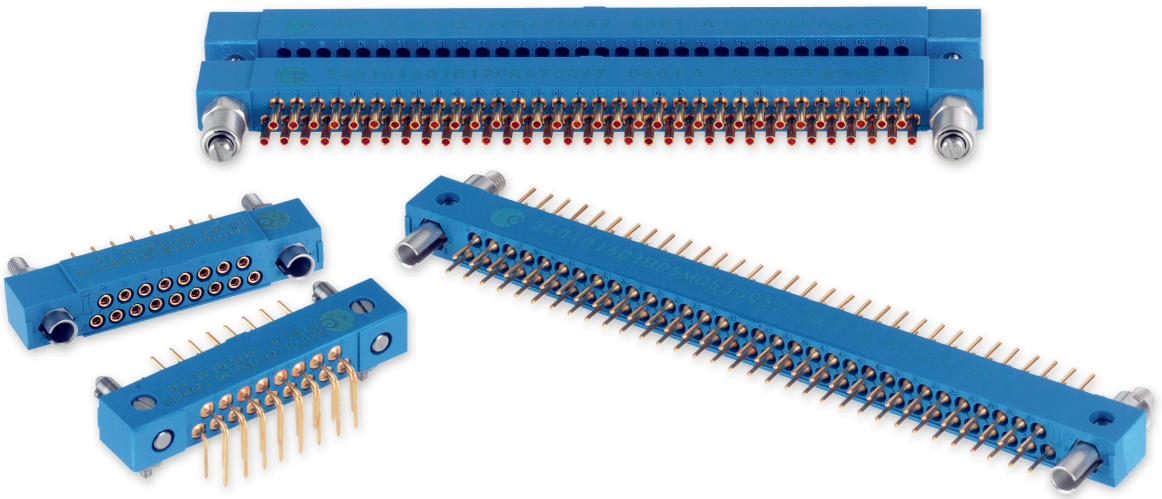
smiths interconnect

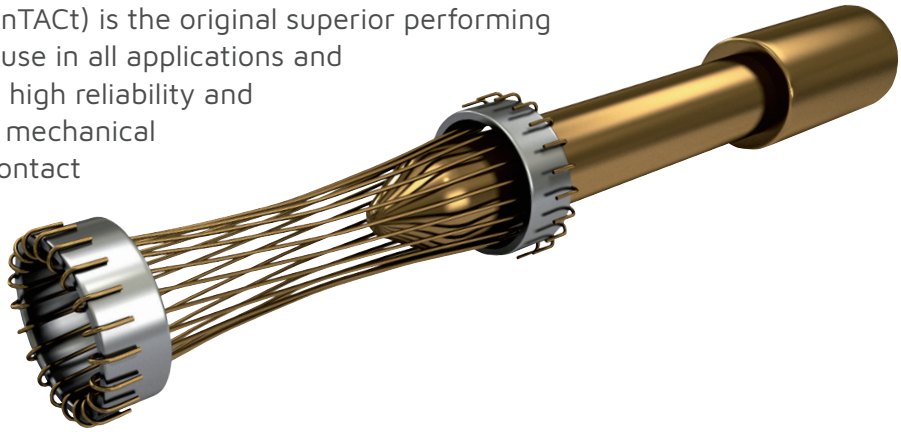
KNB/KNC/KND Series

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,



Features

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.

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.

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.

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.

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.

Benefits

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.

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.

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.

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.

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.

Contents

KN Series - Medium Density PCB Connectors

Technical Characteristics

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

Materials & Platings

Contact	Brass or bronze	
Molding	Glass fiber filled diallyl - Phtalate	
Guides	Stainless steel or nickel plated brass	
	Standard	**ESA**
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 active area 1.27 µm Ni on non active 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 grade rating (at 25°C)	Standard grade: 3 A max. - ESA grade: 5 A max.
Dielectric withstanding voltage	1200 Vrms
Contact resistance	≤8 mΩ
Insulation resistance	>104 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 polarized guides (up to 36 keying)

Environmental

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

How To Order

K	N	B				
1	2	3	4	5	6	7

1 Series

2 Pitch or type

N 1.27 mm pitch, rear removable contacts

3 Model

B 2 rows

4 Number of contacts

017 029 041 053 065 072 084 096 120

For the right angle 053 layout, KNB must be replaced by KXB (non ESA qualified, details on page 20)

5 Molding polarity

NF C-UTE C 93-424 / MIL-C-55302 / ESA/ESCC 3401/01601B SPACE GRADE				
12	14	54	54	Female plug
13	15	55	55	Male plug
16	18	56	56	Tinned female plug*†
17	19	57	57	Tinned male plug*†

NF C-UTE C 93-424 / MIL-C-55302 / ESA/ESCC 3401/01601B SPACE GRADE				
1A	1C	5A	5A	Tinned female plug**†
1B	1D	5B	5B	Tinned male plug**†
22	24	44	44	Female receptacle
23	25	45	45	Male receptacle

NF C-UTE C 93-424 / MIL-C-55302 / ESA/ESCC 3401/01601B SPACE GRADE				
26	28	46	46	Tinned female receptacle*†
27	29	47	47	Tinned male receptacle*†
2A	2C	–	–	Tinned female receptacle**†
2B	2D	–	–	Tinned male receptacle**†

6 Termination styles

10 Through board solder - 90°- length 3 mm	30 Through board solder - straight	51 Wire wrap (3 wrapping levels)
11 Through board solder - 90°- length 4 mm	31 Through board solder - straight	90 Male - male
20 Crimp	40 Solder bucket	91 Female - male
21 Double Crimp		

7 Mounting hardware

Guide Style *(consult us for special guides)*

110 Male polarized, transverse mount, standard plug	145 Male polarized, transverse mount on receptacle only	131 Male unpolarized, transverse mount
111 Male polarized, vertical mount	190 Female power or mass contact, vertical mount	132 Female unpolarized, transverse mount
113 Male polarized, float mount	125 Male unpolarized, transverse mount	133 Female all polarized, transverse mount
121 Female polarized, vertical mount	126 Female unpolarized, vertical mount	191 Male power or mass contact, vertical mount
123 Female polarized, float mount	127 Male unpolarized, vertical mount	
124 Female polarized, transverse mount	130 Female unpolarized, vertical mount	

Locking Styles

MALE PLUG	FEMALE RECEPTACLE	
201 1/4 turn, free connector	202 1/4 turn, vertical mount	212 Jackscrew, transverse mount
203 1/4 turn, transverse mount	204 1/4 turn, transverse mount	215 Jackscrew, vertical mount
207 Jackscrew, free connector	208 Jackscrew, transverse mount	219 Jackscrew, vertical mount
211 Jackscrew, free connector	209 Jackscrew, transverse mount	232 Jackscrew, with operation button
290 Jackscrew, vertical mount	210 Jackscrew, free connector	

* For 90° & straight terminations (splicing on PCB)
** RoHS compliant for 90° & straight terminations (splicing on PCB)
† Tinned contacts are not available as spares

Hypertac & ESA Correspondence Table

HYPERTAC | KNB

34 01 016 01 B

1 2 3 4 5 6

1 ESCC component number

2 Mounting

HYPERTAC		ESA									
Plug KNB 017	01	Plug KNB 096	08	Receptacle KNB 053	16	Plug KNB 072	56	Plug KNC 098	62
Plug KNB 029	02	Plug KNB 120	10	Receptacle KNB 065	17	Receptacle KNB 072	57	Receptacle KNC 098	63
Plug KNB 041	03	Plug KNC 160	12	Receptacle KNB 084	19	Plug KNC 062	58		
Plug KNB 053	04	Receptacle KNB 017	13	Receptacle KNB 096	20	Receptacle KNC 062	59		
Plug KNB 065	05	Receptacle KNB 029	14	Receptacle KNB 120	22	Plug KNC 080	60		
Plug KNB 084	07	Receptacle KNB 041	15	Receptacle KNC 160	24	Receptacle KNC 080	61		

REMINDER SPATIAL P.P.P. *(Party Polarity Protection)*			
Female receptacle	44	Plug female	54
Male receptacle	45	Plug male	55

EXAMPLE
KNB 029 **44** 40 113
P.P.P.

3 Termination style

HYPERTAC		ESA					
Bent male 10	MC	Solder bucket male 40	MS	Bent female tinned 10	FA	Mini-wrapping female 51	FY
Bent male tinned 10	MA	Mini-wrapping male 51	MY	Crimp female 20	FR	Bent long female 11	FL
Crimp male 20	MR	Bent long male 11	ML	Straight female 30	FD	Bent long female tinned 11	FG
Straight male 30	MD	Bent long male tinned 11	MG	Straight female tinned 30	FE	Female-male 91	FM
Straight male tinned 30	ME	Bent female 10	FC	Solder bucket female 40	FS		

4 Locking type On left side

HYPERTAC		ESA									
Guideless connector	00	KNB 145	40	KNC 10 209	49	KNB 11 125	71	KNB 11 208	79
KNB 131	31	KNB 124	41	KN 210	50	KNB 11 110	72	KN 219	80
KNB 132	32	KNC 10 230	43	KN 211	51	KNB 10 230	73	KN 290*	81
KNB 10 110	33	KN 232	45	KNB 212	52	KNC 124	74		
KNC 10 110	34	KN 231	46	KN 215	53	KNC 132	75		
KN 111	35	KN 207	47	KN 123	54	KNC 11 110	76		
KN 121	36	KNB 10 208	48	KN 113	55	KNC 11 125	77		

5 Locking type In center

0 0 For 2 guide connectors

– – For 3 guide connectors (*see table* **4**, Locking type - On left side)

HYPERTAC		ESA					
KNB 10 125	26	KNC 10 125	27	KN 127	28	KN 126	29

6 Locking type On right side

(*see table* **4**, Locking type - On left side)

* Please consult us

Contact Terminations

Plug

Male

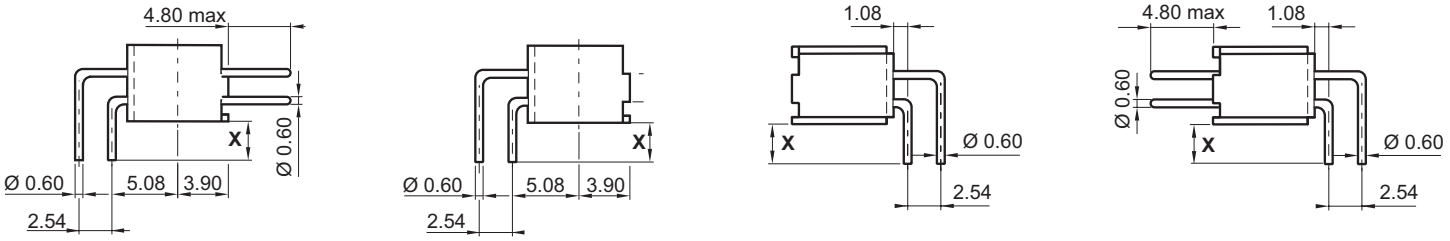
Female

Receptacle

Female

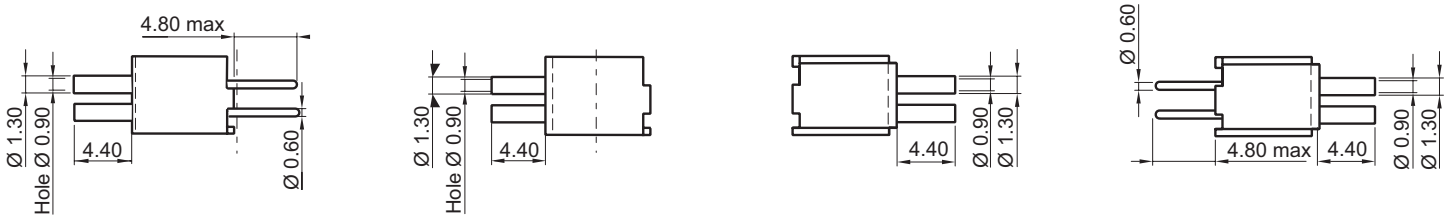
Male

Ref: **10** (**X**=3) Ref : **MC** & **FC / MA** & **FA** - Ref: **11** (**X**=4) Ref : **ML** & **FL / MG** & **FG**



