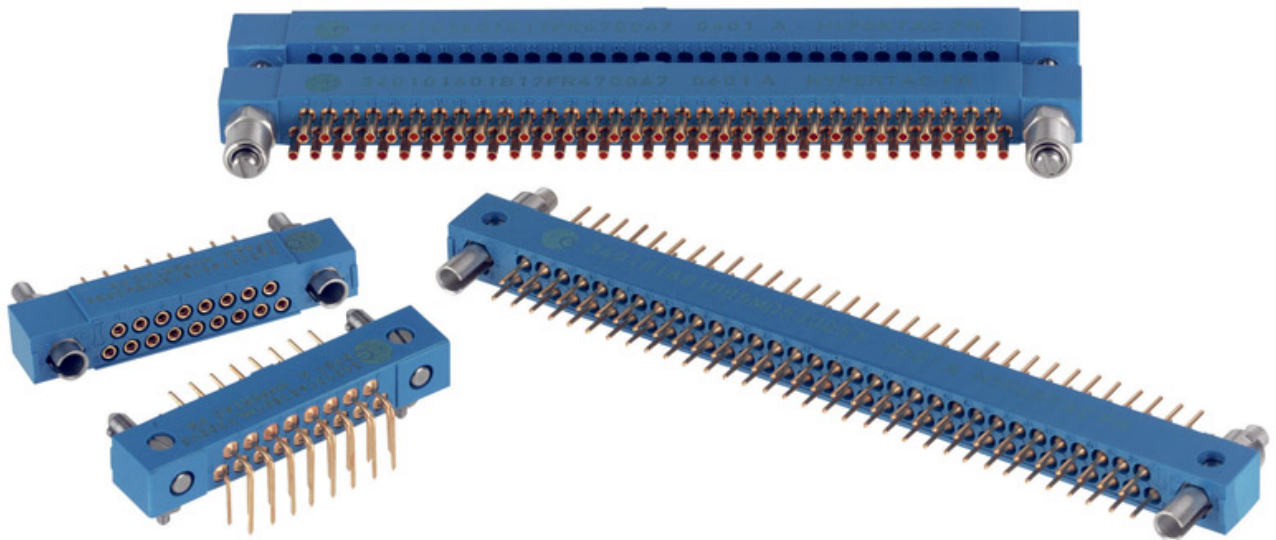


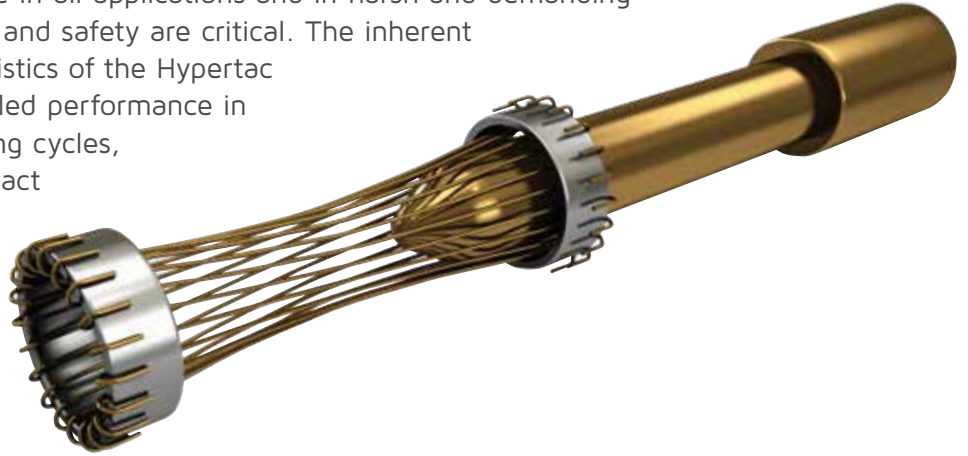
# KNB/KNC/KND Series

Medium & High Density PCB Connectors



# Hypertac® Hyperboloid Technology

Smiths Interconnect offers an extensive range of superior contact technologies suitable for standard and custom solutions. Hypertac® (HYPERboloid conTACT) is the original superior performing hyperboloid contact technology designed for use in all applications and in harsh and demanding environments where high reliability and safety are critical. The inherent electrical and mechanical characteristics of the Hypertac hyperboloid contact ensures unrivalled performance in terms of reliability, number of mating cycles, low contact force and minimal contact resistance. The shape of the contact sleeve is formed by hyperbolically arranged contact wires, which align themselves elastically as contact lines around the pin, providing a number of linear contact paths.



## Features

## Benefits

### Low insertion/extraction forces

The angle of the socket wires allows tight control of the pin insertion and extraction forces. The spring wires are smoothly deflected to make line contact with the pin.

### High density interconnect systems

Significant reductions in size and weight of sub-system designs. No additional hardware is required to overcome mating and un-mating forces.

### Long contact life

The smooth and light wiping action minimizes wear on the contact surfaces. Contacts perform up to 100,000 insertion/extraction cycles with minimal degradation in performance.

### Low cost of ownership

The Hypertac contact technology will surpass most product requirements, thus eliminating the burden and cost of having to replace the connector or the entire subsystem.

### Lower contact resistance

The design provides a far greater contact area and the wiping action of the wires insures a clean and polished contact surface. Our contact technology has about half the resistance of conventional contact designs.

### Low power consumption

The lower contact resistance of our technology results in a lower voltage drop across the connector reducing the power consumption and heat generation within the system.

### Higher current ratings

The design parameters of the contact (e.g., the number, diameter and angle of the wires) may be modified for any requirement. The number of wires can be increased so the contact area is distributed over a larger surface. Thus, the high current carried by each wire because of its intimate line contact, can be multiplied many times.

