MIL-DTL-38999 II Series Electrical Connector

Brief Introduction

- Meet the US military standard:MIL-DTL-38999 II series
- Quick bayonet coupling, locking and releasing quickly
- Small size, light weight and high density
- EMI/RFI shielding
- Withstand strong vibration
- Removable crimp contact, without scoop-proof design

Technical Performance

Mechanical characteristic

Shell	Aluminum alloy/stainless steel
Plating	B class: olive green cadmium plating E class: stainless steel passive F class: electroless nickel plating
Insulator	Thermoset plastic
Grommet and seal	Silicon rubber
Contact	Gold-plated copper alloy,crimping,soldering,PCB
Vibration	Random vibration:frequency 100-1000Hz, power spectral density: 1g2/Hz
Shock	At 3 ms half sinusoid, peak value of acceleration: 300g
Endurance	500 cycles

Environmental characteristic

Operating temperature	-65℃~+175℃(B class)
	-65℃~+200℃(E,F class)
Salt spray	B class 500h,E class 1000h,F class 48h
Relative humidity	98% at 40℃
Operating height	≤30480m
Fluid immersion	Hydraulic oil, Lubricating oil, Freezing liquid and other solvents

Electrical characteristics

EMI shielding	100MHz~1GHz:minimum attenuation 45dB
Insulation resistance	Normal≥5000MΩ Damp heat≥100MΩ
Electrical continuity between shells	B class ≤2.5mΩ;F class ≤1.0mΩ;E class ≤50mΩ

Contact resistance and rating current

Contact size	Operating dia.(mm)	Contact resistance(mΩ)	Rating current(A)
22D	Φ0.76	≤12	5
20#	Φ1.00	≤5	7.5
16#	Φ1.60	≤2.5	13
12#	Φ2.40	≤1.5	23

Withstanding voltage: V

Service rating	M	I	II
Sea level	1300	1800	2300
21000m	800	1000	1000

*Different contact layouts have different service rating. Please see the contact layouts table.

How To Order

MS 27472 T 14 F 35 P N -H

(1) (2) (3) (4) (5) (6) (7) (8) (9)

1:MS—Series Prefix

2:type: 27472-wall mounting receptacle (front mounting) (T)

27497-wall mounting receptacle (rear mounting) (T)

27513-box mounting flange receptacle (front mounting) (E)

27508-box mounting flange receptacle (rear mounting) (E)

27474-jam nut receptacle (T)

27473-straight plug (T)

27484-shielding plug (T)

3:Service class:T- with thread and stop teeth for backshell

E- without thread and stop teeth for back shell

4:Shell size :08-10-12-14-16-18-20-22-24

5:Shell plating: B-aluminum alloy shell with olive green cadmium plating

E-stainless steel shell, passive

F- aluminum alloy shell with electroless nickel plating

6:Contact arrangement : see contact arrangements for details

7:Contact type :P-Normal crimp type pin

S-Normal crimp type socket

PL-long PCB pin

SL- long straight PCB socket

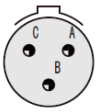
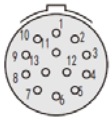
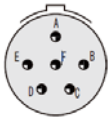
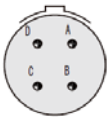
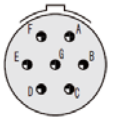
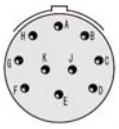
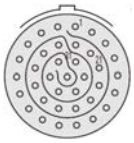
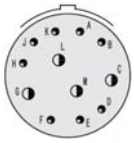
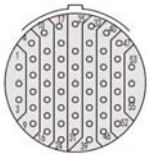
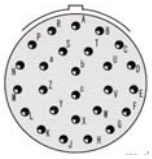
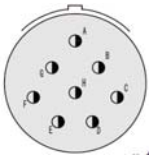
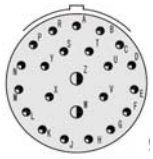
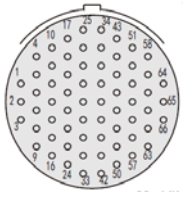
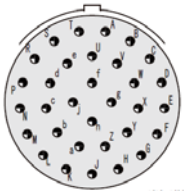
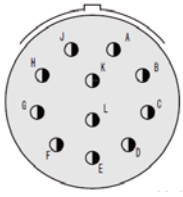
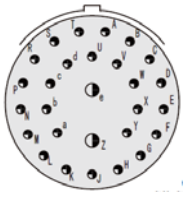
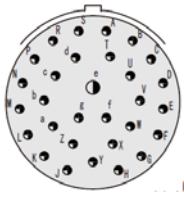
PC-short PCB pin

