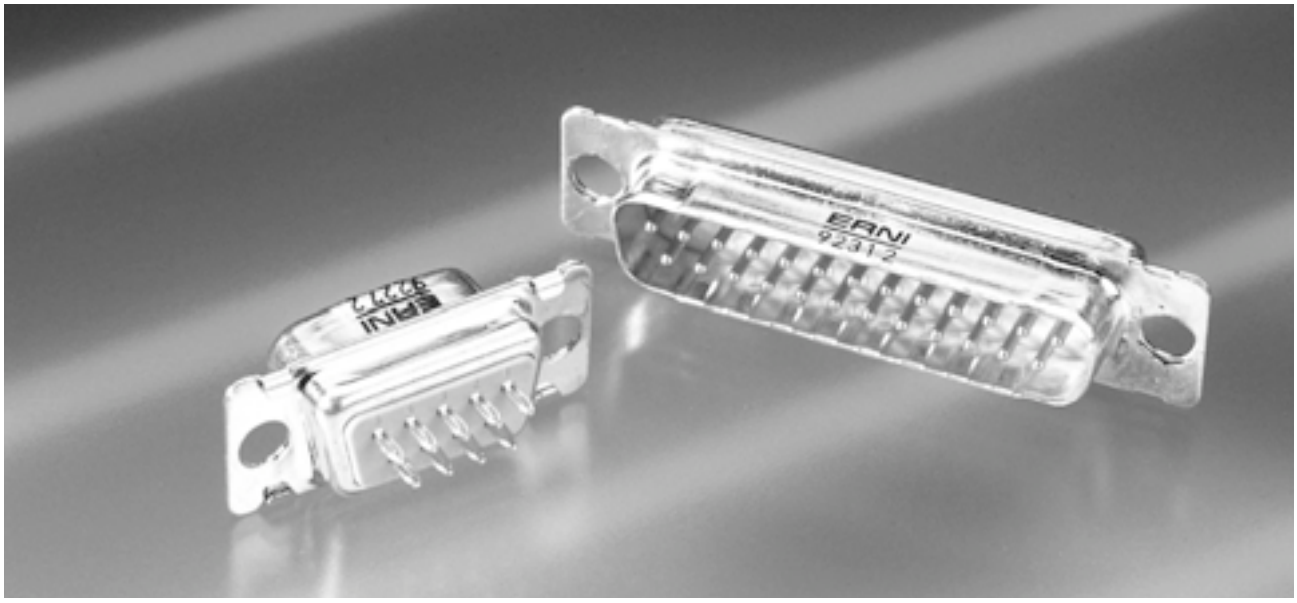
ERNIPRESS

Trapezoidal-Connectors Series TMC

Subminiatur-D Connectors to DIN 41 652/IEC 807-3 with Press-fit zone



General

Solderless press-in technology for connectors in bus systems permits rationalized and reliable connecting of connector and printed circuit board.

TMC series connectors are frequently used for interface connections. To provide a rationalized connecting technique in these applications, too, ERNI also offers the **ERNIPRESS** termination method (solderless press-in technology) for these connectors.

The socket (S) and plug (P) connectors have the wellproven elastic press-in zone (EE).

The contacts of the ERNIPRESS plug connectors (P) are made from a solid round wire.

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 compability, locking devices or connector housings, you will find attractive solutions at ERNI.

Benefits of ERNIPRESS

- Gas-tight, corrosion proof and strong mechanical connection
- No soldering errors
- No thermal stress
- Easy handling
- No flux problems
- Low tooling investment
- Contact is made in the copper-layer, not in the tin-layer of the pcb
- Assembly possible on both sides
- No additional washing, therefore no environmental pollution due to clearing agents

Main features

- International approval certificates such as UL, CECC
- 5 housing sizes with 9, 15, 25, 37 and 50 pins
- Accessories integrated into the connector
- Tinned metal housing
- **Laminated ground** indent 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

Electrical and mechanical data

Versions		TMC-**pin** connectors to Performance Level 207	TMC-**socket** connectors to Performance Level 207
Numbers of pins		2-rows of 9, 15, 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 at 20° C		7,5 A max.	5 A max.
Test voltage	contact/contact contact/ground	1000 V_{rms} 1200 V_{rms}	
Contact resistance		≤ 10 mΩ	
Insulation resistance		≥ 5 x 10^9Ω	
Shock and vibration proofness		No discontinuity at 20 g and 10...2000Hz	
Shock proofness		up to 50 g	
Metal protective collar		Tinned steel MR St 4, 1 µm Ni, 8 µm Sn	
Moulding		PBT 30% GV	
Inflammability of the plastic		Non flammable as per UL 94 V-0	
Comperative creepage figure to DIN IEC 112		CTI 275 / CTI 175 M	
Service life		Performance Level 2 ≥ 200 mating cycles	

