

STABLE VOLTAGE SUPPLY INDEPENDENTLY FROM
INPUT FLUCTUATION IS THE KEY FEATURE TO ENSURE
ELECTRICAL EFFICIENCY AND RELIABILITY

VOLTAGE STABILISERS



Founded in 1969, ORTEA SpA is a leading company in manufacturing and engineering voltage stabilisers and magnetic components.

Over forty years in the business and ongoing technical research have made of ORTEA a competitive and technologically advanced company. Close co-operation between design, production and marketing enables to meet the requirements of a constantly growing number of customers.

In 1996 ORTEA joined ICAR Group, made of Italian and European industrial units specialised in manufacturing capacitors and power factor correction systems.

Beside standard production, ORTEA can be extremely flexible in developing and manufacturing special equipment according to User's specification. All this thanks to the experience gained over many years of applied technological development.

Such development includes IT tools that enable the technical staff to elaborate electrical and mechanical designs for each «custom product» on a quick and cost-effective basis.

ORTEA is well established in the global market. Thanks to strategically positioned offices and distributors and efficient commercial relations, ORTEA's products are installed and working in a large number of countries.



● ORTEA headquarters (Italy)

● ORTEA branches (Russia, Ivory Coast, Kenya, Venezuela, Thailand)

The belief that product quality and Customer satisfaction are the core of a modern organisation, led to the implementation of an ISO9001:2015 certified Company Managing System.
 The achievement of the ISO14001:2015 and OHSAS18001:2007 accreditation was a natural integration in order to optimise the Company's performance, showing at the same time the commitment towards environmental and safety at work issues.





Experience.

In its **over 45 years** of business, Ortea (founded in 1969) has gained **experience** and **know-how** that enabled continuous growth and evolution. This never-ending process has allowed the Company to assume a **leading role worldwide** in designing and manufacturing voltage stabilisers.



Reliability.

Thanks also to its long-established **Quality System**, ORTEA can ensure the production of **reliable** and **long lasting products**, each one of them accurately **tested**.



Flexibility.

In addition to the standard production, ORTEA's extremely flexible organization is able to develop and manufacture **cost-effective special equipment** based on the Customer's specification.



Speed.

ORTEA can manage the purchasing orders **very quickly**. Review of offer/order, design, production planning, manufacturing and strict test routines: all the **processes** have been **analysed** and **optimised** in order to eliminate idle time and shorten delivery terms.



Research & Development.

ORTEA invests a **considerable amount** in **R&D** concerning new products and technology. It is acknowledged that modern challenges in a globalised and competitive market can be won only when you're «ahead of time».



Synergy.

Co-operation between Headquarters, Subsidiaries, Distributors and Customers aimed at a careful **analysis of markets** and **demand** enable ORTEA the development of **up-to-date products**.

By working together, marketing, design, production and after-sales service allow the Company to meet the necessities set forth by an increasingly **globalised** and competitive **market**.



After-sales.

The **continuous monitoring** and **analysis** of requests and claims carried out by the after-sales service enables the **improvement** the **quality** of both **products** and **service** to the Customer.

ORTEA after-sales organization can act **quickly**, providing for precise issue analysis, supply of advise and **know-how** and, if necessary, provision of **spare parts** in order to solve any anomaly.



Quality.

Aiming at providing for the **best quality**, the manufacturing process includes checks during production and detail test sessions for each stabiliser.

The approved Integrated Managing System ensures the control of every manufacturing phase, starting from checking the components at reception and ending with the best package in relation to the transport type.

The Integrated Managing System is **ISO9001:2015 – ISO14001:2015 – OHSAS18001:2007** approved.

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The issue

Electricity is perhaps the most essential raw material used by commerce and industry today. The electricity produced in power plants is circulated through the electricity transmission and distribution networks and it is supplied/delivered to consumers; the **quality of electricity** (known as «Power Quality») is one of the important factors that determine the economic efficiency of both consumers and electrical networks.

Electrical devices are designed to work in distributing systems defined by set **nominal values** in terms of voltage and frequency (for example, 400V at 50Hz).

In actual fact, electric energy distribution **might not ensure the stability** of said nominal parameters. Voltage in particular can **vary** even considerably in relation to the nominal value. These variation can cause **undesired** and **potentially dangerous conditions** for the users.

Voltage 'fluctuations' can be 'fast' and waste themselves away in a few milliseconds (for example, distribution lines hit by lightning) or 'slow', with duration that can last several seconds, minutes or even hours depending on the cause.

Slow fluctuations can be generated by increased voltage level ('surge' due to poor MV regulation at distribution level, disconnection of large loads, overvoltage at generators output, etc) or – more frequently – by decreased voltage level ('sags' due to connection of large loads, motor startup, undersized distribution lines, faults to ground, poor MV voltage regulation, etc).

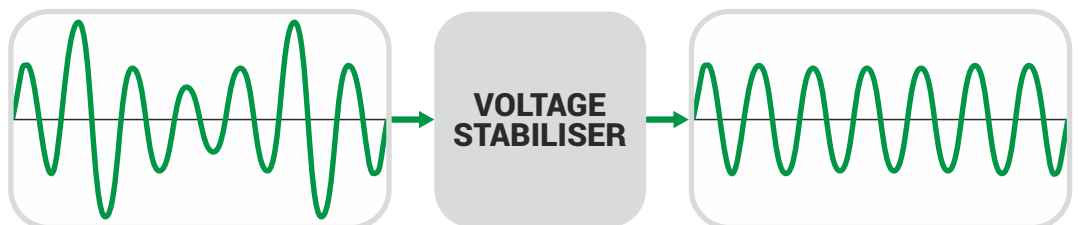
In case of voltage variation, the **voltage stabiliser** is the **solution** that guarantees for **the best cost/benefit ratio**.

The continuous availability of **stable voltage supply** independently from input fluctuation is very often a key feature to ensure **efficiency** and **reliability** for the User.

Reduced productivity, data loss, security failure, machine faults, inaccurate information and domestic inconveniences are only a few examples of potential problems caused by unsteady supply. Obviously, all that results in higher managing cost.

The solution

The **voltage stabiliser** has proven to be an effective solution able to prevent potentially dangerous situations created by input voltage instability.



The main application fields where devices sensitive to voltage variations can be used include:

- **Industrial sector:** oil & gas, laser cutting, water shearing, tobacco industry, textile industry, galvanic processes, machinery in general.
- **Food & Beverage:** industry, intensive breeding, food processing, packaging, bottling.
- **Tertiary & servicing:** banks, hotels & tourist resorts, data centre, laboratories, small businesses, private users.
- **Telecommunications:** TV/Radio stations, telecom networks.
- **Public sector:** hospitals, public offices & institutions.
- **Renewable sources:** solar and wind farms.

In all these applications, voltage fluctuation, even though within the tolerance admitted by the Standards, can generate **operating issues**. In that case, devices particularly sensitive can show errors or malfunctions beyond the acceptable limit.

Typical situations where voltage can be subject to fluctuation beyond the admitted tolerance are:

- Loads supplied by weak or undersized distributing lines (rural areas or locations supplied by long distributing lines such as breeding farms, tourist resorts, hotels, etc).
- Users located near distributing station and therefore subject to voltage increase.
- Private premises with high power installations (swimming pool pumps, big chillers, special lighting systems, lifts) and/or particularly voltage sensitive loads (high power consumer electronics, etc.).
- Loads located near large industrial plants where individual high power devices (MV motors) can induce voltage reduction at startup.
- Island operating loads (ships, offshore rigs, loads not connected to the public grid).

In comparison to other types of equipment, the **voltage stabiliser** offers a number of advantages that very often make it the **optimum solution**:

- Usually lower price.
- High output voltage stability guaranteed even for wide input fluctuation.
- Absence of introduced harmonic distortion.
- Robust and reliable construction, allowing for use in hard environments.
- Overload capability up to twice the rated current (max 2 mins).
- No concerns in terms of storage, transportation, maintenance and disposal due to the fact that batteries are not used.
- Smooth and reliable regulation of the load voltage ensuring a $\pm 0.5\%$ accuracy even with important input voltage variation.
- High efficiency.
- High inrush current withstand capability.
- Reduced dimension, simple to run, 'plug&play' operating mode.

Electro-mechanical or Static voltage stabilisers?

The **static stabiliser** is used when the **correction speed** represents the **critical issue** (for example, computers, laboratory equipment, measuring benches and medical instrumentation). This kind of stabiliser has correction time of 3 milliseconds for full regulation as compared to electro-mechanical stabiliser correction time of 10-50 milliseconds (depends on the model) per volt.



Criteria for choosing the right type

Number of phases

The number of phases of a stabiliser depends on the type of load:

- single-phase load: single-phase stabiliser;
- combination of several single-phase loads on the same line: three-phase stabiliser or a single-phase stabiliser on each load;
- three-phase load: three-phase stabiliser.

Rated voltage

Due to the fact that the nominal voltage varies internationally, establish the rated voltage required at the stabiliser input and output. In case of three-phase systems, provide with the line-to-line voltage value. The standard voltage stabiliser can operate with nominal voltage 380V-400V-415V (50Hz) or 440V-460V-480V (60Hz).

Input variation range

It's key information for the choice and the design of the stabiliser. Establish the amplitude of the oscillation of the input voltage and always keep a safety margin on such percentage: for example, if the measured fluctuation is $\pm 16\%$, then choose a stabiliser suitable for $\pm 20\%$ variation.

Note: if the input variation exceeds the nominal one, the difference is added to the output precision. For example, if a stabiliser designed for $\pm 15\%$ input variation receives a $+20\%$ voltage, the output precision shall not be $\pm 0.5\%$ but $\pm 5.5\%$.

Type of regulation

The three-phase voltage stabilisers perform an independent regulation on each phase. The connection to the distributing line neutral wire is mandatory. Should the neutral wire not be available, a specific accessory component must be added.

Type of technology

In most applications, the electromechanical voltage stabiliser is a reliable and safe tool. In case of high regulation speed is required (milliseconds), it is better to choose the solution with regulation by means of IGBT static switches.

Rated power

All the stabilisers are designed for the maximum input current, but it is advisable to consider an extra safety margin for possible future expansions.

In a voltage stabiliser, the power is expressed in kVA, whilst the load power is usually expressed in kW. Remember that the link between these two measuring units is provided by the power factor ($\cos \varphi$): $kVA = kW / \cos \varphi$

Also, remember that if the power factor and/or the load power in kW cannot be easily established, measure the absorbed currents in order to allow for a correct design of the stabiliser and keeping in mind that:

kVA (1-ph.) = load voltage x load current

kVA (3-ph.) = $\sqrt{3}$ x phase to phase load voltage x load current

Installation

Choose the other characteristics of the stabiliser considering the installation conditions.

The following aspect must be known:

- IP protection degree required.
- Indoor or outdoor installation.
- Site altitude and climatic characteristics.
- Ambient temperature.
- Possible environmental hazards such as aggressive atmosphere, exposure to chemical components and so on.

Accessories

A standard voltage stabiliser can be enriched with a number of accessories:

- Interruption and protection devices.
- Load protection against over/undervoltage.
- Bypass line.
- Input isolating transformer.
- Total protection kit.
- Surge arrestor (SPD).
- Integrated automatic power factor correction system.
- EMI/RFI filter.
- Neutral point reactor.
- Up to IP54 protection degree for both indoor and outdoor installation.

Special construction

By means of some modifications, it is possible to obtain special stabilisers able to:

- deal with asymmetrical input voltage variation (for example, from -25% to $+10\%$ of the nominal voltage);
- deliver an output voltage different from the input one (for example, $V_{in} = 400V \pm 15\%$, $V_{out} = 460V \pm 0.5\%$).



Electro-mechanical digital voltage stabilisers



Design criteria

A **voltage stabiliser** is a power device destined to be positioned between the mains and the User. The purpose is to ensure that the User is fed a voltage subject to a variation much lower ($\pm 0.5\%$ with regards to the nominal value) than the one guaranteed by the distributing system.

The **stabilization** is performed on the «**true rms**» voltage and it is not affected by harmonics in the mains. Due to the fact that the regulation does not involve any intervention on the sinewave, **neither an appreciable harmonic distortion** nor a phase displacement **is introduced** on the downstream line.

The stabiliser **is not affected by the load power factor** ($\cos \varphi$) and can operate **with a load percentage varying between 0% and 100% on each phase**. **Regulation speed** depends on the input voltage variation percentage and on the type of construction. Indicatively, said speed ranges between 8 and 30 millisecc/V. Basically, a voltage stabiliser is made of a **buck/boost transformer**, a **voltage regulator** and an **electronic control**. Based on a **microprocessor** that samples at high frequency the output voltage, the control system drives the regulator gearmotor. By doing so, the regulator rollers change their position and therefore the voltage drawn and supplied to the buck/boost transformer primary winding. Being the secondary voltage of the buck/boost transformer in phase or in opposition to the supply, the voltage drawn from the regulator is added or subtracted to the mains voltage, thus compensating its variations.

The voltage regulator is nothing but an **autotransformer with continuously variable transformer ratio**. Depending on the stabiliser power, the regulator can be either **toroidal** or **columnar**.

The stabilisers are designed and built in compliance with the European Directives concerning CE marking (Low Voltage and Electromagnetic Compatibility Directives).

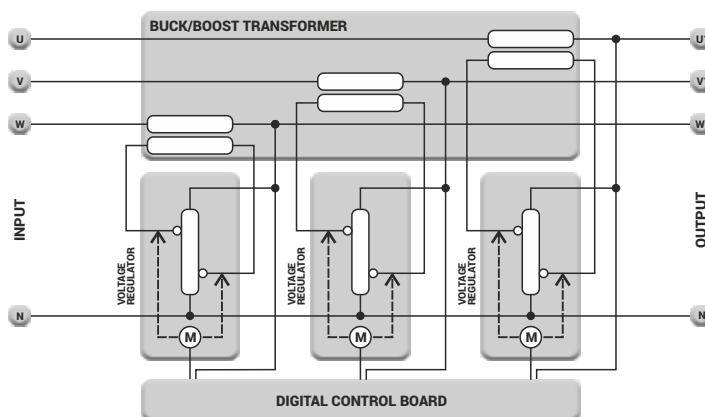
Standard units are housed in an IP21 metallic enclosure RAL7035 painted. Cooling is guaranteed by natural air circulation aided by extracting fans over a certain temperature.

The voltage stabiliser operating nominal voltage can be chosen from values (generally included in the range 380V / 415V). Such setting can be performed at the factory or at the Customer's premises according to the instructions given in the reference technical handbook.

On Sirius and Sirius Advance stabilisers, the output voltage reference and the main configuration parameters can be set in different ways:

- through the local touch panel;
- directly by communicating with the microprocessor via a PC connection (through USB interfaces);
- from a remote station via Ethernet with MODBUS TCP/IP protocol.

Working principle of an electro-mechanical digital voltage stabiliser



Main components

1. Buck/boost transformer

Often referred to as 'booster' transformer, it is a standard dry-type transformer with the secondary winding connected in series to the mains and the primary winding supplied by the voltage regulator.

2. Voltage regulator

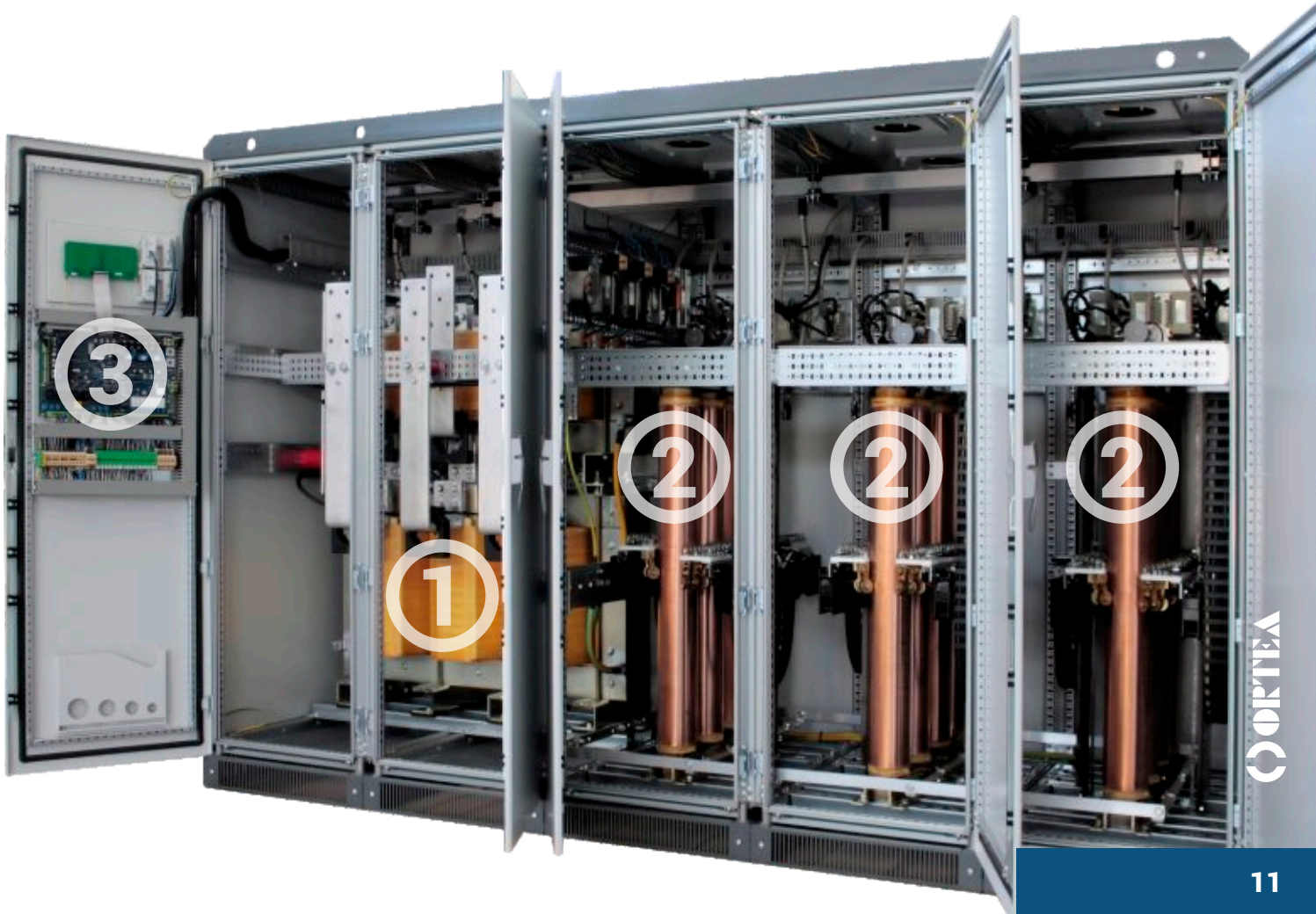
Basically, it is an autotransformer with continuously variable transformer ratio. The voltage intake varies depending on the position of the rolling contacts; therefore the voltage supplied to the booster transformer primary winding also varies. Being the voltage across the regulator contacts (and consequently that on the secondary winding of the booster transformer) either in phase or in opposition to the supply voltage, it is then added or subtracted to the supply voltage, thus compensating its variations.

3. Auxiliary circuit with microprocessor

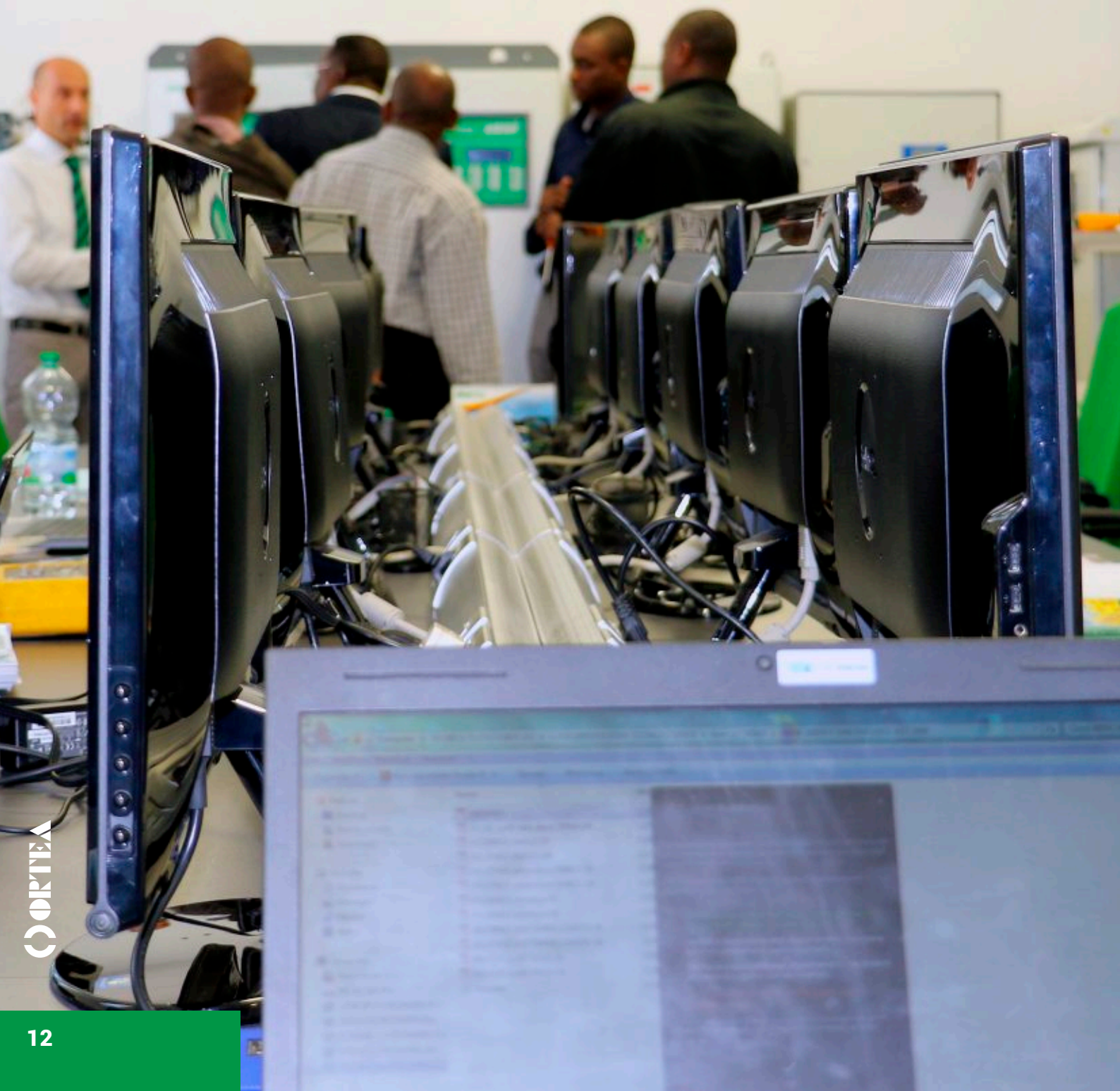
The DSP (Digital Signal Processor) microprocessor-based control circuit (specifically designed for drives with totally digitalised signal) compares the output voltage value to the reference one sampling it 2000 times per second.

When an anomaly is detected, the control drives the voltage regulator gearmotor. By doing so, the regulator rollers change their position thus varying the voltage drawn and supplied to the buck/boost transformer primary winding. The input voltage variation is therefore automatically compensated.

The control system operates so that the output accuracy is $\pm 0.5\%$. The microprocessor is fitted with the soft stop function enabling a precise positioning of the regulator rollers regulation to work smoothly even in case of strong fluctuation of the input voltage.



... ahead of time



| | | |
|-----------------------|--------------|-------------------|
| Vega | Single-phase | 0.3-25kVA |
| Antares | Single-phase | 15-135kVA |
| Orion | Three-phase | 2-135kVA |
| Orion plus | Three-phase | 30-2000kVA |
| Sirius | Three-phase | 60-6000kVA |
| Sirius advance | Three-phase | 60-4000kVA |

| | Single-phase | | Three-phase | | | |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | Vega | Antares | Orion | Orion plus | Sirius | Sirius advance |
| Output accuracy $\pm 0,5\%$ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Regulator rolling contacts | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Toroidal regulator | ✓ | up to 80kVA | ✓ | up to 135kVA | x | x |
| Columnar regulator | x | from 100kVA | x | from 160kVA | ✓ | ✓ |
| Control electronic board | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Local display | ✓ | x | x | x | ✓ | ✓ |
| Alarm signal code | LCD Display | LED (board) | LED (board) | x | ✓ | ✓ |
| External alarm LEDs | x | x | x | ✓ | x | x |
| External phase indication LEDs | x | x | x | ✓ | x | x |
| Acoustic alarm | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| USB connection | x | x | x | ✓ | ✓ | ✓ |
| RS485 connection | ● | ● | ● | ● | ✓ | ✓ |
| Ethernet connection | x | x | x | x | ✓ | ✓ |
| MODBUS TCP/IP protocol | x | x | x | x | ✓ | ✓ |
| Maintenance required signal | x | x | x | ✓ | ✓ | ✓ |
| Regulator protection (magneto-thermal) | ✓ | ✓ | ✓ | x | x | x |
| Regulator protection (electronic) | x | x | x | ✓ | ✓ | ✓ |
| Overvoltage protection SPD cl. I | ● | ● | ● | ● | ✓ | ✓ |
| Overvoltage protection SPD cl. II | ● | ● | from 60kVA | ✓ | ✓ | ✓ |
| Digital voltmeter | ✓ | x | x | x | x | x |
| Multimetre / Line analyser | ● | ✓ | ✓ | ✓ | x | x |
| Touch Display | x | x | x | x | ✓ | ✓ |
| Air conditioning cooling | x | ● | ● | ● | ● | ● |
| Load variation up to 100% | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Overload up to 200% for 2 mins. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Harmonic distortion | none introduced | none introduced | none introduced | none introduced | none introduced | none introduced |
| IP21 degree protection | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Protection degree other than IP21 | ● | ● | ● | ● | ● | ● |
| Indoor installation | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Outdoor installation | ● | ● | ● | ● | ● | ● |
| Ambient temperature | -25/+45°C | -25/+45°C | -25/+45°C | -25/+45°C | -25/+45°C | -25/+45°C |
| Storage temperature | -25/+60°C | -25/+60°C | -25/+60°C | -25/+60°C | -25/+60°C | -25/+60°C |
| Max relative humidity | 95% | 95% | 95% | 95% | 95% | 95% |

✓ standard
x not available
● optional



Vega



single-phase
0.3-25kVA

Standard features

| | |
|--|--------------------------|
| Selectable output voltage (dip-switch)* | 220-230-240V |
| Output voltage accuracy | ±0,5% |
| Frequency | 50Hz ±5% or 60Hz ±5% |
| Admitted load variation | Up to 100% |
| Cooling | Natural ventilation |
| Ambient temperature | -25/+45°C |
| Storage temperature | -25/+60°C |
| Max relative humidity | 95% (non condensing) |
| Admitted overload | 200% 2 min. |
| Harmonic distortion | None introduced |
| Colour | RAL 7035 |
| Protection degree | IP21 |
| Instrumentation | Output digital voltmeter |
| Installation | Indoor |

* The output voltage can be adjusted by choosing **one** of the indicated values. Such choice sets the new nominal value as a reference for all the stabiliser parameters.

