

Miniature connectors Main catalog

Miniline | Industrial connectors



STÄUBLI ELECTRICAL CONNECTORS

Long-term solutions – Expert connections



Stäubli Electrical Connectors is a leading international manufacturer of high-quality electrical contacts and connector systems and solutions for industrial applications. We are part of the Stäubli mechatronics group, the technology leader in connection solutions, robotics and textile machinery.

Stäubli develops, produces, sells and services products for markets with the highest productivity and safety standards. As recognized specialists, our focus is always on solutions and customers. Many new developments got their start here and are now becoming established as worldwide standards.

Our customers depend on our expertise and our active support, even when dealing with unusual challenges. With Stäubli, you're entering into a long-term partnership built on reliability, dedication, and exceptional quality in both products and services.

Pioneering contact technology for increased efficiency

The entire Stäubli Electrical Connectors product range meets market expectations for high performance, the highest number of mating cycles, and long-lasting reliability for safe, durable operation. Our proven **MULTILAM technology** is ideal for all types of connections in industrial applications. Customers in the **power transmission and**

distribution sector rely on our consistent, loss-free transmission performance in all voltage ranges. The **automotive industry** depends on our high-efficiency connections for spot-welding applications in production lines. Harsh conditions in the **transportation sector** require high vibration resistance, maximum reliability, and compact design. These attributes are vitally important for railway and e-mobility applications. The safety

and reliability of our products are essential for **test and measurement technology.**

In the growing field of **alternative energy**, our products have been setting standards since the 1990s. About half of the solar energy generated worldwide is transmitted through safe, long-lasting, high-performance Stäubli connectors.

UNLIMITED POSSIBILITIES FOR CONTACT SOLUTIONS

MULTILAM Technology



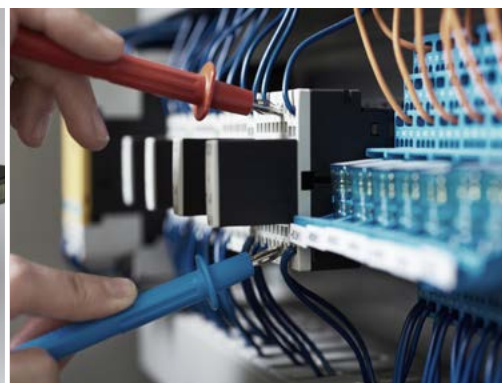
MULTILAM are specially formed and resilient contact elements. All Stäubli Electrical Connectors products benefit from the unique and outstanding performance of the **MULTILAM Technology**.

Thanks to their constant spring pressure, MULTILAM louvers ensure continuous contact with the contact surface, resulting in a constantly low contact resistance.

MULTILAM Technology allows to find solutions for connectors within the severest constraints and in certain products for up to 1 million mating cycles.

This makes the MULTILAM Technology the best choice for applications with demanding requirements:

- Reliable and longlife operation due to constantly high performance
- Safe operation under highest environmental demands on temperature, vibration and shock
- Suitable for data and signal contacts as well as high-current connectors
- Automated solutions with a high number of mating cycles



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General information

Colour code

For those items available in various colors, replace the asterisk "*" with the appropriate colour code.

20	green-yellow	26	violet
21	black	27	brown
22	red	28	grey
23	blue	29	white
24	yellow	33	transparent
25	green		

Changes/Provisos

All data, illustrations and drawings in the catalogue have been carefully checked. They are in accordance with our experience to date, but no responsibility can be accepted for errors. We also reserve the right to make modifications for design and safety reasons. When designing equipment incorporating our components, it is therefore advisable not to rely solely on the data in the catalogue but to consult us to make sure this information is up to date. We shall be pleased to advise you.

Copyright

The use of this catalogue for any other purpose, in whatever form, without our prior written consent is not permitted.

RoHS ready

Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment

Symbols



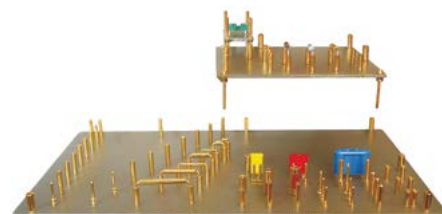
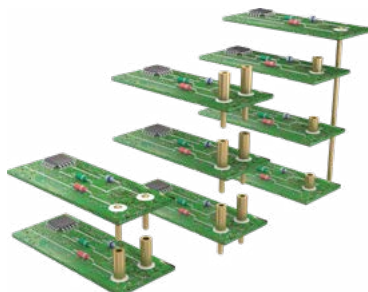
The assembly instruction MA000 is available for this product

INTRODUCTION

Miniature connectors for printed circuits

The special contact elements for printed-circuit technology allow the realization of contacts in sandwich construction.

