

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



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.

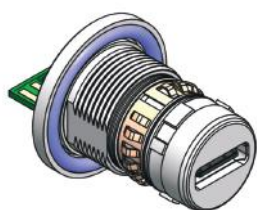
BACKSHELL

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



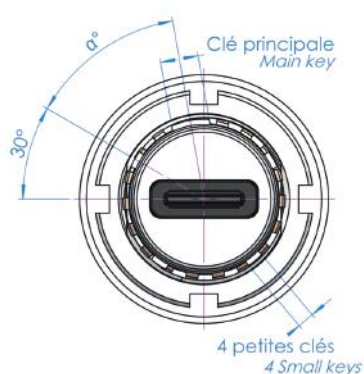
Plug

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

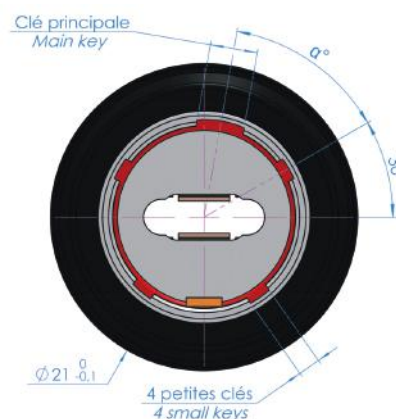
		Keyways					
		N	W	X	Y	Z	P*
Angle α	USBC	60°	50°	70°	40°	80°	103°

* 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)



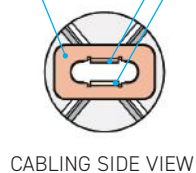
USBC

Ground ring (not provided)



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

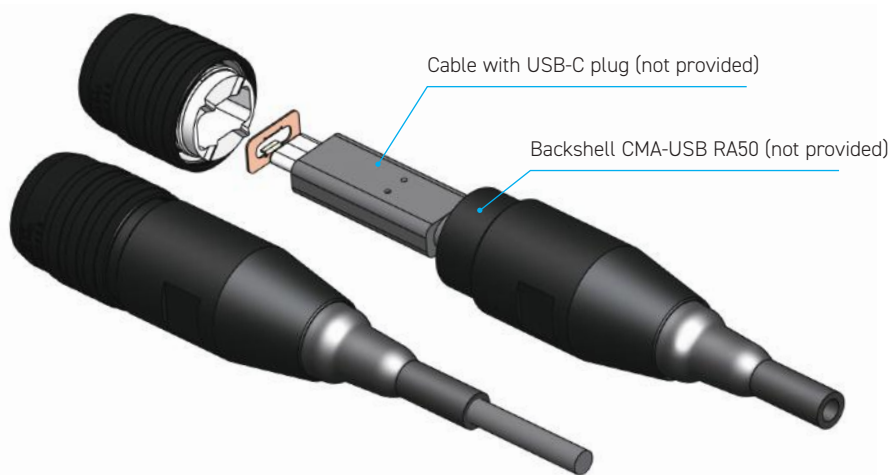
The vanes must be in contact with the metal housing of the USB-C cable



7,6 ±0,3



ADVISE MOUNTING EXAMPLE



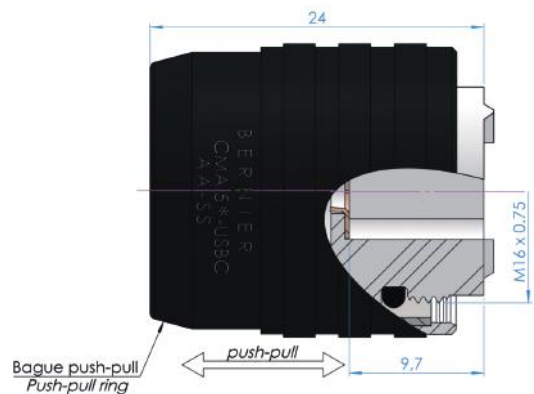
PLUGS (TYPE 5) / CMA-USBC

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

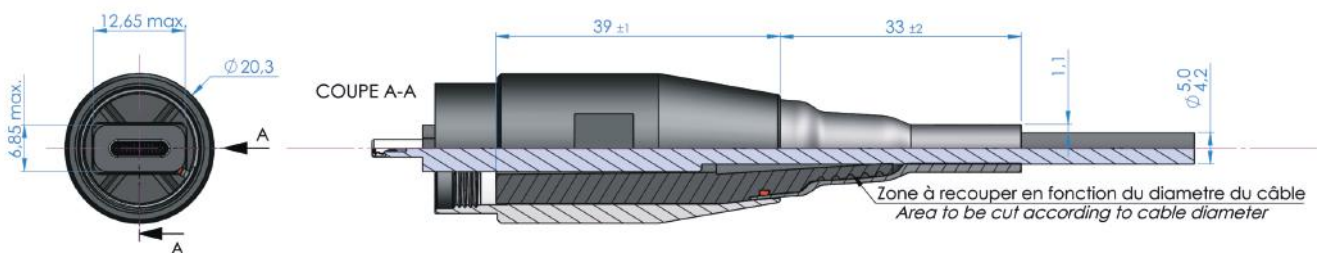
Push-Pull version CMA 5 x - USBC		
Part numbers	Ø diam	L
CMA5x-USBC	21	24



