

CMA SERIES

CMA - CMASD - CMALD - CMA-USBC

PUSH-PULL OR BREAK-AWAY
CONNECTORS



BERNIER



CMA SERIES

PUSH-PULL
OR BREAK-AWAY
CONNECTORS

BERNIER designed the CMA line specially for equipment in harsh environments with a range of connectors offering versatility for a variety of applications.

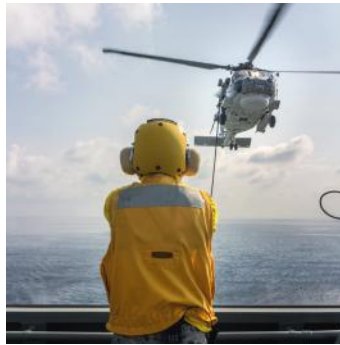
CMA equipped with 04, 06, 10, 14 and 22 contacts.

CMASD small connector from 08 to 19 contacts.

CMALD large dimension connector up to 36 contacts.

CMA-USBC connector with USBC technology.

Applications



Radios systems

Intercoms

Optronic

Rugged computers

Encrypted data

Head sets

Rugged displays

Drones

Aeronautics systems

Cameras

Goggles

Tactical equipments

OPTIMAL EMC REINFORCEMENTS



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°.



Ground pin

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



Conductive O rings

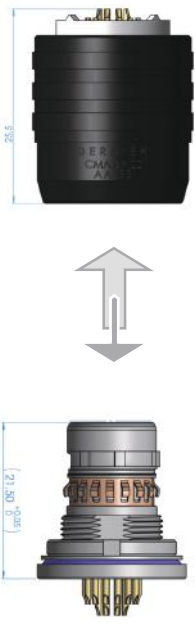
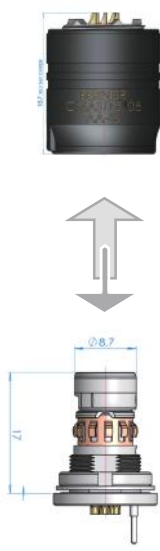
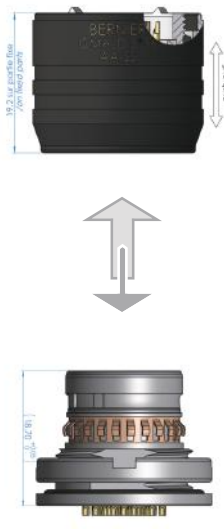
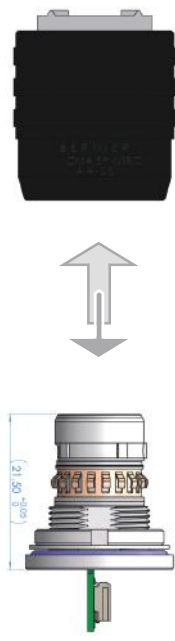
The receptacle Fluorosilicon Oring can be switched to a conductive version to establish a better conductivity between the connector and the panel and EMC reinforcement.

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 for other industrial or military connectors. Caps and backshells can also be improved to provide a better ergonomics for your configuration.

Push-Pull Ergonmics Break-Away Stainless steel Robustness

→	SERIE CMA	SERIE CMASD	SERIE CMALD	SERIE CMA-USBC
	 <p>28.5</p> <p>21.50 (±0.03)</p>	 <p>17</p> <p>28.7</p>	 <p>18.2 (±0.05)</p> <p>14.95</p>	 <p>21.50 (±0.03)</p>

- 8 Technical data CMA
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- 14 Plugs CMA
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P45 CMASD SERIE

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- 74 Tools

P57 CMALD SERIE

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- 61 Plugs CMALD
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- 63 Backshells CMALD
- 64 Receptacles CMALD
- 66 Caps CMALD
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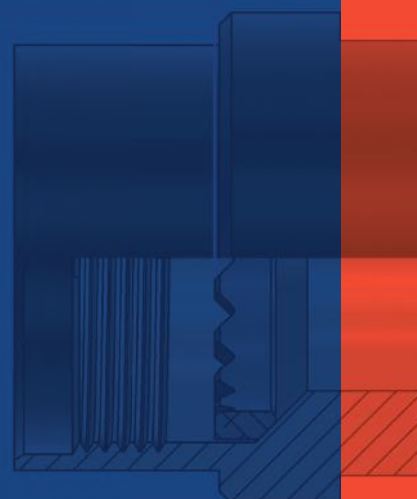
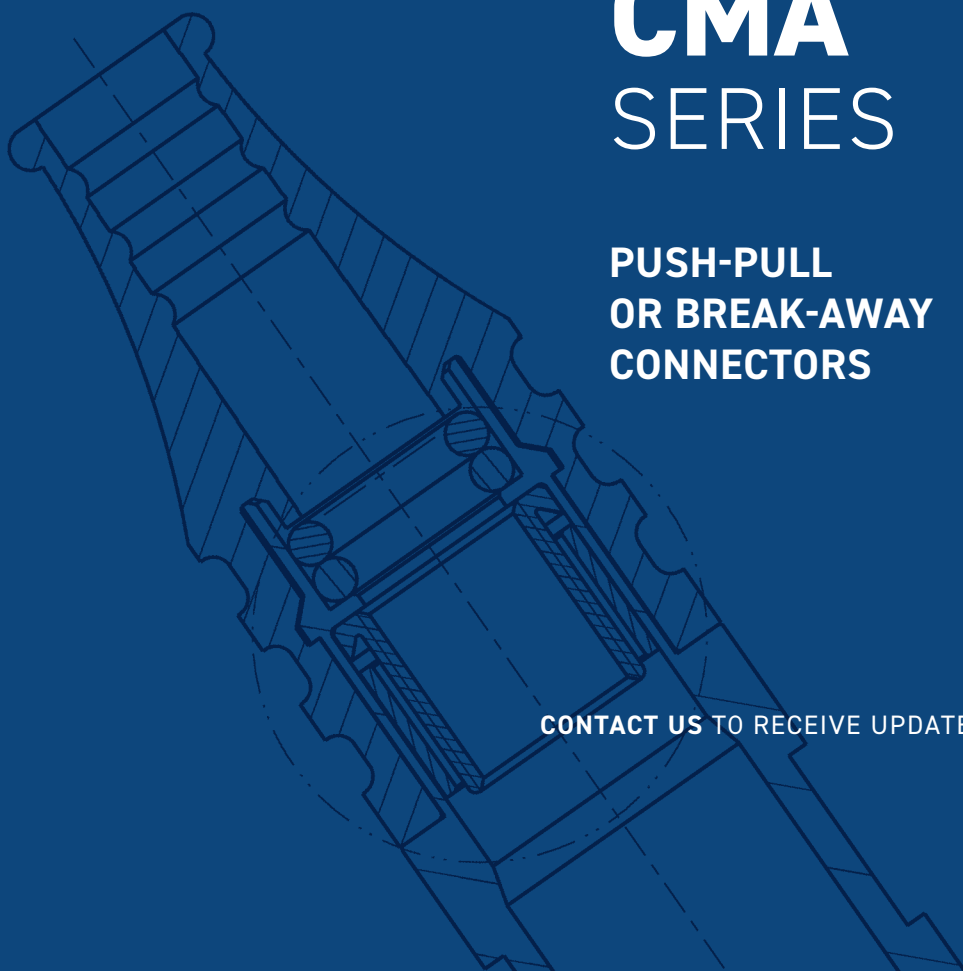
P67 CMA-USBC SERIE

- 68 Technical data CMA-USBC
- 70 Synoptic : Items mounted on cable
- 71 Plugs CMA-USBC
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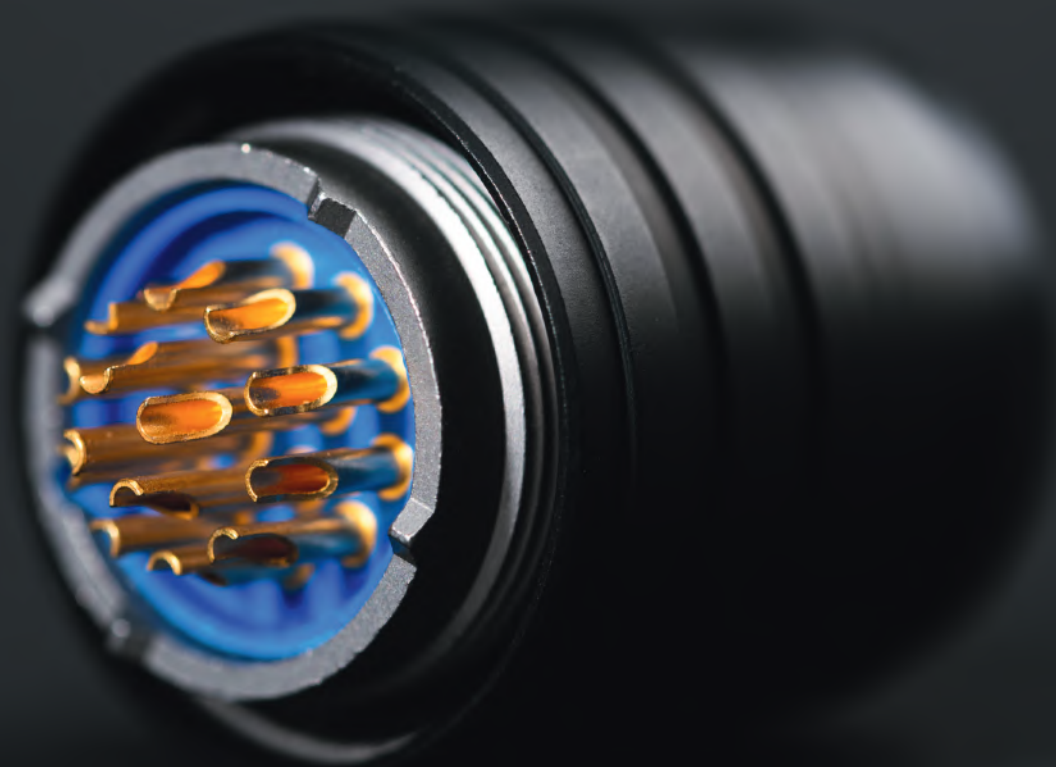
CMA SERIES

**PUSH-PULL
OR BREAK-AWAY
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CONTACT US TO RECEIVE UPDATES



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



CMA SERIE

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OR BREAK-AWAY
CONNECTORS**

FROM 04 TO 22 CONTACTS



ERGONOMICS | STAINLESS STEEL | EMI RFI PROTECTION | MULTI-CONTACTS | WATERTIGHT



BERNIER

■ CLIMATIC AND MECHANICAL CHARACTERISTICS

	CMA push-pull	CMA break-away (L)	CMA break-away (SC)
Unlocking system	Manual action on ring	Axial force (30N ≤ F ≤ 70N)	Axial force (≤ 25N)
Operating temperature Range	-55°C to +125°C		
Endurance (connect disconnect)	10 000 operations 5 000 operations (22 contacts)	2 000 operations	10 000 operations 5 000 operations (22 contacts)
Sealing performance	IP68 (Mated and unmated)		
Corrosion resistance Salt fog :	Stainless steel: 96 hours Navy stainless steel: 250 hours Navy bronze: 500 hours		
Vibration	55 Hz to 2 000 Hz, 10 g (6 hours)		
Fluids resistance	Oils and hydrocarbons		

The Push-Pull version and the Break-Away version mate with the same receptacle

■ ELECTRICAL CHARACTERISTICS

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

* CMA 22 contacts compatible with 10G Ethernet. BERNIER CONNECT has performed high-speed 10G Ethernet protocol tests. Latest-generation USB4 and HDMI2.1 protocols can also be tested on request.

■ MATERIAL AND PLATING

	Material	Plating
Connector shell	Stainless steel Navy stainless steel Navy 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	Aluminum alloy	Black chrome or black anodizing



CONNECTORS

TYPE OF SHELL	Weight (Max)
Plug (CMA 5)	30 g
Extension (CMA 1)	20 g
Receptacle (CMA 2)	20 g
Receptacle (CMA 7)	18,5 g
Receptacle (CMA R7)	18,5 g
Dummy receptacle (CMA 6)	16 g
Panel through (CMA 3)	23 g
Panel plug (CMA 11)	46,5 g
Panel plug (CMA 17)	34 g
Panel plug (CMA 18)	34 g
Panel plug (CMA 19)	34 g

Stainless steel version.



ELBOW AND STRAIGHT BACKSHELLS

TYPE OF BACKSHELLS	Weight (Max)
Straight backshell with sleeve (CMA RA7-xx)	26 g
Straight backshell with knurling (CMA R18-xxx)	14 g
Straight backshell with knurling (CMA RA24-xx)	14 g
Straight backshell with knurling (CMA RA02-10)	10 g
Straight backshell with knurling (CMA RA17-76)	14 g
Straight backshell with double knurling (CMA RA19-95)	14 g
Straight backshell (CMA RAI-xx)	20 g
Elbow backshell with knurling (CMA RA81-xxx)	28 g
Elbow backshell at 105° (CMA RA8)	21 g
Elbow backshell at 90° (CMA RA82)	18 g
Short straight backshell with knurling (CMA RA09-95)	6 g

Aluminum version

CAPS

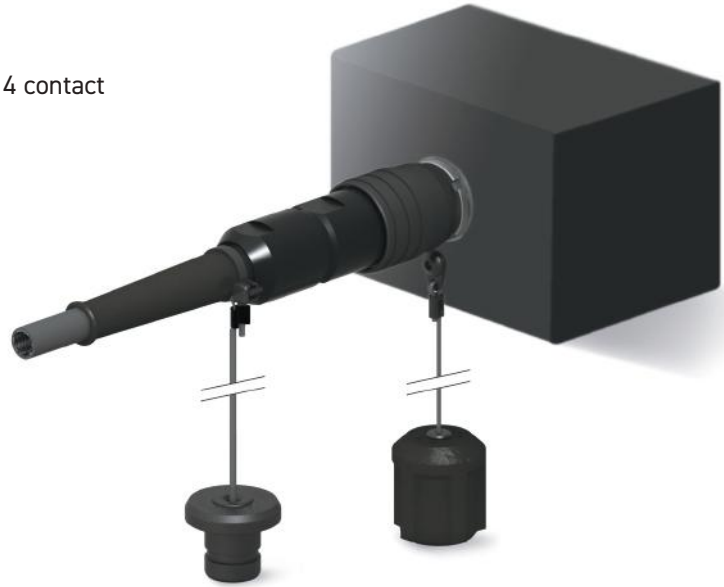
TYPE OF SHELL	TYPE OF CAPS	Weight (Max)
For plug (type 5)	Thermoplastic plug cap (CMA BA06)	4 g
	Metallic plug cap (CMA BA65)	13 g
For receptacle (type 6 et 7) and Panel through (type 3)	Elastomer receptacle cap (CMA BA86)	6 g
	Metallic receptacle cap (CMA BA100)	40 g
For extension (type 1)	Elastomer extension cap (CMA BA94)	6 g
	Metallic extension cap (CMA BA100)	40 g

Other types of caps - contact us

COMPATIBILITY / CMA

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

Special case: a 10 contacts plug can mate with a 14 contact receptacle.



KEYWAYS / CMA



FRONT VIEW



Receptacle

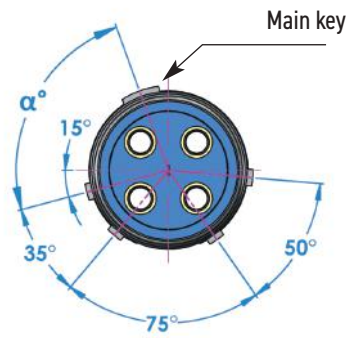
Plug

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

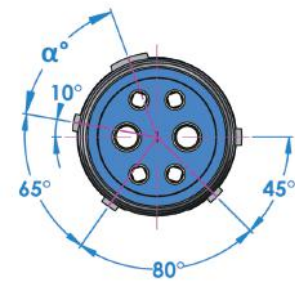
		Keyways						
		N	W	X	Y	Z	P*	T
Angle α	04 contacts	105°	95°	115°	85°	125°	—	**
	06 contacts	80°	70°	90°	60°	100°	—	**
	10-14 contacts	95°	85°	105°	75°	115°	138°	**
	22 contacts	80°	70°	90°	60°	100°	—	**

* 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.

