

SMC\* – Technology and board connectors

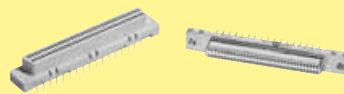
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**harmik®**

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**D-Sub – S**

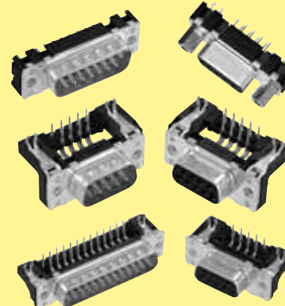
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**SEK**

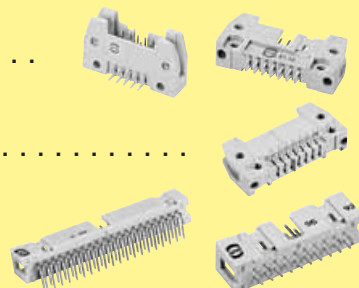
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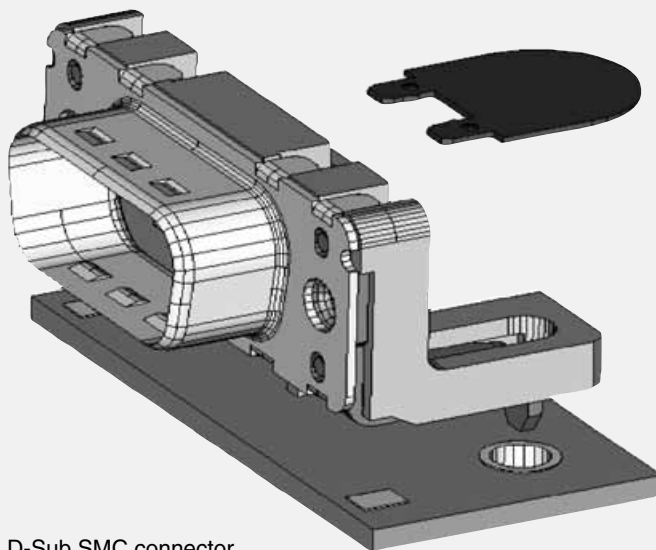


SMC  
technology

\* Also known as Pin-in-Paste or Through Hole Reflow (THR)

The continuing trend towards miniaturisation has revolutionised the assembly of electronic components. For the past 15 years, most components have been secured directly to the pcb surface by means of Surface Mount Technology (SMT). By dispensing with drilled holes on the pcb, a space saving of up to 70 percent is achieved.

Today, typical components such as ICs, resistors, capacitors, inductors, and connectors with straight terminal pins are almost exclusively fitted using SMD (Surface Mount Device) technology in mass production. In contrast, angled SMD connectors at the edge of the board have not been successful because of tolerance problems (co-planarity) and stresses during mating.



D-Sub SMC connector

are equipped with both types of machine. Therefore the "Pin in Hole Intrusive Reflow" process entails no extra investment costs for the user.

### Conventional assembly process:

1. Application of solder paste
2. Positioning the components
3. Positioning odd form components
4. Reflow soldering
5. Pressing in or partially dip soldering the connector at the board edge
6. Quality inspection

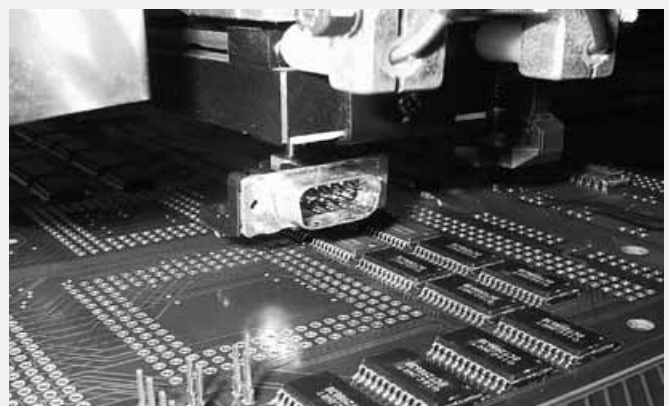
### "Pin in Hole Intrusive Reflow" assembly:

1. Application of solder paste
2. Positioning the components
3. Positioning odd form components
4. Reflow soldering
5. Pressing in or partially dip soldering the connector at the board edge
6. Quality inspection

### "Pin in Hole Intrusive Reflow"

In this process, the connector is inserted into plated through holes in a comparable way to conventional component mounting. All other components can be assembled on the pcb surface.

The components are positioned using pick-and-place machines. These automatic assembly machines differ according to whether the components are small, light-weight or bulky. Connectors, compared to ICs, are considered bulky (odd form). They are more difficult to grip, due to their comparatively heavy weight and larger size. But machines for odd form components, provide the higher insertion power, necessary to fit the components into pcb holes, which are filled with solder paste. Generally modern SMC production lines



D-Sub in pick and place machine equipped with vacuum nozzle

\* Also known as Pin-in-Paste or Through Hole Reflow (THR)

Interface connectors were designed for Pin in Hole Intrusive Reflow with features like an inspection friendly black colour, tape and reel packaging for automated handling and it is self retaining on pcb via kinked pin. The open design – moulded from high temperature resistant material – ensures good heat distribution, so that current solder temperature profiles can be used. The special material of the insulation body withstands also the higher temperatures of lead free soldering.

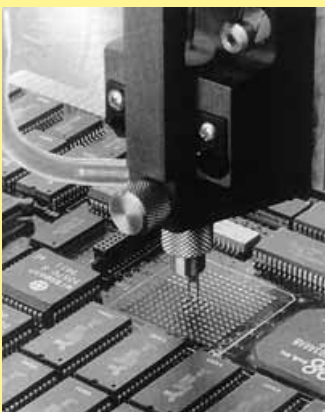
## Advantages for using interface connectors are:

- Partial dip soldering or press fitting is no longer required
- High mechanical stability
- Complete compatibility with Surface Mount Technology
- Savings through integration into the automated assembly process
- Reduced floor space in the production plant

## Application of solder paste

Before the components are assembled, solder paste is applied to all the solder pads and the plated through holes. Usually a screen printing process is used for this purpose. A squeegee moves across the pcb, which is masked with screens and presses the solder paste into all unmasked areas. A good solder joint is basically determined by the amount of the applied solder paste. Only a few parameters (illustrated on the right) will lead to the right quantity.

As an alternative to screen printing, the solder paste can be applied by means of a dispenser. A high-precision robot moves the dispenser to all required positions on the pcb. The dispensing method is particularly suitable for small pcb's or applications which demand high precision and flexibility in dispensing volumes.



Dispenser in operation

## Solder paste volume

There are numerous scientific studies dealing with calculation of the required quantity of solder paste. These studies use various parameters, e.g. the shrinking factor of the paste during soldering or the thickness of the screens used for masking the pcb. Since such calculation methods are complicated to apply, the following rule of thumb has proved valuable in practice:

$$V_{\text{Paste}} = 2(V_H - V_P)$$

in which:

$V_{\text{Paste}}$  = Required volume of solder paste

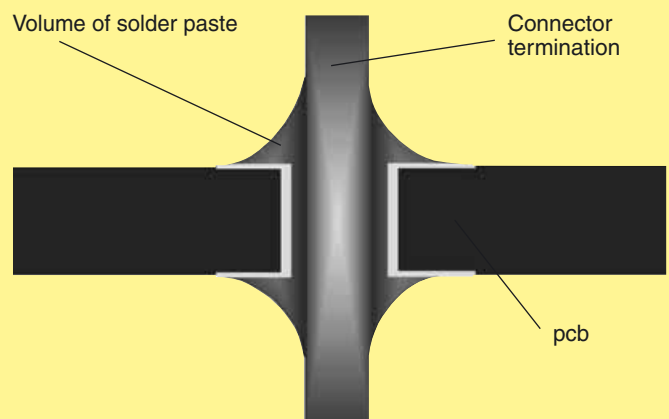
$V_H$  = Volume of the plated through hole

$V_P$  = Volume of the connector termination in the hole

Comment: the multiplier "2" compensates for solder paste shrinkage during soldering. For this purpose, it was assumed that 50 % of the paste consists of the actual solder, the other 50 % being soldering aids.

## Requirements for the solder connection

At the beginning of a new production batch, the process parameters, such as quantity of solder paste and soldering temperature, can be set by interpreting simple cross-sections of the soldered connection. A reliable measure for achieving optimum parameters is the quantity of solder required to fill the hole. In soldered connections of high quality, the holes are filled to between 75 % and 100 %.



Plated through hole with connector termination

## SMC connectors

SMC (Surface Mount Compatible) connectors have to withstand temperatures of up to 225°C in the reflow oven for 10 to 15 seconds. Therefore, the moulding must be made from a dimensionally stable plastic which expands at the same rate as the pcb material when subjected to heat.

The length of the connector contacts should be such that they protrude by no more than 1.5 millimetres after insertion to the pcb. Each contact collects solder on its tip as it penetrates the solder paste in the hole. So if the contact was too long, this solder would no longer be able to reflow back into the plated through hole by capillary action during the soldering process, therefore the quality of the soldered connection would suffer as a result.

Connector design must permit both automatic assembly with pick-and-place machines and manual positioning for test and pre-production batches. It is also important for the packaging of the connectors to be suitable for automated assembly. Experience shows that deep-drawn film and reel packaging fed into the pick-and-place machines with the aid of a conveyor system is particularly suitable.