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

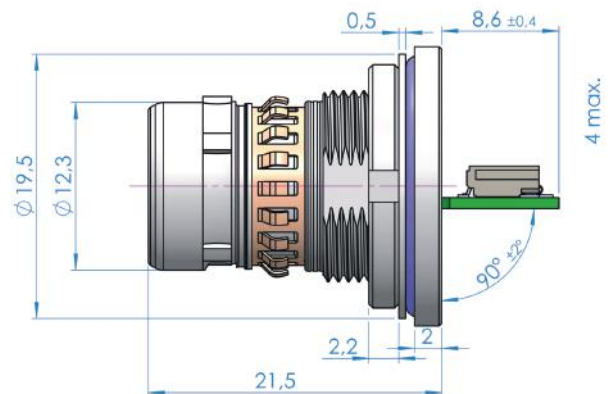
PART NUMBERS: CMA X 7 X - USBC PCB X X X

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 Fluorosilicon charged Ag/Al Oring	JC JC1
KIT Oring - Nut- Washer Assembled on receptacle: no indication Disassembled from receptacle	DA

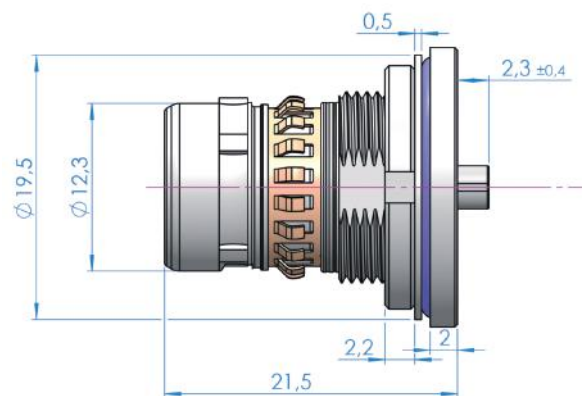
RECEPTACLES USBC

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

Part numbers	Ø 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

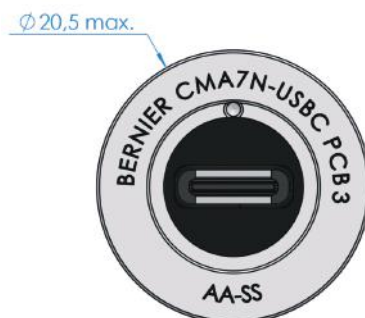


Ex. CMA 7N-USBC PCB3

Other part numbers
receptacles
CMA-USBC :

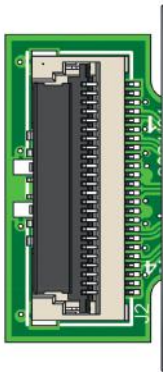
CMA 7N-USBC PCB1
Receptacle CMA-USBC keyway
N PCB1 inverted flange

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

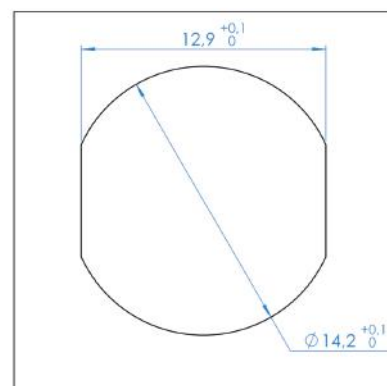
PCB3

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

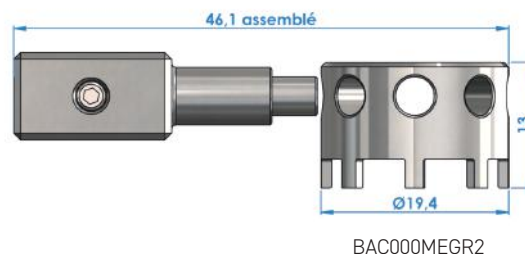
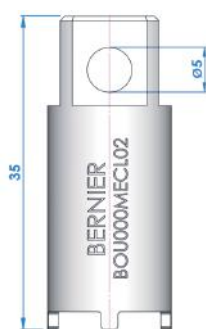
Front face, thickness max: 3.5 mm



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



BOU000MESE01



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



BERNIER

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