

D-SUBMINIATURE SIGNAL PCB CONNECTORS DELTA D

Amphenol's D-Subminiature connectors are part of an industry standard for applications requiring robust and reliable connectors. These proven D-Subminiature connectors are one of the most popular Input/Output interconnects, addressing a wide variety of applications in Telecommunications, Data, Consumer Industrial, Military, Instrumentation and Medical. Since many years Amphenol has been offering a wide range of D-Subminiature connectors to meet various design requirements including those in harsh environment.

The standard density D-Subminiature series are widely used for numerous applications in many market segments. Amphenol offers Delta-D (single shell design) and Frugal-D (two shell design) under this category. Standard density D-subminiature connectors available in solder bucket, straight and angled version. They come with a large number of mounting options.



FEATURES

- A Basic I/O connector comes with five shell size and housing design
- Has a D-shaped shell design
- Meets DIN 41652 and MIL-C-24308 dimensional standards
- Available in Straight, Angle, Wire Wrap, Solder Bucket, Crimp terminations
- Delta-D design (1 shell + 1 housing) with stamped & formed contacts
- Various PCB and Panel mounting accessory options available
- Hoods available in plastic, metalized and metallic form with locking screws
- Lead-free and RoHS compliant

BENEFITS

- Most popular Rugged and sturdy I/O connector
- Supports the need for polarisation
- Interchangeable and intermateable with other makes
- Support both PCB & Cable mounting requirements
- Price competitive
- Wide variety of choices for secure connection
- Supports cable connection; Prevents risks of pulling up and accidental un-mating
- Meets environmental, health and safety requirements

► D-SUBMINIATURE SIGNAL PCB CONNECTORS DELTA D

TARGET MARKETS/APPLICATIONS



Asymmetric Digital Subscriber Line
(ADSL)
Base Station
Switching
Transmission



Set-top Box



Desktop and Laptop
Storage System
Router and Server



Automotive Diagnostics
Control Drives
Energy Meter
Gaming Machine
Test Equipment
Office Automation
POS & Handheld terminal
Power Supplies
Parking Meter
Printer and Copier
Renewable Energy
Robotics
Surveillance Camera
Avionics



Medical Instrument

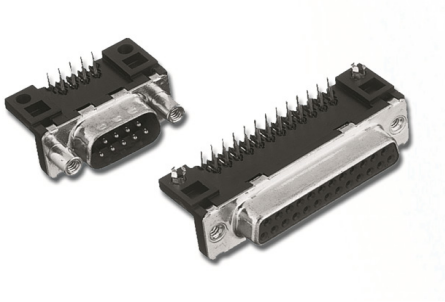


Military Equipment

RIGHT ANGLE SOLDER TO BOARD

UL RECOGNISED FILE E66906

- In compliance with DIN 41652



ORDERING INFORMATION

D

25

P

13A

4

GV

00LF

Series:

Number of Contacts

09

15

25

37

Contacts

Pin

P

Socket

S

RoHS Status

Standard, RoHS compatible

00LF

Mouting Options

Standard hole

PA

Threaded insert M3

PL

Threaded insert UNC 4-40

PX

Female screw UNC 4-40

PV

Harpoons + insert M3 + elec. continuity

GL

Harpoons + insert UNC 4-40 + elec. continuity

GX

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

GV

Harpoons + female screw M3 + elec. continuity

GI

Elec. continuity

UA

Insert M3 + elec. continuity

UL

Insert UNC 4-40 + elec. continuity

UX

Female screw UNC 4-40 + elec. continuity

UV

Durability

Standard class (≥200 mating/unmating)

4

High performance class (≥500 mating/unmating)