### Maximum contact performance

The lower contact resistance of the Hypertac contact reduces heat build-up; therefore Hypertac contacts are able to handle far greater current in smaller contact assemblies without the detrimental effects of high temperature.

### Immunity to shock & vibration

The low mass and resultant low inertia of the wires enable them to follow the most abrupt or extreme excursions of the pin without loss of contact. The contact area extends 360° around the pin and is uniform over its entire length. The 3 dimensional symmetry of the Hypertac contact design guarantees electrical continuity in all circumstances.

### Reliability under harsh environments

Harsh environmental conditions require connectors that will sustain their electrical integrity even under the most demanding conditions such as shock and vibration. The Hypertac contact provides unmatched stability in demanding environments when failure is not an option.

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# Technical Characteristics

Contact diameter	HYPERTAC® type Ø 0.60 mm rear removable
Number of contact	Up to 120
Pitch	2.54mm between rows - 1.27mm between quicuncial contacts
Rows	2

## Materials & Platings

Contact	Brass or bronze	
Moulding	Glass fiber filled diallyl - Phtalate	
Guides	Stainless steel or nickel plated brass	
	<b>Standard</b>	<b>ESA</b>
Pin body	0.25 µm Gold / 1.27 µm Ni	1.27 µm Gold / 1.27 µm Ni (min)
Socket body	0.25 µm Gold / 1.27 µm Ni on activ area 1.27 µm Ni on non activ area	0.25 µm Gold / 1.27 µm Ni (min)
Socket wires	1 µm Gold / 0.20 µm Ni	1.27 µm Gold / 0.20 µm Ni (min)

## Electrical

Current rating (at 25°C)	Standard: 3 A max - ESA: 5 A max
Dielectric withstanding voltage	1200 Vrms
Contact resistance	≤ 8 mΩ
Insulation resistance	> 10 <sup>4</sup> MΩ (500 Vcc)

## Mechanical

Mating & unmating cycle	5000
Guiding	By two outside guides (2 guiding styles) and one central guide (3 guiding styles)
Keying	By rotating of outside polarised guides (up to 36 keying)

## Environmental

Temperature range	-55° C + 125° C
Conformity	MIL C 55302, ESA/ESCC3401/016 - 3401/017, NF C-UTE C 93-424

# How To Order



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\* For 90° & straight terminations (splicing on PCB)

\*\* RoHS compliant for 90° & straight terminations (splicing on PCB)

# Hypertac & ESA Correspondance Table

**HYPERTAC** **KNB**

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KN 121	36	KNB 10 208	48	KN 113	55	KNC 11 125	77																																																																																																																			
<p><b>5 Locking type In center</b></p>	<p>0 0 For 2 guide connectors</p> <p>- - For 3 guide connectors (see table 4, Locking type - On left side)</p> <table border="1"> <thead> <tr> <th colspan="4">HYPERTAC</th> <th colspan="4">ESA</th> </tr> </thead> <tbody> <tr> <td>KNB 10 125</td><td>26</td><td>KNC 10 125</td><td>27</td> <td>KN 127</td><td>28</td><td>KN 126</td><td>29</td> <td colspan="4"></td> </tr> </tbody> </table>												HYPERTAC				ESA				KNB 10 125	26	KNC 10 125	27	KN 127	28	KN 126	29																																																																																														
HYPERTAC				ESA																																																																																																																						
KNB 10 125	26	KNC 10 125	27	KN 127	28	KN 126	29																																																																																																																			
<p><b>6 Locking type On right side</b></p>	<p>(see table 4, Locking type - On left side)</p>																																																																																																																									

\* Please consult us

# Contact Terminations

## Plug

## Receptacle

Male

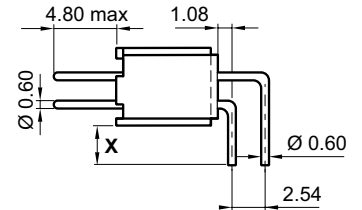
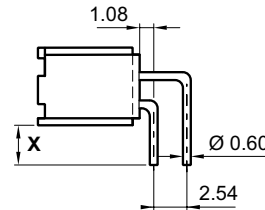
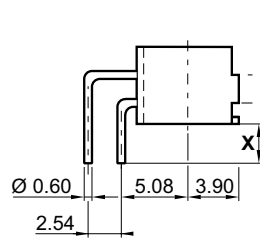
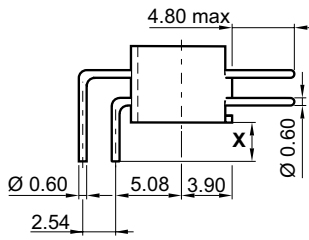
Female

Female

Male

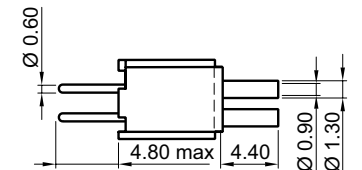
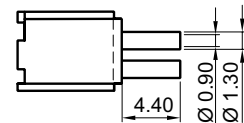
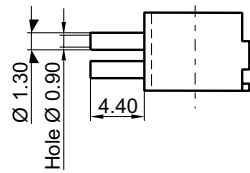
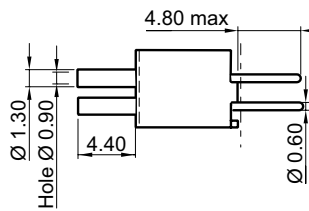
### 90° Through board solder

