THYRON®
SMART THYRISTOR MODULE

For Dynamic Power Factor
Compensation Applications

Application Guide & User's Manual

V1.1

1. Introduction

Main application area of Thyron® is reactive power compensation systems which needs very fast response to power factor changes. Thyron® eliminates high current and voltage pulses on switching. All switching operations done in zero crossings of AC voltage.

Comparing to traditional contactor based devices, Thyron® has such advantages:

- Protects electronic devices in the system agains electrical pulses
- No maintenance needed
- Extends lifetimes of capacitors significantly
- No switching noise, quiet
- Unlimited switching cycles
- Long operation life
- Faster response reduces maximum demand effectively.

There are two models of Thyron® available for 50kVAR :

Thyron® 3P2-50	:	Two Phase Control Module
Thyron® 3P3-50	:	Three Phase Control Module

Adding capacitor banks to system using contactors causes transient currents and transient high voltages on the line. (Fig. 1) Because switching elements does not monitor the line voltage and switching could be done in any time. This pulses affects sensitive devices such as computers, instrumentation devices, PLCs, robot controllers etc. in the system.

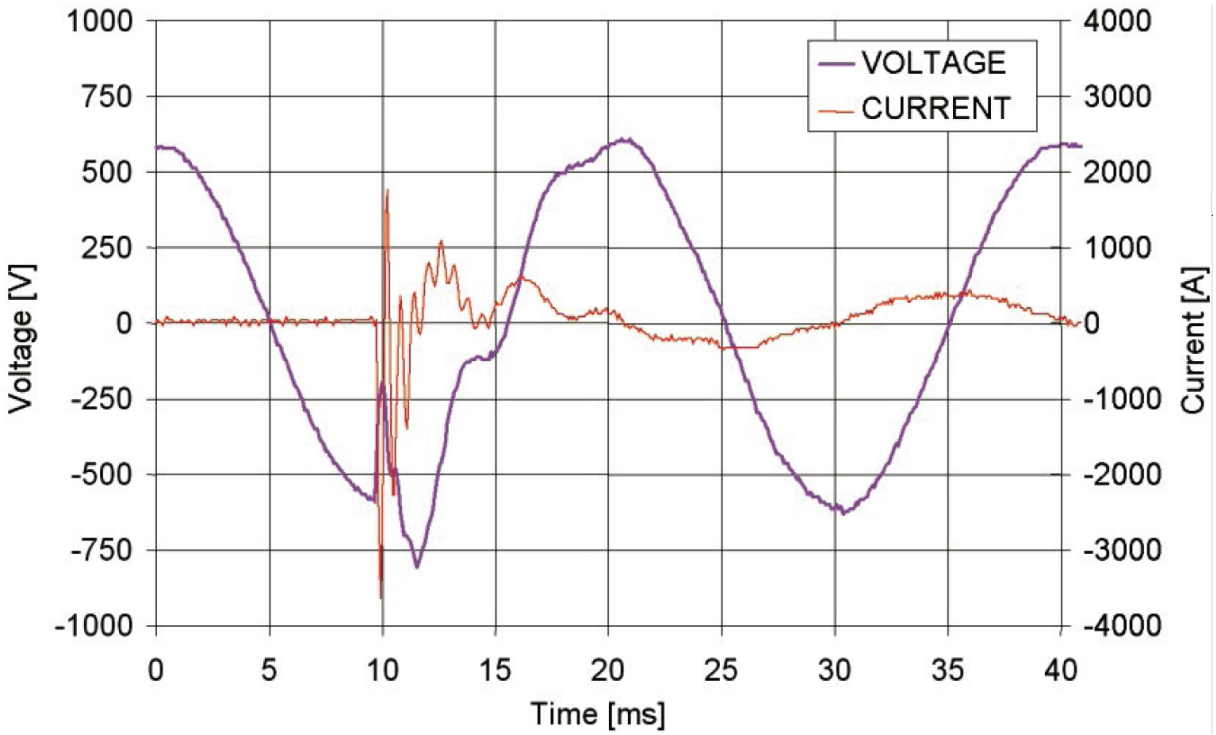

Fig. 1 – Switching capacitors using contactors

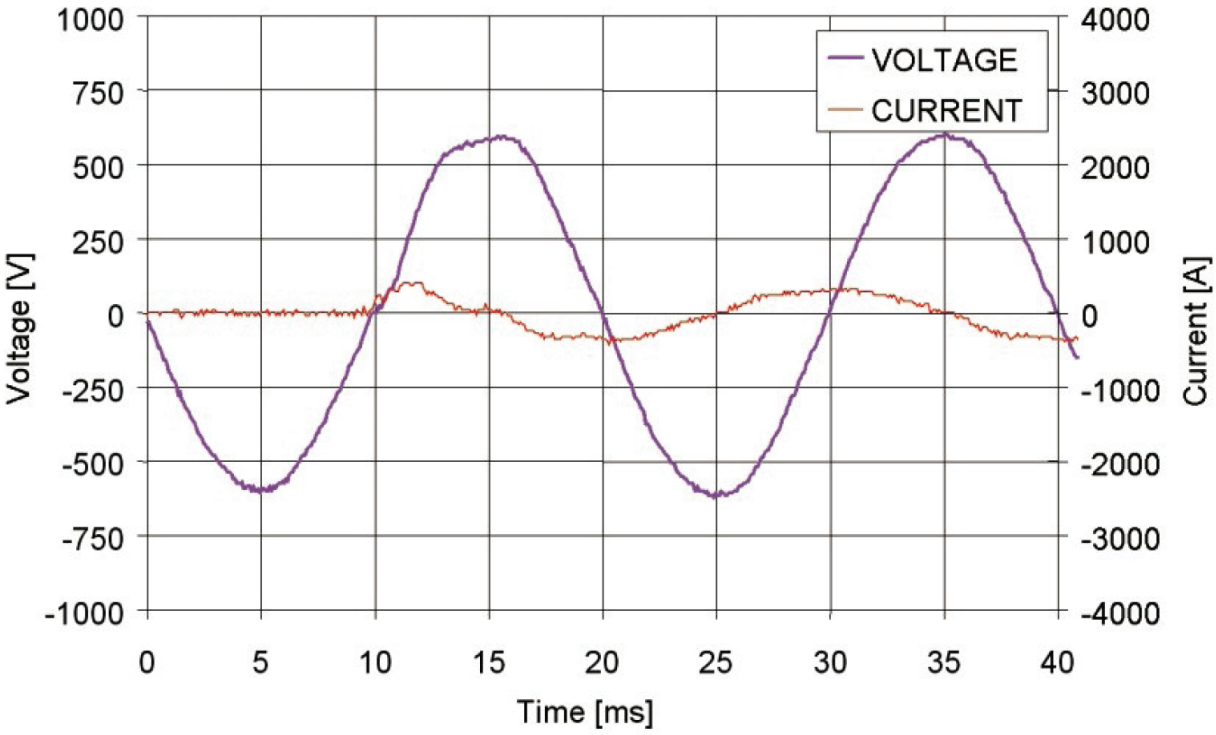

Fig. 2 – Switching capacitors using Thyron®

2. Technical Specifications

Model	Thyron® 3P2-50	Thyron® 3P3-50
Maximum Reactive Power	50kVAr	50kVAr
Maximum Voltage	480Vrms	690Vrms
Maximum Load Current	90A	90A
Operating Frequency	50/60 Hz	
Control Input	Dry contact	
Power Supply	220VAC (50Hz)	
Monitoring	Power supply, activation and temperature	
Display	2 LEDs *(power, status)*	
Power Connection	4 Way Terminal Block *(35mm^2)* 2 phase connection (L1,L3)	6 Way Terminal Block *(35mm^2)* 3 phase connection (L1,L2,L3)
Thermal Power Dissipation	160W	160W
Fuses (Superfast) (Not included)	125A	125A
Switching Time	≤ 10 ms *(with proper discharge resistor)*	
Operating Temperature	-10°C….+45°C	
Protection Class	IP20	IP20
Dimensions (mm) (W x H x D)	160x250x200	160x250x200
Weight (kg)	5.50	5.50

3. Condition Monitoring

There are two LEDs on the front panel of Thyron® for operating mode indication:

LED	LED Status	Description
Power (Green)	On	Module Power Supply OK
	Blinking	Temperature Alert. (Module overheated) Module turns off the outputs, disables capacitor banks for overheat protection
	Off	No power applied to the module
Status (Red)	On	Capacitors active. (Enabled)
	Blinking	Thyristor Error.
	Off	Capacitors inactive. (Disabled)

4. Electrical Connections

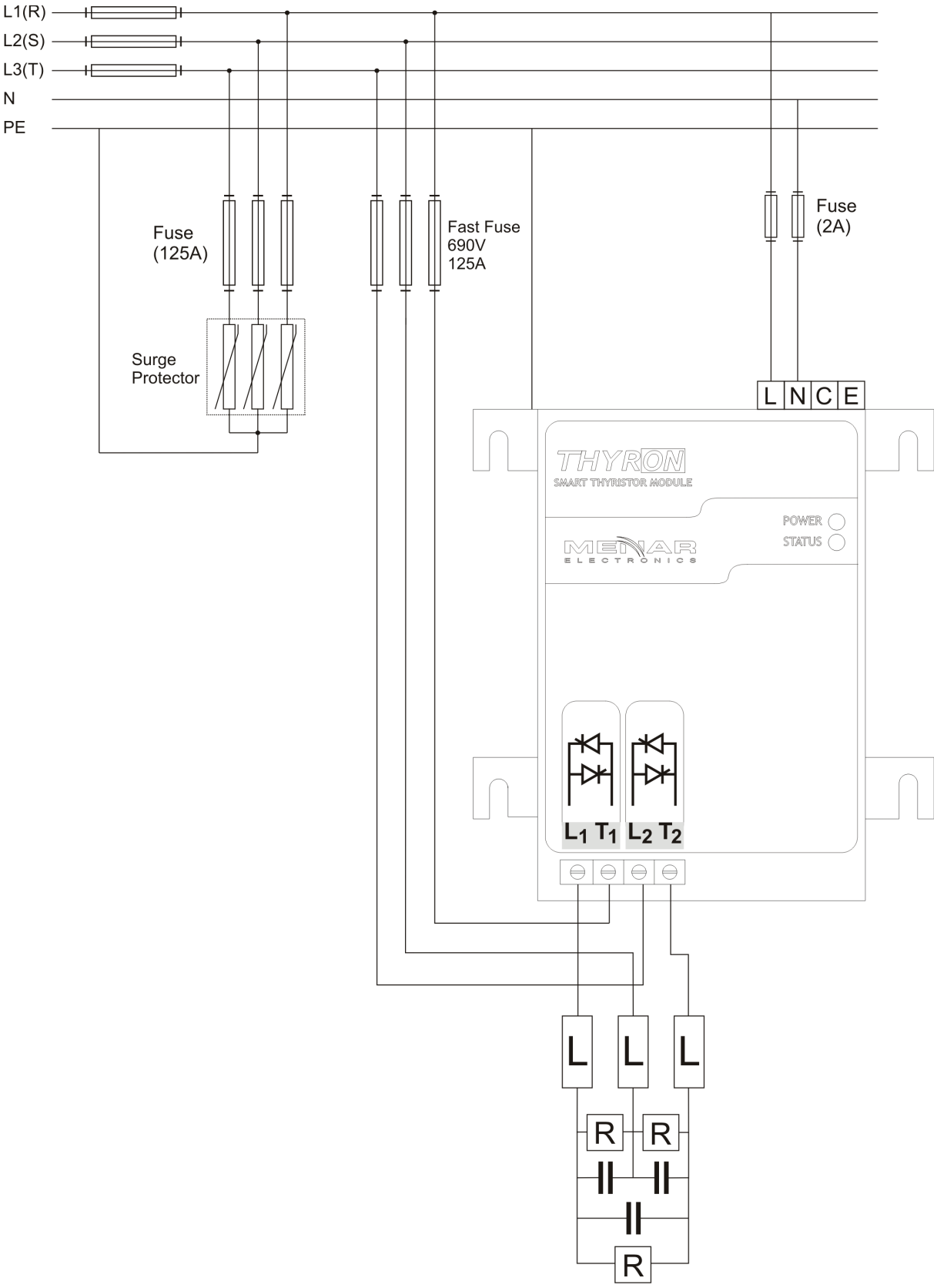

Fig. 3 – Electrical connection for Thyron® 3P2-50

(R=16KΩ 50W) If there is no filter reactor used, current limiting reactor should be used!!!