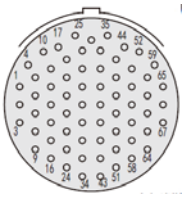
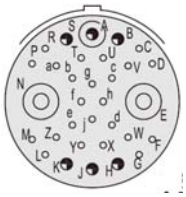
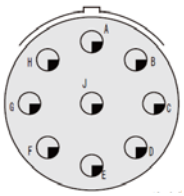
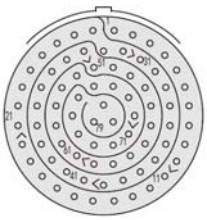
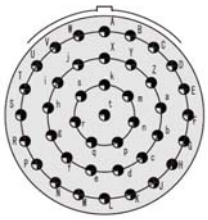
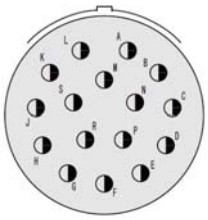
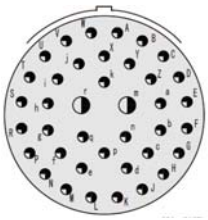
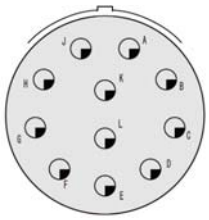
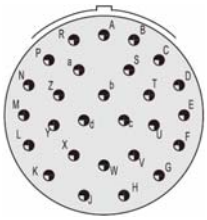
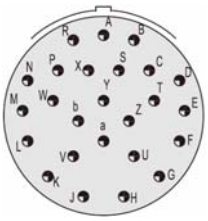
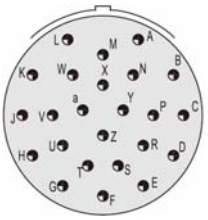
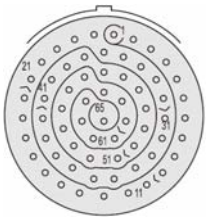
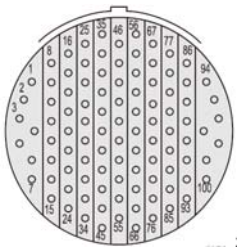
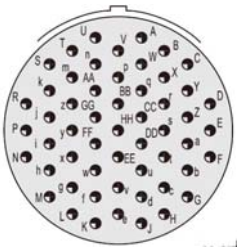
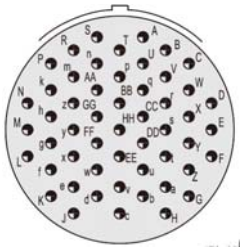
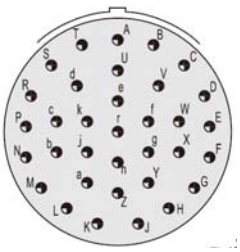
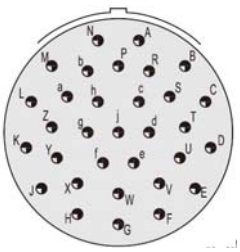
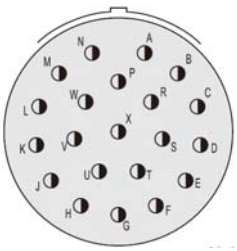
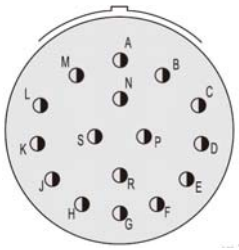
SC- short PCB socket

8:Key: N- normal key;A,B,C,D-Alternative

9.Soldering contact code:H-soldering contact

Contact Arrangement

Shell Size						
08	35 M 6-22D	98 I  3-20#				
10	35 M  13-22D	98 I  6-20#	05 I 5-20#	04 I  4-20#	01 I 1-12#	99 I  7-20#
12	35 M 22-22D	98 I  10-20#	08 I 8-20#	04 I 4-16#	03 II 3-16#	02 I 2-16#
14	35 M  37-22D	19 I 19-20#	18 I 18-20#	05 II 5-16#	97 I  8-20# 4-16#	15 I 14-20# 1-16#
16	35 M  55-22D	26 I  26-20#	06 I 6-12#	08 II  8-16#	99 I  21-20# 2-16#	
18	35 M  66-22D	32 I  32-20#	11 II  11-16#	28 I  26-20# 2-16#	30 I  29-20# 1-16#	

18	45 M  67-22D	93 I  24-22D 6-20# 2-10#	96 I  9-12#		
20	35 M  79-22D	41 I  41-20#	16 II  16-16#	39 I  37-20# 2-16#	11 II  11-12#
	27 I  27-20#	25 I  25-20#	24 I  24-20#	02 M  65-22D	
22	35 M  100-22D#	55 I  55-20#	53 I  53-20#	36 I 36-20#	
	34 I  34-20#	32 I  32-20#	21 II  21-16#	97 I  16-16#	

