

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.



The belief that product quality and Customer satisfaction are the core of a modern organisation, led to the implementation of an ISO9001:2008 certified Company Managing System.

The achievement of the ISO14001:2004 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.



ISO 9001 • ISO 14001
OHSAS 18001





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)



three-phase
60-6000kVA

Sirius



Standard features

Voltage stabilisation	Independent phase control
Output voltage selectable via display, PC and/or Ethernet*	from 210 to 255V (L-N) from 360 to 440V (L-L)
Frequency	50/60Hz ±5%
Admitted load variation	Up to 100%
Admitted load imbalance	100%
Cooling	Natural air ventilation. Up to 35°C aided with fans
Ambient temperature	-25/+45°C
Storage temperature	-25/+60°C
Max relative humidity	95%
Admitted overload	200% 2 min.
Harmonic distortion	None introduced
Colour	RAL 7035
Protection degree	IP21
Instrumentation	– Input & output digital multimeter with RS485 port – LCD display
Installation	Indoor
Regulator overload protection	Digital control
Communication system	Ethernet / GPRS / USB / MODBUS TCP/IP
Overvoltage protection	– Class I input surge arrestor – Class II output surge arrestor – Optimal voltage return through supercapacitors – in case of blackout

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

Accessories



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



All ORTEA stabilisers are designed and built in compliance with the Low Voltage and Electromagnetic Compatibility European Directives with regard to the CE marking requirements. ORTEA products are built with suitable quality components and that the manufacturing process is constantly verified in accordance with the Quality Control Plans which the Company applies in compliance with the ISO 9001:2008 Standards. The commitment towards environmental issues and safety at work matters is guaranteed by the certification of the Management System according to the ISO14001:2004 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 hold therefore any contractual value.

Sirius

three-phase
60-6000kVA

Rating in relation to the input variation percentage

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

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

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

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

In any case, the presence of the **neutral wire is required**. The stabiliser can also operate without neutral wire by adding a device able to generate it (D/z_n or D /y_n 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** (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 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.

Monitoring activities can be **run remotely** by installing the **STABIMON software** provided with the unit on a PC (connected to the stabiliser via Ethernet or a GPRS modem). The readings are **stored locally by the control system** and **sent** via the **Internet** (if an Ethernet or GPRS modem connection is established) to a server at Ortea HQ, thus providing the Service centre with the necessary information.

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



Sirius

three-phase

60-6000kVA



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. 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**.

Remote communication with the stabiliser

The all-in-one control card manages also the remote **communication** to the voltage stabiliser. The card is fitted with a **local display** (showing alarms and setting parameters) and with a keypad used to interact with the card itself.

The **remote data monitoring system** enables the user and Ortea Service Centre the chance of monitoring the stabiliser on-line wherever installed by means of the **STABIMON** dedicated software, supplied with each unit.

Alternatively, the communication with the stabiliser can be established via the **Modbus TCP/IP** protocol. Should the Ethernet connection not be available, the remote communication can be performed via an embedded GPRS modem. A common SIM data card purchased locally and inserted in the modem allows for a simple data transmission.



STABIMON software

STABIMON is the software managing the communication with the voltage stabiliser. The program can be run when the user wishes to communicate with the stabiliser or simply read the collected information.

In a single page, a dashboard provides with the main information concerning voltage, current, power and alarm status.

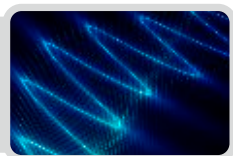
On the left-hand side of the page, each phase input voltage, current and cosphi are shown, while on the right-hand side, the corresponding output parameters are shown.

In the central area between input and output parameters, mains frequency and general information for the stabiliser identification are displayed.

The lower part of the screen is used to visualise communication errors (if any), input and output active, reactive and apparent powers, voltages and temperature measured on the base board.

The LED status as available on the stabiliser control panel is also reproduced (the LEDs are red in case of error).

Graphs and statistics relevant to the stabiliser operating status can also be displayed.



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.

Sirius

three-phase
60-6000kVA



Long life

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



Protection

The stabiliser is provided of an **electronic voltage regulator protection system** activates in case of overload on the voltage regulator.
In such conditions, the **load supply is not interrupted**.
The auxiliary circuit is protected by **fuses**.



Protection

Overvoltage protection:
– Class I input **surge arrestor**.
– Class II output **surge arrestor**.



Protection

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



Instrumentation

Two **multi-task digital analyser** mounted on the front panel and fitted with RS485 port (linked and phase voltage current, frequency, power factor, active power, reactive power, apparent power etc.).



