



QUICK INSTALLATION INSTRUCTIONS FOR CAPACITOR BANKS CAPCONDO CAPACITOR BANKS EQUIPPED WITH THE REGULATOR RG-6T OR RG-8T OR RG-12T



Company CAPCONDO S.A.R.L,
Address: Avenue 14 Janvier 2011 - 8060 - Beni Khiair-Tunisie
Phone / Fax: (+216) 72229800
Website: www.capcondo.tn
Email: contact@capcondo.tn capcondo1@gmail.com

SUMMARY

I – Protection - Raccordements	3
A – Protection	3
B - Connections	3
1) Power Circuit	3
2) Auxiliary Circuits	5
II- Operations And Checks To Be Carried Out By The Installer When Commissioning The CAPCONDO Capacitor Bank.....	7
A - Before Powering Up	7
B - Perform Power-Up.....	7
III- Maintenance.....	8
IV – Annexes	11

I – PROTECTION - RACCORDEMENTS

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.
- ❖ By an HPC type gG fuse-switch caliber 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: (fig. 5)

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

The values indicated in figure 5 are approximate, it is necessary to take into account for the calculation of the section, the usual coefficients linked to the nature of the cables: type, length, installation method, ...

❖ Connect the capacitor bank

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

Note: the CAPCONDO capacitor bank does not require the neutral connection.



Fig.1

L1

L2

L3



Fig.2

L1

L2

L3

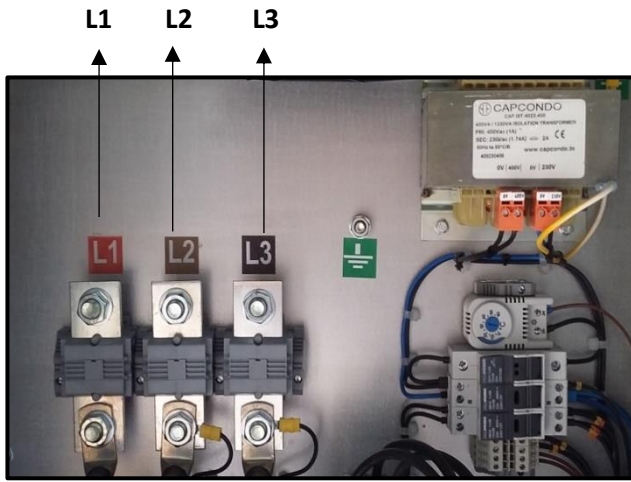


Fig.3

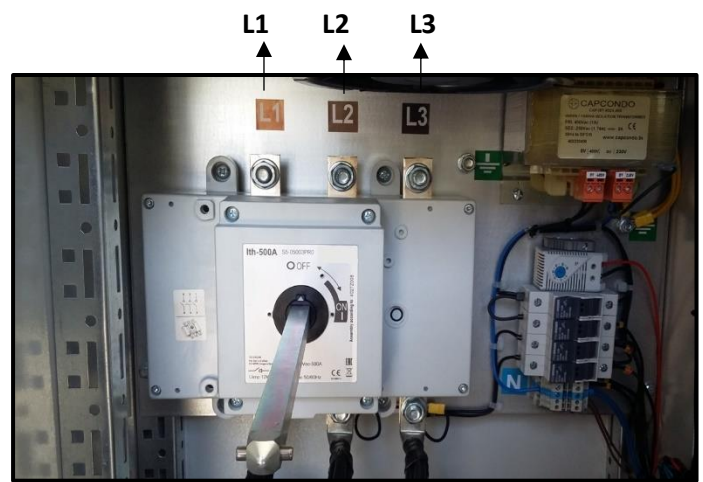


Fig.4

400V												
kVAr	Inom	3x10 ²	3x16 ²	3x25 ²	3x35 ²	3x50 ²	3x70 ²	3x95 ²	3x120 ²	3x150 ²	3x185 ²	3x240 ²
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

