# Automatic Power Factor Correction equipment



PERFORMANCE DATA

	Rated voltage	<b>415 Vac</b> (others on request)
	Rated frequency	50 Hz (60 Hz on request)
	Insulation voltage	690 Vac
•	auxiliary voltage	400 Vac forG3E, G4E, G4RM <sup>1</sup> 230 Vac for G4RM <sup>2</sup> , G6E, G8E
2	Overvoltage	1,1 Un (rated voltage)
2	Temperature range	-5 / +40 °C
	Impulse withstand	6 kV (G3E, G4E); 8 kV (G4RM, G6E, G8E)

**B50** series equipment are particularly suitable for three-phase networks with operating voltage equal to **400 Vac** (+/- 10%) with **medium 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 G8E cabinet, all the capacitors banks are assembled on racks, easily removable from the front of the panel, for simple management and maintenance.

<sup>1</sup>up to 200 kvar. <sup>2</sup>over 200 kvar. Auxiliary voltage is supplied by a proper transformer.

HARMONIC CONTENT (in the absence of resonance)

THD(I)max. = 35%	on the network
THD(lc)max. = 80%	on the capacitors

## **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, with the exception of type G3E and G4E with IP30 (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	Natural for powers up to 200 kvar; Forced for powers over 200 kvar.
Switch isolator	Tri-polar off-load disconnector.
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.
3-pole contactors	Each battery is switched on / off by a three-pole contactor (Class AC6-b) to offer high reliability. The limitation of current peaks caused by the insertion of the capacitive batteries is guaranteed by pre-charging resistors.
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. • rated voltage: 500 Vac (maximum voltage 550 Vac) • overvoltage: 1.1 x A (8h / 24h) • current overload: 1.3 x ln • capacity tolerance: -5% / + 10% • losses due to dissipation: ≤0.4 W / kvar • temperature category: -25 / D
Controller	<ul> <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> </ul>

• standard capacitors on / off times: 25 "÷ 30" (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

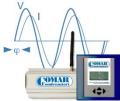
#### General notes

- 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 415 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)

<u>On request</u>, 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 or directly upon request.



