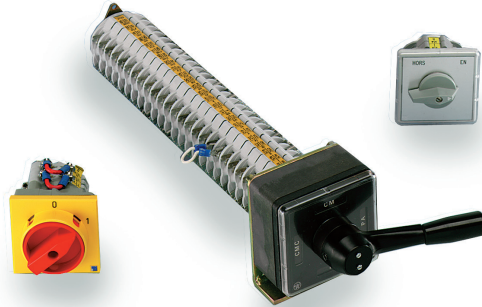


# Standard 16A Switches & Low Level Switches with Self-cleaning Contacts



**MAFELEC**

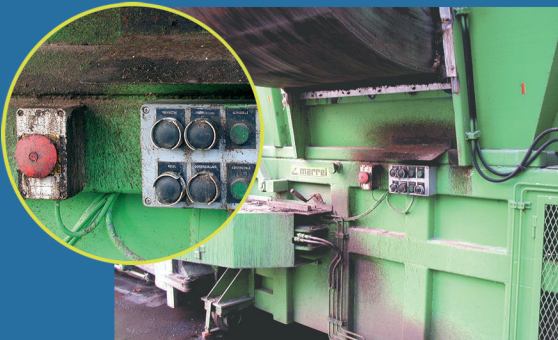
# Creating control and signalling solutions for harsh environments.



Visit MAFELEC at our website: [www.mafelec.fr](http://www.mafelec.fr)



MAFELEC is a specialist in the design of control and signalling components intended to operate in the cold, heat, projections of liquids, dust, shock, vibration, ...



Examples of applications :  
External controls for a compactor.



Railway control station.

## THE QUALITY APPROACH

In a context where markets are ever more competitive, MAFELEC stands out for its voluntarist quality approach, aimed at customer satisfaction.

Very active involvement at all levels in the Company has enabled MAFELEC to obtain certification to :

- ISO 9001 V2000
- OTIS Q+ (Otis lifts)
- AQAP 110 (Defence)
- RQPF (Paris Underground/Subway)

Strengthened by our success in Quality, the Company is continuing its efforts towards a certified environmental approach :

- ISO 14001

# Standard C800 16A Switches & CBN800 Switches from 10 mA



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# Standard C800 16A Switches & CBN800 Switches from 10 mA



## General Characteristics

These switches are designed for currents ranging until 16A, and voltages from 20 V to 500 V, depending on the type, standard C800, or low level with self-cleaning contacts CBN800, even in aggressive and contaminating industrial environments. However, their breaking power with direct or rectified current is naturally lower than when alternating current is used.

Particularities:

### Mechanism

- 4 or 8 positions for the normal versions.
- 4 positions for the reinforced versions designed for severe operating and handling conditions, and especially where the number of stacks is high.

### Electrical stack

- 2 independent "double-break" type contacts per stack, each activated by a cam.
- From 10 W for the standard C800 version.
- CBN800 version with self-cleaning contacts :
  - PD1 degree of pollution : from 10mA with computer entry,
  - PD2 degree of pollution : from 100mA with computer entry.
- Standard mechanism : up to 8 stacks i.e. 16 contacts, from 8 to 12 stacks contact us (beyond 12 stacks, a double mechanism is possible)
- Reinforced mechanism : up to 40 stacks i.e. 80 contacts.

## Environmental Characteristics

### Compliance with standards

IEC & NF EN 60 947-1  
IEC & NF EN 60 947-3

### Protective finish

Tropicalisation (operation at + 65°C with 95 % humidity).

### Degree of protection

IEC & NF EN 60 529 IP 65 (on request)

### Temperature

Storage: - 40°C to +70°C  
Operating: - 25°C to +70°C (- 40°C on request).

### Vibration resistance

5g from 25 to 250Hz

### Shock resistance

30g (1/2 sine waveform, for 11ms)

## Contacts characteristics

### Mechanical life expectancy

Standard mechanism  $10^5$  to  $6 \times 10^5$   
Reinforced mechanism  $3 \times 10^5$

### Electrical durability

Rated thermal current 16 A.  
Rated insulation voltage 500 V.