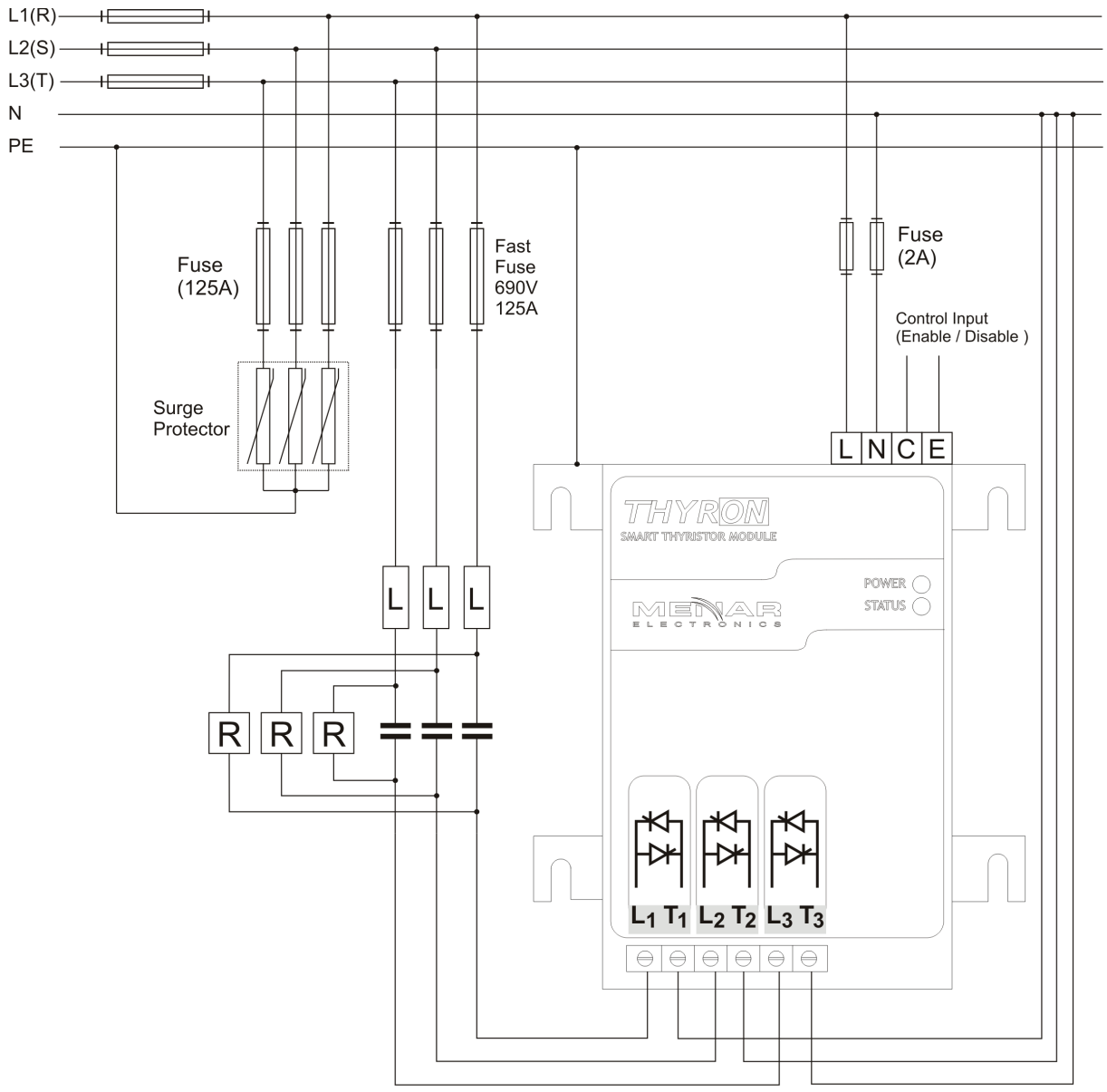

Fig. 4 – Electrical connection for Thyron® 3P3-50

(R=16KΩ 50W) If there is no filter reactor used, current limiting reactor should be used!!!

