CHAPTER 5

Thyristor Switches

Thyristor switched capacitor bank is the best and sometimes the sole choice when it is necessary to compensate loads over short periods of time. Examples are steel companies, lifting apparatus (cranes, quay cranes, etc), cable makers (extruders, etc), welding machines, robots, compressors, skiing lift stations, LV industrial networks (chemical plants, paper mills, automotive suppliers). Thyristor switched capacitor bank are also an ergonomic solution where noise can be problematic, like hotels, banks, offices, service infrastructures (telecommunications board, informatics 'boards, hospitals, malls).

Limits of the traditional contactor switched banks

- High inrush current and over voltages
- Risk of over voltages due to the arc breaking
- Longer reconnecting time: more than 30 sec
- More demanding maintenance compared with static switches.

General advantages of Power Factor Correction

- Reduced losses on mains and power transformers
- Increase of plant available power
- Less voltage drop in the plant

Thyristor switched capacitor bank benefits include:

- Minimises network disturbances such as Voltage Drop and Flicker
- No moving parts therefore reduced maintenance (i.e. no Electro-magnetic contactors)
- Enhanced capacitor life expectancy.

In general there is a comprehensive PLANT EFFICIENCY; because power factor correction is fast, the power transformer and line design can be done considering only the actual load.
Therefore longer working life and reliability of plant.
Static switches allow unlimited operations.
Steps switching is also done limiting transient phenomena that inside normal plants stresses the capacitors reducing their working life.

General Characteristics

ICAR SINCHRO FAST SWITCH FEATURES are described below:

- Switching speed: 60ms
- Electronic components: SCR
- Connectable power: up to 100kvar-400/415V
- Possibility to switch capacitors without reactor
- Fan dedicated to the cooling radiator
- Protection circuit with signalling LED

Further ADVANTAGES

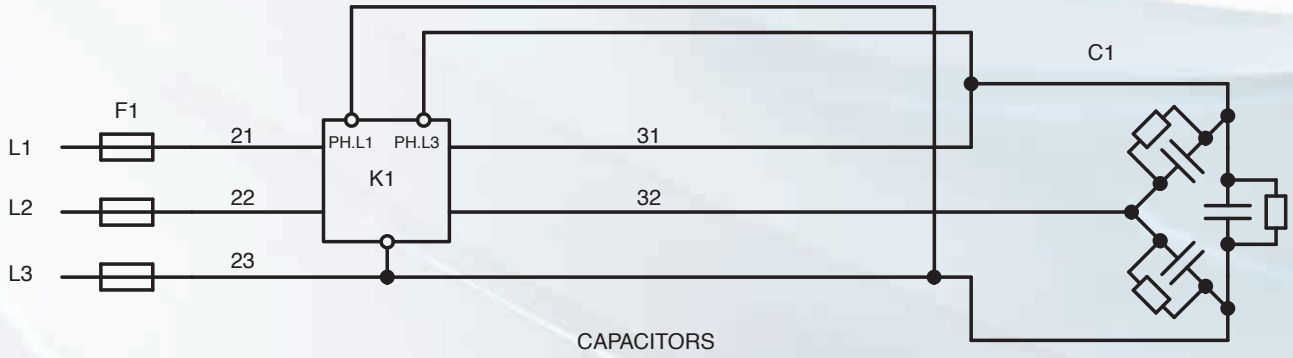
1. 1Possibility to use SFS with ICAR RPE 12BTA regulator.
2. The control technology adopted doesn't allow switching that could generate self damage.
3. Very small dimensions.
4. High temperature protection.
5. Protection from high speed switching.
6. SFS doesn't need any external supply.

