



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.

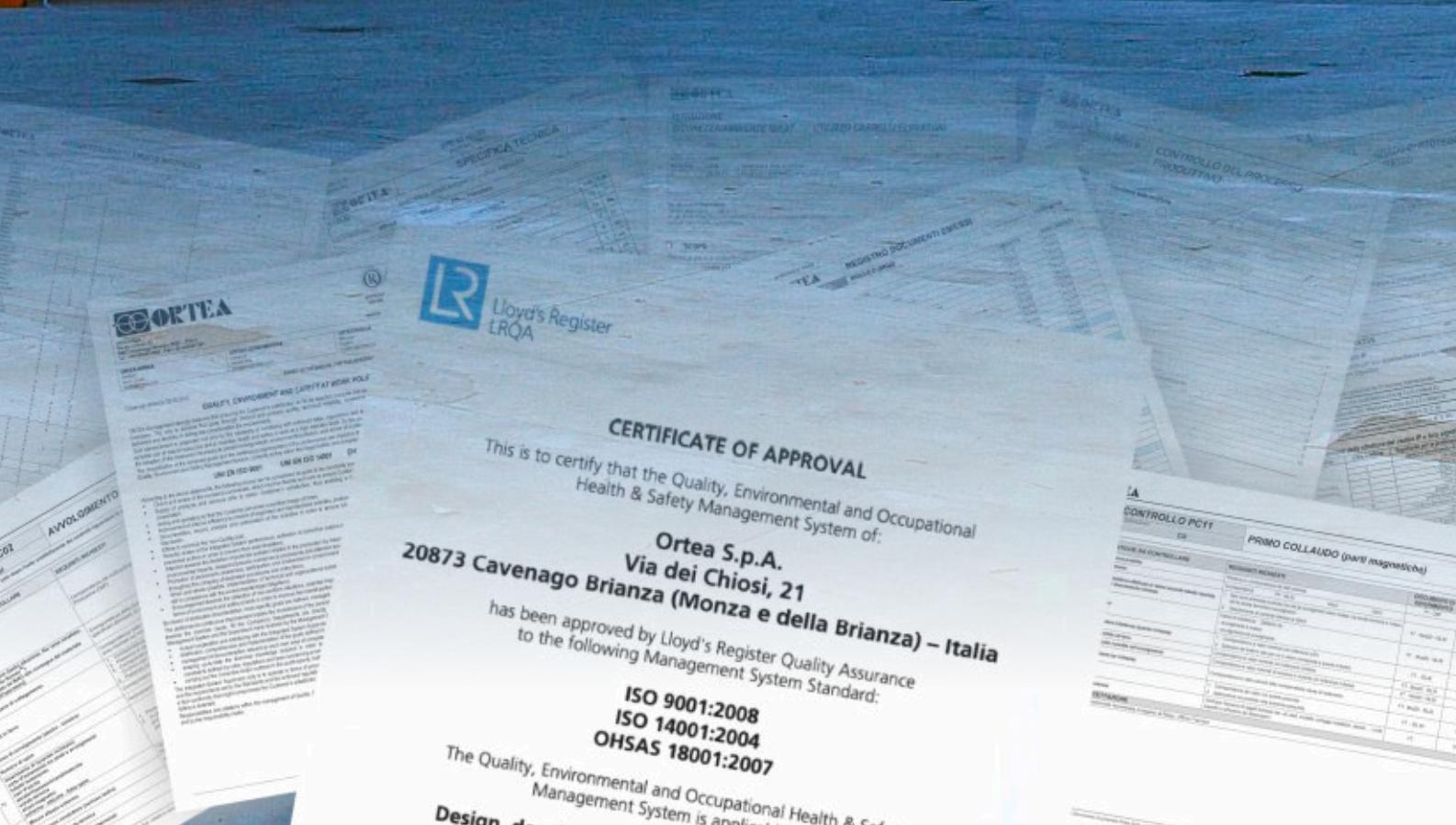


● ORTEA headquarters (Italy)

● 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.



### CERTIFICATE OF APPROVAL

This is to certify that the Quality, Environmental and Occupational Health & Safety Management System of:

**Ortea S.p.A.**  
Via dei Chiosi, 21  
20873 Cavenago Brianza (Monza e della Brianza) - Italia

has been approved by Lloyd's Register Quality Assurance to the following Management System Standard:

**ISO 9001:2008**  
**ISO 14001:2004**  
**OHSAS 18001:2007**

The Quality, Environmental and Occupational Health & Safety Management System is applied to:

Design, de-



### **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:

$kVA(1\text{-ph.}) = \text{load voltage} \times \text{load current}$

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

### 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

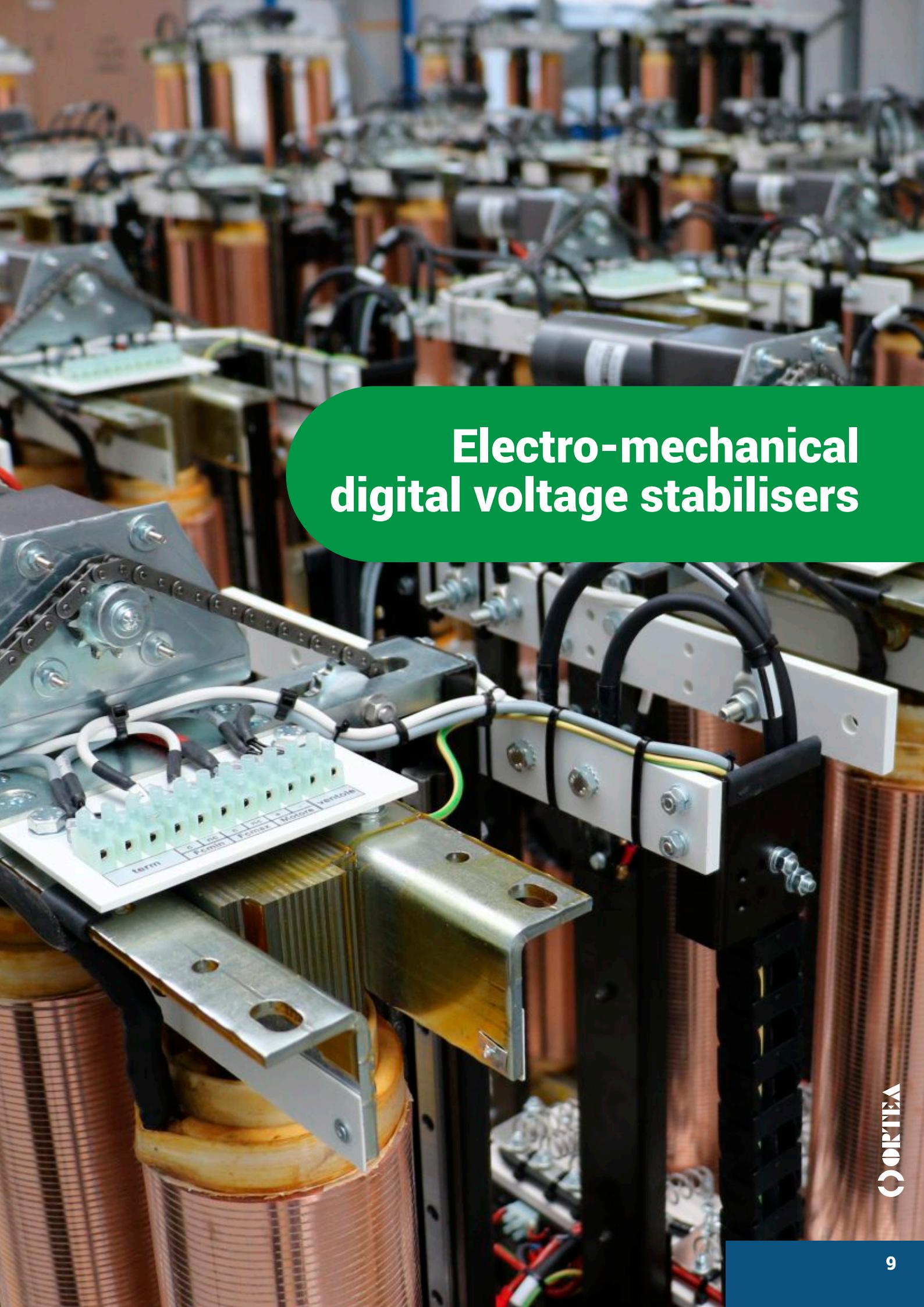
A standard voltage stabiliser can be enriched with a number of accessories:

- 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**

OORTEA

## 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 millisecond/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).