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 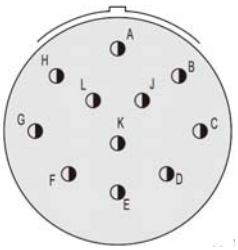
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 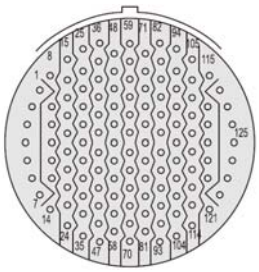
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 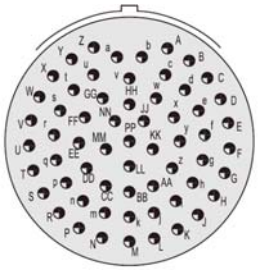
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 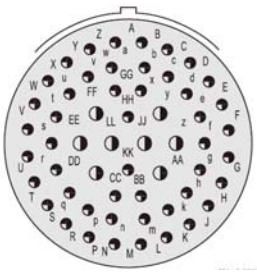
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 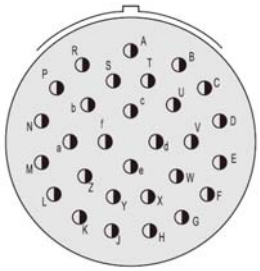
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 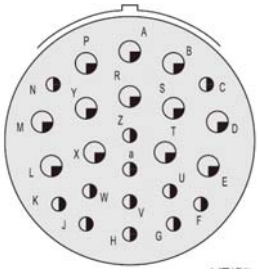
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 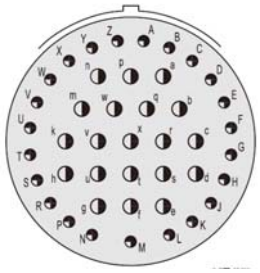
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 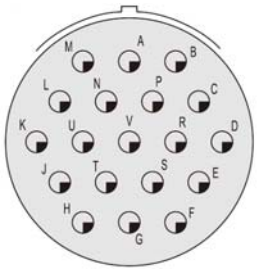
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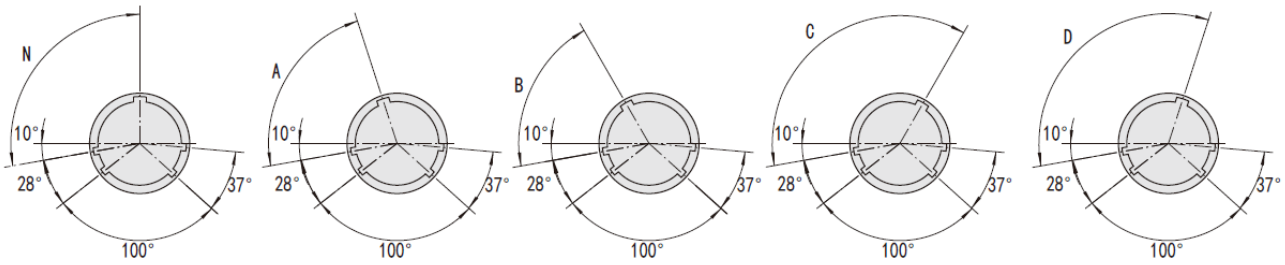
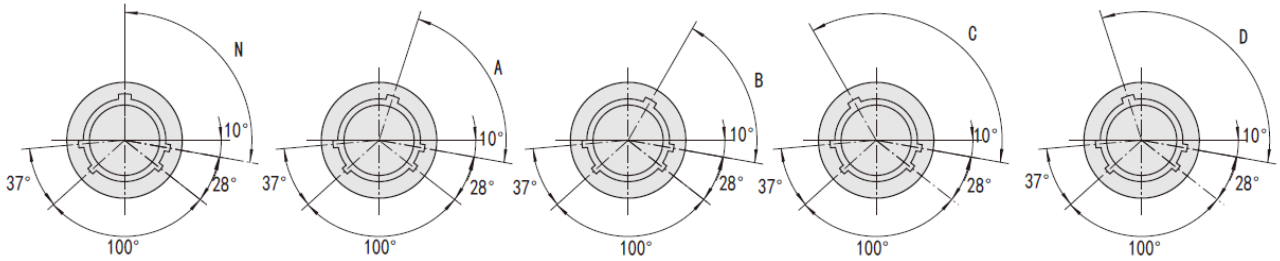
Contact size ○ 22D ◒ 20# ◑ 16# ◔ 12#

Polarization

Receptacle Polarization



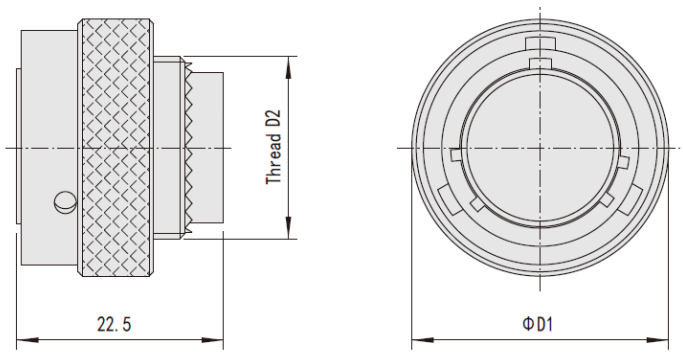
Plug Polarization



Polarzation code	08	10	12	14	16	18	20	22	24
N	100°	100°	100°	100°	100°	100°	100°	100°	100°
A	82°	86°	80°	79°	82°	82°	82°	85°	85°
B	Non	72°	68°	66°	70°	70°	70°	74°	74°
C	Non	128°	132°	134°	130°	130°	130°	126°	126°
D	118°	114°	120°	121°	118°	118°	118°	115°	115°