Monitoring

The local **display** embedded in the front panel enables the visualization of **operating mode** and setting data.



Monitoring

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



Monitoring

Monitoring activities can be run remotely by installing on a PC (connected to the stabiliser via Ethernet) the **STABIMON software** provided with the unit.
It is also possible to communicate with the stabiliser with the **Modbus TCP/IP** protocol.



Monitoring

The control system is able to interface with the **Internet** thanks to its capability to connect with **Ethernet** and **Gprs** protocols.
This allows for a remote monitoring of the equipment made by Ortea at its headquarters, thus guaranteeing **prompt assistance** worldwide.

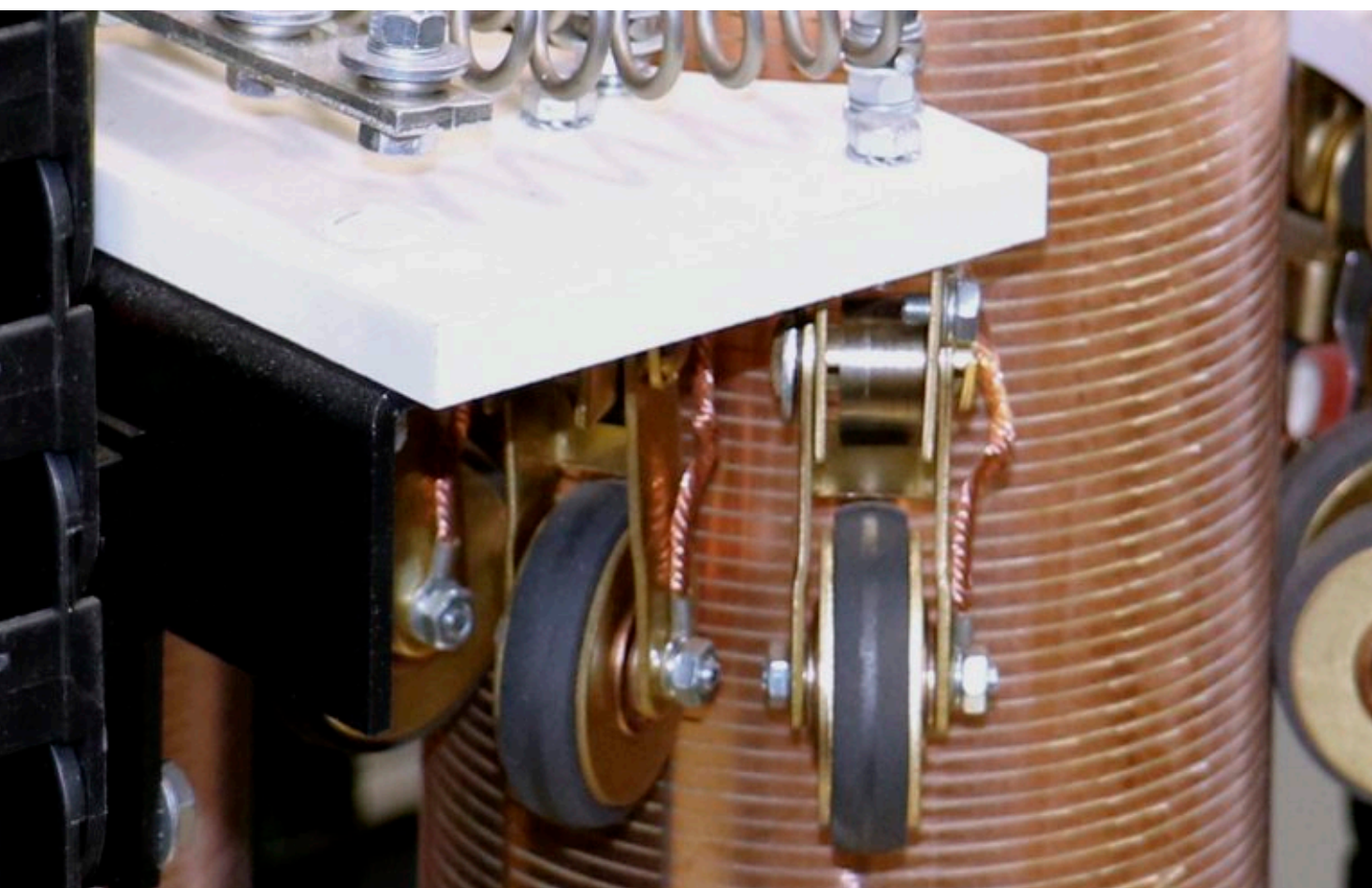
Sirius

three-phase
60-6000kVA

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

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

200-10	± 10	200	360-440	321	400	289	>98	30	54	650
250-10	± 10	250	360-440	401	400	361	>98	30	54	670
320-10	± 10	320	360-440	514	400	462	>98	30	55	900
400-10	± 10	400	360-440	642	400	578	>98	30	55	950
500-10	± 10	500	360-440	803	400	723	>98	30	55	1050
630-10	± 10	630	360-440	1011	400	910	>98	30	55	1300
800-10	± 10	800	360-440	1284	400	1156	>98	30	53	1400
1000-10	± 10	1000	360-440	1606	400	1445	>98	30	62	1700
1250-10	± 10	1250	360-440	2007	400	1806	>98	36	62	2200
1600-10	± 10	1600	360-440	2569	400	2312	>98	36	63	2400
2000-10	± 10	2000	360-440	3211	400	2890	>98	36	64	3000
2500-10	± 10	2500	360-440	4014	400	3613	>98	36	70	4000
3200-10	± 10	3200	360-440	5138	400	4624	>98	36	70	4300
4000-10	± 10	4000	360-440	6422	400	5780	>98	45	80	6000
5000-10	± 10	5000	360-440	8028	400	7225	>98	45	80	7300