6

Termination

Type

Footprint/ Pitch

Length of Termination

PCB Thickness

Code

Right angled – Europe standard

10.4/ 2.54mm

2.90

1.6

13A

Right angled – Europe standard

10.4/ 2.54mm

3.70

2.4 and 1.6

13B

Right angled – Europe standard

10.4/ 2.84mm

2.90

1.6

23A

Right angled – Europe standard

10.4/ 2.84mm

3.70

2.4 and 1.6

23B

Right angled – US standard

8.08/ 2.84mm

3.18

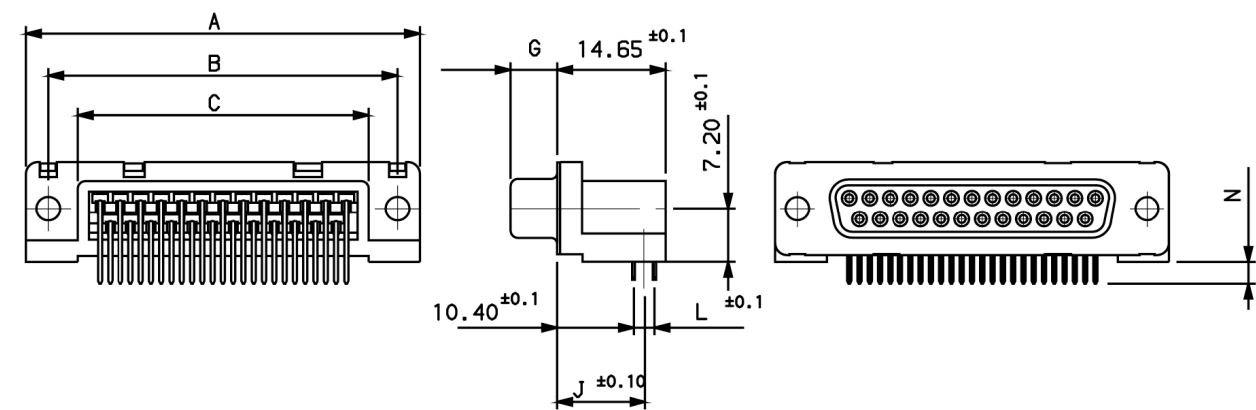
1.6

33E

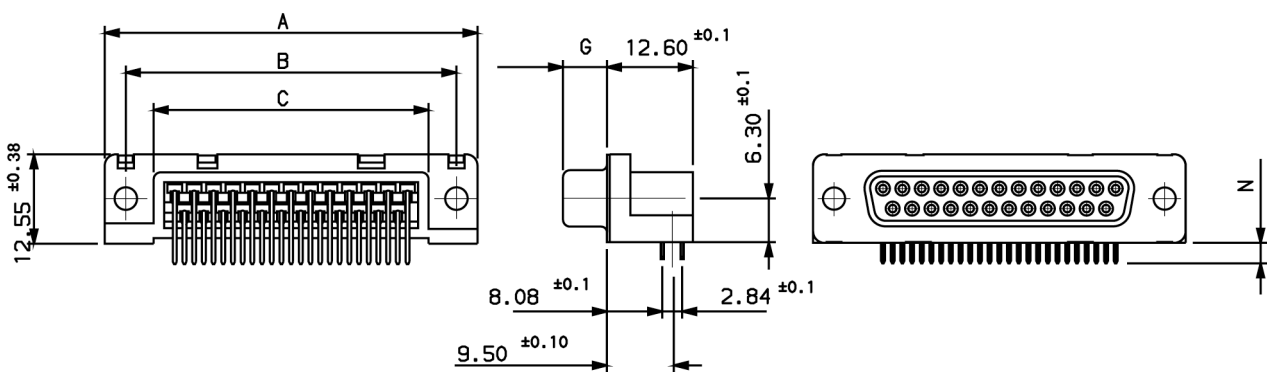
D-SUBMINIATURE SIGNAL PCB CONNECTORS DELTA D

SPECIFIC DIMENSIONS

EUROPE STANDARD



US STANDARD



		A $\pm 0,38$	B $\pm 0,12$	C $\pm 0,10$	G $-0/+0,25$	J $\pm 0,10$		L $\pm 0,10$		N $\pm 0,30$		
						Termination		Termination		Termination Length		
						13	23	13	23	13A 23A	13B 23B	33E
09	P	30.81	24.99	16.96	5.90 $-0/+0,15$	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 $-0/+0,15$	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