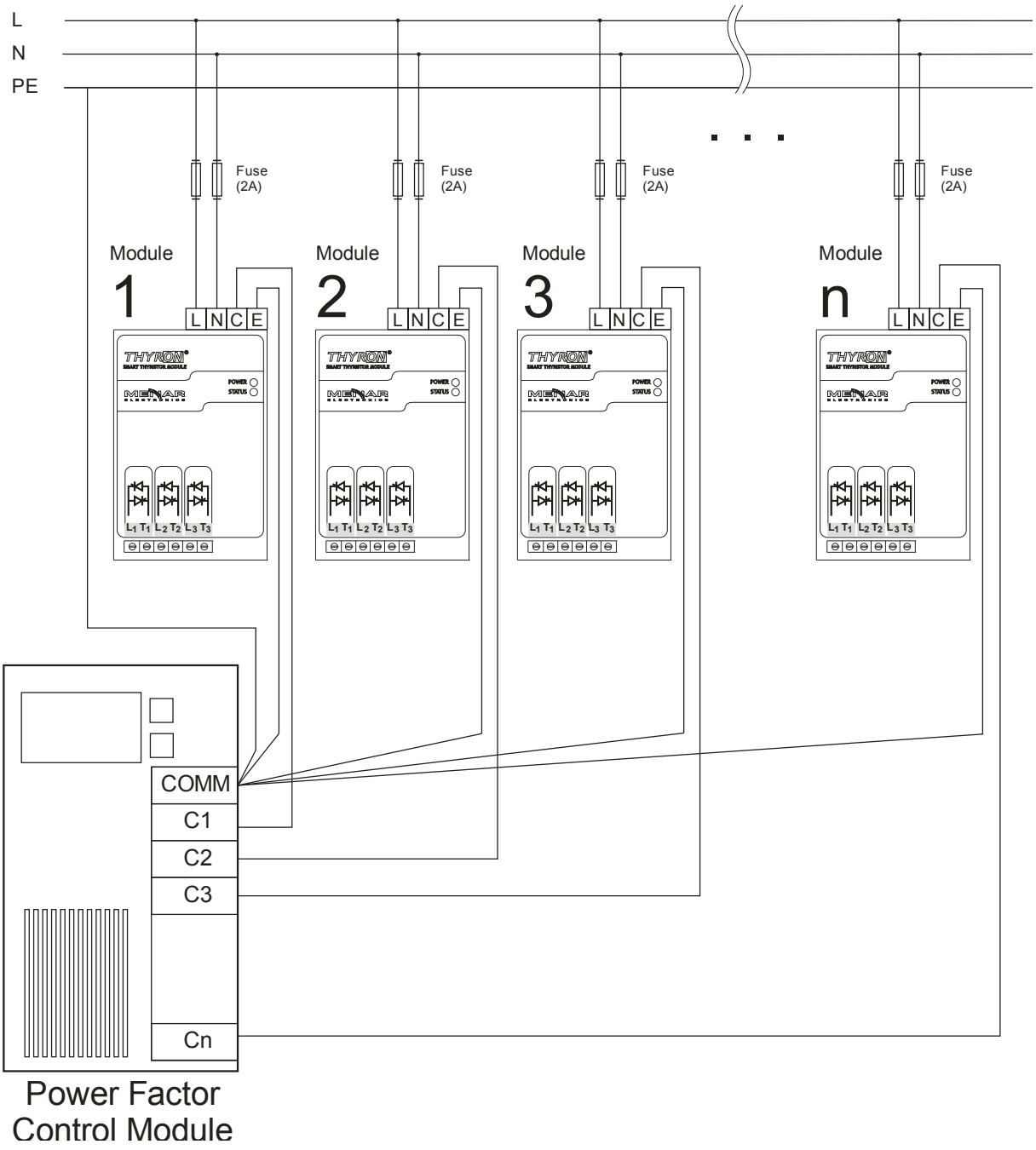

Fig. 5 – Electrical connection for multiple modules

5. Mechanical Drawings

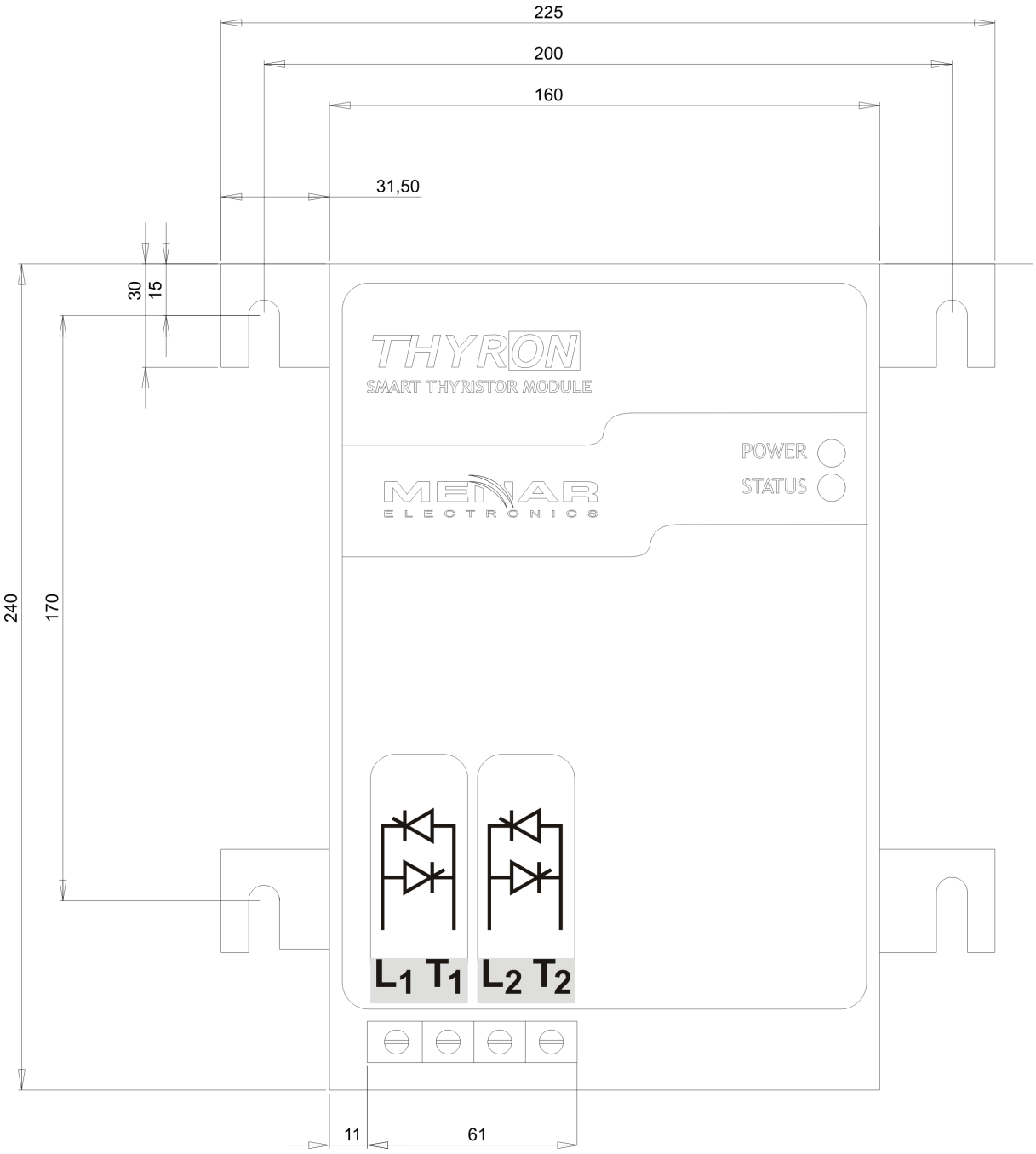

Fig. 6 – Mechanical drawing for Thyron® 3P2-50

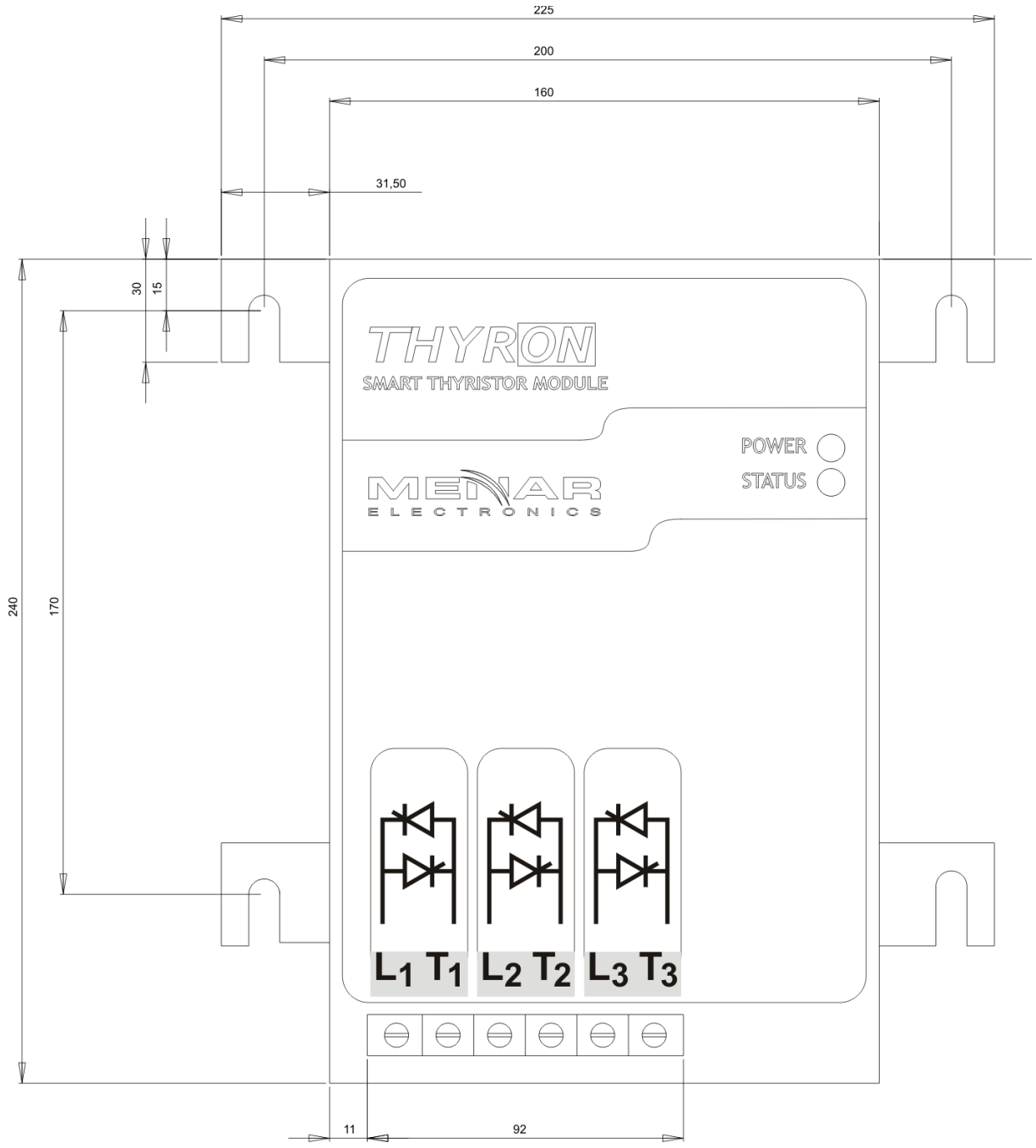

Fig. 7 – Mechanical drawing for Thyron® 3P3-50

6. Cautions

Thyron® should be used only for it's own application purposes

All electrical connections should be done according to this manual and proper protection elements described above should be used.

DO NOT exceed the current and voltage values described in this manual.

Proper air conditioning and cooling systems should be set up in power factor compensation panels against high air temperatures, humidity and dust.