



# QUICK INSTALLATION INSTRUCTIONS FOR CAPACITOR BANKS CAPCONDO CAPACITOR BANKS EQUIPPED WITH THE REGULATOR RG-12BS



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## 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

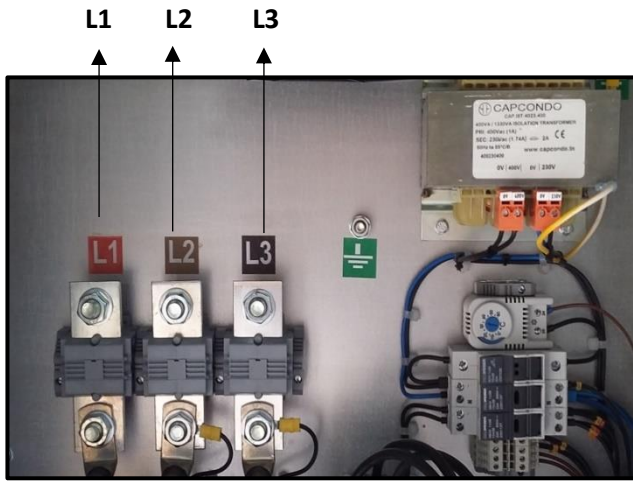


Fig.3

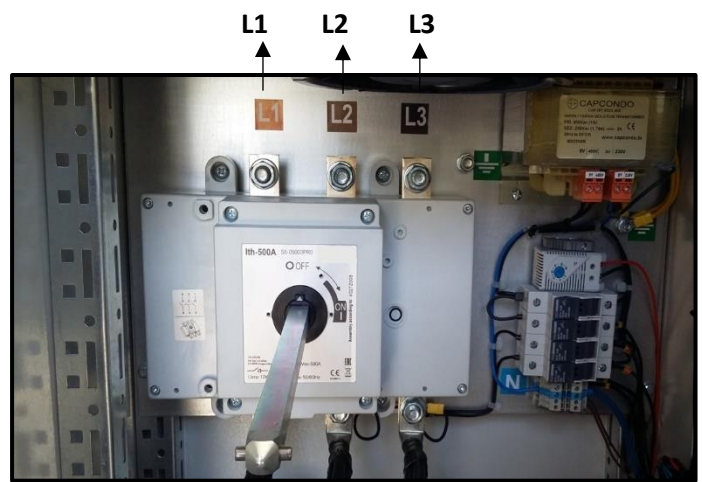


Fig.4

400V												
kVAr	Inom	3x10 <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

