



# QUICK INSTALLATION GUIDE FOR CAPACITOR BANKS CAPCONDO EQUIPPED WITH THE REGULATOR RGI



**COMPANY CAPCONDO S.A.R.L,**  
**Adress : Avenue 14 Janvier 2011 - 8060 - Beni Khier-Tunisie**  
**Tel/Fax: (+216)72229800**  
**Site web: [www.capcondo.tn](http://www.capcondo.tn)**  
**Email: [contact@capcondo.tn](mailto:contact@capcondo.tn) [capcondo1@gmail.com](mailto:capcondo1@gmail.com)**

# SUMMARY

<b>I – PROTECTION - CONNECTIONS</b> .....	3
<u>A – PROTECTION</u> .....	3
<u>B - CONNECTIONS</u> .....	3
1) <u>Power circuit</u> .....	3
2) <u>Auxiliary circuits</u> .....	5
<b>II- OPERATIONS AND CHECKS TO BE CARRIED OUT BY THE INSTALLER WHEN COMMISSIONING THE CAPCONDO CAPACITOR BANK</b> .....	7
<u>A - BEFORE POWERING UP</u> .....	7
<u>B - EFFECTUER LA MISE SOUS TENSION</u> .....	8
<b>III – CONFIGURATION CONTROLLER</b> .....	9
<b>IV- MAINTENANCE</b> .....	15

## I – PROTECTION - CONNECTIONS

### A – PROTECTION

The capacitor banks must be protected :

- ❖ By a circuit breaker :
  - Thermal relay: set at 1.3 times the rated current,
  - Magnetic relay: setting between 6 and 8 times the rated current
- ❖ Or by an HPC type gG fuse-switch with a rating of 1.4 to 1.6 times the rated current.

### B - CONNECTIONS

#### 1) Power circuit

The capacitor bank and its equipment require power cables sized at least for : (see fig.5)

$$I = 1.3 \times \text{Rated current}$$

The values shown in figure.5 are approximate, the usual coefficients linked to the nature of the cables must be taken into account for the calculation of the section: type, length, laying method, ...

#### ❖ Connect the capacitor bank

Connect the three phases of the capacitor battery to the three terminals of the bank circuit breaker, **respecting the L1 - L2 - L3 connection marked on the bank busbar.**

**Note :** the CAPCONDO battery does not require the connection of neutral.



Fig.1

L1

L2

L3

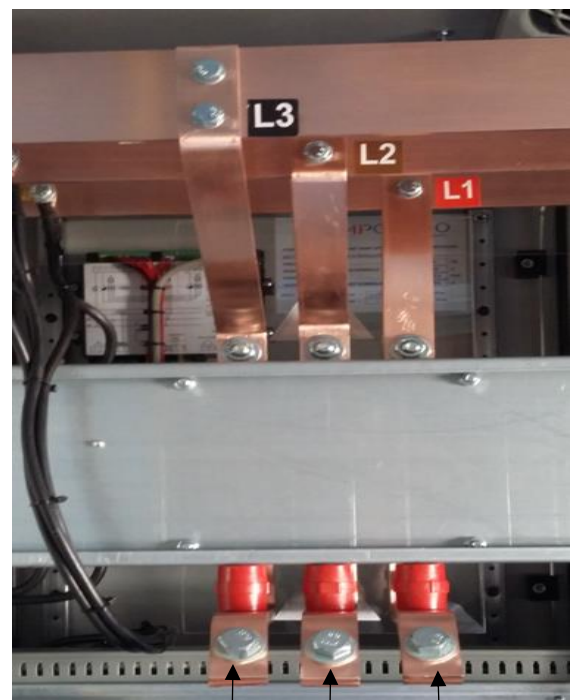
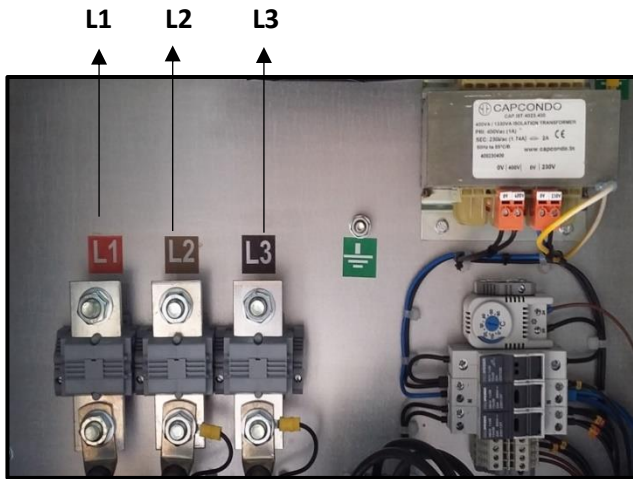


