

Accessories

The characteristics described so far are relevant to the standard voltage stabilisers. Accessories to perform specific tasks are available on request. Combinations or one or more of the accessories listed in the following might result in an increase of the stabiliser overall dimensions and weight.

| Accessories |
|--|
| Interrupting devices |
| Load protection against over/undervoltage |
| Manual by-pass line |
| Total protection kit |
| Input isolating transformer |
| Integrated automatic power factor correction system |
| SPD surge arrestor |
| EMI/RFI filters |
| Neutral point reactor |
| IP54 protection degree for indoor and outdoor installation |

Interrupting devices

Every voltage stabiliser can be fitted with an automatic circuit breaker with thermal and magnetic release on the input and/or on the output. The input breaker protects the stabiliser and the downstream line against potential short-circuits on the input line. The output breaker protects the stabiliser against potential overload. The input breaker is sized according to the maximum input current, whilst the output one is sized in relation to the stabiliser rated current.

| Nominal current | Breaking capacity | Additional module | |
|-----------------|-------------------|-------------------|--------|
| | | Length | Weight |
| [A] | [kA] | [mm] | [kg] |
| 10 | 6 | not needed | |
| 16 | 6 | not needed | |
| 20 | 6 | not needed | |
| 25 | 6 | not needed | |
| 32 | 6 | not needed | |
| 40 | 6 | not needed | |
| 50 | 6 | not needed | |
| 63 | 6 | not needed | |
| 80 | 10 | not needed | |
| 100 | 16 | not needed | |
| 125 | 16 | not needed | |
| 160 | 25 | not needed | |
| 200 | 36 | not needed | |
| 250 | 36 | not needed | |

| Nominal current | Breaking capacity | Additional module | |
|-----------------|-------------------|-------------------|--------|
| | | Length | Weight |
| [A] | [kA] | [mm] | [kg] |
| 320 | 36 | not needed | |
| 400 | 36 | not needed | |
| 500 | 36 | not needed | |
| 630 | 36 | not needed | |
| 800 | 50 | not needed | |
| 1000 | 50 | not needed | |
| 1250 | 50 | not needed | |
| 1600 | 50 | not needed | |
| 2000 | 65 | 600 | 90 |
| 2500 | 65 | 600 | 90 |
| 3200 | 85 | 600 | 90 |
| 4000 | 85 | 600 | 90 |
| 5000 | 100 | 1200 | 200 |
| 6300 | 100 | 1200 | 200 |



Load protection against over/undervoltage

This circuit offers a double protection by:

- delaying the connection to the load each time the stabiliser switches on, so that the user can undergo a smooth start-up with an already stabilised voltage;
- protecting the load from surges, sags and overload by disconnecting the load from the stabiliser.

The protection intervenes when the output voltage is outside the set range (with regard to the rated value). When the supply goes back to the regular value, the load is automatically re-connected. Up to 320A, the protection is obtained with contactors. From 400A upwards, an automatic motorised circuit breaker is used.

The protection must be sized according to the stabiliser nominal current.

| Nominal current | Additional module | |
|-----------------|-------------------|--------|
| | Length | Weight |
| [A] | [mm] | [kg] |
| 10 | not needed | |
| 16 | not needed | |
| 20 | not needed | |
| 25 | not needed | |
| 32 | not needed | |
| 40 | not needed | |
| 50 | not needed | |
| 63 | not needed | |
| 80 | not needed | |
| 100 | not needed | |
| 125 | not needed | |
| 160 | not needed | |
| 200 | not needed | |
| 250 | not needed | |

| Nominal current | Additional module | |
|-----------------|-------------------|--------|
| | Length | Weight |
| [A] | [mm] | [kg] |
| 320 | not needed | |
| 400 | not needed | |
| 500 | not needed | |
| 630 | not needed | |
| 800 | not needed | |
| 1000 | not needed | |
| 1250 | not needed | |
| 1600 | not needed | |
| 2000 | 600 | 90 |
| 2500 | 600 | 90 |
| 3200 | 600 | 90 |
| 4000 | 1200 | 200 |
| 5000 | 1200 | 200 |
| 6300 | 1200 | 200 |

