



BERNIER

Push-Pull or Quick-Releasable Connector **CMA**

Push-Pull Connector **CMASD**

Push-Pull or Quick-Releasable Connector **CMALD**

Compact Quick-Releasable Connector **MMC**

Bayonet Connector **PAM**

Bayonet Connector **55116**

Quick-Releasable Connector **221**

Power Connector **POW**

Avionic Connector **360L6**

Multi-axis Quick-Releasable Connector **B600**

Jack Connector **JCC**

Audio Connector **U**

Coaxial Connector **CCF700**

Hexagonal Connector **MH**

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... For an optimum data transfer in harsh environments !

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Push-Pull Connector

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Dimensions in mm

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CMA Serie

Push-Pull or Quick-Releasable Connector



... For an optimum data transfer in
harsh environments !

Catalog



BERNIER

Introduction

CMA

◆ Description

BERNIER designed the CMA line specially for equipment in harsh environments. The CMA connectors are available equipped with 04, 06, 10, 14 and 22 contacts, their toughness and ergonomics are appreciated in a wide range of applications.

◆ Applications



Radios



Accessories



Intercoms



Crypted data

Push-Pull

Ergonomics

Stainless steel

EMI RFI Protection

Multi-Contacts

Watertightness



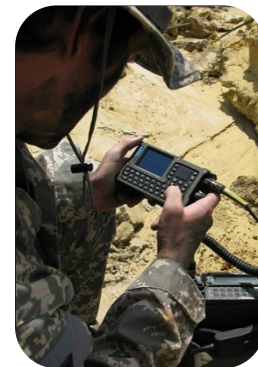
Optronic devices



Future soldier



Ruggedized computers



Tactical equipments

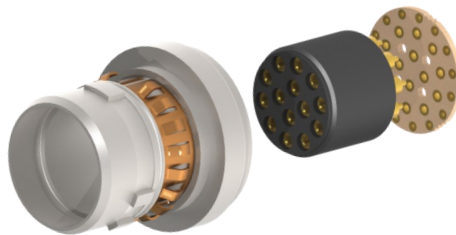
◆ The Right Solution for your projects

CMA connectors are appreciated for their flexibility to fit customer specifications.

Our Design team is able to propose versions answering to your needs. Reinforcements can be applied in case of use in harder climatic, ergonomic and electromagnetic conditions.

The CMA line evolution led by BERNIER has come to integrate electronic modules in the connector shell to carry wireless functions or to make adaptators towards other industrial or military connectors.

Caps and backshells can also be improved to bring a better ergonomics on your configuration.



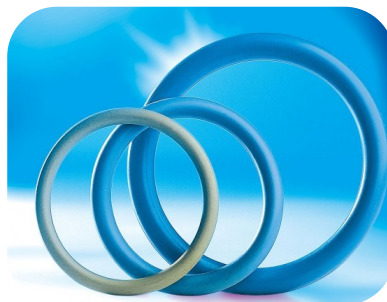
◆ EMC reinforcements

Options are available in order to reinforce the EMC specifications.



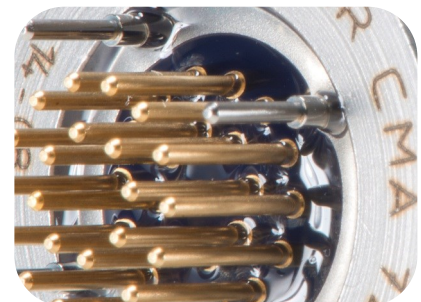
Ground ring « 360° »

CMA standard receptacles are equipped with a ground ring giving a high EMC level. This function developed by Bernier brings a better continuity between the connectors shells and a protection on 360°



Conductive O rings

The receptacle Fluorosilicon Oring can be switched to a conductive version to establish a better conductivity between the connector and the panel.



Ground pin

One or several ground pins inserted in the connector shell can be set to link the chassis ground directly to the PCB.



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CMA

Technical data

◆ Climatic and mechanical characteristics

	Push-Pull version	'L' Quick releasable Version
Unlocking system	Manual action on ring	Axial force ($30N \leq F \leq 70N$)
Operating temperature Range	-55°C to +125°C	
Endurance	10 000 operations 5000 operations (22 contacts)	2000 Operations
Sealing performance	IP68 (Mated and unmated)	
Corrosion resistance	Salt fog : 96 hours, 250 hours, 500 hours depending material	
Vibration	55 Hz to 2000 Hz, 10g (6 hours)	
Fluids resistance	Oils and hydrocarbons	

The Push-Pull version and the quick-releasable version mate on the same receptacle

◆ Electrical characteristics

	04 contacts version	06 contacts version	10,14 contacts version	22 contacts version
Working voltage	100 V _{max}		60 V _{max}	
Current rating per contact	4 A _{max}	4 A _{max} (2cts) 1,5 A _{max} (4cts)	1,5 A _{max}	2 A _{max}
Gauge (AWG)	18	18 (2cts) 22 (4cts)	22	26
Contact type	Solder buckets / For PCB			
Contact resistance	≤ 10 mOhms			
Insulation resistance	>1000 MOhms under 500 V _{DC}			
Crosstalk	80 dB at 8 kHz			-
Dielectric	500 V _{AC RMS} at 50 Hz			
EMI RFI Protection	Yes			

◆ Material and plating

	Matériaux	Plating
Connector shell	Stainless steel Navy stainless steel / Bronze	Sandblasting or Black Chrome
Insulator	Thermosetting (04,06,10,14 cts) PBT (22 cts)	-
Contacts	Copper alloy	Gold over nickel
Ground ring	Beryllium Copper	-
Backshell shell	Aluminium alloy	Black Chrome or Black Anodizing



◆ Connectors

Type	Weight (Max)
CMA 1 (Extension)	20 g
CMA 3 (Panel through)	23 g
CMA 5 (Push-Pull plug)	30 g
CMA 6 (Dummy receptacle)	16 g
CMA 7 (Receptacle)	18.5 g

Stainless steel version

◆ Elbow parts

Type	Weight (Max)
CMA RA8	21 g
CMA RA82	18 g

◆ Elbow and straight backshells

Type	Weight (Max)
CMA RAI-XX	9.6 g
CMA RA7-XX	26 g
CMA RA18-XX	14 g
CMA RA09-XX	6 g
CMA RA81-XX	28 g

◆ Caps

Type	Weight (Max)
Thermoplastic plug cap (CMA BA06 ...)	4.5 g
Metallic plug cap (CMA BA65 ...)	12 g
Elastomer extension cap (CMA BA94 ...)	6 g
Elastomer receptacle cap (CMA BA86-35MC ...)	6 g
Metallic receptacle cap (CMA BA73 ...)	38 g



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CMA

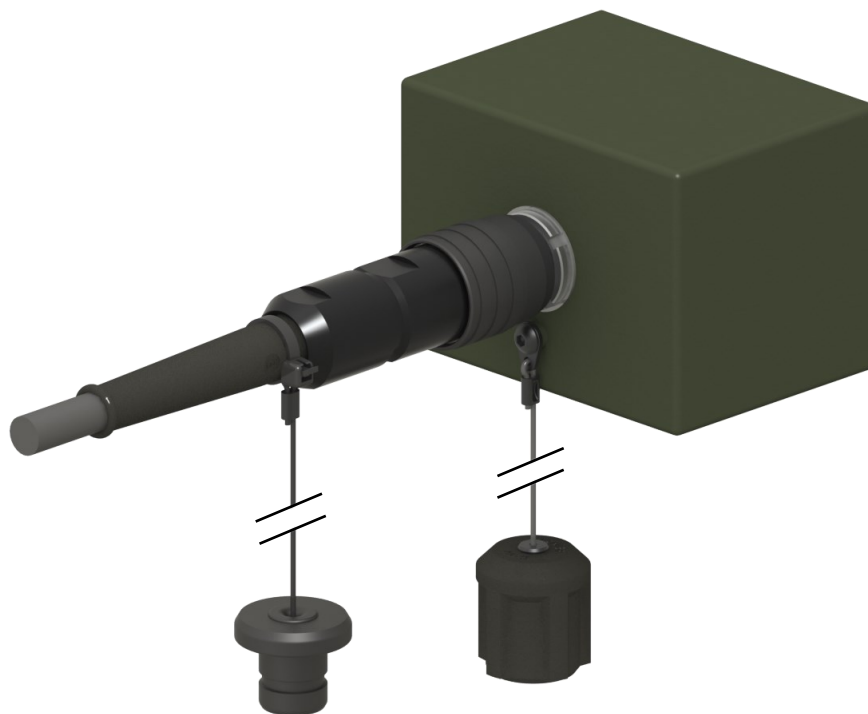
Compatibilities

◆ Compatibility matrix

	Extension Type 1	Panel through Type 3	Dummy receptacle Type 6	Receptacle Types 7 and R7	Elbow part 90°	Elbow part 105°	Straight backshell	Elbow backshell 90°	Thermo-plastic plug cap	Metallic plug cap
Plug Type 5	●	●	●	●	●	●	●	●	●	●
Panel plug Types 11,18	●	●	●	●	-	-	-	-	●	●
Elbow part 90°	●	●	-	-	-	-	●	-	-	-
Elbow part 105°	●	●	-	-	-	-	●	-	-	-
Straight backshell	●	●	-	-	●	●	-	-	-	-
Elbow backshell 90°	●	●	-	-	-	-	-	-	-	-
Elastomer cap	●	●	●	●	-	-	-	-	-	-
Metallic cap	●	●	●	●	-	-	-	-	-	-



Attention : The mating connectors must have the same number of contacts and the same keyway.
Special case : A 10 contacts plug can mate a 14 contacts receptacle.

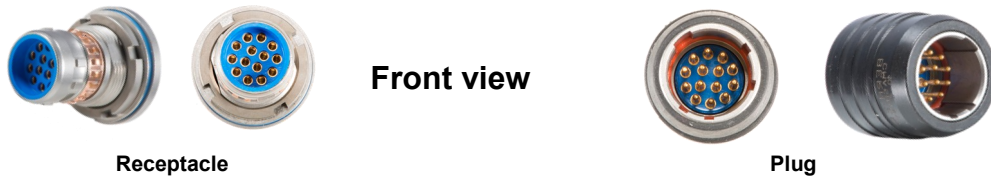


Keyways



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CMA



Front view

Receptacle

Plug

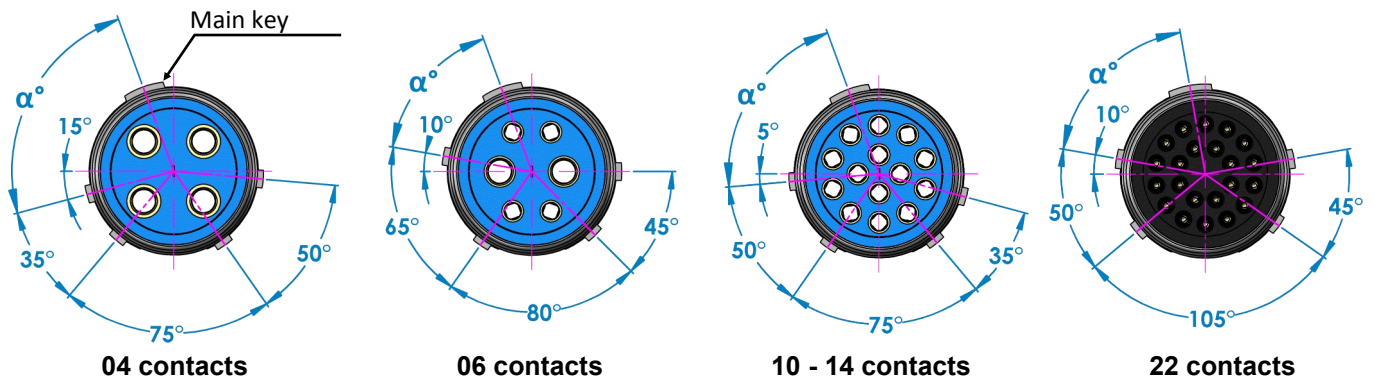
The keyways depend on the main key position. Positions of the 4 small keys, contacts and flats of the receptacle remain the same.

		Keyways						
		N	W	X	Y	Z	P*	T
Angle α	04 contacts	105°	95°	115°	85°	125°	-	**
	06 contacts	80°	70°	90°	60°	100°	-	**
	10-14 contacts	95°	85°	105°	75°	115°	138°	**
	22 contacts	80°	70°	90°	60°	100°	-	**

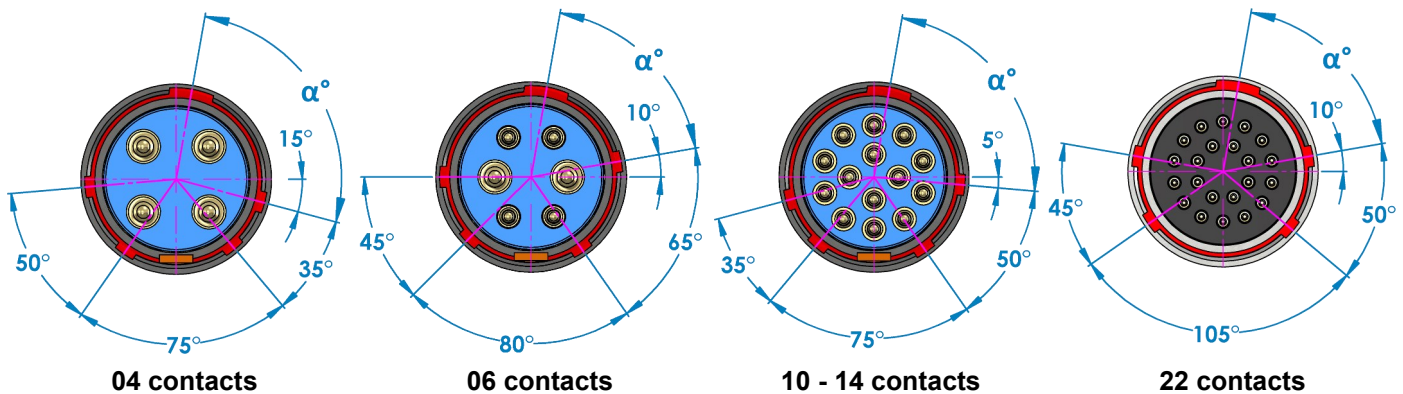
* Keyway P allows the possibility to make 'double keyways' plug ex: CMA 5NP14 mating a N keyway receptacle AND a P keyway receptacle

** Keyway T mates with all keyways—tooling.

Receptacle - Extension



Plug



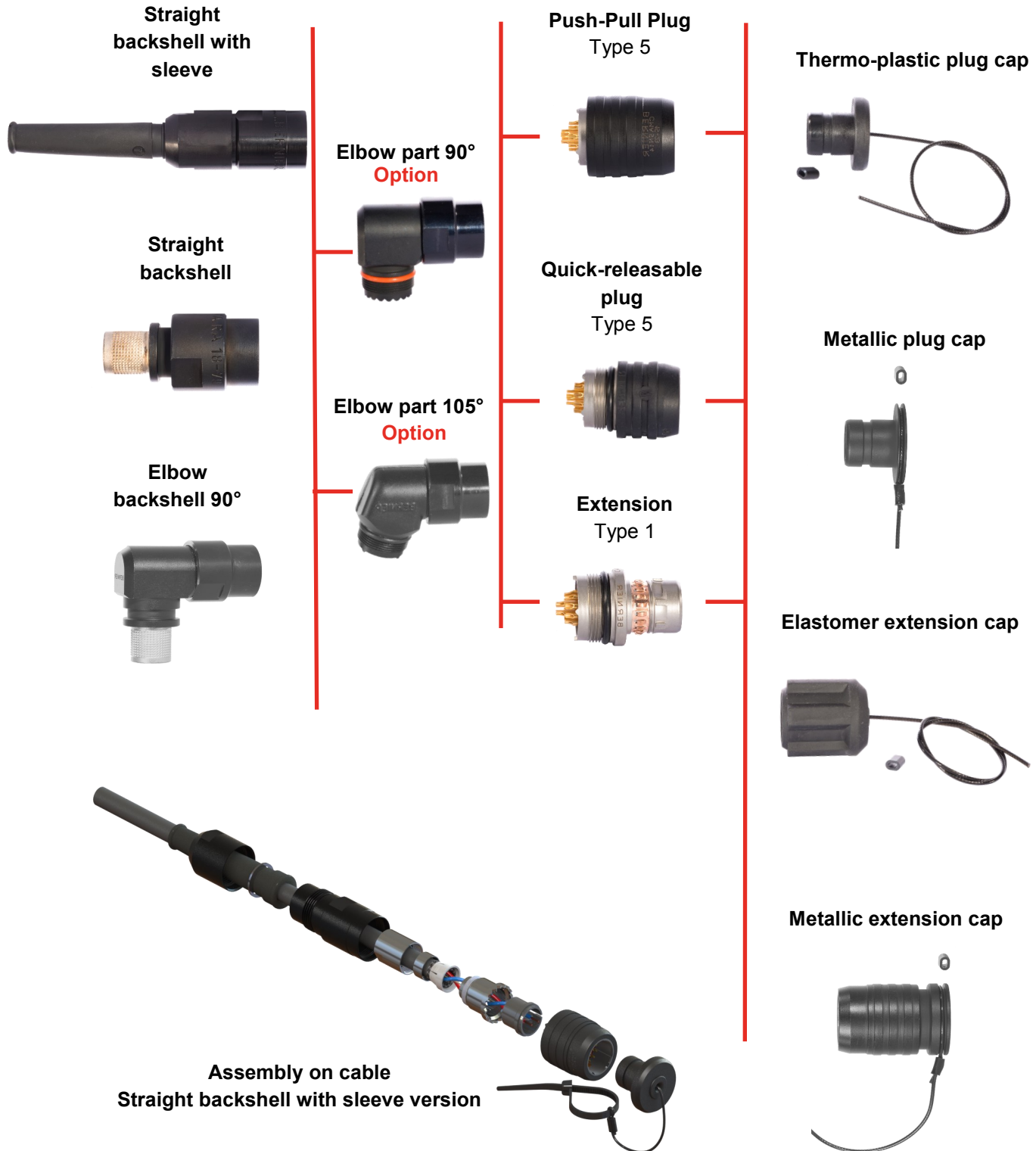


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Synoptic

CMA

◆ Items mounted on cable

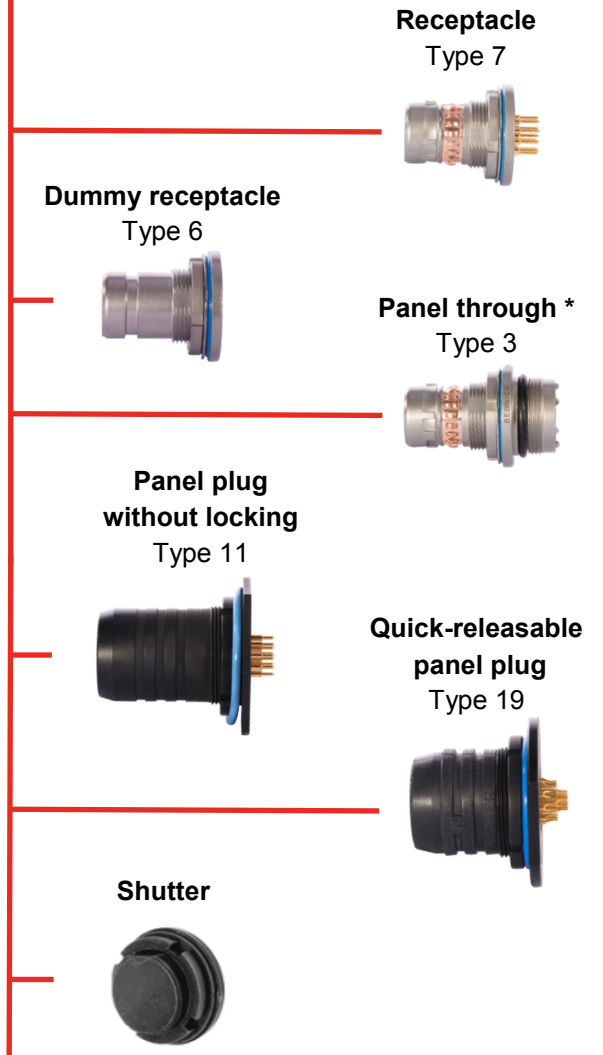


A backshell (necessary for cable assembling) must be ordered at the same time than a connector and the reverse

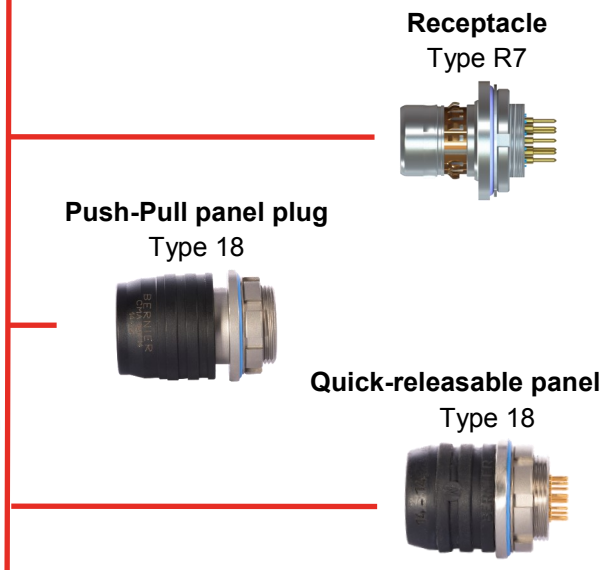
◆ Items mounted on panel



Rear panel mounting



Front panel mounting



* can accept backshell (See items mounted on cable)



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CMA

Part numbers

◆ Connectors

Description	Code	CMA	B	7	N	14	Y1	PM	JC	SM
Serie	CMA	↑								
Aspect : 'Nothing mentionned' : Sandblasted version Black version (by default for type 5)	B		↑							
Locking (Type 5, 18) : 'Nothing mentionned' : Push-pull version Quick-releasable version with spring clip Quick-releasable version without locking	L SC									
Connector Type : Extension Panel Through Plug Dummy receptacle Receptacle Panel Plug	1 3 5 6 2, 7, R7 11, 17, 18, 19			↑						
Keyways	N, W, X, Y, Z, P, T				↑					
Number of contacts	04, 06, 10, 14, 22					↑				
Contacts : 'Nothing mentionned' : Solder cup For PCB Type 7, R7 For PCB Type 5, 18	Y1, Y1.2, Y1.3, Y2, Y3, Y4, Y4.1, Y4.2 Y8, Y8.1 Y, YA						↑			
Ground pin 1 ground pin 4 ground pins	PM PM4S							↑		
Panel Oring, conductive Oring option 'Nothing mentionned' : Fluorosilicon Oring Fluorosilicon charged with Ni/Graph Oring Fluorosilicon charged with Silver/Alu Oring	JC JC1								↑	
Material : 'Nothing mentionned' : Stainless steel Marine stainless steel 250 Hours Salt fog Navy Bronze 500 Hours Salt fog	SM BM									↑

◆ Elbow parts for types 1, 3, 5

Description	Code	CMA	RA8
Serie	CMA	↑	↑
Elbow part	RA8, RA82	↑	↑

◆ Backshell for types 1, 3, 5

Description	Code	CMA	RA7	-	70
Serie	CMA	↑	↑		↑
Backshell	RA02, RA7, RA18, RA24, RA09, RA81, RAIXX	↑	↑		↑
Outer diameter	See chapter « Elbow part and backshells »				↑

◆ Caps

Description	Code	CMA	BA	06	MC	-	200	ST
Serie	CMA	↑						
Caps	BA		↑					
Type of caps	See chapter « Caps »			↑				
Type of fixing : Black covered stainless steel micro-cable 'Nothing mentionned' : Nylon cord	MC				↑			
Fixing length (mm)	See chapter « caps »						↑	
Termination	See chapter « caps »							↑



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Receptacles

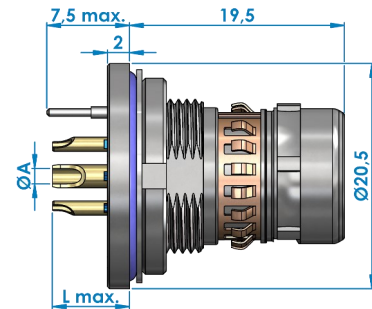
CMA

◆ Type 7 with solder cup contacts



Ex: CMA 7N06PM

Number of contacts	ΦA	L max
04	AWG 18	7.1
06	AWG 18	7.1
2 contacts	AWG 18	7.1
4 contacts	AWG 22	7.1
10	AWG 22	7.1
14	AWG 22	9.1
22	AWG 26	7.1

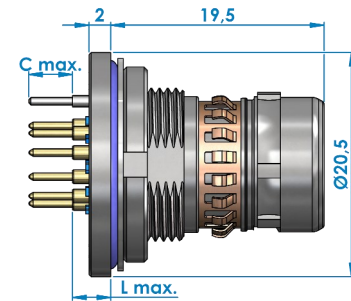


◆ Type 7 with contacts for PCB



Ex: CMA 7N10Y1PM

Contact type	L max	C max
Y1	3.5	4
Y1.2	3.5	2.6
Y1.3	3.5	1.5
Y2	9.5	4
Y3	12.5	4
Y4	3.2	2
Y4.1	3.2	1.3
Y4.2	3.2	1.7
Y8	5.5	4
Y8.1	5.5	2.6

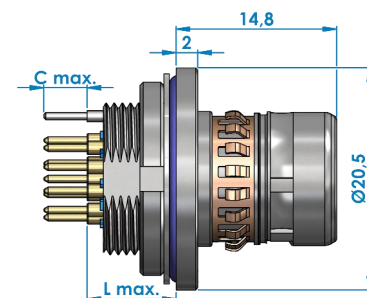


◆ Type R7 rear panel mounting (can't be dismantled by the outside of the equipment)



Ex: CMA R7N14Y1PM

Contact type	L max	C max
Y1	8.2	4
Y1.2	8.2	2.6
Y1.3	8.2	1.5
Y2	14.2	4
Y3	17.2	4
Y4	7.9	2
Y4.1	7.9	1.3
Y4.2	7.9	1.7
Y8	10.2	4
Y8.1	10.2	2.6



Version R7 with solder cup contacts possible

Receptacles



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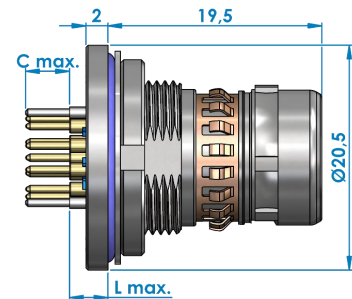
CMA

◆ **Type 7 with 4 ground pins set on 360° 'PM4S'**



Ex: CMA 7N14Y1PM4S

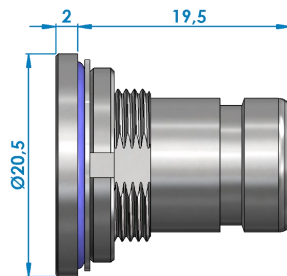
Contact type	L max	C max
Y1	3.5	4
Y1.2	3.5	2.6
Y1.3	3.5	1.5
Y2	9.5	4
Y3	12.5	4
Y4	3.2	2
Y4.1	3.2	1.3
Y4.2	3.2	1.7
Y8	5.5	4
Y8.1	5.5	2.6



◆ **Type 6 for plug fixing, for all plugs**



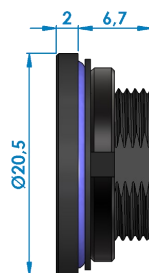
Ex: CMA 6



◆ **Watertight shutter for CMA Type 7 panel cut**



Ex: CMA B598N





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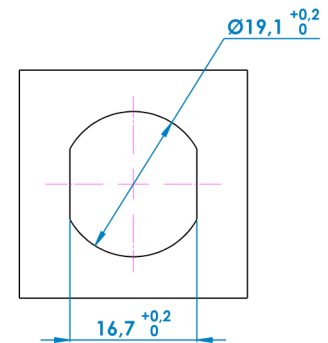
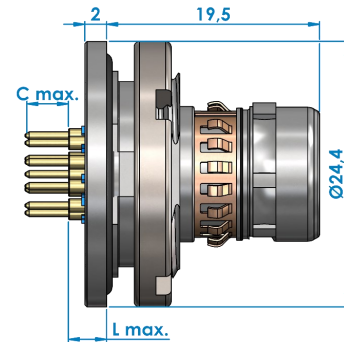
Receptacles

CMA

◆ Type 7 fitting the MIL-C-55116 receptacle panel cut



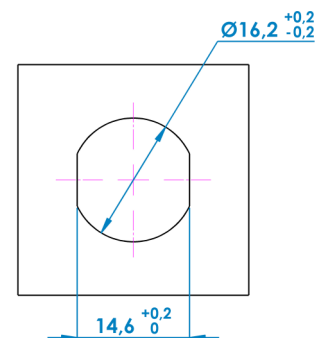
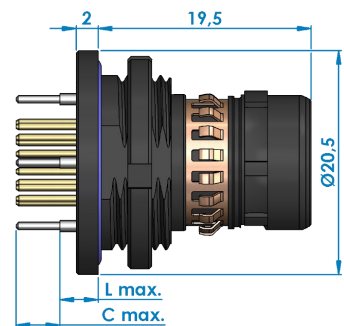
Contact type	L max	C max
Y1	3.5	4
Y1.2	3.5	2.6
Y1.3	3.5	1.5
Y2	9.5	4
Y3	12.5	4
Y4	3.2	2
Y4.1	3.2	1.3
Y4.2	3.2	1.7
Y8	5.5	4
Y8.1	5.5	2.6



◆ Type 2 fitting the special panel cut with 4 ground pins



Contact type	L max	C max
Y1	3.5	4
Y2	9.5	4



Ex: CMA B 2N22Y1PM4



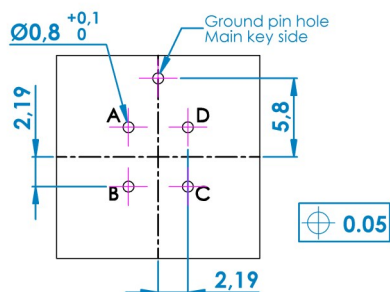
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CMA

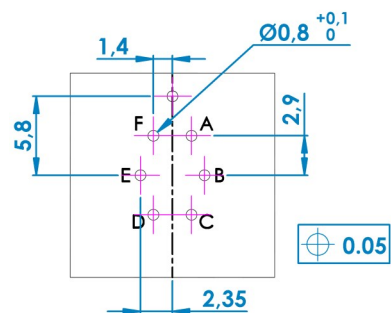
PCB holing and panel cuts

◆ PCB holing, welding side, through pins

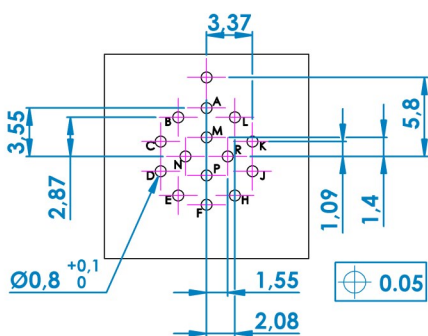
04
Contacts
1 PM



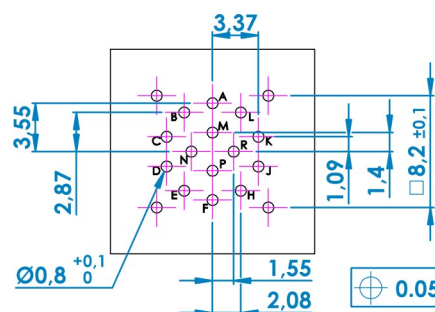
06
Contacts
1 PM



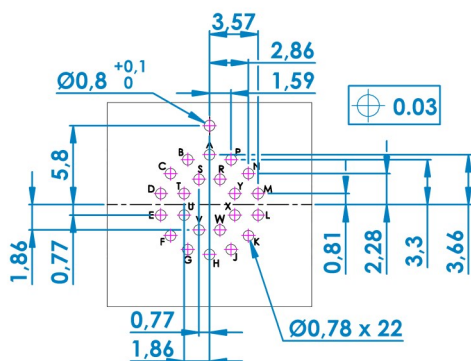
10 - 14
Contacts
1 PM



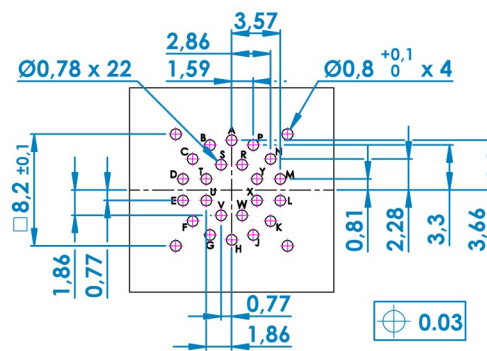
10 - 14
Contacts
with
4 pins
PM4S



22
Contacts
1 PM

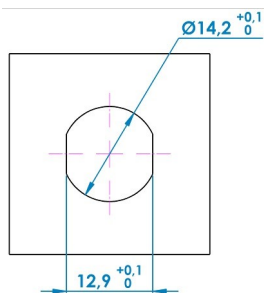


22
Contacts
with
4 pins
PM4S

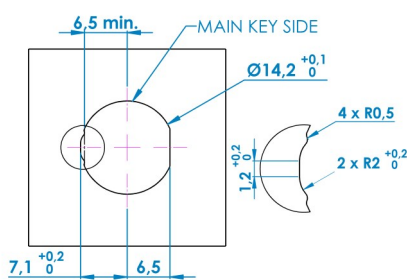


◆ Panel cuts for types 7 and R7

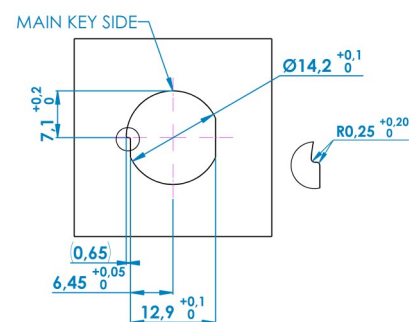
For a receptacle alone
04, 06, 10, 14 contacts



For several CMA receptacles
mounted on 1 PCB



For 22cts receptacle



Front view side — Maximum panel thickness for CMA receptacles : 3.5mm



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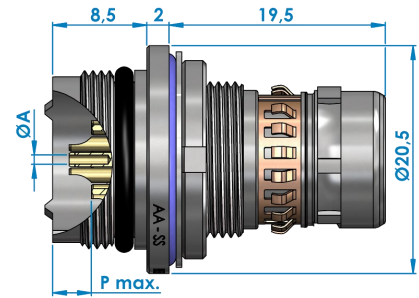
CMA

Panel through

◆ Type 3 With solder cup contacts



Number of contacts	ϕA	P max
04	AWG 18	5.2
06 (2 contacts) (4 contacts)	AWG 18 AWG 22	5.2 5.2
10	AWG 22	5.2
14	AWG 22	5.2
22	AWG 26	5.5

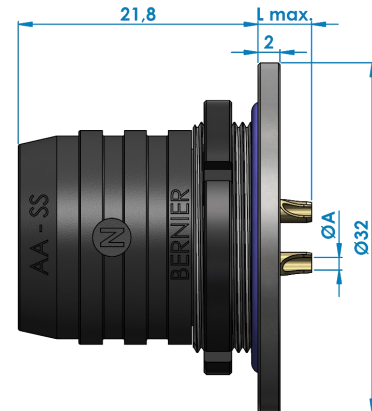


Ex: CMA 3N14

◆ Type 11 Quick-releasable with solder cup contacts



Number of contacts	ΦA	L max
04	AWG 18	4.9
06	AWG 18	4.9
2 contacts	AWG 18	4.9
4 contacts	AWG 22	4.9
10	AWG 22	4.9
14	AWG 22	6.9
22	AWG 26	4



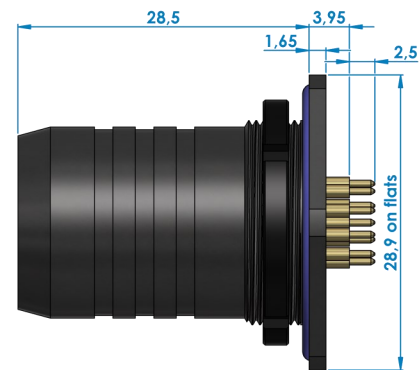
Ex: CMA B L 11N04

Version 11 Quick-releasable panel plug with contacts for PCB possible

◆ Type 11 No locking system with contacts for PCB



Contact type
Y5

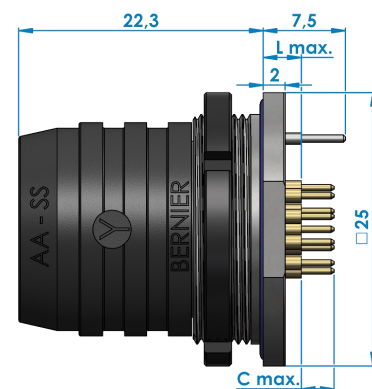


Ex: CMA 11N14Y5

◆ Type 17 Quick-releasable with contacts for PCB



Contact type	L max	C max
Y	1.7	1.2
YA	3.7	3.2



Ex: CMA L 17Y14YAPM

Version 17 Quick-releasable panel plug with solder cup contacts possible



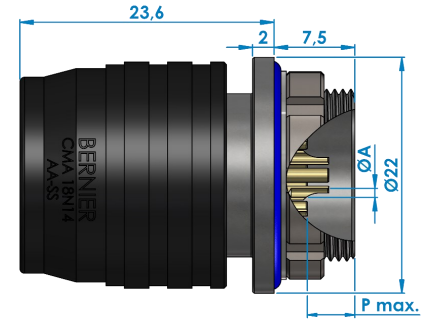
CMA BERNIER

Panel plugs

◆ Type 18 Push-Pull with solder cup contacts



Number of contacts	ΦA	P max
04	AWG 18	4.7
06		
(2 contacts)	AWG 18	4.7
(4 contacts)	AWG 22	4.7
10	AWG 22	4.7
14	AWG 22	4.7
22	AWG 26	7.1



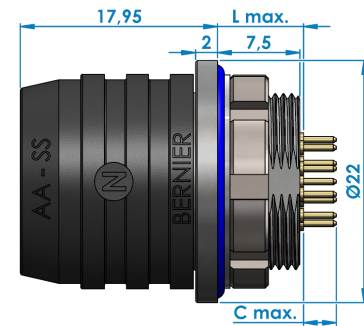
Ex: CMA 18N14

Version 18 Push-Pull panel plug with contacts for PCB possible

◆ Type 18 Quick-releasable with contacts for PCB



Contact type	L max	C max
Y	6.2	1.2
YA	8.2	3.2



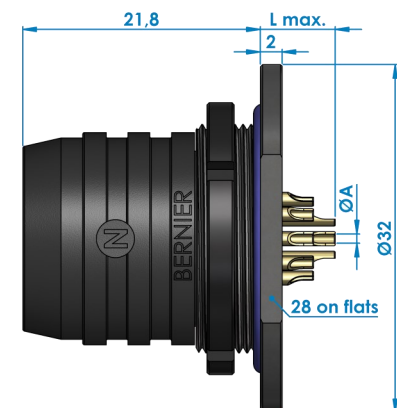
Ex: CMA L 18N14YA

Version 18 Quick releasable panel plug with solder cup contacts possible

◆ Type 19 Quick-releasable with solder cup contacts



Number of contacts	ΦA	L max
04	AWG 18	5
06		
(2 contacts)	AWG 18	5
(4 contacts)	AWG 22	5
10	AWG 22	5
14	AWG 22	7
22	AWG 26	3.9



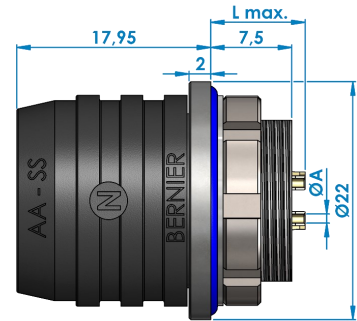
Ex: CMA B L 19N14

Version 19 Quick-releasable panel plug with contacts for PCB possible

◆ Type 18 Quick-Releasable 'SC' No locking system with solder cup contacts



Number of contacts	ΦA	L max
04	AWG 18	8.9
06		
(2 contacts)	AWG 18	8.9
(4 contacts)	AWG 22	8.9
10	AWG 22	8.9
14	AWG 22	11
22	AWG 26	7.9



Ex: CMA SC 18N06

Version 18 No locking system with contacts for PCB possible



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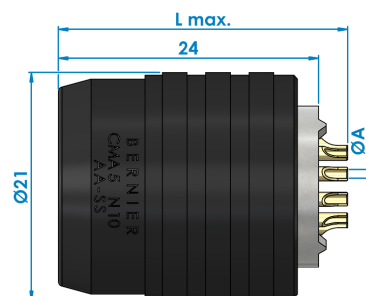
CMA

Plugs

◆ Type 5 Push-Pull plug with solder cup contacts



Number of contacts	ΦA	L max
04	AWG 18	27.2
06	AWG 18	27.2
(2 contacts)	AWG 18	27.2
(4 contacts)	AWG 22	27.2
10	AWG 22	27.2
14	AWG 22	29.2
22	AWG 26	25.7

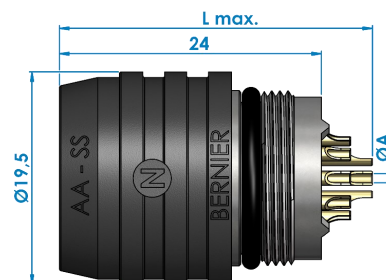


Ex: CMA 5N10

◆ Type 5 Quick releasable plug with solder cup contacts



Number of contacts	ΦA	L max
04	AWG 18	27.2
06	AWG 18	27.2
(2 contacts)	AWG 18	27.2
(4 contacts)	AWG 22	27.2
10	AWG 22	27.2
14	AWG 22	29.2
22	AWG 26	25.7