Dimensions in mm

RIGHT ANGLE PRESS FIT

UL® **UL RECOGNISED FILE E66906**



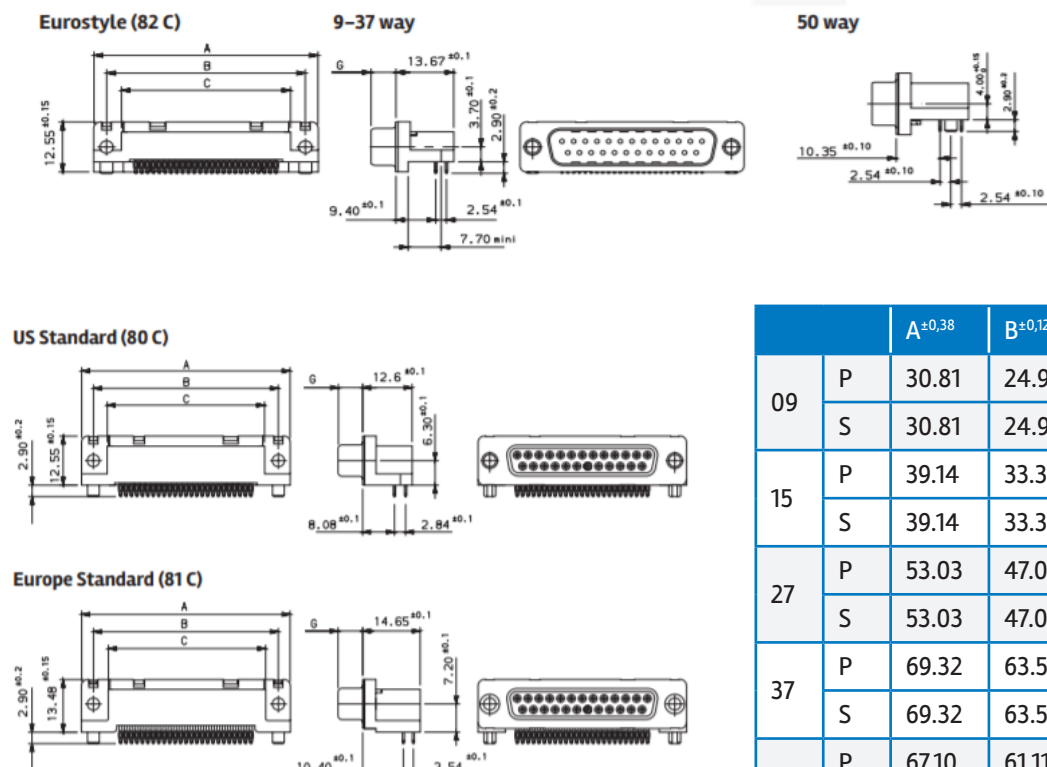
ORDERING INFORMATION

D	25	P	82C	4	PA	00LF
Series:						
Number of Contacts						
09						
15						
25						
37						
50*						
Contacts						
Pin	P					
Socket	S					
Termination						
Type	Footprint/Pitch	Code				
Eurostyle	9.4/2.54 – 9 to 37 way 10.3/2.54 – 50 way	82C				
US standard	8.08/2.84 – 9 to 37 way	80C				
Europe standard*	10.4/2.54 – 9 to 37 way	81C				
Durability						
Standard class (≥200 mating/unmating)		4				
High performance class (≥500 mating/unmating)		6				
RoHS Status						
Standard, RoHS compatible		00LF				
Mouting Options						
Standard hole		PA				
Threaded insert M3		PL				
Threaded insert UNC 4-40		PX				
Female screw UNC 4-40		PV				
Harpoons + insert M3		GL				
Harpoons + insert UNC 4-40		GX				
Harpoons + female screw UNC 4-40		GV				