The overview shows all the board spacing distances and socket-plug combinations that can be realized with our contact elements.



Nominal-Ø of connector	Printboard spacing	Socket	Plug	Page
mm	mm			
0.8	8	B0,8-H	S0,8	8/13
0.8	9	B0,8	S0,8	8/13
0.8	9.1	B0,8-H	S0,8-H	8/13
0.8	10.1	B0,8	S0,8-H	8/13
1	1.3	LB1	S1-B	10/14
1	2.3	LB1	S1-C	10/14
1	3.3	LB1	S1-D	10/14
1	4.3	B1-S	S1-B	9/14
1	5.3	B1-S	S1-C	9/14
1	6.3	B1-S	S1-D	9/14
1	8	B1-A	S1-B	9/14
1	8	BS1	S1-B	10/14
1	9	B1-A	S1-C	9/14
1	9	BS1	S1-C	10/14
1	10	B1-A	S1-D	9/14
1	10	BS1	S1-D	10/14
1	10	LS1	S1-B	11/14
1	11	B1-B	S1-E	9/14
1	11	LS1	S1-C	11/14
1	11.1	B1	S1	8/13
1	12	B1-B	S1-F	9/15
1	12	LS1	S1-D	11/14
1	14.1	B1	S1-A	8/13
1	20.6	B1-T	S1	9/13
1	23.6	B1-T	S1-A	9/13
1.3	9	B1,3	S1,3-15	11/15
2	10	B2-A	S2-L	11/16
2	10	B2-A	S2L-S	11/16
2	11	B2	S2-L	11/16
2	11	B2	S2L-S	11/16
2	12	B2-A	S2-D	11/17
2	13	B2	S2-D	11/17

SOCKETS

∅ 0.56 mm – ∅ 0.8 mm

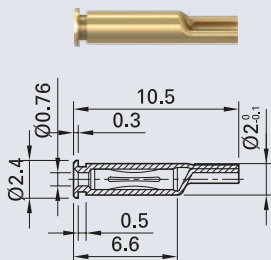


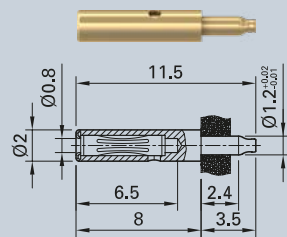
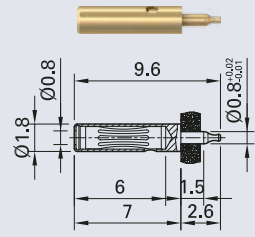
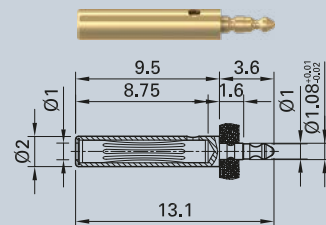
Order No.	Type	Nominal-∅	Type of termination	Sandwich board construction	Metal parts/plating	Withdrawal force	Rated current ¹⁾	Contact resistance	
		mm				N	A	mΩ	
41.6020 Applies for pin ∅ 0.6 mm	B0,56-0,64 ²⁾	0.56 – 0.64	Circuit board installation	✓	CuZn, Sn	~1.2	8	~3	
41.6001 Applies for pin ∅ 0.6 mm	B0,6-0,8	0.6 – 0.8	Soldering Dip soldering	✓	CuZn, Au	~1.8	10	~2,5	
41.6021 Applies for pin ∅ 0.76 mm	B0,7-0,8 ²⁾	0.7 – 0.8	Circuit board installation	✓	CuZn, Sn	~2	15	~3	

¹⁾ According to connecting method and cross section

²⁾ Handling instructions:

- Gloves (cotton or Latex operation gloves) should be worn when handling the sockets (especially when dip soldering).
- Avoid keeping the sockets longer than 6 months in stock.
- Store only in closed plastic bags and do not leave exposed to corrosive agents.