Outline Dimensions

Plug MS27473&MS27484



Shell size	D1	Thread D2 UNEF-2A
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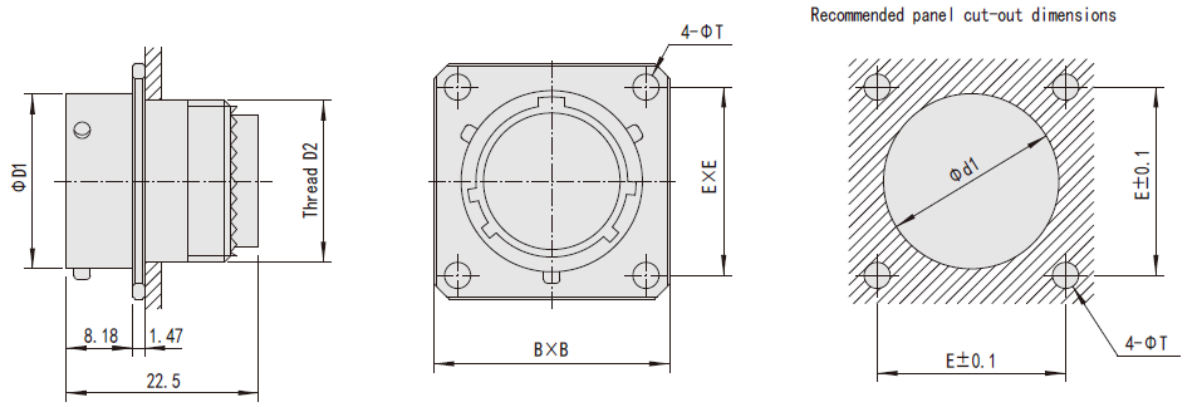
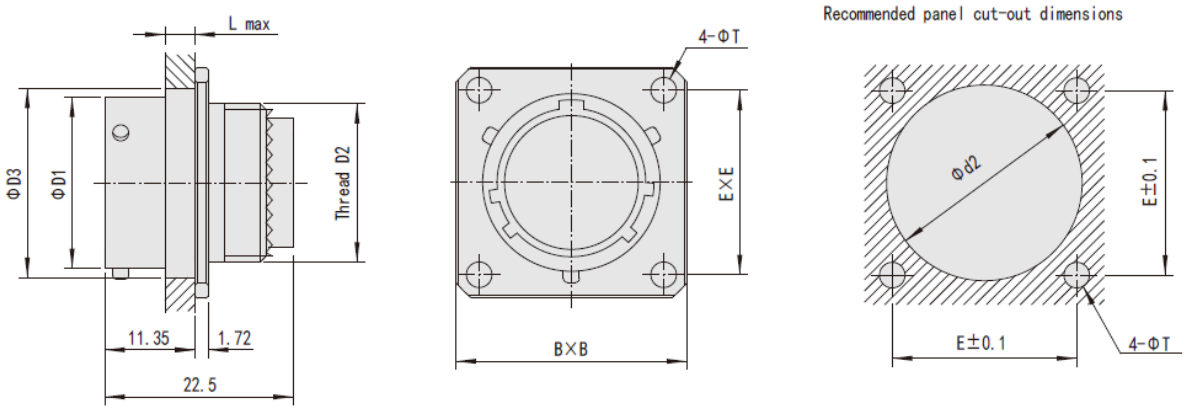
10	21.80	0.5625 -24
12	26.20	0. 6875-24
14	29.30	0. 8125-20
16	32.50	0. 9375-20
18	35.70	1. 0625-18
20	38.80	1. 1875-18
22	41.68	1.3125-18
24	44.86	1.4375-18

Wall mounting receptacle MS27472&MS27497

MS27472



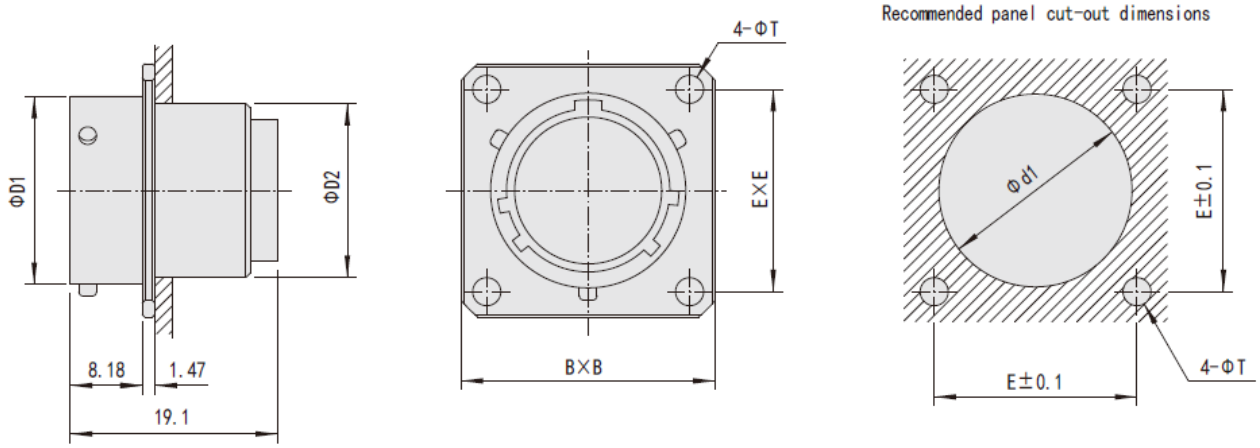
MS27497



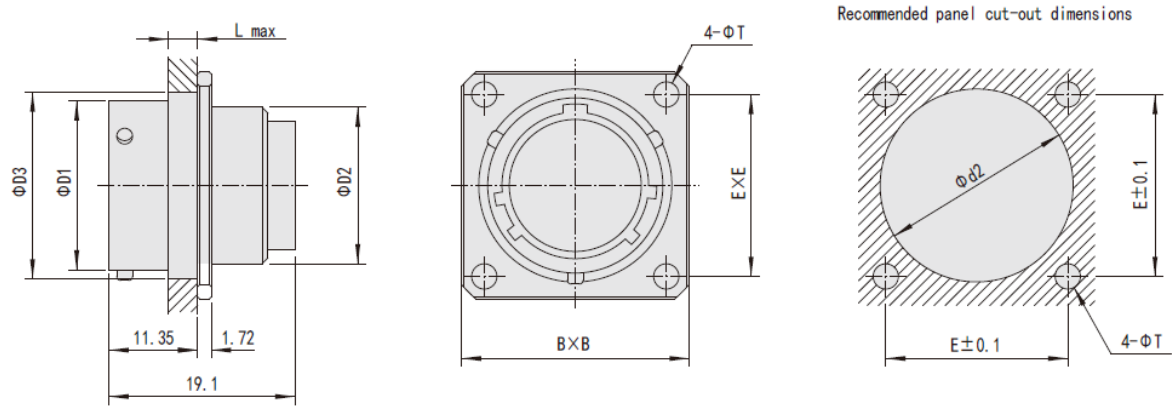
Shell size	D1	Thread D2 UNEF-2A	D3	L max	B	E	T	d 1	d 2
08	12.00	0.4375-28	13.20	3.71	21.00	15.09	3.2	12.5	14.2
10	15.00	0.5625 -24	16.14	3.71	24.10	18.26	3.2	15.5	17.5
12	19.05	0. 6875-24	20.50	3.71	26.50	20.62	3.2	19.5	21.3
14	22.23	0. 8125-20	23.60	3.71	28.90	23.01	3.2	21.5	25.0
16	25.40	0. 9375-20	26.80	3.71	31.21	24.61	3.2	25.0	27.3
18	28.58	1. 0625-18	30.00	3.71	33.60	26.97	3.2	28.0	31.3
20	31.75	1. 1875-18	33.20	4.27	36.80	29.36	3.2	31.5	34.5
22	34.93	1.3125-18	36.35	4.27	40.00	31.75	3.2	34.5	37.5
24	38.10	1.4375-18	39.50	4.27	43.10	34.93	3.9	37.5	40.6