## ❖ 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.

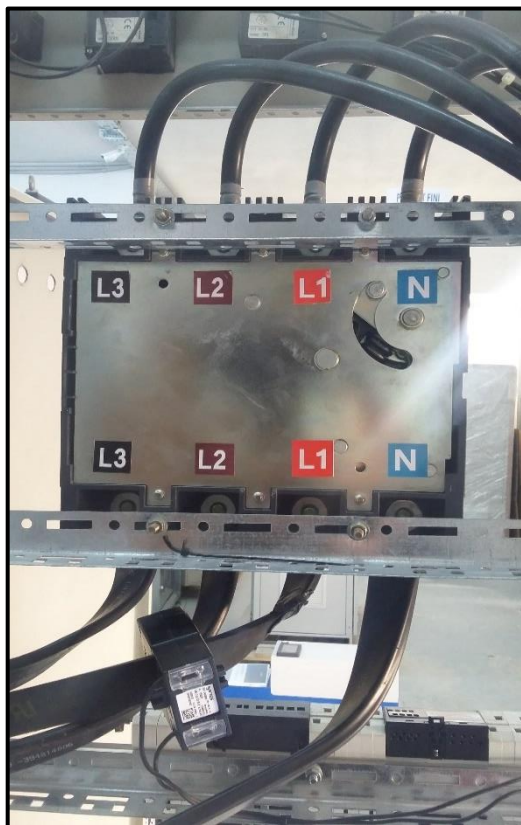


Fig.8

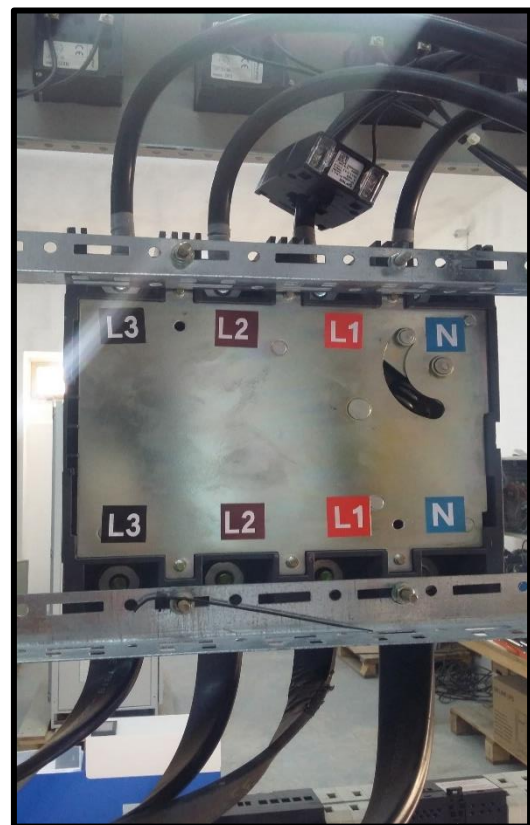


Fig.9

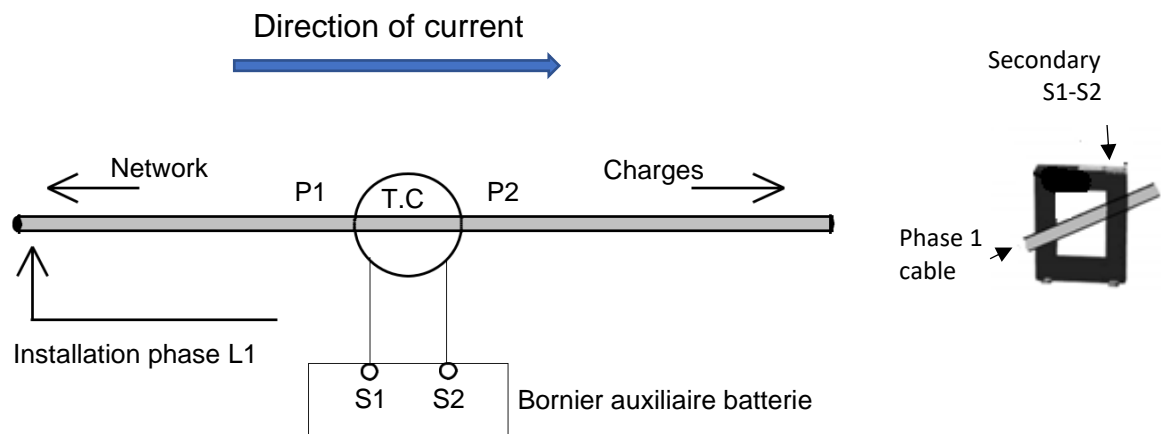
The T.C. secondary is connected at the level of the auxiliary terminal on the terminals marked S1 and S2 (Fig. 10).



**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



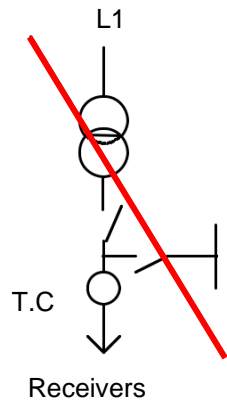
**Fig.11**



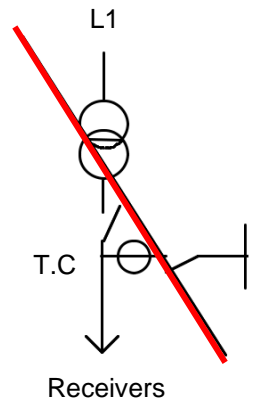
## II- OPERATIONS AND CHECKS TO BE CARRIED OUT BY THE INSTALLER WHEN COMMISSIONING THE CAPCONDO CAPACITOR BANK