Accessories

| |
|---|
| Interrupting devices |
| Load protection against over/undervoltage |
| Manual by-pass line |
| Input isolating transformer |
| SPD surge arrestor |
| EMI/RFI filters |
| IP54 protection degree for indoor and outdoor installation |

Rating in relation to the input variation percentage

| | ±15% | ±20% | ±25% | ±30% | +15%/-25% | +15%/-35% | +15%/-45% |
|------------|------|------|------|------|-----------|-----------|-----------|
| 1 | | 0.7 | 0.5 | 0.3 | 0.7 | 0.5 | 0.3 |
| 2.5 | | 2 | 1.5 | 1 | 2 | 1.5 | 1 |
| 5 | | 4 | 3 | 2 | 4 | 3 | 2 |
| 7 | | 5 | 4 | 3 | 5 | 4 | 3 |
| 10 | | 7 | 5 | 4 | 7 | 5 | 4 |
| 15 | | 10 | 7 | 5 | 10 | 7 | 5 |
| 20 | | 15 | 10 | 7 | 15 | 10 | 7 |
| 25 | | 20 | 15 | 10 | 20 | 15 | 10 |

All ORTEA stabilisers are designed and built in compliance with the Low Voltage and Electromagnetic Compatibility European Directives with regard to the CE marking requirements. ORTEA products are built with suitable quality components and that the manufacturing process is constantly verified in accordance with the Quality Control Plans which the Company applies in compliance with the ISO 9001:2015 Standards. The commitment towards environmental issues and safety at work issues is guaranteed by the certification of the Management System according to the ISO14001:2015 and OHSAS18001:2007 Standards. In order to obtain better performance, the products described in the present document can be altered by the Company at any date and without prior notice. Technical data and descriptions do not hold therefore any contractual value.



Vega single-phase 0.3-25kVA

Vega stabilisers are available for different ranges of input voltage fluctuation.

Standard models offer a **double input connection** so that with the same unit two different input variations ($\pm 15/\pm 20\%$ or $\pm 25/\pm 30\%$) can be dealt with.

An **automatic circuit breaker** is mounted on the regulation circuit **to protect** against overload and short circuit on the voltage regulator, whilst the auxiliary circuit is protected by **fuses**.

A **digital display** on the front panel shows the output voltage and the alarms (min/max output voltage, gearmotor lock, internal overheating, regulator overload)

The control logic is based on a digital **microprocessor**.

All Vega stabilisers are fitted with the **same control card**, thus simplifying maintenance operations and spare parts storage.



Wide range

- symmetrical: **$\pm 15\%$, $\pm 20\%$, $\pm 25\%$, $\pm 30\%$** (other on request)
 - asymmetrical: **$+15\%/-25\%$, $+15\%/-35\%$, $+15\%/-45\%$** (other on request)
- Output voltage accuracy: **$\pm 0.5\%$** .



Technology

Control logic based on digital **microprocessor** operating with a software specifically developed for Ortea.



Long life

Ortea system voltage regulator with **rollers** (without brushes, which are subject to heavy wear & tear).



Protection

The voltage regulator is protected by a **circuit breaker** with magneto thermal release.
The auxiliary circuit is protected by **fuses**.



Instrumentation

A **digital display** providing with output voltage and alarm readings is fitted on the front panel.

| Type | Input voltage variation range | Rating | Input voltage range | Maximum input current | Output voltage $\pm 0.5\%$ | Output current | Efficiency | Speed regulation | Cabinet | Weight |
|------|-------------------------------|--------|---------------------|-----------------------|----------------------------|----------------|------------|------------------|---------|--------|
| | [%] | [kVA] | [V] | [A] | [V] | [A] | [%] | [ms/V] | Type | [kg] |

Input voltage variation range $\pm 20\%/\pm 15\%$ (the values listed in the table are referred to 230V nominal voltage)

| | | | | | | | | | | |
|---------------|----------|-----|---------|-----|-----|-----|-----|----|----|-----|
| 0.7-20 | ± 20 | 0.7 | 184-276 | 3.8 | | 3 | | 12 | | |
| 1-15 | ± 15 | 1 | 195-265 | 5 | 230 | 4.3 | >96 | 16 | 12 | 16 |
| 2-20 | ± 20 | 2 | 184-276 | 11 | | 8.7 | | 12 | | |
| 2.5-15 | ± 15 | 2.5 | 195-265 | 13 | 230 | 11 | >96 | 16 | 12 | 24 |
| 4-20 | ± 20 | 4 | 184-276 | 22 | | 17 | | 12 | | |
| 5-15 | ± 15 | 5 | 195-265 | 26 | 230 | 22 | >96 | 16 | 12 | 28 |
| 5-20 | ± 20 | 5 | 184-276 | 27 | | 22 | | 12 | | |
| 7-15 | ± 15 | 7 | 195-265 | 36 | 230 | 30 | >98 | 16 | 13 | 41 |
| 7-20 | ± 20 | 7 | 184-276 | 38 | | 30 | | 12 | | |
| 10-15 | ± 15 | 10 | 195-265 | 51 | 230 | 43 | >98 | 16 | 13 | 47 |
| 10-20 | ± 20 | 10 | 184-276 | 54 | | 43 | | 12 | | |
| 15-15 | ± 15 | 15 | 195-265 | 77 | 230 | 65 | >98 | 16 | 13 | 55 |
| 15-20 | ± 20 | 15 | 184-276 | 82 | | 65 | | 12 | | |
| 20-15 | ± 15 | 20 | 195-265 | 103 | 230 | 87 | >98 | 16 | 22 | 125 |
| 20-20 | ± 20 | 20 | 184-276 | 109 | | 87 | | 12 | | |
| 25-15 | ± 15 | 25 | 195-265 | 128 | 230 | 109 | >98 | 16 | 22 | 145 |

Input voltage variation range $\pm 30\%/\pm 25\%$ (the values listed in the table are referred to 230V nominal voltage)

| | | | | | | | | | | |
|---------------|----------|-----|---------|-----|-----|-----|-----|----|----|-----|
| 0.3-30 | ± 30 | 0.3 | 161-300 | 1.9 | | 1.3 | | 8 | | |
| 0.5-25 | ± 25 | 0.5 | 172-288 | 2.9 | 230 | 2.2 | >96 | 10 | 12 | 16 |
| 1-30 | ± 30 | 1 | 161-300 | 6.2 | | 4.3 | | 8 | | |
| 1.5-25 | ± 25 | 1.5 | 172-288 | 8.7 | 230 | 6.5 | >96 | 10 | 12 | 24 |
| 2-30 | ± 30 | 2 | 161-300 | 12 | | 8.7 | | 8 | | |
| 3-25 | ± 25 | 3 | 172-288 | 17 | 230 | 13 | >96 | 10 | 12 | 28 |
| 3-30 | ± 30 | 3 | 161-300 | 19 | | 13 | | 8 | | |
| 4-25 | ± 25 | 4 | 172-288 | 23 | 230 | 17 | >98 | 10 | 13 | 41 |
| 4-30 | ± 30 | 4 | 161-300 | 25 | | 17 | | 8 | | |
| 5-25 | ± 25 | 5 | 172-288 | 29 | 230 | 22 | >98 | 10 | 13 | 47 |
| 5-30 | ± 30 | 5 | 161-300 | 31 | | 22 | | 8 | | |
| 7-25 | ± 25 | 7 | 172-288 | 41 | 230 | 30 | >98 | 10 | 13 | 56 |
| 7-30 | ± 30 | 7 | 161-300 | 43 | | 30 | | 8 | | |
| 10-25 | ± 25 | 10 | 172-288 | 58 | 230 | 43 | >98 | 10 | 22 | 125 |
| 10-30 | ± 30 | 10 | 161-300 | 62 | | 43 | | 8 | | |
| 15-25 | ± 25 | 15 | 172-288 | 87 | 230 | 65 | >98 | 10 | 22 | 145 |

Vega

single-phase
0.3-25kVA

| Type | Input voltage variation range | Rating | Input voltage range | Maximum input current | Output voltage $\pm 0.5\%$ | Output current | Efficiency | Speed regulation | Cabinet | Weight |
|------|-------------------------------|--------|---------------------|-----------------------|----------------------------|----------------|------------|------------------|---------|--------|
| | [%] | [kVA] | [V] | [A] | [V] | [A] | [%] | [ms/V] | Type | [kg] |

Input voltage variation range **+15%/-25%** (the values listed in the table are referred to 230V nominal voltage)

| | | | | | | | | | | |
|------------------|---------|-----|---------|-----|-----|-----|-----|----|----|-----|
| 0.7-15/25 | +15/-25 | 0.7 | 172-265 | 4 | 230 | 3 | >96 | 12 | 12 | 17 |
| 2-15/25 | +15/-25 | 2 | 172-265 | 12 | 230 | 8.7 | >96 | 12 | 12 | 25 |
| 4-15/25 | +15/-25 | 4 | 172-265 | 23 | 230 | 17 | >96 | 12 | 12 | 29 |
| 5-15/25 | +15/-25 | 5 | 172-265 | 29 | 230 | 22 | >98 | 12 | 13 | 42 |
| 7-15/25 | +15/-25 | 7 | 172-265 | 41 | 230 | 30 | >98 | 12 | 13 | 48 |
| 10-15/25 | +15/-25 | 10 | 172-265 | 58 | 230 | 43 | >98 | 12 | 13 | 56 |
| 15-15/25 | +15/-25 | 15 | 172-265 | 87 | 230 | 65 | >98 | 12 | 22 | 125 |
| 20-15/25 | +15/-25 | 20 | 172-265 | 116 | 230 | 87 | >98 | 12 | 22 | 145 |

Input voltage variation range **+15%/-35%** (the values listed in the table are referred to 230V nominal voltage)

| | | | | | | | | | | |
|------------------|---------|-----|---------|-----|-----|-----|-----|----|----|-----|
| 0.5-15/35 | +15/-35 | 0.5 | 150-265 | 3.4 | 230 | 2.2 | >96 | 10 | 12 | 17 |
| 1.5-15/35 | +15/-35 | 1.5 | 150-265 | 10 | 230 | 6.5 | >96 | 10 | 12 | 25 |
| 3-15/35 | +15/-35 | 3 | 150-265 | 20 | 230 | 13 | >96 | 10 | 12 | 29 |
| 4-15/35 | +15/-35 | 4 | 150-265 | 27 | 230 | 17 | >98 | 10 | 13 | 42 |
| 5-15/35 | +15/-35 | 5 | 150-265 | 33 | 230 | 22 | >98 | 10 | 13 | 48 |
| 7-15/35 | +15/-35 | 7 | 150-265 | 47 | 230 | 30 | >98 | 10 | 13 | 56 |
| 10-15/35 | +15/-35 | 10 | 150-265 | 67 | 230 | 43 | >98 | 10 | 22 | 125 |
| 15-15/35 | +15/-35 | 15 | 150-265 | 100 | 230 | 65 | >98 | 10 | 22 | 145 |

Input voltage variation range **+15%/-45%** (the values listed in the table are referred to 230V nominal voltage)

| | | | | | | | | | | |
|------------------|---------|-----|---------|-----|-----|-----|-----|---|----|-----|
| 0.3-15/45 | +15/-45 | 0.3 | 126-265 | 2.4 | 230 | 1.3 | >96 | 8 | 12 | 17 |
| 1-15/45 | +15/-45 | 1 | 126-265 | 7.8 | 230 | 4.3 | >96 | 8 | 12 | 25 |
| 2-15/45 | +15/-45 | 2 | 126-265 | 16 | 230 | 8.7 | >96 | 8 | 12 | 29 |
| 3-15/45 | +15/-45 | 3 | 126-265 | 24 | 230 | 13 | >98 | 8 | 13 | 42 |
| 4-15/45 | +15/-45 | 4 | 126-265 | 32 | 230 | 17 | >98 | 8 | 13 | 48 |
| 5-15/45 | +15/-45 | 5 | 126-265 | 40 | 230 | 22 | >98 | 8 | 13 | 56 |
| 7-15/45 | +15/-45 | 7 | 126-265 | 56 | 230 | 30 | >98 | 8 | 22 | 125 |
| 10-15/45 | +15/-45 | 10 | 126-265 | 79 | 230 | 43 | >98 | 8 | 22 | 145 |



Antares

single-phase
15-135kVA



Standard features

| | |
|--|---------------------------------------|
| Selectable output voltage (dip-switch)* | 220-230-240V |
| Output voltage accuracy | ±0,5% |
| Frequency | 50Hz ±5% or 60Hz ±5% |
| Admitted load variation | Up to 100% |
| Cooling | Natural ventilation (aided with fans) |
| Ambient temperature | -25/+45°C |
| Storage temperature | -25/+60°C |
| Max relative humidity | 95% (non condensing) |
| Admitted overload | 200% 2 min. |
| Harmonic distortion | None introduced |
| Colour | RAL 7035 |
| Protection degree | IP21 |
| Instrumentation | Output digital multimeter |
| Installation | Indoor |
| Overvoltage protection | Class II output surge arrestor |

* The output voltage can be adjusted by choosing **one** of the indicated values. Such choice sets the new nominal value as a reference for all the stabiliser parameters.

Accessories

| |
|---|
| Interrupting devices |
| Load protection against over/undervoltage |
| Manual by-pass line |
| Input isolating transformer |
| SPD surge arrestor |
| EMI/RFI filters |
| IP54 protection degree for indoor and outdoor installation |

Rating in relation to the input variation percentage

| ±15% | ±20% | ±25% | ±30% | +15%/-25% | +15%/-35% | +15%/-45% |
|------------|------|------|------|-----------|-----------|-----------|
| 35 | 25 | 20 | 15 | 25 | 20 | 15 |
| 45 | 35 | 25 | 20 | 35 | 25 | 20 |
| 60 | 45 | 35 | 25 | 45 | 35 | 25 |
| 80 | 60 | 45 | 35 | 60 | 45 | 35 |
| 100 | 80 | 60 | 45 | 80 | 60 | 45 |
| 135 | 100 | 80 | 60 | 100 | 80 | 60 |



All ORTEA stabilisers are designed and built in compliance with the Low Voltage and Electromagnetic Compatibility European Directives with regard to the CE marking requirements. ORTEA products are built with suitable quality components and that the manufacturing process is constantly verified in accordance with the Quality Control Plans which the Company applies in compliance with the ISO 9001:2015 Standards. The commitment towards environmental issues and safety at work issues is guaranteed by the certification of the Management System according to the ISO14001:2015 and OHSAS18001:2007 Standards. In order to obtain better performance, the products described in the present document can be altered by the Company at any date and without prior notice. Technical data and descriptions do not hold therefore any contractual value.

Antares single-phase 15-135kVA

Antares stabilisers are available for different ranges of input voltage fluctuation.

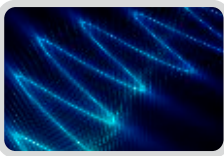
Standard models offer a **double input connection** so that with the same unit two different input variations ($\pm 1.5\%$ / $\pm 20\%$ or $\pm 25\%$ / $\pm 30\%$) can be dealt with.

An **automatic circuit breaker** is provided on the regulation circuit **to protect** against overload and short circuit on the voltage regulator whilst the auxiliary circuit is protected by **fuses**.

The instrumentation consists of a **digital multimeter** installed on the cabinet front panel. The alarms (min/max output voltage, gearmotor lock, internal overheating, regulator overload) are recognizable by means of LEDs on the control card.

The control logic is based on a digital **microprocessor**.

All Antares stabilisers are fitted with the **same control card**, thus simplifying maintenance operations and spare parts storage.



Wide range

- symmetrical: **$\pm 15\%$, $\pm 20\%$, $\pm 25\%$, $\pm 30\%$** (other on request)
 - asymmetrical: **$+15\%/-25\%$, $+15\%/-35\%$, $+15\%/-45\%$** (other on request)
- Output voltage accuracy: **$\pm 0.5\%$** .



Technology

Control logic based on digital **microprocessor** operating with a software specifically developed for Ortea.



Long life

Ortea system voltage regulator with **rollers** (without brushes, which are subject to heavy wear & tear).



Protection

The voltage regulator is protected by a **circuit breaker** with magneto thermal release. The auxiliary circuit is protected by **fuses**.
Overvoltage protection: Class II output **surge arrestor**.



Instrumentation

The digital measuring instrumentation is installed on the front panel and consist of an output **digital multimeter**.

Antares single-phase 15-135kVA

| Type | Input voltage variation range | Rating | Input voltage range | Maximum input current | Output voltage $\pm 0.5\%$ | Output current | Efficiency | Speed regulation | Cabinet | Weight |
|------|-------------------------------|--------|---------------------|-----------------------|----------------------------|----------------|------------|------------------|---------|--------|
| | [%] | [kVA] | [V] | [A] | [V] | [A] | [%] | [ms/V] | Type | [kg] |

Input voltage variation range $\pm 20\%/\pm 15\%$ (the values listed in the table are referred to 230V nominal voltage)

| | | | | | | | | | | |
|---------------|----------|-----|---------|-----|-----|-----|-----|----|----|-----|
| 25-20 | ± 20 | 25 | 184-276 | 136 | | 109 | | 12 | | |
| 35-15 | ± 15 | 35 | 195-265 | 179 | 230 | 152 | >98 | 16 | 23 | 180 |
| 35-20 | ± 20 | 35 | 184-276 | 190 | | 152 | | 12 | | |
| 45-15 | ± 15 | 45 | 195-265 | 231 | 230 | 196 | >98 | 16 | 31 | 200 |
| 45-20 | ± 20 | 45 | 184-276 | 245 | | 196 | | 12 | | |
| 60-15 | ± 15 | 60 | 195-265 | 308 | 230 | 261 | >98 | 16 | 40 | 320 |
| 60-20 | ± 20 | 60 | 184-276 | 326 | | 261 | | 12 | | |
| 80-15 | ± 15 | 80 | 195-265 | 410 | 230 | 348 | >98 | 16 | 40 | 390 |
| 80-20 | ± 20 | 80 | 184-276 | 435 | | 348 | | 12 | | |
| 100-15 | ± 15 | 100 | 195-265 | 513 | 230 | 435 | >98 | 16 | 51 | 550 |
| 100-20 | ± 20 | 100 | 184-276 | 543 | | 435 | | 12 | | |
| 135-15 | ± 15 | 135 | 195-265 | 692 | 230 | 587 | >98 | 16 | 51 | 650 |

Input voltage variation range $\pm 30\%/\pm 25\%$ (the values listed in the table are referred to 230V nominal voltage)

| | | | | | | | | | | |
|--------------|----------|----|---------|-----|-----|-----|-----|----|----|-----|
| 15-30 | ± 30 | 15 | 161-300 | 93 | | 65 | | 8 | | |
| 20-25 | ± 25 | 20 | 172-288 | 116 | 230 | 87 | >98 | 10 | 23 | 180 |
| 20-30 | ± 30 | 20 | 161-300 | 124 | | 87 | | 8 | | |
| 25-25 | ± 25 | 25 | 172-288 | 145 | 230 | 109 | >98 | 10 | 31 | 200 |
| 25-30 | ± 30 | 25 | 161-300 | 155 | | 109 | | 8 | | |
| 35-25 | ± 25 | 35 | 172-288 | 203 | 230 | 152 | >98 | 10 | 40 | 320 |
| 35-30 | ± 30 | 35 | 161-300 | 217 | | 152 | | 8 | | |
| 45-25 | ± 25 | 45 | 172-288 | 262 | 230 | 196 | >98 | 10 | 40 | 390 |
| 45-30 | ± 30 | 45 | 161-300 | 280 | | 196 | | 8 | | |
| 60-25 | ± 25 | 60 | 172-288 | 349 | 230 | 261 | >98 | 10 | 51 | 550 |
| 60-30 | ± 30 | 60 | 161-300 | 373 | | 261 | | 8 | | |
| 80-25 | ± 25 | 80 | 172-288 | 465 | 230 | 348 | >98 | 10 | 51 | 650 |

Antares

single-phase
15-135kVA

| Type | Input voltage variation range | Rating | Input voltage range | Maximum input current | Output voltage $\pm 0.5\%$ | Output current | Efficiency | Speed regulation | Cabinet | Weight |
|------|-------------------------------|--------|---------------------|-----------------------|----------------------------|----------------|------------|------------------|---------|--------|
| | [%] | [kVA] | [V] | [A] | [V] | [A] | [%] | [ms/V] | Type | [kg] |

Input voltage variation range **+15%/-25%** (the values listed in the table are referred to 230V nominal voltage)

| | | | | | | | | | | |
|------------------|---------|-----|---------|-----|-----|-----|-----|----|----|-----|
| 25-15/25 | +15/-25 | 25 | 172-265 | 145 | 230 | 109 | >98 | 14 | 23 | 190 |
| 35-15/25 | +15/-25 | 35 | 172-265 | 203 | 230 | 152 | >98 | 14 | 31 | 210 |
| 45-15/25 | +15/-25 | 45 | 172-265 | 262 | 230 | 196 | >98 | 14 | 40 | 330 |
| 60-15/25 | +15/-25 | 60 | 172-265 | 349 | 230 | 261 | >98 | 14 | 40 | 400 |
| 80-15/25 | +15/-25 | 80 | 172-265 | 465 | 230 | 348 | >98 | 14 | 51 | 560 |
| 100-15/25 | +15/-25 | 100 | 172-265 | 581 | 230 | 435 | >98 | 14 | 51 | 660 |

Input voltage variation range **+15%/-35%** (the values listed in the table are referred to 230V nominal voltage)

| | | | | | | | | | | |
|-----------------|---------|----|---------|-----|-----|-----|-----|----|----|-----|
| 20-15/35 | +15/-35 | 20 | 150-265 | 133 | 230 | 87 | >98 | 11 | 23 | 200 |
| 25-15/35 | +15/-35 | 25 | 150-265 | 167 | 230 | 109 | >98 | 11 | 31 | 220 |
| 35-15/35 | +15/-35 | 35 | 150-265 | 233 | 230 | 152 | >98 | 11 | 40 | 340 |
| 45-15/35 | +15/-35 | 45 | 150-265 | 300 | 230 | 196 | >98 | 11 | 40 | 410 |
| 60-15/35 | +15/-35 | 60 | 150-265 | 400 | 230 | 261 | >98 | 11 | 51 | 570 |
| 80-15/35 | +15/-35 | 80 | 150-265 | 533 | 230 | 348 | >98 | 11 | 51 | 670 |

Input voltage variation range **+15%/-45%** (the values listed in the table are referred to 230V nominal voltage)

| | | | | | | | | | | |
|-----------------|---------|----|---------|-----|-----|-----|-----|---|----|-----|
| 15-15/45 | +15/-45 | 15 | 126-265 | 119 | 230 | 65 | >98 | 9 | 23 | 210 |
| 20-15/45 | +15/-45 | 20 | 126-265 | 159 | 230 | 87 | >98 | 9 | 31 | 230 |
| 25-15/45 | +15/-45 | 25 | 126-265 | 198 | 230 | 109 | >98 | 9 | 40 | 350 |
| 35-15/45 | +15/-45 | 35 | 126-265 | 278 | 230 | 152 | >98 | 9 | 40 | 420 |
| 45-15/45 | +15/-45 | 45 | 126-265 | 357 | 230 | 196 | >98 | 9 | 51 | 580 |
| 60-15/45 | +15/-45 | 60 | 126-265 | 476 | 230 | 261 | >98 | 9 | 51 | 680 |



Orion

three-phase
2-135kVA



Standard features

| | |
|--|---|
| Voltage stabilisation | Independent phase control |
| Selectable output voltage (dip-switch)* | 220-230-240V (L-N) / 380-400-415V (L-L) |
| Output voltage accuracy | ±0,5% |
| Frequency | 50Hz ±5% or 60Hz ±5% |
| Admitted load variation | Up to 100% |
| Admitted load imbalance | 100% |
| Cooling | Natural air ventilation up to 45kVA ±15% Aided with fans from 60kVA ±15% |
| Ambient temperature | -25/+45°C |
| Storage temperature | -25/+60°C |
| Max relative humidity | 95% (non condensing) |
| Admitted overload | 200% 2 min. |
| Harmonic distortion | None introduced |
| Colour | RAL 7035 |
| Protection degree | IP21 |
| Instrumentation | Output digital multimeter |
| Installation | Indoor |
| Overvoltage protection | Output Class II surge arrestor (over 60kVA ±15%) |

* The output voltage can be adjusted by choosing **one** of the indicated values.
Such choice sets the new nominal value as a reference for all the stabiliser parameters.

Accessories

| |
|---|
| Interrupting devices |
| Load protection against over/undervoltage |
| Manual by-pass line |
| Input isolating transformer |
| SPD surge arrestor |
| EMI/RFI filters |
| Neutral point reactor |
| IP54 protection degree for indoor and outdoor installation |

Orion three-phase 2-135kVA



Rating in relation to the input variation percentage

| ±15% | ±20% | ±25% | ±30% | +15%/-25% | +15%/-35% | +15%/-45% |
|------|------|------|------|-----------|-----------|-----------|
| 5 | 4 | 3 | 2 | 4 | 3 | 2 |
| 10 | 7 | 4 | 3 | 7 | 4 | 3 |
| 15 | 10 | 7 | 4 | 10 | 7 | 4 |
| 20 | 15 | 10 | 7 | 15 | 10 | 7 |
| 30 | 20 | 15 | 10 | 20 | 15 | 10 |
| 45 | 30 | 20 | 15 | 30 | 20 | 15 |
| 60 | 45 | 30 | 20 | 45 | 30 | 20 |
| 80 | 60 | 45 | 30 | 60 | 45 | 30 |
| 105 | 80 | 60 | 45 | 80 | 60 | 45 |
| 135 | 105 | 80 | 60 | 105 | 80 | 60 |

Orion stabilisers are available for different ranges of input voltage fluctuation.

Standard models offer a **double input connection** so that with the same unit two different input variations ($\pm 15\%$ / $\pm 20\%$ or $\pm 25\%$ / $\pm 30\%$) can be dealt with.

The output voltage regulation is performed **independently on each phase** (stabilization of each phase-to-neutral voltage).

Orion stabilisers are used with **three-phase loads** and **single-phase loads** with **100% current imbalance** across the phases and asymmetrical mains voltage.

For the correct operation, Orion voltage stabilisers require the **neutral wire presence**. Operation without neutral wire connection is achievable by adding a device able to generate it (D/Yn isolating transformer or neutral point reactor).

An automatic **circuit breaker** is mounted on the regulation circuit **to protect** against overload and short circuit on the voltage regulator, whilst the auxiliary circuit is protected by **fuses**.

The instrumentation consists of a **multi-task digital line analyser**. Such instrument is able to provide with information regarding the voltage stabiliser output parameters, such as phase and linked voltage, current, power factor, active power, apparent power, reactive power, etc..

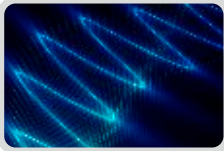
The alarms (min/max output voltage, gearmotor lock, internal overheating, regulator overload) are recognizable by means of LEDs on the control card.

Voltage control and stabilisation, performed on the **true RMS value**, are managed by the digital **microprocessor**.

Each phase of every stabiliser belonging to this range is controlled by the **same control board** used on Vega and Antares models, thus simplifying maintenance operations and spare parts storage.

Up to 45kVA, the stabilisers are equipped with wheels for easy handling.

Orion three-phase 2-135kVA



Wide range

- symmetrical: **±15%, ±20%, ±25%, ±30%** (other on request)
 - asymmetrical: **+15%/-25%, +15%/-35%, +15%/-45%** (other on request)
- Output voltage accuracy: **±0.5%**.



Technology

Control and stabilisation, performed on the **true RMS** value, are based on a digital **microprocessor** operating with a software specifically developed for Ortea.
Independent regulation on each phase.



Long life

Ortea system voltage regulator with **rollers** (without brushes, which are subject to heavy wear & tear).



Protection

The voltage regulator is protected by a **circuit breaker** with magneto thermal release.
The auxiliary circuit is protected by **fuses**.
Overvoltage protection: Class II output **surge arrester**.



Instrumentation

Multi-task digital analyser mounted on the front panel (linked and phase voltage, current, frequency, power factor, active power, reactive power, apparent power etc.).