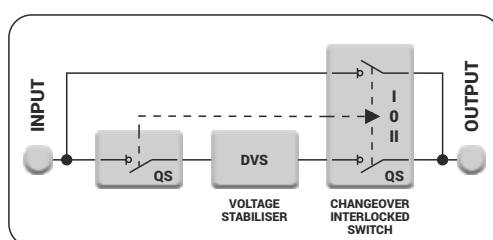


Manual by-pass line

The bypass circuit enables the stabiliser to be segregated from the line supplying the load. The operator can therefore access the internal components and perform maintenance or repairing sessions without having to disconnect the load. For the duration of the bypass condition, the load is directly fed by the mains: the voltage is therefore not stabilised.

The by-pass line configuration can be:

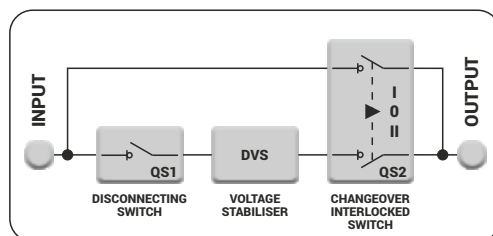
1. – I-0-II changeover interlocked switch (QS)



| Nominal current [A] | Additional module | |
|------------------------|-------------------|----------------|
| | Length [mm] | Weight [kg] |
| 10 | not needed | |
| 16 | not needed | |
| 20 | not needed | |
| 25 | not needed | |
| 32 | not needed | |
| 40 | not needed | |
| 50 | not needed | |
| 63 | not needed | |
| 80 | not needed | |
| 100 | not needed | |

| | |
|-----|------------|
| 10 | not needed |
| 16 | not needed |
| 20 | not needed |
| 25 | not needed |
| 32 | not needed |
| 40 | not needed |
| 50 | not needed |
| 63 | not needed |
| 80 | not needed |
| 100 | not needed |

2. – Input disconnecting switch (QS1)
– Output I-0-II changeover interlocked switch (QS2)

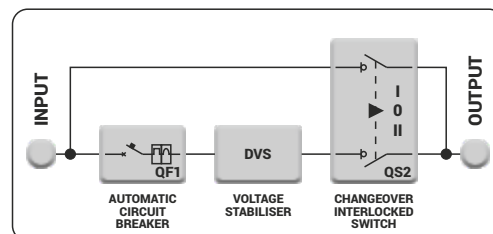


| Nominal current [A] | Additional module | |
|------------------------|-------------------|----------------|
| | Length [mm] | Weight [kg] |
| 125 | 400 | 70 |
| 160 | 400 | 70 |
| 200 | 400 | 70 |
| 250 | 400 | 70 |

| | | |
|-----|-----|----|
| 125 | 400 | 70 |
| 160 | 400 | 70 |
| 200 | 400 | 70 |
| 250 | 400 | 70 |

| Nominal current [A] | Additional module | |
|------------------------|-------------------|----------------|
| | Length [mm] | Weight [kg] |
| 320 | 400 | 70 |
| 400 | 400 | 70 |
| 500 | 400 | 70 |
| 630 | 600 | 90 |
| 800 | 600 | 90 |
| 1000 | 600 | 90 |
| 1250 | 600 | 90 |
| 1600 | 600 | 90 |
| 2000 | 1200 | 200 |
| 2500 | 1200 | 200 |

3. – Input automatic circuit breaker (QF1)
– Output I-0-II changeover interlocked switch (QS2)



| Nominal current [A] | Additional module | |
|------------------------|-------------------|----------------|
| | Length [mm] | Weight [kg] |
| 125 | 400 | 70 |
| 160 | 400 | 70 |
| 200 | 400 | 70 |
| 250 | 400 | 70 |
| 320 | 400 | 70 |
| 400 | 400 | 70 |
| 500 | 600 | 90 |
| 630 | 600 | 90 |
| 800 | 600 | 90 |
| 1000 | 600 | 90 |
| 1250 | 600 | 90 |
| 1600 | 1200 | 200 |
| 2000 | 1200 | 200 |
| 2500 | 1200 | 200 |

| | | |
|------|------|-----|
| 125 | 400 | 70 |
| 160 | 400 | 70 |
| 200 | 400 | 70 |
| 250 | 400 | 70 |
| 320 | 400 | 70 |
| 400 | 400 | 70 |
| 500 | 600 | 90 |
| 630 | 600 | 90 |
| 800 | 600 | 90 |
| 1000 | 600 | 90 |
| 1250 | 600 | 90 |
| 1600 | 1200 | 200 |
| 2000 | 1200 | 200 |
| 2500 | 1200 | 200 |