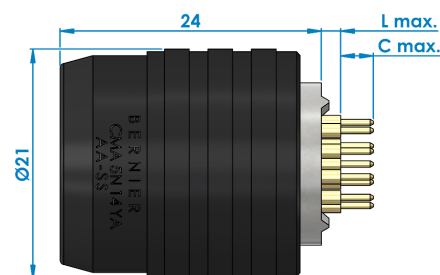


Ex: CMA L 5N14

◆ Type 5 Push-Pull plug with contacts for PCB



Contact type	L max	C max
Y	-0.3	1.2
YA	1.8	3.2



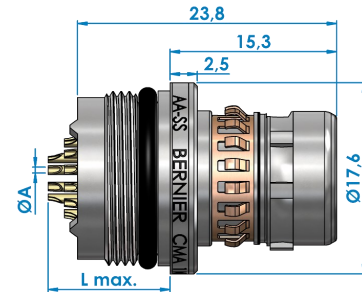
Ex: CMA 5N14YA

Version 5 Quick releasable plug with contact for PCB possible

◆ **Type 1 Extension with solder cup contacts**



Number of contacts	φA	L max
04	AWG 18	11.4
06 (2 contacts) (4 contacts)	AWG 18 AWG 22	11.4 11.4
10	AWG 22	11.4
14	AWG 22	13.4
22	AWG 26	11.4

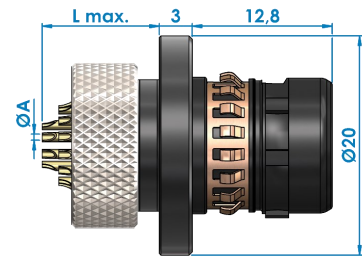


Ex: CMA 1N22

◆ **Type 1 extension with solder cup contacts and integrated backshell**



Number of contacts	φA	L max
04	AWG 18	10.9
06 (2 contacts) (4 contacts)	AWG 18 AWG 22	10.9 10.9
10	AWG 22	10.9
14	AWG 22	12.9
22	AWG 26	10.9



Ex: CMA 1N22SP



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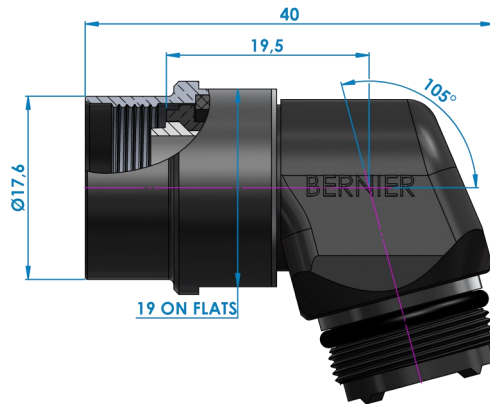
Elbow parts

CMA

◆ Elbow part with a 105° angle



CMA RA8

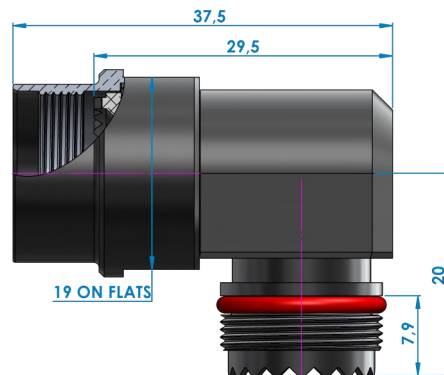


Orientation choice by angle of 20° set when tightening the backshell

◆ Elbow part with a 90° angle



CMA RA82



Orientation choice by angle of 20° set when tightening the backshell



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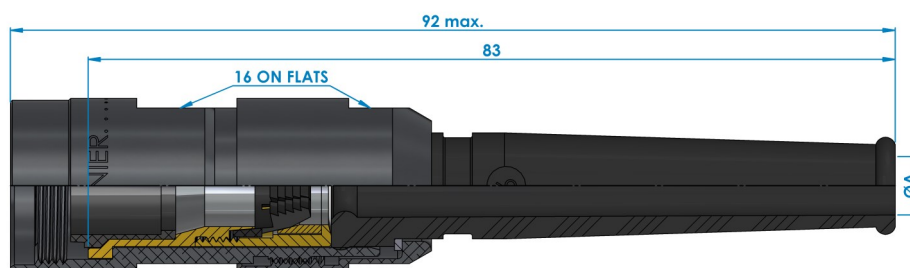
CMA

Backshells

◆ Straight backshell with sleeve



Size XX	ΦA
45	4.5
55	5.5
60	6
70	7
80	8



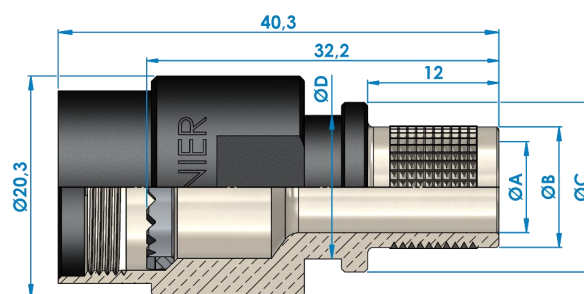
CMA RA7-XX

Cable clamp and sleeve included

◆ Straight backshell with knurling



Size XXX	ΦA	ΦB	ΦC	ΦD
52	5.2	8.5	13.5	11.5
64	6.4	9.6	13.9	11.5
79	7.9	11.2	15.5	13.1
95	9.5	12.8	17.1	14.8
111	11.1	14.3	18.7	16.3
127	12.7	15.9	20.3	17.7



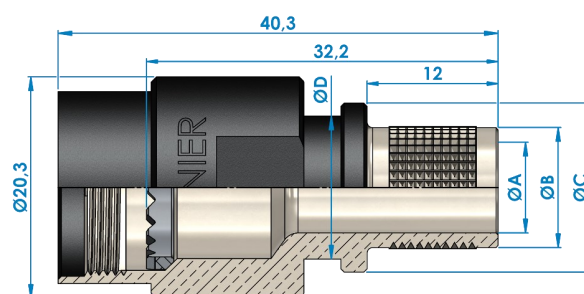
CMA RA18-XXX

Backshell for cable assembling with metallic collar and heat-shrink boot (not included)

◆ Straight backshell with knurling



Size XX	ΦA	ΦB	ΦC	ΦD
52	5.2	8.3	15.5	13.1
64	6.4	9.4	15.5	13.1
79	7.9	11	15.5	13.1
83	8.3	11	15.5	13.1



CMA RA24-XX

Diameters C and D don't change.

Backshell for overmolding or cable assembling with metallic collar and heat shrink boot (not included)



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Backshells

CMA

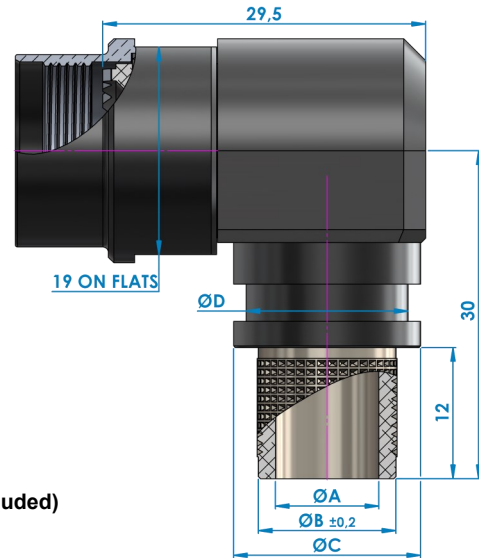
◆ Elbow backshells with knurling



CMA RA81-XXX

Size XXX	ΦA	ΦB	ΦC	ΦD
52	5.2	8.5	13.5	11.5
64	6.4	9.6	13.9	11.5
79	7.9	11.2	15.5	13.1
95	9.5	12.8	17.1	14.8
111	11.1	14.3	18.7	16.3
127	12.7	15.9	20.3	17.7

Backshell for cable assembling with metallic collar and heat-shrink boot (not included)



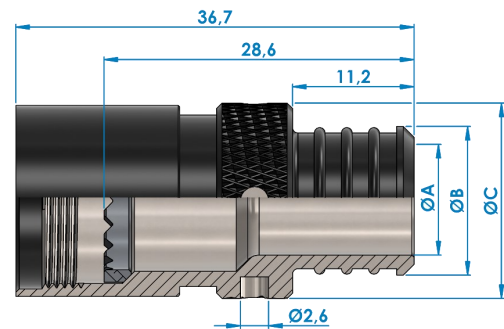
◆ Straight backshell with knurling



CMA RA02-XX

Taille XX	ΦA	ΦB	ΦC
10	10	13.7	18

Backshell for cable assembling with metallic collar and heat-shrink boot (not included)

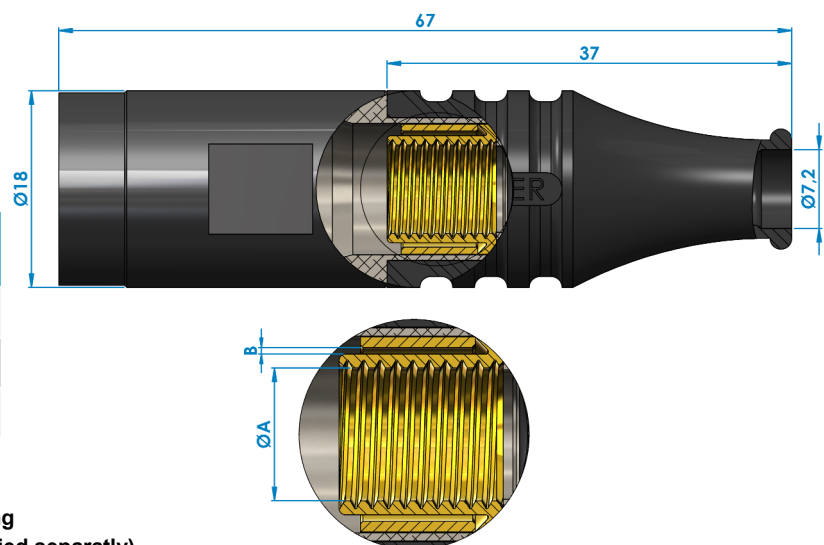


◆ Unremovable straight backshell



CMA RA1XX

Size XX	ΦA	B
01	9.25	0.2
02	10.25	0.5
03	10.6	0.4



Backshell with a crimping operation during assembling to fit with accuracy to the cable (Crimping tools supplied separately)



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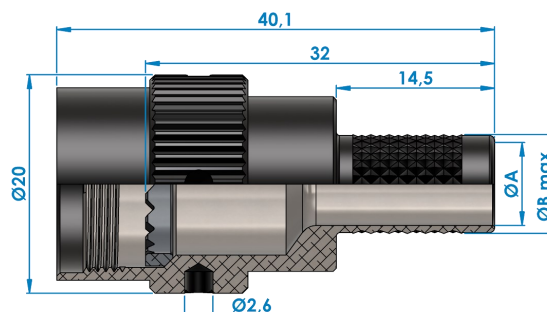
CMA

Backshells

◆ Straight backshell with knurling



Size XX	φA	φB
76	7.6	9.3

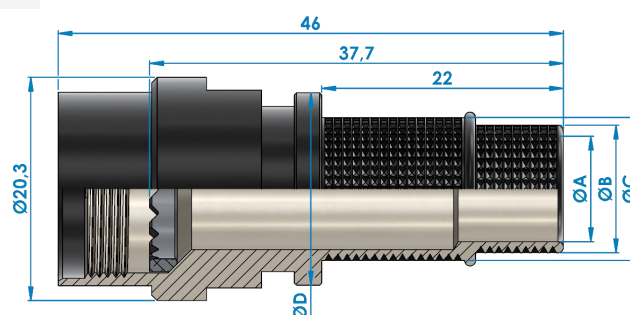


CMA RA17-XX

◆ Straight backshell with double knurling



Size XX	φA	φB	φC	φD
95	9.5	11.6	13	17.5

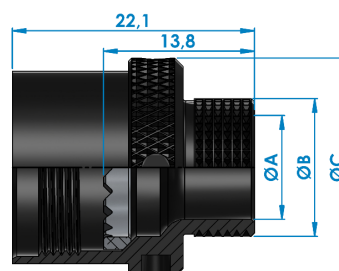


CMA RA19-XX

◆ Short backshell



Size XX	φA	φB	φC
95	9.5	12.6	20



CMA RA09-XX

Backshells for cable assembling with metallic collar and heat-shrink boot (not included)



◆ Plug caps



Ex: CMA BA06MC

With...	Thermo-plastic <i>Watertight</i>		Metallic black <i>Watertight</i>	
	Cord	Microcable	Cord	Microcable
Ferule*	CMA BA06-200ST	CMA BA06MC-200ST	CMA BA65-200ST	CMA BA65MC-200ST
Plastic clamp	CMA BA06	CMA BA06MC	CMA BA65T	CMA BA65MCT

* Ferule is delivered separately to crimp it during cable assembling with the best fixing length.

Note that for plugs without locking system (SC type) a special cap is necessary, please contact us.

Stock cap
CMA BASFIL



◆ Caps for receptacles types 3, 6 and 7



Ex: CMA BA86-35MC

Avec...	Elastomer cap <i>Watertight</i>		Push-Pull metallic cap * <i>Watertight</i>	
	Cord	Microcable	Cord	Microcable
Metallic ring	CMA BA86	CMA BA86-35MC	CMA BA100xxxEM	CMA BA100xxxMCEM
Crimped eyelet for M3 screw	CMA BA98	CMA BA98MC	Contact us	Contact us
90° crimped eyelet for M3 screw	CMA BA81	CMA BA81MC	Contact us	Contact us
Eyelet for M3 screw	CMA BA91	CMA BA91MC	Contact us	Contact us
Specific eyelet attached to 3 caps	CMA BA84	CMA BA84MC	Contact us	Contact us

* Metallic cap part number contains the keyway and the number of contacts (xxx) of the connector it covers ex : CMA BA100W22MCEM

For type R7 receptacle, you must consider the extension cap with an above panel fixing.

Stock cap
CMA BA20



Please contact us for part number confirmation



Nylon cord is nearing obsolescence ! (Microcable is recommended for new projects)



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CMA

Caps

◆ Extension caps



Ex: CMA BA11MC



Ex: CMA BA100N22MC-200ST

Avec...	Elastomer cap		Push-pull Métallic cap* <i>Watertight</i>	
	Cord	Microcable	Cord	Microcable
Ferule**	CMA BA94-200ST	CMA BA94MC-200ST	CMA BA100xxx-200ST	CMA BA100xxxMC-200ST
Plastic clamp	CMA BA11	CMA BA11MC	CMA BA100xxxT	CMA BA100xxxMCT

* Metallic cap part number contains the keyway and the number of contacts (xxx) of the connector it covers ex : CMA BA100W22MCEM

** Ferule is delivered separately to crimp it during cable assembling with the best fixing length.

Stock cap
CMA BA20



◆ Terminations

Some terminations can accept several lanyards

Plastic clamp



Ferule



Metallic ring



Eyelet for M3 screw



Crimped eyelet for M3 screw



90° crimped eyelet for M3 screw



Nylon cord is nearing obsolescence ! (Microcable is recommended for new projects)



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Modules

◆ Connectors with electronic functions integrated

User authentication module



Crypto / Shunt

Wireless module



Bluetooth antenna

Memory key



Several memory sizes available

Adaptator



CMA—Industrial connector (RJ45, USB, HDMI, ...)

◆ Special connectors

Plug with special shapes for rackable system



CMA 14N06

Panel plug with removable insulator



Used on maintenance of crypto device

105° Elbow adaptator with point to point cabling



CMA plug - CMA extension



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Others

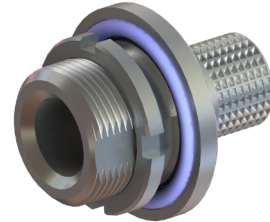
◆ Panel throughs

Similar to CMA RA7-XX backshell construction



B456

For cable shield continuity and heat-shrink boot



B459

◆ Development of products in the CMA environment

Double cap for BNC receptacle and antenna connector



B598

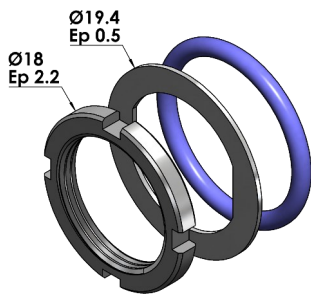


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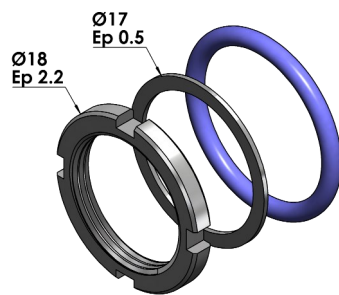
CMA

◆ Accessories

Kits with Oring Washer and Nut for receptacle type 7 and R7	Part numbers
Kit Oring-Washer-Nut (standard)	BEN000ME000
Kit Oring-Circular washer-Nut	BEN000ME001
Kit conductive Oring-Washer-Nut (JC fluorosilicon charged Nickel-Graphite)	BEN000ME002
Kit conductive Oring-Washer-Nut (JC1 fluorosilicon charged Silver-Aluminium)	BEN000ME003



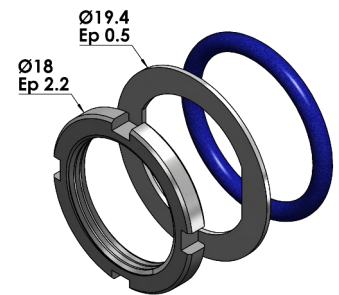
BEN000ME000



BEN000ME001

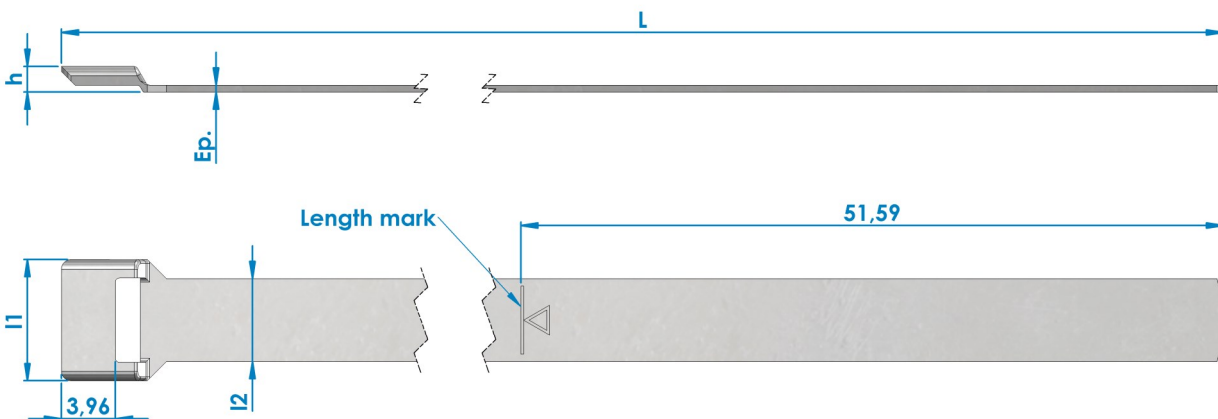


BEN000ME002



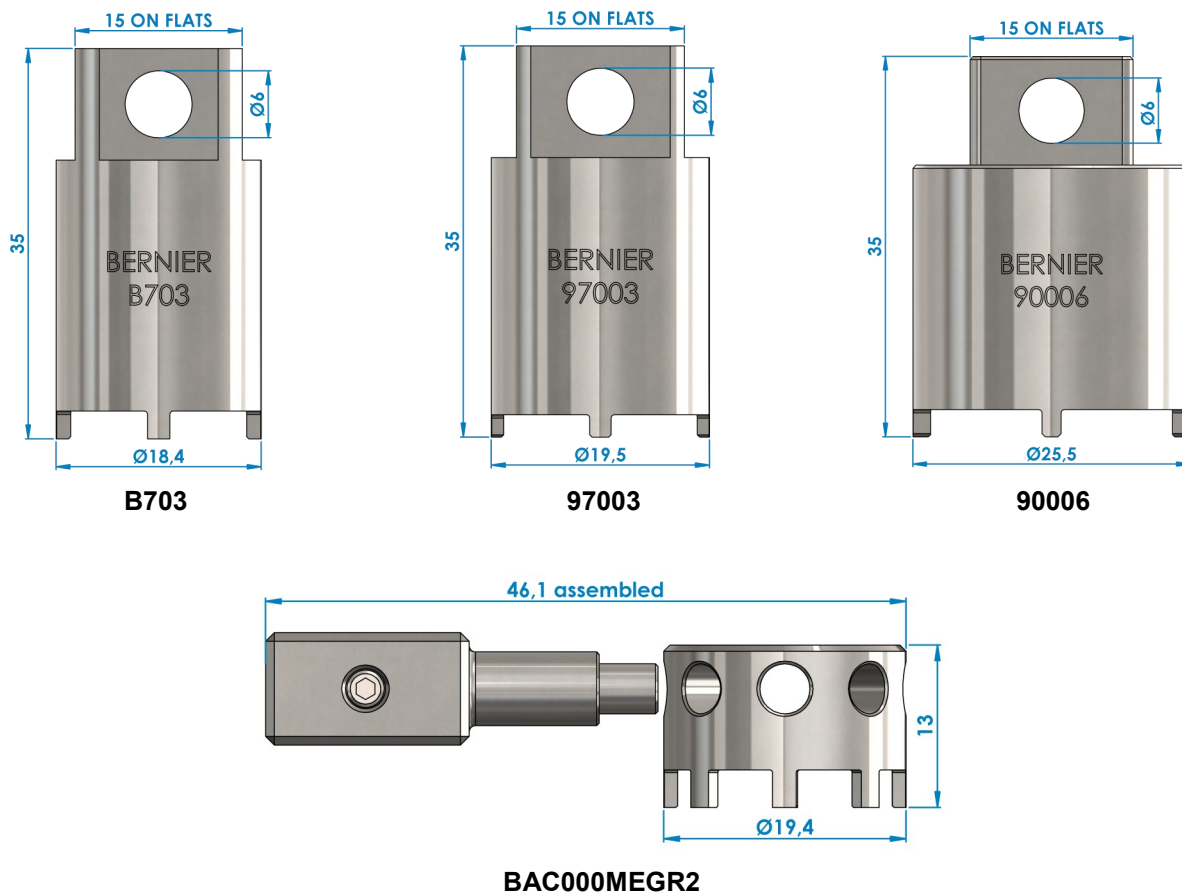
BEN000ME003

Metallic clamp for backshells	PN	L (mm)	h (mm)	l1 (mm)	l2 (mm)	Ep. (mm)
Metallic clamp width 6.10mm	B593	362.1	1.88	8.9	6.1	0.51
Metallic clamp width 3.17mm	B452	206.4	1.35	5	3.1	0.4



◆ Tools

Tightening tools	Part numbers
Tightening key for receptacles type 7	B703
Tightening key for receptacle type 2 and panel plugs type 18	97003
Tightening key for panel plugs types 11, 17 and 19	90006
Tightening key for panel plugs type 18	BAC000MEGR2



◆ Tightening torque

Connector material	Torque For receptacle types 3, 7 and R7	Torque For backshells
Stainless steel	9 N.m	6 N.m
Bronze	11 N.m	6.1 N.m
Navy stainless steel	9 N.m	6 N.m



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CMA

◆ Tools

Mechanical counter part	Part number
Antirotation plug to tighten the backshell on extension with xx contacts	BOUExxMENA01
Antirotation receptacle to tighten the backshell on plug with xx contacts	BOUFxxMENA01



Ex: BOUE14MENA01



Ex: BOUF14MENA01

Electrical counter part	Part number
Panel plug to test all keyways receptacle and extension	CMA 12TxxYA (xx : number of contacts)
Receptacle to test all keyways plug	CMA 7TxxY1 (xx : number of contacts)



CMA 12T14YA



CMA 7T14Y1

Available with solder cup contacts

◆ Tools

For cap installation	Part numbers
Tool to crimp the ferule on microcable	BOU000MESE01
Tool to crimp the ferule on the nylon cord	B705



BOU000MESE01



B705

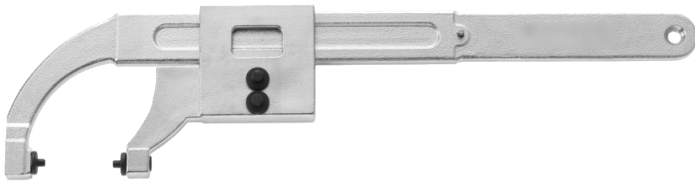


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◆ Tools

For the backshell tightening	Part numbers
Tool to crimp the metallic clamp width 6.10mm	BOU000MESE02
Tool to crimp the metallic clamp width 3.17mm	BOU000MESE03
Crimping jaws for CMA RAI-XX backshell	B458
Pneumatic tool for the crimping jaws B458	RH50
Tightening tool for CMA RA02-XX backshell	B704



B704



BOU000MESE02



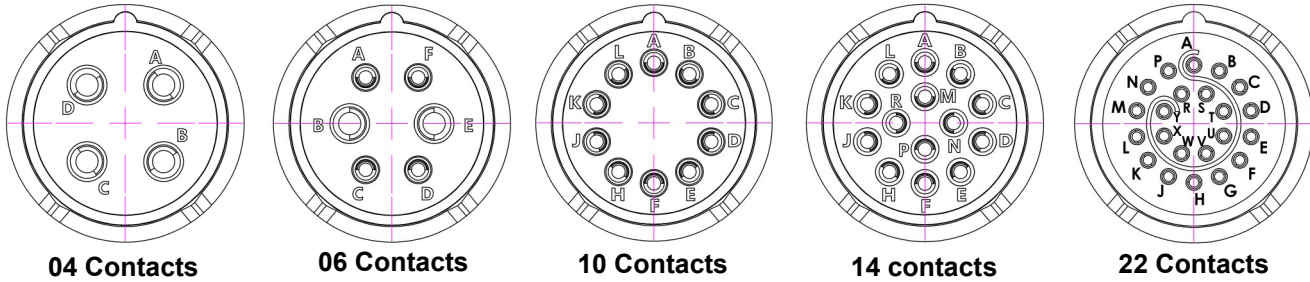
B458



RH50

◆ Contacts position on plugs

Welding side view



For types 1, 3 and 7 : consider the reverse

◆ CMA RA7-XX backshell assembly

Slide items on the cable as shown below

1	Locking backnut
2	Locking washer
3	Sleeve
4	Backshell body
5	Cable clamp nut

6	Tightening cone
7	Cable clamp
8	Stop cable
9	Plastic ring
10	Plug

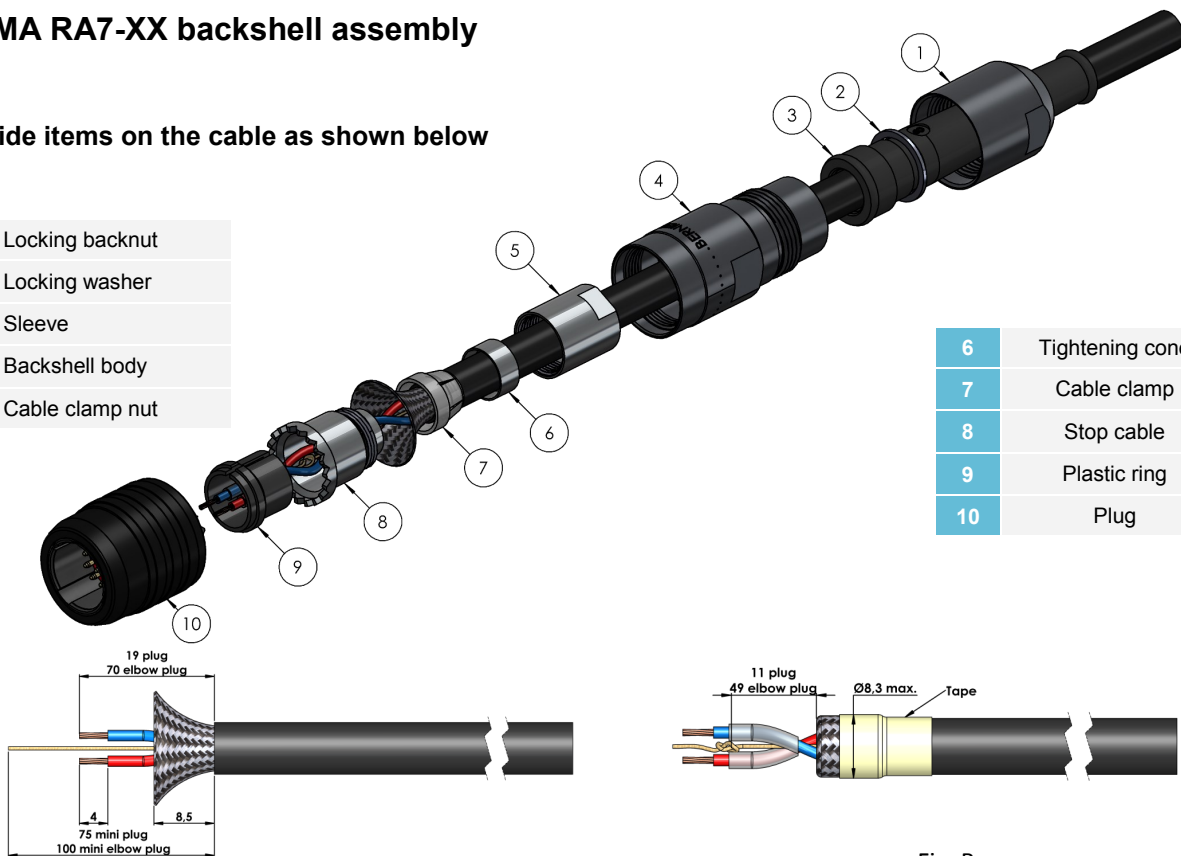


Fig. A

Fig. B

- A- Prepare the cable following Fig.A and Fig.B. The 'elbow plug' is the addition of an elbow part CMA RA8 between items 9 and 10.
- B- To facilitate soldering operation, mate item 10 on counterpart tool BOUExxMENA01 (xx number of contacts).
- C- Solder the wires (protection with heat-shrinkboots recommended).
- D- Make a knot strongly tightened with the cable cord and introduce the knot in the slot of the plastic ring 9, cut extra nylon cord.
- E- Bring the plastic ring 9 on the head of plug 10.
- F- Slide the stop cable 8 on the plastic ring 9.
- G- Spread the cable shield on the stop cable 8 and maintain it with the cable clamp 7.
- H- Cut the extra cable shield.
- I- Slide the tightening cone 6, then the cable clamp nut 5 and screw it on the stop cable 8.
- J- Screw the backshell body 4 on the head of plug 10 mounted on the counterpart tool BOUExxMENA01.
- K- Introduce the end of the sleeve 3 inside the backshell body 4. Put the locking washer in its place on the sleeve 3.
- L- Screw the locking nut 1 on the backshell body 4 with a dynamometric key, tightening torque : 6N.m

ATTENTION : These information are only for information, procedure may vary following the type of cable and the number of contacts.



◆ Cabling overview for CMA RA18-XXX and CMA RA24-XXX backshells



1

- Prepare cable and backshell items (metallic clamp and heat shrink boot not included in the backshell part number)
- Solder the cable wires on the connector contacts

2

- Tighten (with the recommended torque) the backshell on the connector.
- Tighten the metallic clamp to fix the cable shield on the backshell knurled area.
- Cover with a heat shrink boot, a molded part or proceed an overmolding operation.

◆ Cabling overview of CMA RAIXX backshells



1

- Prepare cable and backshell items
- Solder the cable wires on the connector contacts

2

- Tighten (with the recommended torque) the backshell on the connector.
- Bring the assembly 'Ferrule-shield-cable' in position inside the backshell pulling on the cable.
- Proceed the crimping operation following the datasheet and the recommended tools.

3

- Bring the Orings and the elastomer sleeve in position.

◆ Cabling overview of CMA RA81-XXX backshells



1

- Prepare cable and backshell items
- Solder the cable wires on the connector contacts

2

- Tighten (with the recommended torque) the backshell free ring on the connector giving the orientation wanted. (Orientation of the elbow by angle of 20°).
- Tighten the metallic clamp to fix the cable shield on the backshell knurled area.
- Cover with a heat shrink boot, a molded part or proceed an overmolding operation.

Catalogs

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CMA

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Push-Pull / Quick-Releaseable Connector

... For an optimum data transfer in harsh environments !

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CMASD Serie

Push-Pull Connector



... Toughness and reliable high speed data transfer in small dimensions !

Catalog



BERNIER

CMASD

◆ Description

BERNIER designed the CMALD line specially for harsh environments. This line presents the same appreciated characteristics than the CMA connectors in a smaller shell in which can be set up to 8 contacts. Its ergonomics and toughness enhances headsets and handsets use and its construction allows high speed data communication.

◆ Applications



Radios



Accessories



Intercoms



Crypted data

Push-Pull

Ergonomics

Stainless steel

EMI RFI Protection

Multi-Contacts

Watertight



Optronic devices



Weapon systems



Rugged computers



Tactical equipments

Specific Designs

◆ The Right Solution for your projects

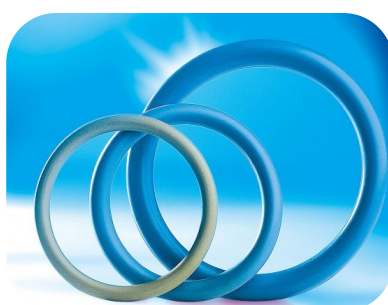
CMASD connectors are appreciated for their flexibility to fit customer specifications. Our Design team is able to propose versions answering to your needs. Reinforcements can be applied in case of use in harder climatic, ergonomic and electromagnetic conditions.

◆ EMC reinforcements

Options are available in order to reinforce the EMC specifications.



Ground ring « 360° »



Conductive Orings



Ground pin

CMASD standard receptacles are equipped with a ground ring giving a high EMC level. This function developed by Bernier brings a better continuity between the connectors shells and a protection on 360°

The receptacle Fluorosilicon Oring can be switched to a conductive version to establish a better conductivity between the connector and the panel.

One or several ground pins inserted in the connector shell can be set to link the chassis ground directly to the PCB.



BERNIER

CMASD

◆ Climatic and mechanical characteristics

	CMASD
Unlocking system	Push-Pull
Operating temperature Range	-55°C to +125°C
Endurance	5 000 operations
Sealing performance	IP68 (connected and disconnected)
Corrosion resistance	Salt fog : 96 hours
Fluids resistance	Oils and Hydrocarbons

◆ Electrical characteristics

	08 contacts
Working voltage	60 V _{max}
Current rating per contact	2 A _{max}
Gauge (AWG)	26
Contact type	Solder cup / For PCB
Contact resistance	≤ 10 mOhms
Insulation resistance	>1000 MOhms under 500 V _{DC}
Dielectric	500 V _{eff} at 50 Hz
EMI RFI	Yes

◆ Material and plating

	Material	Plating
Connector shell	Stainless steel	Sandblasting or Black Chrome
Insulator	PBT	-
Contacts	Copper alloy	Gold over nickel
Ground ring	Beryllium Copper	-
Backshell shell	Aluminium alloy	Black Chrome or Black Anodizing



Weights



CMASD

◆ Connectors

Type	Weight (Max)
CMASD 1 (Extension)	g
CMASD 5 (Plug)	g
CMASD 7 (Receptacle)	g

Stainless steel

◆ Backshell

Part number	Weight (Max)
CMASD RA86-XX	g



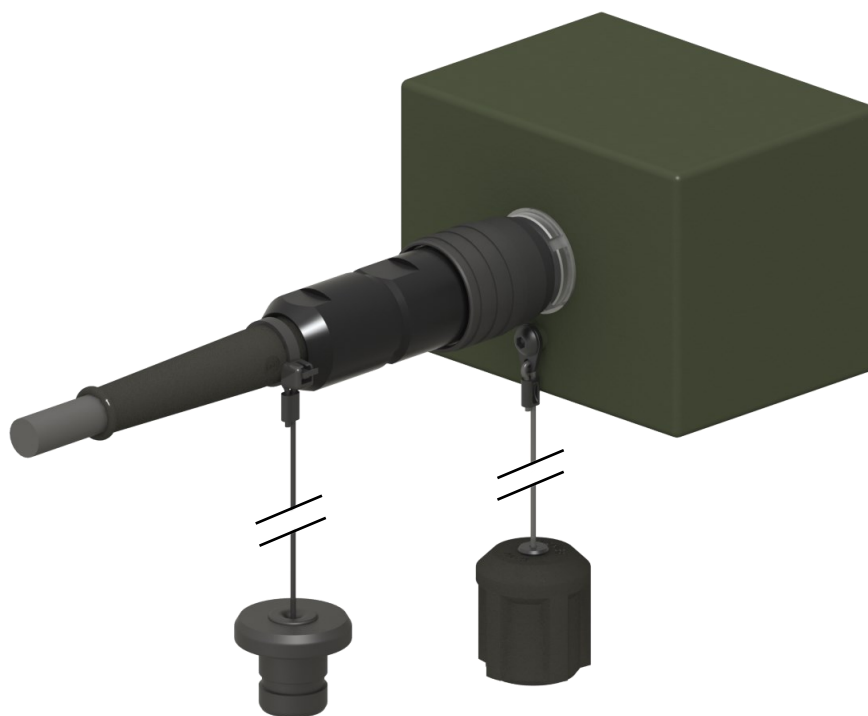
BERNIER

Compatibilities

CMASD

◆ Compatibility matrix

	Extension Type 1	Panel through-Type 3	Dummy receptacle Type 6	Receptacle Type 7	Elbow part 90°	Elbow part 105°	Straight backshell	Elbow backshell 90°	Thermo-plastic plug cap	Metallic plug cap
Plug Type 5	●	●	●	●	●	●	●	●	●	●
Panel plug Type 18	●	●	●	●	-	-	-	-	●	●
Elbow part 90°	●	●	-	-	-	-	●	-	-	-
Elbow part 105°	●	●	-	-	-	-	●	-	-	-
Straight backshell	●	●	-	-	●	●	-	-	-	-
Elbow backshell 90°	●	●	-	-	-	-	-	-	-	-
Elastomer cap	●	●	●	●	-	-	-	-	-	-
Metallic cap	●	●	●	●	-	-	-	-	-	-



Keyways



CMASD



Receptacle

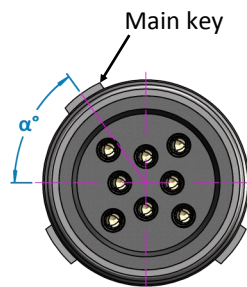
Front view

Plug

The keyways depends on the main key position. Positions of the 2 small keys, contacts and flats of the receptacle remain the same.