Ref: **10** (X=3) Ref : **MC & FC** - Ref: **11** (X=4) Ref : **ML & FL**



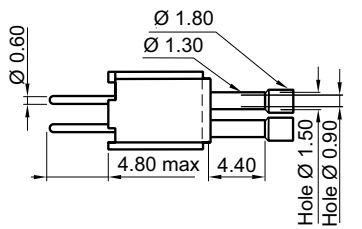
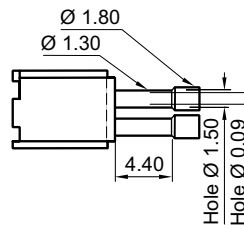
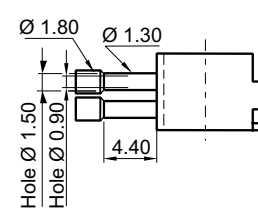
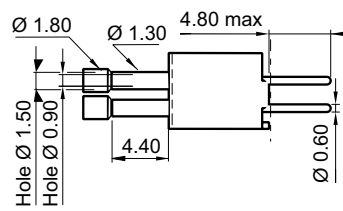
### Crimp (AWG 28-26 & 24-22)

Ref: **20** Ref : **MR & FR**



### Crimp (AWG 28-26 & 24-22) & Crimp on sheath (Ø 1.45)

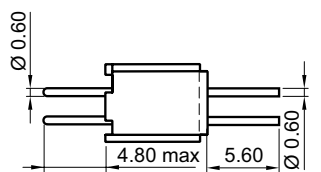
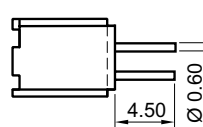
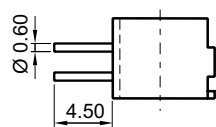
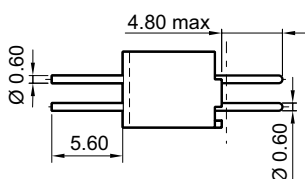
Ref: **21**



### Straight through board solder

Ref: **30** Ref : **MD & FD**

See: 90° Through board solder



Plug

Receptacle

Male

Female

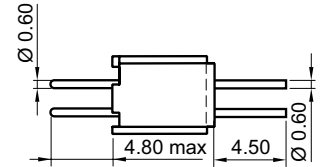
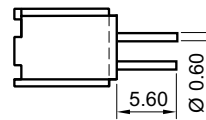
Female

Male

Straight through board solder

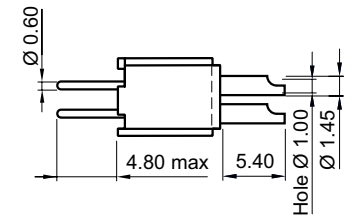
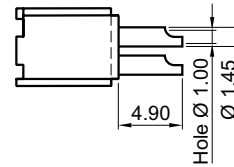
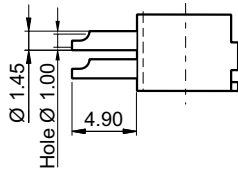
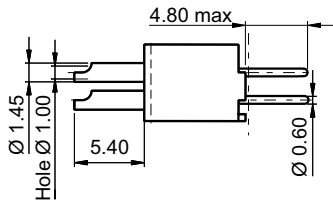
Ref: **31** Ref: : **MD & FD**

See: 90° Through board solder



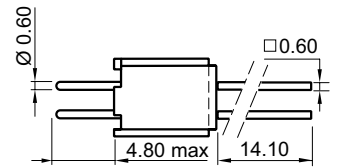
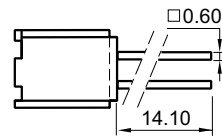
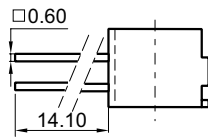
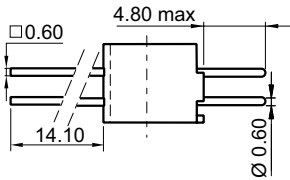
Solder bucket (AWG 22 max)

Ref: **40** Ref: : **MS & FS**



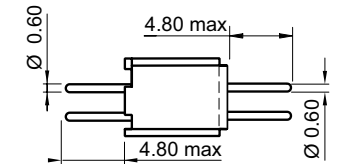
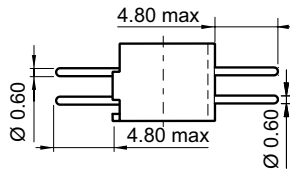
Wire wrap (3 wrapping levels)

Ref: **51** Ref: : **MY & FY**



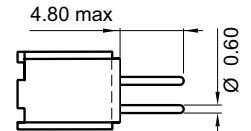
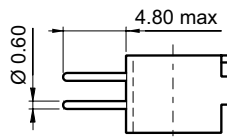
Saver (male-male)

Ref: **90**



Saver (female-male)

