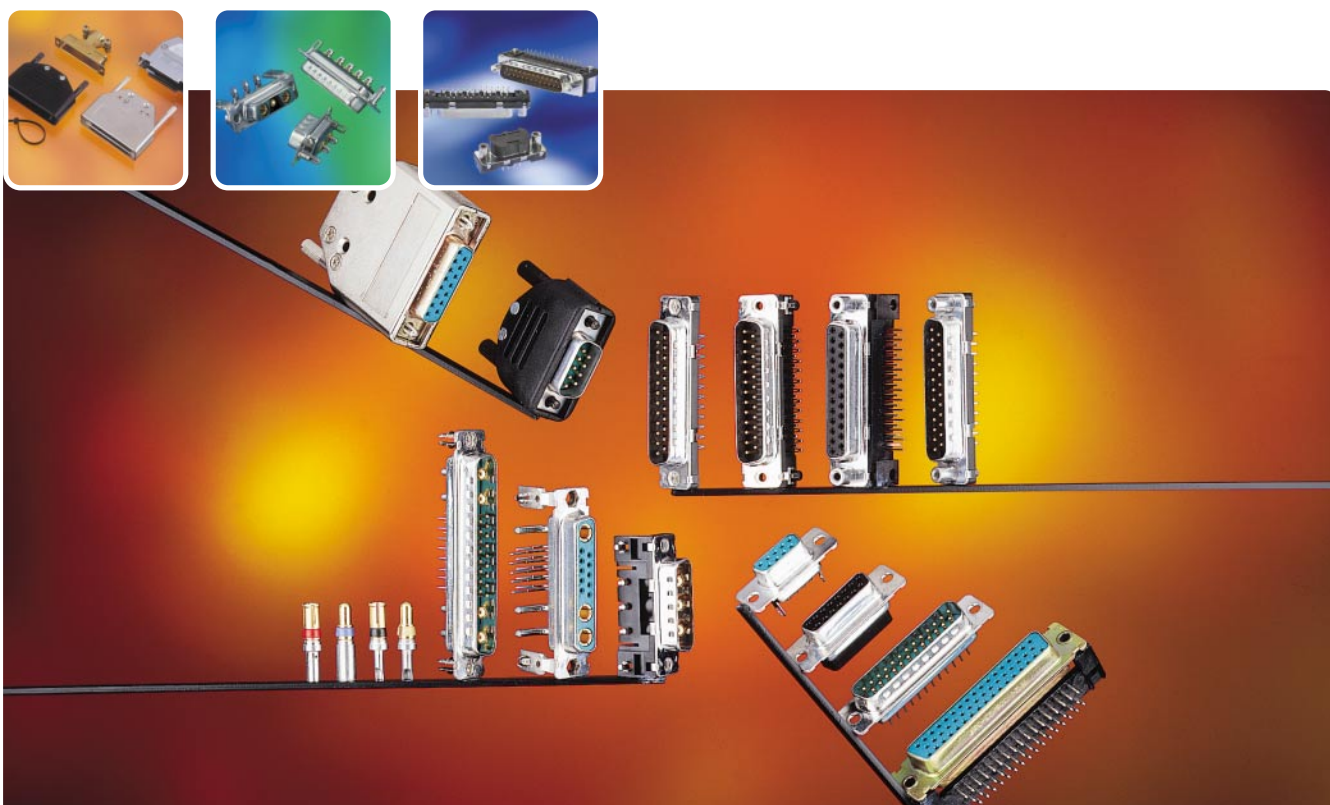




 **ELECTRONICS**

D-Subminiatures Connectors and accessories

WEB Product Catalogue

(2008 August revision)

FCI: SETTING THE STANDARD FOR CONNECTORS

With operations in 30 countries and sales of 1.3 billion euros in 2007, FCI is a leading manufacturer of connectors.

Our 14,200 employees are committed to providing customers with high-quality, innovative products for a wide range of consumer and industrial applications.

INTRODUCTION

The products are marketed through the international sales organisation of FCI.

FCI D-Sub product lines are present in high technology areas:

- communications,
- data,
- consumer,
- industrial,
- military.

Many styles of termination and performance levels are available and a large choice of accessories completes the range.

Our continuous improvement programme is focused on:

- Manufacturing process control,
- High quality level (ISO 9001 approved),
- Innovation

FCI is an excellent partner for your connection needs.

For more information:
www.fci.com



Check preferred and standard solutions !

PCB applications	Cable applications
✓	
✓	
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✓	
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✓	✓
✓	

Nota: All dimensions in mm

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PCB APPLICATIONS

Standard applications

Pages

Signal standard density	Right angle	Solder to board:	Delta D	8		
		Press-fit:	Delta D	10		
		Pin-in-Paste:	Delta D	12		
Signal high density	Straight	Solder to board:	Delta D	14		
		Press-fit:	Delta D	16		
		Pin-in-Paste:	Delta D	18		
		D series also available (Design with two shells) ...			42	
Signal high density		Solder to board		20		
		Press-fit		22		
Power	Right angle	Solder to board - Full & mixed power:	Delta D	28		
		Press-fit - Full power:	DW series	31		
Power	Straight	Solder to board - Full & mixed power:	DW series	29		
		Press-fit - Full power		31		

Demanding applications : machined signal contacts

Signal	- Right angle solder to board: DP series - Wire-wrap: DP series - Straight solder to board: DP series	 48	
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Severe environment applications

Signal	HE 501 compliant standard	- Right angle: - Straight:	DM series	
	HE 508 compliant high temperature	- Right angle: - Straight:	DM series	
Power	HE 507 compliant	- Right angle: - Straight:	DMW series	
			DMW series	

CABLE APPLICATIONS

Standard applications			Pages		
Signal		Solder bucket	D series 42		
		Crimp	8656 series ... 44		
		IDC	8657 series ... 46		
Power		Solder bucket	DW series 33		
		Crimp	DW series 33		

Demanding applications : machined signal contacts

Signal		Solder bucket	DP series 48	
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ACCESSORIES

Hoods		Plastic	} 62	
		Metalised		
		Metalic		
		Others hoods		
Locking devices			 63	
Caps			 65	
Brackets			 66	

D-Sub - Technical Characteristics

Series	Delta D Solder to board	Delta D Press-fit	Delta D Pin-in-Paste	Mixed Power DW	D series	8656 series
ENVIRONMENTAL CHARACTERISTICS						
Operating temperature range	-55°C to 125°C	-55°C to 125°C	-55°C to 125°C	-55°C to 125°C	-55°C to 125°C	-55°C to 105°C
Salt spray	24 hours	24 hours	24 hours	24 hours	24 hours	24 hours
Damp heat	21 days	21 days	21 days	21 days	21 days	21 days
Proof version	no	no	no	no	no	no
UL 94 VO	E 118235 (R)	E 118235 (R)	E 118235 (R)	E 118235 (R)	E 118235 (R)	E 118235 (R)
NORMES AND APPROVALS						
NFC 93425				compliance with HE 507		in compliance with
DIN 41652	in compliance with	in compliance with	in compliance with		in compliance with	in compliance with
Others	LNZ 4404					
MATERIAL						
Shell	Steel	Steel	Ni	Steel	Steel	Steel
Insulator	Thermoplastic	Thermoplastic	Thermoplastic	Thermoplastic	Thermoplastic	Thermoplastic
Contacts	Copper alloy	Copper alloy	Copper alloy	Copper alloy	Copper alloy	Copper alloy
STANDARD PLATING						
Shell	Tin	Tin	Tin	Tin	Tin	Tin
Contact active area termination area	Gold over Nickel Tin over Nickel	Gold over Nickel Tin over Nickel	Gold over Nickel Tin over Nickel	Gold over Nickel Tin over Nickel	Gold over Nickel Tin over Nickel	Gold over Nickel Tin over Nickel
ELECTRICAL CHARACTERISTICS						
Max current rating per contact	5 A	5 A	5 A	7.5 A (signal contact) 40 A (power contact)	5 A	5 A
Dielectric withstanding voltage (DWW)	1000 Vrms	1000 Vrms	1000 Vrms	1000 Vrms	1000 Vrms	1000 Vrms
Rated voltage	300 Vrms	300 Vrms	300 Vrms	300 Vrms	300 Vrms	300 Vrms
Insulation resistance	≥ 5000 MΩ	≥ 5000 MΩ	≥ 5000 MΩ	≥ 5000 MΩ	≥ 5000 MΩ	≥ 5000 MΩ
Contact resistance	≤ 10 mΩ *	≤ 10 mΩ *	≤ 10 mΩ *	≤ 7.3 mΩ	≤ 10 mΩ *	≤ 10 mΩ *
Insertion / Extraction force per contact (N)	5N Max. / 0.3N min.	5N Max. / 0.3N min.	5N Max. / 0.3N min.	5N Max. / 0.3N min.	5N Max. / 0.3N min.	5N Max. / 0.3N min.
MECHANICAL AND DIMENSIONAL CHARACTERISTICS						
Mating / Unmating cycles	200 min.	200 min.	500 min.	500 min.	200 min.	200 min.
Contact diameter on active area	1 mm	1 mm	1 mm	3.6 mm (power contact) 1 mm (signal contact)	1 mm	1 mm
Removable contacts	no	no	no	yes (cable)	no	yes
WIRE						
Size				AWG 20 Max. (signal contact) other see page 35	AWG 20 Max.	AWG 20 Max.
Max diameter on insulator				—	2.1 mm	1.52 mm
LAYOUT						
Number of contacts	9, 15, 25, 37, 50* Male and Female	9, 15, 25, 37, 50 Male and Female	9, 15, 25, 37*, 50* Male and Female	9, 15, 25, 37, 50* Male and Female	9, 15, 25, 37, 50 Male and Female	9, 15, 25, 37, 50 Male and Female

* Straight version only

D-Sub - Technical Characteristics

Series	8657 series	Compact D high density	DP series	DM HE 501 / HE 508	DMW HE 507
ENVIRONMENTAL CHARACTERISTICS					
Operating temperature range	-55°C to 125°C	-55°C to 125°C	-55°C to 125°C	-55°C to 125°C -55°C to 155°C	-55°C to 125°C
Salt spray	24 hours	24 hours	24 hours	48 hours	48 hours
Damp heat	21 days	21 days	21 days	56 days	56 days
Proof version	no	no	no	no	no
UL 94 VO	E 118235 (R)	E 118235 (R)	E 118235 (R)	E 118235 (R)	E 118235 (R)
NORMES AND APPROVALS					
NFC 93425	in compliance with		in compliance with		
DIN 41652	in compliance with		in compliance with		—
Others				LNZ 4404	
Shell	Steel	Steel	Steel	Steel	Steel
MATERIAL					
Insulator	Thermoplastic	Thermoplastic	Thermoplastic	Thermoplastic/Thermoset	Thermoplastic/Thermoset
Contacts	Copper alloy	Copper alloy	Copper alloy	Copper alloy	Copper alloy
STANDARD PLATING					
Shell	Tin	Tin	Tin	Cadmium	Cadmium
Contact active area termination area	Gold over Nickel Tin over Nickel	Gold over Nickel Tin over Nickel	Gold over Nickel Tin over Nickel	Gold over Nickel Tin/Gold over Nickel	Gold over Nickel Tin/Gold over Nickel
ELECTRICAL CHARACTERISTICS					
Max current rating per contact	1.5 A	2.5 A	7.5 A	7.5 A	7.5 A (signal contact) 40 A (power contact)
Dielectric withstanding voltage (DWW)	1000 Vrms	1000 Vrms	1000 Vrms	1000 Vrms	1000 Vrms
Rated voltage	300 Vrms	300 Vrms	300 Vrms	300 Vrms	300 Vrms
Insulation resistance	≥ 5000 MΩ	≥ 5000 MΩ	≥ 5000 MΩ	≥ 5000 MΩ	≥ 5000 MΩ
Contact resistance	≤ 10 mΩ *	≤ 25 mΩ *	≤ 7.3 mΩ	≤ 7.3 mΩ	≤ 7.3 mΩ
Insertion / Extraction force per contact (N)	5N Max. / 0.3N min.	5N Max. / 0.3N min.	5N Max. / 0.3N min.	5N Max. / 0.3N min.	5N Max. / 0.3N min.
MECHANICAL AND DIMENSIONAL CHARACTERISTICS					
Mating / Unmating cycles	500 min.	200 min.	200 min.	500	500
Contact diameter on active area	1 mm	0.76 mm	1 mm	1 mm	1 mm (signal contact)
Removable contacts	no	no	no	no	yes (coax and power)
WIRE					
Size	AWG 26 to AWG 30		AWG 20 Max.	AWG 20	AWG 20 (signal contact) (other see page 36)
Max diameter on insulator	Flat cable		2.1 mm	2.1 mm	2.1 mm
LAYOUT					
Number of contacts	9, 15, 25, 37 Male and Female	Solder : 15, 26, 44, 62 Press-fit: 62, 78	9, 15, 25, 37, 50 Male and Female	9, 15, 25, 37, 50 Male and Female	9, 15, 25, 37, 50 Male and Female

PCB applications



In compliance with DIN 41652.



ORDERING INFORMATION

D
Series:
D

25
Number of contacts:
09 - 15 - 25 - 37

P
Contacts:
P : Pin
S : Socket

13A

4

GV

00LF

Termination:

Code	Type	Foot print/Pitch	Length of termination	PCB thickness
😊 13 A	Right angled – Europe standard	10.4 / 2.54 mm	2.90	1.6
13 B	Right angled – Europe standard	10.4 / 2.54 mm	3.70	2.4 and 1.6
23 A	Right angled – Europe standard	10.4 / 2.84 mm	2.90	1.6
23 B	Right angled – Europe standard	10.4 / 2.84 mm	3.70	2.4 and 1.6
😊 33 E	Right angled – US standard	8.08 / 2.84 mm	3.18	1.6

Durability:

4 : Standard class (≥ 200 mating / unmating)
6 : High performance class (≥ 500 mating / unmating) - LNZ 4404

Mounting options (see page 71)

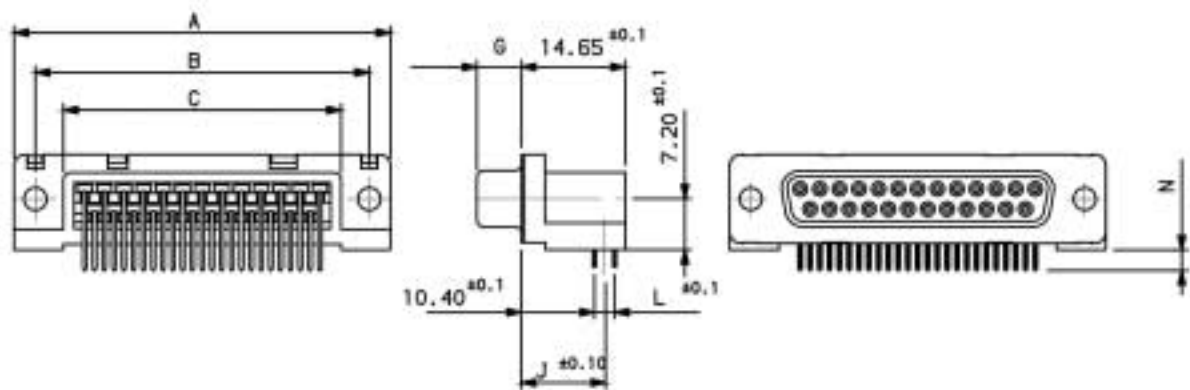
Options:

- PA** : Standard hole
- PL** : Threaded insert M3
- PX** : Threaded insert UNC 4-40
- PV** : Female screw UNC 4-40
- GI** : Harpoons + female screw M3 + elec. continuity
- GL** : Harpoons + insert M3 + elec. continuity
- 😊 **GX** : Harpoons + insert UNC 4-40 + elec. continuity
- 😊 **GV** : Harpoons + female screw UNC 4-40 + elec. continuity
- UA** : Elec. continuity
- UL** : Insert M3 + elec. continuity
- UX** : Insert UNC 4-40 + elec. continuity
- UV** : Female screw UNC 4-40 + elec. continuity

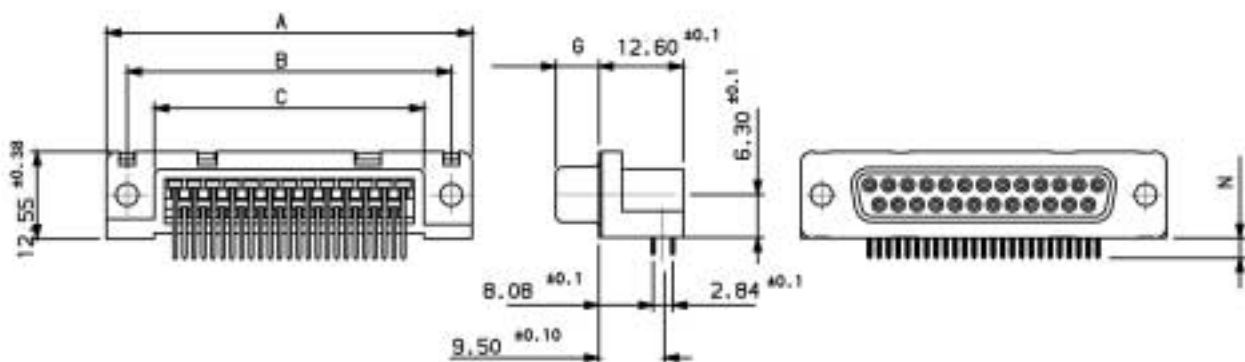
Options
00LF : Standard series, RoHS compatible

SPECIFIC DIMENSIONS

EUROPE STANDARD



US STANDARD



		$A_{\pm 0.38}$	$B_{\pm 0.12}$	$C_{\pm 0.10}$	$G_{+0.25/-0}$	$J_{\pm 0.10}$		$L_{\pm 0.1}$		$N_{\pm 0.30}$		
						Termination		Termination		Terminal length		
						13.	23.	13.	23.	13 A 23 A	13 B 23 B	33 E
9	P	30.81	24.99	16.96	$5.90_{+0.15/-0}$	11.67	11.82	2.54	2.84	2.90	3.70	3.18
	S	30.81	24.99	16.96	6.05	11.67	11.82	2.54	2.84	2.90	3.70	3.18
15	P	39.14	33.32	25.18	$5.90_{+0.15/-0}$	11.67	11.82	2.54	2.84	2.90	3.70	3.18
	S	39.14	33.32	25.18	6.05	11.67	11.82	2.54	2.84	2.90	3.70	3.18
25	P	53.03	47.04	39.12	5.70	11.67	11.82	2.54	2.84	2.90	3.70	3.18
	S	53.03	47.04	39.12	6.05	11.67	11.82	2.54	2.84	2.90	3.70	3.18
37	P	69.32	63.50	55.68	5.70	11.67	11.82	2.54	2.84	2.90	3.70	3.18
	S	69.32	63.50	55.68	6.05	11.67	11.82	2.54	2.84	2.90	3.70	3.18

PCB applications



UL Recognized File E 118235 (R)



ORDERING INFORMATION

D

Series:
D

25

Number of contacts:
09 - 15 - 25 - 37 - 50*

*only for Eurostyle version

P

Contacts:
P : Pin
S : Socket

82C

Code	Type	Foot print / Pitch	
82 C	Eurostyle	9.4 / 2.54 10.3 / 2.54	9 to 37 way 50 way
80 C	US standard	8.08 / 2.84	9 to 37 way
81 C	Europe standard*	10.4 / 2.54	9 to 37 way

4

Durability:
4 : Standard class (≥ 200 mating / unmating)
6 : High performance class (≥ 500 mating / unmating)

Mounting options (see page 71)

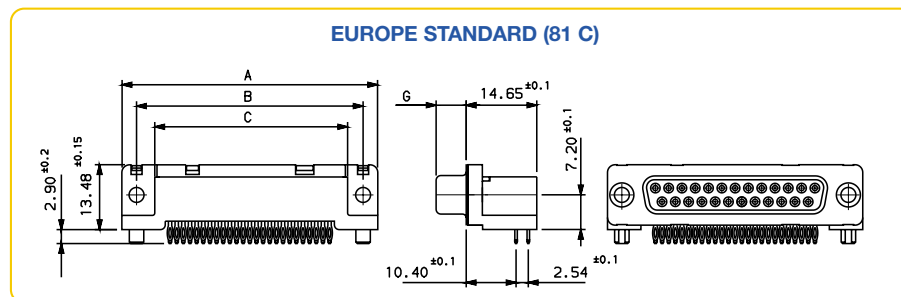
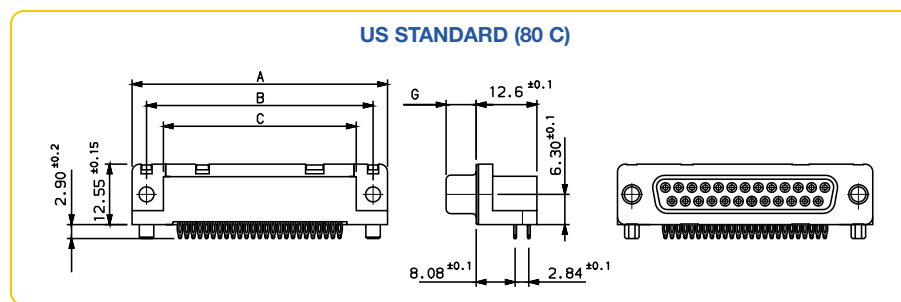
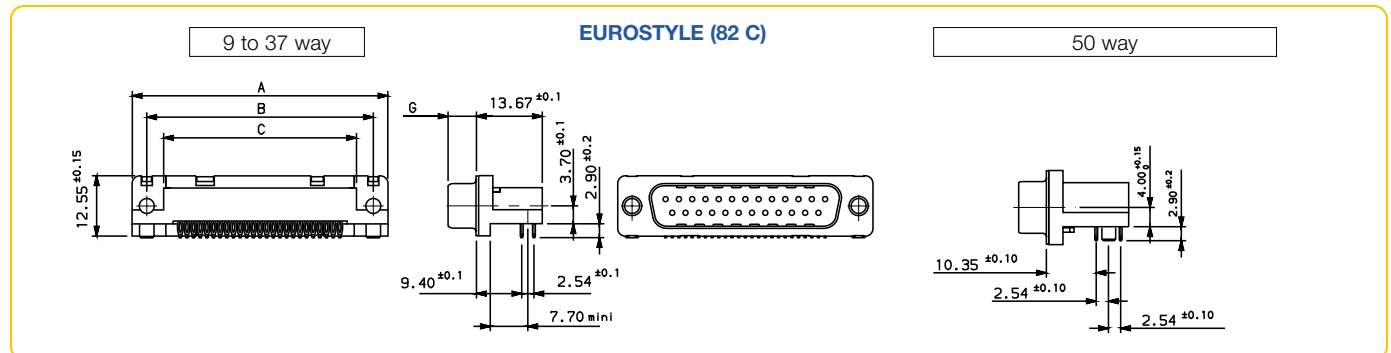
Options:
PA : Standard hole
PL : Threaded insert M3
☺ PX : Threaded insert UNC 4-40
☺ PV : Female screw UNC 4-40
GL : Harpoons + insert M3
GX : Harpoons + insert UNC 4-40
GV : Harpoons + Female screw UNC 4-40

PA

00LF

Other options:
00 : Standard, non RoHS compatible
☺ 00LF : Standard, RoHS compatible

SPECIFIC DIMENSIONS



	A±0.38	B±0.12	C±0.10	G ^{+0.25} ₋₀
9				
P	30.81	24.99	18.00	5.90 ^{+0.15}
S	30.81	24.99	18.00	6.05
15				
P	39.14	33.32	26.32	5.90 ^{+0.15}
S	39.14	33.32	26.32	6.05
25				
P	53.03	47.04	40.04	5.70
S	53.03	47.04	40.04	6.05
37				
P	69.32	63.50	55.50	5.70
S	69.32	63.50	55.50	6.05
50*				
P	67.10	61.11	54.10	5.70
S	67.10	61.11	54.10	6.05

* Only for Eurostyle version.

PRESS-FIT FEATURES

Application by pressure on insulator • D-Sub insertion kit : 8646 3064 01
Eye of the needle design.