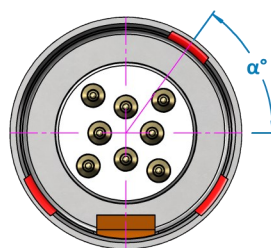
		Keyways				
		N	W	X	Y	Z
Angle α	08 contacts	◦	◦	◦	◦	◦

Receptacle - Extension Front view



08 contacts

Plug Front view



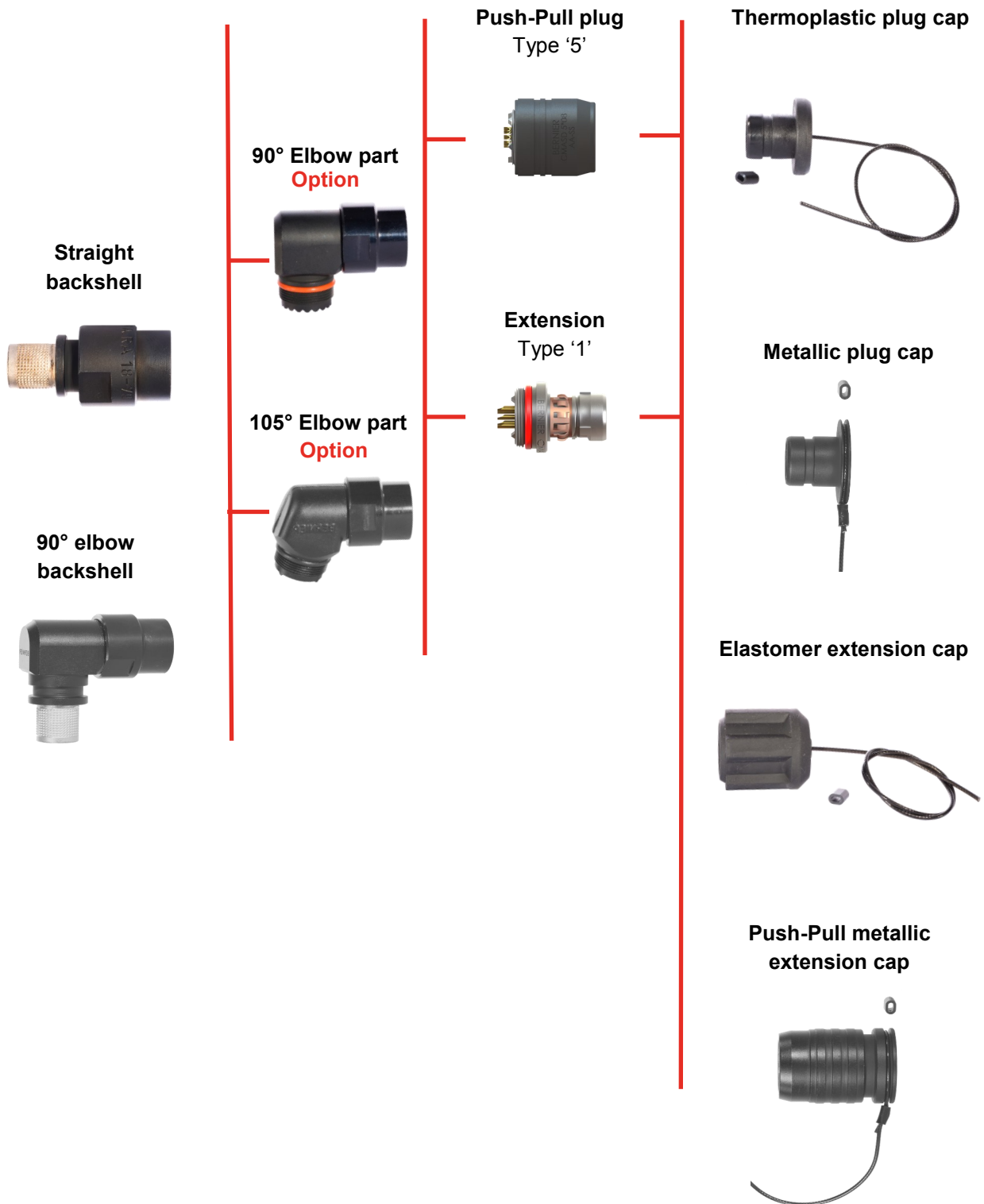
08 contacts



BERNIER

CMASD

◆ Items mounted on cable



A backshell (necessary for cable assembling) must be ordered at the same time than a connector and the reverse

◆ Items mounted on panel

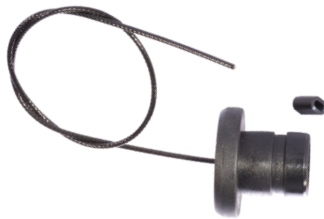
Elastomer receptacle cap



Metallic Push-Pull receptacle cap



Thermo-plastic panel plug cap



Metallic panel plug cap



Rear panel mounting

Receptacle
Type 7

Panel through *
Type 3

Shutter



Front panel mounting

Push-Pull panel plug
Type 18

* can accept backshell (See items mounted on cable)



BERNIER

CMASD

◆ Connectors

Description	Code	CMASD	B	7	N	08	Y1	PM	JC
Serie	CMASD	↑							
Aspect : 'Nothing mentionned' : Sandblasted Black version (By default for type 5)	B		↑						
Connector type : Extension Panel through Plug Dummy receptacle Receptacle Panel plug	1 3 5 6 7 18			↑					
Keyways	N, W, X, Y, Z				↑				
Number of contacts	08					↑			
Contacts : 'Nothing mentionned' : Solder cup For PCB Type 7	H1						↑		
Ground pin 1 Ground pin 4 Ground pins	PM PM4S							↑	
Panel Oring : 'Nothing mentionned' : Fluorosilicon Oring Fluorosilicon charged Ni/Graph Oring Fluorosilicon charged Ag/Al Oring	JC JC1								↑

Part numbers

CMASD

◆ Elbow parts for types 1, 3, 5

Description	Code	CMASD	RA8
Serie	CMASD	↑	↑
Elbow part	RA8, RA82	↑	↑

◆ Backshells for types 1, 3, 5

Description	Code	CMASD	RAXX	-XX
Serie	CMASD	↑	↑	↑
Backshell	RAXX	↑	↑	↑
Outer diameter	See chapter « Elbow parts and backshells »	↑	↑	↑

◆ Caps

Description	Code	CMASD	BA	XX	MC	-	200	ST
Serie	CMASD	↑	↑	↑	↑	↑	↑	↑
Caps	BA	↑	↑	↑	↑	↑	↑	↑
Cap type	See chapter « caps »	↑	↑	↑	↑	↑	↑	↑
Type of fixing : Black covered stainless steel micro-cable	MC	↑	↑	↑	↑	↑	↑	↑
Fixing length (mm)	See chapter « caps »	↑	↑	↑	↑	↑	↑	↑
Termination	See chapter « caps »	↑	↑	↑	↑	↑	↑	↑



BERNIER

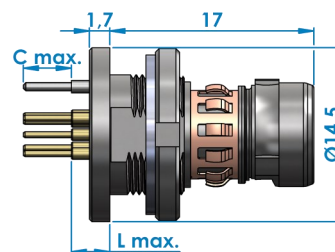
Receptacles

CMASD

◆ Type 7 with contacts for PCB



Contact type	L max	C max
H1	3.2	4



Ex: CMA 7N08PM

◆ Type 6 for plug fixing, for all plug

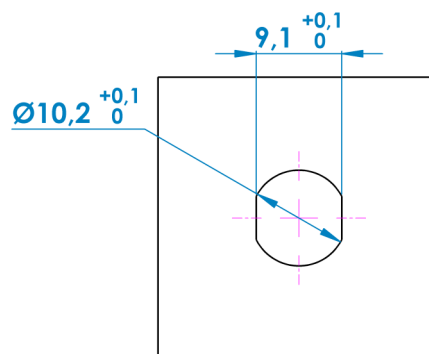
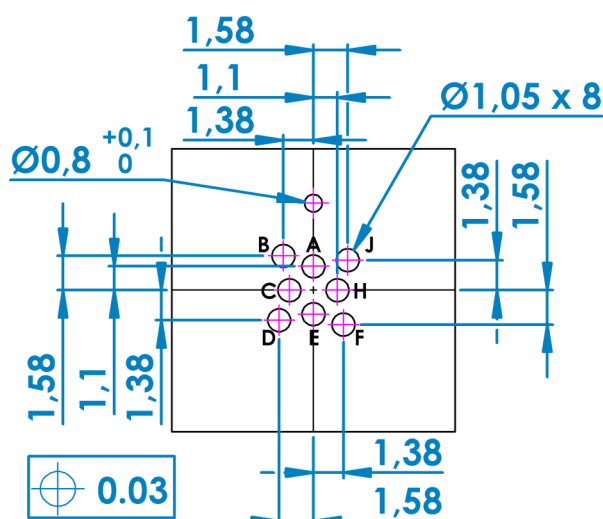


◆ Watertight shutter for CMA Type 7 panel cut



◆ PCB holing, welding side, through pins

◆ Panel cut



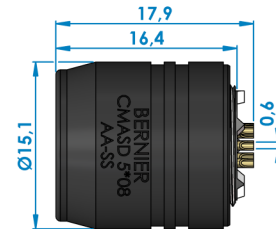
Front view side — Maximum panel thickness for CMASD receptacles : 3.5mm

Plugs and Extensions

◆ Type 5 Push-Pull with solder cup contacts



Number of contacts	Size AWG gauge
08	AWG 26

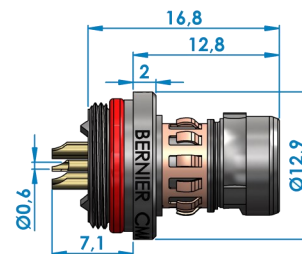


Ex: CMA5D 5N08

◆ Type 1 with solder cup contacts



Number of contacts	Size AWG gauge
08	AWG 26



Ex: CMA5D 1N08



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Elbow parts and backshells

CMASD

- ◆ Elbow part with a 105° angle



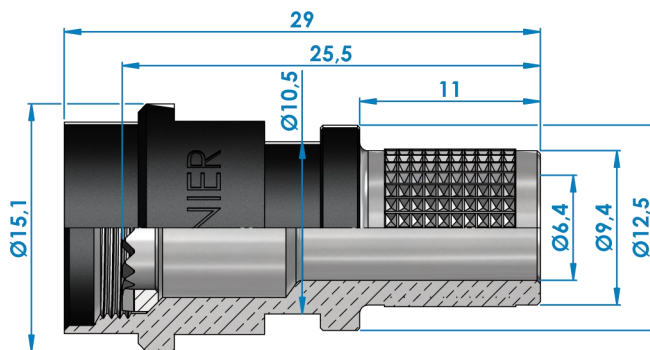
- ◆ Elbow part with a 90° angle



- ◆ Straight backshell with knurling



CMASD RA88-64



Other sizes possible, please contact us.

Backshell for cable assembling with metallic collar and heat-shrink boot (not included)

- ◆ 90° Elbow backshells with knurling



Caps

- ◆ Thermo-plastic caps for plugs



- ◆ Elastomer and metallic cap for receptacle types 3, 6 and 7



- ◆ Elastomer and metallic cap for extensions



- ◆ Terminations

Some terminations can accept several lanyards

Plastic clamp



Ferule



Metallic ring



Eyelet for M3 screw



Crimped eyelet for M3 screw



90° crimped eyelet for M3 screw



Catalogs

Ask for our other catalogs :



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Push-Pull / Quick-Releaseable Connector

... For an optimum data transfer in harsh environments !

Catalog

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Dimensions in mm

BERNIER Relais et Connecteurs 2 rue du Languedoc 91220 BRETIGNY SUR ORGE FRANCE

Tel : 33 (0)1 60 84 21 40 Fax : 33 (0)1 60 84 43 81 info@bernier.tm.fr

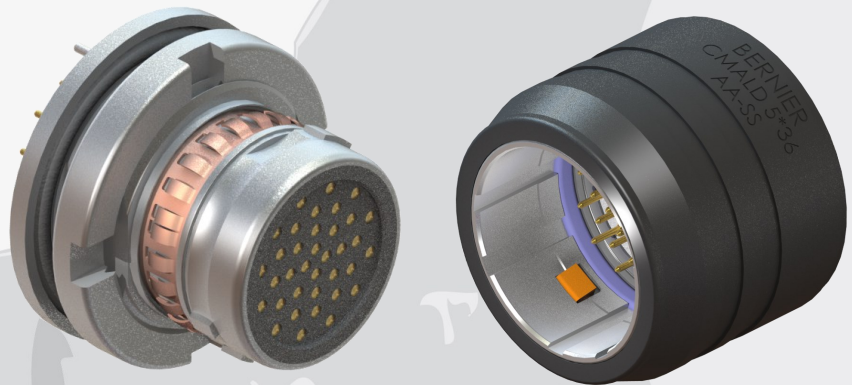


BERNIER

CMALD

CMALD Serie

Push-Pull or Quick-Releasable Connector



... Toughness and Ergonomics allied with
a high contact density configuration !

Catalog

Release 1.0 - JUNE 2016
www.bernier.tm.fr





BERNIER

◆ Description

BERNIER designed the CMALD line specially for harsh environments. This line presents the same appreciated characteristics than the CMA connectors with a slightly bigger shell size allowing to set up to 36 contacts. This shell size is ideal to make also other contacts arrangements with different contact sizes.

CMALD

◆ Applications



Radios



Vehicules



Intercoms



Crypted data

Push-Pull

Ergonomics

Stainless steel

EMI RFI Protection

Multi-Contacts

Watertight



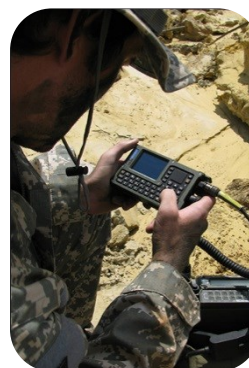
Optronic devices



Weapon systems



Rugged computers



Tactical equipments

Specific Designs

◆ The Right Solution for your projects

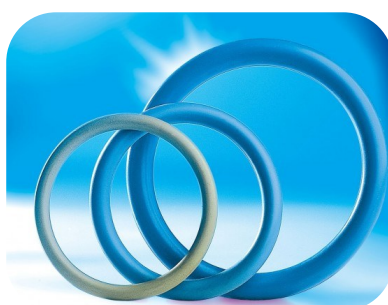
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◆ EMC reinforcements

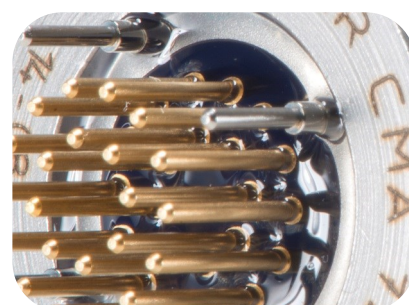
Options are available in order to reinforce the EMC specifications.



Ground ring « 360° »



Conductive Orings



Ground pin

CMALD standard receptacles are equipped with a ground ring giving a high EMC level. This function developed by Bernier brings a better continuity between the connectors shells and a protection on 360°

The receptacle Fluorosilicon Oring can be switched to a conductive version to establish a better conductivity between the connector and the panel.

One or several ground pins inserted in the connector shell can be set to link the chassis ground directly to the PCB.



BERNIER

◆ Climatic and mechanical characteristics

CMALD

	CMALD
Unlocking system	Push-Pull or Quick-Releasable
Operating temperature Range	-55°C to +125°C
Endurance	5 000 operations in Push Pull version 2000 operations in Quick-releasable version
Sealing performance	IP68 (connected and disconnected)
Corrosion resistance	Salt fog : 96 hours
Fluids resistance	Oils and Hydrocarbones

◆ Electrical characteristics

	36 contacts
Working voltage	60 V _{max}
Current rating per contact	2 A _{max}
Gauge (AWG)	26
Contact type	Solder cup / For PCB
Contact resistance	≤ 10 mOhms
Insulation resistance	>1000 MOhms under 500 V _{DC}
Dielectric	500 V _{eff} at 50 Hz
EMI RFI	Yes

◆ Material and plating

	Material	Plating
Connector shell	Stainless steel	Sandblasting or Black Chrome
Insulator	PBT	-
Contacts	Copper alloy	Gold over nickel
Ground ring	Beryllium Copper	-
Backshell shell	Aluminium alloy	Black Chrome or Black anodizing



Weights



CMALD

◆ Connectors

Type	Weight (Max)
CMALD 1 (Extension)	18.5g
CMALD 5 (Push-Pull plug)	24.5g
CMALD 7 (Receptacle)	23.5g

Stainless steel

◆ Backshell

Part number	Weight (Max)
CMALD RA86-XX	16g



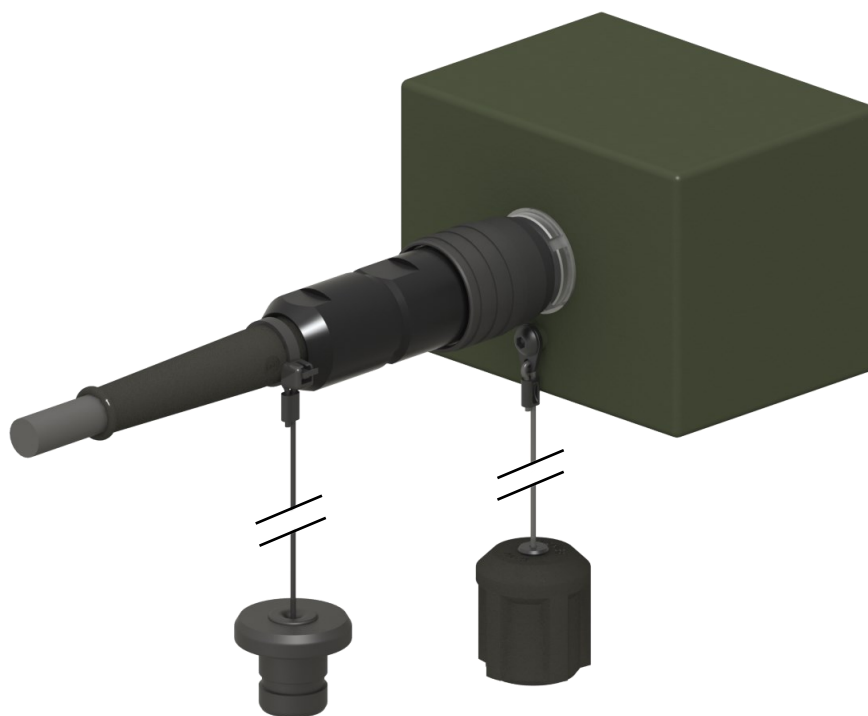
BERNIER

Compatibilities

◆ Compatibility matrix

CMALD

	Extension Type 1	Panel through-Type 3	Dummy receptacle Type 6	Receptacle Type 7	Elbow part 90°	Elbow part 105°	Straight backshell	Elbow backshell 90°	Thermo-plastic plug cap	Metallic plug cap
Plug Type 5	●	●	●	●	●	●	●	●	●	●
Panel plug Type 18	●	●	●	●	-	-	-	-	●	●
Elbow part 90°	●	●	-	-	-	-	●	-	-	-
Elbow part 105°	●	●	-	-	-	-	●	-	-	-
Straight backshell	●	●	-	-	●	●	-	-	-	-
Elbow backshell 90°	●	●	-	-	-	-	-	-	-	-
Elastomer cap	●	●	●	●	-	-	-	-	-	-
Metallic cap	●	●	●	●	-	-	-	-	-	-



Keyways

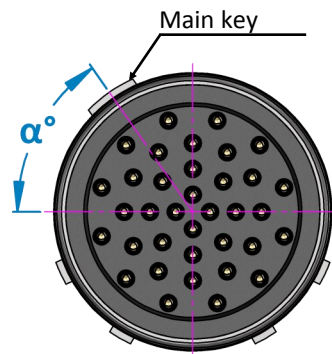


CMALD

The keyways depend on the main key position. Positions of the 4 small keys, contacts and flats of the receptacle remain the same.

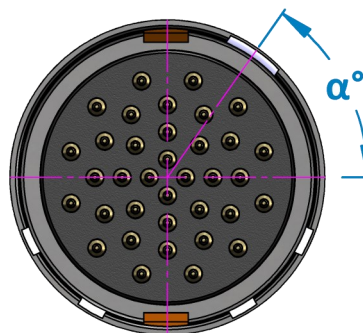
		Keyways				
		N	W	X	Y	Z
Angle α	36 contacts	55°	40°	25°	135°	155°

Receptacle - Extension front view



36 contacts

Plug Front view



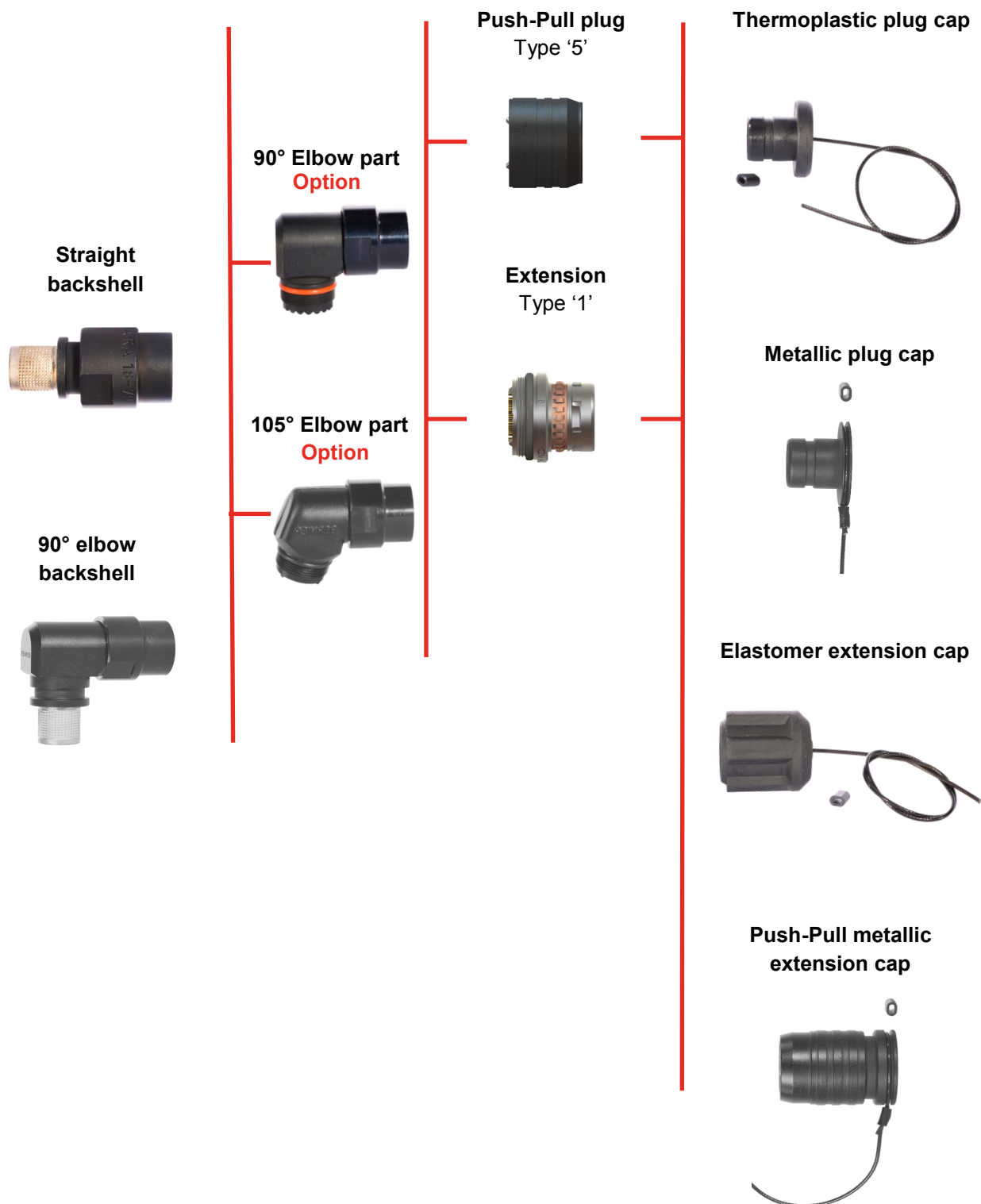
36 contacts



BERNIER

◆ Items mounted on cable

CMALD



A backshell (necessary for cable assembling) must be ordered at the same time than a connector and the reverse

◆ Items mounted on panel

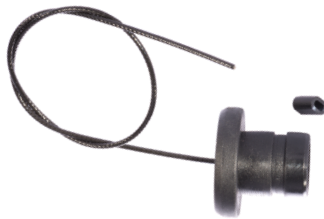
Elastomer receptacle cap



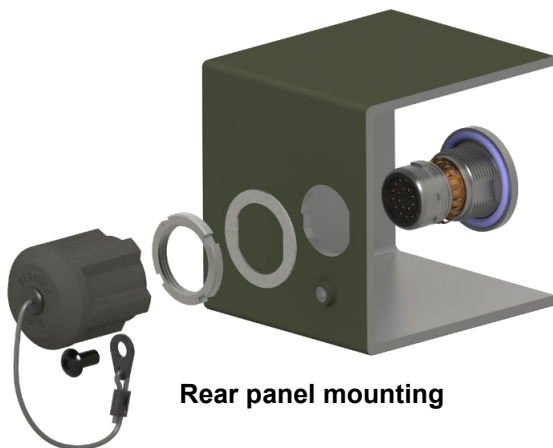
Metallic Push-Pull receptacle cap



Thermo-plastic panel plug cap



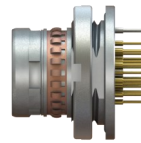
Metallic panel plug cap



Rear panel mounting

Rear panel mounting

Receptacle Type 7



Panel through * Type 3

Shutter



Front panel mounting

Push-Pull panel plug Type 18

CMALD

* can accept backshell (See items mounted on cable)



BERNIER

CMALD

◆ Connectors

Description	Code	CMALD	B	7	N	36	Y1	PM	JC
Serie	CMALD	↑							
Aspect : 'Nothing mentionned' : Sandblasted Black version (By default for type 5)	B		↑						
Connector type : Extension Panel through Plug Dummy receptacle Receptacle Panel plug	1 3 5 6 7 18			↑					
Keyways	N, W, X, Y, Z				↑				
Number of contacts	36					↑			
Contacts : 'Nothing mentionned' : Solder cup For PCB Type 7	H1						↑		
Ground pin 1 Ground pin 4 Ground pins	PM PM4S							↑	
Panel Oring : 'Nothing mentionned' : Fluorosilicon Oring Fluorosilicon charged Ni/Graph Oring Fluorosilicon charged Ag/Al Oring	JC JC1								↑

◆ Elbow parts for types 1, 3, 5

Description	Code	CMALD	RA8
Serie	CMALD	↑	↑
Elbow part	RA8, RA82	↑	↑

CMALD

◆ Backshells for types 1, 3, 5

Description	Code	CMALD	RAXX	-XX
Serie	CMALD	↑	↑	↑
Backshell	RAXX	↑	↑	↑
Outer diameter	See chapter « Elbow parts and backshells »	↑	↑	↑

◆ Caps

Description	Code	CMALD	BA	XX	MC	-	200	ST
Serie	CMALD	↑	↑	↑	↑	↑	↑	↑
Caps	BA	↑	↑	↑	↑	↑	↑	↑
Cap type	See chapter « caps »	↑	↑	↑	↑	↑	↑	↑
Type of fixing : Black covered stainless steel micro-cable	MC	↑	↑	↑	↑	↑	↑	↑
Fixing length (mm)	See chapter « caps »	↑	↑	↑	↑	↑	↑	↑
Termination	See chapter « caps »	↑	↑	↑	↑	↑	↑	↑



BERNIER

Receptacles

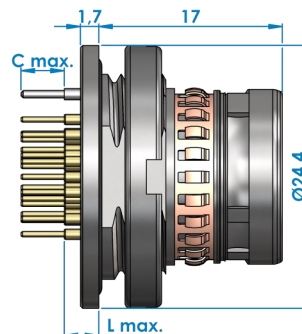
◆ Type 7 with contacts for PCB

CMALD



Ex: CMA 7N36PM

Contact type	L max	C max
Y1	3.2	4



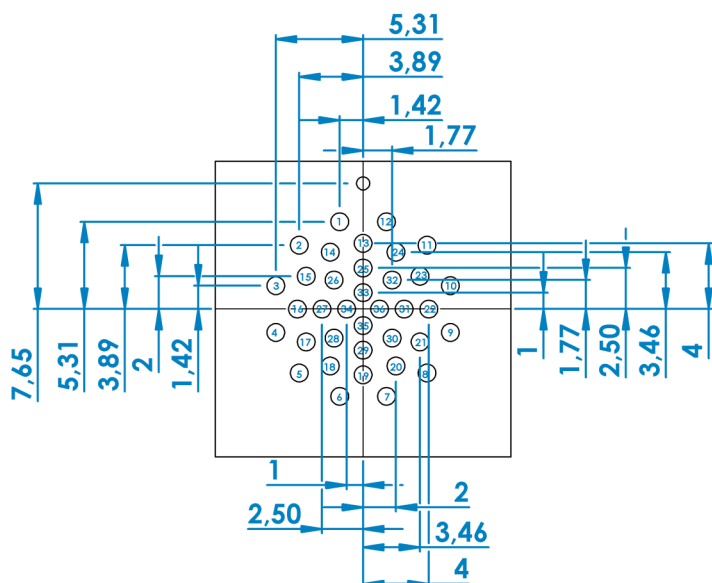
◆ Type 6 for plug fixing, for all plug



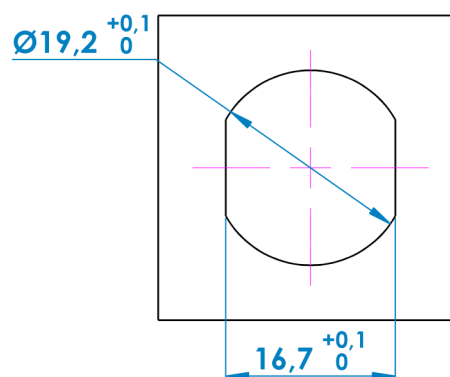
◆ Watertight shutter for CMA Type 7 panel cut



◆ PCB holing, welding side, through pins



◆ Panel cut



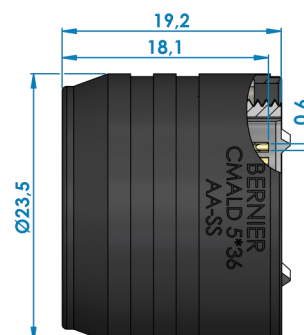
Front view side — Maximum panel thickness for CMALD receptacles : 2.8mm

Plugs and Extensions

◆ Type 5 Push-Pull with cup contacts



Number of contacts	Size AWG gauge
36	AWG 26



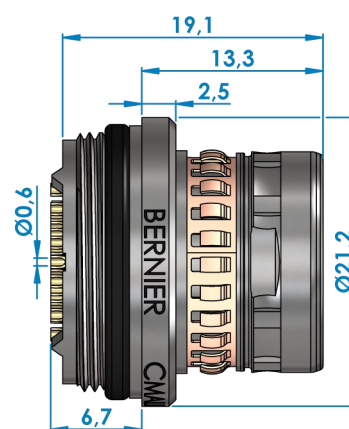
CMALD

Ex: CMALD 5N36

◆ Type 1 With solder cup contacts



Number of contacts	Size AWG gauge
36	AWG 26



Ex: CMALD 1N36



BERNIER

Elbow parts and backshells

CMALD

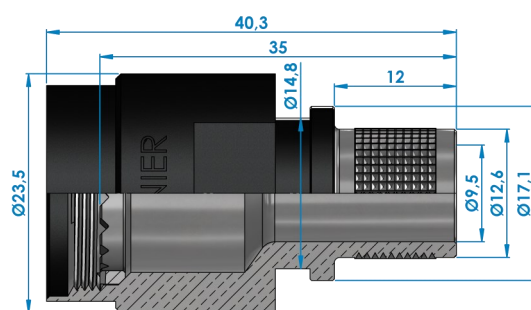
- ◆ Elbow part with a 105° angle



- ◆ Elbow part with a 90° angle



- ◆ Straight backshell with knurling



CMALD RA86-95

Other sizes possible, please contact us.

Backshell for cable assembling with metallic collar and heat-shrink boot (not included)

- ◆ 90° Elbow backshells with knurling



Caps

- ◆ Thermo-plastic caps for plugs



- ◆ Elastomer and metallic cap for receptacle types 3, 6 and 7



- ◆ Elastomer and metallic cap for extensions



- ◆ Terminations

Some terminations can accept several lanyards

Plastic clamp



Ferule



Metallic ring



Eyelet for M3 screw



Crimped eyelet for M3 screw



90° crimped eyelet for M3 screw



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Push-Pull / Quick-Releaseable Connector

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... the good connection for your tactical equipments !

Catalog

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Bayonet Connector

... The Crypto and Audio communication standard !

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BERNIER



MMC

MMC Serie

Compact Quick-Releasable Connector



... for a robust and ergonomic
high speed data connexion !

Catalog

Release 1.0 - JUNE 2016
www.bernier.tm.fr





BERNIER

◆ Description

Bernier designed the MMC connectors specially for system in small spaces or wearable equipments. The design is tough in order to go over harsh environments. It exists today in the 24 contacts version to be used for high speed data transmissions.

MMC

◆ Applications



Radios



Accessories



Intercoms



Crypted data

Quick-releasable

Compact

Stainless steel

EMI RFI protection

Robust

Watertight



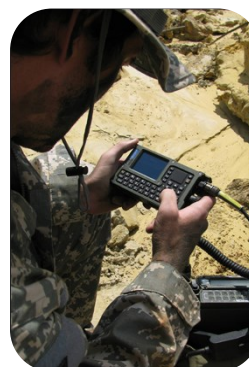
Optronic devices



Weapon systems



Rugged computers



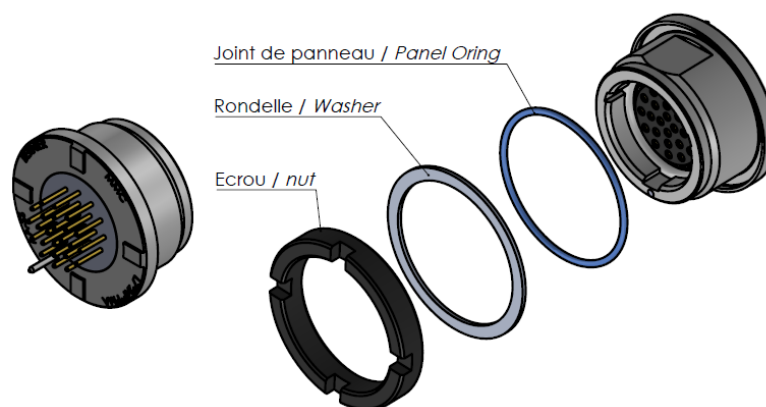
Tactical equipments

Specific Designs

◆ The Right Solution for your projects

MMC connectors are appreciated for their flexibility to fit customer specifications. Our Design team is able to propose versions answering to your needs. Reinforcements can be applied in case of use in harder climatic, ergonomic and electromagnetic conditions. Caps and backshells can also be improved to bring a better ergonomics on your configuration.

MMC

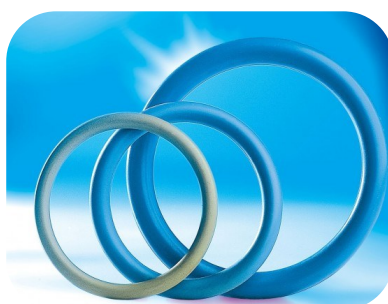


◆ EMC reinforcements



Conductive spring 360°

MMC standard receptacles are equipped with a ground ring giving a high EMC level. This function developed by Bernier brings a better continuity between the connectors shells and a protection on 360°



Conductive Orings

The receptacle Fluorosilicon Oring can be switched to a conductive version to establish a better conductivity between the connector and the panel.



Ground pins

One or several ground pins inserted in the connector shell can be set to link the chassis ground directly to the PCB.



BERNIER

◆ Climatic and mechanical characteristics

	MMC
Unlocking system	Axial Force (40N ≤ F ≤ 70N)
Operating temperature range	-55°C to + 125°C
Endurance	5 000 Operations
Sealing performance	IP68 (connected and disconnected)
Corrosion resistance	Salt fog : 96 hours (Stainless steel)
Fluids resistance	Oils and hydrocarbons

MMC

◆ Electrical characteristics

	MMC Version (24 contacts)
Working voltage	60 V _{max}
Current rating per contact	2 A _{max}
Gauge (AWG)	24
Contact types	Soder cup / For PCB
Contact resistance	≤ 8 mOhms
Insulation resistance	>1000 MOhms
EMI RFI Protection	Yes

◆ Material and plating

	Matériau	Plating
Connector shell	Stainless steel	Sandblasting
Insulator	Thermoplastic	-
Contacts	Copper alloy	Gold over nickel
Backshell shell	Aluminium	Black chrome



Additional information

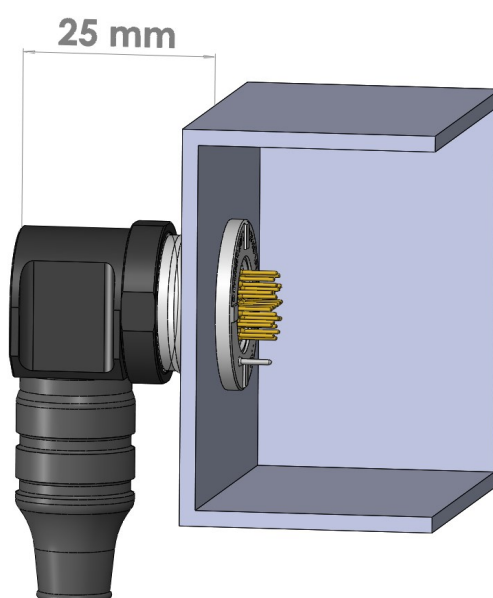
◆ Weight

Description	Weight (Max)
Receptacle	10 g
Plug	7 g
Extension	9 g
90° Elbow backshell	13 g

Standard material

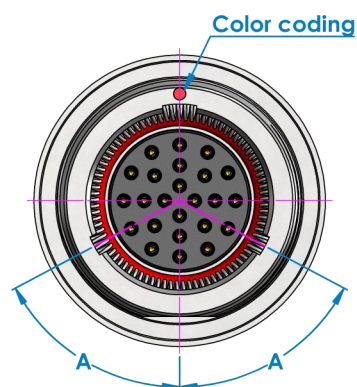
MMC

◆ Low Profile Dimensions



◆ Keyway

Keyway	Angle A	Color
K	70°	Orange
N	62°	Red
W	54°	White
X	46°	Green
Y	38°	Yellow
Z	30°	Blue



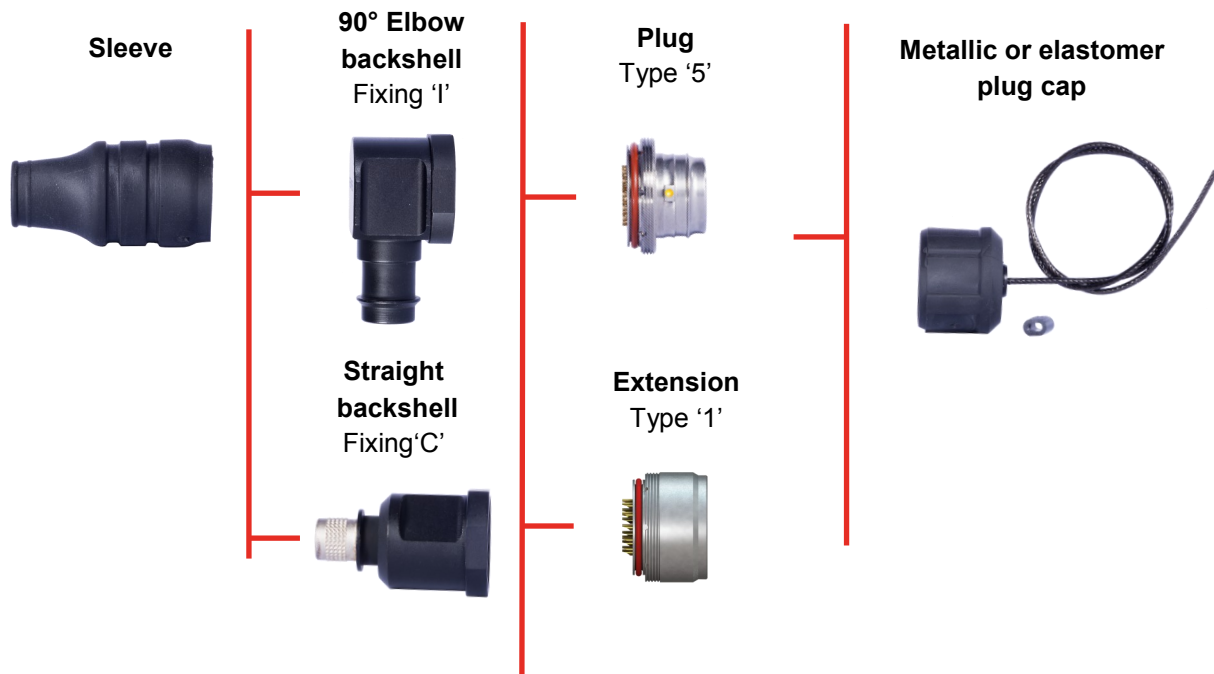
'T' tool version without keyway can mate all keyways.