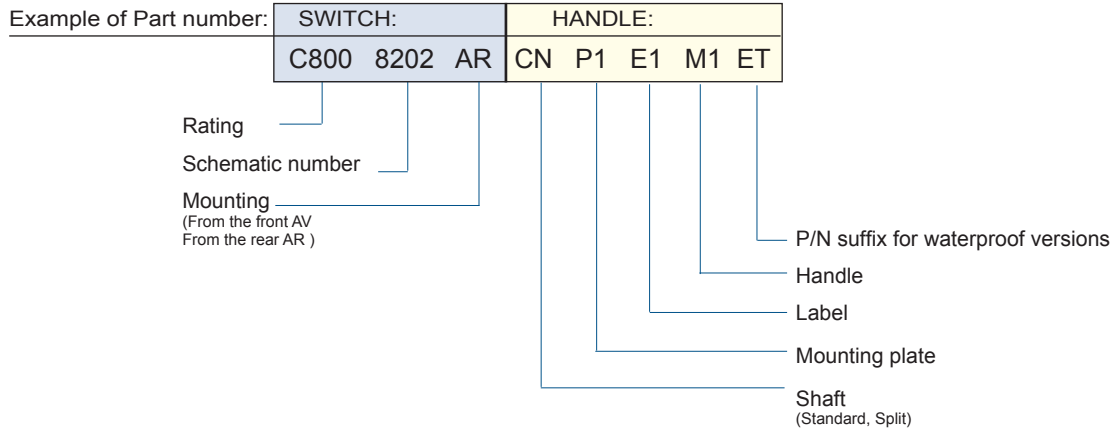
## Change in contact Resistance : CBN800

I in mA	U in V	Contact resistance when new	Contact resistance after $3 \times 10^5$ switching ops.
10	72	$\leq 30 \text{ m}\Omega$	$\leq 30 \text{ m}\Omega$
400	72	$\leq 30 \text{ m}\Omega$	$\leq 30 \text{ m}\Omega$
2000	72	$\leq 30 \text{ m}\Omega$	$\leq 30 \text{ m}\Omega$

