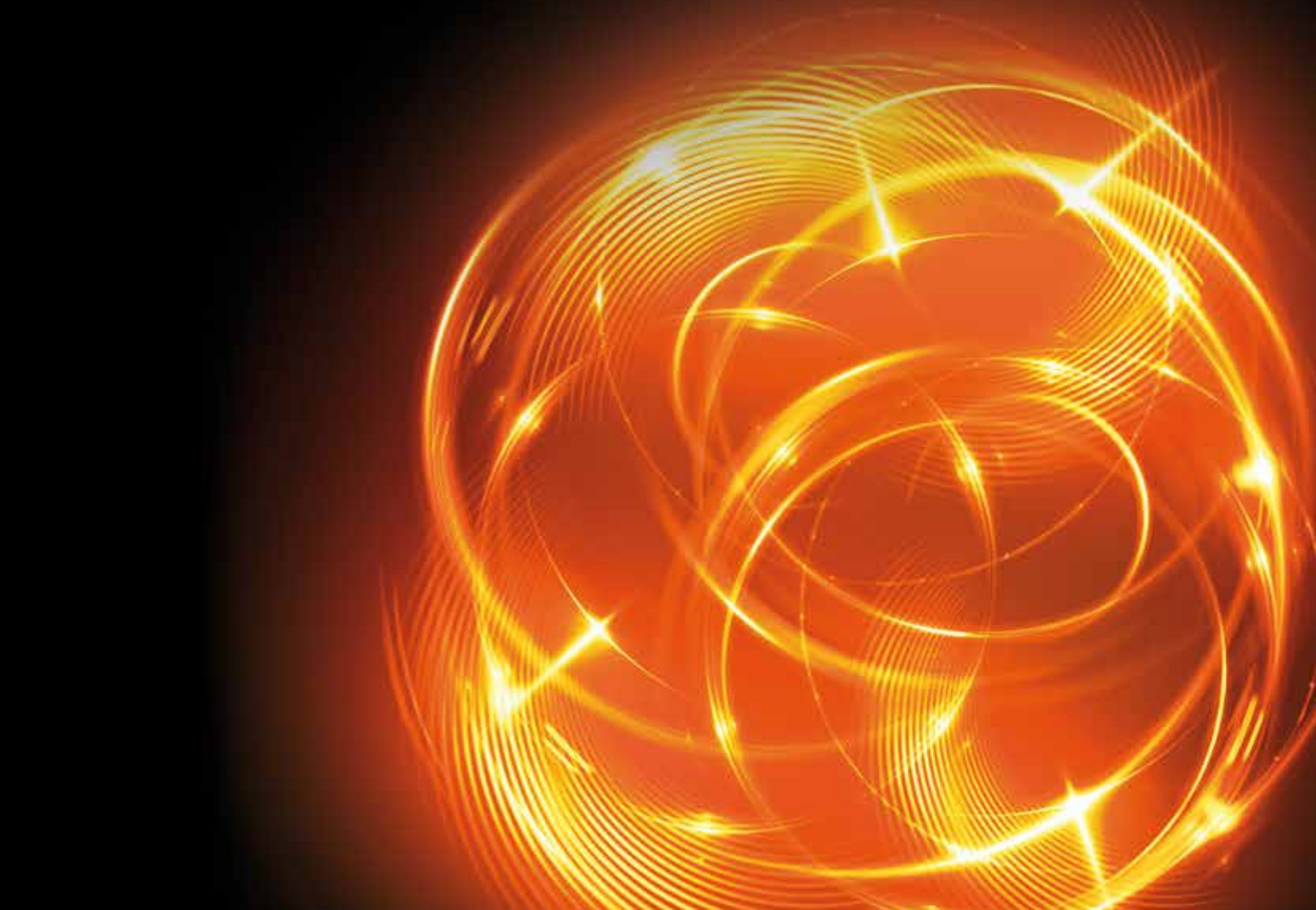
IREM
Made in Italy. Since 1947.

EN - 2020 POWER QUALITY

MASTER IN POWER CONTROL



MINISTAB - STEROSTAB
VOLTAGE STABILISERS

IREM Ministab and Sterostab Voltage Stabilisers are the most reliable solution to problems related to voltage variations in the electric network.

The electric energy producers generate a correct voltage. However, failures on the distribution lines, atmospheric discharges, continuous load variations and disturbances generated by the users make it impossible to guarantee always a steady voltage within the tolerance bandwidth stipulated in the supply contract. Very often this tolerance is insufficient for more sensitive equipment.

Other times the mains voltage reaches levels that exceed the foreseen rated value by 15, 20 or even 30%.

Increasingly, there is a reduction in the Power Quality level of the electrical energy made available to the end user.

IREM Ministab and Sterostab voltage stabilisers guarantee users with perfectly regulated voltage.




POWER SUPPLY AND PROFESSIONAL USERS

The voltage fluctuations are particularly treacherous interferences since they are not seen and can only be detected by using specific instrumentation. When such interferences are present, the electrical equipment seems to maintain correct operation but disguises serious problems that at times are beyond repair. Even an ordinary light bulb, if overpowered by 10%, continues to give light, but halves its operating life; if underpowered by the same percentage it loses 30% of its brightness. The situation becomes much more serious in the case of voltage variations on more complicated equipment:

- ✔ a computer can be damaged or make unpredictable errors;
- ✔ a laser cutting machine undergoes changes in the "laser beam mode", resulting in cutting burrs or the shutting off of the beam;
- ✔ an electric drive causes undesired changes in the speed of the powered motor and damage to the data storage and power terminals;
- ✔ an "electromedical" device gives incorrect results, wastes expensive reagents and loses the samples to be analysed.

IREM PROPOSAL

Ministab and Sterostab are registered names of two series of voltage stabilizers that offer a reliable and tested economic solution to inconveniences caused by voltage fluctuations. The use of voltage stabilizers increases the level of power quality and represents a real investment because the elimination of the inconveniences means a reduction in costs and an increase in productivity. Very often it is only necessary to avoid a few minutes machine downtime or just one failure to repay the cost of the voltage stabilizers.

applications that require:

- ✔ high reliability. For example they can be installed in areas with difficult access, subject to critical environmental conditions due to cold, high temperatures, humidity, atmospheric discharges;
- ✔ capability to compensate wide mains voltage variations. This is a typical requirement of equipment installed in areas that are far from the distribution transformer substation and in fast developing countries;
- ✔ high precision of the stabilised voltage. Ideal condition for calibration and inspection stands, electric furnaces, professional lighting equipment;
- ✔ voltage stabilization of high power users or with high inrush currents like e.g. motors, air conditioners, compressors, pumps;
- ✔ simple and limited maintenance. Very important feature where it is difficult to find qualified personnel for servicing;
- ✔ wide range of models. According to the ambient conditions, the voltage stabilizers can be supplied in enclosures with protection degree IP00, IP21, IP54 INDOOR, IP54 OUTDOOR

COOLING BY NATURAL AIR CONVECTION, FAN-FREE SYSTEM

This is the distinctive characteristic of all IREM voltage stabilisers with protection degree IP21; it dramatically increases the reliability as the cooling of the magnetic components and the electronic control boards is ensured by natural convection without fans (fa-free system). Fans and the relevant filters must be constantly checked, cleaned and periodically replaced.

Moreover, the absence of fans avoids sucking of dust which would deposit on the copper tracks reducing the contact surface between the electro-graphite rolls and the voltage transformer tracks. As a consequence, this would cause roughness, sparks and copper smelting, phenomena that in the long run would damage the component and reduce its life expectancy.

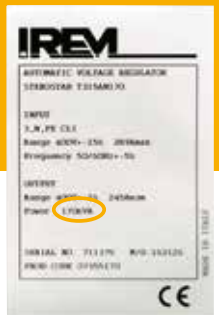
The pictures clearly show that NO fan is used in IREM voltage variable transformers to cool down the contact point between brushes and turns.