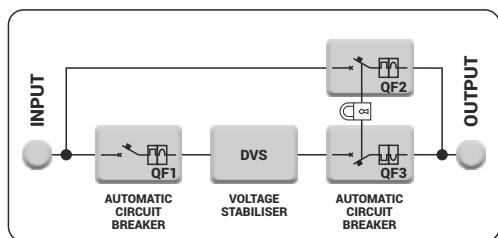
Total protection kit

The total protection kit includes:

- Input automatic circuit breaker (QF1).
- Bypass switch made of an interlocked automatic circuit breaker (QF2).
- Output interlocked motorized automatic circuit breaker (QF3).

The input automatic circuit breaker protects against potential faults and/or short-circuits inside the unit. The bypass switch with automatic circuit breaker protects the load supplying line against overload and short-circuits in bypass condition. The output motorized circuit breaker (interlocked with the bypass circuit breaker) protects against overload, shortcircuit, overvoltage, undervoltage, phase sequence error and phase failure

The total protection kit must be chosen according to the stabiliser maximum input current



| Current | | Additional module | |
|--------------|---------------|-------------------|----------------|
| Input [A] | Output [A] | Length [mm] | Weight [kg] |
| 200 | 160 | 400 | 100 |
| 250 | 200 | 400 | 100 |
| 320 | 250 | 400 | 110 |
| 400 | 320 | 400 | 125 |
| 500 | 400 | 400 | 125 |
| 630 | 500 | 400 | 125 |
| 800 | 630 | 600 | 170 |
| 1000 | 800 | 600 | 200 |
| 1250 | 1000 | 600 | 200 |
| 1600 | 1250 | 600 | 200 |
| 2000 | 1600 | 1200 | 630 |
| 2500 | 2000 | 1200 | 640 |
| 3200 | 2500 | 1200 | 650 |
| 4000 | 3200 | 1200 | 730 |
| 5000 | 4000 | 1800 | 1100 |
| 6300 | 5000 | 1800 | 1200 |

QF1: Input automatic circuit breaker.
 QF2: Bypass switch made of an interlocked automatic circuit breaker.
 QF3: Output automatic circuit breaker.
 QF3 is interlocked with QF2 by means of an individual key. When one of the breakers is closed, the other one is open and the closing spring cannot be manually loaded.





Input isolating transformer

The input isolation transformer is the best solution to provide for:

- galvanic separation between the stabiliser and the mains;
- delta/star or delta/zig-zag connection in order to cancel the 3rd and triplen harmonics and improve the balance of the phase voltages;
- generation of a fixed and steady neutral point;
- protection from overvoltage generated by connecting/disconnecting manoeuvres on the line.

The transformer is fitted with electrostatic screen between primary and secondary winding. It is also possible to have high insulation level (10kV) between input and output.

The input isolating transformer must be chosen according to the stabiliser maximum input current.

| Single-phase transformer for VEGA & ANTARES | | | |
|--|-------|----------------------|----------------------|
| Current | Power | Cabinet (TRS+DVS) | Additional weight |
| [A] | [kVA] | [tipo] | [kg] |
| 8 | 2 | 13 | 48 |
| 13 | 3 | 13 | 59 |
| 21 | 5 | 22 | 79 |
| 34 | 8 | 22 | 95 |
| 43 | 10 | 23 | 110 |
| 52 | 12 | 23 | 113 |
| 65 | 15 | 23 | 115 |
| 86 | 20 | 23 | 125 |
| 108 | 25 | 31 | 135 |
| 130 | 30 | 31 | 150 |
| 173 | 40 | 40 | 160 |
| 217 | 50 | 40 | 220 |
| 273 | 63 | 40 | 240 |
| 304 | 70 | 40 | 260 |
| 347 | 80 | 2x40 | 285 |
| 391 | 90 | 2x40 | 300 |
| 435 | 100 | 2x41 | 335 |
| 478 | 110 | 2x41 | 355 |
| 543 | 125 | 2x41 | 400 |
| 770 | 175 | 2x41 | 455 |