## HARTING SMC technology

HARTING offers its customers a complete system concept for integrating SMC technology into existing production lines. We manufacture a wide range of SMC connectors (3 and 5 row) in compliance with IEC 60 603-2, D-Sub connectors in compliance with CECC 75 301-802 and connectors from the har-mik® series with contact spacing of 1.27 millimetres. In addition, HARTING supports the market with packaging and processing concepts, which have been developed in collaboration with renowned manufacturers of SMC soldering and assembly plants.

**You will find more detailed information in our SMC catalogue, as well as in our hard metric connectors catalogue.**

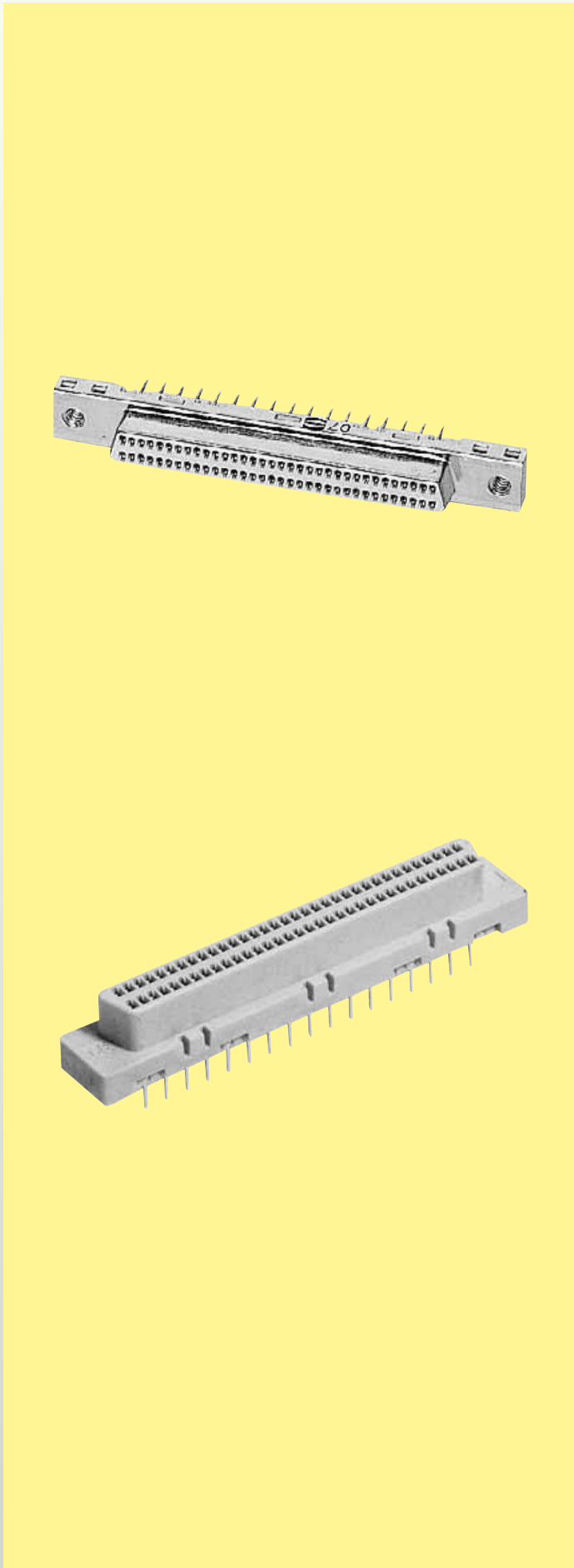
### **Advantages of the “Pin in Hole Intrusive Reflow” process:**

- Partial dip soldering or press fitting is no longer required
- Complete compatibility with Surface Mount Technology
- Complete integration into the automated assembly process
- Reduced floor space in the production plant
- As a rule, no additional investment costs



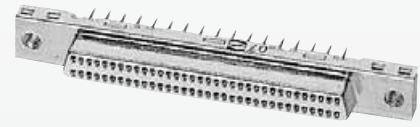
SEK connector mounted in a tape ready for placement using an odd form assembly station.

Number of contacts	68
Pitch	1.27 mm
Working current	1 A
Working voltage	240 V ~
Test voltage $U_{r.m.s.}$	750 V
Contact resistance	$\leq 30 \text{ m}\Omega$
Insulation resistance	$\geq 10^9 \text{ M}\Omega$
Temperature range	-55 °C ... + 105 °C
during reflow soldering	max. + 240 °C for 60 s
<b>Terminations</b>	
Solder pins	Straight for pcb holes min. $\varnothing 0.74 \text{ mm}$
<b>Materials</b>	
Moulding	Thermoplastic resin glass-fibre filled UL 94-V0 Liquid Crystal Polymer (LCP)
Contacts	Copper alloy
<b>Contact surface</b>	
Contact zone	Selectively gold plated according to performance level
Metal shell	Die cast zamac or stamped steel, nickel-plated



Number of contacts

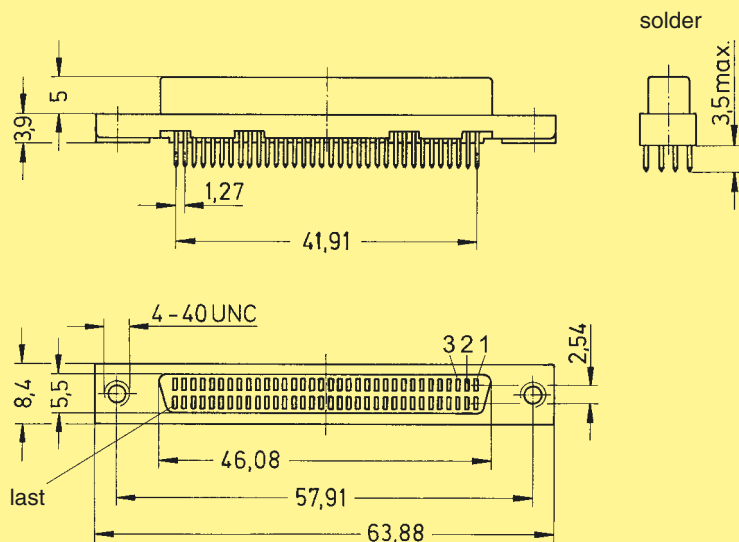
# 68



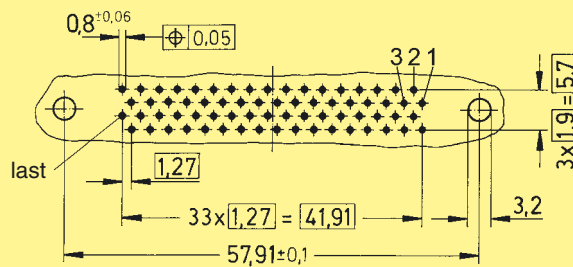
## SMC female connectors, straight

Identification	No. of contacts	Part No.
SMC female connector with straight solder pins	68	60 02 068 5120

### Dimensions



### Board drillings (Components side)

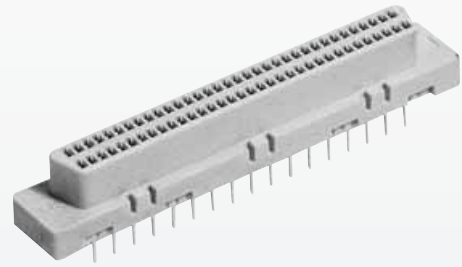


Dimensions in mm

SNC technology

Number of contacts

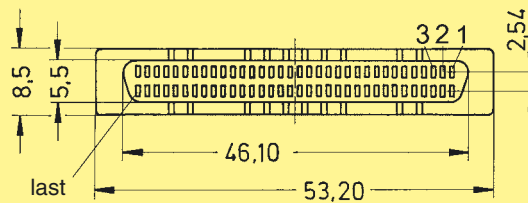
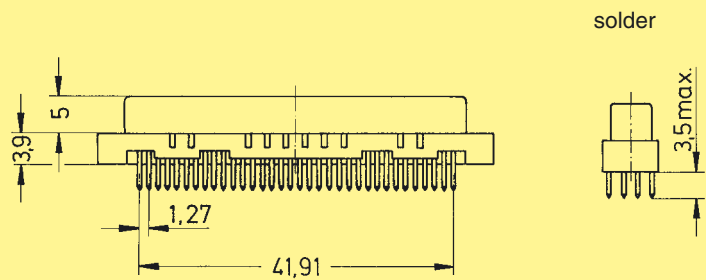
68



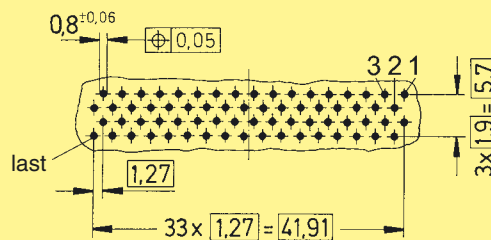
SMC female connectors, straight

Identification	No. of contacts	Part No.
SMC female connector with straight solder pins	68	60 05 068 5100

Dimensions



Board drillings  
(Components side)



Number of contacts 9, 15, 25, 37  
UL recognized

Working current  
see current carrying capacity chart  
Stamped contacts 6.5 A max.

