

# AAR/D20

Automatic P.F.C. equipment with Detuning Reactors



**AAR/D20** series equipment are particularly suitable for three-phase networks with **high harmonic distortion** in current. These equipment guarantee an accurate P.F.C., thanks to a multi-step design that effectively divides the power. In addition, on the G6E and G9E cabinet, all the capacitors banks are assembled on racks, easily removable from the front of the panel, for simple management and maintenance.

## DATI DI PERFORMANCE

- **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

## CONTENUTO ARMONICO (in assenza di risonanza)

- THD(I)max. = 100% on the network
- THD(U)max. = 20% on the network
- $\rho = 7\%$

## TECHNICAL DATA

<b>Enclosures</b>	Made of sheet steel, protected against corrosion by phosphating and epoxy powder coating. RAL 7032 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).
<b>Installation</b>	Indoor installation, in a well ventilated position away from heat sources.
<b>Ventilation</b>	Forced.
<b>Switch isolator</b>	Tri-polar under-load type with door lock.
<b>Wiring</b>	The internal connection cables are FS17-450 / 750V type, flame retardant and with very low fumes 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.
<b>3-pole contactors</b>	Each battery is switched on / off by a three-pole contactor (Class AC6-b) to offer high reliability.
<b>Fuses</b>	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).
<b>Capacitors</b>	Single-phase capacitors in self-healing metallized polypropylene (MKP), equipped with an anti-burst device and discharge resistance. They are impregnated in vegetable oil, PCB free. Delta connection. Type of continuous service. <ul style="list-style-type: none"><li>• <b>rated voltage: 550 Vac (maximum voltage 600 Vac)</b></li><li>• overvoltage: 1.1 x A (8h / 24h)</li><li>• current overload: 1.3 x In</li><li>• capacity tolerance: -5% / + 10%</li><li>• losses due to dissipation: <math>\leq 0.4</math> W / kvar</li><li>• temperature category: -25 / D</li></ul>
<b>Detuning reactors</b>	<b>Tuning frequency: 189 Hz (<math>\rho = 7\%</math>)</b> Power losses: 6 W / kvar (AVG) Max. Harmonic distortion of the voltage allowed on the networks is: THDU = 20% (189 Hz).
<b>Controller</b>	<ul style="list-style-type: none"><li>• type of measurement: varmetric.</li><li>• amperometric signal: by means of an amperometric transformer with secondary 5A, class 1 - 5VA (by the user)</li><li>• amperometric signal sensitivity: 2.5% for BMR series, 0.3% for HPR series</li><li>• standard capacitors on / off times: 25 "± 30" (others on request)</li></ul>

## 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)























The symbol  indicates that CCS, the remote monitoring system, is pre-installed on the P.F.C. equipment. For any specific information, and to find out the advantages of the Cloud Control System service, refer to the appropriate brochure available on [www.comarcond.com](http://www.comarcond.com) or directly on request.

### Table

THD(I)max. = 100%

THD(U)max. = 20%

ρ = 7%

Code	Type	Qn (kvar)	Cable entry	In (A)	Banks size (kvar)					Steps (n)	Switch isolator (A)	Controller (type)	CCS	Weight (kg)		
8541403100620	G6E	100	↓	144	25	25	50			4	200	HPR6		200		
8541403125620	G6E	125	↓	180	25	50	50			5	315	HPR6		259		
8541403150720	G6E	150	↓	216	25	25	50	50		6	400	HPR6		276		
8541403175620	G6E	175	↓	252	25	50	50	50		7	400	HPR6		332		
8541403200720	G9E	200	↑	288	25	50	50	75		8	500	HPR6		349		
8541403225720	G9E	225	↑	324	25	50	75	75		9	500	HPR6		376		
8541403250720	G9E	250	↑	360	25	25	50	75	75	10	630	HPR6		400		
8541403275720	G9E	275	↑	397	25	50	50	75	75	11	630	HPR6		440		
8541403300720	G9E	300	↑	432	25	50	75	75	75	12	800	HPR6		485		
8541403350720	G9E	350	↑	504	50	75	75	75	75	7	800	HPR6		520		
8541403375720	G9E	375	↑	541	75	75	75	75	75	5	800	HPR6		520		
8541403400620	G9E (II)	400	↑	576	50	50	75	75	75	75	8	1000	HPR6		656	
8541403450620	G9E (II)	450	↑	648	25	50	75	75	75	75	18	1000	HPR12		772	
8541403500620	G9E (II)	500	↑	720	50	75	75	75	75	75	10	1250	HPR12		800	
8541403550620	G9E (II)	550	↑	792	50	50	75	75	75	75	11	1250	HPR12		866	
8541403600620	G9E (II)	600	↑	864	75	75	75	75	75	75	8	1250	HPR12		910	
8541403650620	G9E (II)	650	↑	936	50	75	75	75	75	75	150	13	800+630	HPR12		985
8541403750620	G9E (II)	750	↑	1080	75	75	75	75	75	75	150	10	800+800	HPR12		1050
8541403825620	G9E (III)	825	↑	1191	75	75	75	75	75	150	150	11	800+1000	HPR12		1220
8541403900620	G9E (III)	900	↑	1299	75	75	75	75	150	150	150	12	800+1250	HPR12		1300
8541403975620	G9E (III)	975	↑	1407	75	75	75	150	150	150	150	13	800+1250	HPR12		1380
8541404105620	G9E (III)	1050	↑	1516	75	75	150	150	150	150	150	14	800+1600	HPR12		1460

Other solutions are available on request.