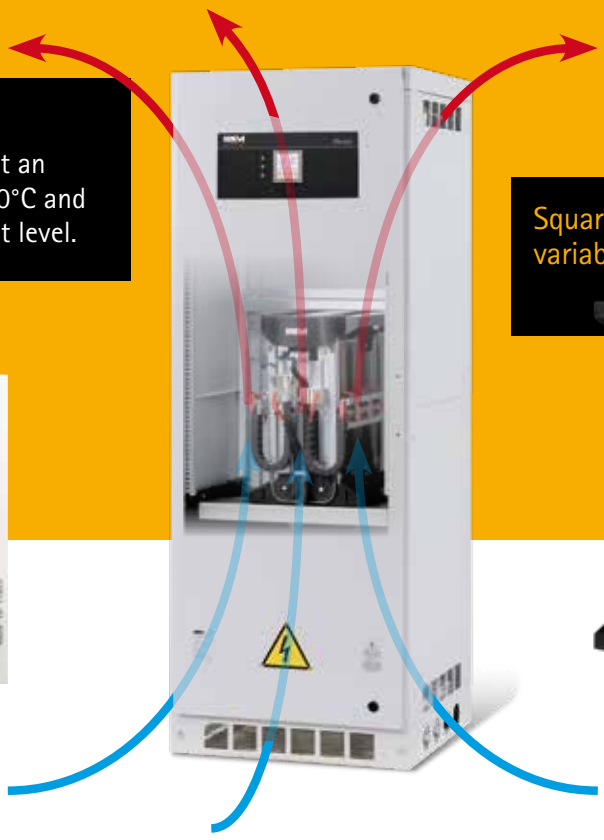
This is possible thanks to the thermal dissipation being the result of:

- ✔ the correct sizing and the high permeability of the magnetic cores;
- ✔ the low density of current flowing through the windings of the variable transformers, and consequently the reduced thermal dissipation,
- ✔ the square section of the linear variable transformers.

Actual power

Power available 24h/day at an ambient temperature of 40°C and input voltage at the lowest level.

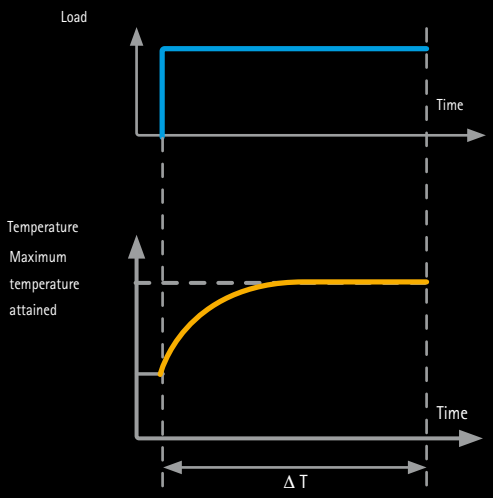




Square section linear variable transformer

DECLARED POWER ON HEAVY DUTY

The fundamental parameter of a voltage stabiliser is the nominal power expressed in kVA and indicated in the product name plate. It represents the maximum power that the equipment can deliver. However, the power of a voltage stabilizer must be contextualized with reference to the service class, to the input voltage fluctuations and to the ambient temperature.



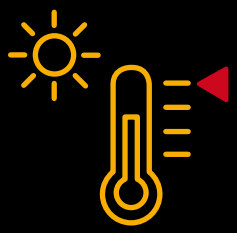
THE SERVICE CLASS

All IREM voltage stabilizers are designed and manufactured to operate in continuous service, intended as the most demanding service at nominal power for unlimited time. In other words: IREM voltage stabilizers are sized to work continuously with 100% duty-cycle and the materials used bear the maximum power expected for unlimited time.

INPUT VOLTAGE FLUCTUATIONS

A voltage stabilizer is characterized by the ability to compensate for the fluctuations in the mains voltage and to supply the connected load at a constant voltage and close to the nominal value. The heaviest working condition is in presence of the minimum mains voltage in input.

All IREM voltage stabilizers are characterized by the ability to stabilize the output voltage when the mains is in the worst conditions for unlimited time and without any degradation of performance.



THE AMBIENT TEMPERATURE

Electric machines are characterized by energy losses produced during energy transformation, which occur in the form of heat.

The cooling of an electric machine occurs through the phenomenon of transmission of the heat produced inside the equipment to an element at a lower temperature.

The most reliable cooling mechanism is when the machine is immersed in the air, at the ambient temperature, without forced ventilation elements (fan-free). The fan-free natural air convection cooling system typical of IREM voltage stabilizers in IP21 version requires that the energy losses are reduced to the minimum value allowed by the technology, using qualified materials and adopting a generous sizing criterion.

MINISTAB - STEROSTAB

IREM Ministab voltage stabilizers are electromechanical devices with electronic control designed to ensure stabilized powering to single-phase and three-phase loads of small and medium powers.

CHARACTERISTICS:

- ✔ Multi range: one model meets 4 levels of compensation and power
- ✔ Toroidal variable autotransformer
- ✔ Power range: from 1 to 350 kVA
- ✔ Compact dimensions: "case" for single-phase M and three-phase T models, "tower" for three-phase Y models.

IREM Sterostab voltage stabilizers are electromechanical devices with electronic control designed to ensure stabilized powering to single-phase and three-phase loads of high and very high power.

The internal equalization system of the medium and large power units, which is essential to equalize the currents in the various branches of the regulation system, is of breakdown type therefore without resistive elements characterizing the dissipative distribution system.

CHARACTERISTICS:

- ✔ Linear square section variable autotransformer with rolling contacts
- ✔ Power range: from 3 to 8000 kVA
- ✔ Modular system for high power models to facilitate transport, handling and installation.

Warranty: 5 years

Natural convection: fan-free for IP21 versions.

Heavy duty power: the declared performance is always ensured in the most severe and critical conditions (continuous service at nominal power with minimum input voltage, highest input current and at the declared ambient temperature).

Operation:

IREM voltage stabilizer is equipped with a control circuit that constantly monitors the line voltage at true voltage (RMS) and compares it with the pre-set voltage value to be kept constant.

The architecture of IREM voltage stabilizer allows to achieve high values of regulation speed and stabilization accuracy. The choice of adopting the booster configuration for the entire range, avoids the presence of mobile contacts in series to the line, makes the equipment insensitive to the load power factor, prevents the introduction of harmonic distortions and allows to achieve high efficiency levels, resulting in reduced heat dissipation and minimization of operating costs in relation to the benefits obtained.

MINISTAB - STEROSTAB OVERVIEW

M — SINGLE-PHASE

Ministab M	1-45 kVA
Sterostab M	15-350 kVA

T — THREE-PHASE

Ministab T	common regulation of the 3 phases	3.5-32 kVA
Sterostab T	common regulation of the 3 phases	22-800 kVA

Y — THREE-PHASE

Ministab Y	independent regulation of each phase	3-120 kVA
Sterostab Y	independent regulation of each phase	45-8000 kVA