Test voltage  $U_{r.m.s.}$  1 kV

Clearance and creepage  $\geq 1.0$  mm

Contact resistance  $\leq 10$  m $\Omega$   
Insulation resistance  $\geq 10^{10}$   $\Omega$

Temperature range -55 °C ... + 125 °C  
during reflow soldering max. + 240 °C for 15 s  
The higher temperature limit includes the local ambient and heating effect of the contacts under load. All connectors are suitable for standard reflow processes.

Terminations a) Solder pins  $\varnothing$  0.6 mm for P.C.B. holes  $\varnothing$  0.8/1 mm  
b) Solder pins, angled 90°  $\varnothing$  0.6 mm for P.C.B. holes  $\varnothing$  1 mm

Materials Mouldings Thermoplastic resin, glass-fibre filled (PCT), UL 94-V0

Contacts Copper alloy

Contact surface Contact zone selectively gold-plated according to performance level<sup>1)</sup>

Metal shell Plated steel

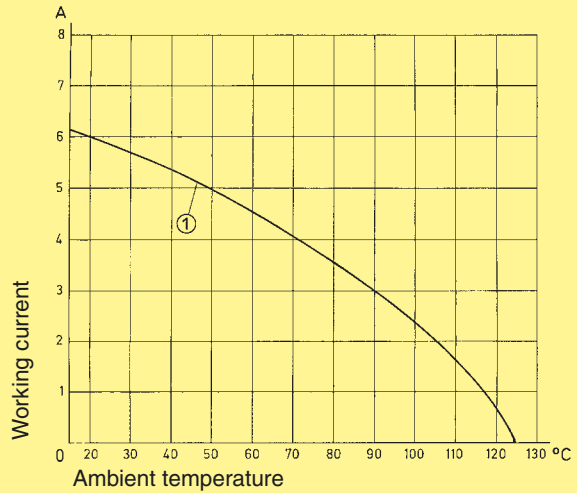
Insertion and withdrawal force Connector on P.C.B.  
Solder, straight with clips  
– insertion max. per connector: 60 N  
– withdrawal min. per connector: 10 N

Mating force  
9 way  $\leq 30$  N  
15 way  $\leq 50$  N  
25 way  $\leq 83$  N  
37 way  $\leq 123$  N

Current carrying capacity

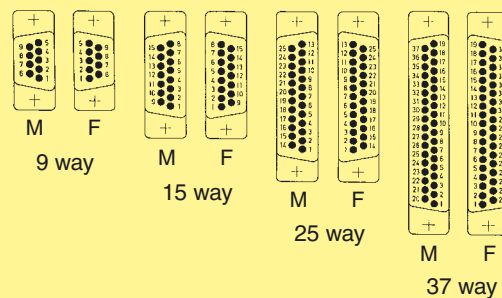
The current carrying capacity is limited by maximum temperature of materials for inserts and contacts including terminals. The current capacity-curve is valid for continuous, not interrupted current-loaded contacts of connectors when simultaneous power on all contacts is given, without exceeding the maximum temperature.

Control and test procedures according to DIN IEC 60 512.



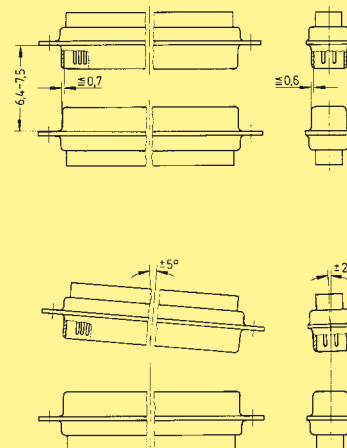
Example: 25 way connector  
① Stamped contacts

Contact arrangement View from termination side



M = Male connector  
F = Female connector

Mating conditions as per DIN 41 652



<sup>1)</sup> Performance level 3, 50 mating cycles, no gas test  
Performance level 2 as per CECC 75 301-802, 250 mating cycles, 4 days 4 mixed gas test – IEC 60 512  
Performance level 1 as per CECC 75 301-802, 500 mating cycles, 10 days 4 mixed gas test – IEC 60 512

Identification

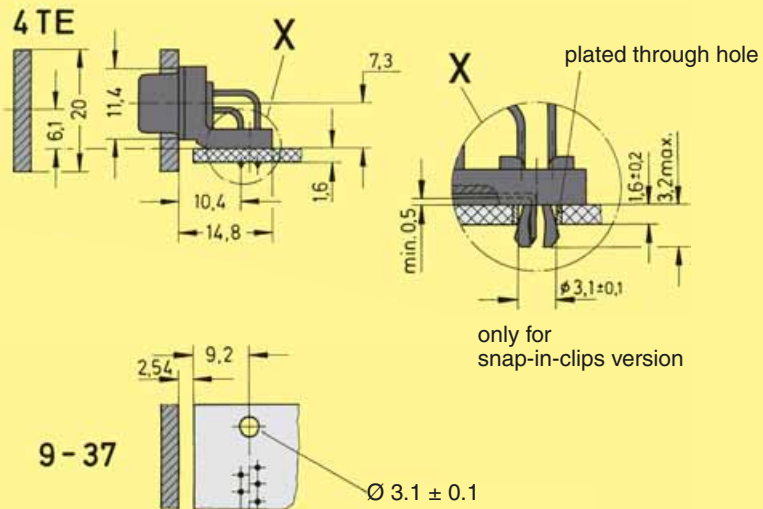
Drawing

Dimensions in mm

**Standard Versions**

Mounting height 7.3 mm

9-37 way  
for front panel  
4 units of width (TE)

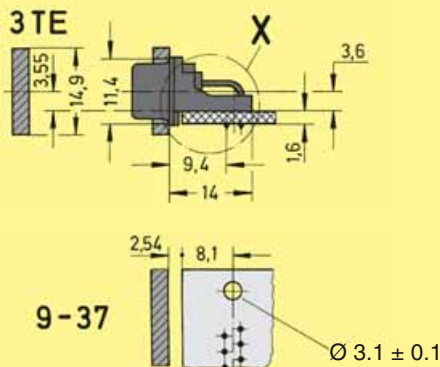


for connectors see pages 21.12 – 21.13

**Low Profile Versions**

Mounting height 3.6 mm

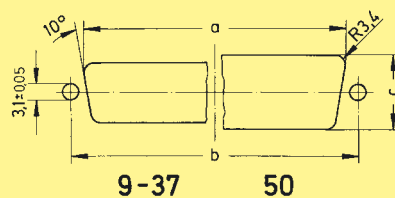
9-37 way  
for front panel  
3 units of width (TE)



for connectors see pages 21.14 – 21.15

Panel cut out  
for front/rear mount

Values are taken from the  
CECC 75 301-802



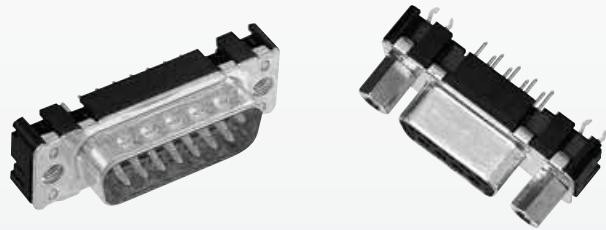
Front mount

Rear mount

	a±0.2	b±0.13	c±0.2		a±0.2	b±0.13	c±0.2
9	22.2	25.0	12.3	9	20.5	25.0	11.4
15	30.5	33.3	12.3	15	28.8	33.3	11.4
25	44.3	47.0	12.3	25	42.5	47.0	11.4
37	60.7	63.5	12.3	37	59.1	63.5	11.4
50	58.3	61.1	15.1	50	56.3	61.1	14.1

Number of contacts

# 9-37



SMC stamped solder pins, straight with/without grounding board locks

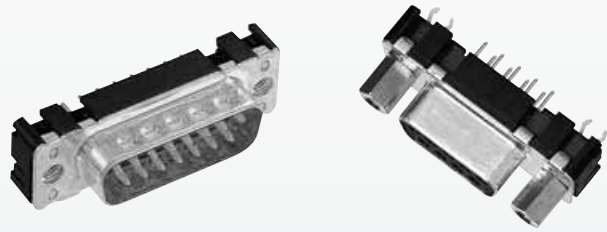
Identification	No. of contacts	Part No.	
<b>Performance levels</b> Explanations see page 21.08 Other performance levels on request		Performance level <b>3</b>	
		Performance level <b>2</b>	
<b>Male connector</b> metal shell with dimples			
Without grounding board locks	9	09 65 129 770 .	09 65 129 670 .
	15	09 65 229 770 .	09 65 229 670 .
	25	09 65 329 770 .	09 65 329 670 .
	37	09 65 429 770 .	09 65 429 670 .
With grounding board locks	9	09 65 169 771 .	09 65 169 671 .
	15	09 65 269 771 .	09 65 269 671 .
	25	09 65 369 771 .	09 65 369 671 .
	37	09 65 469 771 .	09 65 469 671 .
<b>Female connector</b> metal shell			
Without grounding board locks	9	09 66 115 750 .	09 66 115 650 .
	15	09 66 215 750 .	09 66 215 650 .
	25	09 66 315 750 .	09 66 315 650 .
	37	09 66 415 750 .	09 66 415 650 .
With grounding board locks	9	09 66 155 751 .	09 66 155 651 .
	15	09 66 255 751 .	09 66 255 651 .
	25	09 66 355 751 .	09 66 355 651 .
	37	09 66 455 751 .	09 66 455 651 .
Please insert digit for flange thread or fitted female screw locks			
M3 ▶	1		
4-40 UNC ▶	2		
fitted screw locks 4-40 UNC ▶	3 <sup>1)</sup>		

SMC technology

<sup>1)</sup> Fitted screw locks 4-40 UNC not normally kept in stock for performance level 3  
 Connector dimensions see page 21.11. Mating conditions see page 21.08.