∅ 0.76 mm – ∅ 1 mm





Order No.	Type	Nominal-∅	Type of termination	Sandwich board construction	Metal parts/plating	Withdrawal force	Rated current ¹⁾	Contact resistance							
		mm				N	A	mΩ							
41.0009	LB0,76	0.76	Circuit board installation Dip soldering	-	CuZn, Au	~3	15	~1.2							
<p>Suitable insulation</p>  <table border="1"> <thead> <tr> <th>Designation</th> <th>Type</th> <th>Order No.</th> </tr> </thead> <tbody> <tr> <td>Insulation</td> <td>I-EB1</td> <td>23.5000-*</td> </tr> </tbody> </table> <p> Assembly instructions MA102 www.staubli.com/electrical</p> <p>*Colors 20 21 22 23 24 25 26 27 28 29 </p>										Designation	Type	Order No.	Insulation	I-EB1	23.5000-*
Designation	Type	Order No.													
Insulation	I-EB1	23.5000-*													
41.0055	B0,8	0.8	Dip soldering Soldering pin	✓	CuZn, Au	~2.5	18	~1.2							
41.0057	B0,8-H	0.8	Dip soldering Soldering pin	✓	CuZn, Au	~2.5	18	~1.2							
41.0051	B1	1	Soldering pin Suitable for flow soldering	✓	CuZn, Au	~1.5	20	~1							

¹⁾ According to connecting method and cross section

Order No.	Type	Nominal-Ø	Type of termination	Sandwich board construction	Metal parts/plating	Withdrawal force	Rated current ¹⁾	Contact resistance	
		mm				N	A	mΩ	
41.6002	B1-T	1	Soldering pin Suitable for flow soldering	✓	CuZn, Au	~1.5	20	~1.2	
<p>Functions of the special contours on the connection area, see page 24</p>									
41.6019	B1-S	1	Circuit board installation Dip soldering	✓	CuZn, Au	~3	20	~1	
41.0001	B1-A	1	Dip soldering Soldering pin	✓	CuZn, Au	~3	20	~1	
41.0002	B1-B	1	Dip soldering Soldering pin	✓	CuZn, Au	~2	20	~1.2	

¹⁾ According to connecting method and cross section

Ø 1 mm – Ø 2 mm

Order No.	Type	Nominal-Ø	Type of termination	Sandwich board construction	Metal parts/plating	Withdrawal force	Rated current ¹⁾	Contact resistance																		
		mm				N	A	mΩ																		
41.6004	BS1/90	1	Dip soldering Soldering pin	-	CuZn, Au	~3	20	~1																		
41.0010	LB1	1	Circuit board installation Dip soldering	✓	CuZn, Au	~3	20	~1																		
<p>Suitable insulation</p>  <table border="0"> <tr> <td>Designation</td> <td>Type</td> <td>Order No.</td> <td rowspan="2" style="text-align: center;">  Assembly instructions MA102 www.staubli.com/electrical </td> </tr> <tr> <td>Insulation</td> <td>I-EB1</td> <td>23.5000-*</td> </tr> </table> <p>* Colors</p> <table border="1"> <tr> <td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td> </tr> </table>										Designation	Type	Order No.	 Assembly instructions MA102 www.staubli.com/electrical	Insulation	I-EB1	23.5000-*	20	21	22	23	24	25	26	27	28	29
Designation	Type	Order No.	 Assembly instructions MA102 www.staubli.com/electrical																							
Insulation	I-EB1	23.5000-*																								
20	21	22	23	24	25	26	27	28	29																	
41.0053	BS1	1	Pin Ø 1 mm	✓	CuZn, Au	~3	20	~1																		

¹⁾ According to connecting method and cross section

Order No.	Type	Nominal-Ø	Type of termination	Sandwich board construction	Metal parts/plating	Withdrawal force	Rated current ¹⁾	Contact resistance	
		mm				N	A	mΩ	
22.1001	LS1	1	Soldering Pin Ø 1 mm	✓	CuZn, Au	~3	20	~1	
Suitable for lead assemblies									
41.0071	B1,3	1.3	Circuit board installation	✓	CuZn, Au	~1	20	~1	
41.0061	B2	2	Dip soldering Soldering pin	✓	CuZn, Au	~4	25	~0.5	
41.6018	B2-A	2	Dip soldering Soldering pin	✓	CuZn, Au	~4	25	~0.5	

¹⁾ According to connecting method and cross section

∅ 2 mm

Order No.	Type	Nominal-∅	Type of termination	Sandwich board construction	Metal parts/plating	Withdrawal force	Rated current ¹⁾	Contact resistance	
		mm				N	A	mΩ	
22.1031	LS225-BF	2	Soldering	-	CuZn, Au	~8	25	~0.5	