Metallized hole dimensions

			Press-fit contacts	Press-fit harpoons
P.C.B. hole definition (note 1 and 2)	non RoHS	Drill diameter	Ø 1.15 ref (note 3)	Ø 3.22 ref (note 3)
		Drilled hole	Ø 1.18 - 1.2	Ø 3.19 - 3.25
		Copper plating	25 µm min (recommended 50 µ max)	25 µm min (recommended 50 µ max)
		Tin-lead plating	15 µm max (recommended 5 µ min)	15 µm max (recommended 5 µ min)
	RoHS	Finish hole (after reflow)	Ø 0.94 - 1.09	Ø 3.02 - 3.20
		Tin plating	0.8 to 1.2 µm	0.8 to 1.2 µm
		Finish hole (after reflow)	Ø 1.00 - 1.09	Ø 3.08 - 3.20

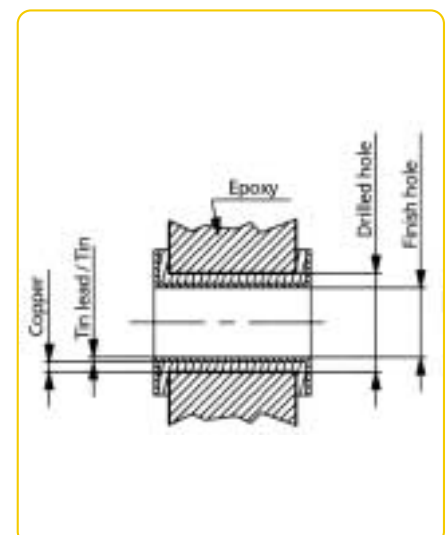
Note 1 : These dimensions must be respected to ensure press-fit pin performance

Note 2 : According to IEC-352-S specification

Note 3 : Vital requirement for press-fit pin performance

Press-fit performance

	Press-fit contacts	Press-fit harpoons
Insertion force	≤ 100 N	≤ 120 N
Extraction force	≥ 30 N	≥ 30 N

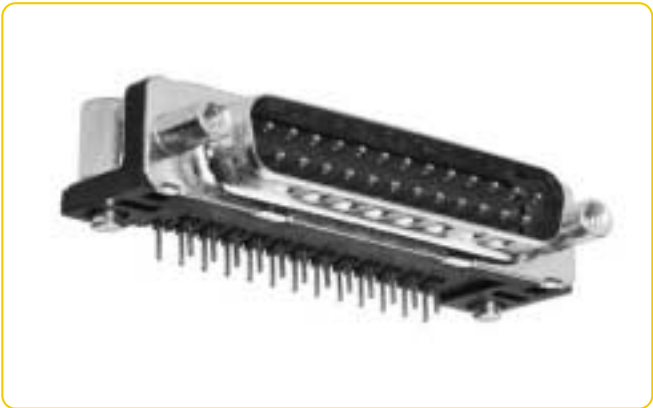


DELTA D - Right angle Pin-in-Paste

PCB applications

In compliance with DIN 41652:

- Reflow type: JSTD-020C
- Packaging: IEA-481-B
- Plating: BELLCORE CO GR-1217

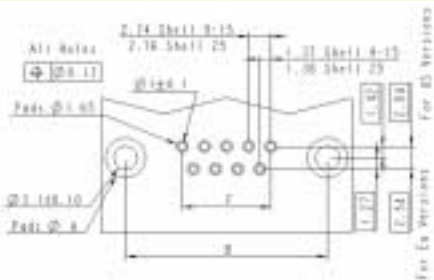


PART NUMBER

D	09	P	13A	6	RV	12	LF
Series: D	Number of contacts: 09 - 15 - 25	Contacts: P : Pin S : Socket		Durability: 6 : High performance class (> 500 mating/unmating)			
Termination:						Packaging: 09 : Tray for manual positioning 12 : Tape and Reel for automatic pick and place	
Code	Type	Footprint/Pitch	Termination length	PCB thickness			
13A	Right angle - Europe standard	10.4 / 2.54 mm	2.0 mm	1.6 mm			
33E	Right angle - US standard	8.08 / 2.84 mm	2.0 mm	1.6 mm			
Mounting options:							
RL : Insert M3 + metal peg + electrical continuity							
RX : Insert UNC 4-40 + metal peg + electrical continuity							
RV : Female screw UNC 4-40 + metal peg + electrical continuity							
							RoHS status: LF : RoHS compatible EU directive 2002/95/EC

RECOMMENDED LAYOUTS AND PAD DIMENSIONS

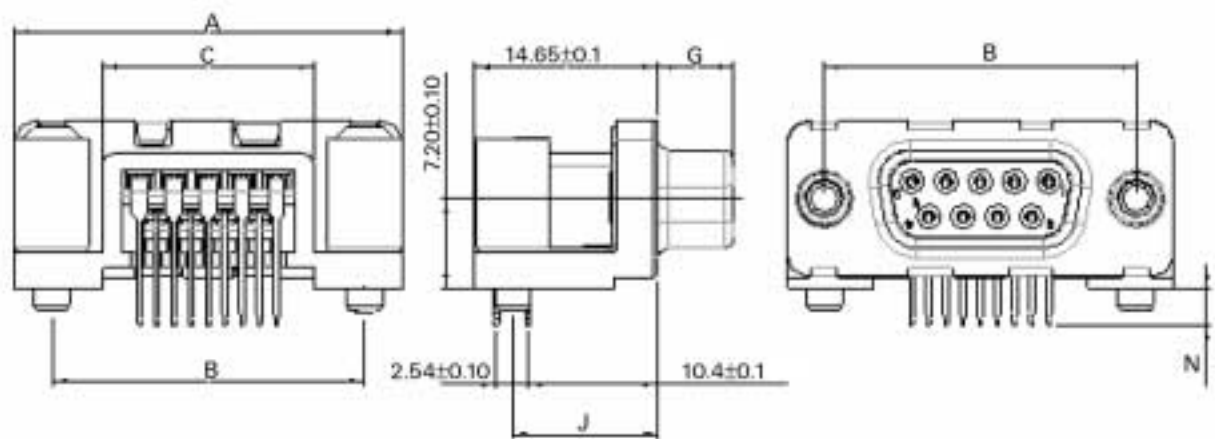
Contacts	B±0.10	F	G
09	24.99	10.96	8.22
15	33.32	19.18	16.44
25	47.04	33.12	30.36



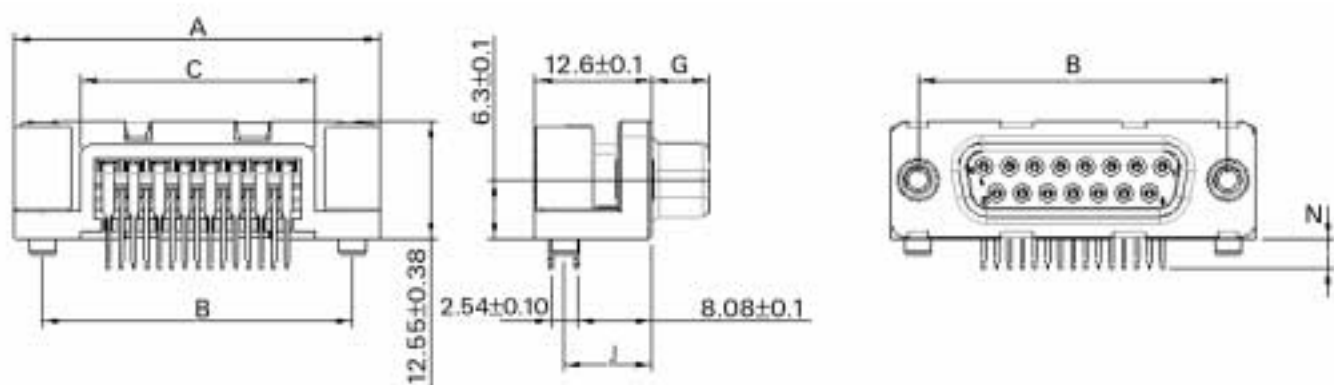
TECHNICAL FEATURES

MATERIALS	Shell: Steel, nickel plated Housing: Thermoplastic HT UL94VO Contacts: Copper Alloy - Active part: Gold over nickel Termination: Matt Tin over nickel Accessories: Brass - Front accessories: Nickel Metal pegs: Tin over nickel
OPERATING TEMPERATURE RANGE	-55° to 125°C
REFERENCE INFORMATION	Product lead free in accordance to RoHS 2002/EC/95
MECHANICAL PERFORMANCES	Mating/unmating cycles: 500 min
ELECTRICAL PERFORMANCES	Current rating: 5 A Insulation resistance: ≥ 5000 MΩ Contact resistance: <10 mΩ Dielectric withstanding voltage: 1000 Vrms

EUROPE standard



US standard



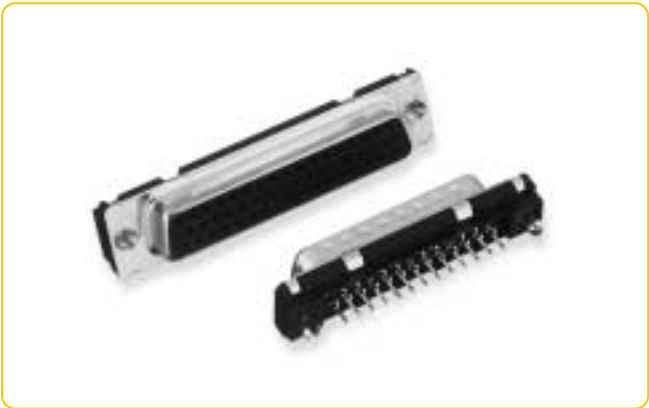
Dimensions

		A _{±0,38}	B _{±0,12}	C _{±0,10}	G _{-0/+0,25}	J _{±0,10}		N _{±0,30}	
						Termination 13	Termination 33	Termination length	
								I3A 33E	I3B
9	P	30.81	24.99	16.96	5.90 ^{-0/+0.15}	11.67	9.50	2.00	2.90
	S	30.81	24.99	16.96	6.05	11.67	9.50	2.00	2.90
15	P	39.14	33.32	25.18	5.90 ^{-0/+0.15}	11.67	9.50	2.00	2.90
	S	39.14	33.32	25.18	6.05	11.67	9.50	2.00	2.90
25	P	53.03	47.04	39.12	5.70	11.67	9.50	2.00	2.90
	S	53.03	47.04	39.12	6.05	11.67	9.50	2.00	2.90

Dimensions in mm

PCB applications

 UL Recognized File E 118235 (R)



ORDERING INFORMATION

D

Series:
D

25

Number of contacts:
09 - 15 - 25 - 37 - 50

P

Contacts:
P : Pin
S : Socket

24A

4

GV

00LF

Termination:

Code	Type	Foot print/Pitch	Length of termination	PCB thickness
14 A	Straight version (low profile)	5.6 / 2.84 mm	2.90	1.6
 24 A	Straight version	6 / 2.84 mm	2.90	1.6
24 B	Straight version	6 / 2.84 mm	3.70	2.4
34 A	Straight version	6.9 / 2.84 mm	2.90	1.6

Durability:
4 : Standard class (≥ 200 mating / unmating)
6 : High performance class (≥ 500 mating / unmating) - LNZ 4404

Mounting options (see page 71)

Options:

PA

Standard hole

PL

Threaded insert M3

PX

Threaded insert UNC 4-40

PV

Female screw UNC 4-40

GL

Harpoons + insert M3 + elec. continuity

 **GX**

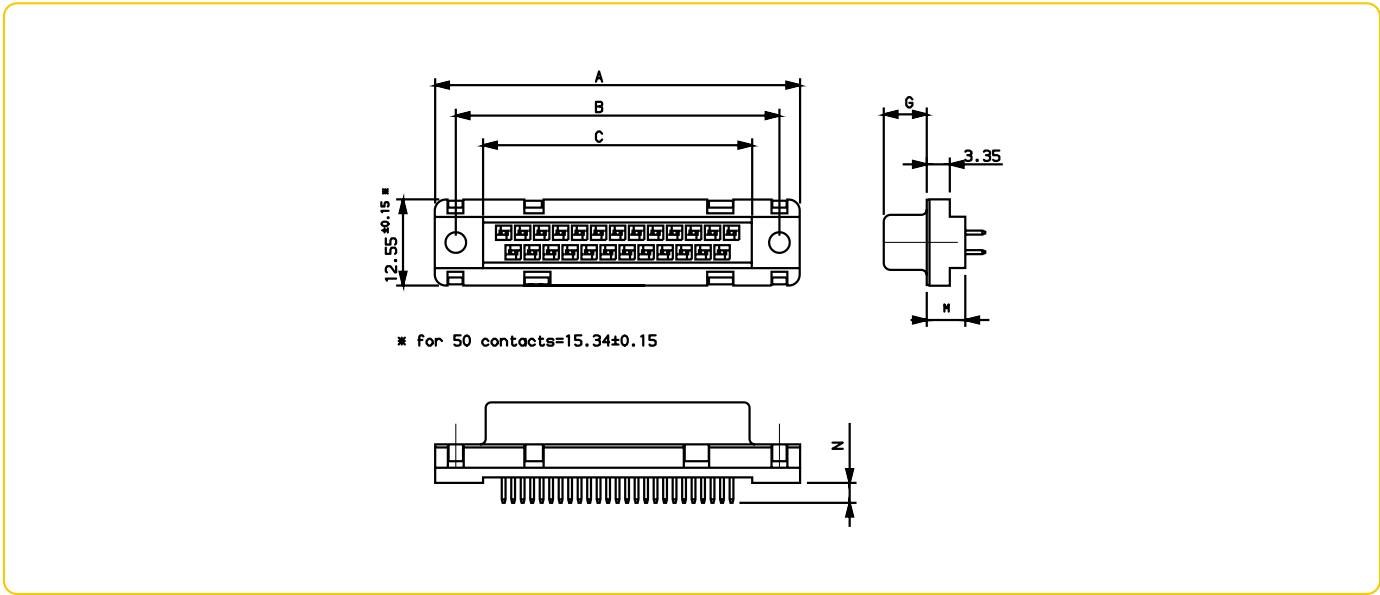
Harpoons + insert UNC 4-40 + elec. continuity

 **GV**

Harpoons + Female screw UNC 4-40 + elec. continuity

Other options:
00LF : Standard series, RoHS compatible

SPECIFIC DIMENSIONS



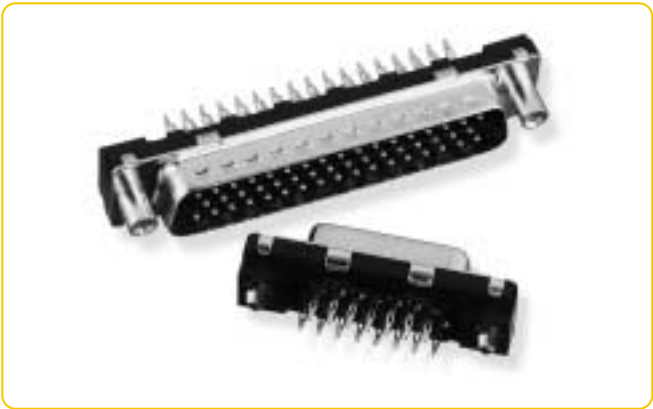
		A±0.38	B±0.12	C±0.10	G±0.25 -0	M±0.10			N±0.30	
						Terminal			Terminal length	
						14	24	34	14 A 24 A 34 A	24 B
9	P	30.81	24.99	16.96	5.90 ^{+0.15} ₋₀	5.60	6.00	6.90	2.90	3.70
	S	30.81	24.99	16.96	6.05	5.60	6.00	6.90	2.90	3.70
15	P	39.14	33.32	25.18	5.90 ^{+0.15} ₋₀	5.60	6.00	6.90	2.90	3.70
	S	39.14	33.32	25.18	6.05	5.60	6.00	6.90	2.90	3.70
25	P	53.03	47.04	39.12	5.70	5.60	6.00	6.90	2.90	3.70
	S	53.03	47.04	39.12	6.05	5.60	6.00	6.90	2.90	3.70
37	P	69.32	63.50	55.68	5.70	5.60	6.00	6.90	2.90	3.70
	S	69.32	63.50	55.68	6.05	5.60	6.00	6.90	2.90	3.70
50	P	67.10	61.11	54.11	5.70	5.60	6.00	6.90	2.90	3.70
	S	67.10	61.11	54.11	6.05	5.60	6.00	6.90	2.90	3.70

PCB applications

PRESS-FIT TERMINATION



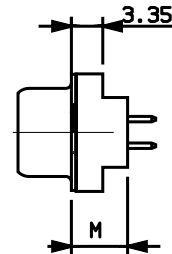
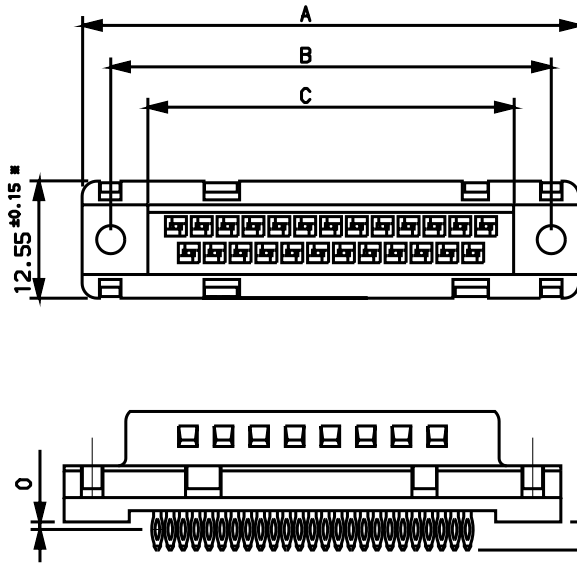
- In case of SMT (Surface Mount Technology) manufacturing process this new press-fit Delta D allows to save cost of an additional wave soldering.
- The "eye of the needle" termination combined with a special flat rock design (easy application by pressure on insulator) make this product line very attractive.



ORDERING INFORMATION

D	25	P	91C	4	PA	00LF
Series: D	Number of contacts: 09 - 15 - 25 - 37 - 50	Contacts: P : Pin S : Socket				
Termination type:						
☺ 91C : Press-fit for all 3 PCB thickness : (1.6 mm ; 2.4 mm ; 3.2 mm and more) - Europe standard						
90C : Press-fit for all 3 PCB thickness : (1.6 mm ; 2.4 mm ; 3.2 mm and more) - Low profile						
Durability:						
4 : Standard class (≥ 200 mating / unmating)						
6 : High performance class (≥ 500 mating / unmating)						
Mounting options (see page 71)						
Options:						
PA Standard hole						
PL Threaded insert M3						
☺ PX Threaded insert UNC 4-40						
☺ PV Female screw UNC 4-40						
GL Harpoons + insert M3 + elec. continuity						
GX Harpoons + insert UNC 4-40 + elec. continuity						
GV Harpoons + Female screw UNC 4-40 + elec. continuity						
Other options:						
00 : Standard series, non RoHS compatible						
☺ 00LF : Standard series, RoHS compatible						

SPECIFIC DIMENSIONS



* For 50 contacts: 15.34 ± 0.15
For other dimensions, consult us

Size	A ± 0.38	B ± 0.12	C ± 0.10
09	30.81	24.99	16.96
15	39.14	33.32	25.18
25	53.03	47.04	39.12
37	69.32	63.50	55.68
50	66.93	61.11	53.11

Termination type	M ± 0.1	N ± 0.3	O ± 0.2
90 C	5.60	3.40	1.20
91 C	6.00	3.00	0.80

PRESS-FIT FEATURES

Application by pressure on insulator
D-Sub insertion kit : 8646 3064 01
Eye of the needle design.

Metallized hole dimensions

			Press-fit contacts	Press-fit harpoons
P.C.B. hole definition (note 1 and 2)	non RoHS	Drill diameter	Ø 1.15 ref (note 3)	Ø 3.22 ref (note 3)
		Drilled hole	Ø 1.18 - 1.2	Ø 3.19 - 3.25
		Copper plating	25 µm min (recommended 50 µ max)	25 µm min (recommended 50 µ max)
		Tin-lead plating	15 µm max (recommended 5 µ min)	15 µm max (recommended 5 µ min)
	RoHS	Finish hole (after reflow)	Ø 0.94 - 1.09	Ø 3.02 - 3.20
		Tin plating	0.8 to 1.2 µm	0.8 to 1.2 µm
		Finish hole (after reflow)	Ø 1.00 - 1.09	Ø 3.08 - 3.20

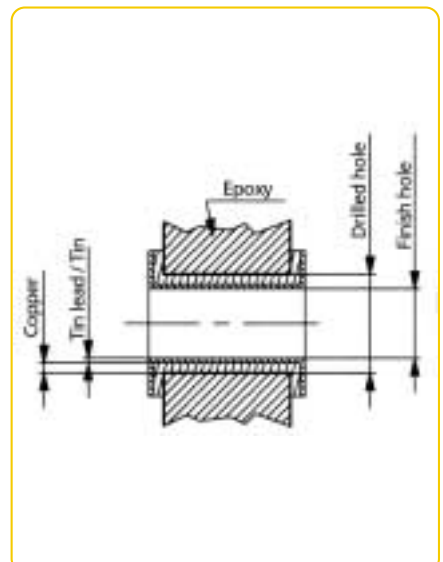
Note 1 : These dimensions must be respected to ensure press-fit pin performance

Note 2 : According to IEC-352-S specification

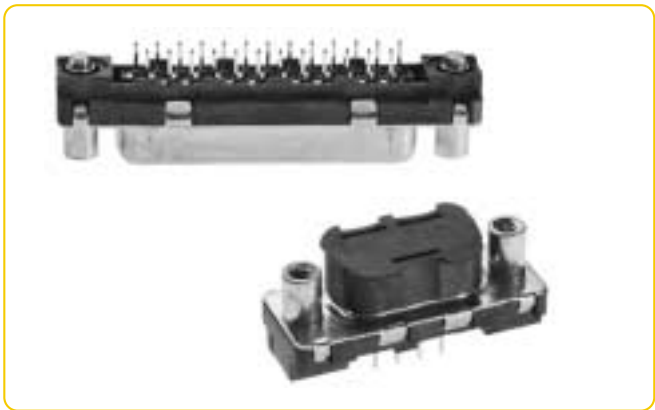
Note 3 : Vital requirement for press-fit pin performance

Press-fit performance

	Press-fit contacts	Press-fit harpoons
Insertion force	≤ 100 N	≤ 120 N
Extraction force	≥ 30 N	≥ 30 N



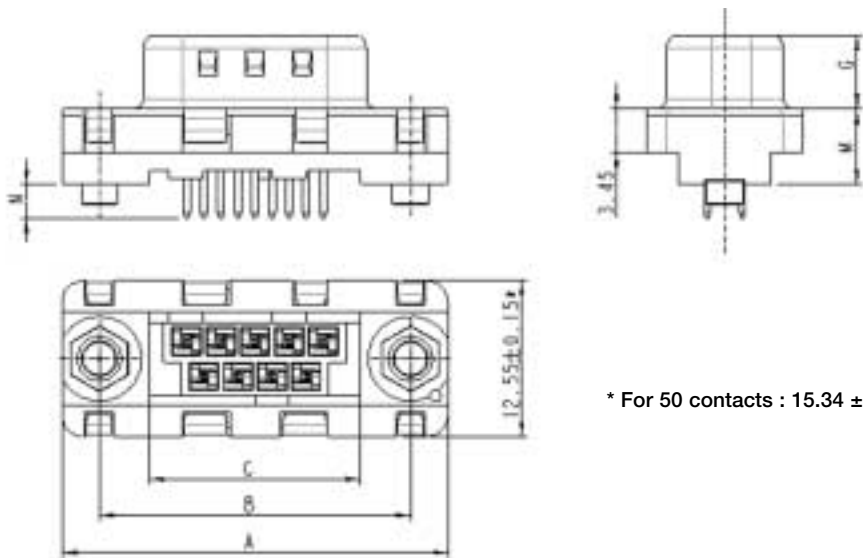
- ▶ Reflow type: JSTD-020C
- ▶ Packaging: IEA-481-B
- ▶ Plating: BELLCORE CO GR-1217

[illegible]

Contacts	B $\pm 0,10$	F	G
09	24.99	10.96	8.22
15	33.32	19.18	16.44
25	47.04	33.12	30.36
37	63.50	49.68	46.92

MATERIALS	Shell: Steel, nickel plated Housing: Thermoplastic HT UL94VO Contacts: Copper Alloy - Active part: Gold over nickel - Termination: Matt Tin over nickel Accessories: Brass, bright tin over nickel
OPERATING TEMPERATURE RANGE	-55° to 125°C
REFERENCE INFORMATION	Product lead free in accordance to RoHS 2002/EC/95
MECHANICAL PERFORMANCES	Mating/unmating cycles: 500 min
ELECTRICAL PERFORMANCES	Current rating: 5 A Insulation resistance: ≥ 5000 MΩ Contact resistance: <10 mΩ Dielectric withstanding voltage: 1000 Vrms

SPECIFIC DIMENSIONS



* For 50 contacts : 15.34 ± 0.15

Dimensions

		A ^{±0,38}	B ^{±0,12}	C ^{±0,10}	G ^{-0/+0,25}	M ^{±0,10}	N ^{±0,30}	
							Termination lenght	
							24A	24B
9	P	30.81	24.99	16.96	5.90 ^{-0/+0.15}	6.00	2.00	2.90
	S	30.81	24.99	16.96	6.05	6.00	2.00	2.90
15	P	39.14	33.32	25.18	5.90 ^{-0/+0.15}	6.00	2.00	2.90
	S	39.14	33.32	25.18	6.05	6.00	2.00	2.90
25	P	53.03	47.04	39.12	5.70	6.00	2.00	2.90
	S	53.03	47.04	39.12	6.05	6.00	2.00	2.90
37	P	69.32	63.50	55.68	5.70	6.00	2.00	2.90
	S	69.32	63.50	55.68	6.05	6.00	2.00	2.90
50	P	67.10	61.11	54.11	5.70	6.00	2.00	2.90
	S	67.10	61.11	54.11	6.05	6.00	2.00	2.90

Dimensions in mm

PCB applications



UL Recognized File E 118235 (R)

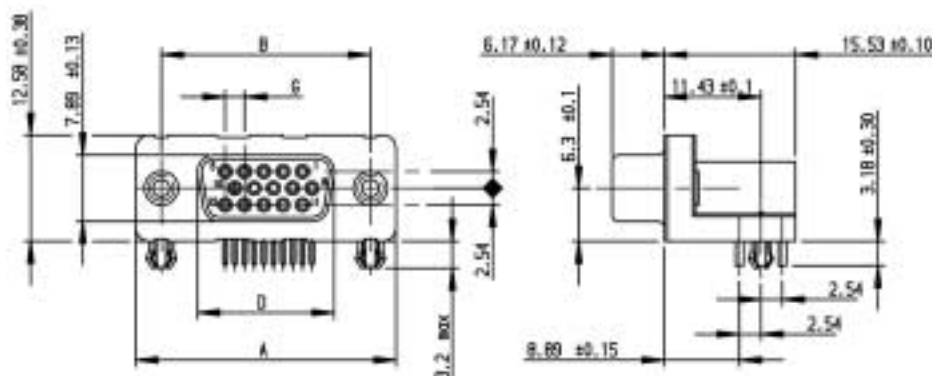
COMPACT D series has been developed to answer the increasing need for higher density packaging.