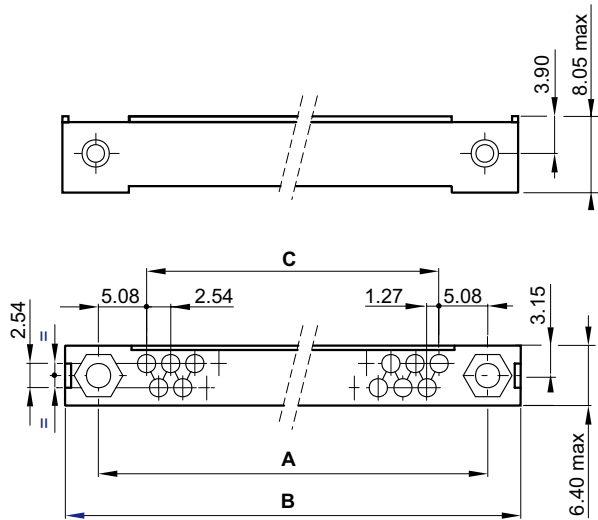
Ref: **91** Ref: : **FM**



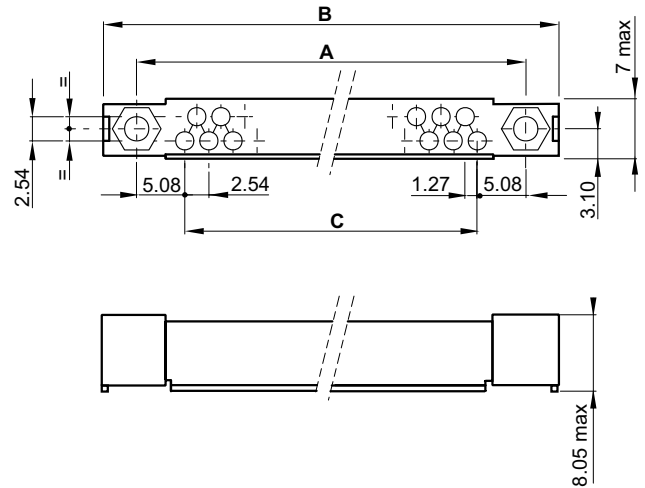
# Connector Dimensions

## Plug

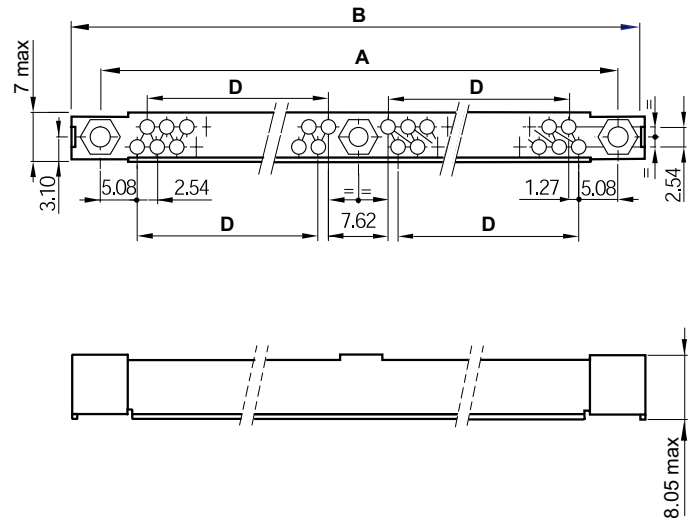
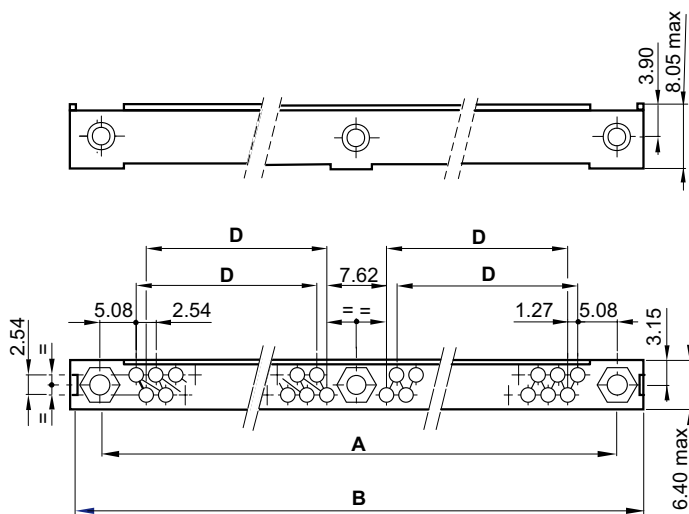
17 to 65 contacts



## Receptacle



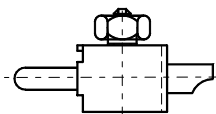
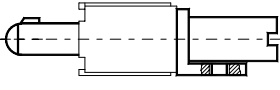
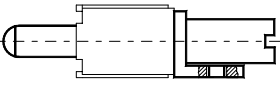
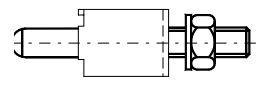
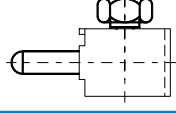
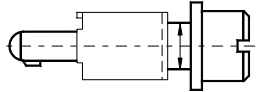
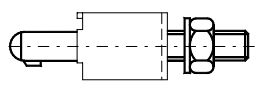
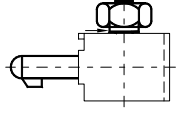
72 to 120 contacts

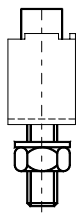
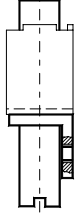
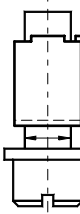
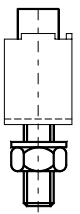


No. of contacts	17	29	41	53	65	72	84	96	120
A	30.48	45.72	60.96	76.20	91.44	106.68	121.92	137.16	167.64
B max	38.50	53.70	69.00	84.20	99.50	114.70	129.90	145.20	175.50
C	20.32	35.56	50.80	66.04	81.28	-	-	-	-
D	-	-	-	-	-	43.18	50.80	58.42	73.66



MR 23	FR 22	FP 12	MP 13	MR 23	FR 22	FP 12	MP 13	MR 23	FR 22	FP 12	MP 13	MR 23	FR 22	FP 12	MP 13	Polarity		
																Receptacle		Moulding
																Plug		
																90°	10	11
																Straight	30	31
																Solder bucket		40
																Crimp	20	21
																Wire wrap		51