| Dyn11 three-phase transformer for ORION | | | |
|--|-------|----------------------|----------------------|
| Current | Power | Cabinet (TRS+DVS) | Additional weight |
| [A] | [kVA] | [tipo] | [kg] |
| 17 | 12 | 31 | 135 |
| 21 | 15 | 31 | 145 |
| 28 | 20 | 31 | 170 |
| 36 | 25 | 40 | 205 |
| 43 | 30 | 40 | 225 |
| 57 | 40 | 40 | 290 |
| 72 | 50 | 2x40 | 335 |
| 91 | 63 | 2x40 | 365 |
| 101 | 70 | 2x40 | 370 |
| 115 | 80 | 2x40 | 395 |

| Dzn0 three-phase transformer for ORION PLUS, SIRIUS & SIRIUS ADVANCE | | | |
|---|--------|----------------------|----------------------|
| Current | Power | Cabinet (TRS+DVS) | Additional weight |
| [A] | [kVA] | [tipo] | [kg] |
| 130 | 90 | 54 | 430 |
| 144 | 100 | 54 | 580 |
| 158 | 110 | 54 | 600 |
| 180 | 125 | 54 | 630 |
| 202 | 140 | 54 | 660 |
| 231 | 160 | 54 | 710 |
| 260 | 180 | 54 | 750 |
| 289 | 200 | 54 | 800 |
| 325 | 225 | 55 | 910 |
| 361 | 250 | 55 | 960 |
| 404 | 280 | 55 | 1020 |
| 462 | 320 | 55 | 1070 |
| 505 | 350 | 55 | 1120 |
| 578 | 400 | 55 | 1210 |
| 650 | 450 | 55 | 1290 |
| 722 | 500 | 55 | 1430 |
| 910 | 630 | 61 | 1700 |
| 1156 | 800 | 61 | 2000 |
| 1445 | 1000 | 61 | 2450 |
| 1806 | 1250 | 62 | 3100 |
| 2312 | 1600 | 62 | 3600 |
| 2890 | 2x1000 | 63 | 4900 |
| 3612 | 2x1250 | 63 | 5800 |
| 4650 | 2x1600 | 80 | 7200 |
| 5780 | 2x2000 | 80 | 8600 |
| 7250 | 2x2500 | 91 | 10600 |

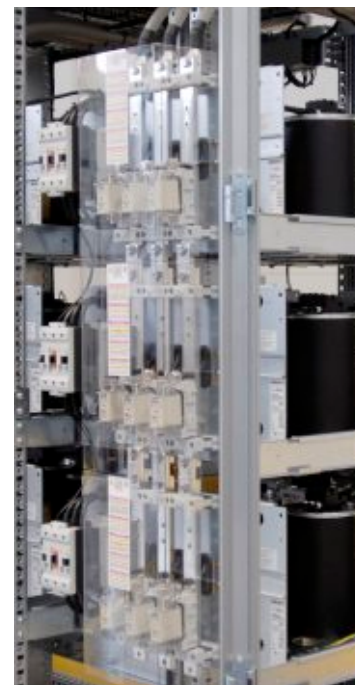
Integrated automatic power factor correction system

A PFC system can be integrated in the same cabinet with a voltage stabiliser, offering the stabilisation and the correction of the power factor of the plant in the same solution. The result is a stabilised supply to the load and a higher power factor of the load itself, with the advantage of having available the maximum active power.