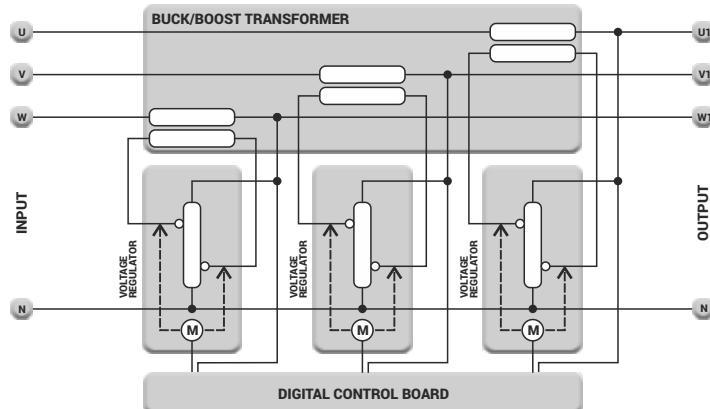
Standard units are housed in an IP21 metallic enclosure RAL7035 painted. Cooling is guaranteed by natural air circulation aided by extracting fans over a certain temperature.

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

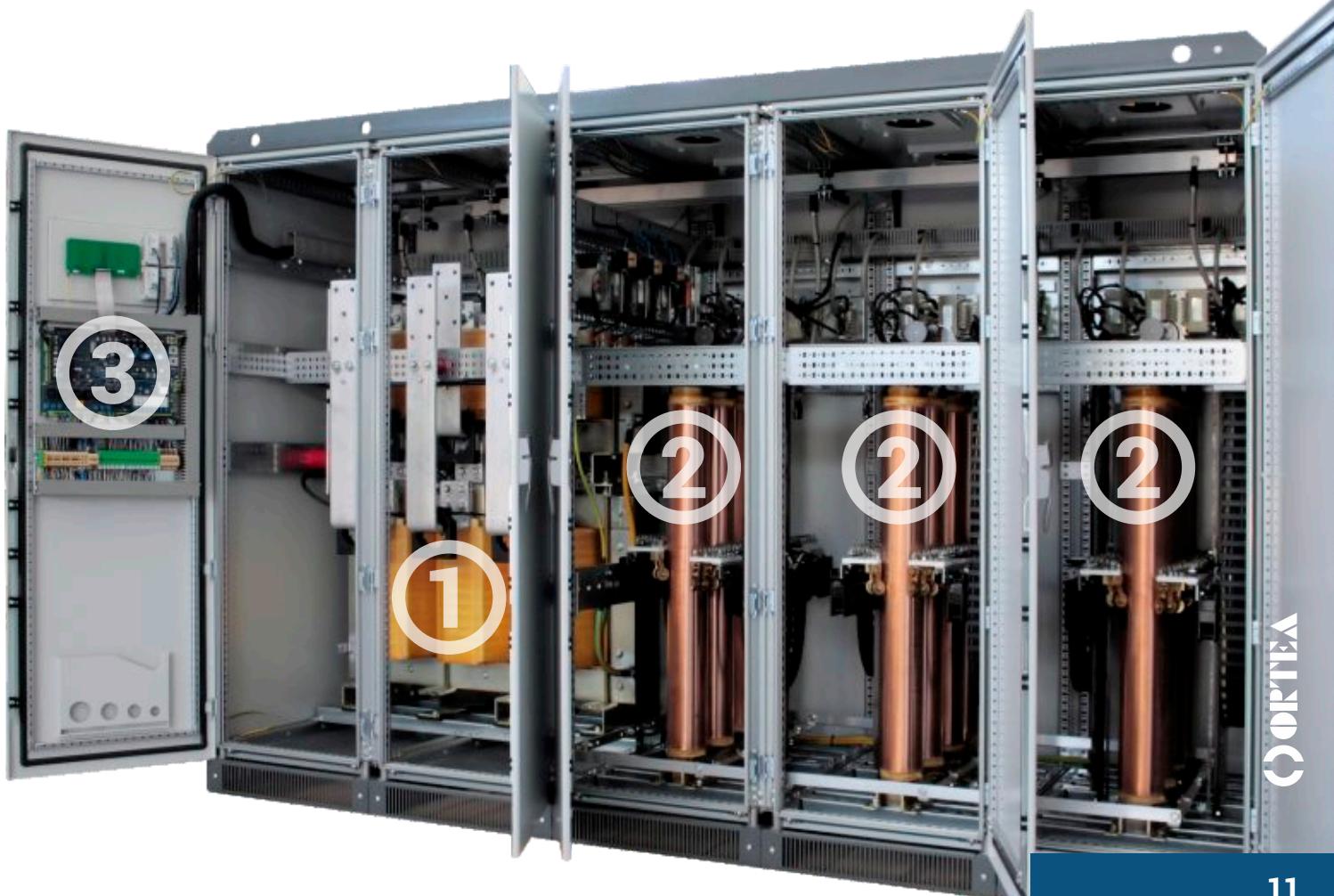
Basically, it is an autotransformer with continuously variable transformer ratio. The voltage intake varies depending on the position of the rolling contacts; therefore the voltage supplied to the booster transformer primary winding also varies. Being the voltage across the regulator contacts (and consequently 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 positoning of the regulator rollers regulation to work smoothly even in case of strong fluctuation of the input voltage.



*... ahead of time*



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

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

✓ standard

x not available

● optional



# Vega



single-phase  
**0.3-25kVA**

## Standard features

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

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

## Rating in relation to the input variation percentage

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

# Electro-mechanical digital voltage stabilisers

**Vega**  
single-phase  
**0.3-25kVA**

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

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

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

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

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

**Vega**  
single-phase  
**0.3-25kVA**

Type	Input voltage variation range	Rating	Input voltage range	Maximum input current	Output voltage ±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)

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

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

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



# Antares



single-phase  
**15-135kVA**

## Standard features

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

## Accessories

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

## Rating in relation to the input variation percentage

<b>±15%</b>	<b>±20%</b>	<b>±25%</b>	<b>±30%</b>	<b>+15%/-25%</b>	<b>+15%/-35%</b>	<b>+15%/-45%</b>
<b>35</b>	25	20	15	25	20	15
<b>45</b>	35	25	20	35	25	20
<b>60</b>	45	35	25	45	35	25
<b>80</b>	60	45	35	60	45	35
<b>100</b>	80	60	45	80	60	45
<b>135</b>	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 ( $\pm 1\%$ / $\pm 20\%$  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 arrester**.



## Instrumentation

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

# Electro-mechanical digital voltage stabilisers

**Antares**  
single-phase  
**15-135kVA**

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

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

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

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

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

**Antares**  
single-phase  
**15-135kVA**

Type	Input voltage variation range	Rating	Input voltage range	Maximum input current	Output voltage ±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)

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

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

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



# Orion

three-phase  
**2-135kVA**



## Standard features

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

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

**Orion**  
three-phase  
**2-135kVA**

**Rating in relation to the input variation percentage**

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

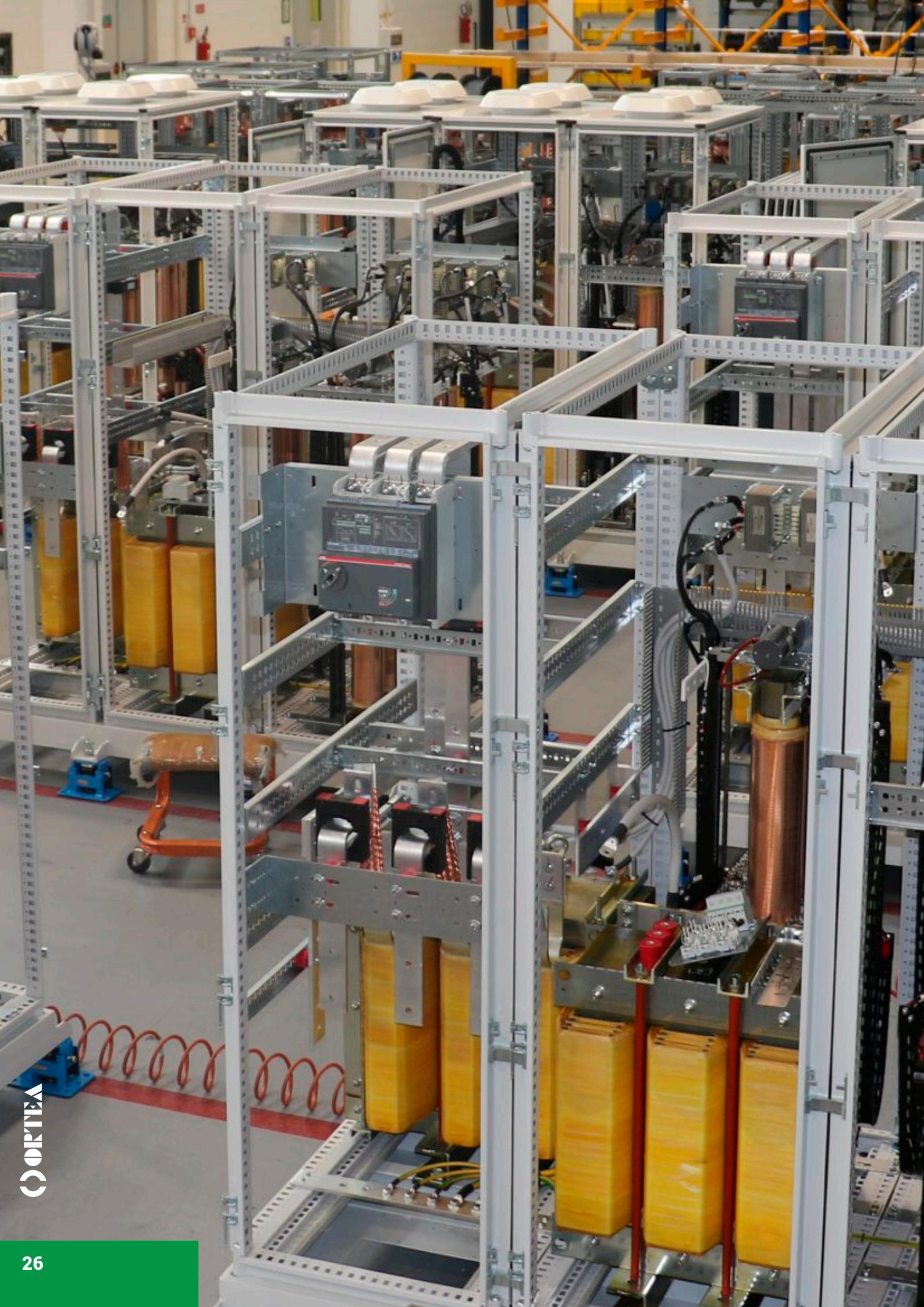
Type	Input voltage variation range	Rating	Input voltage range	Maximum input current	Output voltage ±0.5%	Output current	Efficiency	Speed regulation	Cabinet	Weight
	[%]	[kVA]	[V]	[A]	[V]	[A]	[%]	[ms/V]	Type	[kg]