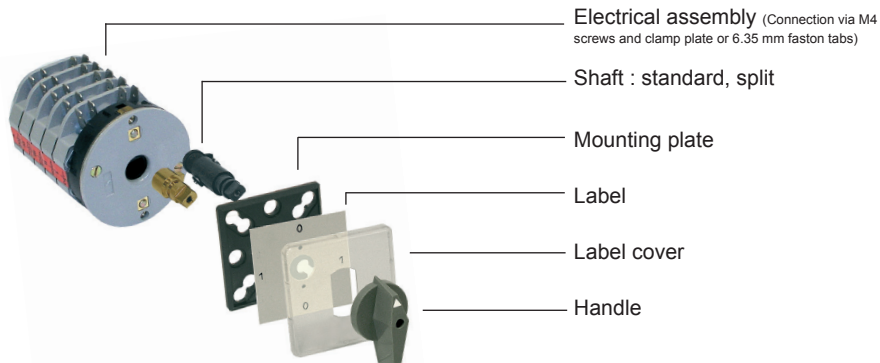
# C800 - CBN800 Switches



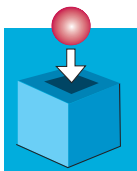
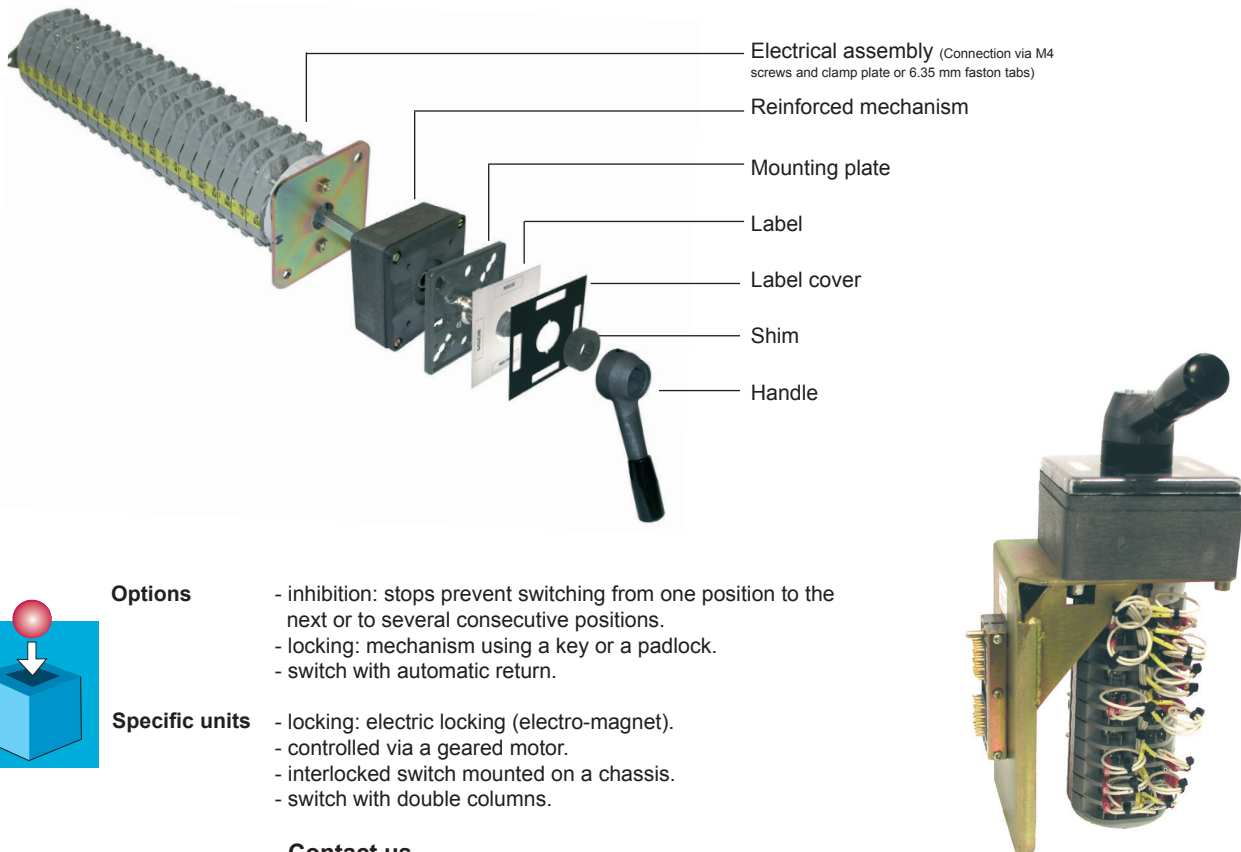
## Composition



## Standard C800 and CBN800 switches



## C800 et CBN800 switches with reinforced mechanism



### Options

- inhibition: stops prevent switching from one position to the next or to several consecutive positions.
- locking: mechanism using a key or a padlock.
- switch with automatic return.

### Specific units

- locking: electric locking (electro-magnet).
- controlled via a geared motor.
- interlocked switch mounted on a chassis.
- switch with double columns.

Contact us.

## Control devises

### Handles

Description	Colour	Part number	Weight kg
Standard plastic paddle 45 x 22	Grey	<b>M 1</b>	0.005
	Black	<b>M 1 N</b>	
Standard plastic paddle 60 x 30	Grey	<b>M 2</b>	0.010
	Black	<b>M 2 N</b>	
Ball-end lever Steel stem		<b>M5</b>	0.130
Plastic handle	Grey	<b>M4</b> <b>M4 N</b>	0.020
	Black		
Plastic handle locking device : standard 620 key (for other keys, contact us)	Grey	<b>M6</b>	0.150
Plastic handle with plunger for locking with 1,2,3 padlocks	Grey	<b>M7</b>	
Lever for reinforced mechanism	Grey	<b>MXQ 068A1</b> <b>MXQ 068A0</b>	0.104
	Black		