																				191	Guiding devices
																				145	
																				131	
																				127	
																				125	
																				113	
																				111	
																				110	

			
126	124	123	121
Guiding devices			

Male guides

Female guides

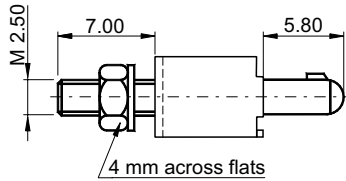
# Guide Styles

## Plug & Receptacle

### Male

#### Polarised vertical mount

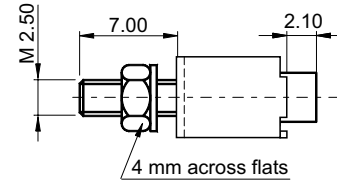
Ref: 111 Ref : 35



### Female

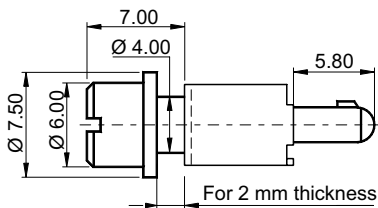
#### Polarised vertical mount

Ref: 121 Ref : 36



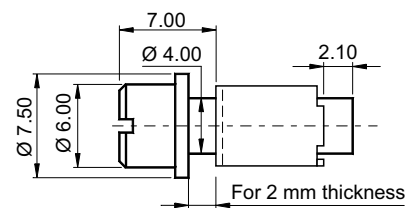
#### Polarised vertical float mount

Ref: 113 Ref : 55



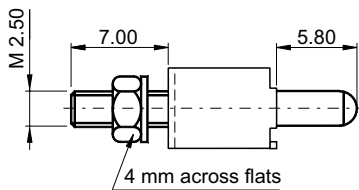
#### Polarised vertical float mount

Ref: 123 Ref : 54



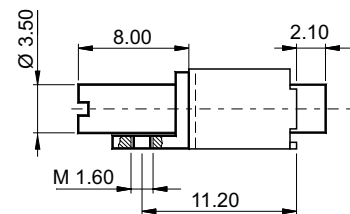
#### Unpolarised vertical mount

Ref: 127 Ref : 28



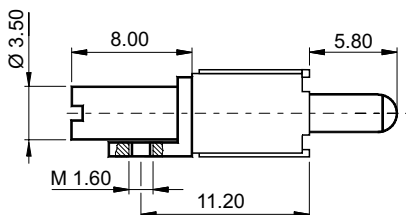
#### Polarised transverse mount

Ref: 124 Ref : 41



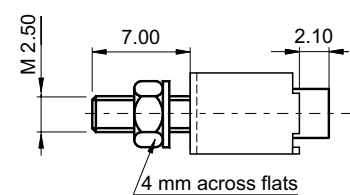
#### Unpolarised transverse mount

Ref: 131 Ref : 31



#### Unpolarised vertical mount

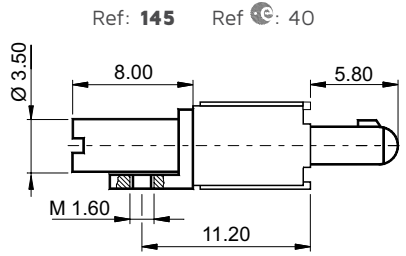
Ref: 126 Ref : 29



# Plug & Receptacle

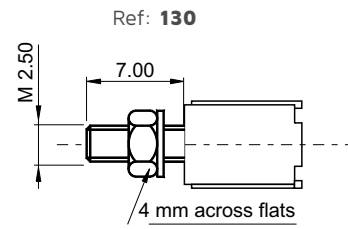
## Male

### Polarised transverse mount



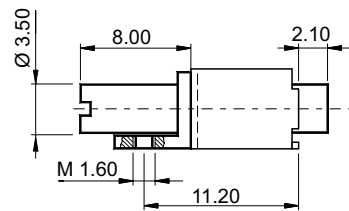
## Female

### All polarised vertical mount



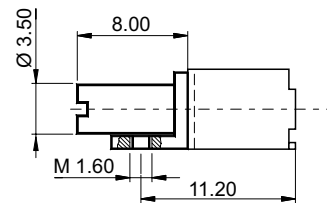
### Unpolarised transverse mount

Ref: **132** Ref: : 32



### All polarised transverse mount

Ref: **133**

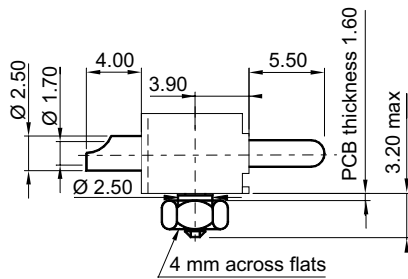


# Plug & Receptacle

## Male

Power or mass transverse mount

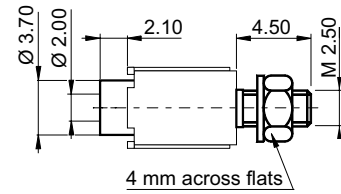
Ref: **191**



## Female

Power or mass vertical mount

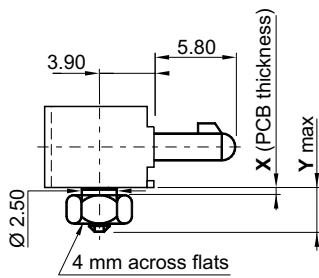
Ref: **190**



# Male plug only

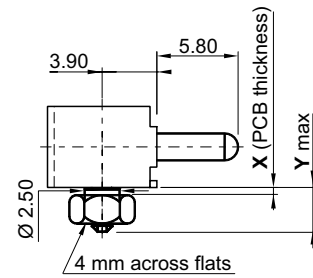
Polarised transverse mount

- Ref: **10 110**    Ref: **33** X=1.60 Y=3.20
- Ref: **11 110**    Ref: **72** X=2.40 Y=4.90