*Only for Eurostyle version Preferred Option

► D-SUBMINIATURE SIGNAL PCB CONNECTORS DELTA D

SPECIFIC DIMENSIONS



		A ± 0.38	B ± 0.12	C ± 0.10	G $-0/+0.25$
09	P	30.81	24.99	16.96	5.90 $-0/+0.15$
	S	30.81	24.99	16.96	6.05
15	P	39.14	33.32	25.18	5.90 $-0/+0.15$
	S	39.14	33.32	25.18	6.05
27	P	53.03	47.04	39.12	5.70
	S	53.03	47.04	39.12	6.05
37	P	69.32	63.50	55.68	5.70
	S	69.32	63.50	55.68	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 Preferred Option

SPECIFIC DIMENSIONS

- Application by pressure on insulator
- D-Subminiature insertion kit: 8846 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)		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	25µm min. (recommended 50µ max.)	25µm min. (recommended 50µ max.)
	non RoHS	Tin-lead plating	15µm max. (recommended 5µ min.)	15µm max. (recommended 5µ min.)
		Finish hole (after reflow)	Ø 0.94 – 1.09	Ø 3.02 – 3.20
	RoHS	Tin plating	0.8 to 1.2µm	0.8 to 1.2µm
		Finish hole (after reflow)	Ø 1.00 – 1.09	Ø 3.08 – 3.20

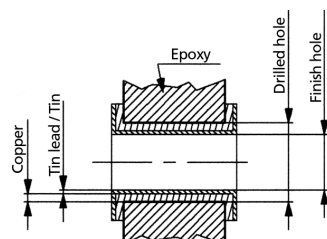
Note 1: These dimensions must be respected to ensure press-fit pin performance

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



► D-SUBMINIATURE SIGNAL PCB CONNECTORS DELTA D

RIGHT ANGLE PIN-IN-PASTE

In compliance with DIN 41652:

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

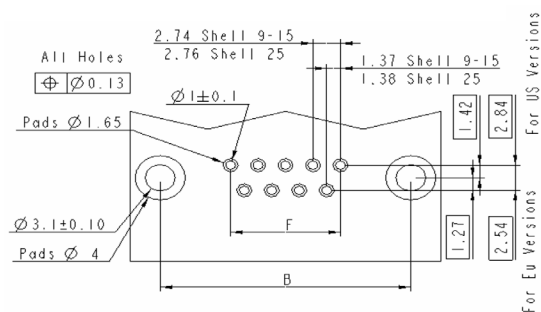


ORDERING INFORMATION

D	09	P	13A	6	RV	12	00LF
Series:							LF: RoHS compatible EU directive 2002/95/EC
Number of Contacts							
09							
15							
25							
Contacts							
Pin		P					
Socket		S					
Termination Type							
Type	Footprint/ Pitch	Termination Length	PCB Thickness	Code			
Right angled – Europe standard	10.4/ 2.54mm	2.0mm	1.6mm	13A			
Right angled – US standard	8.08/ 2.84mm	2.0mm	1.6mm	33E			
Durability							
High performance class (≥500 mating/unmating)				6			
Packaging							
Tray for manual positioning						09	
Tape and Reel for automatic pick and place						12	
Mounting Options							
Insert M3 + metal peg + elec. continuity						RL	RL
Insert UNC 4-40 + metal peg + elec. continuity						RX	RX
Female screw UNC 4-40 + metal peg + elec. continuity						RV	RV

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 INFORMATION

MATERIAL

- Shell: Nickel plated
- Housing: Thermoplastic HT UL940-V
- Contacts: Copper alloy
 - Active Part: Gold over nickel
 - Termination: Matt tin over nickel
- Accessories: Brass
- Front Accessories: Nickel
- Metal Pegs: Tin over nickel

ELECTRICAL PERFORMANCE

- Current rating: 5A
- Insulation resistance: $\geq 5000M\Omega$
- Contact resistance: $<10m\Omega$
- Dielectric withstanding voltage: 1000V RMS

MECHANICAL PERFORMANCE

- Mating/unmating cycles: 500 min.