Certificates of approval

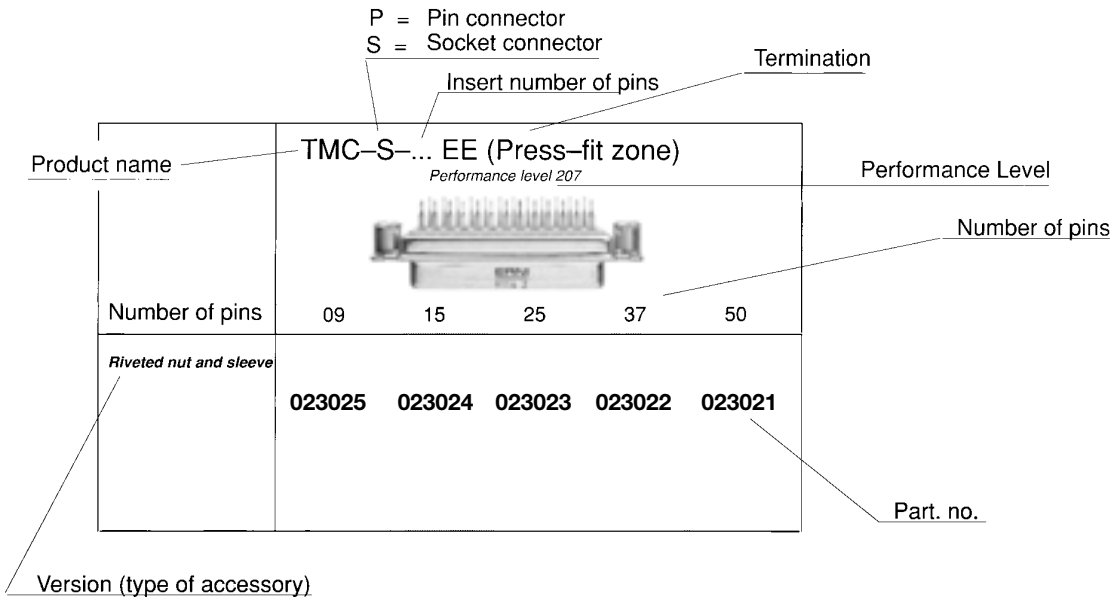
CECC Manufacturer approval for TMC-Connectors CECC 00114 T1/DIN ISO 9001
VDE Registration no. 6078/02.93 CAA)

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

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

Example of how to order



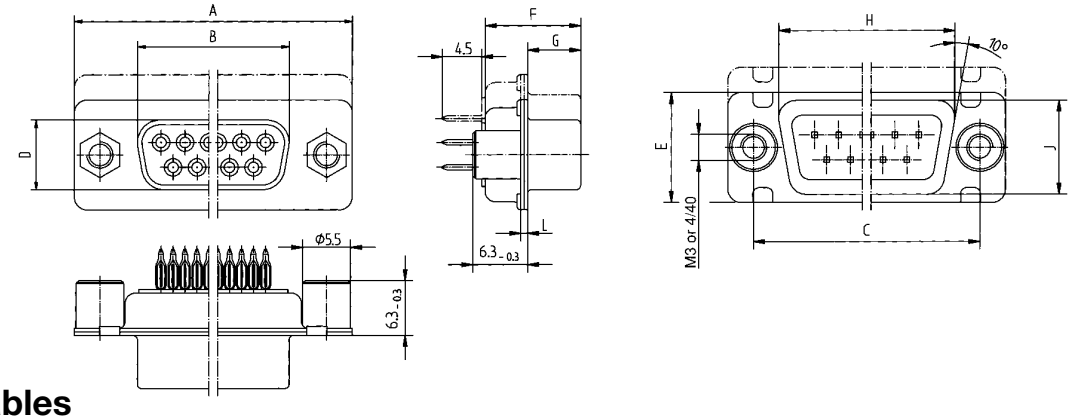
Systems Engineering at ERNI Today

As well as the development and production of components, we have also for many years been active in the field of component-mounting on complete printed board systems, primarily backplane or bus circuitry to customer specifications. In many cases our customers take advantage or our full service right from the start: that is to say, we have the printed boards produced to the customer's specification, take over the testing of the printed board prior to component-mounting, carry out all necessary component-mounting, and electrically test the printed board systems after assembly.
Thus the customer receives backplane circuitry ready for installation, with the ERNI manufacturer's and test certificate. This method does not have to be of benefit merely for large-scale series production. No indeed, in many applications ERNI offers decisive technical advantages even at low unit volumes. We only need mention here the key phrases high polarity, double-side mounting, multilayer printed boards and adapter slots.
Together with our customers, we devise and develop the benefits which ERNIPRESS can offer for the application.
So let's talk about your applications. Together we should work out the benefits which ERNIPRESS offers you.