	Single-phase		Three-phase			
General features	**Ministab M**	**Sterostab M**	**Ministab T**	**Sterostab T**	**Ministab Y**	**Sterostab Y**
Toroidal variable transformer	•	-	•	-	•	-
Linear square section variable transformer	-	•	-	•	-	•
Natural air convection - fan-free	IP21 version	IP21 version	IP21 version	IP21 version	IP21 version	IP21 version
Forced ventilation with fans	IP54 version	IP54 version	IP54 version	IP54 version	IP54 version	IP54 version
Forced ventilation with air conditioner	IP54 version	IP54 version	IP54 version	IP54 version	IP54 version	IP54 version
Electronic control	•	•	•	•	•	•
Output accuracy: ±1% RMS	•	•	•	•	•	•
Harmonic distortion	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Admitted load variation up to 100%	•	•	•	•	•	•
Admitted overload: 200% x 1 mn	•	•	•	•	•	•
Ambient temperature: -10°C +40°C	•	•	•	•	•	•
Storage temperature: -20°C +60°C	•	•	•	•	•	•
Relative humidity: 95% non-condensing	•	•	•	•	•	•
Standard / Optional fittings						
Pilot lamps	•	•	•	•	•	•
Tropicalised control boards	•	•	•	•	•	•
Digital voltmeter	•	•	•	•	•	•
Digital network analyser	•	•	•	•	•	•
Input/output selector	•	•	•	•	•	•
Wheels	•	•	•	•	•	•
Alarm LEDS	•	•	•	•	•	•
Cl.I lightning arresters	•	•	•	•	•	•
Cl.II surge arresters	•	•	•	•	•	•
Short circuit protection	•	•	•	•	•	•
Overload protection	•	•	•	•	•	•
Over/under voltage protection	•	•	•	•	•	•
Reversed phase sequence / phase failure protection	•	•	•	•	•	•
Over temperature protection	•	•	•	•	•	•
Soft start	•	•	•	•	•	•
Functional by-pass	•	•	•	•	•	•
Maintenance by-pass	•	•	•	•	•	•
Galvanic separation	•	•	•	•	•	•
Neutral-point reactor	•	•	•	•	•	•
Input/output adapting transformer	•	•	•	•	•	•
Attenuation of common and transverse mode noise	•	•	•	•	•	•
Harmonic filter	•	•	•	•	•	•
Smart management of the plant	•	•	•	•	•	•
Modular system from Y326 upwards	-	-	-	-	-	•
Remote control	•	•	•	•	•	•
Storage of electrical parameters and alarms	•	•	•	•	•	•

• = standard

• = optional

- = not available

OPTIONAL FITTINGS

ATTENUATION OF VOLTAGE SPIKES

This function is performed by means of surge arresters which protect both the AVR and the load against overcurrent of atmospheric origin and overvoltages. The following protection devices are available:

a. Class I lightning arresters (IEC 62305) wave form 10/350µs 150kA total, 8/20 µs 150kA total, Up < 1.3kV, reaction time <100ns.

b. Combined class I+II surge arresters (IEC 62305), wave form 10/350µs 25kA total, 8/20 µs 120kA total, Up < 1.1kV, reaction time <100ns.

c. Class II surge arresters (IEC 60364-4-44), wave form 8/20µs 120kA total, Up < 1.3kV, reaction time <25ns.

d. Class III surge protection device (IEC 60364-4-44) wave form 8/20µs and 1,2/50µs 60kA total, Up < 1.2kV, reaction time <50ns.

SHORT CIRCUIT PROTECTION

Ensured by means of thermal magnetic circuit breaker or fuses in input.

OVERLOAD PROTECTION

Ensured by means of thermal magnetic circuit breaker, current relay or fuses in output.

OVER/UNDER VOLTAGE PROTECTION

Ensured by voltage relay with load cut-off by means of thermal magnetic circuit breaker or contactor.

REVERSED PHASE SEQUENCE / PHASE FAILURE PROTECTION

Voltage monitoring relay with load cut-off by means of thermal magnetic circuit breaker or contactor.

OVER TEMPERATURE PROTECTION

A sensor detects when the temperature exceeds the alarm threshold in the most critical point of the AVR. The signal can

- ✔ either activate the automatic by-pass or,
- ✔ disconnect the AVR through a contactor or a thermal magnetic circuit breaker.

SOFT START

It guarantees the supply of a stabilized voltage even in the first cycles of operation subsequent to a blackout. It is common, in fact, that following a blackout the lines supply very high voltages for a limited period.

The soft start protection can be implemented according to two methods to be defined in relation to the installation context and the type of load supplied:

- ✔ Through a power circuit that includes command and switching devices capable of connecting the load only when the voltage value at the output of the stabilizer is correctly restored and in tolerance. The command is implemented by a power contactor controlled by a timed relay.
- ✔ Through an auxiliary circuit that includes control and implementation devices capable of regulating the output voltage at the minimum value and then progressively rising to the nominal value. The command is implemented by the same system of regulation of the variable autotransformer powered by capacitors. In no case are accumulators used that require periodic replacement.

FUNCTIONAL BY-PASS

In the unlikely event of a failure of the AVR, the load will be directly powered from the mains. The internal functional by-pass is performed by:

a. manual by-pass switch capable to withstand a current equal to or higher than the max input current of the AVR

b. 3 contactors which can be

- ✔ automatically activated when the sensors detect a critical operating condition or in case of AVR failure,
- ✔ manually activated by service people for maintenance purposes,
- ✔ activated by the remote control centre through the supervision software (password protected).

MAINTENANCE BY-PASS

It is installed in a separate cabinet. The load is directly connected to the mains ensuring the operation in case of

maintenance. It is performed by a manual by-pass switch capable to withstand a current equal to or higher than the max input current of the AVR.

GALVANIC SEPARATION

Besides ensuring galvanic isolation of the system, attenuating common-mode disturbances and creating a "clean neutral", it also allows, when necessary, to transform the nominal supply voltage to the voltage value required by the load.

NEUTRAL-POINT REACTOR

It is a magnetic component designed to create a reference neutral point in those three-phase systems where this is not available or is unstable.

INPUT/OUTPUT ADAPTING TRANSFORMER

It allows to adapt the nominal mains voltage to the value required by the load.

ATTENUATION OF COMMON MODE AND TRANSVERSE MODE NOISE

Ensured by EMI / RFI filters consisting of blocking coils and capacitors, it is able to attenuate high frequency noise.

HARMONIC FILTER

It realizes the reduction of the harmonic current components generated by non-linear or variable loads, it can be active or passive to be chosen according to the spectrum of harmonics present in the system.

SMART MANAGEMENT OF THE PLANT

a. Automatic switching on a reserve stabiliser
   When an anomaly is detected in the operation of the stabilizer, the supervision module automatically transfers the load to the reserve stabilizer.
b. Automatic switching to an emergency line
   The AVR is connected to an emergency line when an abnormal condition of the main power supply is detected by the supervision module.
c. Device for unprivileged load switching-off
   It automatically switches off unprivileged loads in case of AVR overload or to achieve energy saving.
d. Control module for programmed switching-on / off of loads
   Capable to handle up to 8 lines, each of them can undergo 8 changes of state in 24 hours.

MODULAR SYSTEM FROM Y326

The three-phase voltage stabilizers of large power (from model Y326) are made of functional units in order to facilitate transport, handling, positioning and installation. Each functional unit corresponds to the relative single-phase section that will be connected to the system. The connection to the system of this type of voltage stabilizer does not require further interconnections between the units and is therefore very similar to the connection of a voltage stabilizer made in a single unit.

REMOTE CONTROL

It allows remote monitoring of electrical parameters as well as acquisition of real-time information and historical data. The analysis of this information and of any alarm signal and functional status allows to prevent the intervention of the automatic protection systems of the stabilizer that would otherwise cause the interruption of the process or, in the absence of these, to take action to remove the cause of the alarm conditions.

Communication via Internet modem (LAN or Mobile).

STORAGE OF ELECTRICAL, PHYSICAL AND ALARM STATUS PARAMETERS

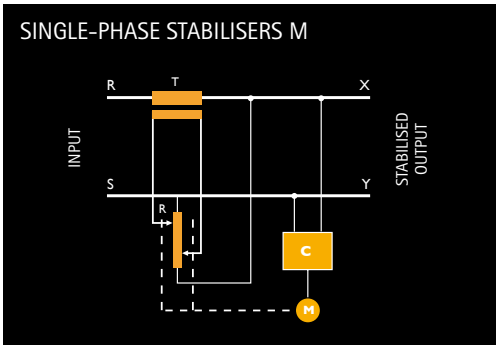
It remotely allows the display, via web on PC, smartphone, web viewers and tablets, of data coming from the voltage stabilizer.

The web display of the electrical parameters of the voltage stabilizer is divided into two macro areas: real-time data and historical data. Historical data can be displayed on a freely selectable period in a column chart, the data thus displayed can be arranged in tabular format and exported to CSV for processing in Excel or another application tool.