Fig.2

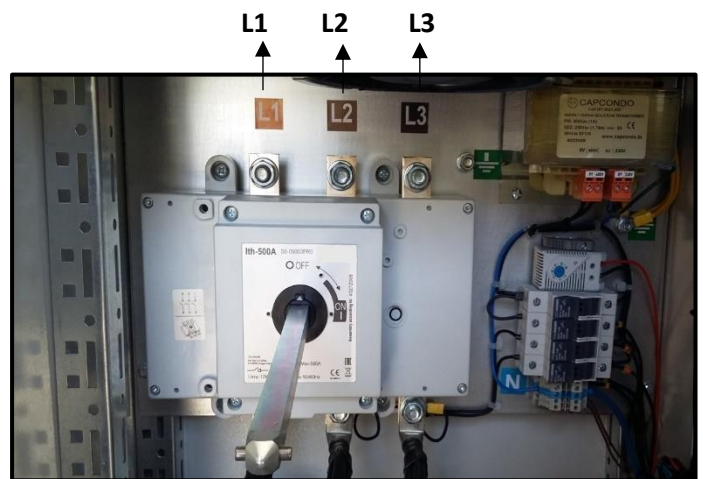
L1

L2

L3



**Fig.3**



**Fig.4**

400V												
kVAr	Inom	3x10 <sup>2</sup>	3x16 <sup>2</sup>	3x25 <sup>2</sup>	3x35 <sup>2</sup>	3x50 <sup>2</sup>	3x70 <sup>2</sup>	3x95 <sup>2</sup>	3x120 <sup>2</sup>	3x150 <sup>2</sup>	3x185 <sup>2</sup>	3x240 <sup>2</sup>
5	7	1										
10	14	1										
12.5	18	1										
15	22	1										
20	29	1										
25	36	1										
30	43	1										
35	51		1									
40	59		1									
50	72			1								
60	87	2			1							
75	103		2			1						
90	130			2			1					
100	144			2				1				
125	180				2				1			
150	217					2				1		
175	253						2				1	
200	289						2					1
225	325								2			
250	361								2			
275	397									2		
300	433									2		
350	505							4	3	2		2
400	577							4	3			2
450	650								4			
480	693								4		3	
500	722										4	
540	779										4	

**Fig.5**

❖ **Grounding**

The capacitor bank must be earthed using a cable with a cross-section that complies with current standards.



Fig.6



Fig.7

2) Auxiliary circuits

To ensure the operation of the varmetric regulator, a current transformer must be **installed on the L1 phase of the upstream or downstream general circuit breaker.**