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

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

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

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



**Orion**  
three-phase  
**2-135kVA**

Type	Input voltage variation range	Rating	Input voltage range	Maximum input current	Output voltage ±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)

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

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

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



# Orion Plus



three-phase  
**30-2000kVA**

## Standard features

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

\* 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

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

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.



## Orion Plus

three-phase  
30-2000kVA

**Rating in relation to the input variation percentage**

<b>±10%</b>	<b>±15%</b>	<b>±20%</b>	<b>±25%</b>	<b>±30%</b>	<b>+15%/-35%</b>	<b>+15%/-45%</b>
<b>125</b>	<b>80</b>	60	45	30	45	30
<b>160</b>	<b>105</b>	80	60	45	60	45
<b>200</b>	<b>135</b>	105	80	60	80	60
<b>250</b>	<b>160</b>	135	90	80	90	80
<b>320</b>	<b>200</b>	160	135	105	135	105
<b>400</b>	<b>250</b>	200	160	135	160	135
<b>500</b>	<b>320</b>	250	200	160	200	160
<b>630</b>	<b>400</b>	320	250	200	250	200
<b>800</b>	<b>500</b>	400	320	250	320	250
<b>1000</b>	<b>630</b>	500	400	320	400	320
<b>1250</b>	<b>800</b>	630	500	400	500	400
<b>1600</b>	<b>1000</b>	800	630	500	630	500
<b>2000</b>	<b>1250</b>	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 ±0.5%	Output current	Efficiency	Speed regulation	Cabinet	Weight
	[%]	[kVA]	[V]	[A]	[V]	[A]	[%]	[ms/V]	Type	[kg]

Input voltage variation range **±10%** (the values listed in the table are referred to 400V nominal voltage)

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

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

<b>60-20</b>	±20	60	320-480	108	400	87	>98	12	51	430
<b>80-15</b>	±15	80	340-460	136		115		16		
<b>80-20</b>	±20	80	320-480	144	400	115	>98	12		
<b>105-15</b>	±15	105	340-460	178		152		16		
<b>105-20</b>	±20	105	320-480	189	400	152	>98	12		
<b>135-15</b>	±15	135	340-460	229		195		16		
<b>135-20</b>	±20	135	320-480	243	400	195	>98	15		
<b>160-15</b>	±15	160	340-460	272		231		20		
<b>160-20</b>	±20	160	320-480	289	400	231	>98	15		
<b>200-15</b>	±15	200	340-460	340		289		20		
<b>200-20</b>	±20	200	320-480	361	400	289	>98	15		
<b>250-15</b>	±15	250	340-460	425		361		20		
<b>250-20</b>	±20	250	320-480	451	400	361	>98	15		
<b>320-15</b>	±15	320	340-460	543		462		20		
<b>320-20</b>	±20	320	320-480	577	400	462		15		
<b>400-15</b>	±15	400	340-460	679		577	>98	20		
<b>400-20</b>	±20	400	320-480	722	400	577	>98	15		
<b>500-15</b>	±15	500	340-460	849		722		20		
<b>500-20</b>	±20	500	320-480	902	400	722	>98	15		
<b>630-15</b>	±15	630	340-460	1070		909		20		
<b>630-20</b>	±20	630	320-480	1137	400	909	>98	18		
<b>800-15</b>	±15	800	340-460	1359		1155		24		
<b>800-20</b>	±20	800	320-480	1443	400	1155	>98	18		
<b>1000-15</b>	±15	1000	340-460	1698		1443		24		
<b>1000-20</b>	±20	1000	320-480	1804	400	1443	>98	18		
<b>1250-15</b>	±15	1250	340-460	2123		1804		24		

# Electro-mechanical digital voltage stabilisers

## Orion Plus three-phase **30-2000kVA**

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

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

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

**Orion Plus**  
three-phase  
**30-2000kVA**

Type	Input voltage variation range	Rating	Input voltage range	Maximum input current	Output voltage ±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)

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

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



# Sirius



three-phase  
**60-6000kVA**

## Standard features

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

\* 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

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

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# Sirius

## three-phase 60-6000kVA

**Rating in relation to the input variation percentage**

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



### 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 [kVA]	Input voltage range [V]	Maximum input current [A]	Output voltage ±0.5% [V]	Output current [A]	Efficiency [%]	Speed regulation [ms/V]	Cabinet Type	Weight [kg]
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Input voltage variation range **±10%** (the values listed in the table are referred to 400V nominal voltage)

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

# Electro-mechanical digital voltage stabilisers

**Sirius**  
three-phase  
**60-6000kVA**

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

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

<b>100-20</b>	±20	100	320-480	180	400	144	>98	15	54	600
<b>125-15</b>	±15	125	340-460	212		180		20		
<b>125-20</b>	±20	125	320-480	226	400	180	>98	15		
<b>160-15</b>	±15	160	340-460	272		231		20	42	670
<b>160-20</b>	±20	160	320-480	289	400	231	>98	15		
<b>200-15</b>	±15	200	340-460	340		289		20	42	720
<b>200-20</b>	±20	200	320-480	361	400	289	>98	15		
<b>250-15</b>	±15	250	340-460	425		361		20	42	800
<b>250-20</b>	±20	250	320-480	451	400	361	>98	15	55	850
<b>320-15</b>	±15	320	340-460	543		462		20		
<b>320-20</b>	±20	320	320-480	577	400	462	>98	15		
<b>400-15</b>	±15	400	340-460	679		577		20	55	1100
<b>400-20</b>	±20	400	320-480	722	400	577	>98	15		
<b>500-15</b>	±15	500	340-460	849		722		20	53	1400
<b>500-20</b>	±20	500	320-480	902	400	722	>98	15		
<b>630-15</b>	±15	630	340-460	1070		909		20	62	1700
<b>630-20</b>	±20	630	320-480	1137	400	909	>98	18		
<b>800-15</b>	±15	800	340-460	1359		1155		24	62	2200
<b>800-20</b>	±20	800	320-480	1443	400	1155	>98	18		
<b>1000-15</b>	±15	1000	340-460	1698		1443		24	63	2400
<b>1000-20</b>	±20	1000	320-480	1804	400	1443	>98	18		
<b>1250-15</b>	±15	1250	340-460	2123		1804		24	64	2650
<b>1250-20</b>	±20	1250	320-480	2255	400	1804	>98	18	70	3500
<b>1600-15</b>	±15	1600	340-460	2717		2309		24		
<b>1600-20</b>	±20	1600	320-480	2887	400	2309	>98	18		
<b>2000-15</b>	±15	2000	340-460	3396		2887		24	70	4150
<b>2000-20</b>	±20	2000	320-480	3609	400	2887	>98	22	80	5250
<b>2500-15</b>	±15	2500	340-460	4245	400	3609	>98	30	80	5250
<b>2500-20</b>	±20	2500	320-480	4511	400	3609	>98	22	80	6050
<b>3200-15</b>	±15	3200	340-460	5434	400	4619	>98	30	80	6050
<b>3200-20</b>	±20	3200	320-480	5774	400	4619	>98	27	90	10000
<b>4000-15</b>	±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 ±0.5%	Output current	Efficiency	Speed regulation	Cabinet	Weight
	[%]	[kVA]	[V]	[A]	[V]	[A]	[%]	[ms/V]	Type	[kg]