Orion

three-phase
2-135kVA

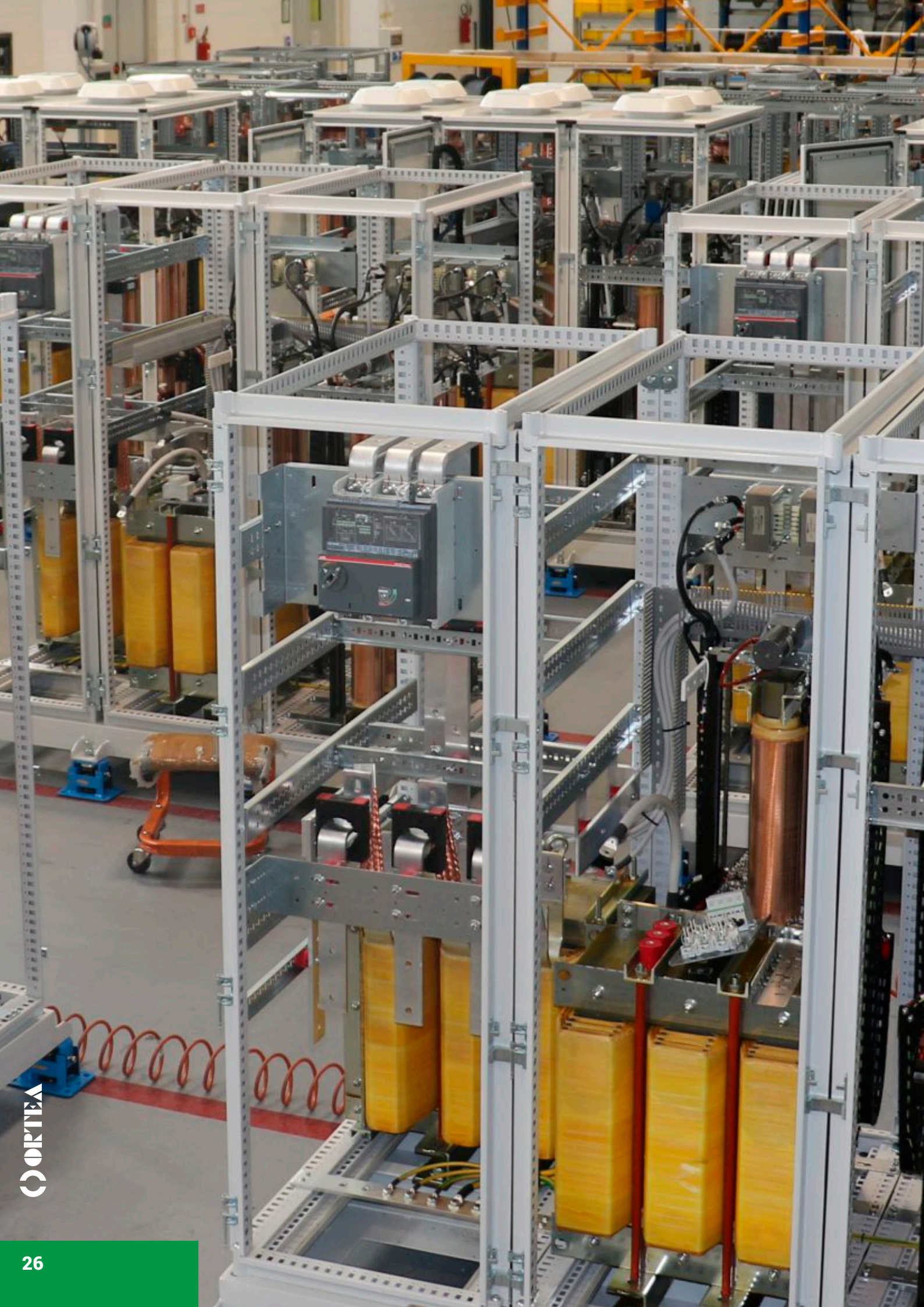
| Type | Input voltage variation range | Rating | Input voltage range | Maximum input current | Output voltage $\pm 0.5\%$ | Output current | Efficiency | Speed regulation | Cabinet | Weight |
|------|-------------------------------|--------|---------------------|-----------------------|----------------------------|----------------|------------|------------------|---------|--------|
| | [%] | [kVA] | [V] | [A] | [V] | [A] | [%] | [ms/V] | Type | [kg] |

Input voltage variation range $\pm 20\%/\pm 15\%$ (the values listed in the table are referred to 400V nominal voltage)

| | | | | | | | | | | |
|---------------|----------|-----|---------|-----|-----|-----|-----|----|----|-----|
| 4-20 | ± 20 | 4 | 320-480 | 7.3 | | 5.8 | | 12 | | |
| 5-15 | ± 15 | 5 | 340-460 | 8.5 | 400 | 7.2 | >96 | 16 | 22 | 90 |
| 7-20 | ± 20 | 7 | 320-480 | 13 | | 10 | | 12 | | |
| 10-15 | ± 15 | 10 | 340-460 | 17 | 400 | 14 | >96 | 16 | 22 | 110 |
| 10-20 | ± 20 | 10 | 320-480 | 18 | | 14 | | 12 | | |
| 15-15 | ± 15 | 15 | 340-460 | 25 | 400 | 22 | >96 | 16 | 22 | 140 |
| 15-20 | ± 20 | 15 | 320-480 | 27 | | 22 | | 12 | | |
| 20-15 | ± 15 | 20 | 340-460 | 34 | 400 | 29 | >98 | 16 | 23 | 155 |
| 20-20 | ± 20 | 20 | 320-480 | 36 | | 29 | | 12 | | |
| 30-15 | ± 15 | 30 | 340-460 | 51 | 400 | 43 | >98 | 16 | 23 | 180 |
| 30-20 | ± 20 | 30 | 320-480 | 54 | | 43 | | 12 | | |
| 45-15 | ± 15 | 45 | 340-460 | 76 | 400 | 65 | >98 | 16 | 23 | 200 |
| 45-20 | ± 20 | 45 | 320-480 | 81 | | 65 | | 12 | | |
| 60-15 | ± 15 | 60 | 340-460 | 102 | 400 | 87 | >98 | 16 | 31 | 310 |
| 60-20 | ± 20 | 60 | 320-480 | 108 | | 86 | | 12 | | |
| 80-15 | ± 15 | 80 | 340-460 | 136 | 400 | 115 | >98 | 16 | 40 | 425 |
| 80-20 | ± 20 | 80 | 320-480 | 144 | | 115 | | 12 | | |
| 105-15 | ± 15 | 105 | 340-460 | 178 | 400 | 152 | >98 | 16 | 51 | 510 |
| 105-20 | ± 20 | 105 | 320-480 | 189 | | 152 | | 12 | | |
| 135-15 | ± 15 | 135 | 340-460 | 229 | 400 | 195 | >98 | 16 | 51 | 580 |

Input voltage variation range $\pm 30\%/\pm 25\%$ (the values listed in the table are referred to 400V nominal voltage)

| | | | | | | | | | | |
|--------------|----------|----|---------|-----|-----|-----|-----|----|----|-----|
| 2-30 | ± 30 | 2 | 280-520 | 4.1 | | 2.9 | | 8 | | |
| 3-25 | ± 25 | 3 | 300-500 | 5.7 | 400 | 4.3 | >96 | 10 | 22 | 90 |
| 3-30 | ± 30 | 3 | 280-520 | 6.1 | | 4.3 | | 8 | | |
| 4-25 | ± 25 | 4 | 300-500 | 7.7 | 400 | 5.8 | >96 | 10 | 22 | 110 |
| 4-30 | ± 30 | 4 | 280-520 | 8.3 | | 5.8 | | 8 | | |
| 7-25 | ± 25 | 7 | 300-500 | 13 | 400 | 10 | >96 | 10 | 22 | 140 |
| 7-30 | ± 30 | 7 | 280-520 | 14 | | 10 | | 8 | | |
| 10-25 | ± 25 | 10 | 300-500 | 19 | 400 | 14 | >98 | 10 | 23 | 155 |
| 10-30 | ± 30 | 10 | 280-520 | 21 | | 14 | | 8 | | |
| 15-25 | ± 25 | 15 | 300-500 | 29 | 400 | 22 | >98 | 10 | 23 | 180 |
| 15-30 | ± 30 | 15 | 280-520 | 31 | | 22 | | 8 | | |
| 20-25 | ± 25 | 20 | 300-500 | 38 | 400 | 29 | >98 | 10 | 23 | 200 |
| 20-30 | ± 30 | 20 | 280-520 | 41 | | 29 | | 8 | | |
| 30-25 | ± 25 | 30 | 300-500 | 58 | 400 | 43 | >98 | 10 | 31 | 310 |
| 30-30 | ± 30 | 30 | 280-520 | 62 | | 43 | | 8 | | |
| 45-25 | ± 25 | 45 | 300-500 | 87 | 400 | 65 | >98 | 10 | 40 | 425 |
| 45-30 | ± 30 | 45 | 280-520 | 93 | | 65 | | 8 | | |
| 60-25 | ± 25 | 60 | 300-500 | 115 | 400 | 87 | >98 | 10 | 51 | 510 |
| 60-30 | ± 30 | 60 | 280-520 | 124 | | 87 | | 8 | | |
| 80-25 | ± 25 | 80 | 300-500 | 154 | 400 | 115 | >98 | 10 | 51 | 580 |



Orion

three-phase
2-135kVA

| Type | Input voltage variation range | Rating | Input voltage range | Maximum input current | Output voltage $\pm 0.5\%$ | Output current | Efficiency | Speed regulation | Cabinet | Weight |
|------|-------------------------------|--------|---------------------|-----------------------|----------------------------|----------------|------------|------------------|---------|--------|
| | [%] | [kVA] | [V] | [A] | [V] | [A] | [%] | [ms/V] | Type | [kg] |

Input voltage variation range **+15%/-25%** (the values listed in the table are referred to 400V nominal voltage)

| | | | | | | | | | | |
|------------------|---------|-----|---------|-----|-----|-----|-----|----|----|-----|
| 4-15/25 | +15/-25 | 4 | 300-460 | 7.7 | 400 | 5.8 | >96 | 14 | 22 | 100 |
| 7-15/25 | +15/-25 | 7 | 300-460 | 13 | 400 | 10 | >96 | 14 | 22 | 130 |
| 10-15/25 | +15/-25 | 10 | 300-460 | 19 | 400 | 14 | >96 | 14 | 22 | 150 |
| 15-15/25 | +15/-25 | 15 | 300-460 | 29 | 400 | 22 | >98 | 14 | 23 | 165 |
| 20-15/25 | +15/-25 | 20 | 300-460 | 38 | 400 | 29 | >98 | 14 | 23 | 190 |
| 30-15/25 | +15/-25 | 30 | 300-460 | 58 | 400 | 43 | >98 | 14 | 23 | 220 |
| 45-15/25 | +15/-25 | 45 | 300-460 | 87 | 400 | 65 | >98 | 14 | 40 | 330 |
| 60-15/25 | +15/-25 | 60 | 300-460 | 115 | 400 | 87 | >98 | 14 | 40 | 445 |
| 80-15/25 | +15/-25 | 80 | 300-460 | 154 | 400 | 115 | >98 | 14 | 51 | 530 |
| 105-15/25 | +15/-25 | 105 | 300-460 | 202 | 400 | 152 | >98 | 14 | 51 | 600 |

Input voltage variation range **+15%/-35%** (the values listed in the table are referred to 400V nominal voltage)

| | | | | | | | | | | |
|-----------------|---------|----|---------|-----|-----|-----|-----|----|----|-----|
| 3-15/35 | +15/-35 | 3 | 260-460 | 6.6 | 400 | 4.3 | >96 | 10 | 22 | 100 |
| 4-15/35 | +15/-35 | 4 | 260-460 | 8.9 | 400 | 5.8 | >96 | 10 | 22 | 130 |
| 7-15/35 | +15/-35 | 7 | 260-460 | 16 | 400 | 10 | >96 | 10 | 22 | 150 |
| 10-15/35 | +15/-35 | 10 | 260-460 | 22 | 400 | 14 | >98 | 10 | 23 | 165 |
| 15-15/35 | +15/-35 | 15 | 260-460 | 33 | 400 | 22 | >98 | 10 | 23 | 190 |
| 20-15/35 | +15/-35 | 20 | 260-460 | 44 | 400 | 29 | >98 | 10 | 23 | 220 |
| 30-15/35 | +15/-35 | 30 | 260-460 | 67 | 400 | 43 | >98 | 10 | 40 | 330 |
| 45-15/35 | +15/-35 | 45 | 260-460 | 100 | 400 | 65 | >98 | 10 | 40 | 445 |
| 60-15/35 | +15/-35 | 60 | 260-460 | 133 | 400 | 87 | >98 | 10 | 51 | 530 |
| 80-15/35 | +15/-35 | 80 | 260-460 | 178 | 400 | 115 | >98 | 10 | 51 | 600 |

Input voltage variation range **+15%/-45%** (the values listed in the table are referred to 400V nominal voltage)

| | | | | | | | | | | |
|-----------------|---------|----|---------|-----|-----|-----|-----|---|----|-----|
| 2-15/45 | +15/-45 | 2 | 220-460 | 5.3 | 400 | 2.9 | >96 | 8 | 22 | 100 |
| 3-15/45 | +15/-45 | 3 | 220-460 | 7.8 | 400 | 4.3 | >96 | 8 | 22 | 130 |
| 4-15/45 | +15/-45 | 4 | 220-460 | 10 | 400 | 5.8 | >96 | 8 | 22 | 150 |
| 7-15/45 | +15/-45 | 7 | 220-460 | 18 | 400 | 10 | >98 | 8 | 23 | 165 |
| 10-15/45 | +15/-45 | 10 | 220-460 | 26 | 400 | 14 | >98 | 8 | 23 | 190 |
| 15-15/45 | +15/-45 | 15 | 220-460 | 39 | 400 | 22 | >98 | 8 | 23 | 220 |
| 20-15/45 | +15/-45 | 20 | 220-460 | 52 | 400 | 29 | >98 | 8 | 40 | 330 |
| 30-15/45 | +15/-45 | 30 | 220-460 | 79 | 400 | 43 | >98 | 8 | 40 | 445 |
| 45-15/45 | +15/-45 | 45 | 220-460 | 118 | 400 | 65 | >98 | 8 | 51 | 530 |
| 60-15/45 | +15/-45 | 60 | 220-460 | 157 | 400 | 87 | >98 | 8 | 51 | 600 |



three-phase
30-2000kVA

Orion Plus



Standard features

| | |
|--------------------------------------|---|
| Voltage stabilisation | Independent phase control |
| PC selectable output voltage* | from 210 to 255V (L-N) from 360 to 440V (L-L) |
| Output voltage accuracy | ±0,5% |
| Frequency | 50Hz ±5% or 60Hz ±5% |
| Admitted load variation | Up to 100% |
| Admitted load imbalance | 100% |
| Cooling | Natural air ventilation. From 35°C aided with fans |
| Ambient temperature | -25/+45°C |
| Storage temperature | -25/+60°C |
| Max relative humidity | 95% (non condensing) |
| Admitted overload | 200% 2 min. |
| Harmonic distortion | None introduced |
| Colour | RAL 7035 |
| Protection degree | IP21 |
| Instrumentation | Input & output digital multimeter |
| Installation | Indoor |
| Overvoltage protection | – Class II output surge arrester – Optimal voltage return through supercapacitors – in case of blackout |

* The output voltage can be adjusted by choosing **one** of the indicated values.
Such choice sets the new nominal value as a reference for all the stabiliser parameters.

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 arrester |
| EMI/RFI filters |
| Neutral point reactor |
| IP54 protection degree for indoor and outdoor installation |

Orion Plus three-phase 30-2000kVA

Rating in relation to the input variation percentage

| ±10% | ±15% | ±20% | ±25% | ±30% | +15%/-35% | +15%/-45% |
|------|------|------|------|------|-----------|-----------|
| 125 | 80 | 60 | 45 | 30 | 45 | 30 |
| 160 | 105 | 80 | 60 | 45 | 60 | 45 |
| 200 | 135 | 105 | 80 | 60 | 80 | 60 |
| 250 | 160 | 135 | 90 | 80 | 90 | 80 |
| 320 | 200 | 160 | 135 | 105 | 135 | 105 |
| 400 | 250 | 200 | 160 | 135 | 160 | 135 |
| 500 | 320 | 250 | 200 | 160 | 200 | 160 |
| 630 | 400 | 320 | 250 | 200 | 250 | 200 |
| 800 | 500 | 400 | 320 | 250 | 320 | 250 |
| 1000 | 630 | 500 | 400 | 320 | 400 | 320 |
| 1250 | 800 | 630 | 500 | 400 | 500 | 400 |
| 1600 | 1000 | 800 | 630 | 500 | 630 | 500 |
| 2000 | 1250 | 1000 | 800 | 630 | 800 | 630 |

Orion Plus stabilisers are available for different ranges of input voltage fluctuation. In the ±15%/ ±20% and ±25%/ ±30% types, the change of input range is obtained through different internal connections.

The Orion Plus voltage stabilisers regulate the output voltage **independently on each phase**.

Similarly to the Orion stabilisers, they can supply **any single-phase, bi-phase and three-phase load** even in case of and up to **100% unbalanced load current** and asymmetrical mains distribution.

In this configuration, the presence of **the neutral wire is required**. The stabiliser can also operate without neutral wire by adding a device able to generate it (D/zn or D /yn isolating transformer or neutral point reactor).

The stabilisers are cooled via **natural air ventilation**, assisted by extracting fans when the cabinet internal temperature exceeds 35°C).

The instrumentation consists of **two multi-task digital line analysers** which are able to provide with information regarding the status of the lines upstream and downstream the voltage stabiliser (phase and linked voltages, current, power factor, active power, apparent power, reactive power, etc.)

The operating status of the stabiliser can be **monitored** by means of the **LEDs** on the front panel displaying all the **information** regarding each phase operating mode ('power on'; reaching of voltage regulation limits; increase/decrease of voltage regulation) and the possible **alarms** (minimum and maximum voltage, maximum current: overtemperature; ventilation failure). The alarm indicators are accompanied by an acoustic alarm.

– Up to 250kVA ±15%, the regulation circuit is protected against overload and short circuit on the voltage regulator by an **automatic circuit breaker**.

– From 300kVA ±15%, an **electronic voltage regulator protection system** activates in case of overload on the voltage regulator. In such condition, the load supply is not interrupted, but the stabiliser output voltage is automatically set to the lower between the mains voltage and the pre-set output voltage.

The service continuity is guaranteed, although the voltage is not stabilised. When the overload condition ceases to exist, the stabiliser switches automatically back to regular functioning.

The auxiliary circuits are protected by **fuses**.

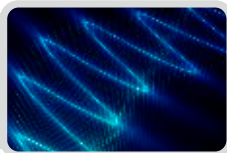
The control logic, performed on the **true RMS** value, is based on **DSP microprocessors**.

The unit parameters and the output voltage reference can be **set** by using a **personal computer**, thus allowing for dealing directly in the field with any problems related to voltage stability.

All Orion Plus stabilisers are provided with **Class II SPD surge arrestors**.



Orion Plus three-phase 30-2000kVA



Wide range

- symmetrical: **±10%, ±15%, ±20%, ±25%, ±30%** (other on request)
 - asymmetrical: **+15%/-35%, +15%/-45%** (other on request)
- Output voltage accuracy: **±0.5%**.



Technology

Control and stabilisation, performed on the **true RMS** value, are based on a digital **microprocessor** operating with a software specifically developed for Ortea.

Parameters and reference voltage can be **set** via a **PC**, thus allowing for adjusting the stabiliser to the actual site conditions.

Independent regulation on each phase.



Long life

Ortea system voltage regulator with **rollers** (without brushes, which are subject to heavy wear & tear). Depending on the rating, the voltage regulator could be **toroidal** or **columnar**.



Protection

Up to 250kVA ±15%: The voltage regulator is protected by a three-phase automatic **circuit breaker**.

The auxiliary circuit is protected by **fuses**.

Overvoltage protection: Class II output **surge arrester**.



Protection

From 300kVA ±15%: The stabiliser is provided of an **electronic** voltage regulator **protection system** activates in case of overload on the voltage regulator. In such conditions, the **load supply is not interrupted**.

The auxiliary circuit is protected by **fuses**.

Overvoltage protection: Class II output **surge arrester**.



Protection

Output voltage reset to the minimum value in case of blackout by means of **supercapacitors** banks in order to ensure the correct shutdown.



Instrumentation

Two **multi-task digital analyser** mounted on the front panel (linked and phase voltage current, frequency, power factor, active power, reactive power, apparent power etc.).



Monitoring

The stabiliser **operating mode** can be easily **monitored** by means of the **LEDs** on the front panel, which provide with **information** and **alarms**.

Orion Plus

three-phase
30-2000kVA

| Type | Input voltage variation range | Rating | Input voltage range | Maximum input current | Output voltage $\pm 0.5\%$ | Output current | Efficiency | Speed regulation | Cabinet | Weight |
|------|-------------------------------|--------|---------------------|-----------------------|----------------------------|----------------|------------|------------------|---------|--------|
| | [%] | [kVA] | [V] | [A] | [V] | [A] | [%] | [ms/V] | Type | [kg] |

Input voltage variation range $\pm 10\%$ (the values listed in the table are referred to 400V nominal voltage)

| | | | | | | | | | | |
|----------------|----------|------|---------|------|-----|------|-----|----|----|------|
| 135-10 | ± 10 | 135 | 360-440 | 216 | 400 | 194 | >98 | 24 | 51 | 430 |
| 160-10 | ± 10 | 160 | 360-440 | 257 | 400 | 231 | >98 | 24 | 51 | 490 |
| 200-10 | ± 10 | 200 | 360-440 | 321 | 400 | 289 | >98 | 24 | 51 | 580 |
| 250-10 | ± 10 | 250 | 360-440 | 401 | 400 | 361 | >98 | 30 | 42 | 670 |
| 320-10 | ± 10 | 320 | 360-440 | 513 | 400 | 462 | >98 | 30 | 42 | 720 |
| 400-10 | ± 10 | 400 | 360-440 | 642 | 400 | 577 | >98 | 30 | 42 | 800 |
| 500-10 | ± 10 | 500 | 360-440 | 802 | 400 | 722 | >98 | 30 | 55 | 850 |
| 630-10 | ± 10 | 630 | 360-440 | 1010 | 400 | 909 | >98 | 30 | 55 | 1100 |
| 800-10 | ± 10 | 800 | 360-440 | 1283 | 400 | 1155 | >98 | 30 | 53 | 1300 |
| 1000-10 | ± 10 | 1000 | 360-440 | 1604 | 400 | 1443 | >98 | 30 | 62 | 1530 |
| 1250-10 | ± 10 | 1250 | 360-440 | 2005 | 400 | 1804 | >98 | 36 | 62 | 2200 |
| 1600-10 | ± 10 | 1600 | 360-440 | 2566 | 400 | 2309 | >98 | 36 | 63 | 2400 |
| 2000-10 | ± 10 | 2000 | 360-440 | 3208 | 400 | 2887 | >98 | 36 | 64 | 2650 |

Input voltage variation range $\pm 20\%/\pm 15\%$ (the values listed in the table are referred to 400V nominal voltage)

| | | | | | | | | | | |
|----------------|----------|------|---------|------|-----|------|-----|----|----|------|
| 60-20 | ± 20 | 60 | 320-480 | 108 | | 87 | | 12 | | |
| 80-15 | ± 15 | 80 | 340-460 | 136 | 400 | 115 | >98 | 16 | 51 | 430 |
| 80-20 | ± 20 | 80 | 320-480 | 144 | | 115 | >98 | 12 | | |
| 105-15 | ± 15 | 105 | 340-460 | 178 | 400 | 152 | >98 | 16 | 51 | 490 |
| 105-20 | ± 20 | 105 | 320-480 | 189 | | 152 | >98 | 12 | | |
| 135-15 | ± 15 | 135 | 340-460 | 229 | 400 | 195 | >98 | 16 | 51 | 580 |
| 135-20 | ± 20 | 135 | 320-480 | 243 | | 195 | >98 | 15 | | |
| 160-15 | ± 15 | 160 | 340-460 | 272 | 400 | 231 | >98 | 20 | 42 | 670 |
| 160-20 | ± 20 | 160 | 320-480 | 289 | | 231 | >98 | 15 | | |
| 200-15 | ± 15 | 200 | 340-460 | 340 | 400 | 289 | >98 | 20 | 42 | 720 |
| 200-20 | ± 20 | 200 | 320-480 | 361 | | 289 | >98 | 15 | | |
| 250-15 | ± 15 | 250 | 340-460 | 425 | 400 | 361 | >98 | 20 | 42 | 800 |
| 250-20 | ± 20 | 250 | 320-480 | 451 | | 361 | >98 | 15 | | |
| 320-15 | ± 15 | 320 | 340-460 | 543 | 400 | 462 | >98 | 20 | 55 | 850 |
| 320-20 | ± 20 | 320 | 320-480 | 577 | | 462 | >98 | 15 | | |
| 400-15 | ± 15 | 400 | 340-460 | 679 | 400 | 577 | >98 | 20 | 55 | 1100 |
| 400-20 | ± 20 | 400 | 320-480 | 722 | | 577 | >98 | 15 | | |
| 500-15 | ± 15 | 500 | 340-460 | 849 | 400 | 722 | >98 | 20 | 53 | 1300 |
| 500-20 | ± 20 | 500 | 320-480 | 902 | | 722 | >98 | 15 | | |
| 630-15 | ± 15 | 630 | 340-460 | 1070 | 400 | 909 | >98 | 20 | 62 | 1530 |
| 630-20 | ± 20 | 630 | 320-480 | 1137 | | 909 | >98 | 18 | | |
| 800-15 | ± 15 | 800 | 340-460 | 1359 | 400 | 1155 | >98 | 24 | 62 | 2200 |
| 800-20 | ± 20 | 800 | 320-480 | 1443 | | 1155 | >98 | 18 | | |
| 1000-15 | ± 15 | 1000 | 340-460 | 1698 | 400 | 1443 | >98 | 24 | 63 | 2400 |
| 1000-20 | ± 20 | 1000 | 320-480 | 1804 | | 1443 | >98 | 18 | | |
| 1250-15 | ± 15 | 1250 | 340-460 | 2123 | 400 | 1804 | >98 | 24 | 64 | 2650 |

Orion Plus three-phase 30-2000kVA

| Type | Input voltage variation range | Rating | Input voltage range | Maximum input current | Output voltage $\pm 0.5\%$ | Output current | Efficiency | Speed regulation | Cabinet | Weight |
|------|-------------------------------|--------|---------------------|-----------------------|----------------------------|----------------|------------|------------------|---------|--------|
| | [%] | [kVA] | [V] | [A] | [V] | [A] | [%] | [ms/V] | Type | [kg] |