Socket connectors TMC-S with press-fit zone EE

Dimensional drawings

Socket connectors



Dimension tables

Socket connectors (S)

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

Ordering details socket connectors TMC-S

	TMC–S–....EE (press–fit zone) *Performance level 207*				
Number of pins	09	15	25	37	50
Riveted nut and sleeve	*Version with riveted nut and sleeve M3 as accessories*				
	023025	**023024**	**023023**	**023022**	**032021**
Threaded bolt and sleeve	*Version with threaded bolt #4/40 and sleeve M3 as accessories*				
	014987	**014988**	**014989**	**014990**	**014991**
	Version with threaded bolt M3 and sleeve M3 as accessories				
	023538	**023539**	**023540**	**023541**	**023543**

Ordering details for press-fit tools for socket connectors series TMC-S

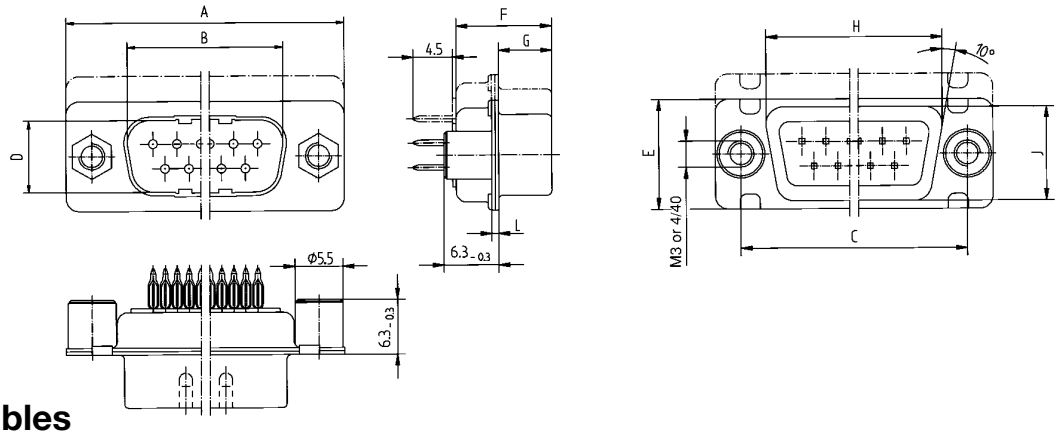
Number of pins	P/N Flat upper section	P/N Lower section
9	**471717**	**473258**
15	**471718**	
25	**471719**	
37	**471720**	
50	**471721**	

The standard connectors have a termination lenght of 4.5 mm and fixing bolts with a height of 6.3 mm.

Pin connectors TMC-P with press-fit zone EE

Dimensional drawings

Pin connector

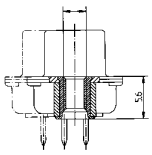
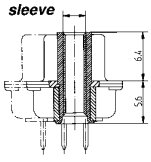


Dimension tables

Pin connectors (P)

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

Ordering details pin connectors TMC-P

	TMC–P–....EE (press–fit zone) *Performance level 207* 				
Number of pins	09	15	25	37	50
Riveted nut and sleeve 	*Version with riveted nut and sleeve M3 as accessories*				
	024965	**024966**	**024967**	**024968**	**024969**
Threaded bolt and sleeve 	*Version with threaded bolt #4/40 and sleeve M3 as accessories*				
	033531	**033532**	**033533**	**033534**	**033535**
	Version with threaded bolt M3 and sleeve M3 as accessories				
	033536	**033537**	**033538**	**033539**	**033540**

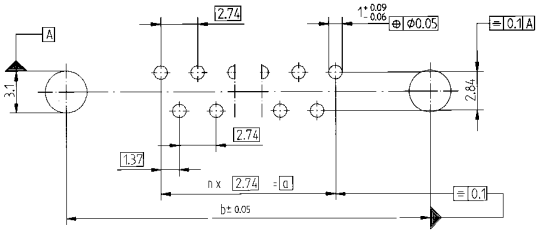
Ordering details for press-fit tools for pin connectors series TMC-P

Number of pins	P/N Flat upper section	P/N Lower section
9	**471826**	**473258**
15	**471827**	
25	**471828**	
37	**471829**	
50	**471830**	

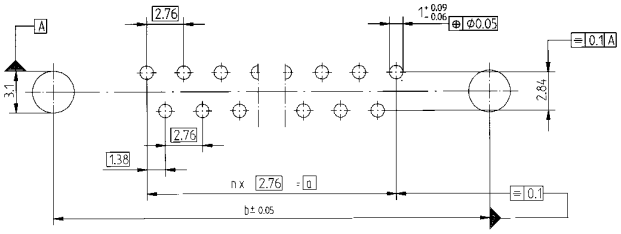
The standard connectors have a termination lenght of 4.5 mm and fixing bolts with a height of 6.3 mm.