SINGLE-PHASE VOLTAGE STABILISERS M MODELS

MINISTAB M 1-45 KVA
STEROSTAB M 15-350 KVA

MINISTAB STEROSTAB



T = series transformer (booster)
R = variable autotransformer
C = electronic control circuit
M = servomotor

GENERAL CHARACTERISTICS

Mains	Single-phase
Nominal input voltage	220V or 230V or 240V (**)
Nominal output voltage	220V or 230V or 240V (**)
Output accuracy	±1% RMS
Frequency	50/60 Hz ±5%
Admitted load variation	0 to 100%
Admitted overload	10 times the nominal power during 10 ms, 5 times during 6 s, 2 times for 1 minute
Harmonic distortion	<0.1%
Efficiency	>98.5%
Cooling	natural air convection (fan-free system)
Colour	black or RAL 7035 (depending on model)
Protection degree	IP21
Installation	indoor
Standard fittings	digital voltmeter, pilot lamps, tropicalised control boards

(**) to be specified on the order. Different voltage values available on request.

OPTIONAL FITTINGS

SHORT CIRCUIT PROTECTION

OVERLOAD PROTECTION

OVER/UNDER VOLTAGE PROTECTION

SOFT START

MANUAL OR AUTOMATIC BY-PASS

DIGITAL NETWORK ANALYSER DISPLAYING THE ELECTRICAL PARAMETERS

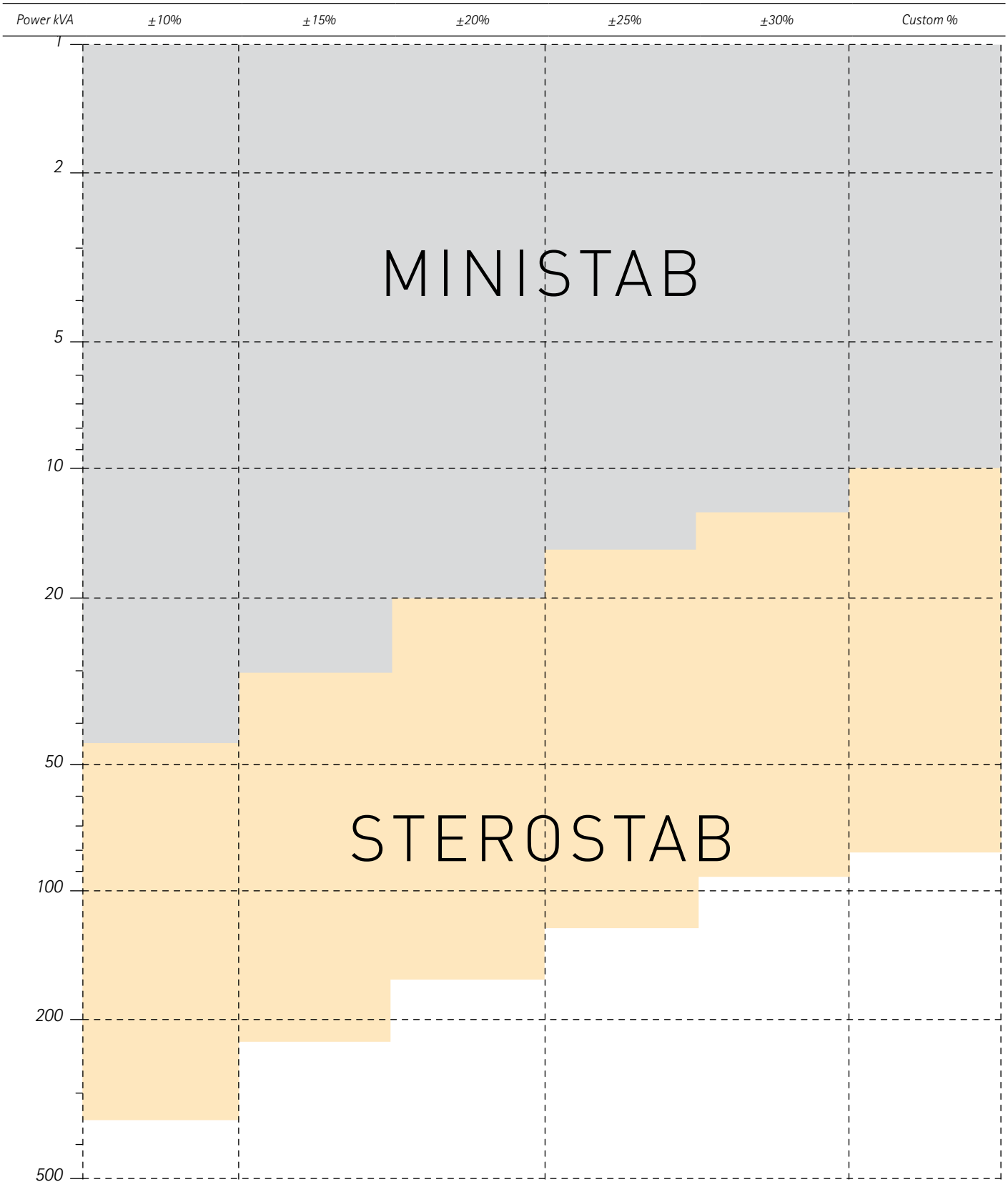
ISOLATION TRANSFORMER

ADAPTING TRANSFORMER

SURGE ARRESTERS

IP54 INDOOR OR OUTDOOR VERSION

VOLTAGE STABILISERS - M MODELS



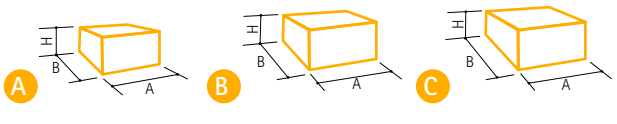
VOLTAGE STABILISERS
MINISTAB M
SINGLE-PHASE 230V 50/60 HZ, PROTECTION DEGREE IP21

Model	*Rated power (KVA)*	*Voltage variation (±%)*	*Response time (ms/V)*	*Output accuracy (±%)*	*Fittings*	*Protection degree IP*	*Dimensions (mm) a x b x h*	*Net weight (kg)*	*Case*
M204E	1	±30	13	±1	CG, L	21	350x400x290	20	A
	1,5	±25	14						
	2	±20	15						
	2,5	±15	18						
M204E-3.5	3,5	±10	25		L				
M206E	2.,5	±30	20	±1	CG, L	21	350x400x290	30	A
	3	±25	13						
	4	±20	16						
	5	±15	19						
M206E7	7	±10	30		L				
M208E	3,3	±30	24	±1	CG, L	21	350x400x290	37	A
	4,5	±25	25						
	6	±20	17						
	7,5	±15	21						
M208E10	10	±10	28		L				
M210E	6	±30	24	±1	CG, L	21	450x560x400	65	B
	8	±25	15						
	10	±20	16						
	15	±15	21						
M210E24	24	±10	35		L				
M211E	9	±30	16	±1	CG, L	21	450x560x400	70	B
	12	±25	19						
	15	±20	22						
	22	±15	22						
M211E35	35	±10	36		L				
M212E	12	±30	20	±1	CG, L	21	450x680x400	110	C
	15	±25	23						
	20	±20	24						
	30	±15	27						
M212E45	40	±10	40		L				

Fittings GC: range selector terminal block
L: pilot lamp
Optional fittings V: digital voltmeter (M2..EV models)

Note: models with different power, and/or different input range, and/or different output accuracy can be quoted on demand.

IREM voltage stabilisers are designed to deliver the declared power permanently (24/7) under the worst operating conditions, i.e. at full load, at minimum input voltage and max input current and at the declared ambient temperature.