ORDERING INFORMATION

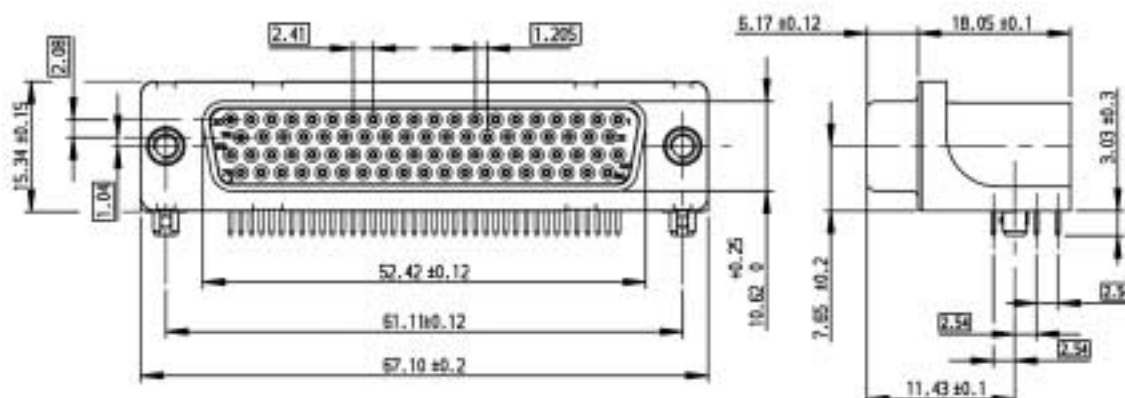
ICD	14	S	13E	6	GX	00LF
Series: ICD	Number of contacts: 14 - 15 - 26 - 44 - 62 - 78	Contacts: S : female				
Termination: ☺ 13E : Angled spills US Standard, 3.18 mm (78 ways not available) 13A : Angled spills US Standard, 2.90 mm 13B : Angled spills US Standard, 3.70 mm (78 ways not available)						
Durability: 4 : Standard class (≥ 200 mating / unmating) 6 : High performance class (≥ 500 mating / unmating)						
Mounting options (see page 71) PA : Standard holes PL : Threaded insert (M3) PX : Threaded insert (UNC 4-40) PV : Female screw (UNC 4-40) ☺ GL : Harpoons + insert M3 + elec. continuity ☺ GX : Harpoons + insert UNC 4-40 + elec. continuity ☺ GV : Harpoons + female (UNC 4-40) + elec. continuity UL : Insert M3 + elec. continuity UX : Insert UNC 4-40 + elec. continuity UV : Female screw UNC 4-40 + elec. continuity						
Options: ☺ 00LF : Standard series, RoHS compatible						

COMPACT D 3 ROWS (14-15/26/44/62 POS)

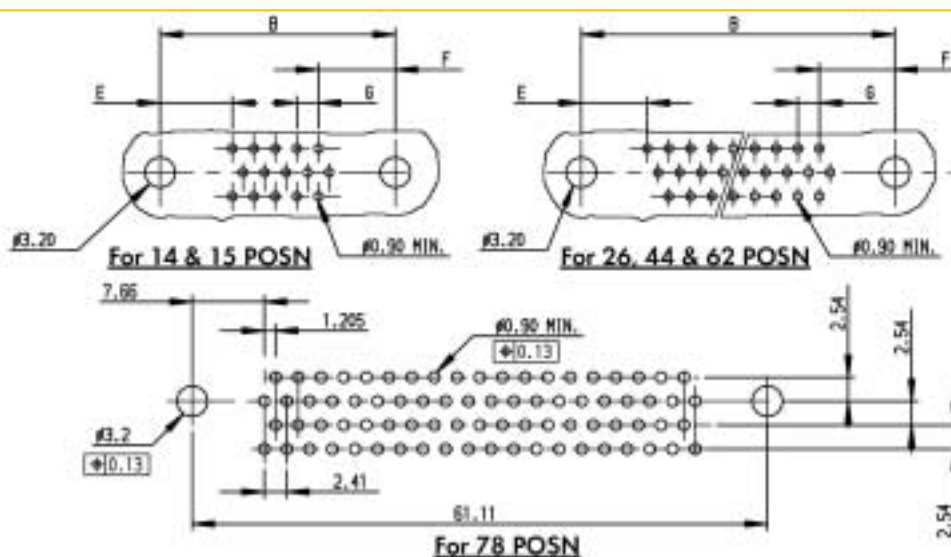


Size	Dimensions						
	A + 0.38	B + 0.12	C + 0.10	D + 0.25	E	F	G
14 / 15	30,81	24,99	16,96	16,21	7,68	8,19	2,285
26	39,14	33,32	25,18	24,54	7,02	8,01	2,285
44	53,03	47,04	39,12	38,25	7,01	8,02	2,285
62	69,32	63,50	55,68	54,71	7,03	8,21	2,41

COMPACT D 4 ROWS (78 POS)



PCB DRILLING DIMENSIONS





UL Recognized File E 118235 (R)



ORDERING INFORMATION

CD78S80C

Series:
78 way right angle
female press-fit

6

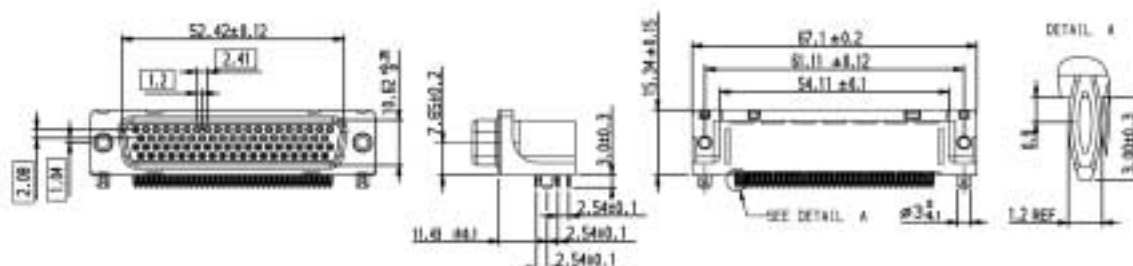
Durability:
4 : Standard class
(> 200 mating/unmating)
6 : High performance class
(> 500 mating/unmating)

GL

Mounting options:
GL : Harpoons + insert M3
+ elec. continuity
GX : Harpoons + insert UNC 4-40
+ elec. continuity
GV : Harpoons
+ female screw UNC 4-40
+ elec. continuity

00LF

Options:
00LF : RoHS compatible EU
directive 2002/95/EC



CD78P91C

Series:
78 way straight
male press-fit

6

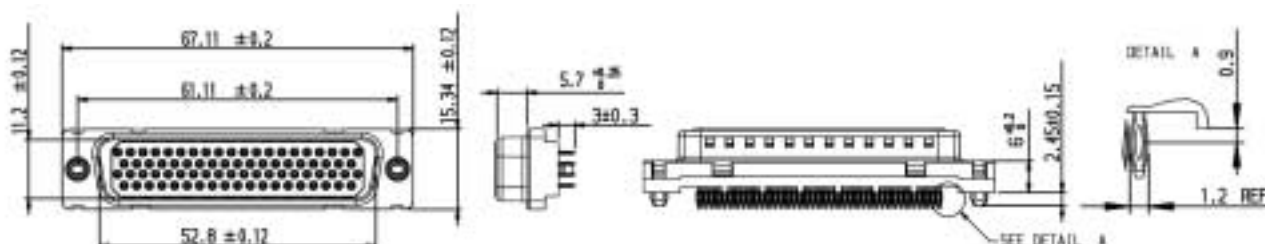
Plating:
4 : Standard class
(> 200 mating/unmating)
6 : High performance class
(> 500 mating/unmating)

GL

Mounting options:
GL : Harpoons + insert M3
+ elec. continuity
GX : Harpoons + insert UNC 4-40
+ elec. continuity
GV : Harpoons
+ female screw UNC 4-40
+ elec. continuity

00LF

Options:
00LF : RoHS compatible EU
directive 2002/95/EC



ORDERING INFORMATION

CD62S91C

Series :
62 way straight
female press-fit

6

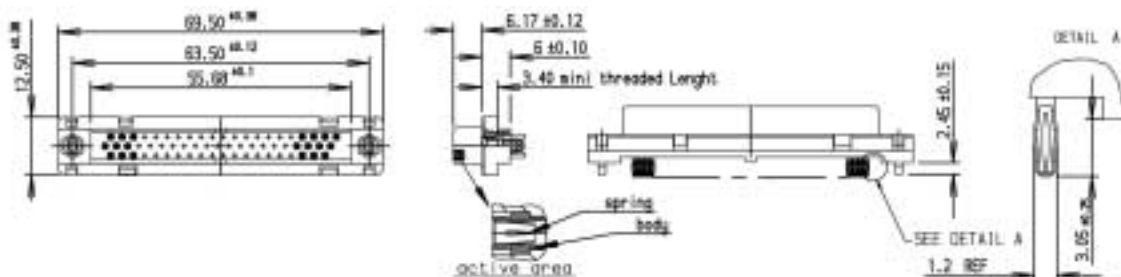
Durability:
4 : Standard class
(> 200 mating/unmating)
6 : High performance class
(> 500 mating/unmating)

GL

Mounting options:
GL : Harpoons + insert M3
+ elec. continuity
GX : Harpoons + insert UNC 4-40
+ elec. continuity
GV : Harpoons
+ female screw UNC 4-40
+ elec. continuity

00LF

Options
00LF : RoHS compatible EU
directive 2002/95/EC



PRESS-FIT FEATURES

Application by pressure on insulator
Eye of the needle design.

Metallized hole dimensions

Metallized hole dimension		Hole press-fit contact SnPb	Hole press-fit contact Sn	Hole press-fit harpoon SnPb	Hole press-fit harpoon Sn	Hole press-fit contact Copper OSP	Hole press-fit harpoon Copper OSP
P.C.B. hole definition (note 1 and 2)	Drill diameter	Ø 1,15 ref (note 3)	Ø 1,15 ref (note 3)	Ø 3,22 ref (note 3)	Ø 3,22 ref (note 3)	Ø 1,15 ref (note 3)	Ø 3,22 ref (note 3)
	Drilled hole	Ø 1,12 - Ø 1,18	Ø 1,12 - Ø 1,18	Ø 3,19 - Ø 3,25	Ø 3,19 - Ø 3,25	Ø 1,12 - Ø 1,18	Ø 3,19 - Ø 3,25
	Copper plating	25µm mini - 50µ maxi	25µm mini - 50µ maxi	25µm mini - 50µ maxi	25µm mini - 50µ maxi	25µm mini - 50µ maxi	25µm mini - 50µ maxi
	Tin lead plating	5µm mini - 15µ maxi		5µm mini - 15µ maxi			
	Pur lead plating		0,8 mini to 1,2µ maxi		0,8 mini to 1,2µ maxi		
	OSP plating (copper)					0,20µm mini - 0,5µ maxi	0,20µm mini - 0,5µ maxi
	Finish hole	Ø 0,94-1,09	Ø 1,00-1,09	Ø 3,00-3,20	Ø 3,08-3,20	Ø 1,01-1,09	Ø 3,09-3,20

Note 1 : These dimensions must be respected to ensure press-fit pin performance

Note 2 : According to IEC-352-S specification

Note 3 : Vital requirement for press-fit pin performance

Press-fit performance

	Press-fit contacts	Press-fit harpoons
Insertion force	< 100N	< 120N
SnPb / Extraction force	> 30N	> 30N
Copper Extraction force	> 20N	> 20N

LAYOUTS

Male insulator front view

Shell size	Layout	
E	2V2 coded	
	5W1	
A	11W1	
	7W2	
	3W3	
	3V3 coded	
C	25W3	
	21WA4	
	27W2	
	8W8	

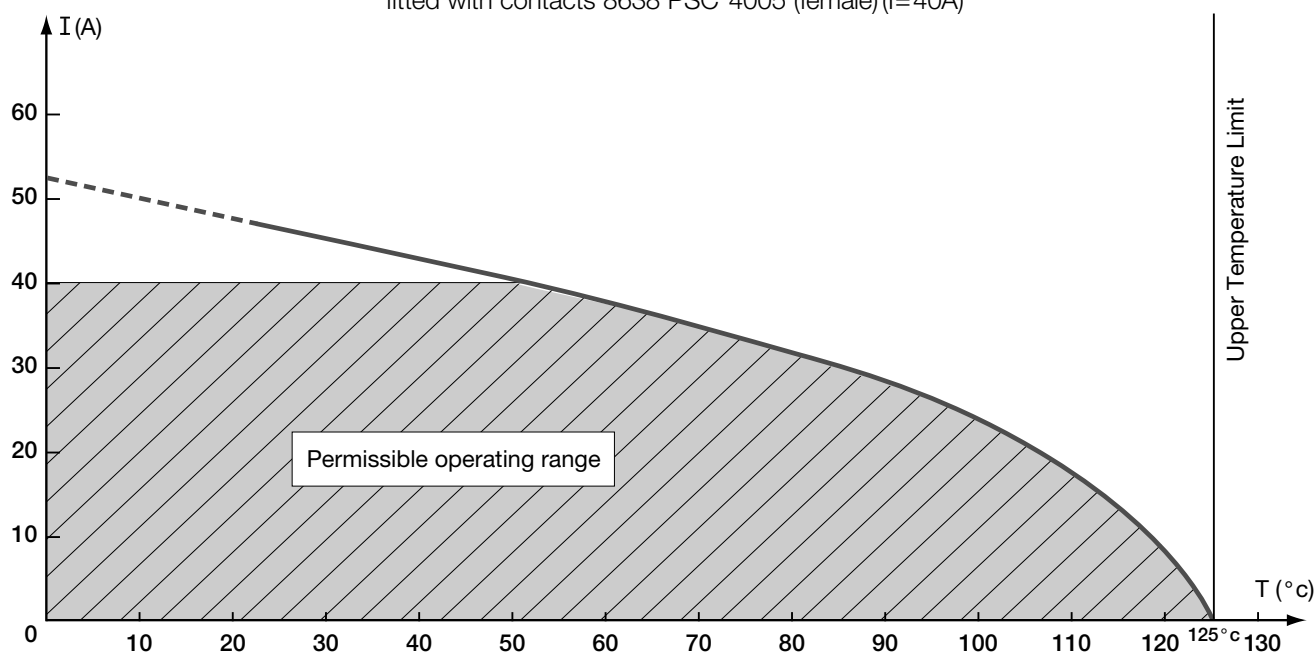
Shell size	Layout	
B	21W1	
	17W2	
	13W3	
	9W4	
D	5W5	
	47W1	
	24W7	
	36W4	

Example of layout codification 7W2 = 7 contacts of which 2 power contacts

DERATING CURVES

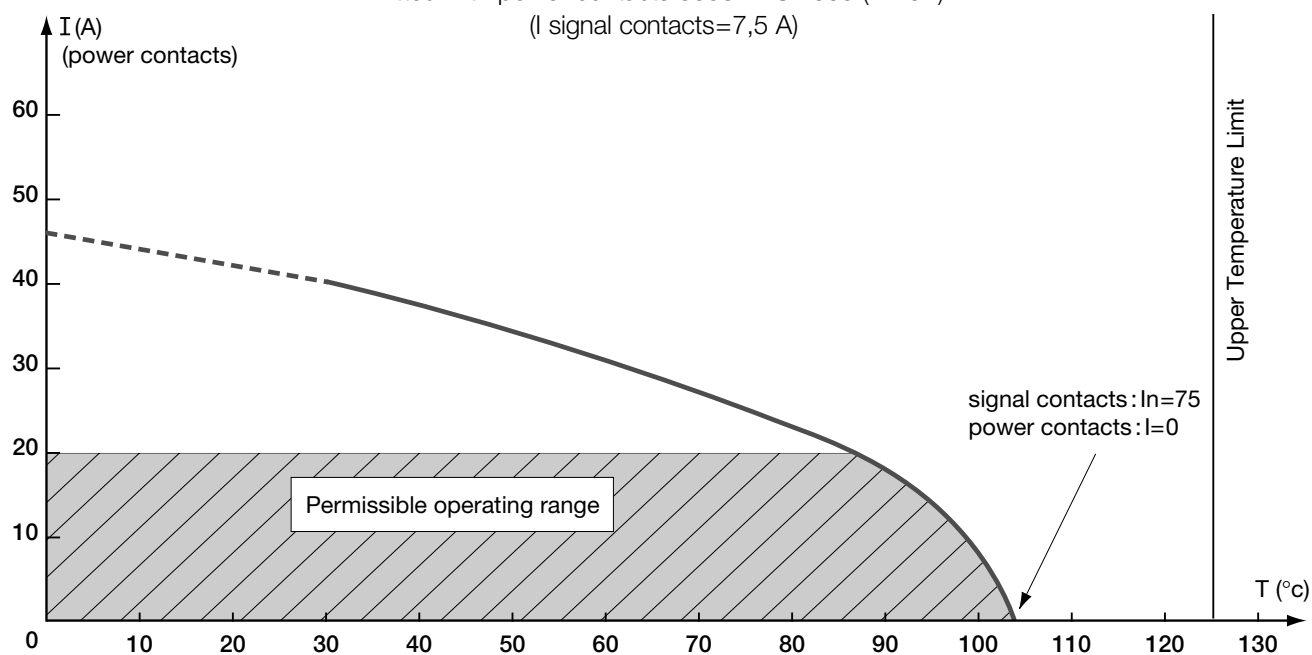
DERATING CURVE ON CONNECTOR DC 8W8 SA 00

fitted with contacts 8638 PSC 4005 (female) ($I=40A$)



DERATING CURVE ON CONNECTOR DB 13W3 PA 00

fitted with power contacts 8638 PPS 2005 ($I=20A$)
(I signal contacts = 7,5 A)

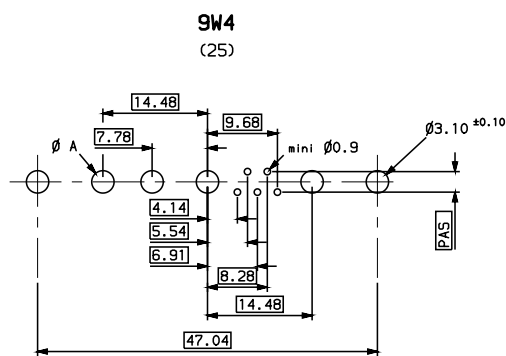
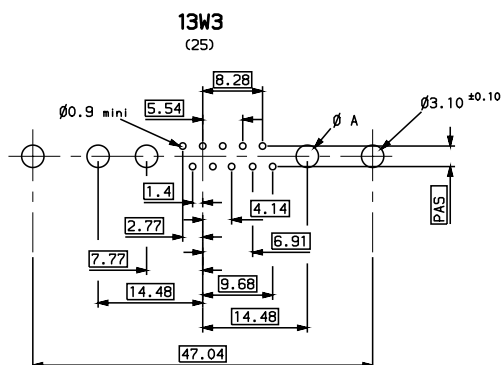
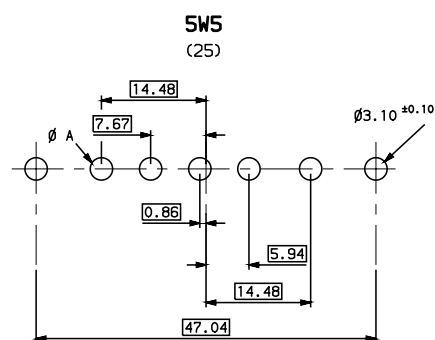
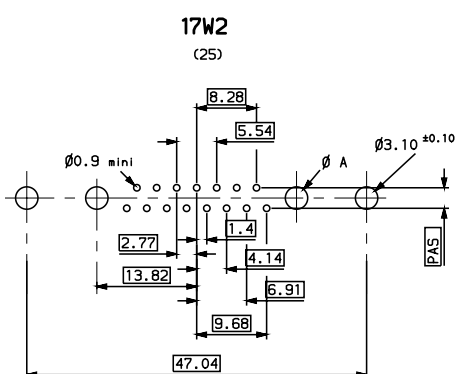
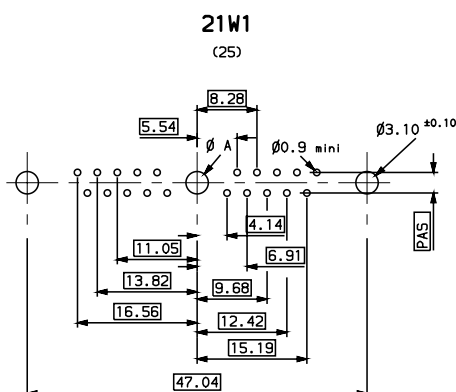
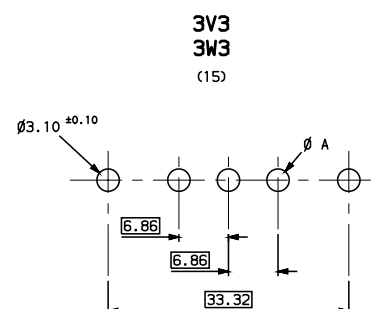
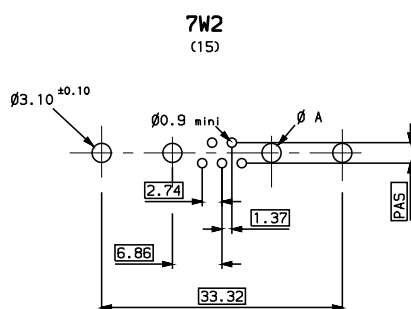
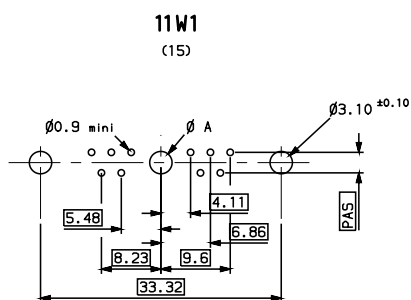
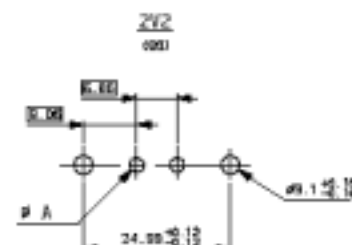
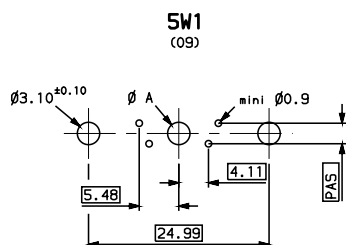


DIMENSIONS

PC board drilling

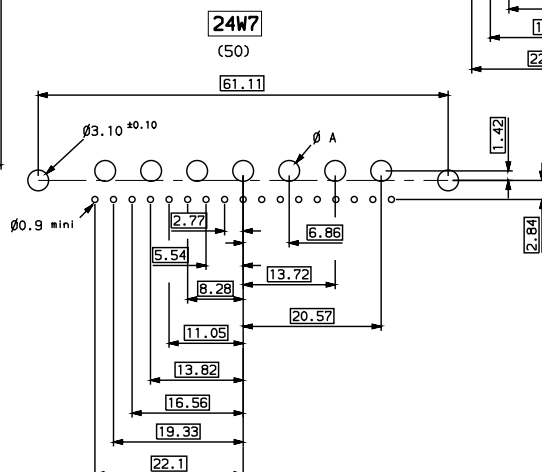
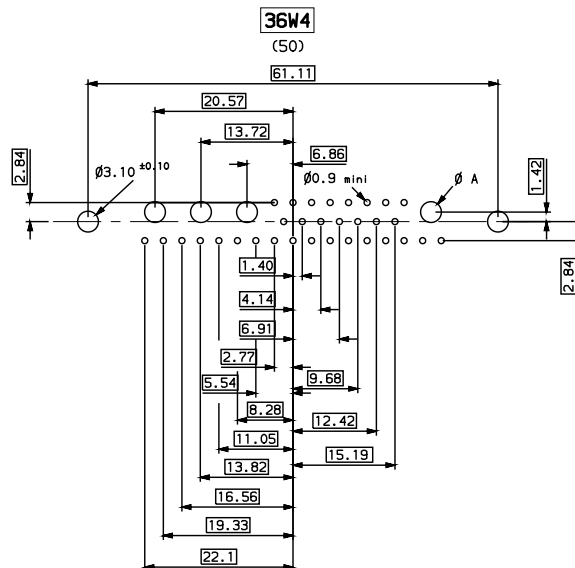
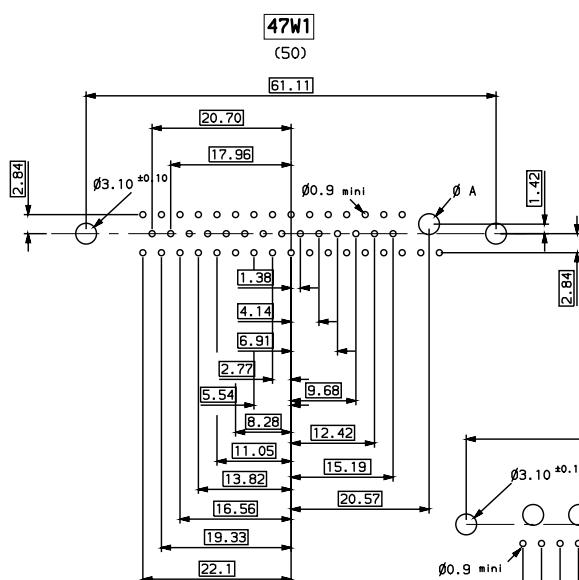
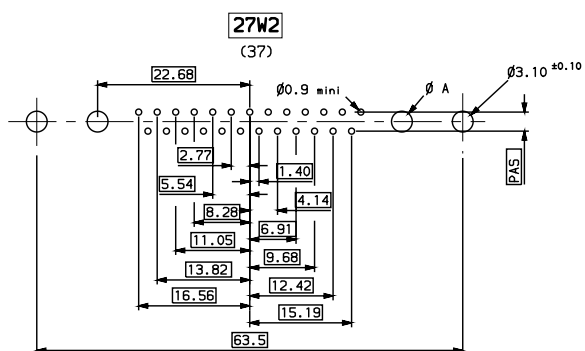
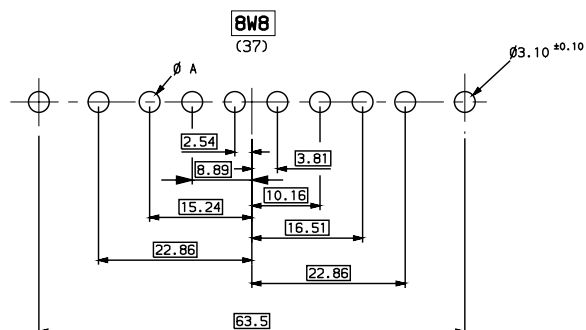
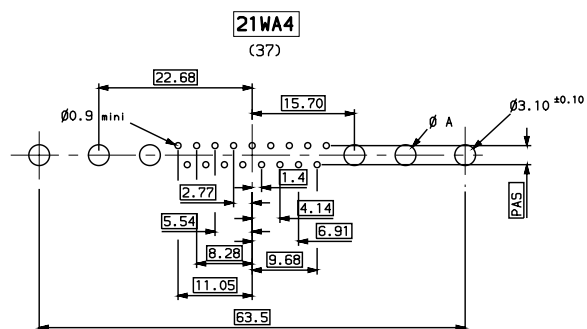
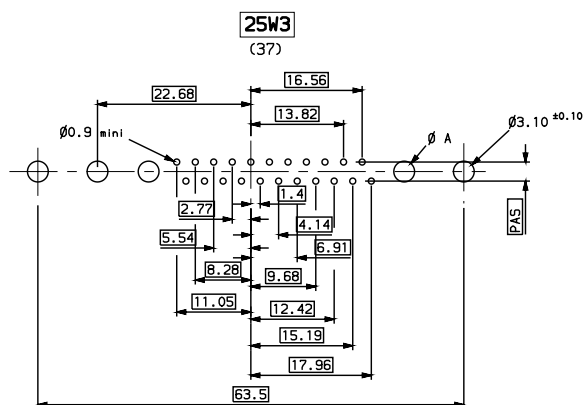
Solder termination

Version	Step	30 A	40 A
		Ø A	
3	2.84	Ø 2.40±0.10	Ø 3.10±0.10
7	2.84	Ø 2.40±0.10	
5	2.54	Ø 2.40±0.10	Ø 3.10±0.10



DIMENSIONS

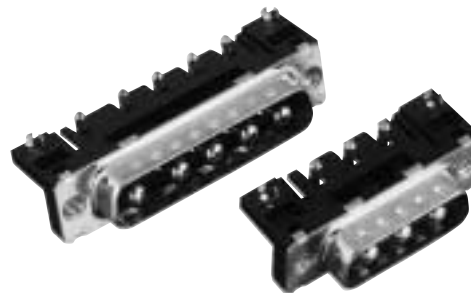
PC board drilling





UL Recognized File E 118235 (R)

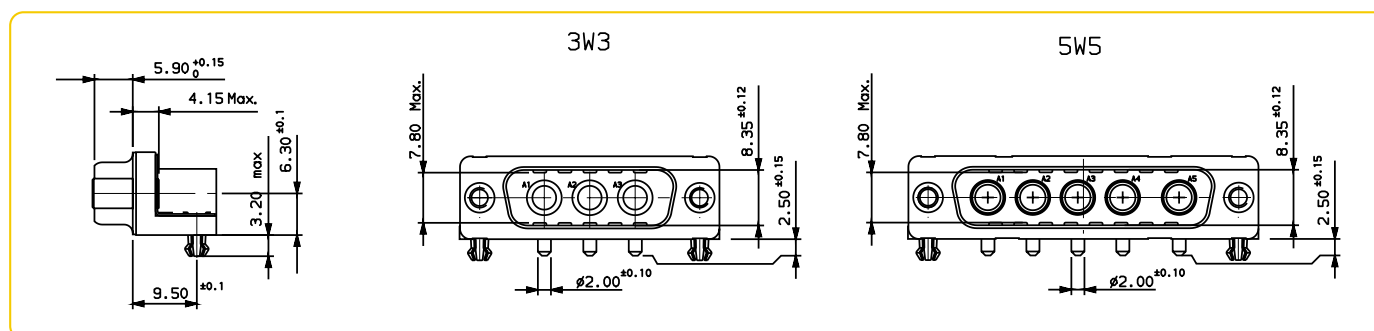
- This monobloc insulator design with stamped and formed signal contacts combines performance and cost effectiveness.