Unpolarised transverse mount

- Ref: **10 125**    Ref: **26** X=1.60 Y=3.20
- Ref: **11 125**    Ref: **71** X=2.40 Y=4.90

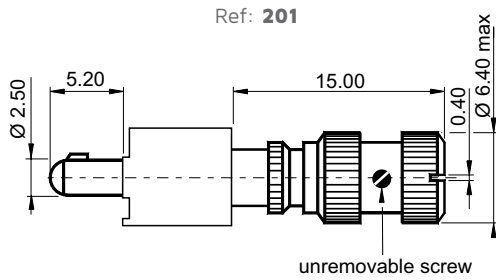




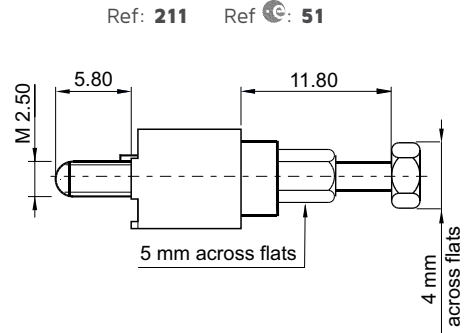
# Male Locking Styles

## Plug & Receptacle

Jack 1/4 turn lock, free connector

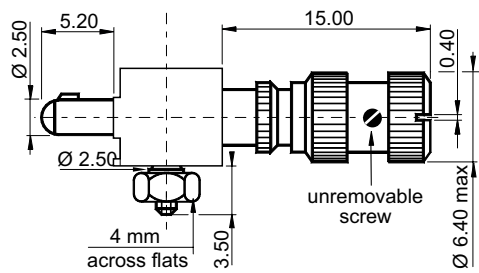


Jackscrew, free connector



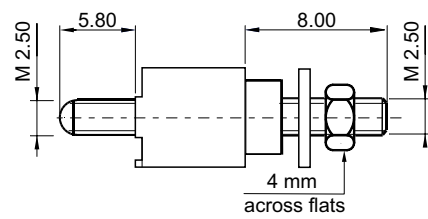
Jack 1/4 turn lock, transverse mount

Ref: **203** PCB thickness **1.60**



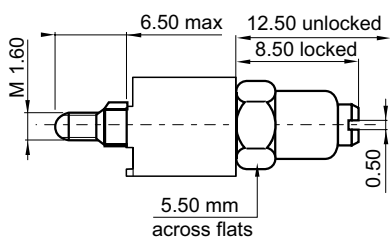
Jackscrew, vertical mount

Ref: **231** Ref: **46**



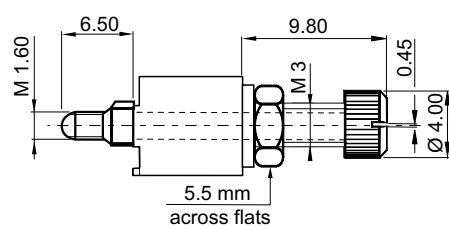
Jackscrew, free connector

Ref: **207** Ref: **47**



Jackscrew, vertical mount

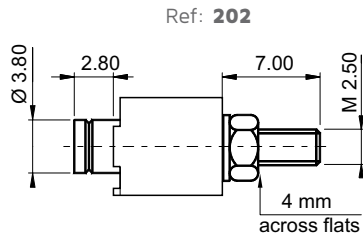
Ref: **290** Ref: **81**



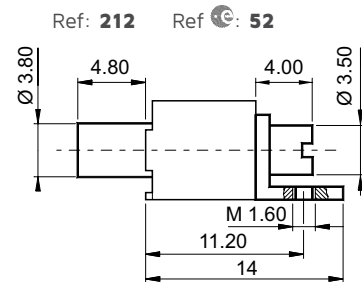
# Female Locking Styles

## Plug & Receptacle

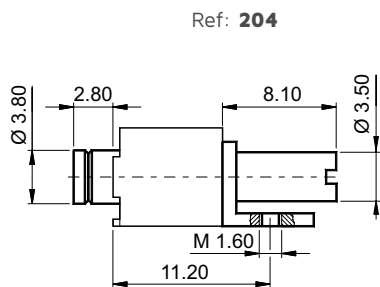
Jack 1/4 turn lock, vertical mount



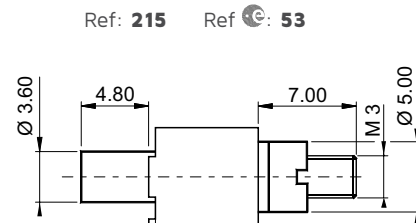
Jackscrew, transverse mount



Jack 1/4 turn lock, transverse mount

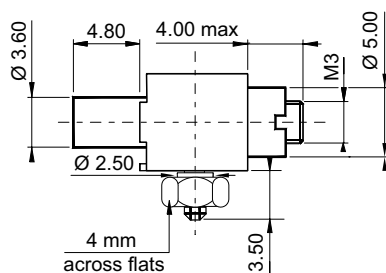


Jackscrew, vertical mount



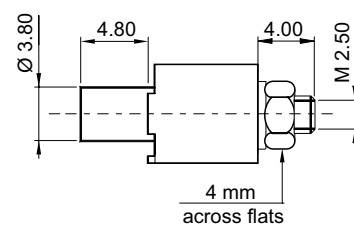
Jackscrew, transverse mount

Ref: **10 208** Ref: **48** PCB thickness 1.60  
 Ref: **11 208** Ref: **79** PCB thickness 2.40