Number of contacts

# 9-37



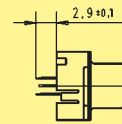
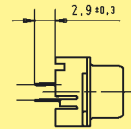
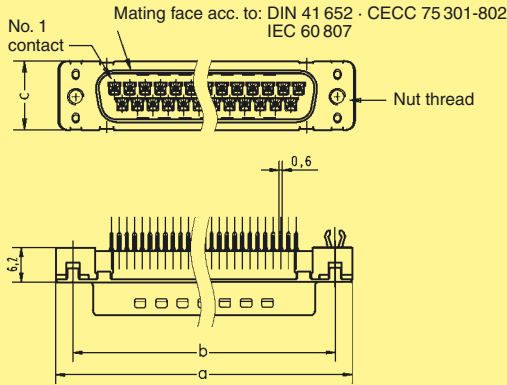
SMC stamped solder pins, straight with/without grounding board locks

Identification

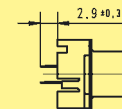
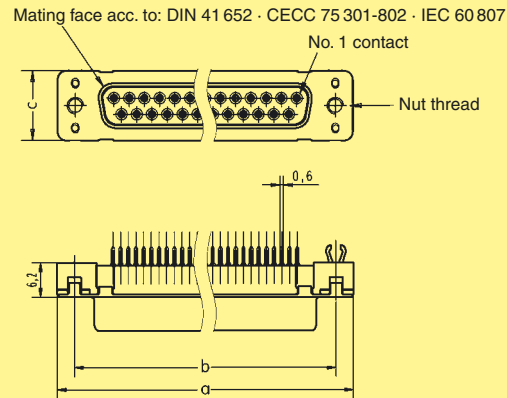
Drawing

Dimensions in mm

Male connector

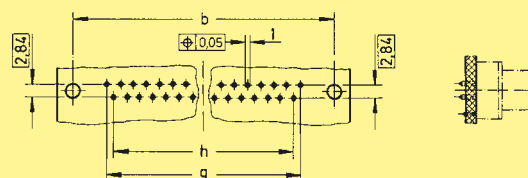


Female connector



	a	b <sub>±0.1</sub>	c	g	h
9	30.9	25.0	12.5	4 x 2.74 = 10.96	3 x 2.74 = 8.22
15	39.2	33.3	12.5	7 x 2.74 = 19.18	6 x 2.74 = 16.44
25	53.1	47.0	12.5	12 x 2.76 = 33.12	11 x 2.76 = 30.36
37	69.4	63.5	12.5	18 x 2.76 = 49.68	17 x 2.76 = 46.92

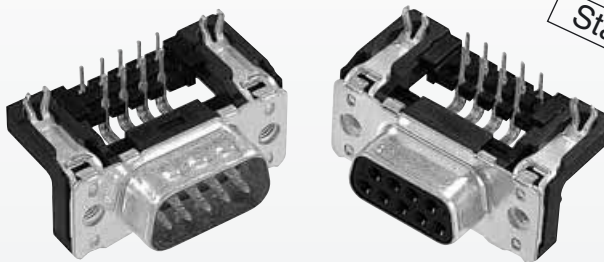
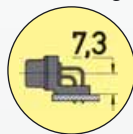
Board drillings



Number of contacts

Mounting height

9-37



Standard Versions

SMC stamped solder pins, angled with grounding board locks

Identification	No. of contacts	Part No.		
<b>Performance levels</b> Explanations see page 21.08 Other performance levels on request		<b>Performance level 3</b>		
		<b>Performance level 2</b>		
<b>Male connector</b> metal shell with dimples		2.84 mm pitch		
	9	09 65 167 781 . 1)	09 65 167 681 . 1)	
	15	09 65 267 781 . 1)	09 65 267 681 . 1)	
	25	09 65 367 781 . 1)	09 65 367 681 . 1)	
	37	09 65 467 781 . 1)	09 65 467 681 . 1)	
		2.54 mm pitch		
	9	09 65 166 781 .	09 65 166 681 .	
	15	09 65 266 781 .	09 65 266 681 .	
	25	09 65 366 781 .	09 65 366 681 .	
	37	09 65 466 781 .	09 65 466 681 .	
	<b>Female connector</b> metal shell		2.84 mm pitch	
		9	09 66 157 761 . 1)	09 66 157 661 . 1)
15		09 66 257 761 . 1)	09 66 257 661 . 1)	
25		09 66 357 761 . 1)	09 66 357 661 . 1)	
37		09 66 457 761 . 1)	09 66 457 661 . 1)	
		2.54 mm pitch		
9		09 66 156 761 .	09 66 156 661 .	
15		09 66 256 761 .	09 66 256 661 .	
25		09 66 356 761 .	09 66 356 661 .	
37		09 66 456 761 .	09 66 456 661 .	
Please insert digit for flange thread or fitted female screw locks				
Ø 3.1 mm hole ▶ 0 <sup>1)</sup>				
M3 ▶ 1				
4-40 UNC ▶ 2				
fitted screw locks 4-40 UNC ▶ 3				

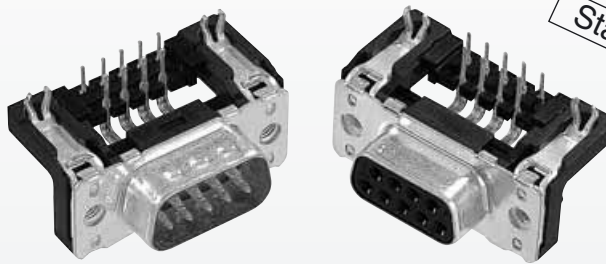
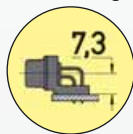
SMC technology

<sup>1)</sup> Not normally kept in stock

Number of contacts

Mounting height

9-37



Standard Versions

SMC stamped solder pins, angled with grounding board locks

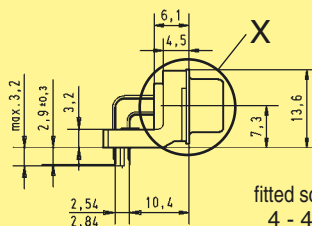
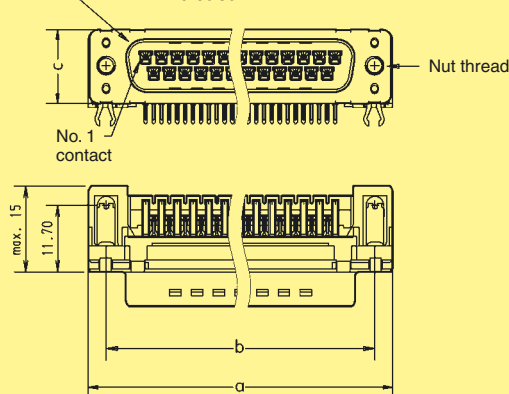
Identification

Drawing

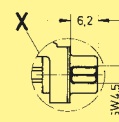
Dimensions in mm

Male connector

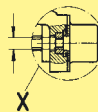
Mating face acc. to: DIN 41 652 · CECC 75 301-802  
IEC 60 807



fitted screw locks  
4 - 40 UNC

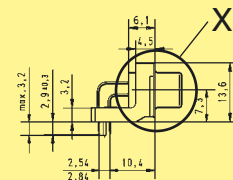
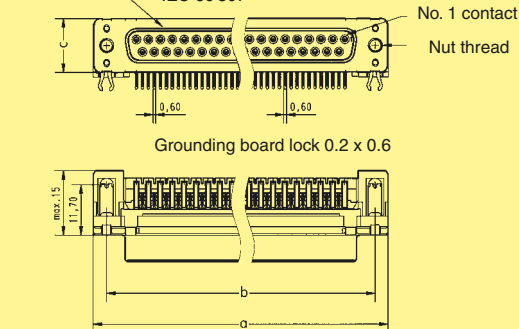


M 3 or  
4 - 40 UNC

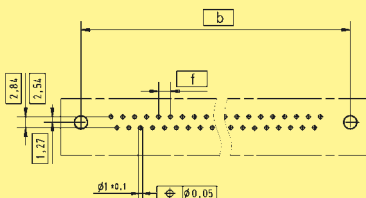


Female connector

Mating face acc. to: DIN 41 652 · CECC 75 301-802  
IEC 60 807



Board drillings

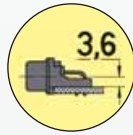


	a	b $\pm$ 0.1	c	f
9	30.90	25.00	12.50	2.74
15	39.20	33.30	12.50	2.74
25	53.10	47.00	12.50	2.76
37	69.40	63.50	12.50	2.76