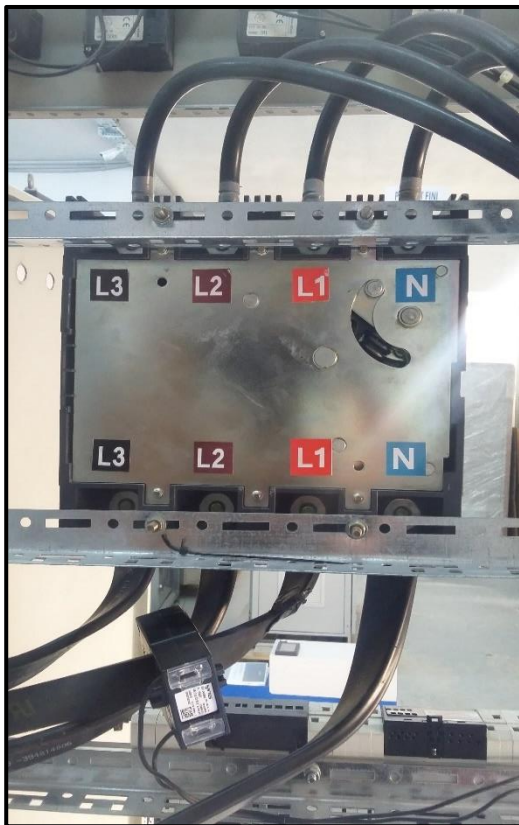


Fig.8

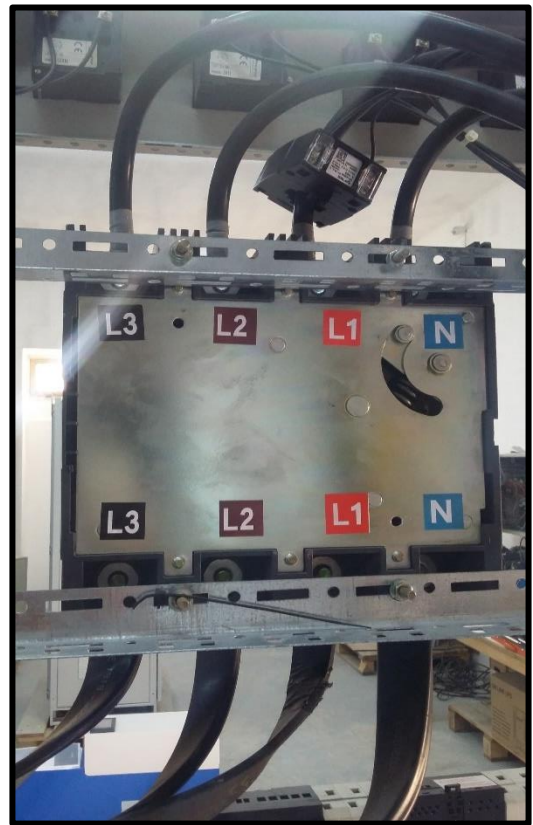


Fig.9

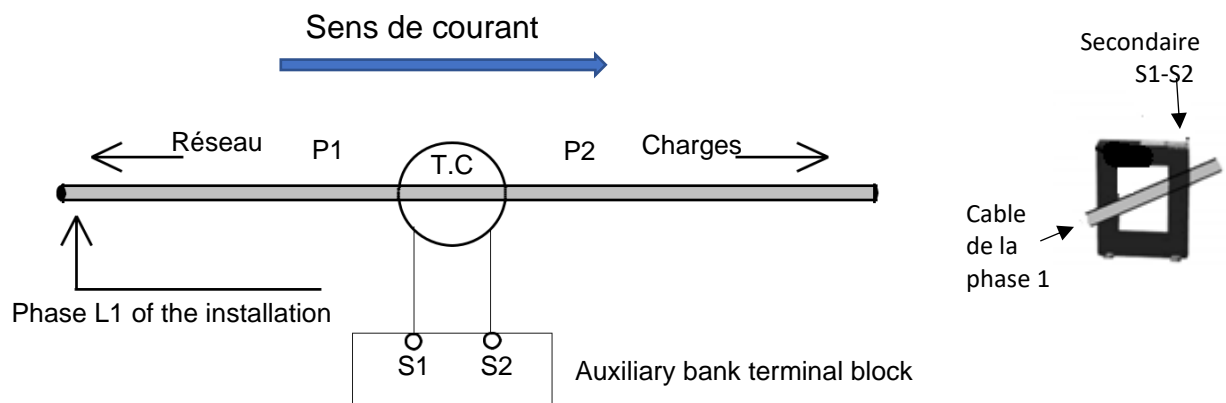
The secondary of the T.C. is connected to the auxiliary terminals marked S1 and S2 (Fig.10).