#### Table

entry         (kvar)         (k)         (kvar)         (n)         (A)         (kyp)         0           6881412102350         G3E         10.2         /         14         3.4				THD(I)	max. = 3	THD(Ic)max. = 80%											
B681412102350       G3E       10.2       ✓       14       3.6       3.6       3.6       3.6       3.6       3.6	Code	Туре	Qn		In				Bank	s size				Steps		Controller	Weight
B681412159350       G3E       15.9       ✓       22       3.4       6.25       5       40       BMR4       3         B681412221350       G3E       22.15       ✓       31       3.4       6.25       12.5       7       80       BMR4       3         B681412210350       G3E       31,25       ✓       43       6.25       12.5       5       80       BMR4       3         B681412300350       G3E       43,75       ✓       61       6.25       12.5       25       7       12.5       BMR4       3         B68141260350       G3E       50       ✓       70       12.5       12.5       25       5       12.5       BMR4       3         B68141260350       G3E       62.5       ✓       87       12.5       25       25       5       12.5       BMR4       3         B681413100350       G4E       70       12.5       12.5       25       50       5       250       BMR4       3         B68141310355       G4RM       125       ✓       174       25       50       50       5       7       400       BMR4       3         B681413103555       G4RM </th <th></th> <th></th> <th>(kvar)</th> <th></th> <th>(A)</th> <th></th> <th></th> <th></th> <th>(kv</th> <th>ar)</th> <th></th> <th></th> <th></th> <th>(n)</th> <th>(A)</th> <th>(type)</th> <th>(kg)</th>			(kvar)		(A)				(kv	ar)				(n)	(A)	(type)	(kg)
6681412221350       G3E       22,15       ✓       31       3.4       6,25       12,5       7       80       BMR4       2         8681412210350       G3E       31,25       ✓       43       6,25       12,5       12,5       5       80       BMR4       2         8681412435350       G3E       43,75       ✓       61       6,25       12,5       2,5       7       12,5       BMR4       2         868141260350       G3E       62,5       ✓       70       12,5       12,5       2,5       2,5       5       12,5       BMR4       2         868141260350       G3E       62,5       ✓       70       12,5       12,5       2,5       2,5       5       12,5       BMR4       2         868141270350       G4E       75       ✓       104       12,5       12,5       2,5       50       5       2,00       BMR4       2         868141310505       G4E       100       ✓       139       12,5       12,5       5,0       5,0       5,0       5,0       8       2,00       BMR4       2         868141320355       G4RM       12,5       ✓       13,4       2,5 <t< td=""><td>8681412102350</td><td>G3E</td><td>10,2</td><td>2</td><td>14</td><td>3,4</td><td>3,4</td><td>3,4</td><td></td><td></td><td></td><td></td><td></td><td>3</td><td>40</td><td>BMR4</td><td>14</td></t<>	8681412102350	G3E	10,2	2	14	3,4	3,4	3,4						3	40	BMR4	14
8681412310350       G3E       51,25       ✓       43       6,25       12,5       12,5       5       80       BMR4       2         8681412435350       G3E       43,75       ✓       61       6,25       12,5       25       7       125       BMR4       2         868141260350       G3E       50       ✓       70       12,5       12,5       25       5       125       BMR4       2         8681412625350       G3E       62,5       ✓       87       12,5       25       25       5       125       BMR4       2         8681412625350       G4E       70       12,5       12,5       25       25       5       125       BMR4       2         868141310350       G4E       100       ✓       139       12,5       12,5       25       50       5       250       BMR4       2         868141310355       G4RM       150       ✓       209       2,5       50       50       7       400       BMR4       2         868141320355       G4RM       200       ✓       278       2,5       50       100       8       400       BMR4       2 <td< td=""><td>8681412159350</td><td>G3E</td><td>15,9</td><td>2</td><td>22</td><td>3,4</td><td>6,25</td><td>6,25</td><td></td><td></td><td></td><td></td><td></td><td>5</td><td>40</td><td>BMR4</td><td>15</td></td<>	8681412159350	G3E	15,9	2	22	3,4	6,25	6,25						5	40	BMR4	15
B681412435350       G3E       43,75       ✓       61       6.25       12,5       25       7       125       BMR4       2         B68141250350       G3E       50       ✓       70       12,5       12,5       25       4       125       BMR4       2         B68141250350       G3E       62,5       ✓       87       12,5       25       25       5       125       BMR4       2         B68141262330       G4E       75       ✓       104       12,5       12,5       25       25       5       125       BMR4       2         B681412750350       G4E       700       ✓       139       12,5       12,5       25       50       5       250       BMR4       26         B68141310355       G4RM       125       ✓       174       25       50       50       5       250       BMR4       26         B68141310355       G4RM       175       ✓       243       25       50       50       7       400       BMR4       26         B68141320355       G4RM       250       ✓       218       25       50       100       9       500       BMR4       26 <td>8681412221350</td> <td>G3E</td> <td>22,15</td> <td>2</td> <td>31</td> <td>3,4</td> <td>6,25</td> <td>12,5</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>7</td> <td>80</td> <td>BMR4</td> <td>16</td>	8681412221350	G3E	22,15	2	31	3,4	6,25	12,5						7	80	BMR4	16