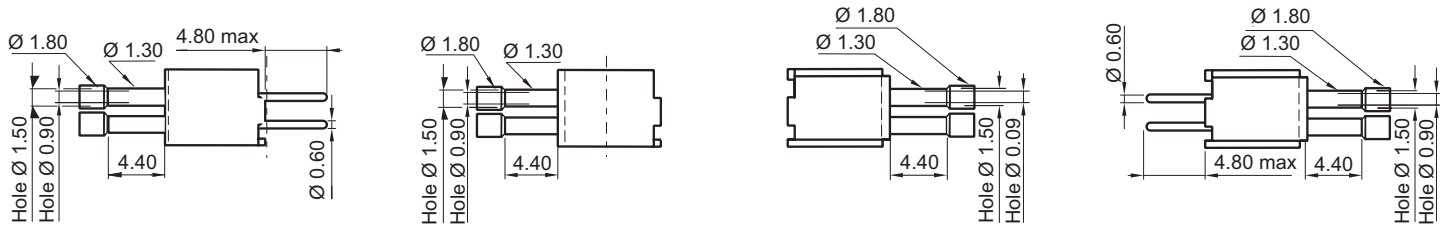
Crimp (AWG 28-26 & 24-22)

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



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

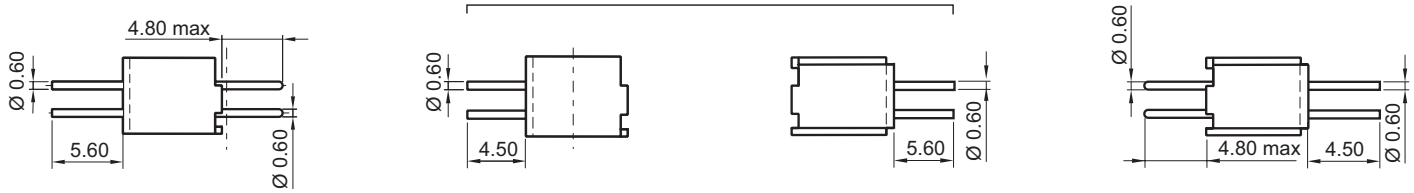
Ref: **21**



Straight through board solder

Ref: **30** Ref : **MD** & **FD / ME** & **FE** Ref **31**

See: 90° Through board solder



Contact Terminations

Plug

Male

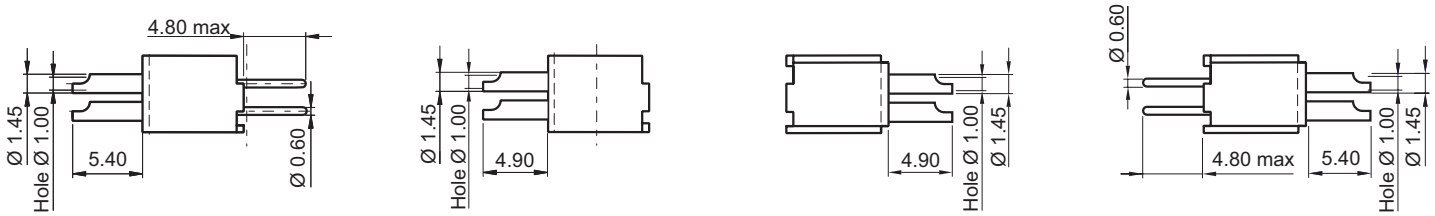
Female

Receptacle

Female

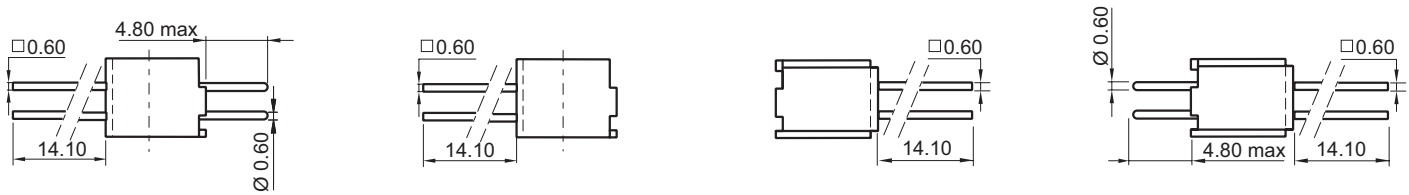
Male

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



Wire wrap *(3 wrapping levels)*

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

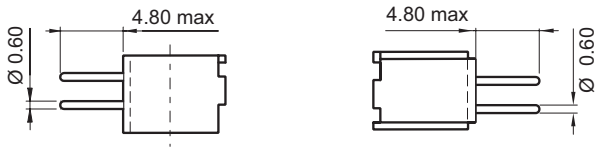


Saver *(male-male)*

Ref: **90**

Saver *(female-male)*

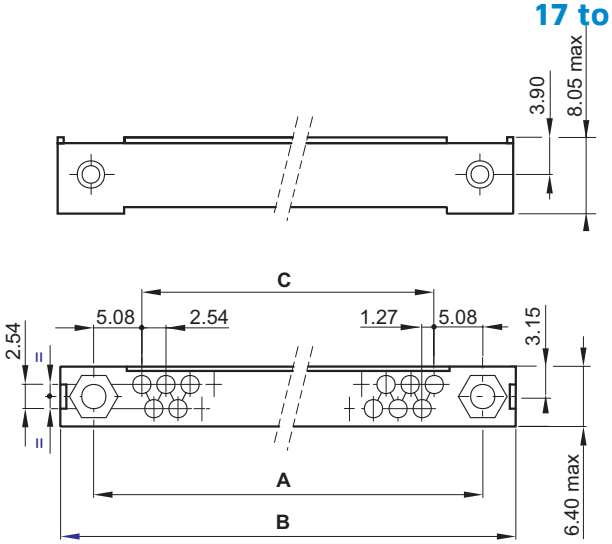
Ref: **91** Ref : **FM**



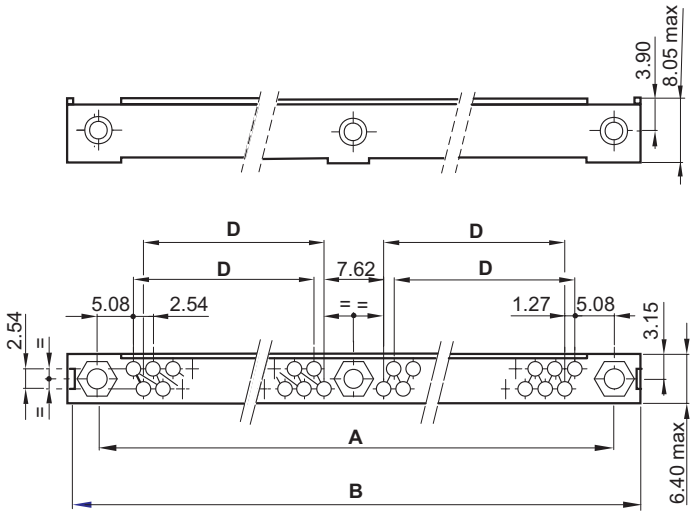
Connector Dimensions

Plug

17 to 65 contacts

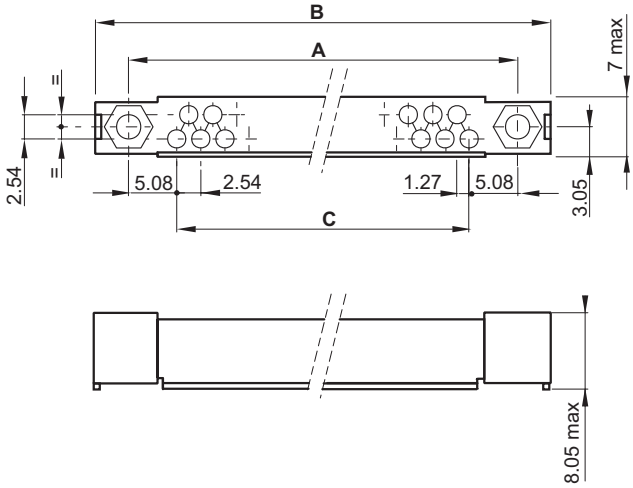


72 to 120 contacts

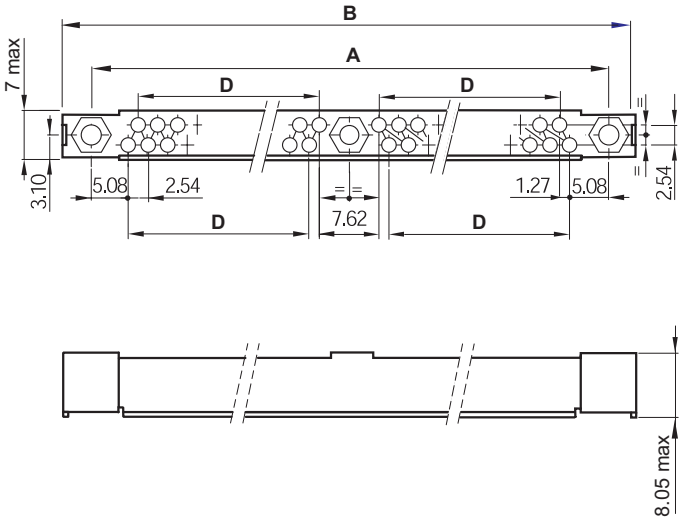


Receptacle

17 to 65 contacts



72 to 120 contacts



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

Guide Device and Polarity Termination Compatibility Chart

Legend

Compatible

Compatible special saver connector

FP = Female Plug

FR = Female Receptacle

MR = Male Receptacle

Polarity			
Receptacle			Molding
Plug			Molding
90°	10	11	Contact
Straight	30	31	Contact
Solder bucket		40	Contact
Crimp	20	21	Contact
Wire wrap		51	Contact

Polarity: MR 23, FR 22, FP 12, MP 13

Guiding devices	Male guides
FP 12 / MP 13	191
MR 23 / FR 22	145
MR 23 / FR 22	131
FP 12 / MP 13 / MR 23 / FR 22	127
FP 12 / MP 13	125
FP 12 / MP 13 / MR 23 / FR 22	113
FP 12 / MP 13 / MR 23 / FR 22	111
FP 12 / MP 13	110

Polarity	Receptacle	Plug	90°	Straight	Solder bucket	Crimp	Wire wrap - PPC
			10	30		20	
			11	31	40	21	51
	Mold-		Contact				

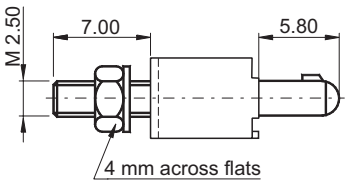
Guiding devices	Female guides
190	133	132	130	126	124	123	121