**Fig.10**

**T.C. characteristics:**

- Primary : adapted to the line current of the installation to be compensated
- Secondary : 5 A
- Minimum power: 10 VA
- Class : 0.5 ou 1

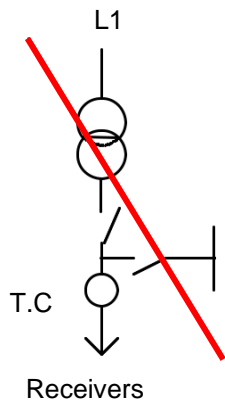


**Fig.11**

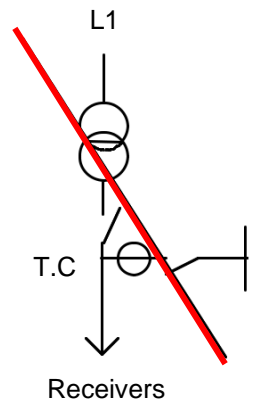
## II- OPERATIONS AND CHECKS TO BE CARRIED OUT BY THE INSTALLER WHEN COMMISSIONING THE CAPCONDO CAPACITOR BANK

### A - BEFORE POWERING UP

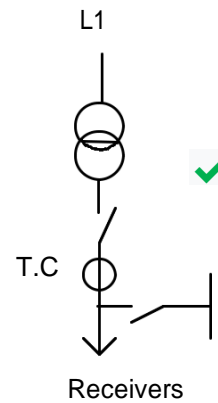
- Check that the T.C. is positioned on phase L1 of the general installation, upstream or downstream of the general TGBT circuit breakers (Fig.14).
- Check the settings of the protections and the connection of the power cables (page 3).



**Fig.12**



**Fig.13**



**Fig.14**

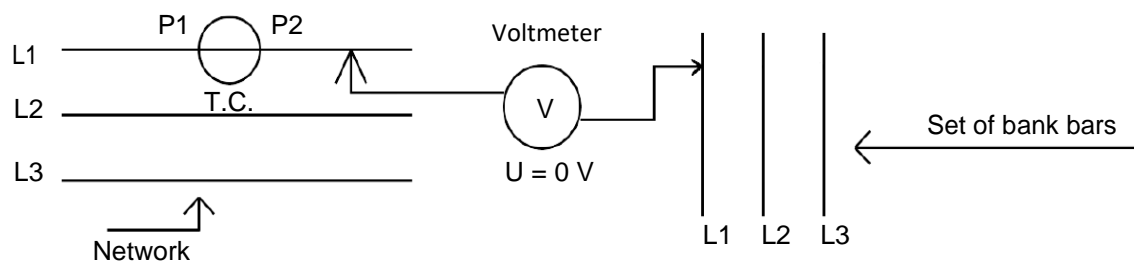
- **Check ventilation:**

- Install the capacitor bank in a well ventilated room: Maximum temperature: 40° C and average over 24 hours: 30°C.
- Make sure that all these ventilation openings are at least 100 mm away from any obstacle (wall, electrical cabinet...).
- Make sure that the air inlets and outlets are not blocked.
- Make sure that the capacitor bank is installed in a dry and dust-free room..

## B - EFFECTUER LA MISE SOUS TENSION

- **Close the circuit breaker of the capacitor bank**

- **Check the position of the current transformer:** a simple way of checking the correct position of the CT on the L1 phase of the installation is to check with a voltmeter that the voltage is zero between the L1 mains phase on which you **have installed the CT and the L1 bank phase.**



**Fig.15**



### III – CONFIGURATION CONTROLLER

**⚠ WARNING**

**The only parameter to check is the value of the primary current transformer CT.**

The other parameters cannot be changed because they are already configured by CAPCONDO.