### Control shafts

Description	Part number	Weight kg
Standard shaft (CN) for projecting or flush mounting	<b>CN</b>	0.020
Split shaft (CR) for mounting the handle on a moving support (door, removable front panel, ...)	<b>CR</b>	0.015



### Mounting plates

Description	Colour	Part number	Weight kg
Plastic mounting plate 70x70 mm and transparent label cover 75x75 mm	Grey	<b>P1</b> <b>P1 N</b>	0.035
	Black		
Plastic mounting plate 85x85 mm and transparent label cover 90x90 mm	Grey	<b>P3</b> <b>P3 N</b>	0.055
	Black		
Metal label cover for P/N P3 only	Black	<b>J5</b>	0.060



# C800 - CBN800 Switches



## Control devices

### Padlockable mounting plate and paddle

Description	Part number	Weight kg
-------------	-------------	-----------

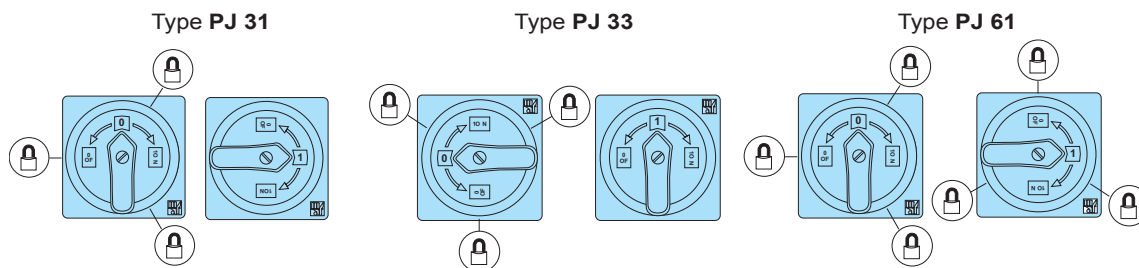
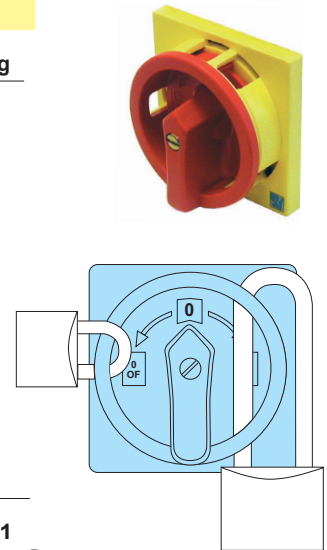
Mounting plate and paddle can be padlocked in 1 or 2 positions, in standard IP409 or waterproof IP699 version (add **ET** to the P/N). Positions visible both from the front and from the side.  
Plastic material.

**1 padlockable position**  
Standard shaft

**QCN PJ 31MR**  
**QCN PJ 33MR**  
**QCN PJ 61MR**

0.056

**2 padlockable positions**  
Standard shaft



### PVC Labels

Description	Colour	Part number	Weight kg
-------------	--------	-------------	-----------

Blank label (to be engraved) 63 x 63 (P1 mounting plate)

Grey

**E.100**

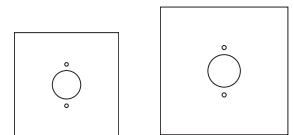
0.001

Blank label (to be engraved) 77 x 77 (P3 mounting plate)

Grey

**E.200**

0.002



### Aluminium Labels

Description	Colour	Part number	Weight kg
-------------	--------	-------------	-----------

Blank label 63 x 63 (P1 mounting plate)

Grey

**E.300**

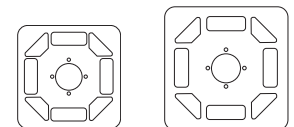
0.002

Blank label 77 x 77 (P3 mounting plate)