Guide Styles

Plug & Receptacle

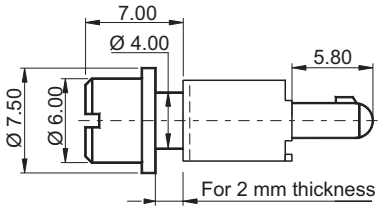
Male

Polarized vertical mount



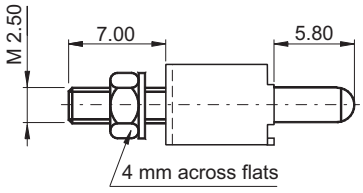
Polarized vertical float mount

Ref: **113** Ref : **55**



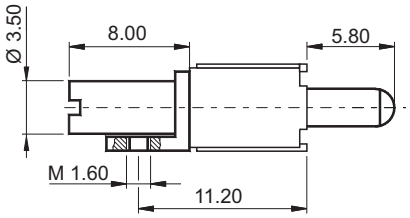
Unpolarized vertical mount

Ref: **127** Ref : **28**



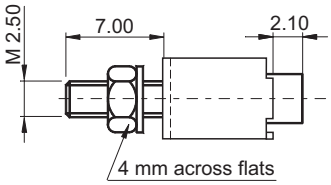
Unpolarized transverse mount

Ref: **131** Ref : **31**



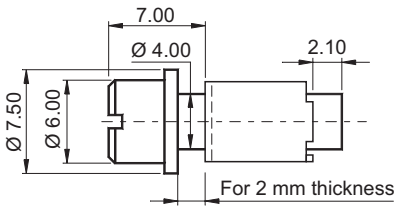
Female

Polarized vertical mount



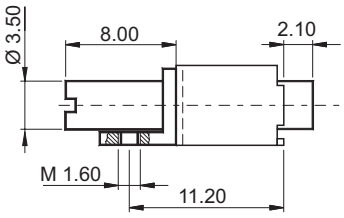
Polarized vertical float mount

Ref: **123** Ref : **54**



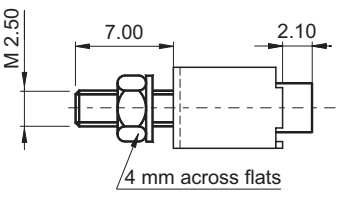
Polarized transverse mount

Ref: **124** Ref : **41**



Unpolarized vertical mount

Ref: **126** Ref : **29**

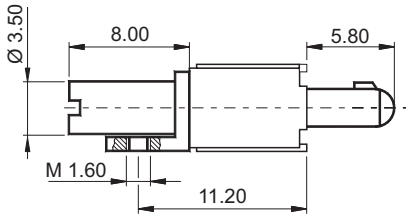


Guide Styles

Plug & Receptacle

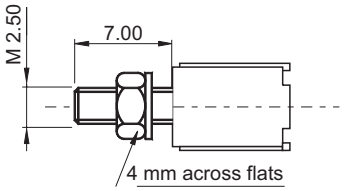
Male

Polarized transverse mount



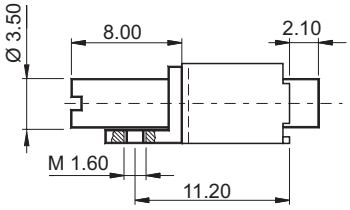
Female

All polarized vertical mount



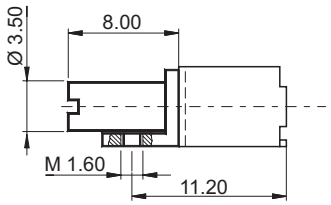
Unpolarized transverse mount

Ref: **132** Ref e: **32**



All polarized transverse mount

Ref: **133**

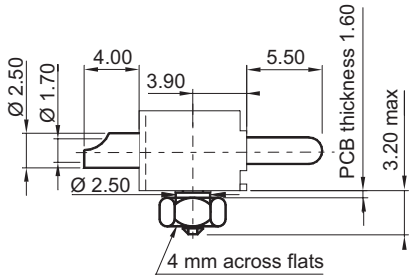


Guide Styles

Plug & Receptacle

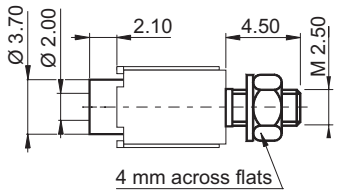
Male

Power or mass transverse mount



Female

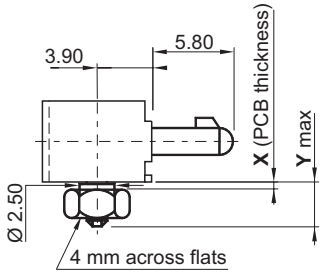
Power or mass vertical mount



Plug Only

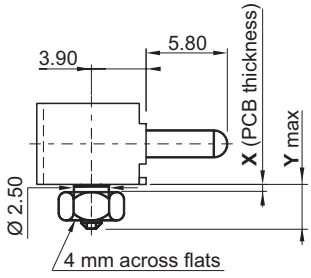
Polarized transverse mount

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



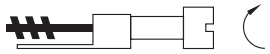
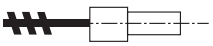
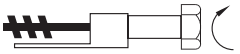
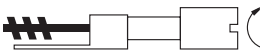
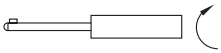
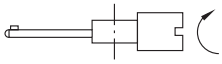
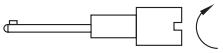
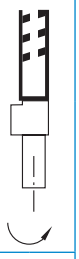
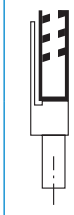
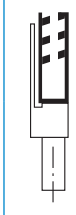
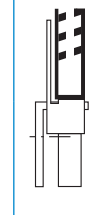
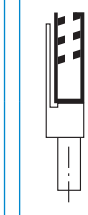
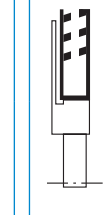
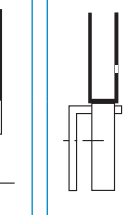
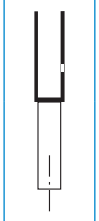
Unpolarized transverse mount

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



Locking Device Compatibility Chart

Compatible

		R	P	R	P	R	P	R	P	R	P	R	P	R	P	Receptacle	Plug	Molding
P	R		■	■			■		■		■			■				290
P	R	■			■	■												231
P	R		■	■				■										211
P	R		■		■		■		■									207
P	R		■									■		■				205
P	R		■									■		■				203
P	R		■									■		■				201
Receptacle																				
Plug																		
Molding				232		219		215		212		210		208		204		202

Male locking devices

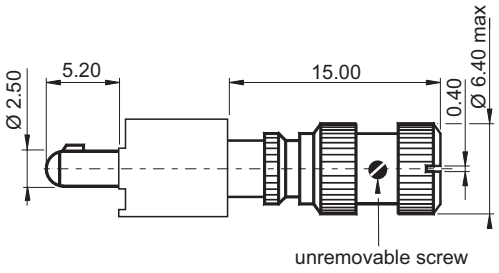
Female locking devices

Male Locking Styles

Plug & Receptacle

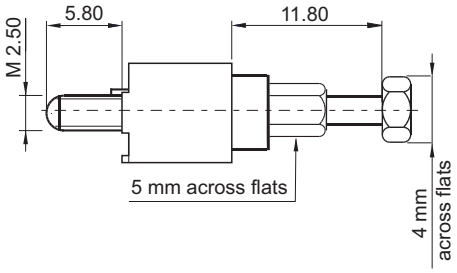
Jack 1/4 turn lock, free connector

Ref: **201**



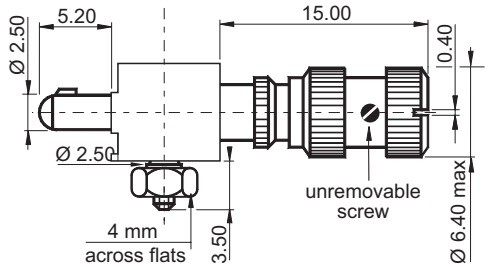
Jackscrew, free connector

Ref: **211** Ref CE: **51**



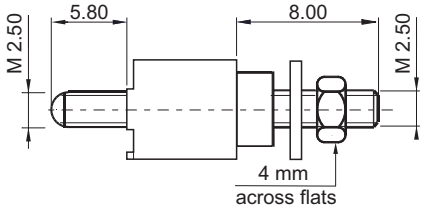
Jack 1/4 turn lock, transverse mount

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



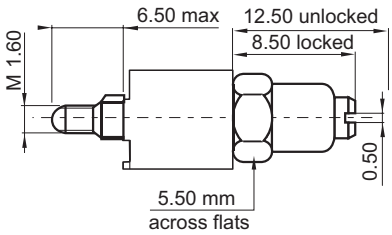
Jackscrew, vertical mount

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



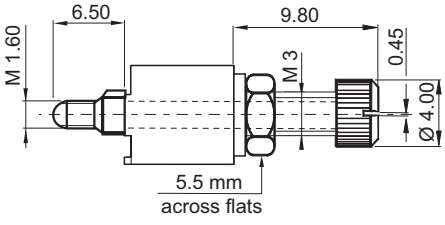
Jackscrew, free connector

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



Jackscrew, vertical mount

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

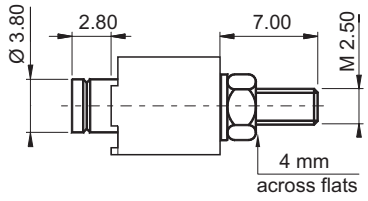


Female Locking Styles

Plug & Receptacle

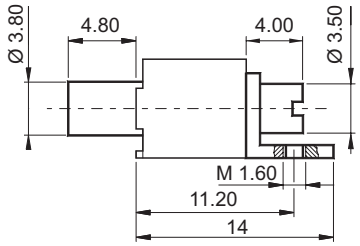
Jack 1/4 turn lock, vertical mount

Ref: **202**



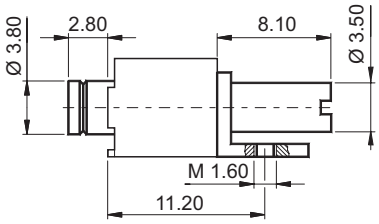
Jackscrew, transverse mount

Ref: **212** Ref : **52**



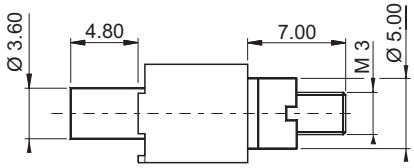
Jack 1/4 turn lock, transverse mount

Ref: **204**



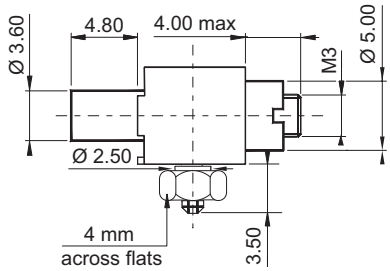
Jackscrew, vertical mount

Ref: **215** Ref : **53**



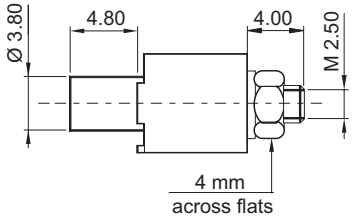
Jackscrew, transverse mount

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



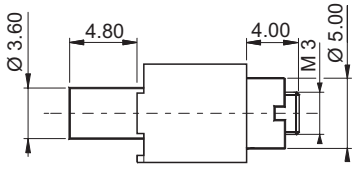
Jackscrew, vertical mount

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



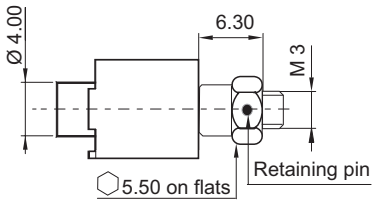
Jackscrew, free connector

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

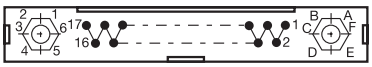
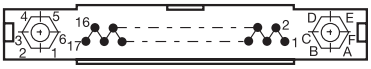
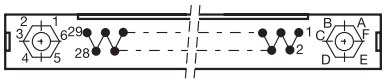
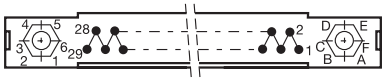
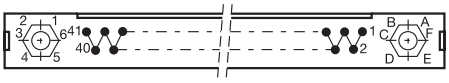
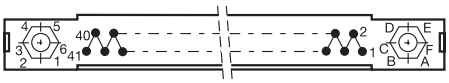
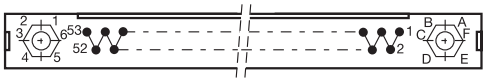
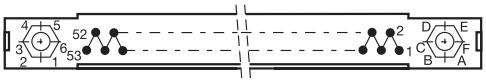
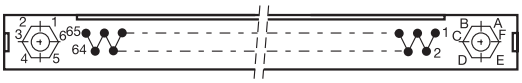
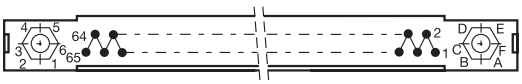
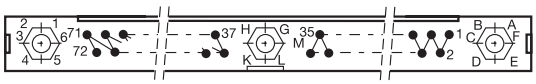
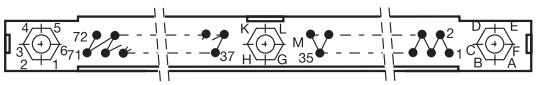
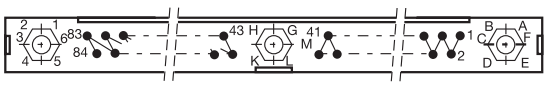
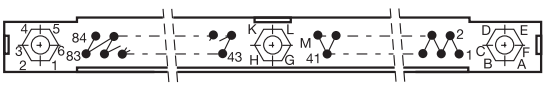
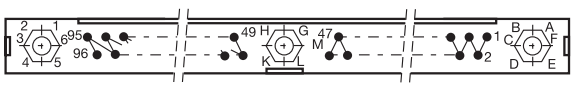
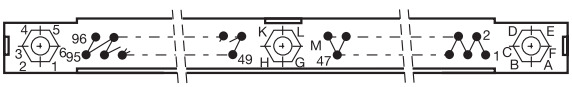
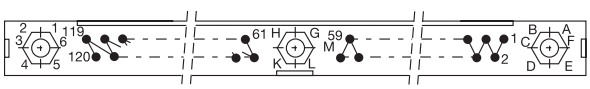
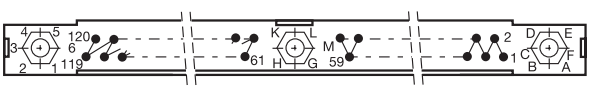


