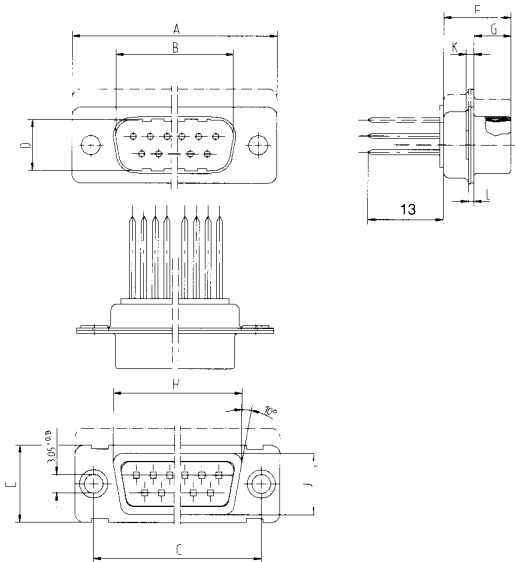
Number of pins	a	b	c	n
9	7	11	25	4
15	7,025	19,25	33,3	7
25	7	33	47	12
37	7	49,5	63,5	18
50	8,55	44	61,1	16



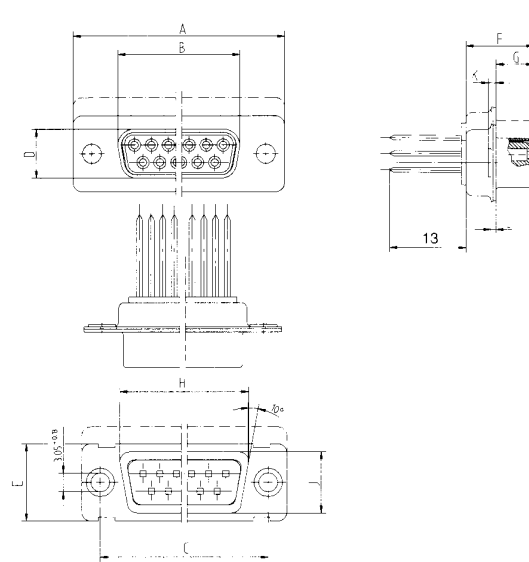
## TMC with wire wrap terminations

### 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>013632</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>