BERNIER

◆ Items mounted on cable

MMC



Synoptic

◆ Items mounted on panel

Thermoplastic or elastomer
receptacle cap



Receptacle
Type '7'



MMC



BERNIER

◆ Connectors

Description	Code	MMC	L	7	K	24	P1	PM	A
Serie	MMC	↑							
Locking (types '1' and '7') : Quick-releasable Without locking spring	L SB		↑						
Connector type : Extension Plug Receptacle	1 5 7			↑					
Keyway	K, N, W, X, Y, Z, T				↑				
Contact number	24					↑			
Contact types : Solder cup Contact for PCB	FS P1						↑		
Ground pin (type '7' only)	PM							↑	
Material : Stainless steel Navy bronze Aluminium	A BM AL								↑

MMC

◆ Backshells

Description	Code	MMC	R	D	B	C	-	45
Serie	MMC	↑						
Type	R		↑					
Backshell type : Straight 90° Elbow	D C			↑				
Type of tightening	B				↑			
Type of cable shield fixing : Metallic clamp Crimping operation	C I					↑		
Size (For type 'C' cable shield fixing)	45,55,65							↑

◆ Backshell ends (On backshells with the 'I' type of cable shield fixing)

Description	Code	MMC	MAI	-	55
Serie	MMC	↑			
Type	MAI		↑		
Size	45, 55, 65				↑

Part numbers

◆ Caps

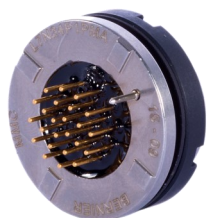
Description	Code	MMC	1	B	A	MC	-	200	FER	M
Serie	MMC	↑								
Version : Simple Double Triple	1 2 3		↑							
Type : For plug For receptacle and extension	A B			↑						
Material : Stainless steel Aluminium Elastomer Thermoplastic	A AL E T				↑					
Attachment : Black covered stainless steel microcable	MC					↑				
Length (mm)	See chapter « caps »							↑		
Fixing : Metallic ring under the nut Crimped eyelet for M3 screw Ferule	EM M3 FER								↑	
Heat-shrink sleeve on ferule	M									↑

MMC



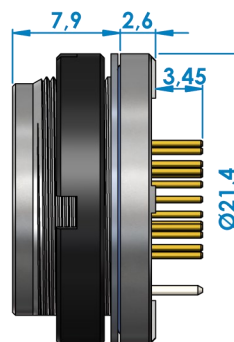
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◆ Type '7' with contacts for PCB



MMC

Key	Color
K	Orange
N	Red
W	White
X	Green
Y	Yellow
Z	Blue



Connector delivered without
Nut-Oring-washer, see page accessories

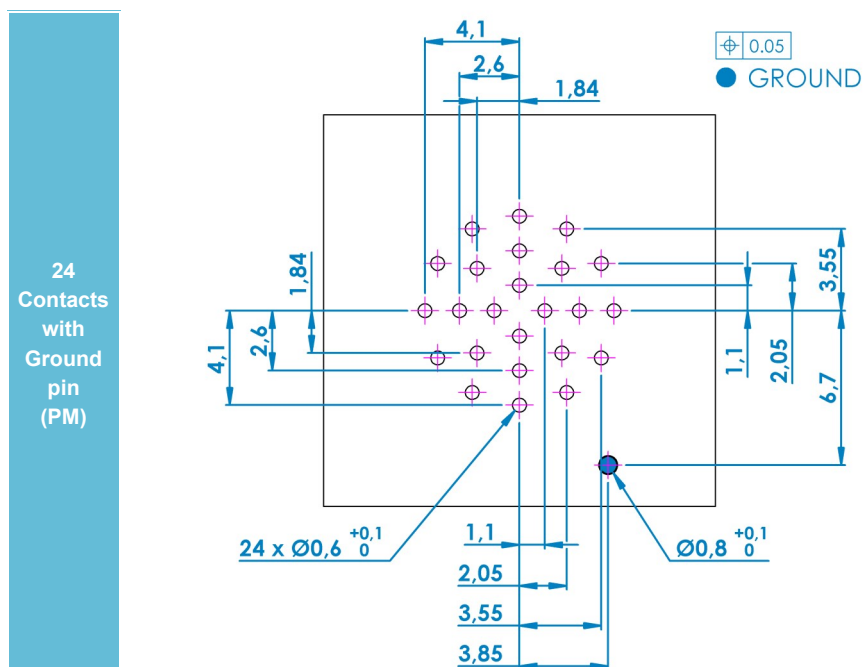
Ex: MMC L 7N24P1PMA

Version '7' with solder cup contacts possible

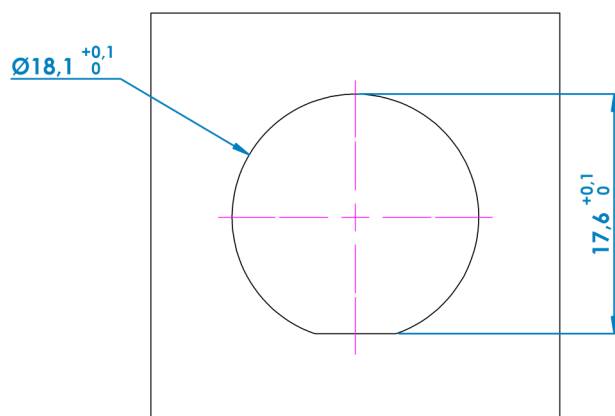
PCB holing and panel cuts

MMC

◆ PCB holing, connector side, through pins



◆ Panel cut for type '7'





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Plugs and Extensions

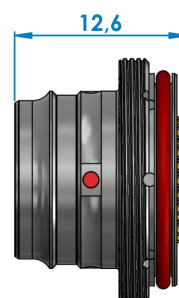
◆ Type '5' with solder cup contacts



MMC

Key	Color
K	Orange
N	Red
W	White
X	Green
Y	Yellow
Z	Blue

Insulator can be removed from the shell for cabling (fixing due to backshell tightening)

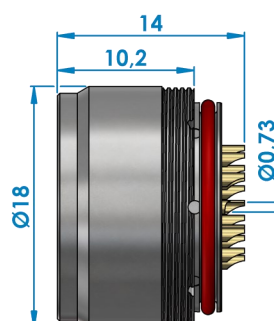


Ex: MMC 5N24FSA

◆ Type '1' with solder cup contacts



Key	Color
K	Orange
N	Red
W	White
X	Green
Y	Yellow
Z	Blue



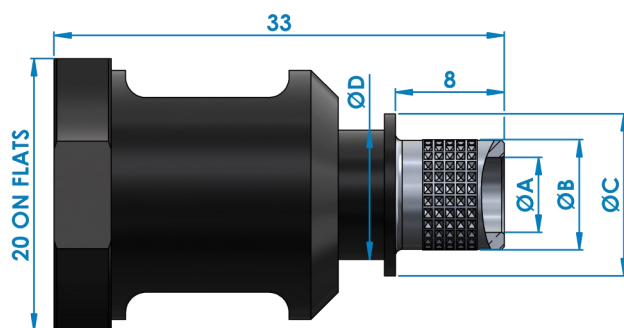
Ex: MMC 1N24FSA

Backshells and Backshell ends

◆ Straight backshell with knurling



Size	ØA	ØB	ØC	ØD
35	3.5	6.1	9.9	7.5
45	4.5	7.1	10.9	8.5
55	5.5	8.1	11.9	9.5



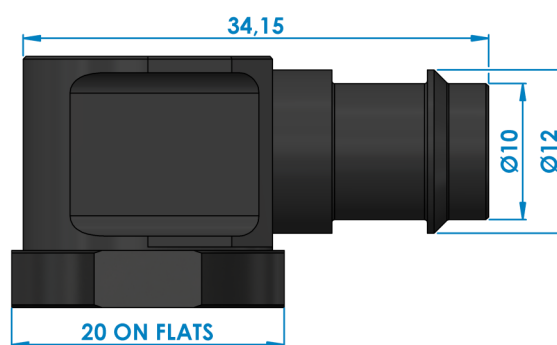
MMC

Ex : MMC RDBC-XX

Backshell for cable assembling with metallic collar and heat-shrink boot (not included)

Backshell also available in 90° elbow version

◆ Elbow backshell with crimping operation



Ex : MMC RCBI

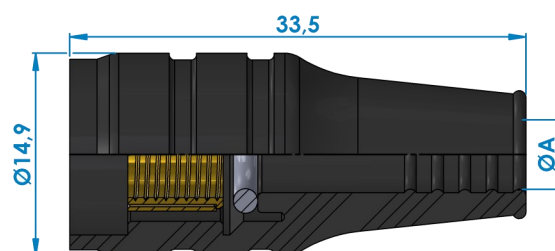
Backshell end MMC MAI –XX necessary to make the crimping operation.

Backshell also available in straight version

◆ Backshell ends



Size	ØA
45	4.5
55	5.5
65	6.5



Ex : MMC MAI-XX



◆ **Caps for plugs**

MMC

With...	Elastomer <i>Watertight IP68</i>	Metallic black <i>Watertight IP68/ EMC</i>
Ferule*	MMC 1AEMC-200FER	MMC 1AAMC-200FER
Stock cap	Contact us	Contact us

* Ferule is delivered separately to fix with the better length during assembling



Ex: MMC 1AEMC-200FER

◆ **Caps for receptacles and extensions**

With...	Thermoplastic <i>Watertightness IP67</i>		Metallic <i>Watertightness IP68/EMC</i>	
	Simple	Triple	Simple	Triple
Ferule*	MMC 1BTMC-200FER	MMC 3BTMC-200FER	MMC 1BAMC-200FER	MMC 3BAMC-200FER
Metallic ring	MMC 1BTMC-200EM	MMC 3BTMC-200EM	MMC 1BAMC-200EM	MMC 3BAMC-200EM
Crimped eyelet for M3 screw	MMC 1BTMC-200M3	MMC 3BTMC-200M3	MMC 1BAMC-200M3	MMC 3BAMC-200M3
Stock cap	Contact us		Contact us	

* Ferule is delivered separately to fix with the better length during assembling



MMC 3BTMC-75-45EM

Terminations

◆ Terminations

Some terminations can accept several lanyards

Plastic clamp



Ferule



Metallic ring



Eyelet for M3 screw



Crimped eyelet for M3 screw



90° crimped eyelet for M3 screw



MMC

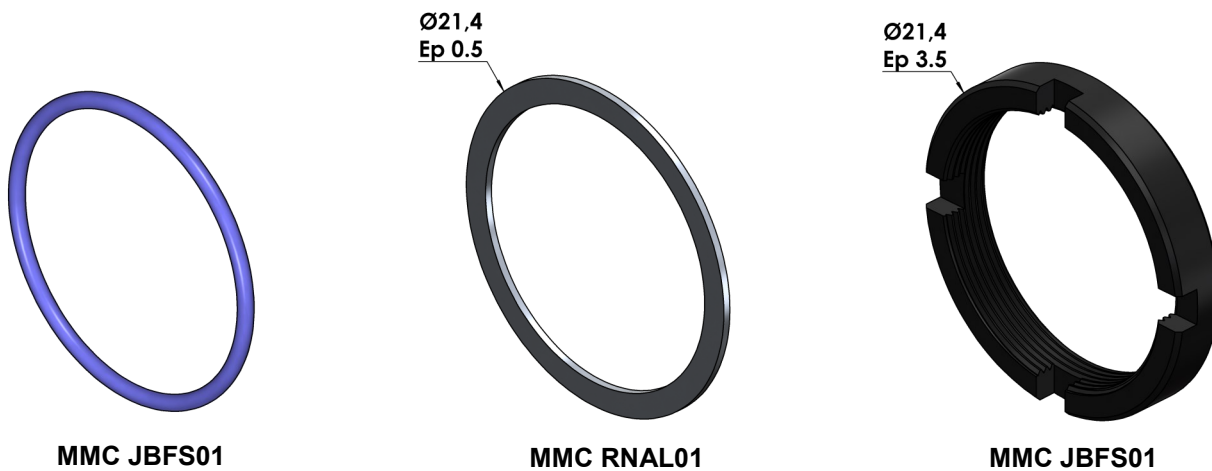


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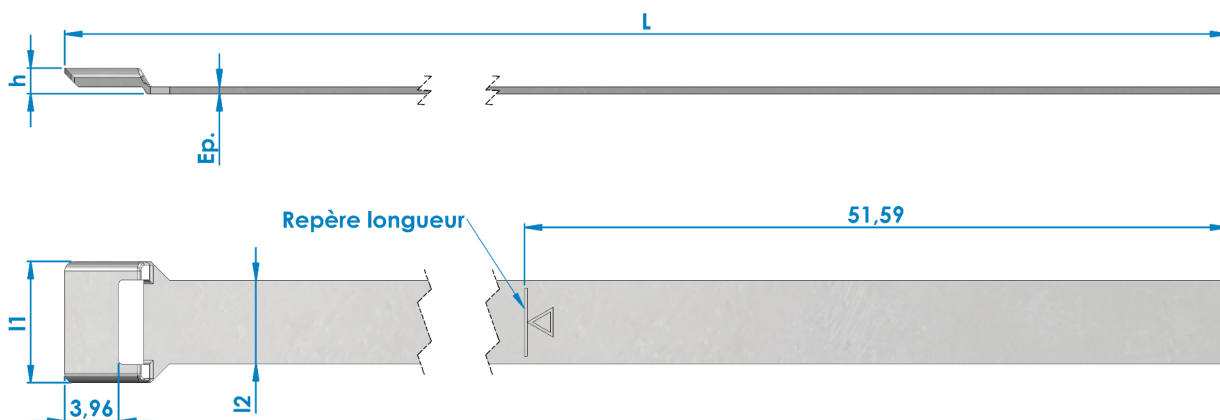
◆ **Accessories**

MMC

Type	Part number
Fluorosilicon Oring (standard)	MMC JBFS01
Conductive Oring (Fluorosilicon charged with Nickel and Graphite)	MMC JBFS02
Conductive Oring (Fluorosilicon charged with Silver and Aluminium)	MMC JBFS03
Aluminium receptacle washer	MMC RNAL01
Aluminium receptacle nut	MMC ENAL01

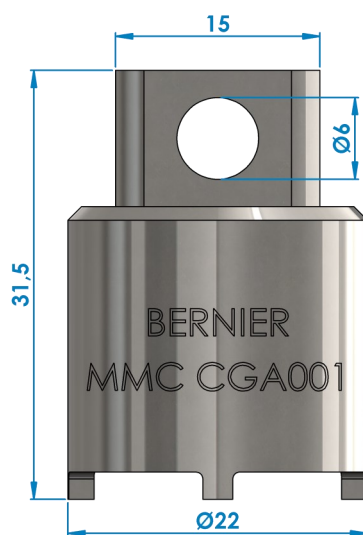


Metallic clamp for backshell type C	Part number	L (mm)	h (mm)	I1 (mm)	I2 (mm)	Ep. (mm)
Metallic clamp width 6.1mm	B593	362.1	1.88	8.9	6.1	0.51
Metallic clamp width 3.17mm	B452	206.4	1.35	5	3.1	0.4



◆ Tools for receptacle

Description	Part number
Tightening key	MMC CGA001



MMC CGA001

MMC

◆ Tightening torque

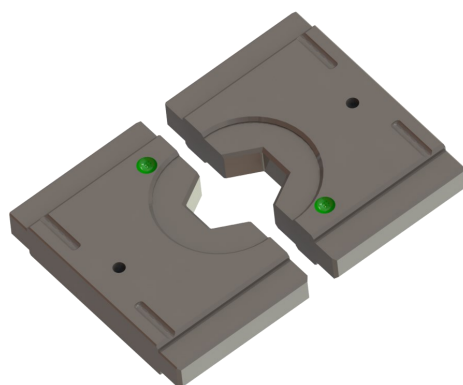
Connector material	Torque
Stainless steel	9 N.m
Aluminium	6 N.m



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◆ Cabling tools

Tools for backshell mounting	Part number
Crimping jaws for backshell MMC type 'I'	MMC MNA001
Metallic clamp crimping tool for backshells type 'C'	BOU000MESE02 or 03
Key for the tightening of the backshell ring	MMC CGA02



MMC MNA001



BOU000MESE02



MMC CGA02

MMC

◆ Assembly of backshell MMC RDBI + backshell end MMC MAI-XX on cable



MMC

1
-Prepare cable and backshell items
-Solder the cable wires on the connector contacts

2
-Tighten (with the recommended torque) the backshell on the connector.
-Bring the assembly 'Ferule-shield-cable' in position inside the backshell pulling on the cable.
-Proceed the crimping operation following the datasheet and the recommended tools.

3
-Bring the Orings and the elastomer sleeve in position.

◆ Assembly of backshell MMC RDBC-XX



1
-Prepare cable and backshell items (metallic clamp and heat shrink boot not included in the backshell part number)
-Solder the cable wires on the connector contacts

2
-Tighten (with the recommended torque) the backshell on the connector.
-Tighten the metallic clamp to fix the cable shield on the backshell knurled area.
-Cover with a heat shrink boot, a molded part or proceed an overmolding operation.

Catalogs

Ask for our other catalogs :



MMC



CMA Serie
Push-Pull / Quick-Releaseable Connector

... For an optimum data transfer in harsh environments !

Catalog

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CMASD Serie
Push-Pull Connector

... Toughness and reliable high speed data transfer in small dimensions !

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PAM

PAM Serie

Bayonet Connector



... the good connection for
your tactical equipments !

Catalog

Release 2.0 - JUNE 2016
www.bernier.tm.fr



◆ Description

The PAM serie is specially designed for the communication devices used on the field. These compact connectors are equipped with 07 and 10 contacts to allow the connection of accessories on Tactical or Radio equipments. The Spring contact technology of this line brings excellent contact resistance and an efficient contact self cleaning function.

PAM connectors are following the VG 96934 and VG 95351 norm and are enlisted in GAM T1.

PAM

◆ Applications



Radios



Accessories



Intercoms



Crypted Data

Bayonet

Ergonomics

Self cleaning contacts

Stainless steel

EMI RFI protection Watertightness



Optronic Devices



Weapon Systems



Ruggedized
Computers

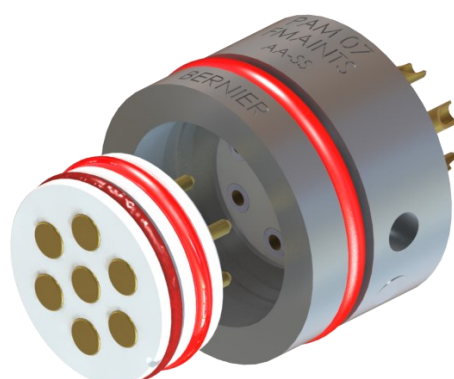


Tactical
Equipments

Specific Designs

◆ The Right Solution for your projects

PAM connectors are appreciated for their flexibility to fit customer specifications. Our Design team is able to propose versions answering to your needs. Reinforcements can be applied in case of use in harder climatic, ergonomic and electromagnetic conditions. Caps and backshells can also be improved to bring a better ergonomics on your configuration.



PAM

◆ EMC reinforcements

Options are available in order to reinforce the EMC specifications.



Ground ring « 360° »

Some PAM receptacles are equipped with a ground ring giving a high EMC level. This function developed by Bernier brings a better continuity between the connectors shells and a protection on 360°



Conductive O rings

The receptacle Fluorosilicon Oring can be switched to a conductive version to establish a better conductivity between the connector and the panel.



Ground pin

One or several ground pins inserted in the connector shell can be set to link the chassis ground directly to the PCB.



BERNIER

◆ Climatic and mechanical characteristics

	PAM Version
Unlocking system	Bayonet
Operating temperature Range	-55°C to +85°C
Endurance	5 000 Operations
Sealing performance	IP68 (mated and unmated)
Corrosion resistance	Salt fog : 96 hours
Air Pressure	0.4 bar
Fluids resistance	Oils and hydrocarbons

PAM

◆ Electrical characteristics

	PAM 07 Version (07 contacts)	PAM 17 Version (10 contacts)	PAM 10 Version (10 contacts)
Working Voltage	42 V _{max} / 30 mV _{min}		100 V _{max} / 30 mV _{min}
Current rating per contact	500 mA _{max} / 30 μA _{min}		1,5 A _{max} / 30 μA _{min}
Gauge (AWG)	20	22	20
Contact type	Solder Buckets / For PCB		
Contact resistance	≤ 20 mOhms at 25°C		
Insulation resistance	≥ 5000 MOhms		
Crosstalk	≥ 80dB at 20 KHz		
Dielectric	500 VAC RMS, 50Hz		
EMI RFI Protection	Yes		

◆ Material and plating

	Material	Plating
Connector Shell	Stainless steel	Sandblasting or Black Chrome
Insulator	Thermosetting	-
Contacts	Copper alloy	Gold over Nickel
Ground ring	Beryllium Copper	-
Backshell shell	Aluminium	Black Chrome or Black Anodizing



◆ Connectors

Shell type	Size	Weight (Grams Max)	
Receptacle 'S'	PAM 07 /17	13 g	
	PAM 10	26 g	
Plug 'F'	PAM 07 /17	Straight backshell : 34 g	-
	PAM 10	Straight backshell : 52 g	Elbow backshell : 72 g
Extension 'P'	PAM 07 /17	34 g	
	PAM 10	46 g	
Dummy receptacle 'R'	PAM 07 /17	8 g	
	PAM 10	16 g	
Panel plug 'L'	PAM 07 /17	16 g	
	PAM 10	24 g	

Standard material

◆ Plastic cap

Type	Size	Weight (grams Max)
For plug	PAM 07 / PAM 17	3.5 g
	PAM 10	4 g
For receptacle / extension	PAM 07 / PAM 17	3 g
	PAM 10	3.5 g

◆ Metallic cap

Type	Size	Stainless steel 'G'	Aluminium alloy 'D'
		Weight (grams Max)	Weight (grams ±Max)
For plug 'A'	PAM 07 / PAM 17	14 g	4.5 g
	PAM 10	26.5 g	9 g
For receptacle / extension 'B'	PAM 07 / PAM 17	12.5 g	4 g
	PAM 10	18 g	6 g



BERNIER

Particularity — Compatibility

◆ Shell sizes

PAM 07 (VG95351)
07 cts



PAM 17 (VG96934)
10 cts



PAM 10
10 cts

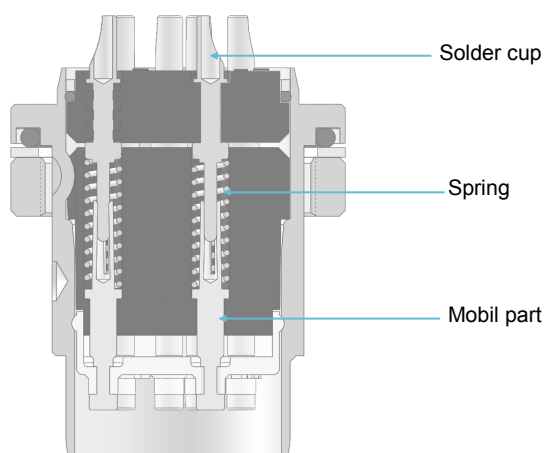


PAM

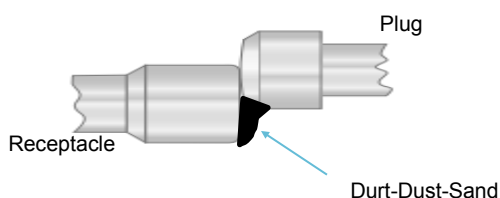
◆ Contact technologies

BERNIER Spring contact technology advantages

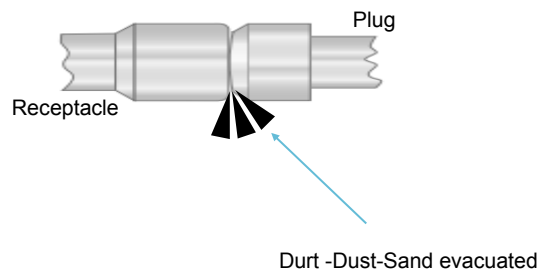
- Maximum contact reliability
- Contact quality duration
- Harsh environment resistance
- Self cleaning contact
- Good behavior in vibration and shock
- High frequencies signals endurance



Before locking



After locking



◆ Compatibility

	Extension 'P'	Dummy receptacle 'R'	Receptacle 'S'	Thermo-plastic cap for plug	Metallic cap for plug
Plug 'F'	●	●	●	●	●
Panel plug 'L'	●	-	-	●	●
Metallic and Thermoplastic cap	●	●	●	-	-



Attention : The mating connectors must have the same number of contacts and the same keyway.

Keyways

◆ Keyways

Type	A	B	C	Color
PAM 07				
Type N	150°	90°	120°	Red
Type W	150°	120°	90°	Yellow
Type X	115°	110°	135°	Green
Type Y	95°	100°	165°	Pink

Type	A	B	C	Color
------	---	---	---	-------

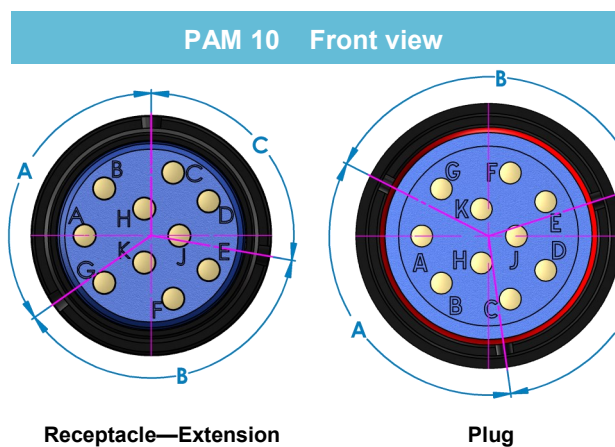
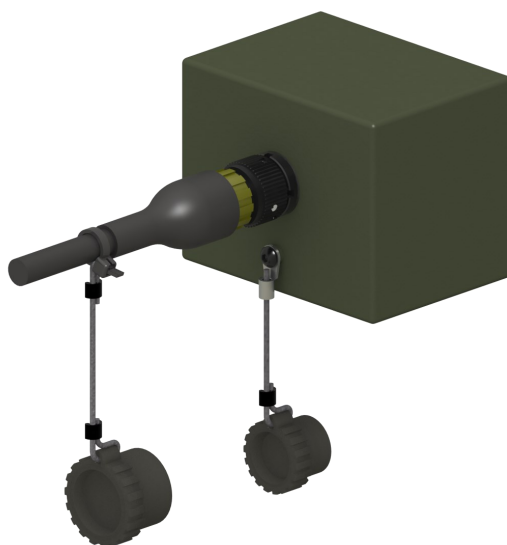
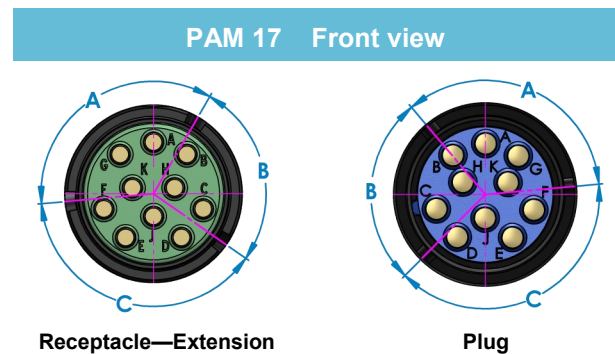
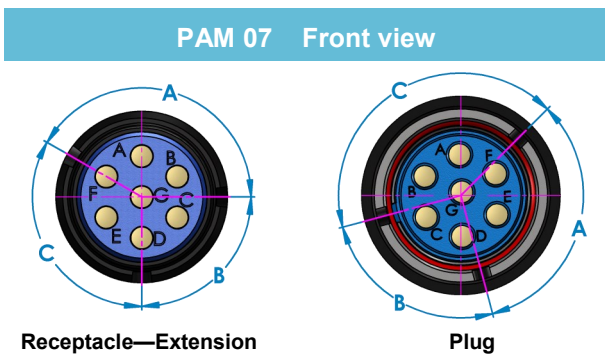
PAM 10

Type N	125°	135°	100°	Red
Type W	130°	110°	120°	White

PAM 17

Type N	125°	95°	140°	White
Type W	160°	85°	115°	Blue
Type X	155°	100°	105°	Purple
Type Y	130°	110°	120°	Chrome
Type Z	135°	80°	145°	Red

PAM





BERNIER

◆ Items mounted on cable

Plug
Type F



Elastomer plug cap



Bayonet metallic plug cap



Extension
Type P



Elastomer extension cap

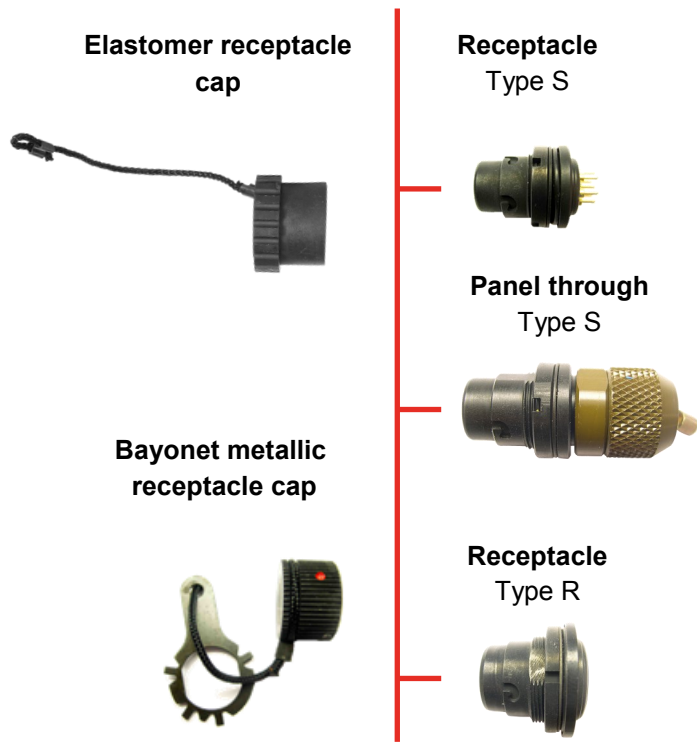


Bayonet metallic
extension cap

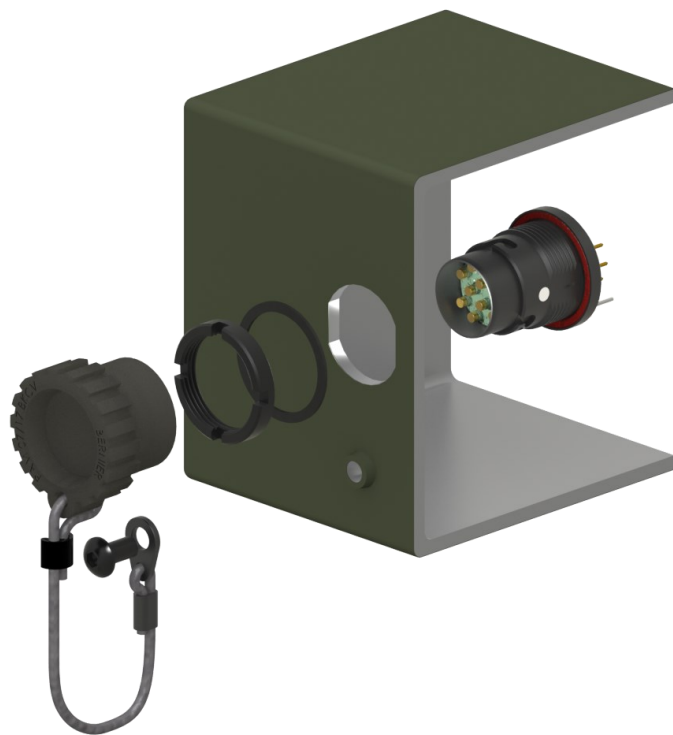


PAM

◆ Items mounted on panel



PAM





BERNIER

Part numbers PAM 07

◆ Connectors

Description	Code	PAM	07	S	N	E	R	1	S	PM
Serie	PAM	↑								
Version with 7 contacts and shell Following norm VG95351	07		↑							
Connector type : Extension Plug Dummy receptacle Receptacle or panel through Panel plug	P F R S L			↑	↑	↑	↑	↑	↑	↑
Keyway	N, W, X, Y			↑						
Nut (connectos R,S,L): Notched nut Hexagonal nut 'Nothing mentionned' : connectors P and F	E H				↑	↑				
Backshell type (connectors P,F,S) : Straight backshell with cable clamp and sleeve included. Knurling integrated for heat-shrink boot Backshell for cable shield continuity and heat-shrink boot.	M R B						↑	↑	↑	↑
Plating Black Navy stainless steel Sandblasted	1 2 3							↑	↑	↑
Contact type (connectors S,L) : Solder cup For PCB soldering	S C								↑	↑
Cable diameter for backshell type 'M' (connectors P and F) : Size (5, 6 or 7mm)	.5, .6, .7									
Ground pin (connectors S,L)	PM									↑

PAM

Notes : Please contact us to get more information on panel plug and panel through types.

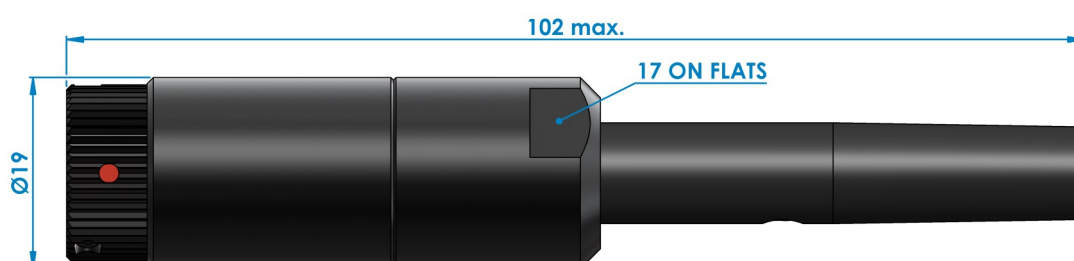
Plugs PAM 07

◆ Type 'F' with straight backshell and sleeve



Key	Color
N	Red
W	Yellow
X	Green
Y	Pink

Ex: PAM 07 FNM1.7

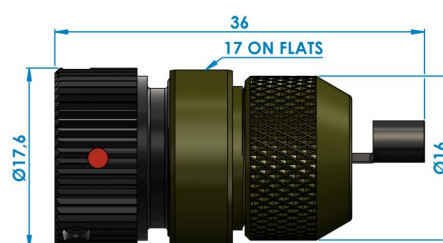


PAM

◆ Type 'F' with backshell for heat-shrink boot and cable shield continuity



Key	Color
N	Red
W	Yellow
X	Green
Y	Pink

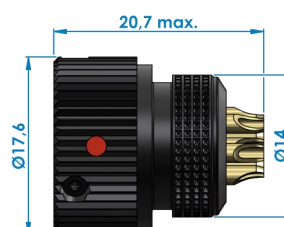


Ex: PAM 07 FNB1

◆ Type 'F' with knurling for heat-shrink boot



Key	Color
N	Red
W	Yellow
X	Green
Y	Pink



Ex: PAM 07 FNR1



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Extension PAM 07

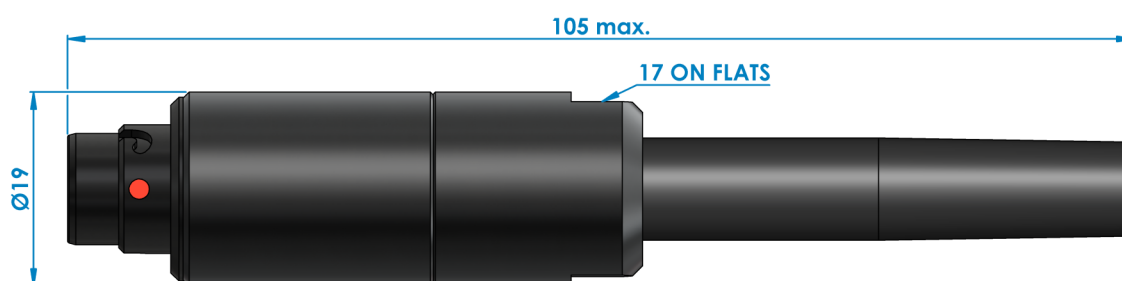
- ◆ Type 'P' with straight backshell and sleeve



Key	Color
N	Red
W	Yellow
X	Green
Y	Pink

PAM

Ex: PAM 07 PNM1.7



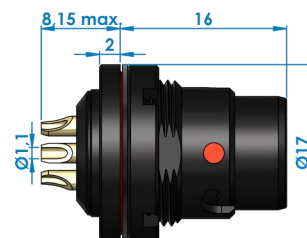
The backshell of PAM 07 FNB1 can be also mounted on extension, part number : PAM 07 PNB1

Receptacles PAM 07

◆ Type 'S' with solder cups



Key	Color
N	Red
W	Yellow
X	Green
Y	Pink



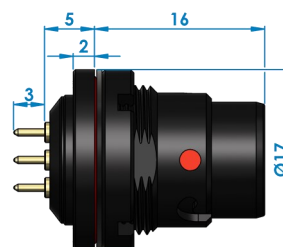
Ex: PAM 07 SNE1S

PAM

◆ Type 'S' with contact for PCB



Key	Color
N	Red
W	Yellow
X	Green
Y	Pink



Ex: PAM 07 SNE1C

◆ Type 'S' Dummy receptacle



Key	Color
N	Red
W	Yellow
X	Green
Y	Pink



Ex: PAM 07 RNE1



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Part numbers PAM 17

◆ Connectors

Description	Code	PAM	17	S	N	E	R	1	S	PM
Serie	PAM	↑								
Version with 10 contacts and shell following norm VG96934	17		↑							
Connector type : Extension Plug Dummy receptacle Receptacle and Panel through Panel plug	P F R S L			↑	↑	↑	↑	↑	↑	↑
Keyway	N, W, X, Y, Z			↑						
Nut (connectors R,S,L): Notched nut Hexagonal nut 'Nothing mentionned' : connectors P et F	E H				↑	↑				
Backshell (connectors P,F,S) : Straight backshell with cable clamp and sleeve included. Backshell for cable shield continuity and heat-shrink boot. Long backshell for cable shield continuity and heat-shrink boot.	M R RA						↑	↑	↑	↑
Plating Black Navy Stainless steel Sandblasted	1 2 3							↑	↑	↑
Contact type (connectors S,L) : Solder cup For PCB soldering	S C1, C2, C3								↑	↑
Cable diameter for backshell type 'M' (connectors P et F) : Size (4, 5, 6 or 7mm)	.4, .5, .6, .7									↑
Ground pin (connectors S,L)	PM									↑

PAM

Notes : Please contact us to get more information on panel plug and panel through types.

Plugs PAM 17

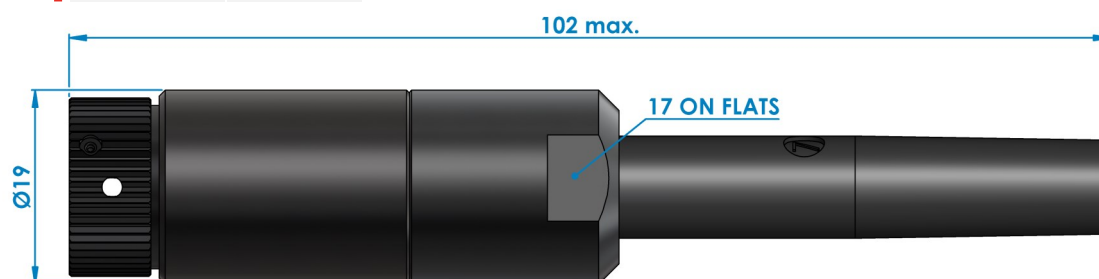
PAM

◆ Type 'F' with straight backshell and sleeve



Key	Color
N	White
W	Blue
X	Purple
Y	Chrome
Z	Red

Ex: PAM 17 FNM1.7

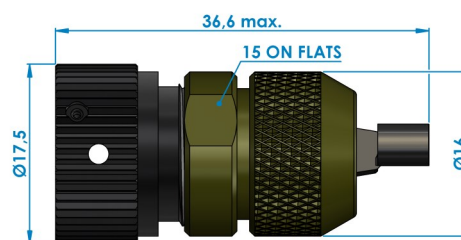


◆ Type 'F' with backshell for cable shield continuity and heat-shrink boot



Key	Color
N	White
W	Blue
X	Purple
Y	Chrome
Z	Red

Ex: PAM 17 FNR1

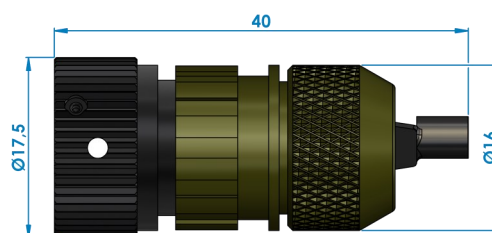


◆ Type 'F' with long backshell for cable shield continuity and heat-shrink boot



Key	Color
N	White
W	Blue
X	Purple
Y	Chrome
Z	Red

Ex: PAM 17 FNRA1

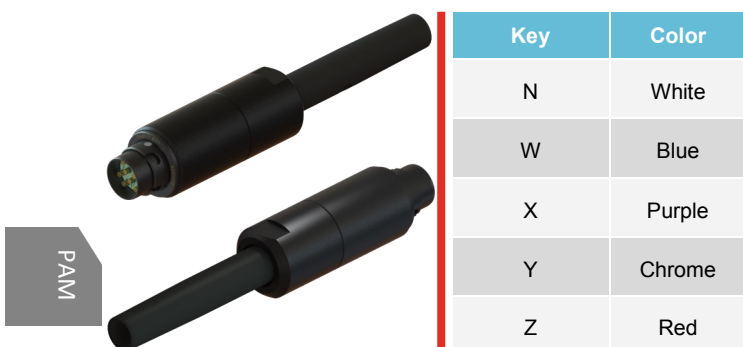




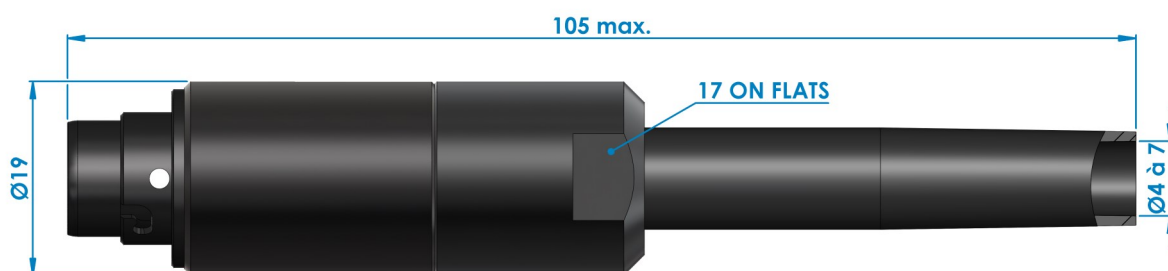
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Extensions PAM 17

◆ Type 'P' with straight backshell and sleeve



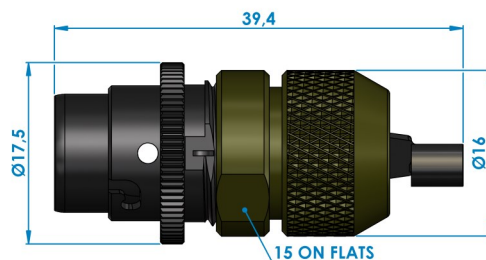
Ex: PAM 17 PNM1.7



◆ Type 'P' with backshell for cable shield continuity and heat-shrink boot



Ex: PAM 07 PNR1

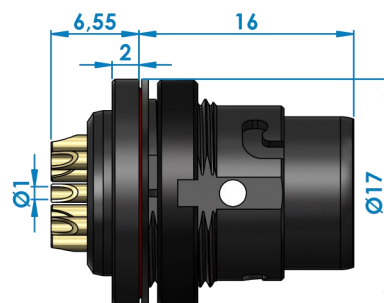


Receptacles PAM 17

◆ Type 'S' with solder cup



Key	Color
N	White
W	Blue
X	Purple
Y	Chrome
Z	Red

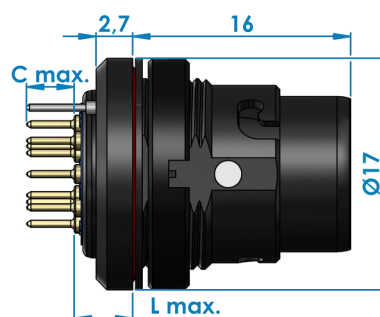


Ex: PAM 17 SNE1S

◆ Type 'S' with contacts for PCB



Length	L	A	ØB
C1	4.30	3.5	0.53
C2	8.95	3	0.5
C3	5	3.5	0.53

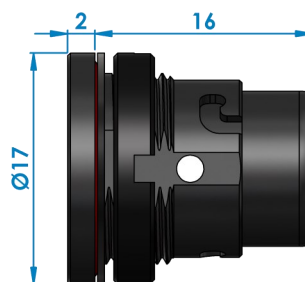


Ex: PAM 17 SNE1C1PM

◆ Type 'S' dummy receptacle



Key	Color
N	White
W	Blue
X	Purple
Y	Chrome
Z	Red



Ex: PAM 17 RNE1

PAM



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Part numbers PAM 10

◆ Connectors

Description	Code	PAM	10	S	N	E		1	C	PM
Serie	PAM	↑								
Version with 10 contacts	10		↑							
Connector type : Extension Plug Dummy receptacle Receptacle and panel through Panel plug	P F R S L			↑	↑	↑				
Keyway	N, W				↑					
Nut (connectors R,S,L): Notched nut Hexagonal nut	E H					↑				
Backshell (connectors P,F,S) : Straight backshell with cable clamp and sleeve included Knurling integrated for heat-shrink boot Backshell for cable shield continuity and heat-shrink boot. Backshell for cable shield continuity and heat-shrink boot.	M R B RA03-10						↑			
Plating Black Navy Stainless steel Sandblasted	1 2 3							↑		
Contact type (connectors S,L) : Solder cup For PCB soldering	S C, C2								↑	
Cable diameter for backshell type 'M' (connectors P et F) : Size (5, 6 ou 7mm)	.5, .6, .7									
Ground pin (connectors S,L)	PM									↑

PAM

Notes : Please contact us to get more information on panel plug and panel through types.