Input voltage variation range $\pm 30\%/\pm 25\%$ (the values listed in the table are referred to 400V nominal voltage)

| | | | | | | | | | | |
|---------------|----------|-----|---------|------|-----|------|-----|----|----|------|
| 30-30 | ± 30 | 30 | 280-520 | 62 | 400 | 43 | >98 | 8 | 51 | 430 |
| 45-25 | ± 25 | 45 | 300-500 | 87 | 400 | 65 | >98 | 10 | 51 | 490 |
| 45-30 | ± 30 | 45 | 280-520 | 93 | 400 | 65 | >98 | 8 | 51 | 490 |
| 60-25 | ± 25 | 60 | 300-500 | 115 | 400 | 87 | >98 | 10 | 51 | 580 |
| 60-30 | ± 30 | 60 | 280-520 | 124 | 400 | 87 | >98 | 8 | 51 | 580 |
| 80-25 | ± 25 | 80 | 300-500 | 154 | 400 | 115 | >98 | 10 | 42 | 670 |
| 80-30 | ± 30 | 80 | 280-520 | 165 | 400 | 115 | >98 | 10 | 42 | 670 |
| 90-25 | ± 25 | 90 | 300-500 | 173 | 400 | 130 | >98 | 12 | 42 | 720 |
| 105-30 | ± 30 | 105 | 280-520 | 217 | 400 | 152 | >98 | 10 | 42 | 720 |
| 135-25 | ± 25 | 135 | 300-500 | 260 | 400 | 195 | >98 | 12 | 42 | 800 |
| 135-30 | ± 30 | 135 | 280-520 | 278 | 400 | 195 | >98 | 10 | 42 | 800 |
| 160-25 | ± 25 | 160 | 300-500 | 308 | 400 | 231 | >98 | 12 | 55 | 850 |
| 160-30 | ± 30 | 160 | 280-520 | 330 | 400 | 231 | >98 | 10 | 55 | 850 |
| 200-25 | ± 25 | 200 | 300-500 | 385 | 400 | 289 | >98 | 12 | 55 | 1100 |
| 200-30 | ± 30 | 200 | 280-520 | 412 | 400 | 289 | >98 | 10 | 55 | 1100 |
| 250-25 | ± 25 | 250 | 300-500 | 481 | 400 | 361 | >98 | 12 | 53 | 1300 |
| 250-30 | ± 30 | 250 | 280-520 | 516 | 400 | 361 | >98 | 10 | 53 | 1300 |
| 320-25 | ± 25 | 320 | 300-500 | 616 | 400 | 462 | >98 | 12 | 62 | 1530 |
| 320-30 | ± 30 | 300 | 280-520 | 660 | 400 | 462 | >98 | 10 | 62 | 1530 |
| 400-25 | ± 25 | 400 | 300-500 | 770 | 400 | 577 | >98 | 12 | 62 | 2200 |
| 400-30 | ± 30 | 400 | 280-520 | 825 | 400 | 577 | >98 | 12 | 62 | 2200 |
| 500-25 | ± 25 | 500 | 300-500 | 962 | 400 | 722 | >98 | 15 | 63 | 2400 |
| 500-30 | ± 30 | 500 | 280-520 | 1031 | 400 | 722 | >98 | 12 | 63 | 2400 |
| 630-25 | ± 25 | 630 | 300-500 | 1212 | 400 | 909 | >98 | 15 | 64 | 2650 |
| 630-30 | ± 30 | 630 | 280-520 | 1299 | 400 | 909 | >98 | 12 | 64 | 2650 |
| 800-25 | ± 25 | 800 | 300-500 | 1540 | 400 | 1155 | >98 | 15 | | |

Orion Plus

three-phase
30-2000kVA

| Type | Input voltage variation range | Rating | Input voltage range | Maximum input current | Output voltage $\pm 0.5\%$ | Output current | Efficiency | Speed regulation | Cabinet | Weight |
|------|-------------------------------|--------|---------------------|-----------------------|----------------------------|----------------|------------|------------------|---------|--------|
| | [%] | [kVA] | [V] | [A] | [V] | [A] | [%] | [ms/V] | Type | [kg] |

Input voltage variation range **+15%/-35%** (the values listed in the table are referred to 400V nominal voltage)

| | | | | | | | | | | |
|------------------|---------|-----|---------|------|-----|------|-----|----|----|------|
| 45-15/35 | +15/-35 | 45 | 260-460 | 100 | 400 | 65 | >98 | 10 | 51 | 470 |
| 60-15/35 | +15/-35 | 60 | 260-460 | 133 | 400 | 87 | >98 | 10 | 51 | 550 |
| 80-15/35 | +15/-35 | 80 | 260-460 | 178 | 400 | 115 | >98 | 10 | 51 | 600 |
| 90-15/35 | +15/-35 | 90 | 260-460 | 200 | 400 | 130 | >98 | 12 | 68 | 900 |
| 135-15/35 | +15/-35 | 135 | 260-460 | 300 | 400 | 195 | >98 | 12 | 68 | 1000 |
| 160-15/35 | +15/-35 | 160 | 260-460 | 355 | 400 | 231 | >98 | 12 | 68 | 1100 |
| 200-15/35 | +15/-35 | 200 | 260-460 | 444 | 400 | 289 | >98 | 12 | 55 | 1200 |
| 250-15/35 | +15/-35 | 250 | 260-460 | 555 | 400 | 361 | >98 | 12 | 52 | 1450 |
| 320-15/35 | +15/-35 | 320 | 260-460 | 711 | 400 | 462 | >98 | 12 | 52 | 1700 |
| 400-15/35 | +15/-35 | 400 | 260-460 | 888 | 400 | 577 | >98 | 12 | 63 | 2300 |
| 500-15/35 | +15/-35 | 500 | 260-460 | 1110 | 400 | 722 | >98 | 15 | 63 | 3200 |
| 630-15/35 | +15/-35 | 630 | 260-460 | 1399 | 400 | 909 | >98 | 15 | 64 | 3400 |
| 800-15/35 | +15/-35 | 800 | 260-460 | 1777 | 400 | 1155 | >98 | 15 | 70 | 3850 |

Input voltage variation range **+15%/-45%** (the values listed in the table are referred to 400V nominal voltage)

| | | | | | | | | | | |
|------------------|---------|-----|---------|------|-----|-----|-----|----|----|------|
| 30-15/45 | +15/-45 | 30 | 220-460 | 79 | 400 | 43 | >98 | 8 | 51 | 470 |
| 45-15/45 | +15/-45 | 45 | 220-460 | 118 | 400 | 65 | >98 | 8 | 51 | 550 |
| 60-15/45 | +15/-45 | 60 | 220-460 | 157 | 400 | 87 | >98 | 8 | 51 | 600 |
| 80-15/45 | +15/-45 | 80 | 220-460 | 210 | 400 | 115 | >98 | 10 | 68 | 900 |
| 105-15/45 | +15/-45 | 105 | 220-460 | 276 | 400 | 152 | >98 | 10 | 68 | 1000 |
| 135-15/45 | +15/-45 | 135 | 220-460 | 354 | 400 | 195 | >98 | 10 | 68 | 1100 |
| 160-15/45 | +15/-45 | 160 | 220-460 | 420 | 400 | 231 | >98 | 10 | 55 | 1200 |
| 200-15/45 | +15/-45 | 200 | 220-460 | 525 | 400 | 289 | >98 | 10 | 52 | 1450 |
| 250-15/45 | +15/-45 | 250 | 220-460 | 656 | 400 | 361 | >98 | 10 | 52 | 1700 |
| 320-15/45 | +15/-45 | 300 | 220-460 | 840 | 400 | 462 | >98 | 10 | 63 | 2300 |
| 400-15/45 | +15/-45 | 400 | 220-460 | 1050 | 400 | 577 | >98 | 12 | 63 | 3200 |
| 500-15/45 | +15/-45 | 500 | 220-460 | 1312 | 400 | 722 | >98 | 12 | 64 | 3400 |
| 630-15/45 | +15/-45 | 630 | 220-460 | 1653 | 400 | 909 | >98 | 12 | 70 | 3850 |



Sirius

three-phase
60-6000kVA



Standard features

| | |
|---|---|
| Voltage stabilisation | Independent phase control |
| Output voltage selectable via display, PC and/or Ethernet* | from 210 to 255V (L-N) from 360 to 440V (L-L) |
| Output voltage accuracy | ±0,5% |
| Frequency | 50Hz ±5% or 60Hz ±5% |
| Admitted load variation | Up to 100% |
| Admitted load imbalance | 100% |
| Cooling | Natural air ventilation. Above 35°C aided with fans |
| Ambient temperature | -25/+45°C |
| Storage temperature | -25/+60°C |
| Max relative humidity | 95% (non condensing) |
| Admitted overload | 200% 2 min. |
| Harmonic distortion | None introduced |
| Colour | RAL 7035 |
| Protection degree | IP21 |
| User interface | 10" touch panel (multilingual) remotely available via VNC |
| Installation | Indoor |
| Regulator overload protection | Digital control |
| Communication system | Ethernet / USB / MODBUS TCP/IP |
| Overvoltage protection | <ul style="list-style-type: none"> - Class I input surge arrestor - Class II output surge arrestor - Optimal voltage return through supercapacitors - in case of blackout |

* The output voltage can be adjusted by choosing **one** of the indicated values.
Such choice sets the new nominal value as a reference for all the stabiliser parameters.



Accessories

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

All ORTEA stabilisers are designed and built in compliance with the Low Voltage and Electromagnetic Compatibility European Directives with regard to the CE marking requirements. ORTEA products are built with suitable quality components and that the manufacturing process is constantly verified in accordance with the Quality Control Plans which the Company applies in compliance with the ISO 9001:2015 Standards. The commitment towards environmental issues and safety at work issues is guaranteed by the certification of the Management System according to the ISO14001:2015 and OHSAS18001:2007 Standards. In order to obtain better performance, the products described in the present document can be altered by the Company at any date and without prior notice. Technical data and descriptions do not hold therefore any contractual value.

Sirius

three-phase
60-6000kVA

Rating in relation to the input variation percentage

| ±10% | ±15% | ±20% | ±25% | ±30% | +15%/-35% | +15%/-45% |
|------|------|------|------|------|-----------|-----------|
| 200 | 125 | 100 | 80 | 60 | 80 | 60 |
| 250 | 160 | 125 | 100 | 80 | 100 | 80 |
| 320 | 200 | 160 | 125 | 100 | 125 | 100 |
| 400 | 250 | 200 | 160 | 125 | 160 | 125 |
| 500 | 320 | 250 | 200 | 160 | 200 | 160 |
| 630 | 400 | 320 | 250 | 200 | 250 | 200 |
| 800 | 500 | 400 | 320 | 250 | 320 | 250 |
| 1000 | 630 | 500 | 400 | 320 | 400 | 320 |
| 1250 | 800 | 630 | 500 | 400 | 500 | 400 |
| 1600 | 1000 | 800 | 630 | 500 | 630 | 500 |
| 2000 | 1250 | 1000 | 800 | 630 | 800 | 630 |
| 2500 | 1600 | 1250 | 1000 | 800 | 1000 | 800 |
| 3200 | 2000 | 1600 | 1250 | 1000 | 1250 | 1000 |
| 4000 | 2500 | 2000 | 1600 | 1250 | 1600 | 1250 |
| 5000 | 3200 | 2500 | 2000 | 1600 | 2000 | 1600 |
| 6000 | 4000 | 3200 | 2500 | 2000 | 2500 | 2000 |

Sirius stabilisers are available for different ranges of input voltage fluctuation. In the ±15%/ ±20% and ±25%/ ±30% types, the change of input range is obtained through different internal connections (only up to 2000kVA ±15% and equivalent).

Sirius stabilisers are equipped with **columnar voltage regulators** which enable the achievement of **high ratings** (up to 6000kVA) and a **solid and reliable construction**, thus **meeting the most diverse industrial applications**.

The Sirius voltage stabilisers regulate the output voltage **independently on each phase**. Similarly to the other models, they can supply **any single-phase, bi-phase and three-phase load** even in case of and up to **100% unbalanced load current** and asymmetrical mains distribution.

In any case, the presence of the **neutral wire is required**. The stabiliser can also operate without neutral wire by adding a device able to generate it (D/zn or D /yn isolating transformer or neutral point reactor).

The stabilisers are cooled via **natural air ventilation**, assisted by extracting fans when the cabinet internal temperature exceeds 35°C.

The user interface consists of a multilingual **10" touch panel** (fitted with RS485 port) able to provide with information regarding the status of the lines upstream and downstream the voltage stabiliser (phase and linked voltages, current, power factor, active power, apparent power, reactive power, etc.), the operating status of the stabiliser displaying all the **information** regarding each phase operating mode ('power on'; reaching of voltage regulation limits; increase/decrease of voltage regulation, etc.) and the possible **alarms** (minimum and maximum voltage, maximum current, overtemperature, etc.). The alarm indicators are accompanied by an acoustic alarm.

The display is remotable using VNC software.

It is also possible to communicate with the stabiliser with the **Modbus TCP/IP** protocol (standard communication protocol between electronic industrial equipment) via an Ethernet connection with RJ45 cable.

The control system is also provided with two **USB ports** for downloading stored data and uploading new releases of the control card software.

The Sirius stabiliser is provided with an **electronic voltage regulator protection system** activates in case of overload on the voltage regulator. In such condition the load supply is not interrupted, but the stabiliser output voltage is automatically set to the lower between the mains voltage and the pre-set output voltage. The **service continuity is guaranteed**, although the voltage is not stabilised. When the overload condition ceases to exist, the stabiliser switches automatically back to regular functioning.

The control logic is managed by two **DSP microprocessors** (one performing the control and the other one managing the measurements) which obtain the output voltage stabilisation by adjusting its **true RMS** value.



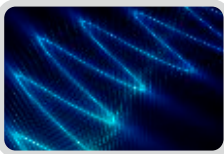
Sirius three-phase 60-6000kVA

The whole system is **supervised** by a third '**bodyguard**' microprocessor that controls the correct functioning of the other microprocessors.

The unit parameters and reference output voltage value can be **set** via a **PC** connection, allowing for promptly dealing in the field with any issues concerning voltage stability.

The output voltage is reset to the minimum value in case of blackout by means of supercapacitor banks in order to ensure the correct shutdown.

All Sirius stabilisers are provided with Class I and Class II **SPD surge arrestors**.



Wide range

- symmetrical: **±10%, ±15%, ±20%, ±25%, ±30%** (other on request)
 - asymmetrical: **+15%/-35%, +15%/-45%** (other on request)
- Output voltage accuracy: **±0.5%**.



Technology

Control and stabilisation, performed on the **true RMS** value, are based on two **two-way DSP-microprocessor** operating with a software specifically developed for Ortea and under the supervision provided by a third **microprocessor (bodyguard)**.

Parameters and reference voltage can be **set** via a **PC**, thus allowing for solving any problems related to voltage stability directly in the field.

Independent regulation on each phase.



Long life

Ortea system voltage regulator with **rollers** (without brushes, which are subject to heavy wear & tear).

Columnar voltage regulator make possible to achieve **high ratings** (up to 6000kVA) and a solid and reliable construction



Protection

The stabiliser is provided of an **electronic** voltage regulator **protection system** activates in case of overload on the voltage regulator.

In such conditions, the **load supply is not interrupted**.

The auxiliary circuit is protected by **fuses**.



Protection

Overvoltage protection:

- Class I input **surge arrestor**.
- Class II output **surge arrestor**.



Protection

Output voltage reset to the minimum value in case of blackout by means of **supercapacitors** banks in order to ensure the correct shutdown.



User Interface

Multilingual **10" touch panel** fitted with RS485 port (linked and phase voltage current, frequency, power factor, active power, reactive power, apparent power etc.). The **touch panel** also displaying all the **information** regarding each phase operating mode ('power on'; reaching of voltage regulation limits; increase/decrease of voltage regulation, etc.) and the possible **alarms** (minimum and maximum voltage, maximum current, overtemperature, etc.).

The display is remotable using VNC software.

Sirius

three-phase
60-6000kVA

| Type | Input voltage variation range | Rating | Input voltage range | Maximum input current | Output voltage $\pm 0.5\%$ | Output current | Efficiency | Speed regulation | Cabinet | Weight |
|------|-------------------------------|--------|---------------------|-----------------------|----------------------------|----------------|------------|------------------|---------|--------|
| | [%] | [kVA] | [V] | [A] | [V] | [A] | [%] | [ms/V] | Type | [kg] |

Input voltage variation range $\pm 10\%$ (the values listed in the table are referred to 400V nominal voltage)

| | | | | | | | | | | |
|----------------|----------|------|---------|------|-----|------|-----|----|----|-------|
| 200-10 | ± 10 | 200 | 360-440 | 321 | 400 | 289 | >98 | 30 | 54 | 600 |
| 250-10 | ± 10 | 250 | 360-440 | 401 | 400 | 361 | >98 | 30 | 42 | 670 |
| 320-10 | ± 10 | 320 | 360-440 | 513 | 400 | 462 | >98 | 30 | 42 | 720 |
| 400-10 | ± 10 | 400 | 360-440 | 642 | 400 | 577 | >98 | 30 | 42 | 800 |
| 500-10 | ± 10 | 500 | 360-440 | 802 | 400 | 722 | >98 | 30 | 55 | 850 |
| 630-10 | ± 10 | 630 | 360-440 | 1010 | 400 | 909 | >98 | 30 | 55 | 1100 |
| 800-10 | ± 10 | 800 | 360-440 | 1283 | 400 | 1155 | >98 | 30 | 53 | 1400 |
| 1000-10 | ± 10 | 1000 | 360-440 | 1604 | 400 | 1443 | >98 | 30 | 62 | 1700 |
| 1250-10 | ± 10 | 1250 | 360-440 | 2005 | 400 | 1804 | >98 | 36 | 62 | 2200 |
| 1600-10 | ± 10 | 1600 | 360-440 | 2566 | 400 | 2312 | >98 | 36 | 63 | 2400 |
| 2000-10 | ± 10 | 2000 | 360-440 | 3208 | 400 | 2887 | >98 | 36 | 64 | 2650 |
| 2500-10 | ± 10 | 2500 | 360-440 | 4009 | 400 | 3609 | >98 | 36 | 70 | 3500 |
| 3200-10 | ± 10 | 3200 | 360-440 | 5132 | 400 | 4619 | >98 | 36 | 70 | 4100 |
| 4000-10 | ± 10 | 4000 | 360-440 | 6415 | 400 | 5774 | >98 | 45 | 80 | 5250 |
| 5000-10 | ± 10 | 5000 | 360-440 | 8019 | 400 | 7217 | >98 | 45 | 80 | 6050 |
| 6000-10 | ± 10 | 6000 | 360-440 | 9623 | 400 | 8661 | >98 | 54 | 90 | 10000 |

Sirius three-phase 60-6000kVA

| Type | Input voltage variation range | Rating | Input voltage range | Maximum input current | Output voltage $\pm 0.5\%$ | Output current | Efficiency | Speed regulation | Cabinet | Weight |
|------|-------------------------------|--------|---------------------|-----------------------|----------------------------|----------------|------------|------------------|---------|--------|
| | [%] | [kVA] | [V] | [A] | [V] | [A] | [%] | [ms/V] | Type | [kg] |

Input voltage variation range $\pm 20\%/\pm 15\%$ (the values listed in the table are referred to 400V nominal voltage)

| | | | | | | | | | | |
|----------------|----------|------|---------|------|-----|------|-----|----|----|-------|
| 100-20 | ± 20 | 100 | 320-480 | 180 | 400 | 144 | >98 | 15 | 54 | 600 |
| 125-15 | ± 15 | 125 | 340-460 | 212 | 400 | 180 | >98 | 20 | 42 | 670 |
| 125-20 | ± 20 | 125 | 320-480 | 226 | 400 | 180 | >98 | 15 | 42 | 670 |
| 160-15 | ± 15 | 160 | 340-460 | 272 | 400 | 231 | >98 | 20 | 42 | 720 |
| 160-20 | ± 20 | 160 | 320-480 | 289 | 400 | 231 | >98 | 15 | 42 | 720 |
| 200-15 | ± 15 | 200 | 340-460 | 340 | 400 | 289 | >98 | 20 | 42 | 800 |
| 200-20 | ± 20 | 200 | 320-480 | 361 | 400 | 289 | >98 | 15 | 42 | 800 |
| 250-15 | ± 15 | 250 | 340-460 | 425 | 400 | 361 | >98 | 20 | 55 | 850 |
| 250-20 | ± 20 | 250 | 320-480 | 451 | 400 | 361 | >98 | 15 | 55 | 850 |
| 320-15 | ± 15 | 320 | 340-460 | 543 | 400 | 462 | >98 | 20 | 55 | 1100 |
| 320-20 | ± 20 | 320 | 320-480 | 577 | 400 | 462 | >98 | 15 | 55 | 1100 |
| 400-15 | ± 15 | 400 | 340-460 | 679 | 400 | 577 | >98 | 20 | 53 | 1400 |
| 400-20 | ± 20 | 400 | 320-480 | 722 | 400 | 577 | >98 | 15 | 53 | 1400 |
| 500-15 | ± 15 | 500 | 340-460 | 849 | 400 | 722 | >98 | 20 | 62 | 1700 |
| 500-20 | ± 20 | 500 | 320-480 | 902 | 400 | 722 | >98 | 15 | 62 | 1700 |
| 630-15 | ± 15 | 630 | 340-460 | 1070 | 400 | 909 | >98 | 20 | 62 | 2200 |
| 630-20 | ± 20 | 630 | 320-480 | 1137 | 400 | 909 | >98 | 18 | 62 | 2200 |
| 800-15 | ± 15 | 800 | 340-460 | 1359 | 400 | 1155 | >98 | 24 | 63 | 2400 |
| 800-20 | ± 20 | 800 | 320-480 | 1443 | 400 | 1155 | >98 | 18 | 63 | 2400 |
| 1000-15 | ± 15 | 1000 | 340-460 | 1698 | 400 | 1443 | >98 | 24 | 64 | 2650 |
| 1000-20 | ± 20 | 1000 | 320-480 | 1804 | 400 | 1443 | >98 | 18 | 64 | 2650 |
| 1250-15 | ± 15 | 1250 | 340-460 | 2123 | 400 | 1804 | >98 | 24 | 70 | 3500 |
| 1250-20 | ± 20 | 1250 | 320-480 | 2255 | 400 | 1804 | >98 | 18 | 70 | 3500 |
| 1600-15 | ± 15 | 1600 | 340-460 | 2717 | 400 | 2309 | >98 | 24 | 70 | 4150 |
| 1600-20 | ± 20 | 1600 | 320-480 | 2887 | 400 | 2309 | >98 | 18 | 70 | 4150 |
| 2000-15 | ± 15 | 2000 | 340-460 | 3396 | 400 | 2887 | >98 | 24 | 80 | 5250 |
| 2000-20 | ± 20 | 2000 | 320-480 | 3609 | 400 | 2887 | >98 | 22 | 80 | 5250 |
| 2500-15 | ± 15 | 2500 | 340-460 | 4245 | 400 | 3609 | >98 | 30 | 80 | 5250 |
| 2500-20 | ± 20 | 2500 | 320-480 | 4511 | 400 | 3609 | >98 | 22 | 80 | 6050 |
| 3200-15 | ± 15 | 3200 | 340-460 | 5434 | 400 | 4619 | >98 | 30 | 80 | 6050 |
| 3200-20 | ± 20 | 3200 | 320-480 | 5774 | 400 | 4619 | >98 | 27 | 90 | 10000 |
| 4000-15 | ± 15 | 4000 | 340-460 | 6793 | 400 | 5774 | >98 | 36 | 90 | 10000 |

Sirius

three-phase
60-6000kVA

| Type | Input voltage variation range | Rating | Input voltage range | Maximum input current | Output voltage $\pm 0.5\%$ | Output current | Efficiency | Speed regulation | Cabinet | Weight |
|------|-------------------------------|--------|---------------------|-----------------------|----------------------------|----------------|------------|------------------|---------|--------|
| | [%] | [kVA] | [V] | [A] | [V] | [A] | [%] | [ms/V] | Type | [kg] |

Input voltage variation range $\pm 30\%/\pm 25\%$ (the values listed in the table are referred to 400V nominal voltage)

| | | | | | | | | | | |
|----------------|----------|------|---------|------|-----|------|-----|----|----|-------|
| 60-30 | ± 30 | 60 | 280-520 | 124 | | 87 | | 10 | | |
| 80-25 | ± 25 | 80 | 300-500 | 154 | 400 | 115 | >98 | 12 | 54 | 600 |
| 80-30 | ± 30 | 80 | 280-520 | 165 | | 115 | | 10 | | |
| 100-25 | ± 25 | 100 | 300-500 | 192 | 400 | 144 | >98 | 12 | 42 | 670 |
| 100-30 | ± 30 | 100 | 280-520 | 206 | | 144 | | 10 | | |
| 125-25 | ± 25 | 125 | 300-500 | 241 | 400 | 180 | >98 | 12 | 42 | 720 |
| 125-30 | ± 30 | 125 | 280-520 | 258 | | 180 | | 10 | | |
| 160-25 | ± 25 | 160 | 300-500 | 308 | 400 | 231 | >98 | 12 | 42 | 800 |
| 160-30 | ± 30 | 160 | 280-520 | 330 | | 231 | | 10 | | |
| 200-25 | ± 25 | 200 | 300-500 | 385 | 400 | 289 | >98 | 12 | 55 | 850 |
| 200-30 | ± 30 | 200 | 280-520 | 412 | | 289 | | 10 | | |
| 250-25 | ± 25 | 250 | 300-500 | 481 | 400 | 361 | >98 | 12 | 55 | 1100 |
| 250-30 | ± 30 | 250 | 280-520 | 516 | | 361 | | 10 | | |
| 320-25 | ± 25 | 320 | 300-500 | 616 | 400 | 462 | >98 | 12 | 53 | 1400 |
| 320-30 | ± 30 | 320 | 280-520 | 660 | | 462 | | 10 | | |
| 400-25 | ± 25 | 400 | 300-500 | 770 | 400 | 577 | >98 | 12 | 62 | 1700 |
| 400-30 | ± 30 | 400 | 280-520 | 825 | | 577 | | 12 | | |
| 500-25 | ± 25 | 500 | 300-500 | 962 | 400 | 722 | >98 | 15 | 62 | 2200 |
| 500-30 | ± 30 | 500 | 280-520 | 1031 | | 722 | | 12 | | |
| 630-25 | ± 25 | 630 | 300-500 | 1212 | 400 | 909 | >98 | 15 | 63 | 2400 |
| 630-30 | ± 30 | 630 | 280-520 | 1299 | | 909 | | 12 | | |
| 800-25 | ± 25 | 800 | 300-500 | 1540 | 400 | 1155 | >98 | 15 | 64 | 2650 |
| 800-30 | ± 30 | 800 | 280-520 | 1650 | | 1155 | | 12 | | |
| 1000-25 | ± 25 | 1000 | 300-500 | 1925 | 400 | 1443 | >98 | 15 | 70 | 3500 |
| 1000-30 | ± 30 | 1000 | 280-520 | 2062 | | 1443 | | 12 | | |
| 1250-25 | ± 25 | 1250 | 300-500 | 2406 | 400 | 1804 | >98 | 15 | 70 | 4150 |
| 1250-30 | ± 30 | 1250 | 280-520 | 2578 | | 1804 | | 15 | | |
| 1600-25 | ± 25 | 1600 | 300-500 | 3079 | 400 | 2309 | >98 | 18 | 80 | 5250 |
| 1600-30 | ± 30 | 1600 | 280-520 | 3299 | | 2309 | | 15 | | |
| 2000-25 | ± 25 | 2000 | 300-500 | 3849 | 400 | 2887 | >98 | 18 | 80 | 6050 |
| 2000-30 | ± 30 | 2000 | 280-520 | 4124 | | 2887 | | 18 | | |
| 2500-25 | ± 25 | 2500 | 300-500 | 4811 | 400 | 3609 | >98 | 22 | 90 | 10000 |