TECHNICAL DATA SHEETS AND TABLES

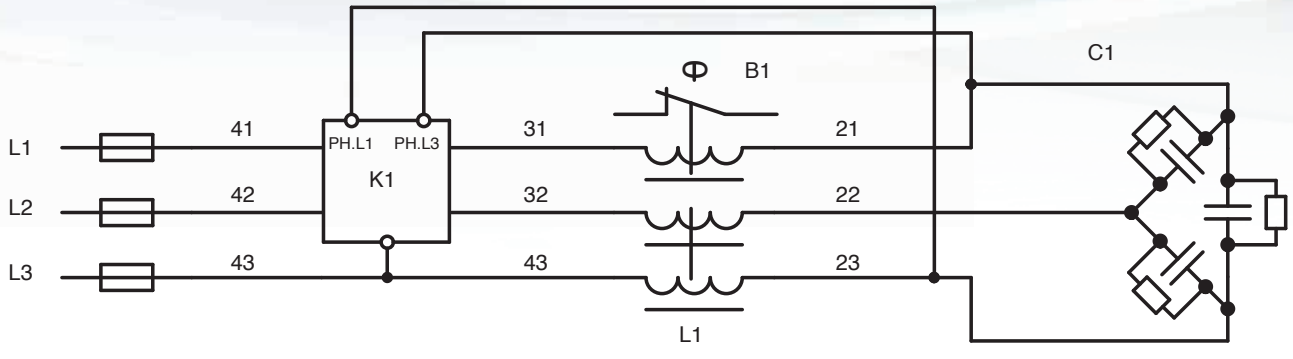
TECHNICAL CHARACTERISTICS	
Voltage	**400-415V**
Frequency	**50Hz (60Hz on request)**
Activation	**Using external contact voltage free (type SSR Bi-directional opto-mos recommended); no need for 24Vdc**
Fuse (not included)	**NH00 Super Fast**
Duty cycle max speed	**60ms ON – 60ms OFF**
Power circuit	**L1-L2: 25mm2 for SFS50/HS and SFS50B/HS (L3: 2,5mm2 on the main supply side only)** **L1-L2: 50mm2 for SFS80/HS (L3: 2,5mm2 on the main supply side only)**
Operating ambient temperature	**0÷50°C**

PART NUMBER	Identification	Switching Power [Capacitors]	Switching Power [Capacitors and Reactors]	Dimensions (mm) [WxHxD]	Weight (kg)
A25060043842751	**SFS50/HS**	60kvar	**38kvar**	195x140x100 (81)	**3,5 Kg**
A25060043842754	**SFS50B/HS**	-	**50kvar**	236x140x125 (82)	**5,5 Kg**
A25060043843150	**SFS80/HS**	100kvar	**80kvar**	236x140x125 (82)	**5,7 Kg**