❖ Electrical Grounding

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



Fig.6



Fig.7

2) Auxiliary circuits

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

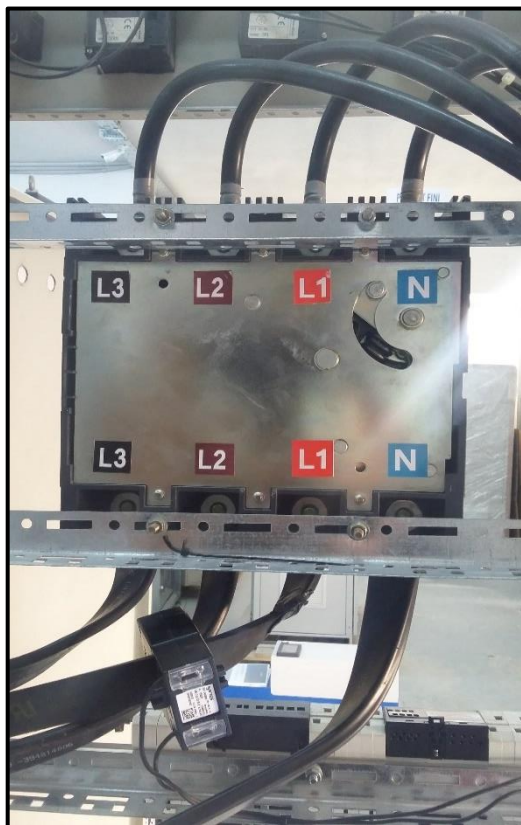


Fig.8

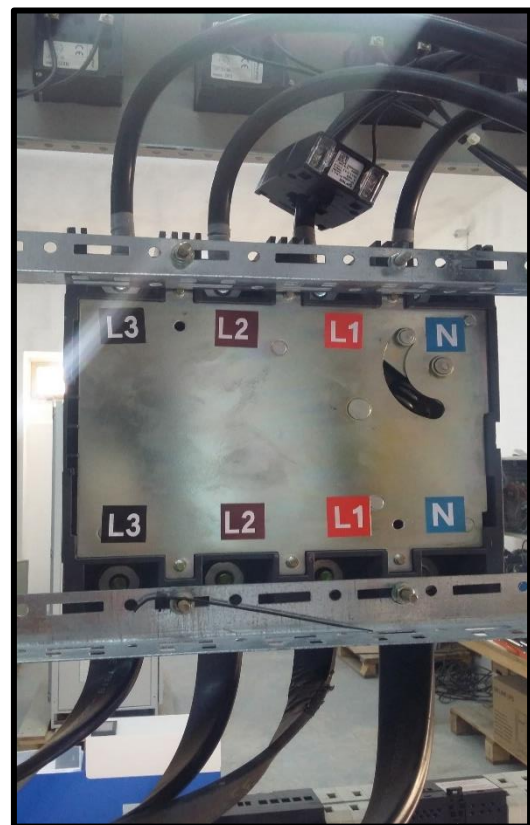


Fig.9

The T.C. secondary is connected at the level of the auxiliary terminal on the terminals marked S1 and S2 (Fig. 10).



Fig.10

Features of T.C:

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

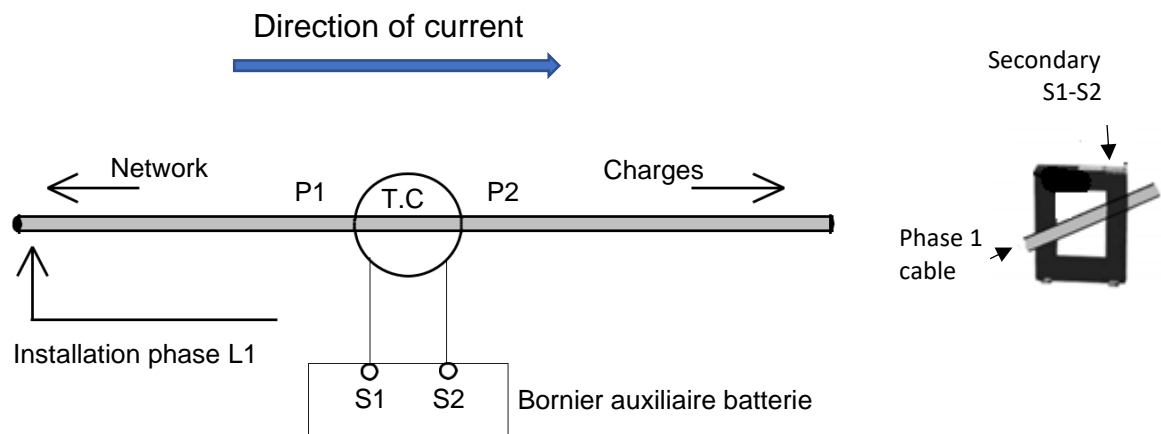


Fig.11

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

A - BEFORE POWERING UP

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

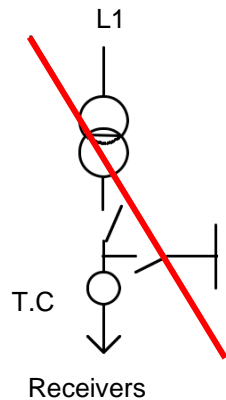


Fig.12

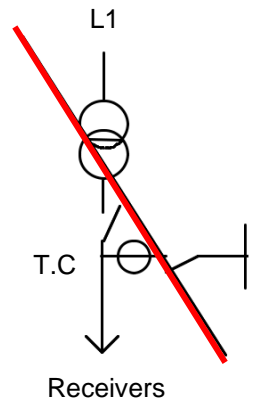


Fig.13

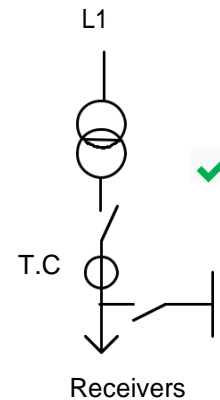
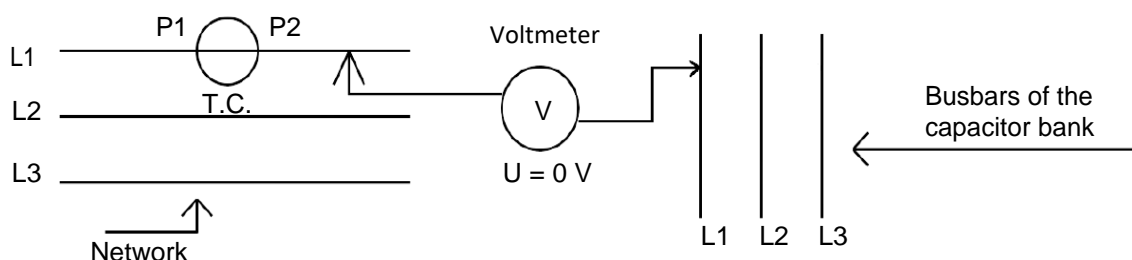


Fig.14

- **Ventilation**
 - Install the capacitor bank in a well ventilated room:
 - Maximum temperature: 40°C and average over 24 hours: 35°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 - PERFORM POWER-UP

- **Close the capacitor bank circuit breaker**
- **Check the position of the current transformer** : a simple way to check 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.**



III- REGULATOR CONFIGURATION



WARNING

The only parameter to check is the CT current transformer value.
 The other parameters cannot be changed because they are parameters configured by CAPCONDO.
 Changing the configuration parameters is very risky.
Not following these instructions can damage the equipment..