¹⁾ According to connecting method and cross section

PLUGS

∅ 0.8 mm – ∅ 1 mm

Order No.	Type	Nominal-∅	Type of termination	Sandwich board construction	Metal parts/plating	
		mm				
42.0055	S0,8	0.8	Dip soldering Soldering pin	✓	CuZn, Au	
42.0054	S0,8-H	0.8	Dip soldering Soldering pin	✓	CuZn, Au	
42.0051	S1	1	Soldering Pin Suitable for flow soldering	✓	CuZn, Au	
Functions of the special contours on the connection area, see page 24						
42.0052	S1-A	1	Soldering Pin Suitable for flow soldering	✓	CuZn, Au	
Functions of the special contours on the connection area, see page 24						

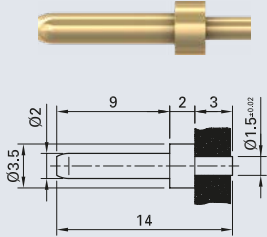
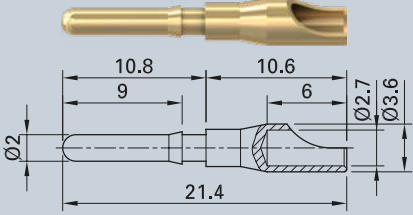
∅ 1 mm – ∅ 1.3 mm

Order No.	Type	Nominal-∅ mm	Type of termination	Sandwich board construction	Metal parts/plating	
42.0001	S1-B	1	Dip soldering Soldering Pin	✓	CuZn, Au	
42.0002	S1-C	1	Dip soldering Soldering Pin	✓	CuZn, Au	
42.0003	S1-D	1	Dip soldering Soldering pin	✓	CuZn, Au	
42.0004	S1-E	1	Dip soldering Soldering pin	✓	CuZn, Au	

Order No.	Type	Nominal-Ø	Type of termination	Sandwich board construction	Metal parts/plating	
		mm				
42.0005	S1-F	1	Dip soldering Soldering pin	✓	CuZn, Au	
42.0071	S1,3-15	1.3	Soldering pin	-	CuNi, Au	
42.0072	S1,3-18,5	1.3	Soldering pin	-	CuNi, Au	
42.0073	S1,3-22	1.3	Soldering pin	-	CuNi, Au	

∅ 1.3 mm – ∅ 2 mm

Order No.	Type	Nominal-∅	Type of termination	Sandwich board construction	Metal parts/plating	
		mm				
42.0074	S1,3-31	1.3	Soldering pin	-	CuNi, Au	
42.0075	S1,3-44	1.3	Soldering pin	-	CuNi, Au	
42.0061	S2-L	2	Dip soldering Soldering pin	✓	CuZn, Au	
42.0060	S2L-S	2	Soldering pin	✓	CuZn, Au	




Order No.	Type	Nominal-Ø	Type of termination	Sandwich board construction	Metal parts/plating	
		mm				
42.0062	S2-D	2	Soldering pin	✓	CuZn, Au	
22.1023	LS225	2	Soldering	-	CuZn, Au	

SOCKETS FOR CONNECTING LEADS

Ø 0.5 mm – Ø 1.57 mm

Order No.	Type	Nominal-Ø	Type of termination	Sandwich board construction	Metal parts/plating	Withdrawal force	Rated current ¹⁾	Contact resistance	
		mm				N	A	mΩ	
41.0056	B0,5	0.5	Soldering Crimping	-	CuZn, Au	~1	7.5	~3	
41.0054	B0,7	0.7	Soldering	-	CuZn, Au	~3.5	15	~1.5	
41.6015	B0,7-B	0.7	Soldering Crimping	-	CuZn, Au	~3.5	15	~3	

¹⁾ According to connecting method and cross section

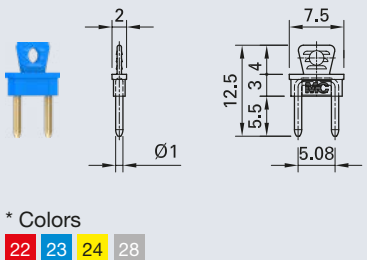
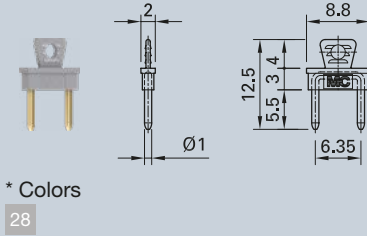
Order No.	Type	Nominal-Ø	Type of termination	Sandwich board construction	Metal parts/plating	Withdrawal force	Rated current ¹⁾	Contact resistance	
		mm				N	A	mΩ	
41.6000	B1-TH	1	Crimping 0.25 mm ²	-	CuZn, Au	~3	20	~1	
<p>Suitable insulation</p>  <p>Designation Type Order No. Insulation KT2-S 22.2010-*</p> <p> Assembly instructions MA145 www.staubli.com/electrical</p> <p>* Colors </p>									
41.6011	B1,5	1.5	Soldering	-	CuZn, Au	~1	25	~0.9	
41.6058	B1,57-20R	1.57	Crimping for AWG20	-	Cu(alloy) ²⁾	~3	10	~0.5	