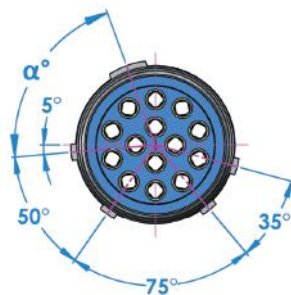


04 contacts

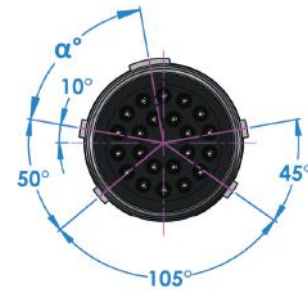


06 contacts

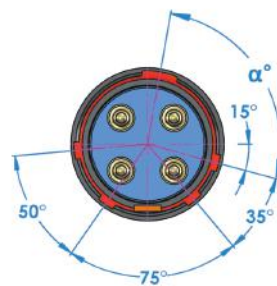
■ RECEPTACLE EXTENSION



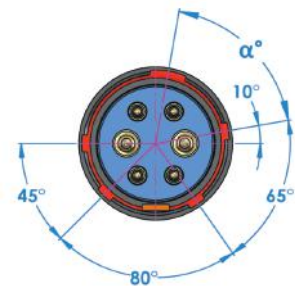
10 - 14 contacts



22 contacts

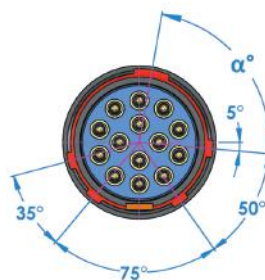


04 contacts

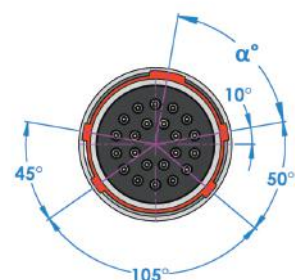


06 contacts

■ PLUG



10 - 14 contacts



22 contacts

■ ITEMS MOUNTED ON CABLE

<p>Straight backshell with sleeve</p>	<p>Elbow part 90° Option</p>	<p>Push-pull plug Type 5</p>	<p>Thermo-plastic plug cap</p>
<p>Straight backshell</p>		<p>Break-away plug Type 5 (L5 ou SC5)</p>	<p>Metallic plug cap</p>
	<p>Elbow part 105° Option</p>		
<p>Elbow backshell à 90°</p>		<p>Extension Type 1</p>	<p>Elastomer extension cap</p>
			
		<p>Panel through Type 3</p>	<p>Metallic extension cap</p>
			



Assembly on cable
Straight backshell with sleeve version

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

■ ITEMS MOUNTED ON PANEL

Elastomer receptacle cap



Push-pull metallic receptacle cap



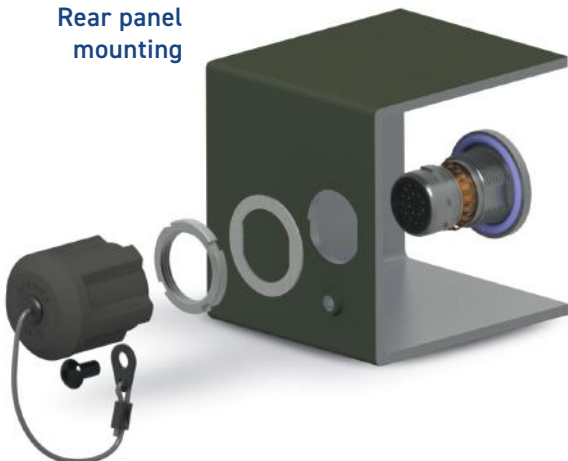
Thermo-plastic panel plug cap



Metallic panel plug cap



Rear panel mounting



Rear panel mounting

Receptacle Type 7



Dummy receptacle Type 6



Panel through Type 3



Panel plug without locking Type 11



Break-away panel plug Type 19



Shutter CMA B598N



Front panel mounting

Receptacle Type R7



Push-pull panel plug Type 18



Break-away panel plug Type 18



* can accept backshell (See items mounted on cable)

PLUGS (TYPE 5) / CMA

PART NUMBERS: **CMA X XX 5 X XX XX XX**

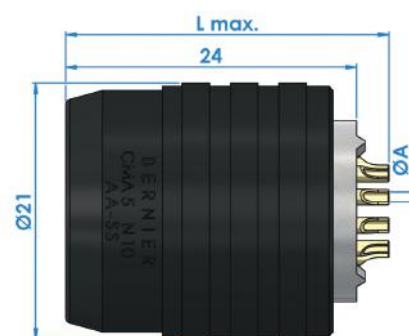
Description	Code
Series	CMA
Surface finish: 'Nothing mentioned' : Black Matte Grey Sandblasted Passivated	" " G
Locking: 'Nothing mentioned' : Push-pull version Break-away version with spring clip Break-away version without locking	L SC
Connector type: Plug	5
Keyways	N, W, X, Y, Z, P, T
Number of contacts	04, 06, 10, 14, 22
Contact: 'Nothing mentioned': solder cup For PCB	Y, YA
Material: 'Nothing mentioned' : stainless steel Marine stainless steel (250 hours salt fog) Marine bronze (500 h salt fog)	SM BM



■ PLUGS WITH SOLDER CUP CONTACTS

Push-Pull version | CMA 5 x xx

Part numbers	Number of contacts	AWG A	L max
CMA 5 x 04	04	AWG 18	27,2
CMA 5 x 06	06	AWG 18	27,2
	(2 contacts) (4 contacts)	AWG 22	27,2
CMA 5 x 10	10	AWG 22	27,2
CMA 5 x 14	14	AWG 22	29,2
CMA 5 x 22	22	AWG 26	25,7



Ex: CMA 5 N10

Break-away version | CMA xx 5 x xx

Part numbers	Number of contacts	AWG A	L max
CMA xx 5 x 04	04	AWG 18	27,2
CMA xx 5 x 06	06	AWG 18	27,2
	(2 contacts) (4 contacts)	AWG 22	27,2
CMA xx 5 x 10	10	AWG 22	27,2
CMA xx 5 x 14	14	AWG 22	29,2
CMA xx 5 x 22	22	AWG 26	25,7



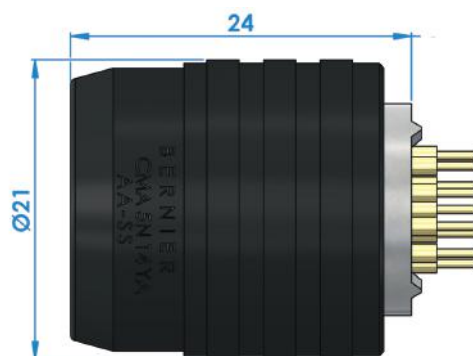
Ex: CMA L 5N14

■ PLUGS WITH CONTACTS FOR PCB

Push-Pull version | CMA 5 x xx xx xx

Part numbers	Types of contacts
CMA 5 x xx Y xx	Y (short version)
CMA 5 x xx YA xx	YA (long version)

Break-away plug with contact for PCB is possible - contact us

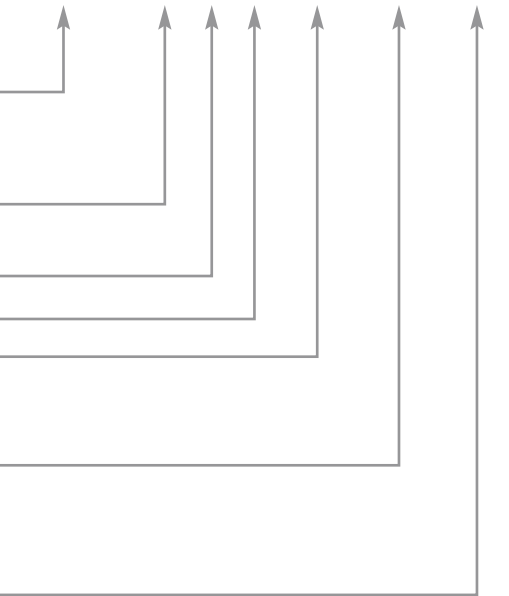


Ex : CMA 5N14YA

EXTENSIONS (TYPE 1) / CMA

PART NUMBERS : **CMA X 1 X XX XX XX**

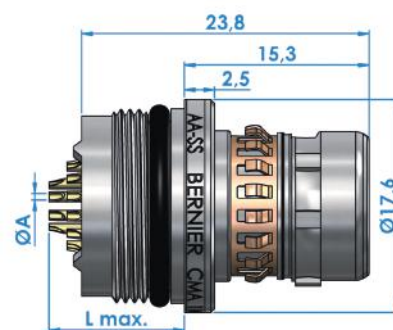
Description	Code
Series	CMA
Aspect: 'Nothing mentioned': sandblasted Black version	B
Connector type: Extension	1
Keyway	N, W, X, Y, Z, P, T
Number of contacts	04, 06, 10, 14, 22
integrated backshell: Nothing mentioned Backshell with knurling	SP
Material: 'Nothing mentioned' : stainless steel Marine stainless steel (250 hours salt fog) Marine bronze (500 h salt fog)	SM BM



■ EXTENSION WITH SOLDER CUP CONTACTS

CMA x 1 x xx xx

Part numbers	Number of contacts	AWG A	L max
CMA x 1 x 04 xx	04	AWG 18	11,4
CMA x 1 x 06 xx	06	AWG 18	11,4
	(2 contacts) (4 contacts)	AWG 22	11,4
CMA x 1 x 10 xx	10	AWG 22	11,4
CMA x 1 x 14 xx	14	AWG 22	13,4
CMA x 1 x 22 xx	22	AWG 26	11,4

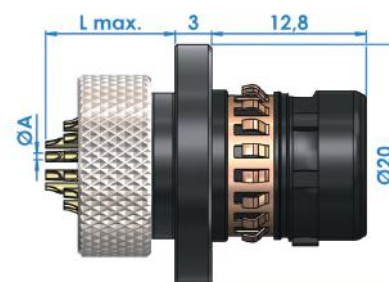


Ex: CMA 1N22

■ EXTENSION WITH SOLDER CUP CONTACTS AND INTEGRATED BACKSHELL

CMA x 1 x xx SP xx

Part numbers	Number of contacts	AWG A	L max
CMA x 1 x 04 SP xx	04	AWG 18	11,4
CMA x 1 x 06 SP xx	06	AWG 18	11,4
	(2 contacts) (4 contacts)	AWG 22	11,4
CMA x 1 x 10 SP xx	10	AWG 22	11,4
CMA x 1 x 14 SP xx	14	AWG 22	13,4
CMA x 1 x 22 SP xx	22	AWG 26	11,4

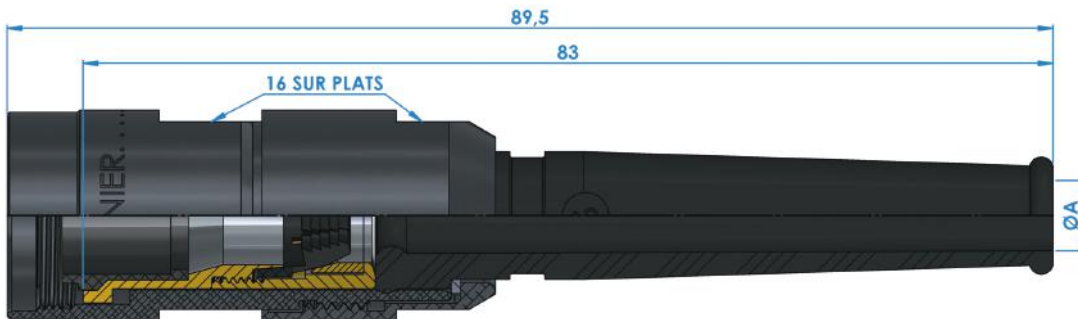


Ex: CMA B 1N22SP

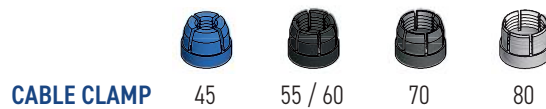
BACKSHELLS / CMA

■ STRAIGHT BACKSHELL WITH SLEEVE

Cable clamp and sleeve included



CMA RA7-XX



RA7-xx

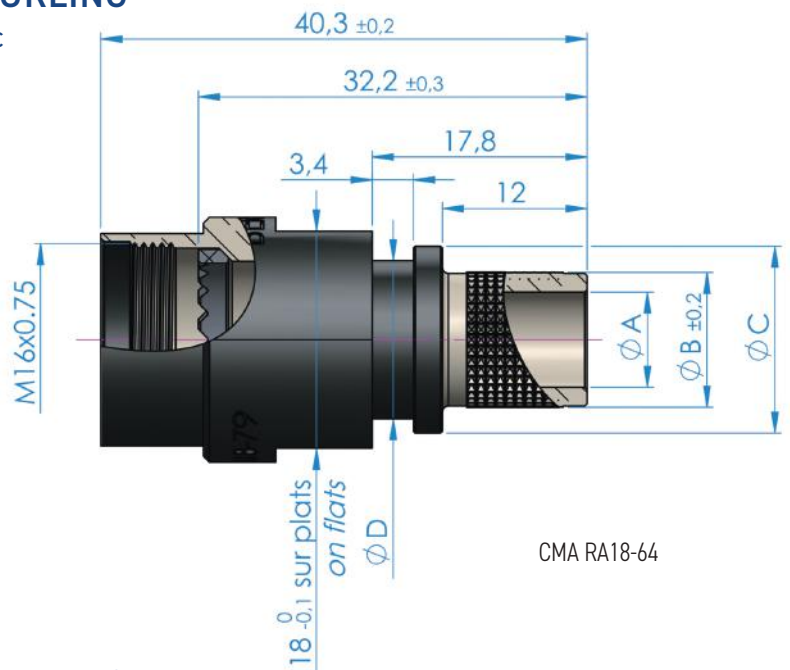
Part numbers	ØA mm
CMA RA7-45	4,5
CMA RA7-55	5,5
CMA RA7-60	6
CMA RA7-70	7
CMA RA7-80	8

■ STRAIGHT BACKSHELL WITH KNURLING

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

RA18-xxx

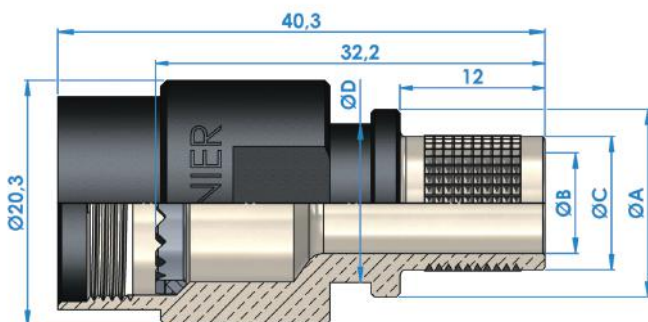
Part numbers	ØA mm	ØB mm	ØC mm	ØD mm
CMA RA18-52	5,2	8,5	13,5	11,5
CMA RA18-64	6,4	9,6	13,9	11,5
CMA RA18-79	7,9	11,2	15,5	13,1
CMA RA18-95	9,5	12,8	17,1	14,8
CMA RA18-111	11,1	14,3	18,7	16,3
CMA RA18-127	12,7	15,9	20,3	17,7



CMA RA18-64

■ STRAIGHT BACKSHELL WITH KNURLING

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



CMA RA24-83

RA24-xx

Part numbers	ØA	ØB	ØC	ØD
CMA RA24-52	15,5	5,2	8,3	13,1
CMA RA24-64	15,5	6,4	9,4	13,1
CMA RA24-79	15,5	7,9	11	13,1
CMA RA24-83	15,5	8,3	11	13,1

Diameters A and D don't change

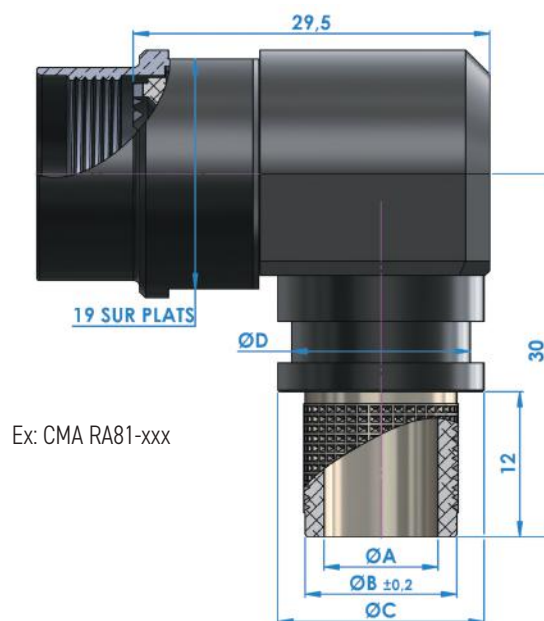
■ ELBOW BACKSHELLS 90° WITH KNURLING

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

RA81-xxx

Part numbers	ØA	ØB	ØC	ØD
CMA RA81-52	5,2	8,5	13,5	11,5
CMA RA81-64	6,4	9,6	13,9	11,5
CMA RA81-79	7,9	11,2	15,5	13,1
CMA RA81-95	9,5	12,8	17,1	14,8
CMA RA81-111	11,1	14,3	18,7	16,3
CMA RA81-127	12,7	15,9	20,3	17,7

20° angle orientation when tightening on connector



Ex: CMA RA81-xxx

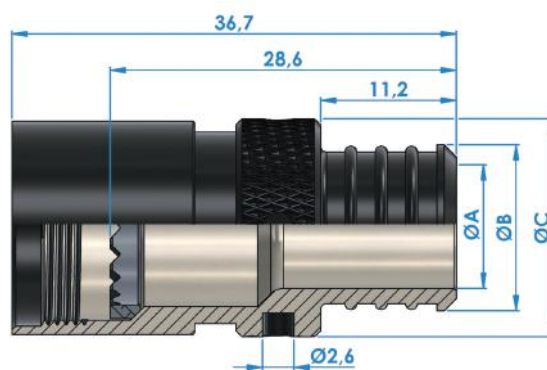
■ STRAIGHT BACKSHELL WITH KNURLING

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

RA02-10

Part numbers	ØA	ØB	ØC
CMA RA02-10	10	13,7	18

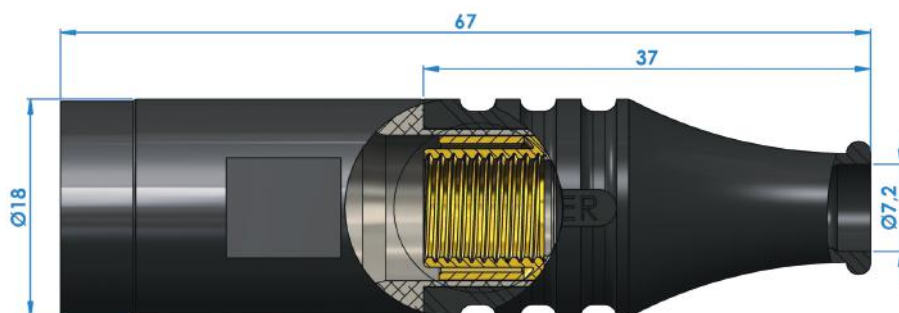
For Ø 06 & 08 Contact us



CMA RA02-10

■ UNREMOVABLE STRAIGHT BACKSHELL

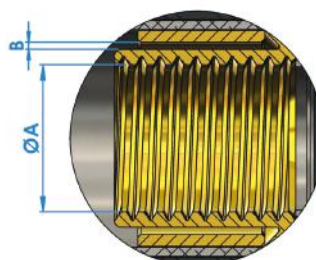
Backshell with a crimping operation during assembling to fit with accuracy to the cable (RH50 and B458 crimping tools sold separately)