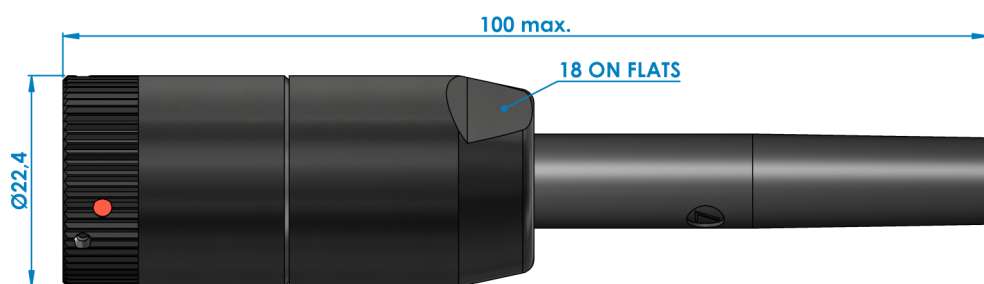
Plugs PAM 10

◆ Type 'F' with straight backshell and sleeve



Key	Color
N	Red
W	White

Ex: PAM 10 FNM1.7



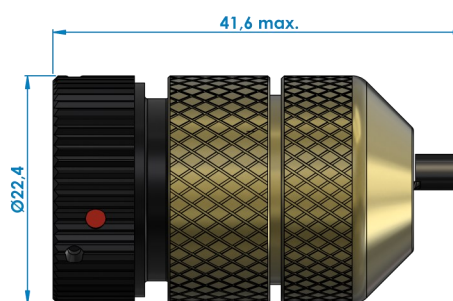
PAM

◆ Type 'F' with backshell for cable shield continuity and heat-shrink boot

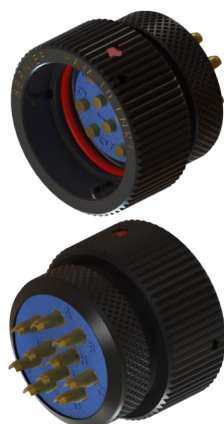


Key	Color
N	Red
W	White

Ex: PAM 10 FNB1



◆ Type 'F' with integrated knurling for heat-shrink boot



Key	Color
N	Red
W	White

Ex: PAM 10 FNR1





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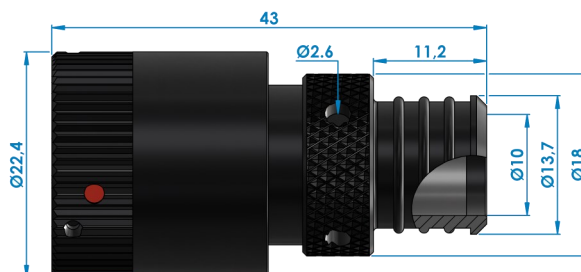
Plugs and extensions PAM 10

◆ Type 'F' with backshell for cable shield continuity and heat-shrink boot

PAM



Clé	Couleur
N	Rouge
W	Blanc

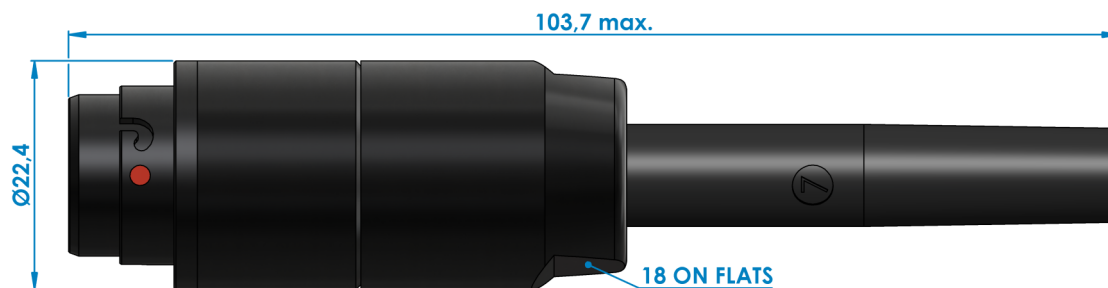


Backshell for cable assembling with metallic collar and heat-shrink boot (not included)

◆ Type 'P' with backshell and sleeve



Key	Color
N	Red
W	White



Ex: PAM 10 PNM1.7

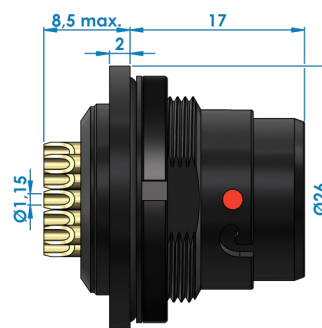
The plug backshells can be mounted on the extension exemple : PAM 10 PNRA03-10

Receptacles PAM 10

◆ Type 'S' with solder cup



Key	Color
N	Red
W	white



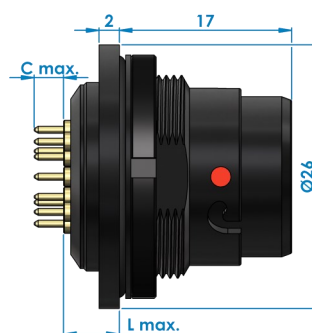
Ex: PAM 10 SNE1S

PAM

◆ Type 'S' with contacts for PCB



Length	L	A	ØB
C	5.7	3	0.7
C2	9.6	4.4	0.7

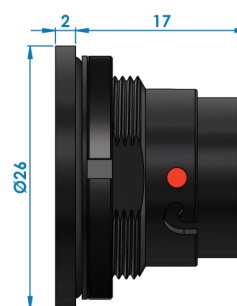


Ex: PAM 10 SNE1C

◆ Type 'S' Dummy receptacle



Key	Color
N	Red
W	White



Ex: PAM 10 RNE1

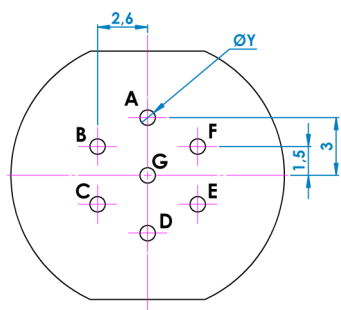


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PCB holing and panel cut

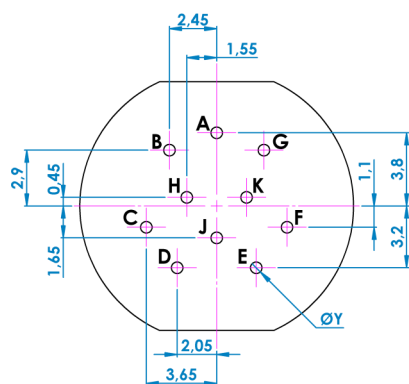
◆ PCB holings, welding side, through pins

PAM
07



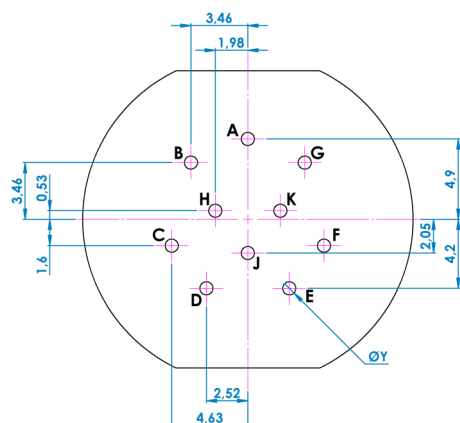
Contact	$\varnothing Y^{+0,1}$
C	0.8

PAM
17



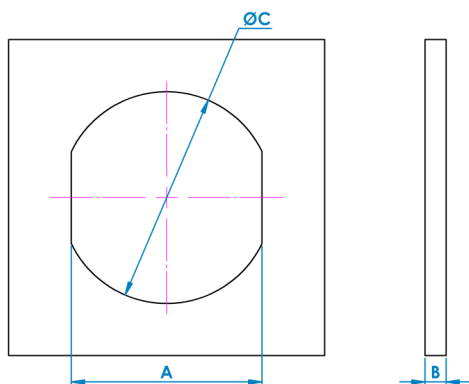
Contact	$\varnothing Y^{+0,1}$
C1	0.6
C2	
C3	

PAM
10



Contact	$\varnothing Y^{+0,1}$
C	0.8
C2	

◆ Panel cut



Version	A	B mini	B maxi	ØC
PAM 07/17	12.9	1	3	14.2
PAM 10	18.1	1	3.5	20.1

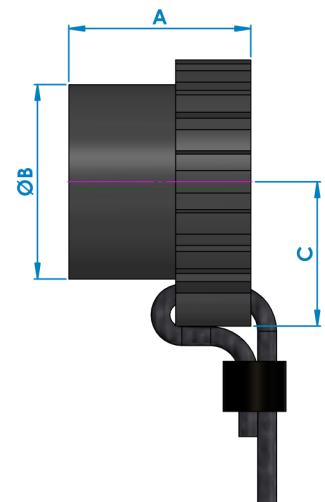
◆ Elastomer caps

Description	Code	PAM	07/17	B	K	C	V	MC
Serie	PAM	↑	↑	↑	↑	↑	↑	↑
Version	07/17, 10	↑	↑	↑	↑	↑	↑	↑
Type : Plug and panel plug Receptacle, extension and panel through	A B	↑	↑	↑	↑	↑	↑	↑
Keyway : All	K	↑	↑	↑	↑	↑	↑	↑
Material Elastomer	C	↑	↑	↑	↑	↑	↑	↑
Fixing : Flange for screw Tyrap Simple metallic ring	V T EM	↑	↑	↑	↑	↑	↑	↑
Attachment: Nothing mentioned : Nylon cord Black covered stainless steel microcable	MC	↑	↑	↑	↑	↑	↑	↑

PAM



Type	Version	A	ØB	C
Plug 'A'	PAM 07 / PAM 17	15	20.4	14.1
	PAM 10	15	25	16.1
Receptacle 'B'	PAM 07 / PAM 17	14.5	15.5	11.5
	PAM 10	15	20.4	14.1





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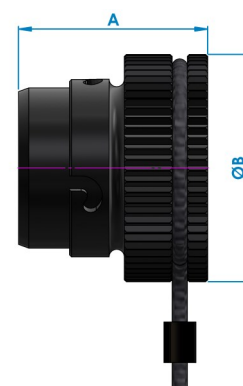
◆ Metallic caps

Description	Code	PAM	07	B	N	G	1	AF	MC
Serie	PAM	↑							
Version	07, 17, 10		↑						
Type : Plug and panel plug Receptacle, extension and panel through	A B			↑					
Keyway : Following mating connector	N, W, X, Y, Z				↑				
Material : Stainless steel Aluminium	G D					↑			
Plating : Black Sandblasted Brass	1 3 4						↑		
Fixing : Flange for screw Tyrap Simple metallic ring	V T EM							↑	
Attachment : Nothing mentioned : Nylon cord Black covered stainless steel microcable	MC								↑

PAM



Plug 'A'	A Max	ØB Max
PAM 07 / PAM 17	18.7	17.7
PAM 10	18.7	23



Receptacle 'B'	A Max	ØB Maxi	C
PAM 07 / PAM 17	12.5	18	18.8
PAM 10	12.5	23	19.8



Cap fixing

◆ Fixing terminals

Some rings can receive several caps.

Plastic clamp



Ferule



Metallic ring



Eyelet for M3 screw



Crimped eyelet for M3 screw



90° crimped eyelet for M3 screw



Nylon cord is nearing obsolescence ! (Microcable is recommended for new projects)



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◆ Special connectors

Plug 07 contacts with ground ring



PAM 07 FW1 MBLE

PAM

◆ Connector system with easy maintenance operation

Receptacle

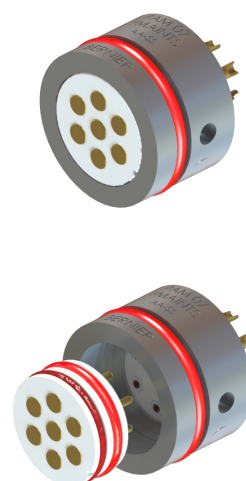


PAM 07 SBASE

PAM 07 SMODUR1CR

Receptacle set composed of a base equipped with contacts to be soldered and a special spring contacts module which can be easily removed and replaced.

Plug

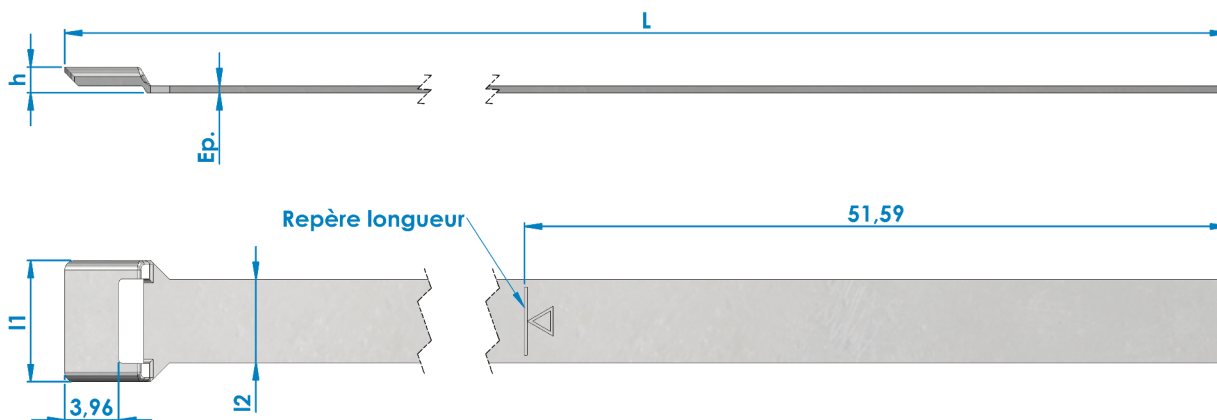


PAM 07 FBASE PAM 07 FMODU

Plug set composed of a base equipped with contacts to be soldered and a flat contacts module which can be easily removed and replaced.

◆ Accessories

Metallic clamp for backshells	Part number	L (mm)	h (mm)	l1 (mm)	l2 (mm)	Ep. (mm)
Width 6.1mm	B593	362.1	1.88	8.9	6.1	0.51
Width 3.17mm	B452	206.4	1.35	5	3.1	0.4



PAM

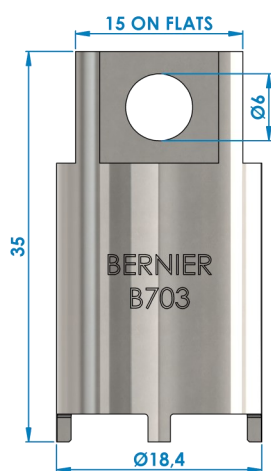


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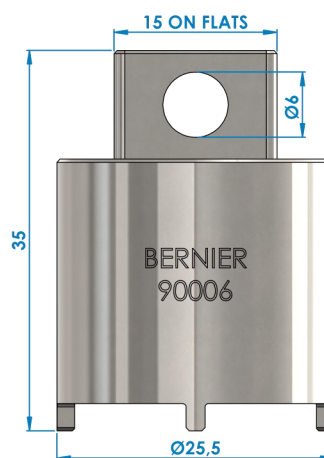
◆ Tightening tools

Tools for receptacle mounting	Part numbers
Tightening key for receptacles PAM 07/17	B703
Tightening key for receptacles PAM 10	90006

PAM



97002



90006

◆ Tightening torque

Material	Torque for nut 'S' and 'R' types receptacles		Torque for nut type 'L' panel plug		Torque for backshell type 'M'	
	PAM 07/17	PAM 10	PAM 17	PAM 10	PAM 07/17	PAM 10
Standard : Stainless steel	9 N.m	13N.m	6N.m	9N.m	6N.m	9N.m

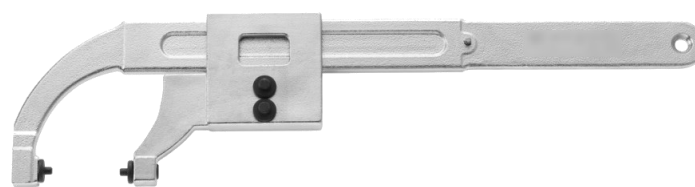
◆ Assembly tools

Tools for backshell mounting	Part numbers
Tool to crimp the metallic clamp width 6.10mm	BOU000MESE02
Tool to crimp the metallic clamp width 3.17mm	BOU000MESE03
Tightening tool for CMA RA02-XX backshell	B704
Strap tool for RA1 backshells	B574

PAM



BOU000MESE02



B704



B574

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Push-Pull / Quick-Releaseable Connector

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Catalog

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... The right solution for the command of Electrical/Power systems !

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Tel : 33 (0)1 60 84 21 40 Fax : 33 (0)1 60 84 43 81 info@bernier.tm.fr



PAM



55116

55116 Serie

Bayonet Connector



... The Crypto and
Audio communication standard !

Catalog





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◆ Description

55116 serie is a standard in Tactical and Radiocommunication systems. Circular, the connectors are equipped with 5 and 6 contacts and bayonet mate. These connectors are designed for low rating signals. They are also appreciated on crypto, sensors and measurement devices.

The 55116 connectors are following the MIL-C-55116 norm.

◆ Applications

55116



Radios



Accessories



Intercoms



Crypted data

Bayonet

Ergonomics

Self cleaning contacts

StainlessSteel

Standard

Watertight



Optronic devices



Weapon systems



Rugged computers



Tactical equipments

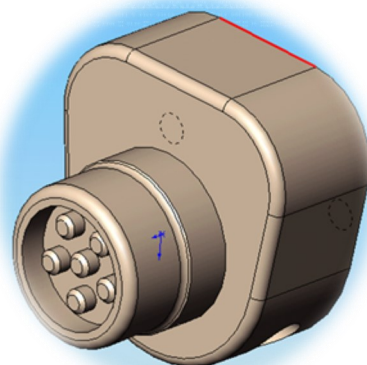
Specific designs

◆ The Right solution for your projects

55116 connectors are appreciated for their flexibility to fit customer specifications.

Our Design team is able to propose versions answering to your needs. Reinforcements can be applied in case of use in harder climatic, ergonomic and electromagnetic conditions.

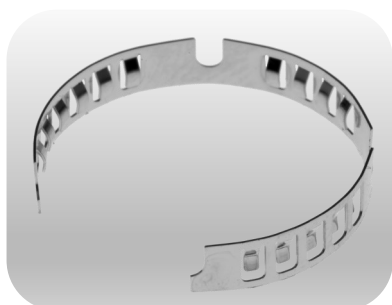
Caps and backshells can also be improved to bring a better ergonomics on your configuration.



55116

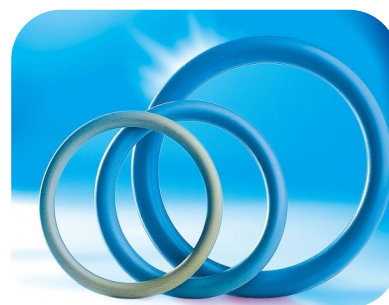
◆ EMC reinforcements

Options are available in order to reinforce the EMC specifications.



Ground ring « 360° »

55116 plug can be equipped with a ground ring giving a high EMC level. This function developed by Bernier brings a better continuity between the connectors shells and a protection on 360°



Conductive O Rings

The receptacle nitrile Oring can be switched to a conductive version to establish a better conductivity between the connector and the panel.



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◆ Climatic and mechanical characteristics

	55116 Serie
Unlocking system	Bayonet
Operating temperature range	-55°C to +85°C
Endurance	3 000 Operations
Sealing performance	IP68 (connected and disconnected)
Corrosion resistance	Salt fog : 96 hours (stainless steel)
Air pressure	0.17 bar
Fluids resistance	Oils and hydrocarbones

55116

◆ Electrical characteristics

	55116 serie (05 and 06 contacts)
Working voltage	60 V _{max}
Current rating per contact	0.5 A _{max}
Gauge (AWG)	20
Contact type	Solder cup / For PCB
Contact resistance	≤ 50 mOhms at 25°C
Insulation resistance	≥ 5000 MOhms
Dielectric	500 V _{ac} RMS
Insulation of insulator	5000 Mohms under 500 V _{cc}

◆ Material and plating

	Material	Plating
Connector shell	Stainless steel	Sandblasting or Black Chrome or Olive green cadmium (non ROHS-REACH)
Insulator	Thermosetting	-
Contacts	Copper alloy	Gold over nickel
Backshell shell	Aluminium	Sandblasting or Black Chrome or Olive green cadmium (non ROHS-REACH)



◆ Connectors

Shell type	Connector 5 contacts (Max)	Connector 6 cts (Max)
Receptacle	32 g	33 g
Plug with backshell	58 g	59 g
Extension with backshell	49 g	50 g

Standard material

55116

◆ Metallic caps

Type	Weight (Max)
Aluminium	10 g
Stainless steel	17 g
Elastomer	5 g
Thermo-plastic	5g



BERNIER

◆ Contact quality

Unique BERNIER contact technology allows excellent contact resistance, better than standard

Maximal contact reliability

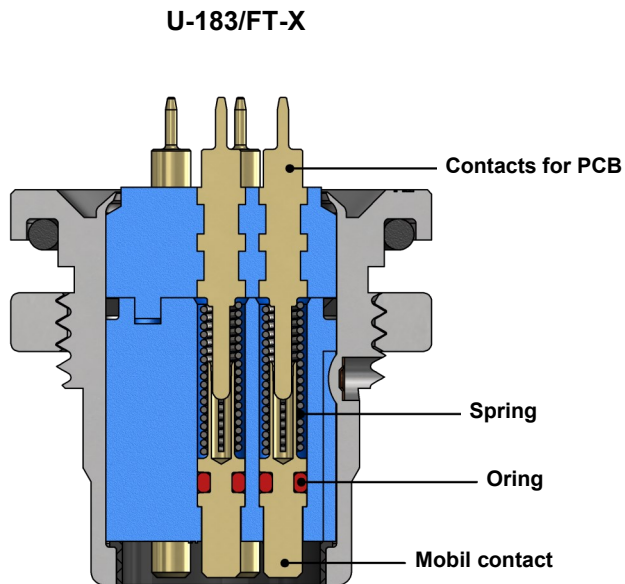
Quality of contact in time

Resistance to harsh environments

Self cleaning contact technology

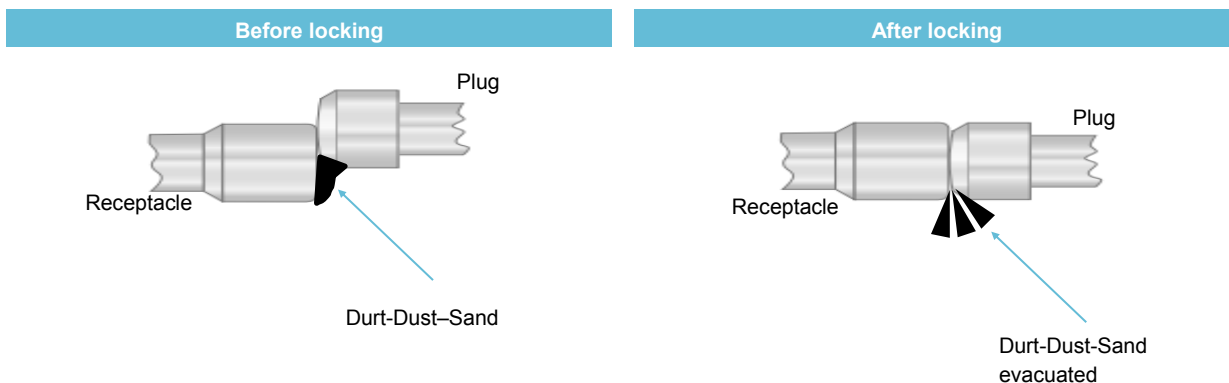
Good behavior in vibration and shock

High frequencies signals endurance



55116

◆ Efficiency of the self cleaning contact function



Compatibility and Keyway

◆ Compatibility

	Extension 05 cts	Extension 06 cts	Receptacle 05 cts	Receptacle 06 cts
Plug 05 cts	●	●	●	●
Plug 06 cts	●	●	●	●
Metallic cap for receptacle and extension	●	●	●	●

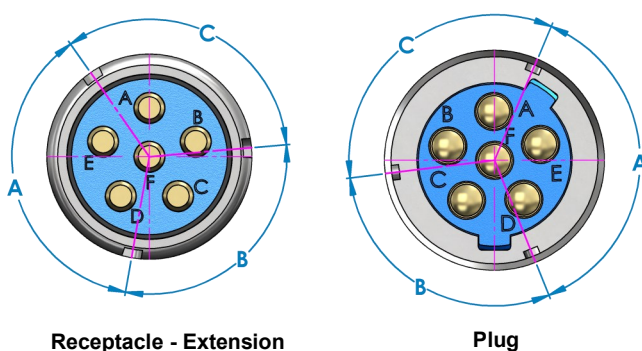
⚠ Note : 06 contacts shell and 05 contacts shell can mate

55116

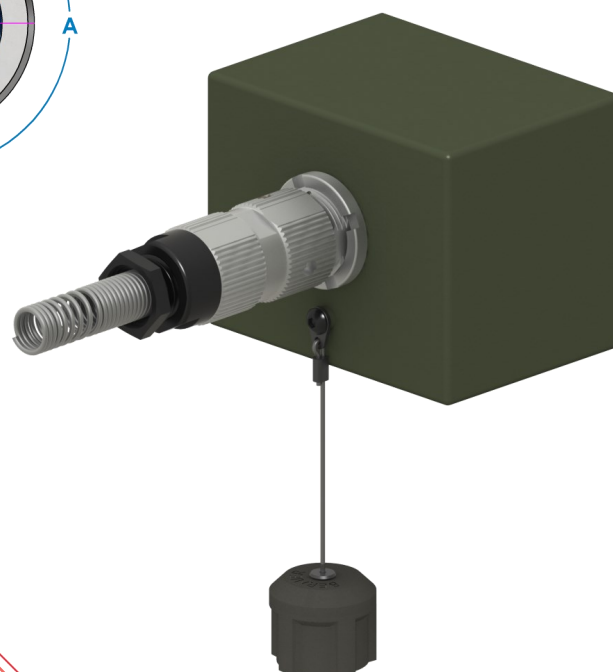
◆ Keyway



05 and 06 contacts Version Front view



Part number	A °	B °	C °
55116	135	105	120





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◆ Items mounted on cable

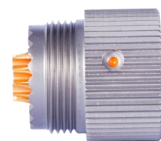
Plug



Thermoplastic plug cap



Plug for MIL-DTL-38999 backshell



Bayonet metallic plug cap



Extension for MIL-DTL-38999 backshell



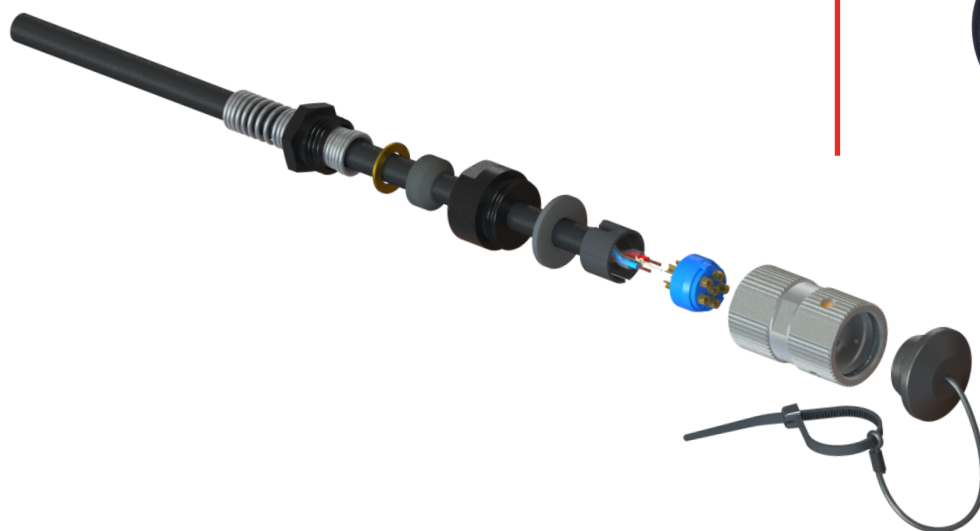
Elastomer extension cap



Extension



Bayonet metallic extension cap



55116

◆ Items mounted on panel

Elastomer receptacle cap



Bayonet metallic receptacle cap



Rear mounting

Receptacle



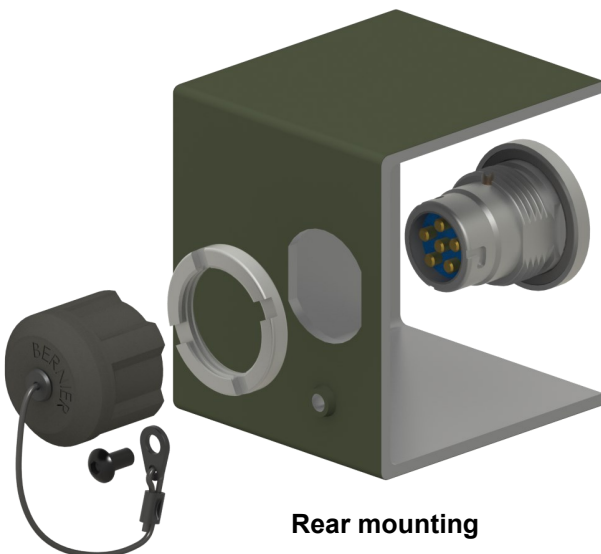
Panel through for MIL-DTL-38999 backshell



Front mounting



55116



Rear mounting



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◆ Connectors

Description	Code	U	-	183/U	-	4
Connector U B	5 contacts 6 contacts	↑		↑		↑
Connector type : Extension Plug Receptacle Panel through	(See page Extension) (See page Plug) (See page Receptacle) (See page Panel through)			↑		↑
Plating : sandblasting Black chrome Olive green cadmium	1 4 7					↑

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◆ Caps

Description	Code	B8	00	A	CD	7
Serie	B8	↑				
Receptacle cap : Watertight with fixing ring Watertight with eyelet Watertight with duckle Without fixing	00 01 05 10		↑			
Plug cap : Watertight for plug	04					
Cap material : Aluminium alloy Stainless steel (Nothing mentioned)	A			↑		
Termination : Cutting small chain Black nylon cord Microcable	CD CN MC				↑	
Plating (Metal cap) : Sandblasting Black Chrome Olive green cadmium Colorless anodised on aluminium	1 4 7 8					↑

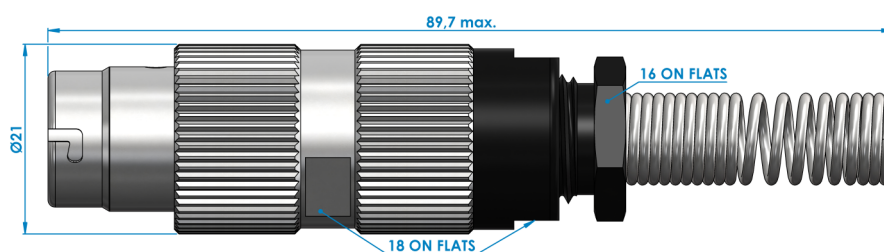
Extension

◆ Extension with straight backshell



Connector type	5 cts	6 cts
Sandblasting	U-228/U-1	B328-1
Black Chrome	U-228/U-4	B328-4
Olive green cadmium	U-228/U-7	B328-7

Ex: B328-1

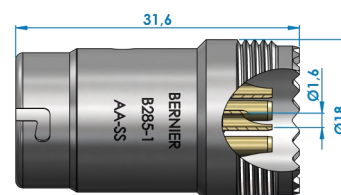


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◆ Extension with thread for MIL-DTL-38999



Connector type	5 cts	6 cts
Sandblasting	U-185/U-1	B285-1
Black chrome	U-185/U-4	B285-4
Olive green cadmium	U-185/U-7	B285-7



Ex: B285-1

Mates with MIL-DTL-38999 series 3 and 4 size 13 backshell



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◆ Plug with straight backshell



Connector type	5 cts	6 cts
Sandblasting	U-229/U-1	B329-1
Black Chrome	U-229/U-4	B329-4
Olive green cadmium	U-229/U-7	B329-7

55116

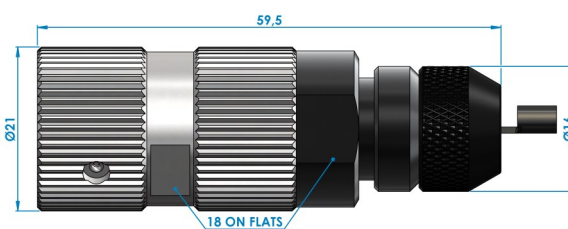
Ex: B329-1



◆ Plug with backshell for cable shield continuity and heat-shrink boot



Connector type	5 cts	6 cts
Sandblasting	B829-1	B817-1
Black chrome	B829-4	B817-4
Olive green cadmium	B829-7	B817-7

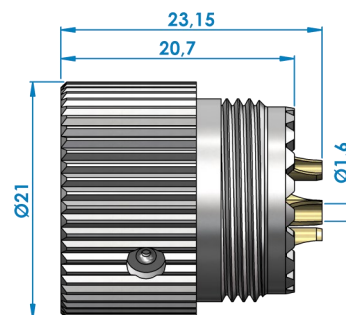


Ex: B817-1

◆ Plug with ground ring and thread for MIL-DTL-38999 backshell



Connector type	5 cts	6 cts
Sandblasting	-	B929-1
Black chrome	-	B929-4
Olive green cadmium	-	B929-7



Ex: B929-1

Mates with MIL-DTL-38999 serie 3 and 4 size 13 backshell

Panel plug and panel through

◆ Panel plug



Connector type	5 cts	6 cts
Sandblasting	U-629/U-1	U-729/U-1
Black chrome	U-629/U-4	U-729/U-4
Olive green cadmium	U-629/U-7	U-729/U-7

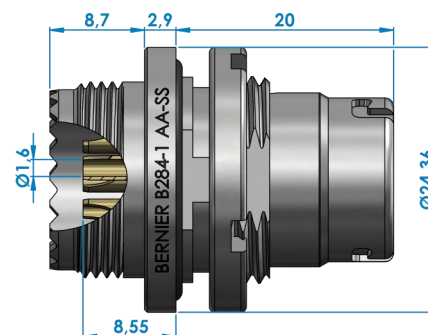
Ex: U-729/U-1

55116

◆ Panel through with thread for MIL-DTL-38999 backshell



Connector type	5 cts	6 cts
Sandblasting	U-184/U-1	B284-1
Black chrome	U-184/U-4	B284-4
Olive green cadmium	U-184/U-7	B284-7



Ex: B284-1

Mates with MIL-DTL-38999 serie 3 and 4 size 13 backshell



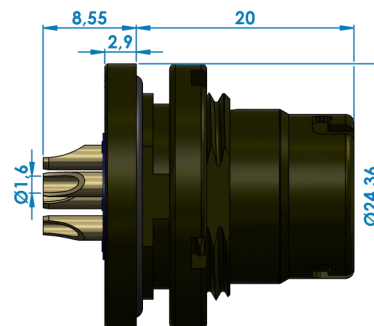
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Receptacles

◆ Receptacle with solder cup contacts (rear mounting)



Connector type	5 cts	6 cts
Sandblasting	U-183/U-1	B283-1
Black chrome	U-183/U-4	B283-4
Olive green cadmium	U-183/U-7	B283-7



55116

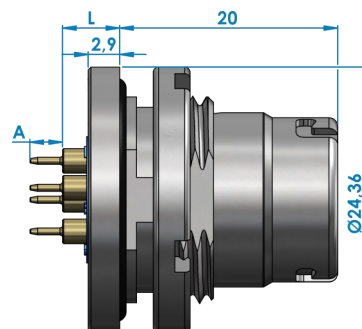
Ex: B283-7

◆ Receptacle with contacts for PCB (rear mounting)



Connector type	5 cts	6 cts
Sandblasting	U-183/FT-1	B283-FT1
Black chrome	U-183/FT-4	B283-FT4
Olive green cadmium	U-183/FT-7	B283-FT7

Contact	L	A
FT	5.1	3
FTA	5.1	3.5
FTB	10	5

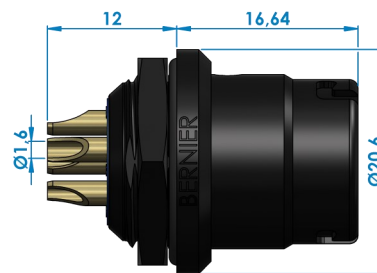


Ex: B283/FT-1

◆ Receptacle with solder cup contacts (front mounting)



Connector type	5 cts	6 cts
Sandblasting	U-183S-1	B683S-1
Black chrome	U-183S-4	B683S-4
Olive green cadmium	U-183S-7	B683S-4



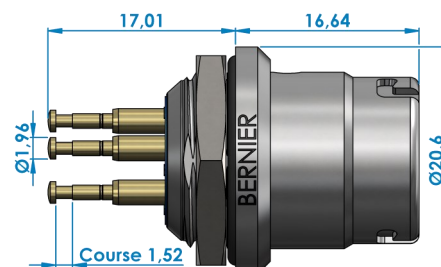
Ex: B683S-4

Receptacle and PCB holing

◆ Receptacle with spring contacts for PCB, contact by pressure (Front mounting)



Connector type	5 cts	6 cts
Sandblasting	B183PPC-1	B283PPC-1
Black chrome	B183PPC-4	B283PPC-4
Olive green cadmium	B183PPC-7	B283PPC-7

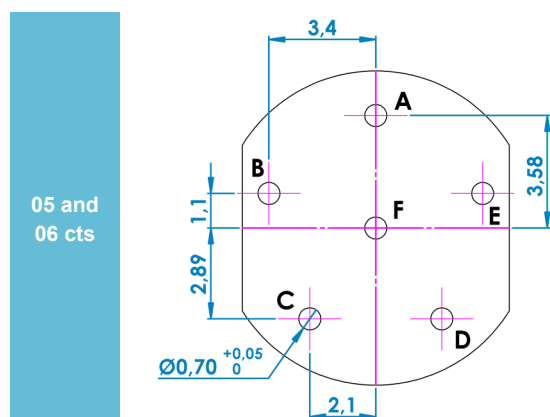


Ex: B183PPC-1

55116

◆ PCB holing

Welding side, through pins

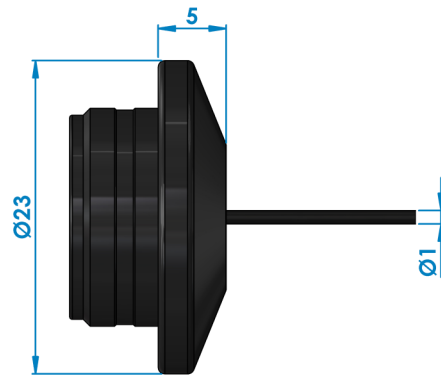




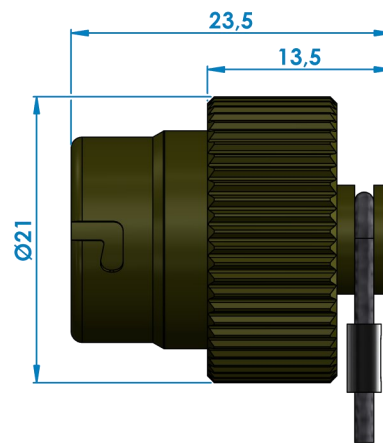
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◆ Plug caps

Thermo-
plastic plug
cap



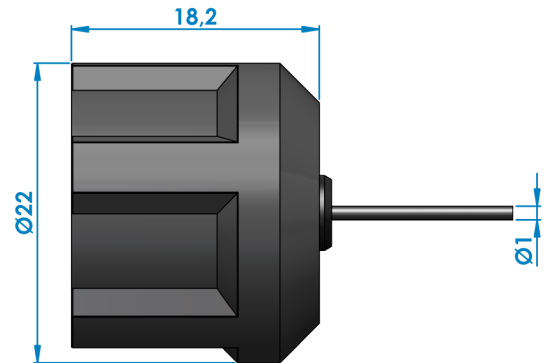
Bayonet
metallic plug
cap



55116

◆ Receptacle and extension caps

Elastomer
receptacle
and
extension
cap



Bayonet
metallic re-
ceptacle and
extension
cap



Cap fixing

◆ Fixing terminal

Some rings can receive several caps

Plastic clamp



Ferule



Metallic ring



Eyelet for M3 screw



Crimped eyelet for M3 screw



90° crimped eyelet for M3 screw



55116



Nylon cord is nearing obsolescence ! (Microcable is recommended for new projects)



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◆ Special connectors

90° angled adaptor plug/extension



55116



◆ Tools

Tools	Part number
Tightening key for receptacle nut	10063



55116

◆ Tightening torque

Material	Torque for type A receptacle nut	Torque for type B receptacle nut	Tightening torque for backshell
Stainless steel	14N.m	12 N.m	(Aluminium alloy) 6N.m

CMA Serie
Push-Pull / Quick-Releaseable Connector

... For an optimum data transfer in harsh environments !