ORDERING INFORMATION

D	3 5	W W	3 5	P	36A	6	GX	08LF
Series: D	Layouts			Contacts: P : male				
Code 36 A								
Type Right angle, US standard,solder								
Foot print 8.08 mm								
Length of termination 2.50								
PCB thickness 1.6								
						Durability: 6 : High performances class (500 ≤ mating / unmating)		
Mounting options (see page 70)								
Options					Description			
GL					Harpoon + insert M3 + elec. continuity			
☺ GX					Harpoon + insert UNC 4-40 + elec. continuity			
☺ GV					Harpoon + Female screw UNC 4-40 + elec. continuity			
					Power contacts: 08LF : Fitted with power contacts 30 A, RoHS compatible			

SPECIFIC DIMENSIONS



☺ Preferred option



UL Recognized File E 118235 (R)

STRAIGHT AND RIGHT ANGLE PC BOARD VERSIONS



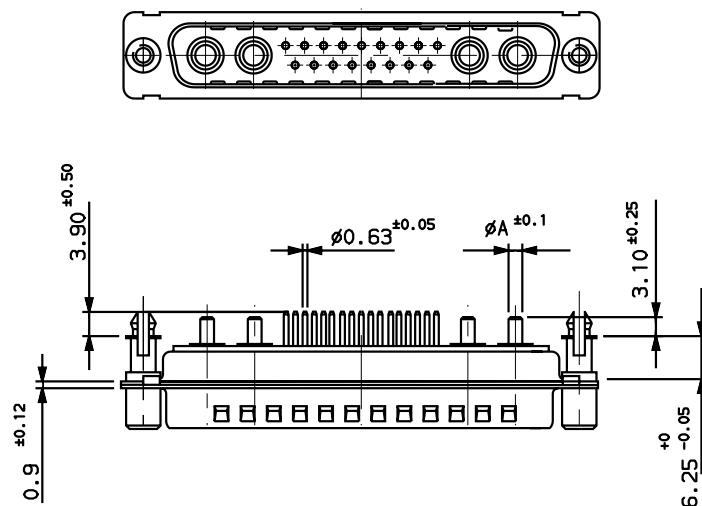
ORDERING INFORMATION

D	B	L	13 W 3	P	3	00	G	30LF
Series: D	Shell size (tin plated): E, A, B, C, D (only straight version)		Layout of contacts: (see page 24) (for right angled versions, 47W1, 24W7, 36W4 non available)	Contacts: P : Pin S : Socket		Durability: 00 : 200 mating / unmating 43 : 500 mating / unmating		
	Options 1 (see page 70)				Termination type: 3 : Straight version 5 : Right angled / Europe standard 7 : Right angled / US standard (5W1, 9W4 non available)			

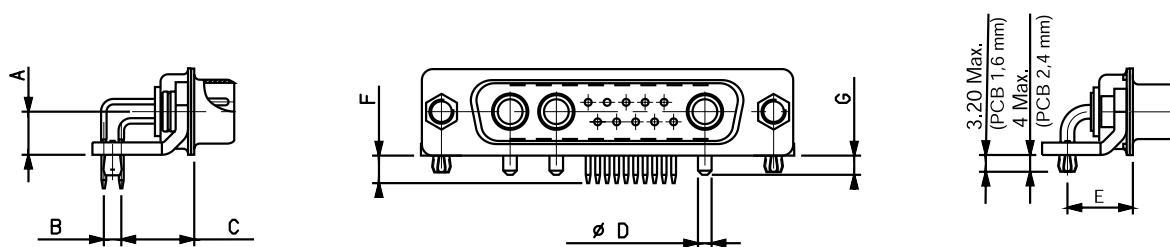
SPECIFIC DIMENSIONS

Straight version

I	30 A	40 A
Ø A	2	2.8



Right angle version



	Termination type	Amp.	A±0.10	B±0.20	C±0.20	D±0.10	E±0.20	F±0.50	G±0.30
Europe	5...	30 A	7.20	2.54	10.30	2.00	11.65	4.00	3.60
		40 A	7.20	2.54	10.30	2.80	11.65	4.00	3.60
U.S.	7...	30 A	6.30	2.84	8.08	2.00	9.50	3.90	3.60



UL Recognized File E 118235 (R)



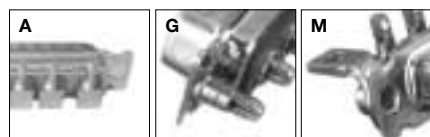
PART NUMBER

D	E	L	2 3 3 5 8	V V W W W	2 3 3 5 8	P	93C	5	G	40LF
Series D	Shell size (tin plated) E, A, B, C		Layouts							
Front accessory										
	Blank	L	O	V						
Straight version		X	X	X						
Right angled	X	X	X	X						
X : available										
L O V										
						Contacts: P : Pin S : Socket				
						Termination type: 93C : Straight version 81C : Right angle / European standard 80C : Right angle / US standard				
							Durability: 5 : 200 mating / unmating 6 : 500 mating / unmating			

PCB accessory

	M	G	A
Straight version		X	
Right angled	X		X

A : without accessory
G : Harpoon used for PCB thickness from 1.6 mm
M : Metal brackets without harpoon



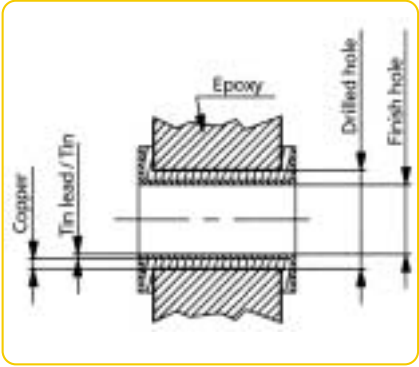
Power contacts

40 : Fitted with power contacts 40 A, non RoHS compatible
 ☺ **40LF** : Fitted with power contacts 40 A, RoHS compatible

SPECIFIC DIMENSIONS

Metallized hole dimensions

			Press-fit contacts	Press-fit harpoons	Ø 3,22 ± 0,03
P.C.B. hole definition (note 1 and 2)		Drill diameter	Ø 3.22 ±0.03	Ø 3.22 ±0.03	
		Drilled hole	Ø 3.19 - 3.25	Ø 3.19 - 3.25	
		Copper plating	25 µm min (recommended 50 µ max)	25 µm min (recommended 50 µ min)	
	non RoHS	Tin lead plating	15 µm max (recommended 5 µ min)	15 µm max (recommended 5 µ min)	
		Finish hole (after reflow)	Ø 3.02 - 3.20	Ø 3.02 - 3.20	
	RoHS	Tin plating	0.8 to 1.2 µm	0.8 to 1.2 µm	
		Finish hole (after reflow)	Ø 3.08 - 3.20	Ø 3.08 - 3.20	



Note 1 : These dimensions must be respected to ensure press-fit pin performance

Note 2 : According to IEC-352-S specification

Note 3 : Vital requirement for press-fit pin performance

Press-fit performance

	Press-fit contacts	Press-fit harpoons
Insertion force	≤ 200 N (average insertion 160N)	≤ 200 N (average insertion 160N)
Extraction force	≥ 30 N	≥ 30 N



UL Recognized File E 118235 (R)

Cable applications



ORDERING INFORMATION (power contacts have to be ordered separately — see next page)

D

Series:
D

B

Shell size (tin plated):
E, A, B, C, D

L

Mounting Options 1 (see page 70)

	Blank	L	O	I	V	F
Solder buckets	X	X	X	X	X	X
Wire wrap	X	X	X	X	X	X

X : Available

Blank : without accessory

L : Threaded insert M3

O : Threaded insert UNC 4-40

I : Female screw M3

V : Female screw UNC 4-40

F : Float mounting

13 W 3

Layout of contacts
(see page 24)

P

Contacts:
P : Pin
S : Socket

4

Durability:
00 : 200 mating / unmating
43 : 500 mating / unmating
(blank for solder bucket termination)

Termination type:
0 : Solder bucket (blank for plating 00)
4 : Wire wrap (3 levels)

00

A

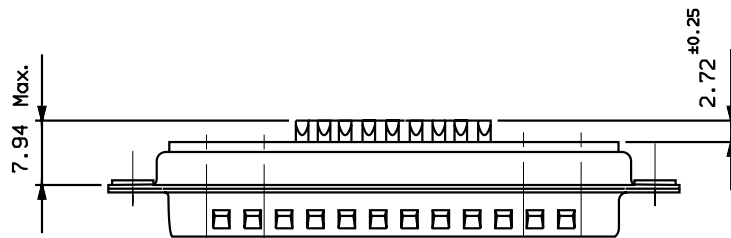
Options:
A : without accessory on PCB

00LF

Power contacts:
00LF : RoHS compatible

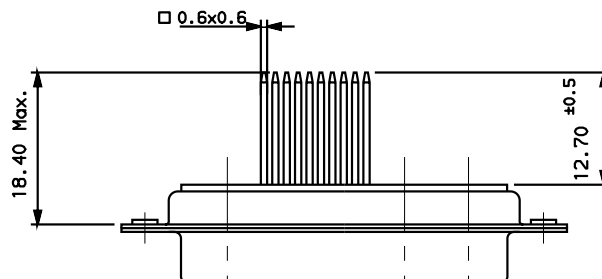
SPECIFIC DIMENSIONS

■ Solder bucket

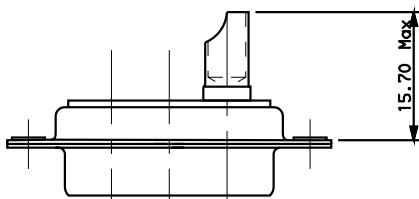


■ Wire wrap

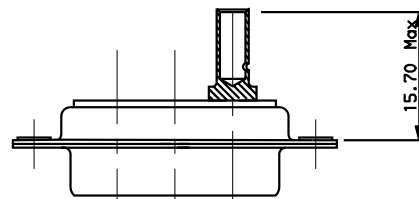
WW (3 levels)



Solder version

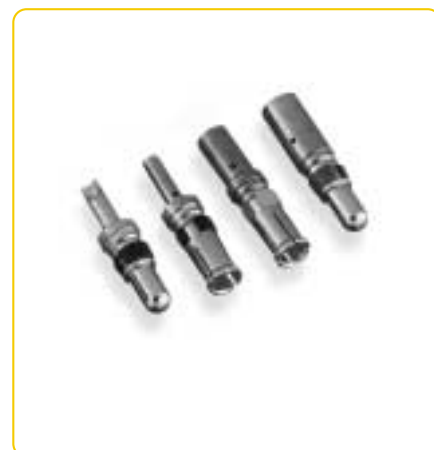
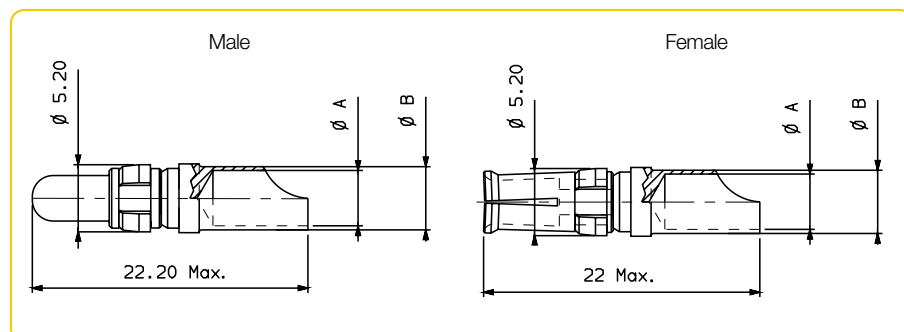


Crimp version



POWER CONTACTS

Solder contacts

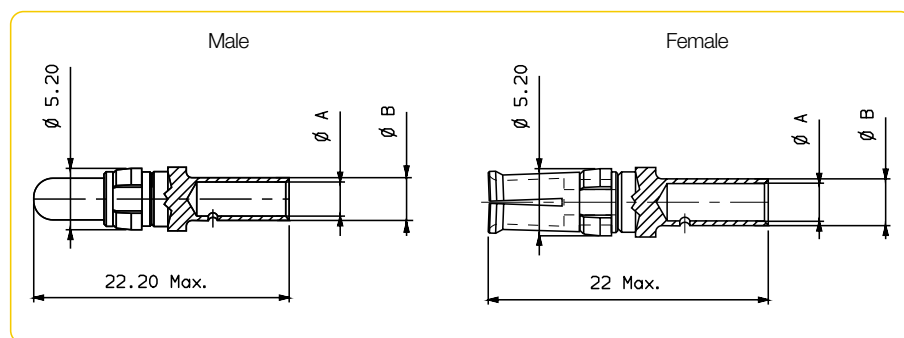


Type	Max. current rating	Clip colour	RoHS* Part number ≥ 200 mating/unmating	RoHS* Part number ≥ 500 mating/unmating	Wire		Strip length mm ^{+0.5} ₋₀	Ø A ₀ ^{+0.1}	Ø B ^{+0.05}
					Size	section mm ²			
Male	10A	Black	8638PPS1005LF	8638PPS1006LF	16	1.3	7	1.7	2.6
Male	15A	White	8638PPS1505LF	8638PPS1506LF	14	1.9	7	2.1	3
Male	20A	Red	8638PPS2005LF	8638PPS2006LF	12	3.2	7	2.8	3.65
Male	40A	Blue	8638PPS4005LF	8638PPS4006LF	8	9	7	4.4	5
Female	10A	Black	8638PSS1005LF	8638PSS1006LF	16	1.3	7	1.7	2.6
Female	15A	White	8638PSS1505LF	8638PSS1506LF	14	1.9	7	2.1	3
Female	20A	Red	8638PSS2005LF	8638PSS2006LF	12	3.2	7	2.8	3.65
Female	40A	Blue	8638PSS4005LF	8638PSS4006LF	8	9	7	4.4	5

- Clip material: plastic withstanding 125°C
- Termination plating: matt tin

* RoHS compatible EU directive 2002/95/EC

Crimp contacts

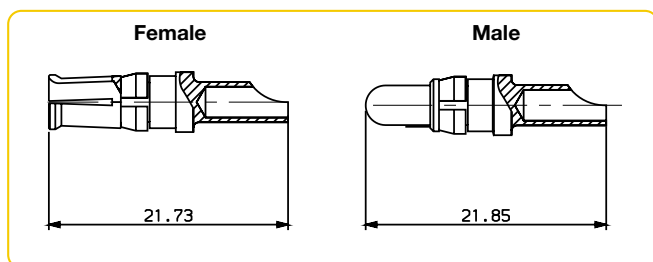


Type	Max. current rating	Clip colour	RoHS* Part number ≥ 200 mating/unmating	RoHS* Part number ≥ 500 mating/unmating	Wire		Strip length mm ^{+0.5} ₋₀	Ø A ₀ ^{+0.1}	Ø B ^{+0.05}
					Size	section mm ²			
Male	10A	Black	8638PPC1005LF	8638PPC1006LF	16 to 18	0.9 to 1.3	7	1.8	2.55
Male	20A	Red	8638PPC2005LF	8638PPC2006LF	12 to 14	2 to 3	7	2.8	3.7
Male	30A	White	8638PPC3005LF	8638PPC3006LF	9	6	7	3.75	4.65
Male	40A	Blue	8638PPC4005LF	8638PPC4006LF	8 to 10	5 to 8	7	4.8	5.5
Female	10A	Black	8638PSC1005LF	8638PSC1006LF	16 to 18	0.9 to 1.3	7	1.8	2.55
Female	20A	Red	8638PSC2005LF	8638PSC2006LF	12 to 14	2 to 3	7	2.8	3.7
Female	30A	White	8638PSC3005LF	8638PSC3006LF	9	6	7	3.75	4.65
Female	40A	Blue	8638PSC4005LF	8638PSC4006LF	8 to 10	5 to 8	7	4.8	5.4

- Clip material: plastic withstanding 125°C
- Termination plating: matt tin

* RoHS compatible EU directive 2002/95/EC

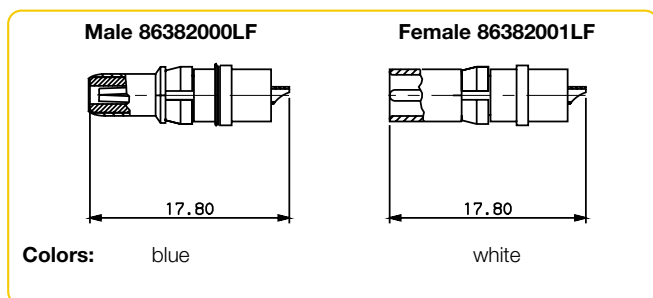
POWER CONTACTS - METAL CLIP



Wire Size	Max. current	Part numbers	
		Male	Female
AWG8	40A	86303098NLF	86303099NLF
AWG12	20A	86303056NLF	86303057NLF
AWG14	15A	86303060NLF	86303061NLF
AWG16	10A	86303064NLF	86303065NLF

Durability : 500 mating/unmating

HIGH VOLTAGE CONTACTS



These removable contacts are suitable for the contact cavities of the DMW series and DW series.

The coaxial contacts are in compliance with:

- NFC 93569
- KMX4 specification

ELECTRICAL CHARACTERISTICS

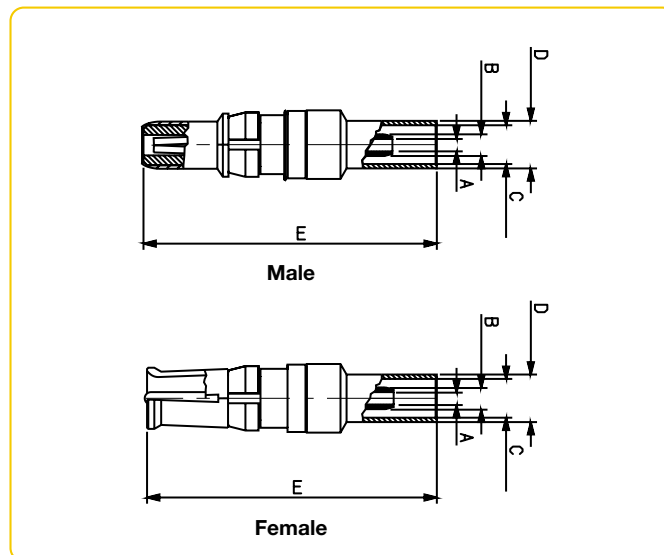
Dielectric with standing voltage	: 2800 V.r.m.s
Break down voltage	: 3200 V.r.m.s
Insulation resistance	: 10^6 MΩ
Contact resistance	: ≤ 5 mΩ
Max current rating	: 5A
Material	: TEFLON

MECHANICAL CHARACTERISTICS

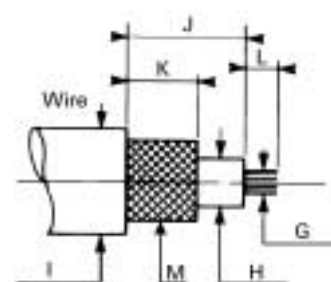
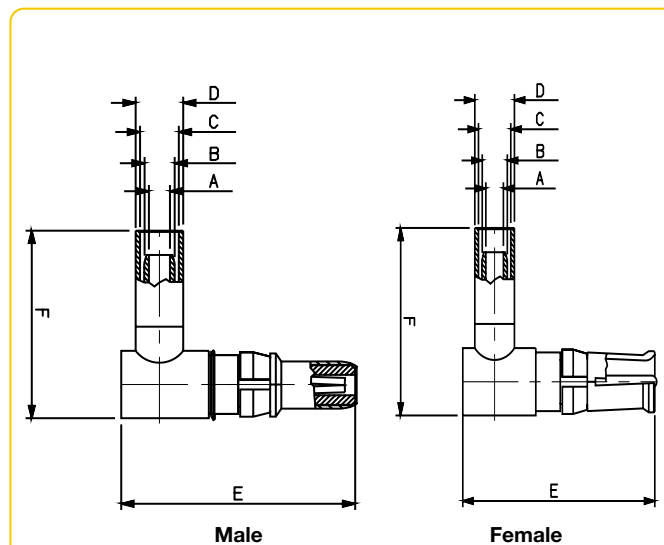
Mating force per set of contact	: 3N
Mating endurance	: 200
Temperature	: -55° C to +125° C

COAXIAL CONTACTS

Straight



Angled



STANDARD
COAXIAL CONTACTS

Contact type		Part numbers				Contacts dimension						Cable			Wire						
		Soldered screen	NFC 93569 KMX4	Crimped screen	NFC 93569 KMX4	A ± 0.10	B ± 0.15	C ± 0.2	D ± 0.15	E ± 0.4	F ± 0.4	MILC 17E	NFC 93550	Impe- dance	G	H	I	J	K	L	M (max.)
Straight	male	DM537405000NCLF	KMX4M11D02	DM53740NCLF	KMX4M12D02					23.60								7.90	6.35	2	
	male	DM537405008NCLF	—	—	—					21.80											
	female	DM537425000NCLF	KMX4F11D02	DM53742NCLF	KMX4F12D02					23.60											
	female	DM537425008NCLF	—	—	—	1	1.75	2.32	3.20	21.80		RG 178BU	KX21A	500±2	0.30	0.90	1.80				1.40
Right angle	male	DM537415000NCLF	KMX4M11C02	DM53741NCLF	KMX4M12C02					18.64	15.30							9.50	5.95	1.60	
	female	DM537435000NCLF	KMX4F11C02	DM537432NCLF	KMX4F12C02					18.64	15.30										
Straight	male	DM537405001NCLF	KMX4M11D01	DM537401NCLF	KMX4M12D01					23.60								7.90	6.35	2.00	
	female	DM537425001NCLF	KMX4F11D01	DM537421NCLF	KMX4F12D01					23.60											2.05
Right angle	male	DM537415001NCLF	KMX4M11C01	DM537411NCLF	KMX4M12C01	1.70	2.46	3	3.84	18.64	15.30		RG 316U	KX22A	50Ω ^{±2}	1.50	2.50				
	female	DM537435001NCLF	KMX4F11C01	DM537433NCLF	KMX4F12C01					18.64	12.50							9.50	5.95	1.60	

SPECIFIC
COAXIAL CONTACTS

Contact type		Part numbers				Contacts dimension						Cable			Wire						
		Soldered screen	NFC 93569 KMX4	Crimped screen	NFC 93569 KMX4	A ±0.10	B ±0.15	C ±0.2	D ±0.15	E ±0.4	F ±0.4	MILC 17E	NFC 93550	Impe- dance	G	H	I	J	K	L	M (Max.)
Straight	male	DM537405002NCLF	—	DM537403NCLF	—	2.75	4.40	5.45	5.95	26.30	RG 180BU		950 ^{±2}	0.30	2.60	3.58	9.70	7.90	2	3.14	
	female	DM537425002NCLF	—	DM537423NCLF	—		26.30														
Straight	male	DM537405005NCLF	—	DM537405NCLF	—		4.40	5.45	5.95	23.60	RG 59CU		KX15	500 ^{±2}	0.90	2.95	4.95	9.50	7.9	2	3.81
	female	DM537425004NCLF	—	DM537425NCLF	—					23.60											
Right angle	female	DM537435004NCLF	—	DM537436NCLF	—					18.64	17.50										

I/O, POWER CONNECTOR

This power module I/O connectors for 48 volts applications are designed in accordance with μTCA specifications. The robust D-Sub concept based on simplified and cost effective Delta D design combines power contacts able to handle up to 24 A with signal contacts. PCB connectors are proposed in traditional solder-to-board and Pin-in-Paste versions for optimized applied cost. Specific to the design of FCI is the fact that the connector's compact footprint allows for more space on the PCB for other components.