Rotating jackscrew, free connector

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

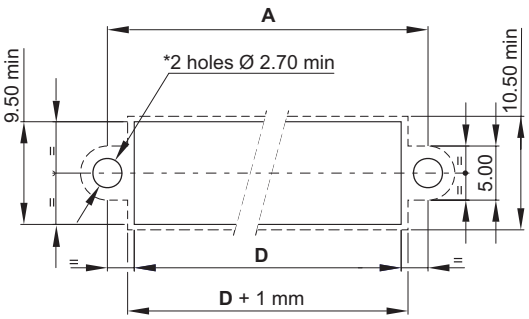


Mating Side Layout View

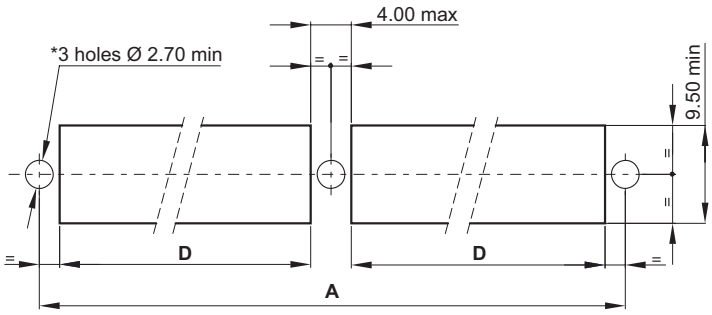
Plug		Receptacle
	017	
	029	
	041	
	053	
	065	
	072	
	084	
	096	
	120	

Panel Preparation Details

17 to 65 Contacts



72 to 120 Contacts

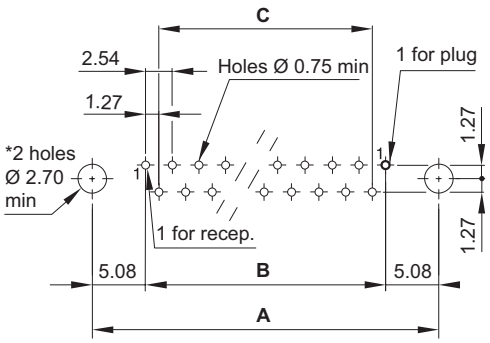


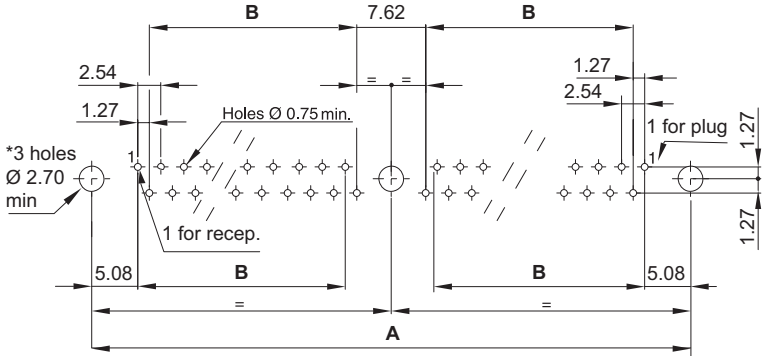
Panel: female or male, plug or receptacle, terminations 20 - 40 - 51
Guide styles: 111 - 121 - 126 - 127 - 130 - 190 (Fixed Mount) - 113 - 123 (Float Mount)
Locking styles: 202 - 215* - 219 - 231
* for ref: **215**, holes Ø 3.20 mm

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

Board Preparation Details

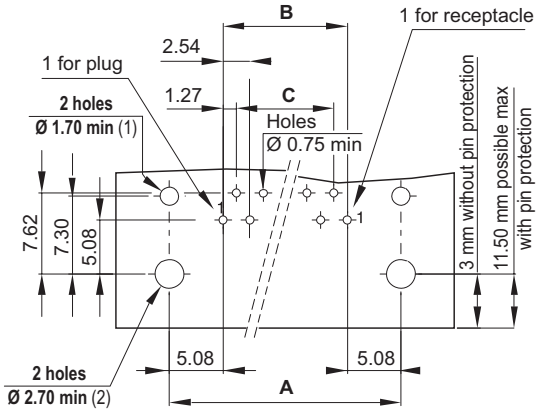
Mother board

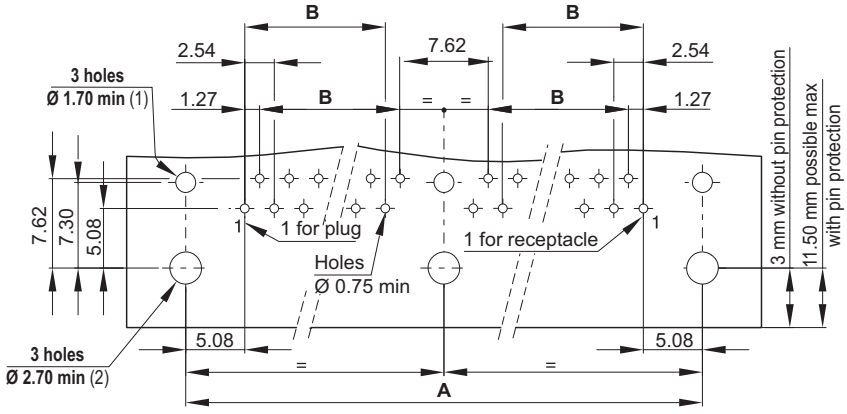




Mother Board: female or male, plug or receptacle, straight solder termination
Guide styles: 111 - 121 - 126 - 127 - 130 - 190 Locking styles: 202 - 215* - 219 - 231
* for ref: 215, holes Ø 3.20 mm

Daughter board





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	–	–	–	–

Technical Characteristics

Contact diameter	HYPERTAC® type Ø 0.60 mm rear removable
Number of contact	53
Pitch	2.54 mm between rows - 1.27 mm between quicuncial contacts
Rows	2

Materials & Platings

Contact	Brass or bronze
Molding	Glass fiber filled diallyl - Phtalate
Guides	Stainless steel or nickel plated brass
Pin body	0.25 µm gold / 1.27 µm Ni
Socket body	0.25 µm gold / 1.27 µm Ni on active area; 1.27 µm Ni on non active area
Socket wires	1 µm gold / 0.20 µm Ni

Electrical

Current rating (at 25°C)	3 A max.
Dielectric withstanding voltage	1200 Vrms
Contact resistance	≤8 mΩ
Insulation resistance	>104 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 polarized guides (up to 36 keying)

Environmental

Temperature range	–55° C to 125° C
Conformity	NF C-UTE C 93-424

How To Order

KXB	053			
1		2	3	4

1 Thermoplastic material

X

2 Molding polarity

NF C-UTE C 93-424 / MIL-C-55302 / SPACE GRADE				NF C-UTE C 93-424 / MIL-C-55302 / SPACE GRADE				NF C-UTE C 93-424 / MIL-C-55302 / SPACE GRADE			
12	14	54	Female plug	1A	1C	5A	Tinned female plug**	26	28	46	Tinned female receptacle*
13	15	55	Male plug	1B	1D	5B	Tinned male plug**	27	29	47	Tinned male receptacle*
16	18	56	Tinned female plug*	22	24	44	Female receptacle	2A	2C	–	Tinned female receptacle**
17	19	57	Tinned male plug*	23	25	45	Male receptacle	2B	2D	–	Tinned male receptacle**

3 Termination styles

10	Through board solder - 90°- length 3 mm	13	Through board solder - 90° - length 2.3 mm, plug only
11	Through board solder - 90°- length 4 mm	14	Through board solder - 90° - length 8 mm, receptacle only
12	Through board solder - 90° - length 5.1 mm, plug only		

4 Mounting hardware

Guide Style***

110	Male polarized, transverse mount, standard plug	131	Male unpolarized, transverse mount
121	Female polarized, vertical mount	145	Male polarized, transverse mount on receptacle only
124	Female polarized, transverse mount	191	Male power or mass contact, vertical mount
125	Male unpolarized, transverse mount		

Locking Styles***

FEMALE RECEPTACLE

204	1/4 turn, transverse mount	218	Jackscrew, transverse mount

MALE PLUG

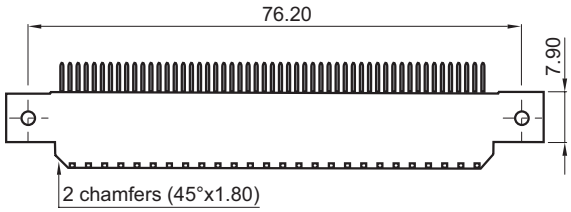
203	1/4 turn, transverse mount

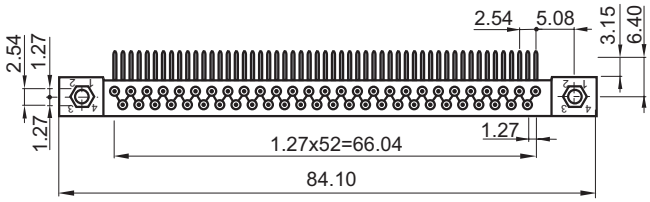
* No RoHS compliant = 16 et 17

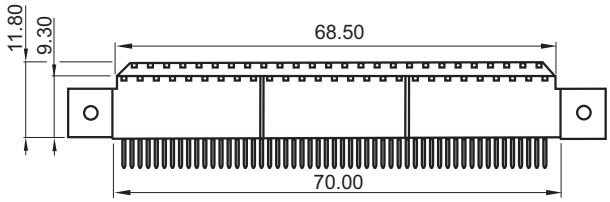
** RoHS Compliant = 1A et 1B

Connector Dimensions

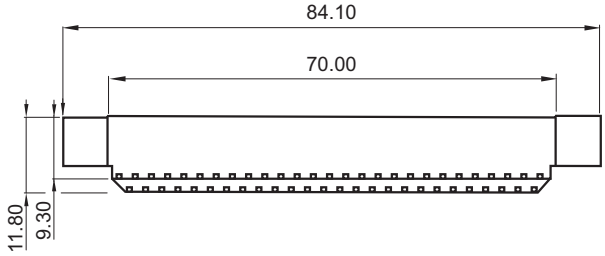
Plug

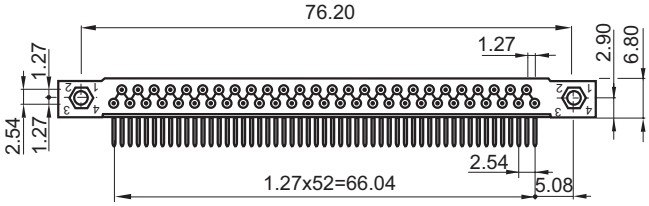


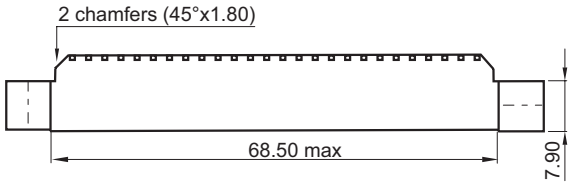




Receptacle







Technical Characteristics

Contact diameter	HYPERTAC® type Ø 0.60 mm rear removable
Number of contact	Up to 160
Pitch	2.54 mm between rows - 1.27 mm between quicuncial contacts
Rows	3