ENVIRONMENTAL

- Operating Temperature Range: $-55^{\circ}C$ to $125^{\circ}C$

APPROVALS AND CERTIFICATIONS

- Product lead free in accordance to RoHS 2002/EC/95

TARGET MARKETS/APPLICATIONS



Asymmetric Digital Subscriber Line (ADSL)
Base Station
Switching
Transmission



Set-top Box



Desktop and Laptop
Storage System
Router and Server



Automotive Diagnostics
Control Drives
Energy Meter
Gaming Machine
Test Equipment
Office Automation
POS & Handheld terminal
Power Supplies
Parking Meter
Printer and Copier
Renewable Energy
Robotics
Surveillance Camera
Avionics



Medical Instrument

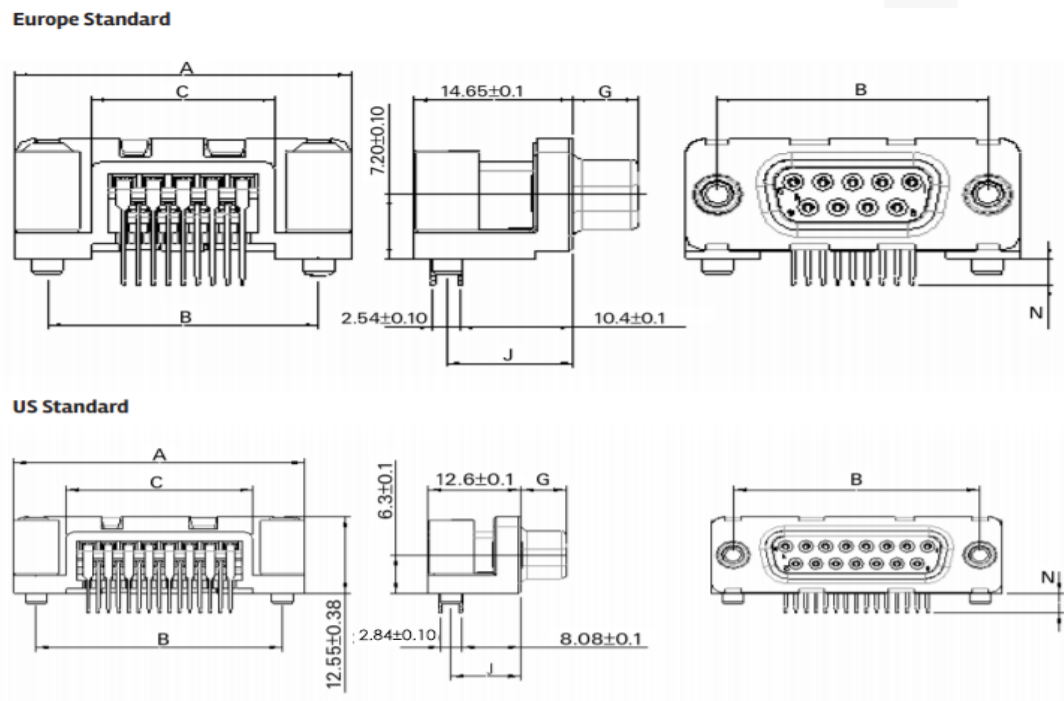


Military Equipment

▶ D-SUBMINIATURE SIGNAL PCB CONNECTORS DELTA D

SPECIFIC DIMENSIONS

EUROPE STANDARD



Dimensions									
		A $\pm 0,38$	B $\pm 0,12$	C $\pm 0,10$	G $-0/+0,25$	J $\pm 0,10$		N $\pm 0,30$	
						Termination		Terminal Length	
						13	33	13A 33E	13B
09	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