### A - BEFORE POWERING UP

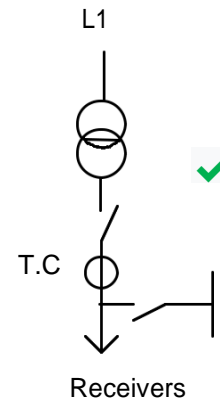
- **Check** the settings of the protections and the connection of the power cables (page 3).
- **Check** that the T.C. is positioned on phase L1 of the general installation, upstream or downstream of general TGBT circuit breakers (Fig. 14).



**Fig.12**



**Fig.13**

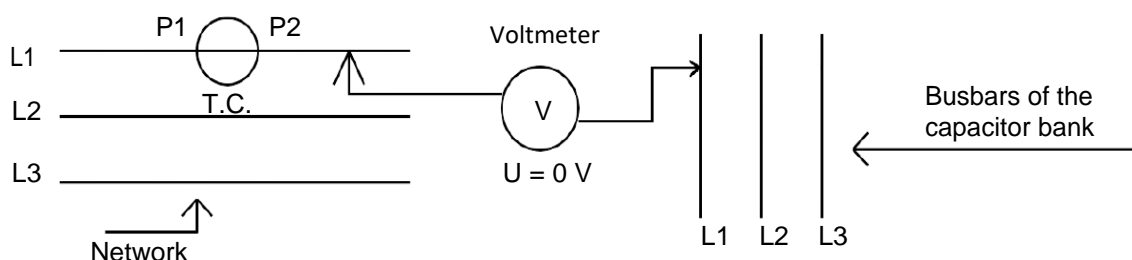


**Fig.14**

- **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



**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..**

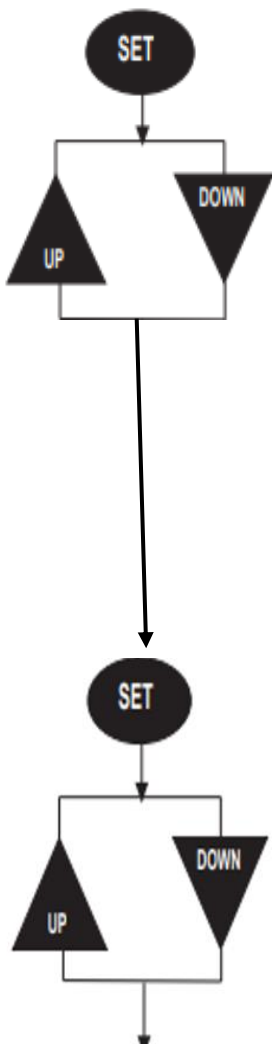
#### Current transformer primary value configuration

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 trF symbol is displayed and the network indicator lights up**

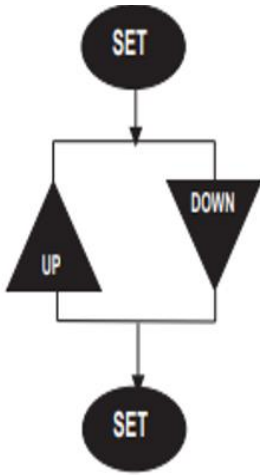


Press the SET button.

Press the DOWN or UP button several times until **the Ctr symbol is displayed**







Press the SET button.  
A value is display.

To modify the TI ratio, press the UP-DOWN buttons per unit, then at each change of unit press the SET button to save it.

When the target value is displayed, to keep the value, press the SET button, then press ESC twice, the word ``SAVE`` is displayed, press the SET button to save, then RG-BS 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

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## 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.

- ➔ For all other information, please consult the technical department
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