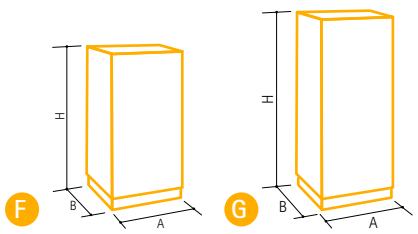
VOLTAGE STABILISERS
STEROSTAB M
SINGLE-PHASE 230V 50/60 HZ, PROTECTION DEGREE IP21

Model	*Rated power (KVA)*	*Voltage variation (±%)*	*Response time (ms/V)*	*Output accuracy (±%)*	*Fittings*	*Protection degree IP*	*Dimensions (mm) a x b x h*	*Net weight kg)*	*Cabinet*
M213AN15	15	±30	10	±1	V, L	21	650x650x1300	187	F
M213AN20	20	±25	12						
M213AN25	25	±20	14						
M213AN35	35	±15	16						
M213AN60	60	±10	37						
M214AN24	24	±30	18	±1	V, L	21	650x650x1300	235	F
M214AN30	30	±25	19						
M214AN40	40	±20	32						
M214AN55	55	±15	24						
M214AN90	90	±10	54						
M216AN30	30	±30	18	±1	V, L	21	650x650x1800	280	G
M216AN40	40	±25	19						
M216AN55	55	±20	21						
M216AN75	75	±15	27						
M216AN120	120	±10	39						
M217AN45	45	±30	22	±1	V, L	21	650x650x1800	340	G
M217AN60	60	±25	24						
M217AN80	80	±20	26						
M217AN110	110	±15	29						
M217AN180	180	±10	31						
M218AN60	60	±30	20	±1	V, L	21	650x650x1900	455	G
M218AN80	80	±25	21						
M218AN100	100	±20	23						
M218AN150	150	±15	26						
M218AN240	240	±10	31						
M219AN90	90	±30	23	±1	V, L	21	650x650x1900	670	G
M219AN120	120	±25	26						
M219AN160	160	±20	28						
M219AN230	230	±15	30						
M219AN350	350	±10	32						

Fittings V: digital voltmeter
L: pilot lamp

Note: models with different power, and/or different input range, and/or different output accuracy can be quoted on demand.

IREM voltage stabilisers are designed to deliver the declared power permanently (24/7) under the worst operating conditions, i.e. at full load, at minimum input voltage and max input current and at the declared ambient temperature.

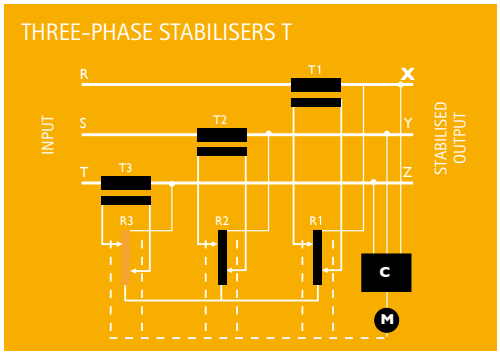


THREE-PHASE VOLTAGE STABILISERS T MODELS

COMMON REGULATION OF THE 3 PHASES

MINISTAB T 3.5-32 KVA
STEROSTAB T 2-800 KVA

MINISTAB STEROSTAB



T = series transformer (booster)
R = variable autotransformer
C = electronic control circuit
M = servomotor

GENERAL CHARACTERISTICS

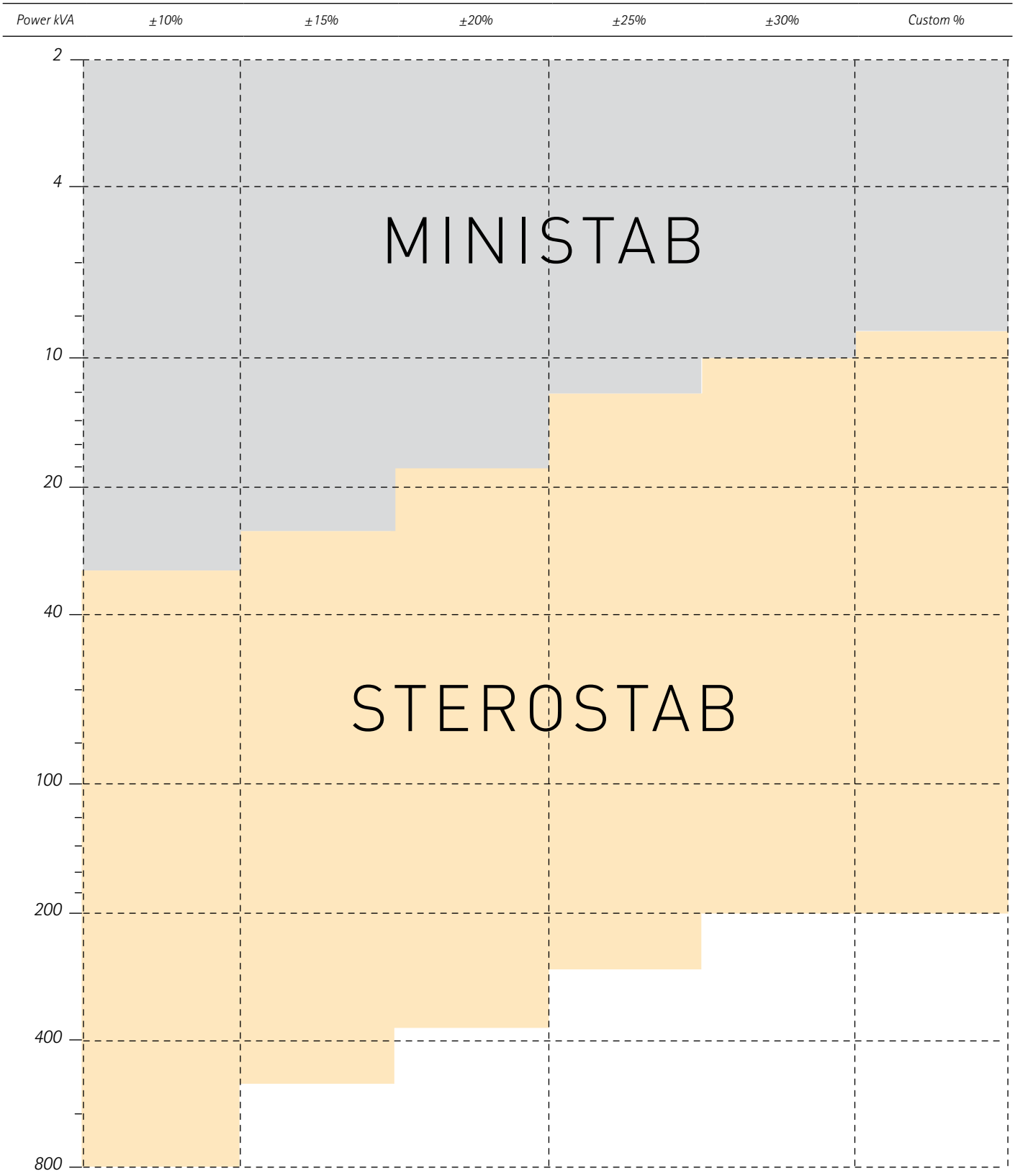
Mains	Three-phase
Nominal input voltage	380V or 400V or 415V (**)
Nominal output voltage	380V or 400V or 415V (**)
Output accuracy	±1% RMS
Frequency	50/60 Hz ±5%
Admitted load variation	0 to 100%
Admitted load unbalance	up to 50%
Admitted overload	10 times the nominal power during 10 ms,i 5 times during 6 s, 2 times for 1 minute
Harmonic distortion	<0,1%
Efficiency	>98,5%
Cooling	natural air convection (fan-free system)
Colour	black or RAL 7035 (depending on model)
Protection degree	IP21
Installation	indoor
Standard fittings	digital voltmeter, pilot lamps, tropicalised control boards

(**) to be specified on the order. Different voltage values available on request.

