

D38999 | series electrical connector



Introduction:

- In accordance with the MIL-DTL-38999M series I standards
- Bayonet type quick connection , which has the advantages of small size, light weight and high contact couple density
- EMI/ RFI shielding
- The receptacle has forms of box ,wall,front mount ,back mount and jam nut fastening mount. The crimp contact is removable and scoop proof design.
- 9 shell sizes and numerous contact layout
- With the high-strength vibration resistance
- The outer shell can choose different materials and platings to adapt to different environmental requirements
- The insertion surface and the backshell have a sealing structure.Besides , it has good performance on the resistances to salt spray , mold and dampness.
- Backshell is in accordance with the GJB1784 standards

Usage: The products are used for the circuit signal connection

Using environment:

The products are used for strong vibration, wind sand, moisture and other complex environment

Technical features:

Mechanical:

Shell: Aluminum , stainless steel and titanium

Insulator: thermoplastic or thermosetting plastic

Grommet and interfacial seal: silicone elastomer

Shell material & plating:

Aluminum: Cadmium olive drab (B)

Nickel (F)

Satin-cadmium over aluminum(FT)

Stainless steel: Passivated (E)

Titanium: Without plating(TA)

Contact: Gold over cooper alloy ,including three types:solder,crimp and PCB.

Endurance: ≥ 500 mating cycles

Vibration: Sine vibration: frequency:from 10 Hz to 2000 Hz

acceleration: 294m/s^2

Random vibration: frequency:from 10 Hz to 2000 Hz

power spectral density: $1\text{g}^2/\text{Hz}$

Shock:300g,3ms

Electrical:

Contact resistance and rated current

Contact size	working diameter(mm)	contact resistance (mΩ)	Rated 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
10#	Φ3.15	≤1.0	40

Voltage rating

Service rating	M	N	I	II
Sea level	1300	1000	1800	2300
21000m	800	600	1000	1000

Insulation resistance

At ambient temperature: ≥5000MΩ,

At wet temperature: ≥100MΩ

Shell continuity:

Aluminum shell

Cadmium olive drab (B) : ≤2.5mV

Nickel (F): ≤1.0 mV

Satin-cadmium over aluminum(FT):

Stainless steel shell

Passivated (E): ≤50mV

Titanium:

Without plating(TA): ≤50mV

Environmental:

Temperature range:

Aluminum shell

B: -65 °C ~+175 °C

E 、 F: -65 °C ~+200 °C

Salt spray:

B: 500h

E 、 TA: 1000h

F: 48h/96h

FT: 96h

Relative humidity: At 40 °C, up to 98%

Working height: ≤30,480 m

Other features: The connectors also have good performance of anti against moisture, salt spray, mold, sand dust and other performances.

How to order

Basic series **MS** **27467** **T** **21** **F** **35** **P** **N** **—H—M1**

Shell style:

27467-plug

27466-Wall Mount Square Flange Receptacle(Front Panel mounted)

27656-Wall Mount Square Flange Receptacle(Back Panel mounted)

27496-Box Mount Square Flange Receptacle(Front Panel mounted)

27505-Box Mount Square Flange Receptacle(Back Panel mounted)

27468-Jam Nut Receptacle

Class:

T = With acc. thread (MS27466, MS27467, MS27468 & MS27656)

E = Same as T in line above but is not approved for new design

(E-nut is not included)

= No acc. thread, box mount (MS27496 & MS27505)

Shell size:09-11-13-15-17-19-21-23-25

Finish:

B: Olive green cadmium F: Nickel S- Stainless steel passivated

Contact layout: See page 7-10

Contact style:

P-Pin S-socket

PL-Long PCB tail pin SL-Long PCB tail socket

PC-Long PCB tail pin SC-Long PCB tail socket

Polarization(Keying):

N=Normal (Included in part number) A,B,C, D, or E

—H—Solder contact (Only for solder connectors)