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

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

# Electro-mechanical digital voltage stabilisers

**Sirius**  
three-phase  
**60-6000kVA**

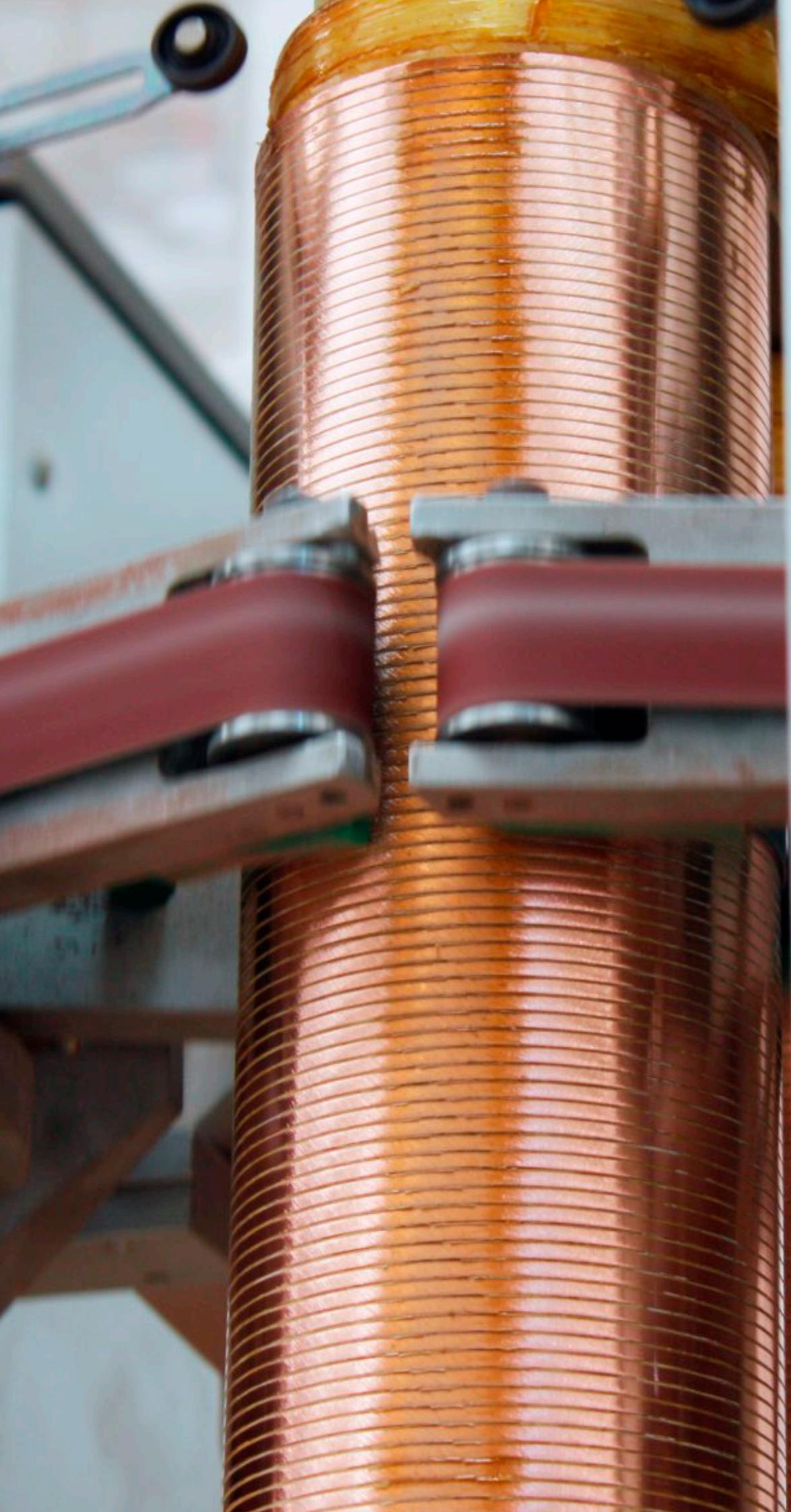
Type	Input voltage variation range	Rating	Input voltage range	Maximum input current	Output voltage ±0.5%	Output current	Efficiency	Speed regulation	Cabinet	Weight
	[%]	[kVA]	[V]	[A]	[V]	[A]	[%]	[ms/V]	Type	[kg]

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

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

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





# Sirius Advance



three-phase  
**60-4000kVA**

## Standard features

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

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 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

<b>±15%</b>	<b>±20%</b>	<b>±25%</b>	<b>±30%</b>
<b>125</b>	100	80	60
<b>160</b>	125	100	80
<b>200</b>	160	125	100
<b>250</b>	200	160	125
<b>320</b>	250	200	160
<b>400</b>	320	250	200
<b>500</b>	400	320	250
<b>630</b>	500	400	320
<b>800</b>	630	500	400
<b>1000</b>	800	630	500
<b>1250</b>	1000	800	630
<b>1600</b>	1250	1000	800
<b>2000</b>	1600	1250	1000
<b>2500</b>	2000	1600	1250
<b>3200</b>	2500	2000	1600
<b>4000</b>	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 ( $\cos \varphi$ ) 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

– **±15%, ±20%, ±25%, ±30%** (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



### 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**.

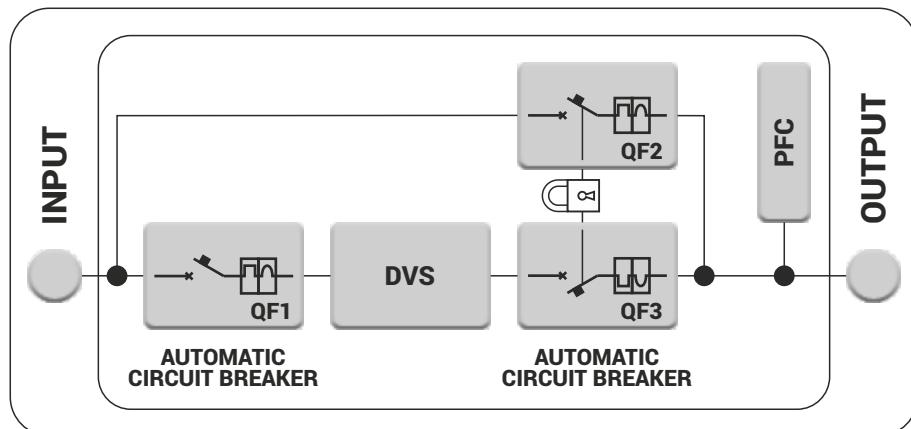
The auxiliary circuit is protected by **fuses**.



### Protection

Overvoltage protection:

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



# 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.



# Electro-mechanical digital voltage stabilisers

## Sirius Advance three-phase **60-4000kVA**

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

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

<b>100-20</b>	±20	100	320-480	180	400	144	>98	15	47	830
<b>125-15</b>	±15	125	340-460	212		180		20		
<b>125-20</b>	±20	125	320-480	226	400	180	>98	15	47	900
<b>160-15</b>	±15	160	340-460	272		231		20		
<b>160-20</b>	±20	160	320-480	289	400	231	>98	15	48	970
<b>200-15</b>	±15	200	340-460	340		289		20		
<b>200-20</b>	±20	200	320-480	361	400	289	>98	15	48	1070
<b>250-15</b>	±15	250	340-460	425		361		20		
<b>250-20</b>	±20	250	320-480	451	400	361	>98	15	48	1250
<b>320-15</b>	±15	320	340-460	543		462		20		
<b>320-20</b>	±20	320	320-480	577	400	462	>98	15	50	1500
<b>400-15</b>	±15	400	340-460	679		577		20		
<b>400-20</b>	±20	400	320-480	722	400	577	>98	15	57	1880
<b>500-15</b>	±15	500	340-460	849		722		20		
<b>500-20</b>	±20	500	320-480	902	400	722	>98	15	64	2200
<b>630-15</b>	±15	630	340-460	1070		909		20		
<b>630-20</b>	±20	630	320-480	1137	400	909	>98	18	64	2720
<b>800-15</b>	±15	800	340-460	1359		1155		24		
<b>800-20</b>	±20	800	320-480	1443	400	1155	>98	18	72	2950
<b>1000-15</b>	±15	1000	340-460	1698		1443		24		
<b>1000-20</b>	±20	1000	320-480	1804	400	1443	>98	18	73	4240
<b>1250-15</b>	±15	1250	340-460	2123		1804		24		
<b>1250-20</b>	±20	1250	320-480	2255	400	1804	>98	18	74	5000
<b>1600-15</b>	±15	1600	340-460	2717		2309		24		
<b>1600-20</b>	±20	1600	320-480	2887	400	2309	>98	18	75	5800
<b>2000-15</b>	±15	2000	340-460	3396		2887		24		
<b>2000-20</b>	±20	2000	320-480	3609	400	2887	>98	22	85	7100
<b>2500-15</b>	±15	2500	340-460	4245	400	3609	>98	30	88	7100
<b>2500-20</b>	±20	2500	320-480	4511	400	3609	>98	22	88	8350
<b>3200-15</b>	±15	3200	340-460	5434	400	4619	>98	30	89	8350
<b>3200-20</b>	±20	3200	320-480	5774	400	4619	>98	27	95	11800
<b>4000-15</b>	±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 ±0.5%	Output current	Efficiency	Speed regulation	Cabinet	Weight
	[%]	[kVA]	[V]	[A]	[V]	[A]	[%]	[ms/V]	Type	[kg]

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

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







three-phase  
**10-6000A**

#### Standard features

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

\* 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

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

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.