Box mounting flange receptacle MS27513&MS27508

MS27513

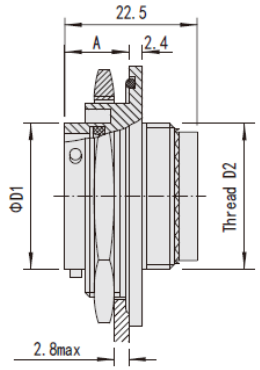


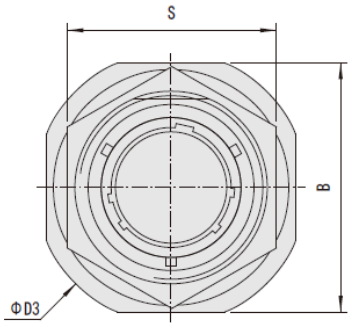
MS27508

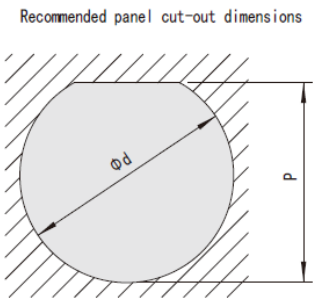


Shell size	D1	D2	D3	L max	B	E	T	d 1	d 2
08	12.00	11.52	13.20	3.71	21.00	15.09	3.2	12.5	14.2
10	15.00	14.68	16.14	3.71	24.10	18.26	3.2	15.5	17.5
12	19.05	17.86	20.50	3.71	26.50	20.62	3.2	19.5	21.3
14	22.23	21.03	23.60	3.71	28.90	23.01	3.2	21.5	25.0
16	25.40	24.21	26.80	3.71	31.21	24.61	3.2	25.0	27.3
18	28.58	26.97	30.00	3.71	33.60	26.97	3.2	28.0	31.3
20	31.75	30.18	33.20	4.27	36.80	29.36	3.2	31.5	34.5
22	34.93	33.32	36.35	4.27	40.00	31.75	3.2	34.5	37.5
24	38.10	36.53	39.50	4.27	43.10	34.93	3.9	37.5	40.6

Jam nut receptacle MS27474



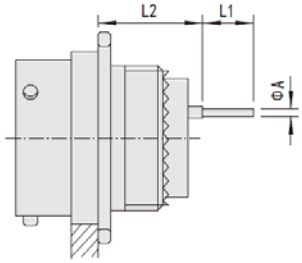




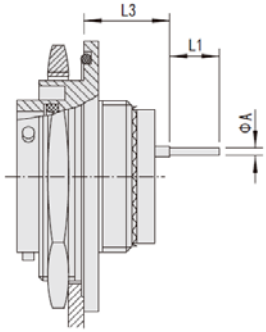
Shell size	D1	Thread D2 UNEF-2A	D3	A	B	S	d	P
08	12.00	0.4375-28	34.95	11.1	31.75	27.40	22.46	21.08
10	15.00	0.5625 -24	38.10	11.1	34.95	30.61	25.58	24.26
12	19.05	0. 6875-24	41.28	11.1	38.10	33.75	28.80	27.53
14	22.23	0. 8125-20	44.45	11.1	41.28	36.96	31.98	30.68
16	25.40	0. 9375-20	49.23	11.1	45.24	40.10	35.15	33.86
18	28.58	1. 0625-18	51.21	11.1	48.00	43.31	38.28	37.06
20	31.75	1. 1875-18	54.38	11.8	51.21	46.45	41.5	40.03
22	34.93	1.3125-18	57.53	11.8	54.36	51.23	44.68	43.21
24	38.10	1.4375-18	60.71	11.8	57.53	54.41	47.85	46.38

Receptacle with PCB contacts

MS27497 receptacle

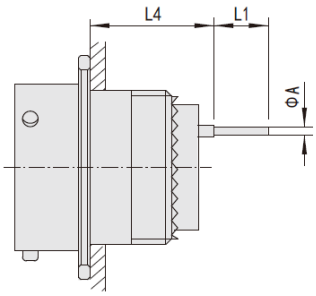


MS27474 receptacle

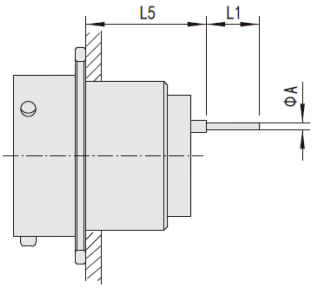


PCB contact type		L1	A
22D	Long PCB contact	8.5	0.7
	Short PCB contact	4.0	
20#	Long PCB contact	8.5	0.7
	Short PCB contact	5.1	
16#	Long PCB contact	8.5	1.15
	Short PCB contact	5.1	