Crimp contact

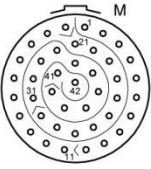
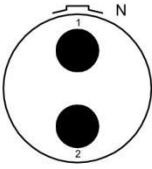
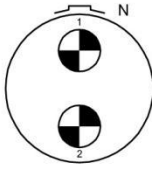
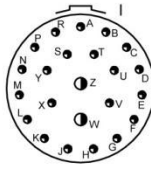
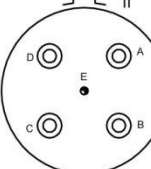
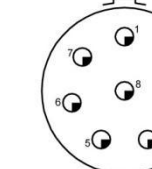
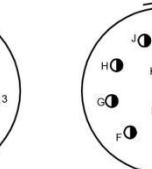
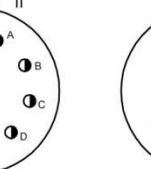
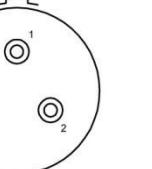
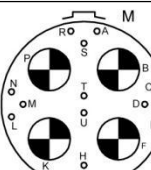
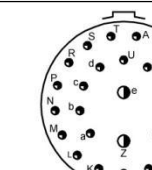
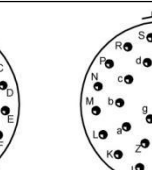
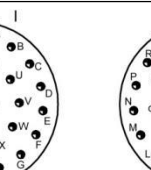
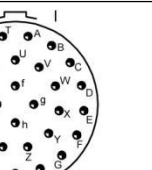
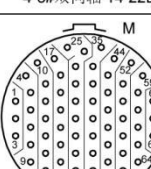
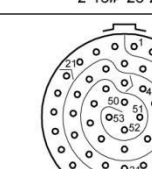
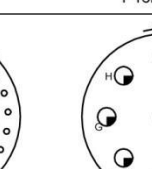
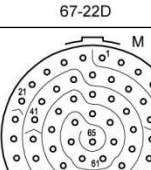
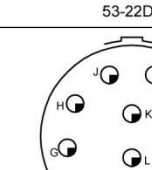
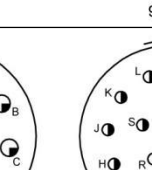
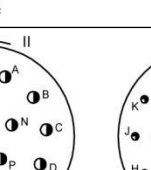
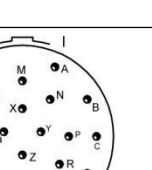
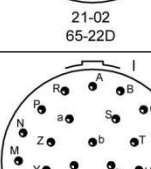
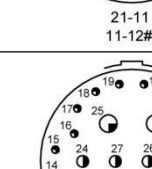
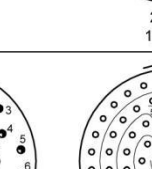
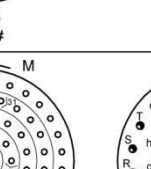
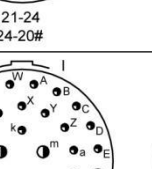
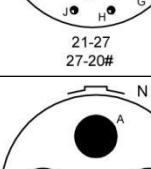
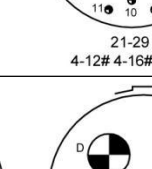
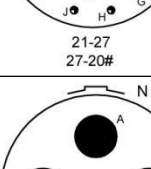
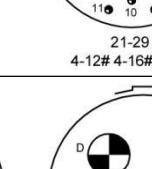
Contact Size	Work diameter	Pin Color	Socket Color	Crimp barrel Inner diameter (mm)	Crimp barrel outer diameter (mm)	Wire Section mm²	AWG	Wire insulation outer diameter (mm)	Insertion & extraction tools	Crimp tool
22D	Φ0.76	orange blue black	orange yellow grey	0.85	1.20	0.08 0.125 0.2 0.3	28 26 24 22	0.76~1.37	M81969/14-01	YJQ-02
20#	Φ1.00	orange- blue orange	orange green brown	1.17	1.78	0.2 0.3 0.5	24 22 20	1.02~2.11	M81969/14-10	YJQ-02 XCXY-01
16#	Φ1.60	orange blue yellow	orange green brown	1.68	2.62	0.5 0.8 1.0 1.2	20 18 16	1.65~2.77	M81969/14-03	XCXY-01
12#	Φ2.40	orange- blue green	orange green orange	2.49	3.84	2.0 3.0	14 12	2.46~3.61	M81969/14-04	XCXY-01
10#	Φ3.15	green red grey	green orange purple	3.40	4.65	4.8	10	3.42~4.12	M81969/14-05	XCXY-01 YTQ
8#	Φ3.60	—	—	4.55	6.4	8.37	8	6.4~6.9	M81969/14-12	YTQ