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CMASD Serie
Push-Pull Connector

... Toughness and reliable high speed data transfer in small dimensions !

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CMALD Serie
Push-Pull and Quick-Releaseable Connector

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Bayonet Connector

... The Crypto and Audio communication standard !

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221 Serie
Quick-Releaseable Connector

... Easy use and communication reliability in operation !

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55116



221 Serie

Quick-Releasable Connector

221



... Easy use and communication reliability in operation !

Catalog



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◆ Description

The 221 connectors are designed for applications requiring quick-disconnection. Used on military and civil planes and helicopters, they provide all types of communication between on board equipments and external connections.

Customer specifications : STTE N°269PNI/1

Environmental specification : AIR 7304

Electrical specification : MIL-C-38999.

Quick-releasable

Watertight

Ergonomics

Aluminium

221

◆ Applications



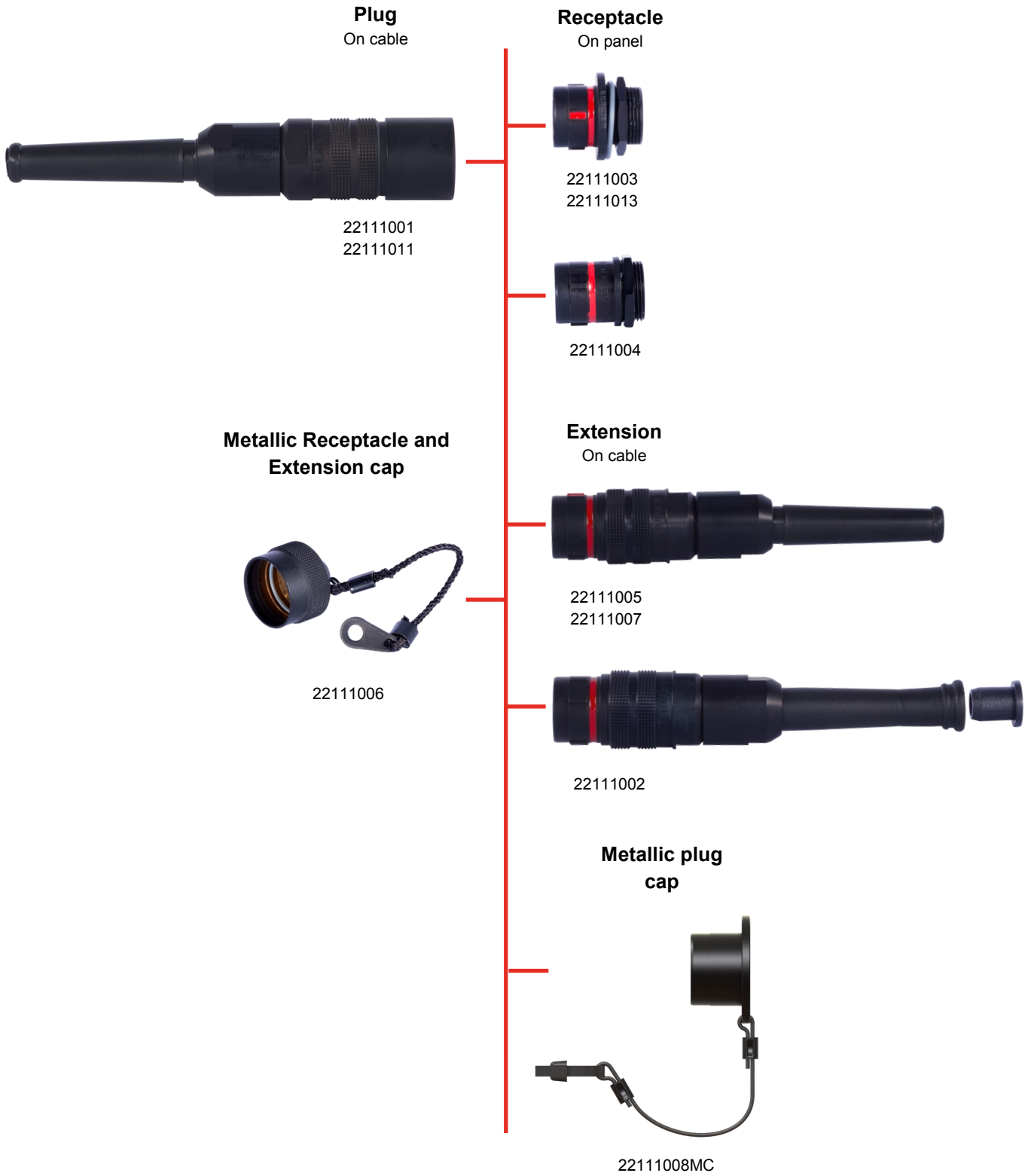
Radios



Accessories



Intercoms



221



BERNIER

◆ Climatic and mechanical characteristics

	221 Serie
Unlocking system	Quick-releasable : Traction Force ($25N \leq F \leq 40N$)
Operating temperature range	-45°C to + 125°C
Endurance	500 Operations
Sealing performance	IP68 (connected and disconnected)
Contacts protection	100% scoop-proof
Vibrations	55Hz at 2000Hz at 10g (6 hours)
Fluids resistance	Oils and hydrocarbons

221

◆ Electrical characteristics

	221 Serie
Working voltage	1800 V _{max} at 50Hz
Current rating per contact	7.5 A _{max}
Gauge (AWG)	20
Contact type	To be crimped
Contact resistance	≤ 10 mOhms à 25°C
Insulation resistance	≥ 5000 MOhms
Crosstalk on mated pairs	<110dB à 8Khz

◆ Material and plating

	Material	Plating
Connector shell	Aluminium	-
Insulator	PPS / Fluorosilicon	-
Contacts	Copper alloy	Gold over nickel
Backshell shell	Aluminium	Black chrome



Additional information

◆ Weights

Part number	Weight (Max)
22110001	33 g
22111002	33 g
22111003	14 g
22111004	14 g
22111005	32 g
22111006	11 g
22111011	36 g
22111013	17 g

Standard material

◆ Dimensions (mated/unmated)

221

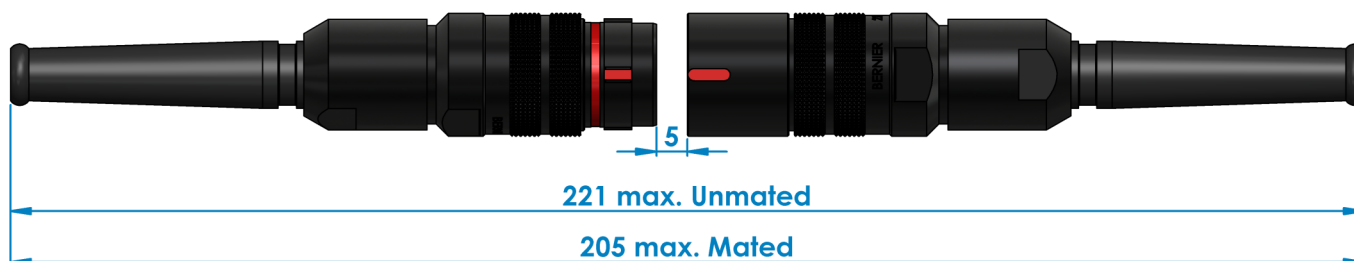
Receptacle without panel sealing / plug :



Receptacle with panel sealing / plug :



Extension / plug :





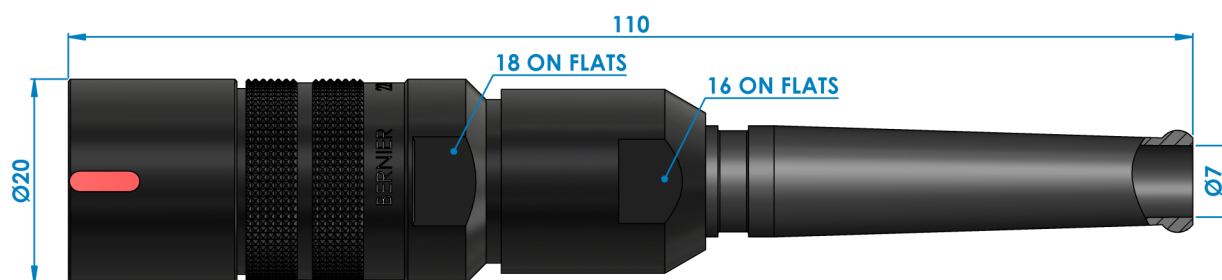
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◆ Plug with straight backshell (diam 7mm)



Part number	Description
22111001	10 male contacts (AWG20)
22111011	10 female contacts (AWG20)

Ex: 22111001



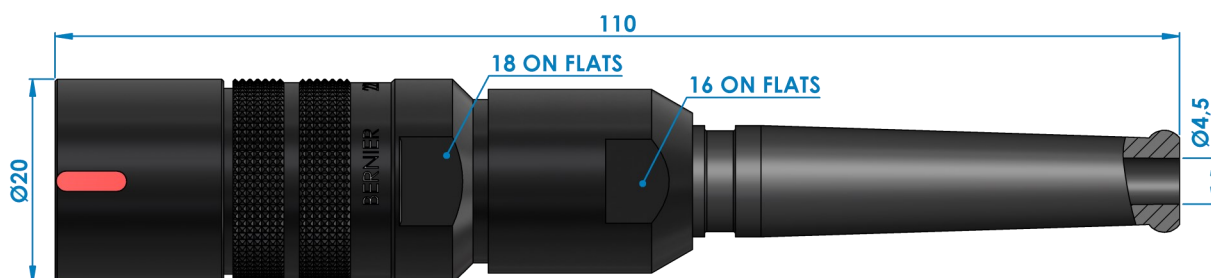
221

◆ Plug with straight backshell (diam 4.5 mm)



Part number	Description
22111001-45	10 male contacts (AWG20)
22111011-45	10 female contacts (AWG20)

Ex: 22111001-45



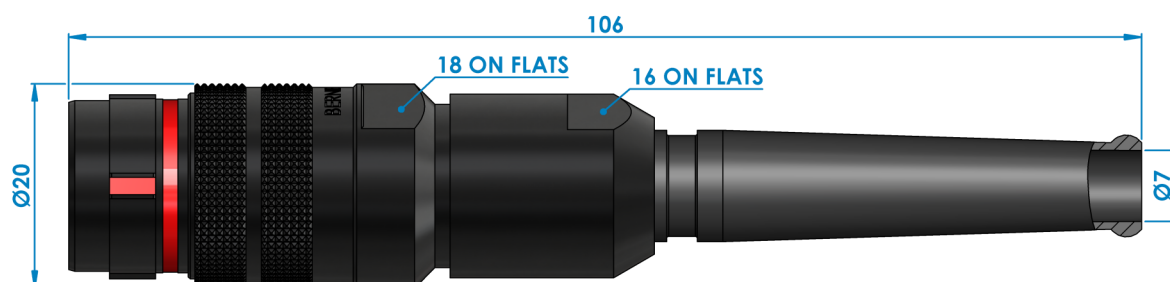
Extensions

◆ Extension with straight backshell (diam 7mm)



Part number	Description
22111007	10 male contacts (AWG20)
22111005	10 female contacts (AWG20)

Ex: 22111005



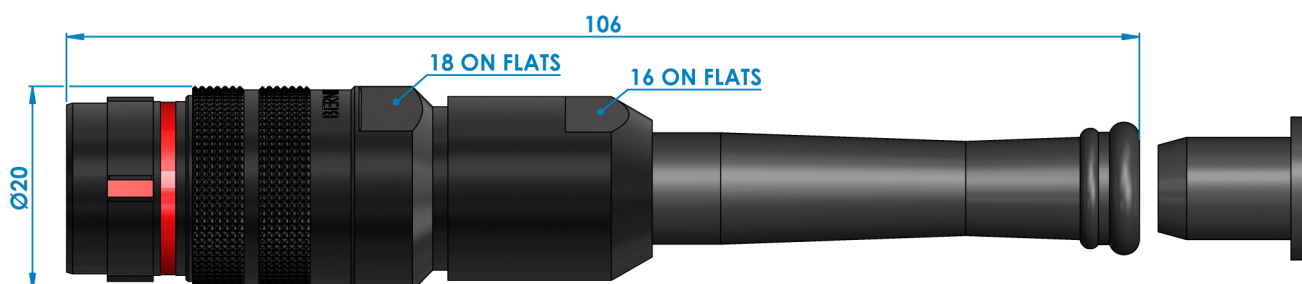
221

◆ Extension with straight backshell (diam 7mm) and panel fixing



Part number	Description
22111002	10 female contacts (AWG20)

Ex: 22111002





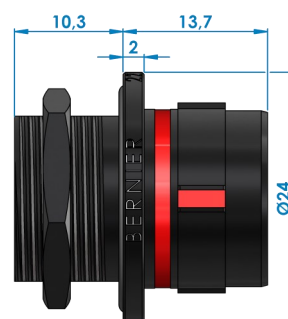
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Receptacles

◆ Receptacle with panel sealing



Part number	Description
22111013	10 male contacts (AWG20)
22111003	10 female contacts (AWG20)



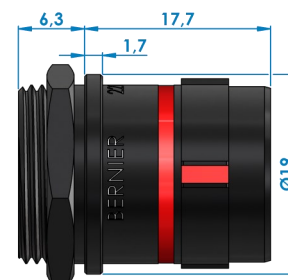
Ex: 22111003

221

◆ Receptacle with no panel sealing

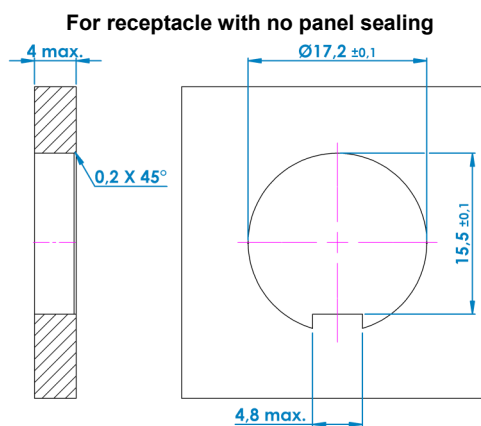
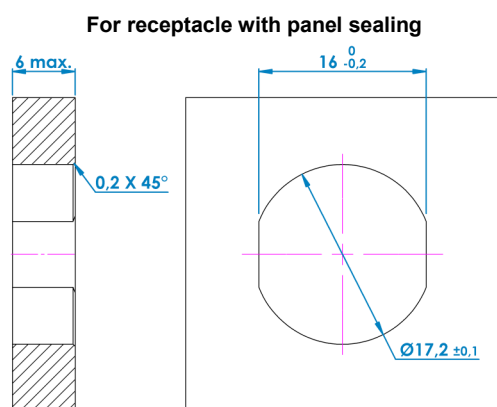


Part number	Description
22111004	10 female contacts (AWG20)



Ex: 22111004

◆ Panel cut



Caps and fixing

◆ Caps

Metallic cap for receptacle



22111006

Metallic cap for plug



22111008MC

Please contact us for other cap versions

221

◆ Terminations

Some terminations can accept several lanyards

Plastic clamp



Ferule



Metallic ring



Eyelet for M3 screw



Crimped eyelet for M3 screw



90° crimped eyelet for M3 screw





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◆ Accessories

Type	Part number
Set of 10 male contacts + 5 shutters	11423
Set of 10 female contacts + 5 shutters	11424
Set of 8 long male contacts + 2 short male contacts + 5 shutters	11425



11423



11424



11425

◆ Tools

Type	Part number
Plastic insertion/extraction tool for male / female contact	M81969/14-02
Hand crimp tool	M22520/1-01
Turret head	M22520/1-04



M81969/14-02



M22520/1-01

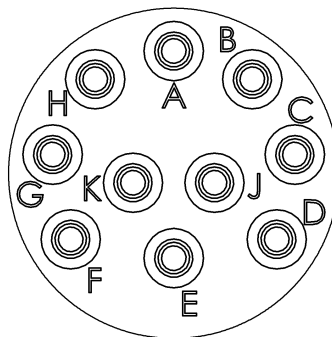


M22520/1-04

221

◆ Contacts positions

Mating side view



◆ Tightening torque

Material	Torque for receptacle nut	Torque for backshell
Alliage Aluminium	8 ⁺² N.m	9 N.m

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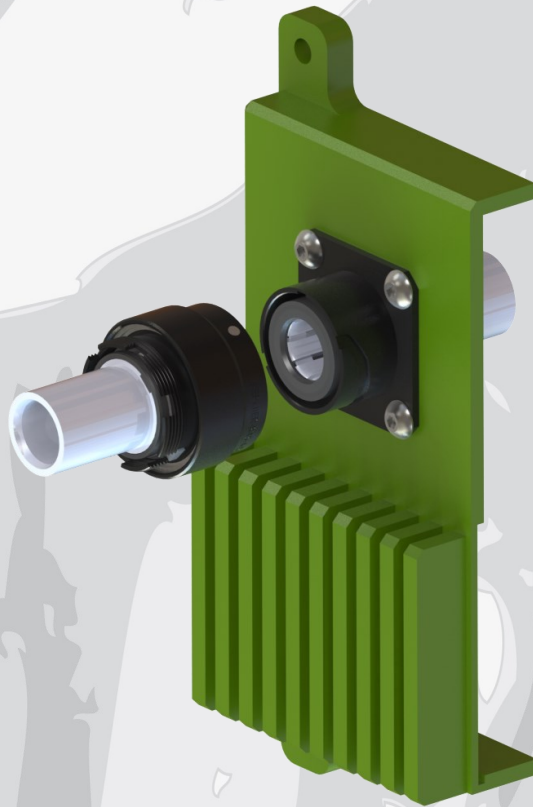




POW Serie

Power Connector

POW



Catalog

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BERNIER

◆ Description

Bernier designed the POW connectors specially for equipments asking high current supply in harsh environments.

◆ Applications



Vehicules



Radar systems

Push-Pull or Bayonet

Ergonomics

Stainless steel

EMI RFI Protection

Multi-Contacts

Watertight



**Optronic
Devices**



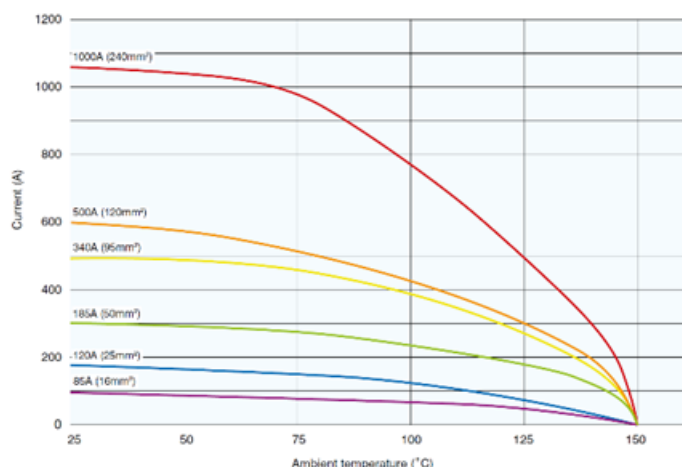
Weapon systems

POW

Power Connectors

◆ Contact Technology

The contact line used in POW connectors presents Mechanical and Electrical characteristics allowing electrical supply of equipments working under severe conditions and with many connections. It has been developed to optimize electrical contact due to a contact surface which is equivalent to the cable cross section and a weak insertion effort.



1 pole POW connector (De-rating)

POW

◆ Current rating

POW connectors can be used in systems asking power supplies from 100A to 1000A according to the configurations.

Contact size	Insertion force (N)	Contact resistance (mOhm)	Max Current rating (A) (@ Ambient temperature +50°C)
1	50	0.16	100
2	70	0.07	500
3	130	0.05	1000

◆ Connector technology

The metallic and watertight shells complete to bring the necessary toughness for the required high level reliability. The POW serie construction includes also the «Finger protection» function for user giving an exceptional ability to adapt to a multitude of applications and environments.

◆ Development

POW connectors are appreciated for their flexibility to fit customer specifications. Our Design team is able to propose versions answering to your needs. Reinforcements can be applied in case of use in harder climatic, ergonomic and electromagnetic conditions. Caps and backshells can also be improved to bring a better ergonomics on your configuration.

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360L6 Serie

Avionic Connector



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◆ Description

The function of this connector is to provide electrical connections between the pilot's headset and the aircraft equipment and also between the technician's headset and the aircraft. The 360L6 serie fits on aircrafts and helicopters, both civil and military, and provide all types of on board connections and external connections.

DASSAULT specification N°975B.



◆ Applications



Radios



Accessories



Intercoms

360L6

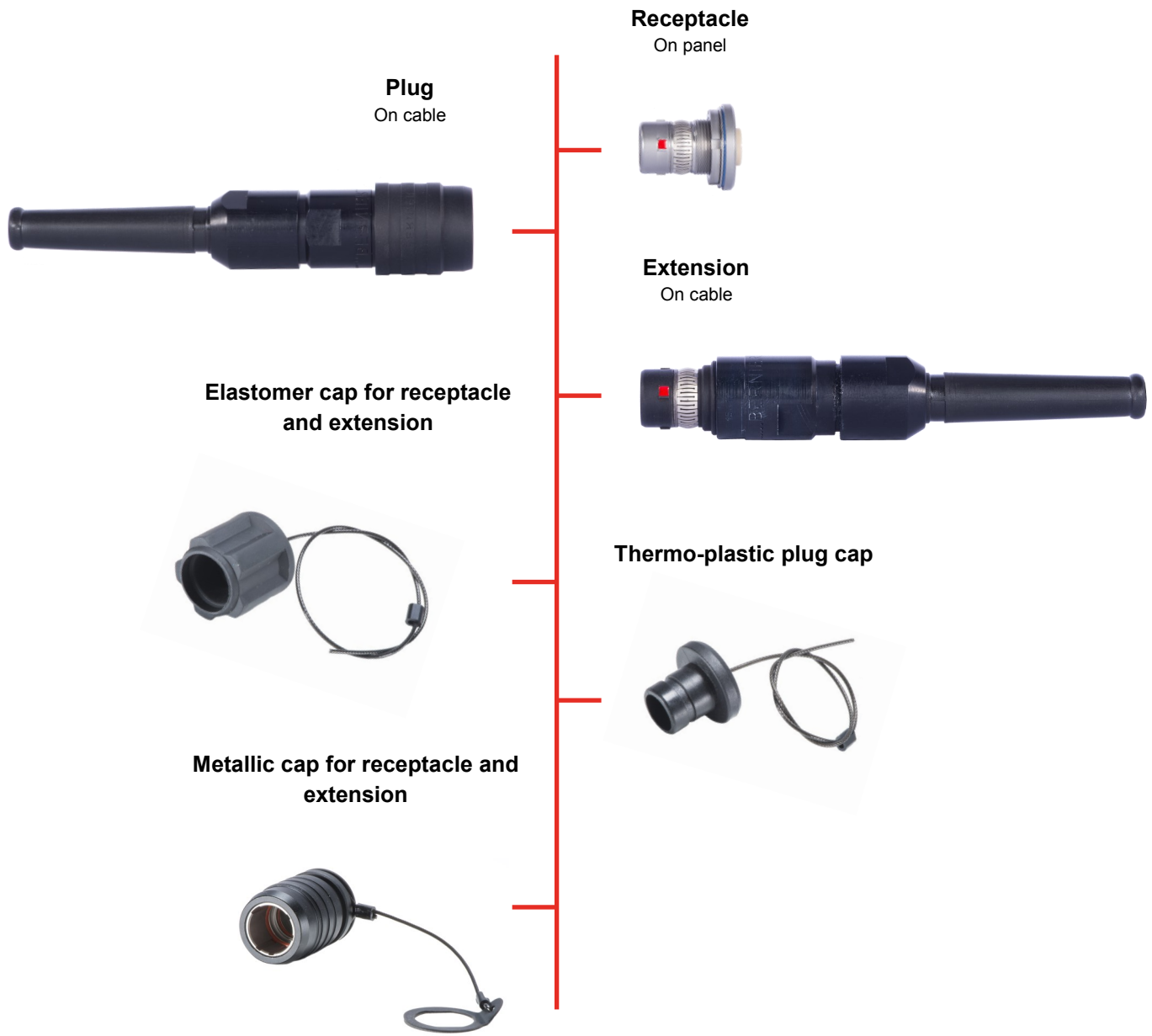
◆ Specific Designs

360L6 connectors are appreciated for their flexibility to fit customer specifications. Our Design team is able to propose versions answering to your needs. Reinforcements can be applied in case of use in harder climatic, ergonomic and electromagnetic conditions. Caps and backshells can also be improved to bring a better ergonomics on your configuration.

360L6 standard receptacles are equipped with a ground ring giving a high EMC level. This function developed by Bernier brings a better continuity between the connectors shells and a protection on 360°



Ground ring 360°



360L6



BERNIER

◆ Climatic and mechanical characteristics

	360L6 Serie
Unlocking system	Push-Pull
Operating temperature range	-55°C at +125°C
Endurance	1500 Operations
Sealing performance	IP68 (connected)
Contact protection	100% scoop-proof
Vibration and shock	Vibration : N=4000, 40g Shock : N=12, 100g.
Corrosion resistance	Salt fog : 96 hours (Stainless steel)
Fluids resistance	Oils and hydrocarbonnes

◆ Electrical characteristics

	360L6 Serie (10 contacts)
Working voltage	500 V _{eff} at 50Hz
Current rating per contact	8 A _{max}
Gauge (AWG)	20
Contact type	To be crimped
Contact resistance	≤ 10 mOhms at 25°C
Insulation resistance	≥ 5000 MOhms
Crosstalk on mated connectors	60dB from 10 kHz to 100MHz.

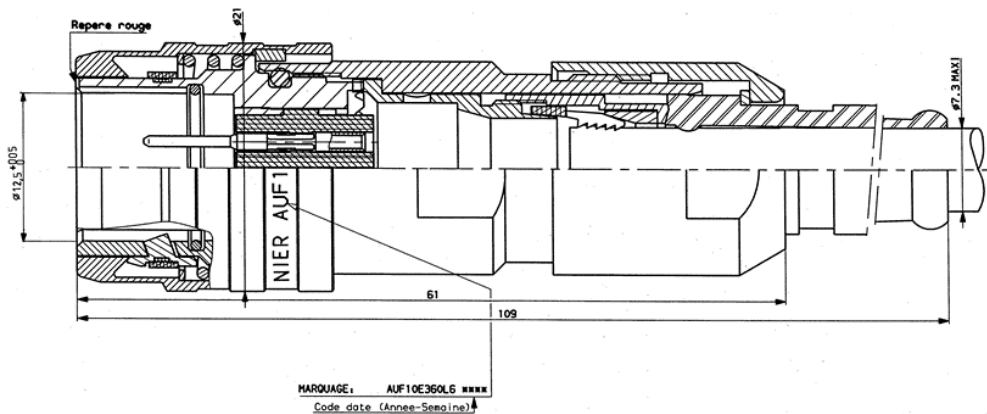
360L6

◆ Material and plating

	Material	Plating
Connector shell	Stainless steel	Sandblasting Black chrome
Insulator	PEEK	-
Contacts	Copper alloy	Gold over nickel
Backshell shell	Aluminium	Black anodization
Ground ring	Beryllium copper	Nickel

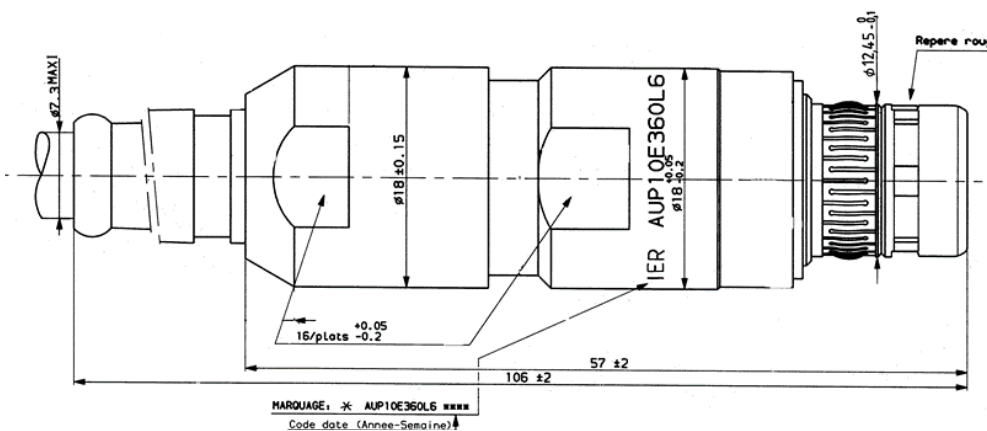


◆ Push-Pull plug with contacts to be crimped



Ex: AUF10E360L6

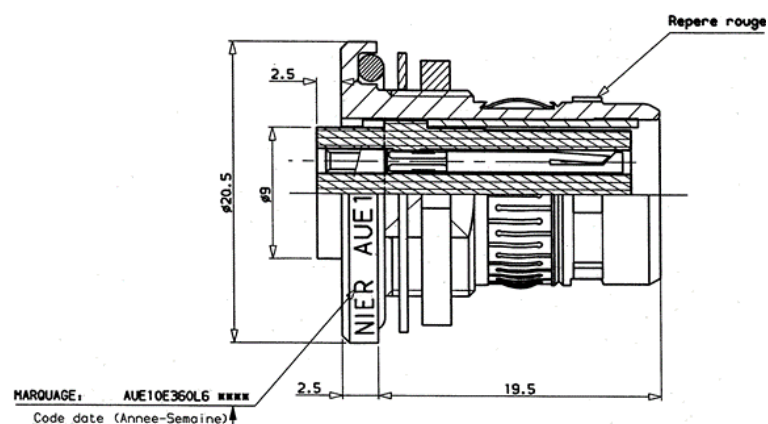
◆ Extension with contacts to be crimped



Ex: AUP10E360L6

360L6

◆ Receptacle with contacts to be crimped



Ex: AUE10E360L6



BERNIER

All caps from the CMA serie fit to the 360 connectors

◆ Caps for plug



Ex: CMA BA06MC-200ST

	Thermo-plastic <i>Watertight IP67</i>	Metallic black <i>Watertight IP68/EMC</i>
Ferule*	CMA BA06MC-200ST	CMA BA65MC-200ST
Plastic clamp	CMA BA06MC	-

* the ferule is delivered separatly in order to fix the right length during cabling.

Stock cap
CMA BASFIL



◆ Caps for receptacle and extension



Ex: CMA BA94MC-200ST



Ex: CMA BA100N 10.14MCEM

	Elastomer <i>Watertight IP68</i>	Metallic <i>Watertight IP68/EMC</i>
Ferule*	CMA BA94MC-200ST	CMA BA 100MC-200ST
Plastic clamp	CMA BA11MC	-
Metallic ring	CMA BA86-35MC	CMA BA100MCEM
Crimped eyelet for	CMA BA98MC	-
90° Crimped eyelet for M3 screw	CMA BA81MC	-
Eyelet for M3 screw	CMA BA91MC	CMA BA100MC

* the ferule is delivered separatly in order to fix the right length during cabling.

Stock cap
CMA BA20



360L6

Terminations

◆ Terminations

Some terminations can accept several lanyards

Plastic clamp



Ferule



Metallic ring



Eyelet for M3 screw



Crimped eyelet for M3 screw



90° crimped eyelet for M3 screw





BERNIER

◆ Accessories

Type	Part number
Set of 12 male contact to be crimped dia 0.90	11509
Set of 12 female contact to be crimped dia 0.90	11510



11509



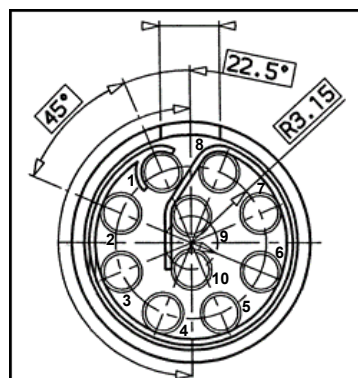
11510

◆ Contact and wire size

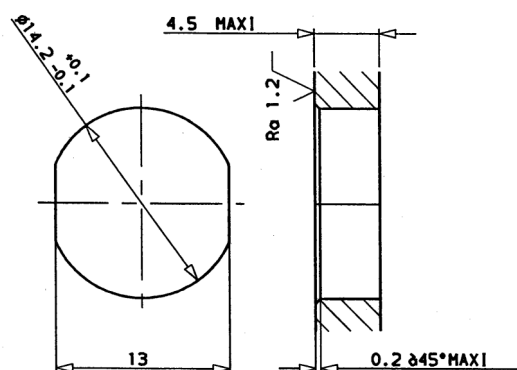
Contact size (diameter)	I (A)	R (m)	Possible wires cross section in mm ² - AWG	Possible wires Insulator Diameter Max
0.9	5	8	0.51—20 Max	1.65

◆ Contacts positions

Vue from cabling side



◆ Panel cut



360L6

Tooling—Cabling

◆ Tools

Type	Part number
Ergot key	DIN.18 10 B
Male and female contact removal tool	JBX OUT DC 09
Female contact positioner	JBX 2 OUT LS 09
Male contact positioner	JBX 3 OUT LP 09
Contact tool frame diam. de 0.7 à 0.9 et 1.3 mm	M22520/7-01
Plug clamp	SXOL6160B7
Receptacle clamp	SXOL6180B7
Tightening key for the receptacle nut	B703



DIN.18 10 B



M22520/7-01



JBX 2 OUT LS 09



JBX 3 OUT LP 09



B703



SXOL6160B7



SXOL6180B7

360L6

◆ Tightening key

Torque for the receptacle nut	Torque for the backshell mounting
9 N.m	6 N.m

◆ Weights

Part number	Weight (grams) Max
AUE10E360L6	19gr
AUF10E360L6	47gr
AUP10E360L6	34gr

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B600 Serie

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B600

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vehicles !

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◆ Description

The B600 connectors present a locking by an elastic clamp which enables very rapid disconnection in all axis.

These connectors are equipped with 6 and 7 contacts to be soldered and provide interfacing between radio sets.

The special function of multi-axis ejection makes it an essential component for motorbikes and other military dynamic applications.

Multi-axis Quick-releasable

Watertight

Ergonomics

Stainless steel

◆ Applications



Motorbikes



Headsets



Light vehicles

B600

Plug
On cable



Receptacle
On panel



**Elastomer cap for receptacle
and extension**



Extension
On cable



B600



BERNIER

◆ Climatic and mechanical characteristics

	B600
Unlocking system	By pushing the plug on one side or traction
Operating temperature range	-35°C to +85°C
Endurance	5000 Operations
Sealing performance	IP65 (connected and disconnected)

◆ Electrical characteristics

	B600 (6 and 10 contacts)
Working voltage	42 Veff max, 30mV mini
Current rating per contact	50 mA, 30 µA mini
Dielectric	500 Veff à 50 Hz
Contact type	Solder cup
Contact resistance	≤ 20 mOhms at 25°C
Insulation resistance	≥ 5000 MOhms
Crosstalk connectors	80dB
Gauge (AWG)	20

B600

◆ Material and plating

	Material	Plating
Connector shell	Stainless steel	-
Insulator	Thermosetting	-
Contacts	Aluminium Alloy	Gold
Backshell shell	Aluminium	Black chrome

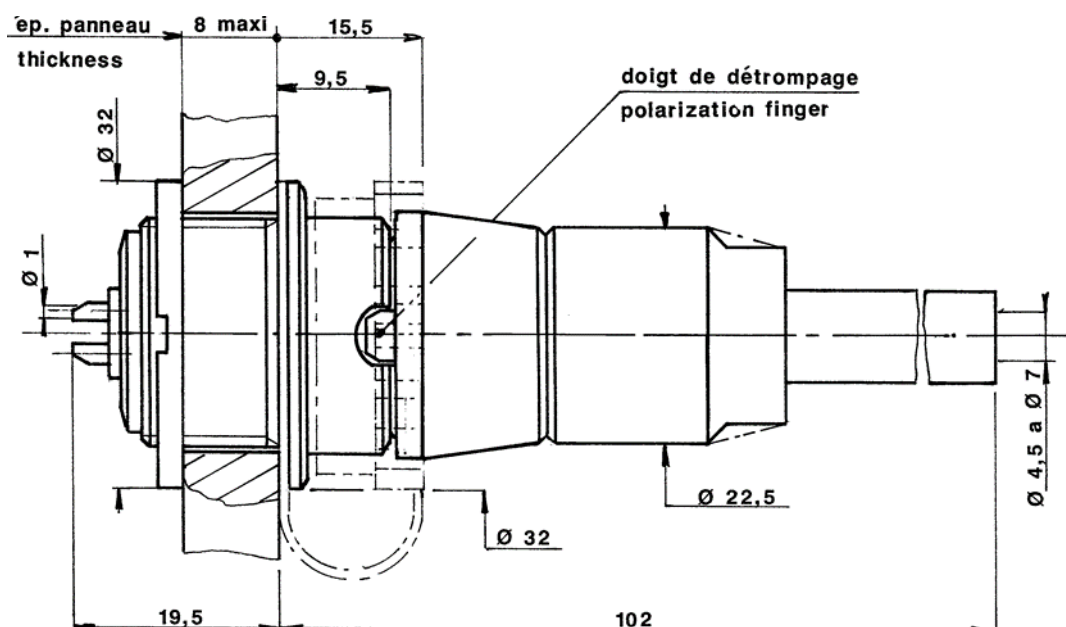


Additional information

◆ Connectors

Description	Code	B600	06	R	06	N	1
Serie	B600	↑	↑	↑	↑	↑	↑
Connector type :							
Extension	01						
Plug	06		↑				
Receptacle	07						
Receptacle with hexagonal nut	08						
Backshell for plug and extension :							
Straight backshell with cable shield continuity	R			↑			
Ground ring for receptacle :							
Ground ring included in receptacle shell	CM						
Contact number	06, 07, 10				↑		
Keyway	N					↑	
Plating :							
Black	1						↑
Sandblasted	6						

◆ Dimensions (receptacle and plug connected)



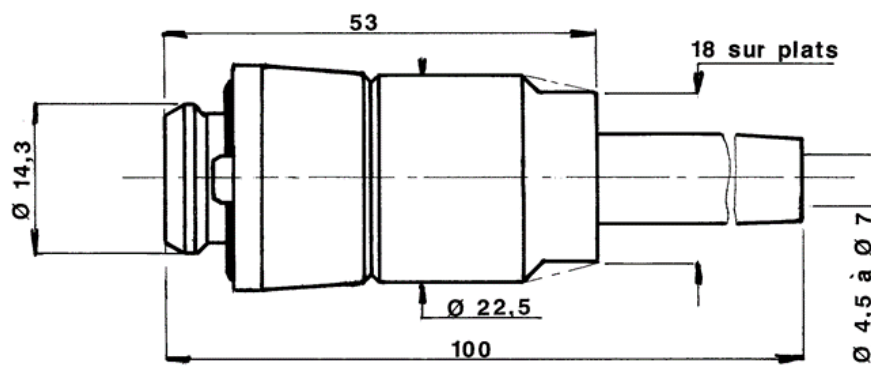
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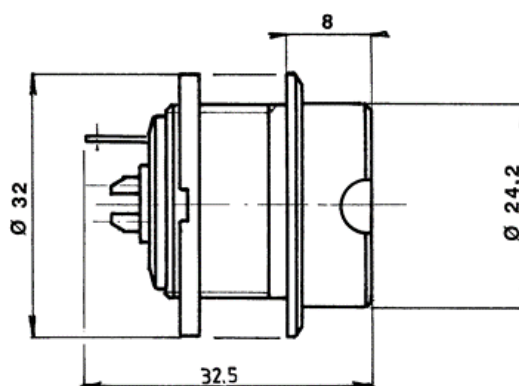
Connectors

◆ Plug with contact to be soldered



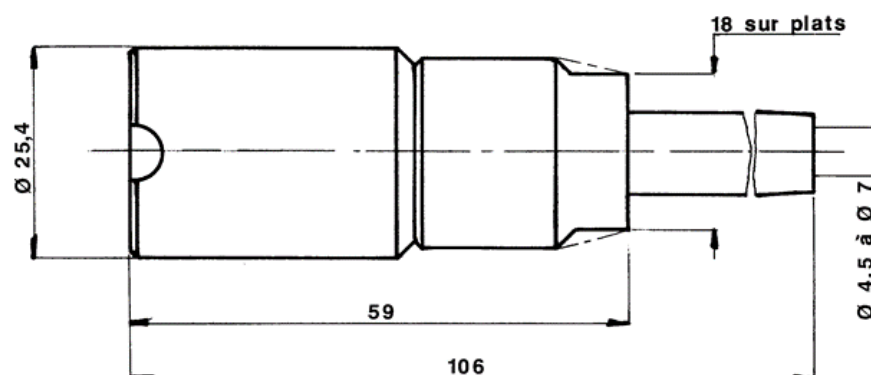
Ex: B600 06 R06 N1

◆ Receptacle with contacts to be soldered and ground ring (front mounting)



Ex: B600 07 CM06 N1

◆ Extension with contacts to be soldered

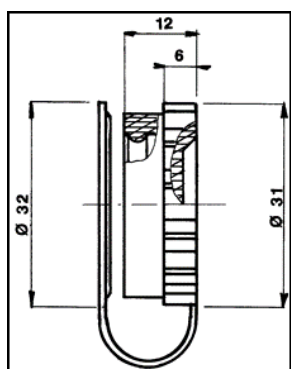


Ex: B600 01 R06 N1

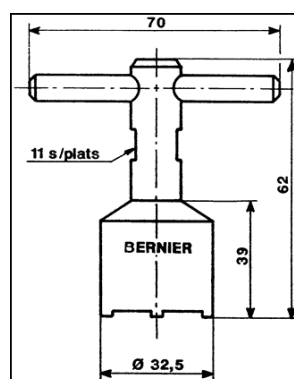
Accessories and Tooling

◆ Accessories

Description	Part number
Elastomer cap for receptacle	B600 BKCE
Tightening key for the receptacle nut	Contact us
Strap tool for the backshell	B574



B600 BKCE



B574



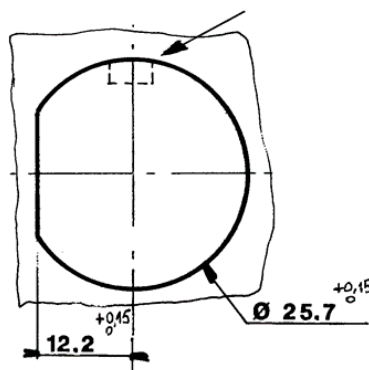
◆ Weights

Description	Weight (grams Max)
Receptacle	60 g
Plug	42 g
Extension	100 g
Receptacle cap	5 g

Standard material

B600

◆ Panel cut for receptacle



◆ Tightening torque

Receptacle nut	Backshell
15N.m	9N.m

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◆ Descriptif

The Jack connectors are used all over the world for the audio communication on board of aircraft and also for the communication between ground teams and pilots.