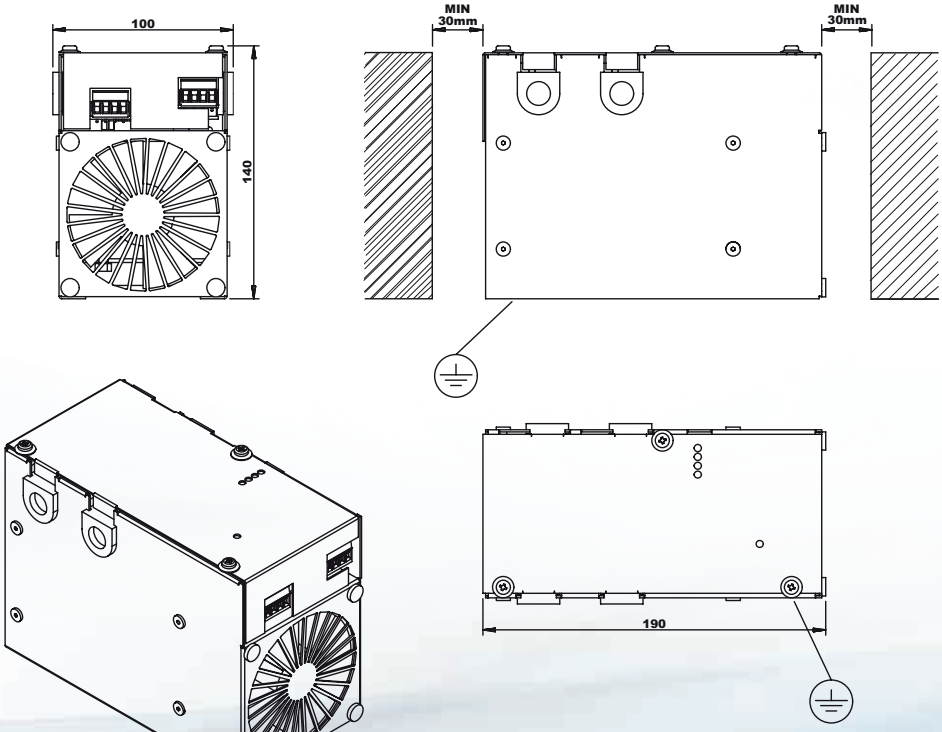
CONNECTING DIAGRAM



CAPACITORS



CAPACITORS AND REACTOR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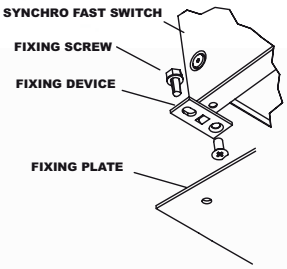
140
MIN
30mm
MIN
30mm
190


SYNCHRO FAST SWITCH
FIXING SCREW
FIXING DEVICE
FIXING PLATE

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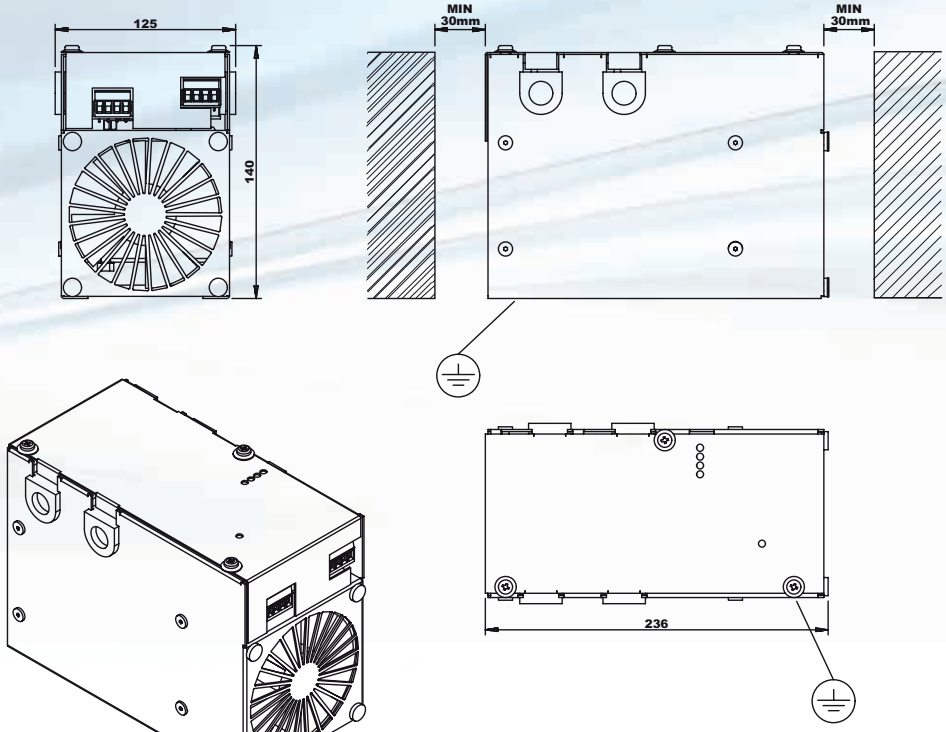
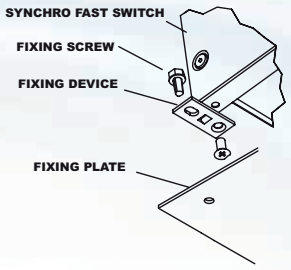

125
140
MIN
30mm
MIN
30mm
236


SYNCHRO FAST SWITCH
FIXING SCREW
FIXING DEVICE
FIXING PLATE

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