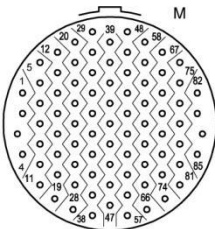
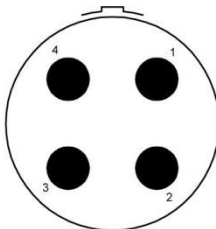
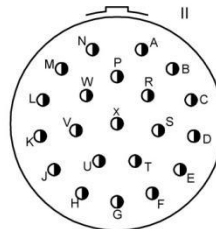
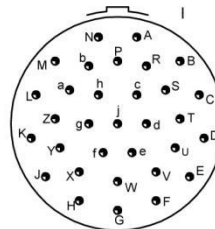
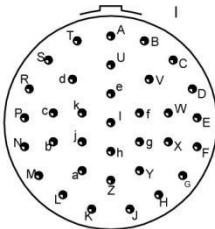
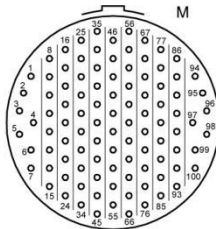
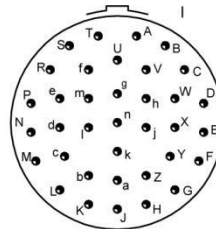
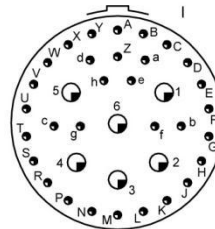
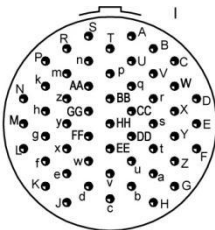
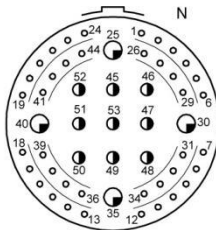
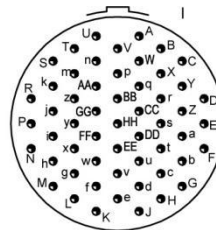
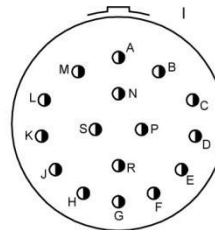
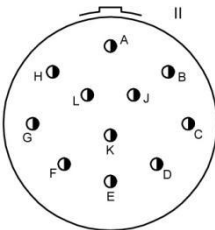
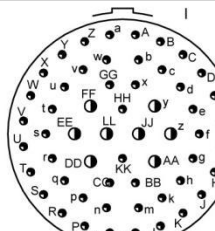
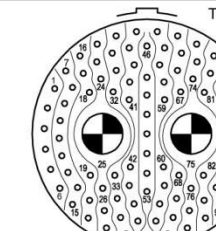
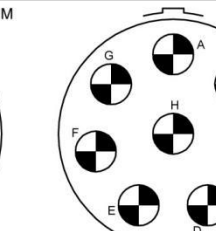
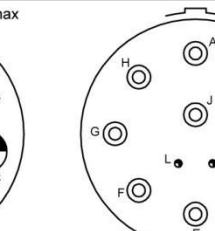
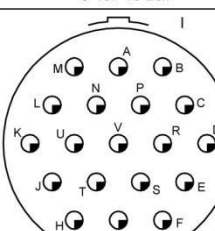
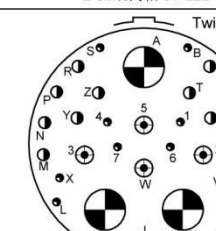
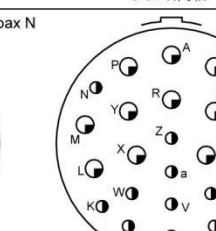
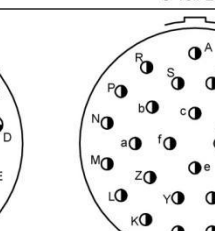
Solder contact

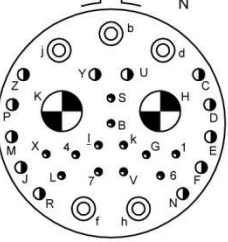
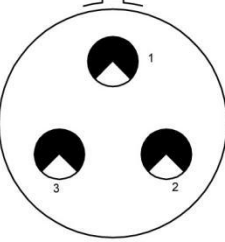
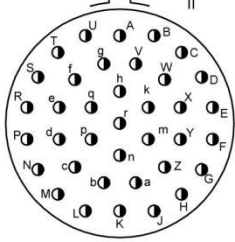
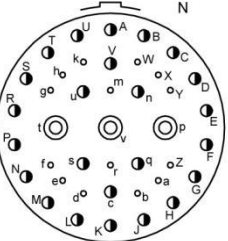
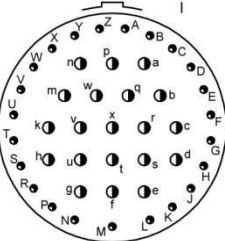
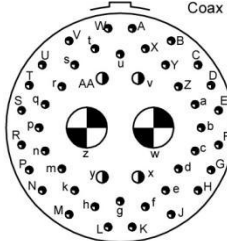
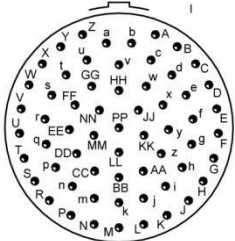
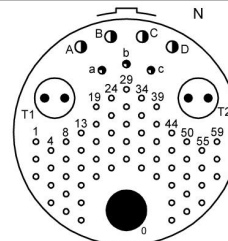
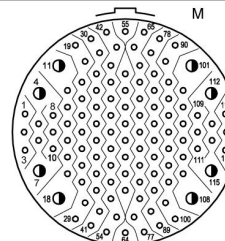
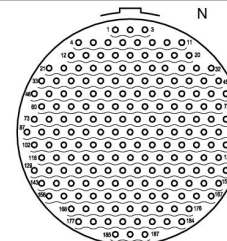
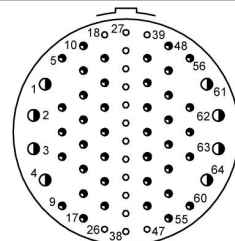
Solder contact size	Solder cup inner diameter	AWG
22D	Φ0.9	22
20#	Φ1.1	20
16#	Φ1.9	16
12#	Φ2.9	12
10#	Φ3.6	10
8#	Φ4.8	8