ORTEA PFC systems exploit high energy density metallised polypropylene three-phase capacitors (Un=525V) exclusively thus guaranteeing robustness and reliability. Furthermore, the detuned filter protects the system against possible harmonics generated by non-linear loads.

| DVS power | PHF power | Additional module | |
|-----------|-----------|-------------------|--------|
| | | Length | Weight |
| [kVA] | [kvar] | [mm] | [kg] |
| 80 | 44 | 400 | 85 |
| 100 | 69 | 400 | 115 |
| 125 | 69 | 400 | 115 |
| 160 | 69 | 400 | 115 |
| 200 | 94 | 400 | 135 |
| 250 | 125 | 600 | 160 |
| 320 | 150 | 600 | 175 |
| 400 | 175 | 600 | 190 |
| 500 | 225 | 600 | 210 |

| DVS power | PHF power | Additional module | |
|-----------|-----------|-------------------|--------|
| | | Length | Weight |
| [kVA] | [kvar] | [mm] | [kg] |
| 630 | 300 | 600 | 260 |
| 800 | 350 | 600 | 295 |
| 1000 | 450 | 1200 | 485 |
| 1250 | 550 | 1200 | 520 |
| 1600 | 700 | 1200 | 580 |
| 2000 | 900 | 1800 | 770 |
| 2500 | 1100 | 1800 | 920 |
| 3200 | 1300 | 2400 | 1110 |
| 4000 | 1600 | 2400 | 1320 |



SPD surge arrester

SPD arrestors protect the load and the stabiliser against voltage peaks of atmospheric or operational origin by discharging them to ground.

The installation depends on the system configuration. For example, in case of high ratings the suggested sequence would be: spark-gap arresters followed by an isolating device (ideally an isolating transformer) and varistor-based arresters on the output.

| Current | Type | Discharge current | |
|----------|-------|-------------------|----------------|
| | | [A] | |
| CLASS I | ORTEA | 50kA | single-phase+N |
| CLASS I | ORTEA | 50kA | three-phase+N |
| CLASS II | ORTEA | 40kA | single-phase+N |
| CLASS II | ORTEA | 40kA | three-phase+N |

| Current | Type | Discharge current | |
|----------|------|-------------------|----------------|
| | | [A] | |
| CLASS I | DEHN | 100kA | single-phase+N |
| CLASS I | DEHN | 200kA | three-phase+N |
| CLASS II | DEHN | 40kA | single-phase+N |
| CLASS II | DEHN | 40kA | three-phase+N |



EMI/RFI filters

The addition of EMI/RFI filters is a valid solution to remove the electromagnetic interferences generated by many electronic devices (converters, switching power supplies, motor drives, etc.).

The EMI/RFI filters must be chosen according to the stabiliser rated output current.

| Type | Rated current |
|--------------|---------------|
| | [A] |
| FL170.50.00 | 50 |
| FL170.100.00 | 100 |
| FL170.150.00 | 150 |
| FL170.300.00 | 300 |
| FL170.500.00 | 500 |

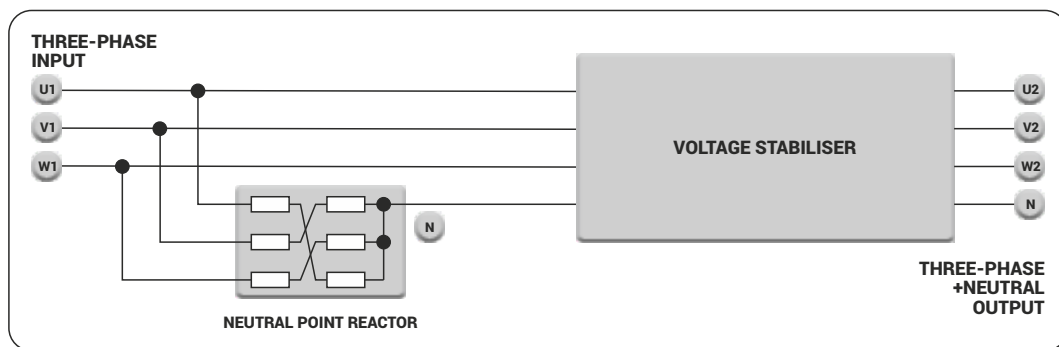
| Type | Rated current |
|---------------|---------------|
| | [A] |
| FL155.800.00 | 800 |
| FL155.1000.00 | 1000 |
| FL155.1600.00 | 1600 |
| FL155.2500.00 | 2500 |





Neutral point reactor

The neutral point reactor creates a reference neutral for the system when the input AC mains does not include the neutral connection or when a stable neutral is required to supply the load. The neutral point inductor is available for all the voltage stabilisers.