Grey

**E.400**

0.003



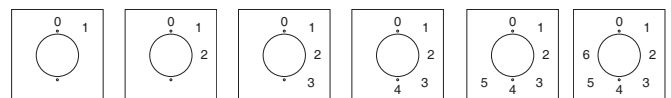
Label with standard markings

Grey background  
black text

Use the P/N root as follows:

**E1..** for P1 mounting plate

**E2..** for P3 mounting plate



**E110**  
**E210**

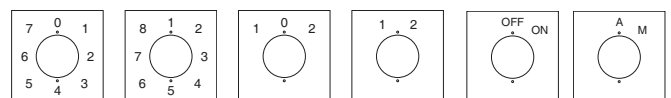
**E111**  
**E211**

**E112**  
**E212**

**E113**  
**E213**

**E114**  
**E214**

**E115**  
**E215**



**E116**  
**E216**

**E117**  
**E217**

**E118**  
**E218**

**E119**  
**E219**

**E120**  
**E220**

**E121**  
**E221**



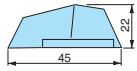
# C800 - CBN800 Switches



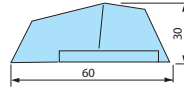
## Dimensions

### Handles

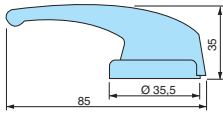
M1



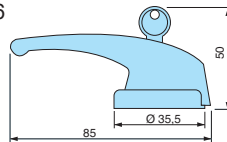
M2



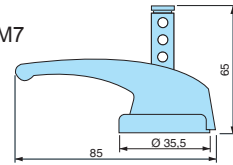
M4



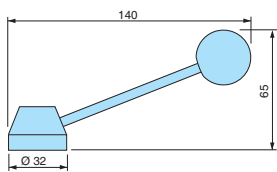
M6



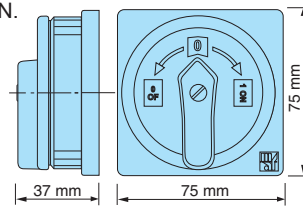
M7



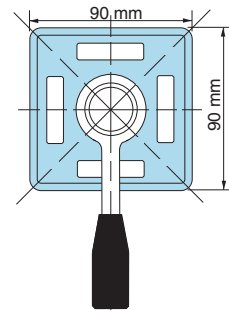
M5



QCN.



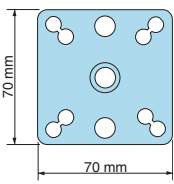
CBN.



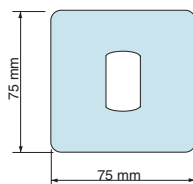
### Mounting plate and label cover

P1

Mounting plate

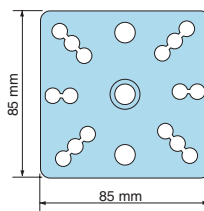


Label cover

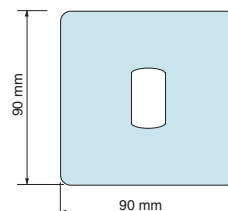


P3

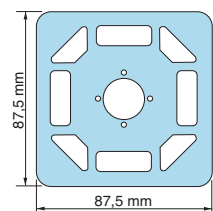
Mounting plate



Label cover



J5

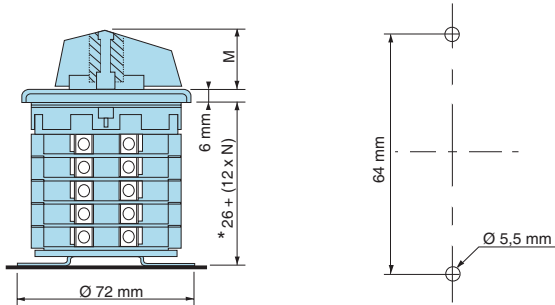


# C800 - CBN800 Switches



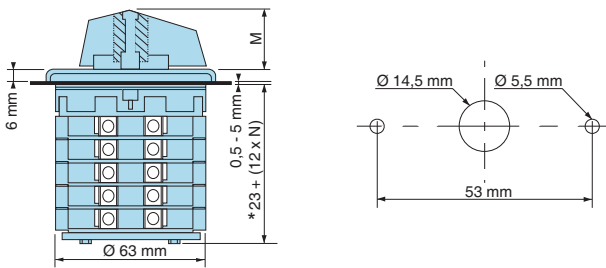
## Dimensions and panel cut-outs: C800 switch