Contact layout

09	 09-03 3-20#	 09-02 2-20#	 09-05 1-8#四差分	 09-07 7-22D	 09-09 9-23#/22D	 09-11 1-16#	 09-23 9-23#/22D	 09-35 6-22D	 09-44 4-22M	 09-98 3-20#
	 11-01 1-12#	 11-02 2-16#	 11-04 4-20#	 11-05 5-20#	 11-19 19-23#/22D	 11-23 19-23#/22D	 11-35 13-22D	 11-98 6-20#	 11-99 7-20#	
13	 13-02 2-12#	 13-03 3-16#	 13-04 4-16#	 13-05 2-16# 3-20#	 13-08 8-20#	 13-12 1-12#同轴 11-22D	 13-23 32-23#/22D	 13-26 2-12# 6-22D		
	 13-35 22-22D	 13-98 10-20#								
15	 15-03 2-12# 1-16#	 15-04 4-12#	 15-05 5-16#	 15-15 1-16# 14-20#	 15-18 18-20#	 15-19 19-20#				
	 15-21 1-12#同轴 3-20# 17-22D	 15-23 55-23#	 15-31 1-12# 30-22D	 15-35 37-22D	 15-38 4-12#	 15-97 4-16# 8-20#				
17	 17-02 1-8#双同轴 38-22D	 17-03 2-10# 1-16#	 17-05 5-12#	 17-06 6-12#	 17-08 8-16#	 17-11 3-12# 8-20#				
	 17-20a 2-8# 2-20# 16-22D	 17-23 73-23#	 17-26 26-20#	 17-30 3-10# 3-20#	 17-32 2-8#差分 22-22D	 17-35 55-22D				

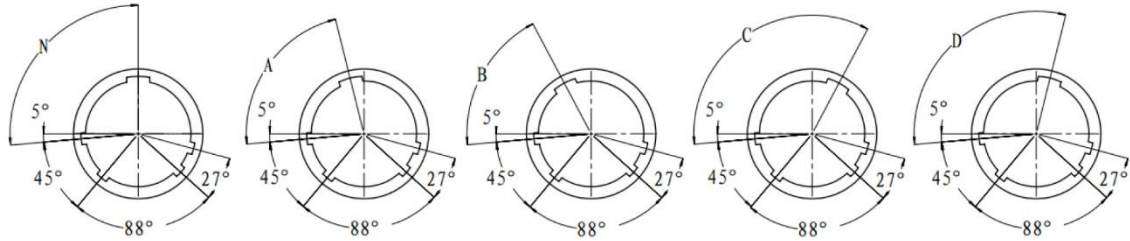
	 17-42 42-22D  17-62 2-8#  17-75 2-8#同轴  17-99 2-16# 21-20#
19	 19-05 1-20# 4-10#  19-08 8-12#  19-11 11-16#  19-13 3-10#  19-16a 16-16#
	 19-18 4-8#双同轴 14-22D  19-28 2-16# 26-20#  19-30 1-16# 29-20#  19-32 32-20#  19-35 66-22D
	 19-45 67-22D  19-53 53-22D  19-96 9-12#
	 21-02 65-22D  21-11 11-12#  21-16 16-16#  21-24 24-20#  21-25 25-20#
	 21-27 27-20#  21-29 4-12# 4-16# 19-20#  21-35 79-22D  21-39 2-16# 37-20#  21-41 41-20#
	 21-48 4-8#  21-75 4-8#双同轴
21	 21-48 4-8#  21-75 4-8#双同轴

23	 23-02 85-22D	 23-04 4-8#	 23-21 21-16#	 23-32 32-20#
	 23-34 34-20#	 23-35 100-22D	 23-36 36-20#	 23-37 6-12# 31-20#
	 23-53 53-20#	 23-54 4-12# 9-16# 40-22D	 23-55 55-20#	 23-97 16-16#
	 23-99 11-16#			
25	 25-04 8-16# 48-20#	 25-07 2-8# 双同轴 97-22D	 25-08 / 25-10 8-8# 双同轴	 25-11 9-10# 2-20#
	 25-19 19-12#	 25-20 3-8# 双同轴 4-12# 同轴 13-16# 10-20#	 25-24 12-12# 12-16#	 25-29 29-16#

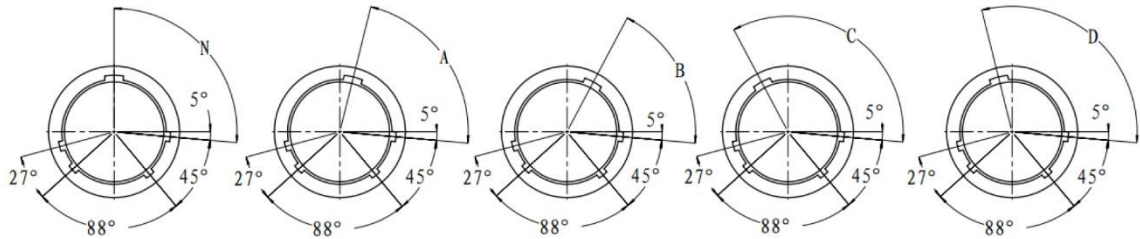
 25-31 2-8#双同轴 5-10# 12-16# 12-20#	 25-33 3-4#	25-35 128-22D	 25-37 37-16#
 25-41 14-22D 24-16# 3-10#	 25-43 20-16# 23-20#	 25-46 2-8#双同轴 4-16# 40-20#	 25-61 61-20#
 25-70 61-22D 3-20# 4-16# 2-8#双差分, 1-8#	 25-93 8-16# 110-22D	 25-187 187-23#	 25-64 16-22D 40-20# 8-16#