They are equipped with 2, 3 and 4 contacts and comply with the MIL-J-641 and MIL-P-642 norms.



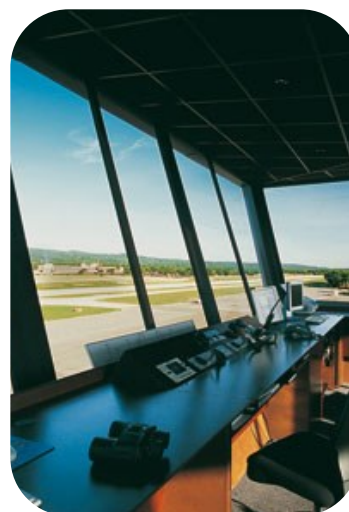
◆ Applications



On board equipments

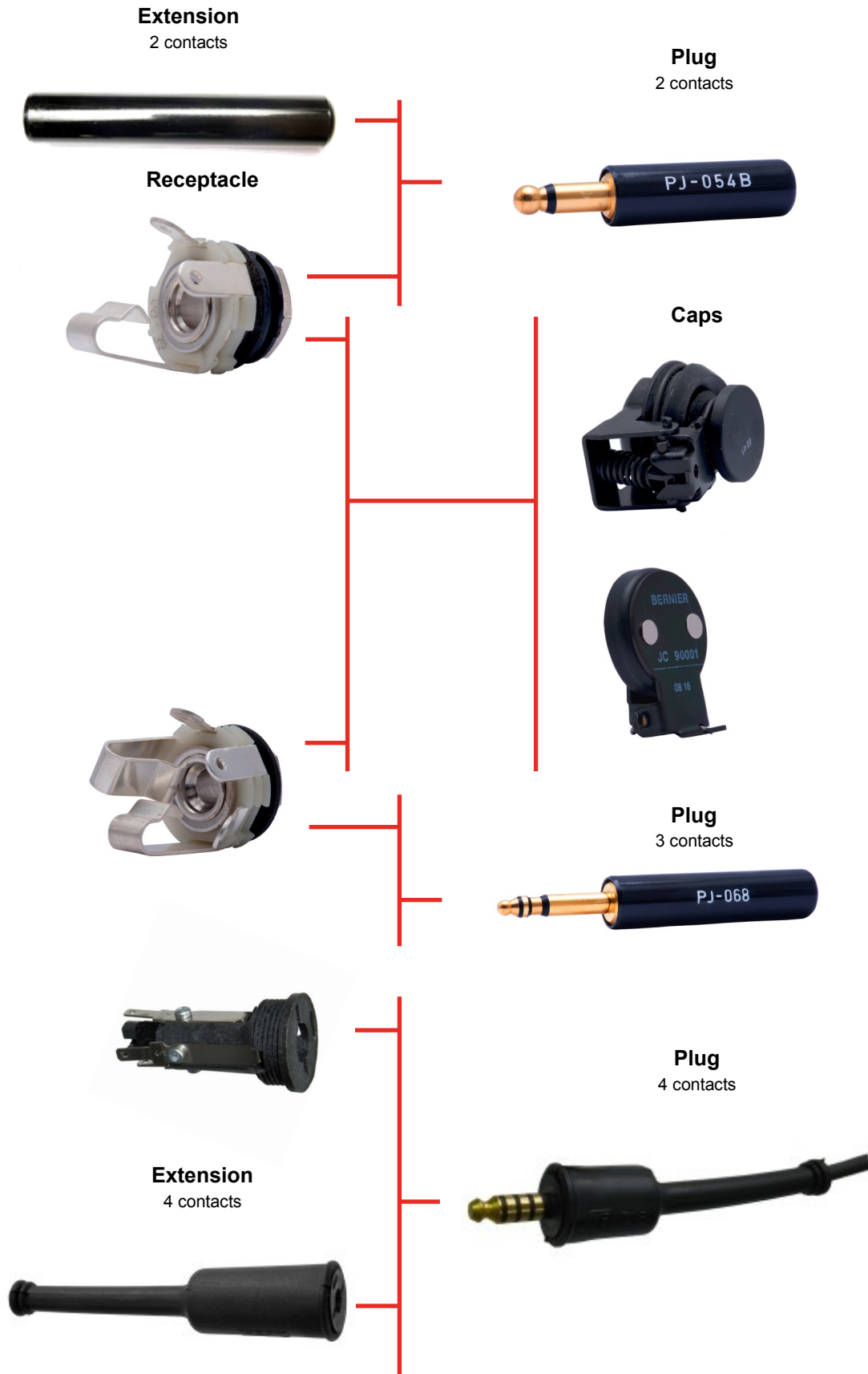


Accessories



Radios

JCC



JCC



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◆ Climatic and mechanical characteristics

	JCC
Unlocking system	Traction
Operating temperature	-55°C to +125°C
Endurance	5000 Operations
Corrosion resistance	Salt fog : 48 hours
Vibration	From 10 to 50Hz amplitude 1.5 mn

◆ Electrical characteristics

	JCC (02, 03 and 04 contacts)
Working voltage	30 V _{max}
Current rating	1 A _{max}
Dielectric strength	500 V _{eff.} at 50Hz, 1min
Contact type	Bolt hole
Contact resistance	≤ 50 mOhms at 25°C
Isolement	≥1000 MOhms under 500 VDC.

◆ Material and Plating

	Material	Plating
Shell	Thermoplastic	-
Insulator	Leminated with epoxy and thermoplastic glass	-
Contacts	Strips in silver copper alloy	Silver



JCC

Additional information

◆ Weight



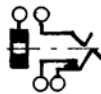


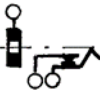
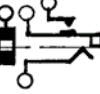
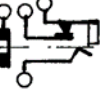
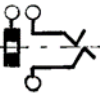
Part number	Weight (grammes ±10%)
Plug PJ-XXXX	18 g
Receptacle JC-XX-XX	13 g
Cap JC 90001	10 g
Cap JC 90002	21 g

◆ Part numbers

Plugs

Part number	Description
PJ-055B	Plug 2 contacts diameter 6,35 Black PJ 55001
PJ-055R	Plug 2 contacts diameter 6,35 Red PJ 55002
PJ-068B	Plug 3 contacts diameter 5.25 Black PJ 68001
PJ-068R	Plug 3 contacts diameter 5.25 Red PJ 68002
PJ-051	Plug 3 contacts diameter 6.35 Black
PJ-054B	Plug 2 contacts diameter 6.35 Black
PJ-054R	Plug 2 contacts diameter 6.35 Red

Receptacles

	Ø 5.25			Ø 6.35					
<i>Scheme</i>									
<i>Part number</i>	JC 35-O	JC 35-REC	JC 35-RC	JC 26-O	JC 26-CC	JC 26-RC	JC 26-CI	JC 26-RI	JC 36-O
<i>Old Part number</i>	JC 35000	JC 35005	JC 35003	JC 26000	JC 26001	JC 26003	JC 26002	JC 26004	JC 36000
<i>For plug</i>	PJ-068	PJ-068	PJ-068	PJ-055	PJ-055	PJ-055	PJ-055	PJ-055	PJ-051

JCC

Sets

BERNIER Part number	JC26900	JC35900	JC26922	JC 90025
<i>NSA number</i>	NSA 938906-26-0	NSA 938906-35-0	NSA 938906-46-0	No part number
<i>Components</i>	JC 26-O + 2 insulating washers	JC 35-O + 2 insulating washers	JC 26-CI + cap D1982	JC 90020 (D1954) JC 90022 (D1955) PJ-055B JC 26-CI (JC 26002)



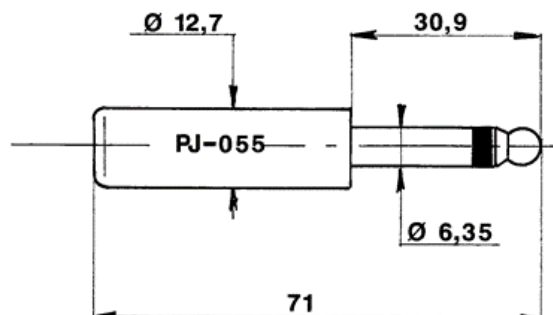
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◆ Long Plug with 2 contacts



Ex: PJ-055B

Part number	Description
PJ-055B	Plug 2 contacts diameter 6,35 Black
PJ-055R	Plug 2 contacts diameter 6,35 Red

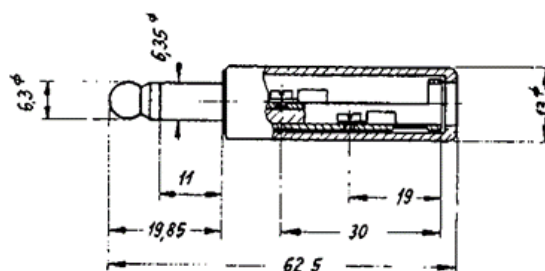


◆ Short plug with 2 contacts



Ex: PJ-054B

Part number	Description
PJ-054B	Plug 2 contacts Diameter 6,35 Black
PJ-054R	Plug 2 contacts diameter 6,35 Red

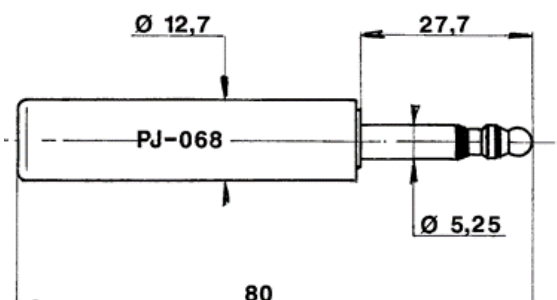


◆ Long plug with 3 contacts



Ex: PJ-068B

Part number	Description
PJ-068B	Plug 3 contacts diameter 5,25 Black
PJ-068R	Plug 3 contacts diameter 5,25 Red

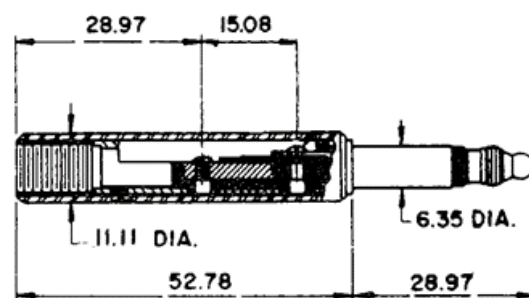


◆ Short plug with 3 contacts



Ex: PJ-051B

Part number	Description
PJ-051B	Plug 3 contacts diameter 6,35 Black
PJ-051R	Plug 3 contacts diameter 6,35 Red



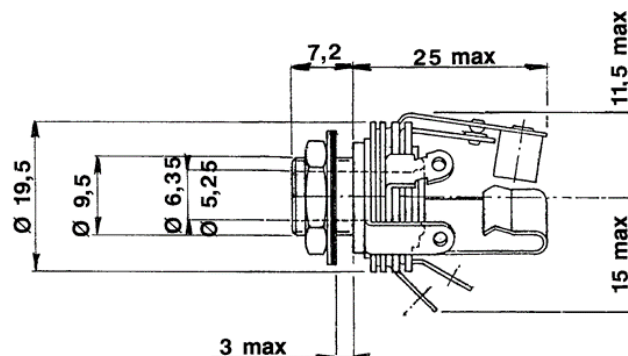
Receptacles

◆ Receptacles for plug 3 contacts (Ø 5.25)



Ex: JC 35-O

Part number	Scheme
JC 35-O	
JC 35-REC	
JC 35-RC	

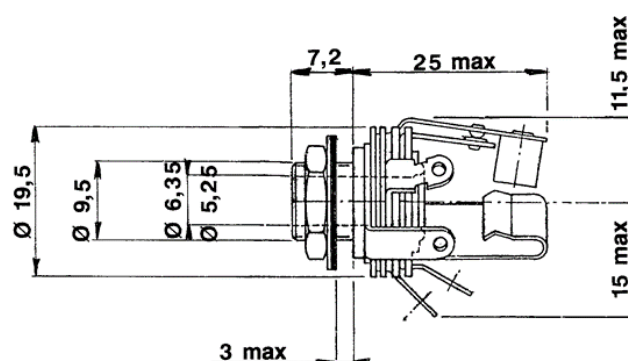


◆ Receptacles for plug 2 contacts (Ø 6.35)



Ex: JC 26-O

Part number	Scheme
JC 26-O	
JC 26-CC	
JC 26-RC	
JC 26-CI	
JC 26-RI	

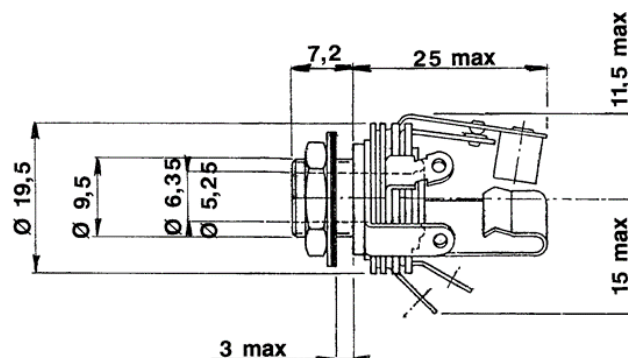


◆ Receptacle for plug 3 contacts (Ø 6.35)



Ex: JC 36-O

Part number	Scheme
JC 36-O	



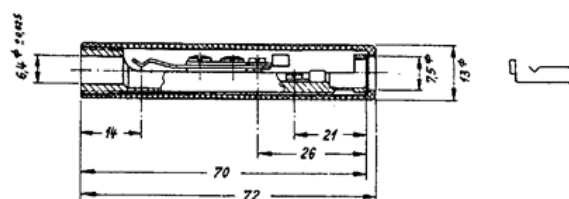
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◆ Long Extension with 2 contacts



Ex: JJ-027

Part number	Description
JJ-027	Extension 2 contacts





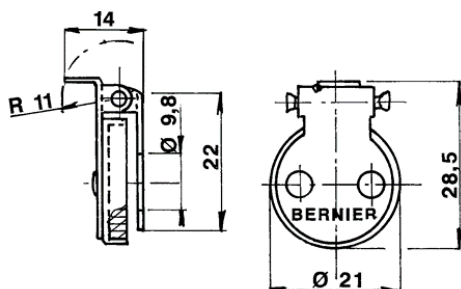
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Caps and Accessories

◆ Plastic cap



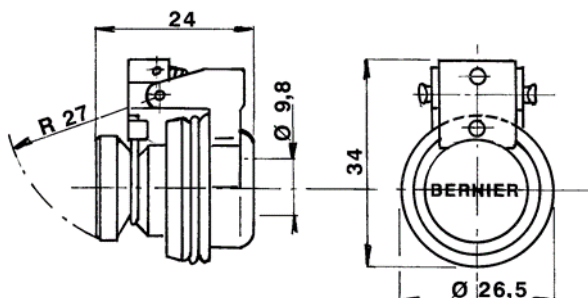
Ex: JC 90001 - D1982



◆ Neoprene Cap



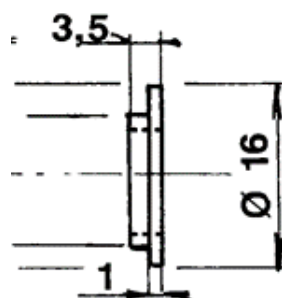
Ex: JC 90002 - F2231



◆ Insulating bush



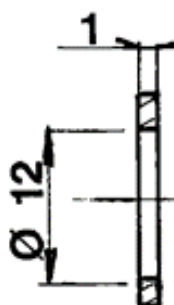
Ex: JC 90020



◆ Insulating washer



Ex: JC 90022



Part number	Description	Connect with
SP112	Panel receptacle with H nut, 4 contacts, 10H/18575, AM626	SP113
SP 113	Simple plug 4 contacts 'OTAN UK' MIL, FJ-3A, 10H/18575	SP114, SP112 in line/avec capot ,SP112
SP114	Extension 'UK OTAN' 4 contacts, SP112 In line receptacle	SP113



SP113



SP114



SP112

Part number	Description	Connect with
U-174/U	Plug 4 contacts MIL US low profile	U-92A/U, U-94A/U
U-93A/U	Plug 4 contacts MIL US 'NATO'	U-92A/U, U-94A/U
U-92A/U	Extension, in line receptacle 4 contacts MIL US 'NATO'	U-174/U, U-93A/U
U-94A/U	Panel receptacle 4 contacts type MIL 'OTAN US'	U-174/U, U-93A/U



U-93A/U



U-92A/U



TJT-120

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◆ Description

The U audio connectors with 10 contacts and with bayonet locking are used for the connection of microphones and of loudspeakers for military radio transmitters. They are tough and corrosion-resistant, and are equipped with self-cleaning contacts.

These connectors comply with the following standard :

MIL C 10544 A.



◆ Applications



Radios

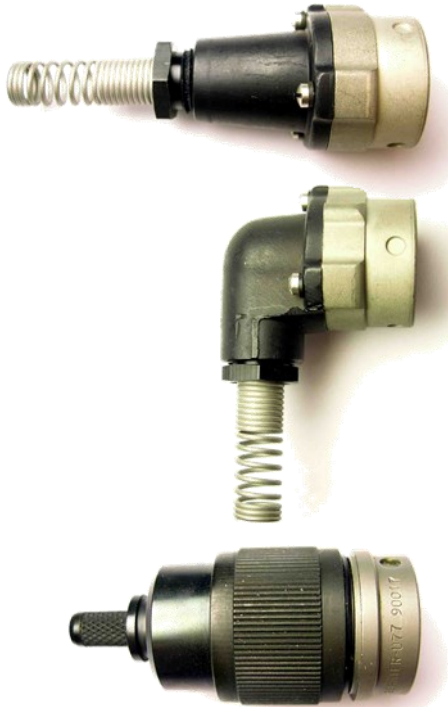


Accessories



Intercoms

Plug
On cable



Receptacle
On panel



Extension
On cable



**Metallic extension and
receptacle cap**



Metallic plug cap





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◆ Climatic and mechanical characteristics

	U
Unlocking system	Bayonet
Operating temperature range	-55°C to +85°C
Endurance	1 500 Opérations
Sealing performance	IP68 (connected and disconnected)
Corrosion resistance	Salt fog : 96 hours (Stainless steel)
Fluids resistance	Oils and hydrocarbons

◆ Electrical characteristics

	U
Working voltage	100 V _{eff} maxi
Current rating per contact	1 A _{max}
Insulation resistance	>1000 MOhms under 100 V _{cc}
Contact type	Solder cup / For PCB
Contact resistance	≤ 15 mOhms at 25°C
Dielectric	500 V _{eff} , 50 Hz, 1min.
Gauge (AWG)	16

◆ Material and Plating

	Material	Plating
Connector shell	Stainless steel	-
Insulator	Thermosetting	-
Contacts	Copper alloy	Gold overnickel / silver
Backshell shell	Aluminium	Black Anodization / Black Chrome



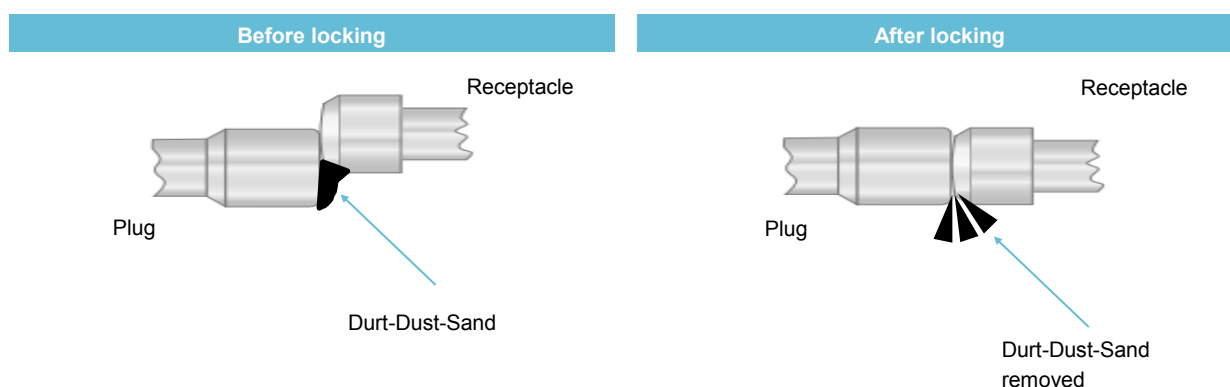
C

Additional information

◆ Weights

Type	Weights (grams)
Fiche (77, 127)	66 g (U77) 70 g (U127)
Prolongateur (78)	92 g
Embase (79)	58 g
Embase à verrouillage (80)	54 g
Bouchon U79 90001	21 g
Bouchon U79 90002	24 g
Bouchon U79 90003	8 g
Bouchon U79 90004	9 g
Bouchon U79 90006	11 g

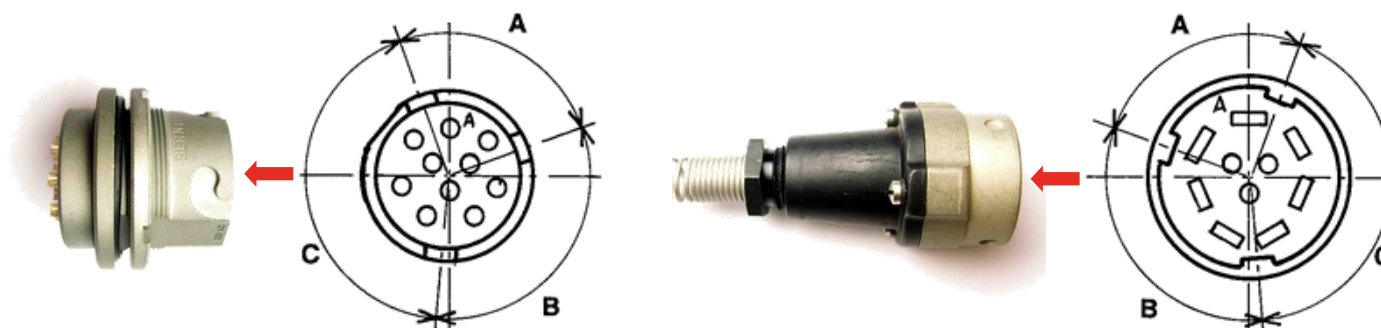
◆ Self cleaning contact technology



◆ Keyways

A	B	C
90 °	105 °	120 °

- Front view -





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◆ Connectors

Description	Code	U	77	/U	MC4
Serie	U	↑	↑	↑	↑
Connector type : Plug with straight backshell Plug with elbow backshell Extension Receptacle Panel plug Panel through Dummy receptacle	77 127 78 79 80 81 82		↑		
Contact types : Solder cup For PCB	/U /UP			↑	
Backshell type : Spring Ø7 (no code) Sleeve Ø4 Sleeve Ø7 Straight backshell and cable shield continuity Backshell with knurling diam.5.8mm	MC4 MC7 -B550 -90017				↑

◆ Caps

Description	Code	U79	9000	XX
Cap type : For receptacle For extension For plug	U79 U78 U77	↑	↑	↑
Material : Metallic Plastic	9000 -B586		↑	
Termination : Contact us	XX			↑

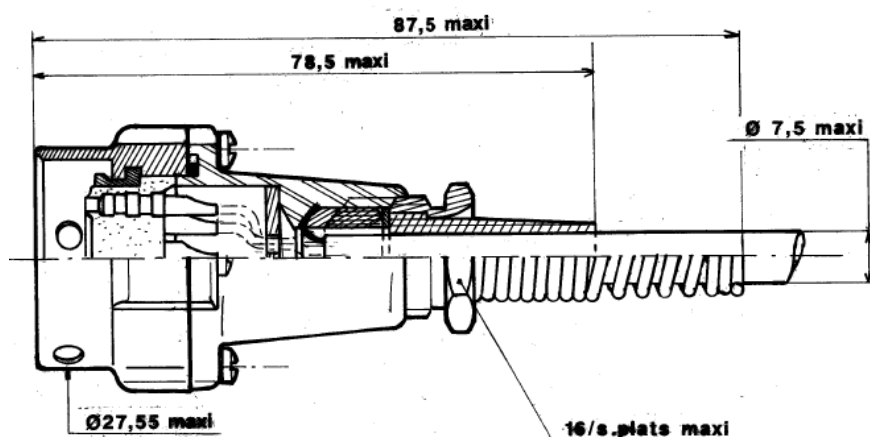
C

Plugs

◆ Plugs with straight backshell



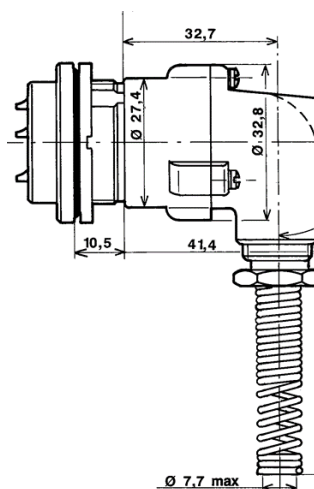
Ex: U77/U



◆ Plug with 90° elbow backshell



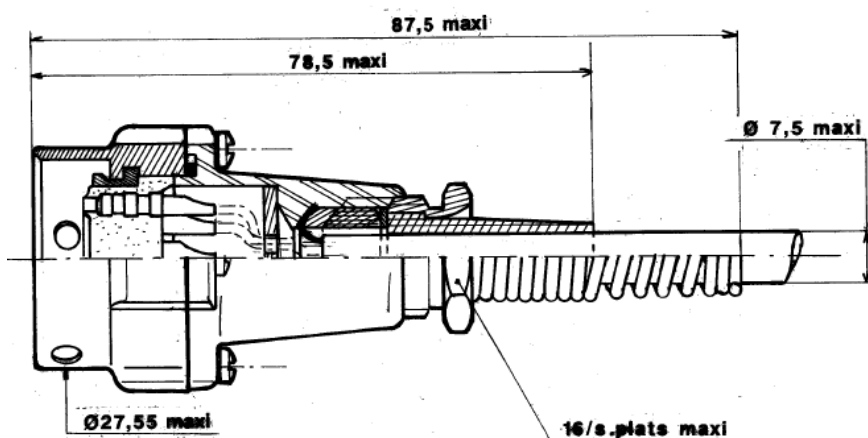
Ex: U127/U



◆ Plug with straight backshell and cable shield continuity



Ex: U77/U-B550





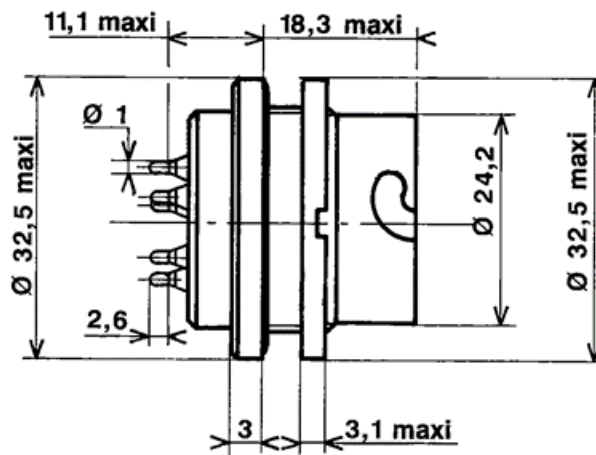
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Receptacles

◆ Receptacle with contacts for PCB



Ex: U79/UP

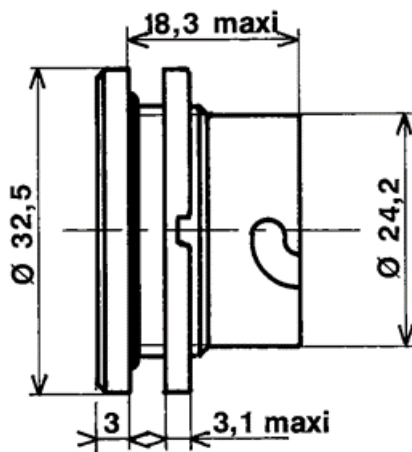


Version with solder bucket possible

◆ Dummy receptacle



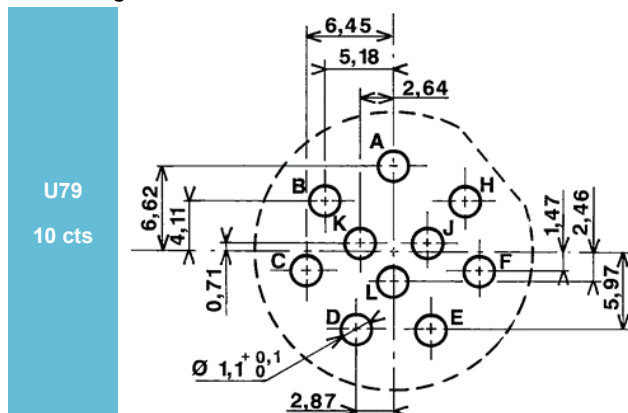
Ex: U-82



PCB holing and panel cut

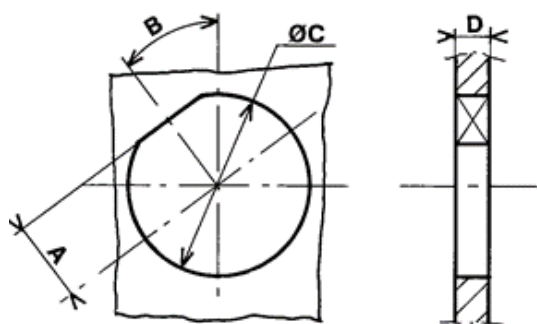
◆ PCB holing

Welding side



U79
10 cts

◆ Panel cut



Receptacle type	ØA ^{+0.1}	B ^{+0.1}	ØC ^{+0.1}	D maxi
Receptacle (79, 82)	11.7	50	25.45	4.5
Receptacle (80)	12.4	38° 30'	27.1	4.5



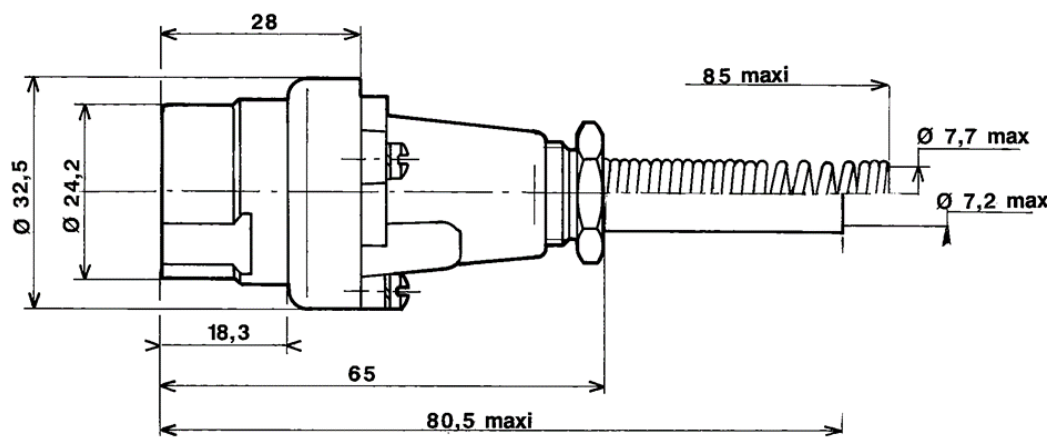


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◆ Extension with straight backshell



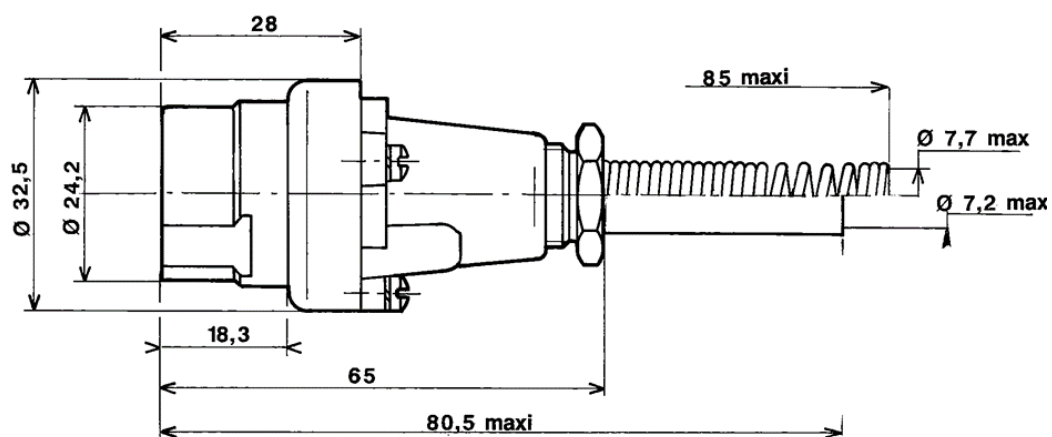
Ex: U78/U



◆ Extension with straight backshell and cable shield continuity



Ex: U78/U-B550



Accessories

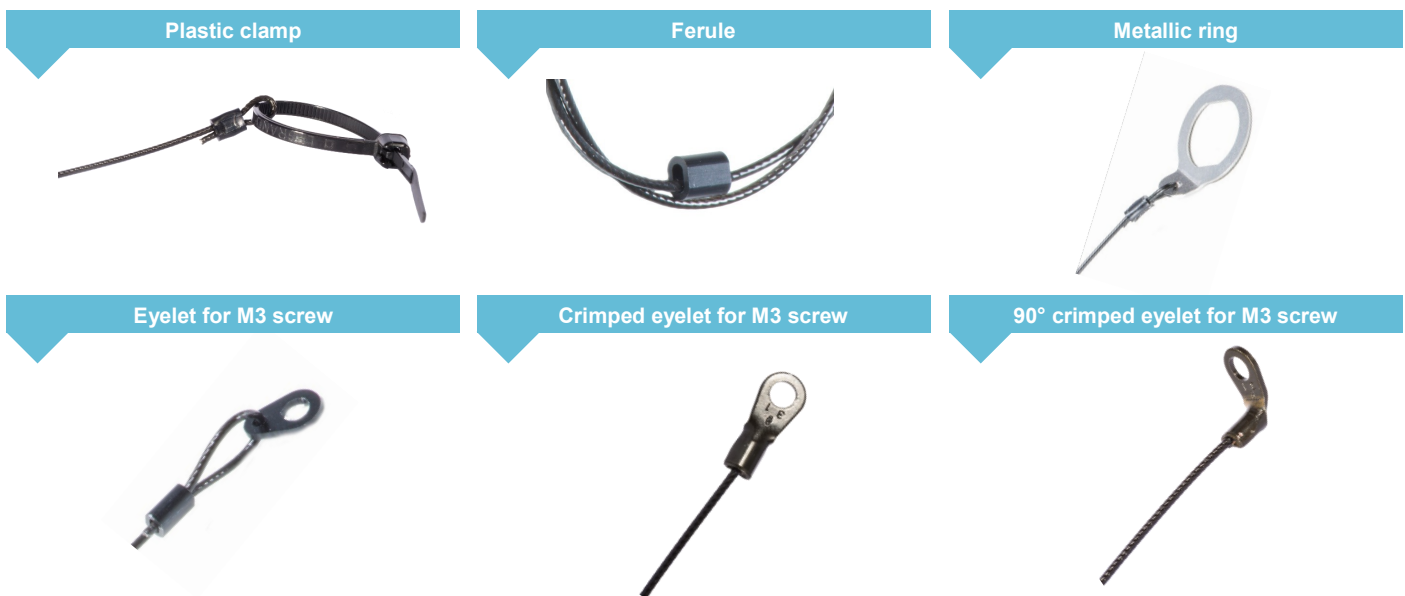


◆ Caps



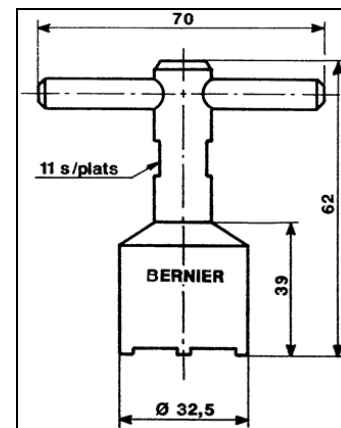
◆ Terminations

Some terminations can accept several lanyards



◆ Accessories

Type	Part number
Tightening key for U79/U	8508



◆ Tightening torque

Connector material	Torque for receptacle U79 nut	Torque for receptacle U80 nut	Torque for U77, U127 backshell
Stainless steel	15N.m	15N.m	10N.m

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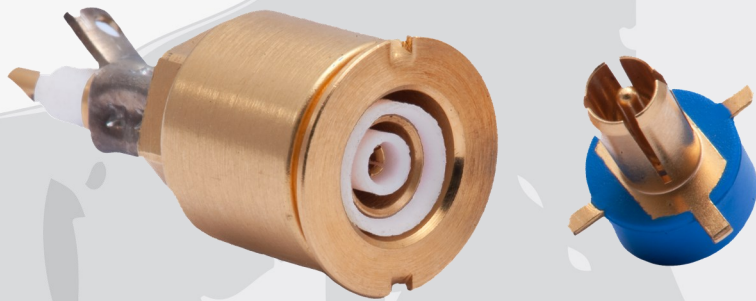
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CCF700 Serie

Coaxial connector



... the suitable connector for cockpit equipments !

CCF700

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◆ Description

The CCF700 are miniature coaxial connectors for civil and military applications, used on avionic, at sea and on land based systems.