OPTIONAL FITTINGS

SHORT CIRCUIT PROTECTION
OVERLOAD PROTECTION
OVER/UNDER VOLTAGE PROTECTION
REVERSED PHASE SEQUENCE / PHASE FAILURE PROTECTION
SOFT START
MANUAL OR AUTOMATIC BY-PASS
DIGITAL NETWORK ANALYSER DISPLAYING THE ELECTRICAL PARAMETERS
ISOLATION TRANSFORMER
ADAPTING TRANSFORMER
SURGE ARRESTERS
IP54 INDOOR OR OUTDOOR VERSION

VOLTAGE STABILISERS - T MODELS



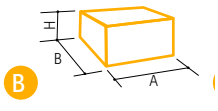
VOLTAGE STABILISERS
MINISTAB T
COMMON REGULATION OF THE THREE PHASES
THREE-PHASE 400V 50/60 HZ PROTECTION DEGREE IP21

Model	*Rated power (KVA)*	*Voltage variations (±%)*	*Response time (ms/V)*	*Output accuracy (±%)*	*Fittings*	*Protection degree IP*	*Dimensions (mm) a x b x h*	*Net weight (kg)*	*Case*
T304E	3.5	±30	13	±1	CG, L	21	450x560x400	75	B
	4	±25	15						
	6	±20	16						
	8.5	±15	20						
T304E10	10	±10	30		L				
T306E	7	±30	13	±1	CG, L	21	450x560x400	85	B
	8	±25	15						
	12	±20	16						
	15	±15	21						
T306E22	22	±10	33		L				
T308E	10	±30	15	±1	CG, L	21	450x560x400	110	B
	12	±25	16						
	18	±20	18						
	25	±15	23						
T308E32	32	±10	30		L				

Fittings GC: range selector terminal block
L: pilot lamp
Optional fittings V: digital voltmeter (T3..EV models)

Note: models with different power, and/or different input range, and/or different output accuracy can be quoted on demand.

IREM voltage stabilisers are designed to deliver the declared power permanently (24/7) under the worst operating conditions, i.e. at full load, at minimum input voltage and max input current and at the declared ambient temperature.

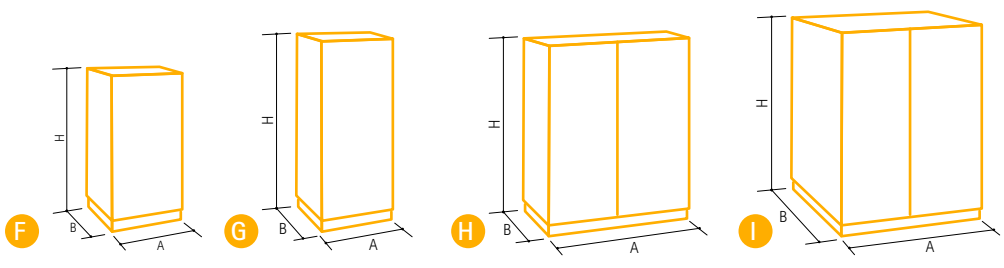


VOLTAGE STABILISERS
STEROSTAB T
COMMON REGULATION OF THE THREE PHASES
THREE-PHASE 400V 50/60 HZ PROTECTION DEGREE IP21

Model	*Rated power (KVA)*	*Voltage variation (±%)*	*Response time (ms/V)*	*Output accuracy (±%)*	*Fittings*	*Protection degree IP*	*Dimensions (mm) a x b x h*	*Net weight (kg)*	*Cabinet*
T310AN22	22	±30	10	±1	V, L	21	650x650x1300	250	F
T310AN30	30	±25	11						
T310AN40	40	±20	13						
T310AN55	55	±15	14						
T310AN90	90	±10	28						
T312AN35	35	±30	6	±1	V, L	21	650x650x1300	280	F
T312AN45	45	±25	15						
T312AN60	60	±20	12						
T312AN80	80	±15	16						
T312AN120	120	±10	23						
T314AN45	45	±30	10	±1	V, L	21	650x650x1300	355	F
T314AN60	60	±25	14						
T314AN80	80	±20	13						
T314AN120	120	±15	17						
T314AN185	185	±10	22						
T315AN70	70	±30	14	±1	V, L	21	650x650x1800	415	G
T315AN90	90	±25	18						
T315AN120	120	±20	23						
T315AN170	170	±15	24						
T315AN270	270	±10	36						
T316AN95	95	±30	12	±1	V, L	21	1100x650x1800	630	H
T316AN120	120	±25	13						
T316AN160	160	±20	17						
T316AN230	230	±15	17						
T316AN370	370	±10	22						
T318AN140	140	±30	14	±1	V, L	21	1100x650x1800	760	H
T318AN180	180	±25	16						
T318AN250	250	±20	21						
T318AN350	350	±15	23						
T318AN560	560	±10	27						
T319AN200	200	±30	21	±1	V, L	21	1100x900x1900	1160	I
T319AN270	270	±25	23						
T319AN370	370	±20	26					1250	
T319AN500	500	±15	29						
T319AN800	800	±10	32						

Fittings V: digital voltmeter
L: pilot lamp

Note: models with different power, and/or different input range, and/or different output accuracy can be quoted on demand.
IREM voltage stabilisers are designed to deliver the declared power permanently (24/7) under the worst operating conditions, i.e. at full load, at minimum input voltage and max input current and at the declared ambient temperature.

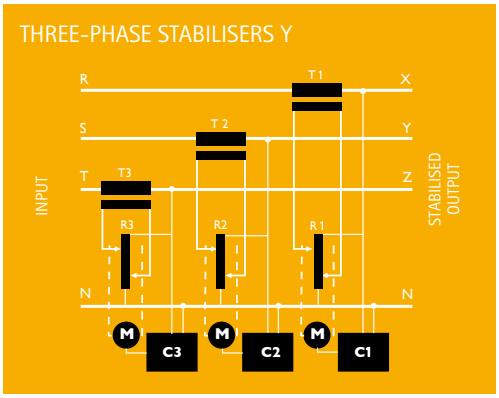


THREE-PHASE VOLTAGE STABILISERS Y MODELS

INDEPENDENT REGULATION OF EACH PHASE

MINISTAB Y 3-120 KVA
STEROSTAB Y 45-8000 KVA

MINISTAB STEROSTAB



T = series transformer (booster)
R = variable autotransformer
C = electronic control circuit
M = servomotor