CMA RAI-xx

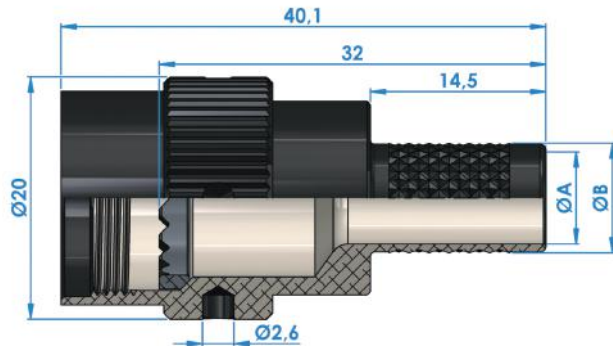
RAIxx

Part numbers	ØA	ØB	ØB
CMA RAI01	9,25	8.8	6.90
CMA RAI02	10,25	9.3	7.6
CMA RAI03	10,60	9.8	8.1



BACKSHELLS / CMA

■ STRAIGHT BACKSHELL WITH KNURLING

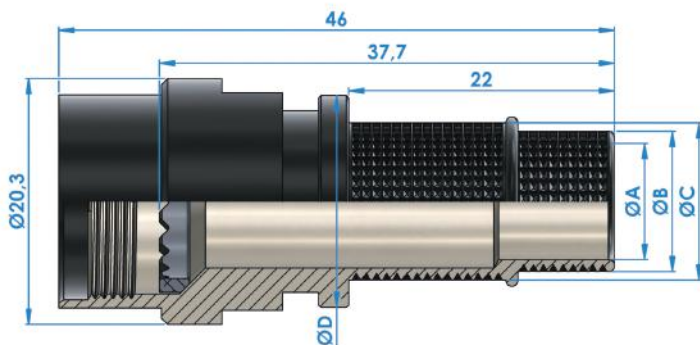


CMA RA17-XX

RA17-76

Part numbers	ØA	ØB
CMA RA17-76	7,6	8,90

■ STRAIGHT BACKSHELL WITH DOUBLE KNURLING



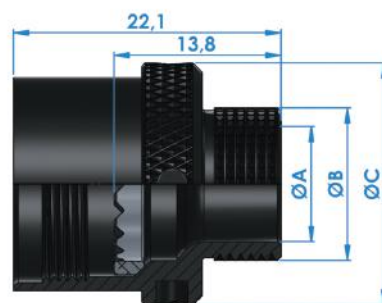
CMA RA19-XX

RA19-95

Part numbers	ØA	ØB	ØC	ØD
CMA RA19-95	9,5	11,6	13	17,5

■ SHORT BACKSHELL

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



CMA RA09-XX

RA09-95

Part numbers	ØA	ØB	ØC
CMA RA09-95	9,5	12,6	20

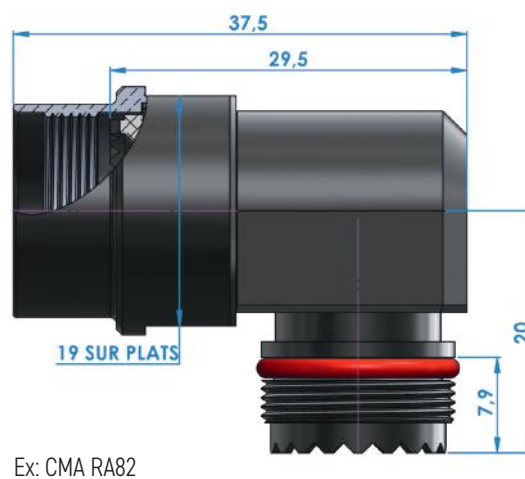
ELBOW PARTS / CMA

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

■ ELBOW PART CMA RA8 WITH A 105° ANGLE



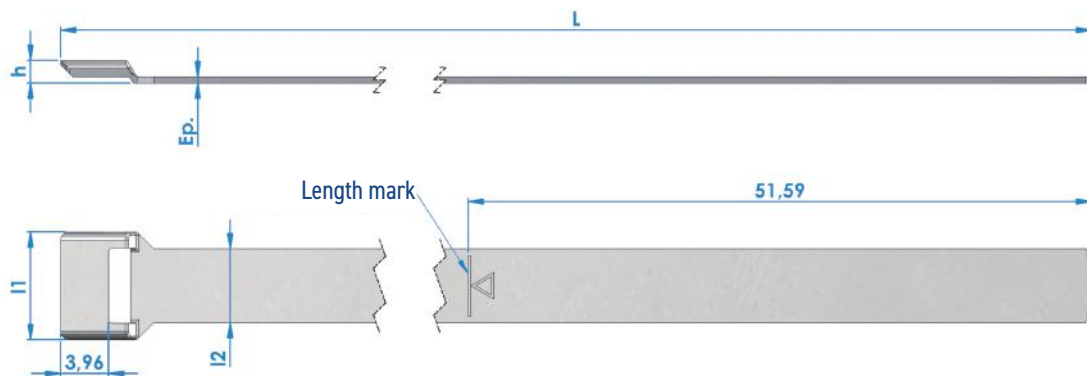
■ ELBOW PART CMA RA82 WITH A 90° ANGLE



BACKSHELLS ASSEMBLY PRINCIPLE / CMA

METALLIC CLAMP FOR BACKSHELLS

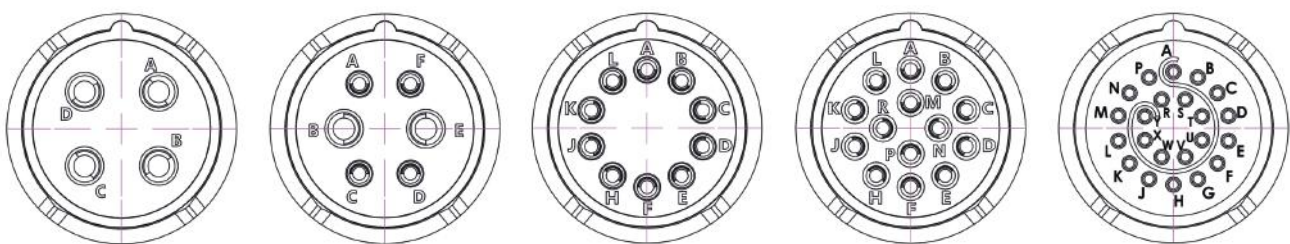
Description	Part numbers	L (mm)	h (mm)	l1(mm)	L2 (mm)	Ep. (mm)
Metallic clamp width 6.10 mm	B593	362,1	1,88	8,9	6,1	0,51
Metallic clamp width 3.17 mm	B452	206,4	1,35	5	3,1	0,4



CABLING

Contacts position on plugs

Welding side view



04 contacts

06 contacts

10 contacts

14 contacts

22 contacts

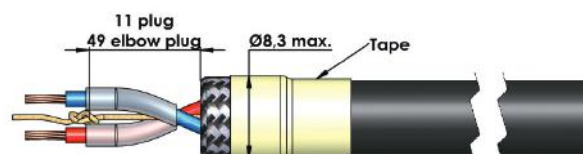
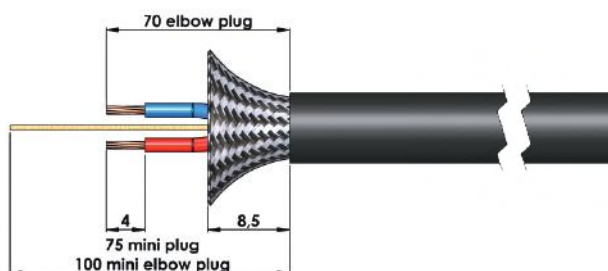
For types 1, 3 and 7: consider the reverse

■ CMA RA7-XX BACKSHELL ASSEMBLY

Slide items on the cable
as shown below



- | | |
|--------------------|------------------|
| 1. Locking backnut | 6. Bague conique |
| 2. Locking washer | 7. Cable clamp |
| 3. Sleeve | 8. Ground cone |
| 4. Backshell body | 9. Stop ring |
| 5. Cable clamp nut | 10. Plug |



- 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 (torque to be defined according to cable) 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 RA1XX 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

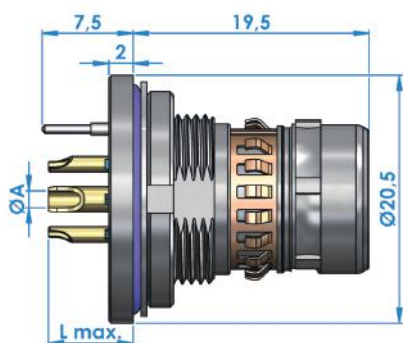
- Tighten (with the recommended torque) the backshell free ring on the connector giving the orientation wanted. (Orientation of the elbow by angle of 20°).
- Tighten the metallic clamp to fix the cable shield on the backshell knurled area.
- Cover with a heat shrink boot, a molded part or proceed an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

RECEPTACLES (TYPES 2, 6, 7, R7) / CMA

PART NUMBERS: **CMA X XX X XX XXXX XXXX XX XX XX**

Description	Code
Series	CMA
Aspect : 'Nothing mentioned': sandblasted Black version	B
Connecteur type: Receptacle Receptacle front panel mounting Dummy receptacle	2, 7 R7 6
Keyways	N, W, X, Y, Z, P, T
Number of contacts	04, 06, 10, 14, 22
Contact : 'Nothing mentioned': solder cup For PCB Type 7, R7	Y1, Y1.2, Y1.3, Y2, Y3, Y4, Y4.1, Y4.2, Y8, Y8.1
Ground pin: 1 ground pin 4 ground pin	PM PM4S
Panel oring: 'Nothing mentioned': Fluorosilicon Oring Fluorosilicon charged with Ni/Graph Oring Fluorosilicon charged Silver/Al Oring	JC JC1
Material: 'Nothing mentioned' : stainless steel Marine stainless steel (250 hours salt fog) Marine bronze (500 h salt fog)	SM BM
KIT Oring - Nut- Washer: Assembled on receptacle: no indication Disassembled from receptacle	DA

RECEPTACLES WITH SOLDER CUP CONTACTS / REAR PANEL MOUNTING



Ex: CMA B 7N06PM JC

Receptacle (type 7) CMA x 7 x xx xxxx xxx xx

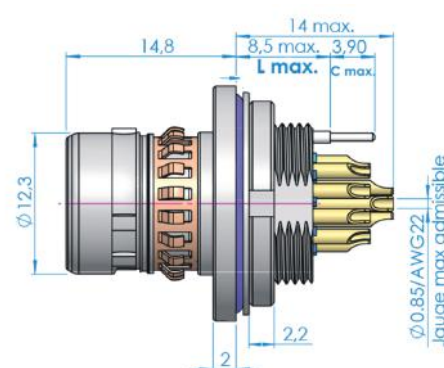
Part numbers	Number of contacts	AWG A	L max
CMA x 7 x 04 xxxx xxx xx	04	AWG 18	7,1
CMA x 7 x 06 xxxx xxx xx	06 (2 contacts) (4 contacts)	AWG 18 AWG 22	7,1 7,1
CMA x 7 x 10 xxxx xxx xx	10	AWG 22	7,1
CMA x 7 x 14 xxxx xxx xx	14	AWG 22	9,1
CMA x 7 x 22 xxxx xxx xx	22	AWG 26	7,1

■ RECEPTACLES WITH SOLDER CUP CONTACTS / FRONT PANEL MOUNTING (can't be dismantled from the outside of the equipment)

Receptacle (type R7) CMA x R7 x xx xxxx xxx xx

Part numbers	Number of contacts	L max	C max
CMA R7N04PM	04	8,2	4
CMA R7N06	06	8,2	4
CMA R7N06PM	06	8,2	4
CMA R7N06PM JC	06	8,2	4
CMA R7Z10	10	12	–
CMA R7N14	14	14	–
CMA R7N14 JC	14	14	–
CMA R7N14PM	14	14	4
CMA R7Z14	14	14	–
CMA R7N22	22	–	–
CMA R7W22	22	–	–
CMA R7N-USBC PCB1	USB	8	–

For other configurations and keyways contact us.

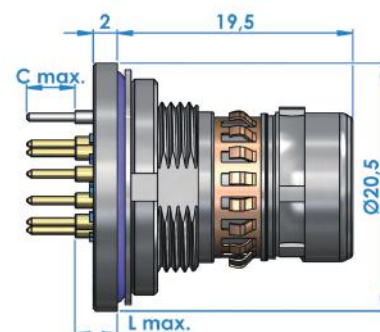


Ex : CMA R7N14

■ RECEPTACLE WITH CONTACTS FOR PCB / REAR PANEL MOUNTING

Receptacle (type 7) CMA x 7 x xx xxxx xxxx xxx xx

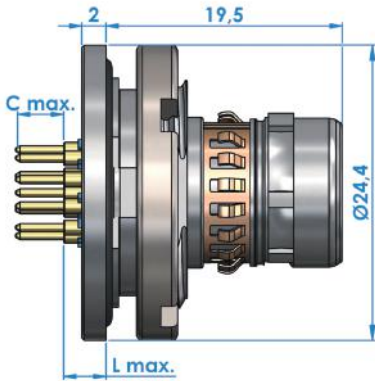
Part numbers	Types of contacts	L max	C max
CMA x 7 x xx Y1 xxxx xxx xx	Y1	3,5	4
CMA x 7 x xx Y1.2 xxxx xxx xx	Y1.2	3,5	2,6
CMA x 7 x xx Y1.3 xxxx xxx xx	Y1.3	3,5	1,5
CMA x 7 x xx Y2 xxxx xxx xx	Y2	9,5	4
CMA x 7 x xx Y3 xxxx xxx xx	Y3	12,5	4
CMA x 7 x xx Y4 xxxx xxx xx	Y4	3,2	2
CMA x 7 x xx Y4.1 xxxx xxx xx	Y4.1	3,2	1,2
CMA x 7 x xx Y4.2 xxxx xxx xx	Y4.2	3,2	1,6
CMA x 7 x xx Y8 xxxx xxx xx	Y8	5,5	4
CMA x 7 x xx Y8.1 xxxx xxx xx	Y8.1	5,5	2,6



Ex : CMA 7N10Y1PM

RECEPTACLES (TYPES 2, 6, 7, R7) / CMA

■ RECEPTACLE FITTING THE MIL-C-55116 RECEPTACLE PANEL CUT



Ex: CMA 7N55116

Receptacle (type 7) CMA x 7 x xx xx xxxx xxx xx

Part numbers	Types of contacts	L max	C max
CMA x 7 x xx Y1 xxxx xxx xx	Y1	3,5	4
CMA x 7 x xx Y1.2 xxxx xxx xx	Y1.2	3,5	2,6
CMA x 7 x xx Y1.3 xxxx xxx xx	Y1.3	3,5	1,5
CMA x 7 x xx Y2 xxxx xxx xx	Y2	9,5	4
CMA x 7 x xx Y3 xxxx xxx xx	Y3	12,5	4
CMA x 7 x xx Y4 xxxx xxx xx	Y4	3,2	2
CMA x 7 x xx Y4.1 xxxx xxx xx	Y4.1	3,2	1,2
CMA x 7 x xx Y4.2 xxxx xxx xx	Y4.2	3,2	1,6
CMA x 7 x xx Y8 xxxx xxx xx	Y8	5,5	4
CMA x 7 x xx Y8.1 xxxx xxx xx	Y8.1	5,5	2,6

■ RECEPTACLE FITTING THE SPECIAL PANEL CUT WITH 4 GROUND PINS - SERIE



Ex: CMA B 2N22Y1PM4

Receptacle (type 2) CMA x 2 x xx xx PM4 xxx xx

Part numbers	Types of contacts	L max	C max
CMA x 2 x xx Y1 PM4 xxx xx	Y1	3,5	4
CMA x 2 x xx Y2 PM4 xxx xx	Y2	9,5	4

RECEPTACLE WITH CONTACTS FOR PCB / FRONT PANEL MOUNTING

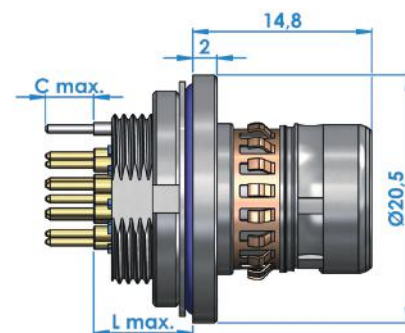
(can't be dismantled from the outside of the equipment)