STRAIGHT SOLDER TO BOARD

 UL RECOGNISED FILE E66906



ORDERING INFORMATION

D

Serie

25

Number of Contacts

09
15
25
37
50

P

Contacts

Pin	P
Socket	S

24A

4

Durability

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

GV

Mouting Options

Standard hole	PA
Threaded insert M3	PL
Threaded insert UNC 4-40	PX
Female screw UNC 4-40	PV
Harpoons + insert M3 + elec. continuity	GL
Harpoons + insert UNC 4-40 + elec. continuity	GX
Harpoons + female screw UNC 4-40 + elec. continuit	GV

00LF

Standard series, RoHS compatible

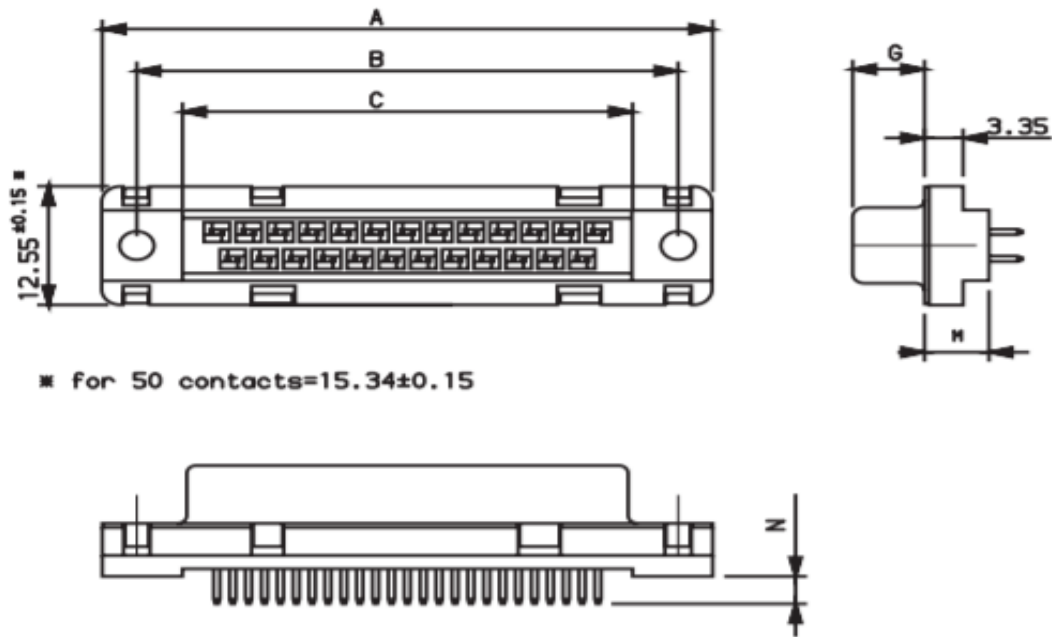
Termination Type

Type	Footprint/ Pitch	Termination Length	PCB Thickness	Code
Straight version (low profile)	5.6/2.84mm	2.90	1.6mm	14A
Straight version	6/2.84mm	2.90	1.6mm	24A
Straight version	6/2.84mm	3.70	2.4mm	24B
Straight version	6.9/2.84mm	2.90	1.6mm	34A

Preferred Option

▶ D-SUBMINIATURE SIGNAL PCB CONNECTORS DELTA D

SPECIFIC DIMENSIONS



Dimensions										
		A $\pm 0,38$	B $\pm 0,12$	C $\pm 0,10$	G $-0/+0,25$	M $\pm 0,10$			N $\pm 0,30$	
						Terminal			Terminal Length	
						14	24	34	14A 24A 34A	24B
09	P	30.81	24.99	16.96	5.90 $-0/+0,15$	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 $-0/+0,15$	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

Dimensions in mm

STRAIGHT PRESS-FIT



- This new Press-fit connectors eliminate soldering process and saves cost
- Compatible with PCB thicknesses of 1.60 mm & 2.40 mm
- 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

