VARACTOR PF CONTROLLERS

CE **CERTIFICATION - STANDARDS: EN50081-2, EN55011, EN55014, EN50082-2, ENV50140, ENV50204, EN61000-4-8, EN61000-4-2, EN61000-4-4**

Model		N. output relays	S/N
VARACTOR	V 450/4	4	PA450104
VARACTOR	V 450/6	6	PA450106

TECHNICAL FEATURES

Dimensions:	96x96x50mm
Supply Voltage:	110-220-400* V
Minimum Secondary Current:	0,100 A
Voltage Signal:	100 - 690 Vrms
Frequency:	50/60 Hz
Display:	LED
Serial Port:	no
Required C.T. :	1

*on request

Model		N. output relays	S/N
VARACTOR	V 650/6	6	PA650106
VARACTOR	V 650/12	12	PA650112

Dimensions:	144x144x50mm
Supply Voltage:	110-220-400* V
Minimum Secondary Current:	0,100 A
Voltage Signal:	100 - 690 Vrms
Frequency:	50/60 Hz
Display:	LED
Serial Port:	no
Required C.T. :	1

*on request

Model		N. output relays	S/N
VARACTOR	V 850/12	13	PA850112

Dimensions:	148x148x62mm
Supply Voltage:	220 V - 400 V
Minimum Secondary Current:	0,125 A
Voltage Signal:	180 - 485 Vrms
Frequency:	50/60 Hz
Display:	LED
Serial Port:	RS485 (Modbus - RTU)
Required C.T. :	1

Model		N. output relays	S/N
VARACTOR	V 950/6	13	PA950113

Dimensions:	148x148x62mm
Supply Voltage:	220 V - 400 V
Minimum Secondary Current:	0,125 A
Voltage Signal:	180 - 485 Vrms
Frequency:	50/60 Hz
Display:	1280x64 dots LCD COG
Serial Port:	RS485 (Modbus - RTU)
	ETHERNET (TCP/IP)
Required C.T. :	1

Model		N. output transistors	S/N
BR7000-I-TH/12	BR7000/12	12	BR700112

Dimensions:	144x144x55mm
Supply Voltage:	1100 V - 400 V
Minimum Secondary Current:	0,020 A
Voltage Signal:	70 - 760 Vrms
Frequency:	50/60 Hz
Display:	1280x64 dots LCD
Serial Port:	RS485 (Modbus - RTU)
Required C.T. :	1

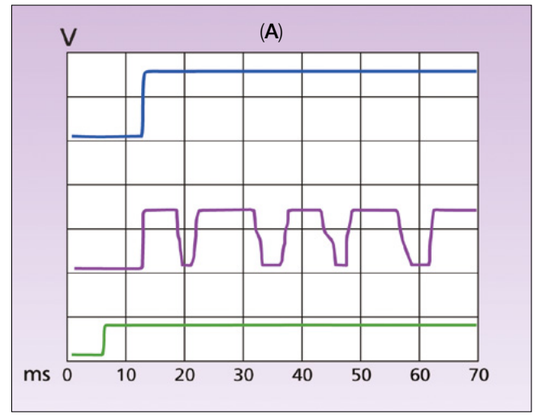
RAM SUPERTEC

PRINCIPLE OF OPERATION

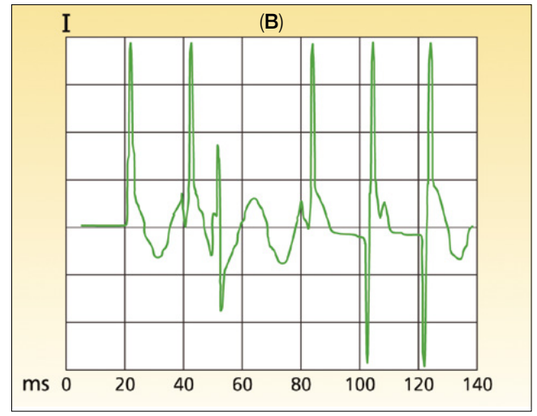
One of the main problem to face with the contactors for the capacitors insertion is the supplied voltage of the contactors coil, which must be sufficiently high for allowing a proper closure of the contacts. However it cannot be too high in order to avoid damages. Thanks to the electronic system **SUPERTEC** that is applied to the new **HD** contactors, developed for this application, a technological standard is eventually reached and it offers remarkable performances in the worst working conditions as well. (**A**)

It is important to consider that the magnet of the contactors might strike with high power, mostly due to the variation of the magnetic circuit when the cores get closer. Considering the high variability of the voltage in the different kind of installations and the randomness of the voltage comand, the contact working parameters are continuously changeable and this condition puts some limits on the standard contactors.
When a capacitor bank is connected to the electrical line these limits are remarkably amplified because, if an electric arc between the contacts occurs due to the electrical rebounds, the connection of the capacitors with the net is restored and this might cause dangerous overvoltages for the PFC system. (**B**)

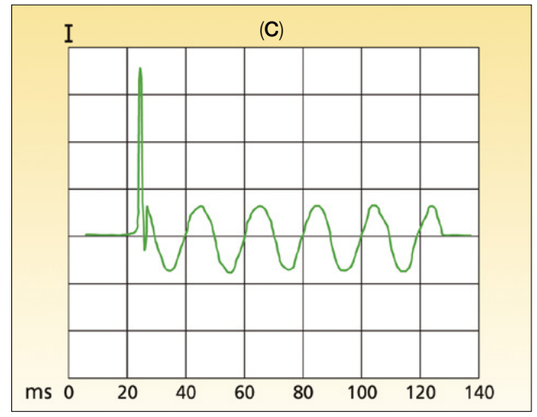
These inrush overcurrents might cause thermal stresses on the capacitors plates that might be damaged and put out of service: in this situation the capacitor dissipation factor (tg δ) increases.
The limitation of the inrush overcurrents and the elimination of the electrical rebounds of the contats is really important. The SUPERTEC system realizes a perfect match between standard technology and the most recent innovation. The standard and widely spread system deals with the insertion of the capacitor using a contactor whose contact are parallel-connected. The first group of contacts is early-closing type and connects the capacitor to the network by a group of resistences able to undo the peak of current: after some milliseconds the power contacts shortcircuit the resistences while the early-closing contacts become an open circuit. The precharge resistences must be inserted for an adequate time allowed by the electronic system.
The system that leads the contactors cannot be a simple relay contact but it becomes a microprocessor electronic system that ensures the optimization, the synchronism and the repeatability of the insertions. (**C**)



Command impulse (green) – Contact of a standard contactor with rebounds (purple) – SUPERTEC contact without rebounds (blue).



Capacitor insertion and its related overcurrents caused by the contactors rebounds.



Capacitor insertion and its related overcurrents thanks to SUPERTEC system.

PF CONTROLLER VARACTOR 180 WITH SUPERTEC SYSTEM

Model		N. output transistors	S/N
VARACTOR	V 180/4	4	PS180204

PF CONTROLLER VARACTOR 650 S WITH SUPERTEC SYSTEM

Model		N. output transistors	S/N
VARACTOR	V 650 S	6	PS650Z06