Receptacle (type 7) CMA x R7 x xx xxxx xxxx xxx xx

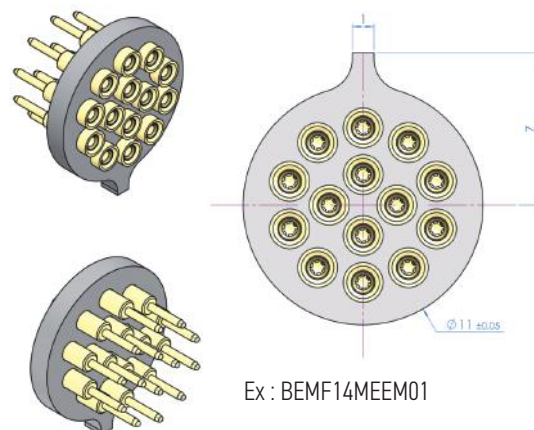
Part numbers	Number of contacts	Types of contacts	L max	C max
CMA R7Z10Y1	10	Y1	8,3	4
CMA R7Z10Y1.2	10	Y1.2	8,3	2,6
CMA R7Z10Y1.2PM	10	Y1.2	8,3	2,6
CMA R7N14Y1.2	14	Y1.2	8,3	2,6
CMA R7N14Y1.2PM	14	Y1.2	8,3	2,6

For other configurations and PCB keyways, please refer to the reference table below:

Part numbers	Types of contacts	L max	C max
CMA x R7 x xx Y1 xxxx xxx xx	Y1	3,5	4
CMA x R7 x xx Y1.2 xxxx xxx xx	Y1.2	3,5	2,6
CMA x R7 x xx Y1.3 xxxx xxx xx	Y1.3	3,5	1,5
CMA x R7 x xx Y2 xxxx xxx xx	Y2	9,5	4
CMA x R7 x xx Y3 xxxx xxx xx	Y3	12,5	4
CMA x R7 x xx Y4 xxxx xxx xx	Y4	3,2	2
CMA x R7 x xx Y4.1 xxxx xxx xx	Y4.1	3,2	1,2
CMA x R7 x xx Y4.2 xxxx xxx xx	Y4.2	3,2	1,6
CMA x R7 x xx Y8 xxxx xxx xx	Y8	5,5	4
CMA x R7 x xx Y8.1 xxxx xxx xx	Y8.1	5,5	2,6



Ex: CMA R7N14



INTERFACE FOR PCB CMA 14 CONTACTS

for receptacle R7

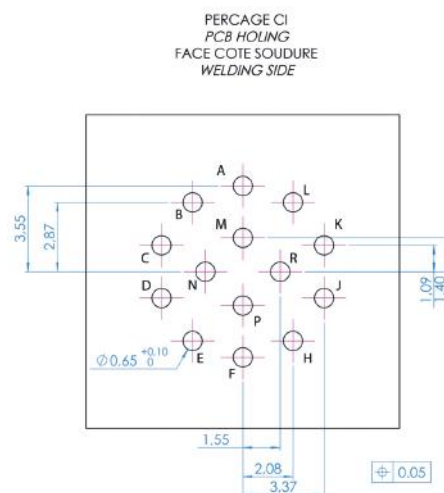
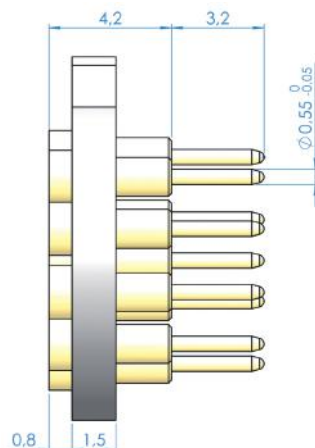
BEMF14MEEM01

MATERIALS AND FINISH:

- Platinum : epoxy.
- Contacts : Copper alloy with gold over nickel plating.

CLIMATIC AND MECHANICAL CHARACTERISTICS:

- Temperature range: -55°C +85°C.
- Weight: 2g max

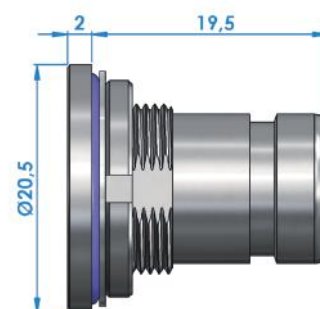


PERCAGE CI
PCB HOLLING
FACE COTE SOUDURE
WELDING SIDE

DUMMY RECEPTACLE

Receptacle (type 6) for plug fixing, for all plugs

CMA 6



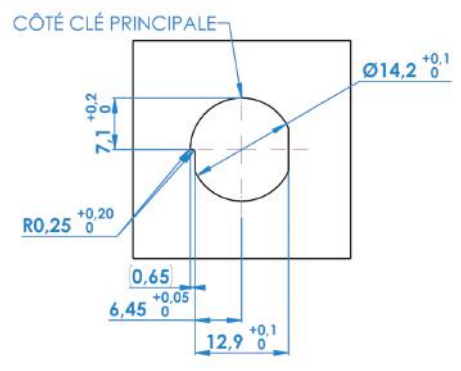
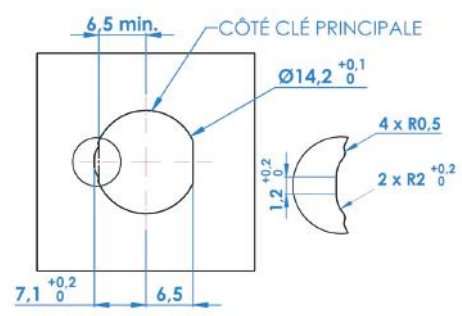
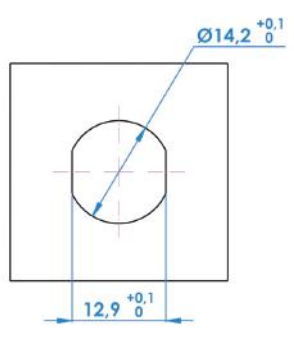
■ **WATERTIGHT SHUTTER**
for CMA Type 7 panel cut

CMA B598N



PANEL CUTS / CMA

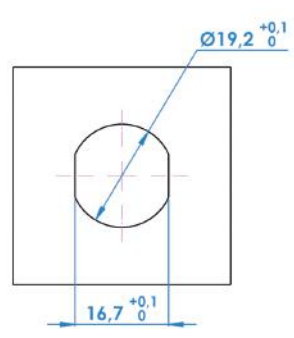
■ **PANEL CUTS FOR TYPES 3, 7 AND R7**



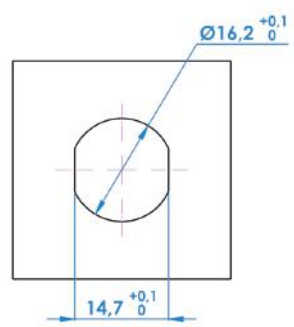
For Type 3 and a receptacle alone 04, 06, 10, 14 contacts

For several CMA receptacles mounted on 1 PCB

For 22 contacts receptacle



■ **SPECIAL RECEPTACLE PANEL CUT FITTING MILC-5516**

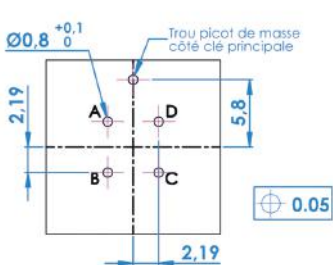


■ **SPECIAL RECEPTACLE TYPE 2 PANEL CUT**

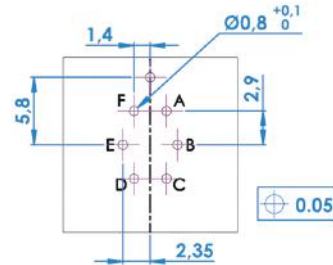
Front view side – Maximum panel thickness for CMA receptacles : 3.5mm

■ PCB HOLING

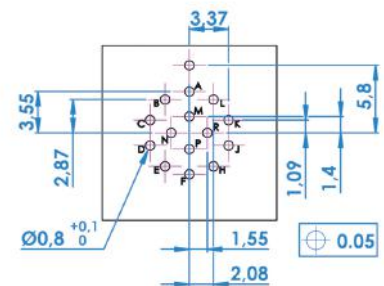
Welding side, through pins



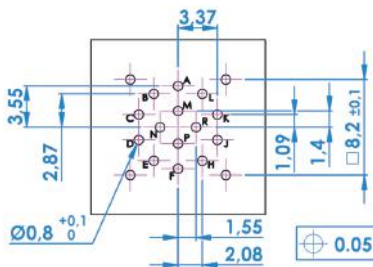
04 contacts / 1 Ground Pin



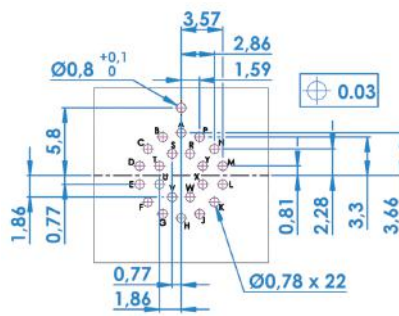
06 contacts / 1 Ground Pin



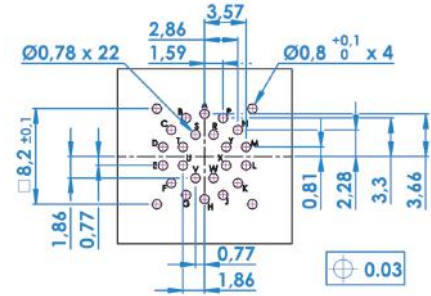
10 et 14 contacts / 1 Ground Pin



10 et 14 contacts
4 Ground pins PM4S



22 contacts / 1 PM



22 contacts
4 Ground pins PM4S

■ KIT ORING-WASHER-NUT FOR RECEPTACLE TYPE 7 ET R7

Description	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-Aluminum)	BEN000ME003



BEN000ME000



BEN000ME001



BEN000ME002

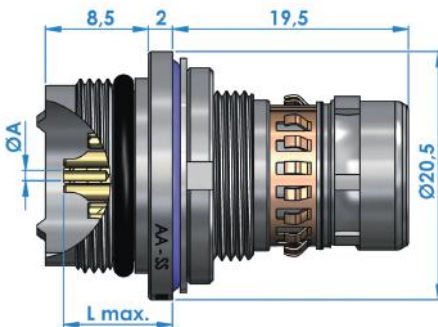


BEN000ME003

PANEL THROUGH (TYPE 3) / CMA

PART NUMBERS: **CMA X 3 X XX XX**

Description	Code
Series	CMA
Aspect : 'Nothing mentioned': sandblasted Black version	B
Connector type: Panel through	3
Keyways	N, W, X, Y, Z, P, T
Number of contacts	04, 06, 10, 14, 22
Material: 'Nothing mentioned' : stainless steel Marine stainless steel (250 hours salt fog) Marine bronze (500 h salt fog)	SM BM



Ex: CMA 3N14

■ PANEL THROUGH (TYPE 3) WITH SOLDER CUP CONTACTS

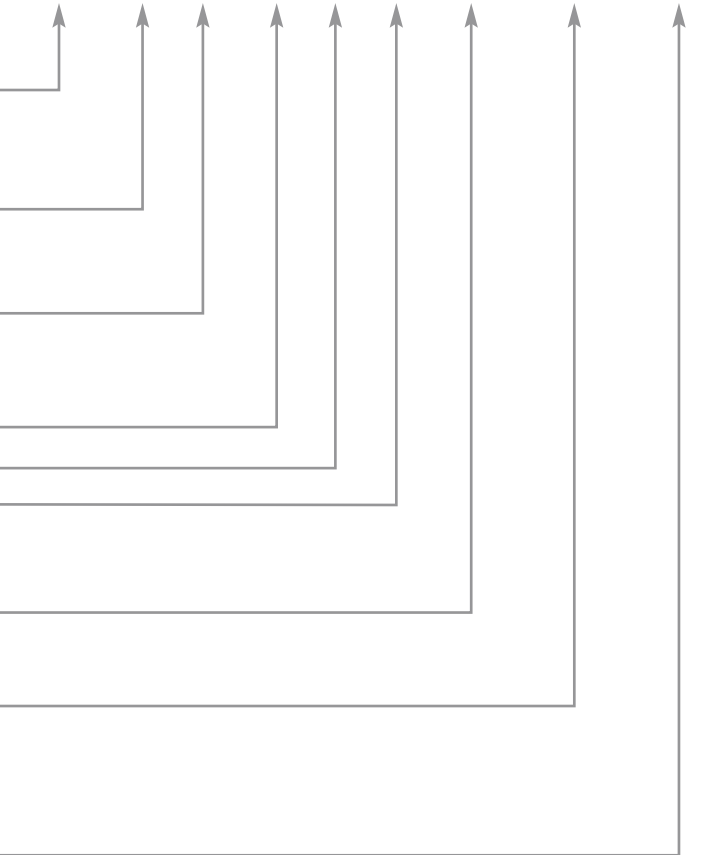
CMA x 3 x xx xx

Part numbers	Number of contacts	ØA
CMA x 3 x 04 xx	04	AWG 18
CMA x 3 x 06 xx	06 (2 contacts) (4 contacts)	AWG 18 AWG 22
CMA x 3 x 10 xx	10	AWG 22
CMA x 3 x 14 xx	14	AWG 22
CMA x 3 x 22 xx	22	AWG 26

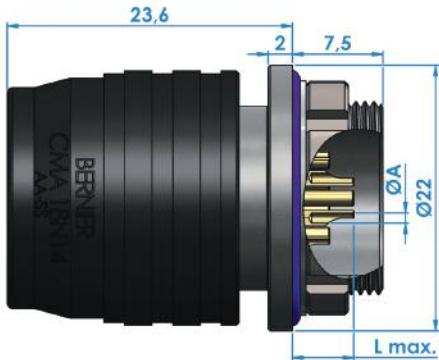
PANEL PLUGS (TYPES 11, 17, 18, 19) / CMA

PART NUMBERS: CMA X XX XX X XX XX XXXX XX

Description	Code
Series	CMA
Aspect: 'Nothing mentioned': sandblasted Black version	B
Locking: Nothing mentioned': push-pull version Break-away version with spring clip Break-away version without locking	L SC
Connector type: Panel plug	11, 17, 18, 19
Keyways	N, W, X, Y, Z, P, T
Number of contacts	04, 06, 10, 14, 22
Contact: 'Nothing mentioned': solder cup For PCB Type 7, R7	Y, YA, Y5
Ground pin: 1 ground pin 4 ground pin	PM PM4S
Material: 'Nothing mentioned' : stainless steel Marine stainless steel (250 hours salt fog) Marine bronze (500 h salt fog)	SM BM



■ PANEL PLUGS WITH SOLDER CUP CONTACTS

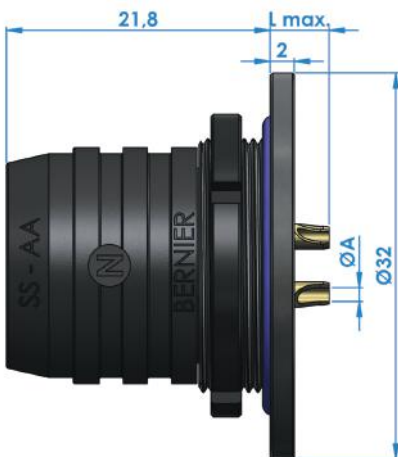


Ex: CMA 18N14

Push-Pull version | (Type 18)

CMA x 18 x xx xxxx xx

Part numbers	Number of contacts	ØA	L max
CMA x 18 x 04 xxxx xx	04	AWG 18	4,7
CMA x 18 x 06 xxxx xx	06 (2 contacts) (4 contacts)	AWG 18 AWG 22	4,7 4,7
CMA x 18 x 10 xxxx xx	10	AWG 22	4,7
CMA x 18 x 14 xxxx xx	14	AWG 22	4,7
CMA x 18 x 22 xxxx xx	22	AWG 26	7,1



Ex: CMA B L 11N04

Break-away version «L» with spring clip | (Type 11)

CMA x L 11 x xx xxxx xx

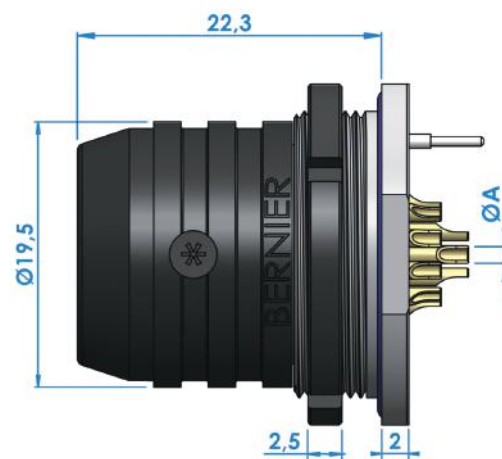
Part numbers	Number of contacts	ØA	L max
CMA x L 11 x 04 xxxx xx	04	AWG 18	4,9
CMA x L 11 x 06 xxxx xx	06 (2 contacts) (4 contacts)	AWG 18 AWG 22	4,9 4,9
CMA x L 11 x 10 xxxx xx	10	AWG 22	4,9
CMA x L 11 x 14 xxxx xx	14	AWG 22	6,9
CMA x L 11 x 22 xxxx xx	22	AWG 26	4



Break-away version «L» with spring clip | (Type 17)

CMA x L 17 x xx xxxx xx

Part numbers	Number of contacts	ØA	L max
CMA x L 17 x 14 xxxx xx	14	AWG 22	4,7



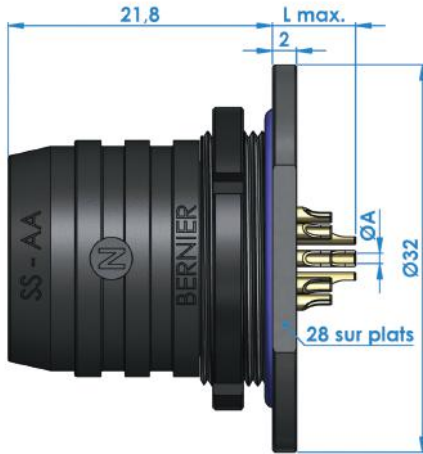
Break-away version «L» with spring clip | (Type 18)

