

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**. 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.

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)
- **Overtoltage** 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. = 20% 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 FS17-450/750V 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.
3-pole contactors	Each battery is switched on / off by a three-pole contactor (Class AC6-b) to offer high reliability.
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	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">• rated voltage: 550 Vac (maximum voltage 600 Vac)• overvoltage: 1.1 x A (8h / 24h)• current overload: 1.3 x In• capacity tolerance: -5% / + 10%• losses due to dissipation: ≤ 0.4 W / kvar• temperature category: -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 = 20% (189 Hz).
Controller	<ul style="list-style-type: none">• 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• standard capacitors on / off times: 60" (others on request)

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

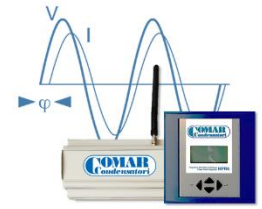
General notes

- 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 or directly on request.
























Table

THD(I)max. = 100%

THD(U)max. = 20%

p = 7%

Code	Type	Qn (kvar)	Cable entry	In (A)	Banks size (kvar)					Steps (n)	Switch isolator (A)	Controller (type)	CCS	Weight (kg)
854140310062R	G6E	100	↓	144	25	25	50			4	250	HPR6		200
854140312562R	G6E	125	↓	180	25	50	50			5	315	HPR6		259
854140315072R	G6E	150	↓	216	25	25	50	50		6	400	HPR6		276
854140317562R	G6E	175	↓	252	25	50	50	50		7	400	HPR6		332
854140320072R	G9E	200	↑	288	25	50	50	75		8	500	HPR6		349
854140322572R	G9E	225	↑	324	25	50	75	75		9	500	HPR6		376
854140325072R	G9E	250	↑	360	25	25	50	75	75	10	630	HPR6		400
854140327572R	G9E	275	↑	397	25	50	50	75	75	11	630	HPR6		440
854140330072R	G9E	300	↑	432	25	50	75	75	75	12	800	HPR6		485
854140335072R	G9E	350	↑	504	50	75	75	75	75	7	800	HPR6		520
854140340062R	G9E (II)	400	↑	576	50	50	75	75	75	8	1000	HPR6		656
854140345062R	G9E (II)	450	↑	648	25	50	75	75	75	18	1000	HPR12		772
854140350062R	G9E (II)	500	↑	720	50	75	75	75	75	10	1250	HPR12		800
854140355062R	G9E (II)	550	↑	792	50	50	75	75	75	11	1250	HPR12		866
854140360062R	G9E (II)	600	↑	864	75	75	75	75	75	8	1600	HPR12		910
854140365062R	G9E (II)	650	↑	936	50	75	75	75	75	13	800+630	HPR12		985
854140375062R	G9E (II)	750	↑	1080	75	75	75	75	150	10	800+800	HPR12		1050
854140382562R	G9E (III)	825	↑	1191	75	75	75	75	150	11	800+1000	HPR12		1220
854140390062R	G9E (III)	900	↑	1299	75	75	75	150	150	12	800+1250	HPR12		1300
854140397562R	G9E (III)	975	↑	1407	75	75	75	150	150	13	800+1250	HPR12		1380
854140410562R	G9E (III)	1050	↑	1516	75	75	150	150	150	14	800+1600	HPR12		1460

Other solutions are available on request.