Sirius three-phase 60-6000kVA

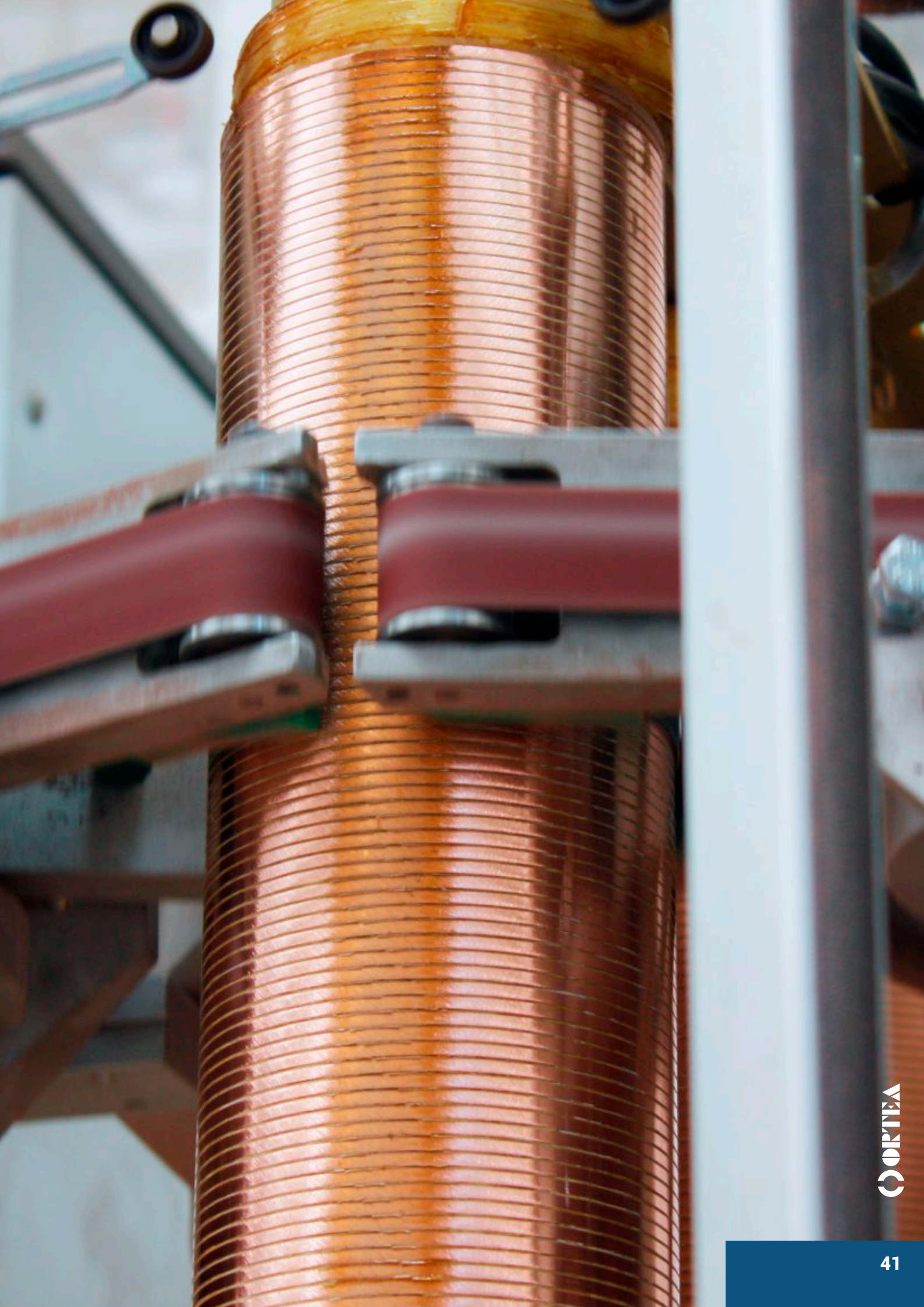
| Type | Input voltage variation range | Rating | Input voltage range | Maximum input current | Output voltage $\pm 0.5\%$ | Output current | Efficiency | Speed regulation | Cabinet | Weight |
|------|-------------------------------|--------|---------------------|-----------------------|----------------------------|----------------|------------|------------------|---------|--------|
| | [%] | [kVA] | [V] | [A] | [V] | [A] | [%] | [ms/V] | Type | [kg] |

Input voltage variation range **+15%/-35%** (the values listed in the table are referred to 400V nominal voltage)

| | | | | | | | | | | |
|-------------------|---------|------|---------|------|-----|------|-----|----|----|-------|
| 80-15/35 | +15/-35 | 80 | 260-460 | 178 | 400 | 115 | >98 | 12 | 54 | 720 |
| 100-15/35 | +15/-35 | 100 | 260-460 | 222 | 400 | 144 | >98 | 12 | 68 | 800 |
| 125-15/35 | +15/-35 | 125 | 260-460 | 278 | 400 | 180 | >98 | 12 | 68 | 920 |
| 160-15/35 | +15/-35 | 160 | 260-460 | 355 | 400 | 231 | >98 | 12 | 68 | 1000 |
| 200-15/35 | +15/-35 | 200 | 260-460 | 444 | 400 | 289 | >98 | 12 | 55 | 1050 |
| 250-15/35 | +15/-35 | 250 | 260-460 | 555 | 400 | 361 | >98 | 12 | 52 | 1500 |
| 320-15/35 | +15/-35 | 320 | 260-460 | 711 | 400 | 462 | >98 | 12 | 52 | 1800 |
| 400-15/35 | +15/-35 | 400 | 260-460 | 888 | 400 | 577 | >98 | 12 | 63 | 2100 |
| 500-15/35 | +15/-35 | 500 | 260-460 | 1110 | 400 | 722 | >98 | 15 | 63 | 2900 |
| 630-15/35 | +15/-35 | 630 | 260-460 | 1399 | 400 | 909 | >98 | 15 | 64 | 3050 |
| 800-15/35 | +15/-35 | 800 | 260-460 | 1777 | 400 | 1155 | >98 | 15 | 70 | 3450 |
| 1000-15/35 | +15/-35 | 1000 | 260-460 | 2221 | 400 | 1443 | >98 | 15 | 70 | 3950 |
| 1250-15/35 | +15/-35 | 1250 | 260-460 | 2776 | 400 | 1804 | >98 | 15 | 72 | 4600 |
| 1600-15/35 | +15/-35 | 1600 | 260-460 | 3553 | 400 | 2309 | >98 | 18 | 82 | 7000 |
| 2000-15/35 | +15/-35 | 2000 | 260-460 | 4441 | 400 | 2887 | >98 | 18 | 82 | 8850 |
| 2500-15/35 | +15/-35 | 2500 | 260-460 | 5552 | 400 | 3609 | >98 | 22 | 92 | 12500 |

Input voltage variation range **+15%/-45%** (the values listed in the table are referred to 400V nominal voltage)

| | | | | | | | | | | |
|-------------------|---------|------|---------|------|-----|------|-----|----|----|-------|
| 60-15/45 | +15/-45 | 60 | 220-460 | 157 | 400 | 87 | >98 | 10 | 54 | 800 |
| 80-15/45 | +15/-45 | 80 | 220-460 | 210 | 400 | 115 | >98 | 10 | 68 | 900 |
| 100-15/45 | +15/-45 | 100 | 220-460 | 262 | 400 | 144 | >98 | 10 | 68 | 1070 |
| 125-15/45 | +15/-45 | 125 | 220-460 | 328 | 400 | 180 | >98 | 10 | 68 | 1100 |
| 160-15/45 | +15/-45 | 160 | 220-460 | 420 | 400 | 231 | >98 | 10 | 55 | 1200 |
| 200-15/45 | +15/-45 | 200 | 220-460 | 525 | 400 | 289 | >98 | 10 | 52 | 1700 |
| 250-15/45 | +15/-45 | 250 | 220-460 | 656 | 400 | 361 | >98 | 10 | 52 | 2000 |
| 320-15/45 | +15/-45 | 320 | 220-460 | 840 | 400 | 462 | >98 | 10 | 63 | 2300 |
| 400-15/45 | +15/-45 | 400 | 220-460 | 1050 | 400 | 577 | >98 | 12 | 63 | 3200 |
| 500-15/45 | +15/-45 | 500 | 220-460 | 1312 | 400 | 722 | >98 | 12 | 64 | 3400 |
| 630-15/45 | +15/-45 | 630 | 220-460 | 1653 | 400 | 909 | >98 | 12 | 70 | 3850 |
| 800-15/45 | +15/-45 | 800 | 220-460 | 2100 | 400 | 1155 | >98 | 12 | 70 | 4400 |
| 1000-15/45 | +15/-45 | 1000 | 220-460 | 2624 | 400 | 1443 | >98 | 12 | 72 | 5100 |
| 1250-15/45 | +15/-45 | 1250 | 220-460 | 3280 | 400 | 1804 | >98 | 15 | 82 | 8000 |
| 1600-15/45 | +15/-45 | 1600 | 220-460 | 4199 | 400 | 2309 | >98 | 15 | 82 | 8900 |
| 2000-15/45 | +15/-45 | 2000 | 220-460 | 5249 | 400 | 2887 | >98 | 18 | 92 | 14000 |





Sirius Advance

three-phase
60-4000kVA



Standard features

| | |
|---|--|
| Voltage stabilisation | Independent phase control |
| Output voltage selectable via display, PC and/or Ethernet* | from 210 to 255V (L-N) from 360 to 440V (L-L) |
| Output voltage accuracy | ±0,5% |
| Frequency | 50 ±5% or 60Hz ±5% |
| Admitted load variation | Up to 100% |
| Admitted load imbalance | 100% |
| Cooling | Natural air ventilation. Above 35°C aided with fans |
| Ambient temperature | -25/+45°C |
| Storage temperature | -25/+60°C |
| Max relative humidity | 95% (non condensing) |
| Admitted overload | 200% 2 min. |
| Harmonic distortion | None introduced |
| Colour | RAL 7035 |
| Protection degree | IP21 |
| User interface | – 10" touch panel (multilingual) remotely available via VNC – Reactive power regulator |
| Installation | Indoor |
| Regulator overload protection | Digital control |
| Communication system | Ethernet / USB / MODBUS TCP/IP |
| Overvoltage protection | – Class I input surge arrestor – Class II output surge arrestor – Optimal voltage return through supercapacitors in case of blackout |
| Total protection and by-pass kit | – Input automatic circuit breaker – By-pass switch made of an interlocked automatic circuit breaker – Output interlocked motorized automatic circuit breaker with protection against overload, overvoltage, undervoltage, phase sequence error and phase failure |
| Integrated automatic power factor correction system | – Based on high energy density metallised polypropylene three-phase capacitors (Un = 525V) – Three-phase blocking reactor (tuning frequency 180Hz) |

* The output voltage can be adjusted by choosing one of the indicated values. Such choice sets the new nominal value as a reference for all the stabiliser parameters.

Sirius Advance

three-phase
60-4000kVA



Accessories

| |
|---|
| Input isolating transformer |
| EMI/RFI filters |
| Neutral point reactor |
| IP54 protection degree for indoor and outdoor installation |

Rating in relation to the input variation percentage

| ±15% | ±20% | ±25% | ±30% |
|-------------|-------------|-------------|-------------|
| 125 | 100 | 80 | 60 |
| 160 | 125 | 100 | 80 |
| 200 | 160 | 125 | 100 |
| 250 | 200 | 160 | 125 |
| 320 | 250 | 200 | 160 |
| 400 | 320 | 250 | 200 |
| 500 | 400 | 320 | 250 |
| 630 | 500 | 400 | 320 |
| 800 | 630 | 500 | 400 |
| 1000 | 800 | 630 | 500 |
| 1250 | 1000 | 800 | 630 |
| 1600 | 1250 | 1000 | 800 |
| 2000 | 1600 | 1250 | 1000 |
| 2500 | 2000 | 1600 | 1250 |
| 3200 | 2500 | 2000 | 1600 |
| 4000 | 3200 | 2500 | 2000 |

Sirius Advance voltage stabilisers derive from the SIRIUS type, of which they maintain the main technical characteristics.

The standard integration of some functions and accessories usually offered as optional, **complete** and **enrich** the equipment.

The **additional features** are:

- Input automatic circuit breaker;
- Bypass switch via an interlocked automatic circuit breaker;
- Output interlocked motorized automatic circuit breaker;
- Integrated automatic power factor correction system.

The input **automatic circuit breaker** (QF1) ensures protection against failure and/or short-circuits inside the unit.

The **bypass automatic circuit breaker** (QF2) protects the line supplying the load against overload and shortcircuits in bypass condition.

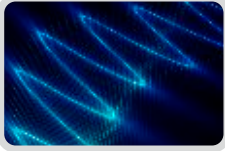
The **output motorized automatic circuit breaker** (QF3), interlocked with the bypass switch, protects against overload, short-circuit, overvoltage, undervoltage, phase sequence error and phase failure.

The **integrated automatic Power Factor Correction system** maintains the power factor value ($\cos \phi$) to a high level ensuring the known advantages for the users but also affecting the sizing of the stabiliser.

The PFC system exploits **high energy density metallised polypropylene three-phase capacitors (Un=525V)** exclusively thus guaranteeing **robustness** and **reliability**. The addition of blocking reactors (detuned filters) eliminates undesired harmonics and protects the capacitors.

The reactive power controller is mounted on the external control synoptic panel.

Sirius Advance three-phase 60-4000kVA



Wide range

– $\pm 15\%$, $\pm 20\%$, $\pm 25\%$, $\pm 30\%$ (other on request)
Output voltage accuracy: $\pm 0.5\%$.



Technology

Control and stabilisation, performed on the **true RMS** value, are based on two **two-way DSP-microprocessor** operating with a software specifically developed for Ortea and under the supervision provided by a third **microprocessor (bodyguard)**.

Parameters and reference voltage can be **set** via a **PC**, thus allowing for solving any problems related to voltage stability directly in the field.

Independent regulation on each phase.



Long life

Ortea system voltage regulator with **rollers** (without brushes, which are subject to heavy wear & tear). **Columnar voltage regulator** make possible to achieve **high ratings** (up to 6000kVA) and a solid and reliable construction



Long life

Extended warranty: **5 years**.



Protection

The stabiliser is provided of an **electronic** voltage regulator **protection system** activates in case of overload on the voltage regulator.

In such conditions, the **load supply is not interrupted**.

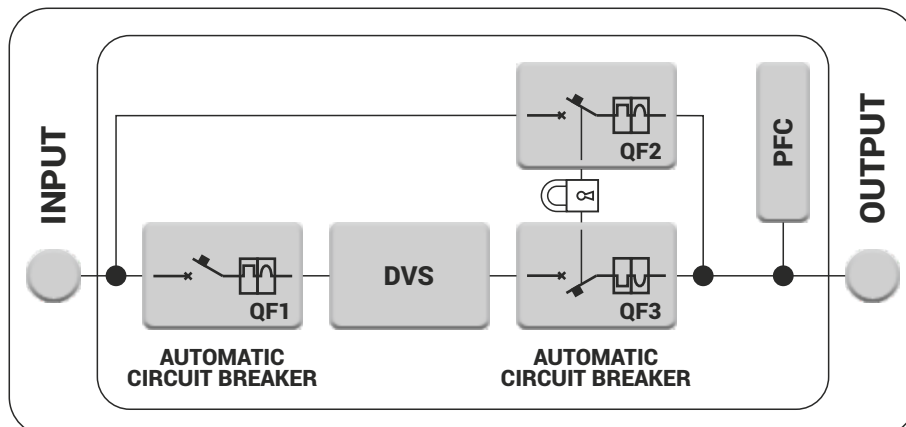
The auxiliary circuit is protected by **fuses**.



Protection

Overvoltage protection:

- Class I input **surge arrestor**.
- Class II output **surge arrestor**.



Sirius Advance

three-phase
60-4000kVA



Protection

Output voltage reset to the minimum value in case of blackout by means of **supercapacitors** banks in order to ensure the correct shutdown.



Protection

Total protection by-pass kit:

- Input automatic circuit breaker
- By-pass automatic circuit breaker
- Output motorized automatic circuit breaker



User Interface

Multilingual **10" touch panel** fitted with RS485 port (linked and phase voltage current, frequency, power factor, active power, reactive power, apparent power etc.). The **touch panel** also displaying all the **information** regarding each phase operating mode ('power on'; reaching of voltage regulation limits; increase/decrease of voltage regulation, etc.) and the possible **alarms** (minimum and maximum voltage, maximum current, overtemperature, etc.). The display is remotable using VNC software.



Power Factor Correction

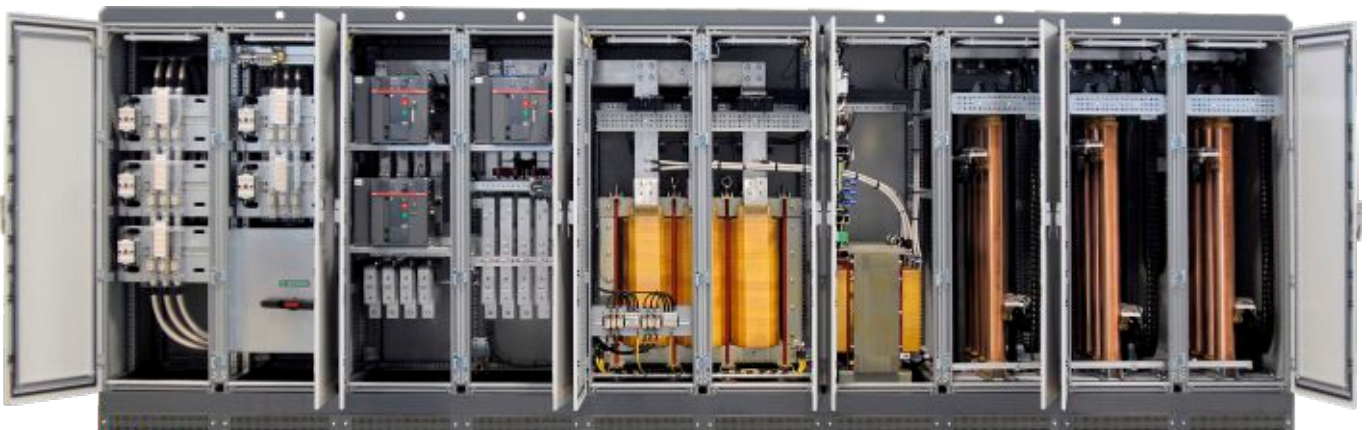
The PFC system exploits **high energy density metallized polypropylene three-phase capacitors** ($U_n = 525V$) exclusively thus guaranteeing **robustness** and **reliability**.

The addition of blocking reactors (**detuned filters**) eliminates undesired harmonics and protects the capacitors.



Power Factor Correction

The **reactive power regulator** RPC are designed to provide the desired power factor while minimizing the wearing on the banks of capacitors, accurate and reliable in measuring and control functions are simple and intuitive in installation and construction.



Sirius Advance three-phase 60-4000kVA

| Type | Input voltage variation range | Rating | Input voltage range | Maximum input current | Output voltage $\pm 0.5\%$ | Output current | Efficiency | Speed regulation | Cabinet | Weight |
|------|-------------------------------|--------|---------------------|-----------------------|----------------------------|----------------|------------|------------------|---------|--------|
| | [%] | [kVA] | [V] | [A] | [V] | [A] | [%] | [ms/V] | Type | [kg] |

Input voltage variation range $\pm 20\%/\pm 15\%$ (the values listed in the table are referred to 400V nominal voltage)

| | | | | | | | | | | |
|----------------|----------|------|---------|------|-----|------|-----|----|----|-------|
| 100-20 | ± 20 | 100 | 320-480 | 180 | | 144 | | 15 | | |
| 125-15 | ± 15 | 125 | 340-460 | 212 | 400 | 180 | >98 | 20 | 47 | 830 |
| 125-20 | ± 20 | 125 | 320-480 | 226 | | 180 | | 15 | | |
| 160-15 | ± 15 | 160 | 340-460 | 272 | 400 | 231 | >98 | 20 | 47 | 900 |
| 160-20 | ± 20 | 160 | 320-480 | 289 | | 231 | | 15 | | |
| 200-15 | ± 15 | 200 | 340-460 | 340 | 400 | 289 | >98 | 20 | 48 | 970 |
| 200-20 | ± 20 | 200 | 320-480 | 361 | | 289 | | 15 | | |
| 250-15 | ± 15 | 250 | 340-460 | 425 | 400 | 361 | >98 | 20 | 48 | 1070 |
| 250-20 | ± 20 | 250 | 320-480 | 451 | | 361 | | 15 | | |
| 320-15 | ± 15 | 320 | 340-460 | 543 | 400 | 462 | >98 | 20 | 48 | 1250 |
| 320-20 | ± 20 | 320 | 320-480 | 577 | | 462 | | 15 | | |
| 400-15 | ± 15 | 400 | 340-460 | 679 | 400 | 577 | >98 | 20 | 50 | 1500 |
| 400-20 | ± 20 | 400 | 320-480 | 722 | | 577 | | 15 | | |
| 500-15 | ± 15 | 500 | 340-460 | 849 | 400 | 722 | >98 | 20 | 57 | 1880 |
| 500-20 | ± 20 | 500 | 320-480 | 902 | | 722 | | 15 | | |
| 630-15 | ± 15 | 630 | 340-460 | 1070 | 400 | 909 | >98 | 20 | 64 | 2200 |
| 630-20 | ± 20 | 630 | 320-480 | 1137 | | 909 | | 18 | | |
| 800-15 | ± 15 | 800 | 340-460 | 1359 | 400 | 1155 | >98 | 24 | 64 | 2720 |
| 800-20 | ± 20 | 800 | 320-480 | 1443 | | 1155 | | 18 | | |
| 1000-15 | ± 15 | 1000 | 340-460 | 1698 | 400 | 1443 | >98 | 24 | 72 | 2950 |
| 1000-20 | ± 20 | 1000 | 320-480 | 1804 | | 1443 | | 18 | | |
| 1250-15 | ± 15 | 1250 | 340-460 | 2123 | 400 | 1804 | >98 | 24 | 73 | 4240 |
| 1250-20 | ± 20 | 1250 | 320-480 | 2255 | | 1804 | | 18 | | |
| 1600-15 | ± 15 | 1600 | 340-460 | 2717 | 400 | 2309 | >98 | 24 | 74 | 5000 |
| 1600-20 | ± 20 | 1600 | 320-480 | 2887 | | 2309 | | 18 | | |
| 2000-15 | ± 15 | 2000 | 340-460 | 3396 | 400 | 2887 | >98 | 24 | 75 | 5800 |
| 2000-20 | ± 20 | 2000 | 320-480 | 3609 | | 2887 | | 22 | | |
| 2500-15 | ± 15 | 2500 | 340-460 | 4245 | 400 | 3609 | >98 | 30 | 88 | 7100 |
| 2500-20 | ± 20 | 2500 | 320-480 | 4511 | 400 | 3609 | >98 | 22 | 88 | 8350 |
| 3200-15 | ± 15 | 3200 | 340-460 | 5434 | 400 | 4619 | >98 | 30 | 89 | 8350 |
| 3200-20 | ± 20 | 3200 | 320-480 | 5774 | 400 | 4619 | >98 | 27 | 95 | 11800 |
| 4000-15 | ± 15 | 4000 | 340-460 | 6793 | 400 | 5774 | >98 | 36 | 95 | 11800 |

Sirius Advance

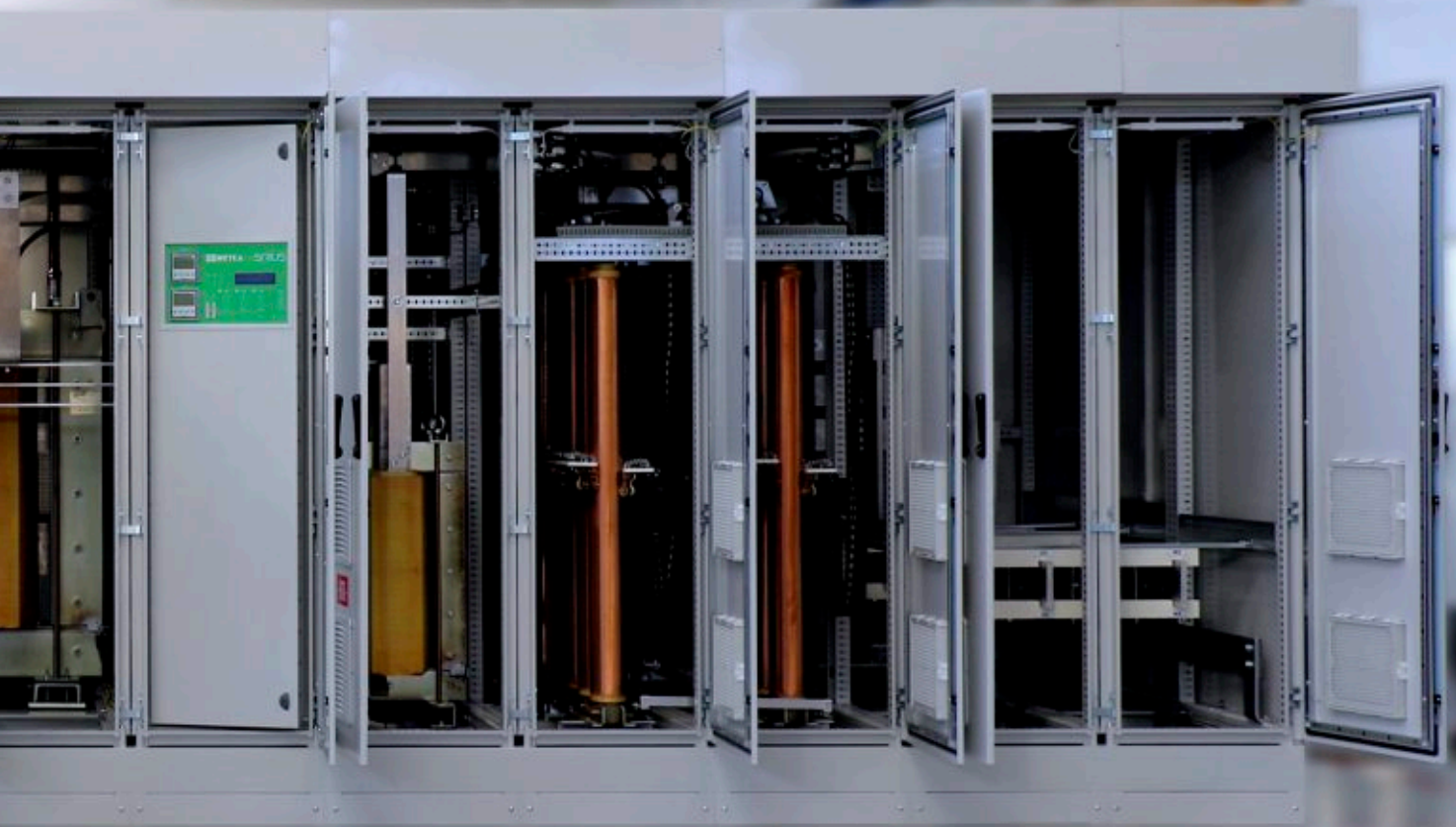
three-phase
60-4000kVA

| Type | Input voltage variation range | Rating | Input voltage range | Maximum input current | Output voltage $\pm 0.5\%$ | Output current | Efficiency | Speed regulation | Cabinet | Weight |
|------|-------------------------------|--------|---------------------|-----------------------|----------------------------|----------------|------------|------------------|---------|--------|
| | [%] | [kVA] | [V] | [A] | [V] | [A] | [%] | [ms/V] | Type | [kg] |