CMA x L 18 x xx xxxx xx

Part numbers	Number of contacts	ØA	L max
CMA x L 18 x 04 xxxx xx	04	AWG 18	4,7
CMA x L 18 x 06 xxxx xx	06	AWG 18	4,7
	(2 contacts) (4 contacts)	AWG 22	4,7
CMA x L 18 x 14 xxxx xx	14	AWG 22	4,7



■ PANEL PLUGS WITH SOLDER CUP CONTACTS



Ex: CMA B L 19N14

Break-away version «L» with spring clip | (Type 19) CMA x L 19 x XX XXXX XX

Part numbers	Number of contacts	ØA	L max
CMA x L 19 x 04 XXXX XX	04	AWG 18	5
CMA x L 19 x 06 XXXX XX	06 (2 contacts) (4 contacts)	AWG 18 AWG 22	5 5
CMA x L 19 x 10 XXXX XX	10	AWG 22	5
CMA x L 19 x 14 XXXX XX	14	AWG 22	7
CMA x L 19 x 22 XXXX XX	22	AWG 26	3,9



Ex: CMA B SC18N06

Break-away version «SC» without locking | (Type 18) CMA x SC 18 x XX XXXX XX

Part numbers	Number of contacts	ØA	L max
CMA x SC 18 x 04 XXXX XX	04	AWG 18	8,9
CMA x SC 18 x 06 XXXX XX	06 (2 contacts) (4 contacts)	AWG 18 AWG 22	8,9 8,9
CMA x SC 18 x 10 XXXX XX	10	AWG 22	8,9
CMA x SC 18 x 14 XXXX XX	14	AWG 22	11
CMA x SC 18 x 22 XXXX XX	22	AWG 26	7,9



■ PANEL PLUG WITH CONTACTS FOR PCB

Push-Pull version | (Type 18) CMA 18 x xx

Please contact us

Break-away version «L» with spring clip | (Type 17) CMA x L 17 x xx xx xxxx xx

Part numbers	Types de contacts	L max	C max
CMA x L 17 x xx Y xxxx xx	Y	1,7	1,2
CMA x L 17 x xx YA xxxx xx	YA	3,7	3,2



Ex: CMA B L 17Y14YAPM

Break-away version «L» with spring clip | (Type 18) CMA x L 18 x xx xx xxxx xx

Part numbers	Types de contacts	L max	C max
CMA x L 18 x xx Y xxxx xx	Y	6,2	1,2
CMA x L 18 x xx YA xxxx xx	YA	8,2	3,2



Ex: CMA B L 18N14YA

■ PANEL PLUG WITH CONTACTS FOR PCB



CMA 11N14Y5

Break-away version «SC» without locking | (Type 11)
CMA x SC 11 x xx Y5 xxxx xx

Part numbers	Types de contacts
CMA x SC 11 x xx Y5 xxxx xx	YA



Break-away version «SC» without locking | (Type 18)
CMA x SC 18 x xx xx xxxx xx

Contact us

Break-away version «L» with spring clip | (Type 19)
CMA x L 19 x xx xx xxxx xx

Contact us

■ PLUGS CAPS FOR CMA TYPE 5 AND L5

Cap for CMA plug 5 or L5 with clamp. It is designed with system of locking and mates on all males connectors of the BERNIER CMA line for version N,W, X, Y, Z, T and P.
Reference of standard : STEI GAM-T2-75500 and 501.

With...	Thermo-plastic		Metallic Black
	Cord	Microcable	Microcable
Ferule*	CMA BA06-130 ST CMA BA06-300 ST	CMA BA06MC-200ST	CMA BA65MC-200ST
Plastic clamp	CMA BA06 CMA BA06-150 CMA BA06-250	CMA BA06MC CMA BA06MC-150	CMA BA65MCT

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

MATERIALS AND FINISH

Shell	Thermo-plastic or Metallic
Cord	Black thermoplastic
Microcable	Stainless steel with black jacket
Ferule	Aluminum alloy with black plating
Clamp	Thermoplastic

CLIMATIC AND MECHANICAL SPECIFICATIONS

Temperature range	-40°C +105°C or -55°C +125°C (ref. CMA06MC et CMA06MC-150)
Traction force	Cord: > 50N Microcable: > 120N
Watertightness	IP68
Clamp diameter	1,6 mm > \varnothing > 18 mm

Stock cap

CMA BASFIL

Protective cap for CMA plug



■ CAPS FOR RECEPTACLES (TYPES 6 ET 7) AND PANEL THROUGH (TYPE 3)

With...	Elastomer		Metallic*
	Cord	Microcable	Microcable
Metallic ring	CMA BA86 CMA BA86-35 CMA BA86-45	CMA BA86-35MC CMA BA86-50MC	CMA BA100x10.14MCEM CMA BA100x22MCEM
Crimped eyelet for M3 screw	CMA BA98	CMA BA98MC-75	Contact us
90° crimped eyelet for M3 screw	Contact us	CMA BA98MC-50CSM490	Contact us
Eyelet for MP3 screw	Contact us	Contact us	CMA BA100Z22MCM3
Specific eyelet attached to 3 caps	CMA BA84	CMA BA84MC	Contact us

MATIÈRE ET FINITION

Shell	Elastomer or Metallic Stainless steel blasted and passivated.
Cord	Black thermoplastic
Microcable	Stainless steel with black jacket
Ferule	Aluminum alloy with black plating
Eyelet	Stainless steel with black plating.
Crimped eyelet	Copper alloy with black plating

CLIMATIC AND MECHANICAL SPECIFICATIONS

Temperature range	-55°C +125°C or -40°C +85°C (ref. CMA BA98MC-75)
Traction force	> 120N
Watertightness	IP68

* CMA push-pull receptacle plugs with panel attachment lug. They mate with BERNIER CMA family types 7, 3 and 6 of the same keyway and the same number of contacts of the connector it covers.

For R7 type receptacles, the plug to be considered is the extender plug with a panel fixation.

Stock cap

CMA BA20

Protective cap for CMA receptacle
and extension



■ EXTENSION CAPS

With...	Elastomer cap		Push-pull metallic cap*
	Cord	Microcable	Microcable
Without fastener	CMA BA94-300	-	-
Ferule**	CMA BA94-300ST	CMA BA94MC-200ST	CMA BA100N10.14MC-200ST
Plastic clamp	CMA BA11	-	-
Thermoplastic clamp	-	CMA BA11 MC	-
Eyelet			CMA BA100N10.14MC-75CSM4 (M4 screw) CMA BA100N10.14MC-75CSM3 (M3 screw)
Metallic ring			CMA BA100N10.14MCEM

* Metallic cap part number contains the keyway and the number of contacts (xxx) of the connector it covers.

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

■ TERMINATIONS

Some eyelet can be fitted with 2 or 3 caps



MODULES / CMA

■ CONNECTORS WITH ELECTRONIC FUNCTIONS INTEGRATED

	
<p>User authentication module Crypto / Shunt</p>	<p>Wireless module Bluetooth antenna</p>
<p>Memory key Several memory sizes available</p>	<p>Adaptator CMA to Industrial connector (RJ45, USBs, HDMI, etc)</p>
	

■ SPECIAL CONNECTORS

		
<p>Plug with special shapes for rackable system CMA 14N06</p>	<p>Panel plug with removable insulator Module DDI</p>	<p>105° Elbow adaptor with point to point cabling Plug CMA CMA Extension</p>

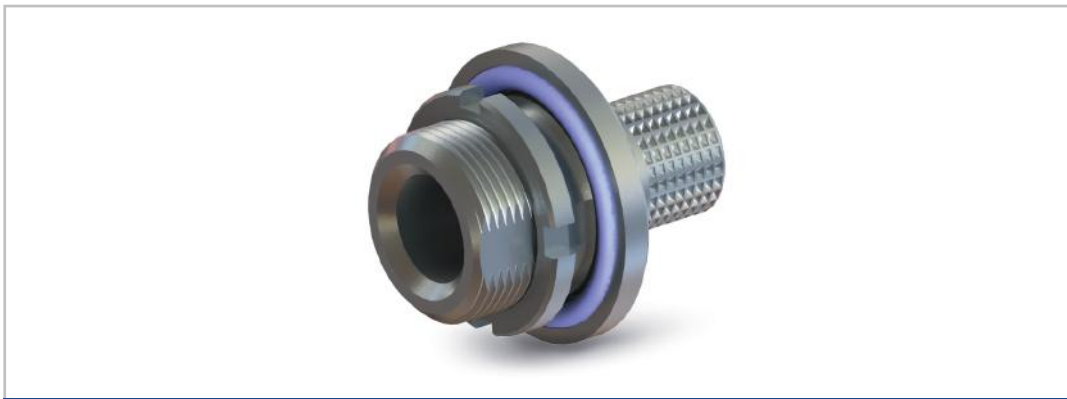
■ PANEL THROUGHS

B456



Similar to CMA RA7-XX backshell construction

B459



For cable shield continuity and heat-shrink boot

■ DEVELOPMENT OF PRODUCTS IN THE CMA ENVIRONMENT

B598



Double cap for BNC receptacle and antenna connector

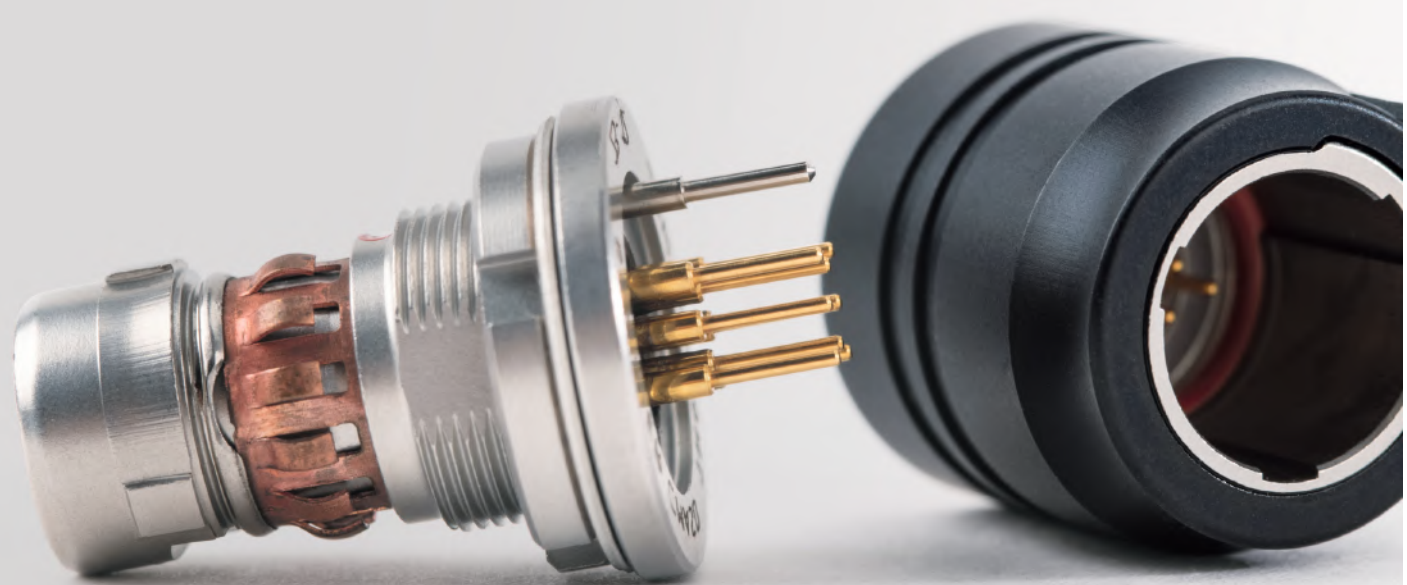
Toughness and reliable high speed data transfer
in **small dimensions!**



CMASD

PUSH-PULL
CONNECTORS

08 AND 19 CONTACTS



ERGONOMICS | STAINLESS STEEL | EMI RFI PROTECTION | MULTI-CONTACTS | WATERTIGHT



BERNIER

TECHNICAL DATA / CMASD

■ CLIMATIC AND MECHANICAL CHARACTERISTICS

	CMASD
Unlocking system	Push-Pull
Operating temperature Range	-55°C à +125°C
Endurance (matted / unmatted)	5 000 operations
Sealing performance	IP68 (connected & disconnected)
Corrosion resistance "Salt fog"	Stainless steel: 96 hours Navy steel: 250 hours Navy Bronze: 500 hours
Fluids resistance	Oils and hydrocarbons

■ ELECTRICAL CHARACTERISTICS

	08 contacts*	19 contacts
Working voltage	60 V _{max}	28 V _{max}
Current rating per contact	2 A _{max}	1 A
Gauge (AWG)	26	28
Contacts type	Solder cup / For PCB	
Contact resistance	≤ 10 mOhms	≤ 20 mOhms
Insulation resistance	>1000 MOhms under 500 V _{DC}	>1000 MOhms at 100 V _{DC}
Dielectric	500 V _{eff} à 50 Hz	
EMI RFI	Yes	

* CMASD 8 contacts compatible with 10G Ethernet. BERNIER CONNECT has tested 10G Ethernet high-speed protocols. Latest-generation USB4 and HDMI2.1 protocols can also be tested on request.

■ MATERIAL AND PLATING

	Material	Plating
Connector shell	Standard: Stainless steel Options: Navy steel / Navy bronze	Sandblasting or Black Chrome
Insulator	PBT	-
Contacts	Copper alloy	Gold over nickel
Ground ring	Beryllium Copper	-
Backshell shell	Aluminum alloy	Black chrome or black anodizing



■ CONNECTORS

TYPE OF BOXES	Weight (Max)	
	08 contacts	19 contacts
Plug Push-Pull (CMASD 5)	10 g	11 g
Extension (CMASD 1)	6 g	-
Receptacle (CMASD 7)	8 g	9 g

Stainless steel Version

■ BACKSHELL

TYPE OF BACKSHELLS	Weight (Max)
Straight backshell (CMASD RA89)	2,5 g
Straight backshell with knurling (CMASD RA88-xx)	6 g
Straight backshell raccourci with knurling (CMASD RA88-64 SP1)	6 g
elbow backshell à 90° with knurling (CMASD RA91-35)	16 g

■ CAPS

CONNECTORS TYPE	TYPE OF CAPS	Weight (Max)
For plug (type 5)	Thermo-plastic (CMASD BS06MC)	3 g
For receptacle (type 7) and extension (type 1)	Elastomer (CMASD BS94MC)	3 g

For other types of caps contact us

KEYWAYS / CMASD

CMASD



FRONT VIEW



Receptacle

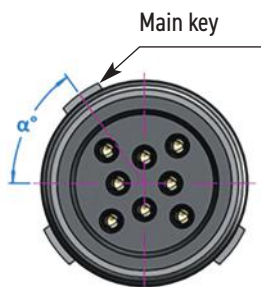
Plug

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

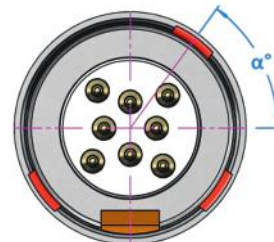
		Keyways				
		N	W	X	Y	Z
Angle α	08 contacts	90°	124°	54°	144°	36°
	19 contacts	118°	152°	82°	172°	64°