6000-10	± 10	6000	360-440	9634	400	8671	>98	54	90	11000



Sirius

three-phase
60-6000kVA

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

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

100-20	± 20	100	320-480	180		144		15		
125-15	± 15	125	340-460	213	400	181	>98	20	54	650
125-20	± 20	125	320-480	226		181		15		
160-15	± 15	160	340-460	272	400	231	>98	20	54	670
160-20	± 20	160	320-480	289		231		15		
200-15	± 15	200	340-460	340	400	289	>98	20	55	900
200-20	± 20	200	320-480	361		289		15		
250-15	± 15	250	340-460	425	400	361	>98	20	55	950
250-20	± 20	250	320-480	452		361		15		
320-15	± 15	320	340-460	544	400	462	>98	20	55	1050
320-20	± 20	320	320-480	578		462		15		
400-15	± 15	400	340-460	680	400	578	>98	20	55	1300
400-20	± 20	400	320-480	722		578		15		
500-15	± 15	500	340-460	851	400	723	>98	20	53	1400
500-20	± 20	500	320-480	903		723		15		
630-15	± 15	630	340-460	1071	400	910	>98	20	62	1700
630-20	± 20	630	320-480	1138		910		18		
800-15	± 15	800	340-460	1360	400	1156	>98	24	62	2200
800-20	± 20	800	320-480	1445		1156		18		
1000-15	± 15	1000	340-460	1700	400	1445	>98	24	63	2400
1000-20	± 20	1000	320-480	1806		1445		18		
1250-15	± 15	1250	340-460	2125	400	1806	>98	24	64	3000
1250-20	± 20	1250	320-480	2258		1806		18		
1600-15	± 15	1600	340-460	2720	400	2312	>98	24	70	4000
1600-20	± 20	1600	320-480	2890		2312		18		
2000-15	± 15	2000	340-460	3400	400	2890	>98	24	70	4300
2000-20	± 20	2000	320-480	3613		2890		22		
2500-15	± 15	2500	340-460	4251	400	3613	>98	30	80	6000
2500-20	± 20	2500	320-480	4516		3613		22		
3200-15	± 15	3200	340-460	5440	400	4624	>98	30	80	7300
3200-20	± 20	3200	320-480	5780		4624		27		
4000-15	± 15	4000	340-460	6800	400	5780	>98	36	90	11000

