

# AAR/100-ST

Automatic P.F.C. equipment with Static Insertion



The entire **AAR/100-ST** series is equipped with "zero-crossing" static relays (thyristors), and it has been designed to improve the performance of traditional equipment, such as: increasing the life of the capacitors banks, decreasing the time response of the equipment to follow rapid changes in loads. Suitable for applications with **high harmonic distortion** such as automotive, harbours, mechanical workshops, ...

## PERFORMANCE DATA

- **Rated voltage** 400 Vac (others on request)
- **Rated frequency** 50 Hz (60 Hz on request)
- **Insulation voltage** 690 Vac
- **auxiliary voltage** 230 Vac (110 Vac on request)
- **Overvoltage** 1,1 Un (rated voltage)
- **Temperature range** -5 / +40 °C
- **Impulse withstand** 8 kV

## HARMONIC CONTENT

- THD(I)max. = 100% on the network
- THD(U)max. = 3% on the network
- p = 7%

## TECHNICAL DATA

- Enclosures** Made of sheet steel, protected against corrosion by phosphating and epoxy powder coating. RAL 7035 colour (others on request). Degree of protection: external panel IP 31 (others on request); internal panel IP 20 at the input of power cables (IP 20 with open doors on request).
- Installation** Indoor installation, in a well ventilated position away from heat sources.
- Ventilation** Forced.
- Switch isolator** Tri-polar off-load disconnecter.
- Wiring** The internal connections are made with flame retardant cables with very low smoke emission (other types of cables on request). On the non-pre-insulated terminals the connection point is covered with a long-life heat-shrinking sheath. The auxiliary voltage are appropriately identified in compliance with current regulations.
- Insertion** Static, based on the use of thyristors, controlled by a microprocessor such that the switching on of the electronic components occurs when the potential difference between the network and the capacitors is zero. In this way dangerous transients are avoided, with negative effects on the network, even when the capacitors are partially charged. The disconnection takes place at zero current (that is, shutdown occurs at the natural zero current passage of the static power factor correction) The microprocessor control ensures for the static system a maximum delay for the insertion of the capacitor banks of 200 ms.
- Fuses** Each capacitors bank is protected by fuses. The protection system of both the power circuits (NH-00 curve gG fuses) and the auxiliary ones (isolable fuse holders and 10.3x38 fuses) foresees the use of high breaking power fuses (100kA).
- Capacitors** Condensatori monofase in polipropilene metallizzato autorigenerabile (MKP), dotati di dispositivo anticoppio e resistenza di scarica. Sono impregnati in olio vegetale, esente da PCB. Collegamento a triangolo. Tipo di servizio continuativo.
- **tensione nominale: 500 Vac (tensione massima 550 Vac)**
  - sovratensione: 1,1 x Un (8h / 24h)
  - sovraccarico di corrente: 1,3 x In
  - tolleranza sulla capacità: -5% / +10%
  - perdite per dissipazione:  $\leq 0,4$  W/kvar
  - categoria temperatura: -25 / D
- Detuning reactors** **Tuning frequency: 189 Hz (p = 7%)**  
Power losses: 6 W / kvar (AVG)  
Max. Harmonic distortion of the voltage allowed on the networks is: THDU = 3% (189 Hz). On request: AAR / 6 (THDU = 10%).
- Controller**
- type of measurement: varmetric.
  - amperometric signal: by means of an amperometric transformer with secondary 5A, class 1 - 5VA (by the user)
  - amperometric signal sensitivity: 2.5% for BMR series, 0.3% for HPR series
  - switching on / off times of the single capacitor bank: 1 "

## QUALITY AND TESTING

- Regulations** Capacitors: IEC/EN 60831-1 / 2 certified by IMQ (V1927); Equipment: IEC/EN 61439-1 / 2, IEC/EN 61921.
- European directives** Low voltage: 2014/35/CE; Electromagnetic compatibility: 2014/30/CE.
- Testing** 100% of the automatic equipment is subject to visual inspection, insulation test: phase-phase and phase-earth, battery efficiency and ventilation circuit control: the report is included in the documentation. The capacitors are tested in three consecutive stages of the production process: after winding, regeneration and before labeling.

## CONFIGURATION

### General notes

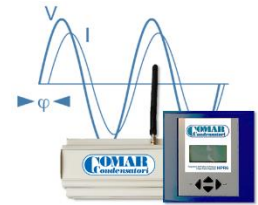
- For dimensions, please consult the cabinet drawings, referring to the "Type" column.
- The indication for cable entry (power supply) is as follows: ↑ from the bottom, ↙ side up, ↓ from the top
- The rated power is expressed at 400 V - 50 Hz.

The choice of supply cables depends on the installation conditions, the length of the same and the ambient temperature. For a correct sizing, refer to the IEC 60364-5, CEI 64-8 and the UNEL 35024/01 standards.

### Cloud Control System (CCS)

On request, the CCS remote monitoring system can be integrated to display the data in real time.

For any specific information, and to discover the advantages of the Cloud Control System service, we refer to the specific brochure available on the website [www.comarcond.com](http://www.comarcond.com) or directly upon request.



### Table

THD(I)max. = 100%

THD(U)max. = 3%

P = 7%

Code	Type	Qn (kvar)	Cable entry	In (A)	Banks size (kvar)					Steps (n)	Switch isolator (A)	Controller (type)	Weight (kg)
8611402750200	G8E	75	↑	108	12.5	12.5	50			5	160	HPR6	180
8611403100200	G8E	100	↑	144	25	25	50			4	200	HPR6	200
8611403125200	G8E	125	↑	180	25	50	50			5	315	HPR6	220
8611403150200	G8E	150	↑	216	25	50	75			6	400	HPR6	240
8611403175200	G8E	175	↑	252	25	50	50	50		7	400	HPR6	260
8611403200709	G9E	200	↑	288	25	50	50	75		8	500	HPR6	300
8611403225709	G9E	225	↑	324	25	50	75	75		9	500	HPR6	330
8611403250709	G9E	250	↑	360	25	25	50	75	75	10	630	HPR6	350
8611403300709	G9E	300	↑	432	25	50	75	75	75	12	800	HPR6	390
8611403350709	G9E	350	↑	504	50	75	75	75	75	9	800	HPR6	410
8611403400709	G9E (II)	400	↑	576	50	50	75	75	75	14	1000	HPR6	570
8611403450709	G9E (II)	450	↑	648	25	50	75	75	75	18	1000	HPR12	620
8611403500709	G9E (II)	500	↑	720	50	75	75	75	75	13	1250	HPR12	670
8611403550709	G9E (II)	550	↑	792	50	50	75	75	75	19	1250	HPR12	720
8611403600709	G9E (III)	600	↑	864	75	75	75	75	75	8	1600	HPR12	770
8611403650709	G9E (III)	650	↑	936	50	75	75	75	75	150	800+630	HPR12	820
8611403750709	G9E (III)	750	↑	1080	75	75	75	75	150	150	800+800	HPR12	870
8611403825709	G9E (III)	825	↑	1191	75	75	75	150	150	150	800+1000	HPR12	1030
8611403900709	G9E (III)	900	↑	1299	75	75	75	150	150	150	800+1250	HPR12	1080
8611403975709	G9E (III)	975	↑	1407	75	75	75	150	150	150	800+1250	HPR12	1130
8611404105709	G9E (III)	1050	↑	1516	75	75	150	150	150	150	800+1600	HPR12	1180

All automatic P.F.C. series, with or without blocking reactors, can be realized with static insertion.

Other solutions are available on request