■ RECEPTACLE - EXTENSION

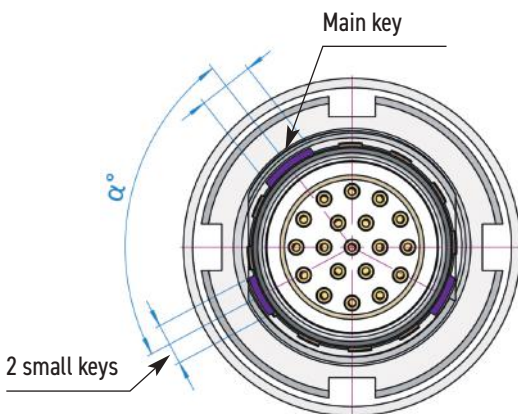
■ PLUG



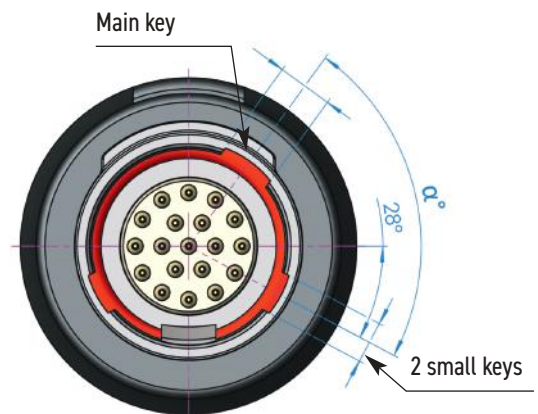
08 contacts



08 contacts



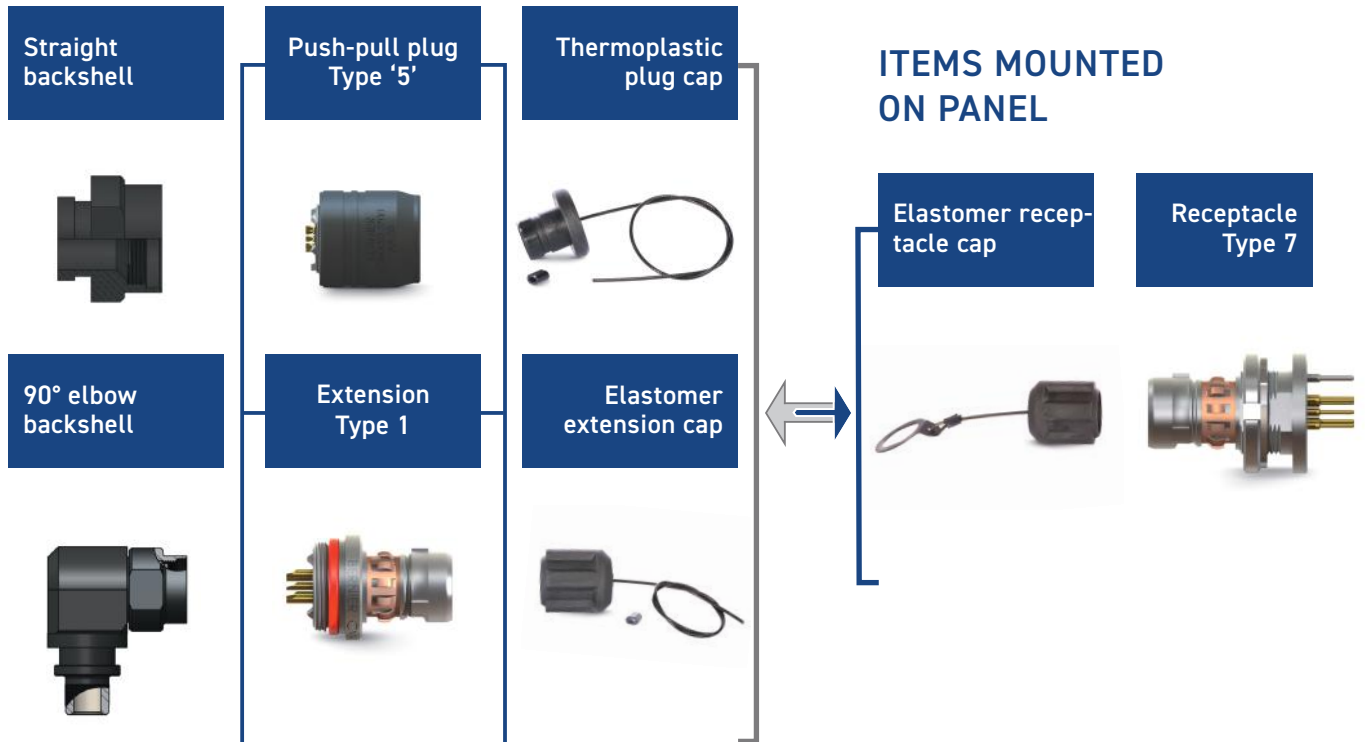
19 contacts



19 contacts

SYNOPTIC / CMASD

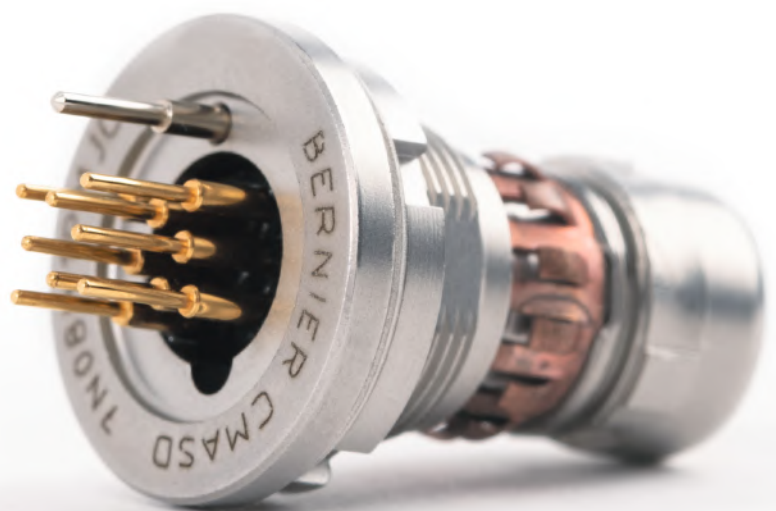
■ ITEMS MOUNTED ON CABLE



Attention: a backshell (necessary for cable assembling) must be ordered at the same time than a connector.

COMPATIBILITY / CMASD

Attention: compatible connectors must have the same number of contacts and the same keyway to be able to connect to each other.



PLUGS (TYPE 5) / CMASD

CMASD

PART NUMBERS: **CMASD 5 X XX XX**

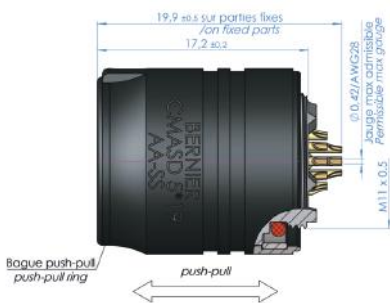
Description	Code
Series	CMASD
Aspect: 'Nothing mentioned': sandblasted Black version (by default for type 5)	
Locking: 'Nothing mentioned' : Push-pull version	
Type of connector:	
Plug	5
Keyway	N, W, X, Y, Z
Number of contacts	08, 19
Contact: 'Nothing mentioned': Solder cup	
Material: 'Nothing mentioned': stainless steel Marine stainless steel (250 hours salt fog) Marine bronze (500 hours salt fog)	SM BM

■ PLUG WITH SOLDER CUP CONTACTS



CMASD 5 x 08 xx

Push-pull version CMASD 5 x xx xx		
Part numbers	Number of contacts	Taille
CMASD 5 x 08 xx	08	AWG 26
CMASD 5 x 19 xx	19	AWG 28



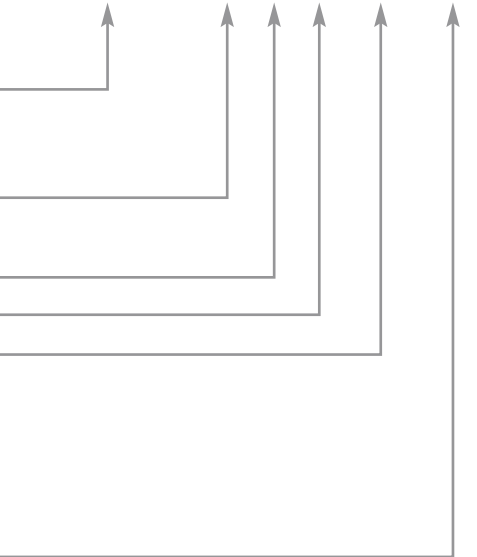
CMASD 5 x 19 xx



EXTENSIONS (TYPE 1) / CMASD

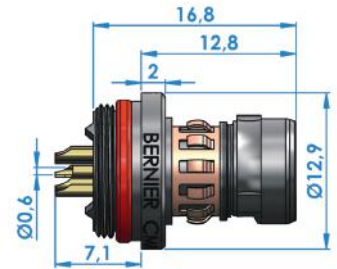
PART NUMBERS: **CMASD X 1 X XX XX**

Description	Code
Series	CMASD
Aspect : 'Nothing mentioned': sandblasted Black version	B
Type of connector: Extension	1
Keyway	N, W, X, Y, Z
Number of contacts	08, 19
Contact: 'Nothing mentioned': Solder cup	
Material: 'Nothing mentioned': stainless steel Marine stainless steel (250 hours salt fog) Marine bronze (500 hours salt fog)	SM BM

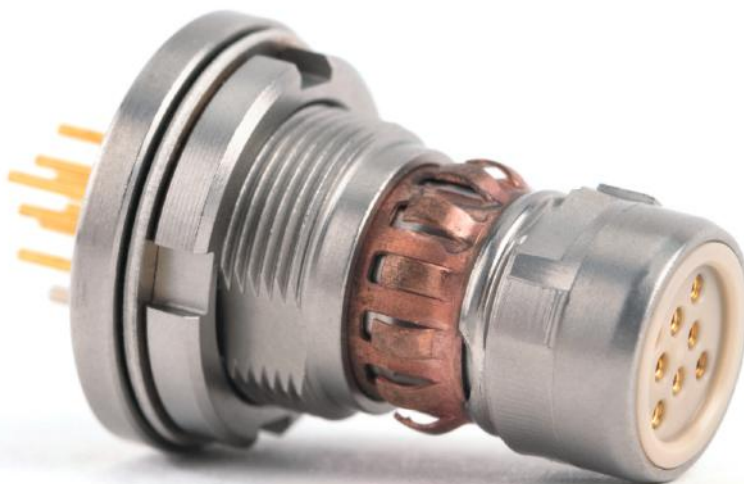


■ EXTENSION WITH SOLDER CUP CONTACTS

CMASD x 1 x xx xx		
Part numbers	Number of contacts	Size
CMASD x 1 x 08 xx	08	AWG 26
CMASD x 1 x 19 xx	19	AWG 28



CMASD x 1 x 08 xx

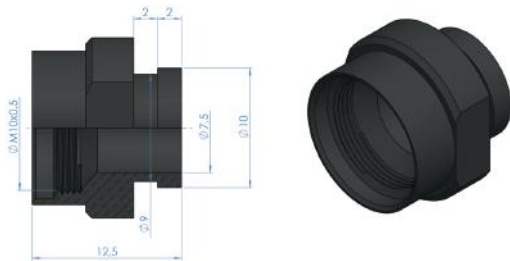


BACKSHELLS / CMASD

■ STRAIGHT BACKSHELL

Requiring assembly with rear overmolding and with/without heat shrink sleeve (not supplied). It can mate on all plugs, cable extensions and panel trough BERNIER CMASD line.

CMASD RA89

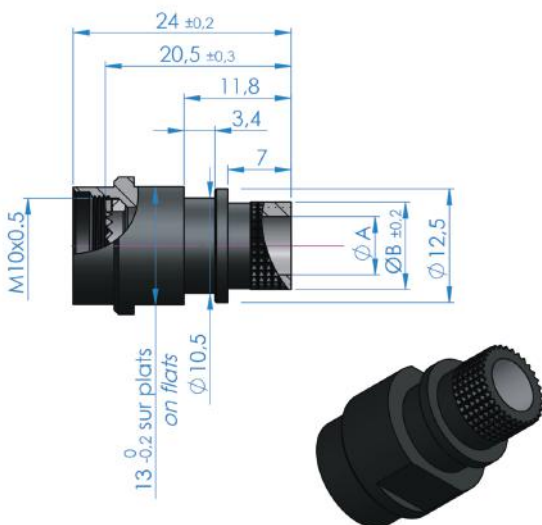


More size available, contact us.

■ SHORT STRAIGHT BACKSHELL

1 for rear overmolding or heat shrink sleeve (not supplied). It can mate on all plugs, cable extensions and panel troughs BERNIER CMASD line.

CMASD RA88-64 SP1



■ STRAIGHT BACKSHELL ON KNURLING

Requiring assembly with metallic band and heat shrink sleeve (not supplied). It can mate on all plugs, cable extensions and panel troughs BERNIER CMASD line.



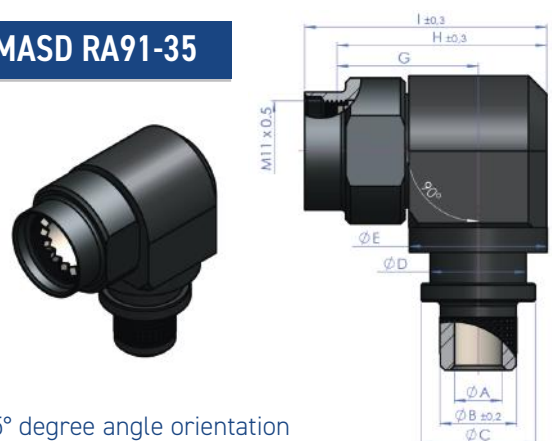
CMASD RA88-xx

Part numbers	ØA	ØB
CMASD RA88-52	5,2	8,5
CMASD RA88-64	6,4	9,6

■ ELBOW BACKSHELL 90° ON KNURLING

Requiring assembly with metallic band and heat shrink sleeve or overmolding (not supplied). It can mate all type 5 plugs and cable extensions type 1&3 BERNIER CMASD line.

CMASD RA91-35

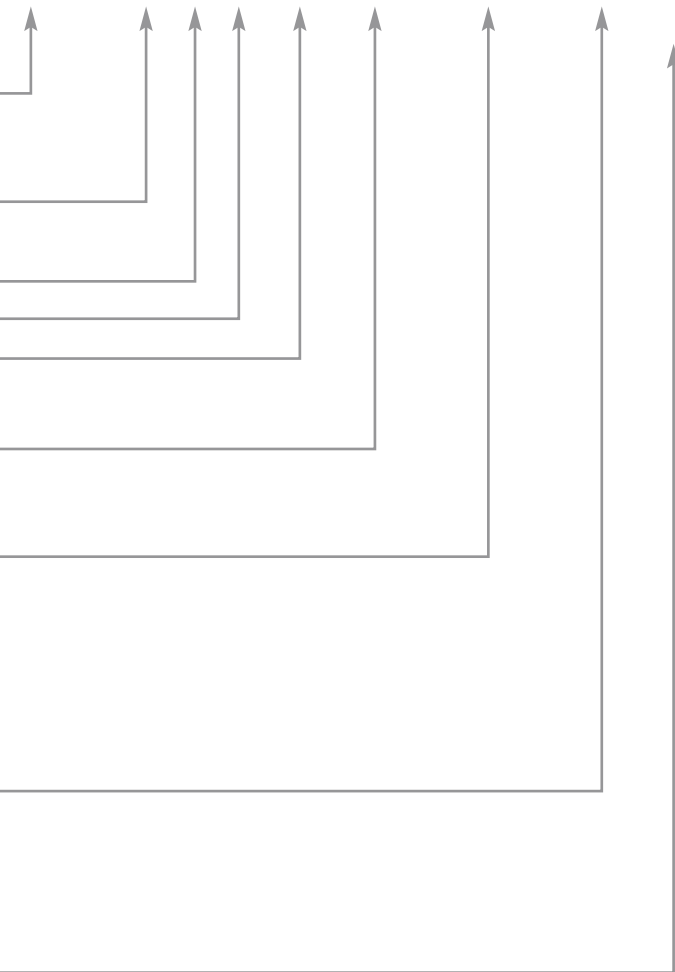


22,5° degree angle orientation when tightening on connector

RECEPTACLES (TYPE 7) / CMASD

PART NUMBERS: **CMASD X 7 X XX H1 XXXX XX XX**

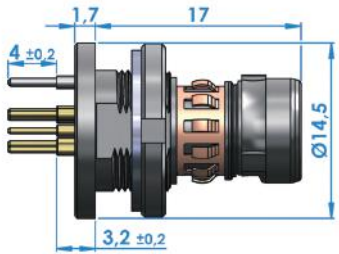
Description	Code
Series	CMASD
Aspect: 'Nothing mentioned': sandblasted Black version	B
Type of connector: Receptacle	7
Keyway	N, W, X, Y, Z
Number of contacts	08, 19
Contact: no indication : solder cup For PCB	H1
Ground pin: 1 ground pin 4 ground pin	PM PM4S
Panel oring: 'Nothing mentioned': Fluorosilicon Oring Fluorosilicon charged with Ni/Graph Oring Fluorosilicon charged Silver/Al Oring	JC JC1
Material: 'Nothing mentioned': stainless steel Marine stainless steel (250 hours salt fog) Marine bronze (500 hours salt fog)	SM BM



RECEPTACLE WITH CONTACTS FOR PCB

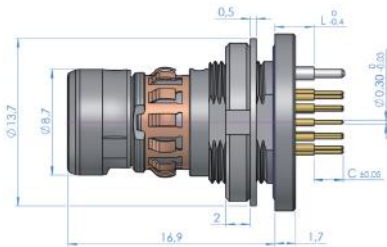
Receptacle (type 7) CMASD x 7 x xx H1 xxxx xx xx

Part numbers	Types of contacts	L	C
CMASD x 7 x 08 H1 xxxx xx xx	H1	3,2	4
CMASD x 7 x 19 H1 xxxx xx xx	H1	16,9	2,4



CMASD x 7 x 08 H1 xxxx xx xx

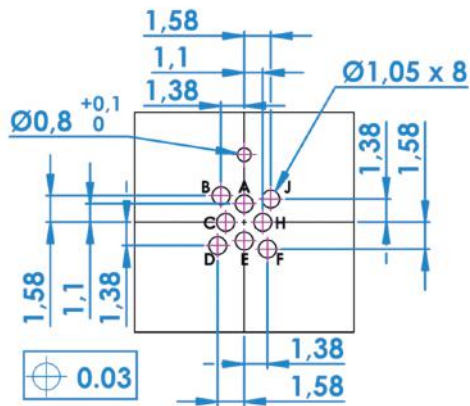
CMASD x 7 x 19 H1 xxxx xx xx



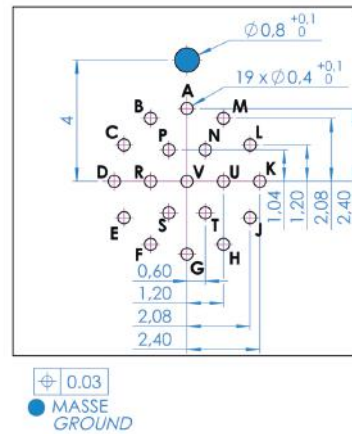
RECEPTACLES (TYPE 7) / CMASD

■ PCB HOLING

Welding side, through pins



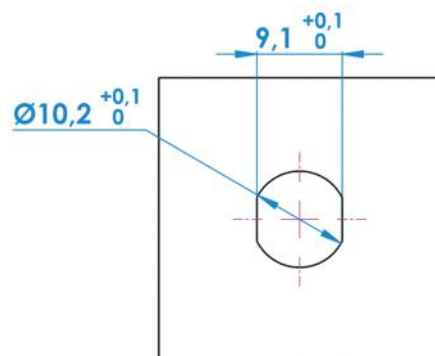
08 contacts



19 contacts

■ PANEL CUT

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



CAPS WITH MICROCABLE / CMASD

■ FOR PLUGS CMASD TYPE 5

Cap for CMA plug type 5 with ferule. It is designed with system of locking and mates on all males connectors of the BERNIER CMASD line for version N,W, X, Y, Z and T.