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 an 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 parametres that allow for the estimation of the energy saving are:

- Mains voltage different form 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 specifi 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

● <b>Incandescent, fluorescent and discharge lamps</b>	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.
● <b>LED lamps</b>	No advantage with these lamps due to the fact that they are supllied a constant voltage.
● <b>Asynchronous motor</b>	Low rating motors (typically under 20/25kW), widely spread at a level both domestic and industrial,are considered as voltage dependant.
● <b>Inverter driven asynchronous motors</b>	If the motor is driven by an inverter (speed electronic control) then it becomes voltage independent.
● <b>Production lines</b>	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.
● <b>Electronic devices</b>	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)

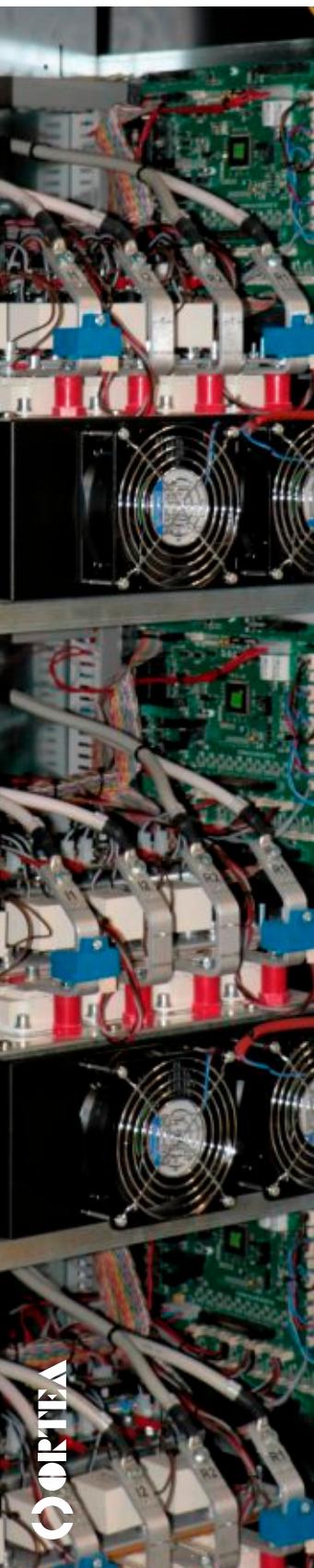
<b>OPTInet 10</b>	10	7	400-460	>97	16	22	90
<b>OPTInet 20</b>	20	15	400-460	>97	16	22	100
<b>OPTInet 30</b>	30	22	400-460	>97	16	22	110
<b>OPTInet 40</b>	40	30	400-460	>97	16	23	155
<b>OPTInet 60</b>	60	45	400-460	>97	16	23	180
<b>OPTInet 90</b>	90	65	400-460	>97	16	23	200
<b>OPTInet 125</b>	125	90	400-460	>97	16	31	320
<b>OPTInet 160</b>	160	115	400-460	>98	18	54	430
<b>OPTInet 200</b>	200	145	400-460	>98	18	54	490
<b>OPTInet 260</b>	260	185	400-460	>98	18	54	580
<b>OPTInet 300</b>	300	215	400-460	>98	18	55	710
<b>OPTInet 350</b>	350	250	400-460	>98	18	55	760
<b>OPTInet 400</b>	400	290	400-460	>98	18	55	850
<b>OPTInet 450</b>	450	325	400-460	>98	18	55	950
<b>OPTInet 500</b>	500	360	400-460	>98	18	55	1000
<b>OPTInet 600</b>	600	430	400-460	>98	18	55	1100
<b>OPTInet 700</b>	700	500	400-460	>98	18	55	1200
<b>OPTInet 800</b>	800	575	400-460	>98	18	55	1300
<b>OPTInet 1000</b>	1000	720	400-460	>98	18	55	1400
<b>OPTInet 1250</b>	1250	900	400-460	>98	18	67	1600
<b>OPTInet 1600</b>	1600	1150	400-460	>98	18	62	2000
<b>OPTInet 2000</b>	2000	1450	400-460	>98	18	63	2200
<b>OPTInet 2500</b>	2500	1800	400-460	>98	18	64	2400
<b>OPTInet 3000</b>	3000	2200	400-460	>98	24	70	4000
<b>OPTInet 4000</b>	4000	2900	400-460	>98	24	70	4300
<b>OPTInet 5000</b>	5000	3600	400-460	>98	30	80	6000
<b>OPTInet 6000</b>	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** ( $\cos \phi$ ) and can operate **with a load percentage varying between 0% and 100% on each phase**.

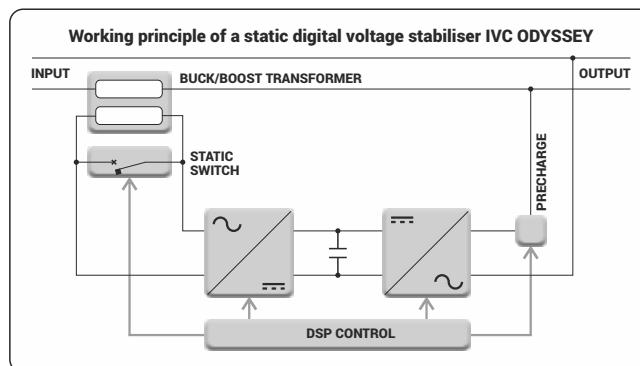
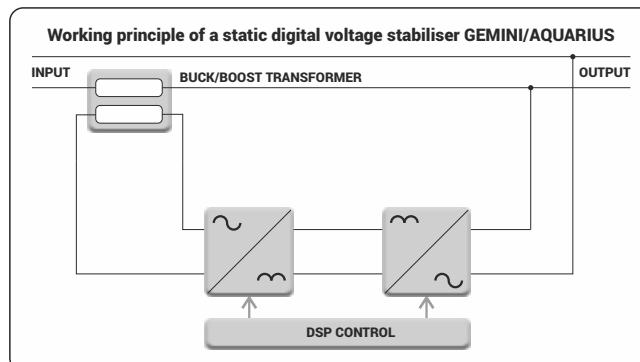
Basically, a static voltage stabiliser is made of a **buck/boost transformer**, a **conversion units** and an **electronic control** (with **IGBT static switches**).

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).



<b>Gemini</b>	Single-phase	<b>4-40kVA</b>
<b>Aquarius</b>	Three-phase	<b>10-120kVA</b>
<b>Odyssey</b>	Three-phase	<b>80-4000kVA</b>

