Hybrid correction can be implemented on all current COMAR power factor correction series.

The installation is similar to that of conventional power factor correction units, with the only additional need to carry the amperometric (CT) signals of the 2 phases L1 (R) and L3 (T).

The equipment leaves the factory already fully configured and therefore does not require any setting by the installer

The AAR/600 hybrid series configurations is given as examples

GENERAL TECHNICAL DATA COMMON TO ALL SERIES

Enclosure	Made of steel sheet, protected against corrosion by phosphating and epoxy powder coating. Colour RAL 7035. Segregation: Form 1 External degree of protection: IP31 Internal degree of protection: panels with interlocked switch-disconnector IP20 live parts; IP20 protection in additional modules Capacitor banks are assembled on drawers that can be pulled out from the front of the cabinet for quick maintenance Cabinets are equipped with eyebolts for lifting
Installation	Indoor installation, in a well ventilated position free from solar radiation. Pollution degree 1 Working temperature: -5 / +40 °C; Relative humidity RH50% @40°C (EN61435-1) Altitude: <1000 asl
Main Disconnector	Three-phase off-load disconnector with mechanical door interlock.
Wiring	Power connections are made with FS17-450/750V insulated, flame-retardant low smoke emission cables. On non-preinsulated cable lugs, the connection point is covered with a durable heat-shrink sleeve. Auxiliary circuits are appropriately identified in accordance with current standards.
Bank insertion	The banks are driven by three-phase contactors (Class AC6-b). Series without tuning reactor have contactors with a pre-insertion resistor to limit peak inrush current Static insertion series are fitted with thyristor insertion modules controlled by microprocessor such that switching on/off occurs when the potential difference between the mains and the capacitors is zero. (zero crossing). The switching time for the insertion of the capacitor banks is approximately 200 ms.
Fuses	The capacitive banks are protected by high breaking capacity fuses (100kA). The protection system for the power circuits uses NH-00 curve gG fuses; for the auxiliary circuits sectionable fuse holders and 10.3x38 fuses.
Auxiliary circuits	230 Vac Internal transformer
Impulse withstand	8 kV
Capacitors	Single-phase capacitors made of self-healing (SH) metallised polypropylene (MKP) Over pressure safety device — Discharge resistor (75V within 3') PCB-free vegetable oil impregnation — Delta connection. Continuous service — Overvoltage: 1.1 x Un (8h / 24h) Current overload: 1.3 x In — Capacitance tollerance: -5% / +10% Dissipation losses: ≤0.4 W/kvar — Temperature category: -25 / D In the higher-performance series, **'Heavy Duty'** capacitors made of high thickness film and multiple elements in series are installed to reduce the effect of high currents on the element heads
Tuning reactor (where present)	Iron core with oriented crystals; aluminium windings Resin impregnation Dissipation loss (average): 6W/kvar Over-temperature control probe
SVG	• IGBT technology • Real-time correction of reactive power and unbalance 97% efficiency • Connection: 3-phase (3-phase + neutral connection on request) Response time: 20ms
Controllers	• HPR+HMI 7" interconnected controllers with three-phase measurement • amperometric signals: by means of 3 current transformers with 5A secondary (not included) • response time: 20ms
Safety	Automatic unit shut-down for high THD(I), THD(U),, over-temperature >50°C, under and overvoltage. Step block for capacitance loss of the bank, reactor overtemperature (where present) Dry contact NC for extreme internal temperature (>70°C)
Testing	100% of the equipment undergoes visual inspection, phase-to-phase and phase-to-ground insulation tests, bank efficiency and ventilation circuit checks. Capacitors are tested for capacitance, dissipation factor [tan(δ)], verification of insulation to earth and overvoltage resistance at three consecutive points of the production process: after winding, during ageing process and at final assembly
Standards	Capacitors: IEC/EN 60831-1 / 2 certified by IMQ (V1927) Equipment: IEC/EN 61439-1 / 2, IEC/EN 61921; 2014/35/EC Electromagnetic compatibility: 2014/30/EC.

AAR/600-HSVG

Hybrid Power Factor Correction



The AAR/600-HSVG series **hybrid** equipments are particularly suitable for three-phase networks with **high harmonic current content**. These devices guarantee accurate correction, even in the presence of **impulsive and unbalanced loads**, thanks to a hybrid logic that manages the SVG system and the multi-step system. **The AAR/600-HSVG** systems can correct **inductive and capacitive loads**.

PERFORMANCE DATA

- **Rated voltage** 400 Vac (others on request)
- **Rated frequency** 50 Hz (60 Hz on request)
- **Insulation voltage** 800 Vac
- **Voltage overload** 1.1 Un (rated voltage)
- **Capacitors** Un=500; Umax 550

HARMONIC CONTENT

THD(I)max. = 100 % in the grid

THD(U)max. = 6%. in the grid

p = 7% (189 Hz)

STANDARD CONFIGURATIONS

Code	Type	Qn (kvar)	Cable entry	In (A)	SVG power (kvar)	bank power (kvar)	Disconnector (A)	Weight (kg)
8520150400HS0	G6E	150	↓	216	75	1x75	315	230
8520225400HS0	G6E	225	↓	324	75	2x75	500	315
8520300400HS0	G8E	300	↓	432	75	3x75	800	380
8520375400HS0	G8E2	375	↑	541	75	4x75	800	520
8520450400HS0	G8E2	450	↑	648	75	5x75	1000	620
8520525400HS0	G8E2	525	↑	756	75	6x75	1250	700
8520600400HS0	G8E2	600	↑	864	75	7x75	1600	770
8520675400HS0	G8E2	675	↑	972	75	8x75	1600	840
8520750400HS0	G8E2	750	↑	1080	75	9x75	1600	880
8520825400HS0	G8E3	825	↑	1191	75	10x75	2x1000	1040
8520900400HS0	G8E3	900	↑	1299	75	11x75	2x1000	1090
8520975400HS0	G8E3	975	↑	1407	75	12x75	1000+1250	1140

- For dimensions, please refer to the mechanical drawings section, referring to the 'Type' column.
- The cable entry (power supply) legend is as follows: ↑ from below, ↙ side up, ↓ from above,
- Rated power is expressed at rated voltage (Un)