	Thermoplastic
With ferule*	CMASD BS06MC-200ST

* With ferule and no plastic clamp



CMASD BS06MC-200ST

■ FOR RECEPTACLES CMASD TYPE 7

for all keyways and all numbers of contacts version.

	Elastomer
With metallic ring	CMASD BS94MC-50B
With ferule*	CMASD BS94MC-200ST
With terminal for screw m3	CMASD BS94MC-75CSM3
With terminal 90° elbow for screw m3	CMASD BS94MC-75CSM390

* With ferule and no plastic clamp



CMASD BS94MC-50B

CMASD BS94MC-75CSM3

CMASD BS94MC-75CSM390

■ FOR EXTENSION CMASD TYPE 1

for all keyways and all numbers of contacts version.

	Elastomer
Avec ferule*	CMASD BS94MC-200ST

* With ferule and no plastic clamp

MATERIALS AND FINISH

Shell	- Plugs caps : Thermo-plastic - Receptacle and extension caps : elastomer
Microcable	Stainless steel with black jacket
Ferule	Aluminum alloy with black plating
Ring terminal	CMASD BS94MC-50B: stainless steel CMASD BS94MC-75CSM3: copper alloy with black plating CMASD BS94MC-75CSM390: tinned copper alloy

CLIMATIC AND MECHANICAL SPECIFICATIONS

Temperature range	-55°C +125°C
Tear off limit force for	> 120N
Protection rating	IP68





CMALD

PUSH-PULL
CONNECTORS

36 CONTACTS

Toughness and Ergonomics
combined with a
high contact density
configuration!

ERGONOMICS | STAINLESS STEEL | EMI RFI PROTECTION | MULTICONTACTS | WATERTIGHT



a HELICO Company

BERNIER

TECHNICAL DATA / CMALD

■ CLIMATIC AND MECHANICAL CHARACTERISTICS

	CMALD
Unlocking system	Push-Pull
Operating temperature Range	-55°C à +125°C
Endurance (connect disconnect)	5 000 operations
Sealing performance	IP68 (connected and disconnected)
Corrosion resistance Salt fog :	Stainless steel: 96 hours Navy stainless steel: 250 hours Navy bronze: 500 hours
Fluids resistance	Oils and hydrocarbons

■ 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	Aluminum alloy	Black Chrome or Black anodizing



WEIGHTS / CMALD

CONNECTORS

TYPE OF SHELL	Weight (Max)
Plug Push-Pull (CMALD 5)	24,5 g
Extension (CMALD 1)	24,5 g
Receptacle (CMALD 7)	23,5 g

Stainless steel version.

BACKSHELL

TYPE OF BACKSHELLS	Weight (Max)
Straight backshell with knurling (CMALD R86-xx)	16 g

KEYWAYS / CMALD



Receptacle

FRONT VIEW

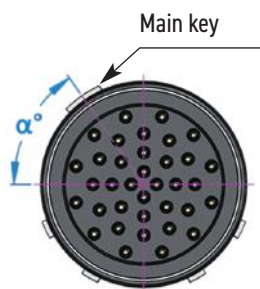


Plug

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

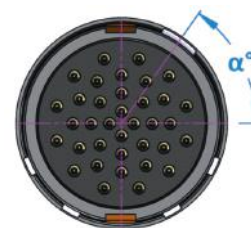
		Keyways				
		N	W	X	Y	Z
Angle α	36 contacts	55°	40°	25°	135°	155°

RECEPTACLE - EXTENSION



36 contacts

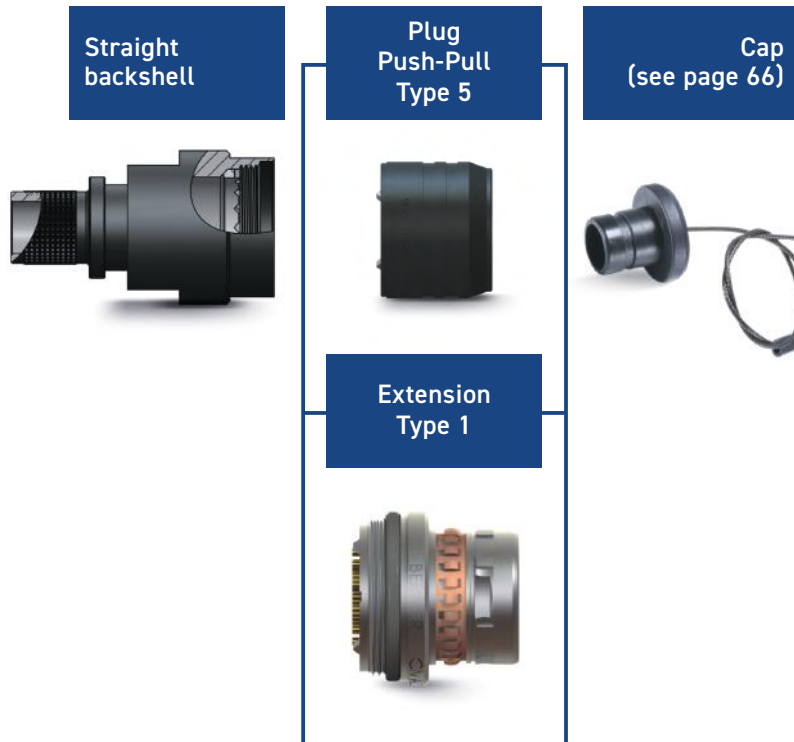
PLUG



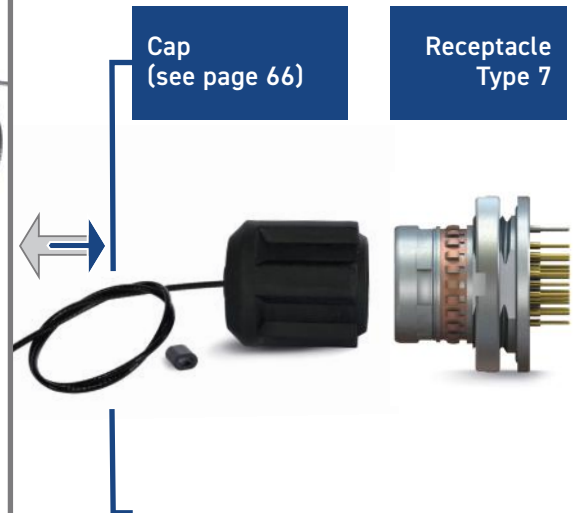
36 contacts

SYNOPTIC / CMALD

■ ITEMS MOUNTED ON CABLE



■ ITEMS MOUNTED ON PANEL



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

COMPATIBILITY / CMALD

Attention: compatible connectors must have the same number of contacts and the same keyway to be able to connect to each other.



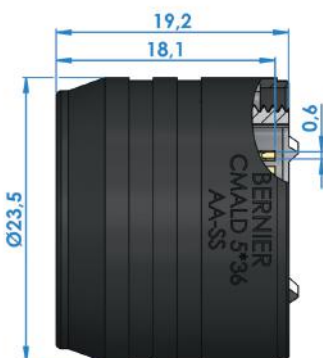
PLUGS (TYPE 5) / CMALD

PART NUMBERS: **CMALD 5 X 36 XX**

Description	Code
Series	CMALD
Aspect : 'Nothing mentioned': sandblasted Black version (by default for type 5)	
Locking: Nothing mentioned': Push-Pull	
Connector type: Plug	5
Keyway	N, W, X, Y, Z
Number of contacts	36
Contact: 'Nothing mentioned': solder cup	
Material: 'Nothing mentioned': stainless steel Marine stainless steel (250 hours salt fog) SM Marine bronze (500 hours salt fog) BM	

CMALD

■ PLUG WITH SOLDER CUP



Push-pull version | CMALD 5 x 36 xx

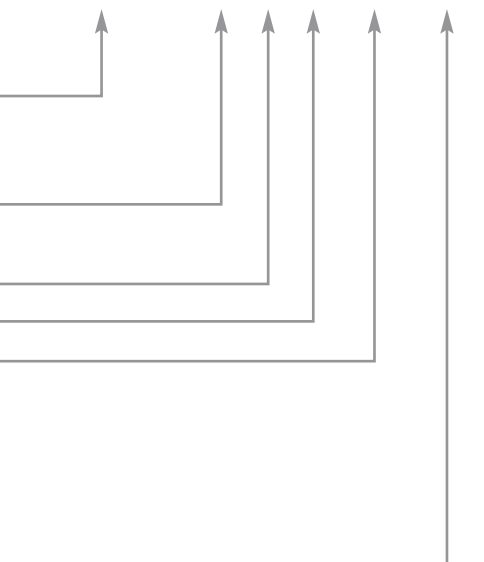
Part numbers	Number of contacts	AWG
CMALD 5 x 36 xx	36	AWG 26

EXTENSION (TYPE 1) / CMALD

CMALD

PART NUMBERS: **CMALD X 1 X 36 XX**

Description	Code
Series	CMALD
Aspect: 'Nothing mentioned': sandblasted Black version	B
Connecteur type: Extension	1
Keyways	N, W, X, Y, Z
Contact number	36
Contact: 'Nothing mentioned': solder cup	
Material: 'Nothing mentioned': stainless steel Marine stainless steel (250 hours salt fog) Marine bronze (500 hours salt fog)	SM BM



EXTENSION WITH SOLDER CUP

CMALD x 1 x 36 xx		
Part numbers	Number of contacts	AWG
CMALD x 1 x 36 xx	36	AWG 26



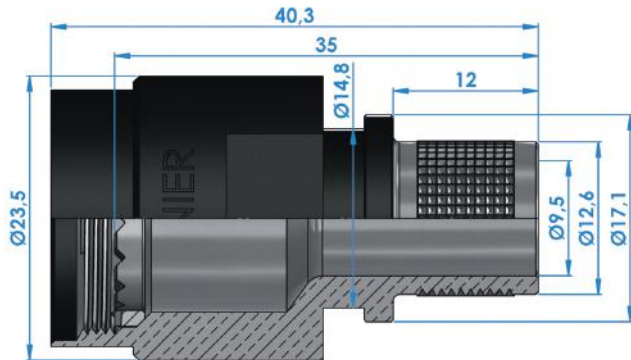
BACKSHELL / CMALD

■ STRAIGHT BACKSHELL WITH KNURLING

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

CMALD RA86-xx

For other size, contact us.



CMALD



RECEPTACLES (TYPE 7) / CMALD

PART NUMBERS: **CMALD X 7 X 36 H1 XXXX XX XX**

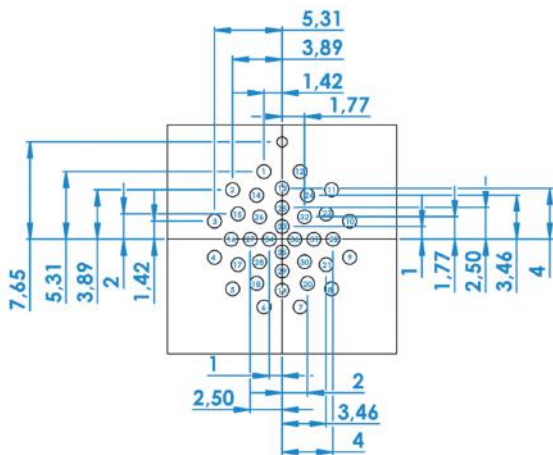
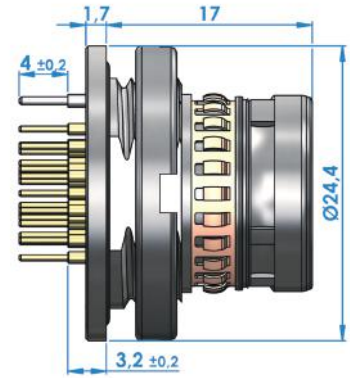
Description	Code
Series	CMALD
Aspect : 'Nothing mentioned': sandblasted Black version	B
Connector type: Receptacle	7
Keyways	N, W, X, Y, Z
Contact number	36
Contact: Nothing mentioned: Solder cup for PCB	H1
Ground pin: 1 ground pin 4 ground pins	PM PM4S
Panel oring: 'Nothing mentioned': fluorosilicon oring Fluorosilicon charged Ni/Graph Oring Fluorosilicon charged Ag/Al Oring	JC JC1
Material: 'Nothing mentioned': stainless steel Marine stainless steel (250 hours salt fog) Marine bronze (500 hours salt fog)	SM BM



RECEPTACLE FOR PCB

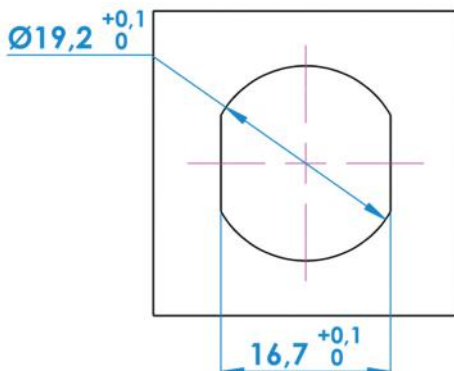
Receptacle (type 7) CMALD x 7 x 36 H1 xxxx xx xx

Part numbers	Types of contacts	L	C
CMALD x 7 x 36 H1 xxxx xx xx	H1	3,2	4



PCB HOLING

welding side, through pins



PANEL CUT CMALD TYPE 7

Front view side

Maximum panel thickness

for CMALD receptacles: 2.8mm

CAPS / CMALD

PART NUMBERS: CMALD BL XXX MC XXX XXX

Description	Code
Series	CMALD

Product designation	BL
---------------------	----

Type of cap:	
For plugs type 5	
Thermoplastic	6
Black metal	65
For receptacles types 3,6 et 7	
Elastomer and metallic ring by default	86
Elastomer Crimped eyelet for M3 screw	98
Elastomer with 90° crimped eyelet for M3 screw	81
Elastomer with eyelet for M3 screw	91
Elastomer with specific eyelet for 3 caps	84
Metallic caps	100

Type of cord:	
Stainless steel with black jacket	MC

Length of cord:	
For plugs type 5	
200 mm	200
For receptacles types 3,6 et 7	
35 mm	35
50 mm *	50

Terminations :	
For plugs type 5	
Plastic clamp "Tyrap" by default	
Ferule	ST
For receptacles types 3,6 et 7	
Nothing	
30° flat metal flange	30
45° flat metal flange	45
* With microcable length of 50 mm, 315° flat metal flange	315

For **versatility in data transmission**
audio, video
and energy!

CMA USBC

PUSH-PULL
CONNECTORS

HIGH SPEED DATA
USB 3.2 GEN 2

ERGONOMICS | STAINLESS STEEL | EMI RFI PROTECTION | USB 3.0 | WATER TIGHT



a HELICO Company

BERNIER

TECHNICAL DATA / CMA-USBC

■ CLIMATIC AND MECHANICAL CHARACTERISTICS

	CMA-USBC
Locking system	Push-Pull
Operating temperature Range	-55°C +125°C (plug type 5) / -40°C +85°C (receptacle type 7)
Endurance (connect / disconnect)	10 000 operations (see USB-C selected cable)
Sealing performance	Under 4 m of water / 24 h mated
Corrosion resistance "salt fog"	Stainless steel: 96 hours
Fluids resistance	Oils and hydrocarbons

■ ELECTRICAL CHARACTERISTICS

	CMA-USBC
Resistance between Cable ground and CMA shell ground	≤ 100 mΩ
Working voltage	30 V _{max}
Current rating	5 A _{max} on A4,B4,A9 et B9 / 0,25 A _{max} other
Contact resistance	≤ 50 mΩ
Insulation resistance	> 100 MΩ
Dielectric	100 V _{eff} at 50 Hz 1min.

* CMA 7N-USBC-PCBX compatible with USB3.2 Gen 2 (10Gb/s). BERNIER CONNECT has performed high-speed 10G Ethernet and USB3.2 Gen 2 protocol tests on the CMA 7NUSBC-PCBx series. Latest-generation USB4 and HDMI2.1 protocols can also be tested on request.

■ MATERIAL AND PLATING

	Materials	Plating
Connector shell	Stainless steel	Blasted and passivated
Unlocking ring	Stainless steel	Black plating
Ground ring	Copper alloy	-
Nut, washer	Stainless steel	Blasted and passivated
Panel oring	Fluorosilicone or conductor fluorosilicone	-
Contacts & PCB	Copper alloy	Gold over nickel plating
PCB insulator	FR4	-
Insulator	Thermoplastic and epoxy resin	-



WEIGHTS / CMA-USBC

CONNECTORS

TYPE	Weight (Max)
Push-Pull plug (CMA-USBC 5)	30 g
Receptacle (CMA-USBC 7)	18 g

Stainless steel version.

BACKSHELL

TYPE OF BACKSHELLS	Weight (Max)
USB-C plug cable backshell (CMA-USB RA50)	23 g

CAPS

For plug (type 5) and receptacle (type 7), refer to CMA caps (page 9).