## 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.

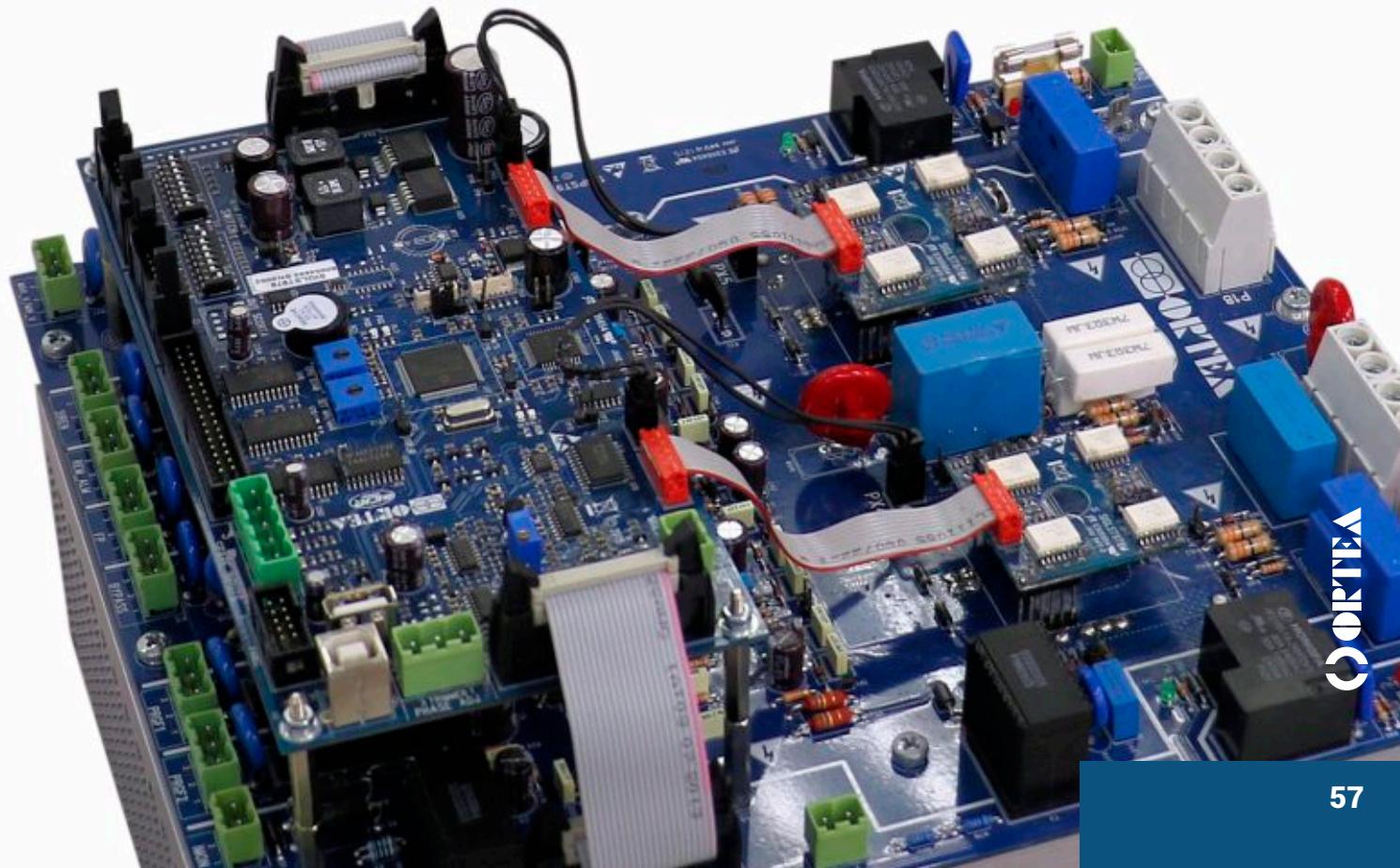
### 2. Conversion unit

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

\* 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%
<b>10</b>	7	5	4
<b>15</b>	10	7	5
<b>20</b>	15	10	7
<b>30</b>	20	15	10
<b>40</b>	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 ±1%	Output current	Efficiency	Correction time	Cabinet	Weight
	[%]	[kVA]	[V]	[A]	[V]	[A]	[%]			

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

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

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

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

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

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

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

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



# Aquarius / Aquarius Plus 10-120kVA three-phase



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

\* 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%
<b>30</b>	20	15	10
<b>45</b>	30	20	15
<b>60</b>	45	30	20
<b>90</b>	60	45	30
<b>120</b>	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 ±1%	Output current	Efficiency	Correction time	Cabinet	Weight
	[%]	[kVA]	[V]	[A]	[V]	[A]	[%]			

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

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

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

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

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

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

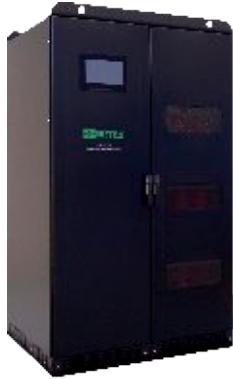
**Aquarius Plus** - Input voltage variation range **±30%/±25%** (the values listed in the table are referred to 400V nominal voltage)

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



# Odyssey

three-phase  
**80-4000kVA**



## Standard Features

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

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

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# Odyssey

three-phase  
**80-4000kVA**

**Rating in relation to the input variation percentage**

<b>±15%</b>	<b>±20%</b>	<b>±25%</b>	<b>±30%</b>
<b>160</b>	120	95	80
<b>200</b>	160	120	95
<b>250</b>	200	160	120
<b>320</b>	250	200	160
<b>400</b>	320	250	200
<b>500</b>	400	320	250
<b>630</b>	500	400	320
<b>800</b>	630	500	400
<b>1000</b>	800	630	500
<b>1250</b>	1000	800	630
<b>1600</b>	1250	1000	800
<b>2000</b>	1600	1250	1000
<b>2500</b>	2000	1600	1250
<b>3200</b>	2500	2000	1600
<b>4000</b>	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.



# Static digital voltage stabilisers IVC

**Odyssey**  
three-phase  
**80-4000kVA**

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

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

<b>120-20</b>	±20	120	320-480	217	400	173	>98	<3	1200x800x2000	650
<b>160-15</b>	±15	160	340-460	272		231				
<b>160-20</b>	±20	160	320-480	289	400	231	>98	<3	1200x800x2000	700
<b>200-15</b>	±15	200	340-460	340		289				
<b>200-20</b>	±20	200	320-480	361	400	289	>98	<3	1200x800x2000	750
<b>250-15</b>	±15	250	340-460	425		361				
<b>250-20</b>	±20	250	320-480	451	400	361	>98	<3	1200x800x2000	850
<b>320-15</b>	±15	320	340-460	543		462				
<b>320-20</b>	±20	320	320-480	577	400	462	>98	<3	1200x1000x2200	1000
<b>400-15</b>	±15	400	340-460	679		577				
<b>400-20</b>	±20	400	320-480	722	400	577	>98	<3	1200x1000x2200	1200
<b>500-15</b>	±15	500	340-460	849		722				
<b>500-20</b>	±20	500	320-480	902	400	722	>98	<3	1200x1000x2200	1500
<b>630-15</b>	±15	630	340-460	1070		909				
<b>630-20</b>	±20	630	320-480	1137	400	909	>98	<3	2400x1000x2200	2000
<b>800-15</b>	±15	800	340-460	1359		1155				
<b>800-20</b>	±20	800	320-480	1443	400	1155	>98	<3	2400x1000x2200	2200
<b>1000-15</b>	±15	1000	340-460	1698		1443				
<b>1000-20</b>	±20	1000	320-480	1804	400	1443	>98	<3	2400x1000x2200	2800
<b>1250-15</b>	±15	1250	340-460	2123		1804				
<b>1250-20</b>	±20	1250	320-480	2255	400	1804	>98	<3	4200x1000x2200	3800
<b>1600-15</b>	±15	1600	340-460	2717		2309				
<b>1600-20</b>	±20	1600	320-480	2887	400	2309	>98	<3	4200x1000x2200	4000
<b>2000-15</b>	±15	2000	340-460	3396		2887				
<b>2000-20</b>	±20	2000	320-480	3609	400	2887	>98	<3	4200x1000x2200	5600
<b>2500-15</b>	±15	2500	340-460	4245		3609				
<b>2500-20</b>	±20	2500	320-480	4511	400	3609	>98	<3	4200x1000x2200	6900
<b>3200-15</b>	±15	3200	340-460	5434		4619				
<b>3200-20</b>	±20	3200	320-480	5774	400	4619	>98	<3	4200x1000x2200	10300
<b>4000-15</b>	±15	4000	340-460	6793		5774				

\* Sizes and weights may change.

**Odyssey**  
three-phase  
**80-4000kVA**

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

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

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

\* 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]
<b>10</b>	6	not needed	
<b>16</b>	6	not needed	
<b>20</b>	6	not needed	
<b>25</b>	6	not needed	
<b>32</b>	6	not needed	
<b>40</b>	6	not needed	
<b>50</b>	6	not needed	
<b>63</b>	6	not needed	
<b>80</b>	10	not needed	
<b>100</b>	16	not needed	
<b>125</b>	18	not needed	
<b>160</b>	25	not needed	
<b>200</b>	36	not needed	
<b>250</b>	36	not needed	

Nominal current	Breaking capacity	Additional module	
[A]	[kA]	Length	Weight
<b>320</b>	36	not needed	
<b>400</b>	36	not needed	
<b>500</b>	36	not needed	
<b>630</b>	36	not needed	
<b>800</b>	50	not needed	
<b>1000</b>	50	not needed	
<b>1250</b>	50	not needed	
<b>1600</b>	50	not needed	
<b>2000</b>	65	600	90
<b>2500</b>	65	600	90
<b>3200</b>	85	600	90
<b>4000</b>	85	600	90
<b>5000</b>	100	1200	200
<b>6300</b>	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]
<b>10</b>	not needed	
<b>16</b>	not needed	
<b>20</b>	not needed	
<b>25</b>	not needed	
<b>32</b>	not needed	
<b>40</b>	not needed	
<b>50</b>	not needed	
<b>63</b>	not needed	
<b>80</b>	not needed	
<b>100</b>	not needed	
<b>125</b>	not needed	
<b>160</b>	not needed	
<b>200</b>	not needed	
<b>250</b>	not needed	

Nominal current	Additional module	
	Length	Weight
[A]	[mm]	[kg]
<b>320</b>	not needed	
<b>400</b>	not needed	
<b>500</b>	not needed	
<b>630</b>	not needed	
<b>800</b>	not needed	
<b>1000</b>	600	80
<b>1250</b>	600	80
<b>1600</b>	600	80
<b>2000</b>	600	90
<b>2500</b>	600	90
<b>3200</b>	600	90
<b>4000</b>	1200	200
<b>5000</b>	1200	200
<b>6300</b>	1200	200