### Projecting mounting (device attached via the rear plate) : AR

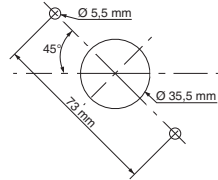


\*Where AR attachment is used with M6 or M7 lockable handles :  
The 26 mm dimensions becomes 38 mm.

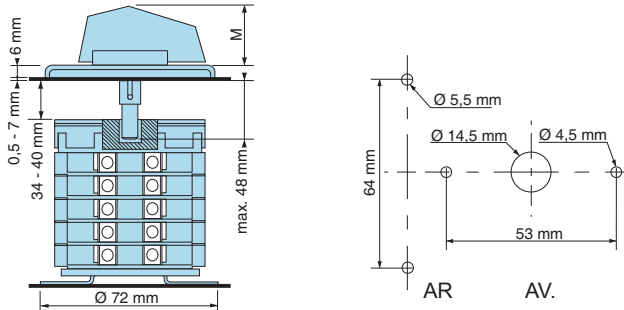
### Flush-mounted (device attached via the front panel, from the front) : AV



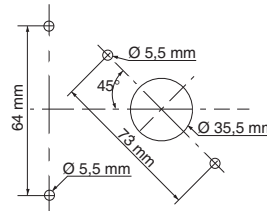
\*Where AV attachment is used with M6 or M7 lockable handles:  
The 23 mm dimension becomes 35 mm.



### Split mounting (unit attached via the rear plate and mounting plate/handle on mobile front panel) : CR



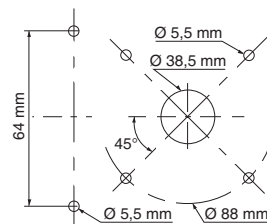
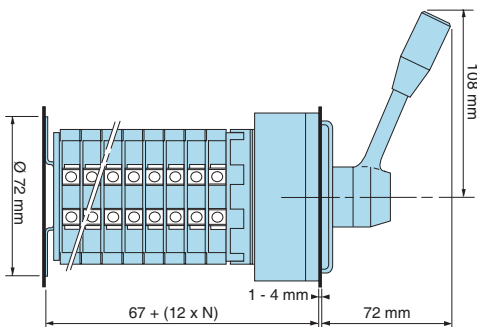
Panel cut-out where AV attachment is used with M6 or M7 lockable handles.



## Dimensions and panel cut-outs : CBN800 switch

### Units with a reinforced mechanism

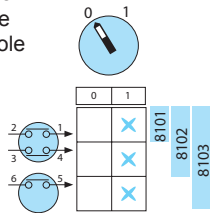
Where there are more than 16 tiers (i.e. 32 contacts) or where the operating conditions are particularly severe, the unit is fitted with a reinforced mechanism (housing moulded in light alloy, cams and positioning stops in heat-treated steel).



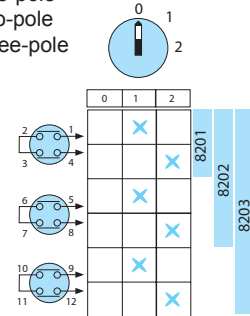
# C800 - CBN800 Switches

Standardised schematics (See our "Control components" catalogue for other standardised schematics)

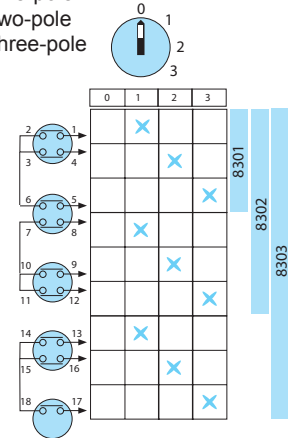
2 positions On-Off switch  
one-pole  
two-pole  
three-pole