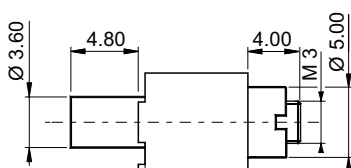
Jackscrew, vertical mount

Ref: **219** Ref: **80**



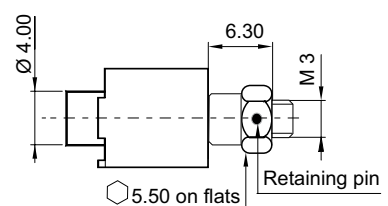
Jackscrew, free connector

Ref: **210** Ref: **50**



Rotating jackscrew, free connector

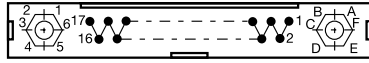
Ref: **232** Ref: **45**



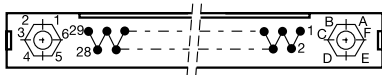
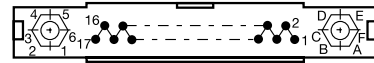
# Mating Side Layout View

## Plug

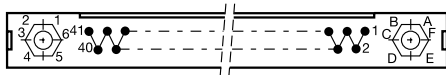
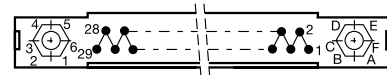
## Receptacle



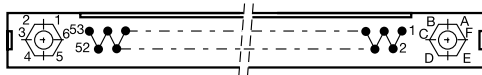
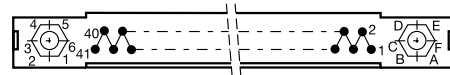
017



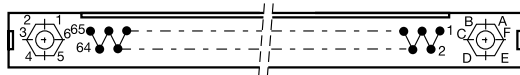
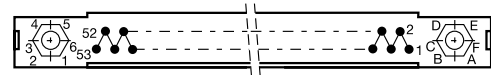
029



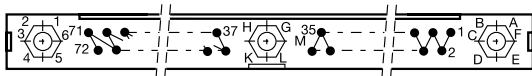
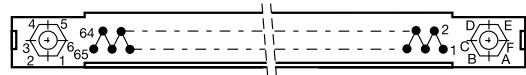
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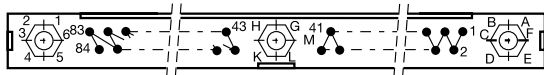
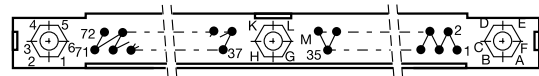
053



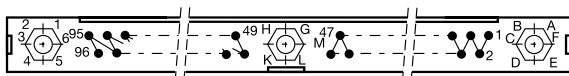
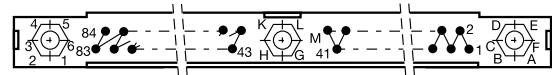
065



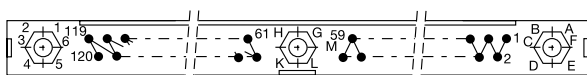
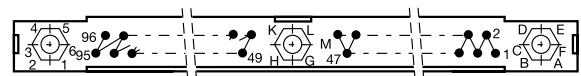
072



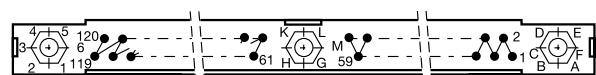
084



096

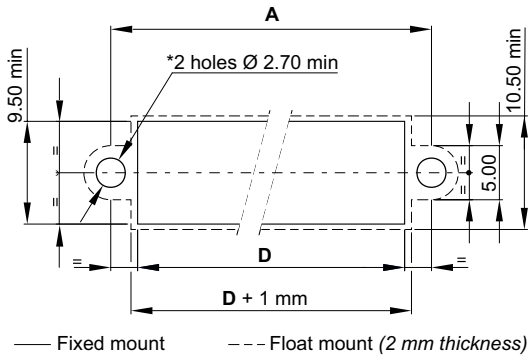


120

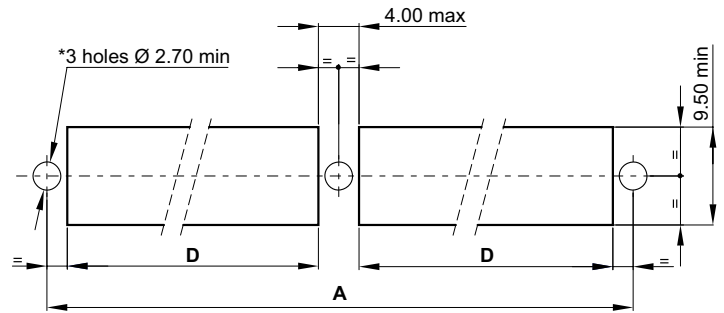


# Panel Preparation Details

## 17 to 65 Contacts



## 72 to 120 Contacts



**Panel:** female or male, plug or receptacle, terminations 20 - 40 - 51  
**Guide styles:** 111 - 121 - 126 - 127 - 130 - 190 (Fixed Mount) - 113 - 123 (Float Mount)  
**Locking styles:** 202 - 215\* - 219 - 231