B681412500350       G3E       S0       ✓       70       12.5       12.5       25       4       125       BMR4       25         B681412625350       G3E       62.5       ✓       87       12.5       25       25       5       125       BMR4       25         B681412750350       G4E       75       ✓       104       12.5       12.5       25       5       6       160       BMR4       25         B681413100350       G4E       100       ✓       139       12.5       12.5       25       50       8       200       BMR4       26         B68141310355       G4RM       125       ✓       174       25       50       50       5       250       BMR4       26         B68141310355       G4RM       150       ✓       209       25       25       50       50       7       400       BMR4       26         B681413200355       G4RM       175       ✓       243       25       50       100       8       400       BMR4       26         B68141320355       G4RM       250       ✓       313       25       50       100       9       500       BMR4<	8681412310350	G3E	31,25	2	43	6,25	12,5	12,5						5	80	BMR4	18
B681412625350       G3E       62,5       ✓       87       12,5       25       25       5       125       BMR4       2         B681412750350       G4E       75       ✓       104       12,5       12,5       25       25       6       160       BMR4       2         B681413100350       G4E       100       ✓       139       12,5       12,5       25       50       8       200       BMR4       2         B681413100350       G4E       100       ✓       139       12,5       12,5       25       50       5       250       BMR4       20         B681413105355       G4RM       150       ✓       209       25       25       50       50       7       400       BMR4       4         B681413200355       G4RM       175       ✓       243       25       50       50       50       7       400       BMR4       4         B681413200355       G4RM       200       ✓       278       25       25       50       100       8       400       BMR4       4         B68141320355       G4RM       200       ✓       278       25       50       100 <td>8681412435350</td> <td>G3E</td> <td>43,75</td> <td>2</td> <td>61</td> <td>6,25</td> <td>12,5</td> <td>25</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>7</td> <td>125</td> <td>BMR4</td> <td>22</td>	8681412435350	G3E	43,75	2	61	6,25	12,5	25						7	125	BMR4	22
8681412750350       G4E       75       ✓       104       12.5       12.5       25       25       6       160       BMR4       33         8681413100350       G4E       100       ✓       139       12.5       12.5       25       50       8       200       BMR4       34         8681413120350       G4E       100       ✓       174       25       50       50       5       250       BMR4       34         8681413125355       G4RM       125       ✓       174       25       50       50       50       5       250       BMR4       34         8681413125355       G4RM       175       ✓       243       25       50       50       50       7       400       BMR4       34         868141320355       G4RM       200       ✓       278       25       25       50       100       8       400       BMR4       34         868141320355       G4RM       220       ✓       313       25       50       100       9       500       BMR4       34         868141320345       G6E       300       ↓       417       25       50       75       75	8681412500350	G3E	50	2	70	12,5	12,5	25						4	125	BMR4	23
8681413100350       G4E       100       ✓       139       12.5       12.5       25       50       8       200       BMR4       4         8681413125355       G4RM       125       ✓       174       25       50       50       5       250       BMR4       4         8681413150355       G4RM       150       ✓       209       25       25       50       50       6       315       BMR4       4         8681413150355       G4RM       175       ✓       243       25       50       50       7       400       BMR4       4         868141320355       G4RM       200       ✓       278       25       25       50       100       8       400       BMR4       4         868141320355       G4RM       200       ✓       278       25       25       50       100       9       500       BMR4       4         868141320355       G4RM       220       ✓       313       25       50       75       100       10       500       BMR4       4         868141320345       G6E       300       ↓       417       25       50       75       75	8681412625350	G3E	62,5	2	87	12,5	25	25						5	125	BMR4	26
Best 1413125355       G4RM       125       ✓       174       25       50       50       5       250       BMR4       42         8681413150355       G4RM       150       ✓       209       25       25       50       50       6       315       BMR4       48         8681413150355       G4RM       175       ✓       243       25       50       50       7       400       BMR4       48         8681413200355       G4RM       200       ✓       278       25       25       50       100       8       400       BMR4       48         868141320355       G4RM       225       ✓       313       25       50       50       100       9       500       BMR4       48         8681413200345       G6E       300       ↓       417       25       50       75       75       10       10       500       BMR4       48         8681413300345       G6E       300       ↓       417       25       50       75       75       75       12       630       HPR6       1         8681413300345       G6E       300       ↓       487       50       75	8681412750350	G4E	75	2	104	12,5	12,5	25	25					6	160	BMR4	38
8681413150355       G4RM       150       ✓       209       25       25       50       50       6       315       BMR4       48         8681413175355       G4RM       175       ✓       243       25       50       50       50       7       400       BMR4       48         8681413200355       G4RM       200       ✓       278       25       25       50       100       8       400       BMR4       48         8681413200355       G4RM       225       ✓       313       25       50       50       100       9       500       BMR4       48         868141320355       G4RM       250       ✓       348       25       50       75       100       10       500       BMR4       48         8681413200345       G6E       300       ↓       417       25       50       75       75       75       12       630       HPR6       1         8681413300345       G6E       300       ↓       487       50       75       75       75       12       630       HPR6       1         868141350345       G6E       400       ↓       556       50	8681413100350	G4E	100	2	139	12,5	12,5	25	50					8	200	BMR4	43