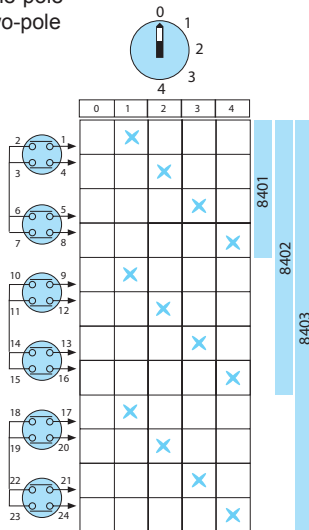
3 positions switch  
one-pole  
two-pole  
three-pole



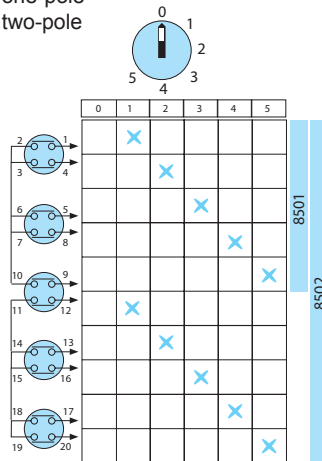
4 positions switch  
one-pole  
two-pole  
three-pole



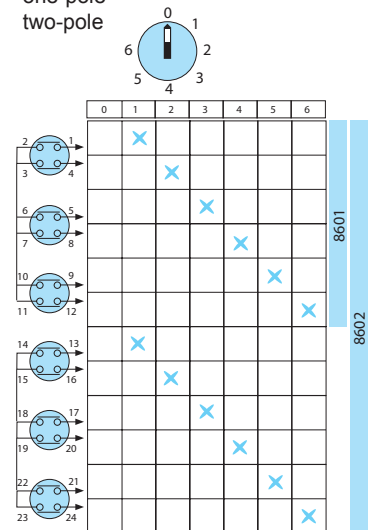
5 positions switch  
one-pole  
two-pole



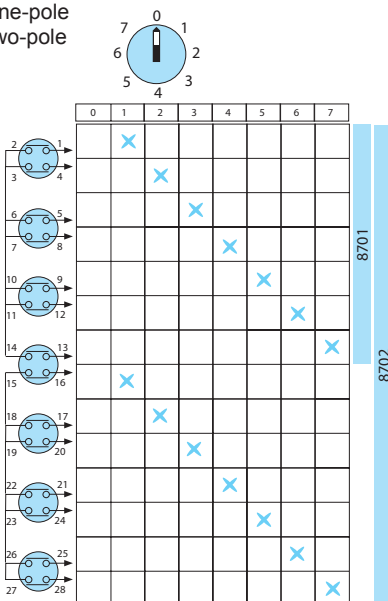
6 positions switch  
one-pole  
two-pole



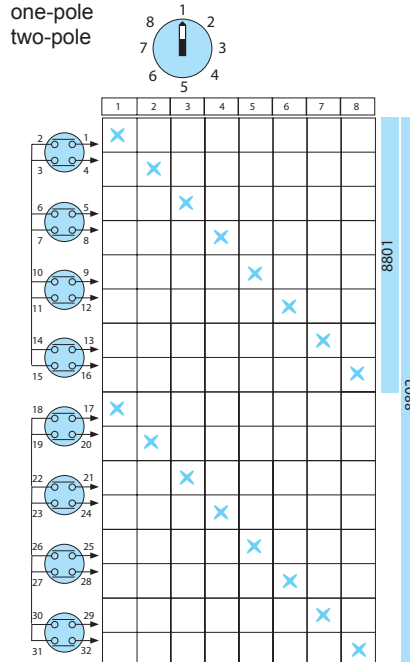
7 positions switch  
one-pole  
two-pole