Input voltage variation range **$\pm 30\%/ \pm 25\%$** (the values listed in the table are referred to 400V nominal voltage)

| | | | | | | | | | | |
|----------------|----------|------|---------|------|-----|------|-----|----|----|-------|
| 60-30 | ± 30 | 60 | 280-520 | 124 | | 87 | | 10 | | |
| 80-25 | ± 25 | 80 | 300-500 | 154 | 400 | 115 | >98 | 12 | 47 | 830 |
| 80-30 | ± 30 | 80 | 280-520 | 165 | | 115 | | 10 | | |
| 100-25 | ± 25 | 100 | 300-500 | 192 | 400 | 144 | >98 | 12 | 47 | 900 |
| 100-30 | ± 30 | 100 | 280-520 | 206 | | 144 | | 10 | | |
| 125-25 | ± 25 | 125 | 300-500 | 241 | 400 | 180 | >98 | 12 | 48 | 970 |
| 125-30 | ± 30 | 125 | 280-520 | 258 | | 180 | | 10 | | |
| 160-25 | ± 25 | 160 | 300-500 | 308 | 400 | 231 | >98 | 12 | 48 | 1070 |
| 160-30 | ± 30 | 160 | 280-520 | 330 | | 231 | | 10 | | |
| 200-25 | ± 25 | 200 | 300-500 | 385 | 400 | 289 | >98 | 12 | 48 | 1250 |
| 200-30 | ± 30 | 200 | 280-520 | 412 | | 289 | | 10 | | |
| 250-25 | ± 25 | 250 | 300-500 | 481 | 400 | 361 | >98 | 12 | 50 | 1500 |
| 250-30 | ± 30 | 250 | 280-520 | 516 | | 361 | | 10 | | |
| 320-25 | ± 25 | 320 | 300-500 | 616 | 400 | 462 | >98 | 12 | 57 | 1880 |
| 320-30 | ± 30 | 320 | 280-520 | 660 | | 462 | | 10 | | |
| 400-25 | ± 25 | 400 | 300-500 | 770 | 400 | 577 | >98 | 12 | 64 | 2200 |
| 400-30 | ± 30 | 400 | 280-520 | 825 | | 577 | | 12 | | |
| 500-25 | ± 25 | 500 | 300-500 | 962 | 400 | 722 | >98 | 15 | 64 | 2720 |
| 500-30 | ± 30 | 500 | 280-520 | 1031 | | 722 | | 12 | | |
| 630-25 | ± 25 | 630 | 300-500 | 1212 | 400 | 909 | >98 | 15 | 72 | 2950 |
| 630-30 | ± 30 | 630 | 280-520 | 1299 | | 909 | | 12 | | |
| 800-25 | ± 25 | 800 | 300-500 | 1540 | 400 | 1155 | >98 | 15 | 73 | 4240 |
| 800-30 | ± 30 | 800 | 280-520 | 1650 | | 1155 | | 12 | | |
| 1000-25 | ± 25 | 1000 | 300-500 | 1925 | 400 | 1443 | >98 | 15 | 74 | 5000 |
| 1000-30 | ± 30 | 1000 | 280-520 | 2062 | | 1443 | | 12 | | |
| 1250-25 | ± 25 | 1250 | 300-500 | 2406 | 400 | 1804 | >98 | 15 | 74 | 5800 |
| 1250-30 | ± 30 | 1250 | 280-520 | 2578 | | 1804 | | 15 | | |
| 1600-25 | ± 25 | 1600 | 300-500 | 3079 | 400 | 2309 | >98 | 18 | 84 | 7100 |
| 1600-30 | ± 30 | 1600 | 280-520 | 3299 | | 2309 | | 15 | | |
| 2000-25 | ± 25 | 2000 | 300-500 | 3849 | 400 | 2887 | >98 | 18 | 85 | 8350 |
| 2000-30 | ± 30 | 2000 | 280-520 | 4124 | | 2887 | | 18 | | |
| 2500-25 | ± 25 | 2500 | 300-500 | 4811 | 400 | 3609 | >98 | 22 | 95 | 11800 |







OPTI *net*[®]
power quality



three-phase
10-6000A

Standard features

| | |
|-----------------------------------|--|
| Voltage stabilisation | Independent phase control |
| Selectable output voltage* | 380-400-415V |
| Output voltage accuracy | ±0,5% |
| Frequency | 50Hz ±5% or 60Hz ±5% |
| Admitted load variation | Up to 100% |
| Admitted load imbalance | 100% |
| Cooling | Natural air ventilation. From 35°C aided with fans |
| Ambient temperature | -25/+45°C |
| Storage temperature | -25/+60°C |
| Max relative humidity | 95% (non condensing) |
| Admitted overload | 200% 2 min. |
| Harmonic distortion | None introduced |
| Colour | RAL 7035 |
| Protection degree | IP21 |
| Instrumentation | From 10A to 2500A digital multimeter from 3000A 10" touch panel (multilingual) |
| Installation | Indoor |
| Overvoltage protection | <ul style="list-style-type: none"> - Class I input surge arrestors** (standard from 3000A) - Class II output surge arrestor** (standard from 90A) - Optimal voltage return through supercapacitors - in case of blackout (from 160A) |

* The output voltage can be adjusted by choosing **one** of the indicated values.

Such choice sets the new nominal value as a reference for all the stabiliser parameters.

** Optional.

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 |

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OPTInet has been specifically designed to meet the ever increasing **power quality** issues that can be easily found in a wide range of industrial applications.

OPTInet combines the established and consolidated characteristics proper of ORTEA voltage stabilisers with features that enable the achievement of **energy saving** and **power quality** improvement. One of the factors that most affect energy saving is given by the fact that electrical appliances are usually designed to operate with an input voltage included in range rather than just one nominal voltage. Nevertheless, supplying a device a voltage **higher than the rated one** implies **higher consumption** and decrease of the expected life.

For example, supplying resistive loads 240V instead of 230V implies approximately 10% increase in the power consumption

This situation can be found worldwide due to the fact that several distribution systems are rated for a **voltage higher than 400V** (United Kingdom, Australia, parts of India, and so on): OPTInet provide with a practical and efficient answer to such issue.

Furthermore, higher supplying voltage might induce problems in magnetic components (possibility of magnetic core saturation).

Other factors such as proximity to power plants or distribution stations and voltage supplied at high level to cover the far end of distribution lines might affect performance of the supplied loads and energy bills.

In order to **optimise energy consumption**, the first step is a **load survey** performed by a qualified technician aiming at assessing the existing situation, deciding what steps need to be taken and **estimating the potential energy savings**. The survey is made necessary by the fact that not all loads are voltage-sensitive.

To sum up, the main parameters that allow for the estimation of the energy saving are:

- Mains voltage different from the load nominal one: the higher the difference, the better the energy saving.
- Level of load sensitivity to voltage variations.

An accurate analysis shall allow for the **best solution** in terms of design and rating. In some cases, it could be more sensible and economical to install an optimiser only for specific types of loads.

OPTInet is specifically designed to allow the adjustment of the voltage received from the mains and bring it back to the value for which the load has been built.

OPTInet optimises the load performance, thus obtaining **lower consumption, energy saving, cost reduction** and longer life expectancy.

Type of load sensitivity to the voltage variation

| | | |
|---|--|--|
| ● | Incandescent, fluorescent and discharge lamps | Consumed power is in this case directly proportional to the square of the supply voltage and the load can be defined as voltage dependant. Using an optimiser can extend the expected life of the load by preventing the supplying voltage from being higher than the nominal one. |
| ● | LED lamps | No advantage with these lamps due to the fact that they are supplied a constant voltage. |
| ● | Asynchronous motor | Low rating motors (typically under 20/25kW), widely spread at a level both domestic and industrial, are considered as voltage dependant. |
| ● | Inverter driven asynchronous motors | If the motor is driven by an inverter (speed electronic control) then it becomes voltage independent. |
| ● | Production lines | Usually, voltage dependant loads (low rating motors and heating systems) are mixed with voltage independent loads (electronic devices). Only a careful investigation can establish the energy savings entity. A typical application is provided by the refrigerating banks used in supermarkets, made of combination of small motors directly fed by electronic units. |
| ● | Electronic devices | Small equipment such as computers, office machines and telecom systems are generally fed via power supplies, which are insensitive to voltage variation. |

● a little sensitive to voltage variation / ● sensitive to voltage variation



Energy saving

Load voltage optimization ending in performance improvement, increase of the equipment life expectancy and overall cost reduction.



Power Quality

Continuous voltage monitoring and regulation to a stable value aimed at providing for the optimum supply protected from potential electromagnetic and radio-frequency noise.



Long life

Ortea system voltage regulator with **rollers** (without brushes, which are subject to heavy wear & tear). **Columnar voltage regulator** make possible to achieve **high ratings** (up to 6000kVA) and a solid and reliable construction



Technology

Control and stabilisation, performed on the **true RMS** value, are based on two **two-way DSP-microprocessor** operating with a software specifically developed for Ortea and under the supervision provided by a third **microprocessor (bodyguard)**. **Parameters** and reference voltage can be **set** via a **PC**, thus allowing for solving any problems related to voltage stability directly in the field.
Independent regulation on each phase.



| Type | Nominal current | Rating | Input voltage range | Efficiency | Adjustable Speed | Cabinet | Weight |
|------|-----------------|--------|---------------------|------------|------------------|---------|--------|
| | [A] | [kVA] | [V] | [%] | [ms/V] | Type | [kg] |

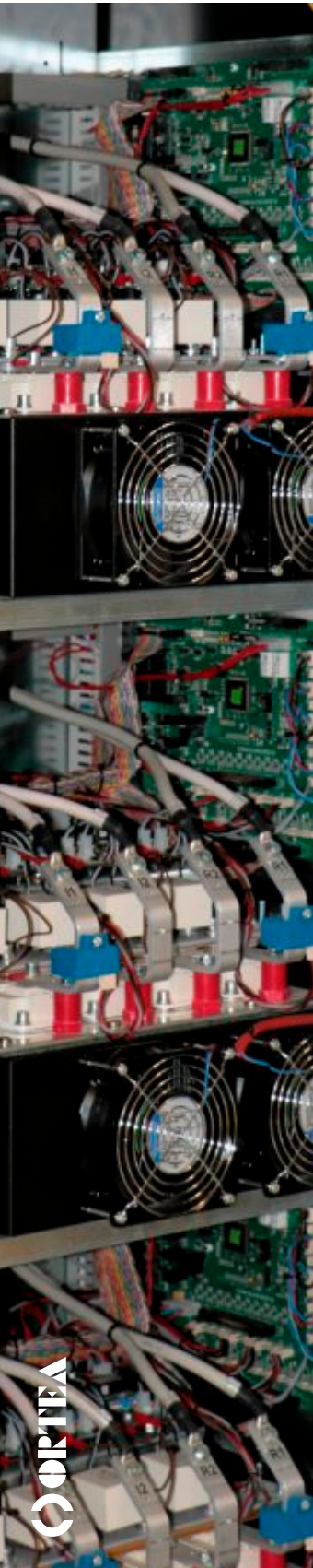
Input voltage variation range **-0%/+15%** (the values listed in the table are referred to 415V nominal voltage)

| | | | | | | | |
|---------------------|------|------|---------|-----|----|----|------|
| OPTInet 10 | 10 | 7 | 400-460 | >97 | 16 | 22 | 90 |
| OPTInet 20 | 20 | 15 | 400-460 | >97 | 16 | 22 | 100 |
| OPTInet 30 | 30 | 22 | 400-460 | >97 | 16 | 22 | 110 |
| OPTInet 40 | 40 | 30 | 400-460 | >97 | 16 | 23 | 155 |
| OPTInet 60 | 60 | 45 | 400-460 | >97 | 16 | 23 | 180 |
| OPTInet 90 | 90 | 65 | 400-460 | >97 | 16 | 23 | 200 |
| OPTInet 125 | 125 | 90 | 400-460 | >97 | 16 | 31 | 320 |
| OPTInet 160 | 160 | 115 | 400-460 | >98 | 18 | 54 | 430 |
| OPTInet 200 | 200 | 145 | 400-460 | >98 | 18 | 54 | 490 |
| OPTInet 260 | 260 | 185 | 400-460 | >98 | 18 | 54 | 580 |
| OPTInet 300 | 300 | 215 | 400-460 | >98 | 18 | 55 | 710 |
| OPTInet 350 | 350 | 250 | 400-460 | >98 | 18 | 55 | 760 |
| OPTInet 400 | 400 | 290 | 400-460 | >98 | 18 | 55 | 850 |
| OPTInet 450 | 450 | 325 | 400-460 | >98 | 18 | 55 | 950 |
| OPTInet 500 | 500 | 360 | 400-460 | >98 | 18 | 55 | 1000 |
| OPTInet 600 | 600 | 430 | 400-460 | >98 | 18 | 55 | 1100 |
| OPTInet 700 | 700 | 500 | 400-460 | >98 | 18 | 55 | 1200 |
| OPTInet 800 | 800 | 575 | 400-460 | >98 | 18 | 55 | 1300 |
| OPTInet 1000 | 1000 | 720 | 400-460 | >98 | 18 | 55 | 1400 |
| OPTInet 1250 | 1250 | 900 | 400-460 | >98 | 18 | 67 | 1600 |
| OPTInet 1600 | 1600 | 1150 | 400-460 | >98 | 18 | 62 | 2000 |
| OPTInet 2000 | 2000 | 1450 | 400-460 | >98 | 18 | 63 | 2200 |
| OPTInet 2500 | 2500 | 1800 | 400-460 | >98 | 18 | 64 | 2400 |
| OPTInet 3000 | 3000 | 2200 | 400-460 | >98 | 24 | 70 | 4000 |
| OPTInet 4000 | 4000 | 2900 | 400-460 | >98 | 24 | 70 | 4300 |
| OPTInet 5000 | 5000 | 3600 | 400-460 | >98 | 30 | 80 | 6000 |
| OPTInet 6000 | 6000 | 4300 | 400-460 | >98 | 30 | 80 | 7300 |





Static digital voltage stabilisers



Design criteria

A **voltage stabiliser** is a power device destined to be positioned between the mains and the User. The purpose is to ensure that the User is fed a voltage subject to a variation much lower ($\pm 0.5\%$ with regards to the nominal value) than the one guaranteed by the distributing system.

The **static stabiliser** is used when the **correction speed** represents the critical issue (for example, computers, laboratory equipment, measuring benches and medical instrumentation).

The **stabilisation** is performed on the «**true rms**» voltage. The stabiliser **is not affected by the load power factor** ($\cos \varphi$) and can operate **with a load percentage varying between 0% and 100% on each phase**.

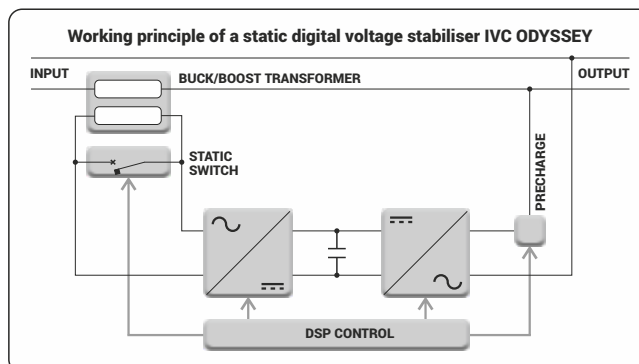
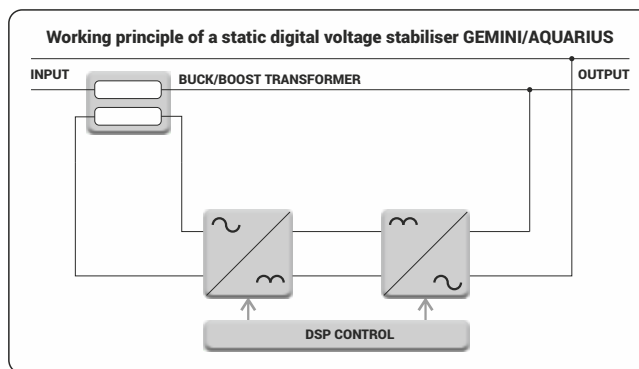
Basically, a static voltage stabiliser is made of a **buck/boost transformer**, a **conversion units** and an **electronic control** (with **IGBT static switches**).

The operating principle is similar to the one described for the electro-mechanical stabilisers. The difference lies in the fact that the **voltage compensation** on the buck/boost primary winding is performed by an electronic board through **IGBT static switches** instead of the autotransformer with variable transformer ratio.

The control circuit compares the output voltage value to the adjusted one. When the percentage variation is too high, the control drives the double conversion regulators. By doing so setting and supplied the voltage to the buck/boost transformer primary winding. Being the secondary voltage of the buck/boost transformer in phase or in opposition to the supply, the voltage drawn from the regulator is added or subtracted to the mains voltage, thus compensating its variations with response time in milliseconds.

The voltage stabiliser can operate with **input and output voltage different** (single-phase 220V/240V - three-phase 380V/415V) from the rated voltage (single-phase 230V - three-phase 400V). Such setting can be performed at the factory or at the Customer's premises according to the instructions given in the handbook.

The stabilisers are designed and built in compliance with the European Directives concerning CE marking (Low Voltage and Electromagnetic Compatibility Directives).



| | | |
|-----------------|--------------|-------------------|
| Gemini | Single-phase | 4-40kVA |
| Aquarius | Three-phase | 10-120kVA |
| Odyssey | Three-phase | 80-4000kVA |

Main components

1. Buck/boost transformer

Often referred to as 'booster' transformer, it is a standard dry-type transformer with the secondary winding connected in series to the mains and the primary winding supplied by the conversion regulator.

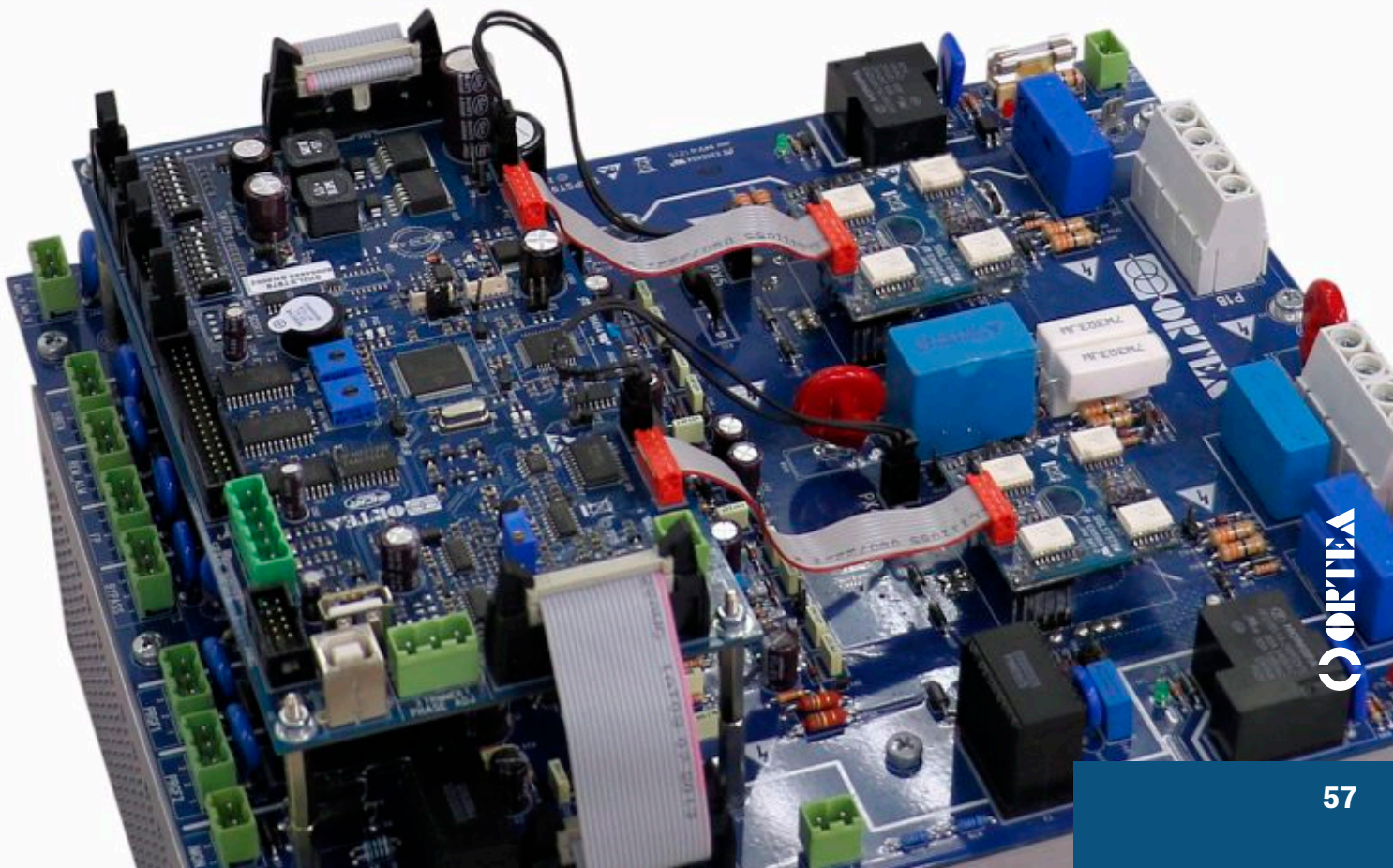
2. Conversion unit

AC/DC rectifier: it converts the phase to neutral voltage of the AC mains into DC voltage by means of a fully-controlled IGBT bridge. The rectifier is sized in order to supply the inverter at full load.

DC/AC inverter: it converts the DC voltage coming from the rectifier into AC voltage, stabilised in amplitude. The inverter uses the same IGBT technology as the rectifier.

3. Electronic control

IGBT microcontroller-based electronic control boards running the system in terms of regulation and alarm management. They compare the output voltage value to the set one: if a difference is detected, they generate the compensation necessary to bring back the output voltage to the nominal value (provided that said difference falls in the working range).





Gemini / Gemini Plus

single-phase
4-40kVA



| Standard features | Gemini | Gemini Plus |
|-----------------------------------|---|--|
| Voltage regulation | IGBT control | |
| Selectable output voltage* | 220-230-240V | |
| Output voltage accuracy | ±1% | |
| Frequency | 50-60Hz ±5% | |
| Admitted load variation | Up to 100% | |
| Cooling | Forced ventilation | |
| Ambient temperature | -25/+45°C | |
| Storage temperature | -25/+60°C | |
| Max relative humidity | 95% | |
| Admitted overload | 150% 2 sec. | |
| Harmonic distortion | None introduced | |
| Colour | RAL 9005 | |
| Protection degree | IP21 | |
| Instrumentation | Output digital voltmeter | |
| Installation | Indoor | |
| Overvoltage protection | Output class II surge arrestor | |
| Protection | <ul style="list-style-type: none"> - EMI/RFI filters - Automatic by-pass protection | <ul style="list-style-type: none"> - EMI/RFI filters - Input automatic circuit breaker - Automatic by-pass protection - Manual maintenance by-pass |

* The output voltage can be adjusted by choosing **one** of the indicated values. Such choice sets the new nominal value as a reference for all the stabiliser parameters.



Rating in relation to the input variation percentage

| ±15% | ±20% | ±25% | ±30% |
|-----------|------|------|------|
| 10 | 7 | 5 | 4 |
| 15 | 10 | 7 | 5 |
| 20 | 15 | 10 | 7 |
| 30 | 20 | 15 | 10 |
| 40 | 30 | 20 | 15 |

Accessories

| |
|---|
| Interrupting devices |
| Load protection against over/undervoltage |
| Input isolating transformer |
| IP54 protection degree for indoor and outdoor installation |

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Gemini / Gemini Plus

single-phase
4-40kVA

| Type | Input voltage variation range | Rating | Input voltage range | Maximum input current | Output voltage $\pm 1\%$ | Output current | Efficiency | Correction time | Cabinet | Weight |
|------|-------------------------------|--------|---------------------|-----------------------|--------------------------|----------------|------------|-----------------|---------|--------|
| | [%] | [kVA] | [V] | [A] | [V] | [A] | [%] | | Type | [kg] |

Gemini - Input voltage variation range $\pm 20\%/\pm 15\%$ (the values listed in the table are referred to 230V nominal voltage)

| | | | | | | | | | | |
|----------------|----------|----|---------|-----|-----|-----|-----|------------|----|-----|
| ES7-20 | ± 20 | 7 | 184-276 | 38 | 230 | 30 | >98 | half-cycle | 13 | 30 |
| ES10-15 | ± 15 | 10 | 195-265 | 51 | 230 | 43 | >98 | half-cycle | 13 | 35 |
| ES10-20 | ± 20 | 10 | 184-276 | 54 | 230 | 43 | >98 | half-cycle | 13 | 35 |
| ES15-15 | ± 15 | 15 | 195-265 | 76 | 230 | 65 | >98 | half-cycle | 22 | 50 |
| ES15-20 | ± 20 | 15 | 184-276 | 81 | 230 | 65 | >98 | half-cycle | 22 | 50 |
| ES20-15 | ± 15 | 20 | 195-265 | 102 | 230 | 87 | >98 | half-cycle | 23 | 110 |
| ES20-20 | ± 20 | 20 | 184-276 | 109 | 230 | 87 | >98 | half-cycle | 23 | 110 |
| ES30-15 | ± 15 | 30 | 195-265 | 153 | 230 | 130 | >98 | half-cycle | 23 | 125 |
| ES30-20 | ± 20 | 30 | 184-276 | 163 | 230 | 130 | >98 | half-cycle | 23 | 125 |
| ES40-15 | ± 15 | 40 | 195-265 | 205 | 230 | 174 | >98 | half-cycle | 23 | 125 |

Gemini - Input voltage variation range $\pm 30\%/\pm 25\%$ (the values listed in the table are referred to 230V nominal voltage)

| | | | | | | | | | | |
|----------------|----------|----|---------|-----|-----|----|-----|------------|----|-----|
| ES4-30 | ± 30 | 4 | 161-300 | 25 | 230 | 17 | >98 | half-cycle | 13 | 30 |
| ES5-25 | ± 25 | 5 | 172-288 | 29 | 230 | 22 | >98 | half-cycle | 13 | 35 |
| ES5-30 | ± 30 | 5 | 161-300 | 31 | 230 | 22 | >98 | half-cycle | 13 | 35 |
| ES7-25 | ± 25 | 7 | 172-288 | 40 | 230 | 30 | >98 | half-cycle | 22 | 50 |
| ES7-30 | ± 30 | 7 | 161-300 | 44 | 230 | 30 | >98 | half-cycle | 22 | 50 |
| ES10-25 | ± 25 | 10 | 172-288 | 57 | 230 | 43 | >98 | half-cycle | 23 | 110 |
| ES10-30 | ± 30 | 10 | 161-300 | 62 | 230 | 43 | >98 | half-cycle | 23 | 110 |
| ES15-25 | ± 25 | 15 | 172-288 | 87 | 230 | 65 | >98 | half-cycle | 23 | 125 |
| ES15-30 | ± 30 | 15 | 161-300 | 93 | 230 | 65 | >98 | half-cycle | 23 | 125 |
| ES20-25 | ± 25 | 20 | 172-288 | 116 | 230 | 87 | >98 | half-cycle | 23 | 125 |

Gemini Plus - Input voltage variation range $\pm 20\%/\pm 15\%$ (the values listed in the table are referred to 230V nominal voltage)

| | | | | | | | | | | |
|-----------------|----------|----|---------|-----|-----|-----|-----|------------|----|-----|
| ESP7-20 | ± 20 | 7 | 184-276 | 38 | 230 | 30 | >98 | half-cycle | 13 | 32 |
| ESP10-15 | ± 15 | 10 | 195-265 | 51 | 230 | 43 | >98 | half-cycle | 13 | 40 |
| ESP10-20 | ± 20 | 10 | 184-276 | 54 | 230 | 43 | >98 | half-cycle | 13 | 40 |
| ESP15-15 | ± 15 | 15 | 195-265 | 76 | 230 | 65 | >98 | half-cycle | 22 | 57 |
| ESP15-20 | ± 20 | 15 | 184-276 | 81 | 230 | 65 | >98 | half-cycle | 22 | 57 |
| ESP20-15 | ± 15 | 20 | 195-265 | 102 | 230 | 87 | >98 | half-cycle | 23 | 120 |
| ESP20-20 | ± 20 | 20 | 184-276 | 109 | 230 | 87 | >98 | half-cycle | 23 | 120 |
| ESP30-15 | ± 15 | 30 | 195-265 | 153 | 230 | 130 | >98 | half-cycle | 23 | 135 |
| ESP30-20 | ± 20 | 30 | 184-276 | 163 | 230 | 130 | >98 | half-cycle | 23 | 135 |
| ESP40-15 | ± 15 | 40 | 195-265 | 205 | 230 | 174 | >98 | half-cycle | 23 | 135 |

Gemini Plus - Input voltage variation range $\pm 30\%/\pm 25\%$ (the values listed in the table are referred to 230V nominal voltage)

| | | | | | | | | | | |
|-----------------|----------|----|---------|-----|-----|----|-----|------------|----|-----|
| ESP4-30 | ± 30 | 4 | 161-300 | 25 | 230 | 17 | >98 | half-cycle | 13 | 32 |
| ESP5-25 | ± 25 | 5 | 172-288 | 29 | 230 | 22 | >98 | half-cycle | 13 | 40 |
| ESP5-30 | ± 30 | 5 | 161-300 | 31 | 230 | 22 | >98 | half-cycle | 13 | 40 |
| ESP7-25 | ± 25 | 7 | 172-288 | 40 | 230 | 30 | >98 | half-cycle | 22 | 57 |
| ESP7-30 | ± 30 | 7 | 161-300 | 44 | 230 | 30 | >98 | half-cycle | 22 | 57 |
| ESP10-25 | ± 25 | 10 | 172-288 | 57 | 230 | 43 | >98 | half-cycle | 23 | 120 |
| ESP10-30 | ± 30 | 10 | 161-300 | 62 | 230 | 43 | >98 | half-cycle | 23 | 120 |
| ESP15-25 | ± 25 | 15 | 172-288 | 87 | 230 | 65 | >98 | half-cycle | 23 | 135 |
| ESP15-30 | ± 30 | 15 | 161-300 | 93 | 230 | 65 | >98 | half-cycle | 23 | 135 |
| ESP20-25 | ± 25 | 20 | 172-288 | 116 | 230 | 87 | >98 | half-cycle | 23 | 135 |



Aquarius / Aquarius Plus three-phase 10-120kVA



| Standard features | Aquarius | Aquarius Plus |
|-----------------------------------|---|--|
| Voltage regulation | IGBT control | |
| Voltage stabilisation | Independent phase control | |
| Selectable output voltage* | 220-230-240V (L-N) / 380-400-415V (L-L) | |
| Output voltage accuracy | ±1% | |
| Frequency | 50-60Hz ±5% | |
| Admitted load variation | Up to 100% | |
| Cooling | Forced ventilation | |
| Ambient temperature | -25/+45°C | |
| Storage temperature | -25/+60°C | |
| Max relative humidity | 95% | |
| Admitted overload | 150% 2 sec. | |
| Harmonic distortion | None introduced | |
| Colour | RAL 9005 | |
| Protection degree | IP21 | |
| Instrumentation | Output digital multimeter | |
| Installation | Indoor | |
| Overvoltage protection | Output class II surge arrestor | |
| Protection | <ul style="list-style-type: none"> - EMI/RFI filters - Automatic by-pass protection | <ul style="list-style-type: none"> - EMI/RFI filters - Input automatic circuit breaker - Automatic by-pass protection - Manual maintenance by-pass |

* The output voltage can be adjusted by choosing **one** of the indicated values. Such choice sets the new nominal value as a reference for all the stabiliser parameters.