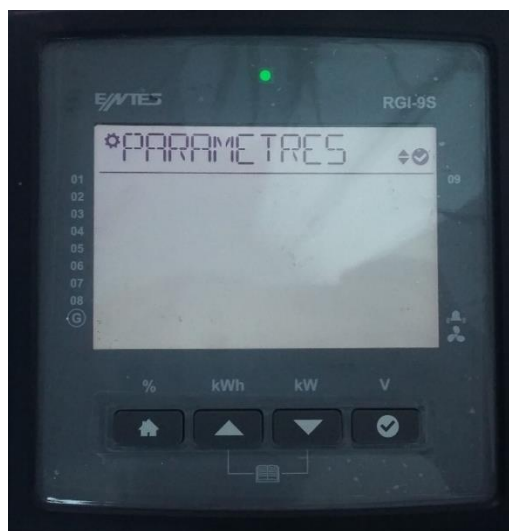
Changing the factory settings is very risky.

**Not following these instructions can damage the equipment.**

#### Configuration of the primary / secondary value of the current transformer (CT)

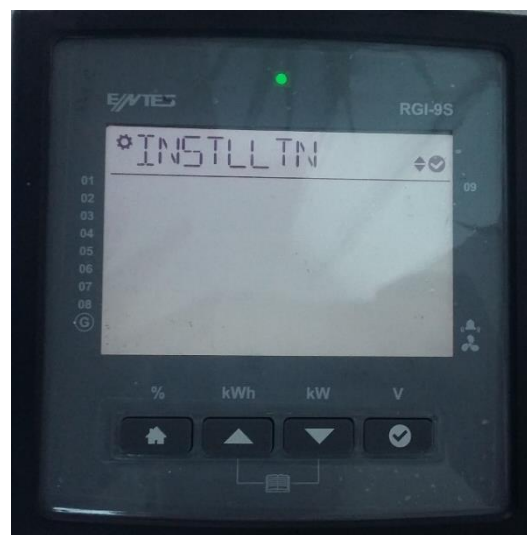
To set the parameters of the RGI, follow these steps:


- Use the ▲ and ▼ , to move in the menu to **'PARAMETRES'**





-Press on ✓


-Press on ▲ or ▼ until you see **'INSTLLTN'**






--Press on 

--Press on  or  until you see **'INS.RPR.D.TT'**

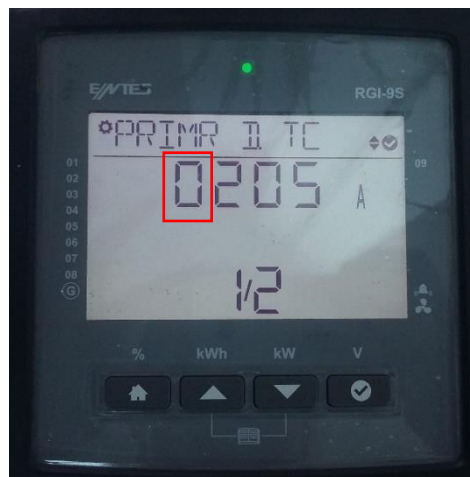




--Press on 

- Modify the value of the primary / secondary of the current transformer, using the buttons  and  by unit, then at each change of unit press  to save it.

**\*\*For example TI: 1500/5A => the primary value to be configured from TI: 1500 and the secondary value: 5A**

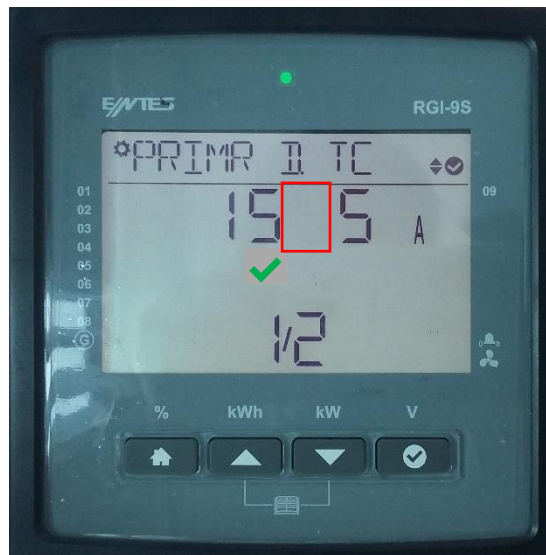
--Press on  to change the 1st unit: the 1st digit flashes until the new value is assigned and saved.