Materials & Platings

Contact	Brass or bronze	
Molding	Glass fiber filled diallyl - Phtalate	
Guides	Stainless steel or nickel plated brass	
	Standard	**ESA**
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 active area 1.27 µm Ni on non active 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 grade rating (at 25°C)	Standard grade: 3 A max - ESA grade: 5 A max
Dielectric withstanding voltage	1200 Vrms
Contact resistance	≤8 mΩ
Insulation resistance	>104 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 polarized guides (up to 36 keying)

Environmental

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

How To Order

K	N					
1	2	3	4	5	6	7

1 Series

2 Pitch or type

N 1.27 mm pitch, rear removable contacts

3 Model

C 3 rows centered fixing

D 3 rows uncentered fixing

4 Number of contacts

KNC	062	080	098	160				
KND	026	044	062	080	098	108	126	144

5 Molding polarity

NF C-UTE C 93-424 / MIL-C-55302 / ESA/ESCC 3401/01601B / SPACE GRADE				
12	14	54	54	Female plug
13	15	55	55	Male plug
16	18	56	56	Tinned female plug*†
17	19	57	57	Tinned male plug*†

NF C-UTE C 93-424 / MIL-C-55302 / ESA/ESCC 3401/01601B / SPACE GRADE				
1A	1C	5A	5A	Tinned female plug**†
1B	1D	5B	5B	Tinned male plug**†
22	24	44	44	Female receptacle
23	25	45	45	Male receptacle

NF C-UTE C 93-424 / MIL-C-55302 / ESA/ESCC 3401/01601B / SPACE GRADE				
26	28	46	46	Tinned female receptacle*†
27	29	47	47	Tinned male receptacle*†
2A	2C	–	–	Tinned female receptacle**†
2B	2D	–	–	Tinned male receptacle**†

6 Termination styles

10	Through board solder - 90°- length 3 mm	21	Double Crimp	51	Wire wrap (3 wrapping levels)
11	Through board solder - 90°- length 4 mm	30	Through board solder - straight	90	Male - male
20	Crimp	40	Solder Bucket	91	Female - male

7 Mounting hardware

Guide Style *(consult us for special guides)*

110	Male polarized, transverse mount, standard plug	145	Male polarized, transverse mount on receptacle only	131	Male unpolarized, transverse mount
111	Male polarized, vertical mount	190	Female power or mass contact, vertical mount	132	Female unpolarized, transverse mount
113	Male polarized, float mount	125	Male unpolarized, transverse mount	133	Female all polarized, transverse mount
121	Female polarized, vertical mount	126	Female unpolarized, vertical mount	191	Male power or mass contact, vertical mount
123	Female polarized, float mount	127	Male unpolarized, vertical mount		
124	Female polarized, transverse mount	130	Female unpolarized, vertical mount		

Locking Styles

MALE PLUG		FEMALE RECEPTACLE			
201	1/4 turn, free connector	202	1/4 turn, vertical mount	212	Jackscrew, transverse mount
203	1/4 turn, transverse mount	204	1/4 turn, transverse mount	215	Jackscrew, vertical mount
207	Jackscrew, free connector	208	Jackscrew, transverse mount	219	Jackscrew, vertical mount
211	Jackscrew, free connector	209	Jackscrew, transverse mount	232	Jackscrew, with operation button
290	Jackscrew, vertical mount	210	Jackscrew, free connector		

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

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

† Tinned contacts are not available as spares

Hypertac & ESA Correspondence Table

HYPERTAC **KNC**

34 01 016 01 B					
1	2	3	4	5	6

1 ESCC component number

2 Mounting

HYPERTAC		ESA									
Plug KNB 017	01	Plug KNB 096	08	Receptacle KNB 053	16	Plug KNB 072	56	Plug KNC 098	62
Plug KNB 029	02	Plug KNB 120	10	Receptacle KNB 065	17	Receptacle KNB 072	57	Receptacle KNC 098	63
Plug KNB 041	03	Plug KNC 160	12	Receptacle KNB 084	19	Plug KNC 062	58		
Plug KNB 053	04	Receptacle KNB 017	13	Receptacle KNB 096	20	Receptacle KNC 062	59		
Plug KNB 065	05	Receptacle KNB 029	14	Receptacle KNB 120	22	Plug KNC 080	60		
Plug KNB 084	07	Receptacle KNB 041	15	Receptacle KNC 160	24	Receptacle KNC 080	61		

REMINDER SPATIAL P.P.P. *(Party Polarity Protection)*			
Female receptacle	44	Plug female	54
Male receptacle	45	Plug male	55

EXAMPLE

KNC 062 **44** 30 113

P.P.P.

3 Termination style

HYPERTAC		ESA					
Bent male 10	MC	Solder bucket male 40	MS	Bent female tinned 10	FA	Mini-wrapping female 51	FY
Bent male tinned 10	MA	Mini-wrapping male 51	MY	Crimp female 20	FR	Bent long female 11	FL
Crimp male 20	MR	Bent long male 11	ML	Straight female 30	FD	Bent long female tinned 11	FG
Straight male 30	MD	Bent long male tinned 11	MG	Straight female tinned 30	FE	Female-male 91	FM
Straight male tinned 30	ME	Bent female 10	FC	Solder bucket female 40	FS		

4 Locking type On left side

HYPERTAC		ESA									
Guideless connector	00	KNB 145	40	KNC 10 209	49	KNB 11 125	71	KNB 11 208	79
KNB 131	31	KNB 124	41	KN 210	50	KNB 11 110	72	KN 219	80
KNB 132	32	KNC 10 230	43	KN 211	51	KNB 10 230	73	KN 290*	81
KNB 10 110	33	KN 232	45	KNB 212	52	KNC 124	74		
KNC 10 110	34	KN 231	46	KN 215	53	KNC 132	75		
KN 111	35	KN 207	47	KN 123	54	KNC 11 110	76		
KN 121	36	KNB 10 208	48	KN 113	55	KNC 11 125	77		

5 Locking type In center

0 0 For 2 guide connectors

– – For 3 guide connectors (*see table* **4**, Locking type - On left side)

HYPERTAC		ESA					
KNB 10 125	26	KNC 10 125	27	KN 127	28	KN 126	29

6 Locking type On right side

(*see table* **4**, Locking type - On left side)

* Please consult us

Contact Terminations

Plug

Male

Female

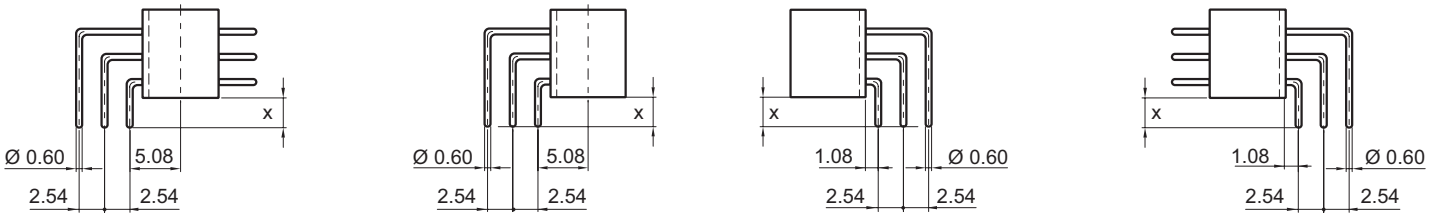
Receptacle

Female

Male

90° Through board solder

Ref: **10** (**X**=3) Ref : **MC** & **FC / MA** & **FA** - Ref: **11** (**X**=4) Ref : **ML** & **FL /MG** & **FG**

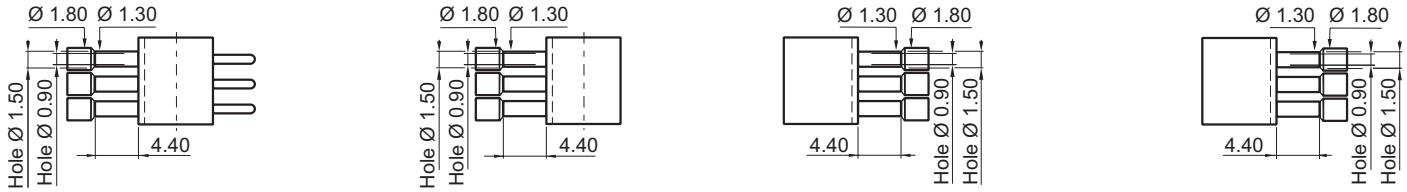


Crimp (AWG 28-22)

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

Crimp (AWG 28-22)

Ref: **21**



Straight through board solder

Ref: **30** Ref : **MD** & **FD / ME** & **FE**

Contact Terminations

Plug

Male

Female

Receptacle

Female

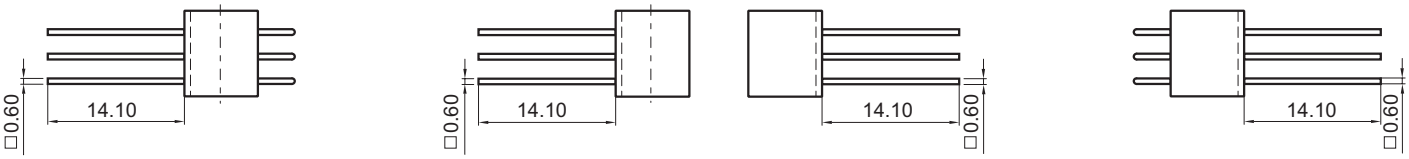
Male

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**

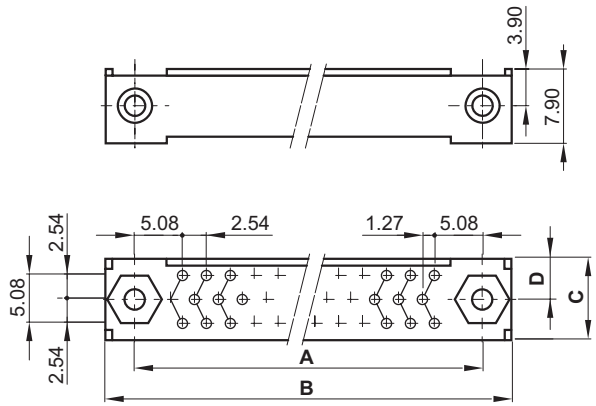
Saver (female-male)