Number of contacts

9-37

Mounting height



Low Profile Versions

SMC stamped solder pins, angled with grounding board locks

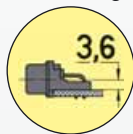
Identification	No. of contacts	Part No.	
<b>Performance levels</b> Explanations see page 21.08 Other contact surfaces on request		Performance level 3	Performance level 2
<b>Male connector</b> metal shell with dimples	9 15 25 37	09 65 166 781 . 09 65 266 781 . 09 65 366 781 . 09 65 466 781 .	09 65 166 681 . 09 65 266 681 . 09 65 366 681 . 09 65 466 681 .
<b>Female connector</b> metal shell	9 15 25 37	09 66 156 761 . 09 66 256 761 . 09 66 356 761 . 09 66 456 761 .	09 66 156 661 . 09 66 256 661 . 09 66 356 661 . 09 66 456 661 .
Please insert digit for flange thread or fitted female screw locks	M3 ▶ 5 4-40 UNC ▶ 6 fitted screw locks 4-40 UNC ▶ 7		

SMC technology

Number of contacts

Mounting height

9-37



Low Profile Versions

SMC stamped solder pins, angled with grounding board locks

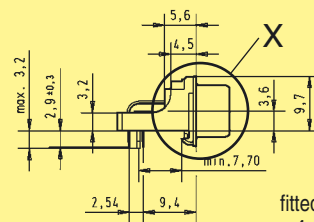
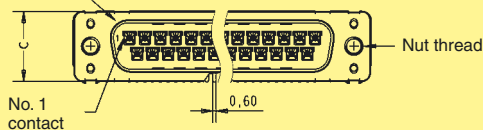
Identification

Drawing

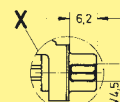
Dimensions in mm

Male connector

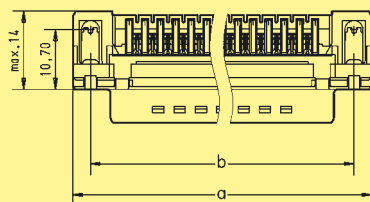
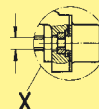
Mating face acc. to: DIN 41 652 · CECC 75 301-802  
IEC 60 807



fitted screw locks  
4 - 40 UNC

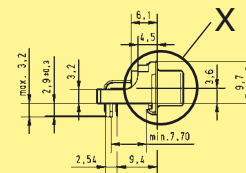
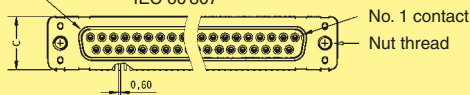


M 3 or  
4 - 40 UNC

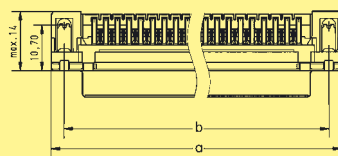


Female connector

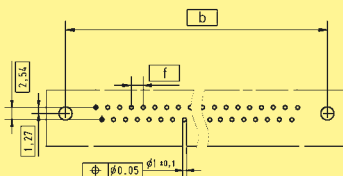
Mating face acc. to: DIN 41 652 · CECC 75 301-802  
IEC 60 807



Grounding board lock 0.2 x 0.6

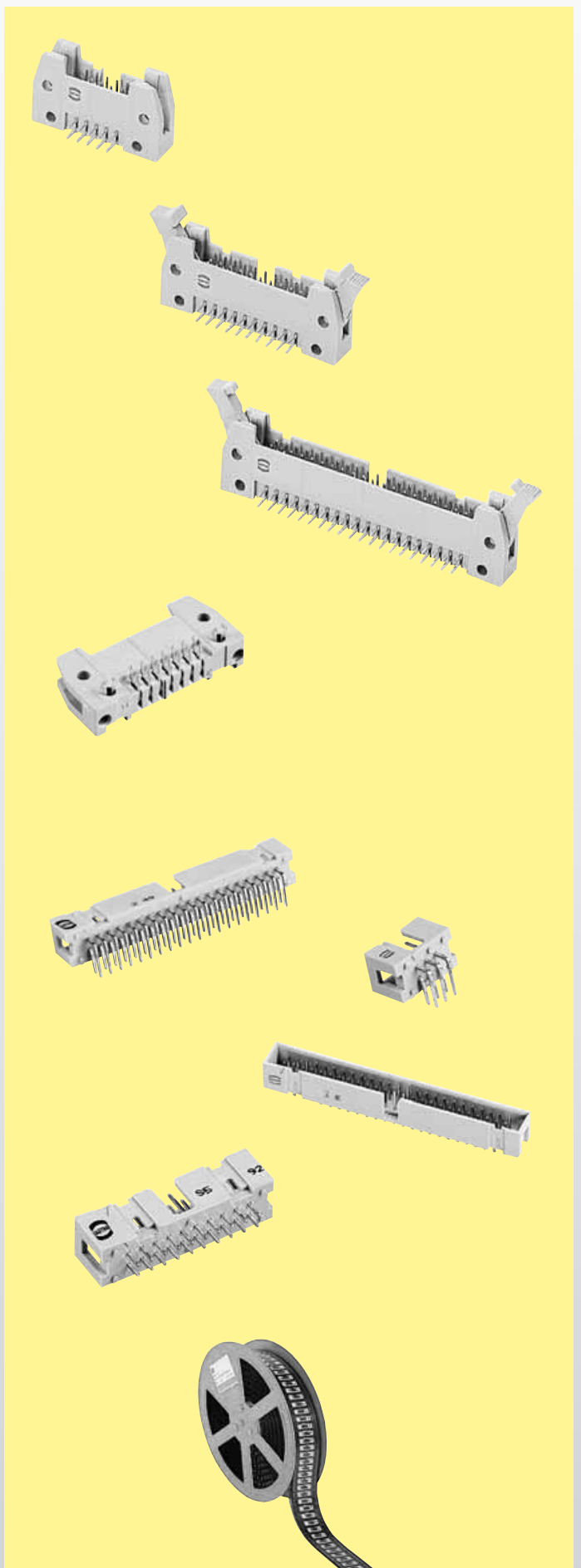


Board drillings



	a	b $\pm$ 0.1	c	f
9	30.90	25.00	12.50	2.74
15	39.20	33.30	12.50	2.74
25	53.10	47.00	12.50	2.76
37	69.40	63.50	12.50	2.76

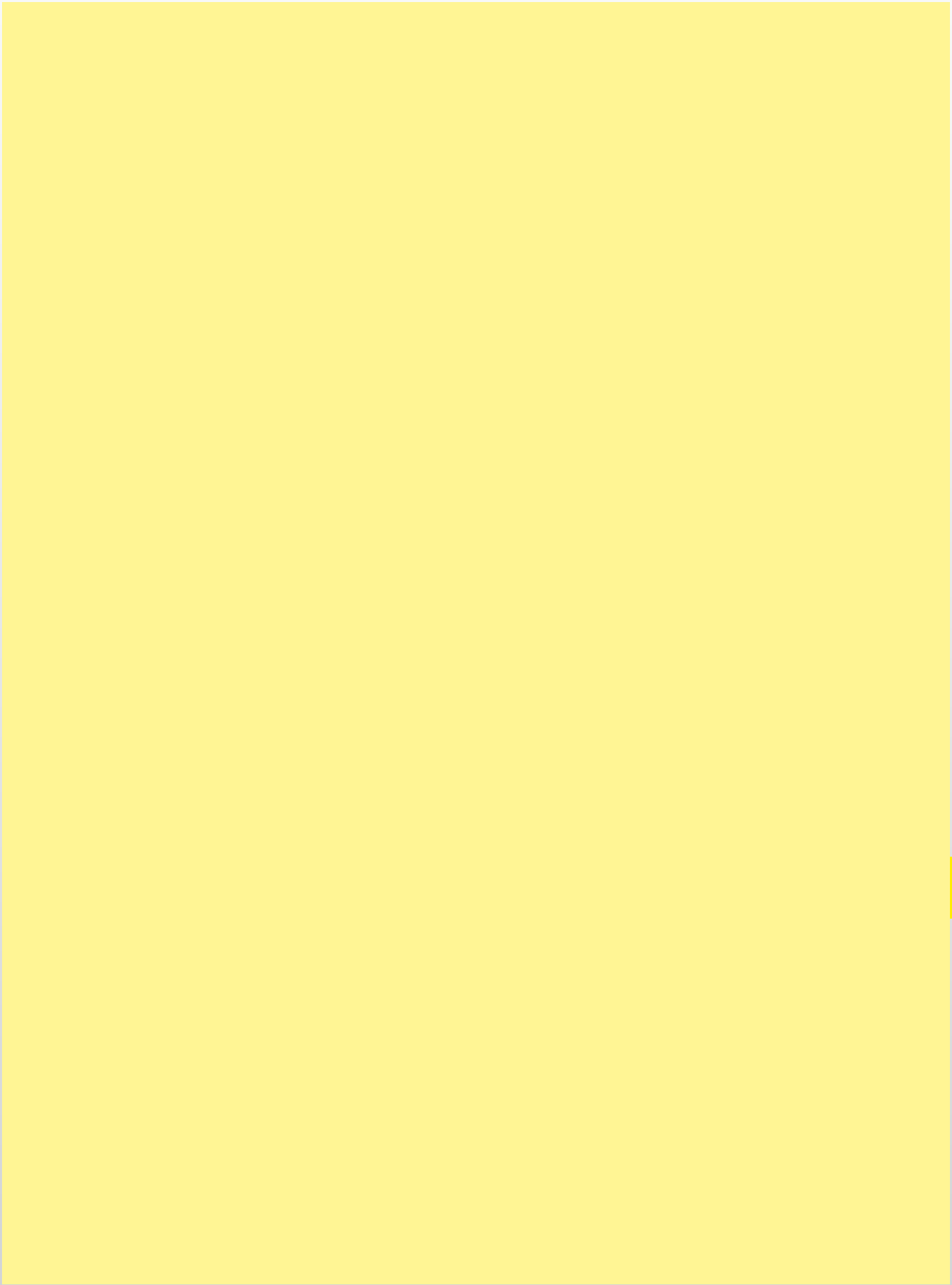
Number of contacts	6, 10, 14, 16, 20, 26, 30*, 34, 40, 50, 60, 64
Contact arrangement	straight, angled
Contact length	2.9 mm
Approvals	IEC 60 603-13 DIN EN 60 603-13 D 2632 BT 224 NFC 93-428 (HE 10)  comply with MIL DTL 83 503
Pitch	2.54 mm [0.100"]
Working current	1 A
Working voltage	500 V for pollution degree 1
Test voltage $U_{r.m.s.}$	1 kV
Contact resistance	$\leq 20 \text{ m}\Omega$
Insulation resistance	$\geq 10^9 \Omega$
Temperature range	-55 °C ... + 125 °C during reflow soldering max. + 240 °C for 60 s The higher temperature limit includes the local ambient and heating effect of the contacts under load
Terminations	For pcb hole $\varnothing 0.9 \text{ mm}$ DIN IEC 52 141 Diagonal: 0.79 mm
Materials	Moulding Thermoplastic resin (PCT) UL 94-V0
Contact surface	Contact zone gold-plated according to performance level <sup>1)</sup>
Options on request	
Colour of connectors	black
For pick & place process	Tape & Reel packaging with/without vacuum cover Tube packaging with/without vacuum cover