¹⁾ According to connecting method and cross section

²⁾ MULTILAM:
hard-drawn copper alloy, gold-plated (1.2 µm Au);
contact body: brass, gold-plated (0.5 µm Au)

CONNECTING PLUGS

∅ 1 mm, insulated

Order No.	Type	Insulation handle	Operating temperature	Metal parts/plating	Rated current	Plug spacing	
			°C		A	mm	
24.0037-*	KSI1-5,08	PA	-40...80	CuZn, Au	20	5.08	 <p>* Colors 22 23 24 28</p>
24.0038-*	KSI1-6,35	PA	-40...80	CuZn, Au	20	6.35	 <p>* Colors 28</p>

Customized designs

A speciality of Stäubli is to develop individual solutions for special contact requirements in collaboration with the customer.

Just ask us. We shall be pleased to advise you.

Examples:

ILL. 1

Plug connector for relay support (aerospace engineering)



ILL. 1

ILL. 2

High temperature connector



ILL. 2

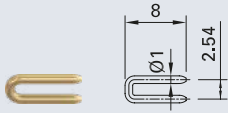
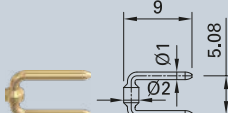
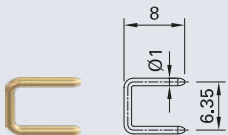
ILL. 3

∅ 1 mm plug connector, material and plating non magnetic



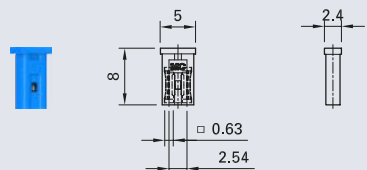
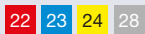
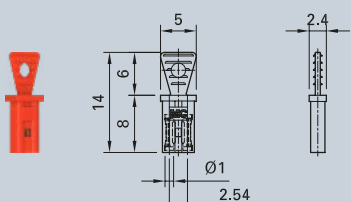
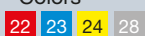
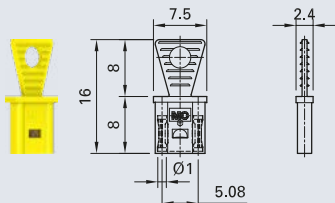

ILL. 3

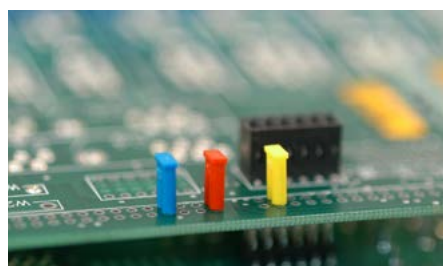
Ø 1 mm, not insulated

Order No.	Type	Metal parts/plating	Rated current	Plug spacing	
			A	mm	
24.0030	KS1-2,54	CuZn, Au	20	2.54	
24.0031	KS1-5,08	CuZn, Au	20	5.08	
24.0035	KS1-6,35	CuZn, Au	20	6.35	

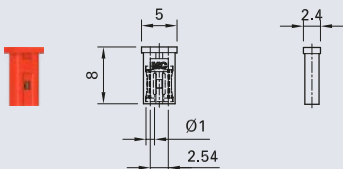
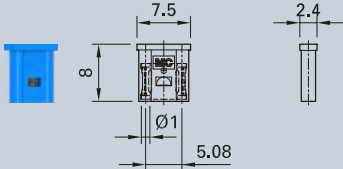
CONNECTING BRIDGES