The function of this connector is to supply power to the illuminated surfaces of many items of avionic equipments

◆ Climatic and mechanical characteristics

	CCF700
Operating temperature range	-30°C to + 120°C

◆ Electrical characteristics

	CCF700
Nominal current	5 A
Rating current	7.5A
Dielectric strength	500VDC
Contact resistance	≤ 8 mOhms
Insulation resistance	>5000 MOhms

◆ Material and plating

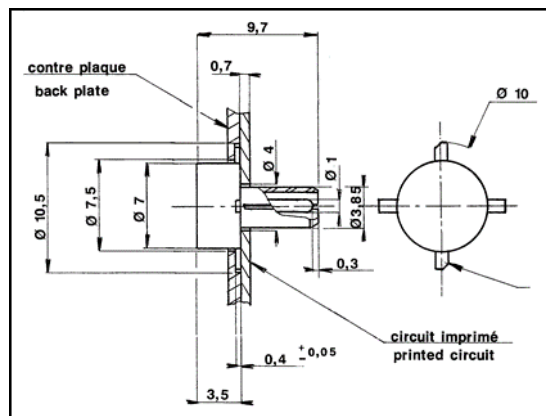
	Material	Plating
Connector shell	Brass	Gold
Insulator	PTFE, DAP	-
Contacts	Copper alloy	Gold

CCF700

Connectors

◆ CCF700P

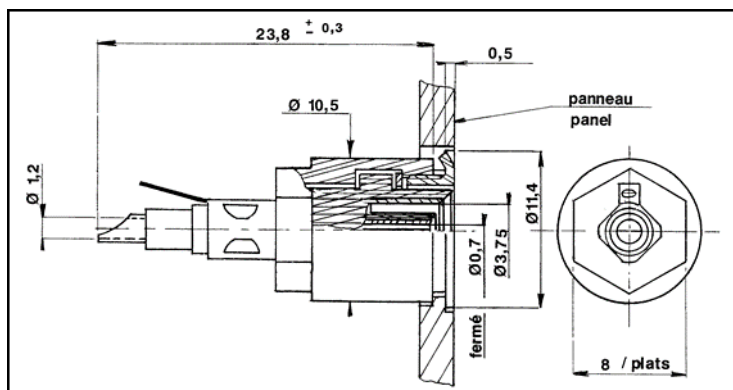
Male coaxial plug 2 contacts for PCB



Corner cut indicates center pins (positive)
Weight : 0.71gr

◆ CCF700S

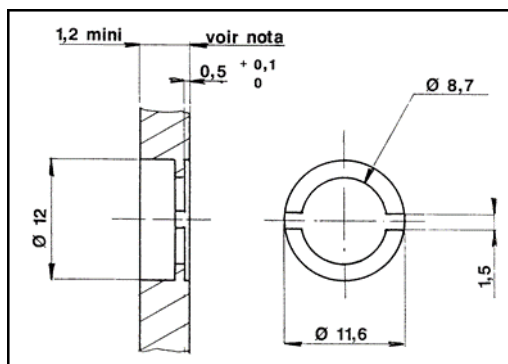
Female coaxial receptacle 2 solder cup contacts



Wire used : Gauge 20
Weight : 5.27gr
Excentric limit of the floating part : Diam. 1 Max

◆ Panel holing

For thickness 2.5, you must make a chamber



T.G +/- 0.1

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CCF700

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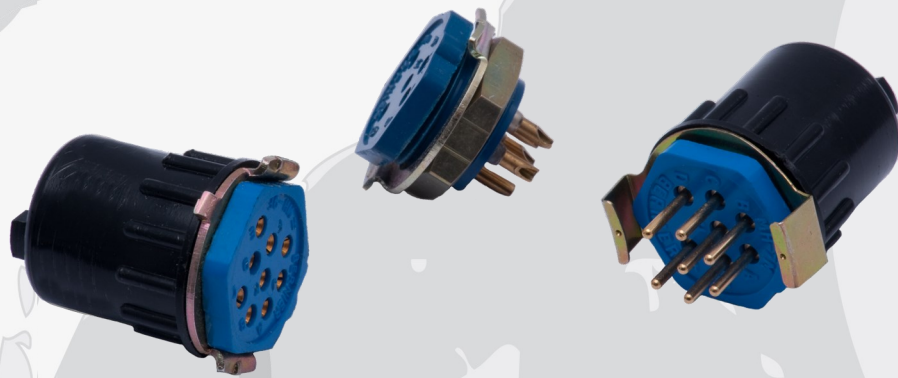
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MH Serie

Hexagonal Connector



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MH

◆ Description

MH line is designed to ensure transmission of command signals. Used on many applications, the MH line is composed of connectors with 5, 7 and 9 contacts. The locking system offers a good resistance to shock and vibration effects.

These connectors are conform to MIL-C-8384 norm.



◆ Applications



Railroad command signals



Logistic command signals

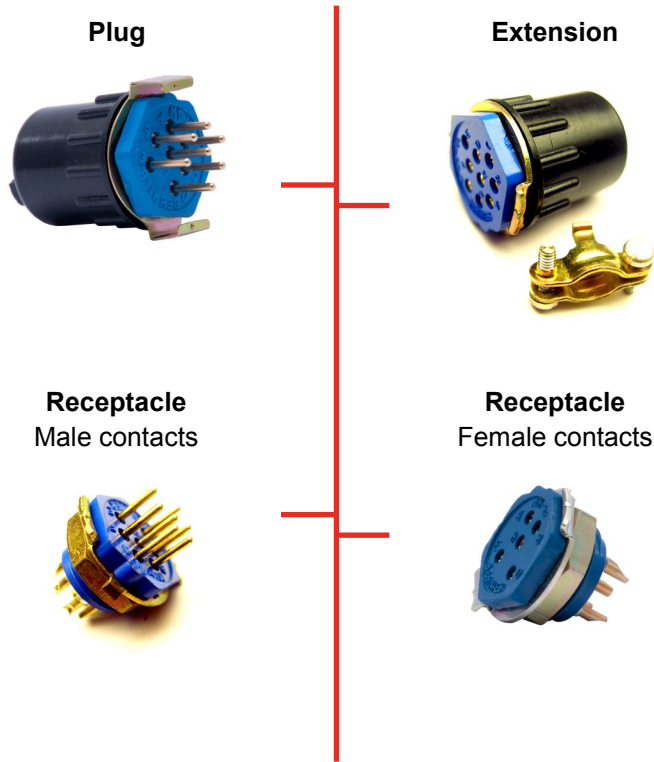


Industrial command signals

Synoptic and Part numbers



◆ Synoptic



◆ Connectors

Description	Code	MH	5	F	LR	N
Serie	MH	↑				
Contact number	5, 7, 9		↑			
Connector type : Receptacle Plug Panel through Dummy receptacle Extension	F M T R P			↑		
Locking type : Fixed bolt Mobile bolt	LR LS				↑	
Fastening type (types F, R and T) : Hexagonal nut	N					↑
Backshell type (types M and P) : Straight backshell with cable clamp	C					↑





BERNIER

◆ Climatic and mechanical characteristics

	MH
Unlocking system	2 points with a mobil bolt
Operating temperature	-55°C to +85°C
Endurance	2 500 Operations

◆ Electrical characteristics

	MH (5,7 and 9 contacts)
Working voltage	220 V _{eff max}
Current rating per contact	2 A _{max}
Insulation resistance	≥ 5000 MOhms
Contact type	Solder cup
Contact resistance	≤ 10 mOhms
Dielectric	1500 V _{eff}

◆ Material and plating

	Material	Plating
Insulator	Thermosetting	-
Contacts	Copper alloy	Gold over nickel

◆ Weight

Reference	Old reference	Weight (grams)
MH9F	MH 9001	6 g
MH9FP	MH 9002	6 g
MH9M	MH 9010	8 g

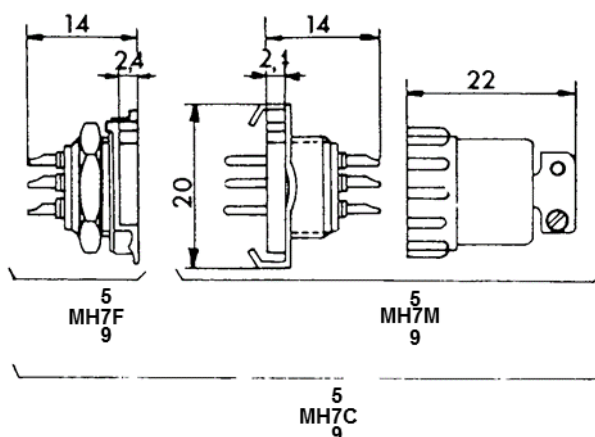
MH

Connectors

◆ Standard version



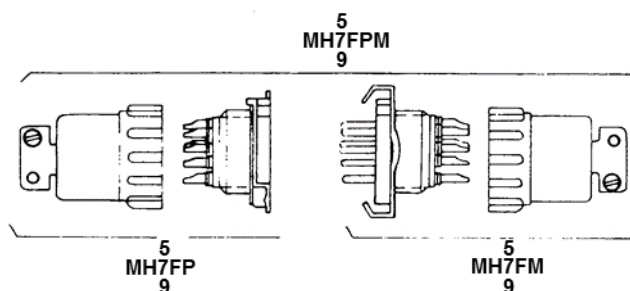
Ex: MH7F and MH7M



◆ Extension



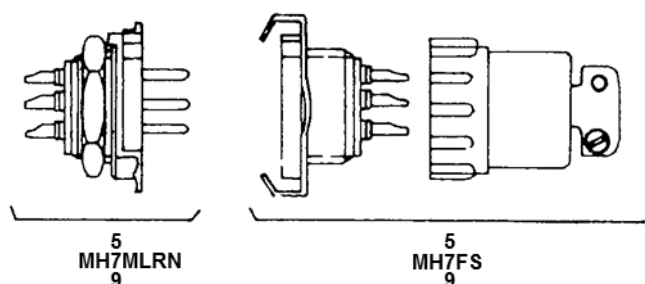
Ex: MH7FP and MH7FM



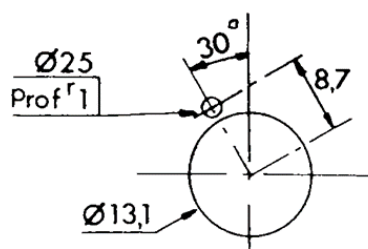
◆ Standard version with reverse contacts



Ex: MH7MLRN and MH7FS



◆ Panel cut



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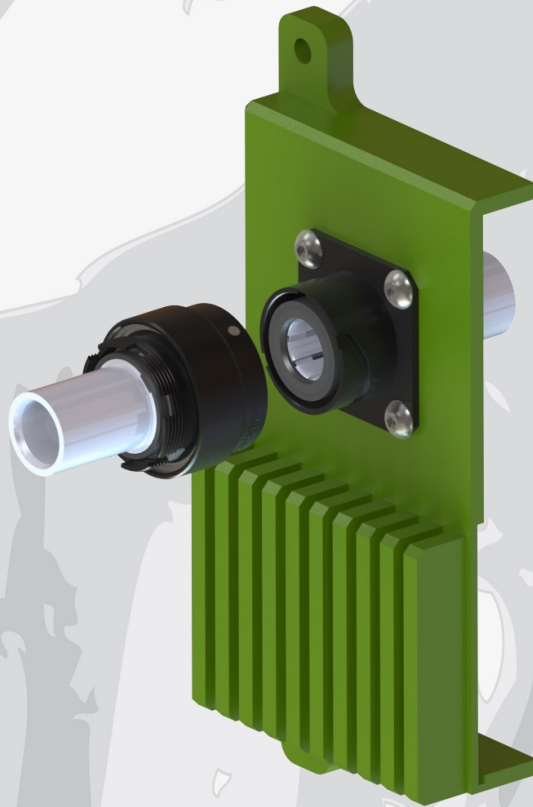




POW Serie

Power Connector

POW



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◆ Description

Bernier designed the POW connectors specially for equipments asking high current supply in harsh environments.

◆ Applications



Vehicules



Radar systems

Push-Pull or Bayonet

Ergonomics

Stainless steel

EMI RFI Protection

Multi-Contacts

Wateright



**Optronic
Devices**



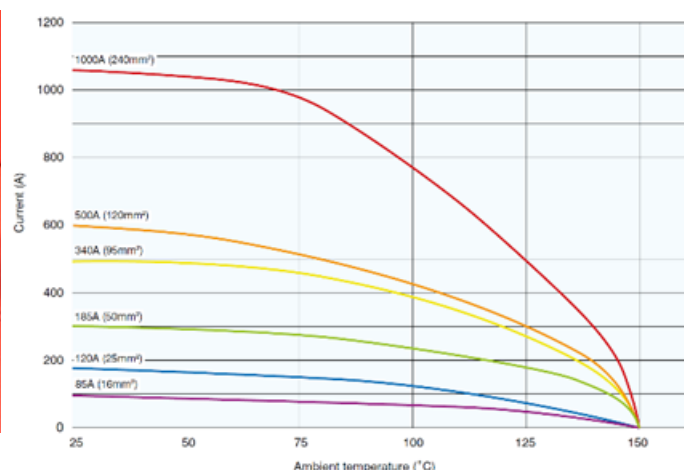
Weapon systems

POW

Power Connectors

◆ Contact Technology

The contact line used in POW connectors presents Mechanical and Electrical characteristics allowing electrical supply of equipments working under severe conditions and with many connections. It was developed to optimize electrical contact due to a contact surface which is equivalent to the cable cross section and a weak insertion effort.



1 pole POW connector (De-rating)

POW

◆ Current rating

POW connectors can be used in systems asking power supplies from 100A to 1000A according to the configurations.

Contact size	Insertion force (N)	Contact resistance (mOhm)	Max Current rating (A) (@ Ambient temperature +50°C)
1	50	0.16	100
2	70	0.07	500
3	130	0.05	1000

◆ Connector technology

The metallic and watertight shells complete to bring the necessary toughness for the required high level reliability. The POW serie construction includes also the «Finger protection» function for user giving an exceptional ability to adapt to a multitude of applications and environments.

◆ Development

POW connectors are appreciated for their flexibility to fit customer specifications. Our Design team is able to propose versions answering to your needs. Reinforcements can be applied in case of use in harder climatic, ergonomic and electromagnetic conditions. Caps and backshells can also be improved to bring a better ergonomics on your configuration.

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BERNIER

Technical solutions

Metals



Specialist in micro-mechanical solutions, BERNIER acquired a real knowledge in using materials and metal compounds. Our solutions can match to all specific needs of our customer regarding the solidity, lightness, corrosion resistance and conductivity.

With this ability, BERNIER can make complex interconnection solution in Stainless Steel, Aluminium, Navy Stainless Steel, Navy Bronze or Beryllium Copper.

Plastic materials

Mainly used in connectors as an insulator, this item has to respect all mechanical and environmental restrictions. Our different product lines are made for special conditions then BERNIER has acquired a high level know-how in the suitable use of these materials. Our good relationships with our suppliers allow us an appreciated reactivity in the creation and modification of insulators.



Plating



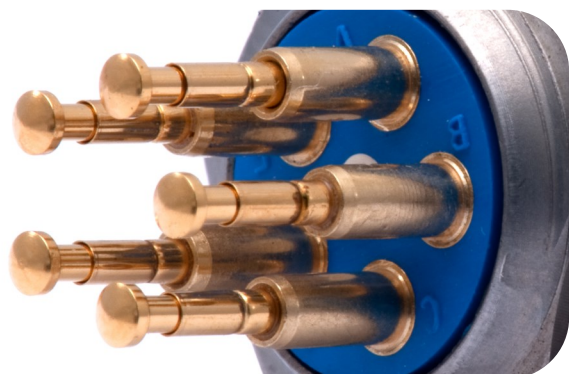
To get the best products in toughness and reliability, some of our components are going under plating process. Our design team always takes into consideration environmental restrictions and finds the suitable plating for material such as aluminiums and steels.

The plating operation is not only done to increase the performances of the connectors but also sometimes to reach aspect specifications, BERNIER is able to adapt the products to meet these requirements.

DIV

Technical solutions

Contacts



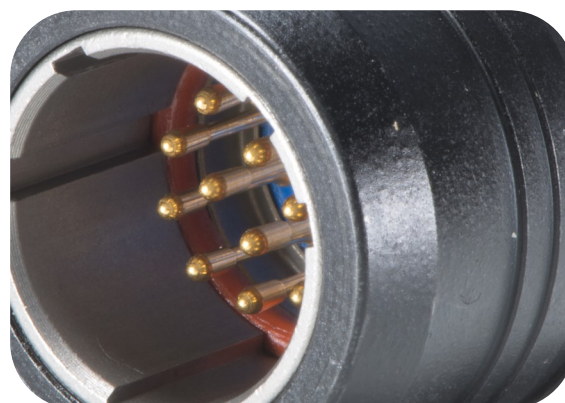
More important part of a connector, the contact must be reliable even after many uses even in severe climatic conditions. BERNIER offers a various number of contacts, male/female types, spring types, crimped types, pressure contacts for cabling or PCB mounting.

Almost all connectors lines have self cleaning contacts.

Locking systems

The locking system is also an important parameter, it will give the ergonomics to the end user making the connector suitable for an equipment.

BERNIER proposes Push-Pull, Quick-Releasable, Bayonet or screw systems. The number of connection/disconnection cycles can be also defined following the connector material and we can apply design modification to increase or reduce this number.



EMC reinforcements



Some of our connectors are equipped with a ground ring giving a better shell continuity between the connectors and a 360° EMC protection.

Conductive Orings can also be set to improve the ground continuity with the chassis. Ground pins are also appreciated, they are the simplest way to link directly the ground from the connectors and chassis to the PCB ground.



BERNIER

◆ Design

Our design team helped with SOLIDWORKS software is concentrating on the design of simple, tough, reliable, cost effective interconnect solutions.

Because we have many customers working on slightly different technologies, our team is able to adapt these solutions taking care of compatibilities.

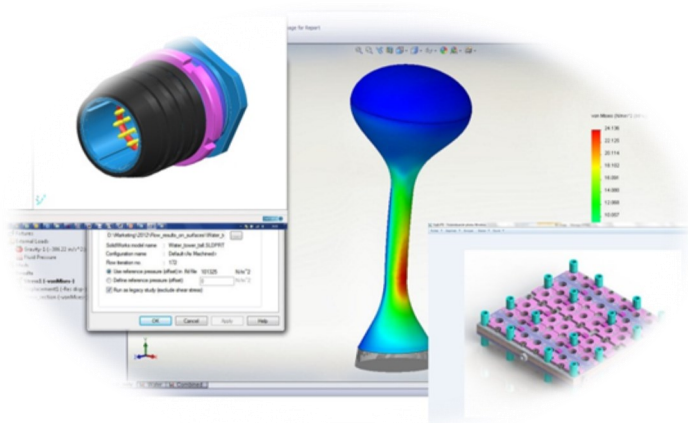


Our Design team is able to propose versions answering to your needs. Reinforcements can be applied in case of use in harder climatic, ergonomic and electromagnetic conditions.

Caps and backshells can also be improved to bring a better ergonomics on your configuration.

Our design steps :

- Listening and customer requests list
- Definition of work axes, possible solutions proposals.
- Project specifications constructions and validation.
- Calculation and solutions presentation.
- Drawings design
- Prototypes and manufacturing follow-up.



Environmental norms is an important parameter in the design of technical solutions. Our design department doesn't include in the configuration dangerous material for nature and men.

DIV



◆ Traceability

Without contact, LASER marking avoid taking into consideration the toughness of the material. Allowing a sharp and fast marking, it is the best tool for our making on high volume production. All our items contains the company name, the part number and the production date. These data allow us to find easily the origin of the components and production historic in case of non conformity on a batch.

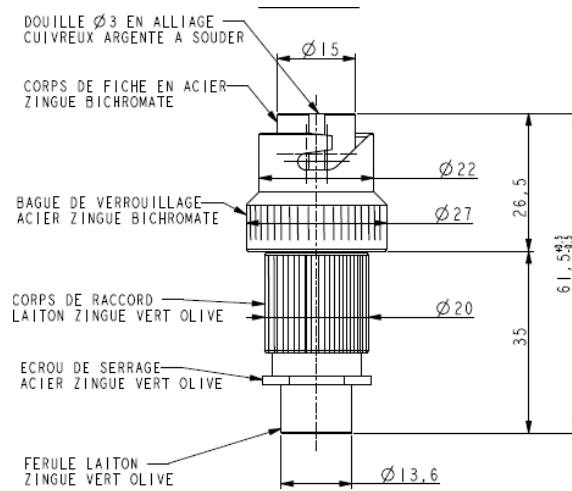
With the data, our customers are also able to know easily which item is in their hands.



◆ Controls

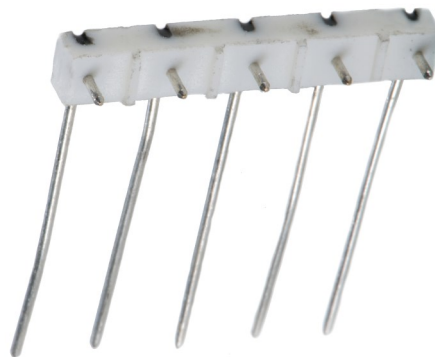
Performance and reliability of our products are the first parameter for our success. This is why we proceed to visuals inspections, watertightness and electrical tests. Our tests tools are regularly controled and we are always investing in order to get up to date devices and processes.

◆ **One contact female plug diameter 3 following NFL 54111 norm**



Ex: B595

◆ **Special module with 5 contacts**



Ex: BEMM05PLCO



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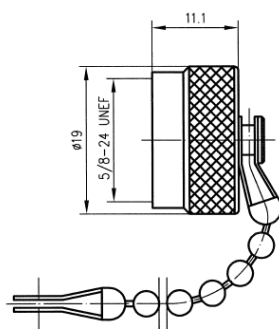
Various Caps

◆ Double cap for antenna and



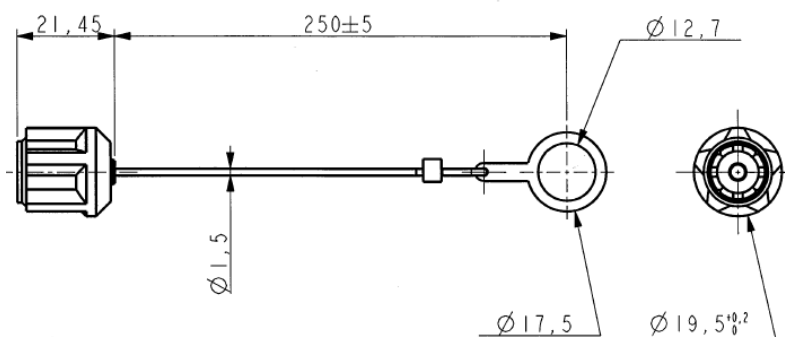
Ex: B598

◆ Metallic cap for UHF receptacle with chain and eyelet for M3 screw



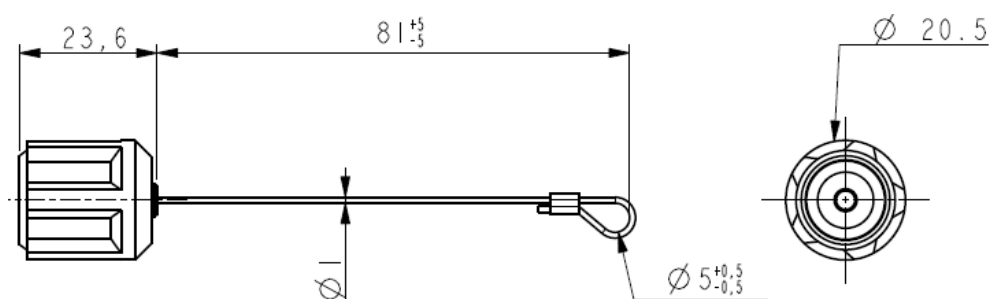
Ex: CAP239A

◆ Elastomer cap for BNC receptacle lg 250 mm with eyelet



Ex: B457

◆ Elastomer cap for BNC plug with microcable

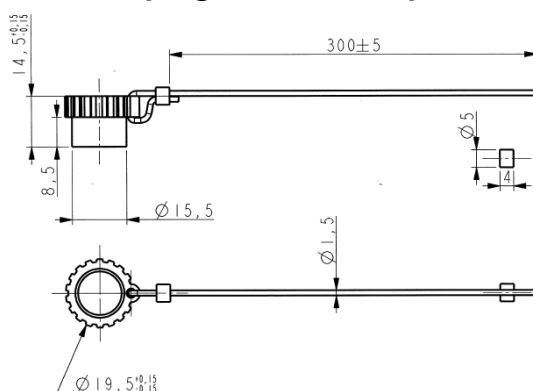


Ex: B453MC

DIV

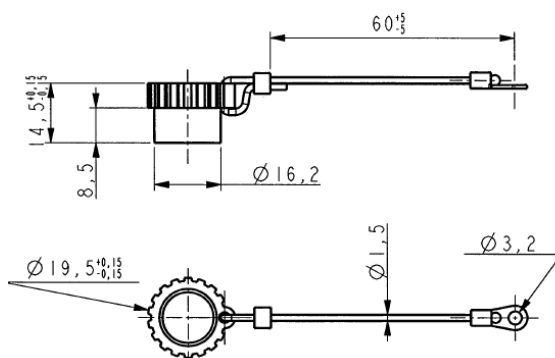
Various Caps

◆ Elastomer cap for JDX T2 plug with ferule apart



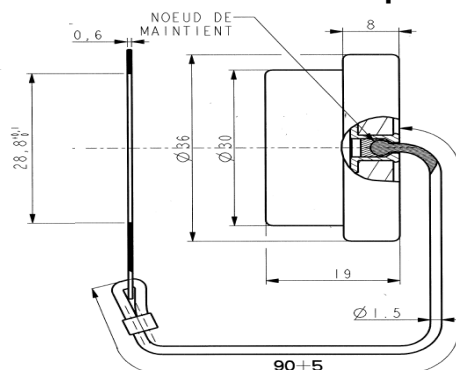
Ex: B599

◆ Elastomer cap with crimped eyelet diameter 3 for JDX T2 receptacle



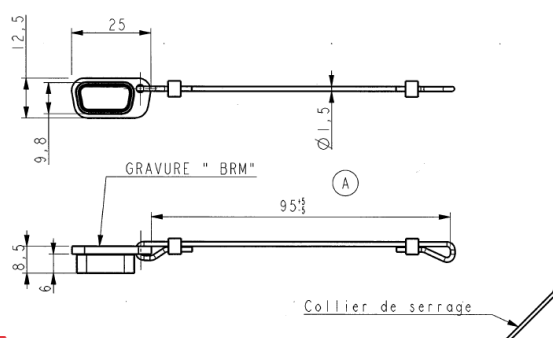
Ex: B591

◆ PUR cap for MIL-C-38999 serie 3 size 15 receptacle



Ex: 389-3-15

◆ Elastomer cap for SUBD 9 cts plug with plastic clamp



Ex: B454

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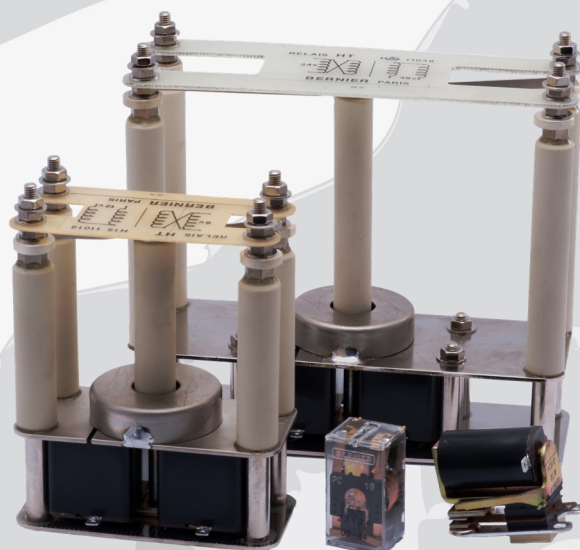
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RELAYS



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◆ Description

H relays : Thanks to a large contact gap and a double break, the H relays can commute high voltages. The silicone coated steatite insulators ensure excellent insulation. The only difference between types H10 and H15 is their dielectric in relation to the ground. The H20 relay is based on the same design but has a larger contact gap and a very large contact – ground dielectric, in conformity with the VDE standard (Insulation distance $\geq 70\text{mm}$) These relays can be submerged in oil.

PC16 relays : they are weldable on printed circuit, dust proof protected, used in telecontrol, metering circuit, auxiliary automation control.

MTD relays : Despite its compactness, this relay has a strong breaking capacity and is used for energy, safety power, commutation, etc. CENT approved (List LNZ 44.04)

Industrial applications

Command reliability

High security level

Durability

◆ Applications



Energy



Industry



Railroads

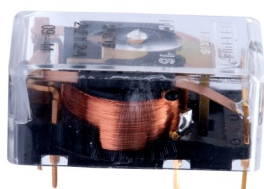
Part numbers

◆ H Relays



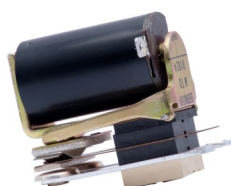
Coil	H10	H15	H20
6 – 12 V=	H10 11012	H15 11012	H20 11012
24 – 48 V=	H10 11048	H15 11048	H20 11048
110 – 220 V =	H10 11022	H15 11022	H20 11022
16 -32 V=	H10 90001	H15 90001	H20 90001

◆ PC16 Relays



Part numbers	Old part numbers
PC16 2RT 6V Ag Pd	PC 6 22106
PC16 2RT 12V Ag Pd	PC 6 22112
PC16 2RT 24V Ag Pd	PC 6 22124
PC16 2RT 48V Ag Pd	PC 6 22148
PC16 2RT 110V Ag Pd	PC 6 22111

◆ MTD Relays



Part numbers	Old part numbers
MTD 30A 6VCC	MTD 01 306
MTD 30A 12VCC	MTD 01 312
MTD 30A 24VCC	MTD 01 324
MTD 30A 48VCC	MTD 01 348
MTD 30A 110VCC	MTD 01 311
MTD 60A 6VCC	MTD 01 606
MTD 60A 12VCC	MTD 01 612
MTD 60A 24VCC	MTD 01 624
MTD 60A 48VCC	MTD 01 648
MTD 60A 110VCC	MTD 01 611
MTD 20A 48 V= RIND 001	MTD 90 001
MTD 30A 6-12 V=	MTD 01 912
MTD 30A 12-24 V=	MTD 01 924



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◆ H Relays

Features :

Weight :

H10 : 415g

H15 : 470g

H20 : 610g

Coil supply : D.C.

Contacts : 1 ON -1 OFF double break

Material : Hard Ag over brass

Operation :

Breaking capacity :

H10 – H15 : 200V= or 10 000 V~

H20 : 250 V= or 16 000 V~

Max. Resistive : Load of 0.2 A – Passing through 2A

Max. Inductive : 0.1A

Response time :

Connection : 30ms

Release : 65ms Max

Life-span using indicated load : 200 000 operations mini

Electrical characteristics :

Contact resistance : Initiale \leq 100m Ω

Dielectric strength :

Dielectric strength	H10	H15	H20
Contact / contact	20 000 Veff.	20 000 Veff.	33 000 Veff.
Contact / Ground	16 000 Veff.	30 000 Veff.	40 000 Veff.
Coil / Ground	1 000 Veff.	10000 Veff.	1 000 Veff.

Insulance :

(20°C – 50% relative humidity \geq 10 000M Ω at 500 V

Coil characteristics : See table

Conditions of use :

Utilization temperature : -25°C +85°C

Mechanical class : 2-2 (NF C 45 255)

Branches : \varnothing M 4 screw

◆ PC16 Relays

Features :

Weight : 23gr

Coil supply : D.C.

Contacts : 2 inversors

Material : AgPd

Operation :

Breaking capacity : 30 V= or 125 V~

Max. Resistive : 2A

Max. inductive : 1A Max.

Power : 30W= 80VA

Response time :

Connection : 7ms

Release : 17ms

Max Life-span using indicated load : 500 000 operations mini

Mechanical life-span : 15 000 000 operations mini

Electrical characteristics :

Contact Resistance : \leq 100m Ω

Dielectric strength :

Contact / Contact : 1 000Veff.

Contact / Ground : 2 000 Veff.

Coil / Ground : 1 000 Veff.

Insulance :

(20°C – 50% relative humidity) \geq 1 000M Ω at 500 V

Coil characteristics : See table

Conditions of use :

Utilization temperature : -25°C +70°C

Mechanical class : 2-2 (NF C 45 255)

Welding on printed circuit : soldering iron

◆ MTD Relays

Features :

Weight : 65gr

Coil supply : D.C.

Contacts : 1 On double break

Material :

30A : Ag

60A : AgCdo

Operation :

Breaking capacity : 30 V= or 125 V~

Max. Resistive	30 A	60 A
Max. Inductive	12 A	24 A
Max. Power :	300W= 1 000 VA~	400W= 1 200 A~

Response time :

Connection : 15ms

Release : 2ms

Life-span using indicated load : 100 000 operations mini

Mechanical life-span : 2 500 000 operations mini

Electrical characteristics :

Contact Resistance : \leq 50m Ω

Dielectric strength

Contact / Contact : \geq 1 500Veff.

Contact / Ground : \geq 1 000 Veff.

Coil / Ground : \geq 1 000 Veff.

Insulance :

(20°C – 50% relative humidity) \geq 1 000M Ω at 500 V=

Coil characteristics : See table

Conditions of use :

Utilization temperature : -55°C +85°C

Mechanical class : 2-2 (NF C 45 255)

Branches : Soldering ring

Coil characteristics

◆ H Relays

Indicated load	Min. / Max. Load -20°C		Parallel / In series	Unit R in Ω - 20°C
6 ou 12 V =	4.2 / 8.5 V	8.3 / 16.8 V	6Ω / 24Ω	12 Ω ± 10%
16 ou 32 V=	11.2 / 22.4 V	22.4 / 45 V	42.5Ω / 170	85 Ω ± 10%
24 ou 48 V=	17 / 34 V	32.8 / 67 V	95Ω / 380Ω	190 Ω ± 10%
110 ou 220 V=	77 / 154 V	165 / 308 V	2400Ω / 9600Ω	4800 Ω ± 15%

Indicated excitation power : 6W approximately

As these relays are equipped with 2 coils, they can be wired in parallel or in series, thus providing 2 excitation voltage per relay : 6 or 12 VDC, 16 or 32 VDC, 24 or 48 VDC, 110 or 220 VDC.

◆ PC16 Relays

Indicated load	Min. / Max. Load -20°C	R in Ohms -20 °C
6 V =	4.2 / 8.5 V	56 Ω ± 10%
12 V=	8.3 / 16.8 V	193 Ω ± 10%
24 V=	17 / 34 V	895 Ω ± 10%
48 V=	32.8 / 67 V	4150 Ω ± 15%
110 V=	77 / 154 V	14 550 Ω ± 15%

Indicated excitation power : 0.7 W approximately

◆ MTD Relays

Indicated load	Min./Max. Load 20°C	R in Ω 20°C
6 V=	4.2 / 8.5 V	15 Ω ±10%
12 V=	8.3 / 16.8 V	62 Ω ± 10%
24 V=	17 / 34 V	1235 Ω ± 15%
110 V=	77 / 154 V	5600 Ω ± 15%

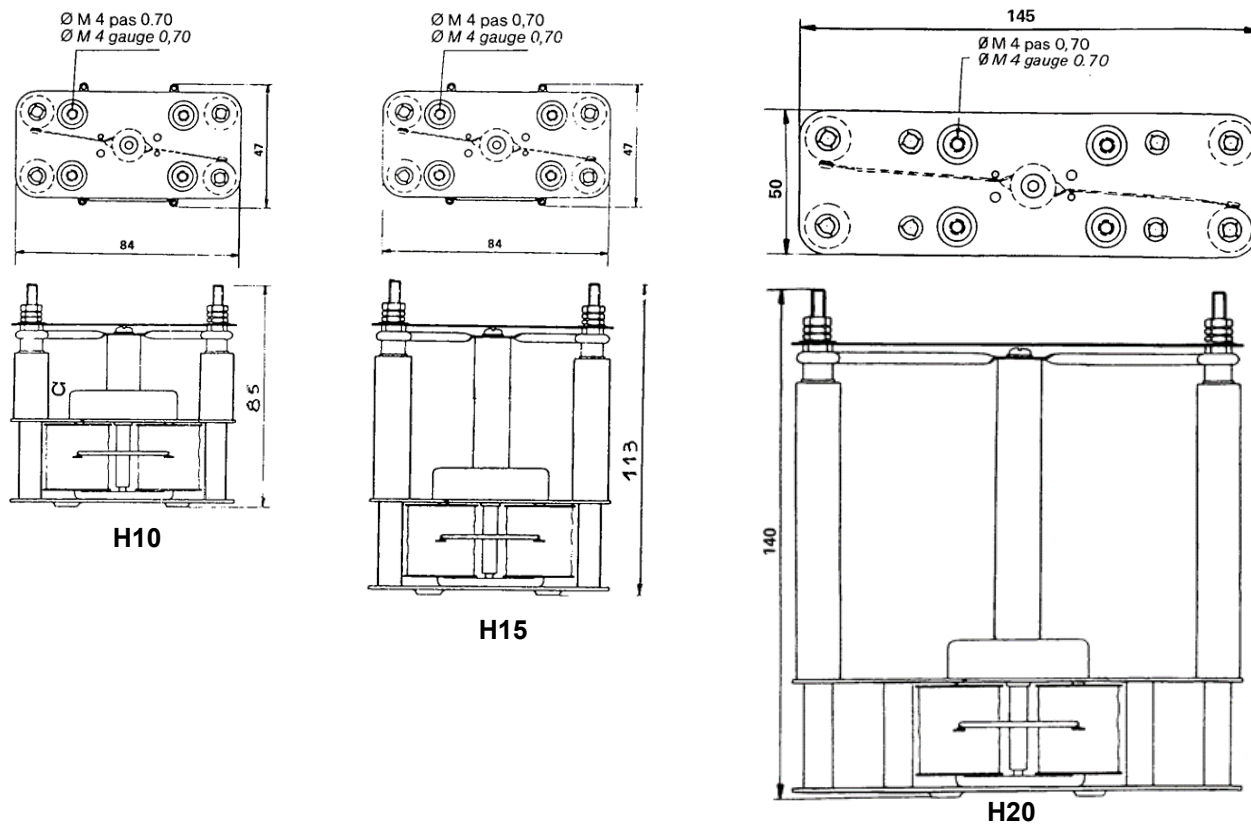
Indicated excitation power : 2 W approximately



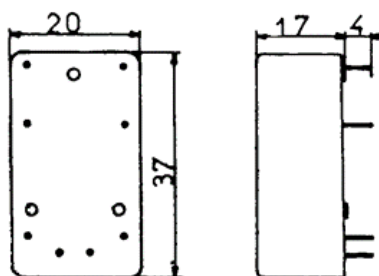
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Dimensions

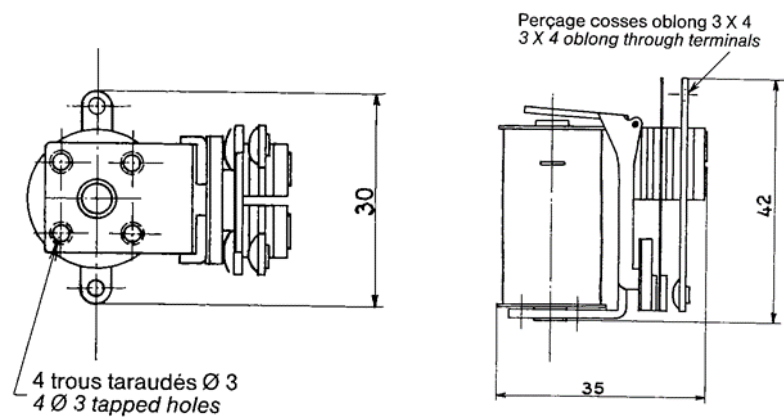
◆ H Relays



◆ PC16 Relays

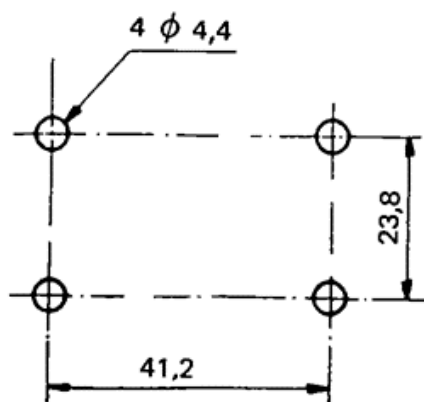


◆ MTD Relays



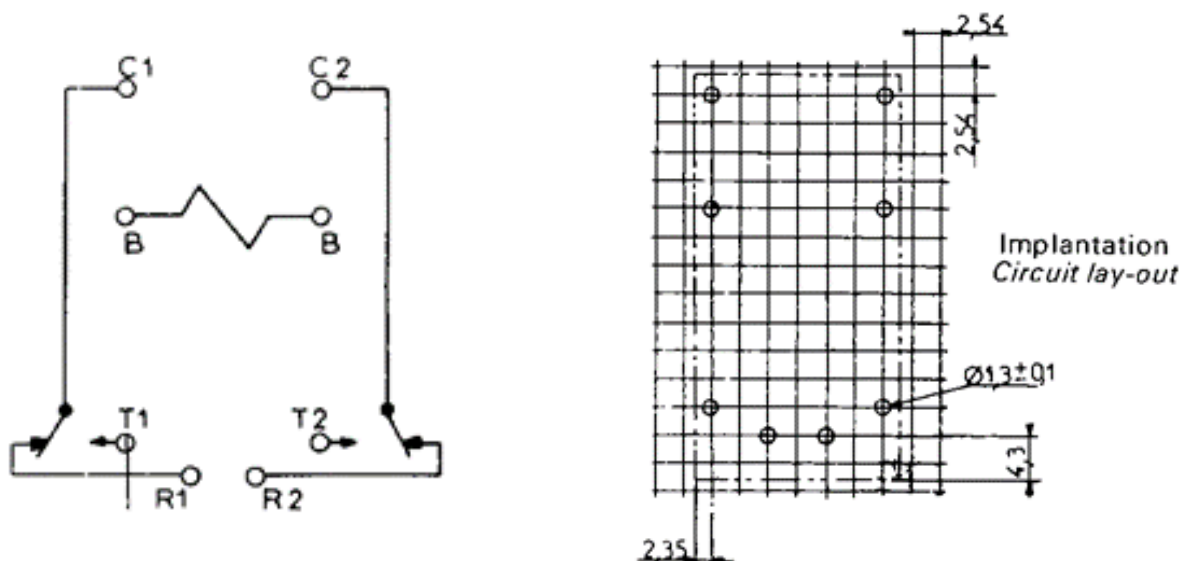
Holing diagram

◆ H Relays

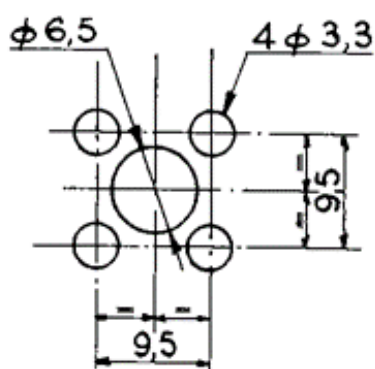


Max. fastening screw length =
panel thickness + 3mm

◆ PC16 Relays



◆ MTD Relays



Max. fastening screw length =
panel thickness + 3mm

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