SMC technology

<sup>1)</sup> Performance level 3 as per IEC 60 603-13,  $\geq 50$  mating cycles, no gas test  
Performance level 2 as per IEC 60 603-13,  $\geq 250$  mating cycles, 4 days gas test  
as per MIL DTL 83 503,  $> 0.76 \mu\text{m Au}$  (30  $\mu$  inch), other performance levels on request

\* on request



Number of contacts

6-64



SMC male header with angled solder pins

Identification	No. of contacts	Part No.						
		Without levers		With short levers		With long levers		
SMC male header with angled solder pins Length: 2.9 mm	6	09 19 506	└ 923	09 19 506	└ 913	09 19 506	└ 903	
	10	09 19 510	└ 923	09 19 510	└ 913	09 19 510	└ 903	
	14	09 19 514	└ 923	09 19 514	└ 913	09 19 514	└ 903	
	16	09 19 516	└ 923	09 19 516	└ 913	09 19 516	└ 903	
	20	09 19 520	└ 923	09 19 520	└ 913	09 19 520	└ 903	
	26	09 19 526	└ 923	09 19 526	└ 913	09 19 526	└ 903	
	34	09 19 534	└ 923	09 19 534	└ 913	09 19 534	└ 903	
	40	09 19 540	└ 923	09 19 540	└ 913	09 19 540	└ 903	
	50	09 19 550	└ 923	09 19 550	└ 913	09 19 550	└ 903	
	60	09 19 560	└ 923	09 19 560	└ 913	09 19 560	└ 903	
	64	09 19 564	└ 923	09 19 564	└ 913	09 19 564	└ 903	
	30 contacts and kinked version on request							

SMC technology

\* Not normally kept in stock  
 For accessories see page 21.26  
 For dimensions see page 21.19

For performance level 3 please specify digit  
 For performance level 2 please specify digit  
 > 0.76 µm Au (30 µinch) on request



Number of contacts

# 6-64



## SMC male header with angled solder pins

Identification

Drawing

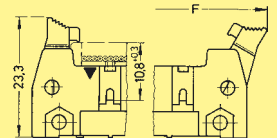
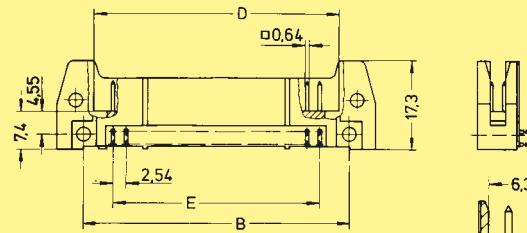
Dimensions in mm

SMC male header

No. of contacts	A	B	D	E	F	G
6	26.9	16.76	12.45	2.54 x 2 = 5.08	36.9	40.3
10	32.0	21.84	17.53	2.54 x 4 = 10.16	42.0	45.4
14	37.1	26.92	22.61	2.54 x 6 = 15.24	47.1	50.4
16	39.6	29.46	25.15	2.54 x 7 = 17.78	49.6	53.0
20	44.7	34.54	30.23	2.54 x 9 = 22.86	54.7	58.1
26	52.3	42.16	37.85	2.54 x 12 = 30.48	62.3	65.7
34	62.5	52.32	48.01	2.54 x 16 = 40.64	72.5	75.8
40	70.1	59.94	55.63	2.54 x 19 = 48.26	80.1	83.5
50	82.8	72.64	68.33	2.54 x 24 = 60.96	92.8	96.2
60	95.5	85.34	81.03	2.54 x 29 = 73.66	105.5	108.9
64	100.6	90.42	86.11	2.54 x 31 = 78.74	110.6	113.9

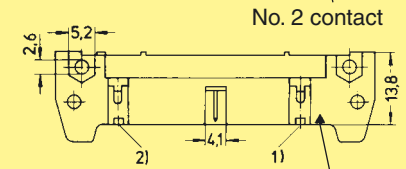
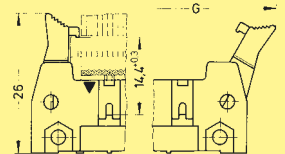
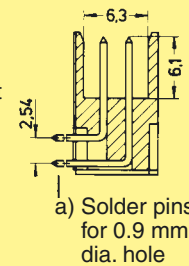
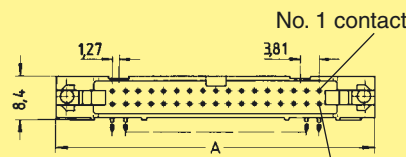
### Short levers

for use with female connector without strain relief clamp



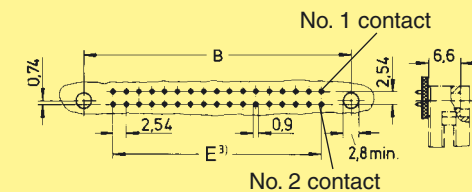
### Long levers

for use with female connector with strain relief clamp



a) Solder pins for 0.9 mm dia. hole

Marking No. 1 contact



Board drillings

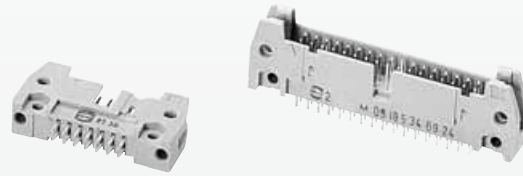
<sup>1)</sup> No polarization slot for 6, 10 or 14 way male header

<sup>2)</sup> No polarization slot for 6 way male header

<sup>3)</sup> Pitch tolerance: ± 0.1

Number of contacts

# 6-64



SMC male header with straight solder pins

Identification	No. of contacts	Part No.						
		Without levers		With short levers		With long levers		
SMC male header with straight solder pins Length: 2.9 mm	6	09 19 506	└ 924	09 19 506	└ 914	09 19 506	└ 904	
	10	09 19 510	└ 924	09 19 510	└ 914	09 19 510	└ 904	
	14	09 19 514	└ 924	09 19 514	└ 914	09 19 514	└ 904	
	16	09 19 516	└ 924	09 19 516	└ 914	09 19 516	└ 904	
	20	09 19 520	└ 924	09 19 520	└ 914	09 19 520	└ 904	
	26	09 19 526	└ 924	09 19 526	└ 914	09 19 526	└ 904	
	34	09 19 534	└ 924	09 19 534	└ 914	09 19 534	└ 904	
	40	09 19 540	└ 924	09 19 540	└ 914	09 19 540	└ 904	
	50	09 19 550	└ 924	09 19 550	└ 914	09 19 550	└ 904	
	60	09 19 560	└ 924	09 19 560	└ 914	09 19 560	└ 904	
	64	09 19 564	└ 924	09 19 564	└ 914	09 19 564	└ 904	
	30 contacts and kinked version on request							

SMC technology

\* Not normally kept in stock  
 For accessories see page 21.26  
 For dimensions see page 21.21

For performance level 3 please specify digit  $\begin{matrix} \boxed{7} \\ \boxed{6} \\ \boxed{5} \end{matrix}$  \*  
 For performance level 2 please specify digit  $\begin{matrix} \boxed{7} \\ \boxed{6} \\ \boxed{5} \end{matrix}$  \*