Rating in relation to the input variation percentage

| | ±15% | ±20% | ±25% | ±30% |
|------------|------|------|------|------|
| 30 | | 20 | 15 | 10 |
| 45 | | 30 | 20 | 15 |
| 60 | | 45 | 30 | 20 |
| 90 | | 60 | 45 | 30 |
| 120 | | 90 | 60 | 45 |

Accessories

| |
|---|
| Interrupting devices |
| Load protection against over/undervoltage |
| Input isolating transformer |
| Integrated automatic power factor correction system |
| Neutral point reactor |
| IP54 protection degree for indoor and outdoor installation |

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Aquarius / Aquarius Plus

three-phase
10-120kVA

| Type | Input voltage variation range | Rating | Input voltage range | Maximum input current | Output voltage $\pm 1\%$ | Output current | Efficiency | Correction time | Cabinet | Weight |
|------|-------------------------------|--------|---------------------|-----------------------|--------------------------|----------------|------------|-----------------|---------|--------|
| | [%] | [kVA] | [V] | [A] | [V] | [A] | [%] | | Type | [kg] |

Aquarius - Input voltage variation range $\pm 20\%/\pm 15\%$ (the values listed in the table are referred to 400V nominal voltage)

| | | | | | | | | | | |
|-----------------|----------|-----|---------|-----|-----|-----|-----|------------|----|-----|
| ET20-20 | ± 20 | 20 | 320-480 | 36 | | 29 | >98 | half-cycle | 23 | 120 |
| ET30-15 | ± 15 | 30 | 340-460 | 51 | 400 | 43 | >98 | half-cycle | 23 | 160 |
| ET30-20 | ± 20 | 30 | 320-480 | 54 | 400 | 43 | >98 | half-cycle | 23 | 200 |
| ET45-15 | ± 15 | 45 | 340-460 | 76 | 400 | 65 | >98 | half-cycle | 31 | 370 |
| ET45-20 | ± 20 | 45 | 320-480 | 81 | 400 | 65 | >98 | half-cycle | 35 | 390 |
| ET60-15 | ± 15 | 60 | 340-460 | 102 | 400 | 87 | >98 | half-cycle | 35 | 390 |
| ET60-20 | ± 20 | 60 | 320-480 | 109 | 400 | 87 | >98 | half-cycle | 35 | 390 |
| ET90-15 | ± 15 | 90 | 340-460 | 153 | 400 | 130 | >98 | half-cycle | 35 | 390 |
| ET90-20 | ± 20 | 90 | 320-480 | 162 | 400 | 130 | >98 | half-cycle | 35 | 390 |
| ET120-15 | ± 15 | 120 | 340-460 | 204 | 400 | 173 | >98 | half-cycle | 35 | 390 |

Aquarius - Input voltage variation range $\pm 30\%/\pm 25\%$ (the values listed in the table are referred to 400V nominal voltage)

| | | | | | | | | | | |
|----------------|----------|----|---------|-----|-----|----|-----|------------|----|-----|
| ET10-30 | ± 30 | 10 | 280-520 | 20 | | 14 | >98 | half-cycle | 23 | 120 |
| ET15-25 | ± 25 | 15 | 300-500 | 29 | 400 | 22 | >98 | half-cycle | 23 | 160 |
| ET15-30 | ± 30 | 15 | 280-520 | 31 | 400 | 22 | >98 | half-cycle | 23 | 200 |
| ET20-25 | ± 25 | 20 | 300-500 | 39 | 400 | 29 | >98 | half-cycle | 31 | 370 |
| ET20-30 | ± 30 | 20 | 280-520 | 41 | 400 | 29 | >98 | half-cycle | 35 | 390 |
| ET30-25 | ± 25 | 30 | 300-500 | 57 | 400 | 43 | >98 | half-cycle | 35 | 390 |
| ET30-30 | ± 30 | 30 | 280-520 | 61 | 400 | 43 | >98 | half-cycle | 35 | 390 |
| ET45-25 | ± 25 | 45 | 300-500 | 86 | 400 | 65 | >98 | half-cycle | 35 | 390 |
| ET45-30 | ± 30 | 45 | 280-520 | 93 | 400 | 65 | >98 | half-cycle | 35 | 390 |
| ET60-25 | ± 25 | 60 | 300-500 | 116 | 400 | 87 | >98 | half-cycle | 35 | 390 |

Aquarius Plus - Input voltage variation range $\pm 20\%/\pm 15\%$ (the values listed in the table are referred to 400V nominal voltage)

| | | | | | | | | | | |
|------------------|----------|-----|---------|-----|-----|-----|-----|------------|----|-----|
| ETP20-20 | ± 20 | 20 | 320-480 | 36 | 400 | 29 | >98 | half-cycle | 23 | 130 |
| ETP30-15 | ± 15 | 30 | 340-460 | 51 | 400 | 43 | >98 | half-cycle | 23 | 170 |
| ETP30-20 | ± 20 | 30 | 320-480 | 54 | 400 | 43 | >98 | half-cycle | 23 | 220 |
| ETP45-15 | ± 15 | 45 | 340-460 | 76 | 400 | 65 | >98 | half-cycle | 31 | 410 |
| ETP45-20 | ± 20 | 45 | 320-480 | 81 | 400 | 65 | >98 | half-cycle | 35 | 430 |
| ETP60-15 | ± 15 | 60 | 340-460 | 102 | 400 | 87 | >98 | half-cycle | 35 | 430 |
| ETP60-20 | ± 20 | 60 | 320-480 | 109 | 400 | 87 | >98 | half-cycle | 35 | 430 |
| ETP90-15 | ± 15 | 90 | 340-460 | 153 | 400 | 130 | >98 | half-cycle | 35 | 430 |
| ETP90-20 | ± 20 | 90 | 320-480 | 162 | 400 | 130 | >98 | half-cycle | 35 | 430 |
| ETP120-15 | ± 15 | 120 | 340-460 | 204 | 400 | 173 | >98 | half-cycle | 35 | 430 |

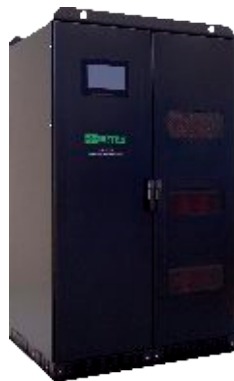
Aquarius Plus - Input voltage variation range $\pm 30\%/\pm 25\%$ (the values listed in the table are referred to 400V nominal voltage)

| | | | | | | | | | | |
|-----------------|----------|----|---------|-----|-----|----|-----|------------|----|-----|
| ETP10-30 | ± 30 | 10 | 280-520 | 20 | 400 | 14 | >98 | half-cycle | 23 | 130 |
| ETP15-25 | ± 25 | 15 | 300-500 | 29 | 400 | 22 | >98 | half-cycle | 23 | 170 |
| ETP15-30 | ± 30 | 15 | 280-520 | 31 | 400 | 22 | >98 | half-cycle | 23 | 220 |
| ETP20-25 | ± 25 | 20 | 300-500 | 39 | 400 | 29 | >98 | half-cycle | 31 | 410 |
| ETP20-30 | ± 30 | 20 | 280-520 | 41 | 400 | 29 | >98 | half-cycle | 35 | 430 |
| ETP30-25 | ± 25 | 30 | 300-500 | 57 | 400 | 43 | >98 | half-cycle | 35 | 430 |
| ETP30-30 | ± 30 | 30 | 280-520 | 61 | 400 | 43 | >98 | half-cycle | 35 | 430 |
| ETP45-25 | ± 25 | 45 | 300-500 | 86 | 400 | 65 | >98 | half-cycle | 35 | 430 |
| ETP45-30 | ± 30 | 45 | 280-520 | 93 | 400 | 65 | >98 | half-cycle | 35 | 430 |
| ETP60-25 | ± 25 | 60 | 300-500 | 116 | 400 | 87 | >98 | half-cycle | 35 | 430 |



Odyssey

three-phase
80-4000kVA



Standard Features

| | |
|-----------------------------------|--|
| Voltage regulation | IGBT control (double conversion technology) |
| Voltage stabilisation | Independent phase control |
| Available nominal voltage* | 220-230-240V (L-N) 380-400-415V (440-460-480V**) (L-L) |
| Output voltage accuracy | ±0,5% |
| Frequency | 50Hz ±5% or 60Hz ±5% |
| Correction time | <3 millisecs |
| Admitted load variation | Up to 100% |
| Admitted load imbalance | 100% |
| Cooling | Forced Ventilation |
| Ambient temperature | -20/+40°C |
| Storage temperature | -25/+60°C |
| Max relative humidity | <95% (non condensing) |
| Admitted overload | 150% for 1 minute (at nominal input voltage) |
| Colour | RAL 9005 |
| Protection degree | IP21 |
| User interface | 10" Touch panel, multilingual (Ethernet communication) Remotely available by dedicated «client» |
| Installation | Indoor |
| Communication system | MODBUS RTU (RS485) |
| Overvoltage protection | – Input class I surge arrestors – Output class II surge arrestors |
| Protection | – Automatic by-pass protection |

* The output voltage can be adjusted by choosing **one** of the indicated values.
Such choice sets the new nominal value as a reference for all the stabiliser parameters.

** 60Hz only.

Accessories

| |
|---|
| Interrupting devices |
| Short circuit output protection |
| Manual by-pass line |
| Total protection kit |
| Input isolating transformer |
| Integrated automatic power factor correction system |
| EMI/RFI filters |
| IP54 protection degree for indoor and outdoor installation |

All ORTEA stabilisers are designed and built in compliance with the Low Voltage and Electromagnetic Compatibility European Directives with regard to the CE marking requirements. ORTEA products are built with suitable quality components and that the manufacturing process is constantly verified in accordance with the Quality Control Plans which the Company applies in compliance with the ISO 9001:2015 Standards. The commitment towards environmental issues and safety at work issues is guaranteed by the certification of the Management System according to the ISO14001:2015 and OHSAS18001:2007 Standards. In order to obtain better performance, the products described in the present document can be altered by the Company at any date and without prior notice. Technical data and descriptions do not hold therefore any contractual value.

Odyssey three-phase 80-4000kVA

Rating in relation to the input variation percentage

| ±15% | ±20% | ±25% | ±30% |
|------|------|------|------|
| 160 | 120 | 95 | 80 |
| 200 | 160 | 120 | 95 |
| 250 | 200 | 160 | 120 |
| 320 | 250 | 200 | 160 |
| 400 | 320 | 250 | 200 |
| 500 | 400 | 320 | 250 |
| 630 | 500 | 400 | 320 |
| 800 | 630 | 500 | 400 |
| 1000 | 800 | 630 | 500 |
| 1250 | 1000 | 800 | 630 |
| 1600 | 1250 | 1000 | 800 |
| 2000 | 1600 | 1250 | 1000 |
| 2500 | 2000 | 1600 | 1250 |
| 3200 | 2500 | 2000 | 1600 |
| 4000 | 3200 | 2500 | 2000 |



The use of the **double conversion technology** guarantees the insulation from the disturbances and the distortions of the network and, together with the help provided by the electrolytic capacitors, makes it possible to build machines for high power loads.

Odyssey can operate with a **load variation range** for each phase **from 0 to 100%**, it is **not affected** by the **power factor** of the load and they can work with or without the neutral.

This voltage stabiliser can operate with different input and, consequently, output voltage (380V or 415V) from the nominal one (400V). Such setting can be performed at the factory or at the Customer's premises according to the instructions given in the handbook. It is also possible to select an output voltage different from the nominal one, but it is necessary to take into account the reduction of the power and the adjustment interval of the machine.

The user interface is created using a multilingual «touch panel» (10") with an Ethernet communication port which, via dedicated «client», allows remote control. Through the selection menu, it is possible to display electrical values and set the operating parameters of the stabiliser.

It is also possible to communicate with the electronic component via the **RS485 serial bus** using the **Modbus RTU** protocol.

The standard cabinet is an IP21 metal enclosure with RAL9005 finish for indoor installation.

Cooling is guaranteed by extracting fans.



Odyssey three-phase 80-4000kVA

| Type | Input variation range | Rated Power | Input Voltage range | Max input current | Output voltage $\pm 0.5\%$ | Rated output current | Efficiency | Correction time | Cabinet dimensions* | Weight* |
|------|-----------------------|-------------|---------------------|-------------------|----------------------------|----------------------|------------|-----------------|---------------------|---------|
| | [%] | [kVA] | [V] | [A] | [V] | [A] | [%] | [ms] | [WxDxH] | [kg] |

Input voltage variation range $\pm 20\%/\pm 15\%$ (the values listed in the table are referred to 400V nominal voltage)

| | | | | | | | | | | |
|----------------|----------|------|---------|------|-----|------|-----|----|----------------|-------|
| 120-20 | ± 20 | 120 | 320-480 | 217 | 400 | 173 | >98 | <3 | 1200x800x2000 | 650 |
| 160-15 | ± 15 | 160 | 340-460 | 272 | 400 | 231 | >98 | <3 | 1200x800x2000 | 700 |
| 160-20 | ± 20 | 160 | 320-480 | 289 | 400 | 231 | >98 | <3 | 1200x800x2000 | 750 |
| 200-15 | ± 15 | 200 | 340-460 | 340 | 400 | 289 | >98 | <3 | 1200x800x2000 | 850 |
| 200-20 | ± 20 | 200 | 320-480 | 361 | 400 | 289 | >98 | <3 | 1200x800x2000 | 900 |
| 250-15 | ± 15 | 250 | 340-460 | 425 | 400 | 361 | >98 | <3 | 1200x800x2000 | 1000 |
| 250-20 | ± 20 | 250 | 320-480 | 451 | 400 | 361 | >98 | <3 | 1200x800x2000 | 1100 |
| 320-15 | ± 15 | 320 | 340-460 | 543 | 400 | 462 | >98 | <3 | 1200x1000x2200 | 1200 |
| 320-20 | ± 20 | 320 | 320-480 | 577 | 400 | 462 | >98 | <3 | 1200x1000x2200 | 1300 |
| 400-15 | ± 15 | 400 | 340-460 | 679 | 400 | 577 | >98 | <3 | 1200x1000x2200 | 1400 |
| 400-20 | ± 20 | 400 | 320-480 | 722 | 400 | 577 | >98 | <3 | 1200x1000x2200 | 1500 |
| 500-15 | ± 15 | 500 | 340-460 | 849 | 400 | 722 | >98 | <3 | 1200x1000x2200 | 1600 |
| 500-20 | ± 20 | 500 | 320-480 | 902 | 400 | 722 | >98 | <3 | 1200x1000x2200 | 1700 |
| 630-15 | ± 15 | 630 | 340-460 | 1070 | 400 | 909 | >98 | <3 | 1200x1000x2200 | 1800 |
| 630-20 | ± 20 | 630 | 320-480 | 1137 | 400 | 909 | >98 | <3 | 1200x1000x2200 | 1900 |
| 800-15 | ± 15 | 800 | 340-460 | 1359 | 400 | 1155 | >98 | <3 | 2400x1000x2200 | 2000 |
| 800-20 | ± 20 | 800 | 320-480 | 1443 | 400 | 1155 | >98 | <3 | 2400x1000x2200 | 2100 |
| 1000-15 | ± 15 | 1000 | 340-460 | 1698 | 400 | 1443 | >98 | <3 | 2400x1000x2200 | 2200 |
| 1000-20 | ± 20 | 1000 | 320-480 | 1804 | 400 | 1443 | >98 | <3 | 2400x1000x2200 | 2300 |
| 1250-15 | ± 15 | 1250 | 340-460 | 2123 | 400 | 1804 | >98 | <3 | 2400x1000x2200 | 2400 |
| 1250-20 | ± 20 | 1250 | 320-480 | 2255 | 400 | 1804 | >98 | <3 | 2400x1000x2200 | 2500 |
| 1600-15 | ± 15 | 1600 | 340-460 | 2717 | 400 | 2309 | >98 | <3 | 4200x1000x2200 | 2600 |
| 1600-20 | ± 20 | 1600 | 320-480 | 2887 | 400 | 2309 | >98 | <3 | 4200x1000x2200 | 2700 |
| 2000-15 | ± 15 | 2000 | 340-460 | 3396 | 400 | 2887 | >98 | <3 | 4200x1000x2200 | 2800 |
| 2000-20 | ± 20 | 2000 | 320-480 | 3609 | 400 | 2887 | >98 | <3 | 4200x1000x2200 | 2900 |
| 2500-15 | ± 15 | 2500 | 340-460 | 4245 | 400 | 3609 | >98 | <3 | 4200x1000x2200 | 3000 |
| 2500-20 | ± 20 | 2500 | 320-480 | 4511 | 400 | 3609 | >98 | <3 | 4200x1000x2200 | 3100 |
| 3200-15 | ± 15 | 3200 | 340-460 | 5434 | 400 | 4619 | >98 | <3 | 4200x1000x2200 | 3200 |
| 3200-20 | ± 20 | 3200 | 320-480 | 5774 | 400 | 4619 | >98 | <3 | 4200x1000x2200 | 3300 |
| 4000-15 | ± 15 | 4000 | 340-460 | 6793 | 400 | 5774 | >98 | <3 | 4200x1400x2200 | 10300 |

* Sizes and weights may change.

Odyssey

three-phase
80-4000kVA

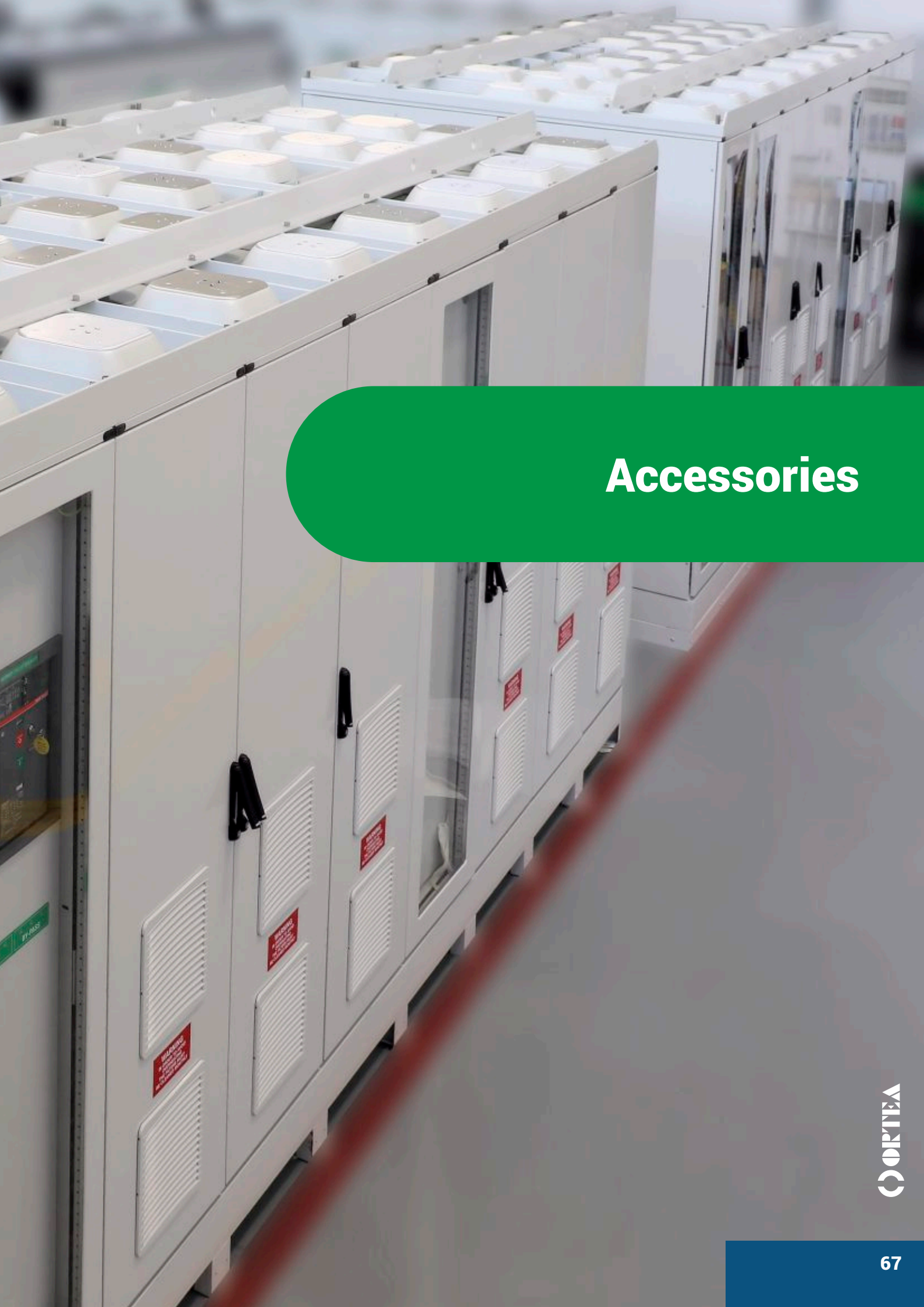
| Type | Input variation range | Rated Power | Input Voltage range | Max input current | Output voltage $\pm 0.5\%$ | Rated output current | Efficiency | Correction time | Cabinet dimensions* | Weight* |
|------|-----------------------|-------------|---------------------|-------------------|----------------------------|----------------------|------------|-----------------|---------------------|---------|
| | [%] | [kVA] | [V] | [A] | [V] | [A] | [%] | [ms] | [WxDxH] | [kg] |

Input voltage variation range $\pm 30\%/\pm 25\%$ (the values listed in the table are referred to 400V nominal voltage)

| | | | | | | | | | | |
|----------------|----------|------|---------|------|-----|------|-----|----|----------------|-------|
| 80-30 | ± 30 | 80 | 280-520 | 165 | 400 | 115 | >98 | <3 | 1200x800x2000 | 650 |
| 95-25 | ± 25 | 95 | 300-500 | 183 | 400 | 137 | >98 | <3 | 1200x800x2000 | 700 |
| 95-30 | ± 30 | 95 | 280-520 | 196 | 400 | 137 | >98 | <3 | 1200x800x2000 | 700 |
| 120-25 | ± 25 | 120 | 300-500 | 231 | 400 | 173 | >98 | <3 | 1200x800x2000 | 750 |
| 120-30 | ± 30 | 120 | 280-520 | 247 | 400 | 173 | >98 | <3 | 1200x800x2000 | 750 |
| 160-25 | ± 25 | 160 | 300-500 | 308 | 400 | 231 | >98 | <3 | 1200x800x2000 | 850 |
| 160-30 | ± 30 | 160 | 280-520 | 330 | 400 | 231 | >98 | <3 | 1200x800x2000 | 850 |
| 200-25 | ± 25 | 200 | 300-500 | 385 | 400 | 289 | >98 | <3 | 1200x800x2000 | 1000 |
| 200-30 | ± 30 | 200 | 280-520 | 412 | 400 | 289 | >98 | <3 | 1200x1000x2200 | 1000 |
| 250-25 | ± 25 | 250 | 300-500 | 481 | 400 | 361 | >98 | <3 | 1200x1000x2200 | 1200 |
| 250-30 | ± 30 | 250 | 280-520 | 516 | 400 | 361 | >98 | <3 | 1200x1000x2200 | 1200 |
| 320-25 | ± 25 | 320 | 300-500 | 616 | 400 | 462 | >98 | <3 | 1200x1000x2200 | 1500 |
| 320-30 | ± 30 | 320 | 280-520 | 660 | 400 | 462 | >98 | <3 | 1200x1000x2200 | 1500 |
| 400-25 | ± 25 | 400 | 300-500 | 770 | 400 | 577 | >98 | <3 | 1200x1000x2200 | 2000 |
| 400-30 | ± 30 | 400 | 280-520 | 825 | 400 | 577 | >98 | <3 | 2400x1000x2200 | 2000 |
| 500-25 | ± 25 | 500 | 300-500 | 962 | 400 | 722 | >98 | <3 | 2400x1000x2200 | 2200 |
| 500-30 | ± 30 | 500 | 280-520 | 1031 | 400 | 722 | >98 | <3 | 2400x1000x2200 | 2200 |
| 630-25 | ± 25 | 630 | 300-500 | 1212 | 400 | 909 | >98 | <3 | 2400x1000x2200 | 2800 |
| 630-30 | ± 30 | 630 | 280-520 | 1299 | 400 | 909 | >98 | <3 | 2400x1000x2200 | 2800 |
| 800-25 | ± 25 | 800 | 300-500 | 1540 | 400 | 1155 | >98 | <3 | 4200x1000x2200 | 3800 |
| 800-30 | ± 30 | 800 | 280-520 | 1650 | 400 | 1155 | >98 | <3 | 4200x1000x2200 | 3800 |
| 1000-25 | ± 25 | 1000 | 300-500 | 1925 | 400 | 1443 | >98 | <3 | 4200x1000x2200 | 4000 |
| 1000-30 | ± 30 | 1000 | 280-520 | 2062 | 400 | 1443 | >98 | <3 | 4200x1000x2200 | 4000 |
| 1250-25 | ± 25 | 1250 | 300-500 | 2406 | 400 | 1804 | >98 | <3 | 4200x1000x2200 | 5600 |
| 1250-30 | ± 30 | 1250 | 280-520 | 2578 | 400 | 1804 | >98 | <3 | 4200x1000x2200 | 5600 |
| 1600-25 | ± 25 | 1600 | 300-500 | 3079 | 400 | 2309 | >98 | <3 | 4200x1000x2200 | 6900 |
| 1600-30 | ± 30 | 1600 | 280-520 | 3299 | 400 | 2309 | >98 | <3 | 4200x1000x2200 | 6900 |
| 2000-25 | ± 25 | 2000 | 300-500 | 3849 | 400 | 2887 | >98 | <3 | 4200x1000x2200 | 10300 |
| 2000-30 | ± 30 | 2000 | 280-520 | 4124 | 400 | 2887 | >98 | <3 | 4200x1000x2200 | 10300 |
| 2500-25 | ± 25 | 2500 | 300-500 | 4811 | 400 | 3609 | >98 | <3 | 4200x1000x2200 | 10300 |

* Sizes and weights may change.