FEATURES

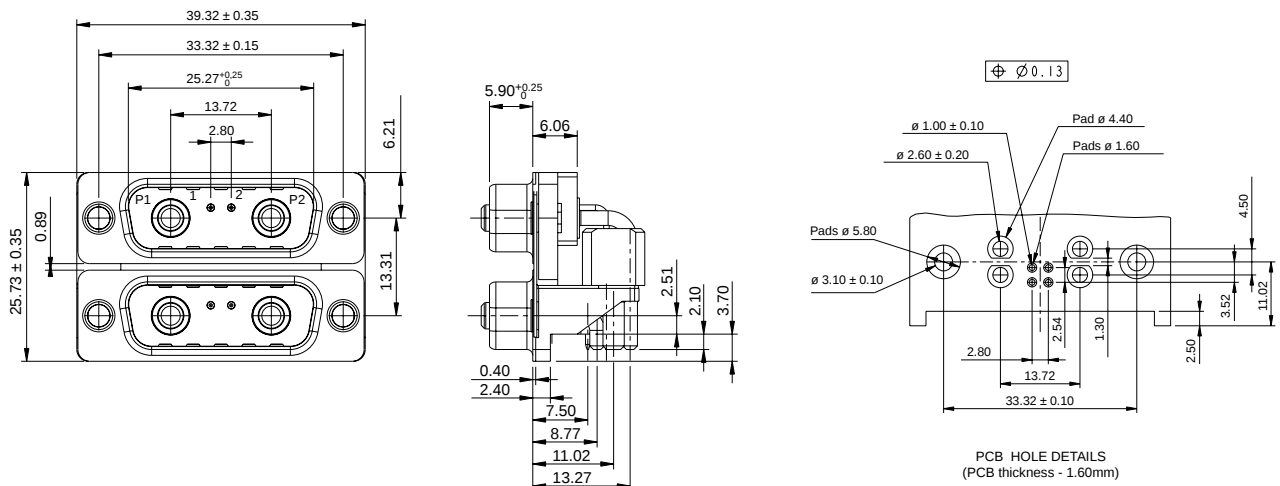
- 48 V / 24 A (shell size A)
- FMLB (First Mate Last Brake) functionality for hot plugging
- Field repairable

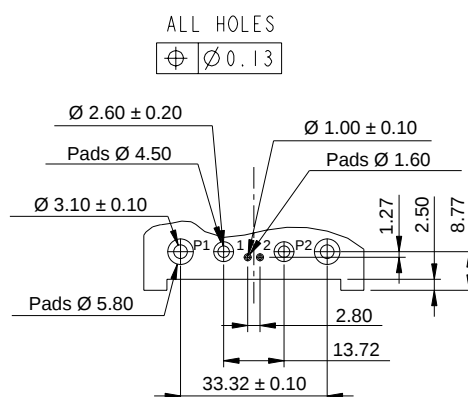
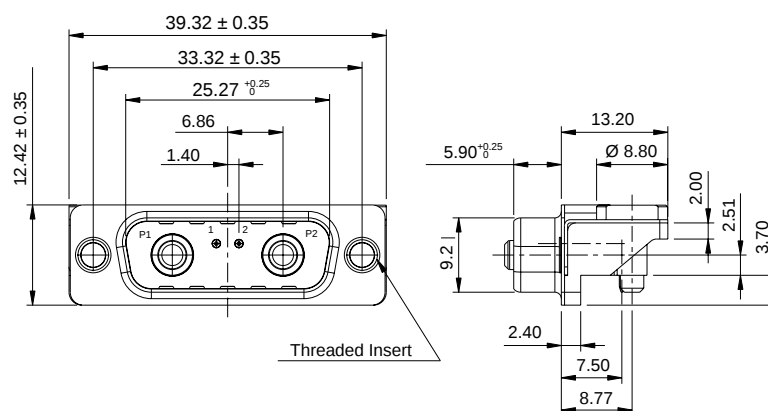


ORDERING INFORMATION

10070158	002	12	X	LF
μTCA 48 V / 24 A power board connector	001 : Dual solder-to-board 002 : Dual Pin-in-Paste 003 : Single solder-to-board 004 : Single Pin-in-Paste	12 : Tape and reel packing 19 : Card box packing	L : M3 threaded insert X : UNC 4-40 threaded insert	LF : RoHS compatible EU directive 2002/95/EC

PRODUCT DRAWING





Cable applications

FEATURES

- Field reparable
- Touch proof
- Stackable hoods with high retention devices
- Cost saving jumper option for signal contacts



ORDERING INFORMATION

CABLE CONNECTOR

10070165

μTCA
48 V / 24 A power cable connector

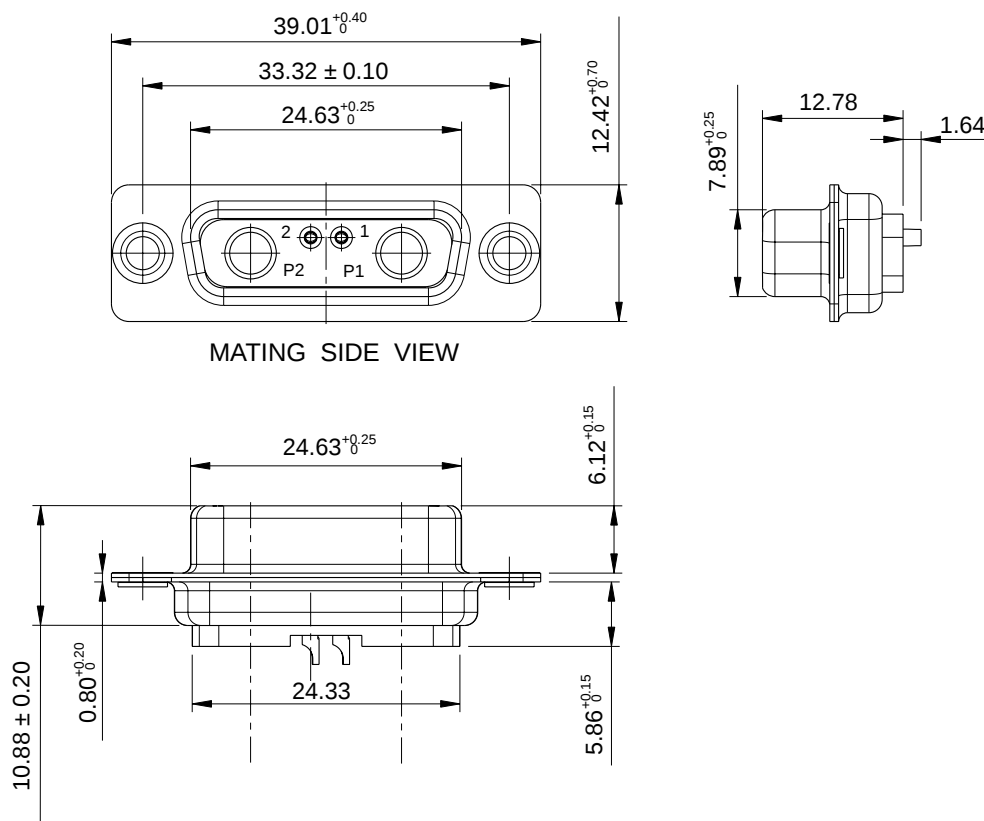
001

001 : without jumper
002 : with jumper option

19ALF

Card box packing

PRODUCT DRAWING

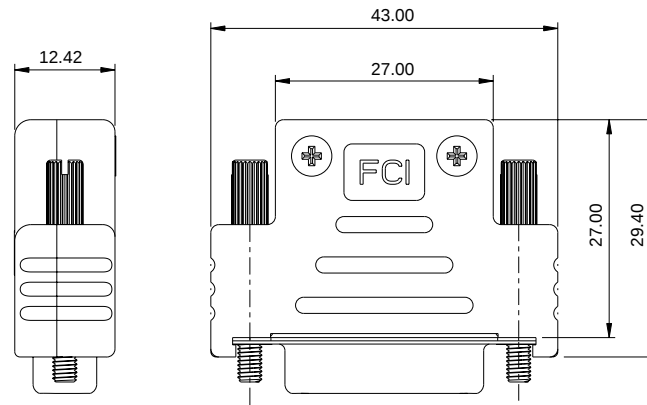


POWER CONTACTS

8638PSC3005LF 30 A crimp contacts
8638PSS4005LF 40 A solder buckets contacts

■ HOOD (stackable hood and slim design)

10070163 - 001LF



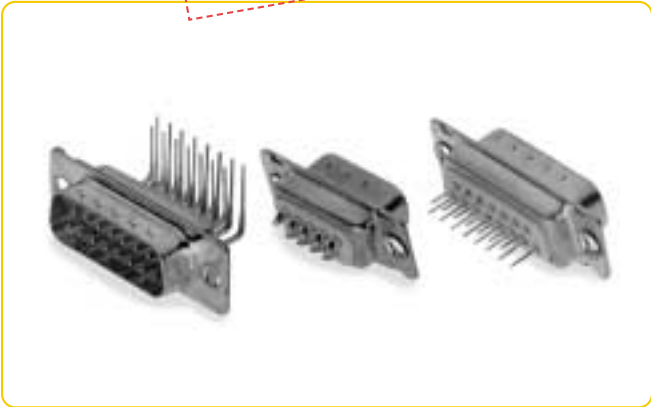
D series - Stamped and rolled contacts



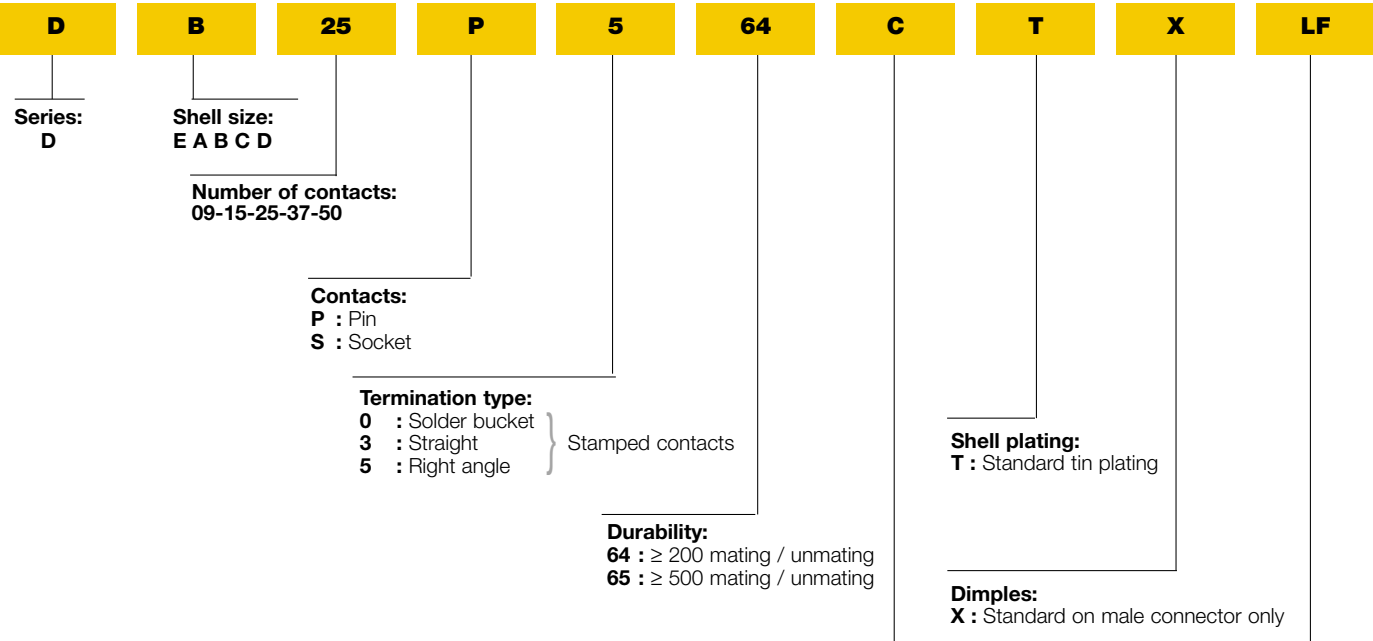
UL Recognized File E 118235

PCB and
Cable applications

D series is the standard D-Sub full metal shell version with stamped contacts. This design is basically proposed in solder bucket, straight and angled version without accessories.



ORDERING INFORMATION



Options 2 (see page 70)

Termination type Index	Straight version	Angled version	Solder buckets
Blank	Without accessory	Not possible	Without accessory
C	Not possible	Without bracket	Not possible
H*	Not possible	Not possible	Shielding termination fingers*

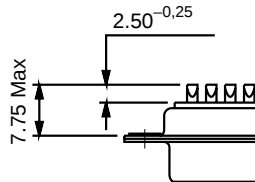
* not available on 50 way

Blank : non RoHS compatible
☺ LF : RoHS compatible

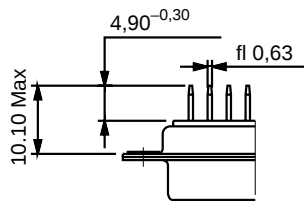
*PCB and
Cable applications*

SPECIFIC DIMENSIONS

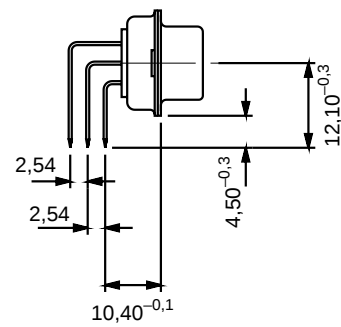
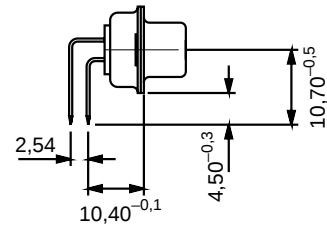
Solder buckets



Straight spills



Right angle spills



Cable applications



UL Recognized File E 118235

- 8656 series is a D connector with removable crimp contacts for AWG 20/24 or 24/28 wires.
- It is used for commercial cabling like computer equipment, cash registers...
- It accepts our standard accessories (hoods, locking devices) and is available with a complete range of crimping tools from hand tools to high volume production equipment.



ORDERING INFORMATION

Connector part numbers

8656	0	25	P	L	T	X	LF
Series: 8656		Number of contacts: 09-15-25-37-50	Contacts: P : Pin S : Socket	L : Supplied without contacts (obligatory)	Shell plating: T : Standard tin plating	Dimples: X : Standard on male shell only	LF : RoHS compatible

Contact part numbers

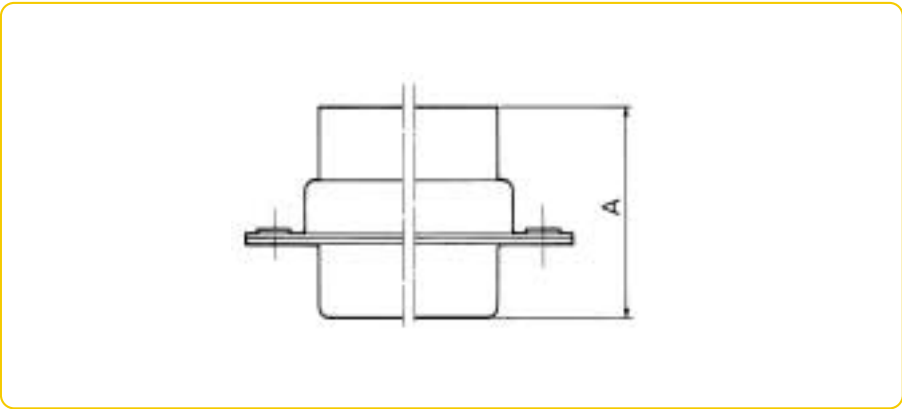
Contact type \ Packaging type	Box of 500 contacts	Reel of 400 contacts	Reel of 5000 contacts	Reel of 10 000 contacts
AWG 24/28 male	865635006 ▲	8656300306 ▲	8656451006 ▲	8656454006 ▲
AWG 24/28 female	865635106 ▲	8656300406 ▲	8656651006 ▲	8656654006 ▲
AWG 20/24 male	865635206 ▲	8656300506 ▲	8656452006 ▲	8656453006 ▲
AWG 20/24 female	865635306 ▲	8656300606 ▲	8656652006 ▲	8656653006 ▲

▲ Contact performance code

4LF: ≥ 200 mating / unmating, RoHS compatible

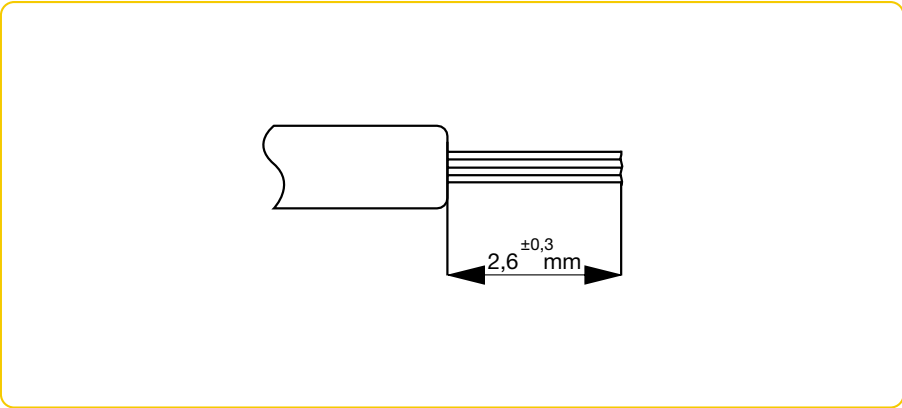
5LF: ≥ 500 mating / unmating, RoHS compatible

SPECIFIC DIMENSIONS



	09	15	25	37	50
Pin	17.19	17.19	17.35	17.35	17.35
A _{Max.}					
Socket	17.44	17.44	17.44	17.44	17.44

CABLE PREPARATION

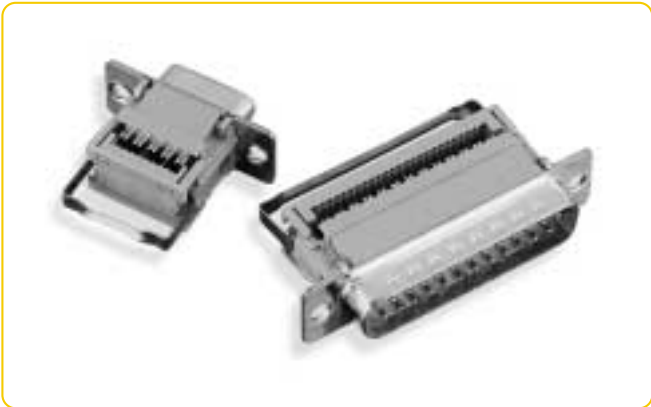


Cable applications

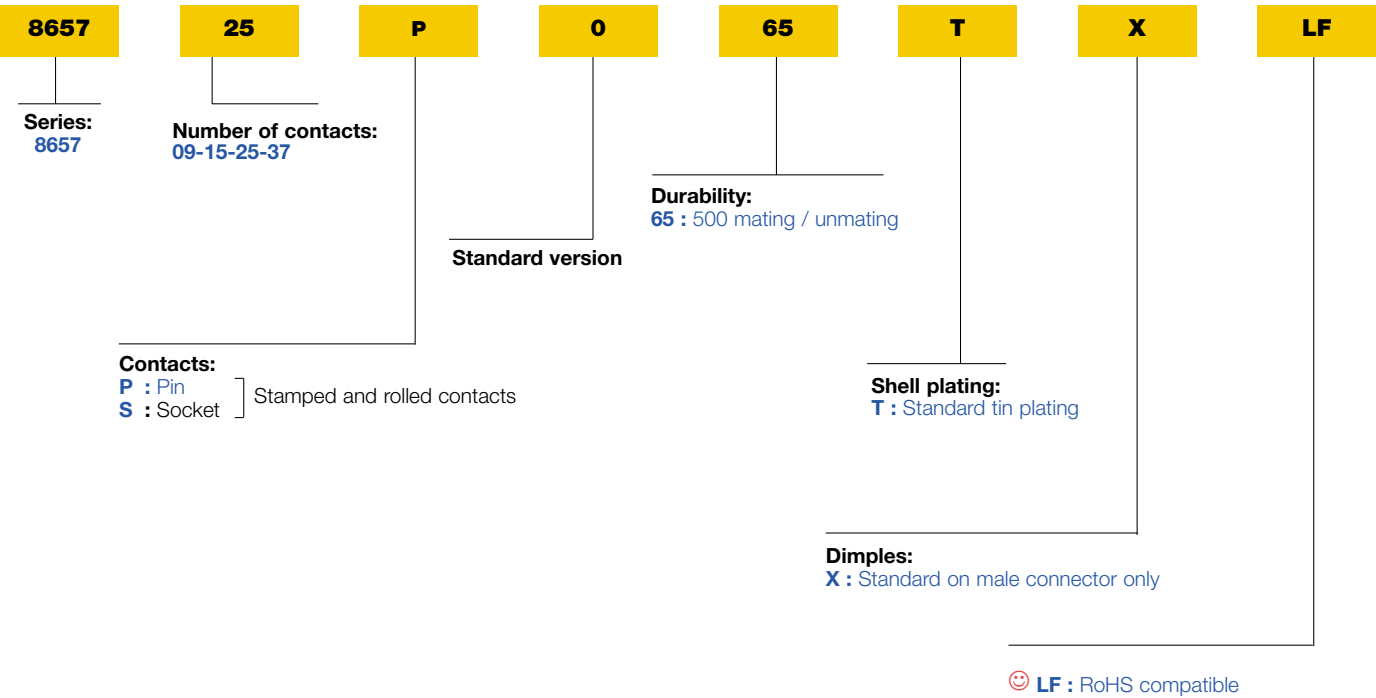
INSULATION DISPLACEMENT CONNECTION FOR FLAT CABLE,
MULTI STRAND (AWG 26/28) OR SINGLE STRAND (AWG 28/30)

 **UL Recognized File E 118235**

These connectors are suitable for input/output applications and interconnecting electronic equipment.



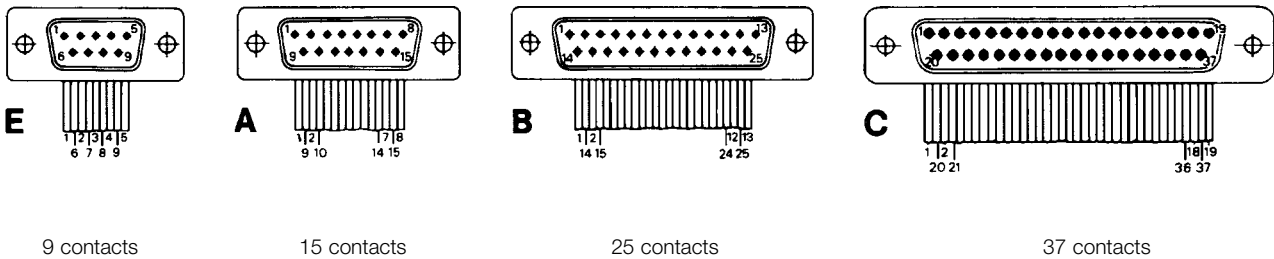
ORDERING INFORMATION



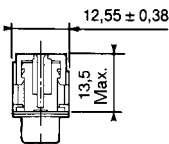
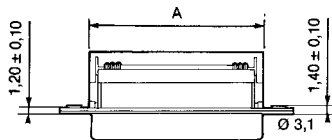
LAYOUTS

Male insulator front view

Contacts are individually numbered on the front side of the insulator



SPECIFIC DIMENSIONS



HIGH PROFILE
supplied with
metallic strain relief clamp

	09	15	25	37
A ± 0.25	19.27	27.50	41.27	57.70

DP series Machined contacts D-Sub

*PCB and
Cable applications*



UL Recognized File E 118235

- DP series is designed for high performance applications, particularly in the field of telecommunications: data transmission, private automatic branch switching, telecom (LNZ listed).
- It features machined contacts and is available with solder bucket, straight spills, angled spills, and wire wrap terminations.