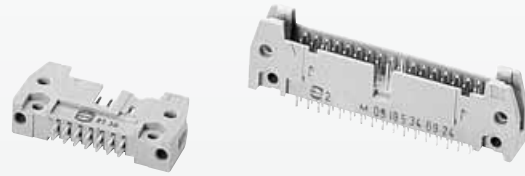
$\begin{matrix} \boxed{7} \\ \boxed{6} \\ \boxed{5} \end{matrix}$  \*

$\begin{matrix} \boxed{7} \\ \boxed{6} \\ \boxed{5} \end{matrix}$  \*

$\begin{matrix} \boxed{7} \\ \boxed{6} \\ \boxed{5} \end{matrix}$  \*

Number of contacts

# 6-64



## SMC male header with straight solder pins

Identification

Drawing

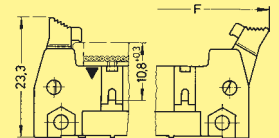
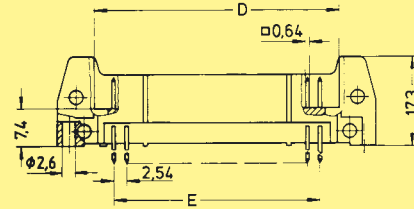
Dimensions in mm

SMC male header

No. of contacts	A	C	D	E	F	G
6	26.9	22.86	12.45	2.54 x 2 = 5.08	36.9	40.3
10	32.0	27.94	17.53	2.54 x 4 = 10.16	42.0	45.4
14	37.1	33.02	22.61	2.54 x 6 = 15.24	47.1	50.4
16	39.6	35.56	25.15	2.54 x 7 = 17.78	49.6	53.0
20	44.7	40.64	30.23	2.54 x 9 = 22.86	54.7	58.1
26	52.3	48.26	37.85	2.54 x 12 = 30.48	62.3	65.7
34	62.5	58.42	48.01	2.54 x 16 = 40.64	72.5	75.8
40	70.1	66.04	55.63	2.54 x 19 = 48.26	80.1	83.5
50	82.8	78.74	68.33	2.54 x 24 = 60.96	92.8	96.2
60	95.5	91.44	81.03	2.54 x 29 = 73.66	105.5	108.9
64	100.6	96.52	86.11	2.54 x 31 = 78.74	110.6	113.9

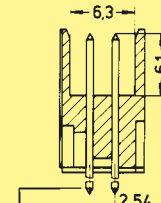
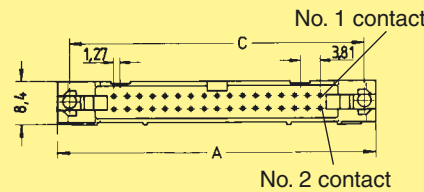
### Short levers

for use with female connector without strain relief clamp

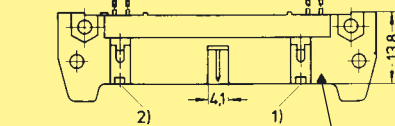
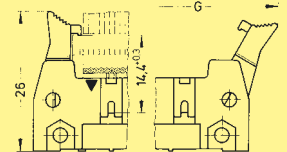


### Long levers

for use with female connector with strain relief clamp

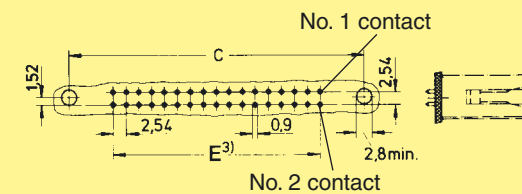


a) Solder pins for 0.9 mm dia. hole



Marking No. 1 contact

Board drillings



<sup>1)</sup> No polarization slot for 6, 10 or 14 way male header

<sup>2)</sup> No polarization slot for 6 way male header

<sup>3)</sup> Pitch tolerance: ± 0.1

Number of contacts

# 6-64



## SMC male header with angled solder pins and board lock

Identification	No. of contacts	Part No.					
		Without levers		With short levers		With long levers	
<p>SMC male header with angled solder pins and pcb board lock</p> <p>Length: 2.9 mm for 1.6 mm pcb thickness</p> <p>To hold the connector on the pcb before the soldering process, two board locks have been added on the male header with angled solder pins.</p>	6	09 19 506	└ 973*	09 19 506	└ 963*	09 19 506	└ 953*
	10	09 19 510	└ 973*	09 19 510	└ 963*	09 19 510	└ 953*
	14	09 19 514	└ 973*	09 19 514	└ 963*	09 19 514	└ 953*
	16	09 19 516	└ 973*	09 19 516	└ 963*	09 19 516	└ 953*
	20	09 19 520	└ 973*	09 19 520	└ 963*	09 19 520	└ 953*
	26	09 19 526	└ 973*	09 19 526	└ 963*	09 19 526	└ 953*
	34	09 19 534	└ 973*	09 19 534	└ 963*	09 19 534	└ 953*
	40	09 19 540	└ 973*	09 19 540	└ 963*	09 19 540	└ 953*
	50	09 19 550	└ 973*	09 19 550	└ 963*	09 19 550	└ 953*
	60	09 19 560	└ 973*	09 19 560	└ 963*	09 19 560	└ 953*
	64	09 19 564	└ 973*	09 19 564	└ 963*	09 19 564	└ 953*

SMC technology

\* Not normally kept in stock  
30 contacts on request

For performance level 3 please specify digit 7  
For performance level 2 please specify digit 6  
> 0.76 µm Au (30 µinch) on request



Number of contacts

# 6-64



SMC male header with angled solder pins and board lock

Identification

Drawing

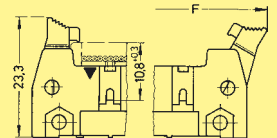
Dimensions in mm

SMC male header

No. of contacts	A	B	D	E	F	G
6	26.9	16.76	12.45	2.54 x 2 = 5.08	36.9	40.3
10	32.0	21.84	17.53	2.54 x 4 = 10.16	42.0	45.4
14	37.1	26.92	22.61	2.54 x 6 = 15.24	47.1	50.4
16	39.6	29.46	25.15	2.54 x 7 = 17.78	49.6	53.0
20	44.7	34.54	30.23	2.54 x 9 = 22.86	54.7	58.1
26	52.3	42.16	37.85	2.54 x 12 = 30.48	62.3	65.7
34	62.5	52.32	48.01	2.54 x 16 = 40.64	72.5	75.8
40	70.1	59.94	55.63	2.54 x 19 = 48.26	80.1	83.5
50	82.8	72.64	68.33	2.54 x 24 = 60.96	92.8	96.2
60	95.5	85.34	81.03	2.54 x 29 = 73.66	105.5	108.9
64	100.6	90.42	86.11	2.54 x 31 = 78.74	110.6	113.9

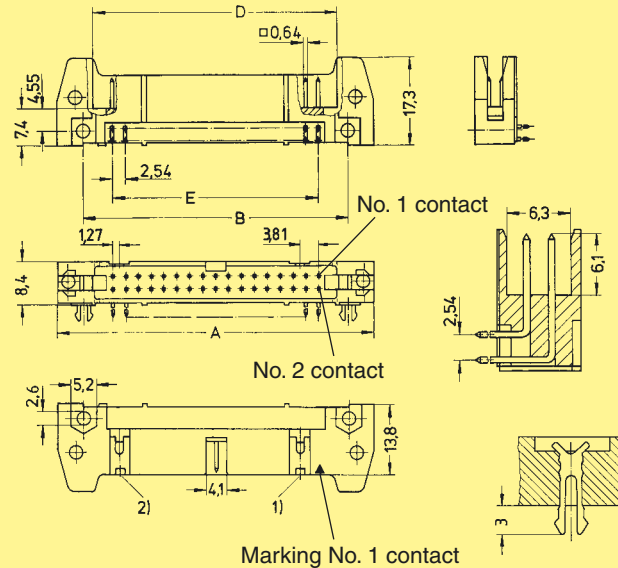
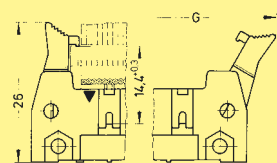
**Short levers**

for use with female connector without strain relief clamp

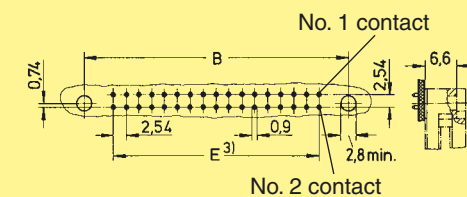


**Long levers**

for use with female connector with strain relief clamp



Board drillings



SMC technology

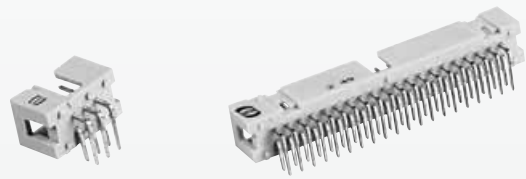
<sup>1)</sup> No polarization slot for 6, 10 or 14 way male header