8681413175355       G4RM       175       ✓       243       25       50       50       50       7       400       BMR4       28         8681413200355       G4RM       200       ✓       278       25       25       50       100       8       400       BMR4       28         868141320355       G4RM       225       ✓       313       25       50       50       100       9       500       BMR4       28         868141320355       G4RM       250       ✓       348       25       50       75       100       10       500       BMR4       19         868141320345       G6E       300       ↓       417       25       50       75       75       75       12       630       HPR6       1         8681413300345       G6E       350       ↓       487       50       75       75       75       12       630       HPR6       1         8681413400345       G6E       400       ↓       556       50       50       75       75       75       14       800       HPR6       2         868141350345       G6E       450       ↓       626	8681413125355	G4RM	125	2	174	25	50	50						5	250	BMR4	80
Rest       Res       Rest       Rest	8681413150355	G4RM	150	2	209	25	25	50	50					6	315	BMR4	85
8681413225355       G4RM       225       ✓       313       25       50       50       100       9       500       BMR4       9         8681413250355       G4RM       250       ✓       348       25       50       75       100       10       500       BMR4       1         8681413200345       G6E       300       ↓       417       25       50       75       75       75       12       630       HPR6       1         8681413300345       G6E       300       ↓       487       50       75       75       75       9       800       HPR6       1         8681413400345       G6E       400       ↓       556       50       75       75       75       75       14       800       HPR6       2         868141350345       G6E       400       ↓       556       50       50       75       75       150       16       1000       HPR6       2         8681413500345       G6E       450       ↓       626       50       75       75       75       150       13       1000       HPR6       2         8681413500345       G8E       525	8681413175355	G4RM	175	2	243	25	50	50	50					7	400	BMR4	87
8681413250355       G4RM       250       ✓       348       25       50       75       100       10       500       BMR4       1         8681413300345       G6E       300       ↓       417       25       50       75       75       75       12       630       HPR6       1         8681413350345       G6E       350       ↓       487       50       75       75       75       75       9       800       HPR6       1         8681413400345       G6E       400       ↓       556       50       50       75       75       75       14       800       HPR6       2         8681413450345       G6E       450       ↓       626       50       50       75       75       150       16       1000       HPR6       2         8681413500345       G6E       450       ↓       626       50       75       75       75       150       13       1000       HPR6       2         8681413500345       G6E       500       ↑       75       75       75       75       75       75       75       75       75       75       75       75       75	8681413200355	G4RM	200	2	278	25	25	50	100					8	400	BMR4	89
8681413300345       G6E       300       ↓       417       25       50       75       75       75       12       630       HPR6       1         8681413350345       G6E       350       ↓       487       50       75       75       75       9       800       HPR6       1         8681413400345       G6E       400       ↓       556       50       50       75       75       75       14       800       HPR6       1         8681413400345       G6E       400       ↓       556       50       50       75       75       14       800       HPR6       2         8681413400345       G6E       450       ↓       626       50       50       75       75       150       16       1000       HPR6       2         8681413500345       G6E       500       ↓       696       50       75       75       75       150       13       1000       HPR6       2         8681413500345       G8E       525       ↑       731       75       75       75       75       75       75       75       75       75       75       75       75       75	8681413225355	G4RM	225	2	313	25	50	50	100					9	500	BMR4	95
8681413350345       G6E       350       ↓       487       50       75       75       75       9       800       HPR6       1         8681413400345       G6E       400       ↓       556       50       50       75       75       75       14       800       HPR6       2         8681413400345       G6E       400       ↓       556       50       50       75       75       150       16       1000       HPR6       2         8681413450345       G6E       450       ↓       626       50       50       75       75       150       16       1000       HPR6       2         8681413500345       G6E       500       ↓       696       50       75       75       150       13       1000       HPR6       2         8681413502450       G8E       525       ↑       731       75	8681413250355	G4RM	250	2	348	25	50	75	100					10	500	BMR4	102