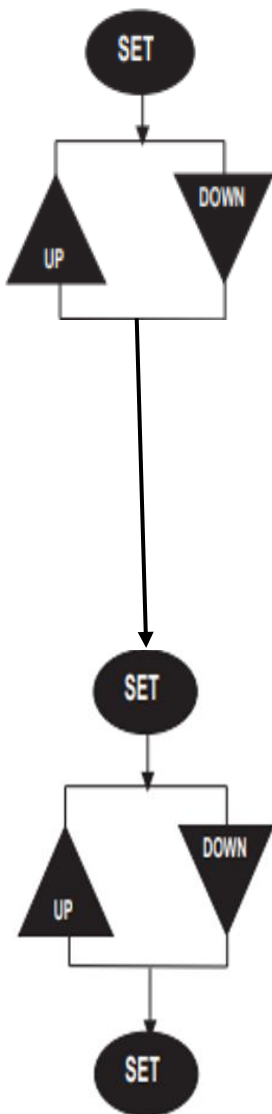
Current transformer primary value configuration

The value to be configured is **the primary** of the current transformer

Examples: for the T.C. **800/5 A**: the value to be configured is **800**;

If the T.C. **1500/5 A**: the value to be configured is **1500**.

To configure the transformer primary, press the SET key



By pressing the SET button for 3 seconds, the SET menu starts

AUTO → displayed

Press the DOWN button several times until **the CT symbol is displayed and the CTR indicator lights up**



Press the SET button.
 A value is displayed.

Press UP-DOWN buttons to adjust the primary value of TI. (This is the value displayed on the current transformer which is installed on phase L1 of the capacitor bank).

When the target value is displayed, it is saved by pressing the SET button and RG-T returns to its normal operating mode.

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 opening doors or removing covers.
- 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 consult the technical department
- * Tel: (00216) 72229800
 - * E-mail: contact@capcondo.tn

IV- MAINTENANCE

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

- Put the regulator in manual mode.
- Deactivate all the steps one by one.
- Open the circuit breaker which 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

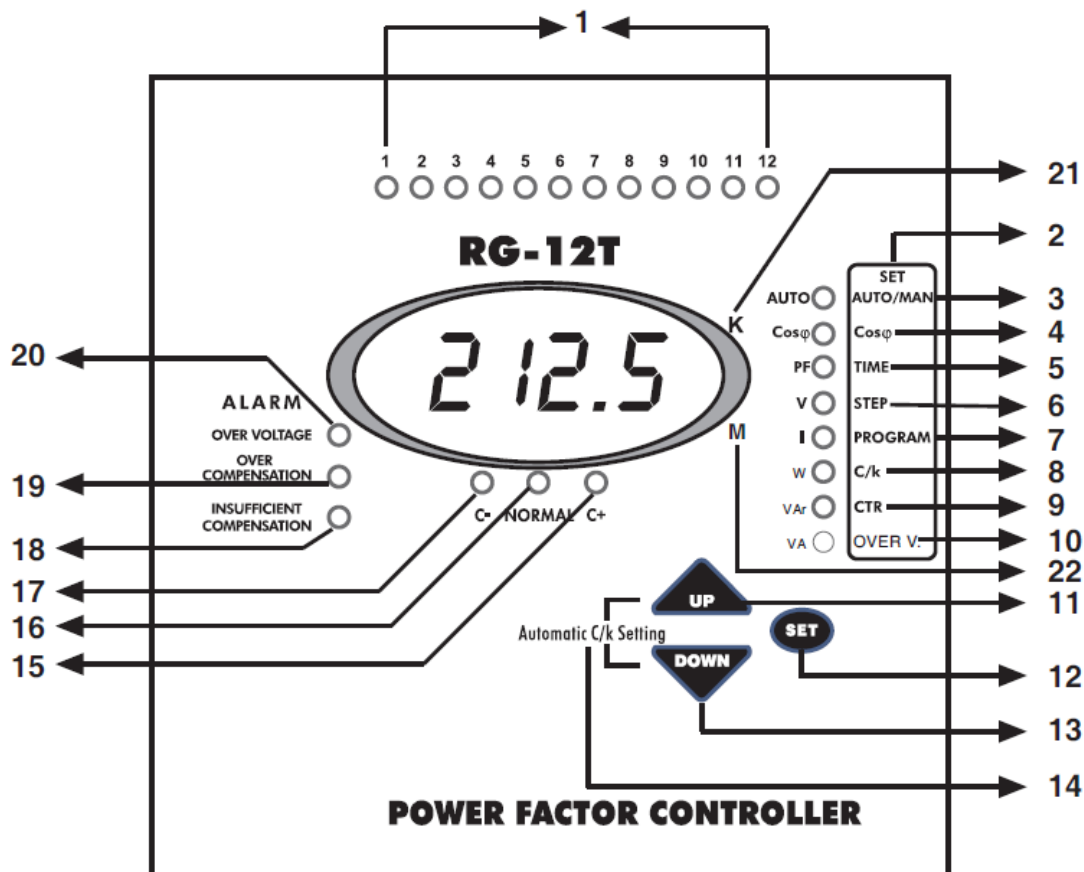
The capacitors being static devices, their maintenance is very reduced, it is however advised to proceed **annually**:

- To the verification of the cleanliness of the equipment, the accumulation of dust can be harmful to the good ventilation and the insulation of the equipment.
- To the state of the contacts of the switching devices. (Contactors, switches,)
- To the tightening of all connections (a first check must **be 2 months after the commissioning**).
- To the control of the power cables and the souple wires inside the bank.
- To the dust removal and to the good functioning of the ventilation.
- To control the state of the capacitors.
- Au contrôle de la ventilation du local dans lequel est installée la batterie de condensate Controlling the ventilation of the room in which the capacitor bank is installed. (respect a maximum temperature of 40°C and an average over 24 hours of 35°C).
- Cleaning: in dirty environments (dust, sawdust, metal shavings, etc.), vacuum the dust and solid waste periodically, clean the ventilation grids. There is no set time for cleaning, it will depend on the degree of pollution that gets inside the bank cabinet.
- Check that the regulator does not show any symptoms 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.

IV – ANNEXES

Description of the controller front panel

- | | |
|---|--|
| <p>1 Indicates the steps that have been activated</p> <p>2 The menu options that correspond to the lights</p> <p>3 This light is on continuously: automatic mode.
If it is blinking, RG-T is in manual mode</p> <p>4 Cos ϕ of system and ind/cap status is displayed.</p> <p>5 TIME / PF : time setting. In automatic mode, when this light is selected by pressing the UP and DOWN buttons, the system power factor is displayed.</p> <p>6 STEP: Number of step setting executed.</p> <p>7 PROGRAM / I: Power sequence setting / phase current display (L1).</p> <p>8 C/K - W: Manual C/K setting / display of active system power.</p> <p>9 CTR- : current transformer ratio setting / display of system reactive power.</p> <p>10 Over V. : step protection against overvoltage functions / display of system apparent power</p> <p>11 Key for selecting or changing parameters (UP)</p> | <p>12 SET" button to scroll through the functions from AUTO to OVER V</p> <p>13 DOWN button for selecting or changing parameters</p> <p>14 Automatic C/k setting the automatic adjustment of C/K is activated by pressing the UP and DOWN buttons at the same time.</p> <p>15 C- Light on: switches ON the step</p> <p>16 NORMAL Light on: Targeted compensation is performed.</p> <p>17 C- Light on: Switches OFF the step.</p> <p>18 Insufficient Compensation on: Insufficient compensation is occurring.</p> <p>19 Over Compensation on: The controller detects an overvoltage.</p> <p>20 ALARM on: indicates that a programmed alarm has been stored</p> <p>21 K lit : the values displayed on the digital screen " D " are to be multiplied by 1000</p> <p>22 M lit : the values displayed on the screen " D " are to be multiplied by 1 000 000</p> |
|---|--|



- For all other information, please consult the technical department
- * Tel: (00216) 72229800
 - * E-mail: contact@capcondo.tn

Society CAPCONDO S.A.R.L

Avenue 14 Janvier 8060 Béni khiar Tunisia

Tél/Fax :(+216) 72 229 800

E-mail: contact@capcondo.tn

capcondo1@gmail.com

Site web: www.capcondo.tn