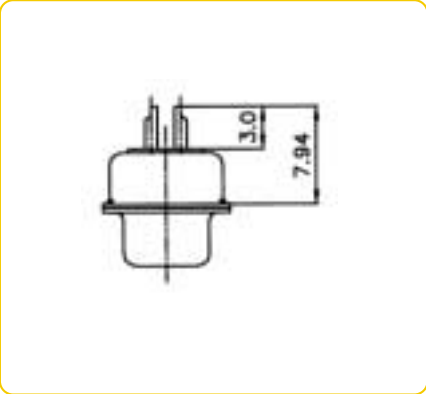
ORDERING INFORMATION

D	B	P	V	25	P	3	64	C	T	X	LF																														
Series: D Shell size: E, A, B, C, D P : Characterisation of DP series Front accessories (see page 70) Blank : Standard mounting holes (Ø = 3.10) L : Threaded insert M3 V : Female screw locks UNC 4-40 S : Spacers (straight spills only) Number of contacts: 09-15-25-37-50 Contacts: P : Pin S : Socket Termination: 0 : Solder buckets (blank for plating 00) 3 : Straight spills 5 : Angled spills- 2.54 mm between rows 8 : Angled spills- 2.84 mm between rows 4 : Wire wrap (3 levels) 6 : Wire wrap (2 levels) Durability: 64 : ≥ 200 mating / unmating 65 : ≥ 500 mating / unmating, blank for solder bucket termination PCB accessories (see page 70) <table border="1"> <thead> <tr> <th>Index \ Termination type</th> <th>Straight spills</th> <th>Angled spills</th> <th>Solder buckets</th> <th>Wire wrap</th> </tr> </thead> <tbody> <tr> <td>Blank</td> <td>Without accessory</td> <td>Two plastic brackets*</td> <td>Without accessory</td> <td>Without accessory</td> </tr> <tr> <td>C</td> <td></td> <td>Without bracket</td> <td></td> <td></td> </tr> <tr> <td>M</td> <td>Harpoons</td> <td>Two metal brackets</td> <td></td> <td></td> </tr> <tr> <td>G</td> <td>(Compulsary with option L or V)</td> <td>Harpoons</td> <td></td> <td></td> </tr> <tr> <td>H</td> <td></td> <td>(9 to 37 ways only)</td> <td>Shielding termination fingers</td> <td></td> </tr> </tbody> </table> * Except 50 pos. with monobloc plastic brackets												Index \ Termination type	Straight spills	Angled spills	Solder buckets	Wire wrap	Blank	Without accessory	Two plastic brackets*	Without accessory	Without accessory	C		Without bracket			M	Harpoons	Two metal brackets			G	(Compulsary with option L or V)	Harpoons			H		(9 to 37 ways only)	Shielding termination fingers	
Index \ Termination type	Straight spills	Angled spills	Solder buckets	Wire wrap																																					
Blank	Without accessory	Two plastic brackets*	Without accessory	Without accessory																																					
C		Without bracket																																							
M	Harpoons	Two metal brackets																																							
G	(Compulsary with option L or V)	Harpoons																																							
H		(9 to 37 ways only)	Shielding termination fingers																																						
Shell plating: T : Standard tin plated Dimples: X : Standard on male connectors only LF : Standard series, RoHS compatible																																									

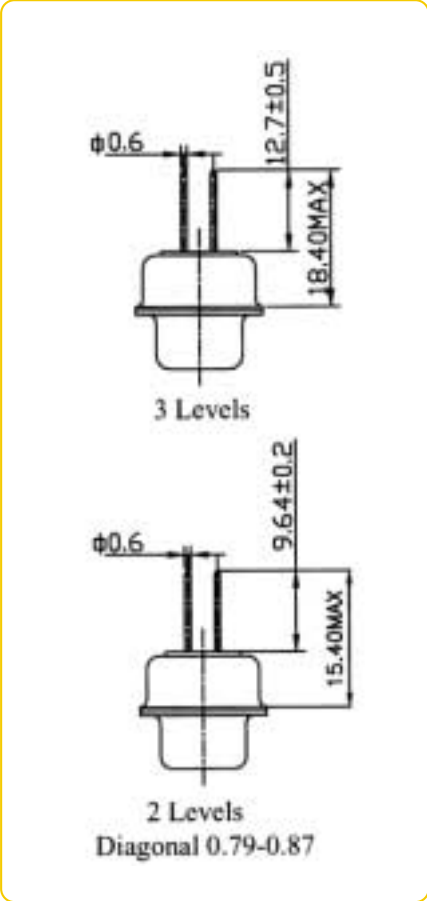
PCB and
Cable applications

SPECIFIC DIMENSIONS

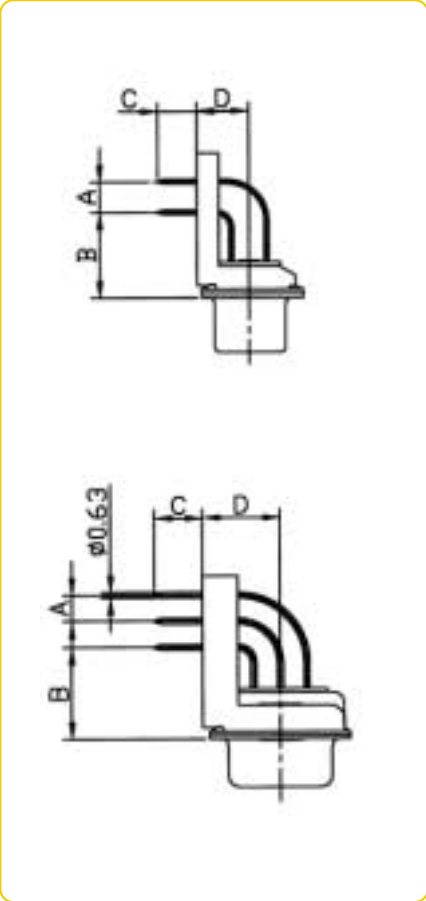
Solder buckets



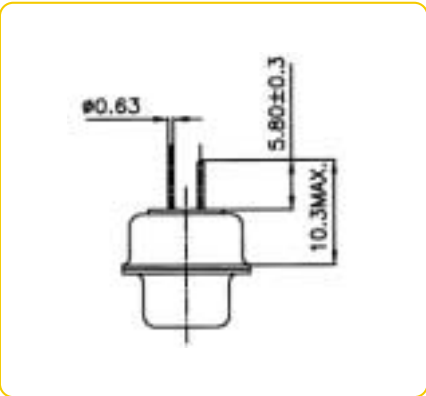
Wire wrap



Right angle spills



Straight spills



Termination code		5	8
Dimension			
A		2.54	2.84
B± 0.1		10.30	10.30
C± 0.5		4.00	4.00
D± 0.1	9 to 37 contacts	7.20	7.20
	50 contacts	8.60	8.60



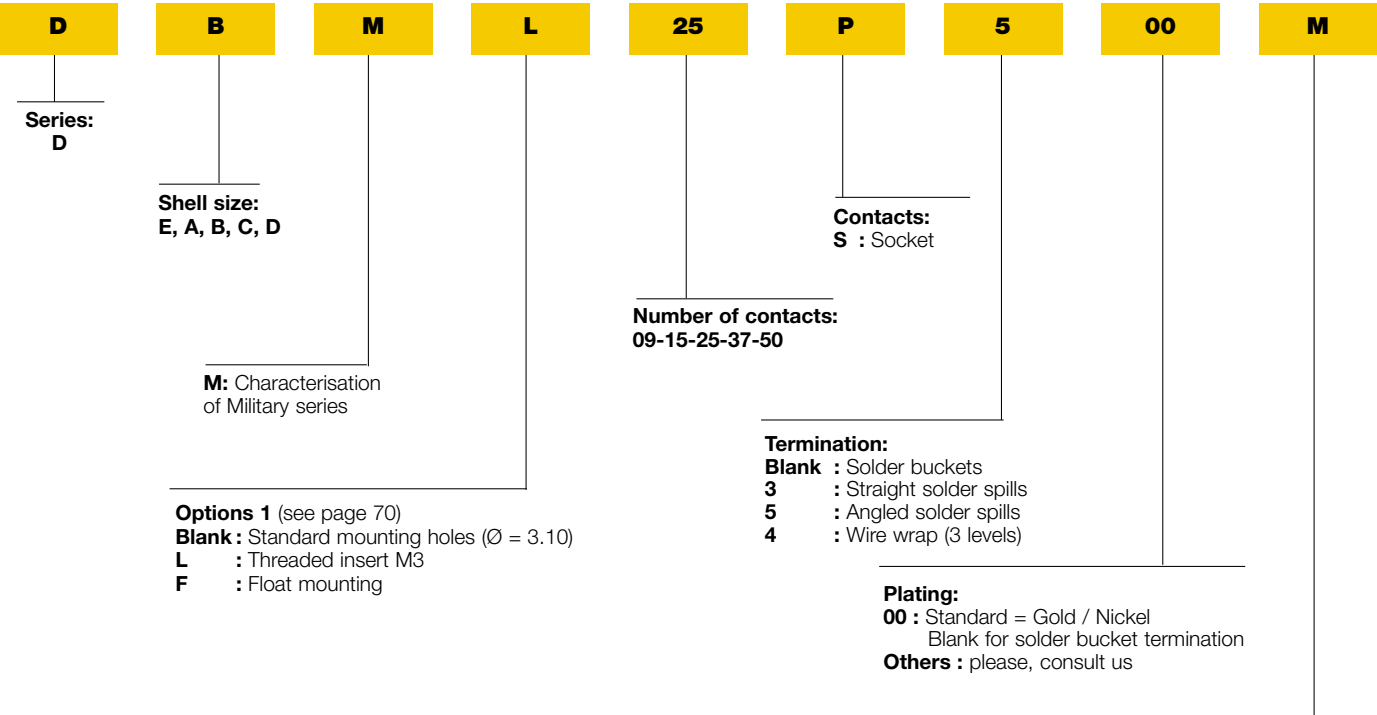
UL Rating Product File E 118235 (R)

- For aerospace, military 125° class-European standard in compliance with NFC 93425 / HE 501.
- Shell plating:** Cadmium
- Military and Aero applications**

PCB and Cable applications



ORDERING INFORMATION

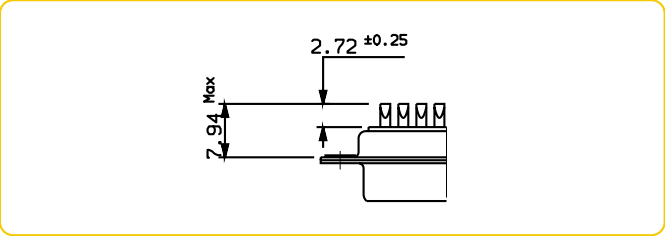


Options 2 (see page 70)

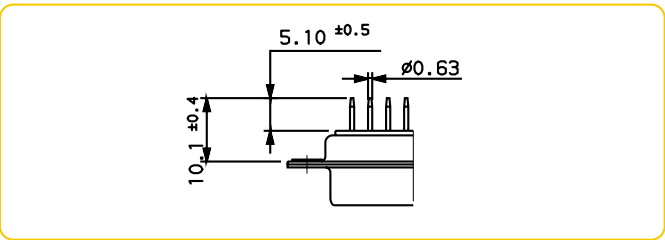
Option	Version	Angled spills	Other terminations
Blank		Plastic brackets	Not applicable
C		Without brackets	Not applicable
M		Metal brackets	Not applicable

SPECIFIC DIMENSIONS

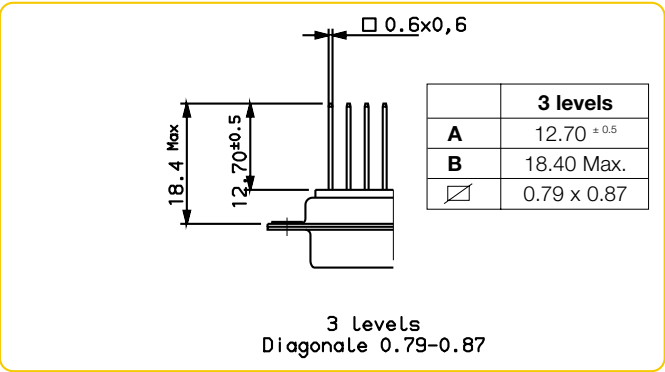
Solder buckets



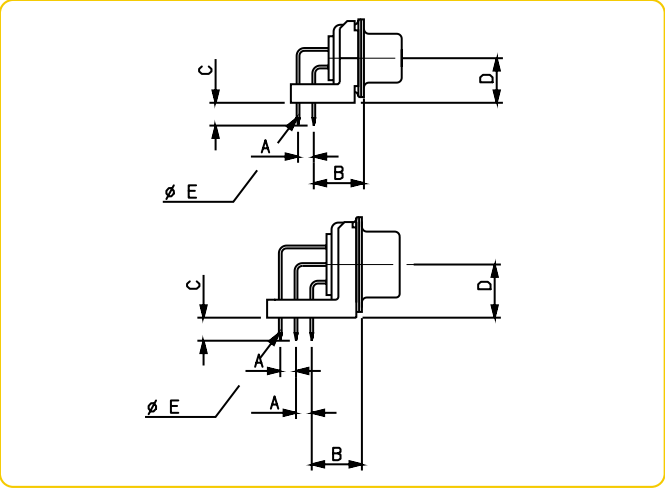
Straight spills



Wire wrap



Right angle spills



CROSS REFERENCE LIST
FOR THE MAIN HE 501 AND FCI

Connector type			HE 501	FCI
Solder buckets			HE 501 N..AP3	D.M..PLF
		F	HE 501 N..AS3	D.M..SLF
	Float mounting	M	HE 501 F..AP3	D.MF..PLF
		F	HE 501 F..AS3	D.MF..SLF

Connector type			HE 501	FCI
Straight spills	Standard	M	HE 501 N..YP4.3	D.M..P 300LF
		F	HE 501 N..YS4.3	D.M..S 300LF
	Float mounting	M	HE 501 F..YP4.3	D.MF..P 300LF
		F	HE 501 F..YS4.3	D.MF..S 300LF

Connector type			HE 501	FCI
Wire wrap 3 levels	Standard	M	HE 501 N..KP3.3	D.M..P 400LF
		F	HE 501 N..KS3.3	D.M..S 400LF
	Float mounting	M	HE 501 F..KP3.3	D.MF..P 400LF
		F	HE 501 F..KS3.3	D.MF..S 400LF

Connector type			HE 501	FCI
Angled spills 500	Standard	M	HE 501 P..VP6.3	D.M..P 500LF
		F	HE 501 P..VS6.3	D.M..S 500LF
	Metal brackets	M	HE 501 M..VP6.3	D.M..P 500MLF
		F	HE 501 M..VS6.3	D.M..S 500MLF

Dimension	Termination	5
A		2.54
B ± 0.1		10.30
C ± 0.5		4.00
D ± 0.1	9 to 37 contacts	7.20
	50 contacts	8.60
Ø E		0.63

PCB and
Cable applications



UL Rating Product File E 118235 (R)

- For particularly severe applications, especially high temperatures class + 155°C in compliance with NFC 93425 / HE 508.
- Shell plating:** Cadmium
- Military and Aero applications**



ORDERING INFORMATION

D

B

M

LF

25

P

5

00

M

N

Series:
D

Shell size:
E, A, B, C, D

M: Characterisation of
Military series

Options 1 (see page 70)
Blank : Standard mounting holes (Ø = 3.10)
F : Float mounting

Number of contacts:
09-15-25-37-50

Contacts:
P : Pin
S : Socket

Termination:
Blank : Solder buckets
3 : Straight solder spills
5 : Angled solder spills
4 : Wire wrap (3 levels)

Plating:
00 : Standard = Gold / Nickel
blank for solder bucket termination
Others : please, consult us

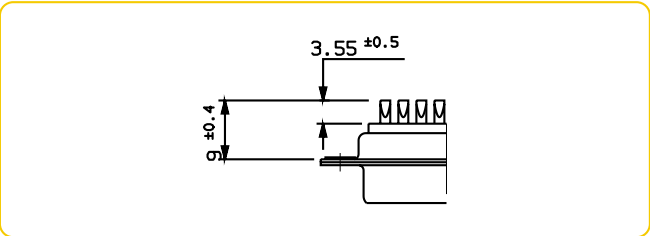
Options 2 (see page 70)

Option	Version	Angled spills	Other terminations
Blank		Plastic brackets	Not applicable
C		Without brackets	Not applicable
M		Metal brackets	Not applicable

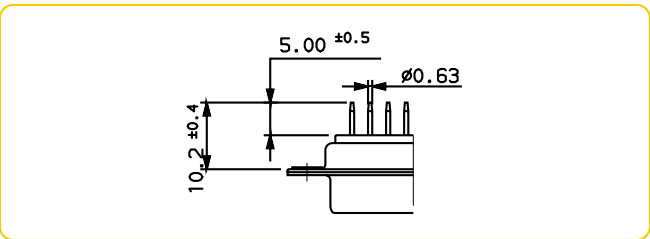
N : Obligatory for HE 508

SPECIFIC DIMENSIONS

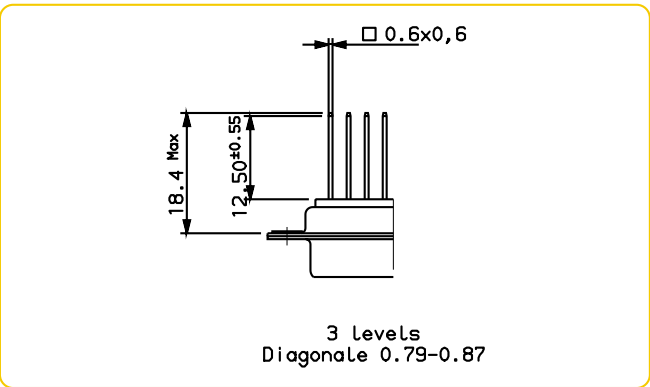
Solder buckets



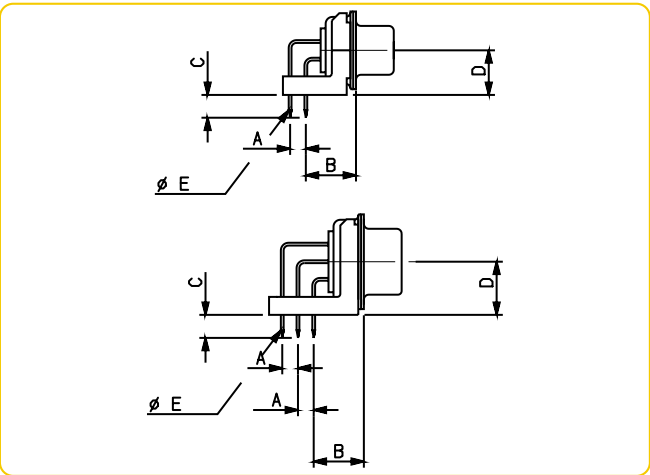
Straight spills



Wire wrap



Right angle spills



CROSS REFERENCE LIST FOR THE MAIN HE 508 AND FCI

Connector type			HE 508	FCI
Solder buckets	Standard	M	HE 508 N..AP	D.M..PNLF
		F	HE 508 N..AS	D.M..SNLF
	Float mounting	M	HE 508 F..AP	D.MF..PNLF
		F	HE 508 F..AS	D.MF..SNLF

Connector type			HE 508	FCI
Straight spills	Standard	M	HE 508 N..YP4	D.M..P 300NLF
		F	HE 508 N..YS4	D.M..S 300NLF
	Float mounting	M	HE 508 F..YP4	D.MF..P 300NLF
		F	HE 508 F..YS4	D.MF..S 300NLF

Connector type			HE 508	FCI
Wire wrap 3 levels	Standard	M	HE 508 N..KP3	D.M..P 400NLF
		F	HE 508 N..KS3	D.M..S 400NLF
	Float mounting	M	HE 508 F..KP3	D.MF..P 400NLF
		F	HE 508 F..KS3	D.MF..S 400NLF

Connector type			HE 508	FCI
Angled spills 500	Standard	M	HE 508 P..VP6	D.M..P 500NLF
		F	HE 508 P..VS6	D.M..S 500NLF
	Metal	M	HE 508 M..VP6	D.M..P 500MNLF
			HE 508 M..VS6	D.M..S 500MNLF

Dimension	Termination	5
A		2.54
B ± 0.1		10.30
C ± 0.5		4.00
D ± 0.1	9 to 37 contacts	7.20
	50 contacts	8.60
Ø E		0.63



- Connectors drawn from DM series. Composed of mixed arrangements of standard signal and size 8 cavities housing, coax, power, high voltage and optical removable contacts.
- Shell plating:** Cadmium
- Military and Aero applications**

PCB and
Cable applications



ORDERING INFORMATION

D

Series:
D

B

Shell size:
E, A, B, C, D

M

M: Characterisation of
Military series

13 W 3

Layout of contacts:
(see page 24)

P

Contacts:
P : Pin
S : Socket

5

Termination:
Blank : Solder buckets
3 : Straight solder spills
5 : Angled solder spills
4 : Wire wrap (3 levels)

00

Plating:
00 : Standard = Gold / Nickel on active
areas - Tin lead on termination
(blank for solder bucket termination)

M

N

N : Compulsary in compliance
with HE 507

Options 1 (see page 70)
Blank : Standard mounting holes (Ø = 3.10)
F : Float mounting

Options 2 (see page 70)

Option	Version	Angled spills	Other terminations
Blank		Plastic brackets	Not applicable
C		Without brackets	Not applicable
M		Metal brackets	Not applicable

PCB and
Cable applications

LAYOUTS

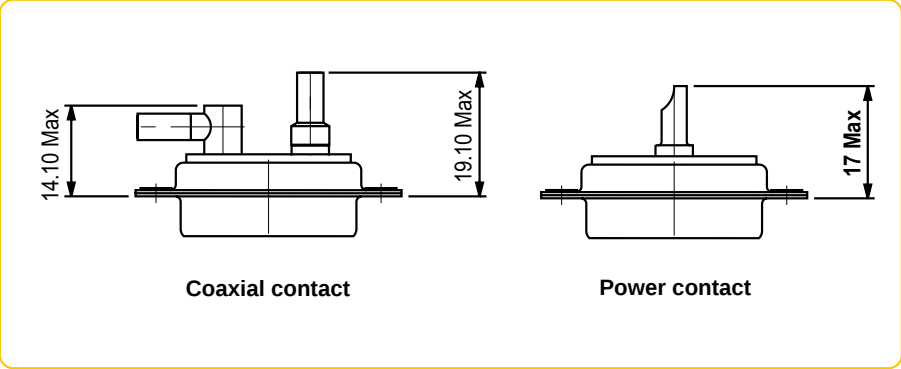
Male insulator front view

Shell size	Layout	
E	5W1	
	11W1	
	7W2	
	3W3	
	3V3	
A	21W1	
	17W2	
	13W3	
	9W4	
	5W5	

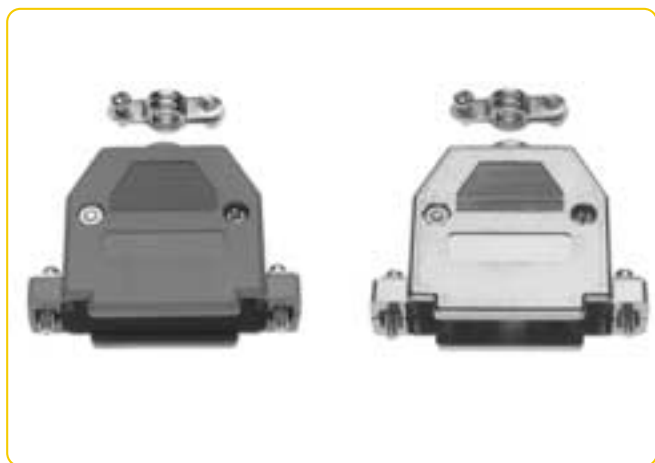
Shell size	Layout	
C	25W3	
	21WA4	
	27W2	
	8W8	
D	47W1	
	24W7	
	36W4	

- Standard contacts
- Coaxial and power contacts

SPECIFIC DIMENSION for standard terminations, see DM series, page 51



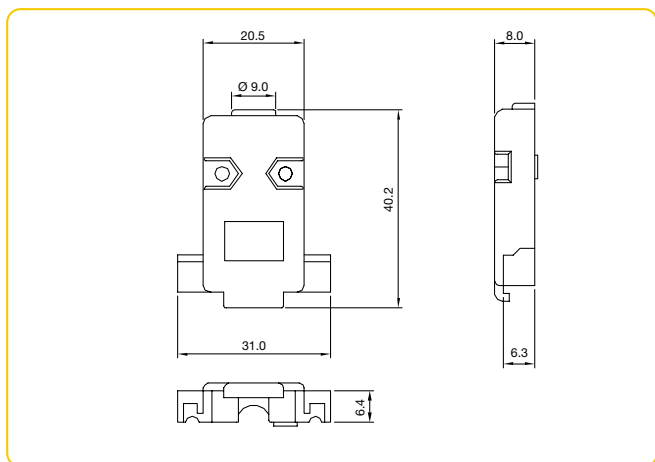
1 • Straight exit plastic and metalised hood with integrated locking - Economical series



Material : self extinguishing UL 94V0 thermoplastic
Colour : black / metalised
Temperature range : -55°C +105°C
Locking screws : UNC 4-40 thread

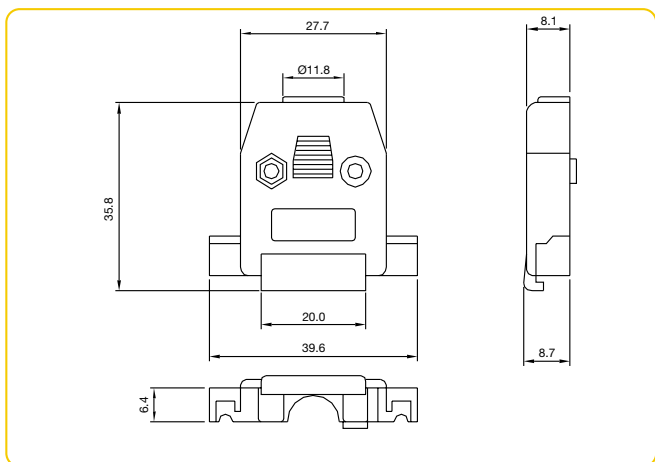
Shell size E (9 way)

- Plastic hood : part number : **10039449-00001LF**
- Metalised hood : part number : **10039449-00002LF**



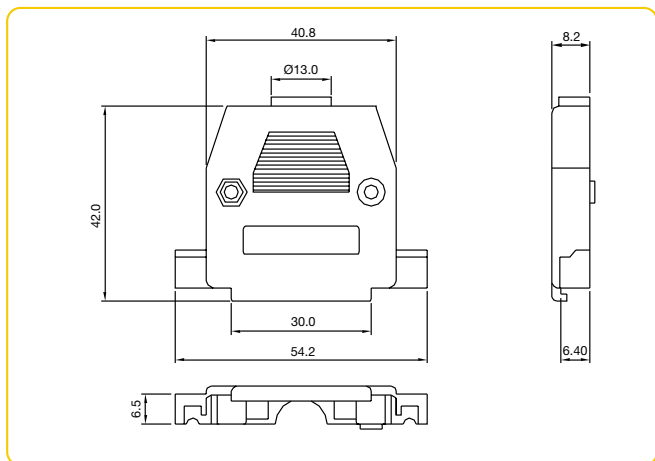
Shell size A (15 way)

- Plastic hood : part number : **10039450-00001LF**
- Metalised hood : part number : **10039450-00002LF**



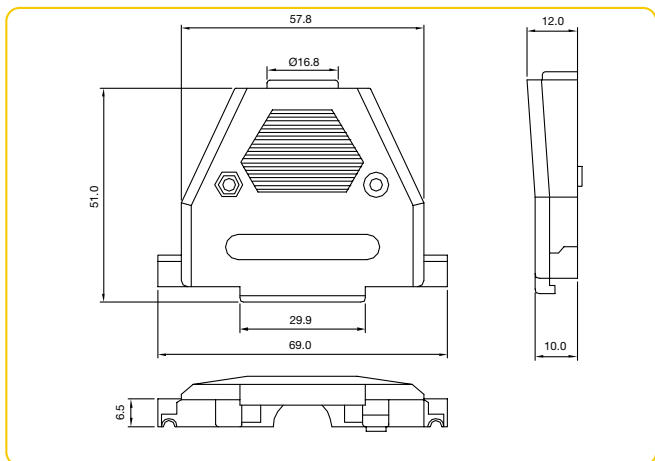
Shell size B (25 way)

- Plastic hood : part number : **10039451-00001LF**
- Metalised hood : part number : **10039451-00002LF**



Shell size C (37 way)

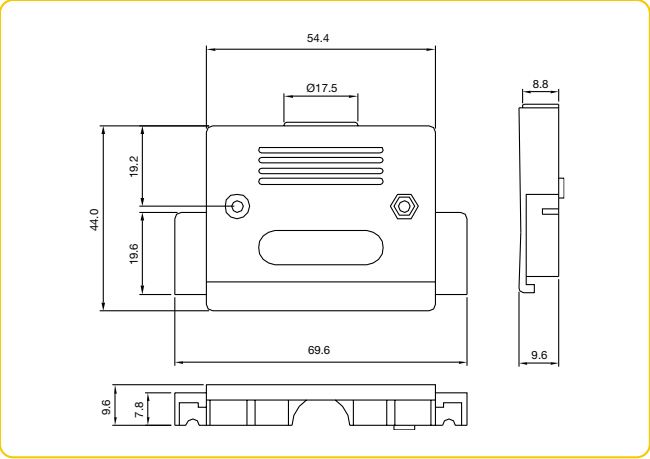
- Plastic hood : part number : **10039452-00001LF**
- Metalised hood : part number : **10039452-00002LF**