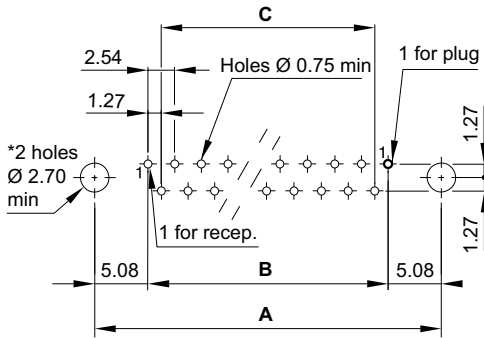
No. of contacts	17	29	41	53	65	72	84	96	120
A	30.48	45.72	60.96	76.20	91.44	106.68	121.92	137.16	167.64
D	25.90	41.10	56.40	71.60	86.90	48.50	56.00	63.30	78.80

\* for ref: 215, holes  $\varnothing$  3.20 mm

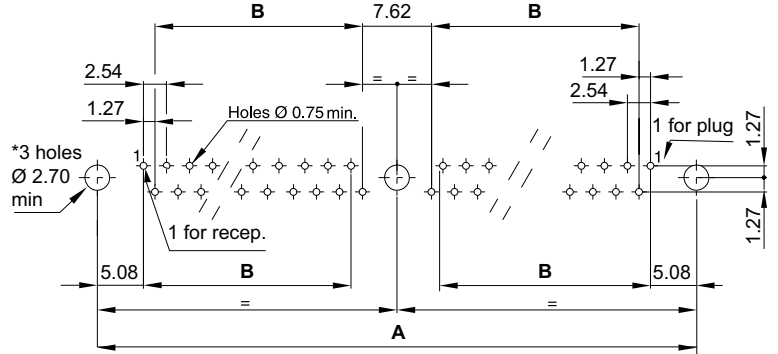
# Board Preparation Details

## Mother board

17 to 65 Contacts



72 to 120 Contacts

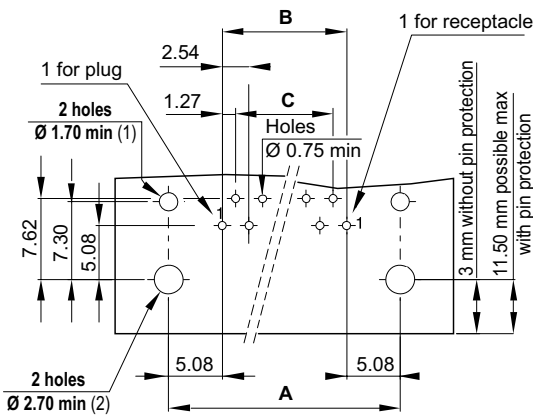


**Mother Board:** female or male, plug or receptacle, straight solder termination  
**Guide styles:** 111 - 121 - 126 - 127 - 130 - 190 **Locking styles:** 202 - 215\* - 219 - 231

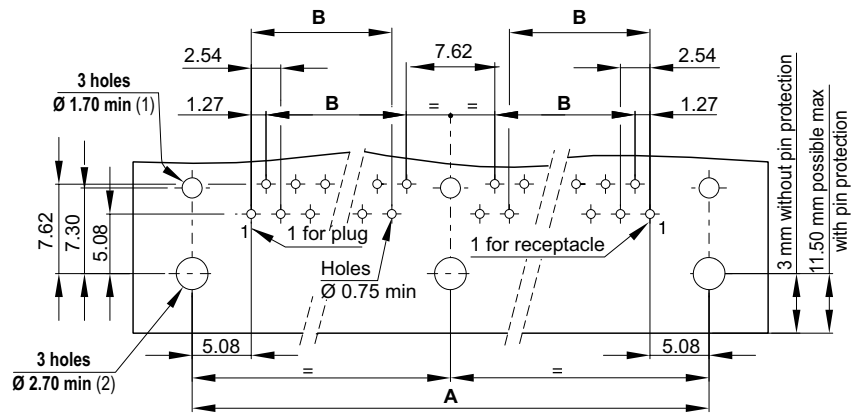
\* for ref: 215, holes Ø 3.20 mm

## Daughter board

17 to 65 Contacts



72 to 120 Contacts



**Daughter Board:** female or male, plug or receptacle, 90° termination  
 (1) **Guide styles:** 124 - 131 - 132 - 133 - 145 **Locking styles:** 204 - 212  
 (2) **Guide styles:** 110 - 125 - 191 **Locking styles:** 203 - 208

No. of contacts	17	29	41	53	65	72	84	96	120
A	30.48	45.72	60.96	76.20	91.44	106.68	121.92	137.16	167.64
B	20.32	35.56	50.80	66.04	81.28	43.18	50.80	58.42	73.66
D	17.78	33.02	48.26	63.50	78.74	-	-	-	-

# Worldwide Support

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## Connectors

### Americas

#### Sales

connectors.uscsr@smithsinterconnect.com

#### Technical Support

connectors.ustechsupport@smithsinterconnect.com

### Europe

#### Sales

connectors.emeacsr@smithsinterconnect.com

#### Technical Support

connectors.emeatechsupport@smithsinterconnect.com

### Asia

#### Sales

asiacsr@smithsinterconnect.com

#### Technical Support

asiatechsupport@smithsinterconnect.com

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## Fibre Optics & RF Components

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#### Technical Support

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### Asia

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#### Technical Support

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## Semiconductor Test

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#### Technical Support

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### Asia

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#### Technical Support

semi.techsupport@smithsinterconnect.com

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## RF/MW Subsystems

### Americas, Europe & Asia

#### Sales

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#### Technical Support

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# Connecting Global Markets

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