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

Dimensions

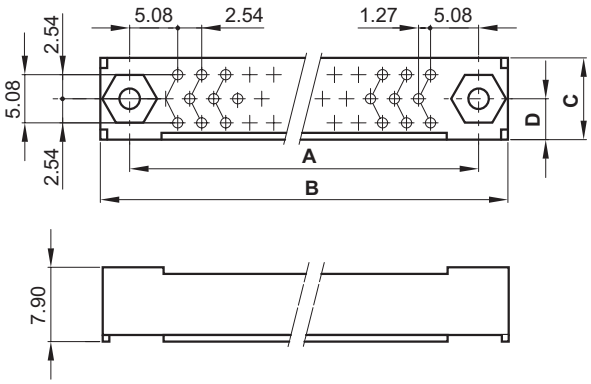
Plug

26 to 98 contacts

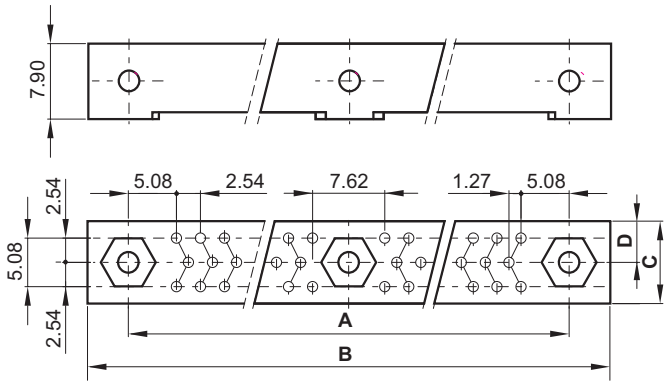


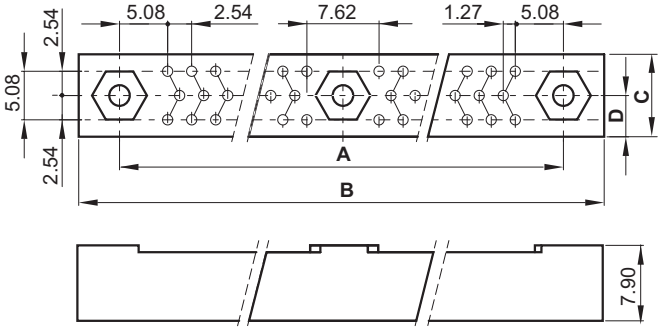
Receptacle

26 to 98 contacts



108 to 160 contacts





	No. of contacts		26	44	62	80	98	108	126	144	160
KNC	Plug & Receptacle	A	–	–	60.96	76.20	91.44	–	–	–	149.86
		B max	–	–	69.00	84.20	99.50	–	–	–	158.00
	Plug	C max	–	–	9.45	9.45	9.45	–	–	–	9.30
		D	–	–	4.42	4.42	4.42	–	–	–	4.70
	Receptacle	C max	–	–	9.30	9.30	9.30	–	–	–	9.30
		D	–	–	4.17	4.17	4.17	–	–	–	4.70

KND	Plug & Receptacle	A	30.48	45.72	60.96	76.20	91.44	106.68	121.92	137.16	–
		B max	38.50	53.70	69.00	84.20	99.50	114.70	129.90	145.20	–
	Plug	C min	8.95	8.95	8.95	8.95	8.95	8.95	8.95	8.95	–
		C max	9.55	9.55	9.55	9.55	9.55	9.55	9.55	9.55	–
		D	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15	–
	Receptacle	C max	9.35	9.35	9.35	9.35	9.35	9.35	9.35	9.35	–
		D	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	–

Guide Device and Polarity Termination Compatibility Chart

Legend

Compatible

Compatible special saver connector

FP = Female Plug

FR = Female Receptacle

MR = Male Receptacle

Polarity			
Receptacle			Molding
Plug			Molding
90°	10	11	Contact
Straight	30	31	Contact
Solder bucket		40	Contact
Crimp	20	21	Contact
Wire wrap		51	Contact

Guiding devices									
FP 12 / MP 13									191
MR 23 / FR 22									145
MR 23 / FR 22									131
FP 12 / MP 13 / MR 23 / FR 22									127
FP 12 / MP 13									125
FP 12 / MP 13 / MR 23 / FR 22									113
FP 12 / MP 13 / MR 23 / FR 22									111
FP 12 / MP 13									110

Guiding devices

Male guides

Polarity	Receptacle	Plug	90°	Straight	Solder bucket	Crimp	Wire wrap - PPC
			10	30		20	
			11	31	40	21	51
	Mold-		Contact				