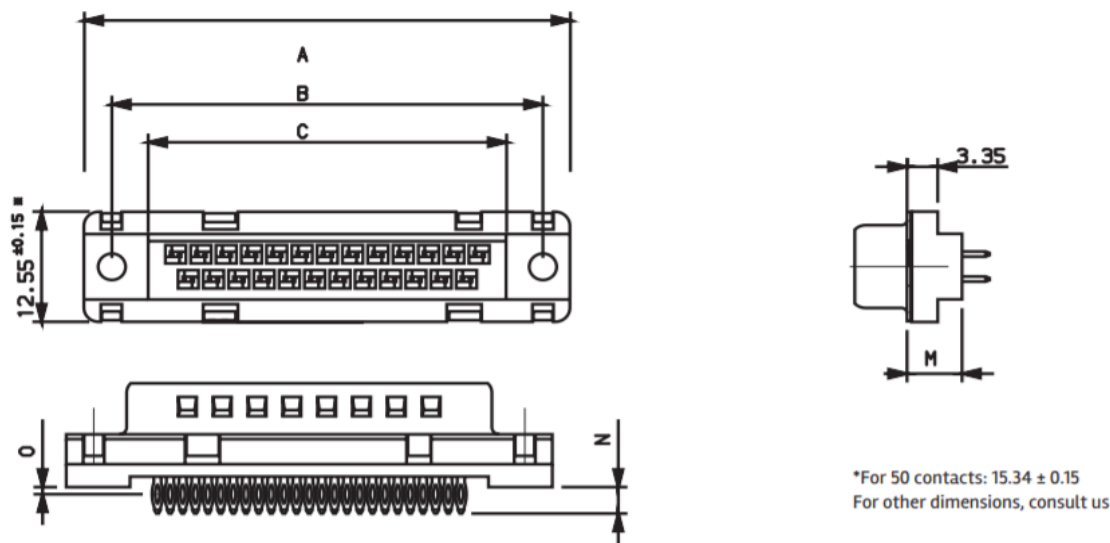


ORDERING INFORMATION

D	25	P	91C	4	PA	00LF	RoHS Status	
Series							Standard, RoHS compatible	00LF ✓
Number of Contacts						Mounting Options		
09						Standard hole PA		
15						Threaded insert M3 PL		
25						Threaded insert UNC 4-40 PX ✓		
37						Female screw UNC 4-40 PV ✓		
50						Harpoons + insert M3 + elec. continuity GL		
						Harpoons + insert UNC 4-40 + elec. continuity GX		
						Harpoons + female screw UNC 4-40 + elec. continuity GV		
		Contacts				Durability		
		Pin P				Standard class ≥200 mating/ unmating 4		
		Socket S				High performance mating/unmating) 6		
Termination Type								
Type						Code		
Press-fit suitable for PCB thickness 1.6mm & 2.4mm – Europe Standard						91C		
Press-fit suitable for PCB thickness 1.6mm & 2.4mm – Low Profile						90C		

Preferred Option ✓

SPECIFIC DIMENSIONS



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±0.3	N±0.3	O±0.2
90C	5.60	3.40	1.20
91C	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)		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	25µm min. (recommended 50µ max.)	25µm min. (recommended 50µ max.)
	non RoHS	Tin-lead plating	15µm max. (recommended 5µ min.)	15µm max. (recommended 5µ min.)
		Finish hole (after reflow)	Ø 0.94 – 1.09	Ø 3.02– 3.20
	RoHS	Tin plating	0.8 to 1.2µm	0.8 to 1.2µm
		Finish hole (after reflow)	Ø 1.00 – 1.09	Ø 3.08 – 3.20

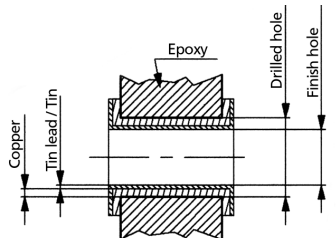
Note 1: These dimensions must be respected to ensure press-fit pin performance