Alternation key position

Receptacle key position



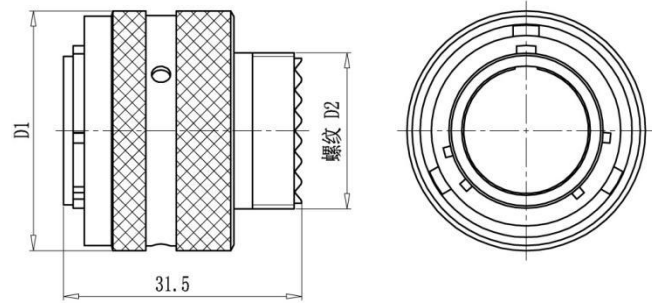
Plug key position



Key position	09	11	13	15	17	19	21	23	25
N	95°	95°	95°	95°	95°	95°	95°	95°	95°
A	77°	81°	75°	74°	77°	77°	77°	80°	80°
B	-	67°	63°	61°	65°	65°	65°	69°	69°
C	-	123°	127°	129°	125°	125°	125°	121°	121°
D	113°	109°	115°	116°	113°	113°	113°	110°	110°

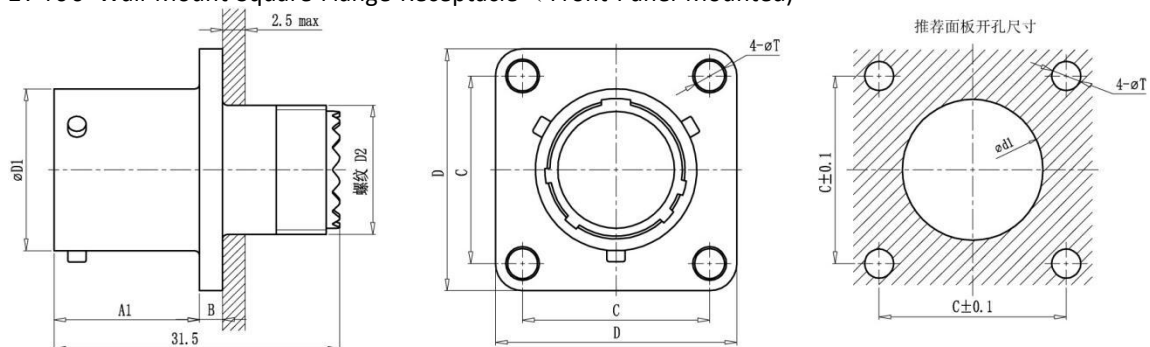
Dimension

MS27467 Plug

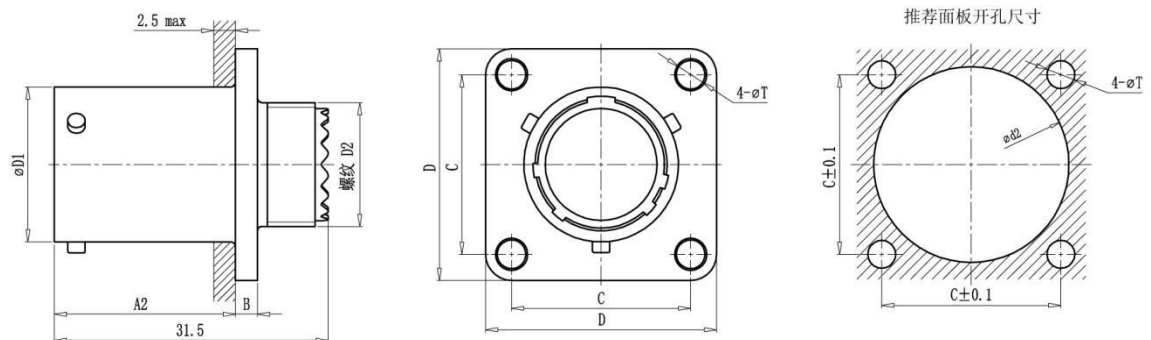
	Shell size	D1	Thread D2 UNEF-2A
	09	21.6	0.4375-28
	11	24.7	0.5625-24
	13	28.6	0.6875-24
	15	31.5	0.8125-20
	17	35.5	0.9375-20
	19	38.5	1.0625-18
	21	41.6	1.1875-18
	23	44.6	1.3125-18
	25	47.6	1.4375-18

MS27466 MS27656 Wall mount square flange receptacle

27466-Wall Mount Square Flange Receptacle (Front Panel Mounted)