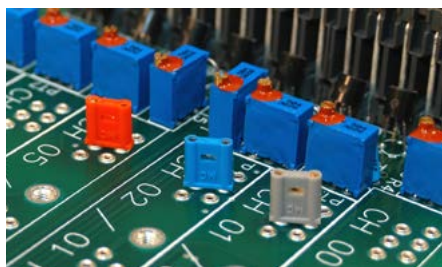
□ 0.63 mm – 2 mm, insulated

Order No.	Type	Insulation handle	Operating temperature	Metal parts/plating	Rated current	Plug spacing	
			°C		A	mm	
24.0058-*	KB0,63-2,54/1	PA	-40...80	Cu(alloy) ¹⁾	8	2.54	 <p>* Colors </p>
24.0052-*	KB1-2,54	PA	-40...80	Cu(alloy) ¹⁾	10	2.54	 <p>* Colors </p>
24.0050-*	KB1-5,08	PA	-40...80	Cu(alloy) ¹⁾	10	5.08	 <p>* Colors </p>



¹⁾ Hard-drawn copper alloy, gold plated

Order No.	Type	Insulation handle	Operating temperature	Metal parts/plating	Rated current	Plug spacing	
			°C		A	mm	
24.0053-*	KB1-2,54/1	PA	-40...80	Cu(alloy) ¹⁾	10	2.54	 <p>* Colors 22 23 24 28 </p>
24.0054-*	KB1-5,08/1	PA	-40...80	Cu(alloy) ¹⁾	10	5.08	 <p>* Colors 22 23 24 28 </p>



¹⁾ Hard-drawn copper alloy, gold plated

Technical information

Withdrawal force

is the force required to pull out a connector without influence of a locking or a coupling device. The withdrawal force is determined on polished pins and sockets with Stäubli MULTILAM.

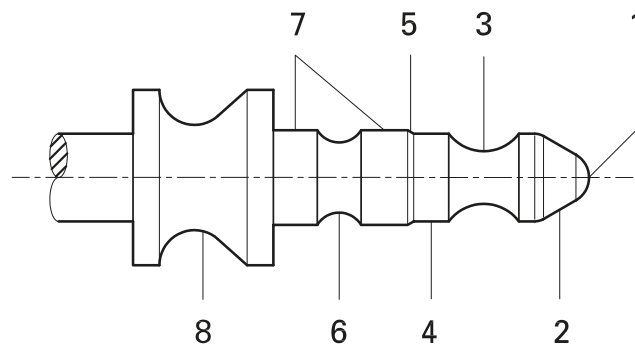
Rated current (IEC 61984)

Assigned current which the connector can carry continuously (without interruption) and simultaneously through all its wired contacts with the largest specified conductor, at an ambient temperature of 20°C, without the upper limiting temperature being exceeded.

Flow soldering

Function of the special contour for flow soldering:

- 1) Rounded shank tip prevents damage to insulation.
- 2) Tapered sides of shank tip. No damage to gold plating during assembly, good soldering qualities.
- 3) The narrowing of the shank restricts heat transfer during soldering, and the solder flowing into the narrow neck produces better mechanical adhesion.
- 4) The \varnothing 1 mm shank can easily be provisionally pressed by hand into the holes in printed circuit boards.
- 5) Widening of shank to press fit \varnothing 1.08 mm.
- 6) The narrowing of the shank restricts heat transfer between the soldering tip and the socket or plug body.
- 7) \varnothing 1.08 mm shank gives a good press fit in the printed circuit board hole.
- 8) The narrowing of the plug shoulder gives greater resilience to absorb plug-socket misalignment, thus protecting the press fit and solder joint from excessive stress.



Contact resistance

is the resistance occurring at the point of contact between two surfaces. Its value is calculated with the measured voltage drop and the rated current in new condition. The technical data here stated are mean values.

Gold plating

Gold has good electrical conductivity and affords unexcelled corrosion protection. Contact resistance is low and constant. A nickel or copper layer is applied as a diffusion barrier.

Nickel plating

In cases where electrical specifications are less demanding, nickel-plated contact elements are used. This process is also frequently used to provide a diffusion barrier prior to gold plating.

Employed plastic material

PA (Polyamide)

Protection against electric shock for unenclosed connectors.

Protection against electric shock is provided by the customer by the enclosure of the equipment in which the connector is mounted. Or its use is limited to very low voltage (SELV – safety extra low voltage).

Upper limiting temperature

Maximum temperature of a connector as defined by the climatic category assigned by the manufacturer, in which the connector is intended to operate.

Lubricants

To give our connectors optimum protection from wear, we recommend applying a thin film of lubricant to the contacts before the first connection is made. We recommend the following lubricants:

- Klübertemp GR UT 18
(Order No. 73.1059)
- Kontasynth BA 100, spray
(Order No. 73.1051)

from Klüber Lubrication, Munich.

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