IP54 protection degree for indoor and outdoor installation

IP54 indoor installation: These units are equipped with air conditioning units to ensure the correct ventilation and cooling of the internal magnetic and electrical components. The cabinet is completely sealed: this makes the stabiliser suitable for operating in damp and dusty environments.

IP54 outdoor installation: ORTEA's stabilisers are also available for outdoor installation.



Cabinets size

| Type | Dimensions [mm] | | |
|-----------|-----------------|-----|------|
| | W | D | H |
| 11 | 210 | 400 | 200 |
| 12 | 300 | 460 | 300 |
| 13 | 300 | 560 | 300 |
| 21 | 300 | 500 | 900 |
| 22 | 410 | 530 | 1200 |
| 23 | 410 | 680 | 1200 |
| 31 | 600 | 600 | 1600 |
| 32 | 600 | 600 | 2000 |
| 33 | 800 | 600 | 2000 |
| 35 | 800 | 600 | 1800 |
| 36 | 1200 | 600 | 1600 |
| 37 | 1200 | 600 | 2000 |
| 40 | 600 | 800 | 1600 |
| 41 | 1000 | 800 | 1800 |
| 43 | 1200 | 800 | 1600 |
| 44 | 2000 | 800 | 2000 |
| 46 | 1800 | 800 | 1600 |
| 47 | 1600 | 800 | 1800 |
| 48 | 2200 | 800 | 1800 |
| 49 | 2200 | 800 | 2000 |
| 50 | 2400 | 800 | 1800 |
| 51 | 600 | 800 | 1800 |
| 52 | 1800 | 800 | 2000 |
| 53 | 1200 | 800 | 2000 |
| 54 | 600 | 800 | 2000 |
| 55 | 1200 | 800 | 1800 |
| 56 | 1800 | 800 | 1800 |
| 57 | 2400 | 800 | 2000 |
| 58 | 3000 | 800 | 2000 |
| 59 | 3600 | 800 | 2100 |

| Type | Dimensions [mm] | | |
|-------------|-----------------|------|------|
| | W | D | H |
| 60 | 600 | 1000 | 1800 |
| 61 | 1200 | 1000 | 1800 |
| 62 | 1800 | 1000 | 2000 |
| 63 | 2400 | 1000 | 2000 |
| 64 | 3000 | 1000 | 2000 |
| 65 | 3600 | 1000 | 2000 |
| 66 | 4200 | 1000 | 2000 |
| 67 | 1200 | 1000 | 2000 |
| 70 | 3600 | 1000 | 2100 |
| 71 | 4200 | 1000 | 2100 |
| 72 | 4800 | 1000 | 2100 |
| 73 | 5400 | 1000 | 2100 |
| 74 | 6000 | 1000 | 2100 |
| 75 | 6600 | 1000 | 2100 |
| 76 | 7200 | 1000 | 2100 |
| 80 | 3600 | 1400 | 2200 |
| 81 | 4200 | 1400 | 2200 |
| 82 | 4800 | 1400 | 2200 |
| 83 | 5400 | 1400 | 2200 |
| 84 | 6000 | 1400 | 2200 |
| 85 | 6600 | 1400 | 2200 |
| 86 | 7200 | 1400 | 2200 |
| 87 | 7800 | 1400 | 2200 |
| 90 | 4200 | 2000 | 2400 |
| 91 | 5400 | 2000 | 2400 |
| 92 | 6000 | 2000 | 2400 |
| 93 | 6600 | 2000 | 2400 |
| 94 | 7200 | 2000 | 2400 |
| 95 | 8400 | 2000 | 2400 |
| C20 | 6000 | 2400 | 2400 |
| C30 | 9000 | 2400 | 2400 |
| HC40 | 12000 | 2400 | 2700 |