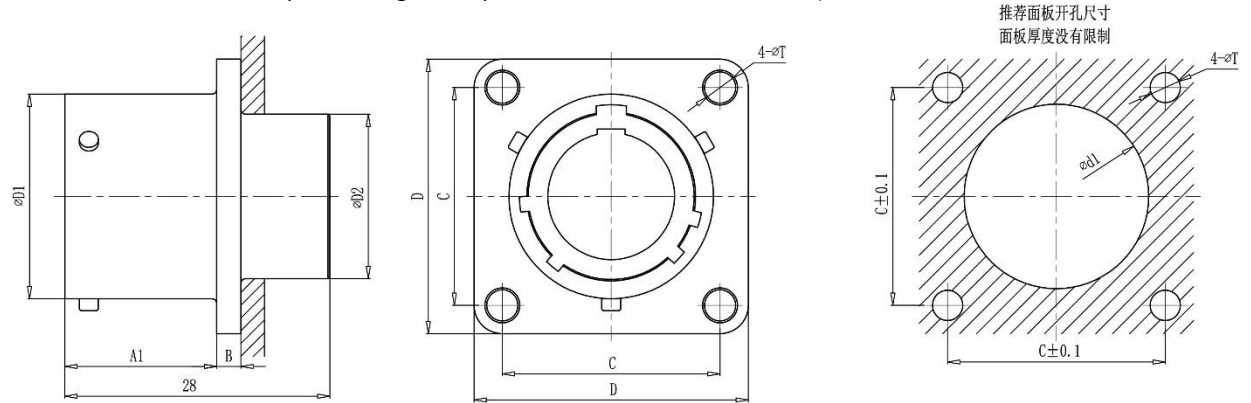
27656-Wall Mount Square Flange Receptacle (Back Panel Mounted)



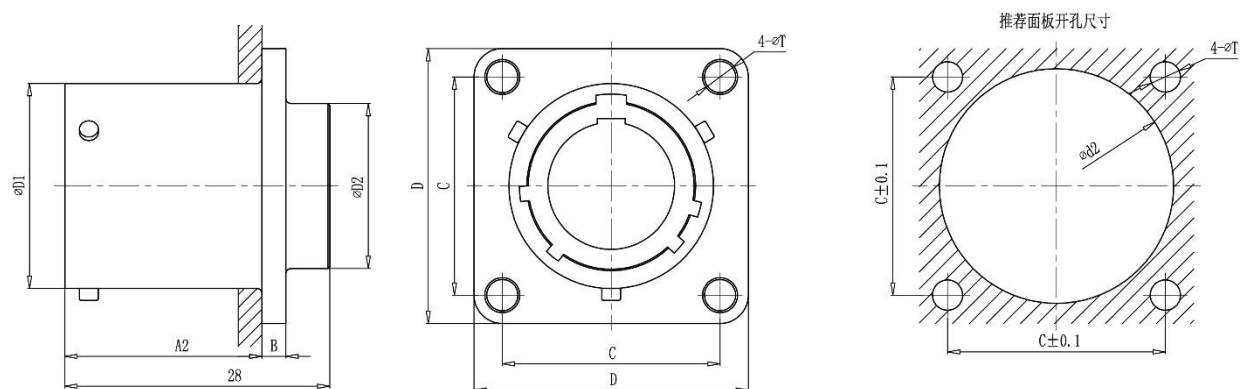
Shell size	D1	Thread D2 UNEF-2A	A1	A2	B	C	D	T	d1	d2
09	14.6	0.4375-28	16.1	20.8	2.54	18.26	23.8	3.2	12.5	16.7
11	17.8	0.5625-24	16.1	20.8	2.54	20.62	26.2	3.2	15.5	20.2
13	21.6	0.6875-24	16.1	20.8	2.54	23.02	28.6	3.2	19.5	24.5
15	24.8	0.8125-20	16.1	20.8	2.54	24.62	31.0	3.2	21.5	27.7
17	28.0	0.9375-20	16.1	20.8	2.54	26.98	33.3	3.2	25.0	30.9
19	30.7	1.0625-18	16.1	20.8	2.54	29.36	36.5	3.2	28.0	32.9
21	33.8	1.1875-18	15.3	20.1	3.3	31.76	39.7	3.7	31.5	36.2
23	37.0	1.3125-18	15.3	20.1	3.3	34.92	42.9	3.7	34.5	39.3
25	40.2	1.4375-18	15.3	20.1	3.3	38.10	46.0	3.7	37.5	42.5

MS27496 MS27505 Box mount square flange receptacle

MS27496 Box Mount Square Flange Receptacle (Front Panel Mounted)