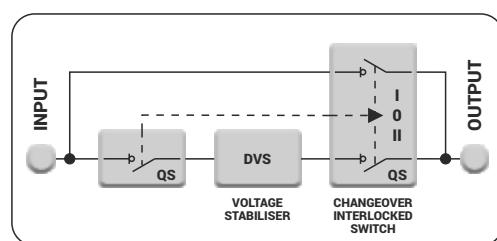


## Manual by-pass line

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:

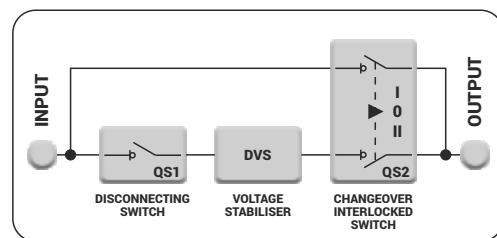
#### 1. – I-0-II changeover interlocked switch (QS)



Nominal current	Additional module	
[A]	Length [mm]	Weight [kg]
<b>10</b>	not needed	
<b>16</b>	not needed	
<b>20</b>	not needed	
<b>25</b>	not needed	
<b>32</b>	not needed	
<b>40</b>	not needed	
<b>50</b>	not needed	
<b>63</b>	not needed	
<b>80</b>	not needed	
<b>100</b>	not needed	

#### 2. – Input disconnecting switch (QS1)

- Output I-0-II changeover interlocked switch (QS2)

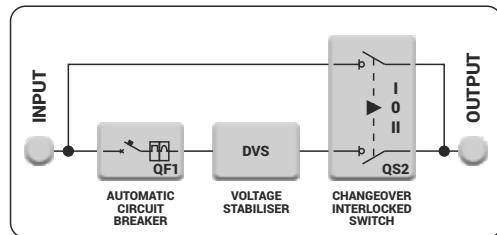


Nominal current	Additional module	
[A]	Length [mm]	Weight [kg]
<b>125</b>	400	70
<b>160</b>	400	70
<b>200</b>	400	70
<b>250</b>	400	70
<b>320</b>	400	70
<b>400</b>	400	70
<b>500</b>	600	90
<b>630</b>	600	90
<b>800</b>	600	90
<b>1000</b>	600	90
<b>1250</b>	600	90
<b>1600</b>	600	120
<b>2000</b>	1600	200
<b>2500</b>	1600	200

Nominal current	Additional module	
[A]	Length [mm]	Weight [kg]
<b>320</b>	400	70
<b>400</b>	400	70
<b>500</b>	600	90
<b>630</b>	600	90
<b>800</b>	600	90
<b>1000</b>	600	90
<b>1250</b>	600	90
<b>1600</b>	600	90
<b>2000</b>	1600	200
<b>2500</b>	1600	200

#### 3. – Input automatic circuit breaker (QF1)

- Output I-0-II changeover interlocked switch (QS2)



Nominal current	Additional module	
[A]	Length [mm]	Weight [kg]
<b>125</b>	400	70
<b>160</b>	400	70
<b>200</b>	400	70
<b>250</b>	400	70
<b>320</b>	400	70
<b>400</b>	400	70
<b>500</b>	600	90
<b>630</b>	600	90
<b>800</b>	600	90
<b>1000</b>	600	90
<b>1250</b>	600	90
<b>1600</b>	600	120
<b>2000</b>	1600	200
<b>2500</b>	1600	200

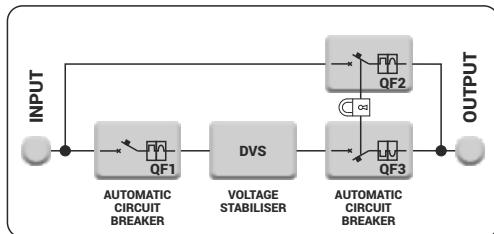
## Total protection kit

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.

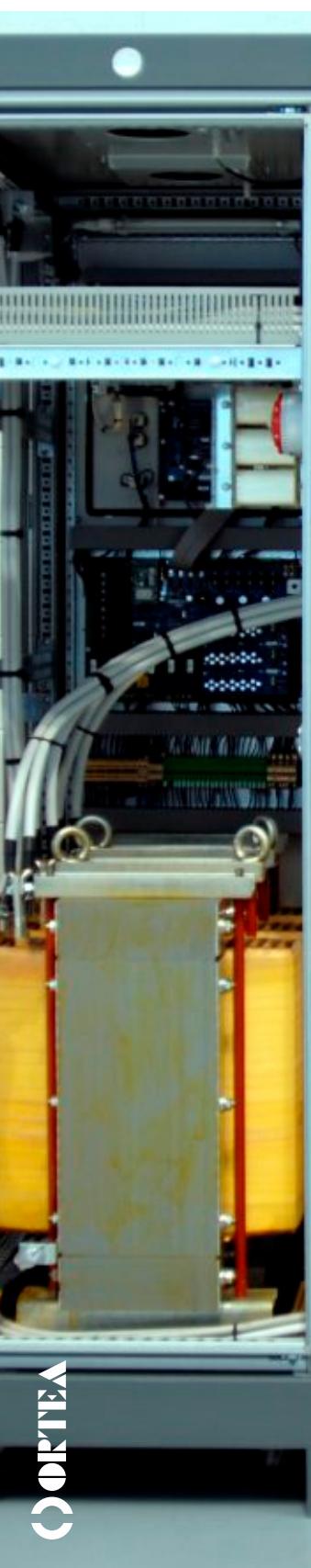
Current		Additional module	
Input [A]	Output [A]	Length [mm]	Weight [kg]
<b>200</b>	<b>160</b>	400**	100
<b>250</b>	<b>200</b>	400**	100
<b>320</b>	<b>250</b>	400**	110
<b>400</b>	<b>320</b>	400**	125
<b>500</b>	<b>400</b>	400**	125
<b>630</b>	<b>500</b>	400**	125
<b>800</b>	<b>630</b>	600**	170
<b>1000</b>	<b>800</b>	600**	200
<b>1250</b>	<b>1000</b>	600**	200
<b>1600</b>	<b>1250</b>	600**	200
<b>2000</b>	<b>1600</b>	1200***	630
<b>2500</b>	<b>2000</b>	1200***	640
<b>3200</b>	<b>2500</b>	1200***	650
<b>4000</b>	<b>3200</b>	1200***	730
<b>5000*</b>	<b>4000</b>	2000***	1100
<b>6300*</b>	<b>5000</b>	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]
<b>8</b>	2	13	48
<b>13</b>	3	13	59
<b>21</b>	5	22	79
<b>34</b>	8	22	95
<b>43</b>	10	23	110
<b>52</b>	12	23	113
<b>65</b>	15	23	115
<b>86</b>	20	23	125
<b>108</b>	25	31	135
<b>130</b>	30	31	150
<b>173</b>	40	40	160
<b>217</b>	50	40	220
<b>273</b>	63	40	240
<b>304</b>	70	40	260
<b>347</b>	80	2x40	285
<b>391</b>	90	2x40	300
<b>435</b>	100	2x41	335
<b>478</b>	110	2x41	355
<b>543</b>	125	2x41	400
<b>770</b>	175	2x41	455

**Dzn0 three-phase transformer for ORION PLUS, SIRIUS & SIRIUS ADVANCE**

Current	Power	Cabinet (TRS+DVS)	Additional weight
[A]	[kVA]	[tipo]	[kg]
<b>130</b>	90	51	430
<b>144</b>	100	51	580
<b>158</b>	110	51	600
<b>180</b>	125	51	630
<b>202</b>	140	51	660
<b>231</b>	160	51	710
<b>260</b>	180	51	750
<b>289</b>	200	51	800
<b>325</b>	225	55	910
<b>361</b>	250	55	960
<b>404</b>	280	55	1020
<b>462</b>	320	55	1070
<b>505</b>	350	55	1120
<b>578</b>	400	55	1210
<b>650</b>	450	55	1290
<b>722</b>	500	55	1430
<b>910</b>	630	61	1700
<b>1156</b>	800	61	2000
<b>1445</b>	1000	61	2450
<b>1806</b>	1250	62	3100
<b>2312</b>	1600	62	3600
<b>2890</b>	2x1000	63	4900
<b>3612</b>	2x1250	63	5800
<b>4650</b>	2x1600	80	7200
<b>5780</b>	2x2000	80	8600
<b>7250</b>	2x2500	91	10600

**Dyn11 three-phase transformer for ORION**

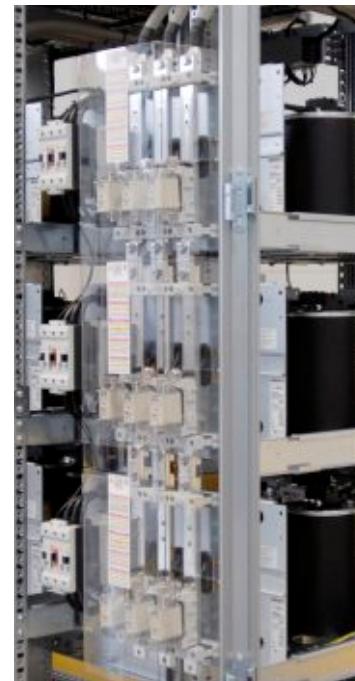
Current	Power	Cabinet (TRS+DVS)	Additional weight
[A]	[kVA]	[tipo]	[kg]
<b>17</b>	12	31	135
<b>21</b>	15	31	145
<b>28</b>	20	31	170
<b>36</b>	25	40	205
<b>43</b>	30	40	225
<b>57</b>	40	40	290
<b>72</b>	50	2x40	335
<b>91</b>	63	2x40	365
<b>101</b>	70	2x40	370
<b>115</b>	80	2x40	395