Guiding devices							
190	133	132	130	126	124	123	121

Female guides

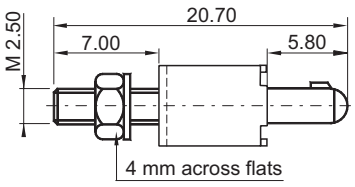
Guide Styles

Plug & Receptacle

Male

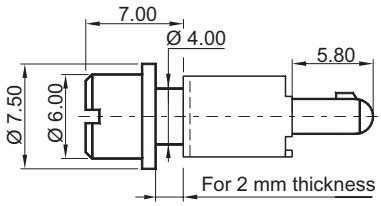
Polarized vertical mount

Ref: **111** Ref : **35**



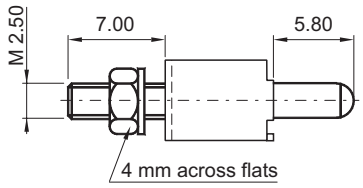
Polarized vertical float mount

Ref: **113** Ref : **55**



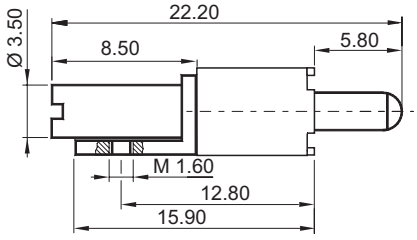
Unpolarized vertical mount

Ref: **127** Ref : **28**



Unpolarized transverse mount

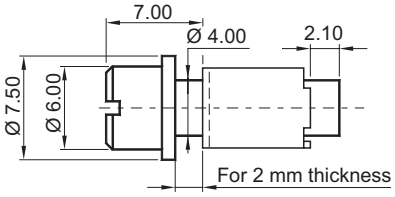
Ref: **131**



Female

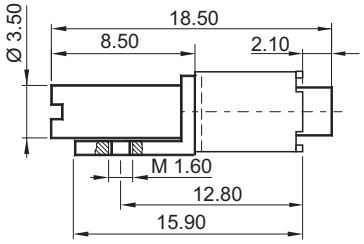
Polarized vertical float mount

Ref: **123** Ref : **54**



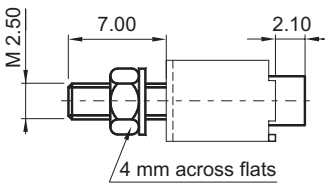
Polarized transverse mount

Ref: **124** Ref : **74**



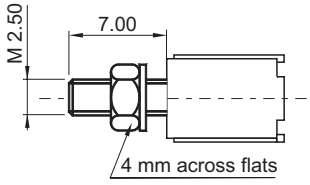
Unpolarized vertical mount

Ref: **126** Ref : **29**



All polarized vertical mount

Ref: **130**



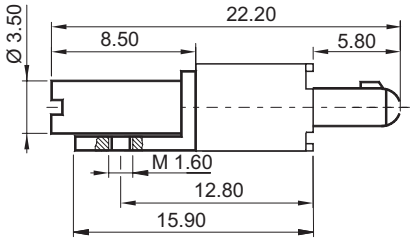
Guide Styles

Plug & Receptacle

Male

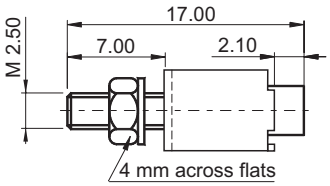
Polarized transverse mount

Ref: **145**



Polarized vertical mount

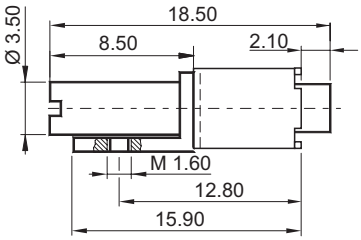
Ref: **121** Ref : **36**



Female

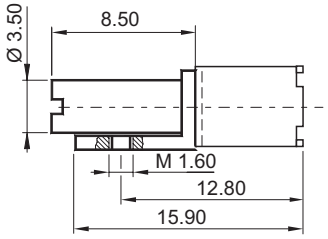
Unpolarized transverse mount

Ref: **132** Ref : **75**



All polarized transverse mount

Ref: **133**

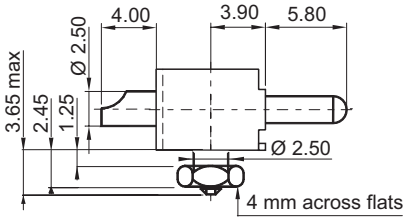


Guide Styles

Plug & Receptacle

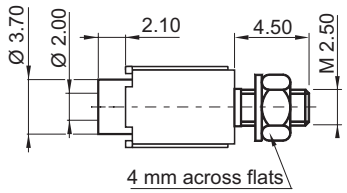
Male

Power or mass vertical mount



Female

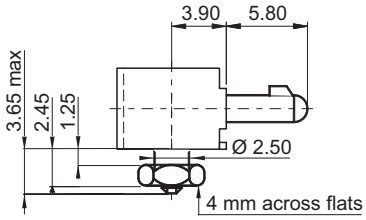
Power or mass vertical mount



Male plug only

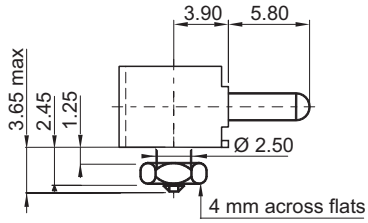
Polarized transverse mount

Ref: **10 110** Ref : **34** PCB thickness **1.60**

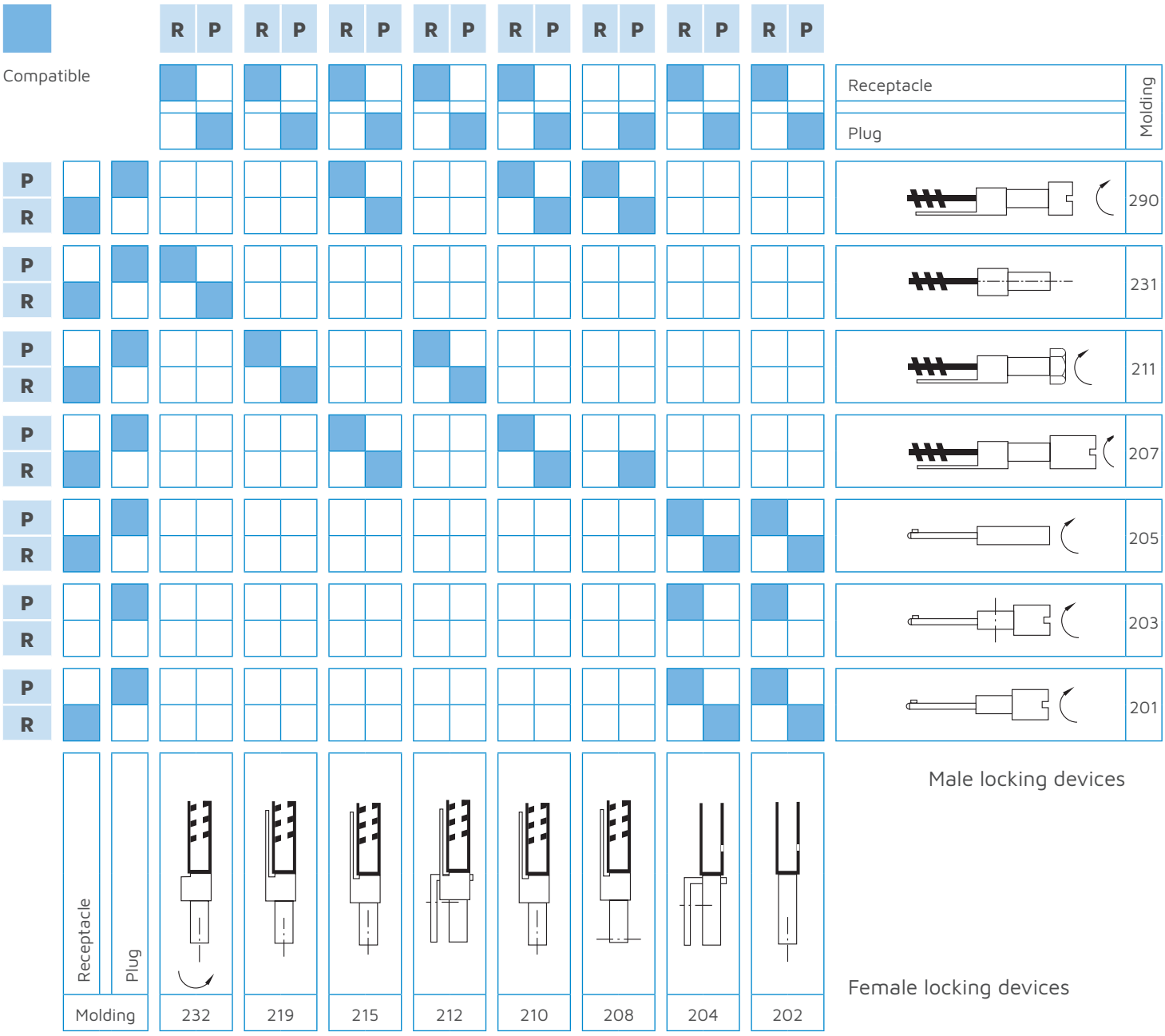


Unpolarized transverse mount

Ref: **10 125** Ref : **27** PCB thickness **1.60**



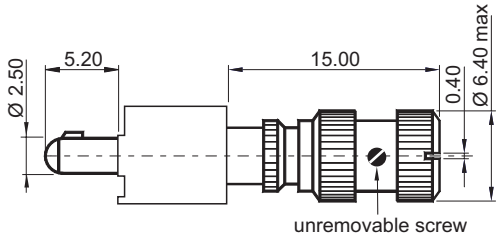
Locking Devices Compatibility Chart



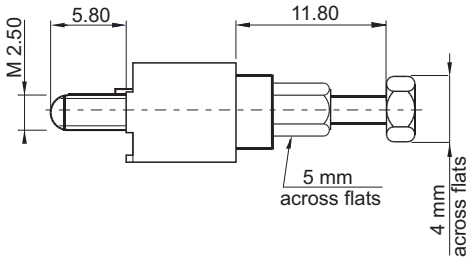
Male Locking Styles

Plug & Receptacle

Jack 1/4 turn lock, free connector

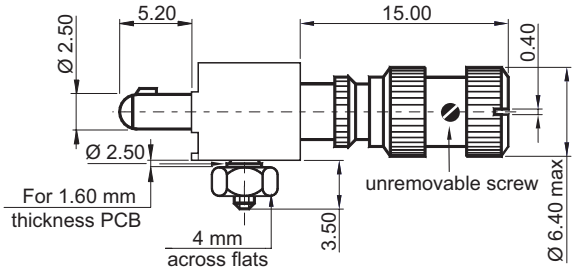


Jackscrew, free connector



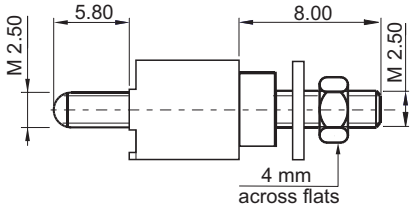
Jack 1/4 turn lock, transverse mount

Ref: **206**



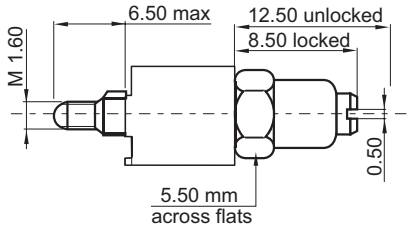
Jackscrew, vertical mount

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



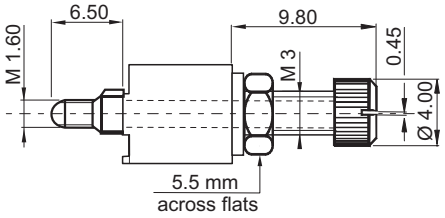
Jackscrew, free connector

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



Jackscrew, vertical mount

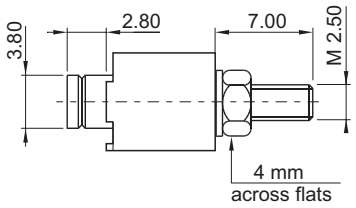
Ref: **290** Ref : **81**



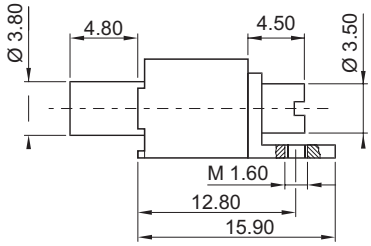
Female Locking Styles

Plug & Receptacle

Jack 1/4 turn lock, vertical mount

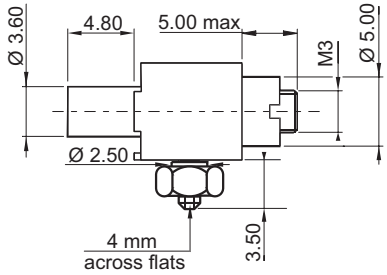


Jackscrew, transverse mount



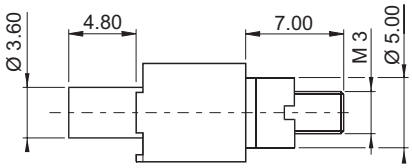
Jackscrew, transverse mount

Ref: **10 209** Ref : **49** PCB thickness 1.60



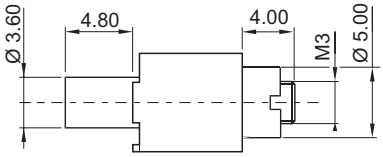
Jackscrew, vertical mount

Ref: **215** Ref : **53**



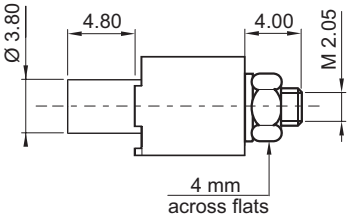
Jackscrew, free connector

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



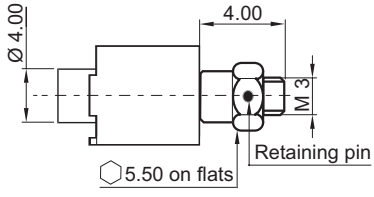
Jackscrew, vertical mount

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



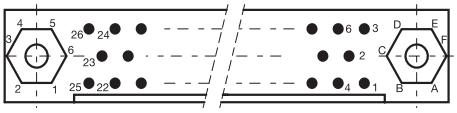
Rotating jackscrew

Ref: **232**

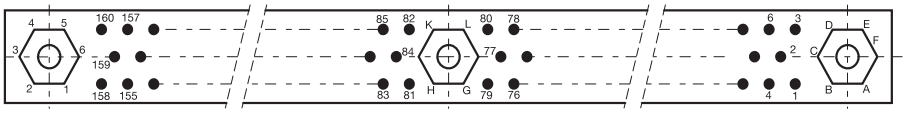


Receptacle Mating Side Layout View

26 to 98 contacts

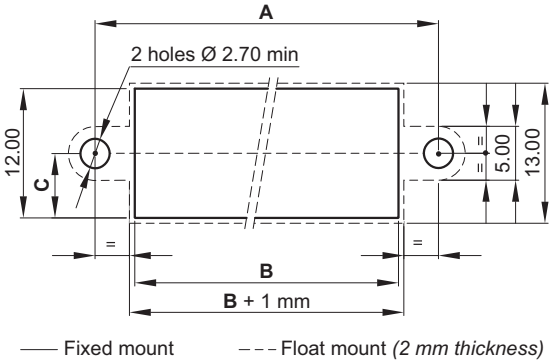


108 to 160 contacts

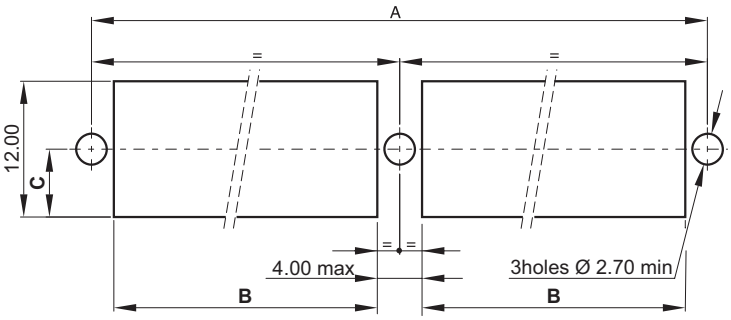


Panel Preparation Details

26 to 98 contacts



108 to 160 contacts



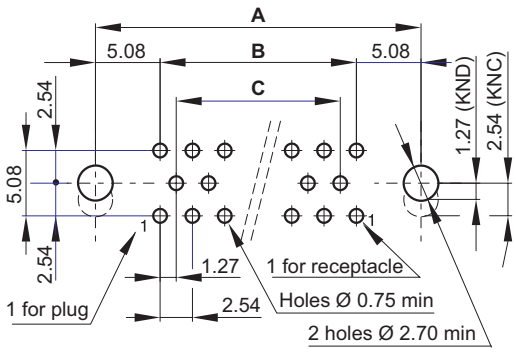
Panel: female or male, plug or receptacle
Terminations: 40 - 51
Guide styles: 111 - 121 *(Fixed Mount)*
Guide styles: 113 - 123 - 202 *(Float Mount)*

No. of contacts	26	44	62	80	98	108	126	144	160
A	30.48	45.72	60.96	76.20	91.44	106.68	121.92	137.16	149.86
B min	25.90	41.10	56.40	71.60	86.90	48.50	56.00	63.60	69.95
C (KNC)	–	–	6.00	6.00	6.00	–	–	–	6.00
C (KND)	4.73	4.73	4.73	4.73	4.73	4.73	4.73	4.73	–

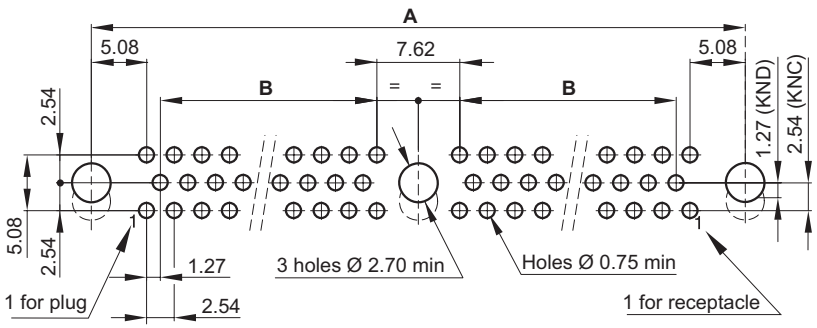
Board Preparation Details

Mother board

26 to 98 Contacts



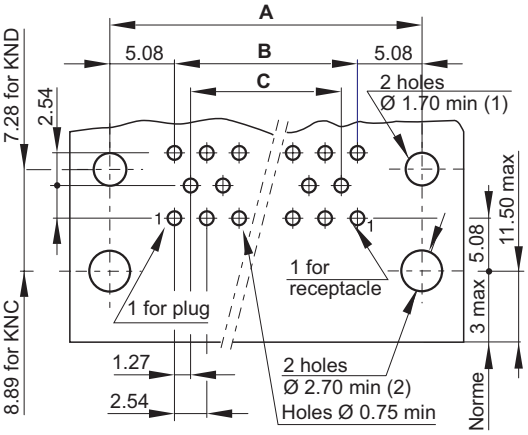
108 to 160 Contacts



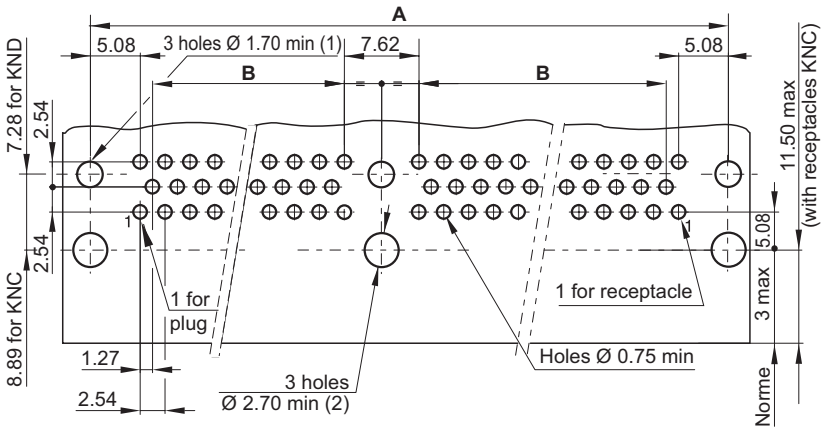
Mother Board: female or male, plug or receptacle, straight solder termination
Guide styles: 111 - 121- 202