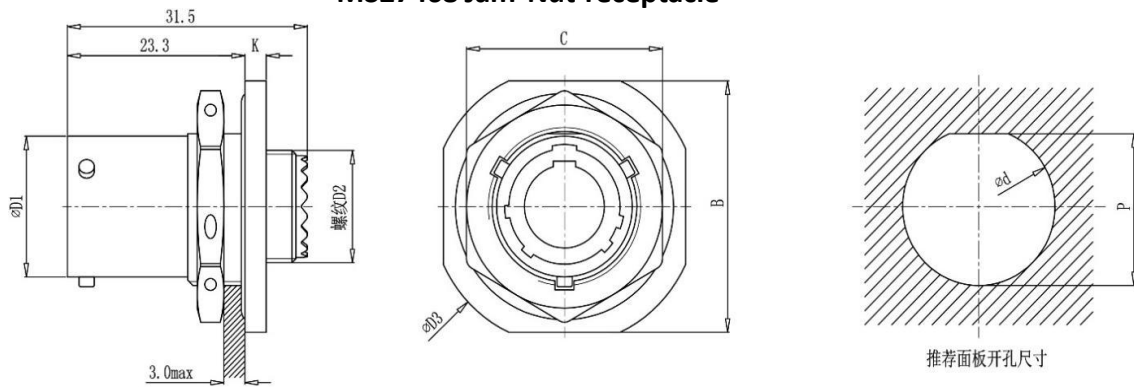


MS27505 Box Mount Square Flange Receptacle (Back Panel Mounted)



Shell size	D1	D2	A1	B	C	D	T	d1	d2
09	14.6	11.2	16.1	2.54	18.26	23.8	3.2	12.5	16.7
11	17.8	14.5	16.1	2.54	20.62	26.2	3.2	15.5	20.2
13	21.6	18.0	16.1	2.54	23.02	28.6	3.2	19.5	24.5
15	24.8	20.5	16.1	2.54	24.62	31.0	3.2	21.5	27.7
17	28.0	23.8	16.1	2.54	26.98	33.3	3.2	25.0	30.9
9	30.7	26.5	16.1	2.54	29.36	36.5	3.2	28.0	32.9
21	33.8	29.7	15.3	3.3	31.76	39.7	3.7	31.5	36.2
23	37.0	32.8	15.3	3.3	34.92	42.9	3.7	34.5	39.3
25	40.2	36.0	15.3	3.3	38.10	46.0	3.7	37.5	42.5

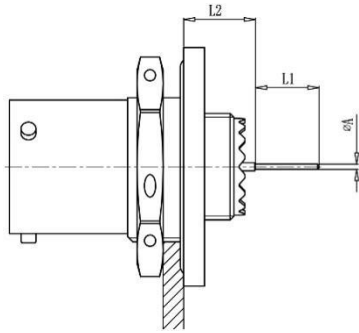
MS27468 Jam Nut receptacle



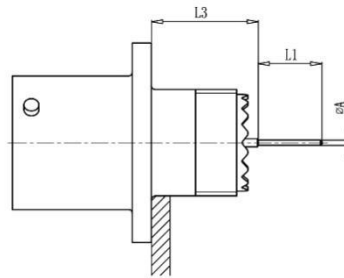
Shell size	D1	Thread D2 UNEF-2A	D3	B	K	C	d	P
09	14.6	0.4375-28	30.2	27.1	2.8	22.5	17.7	17.0
11	17.8	0.5625-24	35.0	31.8	2.8	25.7	21.0	19.6
13	21.6	0.6875-24	38.1	35.0	2.8	30.5	25.6	24.3
15	24.8	0.8125-20	41.3	38.1	2.8	33.6	28.8	27.6
17	28.0	0.9375-20	44.5	41.3	2.8	36.8	32.0	30.7
19	30.7	1.0625-18	49.3	46.0	3.5	40.0	35.2	33.9
21	33.8	1.1875-18	52.4	49.2	3.5	43.2	38.3	37.1
23	37.0	1.3125-18	55.6	52.4	3.5	46.3	41.5	40.2
25	40.2	1.4375-18	58.8	55.6	3.5	51.0	44.7	43.4