Sirius

three-phase
60-6000kVA

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

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

60-30	± 30	60	280-520	124		87	>98	10	54	650
80-25	± 25	80	300-500	154	400	116	>98	12	54	670
80-30	± 30	80	280-520	165		116	>98	10	54	670
100-25	± 25	100	300-500	193	400	144	>98	12	55	900
100-30	± 30	100	280-520	206		144	>98	10	55	900
125-25	± 25	125	300-500	241	400	181	>98	12	55	950
125-30	± 30	125	280-520	258		181	>98	10	55	950
160-25	± 25	160	300-500	308	400	231	>98	12	55	1050
160-30	± 30	160	280-520	330		231	>98	10	55	1050
200-25	± 25	200	300-500	385	400	289	>98	12	55	1300
200-30	± 30	200	280-520	413		289	>98	10	55	1300
250-25	± 25	250	300-500	482	400	361	>98	12	53	1400
250-30	± 30	250	280-520	516		361	>98	10	53	1400
320-25	± 25	320	300-500	617	400	462	>98	12	62	1700
320-30	± 30	320	280-520	661		462	>98	10	62	1700
400-25	± 25	400	300-500	770	400	578	>98	12	62	2200
400-30	± 30	400	280-520	826		578	>98	12	62	2200
500-25	± 25	500	300-500	963	400	723	>98	15	63	2400
500-30	± 30	500	280-520	1032		723	>98	12	63	2400
630-25	± 25	630	300-500	1214	400	910	>98	15	64	3000
630-30	± 30	630	280-520	1300		910	>98	12	64	3000
800-25	± 25	800	300-500	1541	400	1156	>98	15	70	4000
800-30	± 30	800	280-520	1651		1156	>98	12	70	4000
1000-25	± 25	1000	300-500	1927	400	1445	>98	15	70	4300
1000-30	± 30	1000	280-520	2064		1445	>98	12	70	4300
1250-25	± 25	1250	300-500	2408	400	1806	>98	15	80	6000
1250-30	± 30	1250	280-520	2580		1806	>98	15	80	6000
1600-25	± 25	1600	300-500	3083	400	2312	>98	18	80	7300
1600-30	± 30	1600	280-520	3303		2312	>98	15	80	7300
2000-25	± 25	2000	300-500	3853	400	2890	>98	18	90	11000
2000-30	± 30	2000	280-520	4130		2892	>98	18	90	11000
2500-25	± 25	2500	300-500	4817	400	3613	>98	22	90	11000

Sirius

three-phase
60-6000kVA

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

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

80-15/35	+15/-35	80	260-460	178	400	116	>98	12	54	770
100-15/35	+15/-35	100	260-460	222	400	144	>98	12	54	800
125-15/35	+15/-35	125	260-460	278	400	181	>98	12	55	1050
160-15/35	+15/-35	160	260-460	356	400	231	>98	12	55	1150
200-15/35	+15/-35	200	260-460	444	400	289	>98	12	55	1250
250-15/35	+15/-35	250	260-460	556	400	361	>98	12	52	1700
320-15/35	+15/-35	320	260-460	711	400	462	>98	12	52	1800
400-15/35	+15/-35	400	260-460	889	400	578	>98	12	63	2100
500-15/35	+15/-35	500	260-460	1111	400	723	>98	15	63	2900
630-15/35	+15/-35	630	260-460	1400	400	910	>98	15	64	3050
800-15/35	+15/-35	800	260-460	1778	400	1156	>98	15	70	3800
1000-15/35	+15/-35	1000	260-460	2223	400	1445	>98	15	70	4450
1250-15/35	+15/-35	1250	260-460	2779	400	1806	>98	15	72	4800
1600-15/35	+15/-35	1600	260-460	3557	400	2312	>98	18	82	7700
2000-15/35	+15/-35	2000	260-460	4446	400	2890	>98	18	82	9050
2500-15/35	+15/-35	2500	260-460	5558	400	3613	>98	22	92	13500

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

60-15/45	+15/-45	60	220-460	158	400	87	>98	10	54	850
80-15/45	+15/-45	80	220-460	211	400	116	>98	10	54	900
100-15/45	+15/-45	100	220-460	262	400	144	>98	10	55	1200
125-15/45	+15/-45	125	220-460	329	400	181	>98	10	55	1250
160-15/45	+15/-45	160	220-460	420	400	231	>98	10	55	1400
200-15/45	+15/-45	200	220-460	525	400	289	>98	10	52	1900
250-15/45	+15/-45	250	220-460	656	400	361	>98	10	52	2000
320-15/45	+15/-45	320	220-460	840	400	462	>98	10	63	2300
400-15/45	+15/-45	400	220-460	1051	400	578	>98	12	63	3200
500-15/45	+15/-45	500	220-460	1315	400	723	>98	12	64	3400
630-15/45	+15/-45	630	220-460	1655	400	910	>98	12	70	4200
800-15/45	+15/-45	800	220-460	2102	400	1156	>98	12	70	4900
1000-15/45	+15/-45	1000	220-460	2627	400	1445	>98	12	72	5300
1250-15/45	+15/-45	1250	220-460	3284	400	1806	>98	15	82	8700
1600-15/45	+15/-45	1600	220-460	4204	400	2312	>98	15	82	10100
2000-15/45	+15/-45	2000	220-460	5254	400	2890	>98	18	92	15000



Via dei Chiosi, 21
20873 Cavenago di Brianza MB - ITALY
Phone: +39.02.95.917.800
Fax: +39.02.95.917.801
Mail: sales@ortea.com

www.ortea.com