GENERAL CHARACTERISTICS

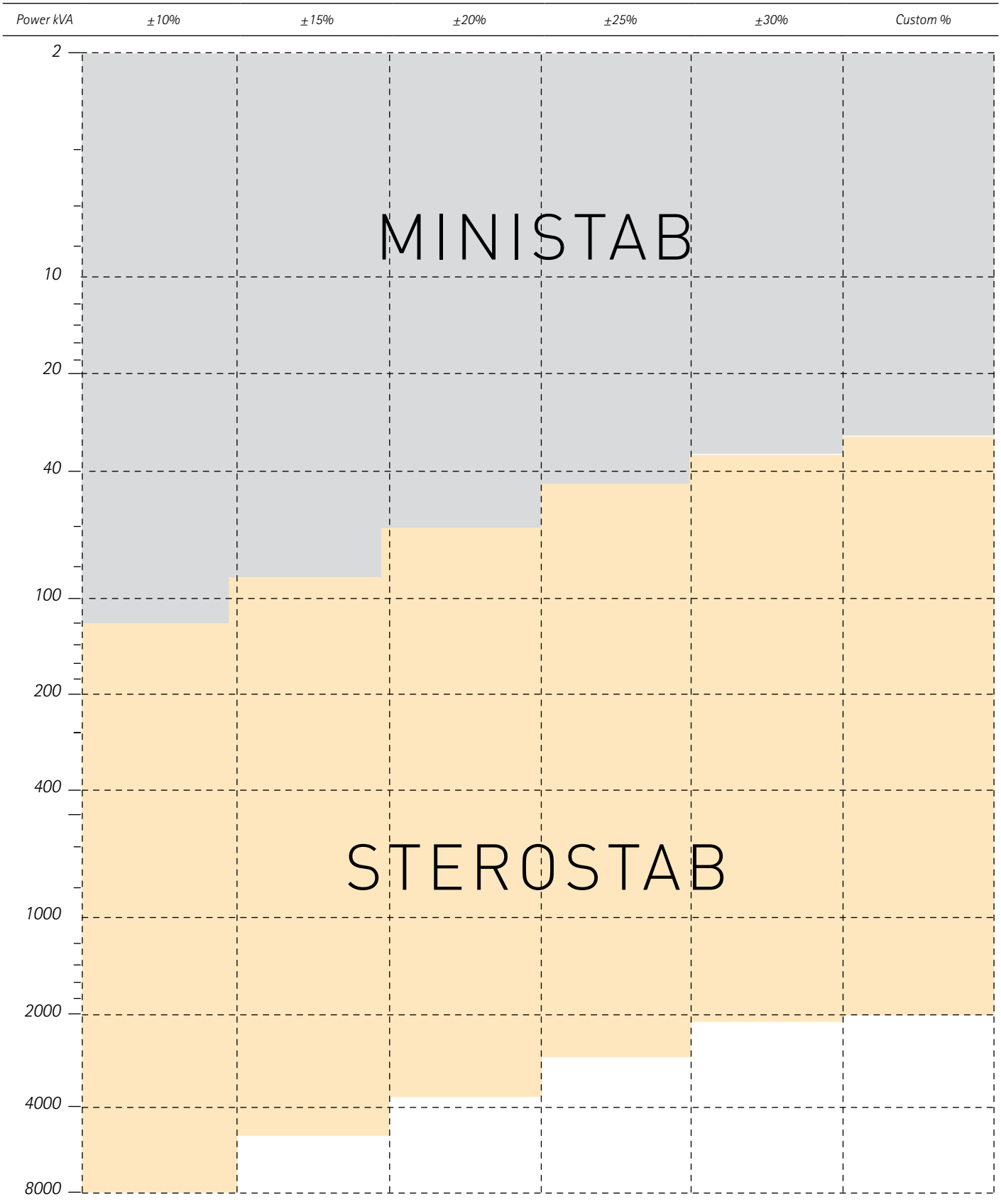
Mains	Three-phase
Nominal input voltage	380V or 400V or 415V (**)
Nominal output voltage	380V or 400V or 415V (**)
Output accuracy	±1% RMS
Frequency	50/60 Hz ±5%
Admitted load variation	0 to 100%
Admitted load unbalance	up to 100%
Admitted overload	10 times the nominal power during 10 ms, 5 times during 6 s, 2 times for 1 minute
Harmonic distortion	<0.1%
Efficiency	>98.5%
Cooling	natural air convection (fan-free system)
Colour	black or RAL 7035 (depending on model)
Protection degree	IP21
Installation	indoor
Standard fittings	digital voltmeter, pilot lamps, tropicalised control boards

(**) to be specified on the order. Different voltage values available on request.

OPTIONAL FITTINGS

SHORT CIRCUIT PROTECTION
OVERLOAD PROTECTION
OVER/UNDER VOLTAGE PROTECTION
REVERSED PHASE SEQUENCE / PHASE FAILURE PROTECTION
SOFT START
MANUAL OR AUTOMATIC BY-PASS
DIGITAL NETWORK ANALYSER DISPLAYING THE ELECTRICAL PARAMETERS
ISOLATION TRANSFORMER
ADAPTING TRANSFORMER
NEUTRAL-POINT REACTOR
SURGE ARRESTERS
IP54 INDOOR OR OUTDOOR VERSION

VOLTAGE STABILISERS - Y MODELS



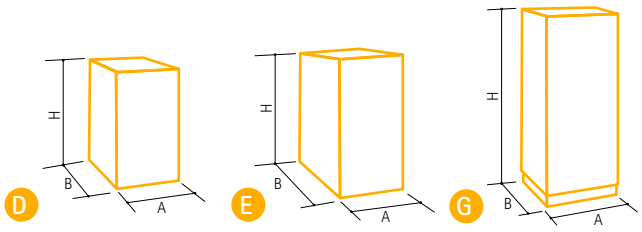
VOLTAGE STABILISERS
MINISTAB Y
INDEPENDENT REGULATION OF EACH PHASE
THREE-PHASE 400V 50/60 HZ PROTECTION DEGREE IP21

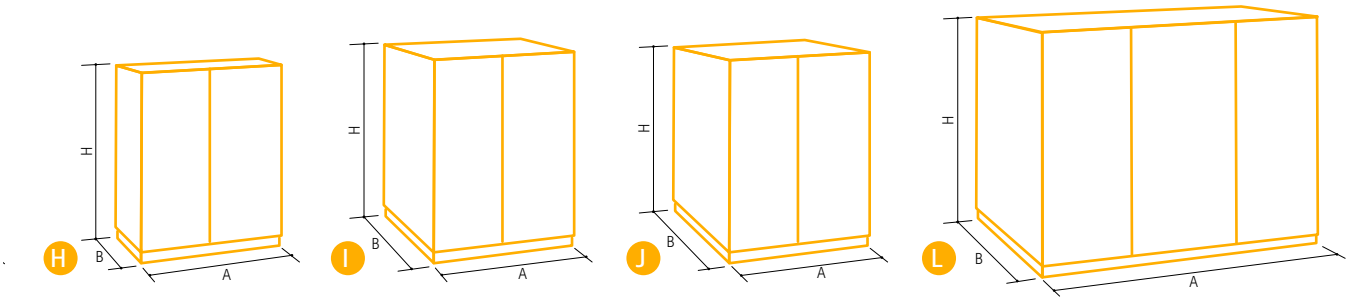
Model	*Rated power (KVA)*	*Voltage variation (±%)*	*Response time (ms/V)*	*Output accuracy (±%)*	*Fittings*	*Protection degree IP*	*Dimensions (mm) a x b x h*	*Net weight (kg)*	*Case*
Y304ES	3	±30	8	±1	V, GC, L, R	21	350x580x890	90	D
	4	±25	9						
	6	±20	10						
	8	±15	13						
Y304ES10	10	±10	16		V, L, R				
Y306ES	7	±30	11	±1	V, GC, L, R	21	350x580x890	110	D
	8.5	±25	12						
	12	±20	9						
	15	±15	13						
Y306ES24	24	±10	17		V, L, R				
Y308ES	10	±30	8	±1	V, GC, L, R	21	350x580x890	120	D
	12	±25	9						
	18	±20	10						
	25	±15	13						
Y308ES30	30	±10	19		V, L, R				
Y310ES	18	±30	10	±1	V, GC, L, R	21	450x800x1200	210	E
	24	±25	10						
	30	±20	10						
	45	±15	12						
Y310ES70	70	±10	18		V, L, R				
Y311ES	27	±30	8	±1	V, GC, L, R	21	450x800x1200	245	E
	35	±25	14						
	45	±20	11						
	65	±15	16						
Y311ES100	100	±10	23		V, L, R				
Y312ES	35	±30	14	±1	V, GC, L, R	21	450x800x1200	330	E
	45	±25	15						
	60	±20	17						
	85	±15	19						
Y312ES120	120	±10	23		V, L, R				

Fittings GC: range selector terminal block
V: digital voltmeter
L: pilot lamps
R: wheels

Note: models with different power, and/or different input range, and/or different output accuracy can be quoted on demand.

IREM voltage stabilisers are designed to deliver the declared power permanently (24/7) under the worst operating conditions, i.e. at full load, at minimum input voltage and max input current and at the declared ambient temperature.