D38999-I series receptacle with PCB contacts

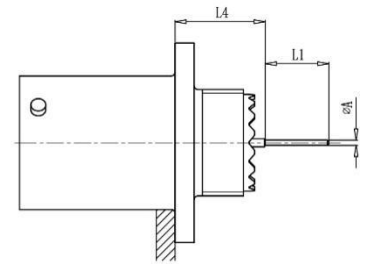
MS27468 receptacle



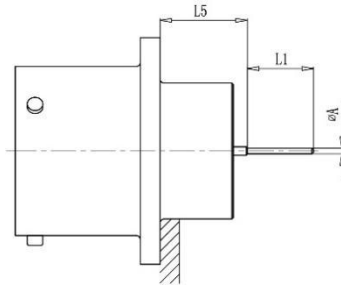
MS27466 receptacle



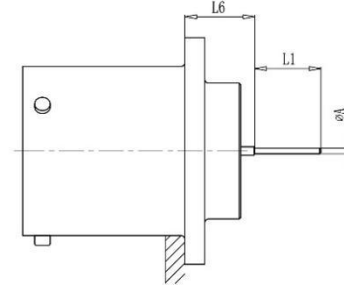
MS27656 receptacle



MS27496 receptacle



MS27505 receptacle



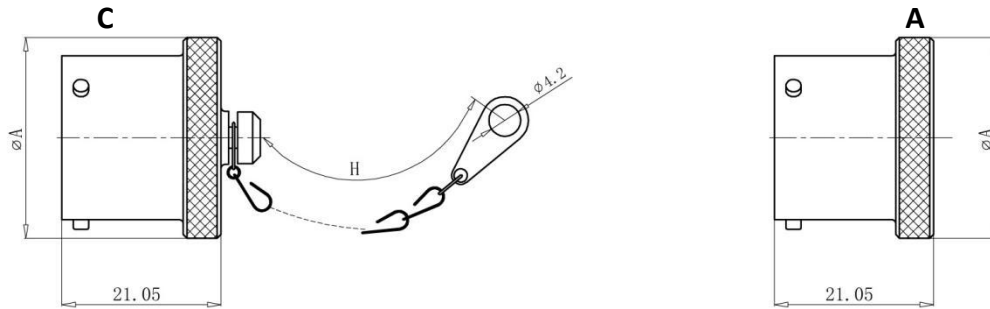
PCB contact size		L1	A
22D	Long PCB tail contact	8.5	0.7
	Short PCB tail contact	4.0	
20#	Long PCB tail contact	8.5	0.7
	Short PCB tail contact	5.0	
16#	Long PCB tail contact	8.5	1.15
	Short PCB tail contact	5.0	

Different specification contact			Shell size 09-11-13-15-17-19	Shell size 21-23-25
L2	22D pin	max	10.06	10.06
		min	9.06	9.06
	22D socket	max	10.06	10.06
		min	8.74	8.74
	20# or 16#pin 、 socket	max	10.23	10.23
		min	9.24	9.24
L3	22Dpin	max	15.08	15.08
		min	13.91	13.91
	22D socket	max	15.08	15.08
		min	13.58	13.58
	20# or 16#pin 、 socket	max	15.25	15.25
		min	14.08	14.08
L4	22D pin	max	12.47	13.22
		min	11.60	12.35
	22D socket	max	12.47	13.22
		min	11.27	12.02
	20# or 16# pin 、 socket	max	12.64	13.39
		min	11.77	12.52
L5	22D pin	max	11.08	11.08
		min	9.91	9.91
	22D socket	max	11.08	11.08
		min	9.58	9.58
	20# or 16# pin 、 socket	max	11.25	11.25
		min	10.08	10.08
L6	22D pin	max	8.47	9.22
		min	7.60	8.35
	22D socket	max	8.47	9.22
		min	7.27	8.02
	20# or 16# pin 、 socket	max	8.64	9.39
		min	7.77	8.52

Plug and receptacle caps

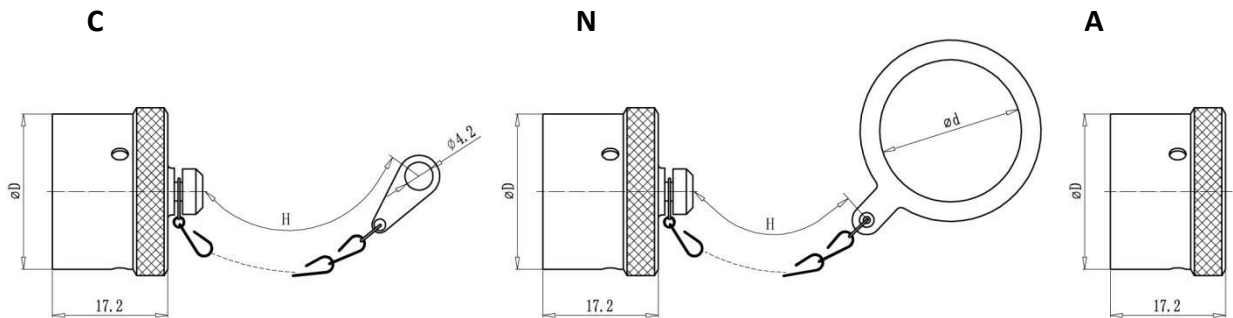
Basic series	MS	27501	F	11	C	L
Cap style:						
27501-plug cap						
27502-receptacle cap						
Finish:						
B: Olive green cadmium						
F: Nickel						
S:Stainless steel						
Shell size: 09-11-13-15-17-19-21-23-25						
Accessories:						
A-without rope N-With stainless steel rope and ring						
C, S-With stainless steel rope and eyelet						
R-With nylon rope and eyelet						
E-With nylon rope and ring						
Rope length:						
With specification-standard length						
L-rope length of 127mm						

MS27501 plug cap dimension



Shell size	09	11	13	15	17	19	21	23	25
A	18.6	21.6	24.7	28.6	31.7	35.6	38.4	41.7	44.7
H max	76.2	76.2	88.9	88.9	88.9	88.9	101.6	101.6	101.6

MS27502 receptacle cap dimension



Shell size	09	11	13	15	17	19	21	23	25
D	19.9	23.1	27.1	30.2	33.2	36.2	39.3	42.5	45.7
d	min	18.0	21.5	26.0	29.0	32.5	35.5	38.6	42.0
H	max	76.2	76.2	88.9	88.9	88.9	88.9	101.6	101.6

Note:The cap should be ordered separately, not supplied with the connector, and can be customized according to the requirements