## 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	PFC power	Additional module	
		Length	Weight
[kVA]	[kvar]	[mm]	[kg]
<b>80</b>	<b>50</b>	400	85
<b>100</b>	<b>50</b>	400	85
<b>125</b>	<b>75</b>	400	115
<b>160</b>	<b>75</b>	400	115
<b>200</b>	<b>100</b>	400	135
<b>250</b>	<b>150</b>	600	160
<b>320</b>	<b>150</b>	600	160
<b>400</b>	<b>200</b>	600	190
<b>500</b>	<b>250</b>	600	220

DVS power	PFC power	Additional module	
		Length	Weight
[kVA]	[kvar]	[mm]	[kg]
<b>630</b>	<b>300</b>	600	230
<b>800</b>	<b>350</b>	600	250
<b>1000</b>	<b>500</b>	1600	830
<b>1250</b>	<b>600</b>	1600	890
<b>1600</b>	<b>750</b>	2400	1245
<b>2000</b>	<b>900</b>	2400	1335
<b>2500</b>	<b>1200</b>	3200	1780
<b>3200</b>	<b>1500</b>	4800	2490
<b>4000</b>	<b>2000</b>	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	Type	Discharge current	
		[A]	
<b>CLASS I</b>	<b>ORTEA</b>	25kA/pole	2 poles
<b>CLASS I</b>	<b>ORTEA</b>	25kA/pole	4 poles
<b>CLASS II</b>	<b>ORTEA</b>	20kA/pole	2 poles
<b>CLASS II</b>	<b>ORTEA</b>	20kA/pole	4 poles

Current	Type	Discharge current	
		[A]	
<b>CLASS I</b>	<b>DEHN</b>	100kA	2 poles
<b>CLASS I</b>	<b>DEHN</b>	200kA	4 poles
<b>CLASS II</b>	<b>DEHN</b>	40kA	2 poles
<b>CLASS II</b>	<b>DEHN</b>	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]	
<b>FL170.50.00</b>	50	
<b>FL170.100.00</b>	100	
<b>FL170.150.00</b>	150	
<b>FL170.300.00</b>	300	
<b>FL170.500.00</b>	500	

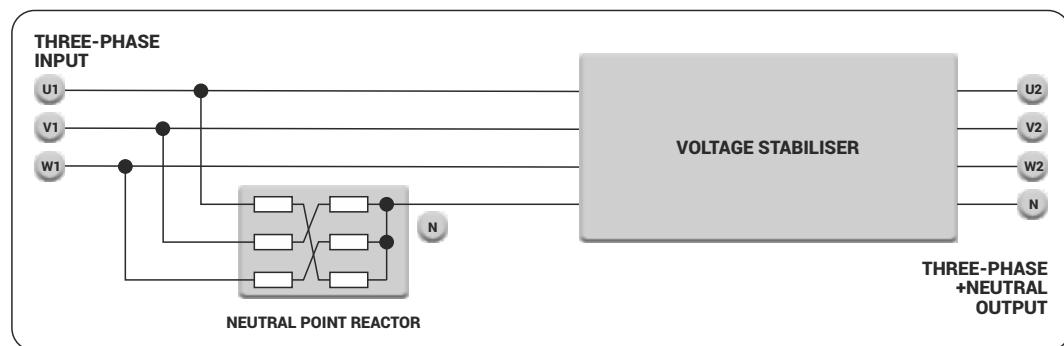
Type	Rated current	
	[A]	
<b>FL155.800.00</b>	800	
<b>FL155.1000.00</b>	1000	
<b>FL155.1600.00</b>	1600	
<b>FL155.2500.00</b>	2500	





## 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.



# Cabinet size

Type	Dimensions [mm]		
	W	D	H
<b>11</b>	210	400	200
<b>12</b>	300	460	300
<b>13</b>	300	560	300
<b>21</b>	300	500	900
<b>22</b>	410	530	1200
<b>23</b>	410	680	1200
<b>31</b>	600	600	1600
<b>32</b>	600	600	2000
<b>33</b>	800	600	2000
<b>35</b>	800	600	1800
<b>36</b>	1200	600	1600
<b>37</b>	1200	600	2000
<b>40</b>	600	800	1600
<b>41</b>	1000	800	1800
<b>42</b>	800	800	2000
<b>43</b>	1200	800	1600
<b>44</b>	2000	800	2000
<b>46</b>	1800	800	1600
<b>47</b>	1600	800	1800
<b>48</b>	2200	800	1800
<b>49</b>	2200	800	2000
<b>50</b>	2400	800	1800
<b>51</b>	600	800	1800
<b>52</b>	1800	800	2000
<b>53</b>	1200	800	2000
<b>54</b>	600	800	2000
<b>55</b>	1200	800	1800
<b>56</b>	1800	800	1800
<b>57</b>	2400	800	2000
<b>58</b>	3000	800	2000
<b>59</b>	3600	800	2100

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

<b>BTS series</b>	Telecommunication (TLC)
<b>DLC series</b>	Line conditioners
<b>BC series</b>	Broadcasting
<b>AOT series</b>	Mains filters
<b>OUTDOOR series</b>	Outdoor installations
<b>F&amp;B series</b>	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 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.

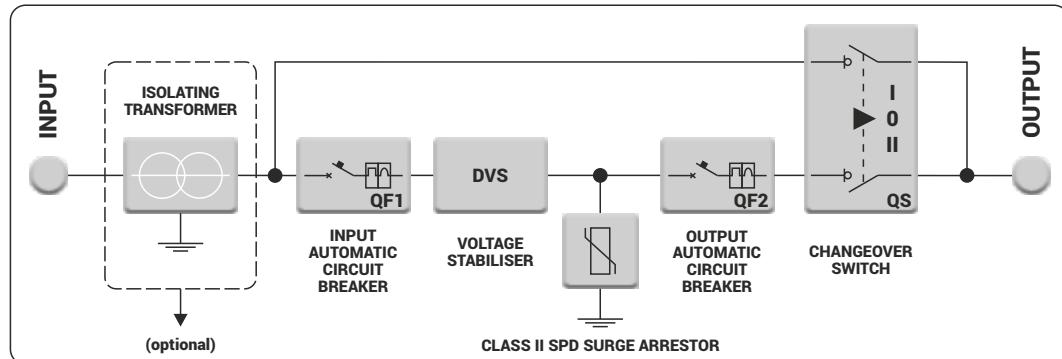
### Main features

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



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.

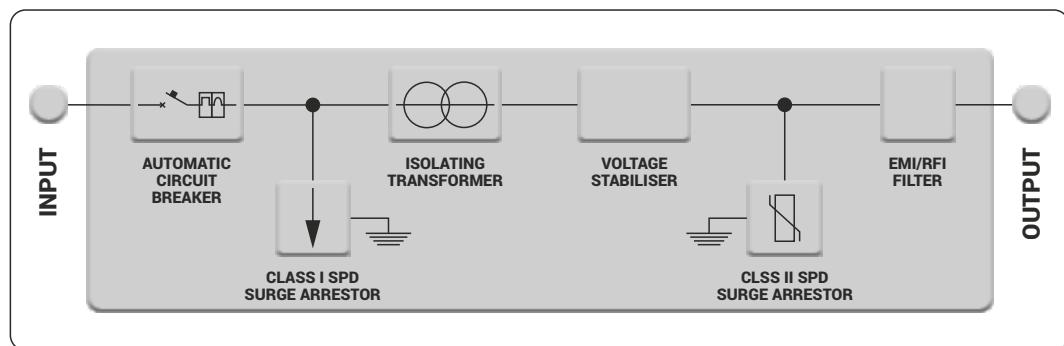
## DLC series

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).

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



## 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 in side 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).



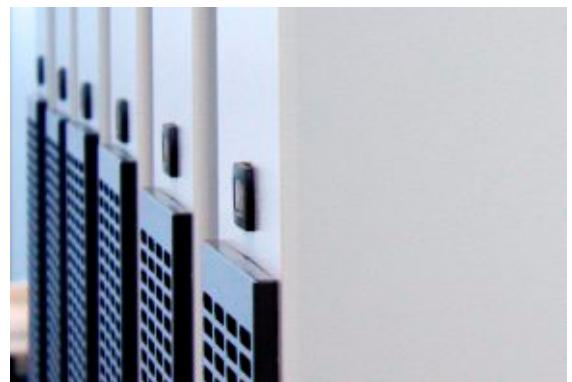
### F&B series

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**.



# Warranty terms



## 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.

# ORTEA NE XT

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