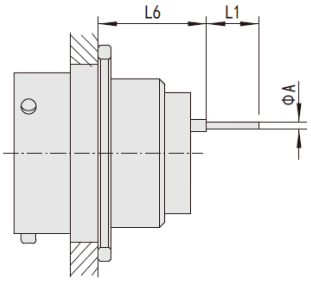
MS27472 receptacle



MS27513 receptacle



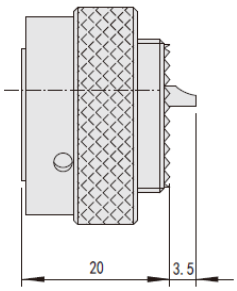
MS27508 receptacle



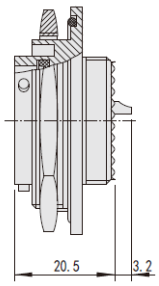
Dimensions with different contacts		Shell size 08-10-12-14-16-18	Shell size 20-22-24
L2	With 22D# pin/socket	13.40	13.40
	With 20# or 16# pin/socket	13.57	13.57
L3	With 22D# pin/socket	13.61	12.95
	With 20# or 16# pin/socket	13.78	13.12
L4	With 22D# pin/socket	15.10	15.10
	With 20# or 16# pin/socket	15.27	15.27
L5	With 22D# pin/socket	11.10	11.10
	With 20# or 16# pin/socket	11.27	11.27
L6	With 22D# pin/socket	9.40	9.40
	With 20# or 16# pin/socket	9.57	9.57

Soldering products outline dimension

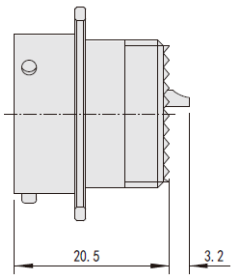
MS27473 plug



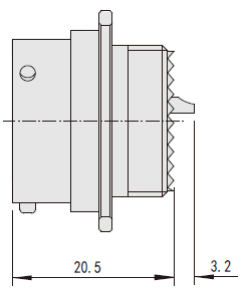
MS27474 receptacle



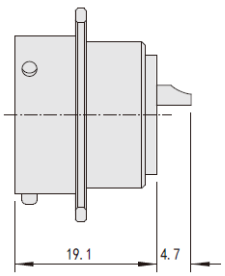
MS27472 receptacle



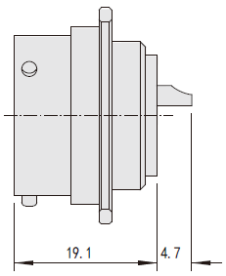
MS27497 receptacle



MS27513 receptacle



MS27508 receptacle



Standard Rear Accessories(MIL-C-85049)

How To Order

M85049/ 27 14 N

(1) (2) (3) (4)

(1)Basic series:M85049

(2)Type:27-A type back nut

49-B type straight cable clamp

47-C type elbow cable clamp

62-D type screen-termination accessory(part number plus"T")

62-heatshrink boot accessory

(3)Shell size:08,10,12,14,16,18,20,22,24

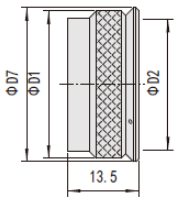
(4)Shell plating:W-olive green cadmium plating

N-electroless nickel plating

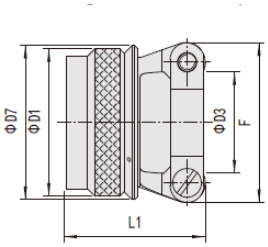
S-stainless steel passive

Outline Dimensions

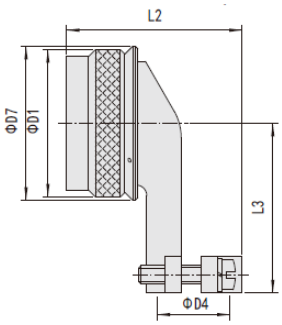
M85049/27 Back nut



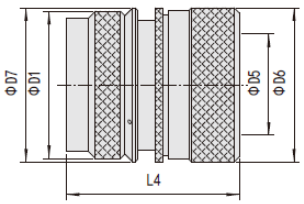
M85049/49 Straight cable clamp



M85049/47 Elbow cable clamp



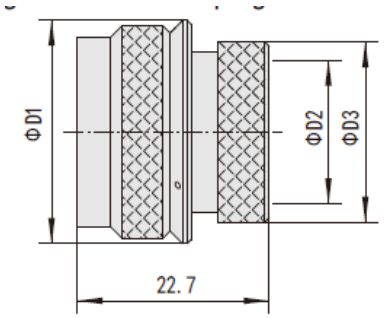
M85049/62 Backshell for shielding termination



Shell Size		08	10	12	14	16	18	20	22	24
D1	max	15.6	18.6	21.8	25.0	28.2	31.0	34.2	37.3	40.5
D2	max	7.9	10.8	13.6	16.9	20.1	22.4	25.6	28.8	31.9
D3	min	2.49	3.87	4.83	6.6	7.19	8.26	8.71	9.68	10.62
	max	5.94	5.94	8.33	11.61	15.6	16.1	17.73	20.9	21.66
D4	min	3.2	4.0	4.8	5.5	6.4	7.9	9.5	10.3	14.3
	max	6.4	9.5	11.1	14.3	15.9	19.1	22.2	23.8	25.4
D5	max	7.0	9.7	12.8	14.9	18.0	20.0	23.2	26.3	28.9
D6	max	17.0	19.9	23.1	26.3	29.5	32.5	35.7	38.9	42.0
D7	max	16.9	19.9	23.1	26.3	29.5	32.3	35.5	38.6	41.8