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



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ORDERING INFORMATION

D Series

09 Number of Contacts

09
15
25
37
50

P Contacts

Pin	P
Socket	S

24A Termination Type

Type	Footprint/ Pitch	Termination Length	PCB Thickness	Code
Straight version	6.0/2.84mm	2.0mm	1.6mm	24A
Straight version	6/2.84mm	2.9mm	2.4mm	24B

6 Durability

High performance class (>500 mating/unmating)	6
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RV Mounting Options

Insert M3 + metal peg + elec. continuity	RL
Insert UNC 4-40 + metal peg + elec. continuity	RX
Female screw UNC 4-40 + metal peg + elec. continuity	RV

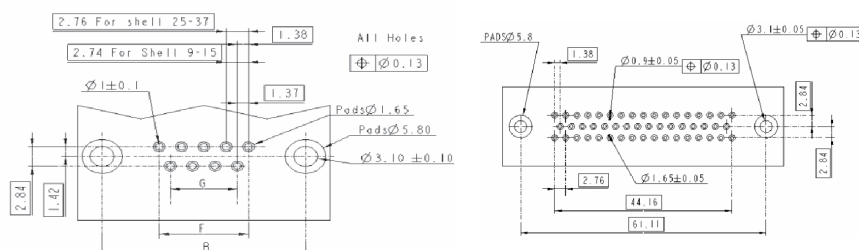
12 Packaging

Tray for manual positioning	09
Tape and Reel for automatic pick and gripper device (not available in 37 and 50 ways)	12
Tape and Reel and pick-up cap for vacuum nozzle device (not available in 37 and 50 ways)	22

LF 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
37	63.50	49.68	46.92



TECHNICAL INFORMATION

MATERIAL

- Shell: Steel, nickel plated
- Housing: HT UL94V-0
- Contacts: Copper alloy
 - Active part: Gold over nickel
 - Termination: Matt tin over nickel
- Accessories: Brass, bright tin over nickel

ELECTRICAL PERFORMANCE

- Current rating: 5A
- Insulation Resistance: $\geq 5000M\Omega$
- Contact Resistance: $<10m\Omega$
- Dielectric Withstanding Voltage: 1000V RMS

MECHANICAL PERFORMANCE

- Mating/unmating cycles: 500 min.

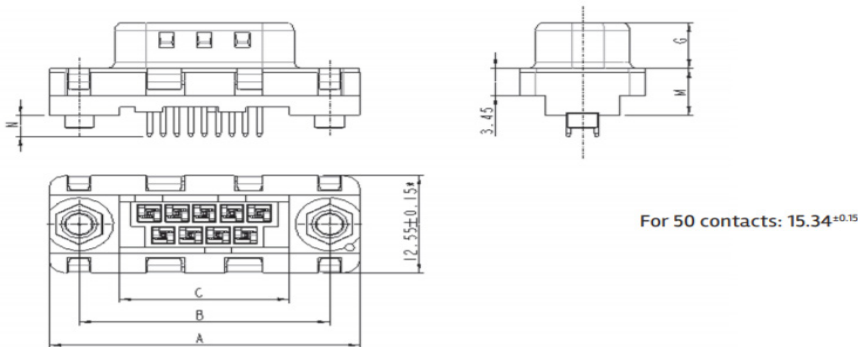
ENVIRONMENTAL

- Operating Temperature Range: $-55^{\circ}C$ to $125^{\circ}C$

APPROVALS AND CERTIFICATIONS

- Product lead free in accordance to RoHS 2002/EC/95

SPECIFIC DIMENSIONS



Dimensions								
		A $\pm 0,38$	B $\pm 0,12$	C $\pm 0,10$	G $-0/+0.25$	M $\pm 0,10$	N $\pm 0,30$	
							Terminal Length	
							24A	24B
09	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

IN0DSUBSGD002/EA4