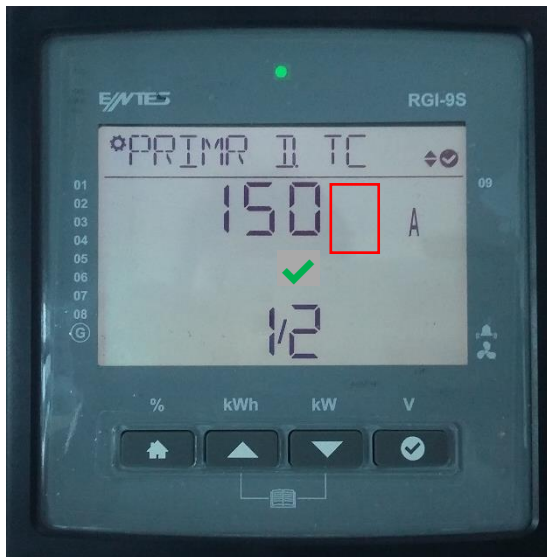
--Press on  to reach the digit "1" then press on  to save, and move on to the 2nd unit: the 2nd digit flashes until the new value is assigned and saved.




-Press on ▲ to reach the digit "5" then press on ✓ to save, and go to the 3rd unit: the 3rd digit flashes until the new value is assigned and saved..




-Press on ▼ to reach the digit "0" then press on ✓ to save: the 4th digit flashes until the new value is assigned and saved.




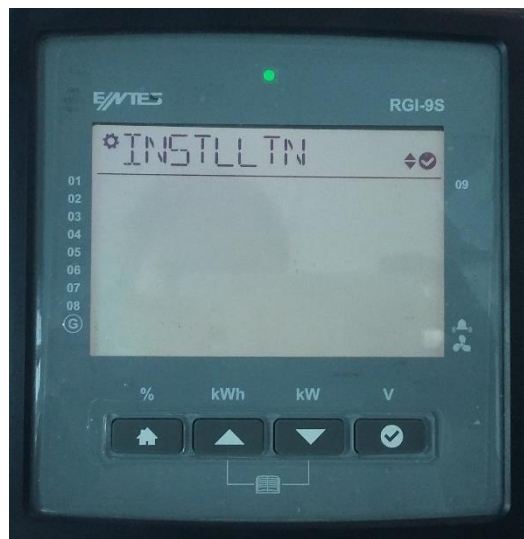
-Press again  to change the secondary value to 5A



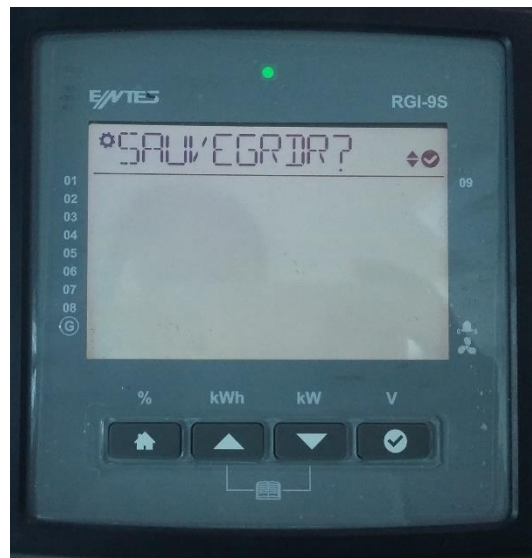
-Press on  to validate the value of the current transformer