Straight exit plastic and metalised hood with integrated locking

Shell size D (50 way)

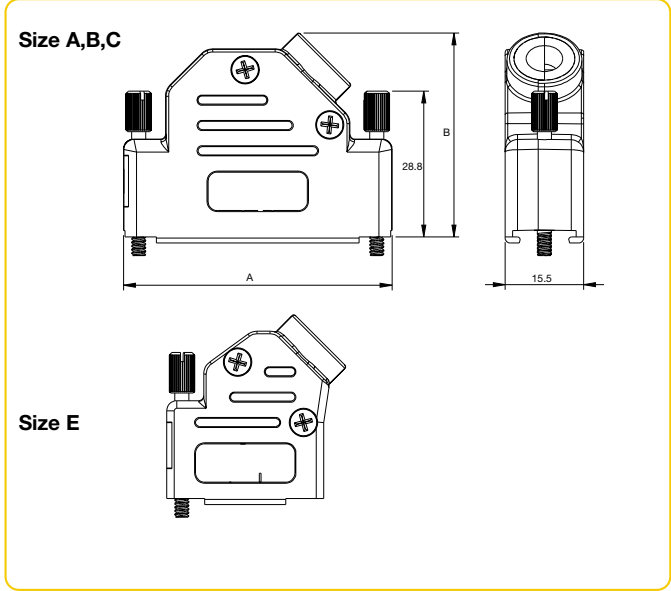
- Plastic hood : part number : 10039453-00001LF
- Metalised hood : part number : 10039453-00002LF



2 • Angle exit plastic hood for cable



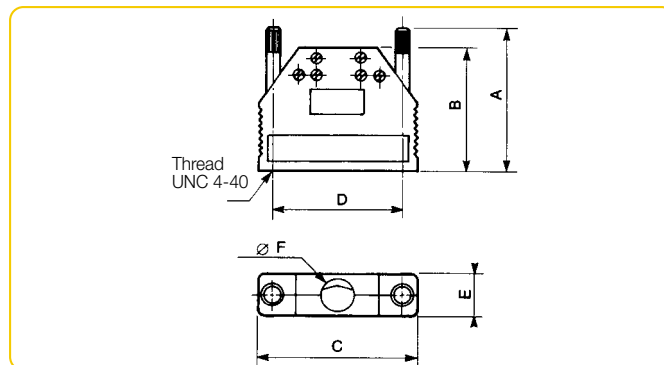
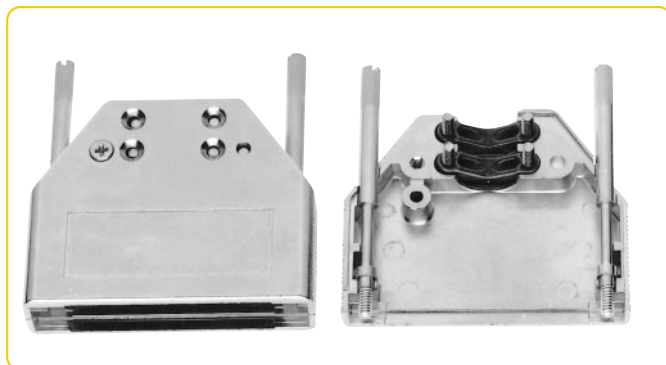
Shell size	Part number	A	B	Cable diameter
E (9)	8655PHRA0901LF	31.0	36.2	4 to 13 mm
A (15)	8655PHRA1501LF	39.5	40.2	
B (25)	8655PHRA2501LF	53.0	40.2	
C (37)	8655PHRA3701LF	69.5	40.2	



- Material : polycarbonat UL 94V0
- Cable strain relief : steel fibre reinforced polycarbonat UL 94V0
- Colour : black
- Temperature range : -40°C +120°C
- Packaging : bulk, in box of 100 pieces
- Locking screws : UNC 4-40 thread

All dimensions in mm

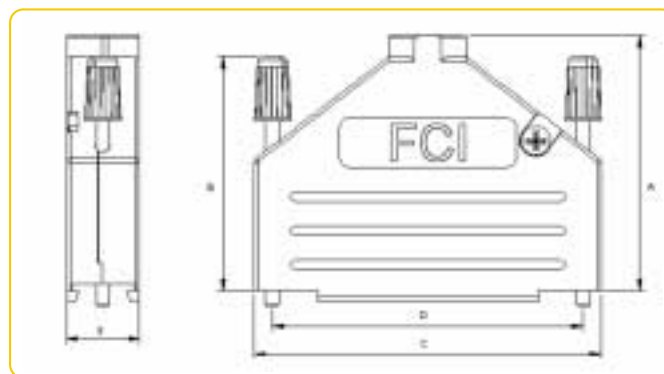
3 • Straight exit metal hood with two metal clamps for cable EMI / RFI



Shell size	Part numbers in bulk	Packaging	Part numbers (in individual set)	Packaging	A ± 0.1	B ± 0.3	C ± 0.1	D ± 0.1	E ± 0.2	F max.
E	8655MH0901LF	80	8655MH0911LF	50	55.00	45.00	34.40	24.99	14.70	7.85
A	8655MH1501LF	80	8655MH1511LF	50	55.00	45.00	42.70	33.32	14.70	11.80
B	8655MH2501LF	60	8655MH2511LF	50	55.00	45.00	56.70	47.04	14.70	11.80
C	8655MH3701LF	40	8655MH3711LF	50	55.00	45.00	72.95	63.50	14.70	11.80
D	8655MH5001LF	40	8655MH5011LF	50	55.00	45.00	70.60	61.11	17.30	14.10

Material : zamack
Plating : nickel
Environment : frequencies at 100 Mz > 40 dB
Corrosion resistance : 50 hours exposure to salt spray

4 • Straight exit metal hood for cable EMI / RFI - Economical series



Shell size	Part numbers	A	B	C	D	E
E	8655MH0901BLF	38.3	47.3	31	24.99	14.6
A	8655MH1501BLF	40.5	47.3	39.5	33.32	14.6
B	8655MH2501BLF	47.3	47.3	53.2	47.04	14.6
C	8655MH3701BLF	52.2	47.3	70.9	63.5	15

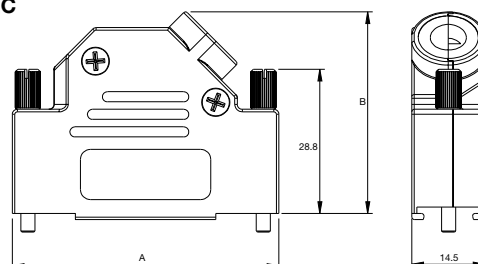
Material : zamack, nickel plated
Cable strain relief : steel fiber reinforced polycarbonat UL 94V0 for EMI/RFI screening
Temperature range : -40°C +120°C
Environment : >40 dB between 30 MHz and 1 GHz
Packaging : bulk, in box of 100 pieces
Locking screws : UNC 4-40 thread

5 • Angle exit metal hood for cable EMI / RFI - Economical series

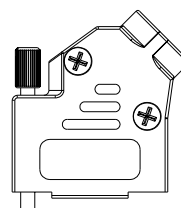


Shell size	Part number	A	B	Cable diameter
E (9)	8655MHRA0901LF	31.0	36.2	4 to 13 mm
A (15)	8655MHRA1501LF	39.5	40.2	
B (25)	8655MHRA2501LF	53.2	40.2	
C (37)	8655MHRA3701LF	69.7	40.2	
D (50)	8655MHRA5001LF	67.2	43.7	10 to 16 mm

Size A,B,C



Size E



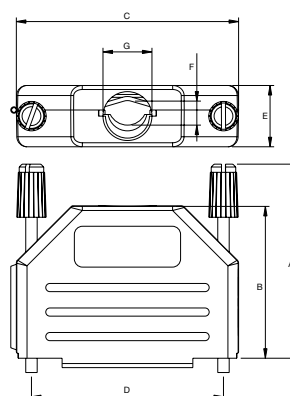
Material : zamack, nickel plated
Cable strain relief : steel fibre reinforced polycarbonat UL 94V0 for EMI/RFI screening
Temperature range : -40°C +120°C
Environment : >40 dB between 30 MHz and 1 GHz
Packaging : bulk, in box of 100 pieces
Locking screws : UNC 4-40 thread

6 • “Snap together” plastic hood

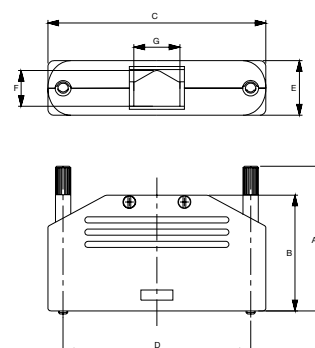


Shell size	Part number	A	B	C	D	E	with clamp			without clamp	
							F		G	F	G
							min	max			
E(9)	86303637BLF	47.3	31.3	32.4	24.99	15	1	5.5	8.5	7	8.5
A(15)	86303638BLF	47.3	30.8	40.7	33.32	15	4	7	12	11	12
B(25)	86303639BLF	47.3	37.3	54.4	47.04	15	4	7	12	11	12
C(37)	86303640BLF	47.3	36	70.9	63.5	15	4	7	12	11	12
D(50)	86303641BLF	47.3	37.8	71.2	61.11	15	4.4	11.5	15.5	14	18

Size E, A, B, C

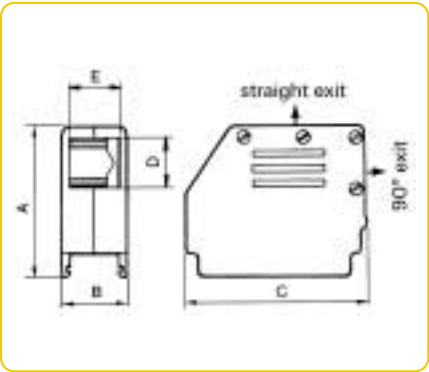


Size D



Material (size E,A,B,C) : nylon (UL 94V2)
Material (size D) : thermoplastic (UL 94V2)
Colour : black
Temperature range : -40°C +95°C
Packaging : individual sets
Locking screws : UNC 4-40 thread

7 • Universal plastic hood with metal clamp for strain relief



Shell size	Part numbers black hood	Part numbers metalised hood	A	B	C	with clamp			without clamp	
						D	E		D	E
							min.	max.		
E	863093C09ALF	863093C09MLF	29.75	15.50	24.25	6	1.90	10.10	8	11.50
A	863093C15ALF	863093C15MLF	29.75	15.50	32.50	6	1.90	10.10	8	11.50
B	863093C25ALF	863093C25MLF	46.50	15.50	46.00	13.50	2.60	10.10	16	11.50
C	863093C37ALF	863093C37MLF	46.50	15.50	60.50	13.50	2.60	10.10	16	11.50
D	863093C50ALF	863093C50MLF	48.50	18.00	56.50	15.50	4.40	12.60	18	14.00

Material (black hood):
self extinguishing UL 94V0 thermoplastic

Material (metalised):
thermoplastic

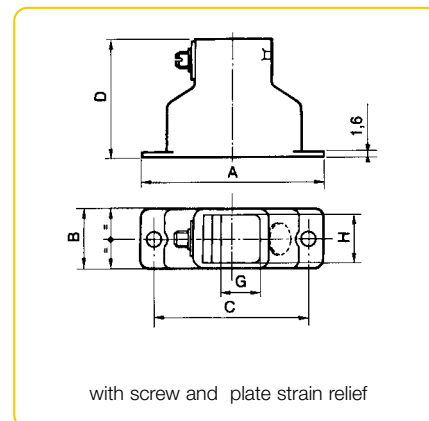
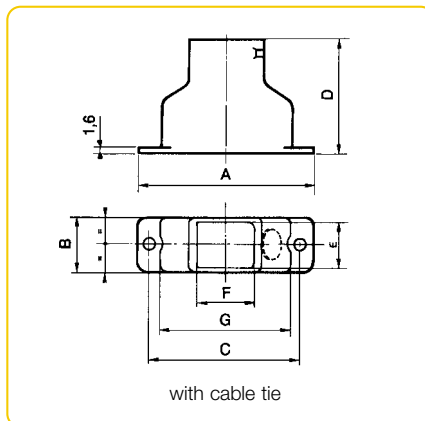
Temperature range:
-55°C +125°C

Packaging:
individual sets

All dimensions in mm

MONOBLOC PLASTIC HOODS FOR POTTING

8 • Straight exit



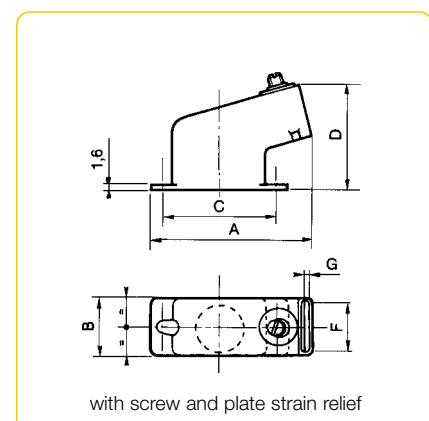
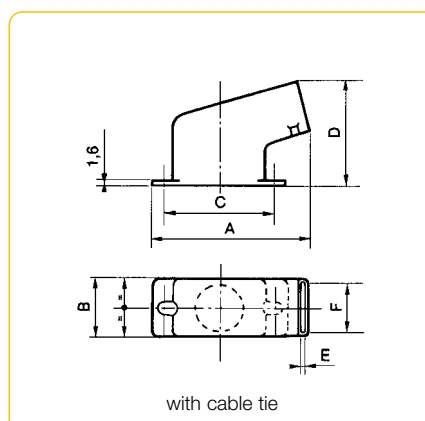
Shell size	Part numbers		A	B	C	D	E	F	G min.	G Max.	H
	Hood with cable tie	Hood with screw and plate									
E	863086BLF	86303920ALF	30.60	12.50	25.00	29.00	9.90	9.90	2.70	7.10	10.50
A	863021BLF	86303921ALF	38.90	12.50	33.32	29.00	9.90	11.90	4.50	9.10	10.50
B	863022BLF	86303922ALF	52.80	12.50	47.05	35.00	9.90	16.40	9.20	13.60	10.50
C	863023BLF	86303923ALF	69.10	12.50	63.50	41.00	9.90	23.40	9.20	20.60	10.50
D	863024BLF	86303924ALF	66.70	15.30	61.10	41.00	12.70	23.40	9.20	20.60	13.30

Material: self extinguishing
UL rated 94 V0 thermoplastic

Temperature range:
-55°C to +105°C

Colour: black

9 • Right angle exit



Shell size	Part numbers		A	B	C	D	E	F	G min.	G Max.
	Hood with cable tie	Hood with screw and plate								
E	86305002BLF	86303925ALF	30.60	12.50	25.00	26.20	10.50	10.50	2.70	7.10
A	863026BLF	86303926ALF	38.90	12.50	33.32	28.60	12.50	10.50	4.50	9.10
B	863027BLF	86303927ALF	52.80	12.50	47.05	36.40	17.00	10.50	9.20	13.60
C	863028BLF	86303928ALF	69.10	12.50	63.50	42.60	24.00	10.50	9.20	20.60
D	863029BLF	86303929ALF	66.70	15.30	61.10	41.60	24.00	13.30	9.20	20.60

Material: self extinguishing
UL rated 94 V0 thermoplastic

Temperature range:
-55°C to +105°C

Colour: black

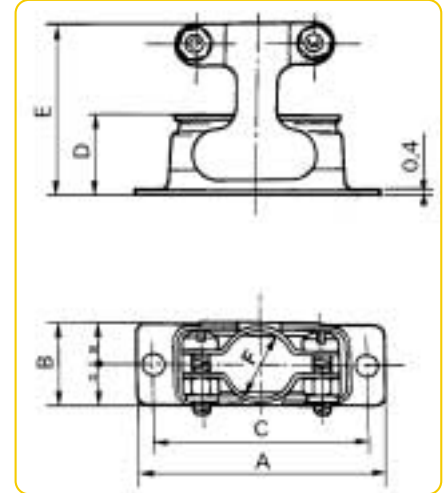
HOOD WITH CABLE CLAMPS

10 • Metal hood with circular clamp and straight exit

Material: Steel

Plating: Yellow chromate cadmium

Corrosion resistance:
50 hours exposure to salt spray



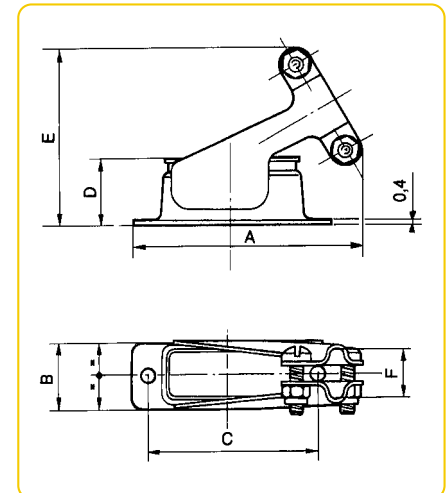
Shell size	Part numbers	A	B	C	D	E	F
E	863010	30.55	12.70	24.99	12.30	26.40	8.00
A	863011	38.89	12.70	33.32	12.30	26.40	10.00
B	863012	52.78	12.70	47.04	12.30	27.20	15.00
C	863013	69.06	12.70	63.50	12.30	27.20	18.00
D	863014	66.67	15.40	61.17	12.30	27.20	20.60

11 • Metal hood with circular clamp and 30° exit

Material: Steel

Plating: Yellow chromate cadmium

Corrosion resistance:
50 hours exposure to salt spray



Shell size	Part numbers	A	B	C	D	E	F
E	863016	39.00	12.70	24.99	12.30	30.60	8.00
A	863017	43.10	12.70	32.32	12.30	32.50	10.00
B	863018	55.40	12.70	47.04	12.30	34.50	15.05
C	863019	75.30	12.70	63.50	12.30	37.50	18.00
D	863020	72.80	15.40	61.11	12.30	37.60	20.60

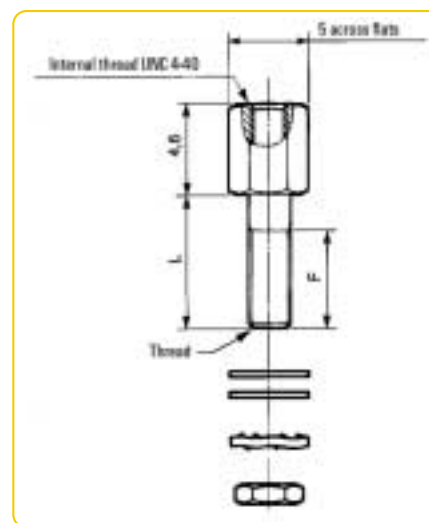
*PCB and
Cable applications*

12 • Female screw locks

Part numbers	Thread	L Max.	F	Material
863001TLF	M3	8.30	6.90	Brass
86552153TLF	M3	8.30	6.90	Steel
863001017TLF	M3	6.30	5.00	Brass
863001061TLF	M3	13.00	12.00	Brass
863001060TLF	UNC 4-40	8.30	6.90	Brass

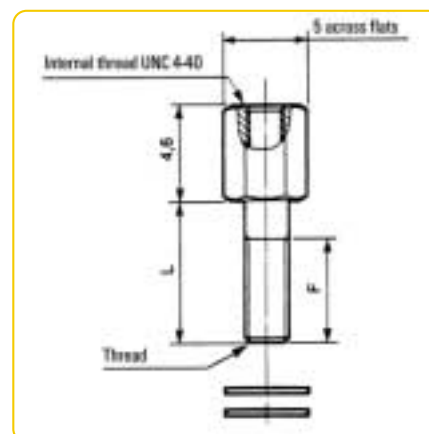
Plating: bright tin

Corrosion resistance: 50 hours exposure to salt spray



13 • Specific female screw locks for Delta D series

Part numbers	Thread	L Max.	F	Material
863001018TLF	M3	4.5	3.7	Steel
863001019TLF	UNC 4.40	4.5	3.7	Steel



TORQUE FORCE

Material	Torque Max. (Nm)
Brass	0.5
Steel	0.7

14 • Male screw locks

Shell size	Connector type	Part numbers		
E	Male	863005ATLF	863004ATLF	863009ATLF
	Female			
A	Male			
	Female			
B	Male	863008ATLF	863002ATLF	863025ATLF
	Female			
C	Male	863005ATLF	863003ATLF	
	Female	863005ATLF		
D	Male	863015ATLF	863002ATLF	863025ATLF
	Female	863003ATLF		

Material: steel

Plating: bright tin

Corrosion resistance:
50 hours exposure to salt spray

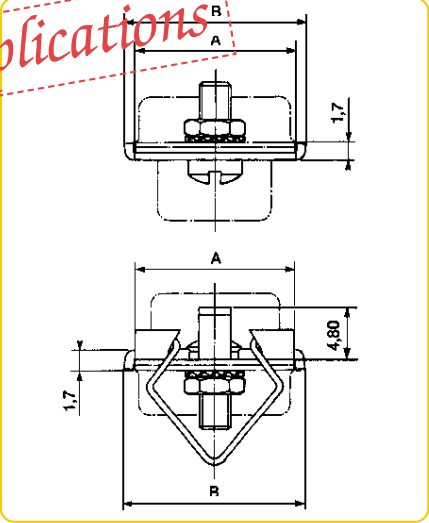
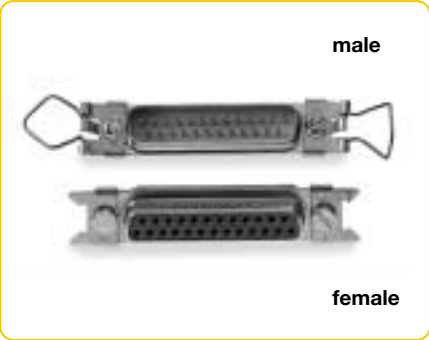
To obtain military plating (yellow chromate cadmium) exclude «TLF» in the part number (ex: 863005A)

Thread: UNC 4-40



PCB and
Cable applications

15 • Lever locks



Shell size	A	B	M3 thread		UNC 4-40 thread	
			Female	Male	Female	Male
E, A, B, C	12.50	14.30	86303425LF	86552096LF	86303425060LF	86552098LF
D	15.30	17.10	86303426LF	86552097LF	86303426060LF	86552099LF

Material: steel
Plating: passivated

16 • Specific lever locks for straight Delta D series with harpoons

Shell size	M3 thread		UNC 4-40 thread	
	Female	Male	Female	Male
E, A, B, C	86303425LF	865520961ALF	86303425060LF	865520981ALF
D	86303426LF	865520971ALF	86303426060LF	865520991ALF

*PCB and
Cable applications*

17 • Metal caps

Shell size	For use with connectors	Part numbers	Packaging
E	Male	86553148TLF	30
	Female	86553113TLF	30
		86553138TLF*	30
A	Male	86553149TLF	25
	Female	86553114TLF	25
		86553139TLF*	25
B	Male	86553150TLF	20
	Female	86553115TLF	20
		86553140TLF*	20
C	Male	86553151TLF	15
	Female	86553116TLF	15
		86553141TLF*	15
D	Male	86553152TLF	10
	Female	86553117TLF	10
		86553142TLF*	10



Material: steel

Plating: bright tin

To obtain military plating (yellow chromate cadmium) exclude "TLF" in part number (ex : 86553148A).

* Sealed caps IP 65

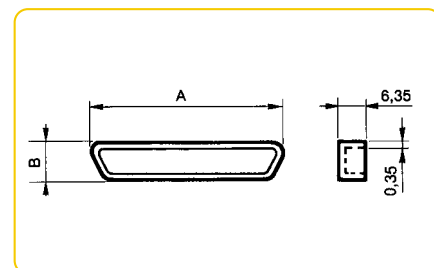
18 • Attaching cord for metal caps

86553156LF (length = 100 mm)

Packaging: individual



19 • Plastic dust cap



Shell size	For male connector	A	B	For female connector	A	B
E	70518CLF	19.17	10.30	70523CLF	17.77	9.00
A	70519CLF	27.50	10.30	70524CLF	26.10	9.00
B	70520CLF	41.67	10.70	70525CLF	39.82	9.00
C	70521CLF	58.13	10.70	70526CLF	56.28	9.00
D	70522CLF	55.49	13.40	70527CLF	53.89	11.85

Material: thermoplastic

Color: red

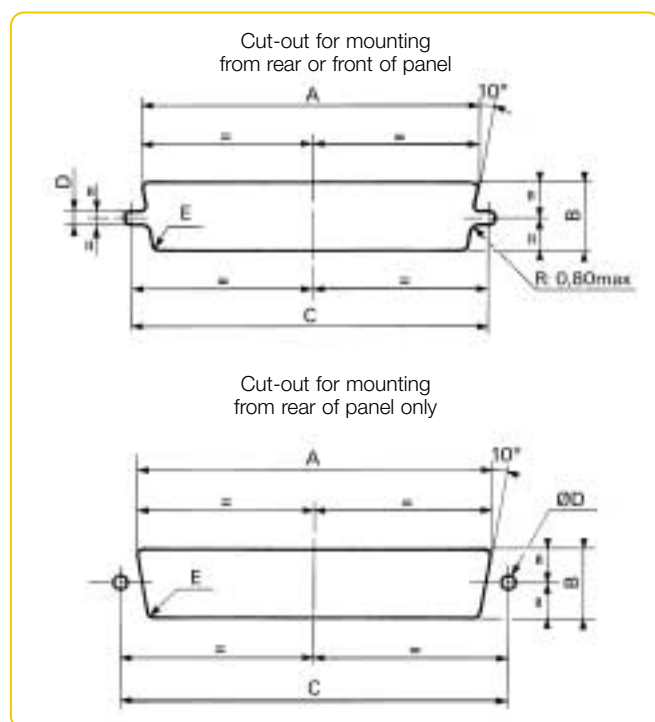
However, both plastic and metal brackets can be ordered separately, using the part numbers listed below. These brackets are supplied with a screw and a nut. Order two assemblies for each connector.