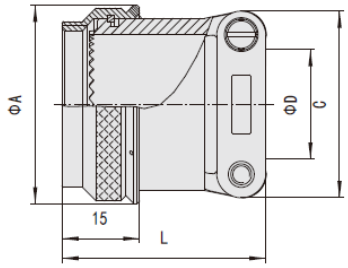
F	max	20.0	20.0	23.4	26.6	30.6	34.0	35.8	39.0	40.6
L1	max	23.4	23.4	23.4	27.8	27.8	27.8	27.8	29.9	29.9
L2	max	29.0	32.0	33.5	36.5	38.5	41.5	44.5	46.0	48.0
L3	max	25.0	26.0	27.5	31.0	32.5	34.0	34.5	36.5	43.5
L4	max	31.2	31.2	31.2	33.2	33.2	33.2	36.2	36.2	36.2

M85049/62-backshell for heat shrink sleeve



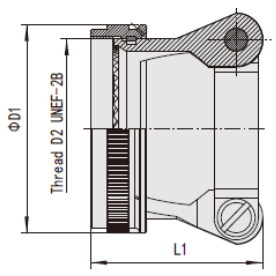
Part No.	D1	D2	D3
M85049/62-08N	16.9	7.9	11.6
M85049/62-10N	19.9	10. 9	14.7
M85049/62-12N	23.1	13.7	17.6
M85049/62-14N	26.3	16.9	21.2
M85049/62-16N	29.5	20.1	24.4
M85049/62-18N	32.3	22.5	26.4
M85049/62-20N	35.5	25.4	30.9
M85049/62-22N	38.6	28.5	33.8
M85049/62-24N	41.8	31.6	36.9

M85049/49H-soldering straight cable clamp



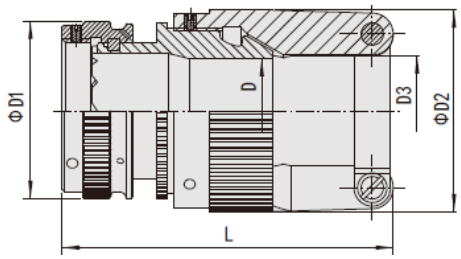
Part No.	A max	C	L max	D
M85049/49H-08N	18.0	20.0	26.4	2.49~5.94
M85049/49H-10N	22.0	21.0	27.9	3.87~5.94
M85049/49H-12N	25.1	23.4	29.4	4.83~8.33
M85049/49H-14N	29.0	26.6	30.9	6.6~11.61
M85049/49H-16N	32.1	30.6	33.1	7.19~15.6
M85049/49H-18N	35.1	34.0	36.2	8.26~16.1
M85049/49H-20N	38.1	35.8	39.4	8.71~17.73
M85049/49H-22N	41.1	39.0	42.5	9.68~20.9
M85049/49H-24N	44.1	40.6	44.6	10.62~21.66

M85049/49-X X N(short)



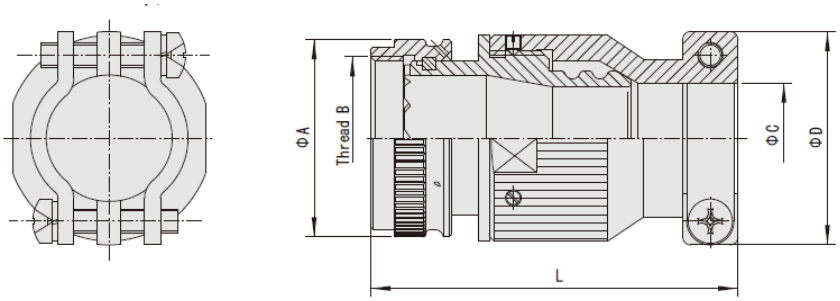
Part No.	D1	Thread D2	L1	Lead-out dia.
M85049/49-10N(short)	19.5	0.5625-24	20.8	5.1~10
M85049/49-12N(short)	22.6	0.6875-24	19	6.7~12.9
M85049/49-14N(short)	25.8	0.8125-20	25.2	8.4~16
M85049/49-16N(short)	29	0.9375-20	25.3	9.2~18.5
M85049/49-18N(short)	32.2	1.0625-18	26.7	10~21.5
M85049/49-20N(short)	35.3	1.1875-18	26.8	11.2~24.75
M85049/49-22N(short)	38.5	1.3125-18	32	11.6~22.6

M85049/62-NB shielding straight cable clamping backshell



Part No.	D	D1	D2	D3	L
M85049/62-08NB	6.5	16.3	19.4	6.8	39.0
M85049/62-10NB	9.7	19.5	22.5	9.2	39.0
M85049/62-12NB	12.8	22.6	25.7	12.6	39.0
M85049/62-14NB	14.9	25.8	28.9	16	45.0
M85049/62-16NB	18	29.0	32.1	17.5	45.0
M85049/62-18NB	20	32.2	35.3	21.5	46.5
M85049/62-20NB	23.2	35.3	38.4	24.8	51.3
M85049/62-22NB	26.3	38.5	41.6	22.6	56.6
M85049/62-24NB	28.9	41.7	44.8	23.1	57.3