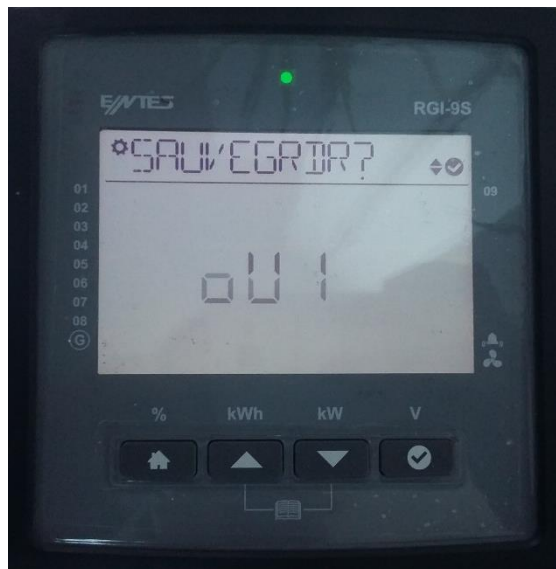
--Press on  to see 'INSTLLTN'




- Press again on  'SAUVEGRDR?' is displayed, press on 



Using the arrows  and  select the menu "oUI" puis press on 



Finally press the arrow button once  to display the cos phi.

## Inspection and commissioning of the capacitor bank



**DANGER**

### **RISK OF ELECTRIC SHOCK, EXPLOSION OR ARCING**

- Wear personal protective equipment (PPE) and follow the safety rules for electrical work.
- This equipment must be installed and serviced by qualified personnel.
- Turn off all power to the equipment before working on or inside the equipment.
- After turning off the power, wait 5 minutes for the capacitors to discharge before
- capacitors to discharge before opening doors or removing covers.
- Always use an appropriately rated voltage sensing device to ensure that the power supply
- Replace all devices, doors and covers before turning the power back on.
- Before closing and sealing the door, carefully check that you have not left any tools inside.

**Failure to follow these instructions will result in serious accidents**

➔ For all other information please contact the technical department

\*Tel : (00216) 72229800

\*E-mail : [contact@capcondo.tn](mailto:contact@capcondo.tn)

## IV- MAINTENANCE

When checking or maintaining the equipment, it is imperative to respect the safety **standards** in force.

- **Put the controller in manual mode.**
- **Switch off all the steps one by one.**
- **Open the circuit breaker that supplies the capacitor bank.**
- Before accessing the various live parts:
  - **Open the fuse-disconnectors of the auxiliary circuits and the power circuit.**
- **The capacitors are equipped with discharge resistors that reduce the residual voltage to 75 V in 3 minutes (in accordance with current standards)**

### MAINTENANCE WITH DISCONNECTED BANK

#### **Wait 5 minutes**

As capacitors are static devices, their maintenance is very limited, but it is recommended to proceed **every three months**:

- Check the cleanliness of the equipment, as the accumulation of dust can be detrimental to the proper ventilation and insulation of the equipment.
- Check the state of the contacts of the operating devices. (Contactors, switches,)
- Tightening of all connections (a first check must be 2 months after commissioning).
- To the control of the power cables and the flexible wires inside the battery.
- To the dust removal and verification of the good functioning of the ventilation.
- Checking the condition of the capacitors.
- Checking the ventilation of the room in which the capacitor bank is installed:
  - + a maximum ambient temperature of 40°C and an average temperature of 30°C over 24 hours
- Cleaning: in dirty environments (dust, sawdust, metal shavings, etc.), dust and solid waste should be vacuumed periodically, and the ventilation grids should be cleaned. There is no set time for cleaning, it will depend on the degree of pollution that penetrates the interior.
- Check that the controller shows no signs of deterioration and that the display lights up normally.
- Check the cables and terminals. They must be clean and must not be hardened or overheated..

➔ For any other information, please consult the technical service  
\*Tel : (00216) 72229800  
\*E-mail : [contact@capcondo.tn](mailto:contact@capcondo.tn)

## Société CAPCONDO S.A.R.L

Avenue 14 Janvier 8060 Béni khiar Tunisie

Tél/Fax : (00216) 72 229 800

E-mail: [contact@capcondo.tn](mailto:contact@capcondo.tn)

[capcondo1@gmail.com](mailto:capcondo1@gmail.com)

Site web: [www.capcondo.tn](http://www.capcondo.tn)