PC board hole patterns

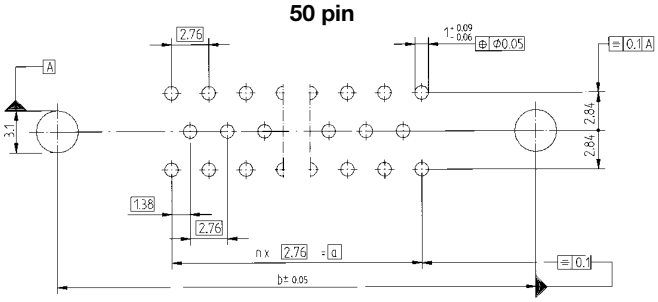
9 – 15 pin



25 – 37 pin



50 pin



Dimension table

Number of pins	a	b	n
9	10,96	25	4
15	19,18	33,3	7
25	33,12	47	12
37	49,68	63,5	18
50	44,16	61,1	16

Simple fixing and interlocking of the connector with integrated accessories

Our picture shows a 25-pole socket connector with integrated accessories.
On the plug-in side, the widely-used hexagon interlock bolts with inside thread can be seen.
The spacer bolts with inside thread for fixing on the printed board are likewise riveted on at the factory.
All accessory parts are available with thread versions M3 or 4/40 UNC.
The types of thread may also differ within a connector, e.g. M3 for fixing to the printed board and 4/40 as an inside thread for interlocking.

PCB requirements

In manufacturing the PCB board for the press-fit technique it is essential that the recommended DIN PC board specifications be met. The dimensions of the plated through drillholes and their hole design are described in DIN 41 611 as well as DIN IEC 60 352-5.
The quality and long-term performance of a press-fit connector are influenced by the following factors:

a.) Base material of the PCB.
To meet UL requirements, epoxy glass fabric type Hgw 2372.1 to DIN 7735, FR 4, should be used.

b.) Adherence to drillhole tolerances.
For optimum and uniform plating of the metallization of the pcb, a selective rack technique, flexible anode arrangement and continuous plating bath monitoring are suggested.

c.) Drillhole diameter and positioning.
Maintaining the correct roughness of the drillhole wall and restricting drill bit travel are critical production processes.

d.) PCB hole and layout requirements.
A minimal residual ring width of 0.1 mm, finished hole tolerances, layer thicknesses and a high quality consistent conductive pattern are all critical.

e.) Insertion and retention forces.
Measurement of these forces should be checked.

Insertion and retention forces

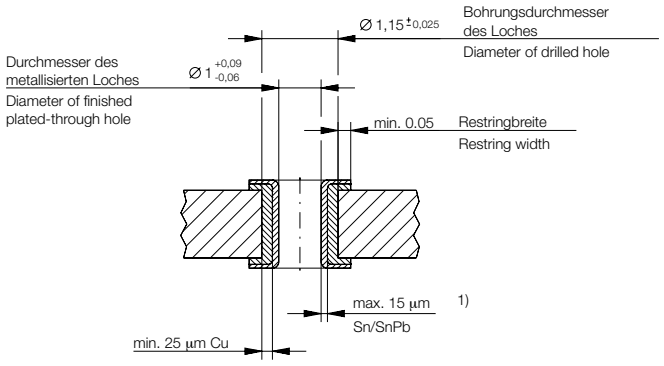
The design of the press-fit zone of the ERNIPRESS connectors performs a dual function. On the one hand this design has high elasticity and therefore can accomodate large hole tolerances. On the other hand, the press-fit zone's design ensures high edge loadinge at the copper layer of the PCB hole resulting in a gas-tight, corrosion-proof and mechanically secure connection.
Due to the special shape of the press-fit zone, insertion forces are not detrimental to the hole plating.

Retention forces of the contacts in the PCB hole are sufficient to withstand the torques which occur during wire wrap termination. Typical average values for retention force are between 40 – 70 N per contact depending upon PCB thickness.

For more details please refer to the data sheet entitled „ERNIPRESS – Long-term Test Programme to DIN 41 611/ IEC 60 352-5 Part 5 for Compliant Press-fit Zones".

Press-fit PCB hole design

Connectors Series TMC
Compliant press-fit zone EE



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