Accessories

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 | 18 | 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 | 600 | 80 |
| 1250 | 600 | 80 |
| 1600 | 600 | 80 |
| 2000 | 600 | 90 |
| 2500 | 600 | 90 |
| 3200 | 600 | 90 |
| 4000 | 1200 | 200 |
| 5000 | 1200 | 200 |
| 6300 | 1200 | 200 |



Manual by-pass line

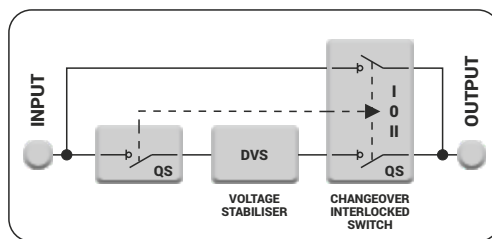
The bypass circuit enables the stabiliser to be segregated from the line supplying the load.

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:

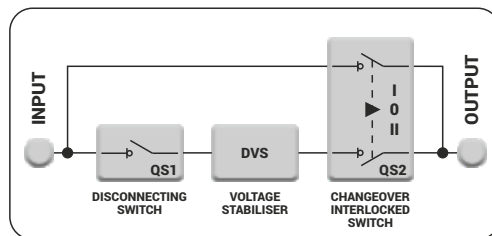
1. – I-0-II changeover interlocked switch (QS)



| 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 |

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



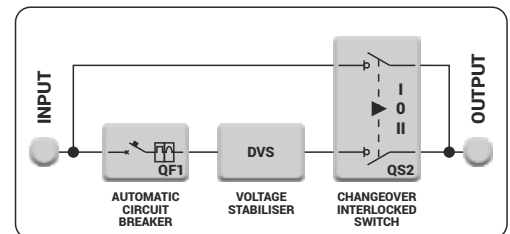
| Nominal current [A] | Additional module | |
|------------------------|-------------------|----------------|
| | Length [mm] | Weight [kg] |

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

| Nominal current [A] | Additional module | |
|------------------------|-------------------|----------------|
| | Length [mm] | Weight [kg] |

| | | |
|------|------|-----|
| 320 | 400 | 70 |
| 400 | 400 | 70 |
| 500 | 600 | 90 |
| 630 | 600 | 90 |
| 800 | 600 | 90 |
| 1000 | 600 | 90 |
| 1250 | 600 | 90 |
| 1600 | 600 | 90 |
| 2000 | 1600 | 200 |
| 2500 | 1600 | 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 | 600 | 120 |
| 2000 | 1600 | 200 |
| 2500 | 1600 | 200 |

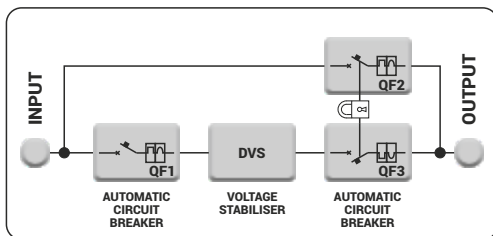
Total protection kit

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



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.

| 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 | 2000*** | 1100 |
| 6300* | 5000 | 2000*** | 1200 |

* Neutral wire sized for 50% of the rate current

** In case of stand alone by-pass add 400mm

*** In case of stand alone by-pass add 600mm





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 | 51 | 430 |
| 144 | 100 | 51 | 580 |
| 158 | 110 | 51 | 600 |
| 180 | 125 | 51 | 630 |
| 202 | 140 | 51 | 660 |
| 231 | 160 | 51 | 710 |
| 260 | 180 | 51 | 750 |
| 289 | 200 | 51 | 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 ($U_n=525V$) exclusively thus guaranteeing robustness and reliability. Furthermore, the detuned filter (included from 1000kVA) protects the system against possible harmonics generated by non-linear loads.

| DVS power [kVA] | PFC power [kvar] | Additional module | |
|--------------------|---------------------|-------------------|----------------|
| | | Length [mm] | Weight [kg] |
| 80 | 50 | 400 | 85 |
| 100 | 50 | 400 | 85 |
| 125 | 75 | 400 | 115 |
| 160 | 75 | 400 | 115 |
| 200 | 100 | 400 | 135 |
| 250 | 150 | 600 | 160 |
| 320 | 150 | 600 | 160 |
| 400 | 200 | 600 | 190 |
| 500 | 250 | 600 | 220 |

| DVS power [kVA] | PFC power [kvar] | Additional module | |
|--------------------|---------------------|-------------------|----------------|
| | | Length [mm] | Weight [kg] |
| 630 | 300 | 600 | 230 |
| 800 | 350 | 600 | 250 |
| 1000 | 500 | 1600 | 830 |
| 1250 | 600 | 1600 | 890 |
| 1600 | 750 | 2400 | 1245 |
| 2000 | 900 | 2400 | 1335 |
| 2500 | 1200 | 3200 | 1780 |
| 3200 | 1500 | 4800 | 2490 |
| 4000 | 2000 | 6400 | 3320 |



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 [A] | Type | Discharge current | |
|----------------|-------|-------------------|---------|
| | | CLASS I | ORTEA |
| CLASS I | ORTEA | 25kA/pole | 4 poles |
| CLASS II | ORTEA | 20kA/pole | 2 poles |
| CLASS II | ORTEA | 20kA/pole | 4 poles |

| Current [A] | Type | Discharge current | |
|----------------|------|-------------------|---------|
| | | CLASS I | DEHN |
| CLASS I | DEHN | 200kA | 4 poles |
| CLASS II | DEHN | 40kA | 2 poles |
| CLASS II | DEHN | 40kA | 4 poles |



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 |

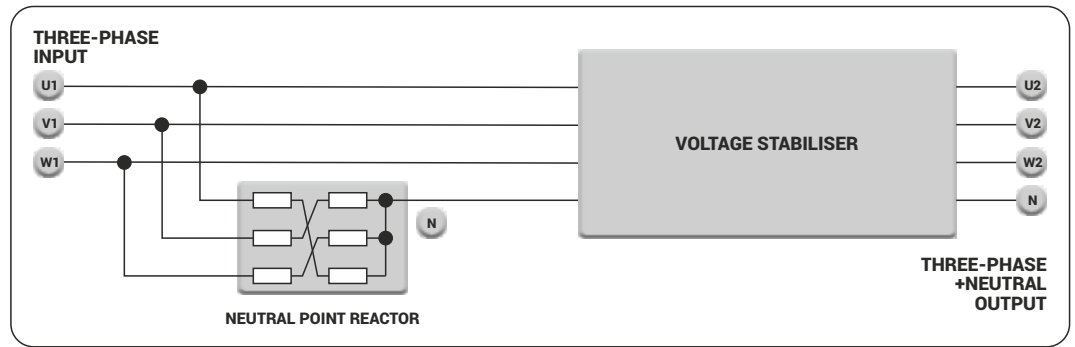
| Type | Rated current |
|---------------|---------------|
| | [A] |
| FL155.800.00 | 800 |
| FL155.1000.00 | 1000 |
| FL155.1600.00 | 1600 |
| FL155.2500.00 | 2500 |





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.



| 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 |
| 42 | 800 | 800 | 2000 |
| 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 |





«Special» voltage stabilisers

Beside designing and manufacturing **customised stabilisers** tailored on the Customer's requirements, ORTEA developed product series particularly thought and **optimised** for **specific necessities and/or applications**.

Here below is a list summarizing said series.

| | |
|-----------------------|--|
| BTS series | Telecommunication (TLC) |
| DLC series | Line conditioners |
| BC series | Broadcasting |
| AOT series | Mains filters |
| OUTDOOR series | Outdoor installations |
| F&B series | Food & Beverage, packaging and bottling industry |

BTS series



The acronym **BTS** stands for **Base Transceiver Station** and is used to indicate all the transmitting and receiving devices that enable the radio coverage in a telecom cell.

This is definitely an application where **high quality voltage supply**, regardless of the incoming fluctuation, is very often the key for ensuring **efficiency** and **reliability**, fundamental qualities to guarantee operating continuity.

Disrupted service, loss of data, security failure, inaccurate information and general inconvenience are examples of possible problems caused by unstable supply. Of course, all this results in increased costs.

A **voltage stabiliser** is a device able to respond to changes in the voltage level on the input line caused by sags (due to undersized distribution lines, connection of large loads to the network, ground faults, etc.) and surges (generated by disconnection of large loads, increased voltage at the generating plant, atmospheric events, etc.) The duration of such phenomena depends on their cause and is not easily predictable. Sags are generally more common especially where the distribution is not efficient

The voltage stabiliser **specifically designed for BTS** sites has proved to be an efficient solution in the telecommunication field.

In comparison to a standard voltage stabiliser, a BTS unit offers the following characteristics:

- IP54 metallic enclosure for outdoor installation.
- Manual by-pass.
- Input and output circuit breakers.
- Input digital voltmeter.
- Output Class II surge arrestors.
- Optional isolating transformer.

The stabilisers can be single-phase, three-phase or specifically designed for receiving a three-phase input and releasing a single-phase output. With the three-phase configuration, the regulation is performed independent on each phase and the voltage stabiliser requires the neutral wire presence for a correct operation. If the neutral wire is not available, the addition of a D/Y isolating transformer or neutral-point reactor is required.

Three-phase stabilisers can be used with three-phase loads and up to 100% unbalanced single-phase loads, even in case of asymmetric mains.

The **instrumentation** is installed on the cabinet door. An output digital multimeter provides with information on the line downstream the voltage stabiliser (phase and linked voltages, current, power factor, active power, apparent power, reactive power, etc).

Minimum voltage, maximum voltage, internal overheating and overload on the voltage regulator are signalled by an acoustic alarm.

The stabiliser exploits a **microprocessor-based control** logic.

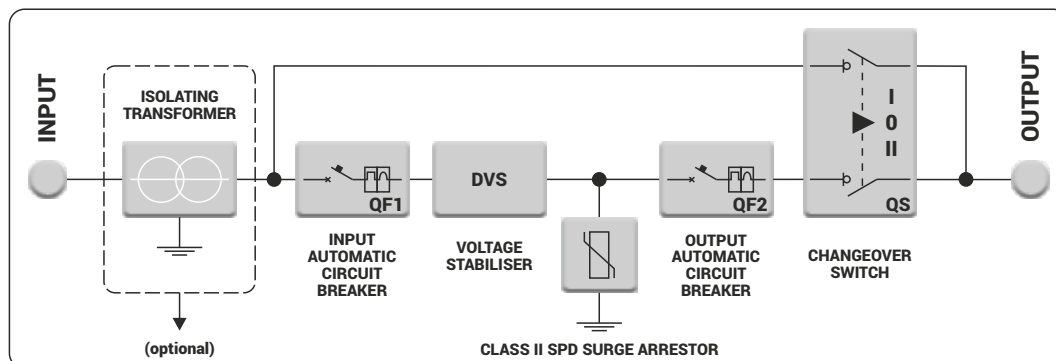
Main features

- Power design based on the maximum input current.
- Regulation based on the «rms voltage» and insensitivity to harmonics on the mains.
- Full functionality with load charge variable from 0 to 100%.
- Up to 30% harmonic content admitted on the load current.
- Insensitivity to the load power factor.
- No generation of noticeable harmonics in the output voltage.

Protections and signals

- Motor rotation stop due to regulation reaching the limit switches.
- Maximum and minimum line voltage alarm.
- Ambient thermostat (set to 65°C).
- Automatic circuit breaker to protect the voltage regulator.
- Fuses to protect the auxiliary circuits.
- Class II surge arrestors.

BTS series



| Standard features | BTS1 | BTS3 | BTS3/1 |
|---------------------------|---|--------------------|---|
| Number of phases | 1 | 3 | 3/1 |
| Output voltage* | 220-230-240V (L-N) | 380-400-415V (L-L) | 380-400-415V (L-L) input 220-230-240V (L-N) output |
| Nominal rating | from 5kVA to 80kVA | | |
| Input voltage range | ±15% - ±20% - ±25% - ±30% - +15%/-25% - +15%/-35% - +15%/-45% | | |
| Output voltage range | ±0.5% | | |
| Frequency | 50 ±5% or 60Hz ±5% | | |
| Admitted load variation | Up to 100% | | |
| Admitted load imbalance | n.a. | 100% | n.a. |
| Cooling | Natural air ventilation (air extraction over 35°C) | | |
| Ambient temperature | -25/+45°C | | |
| Storage temperature | -25/+60°C | | |
| Maximum relative humidity | 95% (non condensing) | | |
| Admitted overload | 200% 2 min. | | |
| Harmonic distortion | None introduced | | |
| Colour | RAL 7035 | | |
| Protection degree | IP54 | | |
| Installation | Outdoor | | |
| Overvoltage protection | class II surge arrester | | |

* The output voltage can be adjusted by choosing **one** of the indicated values. Such choice sets the new nominal value as a reference for all the stabiliser parameters.



All ORTEA stabilisers are designed and built in compliance with the Low Voltage and Electromagnetic Compatibility European Directives with regard to the CE marking requirements. ORTEA products are built with suitable quality components and that the manufacturing process is constantly verified in accordance with the Quality Control Plans which the Company applies in compliance with the ISO 9001:2015 Standards. The commitment towards environmental issues and safety at work issues is guaranteed by the certification of the Management System according to the ISO14001:2015 and OHSAS18001:2007 Standards. In order to obtain better performance, the products described in the present document can be altered by the Company at any date and without prior notice. Technical data and descriptions do not hold therefore any contractual value.

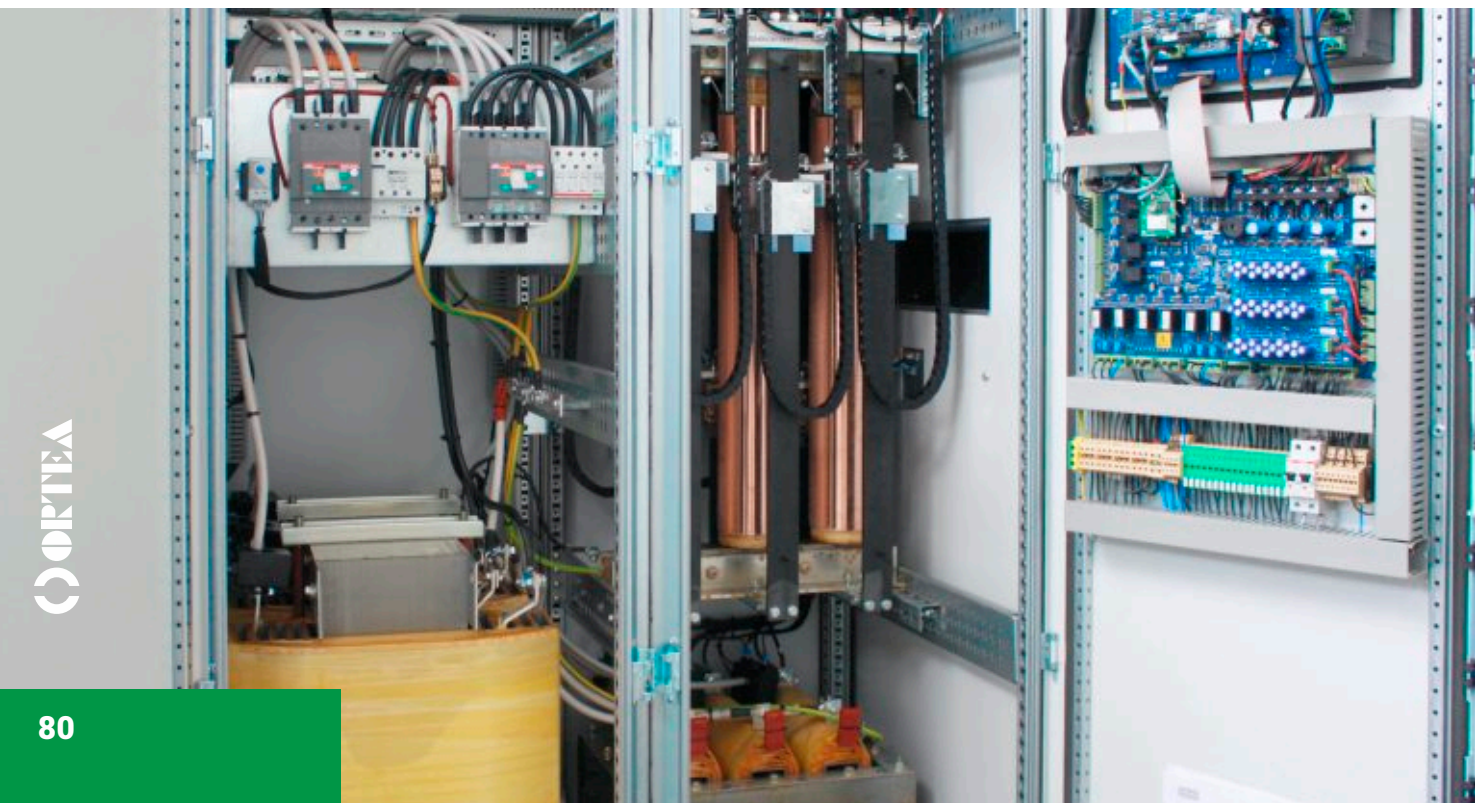
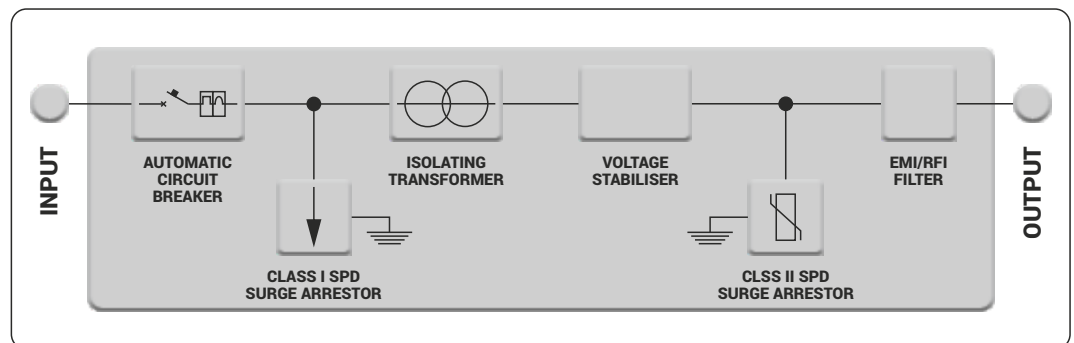
DLC series

ORTEA product range is completed by a range of **line conditioners** based on voltage stabilisers and **provided with additional protective devices**.

The following sketch shows the typical line conditioners:

- **Input automatic circuit breaker** (protection against short-circuit).
- Delta/Star or Delta/Zig-zag **input isolation transformer** (complete galvanic isolation between the mains and the load and cancellation of third and triplen harmonics).
- **Class 1 SPD surge protective device** (protection against lightning).
- **Class 2 SPD surge protective device** (protection against transients).
- **EMI/RFI filter** (protection against electro-magnetic and radio-frequency noise).

| | | | | |
|-------------------|--------------|---------------------|-----------------------|-------------------|
| Lybra | Single-phase | Vega/Antares | + advanced protection | 0.3-135kVA |
| Aries | Three-phase | Orion | + advanced protection | 2-250kVA |
| Aries Plus | Three-phase | Orion Plus | + advanced protection | 30-1250kVA |
| Discovery | Three-phase | Sirius | + advanced protection | 60-6000kVA |



BC series

The acronym **DVB** stands for Digital Video Broadcasting and is used to indicate all the devices transmitting and receiving digital signal. The availability of **high quality voltage supply** is the key for ensuring operating continuity.

The BC series is specifically designed for DVB stations and consists of a **digital voltage stabiliser** able to compensate for voltage variation on the input line generated by sags or surges, completed by **additional devices** for the **protection** against transients and electric noise generated by electronic appliances.

Usually, a BC stabiliser includes

- Digital voltage stabiliser.
- Isolating transformer.
- Input & output automatic circuit breakers.
- Input Class I surge arrestors.
- Output Class II surge arrestors.
- EMI/RFI filter.
- Instrumentation (voltmeter/multimetre).

For outdoor installation, the unit is housed inside an **IP54 metallic enclosure**.

Small ratings can be assembled in enclosures suitable for installation in **19" rack cabinets**.



AOT series

AOTs (wave absorbers) are obtained by assembling in a cabinet a combination of **protective devices** to deal with **transients** carried by the distributing lines.

In order to achieve the most complete protection level, the AOT combines two complementary concepts: **smoothing** and **filtering**. The task is performed through surge arrestors, isolating transformers, detuning reactors and capacitors.

AOTs must be installed upstream and in series to the equipment that needs protection in order to avoid inductive and /or capacitive effects on the lines.

Usually, AOTs include:

- Input automatic circuit breaker.
- Parallel surge arrestors (redundant system).
- Isolating transformer.
- Capacitors.
- Detuning/blocking reactor
- Output automatic circuit breaker.

The operation can be divided in three phases:

1. The surge arrestors discharge to ground the direct overvoltage energy.
2. The isolating transformer ensures galvanic isolation between the mains and the equipment to be protected.
3. The filtering module eliminates the residual energy.



OUTDOOR series

All ORTEA voltage stabilisers can be assembled in cabinets specifically designed for **outdoor installation**.

The standard outdoor cabinets are built for an **IP54** protection degree and are painted with powder paint for **C3** anti-corrosion class (C4 on request).

On request, ORTEA is also able to provide with units destined to be installed in particularly aggressive environments (for example, AISI304 and AISI316 stainless steel cabinets).



F&B series

Specifically designed for **food & beverage, packaging** and **bottling industries**, these voltage stabilisers are housed in an **IP54** cabinet cooled via **air conditioning units**.

The stabiliser is therefore protected against dust or other volatile substances and liquid sprays.

The configuration includes **raised feet**, so that normal cleaning routines can be performed underneath the stabiliser.

On request, the cabinet can be in **stainless steel**.





1.1 Warranty

The purchased equipment is under warranty against any material or workmanship defects that might occur within the terms indicated in the following starting from the date of purchase and for all mechanical, electrical and electronic parts.

During the warranty period, the Manufacturer will repair or replace any defective parts, unless said defects are due to:

- improper handling, storage and/or use;
- wear & tear resulting from normal usage;
- incompetence or negligence on the Buyer's side when installing, running and maintaining the unit;
- interventions performed by or on behalf of the Buyer without written authorization;
- failure to comply with instructions given by the Manufacturer;
- removal, alteration or forgery of the nameplate and the data indicated thereof; and
- fortuitous or force majeure events such as (but not limited to) fire, earthquake, flood, riot and revolution, war, political instability, terroristic act, strike, etc.).

Moreover, the provided warranty will immediately become null and void in case of:

- failure to comply with the payment terms;
- failure to carry out routine and / or extraordinary maintenance;
- improper use of the equipment; and
- external phenomena beyond the unit's scope and control.

In case of failure, the Buyer shall contact the Head Office where the Manufacturer will decide whether the repair can be performed on location, or if the equipment has to be shipped to the Manufacturer's facilities or to an after-sale Service Centre authorised by the Manufacturer.

If the repairing intervention can be performed at the Buyer's facility, all the expenses relevant to travelling, boarding and lodging of the Seller personnel shall be at the Buyer's charge, whilst spare parts and labour costs shall be at the Manufacturer's charge. However, the Buyer shall produce copy of the purchasing document (invoice) and report the detected anomaly prior to the intervention.

If the intervention is performed at the Manufacturer's facility, the equipment shall be duly packed and shipped back at the Buyer's expense and risk. The shipment after the repairing operations shall be under the Manufacturer's responsibility.

Unless otherwise agreed upon in writing, this warranty does not cover the replacement of the entire equipment under no circumstances whatsoever. Nothing shall be due to the Buyer for the time in which the equipment is left idle. The Buyer may not claim any compensations and/or reimbursements for expenses or indirect damages caused by the equipment failure.

Parts provided as spare parts and/or replacements are subject to the same warranty terms. Repair or replacement of a defective part does not extend the original warranty period on the product as a whole.

The competent place of jurisdiction for any disputes is in Monza (Italy).

1.2 Proper use

While the unit is functioning, the operator must be protected from any risks associated with the functioning mode.

The proper / correct use of the equipment allows for full exploitation of its characteristics in complete safety. For such purpose:

- follow the instructions in the user manual;
- check the integrity of equipment and components;
- comply with instructions and warnings provided;
- check status of preservation and keep maintenance on the equipment under control;
- check the status of cables and electrical connections;
- comply with the nameplate data such as (but not limited to) power, voltage and amperage;
- use the equipment for the purpose intended by the Manufacturer;
- operate the equipment in the environmental conditions for which it was designed;
- cut off the power supply in case of inspection, repair and maintenance;
- use suitable work clothing and personal protective equipment (PPE);
- immediately report any malfunction (bad behaviour, suspicion of rupture, incorrect movement and noise beyond the standard level) to the department manager and switch off the equipment;
- comply with the recommended maintenance frequency, recording every control and comment related to the performed intervention.

1.3 Misuse / Improper use

The Manufacturer defines as «misuse / improper use» of the equipment any other than what described in the previous paragraph and in addition to that:

- modification of the operating parameters. Should it be necessary to make any modification to the equipment, the Buyer shall contact the Manufacturer;
- use of unsuitable or inadequate energy sources;
- employment of not adequately trained/skilled personnel to run the unit;
- failure to comply with the maintenance instructions or maintenance incorrectly carried out;
- use of non-original spare parts or unsuitable ones;
- modification and / or tapering with the equipment safety devices;
- performance of control operations, maintenance, or repairs without having first disconnected the energy supply;
- performance of temporary repairs or remedial measures not complying with the instructions..

WARNING. The Manufacturer declines all responsibility for damage to persons or belongings due to improper use as defined above.

1.4 Warranty terms

24 months from invoice date for VEGA, ANTARES, ORION, ORION PLUS, GEMINI, AQUARIUS and ODYSSEY.

36 months from invoice date for SIRIUS.

60 months from invoice date for SIRIUS ADVANCE.

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ORTEA SpA

Via dei Chiosi, 21
20873 Cavenago di Brianza MB | ITALY
tel. +39 02 95 917 800

www.orteacom
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