M85049/62-X X NC- X X Shielding clamping cable accessory



Part No.	A	Thread B UNEF	C	D	L
M85049/62-08NC-08	16.3	0.4375-28	8	20	39.7
M85049/62-10NC-08	19.5	0.5625-24	8	20	39.7
M85049/62-10NC-10			10	20	40.7
M85049/62-12NC-10	22.6	0.6875-24	10	20	40.7
M85049/62-12NC-12			12	25	47.4
M85049/62-14NC-12	25.8	0.8125-20	12	25	47.4
M85049/62-14NC-14			14	27	47.4
M85049/62-14NC-16			16	27	47.4
M85049/62-16NC-16	29	0.9375-20	16	27	47.4
M85049/62-16NC-19			19	32	47.4
M85049/62-18NC-19	32.2	1.0625-18	19	32	47.4
M85049/62-18NC-22			22	33	47.4
M85049/62-20NC-22	35.3	1.1875-18	22	33	47.4

M85049/62-20NC-25			25	36.5	47.4
M85049/62-22NC-25	38.5	1.3125-18	25	36.5	47.4
M85049/62-22NC-28			28	40	47.4
M85049/62-24NC-28	41.7	1.4375-18	28	40	47.4
M85049/62-24NC-31			31	44	47.4

Protective caps for plug and receptacle

MS 27510 F 10 C L

(1) (2) (3) (4) (5) (6)

(1)Basic series:MS

(2)Type:MS27510-protective cap for plug

MS27511-protective cap for receptacle

(3) Shell plating:B-olive green cadmium plating

F-electroless nickel plating

E-stainless steel passive

(4) Shell size: 08,10,12,14,16,18,20,22,24

(5)Fixing type:A-without chain

N-stainless steel chain with ring

S-stainless steel string with connecting lug

C-stainless steel chain with connecting lug

R-nylon cord with connecting plate

E-nylon cord with ring

(6)Length:no mark-standard length

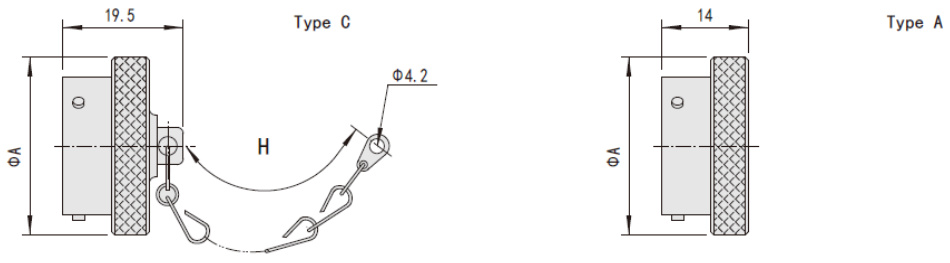
L-127mm of chain length

M-152.4mm of chain length(MS27510)

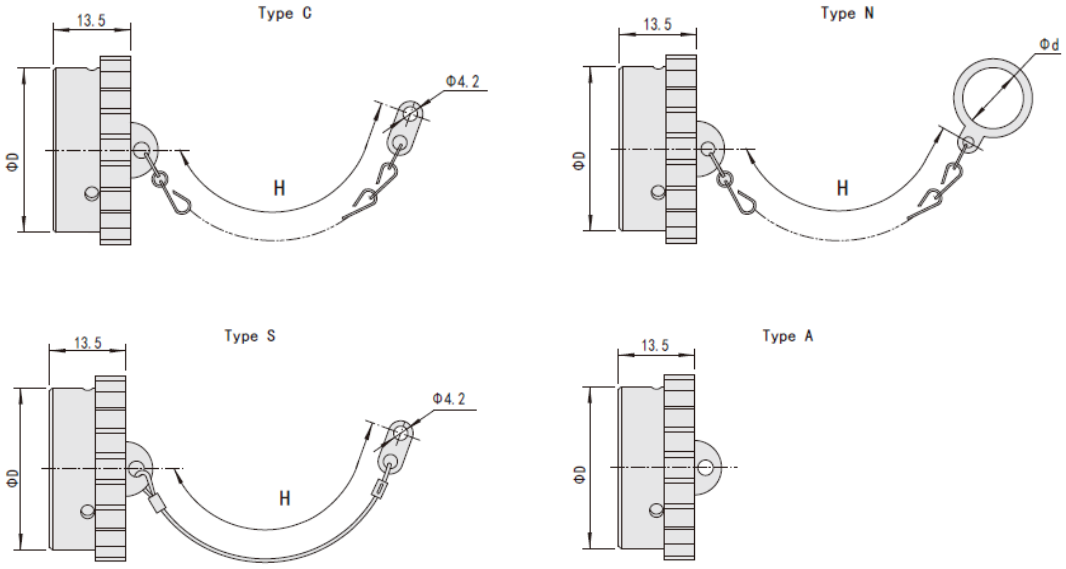
N-177.8mm of chain length(MS27510)

Outline Dimensions

Plug protective cap MS27510



Receptacle protective cap MS27511



Shell size		08	10	12	14	16	18	20	22	24
A	max	18.2	21.5	25.4	28.7	31.7	35.0	38.1	41.4	44.4
D	max	18.5	21.7	25.3	29.0	31.6	34.8	38.0	41.1	44.2
d	min	22.6	26.0	29.0	32.4	35.5	38.6	42.0	44.7	48.5
H	max	76.2	76.2	88.9	88.9	88.9	88.9	101.6	101.6	101.6