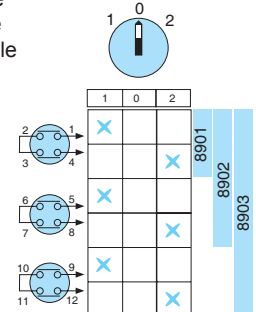
8 positions switch  
one-pole  
two-pole



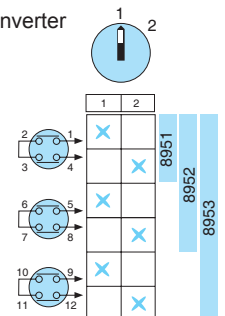
8 positions switch  
one-pole  
two-pole



3 positions inverter (with intermediate stop)  
one-pole  
two-pole  
three-pole



2 positions inverter  
one-pole  
two-pole  
three-pole



## Example of electrical schematic

"X" indicates that the contact is closed

"X—X" indicates contacts which overlap two positions.

		Mechanism and position								
		90°	1	2	3	4	5	6	7	8
		45°	1	2	3	4	5	6	7	8
		contact								
Tier 1	2 ___ 1		X							
	3 ___ 4				X—X					
Tier 2	6 ___ 5							X—X		
	7 ___ 8						X—X			

- Choice of the 90° positions (1.2.3.4)

- X                      Contact 1.2. closed in position 1

- X—X                 Contact 3.4. closed in 2 and 3

- X—X                 Contact 5.6. closed in 4

- X—X                 Contact 7.8. closed in 3 and overlapping each other. (Only possible with 90° positions)

## Switches with special schematics (definition chart)


### Electrical schematic

1 - Tick the selector type.

. Strike out the unused mechanism positions.

. Used the symbol "X" to show closed contacts and fill in the chart opposite

. Used the symbol "X—X" to show contacts overlapping two positions.

 80 contacts max.

2 - Indicate the label engraving.

3 - Tick the type of connection

		Mechanism and position								
		90°	1	2	3	4	5	6	7	8
		45°	1	2	3	4	5	6	7	8
		contact								
Tier 1	2 ___ 1									
	3 ___ 4									
Tier 2	6 ___ 5									
	7 ___ 8									
Tier 3	10 ___ 9									
	11 ___ 12									
Tier 4	14 ___ 13									
	15 ___ 16									
Tier 5	18 ___ 17									
	19 ___ 20									
Tier 6	22 ___ 21									
	23 ___ 24									
Tier 7	26 ___ 25									
	27 ___ 28									
Tier 8	30 ___ 29									
	31 ___ 32									

### 2 - Label marking

Position	Text to be engraved
1	
2	
3	
4	
5	
6	
7	
8	

### 3 - Connection type

- M4 screw and clamp plate
- 6.35 faston tabs

# *C800 - CBN800 Switches*



Memo.

# *C800 - CBN800 Switches*



Memo.

# *C800 - CBN800 Switches*



Memo.

## Consult our other catalogues

Catalogue A6-1

**Control components**



Catalogue B2-1

**Standard 16 A switches and Low level switches with self-cleaning contact**



Catalogue B3-2

**16A to 400A AC/DC Snap action switches**



Catalogue E1-4

**Standard and special Indicator lights**



Catalogue E7

**LED Marker / Tail lights**



Catalogue E8

**Display & Signalling**



Catalogue G1-2

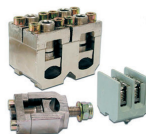
**Low and medium voltage Insulators and Partitions bushings**



Catalogue F4-1

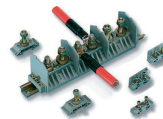
Contact us

**BR500 junction terminals**



Catalogue F2-2

**Stud junction terminals**



Catalogue L1

**Watertight control boxes**



Catalogue D2-2

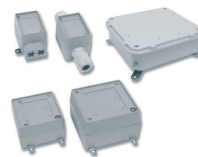
**Pendant control boxes**



Catalogue L2

Contact us

**ORCA Range**



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[www.mafelec.fr](http://www.mafelec.fr)