8681413400345       G6E       400       ↓       556       50       75       75       75       14       800       HPR6       2         8681413450345       G6E       450       ↓       626       50       50       75       75       150       16       1000       HPR6       2         8681413500345       G6E       450       ↓       626       50       75       75       150       16       1000       HPR6       2         8681413500345       G6E       500       ↓       696       50       75       75       75       150       13       1000       HPR6       2         8681413500345       G8E       525       ↑       731       75       75       75       75       75       7       1250       HPR12       3         8681413607450       G8E       600       ↑       836       75       75       75       75       75       75       8       1250       HPR12       3         86814136075450       G8E       675       ↑       940       75       75       75       75       150       9       1600       HPR12       3         8681413750450	8681413300345	G6E	300	↓	417	25	50	75	75	75				12	630	HPR6	175
8681413450345       G6E       450       ↓       626       50       50       75       75       150       16       1000       HPR6       2         8681413500345       G6E       500       ↓       696       50       75       75       75       150       13       1000       HPR6       2         8681413502345       G6E       500       ↓       696       50       75       75       75       150       13       1000       HPR6       2         86814135225450       G8E       525       ↑       731       75       75       75       75       75       7       1250       HPR12       3         8681413600450       G8E       600       ↑       836       75       75       75       75       75       75       8       1250       HPR12       3         86814136075450       G8E       675       ↑       940       75       75       75       75       75       150       9       1600       HPR12       3         8681413750450       G8E       750       ↑       1045       75       75       75       75       150       10       1600       HPR12	8681413350345	G6E	350	$\downarrow$	487	50	75	75	75	75				9	800	HPR6	192
8681413500345       G6E       500       ↓       696       50       75       75       75       150       13       1000       HPR6       2         8681413525450       G8E       525       ↑       731       75       75       75       75       75       7       1250       HPR12       3         8681413600450       G8E       600       ↑       836       75       75       75       75       75       75       8       1250       HPR12       3         8681413600450       G8E       600       ↑       836       75       75       75       75       75       8       1250       HPR12       3         8681413675450       G8E       675       ↑       940       75       75       75       75       75       150       9       1600       HPR12       3         8681413750450       G8E       750       ↑       1045       75       75       75       75       150       10       1600       HPR12       3         8681413825450       G8E (III)       825       ↑       1149       75       75       75       75       150       150       11       800+1000	8681413400345	G6E	400	$\downarrow$	556	50	50	75	75	75	75			14	800	HPR6	207
8681413525450       G8E       525       ↑       731       75       75       75       75       75       7       1250       HPR12       3         8681413600450       G8E       600       ↑       836       75       75       75       75       75       75       75       8       1250       HPR12       3         86814136075450       G8E       675       ↑       940       75       75       75       75       75       150       9       1600       HPR12       3         8681413675450       G8E       675       ↑       940       75       75       75       75       150       9       1600       HPR12       3         8681413750450       G8E       750       ↑       1045       75       75       75       75       150       10       1600       HPR12       3         8681413825450       G8E (II)       825       ↑       1149       75       75       75       75       150       150       11       800+1000       HPR12       5	8681413450345	G6E	450	Ļ	626	50	50	50	75	75	150			16	1000	HPR6	240
8681413600450       G8E       600       ↑       836       75<	8681413500345	G6E	500	Ļ	696	50	75	75	75	75	150			13	1000	HPR6	255
8681413675450       G8E       675       ↑       940       75       75       75       75       75       150       9       1600       HPR12       3         8681413750450       G8E       750       ↑       1045       75       75       75       75       150       10       1600       HPR12       3         8681413825450       G8E (II)       825       ↑       1149       75       75       75       75       150       150       10       1600       HPR12       3	8681413525450	G8E	525	1	731	75	75	75	75	75	75	75		7	1250	HPR12	315
8681413750450       G8E       750       ↑       1045       75       75       75       75       75       150       10       1600       HPR12       3         8681413825450       G8E (II)       825       ↑       1149       75       75       75       75       150       150       11       800+1000       HPR12       5	8681413600450	G8E	600	1	836	75	75	75	75	75	75	75	75	8	1250	HPR12	330
8681413825450 G8E (II) 825 ↑ 1149 75 75 75 75 75 150 150 11 800+1000 HPR12 5	8681413675450	G8E	675	↑	940	75	75	75	75	75	75	75	150	9	1600	HPR12	350
	8681413750450	G8E	750	↑	1045	75	75	75	75	75	75	150	150	10	1600	HPR12	380
8681413900450 G8E(II) 900 ↑ 1254 75 75 75 75 150 150 150 12 1000+1000 HPR12 5	8681413825450	G8E (II)	825	1	1149	75	75	75	75	75	150	150	150	11	800+1000	HPR12	510
	8681413900450	G8E (II)	900	↑	1254	75	75	75	75	150	150	150	150	12	1000+1000	HPR12	530
8681413975450 G8E (II) 975 ↑ 1358 75 75 75 150 150 150 150 150 13 1000+1250 HPR12 5	8681413975450	G8E (II)	975	↑	1358	75	75	75	150	150	150	150	150	13	1000+1250	HPR12	550
8681414105450 G8E(II) 1050 ↑ 1462 75 75 150 150 150 150 150 150 14 1000+1250 HPR12 6	8681414105450	G8E (II)	1050	↑	1462	75	75	150	150	150	150	150	150	14	1000+1250	HPR12	650
8681414120450 G8E (II) 1200 ↑ 1671 75 75 150 150 150 150 150 300 16 1250+1250 HPR12 6	8681414120450	G8E (II)	1200	<b>↑</b>	1671	75	75	150	150	150	150	150	300	16	1250+1250	HPR12	690
8681414135450 G8E(II) 1350 ↑ 1880 75 75 150 150 150 150 300 300 18 1600+1250 HPR12 7	8681414135450	G8E (II)	1350	↑	1880	75	75	150	150	150	150	300	300	18	1600+1250	HPR12	730

Other solutions are available on request.