Shell size	Part numbers	A	B	C	D
E, A, B, C	86303714LF	13.20	7.20	10.74	13.90
D	86303715LF	16.00	8.60	12.09	16.50

Shell size	Part numbers	A	B	C	D	E
E, A, B, C	86303612LF	13.20	7.40	13.60	10.50	0.8
D	86303613LF	16.15	8.80	16.50	11.60	1.0

Shell size	Part numbers	A	B	C	D
E, A, B, C	86552008	10.55	7.20	10.74	13.90
D	86552009	12.55	8.60	12.09	16.50

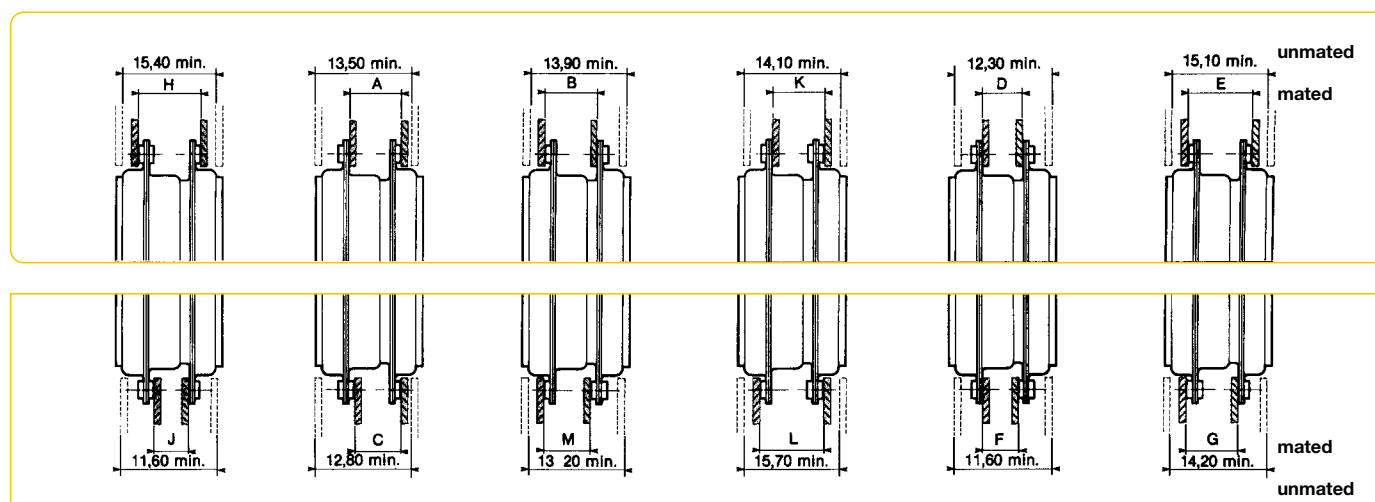
PANEL CUT-OUT



Shell size	Type of mounting	Mounting position	A ^{+0.2}	B ^{+0.2}	C ^{+0.2}	D ^{+0.01}	E ^{+0.1}
E	rigid	front	22.20	13.00	25.00	3.00	2.10
		rear	20.50	11.40	25.00	3.00	3.30
	float	front	23.00	13.80	25.00	2.20	2.10
		rear	21.30	12.20	25.00	2.20	3.30
A	rigid	front	30.50	13.00	33.30	3.00	2.10
		rear	28.80	11.40	33.30	3.00	3.30
	float	front	31.30	13.80	33.30	2.20	2.10
		rear	29.60	12.20	33.30	2.20	3.30
B	rigid	front	44.30	13.00	47.00	3.00	2.10
		rear	42.50	11.40	47.00	3.00	3.30
	float	front	45.10	13.80	47.00	2.20	2.10
		rear	43.30	12.20	47.00	2.20	3.30
C	rigid	front	60.70	13.00	63.50	3.00	2.10
		rear	59.10	11.40	63.50	3.00	3.30
	float	front	61.50	13.80	63.50	2.20	2.10
		rear	59.80	12.20	63.50	2.20	3.30
D	rigid	front	58.30	15.80	61.50	3.00	2.10
		rear	56.30	14.10	61.50	3.00	3.30
	float	front	59.20	16.60	61.50	2.20	2.10
		rear	57.20	14.90	61.50	2.20	3.30

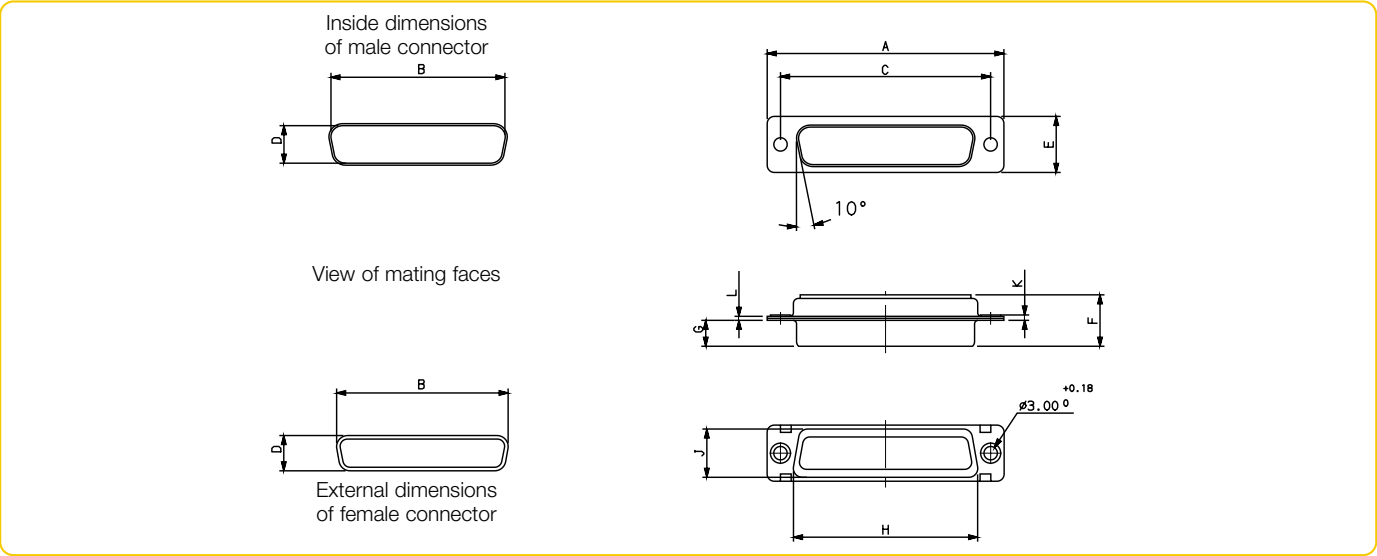
PANEL MOUNTING

It is recommended that only **one of a pair** of connectors should be float mounted. Rigid mounted connectors require 2 screws Ø 3mm, float mounting connectors require 2 screws Ø 2 mm.



Shell size	A ^{+0.6} ₋₀	B ^{+0.6} ₋₀	C ^{+0.6} ₋₀	D ^{+0.6} ₋₀	E ^{+0.6} ₋₀	F ^{+0.6} ₋₀	G ^{+0.6} ₋₀	H ^{+0.6} ₋₀	J ^{+0.6} ₋₀	K ^{+0.6} ₋₀	L ^{+0.6} ₋₀	M ^{+0.6} ₋₀
E	7.65	7.65	6.85	6.45	8.85	5.65	8.25	9.45	5.65	8.25	9.45	6.85
A	7.65	7.65	6.85	6.45	8.85	5.65	8.25	9.45	5.65	8.25	9.45	6.85
B	7.55	7.55	6.75	6.35	8.85	5.55	8.15	9.35	5.55	8.15	9.35	6.75
C	7.55	7.95	6.75	6.35	9.15	5.55	8.35	9.55	5.55	8.15	9.75	7.15
D	7.55	7.95	6.75	6.35	9.15	5.55	8.35	9.55	5.55	8.15	9.75	7.15

SHELL DIMENSIONS

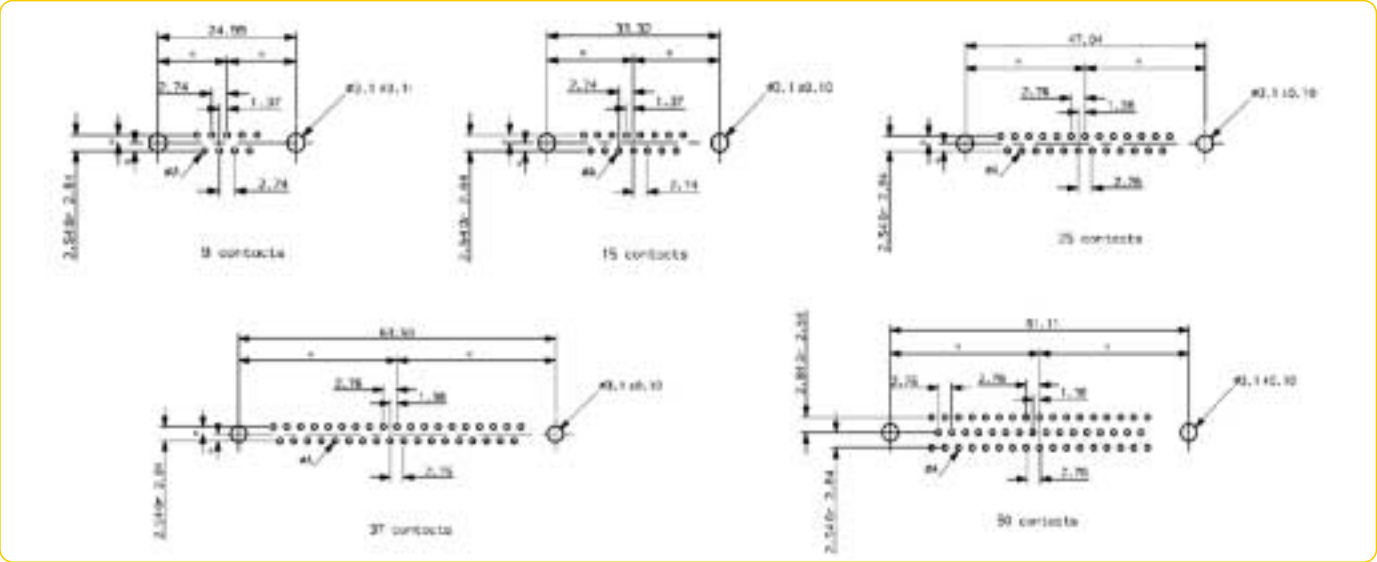


		A ± 0.38	B ± 0.13	C ± 0.13	D ± 0.13	E ± 0.38	F Max.	G $^{+0.25}_0$	H ± 0.25	J ± 0.25	K Max.	L ± 0.12
E	P	30.81	16.91	24.99	8.35	12.55	10.99	5.85	19.27	10.71	1.50	0.90
	S	30.81	16.33	24.99	7.89	12.55	11.21	6.05	19.27	10.71	1.50	0.90
A	P	39.14	25.24	33.32	8.35	12.55	10.99	5.85	27.50	10.71	1.50	0.90
	S	39.14	24.66	33.32	7.89	12.55	11.21	6.05	27.50	10.71	1.50	0.90
B	P	53.03	38.96	47.04	8.35	12.55	11.07	5.75	41.27	10.71	1.50	0.90
	S	53.03	38.37	47.04	7.89	12.55	11.21	6.05	41.27	10.71	1.50	0.90
C	P	69.32	55.42	63.50	8.35	12.55	11.09	5.75	57.70	10.71	1.50	1.00
	S	69.32	54.83	63.50	7.89	12.55	11.21	6.05	57.70	10.71	1.50	0.90
D	P	66.93	52.80	61.11	11.20	15.37	11.09	5.75	55.32	13.56	1.70	1.00
	S	66.93	52.42	61.11	10.74	15.37	11.21	6.05	55.32	13.56	1.50	0.90

PC CARD DRILLING DIMENSIONS (mm)

(for solder versions)

Note: Ø A= 0.8 min. for D, DP
Note: Ø A= 0.9 min. for Delta D, Compact D, HE501, HE507, HE508 and DP US footprint



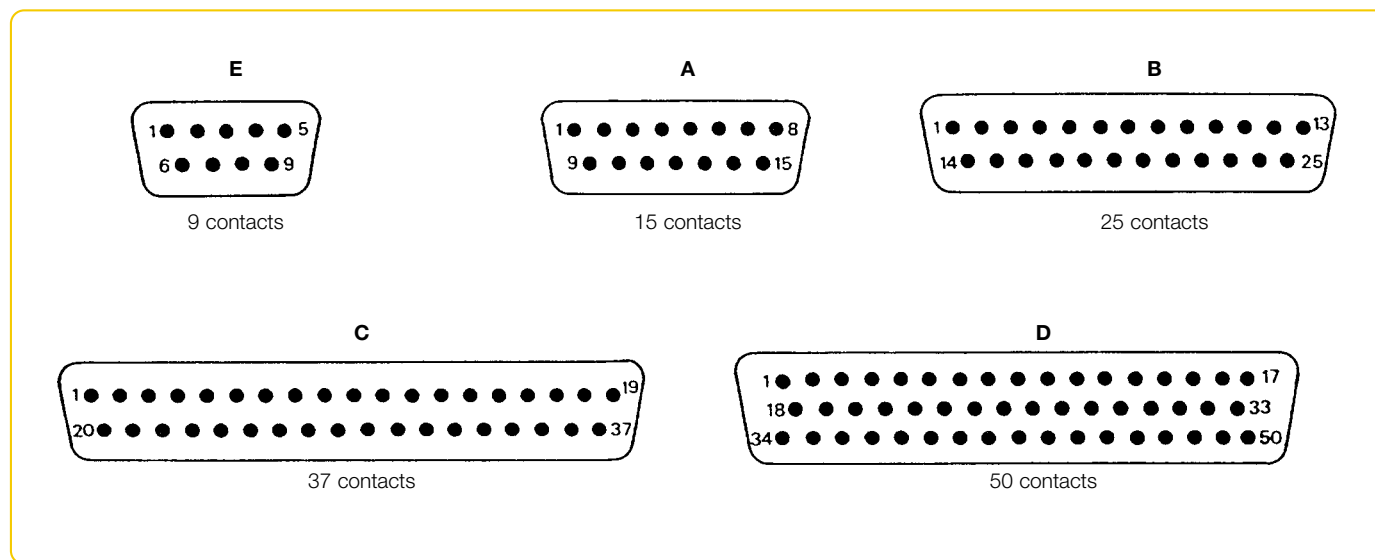
Note: pitch between row= 2.84 for straight spills

LAYOUTS

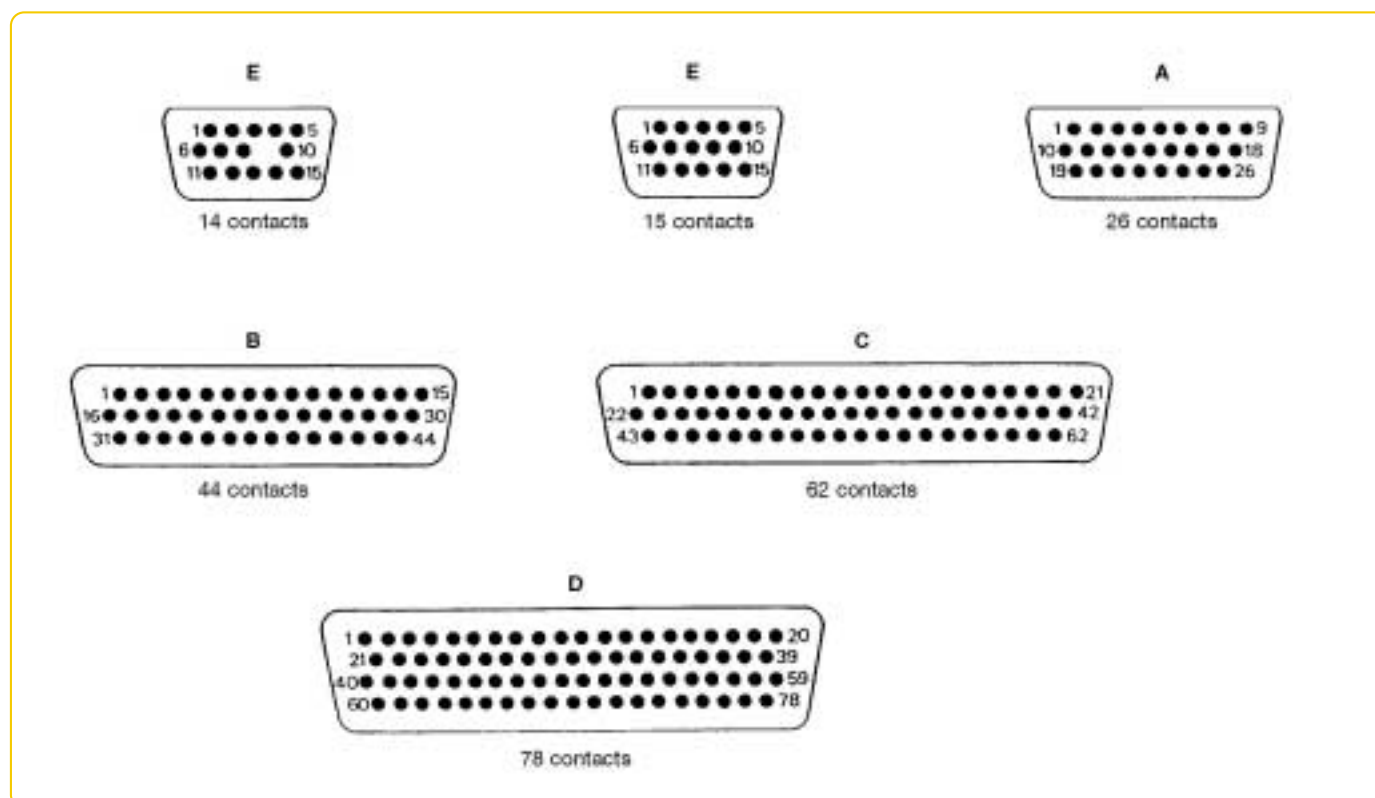
Male insulator front view

Contacts are individually numbered on both sides of the insulator.

Standard density connectors



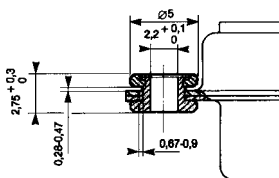
High density connectors (Compact D)



MOUNTING OPTIONS for D, DP, DW, DM, DMW, 8656, 8657 series (dimensions in mm)

Options 1

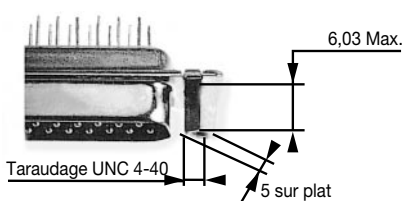
F Float mounting (only military series)



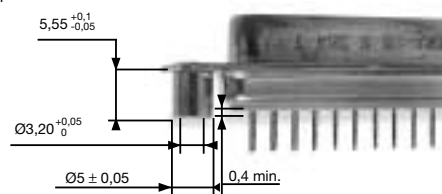
L Threaded insert M3
O Threaded insert UNC 4-40



V Female screw lock UNC 4-40



S Spacers riveted to shell

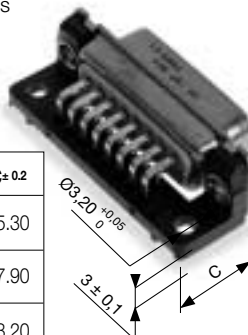


Options 2

C Without bracket



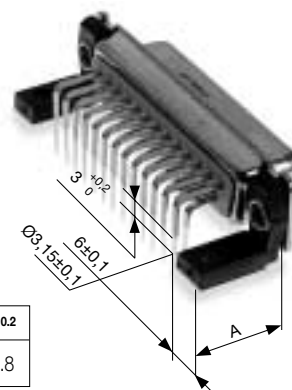
Blank For **DM** and **DMW** series connectors are delivered with monobloc plastic bracket
P For **DW** series



Termination		C ± 0.2
5	9 to 37 contacts	15.30
	50 contacts	17.90
9 (US standard)	9 to 37 contacts	13.20
	50 contacts	15.70

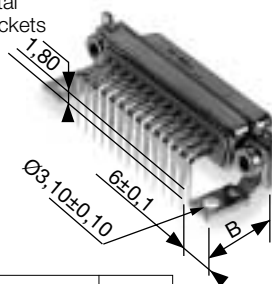
Bracket thickness = 3 ± 0.1

Blank For **DP** series connectors are delivered with 2 separate plastic brackets (except for layout 50 with monobloc bracket)



Layout	A ± 0.2
9 to 37 contacts	14.8

M Metal brackets



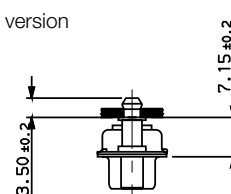
Termination		B ± 0.2
5, 8, 14, 18	9 to 37 contacts	14.80
	50 contacts	17.40
9 (US standard)	9 to 37 contacts	13.19
	50 contacts	15.99

U Monobloc plastic bracket with metal plate for electrical continuity (dim. same as above)

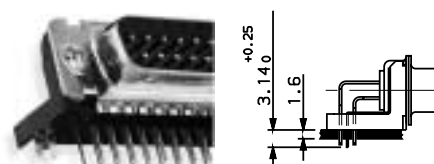


G Harpoon with electrical continuity
For **DM** and **DP** series available in angled version only
For **PCB** thickness of 1.6
Metallized hole Ø 3.1 ± 0.12

straight version

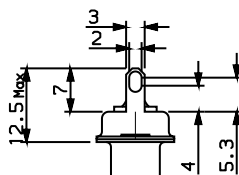


angled version



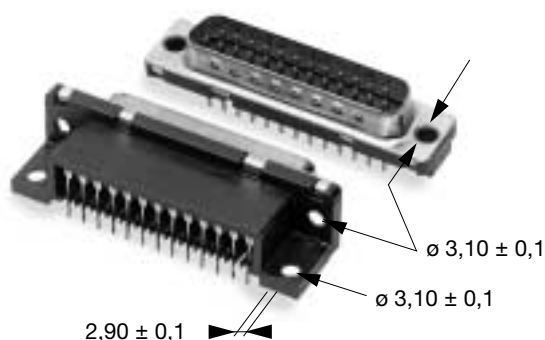
except 50 way

H Shielding fingers for solder D series (not available on 50 way)



MOUNTING OPTIONS for DELTA D and COMPACT D series

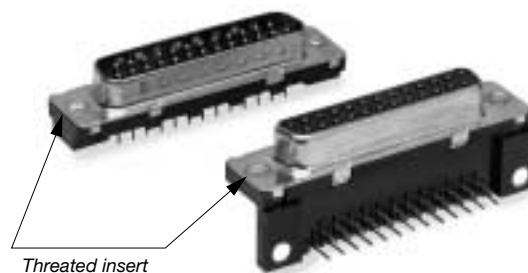
PA Standard hole without hardware



PL With threaded insert M3

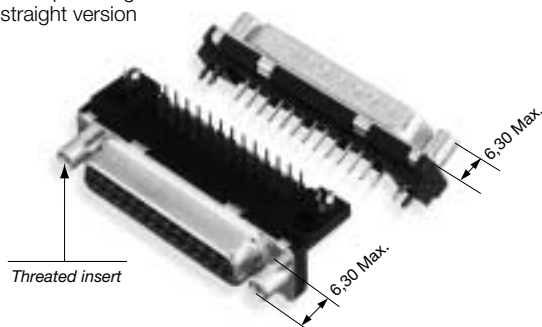
PX With threaded insert UNC 4-40

PV With female screw UNC 4-40 (not represented)



GV Harpoons + Female screw UNC 4-40 + Electrical continuity through metal strip for angled version and monobloc hardware for straight version

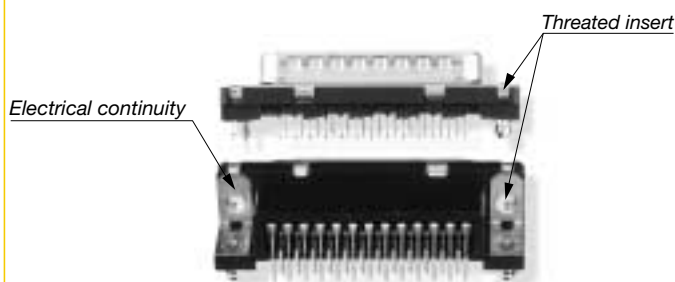
GI Harpoons + Female screw M3 + Electrical continuity through metal strip for angled version and monobloc hardware for straight version



GL Thread M3

GX Thread UNC 4-40

Harpoons + Insert + Electrical continuity through metal strip for angled version and monobloc hardware for straight version



PCB thickness: 1,6 mm/Metallized toles Ø 3,1^{±0,1}

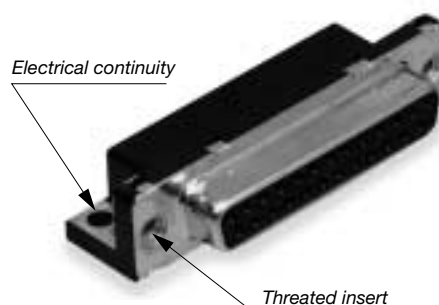
UV Female screw UNC 4-40 + Electrical continuity through metal strip



UL Insert M3 + Electrical continuity through metal strip

UX Insert UNC 4-40 + Electrical continuity through metal strip

UA Electrical continuity through metal strip



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D09P90C6GL00LF	D09P90C6GV00LF	D09P90C6GX00LF	D09P90C6PA00LF	D09P90C6PV00LF
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D09S82C4GL00LF	D09S82C4GV00LF	D09S82C4GX00LF	D09S82C6GL00LF	D09S82C6GV00LF
D09S82C6GX00LF	D09S90C4GL00LF	D09S90C4PA00LF	D09S90C6GL00LF	D09S90C6GV00LF
D09S90C6GX00LF	D09S90C6PV00LF	D09S90C6PX00LF	D09S91C4GI00LF	D09S91C4GL00LF
D09S91C4GV00LF	D09S91C4PA00LF	D09S91C4PL00LF	D09S91C4PV00LF	D09S91C4PX00LF
D09S91C6GL00LF	D09S91C6GV00LF	D09S91C6GX00LF	D09S91C6PA00LF	D09S91C6PL00LF
D09S91C6PV00LF	D09S91C8PV00LF	D15P13A6PV00LF	D15P13B6UA00LF	D15P13B6UX00LF