



# **RACK MODULE WITH FILTER**

## **USER MANUAL**

**INTERNATIONAL CAPACITORS S.A.**

## **SERVICE AND INSTALLATION INSTRUCTIONS OF THE MODULAR EQUIPMENTS FOR POWER FACTOR CORRECTION, WITH FILTER REACTORS, MODF SERIES.**

### **1. DESCRIPTION OF THE EQUIPMENT**

**MODF** series group in a compact unit power capacitors of low losses, contactor, high rupture capacity fuses, fast discharge resistors, filter reactors and a busbar to form modular banks of higher powers. Its main use is to build capacitor banks for the automatic compensation of the power factor in low voltage installations. They are ready to be installed in standardized cabinets of 600 or 800 mm height. Equipments are supplied completely assembled and tested at works.

### **2. INSTALLATION Location**

Modules are for indoor installation and in well ventilated places, away from heat sources.

#### **Preparation**

- F Check that rated voltage of the module is the same as that of the mains to which is going to be connected
- F Ensure that power in the area that it is going to be handled has been disconnected

#### **Fixing**

Modules have at the frontal side 4 holes for fixing with some distances between centres that allow them to be compatible with standard cabinets existing in the market. Screw up the frontal part of the module with the help of 4 screws and anticipate a support at the rear part of the module.

Assembly the necessary number of modules by starting from the lower part of the cabinet and link between them the number of modules needed. Maximum number of modules to install in the interior of a cabinet is 6, while maximum power for which busbars have been dimensioned is 300 kvar at 400 V.

#### **Connection of the protection conductor**

Module remains electrically linked to the structure of the cabinet by means of fixing screws. Do not forget to connect the protection conductor to the cabinet by using the terminal disposed for this purpose.

#### **Connection of the power circuit**

Connect the three lower busbars (L1, L2 and L3) of the first equipment by means of a cable of adequate section to the total power of the bank. Characteristics plate indicates the rated over current of each module.

#### **Connection of the control circuit**

Connect the coil of the contactor to its feeding system (manual switch, reactive power controller, etc) with the help of the plug-in-connector (see diagram).

### **3. COMMISSIONING**

Once checked that installation of the bank is correct, proceed to its commissioning taking into account the following points: **Temperature**

The operating temperature is an extremely important parameter for a reliable operation of power capacitors. Maximum ambient temperature in the interior of the cabinet shall be of 55 EC. If temperature is higher, refrigeration has to be improved by increasing natural convection or by setting a forced convection.

## Voltage

Reliable operation of the equipment requires that the service voltage does not exceed the rated voltage. It should be kept in mind that operation under overload conditions shortens considerably life of capacitors.

## Current

It should be checked that the rms current absorbed by each capacitor is the rated current and that it never exceed 1.15 times the rated current.

In order to avoid errors in the measurements, only "true rms" meters should be used to measure the current. If excessive currents are detected, disconnect the equipment and consult **INTERNATIONAL CAPACITORS Technical-Assistance Service** in order to establish the best solution to the problem.

## 4. MAINTENANCE

Maintenance works will be made bearing in mind what indicated in chapter 5 Safety. Bans require only a very limited maintenance, yet is very convenient for reliable operation. The following operations are recommended:

### Monthly

- F Check capacitors visually
- F Examine protection fuses
- F Check temperature
- F Check service voltage (specially in moments of low load)

### Annually

- F Keep clean capacitor terminals and insulators
- F Check that terminal connections are tight
- F Check state of the contactor contacts
- F Inspect fast discharge resistors

## 5. SAFETY

**ATTENTION: Before performing any maintenance operation or handling any part of the equipment, remove all power and control fuses and check that capacitors are discharged.**

Even then the bank is disconnected from the mains, the capacitors may still be charged. Therefore, after having removed fuses, wait for three minutes and then short circuit and earth the terminal or outlet cables of each capacitor.

## 6. GUARANTEE

**INTERNATIONAL CAPACITORS** guarantees its products against any manufacturing defect for a period of TWO YEARS from the date of sale. In no case this guarantee will last longer than three years from the date of manufacture.

In the case of banks with automatic regulation, this guarantee does not cover neither protection devices (fuses) nor the spare parts of the equipment which are subject to wear and tear.

**INTERNATIONAL CAPACITORS** will repair or replace, as it deems fit, any defective product that is returned during the guarantee period.

This guarantee remains null and void if installation and maintenance instructions of the product have not been followed or if the product has been some way misused.