VOLTAGE STABILISERS
STEROSTAB Y
INDEPENDENT REGULATION OF EACH PHASE
THREE-PHASE 400V 50/60 HZ PROTECTION DEGREE IP21

Model	*Rated power (KVA)*	*Voltage variations (±%)*	*Response time (ms/V)*	*Output accuracy (±%)*	*Fittings*	*Protection degree IP*	*Dimensions (mm) a x b x h*	*Net weight (kg)*	*Cabinet*
Y313AN45	45	±30	6						
Y313AN60	60	±25	13						
Y313AN80	80	±20	15	±1	V, L	21	650x650x1800	480	G
Y313AN110	110	±15	17						
Y313AN180	180	±10	23						
Y314AN70	70	±30	8						
Y314AN90	90	±25	22						
Y314AN120	120	±20	18	±1	V, L	21	1100x650x1800	620	H
Y314AN170	170	±15	27						
Y314AN270	270	±10	24						
Y316AN90	90	±30	6						
Y316AN120	120	±25	12						
Y316AN160	160	±20	13	±1	V, L	21	1100x650x1800	650	H
Y316AN230	230	±15	19						
Y316AN370	370	±10	23						
Y317AN140	140	±30	8						
Y317AN180	180	±25	16						
Y317AN250	250	±20	18	±1	V, L	21	1100x650x1800	750	H
Y317AN350	350	±15	22						
Y317AN550	550	±10	33						
Y318AN190	190	±30	11						
Y318AN240	240	±25	12						
Y318AN320	320	±20	15	±1	V, L	21	1100x900x1900	1100	I
Y318AN460	460	±15	16						
Y318AN730	730	±10	24						
Y319AN280	280	±30	16						
Y319AN370	370	±25	11						
Y319AN500	500	±20	14	±1	V, L	21	1100x1300x1800	1360	J
Y319AN700	700	±15	17						
Y319AN1100	1100	±10	27						
Y320AN420	420	±30	9						
Y320AN550	550	±25	14						
Y320AN730	730	±20	13	±1	V, L	21	1100x1300x1900	1850	J
Y320AN1000	1000	±15	18						
Y320AN1500	1500	±10	26						
Y322AN550	550	±30	16						
Y322AN730	730	±25	18						
Y322AN1000	1000	±20	14	±1	V, L	21	2150x1350x2150	2700	L
Y322AN1350	1350	±15	16						
Y322AN2200	2200	±10	29						
Y323AN700	700	±30	16						
Y323AN900	900	±25	18						
Y323AN1200	1200	±20	14	±1	V, L	21	2150x1350x2150	3100	L
Y323AN1700	1700	±15	18						
Y323AN2700	2700	±10	29						
Y324AN800	800	±30	16						
Y324AN1000	1000	±25	18						
Y324AN1400	1400	±20	22	±1	V, L	21	2150x1350x2150	3400	L
Y324AN2000	2000	±15	17						
Y324AN3200	3200	±10	29						

Model	Rated power (KVA)	Voltage variations (±%)	Response time (ms/V)	Output accuracy (±%)	Fittings	Protection degree IP	Dimensions (mm) a x b x h	Net weight (kg)	Cabinet
Y326AN1000	1000	±30	16	±1	V, L	21	3 cabinets 1100x1300x1900	3800	3 cabinets type J
Y326AN1250	1250	±25	18						
Y326AN1700	1700	±20	22						
Y326AN2400	2400	±15	18						
Y326AN3800	3800	±10	29						
Y328AN1100	1100	±30	16	±1	V, L	21	3 cabinets 1100x1270x1900	5200	3 cabinets type J
Y328AN1400	1400	±25	18						
Y328AN1900	1900	±20	22						
Y328AN2700	2700	±15	24						
Y328AN4400	4400	±10	26						
Y330AN1250	1250	±30	16	±1	V, L	21	3 cabinets 1100x1300x1900	5700	3 cabinets type J
Y330AN1600	1600	±25	18						
Y330AN2200	2200	±20	22						
Y330AN3100	3100	±15	26						
Y330AN5000	5000	±10	29						
Y332AN1400	1400	±30	18	±1	V, L	21	3 cabinets 1500x1350x2150	6300	3 cabinets type K
Y332AN1800	1800	±25	20						
Y332AN2400	2400	±20	23						
Y332AN3400	3400	±15	24						
Y332AN5500	5500	±10	27						
Y334AN1500	1500	±30	9	±1	V, L	21	3 cabinets 1500x1350x2150	6800	3 cabinets type K
Y334AN2000	2000	±25	20						
Y334AN2600	2600	±20	23						
Y334AN3800	3800	±15	24						
Y334AN6000	6000	±15	27						
Y336AN1650	1650	±30	18	±1	V, L	21	3 cabinets 1500x1350x2150	7400	3 cabinets type K
Y336AN2200	2200	±25	20						
Y336AN3000	3000	±20	13						
Y336AN4100	4100	±15	24						
Y336AN6500	6500	±15	27						
Y338AN1800	1800	±30	18	±1	V, L	21	3 cabinets 2150x1350x2150	8000	3 cabinets type L
Y338AN2300	2300	±25	20						
Y338AN3100	3100	±20	23						
Y338AN4500	4500	±15	24						
Y338AN7000	7000	±15	27						
Y340AN2000	2000	±30	18	±1	V, L	21	3 cabinets 2150x1350x2150	8400	3 cabinets type L
Y340AN2500	2500	±25	20						
Y340AN3300	3300	±20	23						
Y340AN4700	4700	±15	24						
Y340AN7500	7500	±10	27						
Y342AN2100	2100	±30	10	±1	V, L	21	3 cabinets 2150x1350x2150	8800	3 cabinets type L
Y342AN2700	2700	±25	20						
Y342AN3600	3600	±20	23						
Y342AN5000	5000	±15	24						
Y342AN8000	8000	±10	27						

Fittings V: digital voltmeter
L: pilot lamp

Note: models with different power, and/or different input range, and/or different output accuracy can be quoted on demand.

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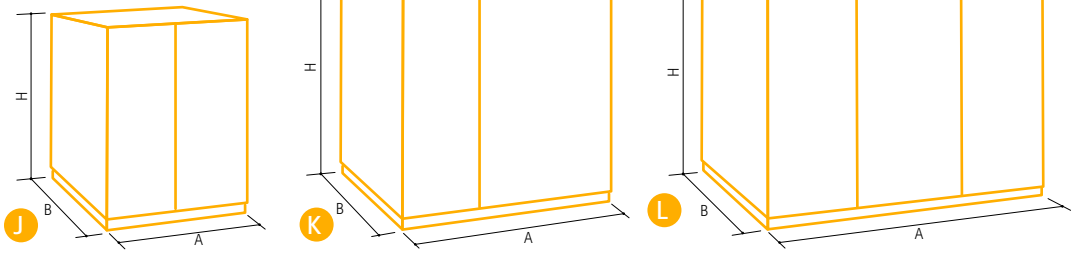
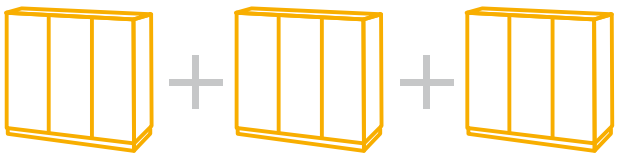


IREM MODULAR SYSTEM



IREM 3PH voltage stabilisers (AVR) of higher power (from model Y326) are made in 3 sections in order to facilitate transport, handling, positioning and installation.

This kind of structure has been designed as a solution to problems related to handling of extremely big loads not common in electrical systems.

IREM voltage stabiliser modular system particularly helps during preparation of the site, avoiding the use of expensive lifting equipment and building of special openings to access the technical room.

The voltage stabiliser is made in separate sections corresponding to the single-phase units which will be connected to the plant.

No further interconnection between the different AVR sections is required, therefore the installation is perfectly similar to the connection of a voltage stabiliser made in one single cubicle.

Each single-phase unit includes all the control and regulation devices that determine its autonomous and independent operation.

In the unlikely event of a failure, this type of design limits the fault propagation, ensuring the best functionality and allows to act in a targeted and selective way on the component without having to operate on the other sections.

In this case the solution allows to contain the periodic maintenance and repair costs.

HIGHLIGHTS

REDUCED SHIPPING COSTS

Smart solution to problems related to handling/shipping of bulky loads.

REDUCED MAINTENANCE COSTS

Easy intervention on one section ensuring the functionality of the other units.

EASIER HANDLING

Excellent solution avoiding the use of expensive lifting equipment and building of special openings to access the installation room.

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