Daughter board

26 to 98 Contacts



108 to 160 Contacts



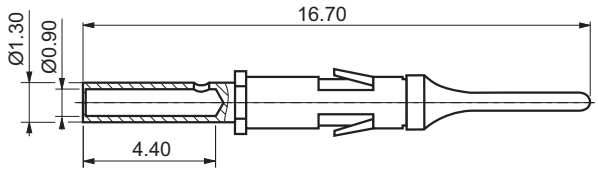
Daughter Board: female or male, plug or receptacle, 90° termination
(1) **Guide styles**: 124 (2) **Guide styles**: 110 - 206

No. of contacts	26	44	62	80	98	108	126	144	160
A	30.48	45.72	60.96	76.20	91.44	106.68	121.92	137.16	149.86
B	20.32	35.56	50.80	66.04	81.28	43.18	50.80	58.42	64.77
C	17.78	33.02	48.26	63.50	78.74	–	–	–	–

Contacts

Male

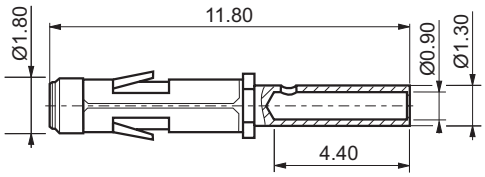
Crimp terminations AWG 22-28 (0.079 - 0.34 mm²)



Reference	Part number
KN- ---13 **20** ---	006 042 1- 20R OG
KN- ---55 **20** --- **MR**	006 042 1- 20P OF 3401 017 004B

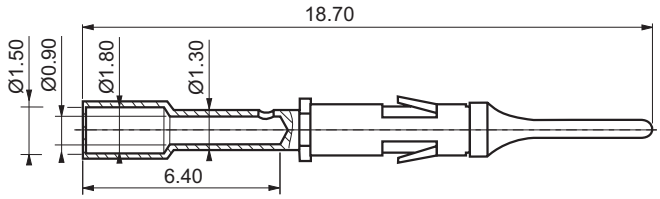
Female

Crimp terminations AWG 22-28 (0.079 - 0.34 mm²)

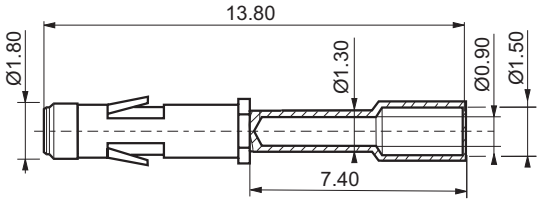


Reference	Part number
KN- ---22 **20** ---	006 042 2- 20R G0
KN- ---44 **20** --- **FR**	006 042 2- 20P J9 3401 017 015B

Crimp terminations AWG 22-28 (0.079 - 0.34 mm²) & Sheath Ø1.45



Reference	Part number
KN- ---13 **20** ---	006 063 1- 21R OG
KN- ---55 **20** ---	006 063 1- 20R OF



Reference	Part number
KN- ---22 **20** ---	006 063 2- 21R G0
KN- ---44 **20** ---	006 063 2- 21R J3

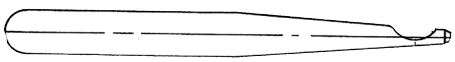
Tools and accessories

Crimp tool & Positioner

Ref: **S_102**
(M22520/2.01)

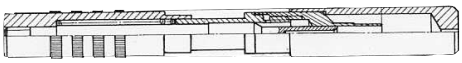
Contact part number		Crimp tool	AWG	Wire cross section	Positioner	Tool turret	Selector position
006 042 1- 20R OG 006 042 2- 20R GO		ASTRO TOOL M22520/2.01	28	0.079	SS-0060000001		3
			26	0.14			4
			24	0.20			4
			22	0.34			5
		DANIELS M22520/2.01	28	0.079	SS-0060000001		3
			26	0.14			4
			24	0.20			4
			22	0.34			5
006 063 1- 21R OG 006 063 2- 21R GO	**2 operations** **1st crimp** *(lead)*	ASTRO TOOL M22520/2.01	28	0.079	SS-0060000001		3
			26	0.14			4
			24	0.20			4
			22	0.34			5
		DANIELS M22520/2.01	28	0.079	SS-0060000001		3
			26	0.14			4
			24	0.20			4
			22	0.34			5
	2nd crimp *(sheath)*	ASTRO TOOL M22520/2.01	28	0.079	SS-0060000002		*
			26	0.14			6
			24	0.20			7
			22	0.34			7
		DANIELS M22520/2.01	28	0.079	SS-0060000002		*
			26	0.14			6
			24	0.20			7
			22	0.34			7

Insertion



SM-0060000001

Extraction



SD-0060000006

Alignment Combs

for 90° through board termination

2 fixing points **HPF107/B**
3 fixing points **SP. 006 00 00 004**

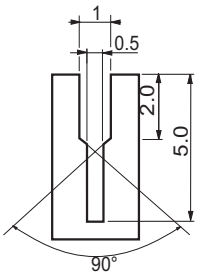
Screwdriver for m3 nut

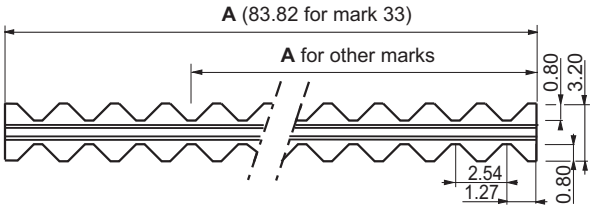
208 locking devices
215 locking devices

S_075

Accessories

Antistatic Pin Protector





Ordering information

K N B - - - _ 314

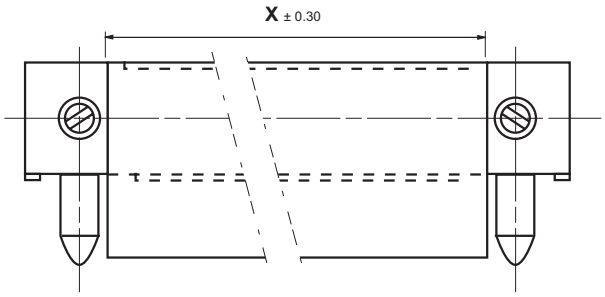
Use	A	Ref
KNB 017 KND 026	24.13	**009**
KNB 029 KND 044	39.37	**015**
KNB 072 KND 108	46.99	**018**
KNB 041 & 084 KNC 062 KND 062 & 126	54.61	**021**

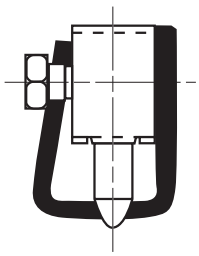
Use	A	Ref
KNB 096 KND 144	62.23	**024**
KNB 053 KNC 080 & 160 KND 080	69.85	**027**
KNB 120	77.47	**030**
KNB 065 KNC 098 KND 098	83.82	**033**

Note: Each part number contains only one header.
To equip fully the connector, you have to order 2, 3, 4 or 6 identical headers.
Header can fit on contacts or be positioned between rows.

Accessories

Pin Protector *(extruded polypropylene)*





Ordering information

K N - - - - _ 308

B, C or D — **Number of positions**

KNB	017	029	041	053	065	072	084	096	120
X ± 0.30	25.50	40.70	56	71.20	86.50	48.40	56	63.60	78.80
Qty	1	1	1	1	1	2	2	2	2

KNC	062	080	098	119	160
X ± 0.30	66	81.20	96.40	114.20	155.00
Qty	1	1	1	1	1

KND	026	044	108	126	144
X ± 0.30	35.50	50.70	111.70	127.00	142.20
Qty	1	1	1	1	1

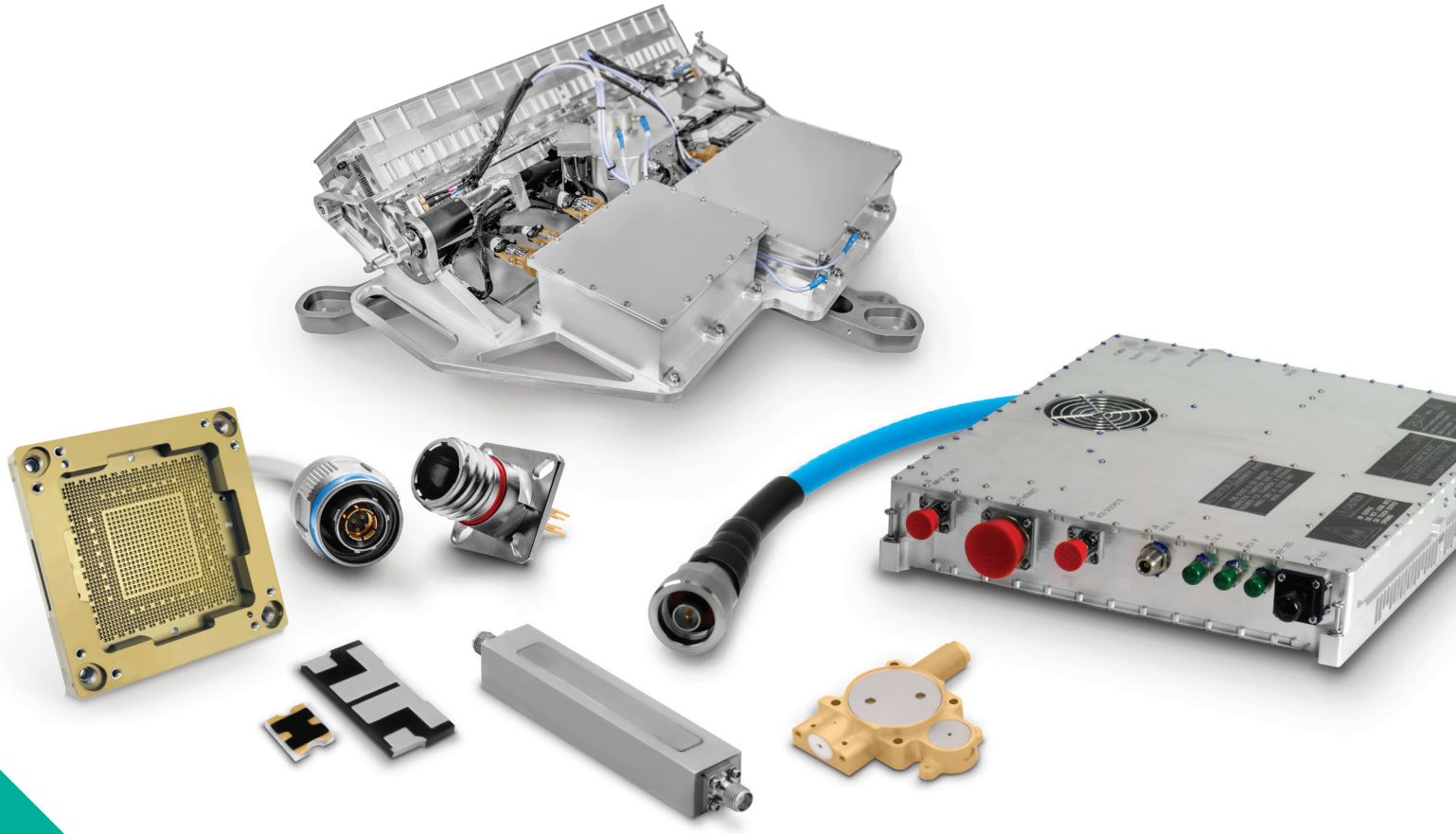
Disclaimer

All of the information included in this catalogue is believed to be accurate at the time of printing. It is recommended, however, that users should independently evaluate the suitability of each product for their intended application and be sure that each product is properly installed, used and maintained to achieve desired results.

Smiths Interconnect makes no warranties as to the accuracy or completeness of the information, and disclaims any liability regarding its use.

Smiths Interconnect reserves the right to modify design and specifications, in order to improve quality, keep pace with technological development or meet specific production requirements.

Product Portfolio



- Antenna Systems
  - Cable Assemblies
    - Connector Solutions
      - Ferrite Components & Assemblies
        - RF Filter Components & Assemblies
          - Integrated Microwave Assemblies
            - Millimeter-Wave Solutions
              - RF Components
                - Test Sockets and WLCSP Probe Heads
                  - Time & Frequency Systems

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