<sup>2)</sup> No polarization slot for 6 way male header

<sup>3)</sup> Pitch tolerance: ± 0.1

Number of contacts

# 6-64



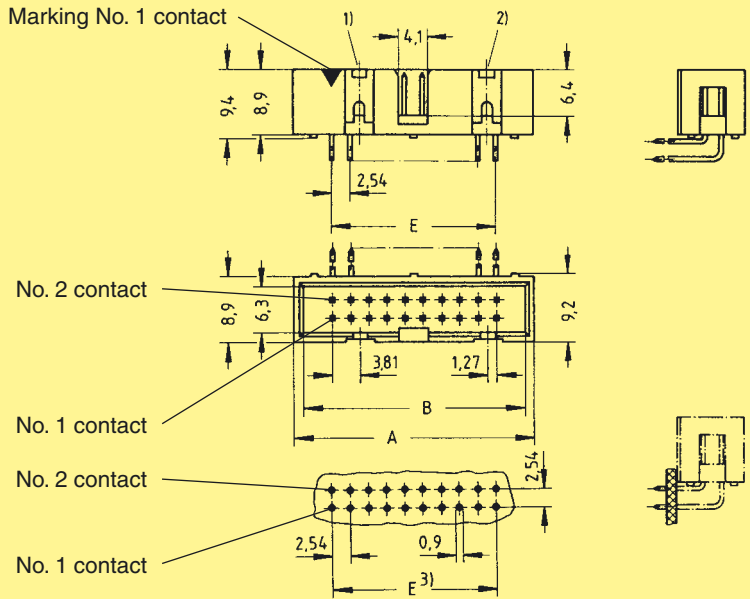
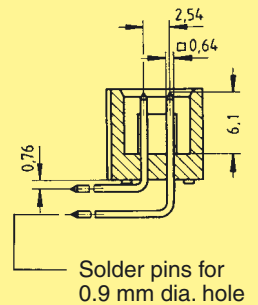
## SMC low-profile male header, angled solder pins

Identification      No. of contacts      Part No.      Drawing      Dimensions in mm

SMC male header with angled solder pins  
Length: 2.9 mm

No. of contacts	Part No.	Drawing
6	09 19 506 □ 323	
10	09 19 510 □ 323	
14	09 19 514 □ 323	
16	09 19 516 □ 323	
20	09 19 520 □ 323	
26	09 19 526 □ 323	
34	09 19 534 □ 323	
40	09 19 540 □ 323	
50	09 19 550 □ 323	
60	09 19 560 □ 323	
64	09 19 564 □ 323	

No. of contacts	A	B	E
6	15.2	12.78	2.54 x 2 = 5.08
10	20.3	17.86	2.54 x 4 = 10.16
14	25.4	22.94	2.54 x 6 = 15.24
16	27.9	25.48	2.54 x 7 = 17.78
20	33.0	30.56	2.54 x 9 = 22.86
26	40.6	38.18	2.54 x 12 = 30.48
34	50.8	48.34	2.54 x 16 = 40.64
40	58.4	55.96	2.54 x 19 = 48.26
50	71.3	68.66	2.54 x 24 = 60.96
60	84.0	81.36	2.54 x 29 = 73.66
64	89.1	86.44	2.54 x 31 = 78.74



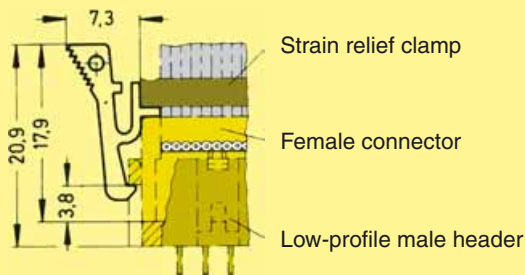
For performance level 3 please specify digit 7  
 For performance level 2 please specify digit 6  
 > 0.76 µm Au (30 µinch) on request 5\*

Identification      No. of contacts      Part No.      Drawing      Dimensions in mm

Locking lever for female connector with strain relief  
in conjunction with low-profile male header

When the security of latching is required and space is a premium, these locking levers can be fitted onto the strain relief of the HARTING female connector.

09 18 000 9905<sup>4)</sup>



\* Not normally kept in stock

<sup>1)</sup> No polarization slot for 6, 10 or 14 way male header  
<sup>2)</sup> No polarization slot for 6 way male header

<sup>3)</sup> Pitch tolerance: ± 0.1  
<sup>4)</sup> Order 2 per female connector

Number of contacts

# 6-64



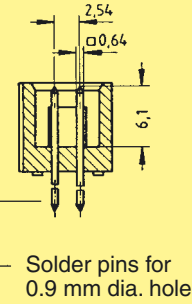
## SMC low-profile male header, straight solder pins

Identification      No. of contacts      Part No.      Drawing      Dimensions in mm

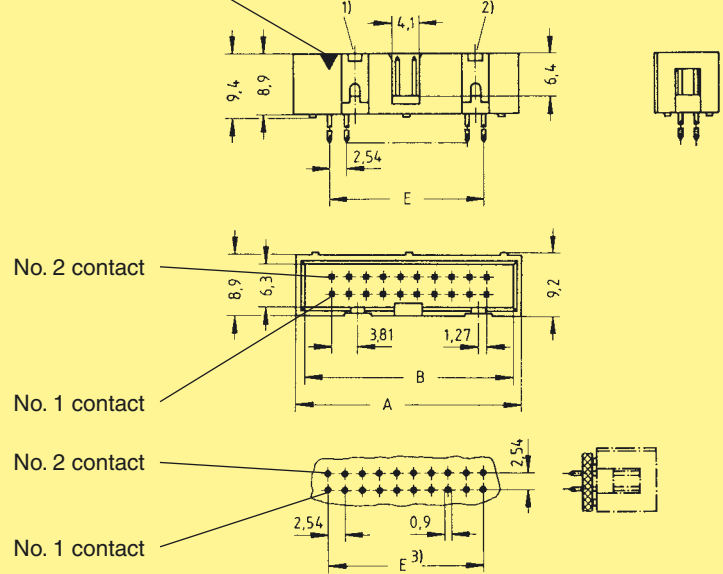
**SMC male header with straight solder pins**  
Length: 2.9 mm

6	09 19 506	□ 324
10	09 19 510	□ 324
14	09 19 514	□ 324
16	09 19 516	□ 324
20	09 19 520	□ 324
26	09 19 526	□ 324
34	09 19 534	□ 324
40	09 19 540	□ 324
50	09 19 550	□ 324
60	09 19 560	□ 324
64	09 19 564	□ 324

No. of contacts	A	B	E
6	15.2	12.78	2.54 x 2 = 5.08
10	20.3	17.86	2.54 x 4 = 10.16
14	25.4	22.94	2.54 x 6 = 15.24
16	27.9	25.48	2.54 x 7 = 17.78
20	33.0	30.56	2.54 x 9 = 22.86
26	40.6	38.18	2.54 x 12 = 30.48
34	50.8	48.34	2.54 x 16 = 40.64
40	58.4	55.96	2.54 x 19 = 48.26
50	71.3	68.66	2.54 x 24 = 60.96
60	84.0	81.36	2.54 x 29 = 73.66
64	89.1	86.44	2.54 x 31 = 78.74



Marking No. 1 contact

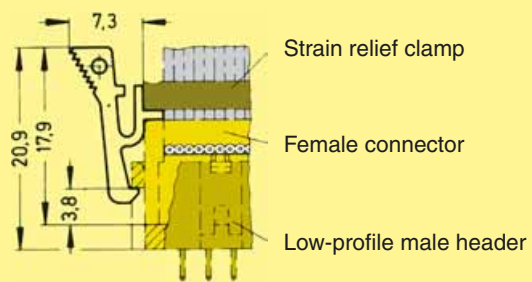


For performance level 3 please specify digit 7  
For performance level 2 please specify digit 6  
> 0.76 µm Au (30 µinch) on request 5 \*

Identification      No. of contacts      Part No.      Drawing      Dimensions in mm

**Locking lever for female connector with strain relief**  
in conjunction with low-profile male header  
  
When the security of latching is required and space is a premium, these locking levers can be fitted onto the strain relief of the HARTING female connector.

09 18 000 9905<sup>4)</sup>



\* Not normally kept in stock

<sup>1)</sup> No polarization slot for 6, 10 or 14 way male header  
<sup>2)</sup> No polarization slot for 6 way male header

<sup>3)</sup> Pitch tolerance: ± 0.1  
<sup>4)</sup> Order 2 per female connector

Accessories

Identification	Part No.	Drawing	Dimensions in mm
<p>Polarization key</p> <p>1) Part No. comprises 2 keys</p>	<p>09 18 500 9902<sup>1)</sup></p>		
<p>Locking lever (snaps into place, can be fitted whenever required)</p> <p>2) Order 2 per male header</p>	<p>Long: 09 19 000 9903<sup>2)</sup></p> <p>Short: 09 19 000 9904<sup>2)</sup></p>	<p>Long</p> <p>Short</p> <p>For use with female connector <u>with</u> strain relief clamp</p> <p>For use with female connector <u>without</u> strain relief clamp</p>	
<p>Fixing screws for 1.6 mm P.C. board</p> <p>3) Part No. comprises 50 pieces</p>	<p>09 18 000 9906<sup>3)</sup></p>		
<p><b>SMC technology</b></p> <p>Coding system with loss of contact</p> <p>4) Part No. comprises 6 code pins</p>	<p>Code pin 09 18 000 9901<sup>4)</sup></p> <p>Removal tool for male contacts 09 99 000 0133</p>	<p>To avoid cross-plugging adjacent connectors a coding system is required. A code pin is inserted into the appropriate cavity in the female connector. The corresponding male contact is removed by a special removal tool.</p>	