KEYWAYS / CMA-USBC



Receptacle

FRONT VIEW



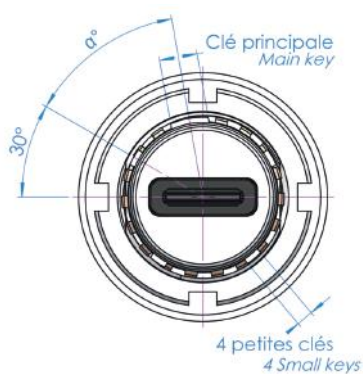
Plug

The different keyways result from the movement of the main key. The positions of the 4 small keys, the contacts and the receptacle flats are invariable.

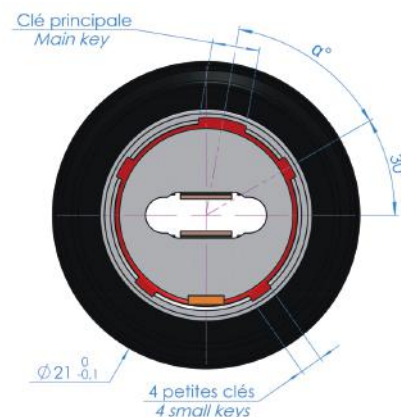
		Keyways					
		N	W	X	Y	Z	P*
Angle α	USBC	60°	50°	70°	40°	80°	103°

* The P code can be combined with another keyway to create a double-keyway plug.

RECEPTACLE - EXTENSION



PLUG



SYNOPTICS / CMA-USBC

ITEMS MOUNTED ON CABLE

Backshell CMA USB-C



Plug Push-Pull Type 5



Cap (see page 39)



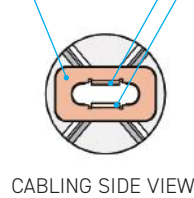
USBC

Ground ring (not provided)



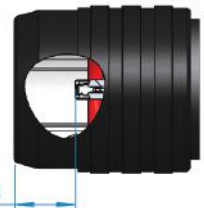
The surface must be in contact with the plastic body of the USB-C cable

The vanes must be in contact with the metal housing of the USB-C cable

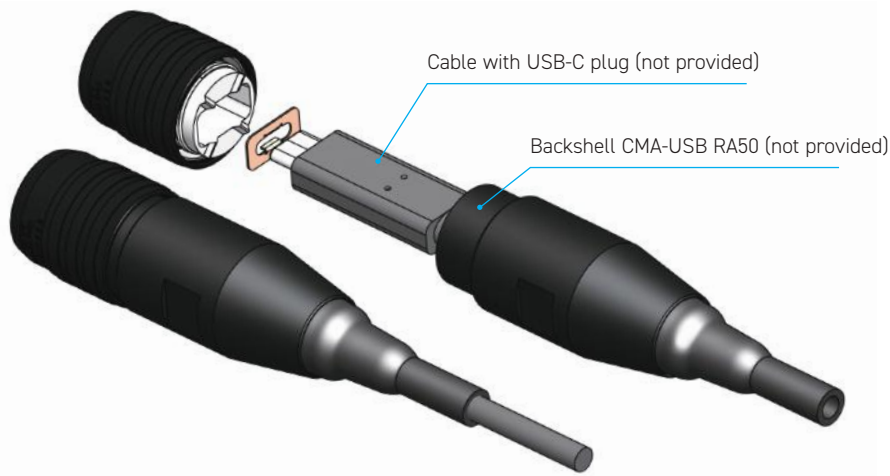


CABLING SIDE VIEW

7,6 ±0,3



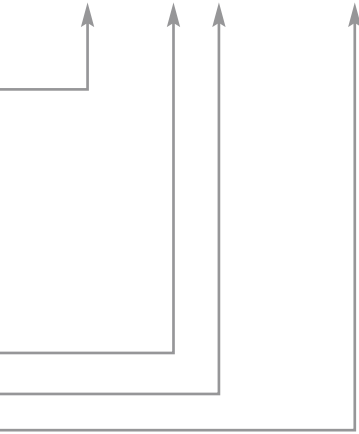
ADVISE MOUNTING EXAMPLE



PLUGS (TYPE 5) / CMA-USBC

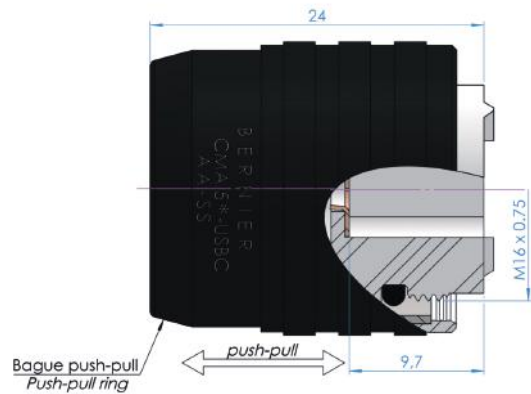
PART NUMBERSS : **CMA 5 X - USBC**

Description	Code
Series	CMA
Aspect:	"Nothing mentioned": Black version
Locking:	"Nothing mentioned": Push-Pull
Connector type :	
Plug	5
Keyways	N, W, X, Y, Z, P
Contacts	USBC



PLUGS USBC

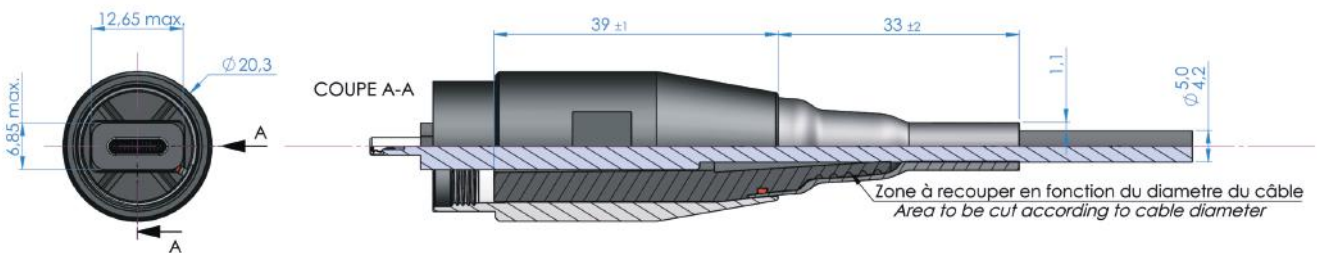
Push-Pull version CMA 5 x - USBC		
Part numbers	Ø diam	L
CMA5x-USBC	21	24



BACKSHELL / CMA-USBC

CMA-USB RA50

Backshell CMA-USB RA50, requiring assembly with USB-C Plug on cable (not supplied). It can mate on all plugs, cable extensions and panel through BERNIER CMA-USB line. A heat shrink tubing provided ensures the rear sealing of the backshell. Compensators are provided to adapt the length of the USB cable housing to the length of the USB sleeve.



MATERIALS AND FINISH

Shell and tightening ring	Aluminum alloy with black plating
Sleeve USB	TPU
O-ring	Elastomer

Heat shrink tubing	Polyolefin adhesive
Weight	23g max
Locking torque	6N.m

RECEPTACLES (TYPE 7) / CMA-USBC

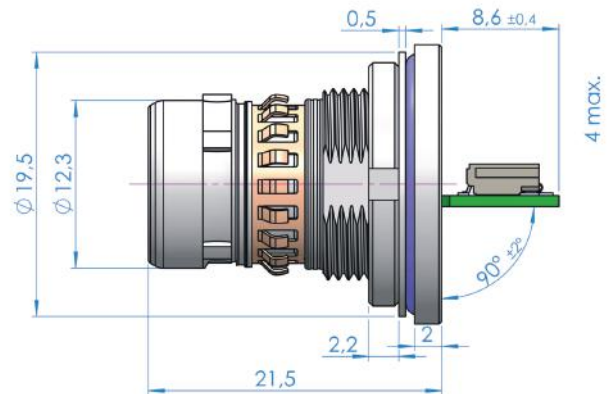
PART NUMBERS: CMA X 7 X - USBC PCB X X X

Description	Code
Series	CMA
Aspect : 'Nothing mentioned': sandblasted Black version	B
Type of connector: Receptacle	7
Keyways	N, W, X, Y, Z, P
Contacts	USBC
Default PCB PCB Type	PCB 1, 1.1, 2, 3
Panel oring: 'Nothing mentioned': fluorosilicon oring Fluorosilicon charged Ni/Graph Oring	JC
Fluorosilicon charged Ag/Al Oring	JC1
KIT Oring - Nut- Washer Assembled on receptacle: no indication Disassembled from receptacle	DA

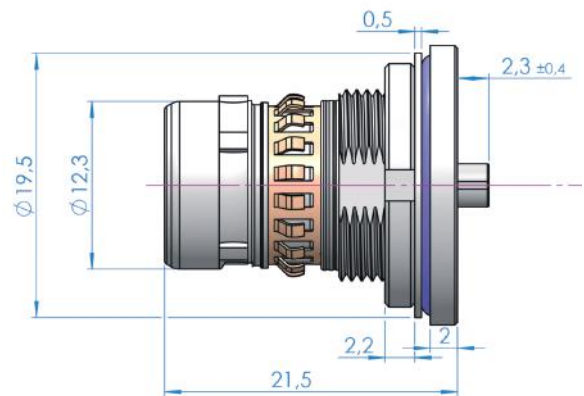
RECEPTACLES USBC

Receptacle (type) USB-C | CMA x 7 - USBC PCB x x x

Part numbers	∅ diam	L	Type PCB	A	Specification
CMA 7N-USBC PCB	20,5	21,5	PCB		
CMA7N-USBC PCB1	20,5	21,5	1	8	6 pads
CMA7N-USBC PCB1.1	20,5	21,5	1.1		6 pads
CMA 7N-USBC PCB2	20,5	21,5	2	8,6	FFC/FPC 15 cts
CMA 7N-USBC PCB3	20,5	21,5	3		USB-C



Ex. CMA 7N-USBC PCB JC

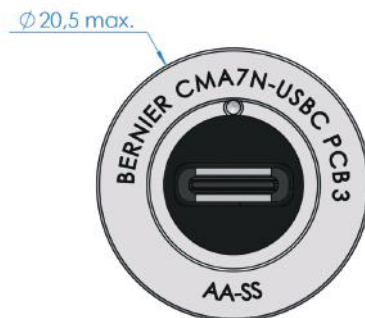


Ex. CMA 7N-USBC PCB3

Other part numbers
receptacles
CMA-USBC :

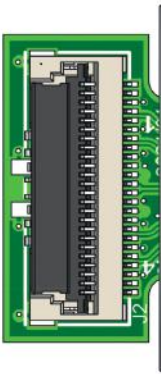
CMA 7N-USBC PCB1
Receptacle CMA-USBC keyway
N PCB1 inverted flange

CMA7N-USBC CABLE
Receptacle CMA-USBC Keyway
N USB-C plug cable output



■ CABLING SIDE

PCB



MOLEX 502244-2430		PCB
GND SHELL		GND SHELL
3, 6, 9, 16, 19, 22	GND	A1, B1, A12, B12
1, 2, 23, 24	VBUS	A4, B4, A9, B9
13	D+	A6, B6
12	D-	A7, B7
15	CC1	A5
10	CC2	B5
11	SBU1	A8
14	SBU2	B8
18	TX1+	A2
17	TX1-	A3
21	RX1+	B11
20	RX1-	B10
4	TX2+	B2
5	TX2-	B3
7	RX2+	A11
8	RX2-	A10

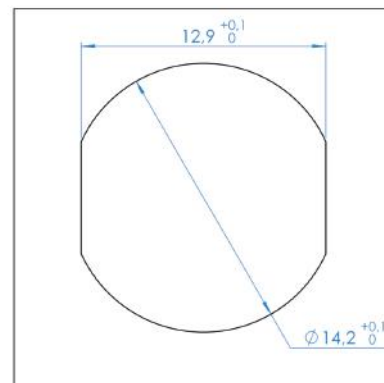
PCB3

USBC		USBC
GND SHELL		GND SHELL
A1, B1, A12, B12	GND	A1, B1, A12, B12
A4, B4, A9, B9	VBUS	A4, B4, A9, B9
A6, B6	D+	A6, B6
A7, B7	D-	A7, B7
A5	CC1	A5
B5	CC2	B5
A8	SBU1	A8
B8	SBU2	B8
A2	TX1+	A2
A3	TX1-	A3
B11	RX1+	B11
B10	RX1-	B10
B2	TX2+	B2
B3	TX2-	B3
A11	RX2+	A11
A10	RX2-	A10



■ PANEL CUT FOR RECEPTACLE CMA-USBC TYPE 7

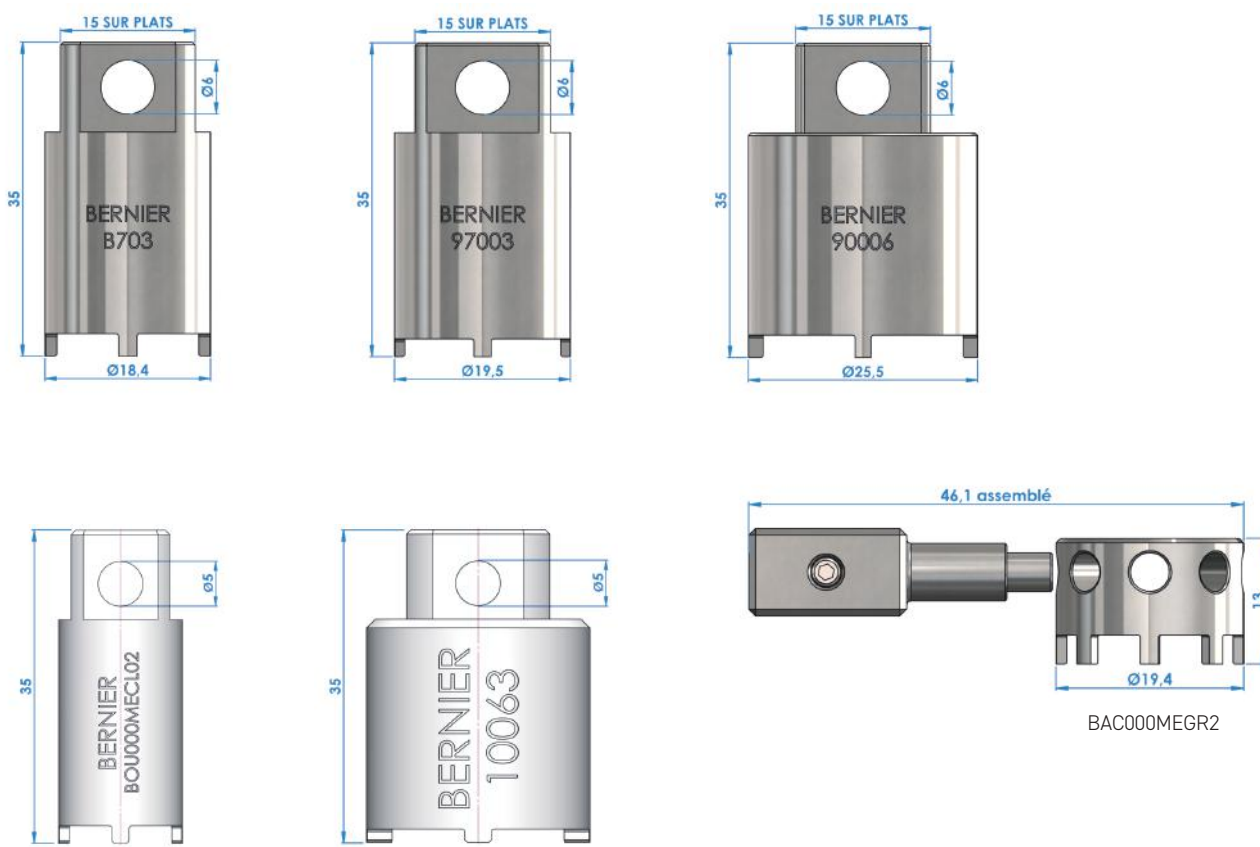
Front face, thickness max: 3.5 mm



TOOLS

■ TIGHTENING TOOLS

Tightening tools for:		Part numbers
CMA	for receptacles type 7	B703
CMA	for receptacle type 2	97003
CMA	for panel plugs types 11, 17 and 19	90006
CMA	for panel plugs type 18	BAC000MEGR2
CMASD	for receptacle type 3, 7 et R7	BOU000MECL02
CMALD	for receptacle type 7	10063



■ TIGHTENING TORQUE

Connector material	Torque For receptacle types 3, 7 and R7	Torque for backshells
Stainless steel	9 N.m	6 N.m
Navy bronze	11 N.m	6,1 N.m
Navy stainless steel	9 N.m	6 N.m

TOOLS

■ MECHANICAL COUNTER PART

Description	Part numbers
Antirotation plug to tighten the backshell on extension with xx contacts	BOUExxMENA01 (xx: number of contacts)
Antirotation receptacle to tighten the backshell on plug with xx contacts	BOUFxxMENA01 (xx: number of contacts)



BOUE14MENA01



BOUF14MENA01

■ ELECTRICAL COUNTER PART

Description	Part numbers
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)



CMA12T14YA



CMA 7T14Y1

Available with solder cup contacts

TOOLS

■ TOOLS FOR CAP INSTALLATION

Description	Part numbers
Tool to crimp the ferule on microcable	BOU000MESE01
Tool to crimp the ferule on the nylon cord	B705



TOOLS

■ TOOLS FOR THE BACKSHELL TIGHTENING

Description	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



BOU000MESE02



B458



RH50



B704

NOTES

NOTES



a **HEICO** Company

BERNIER

4, avenue Concordet
91240 Saint-Michel-sur-Orge
France
Tél. +33 1 60 84 21 40