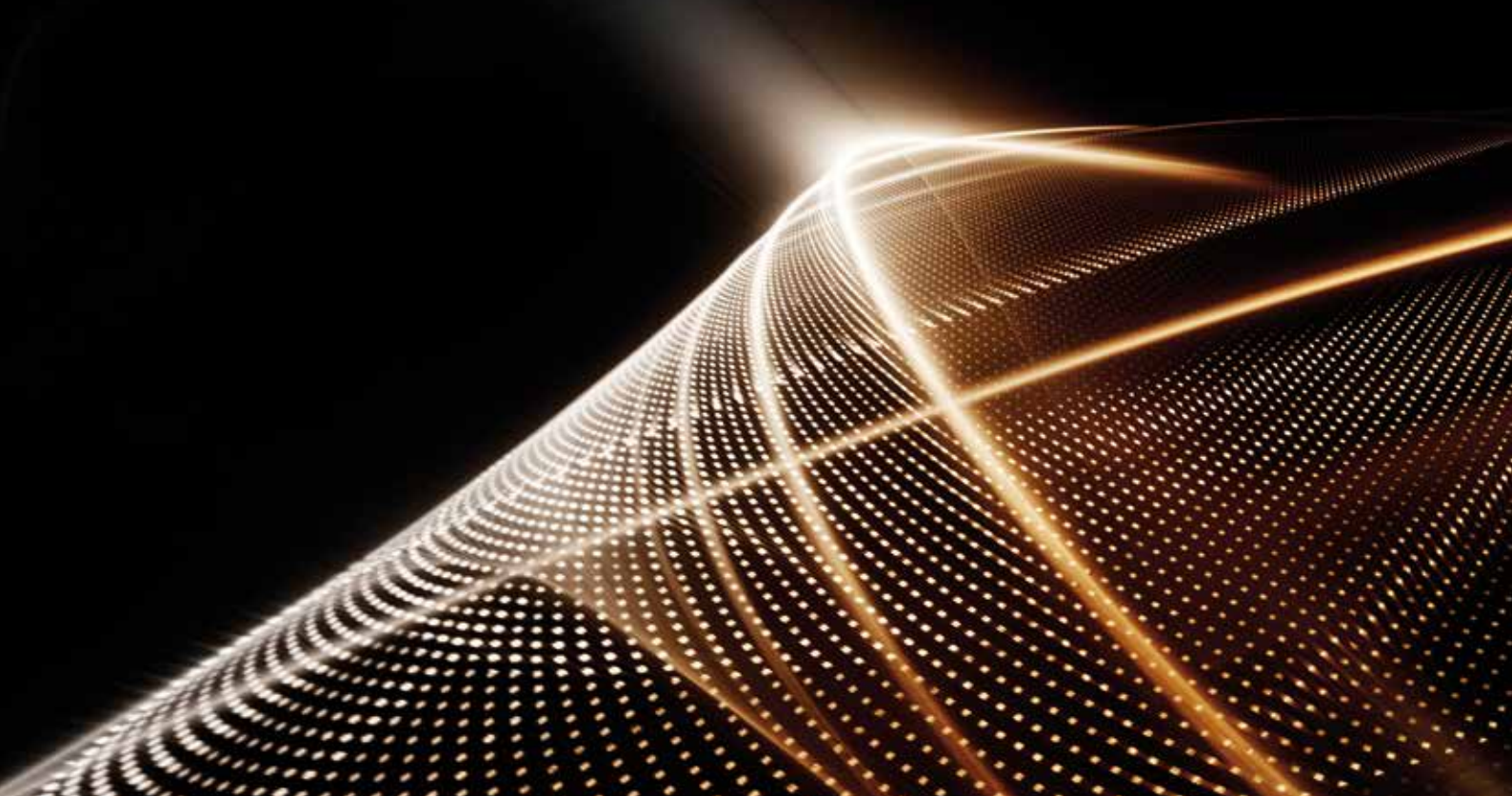
IREM
Made in Italy. Since 1947.

EN - 2018 POWER

MASTER IN POWER CONTROL



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Made in Italy. Since 1947.

www.irem.it

IREM: POSITIVE ENERGY, WITHOUT INTERRUPTION. SINCE 1947.

IREM is a worldwide leading manufacturing company of electromechanical and electronic equipment for the control of the mains power in the following sectors:

Power:
Power quality and energy saving;

Hydro:
power generation by hydroelectric turbines;

Lighting:
powering of discharge lamps for professional applications.

Two production plants, a philosophy based on "quality upgrading" as the company's primary concern and direct export exceeding 70% of the global turnover are a warranty of continuity and development.

"Quality is our first responsibility and customer satisfaction is our pride. The environment is our social objective, the safety and health of the individual is our duty".

OUR HISTORY

IREM is an Italian company, founded in 1947, worldwide leader in design and manufacture of equipment for the control and generation of electric energy.

Its brilliant founder, Mario Celso, as a boy passionate of electrical engineering and cinema, in the late 40's succeeded to realize his childhood dream creating the first electromechanical rectifier for carbon arcs used in cinema projection.

From this first rectifier, a comprehensive line of products dedicated to power and strike gas discharge lamps will take shape.

Soon the production is enhanced with the introduction of voltage stabilisers, starting a line of products designed to develop quickly to a full range of equipment able to solve the mains power problems.

ISO 9001
since 1991

ISO 14001
since 2000

BS OHSAS 18001
since 2014

In the 50's in addition to the energy management, IREM enters the field of machines for the production of energy: the first hydroelectric turbines, capable of generating renewable energy exploiting the head and flow of water streams are designed and produced .

In 1992, Mario Celso receives the Scientific and Technical Award for his technological contribution to the development of the film industry from the Academy of Motion Picture Arts and Sciences in Los Angeles

Today, IREM is a protagonist on the international markets. The constant investments in research and development allow to maintain the highest quality standards by continuing to develop innovative products capable to meet the demands of prestigious customers.

Quality, Safety and Environment are Corporate Values that IREM has pursued since its foundation as the basis of its organization and its development.

MASTER IN POWER CONTROL

Power protection and energy saving

SUMMARY

UNIQUE
AT HEART
FOR
70 YEARS

MINISTAB STEROSTAB
VOLTAGE STABILISERS

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%.




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:

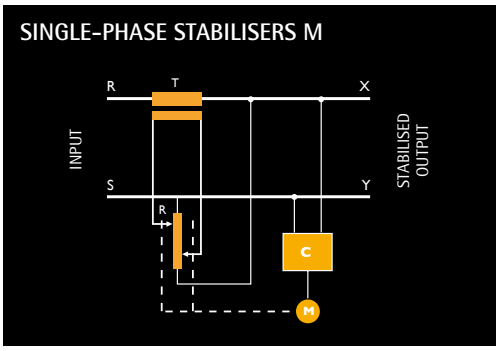
- ✔ a laser cutting machine undergoes changes in the "laser beam mode", resulting in cutting burrs or the shutting off of the beam;
- ✔ an electric drive causes undesired changes in the speed of the powered motor and damage to the data storage and power terminals;
- ✔ an "electromedical" device gives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

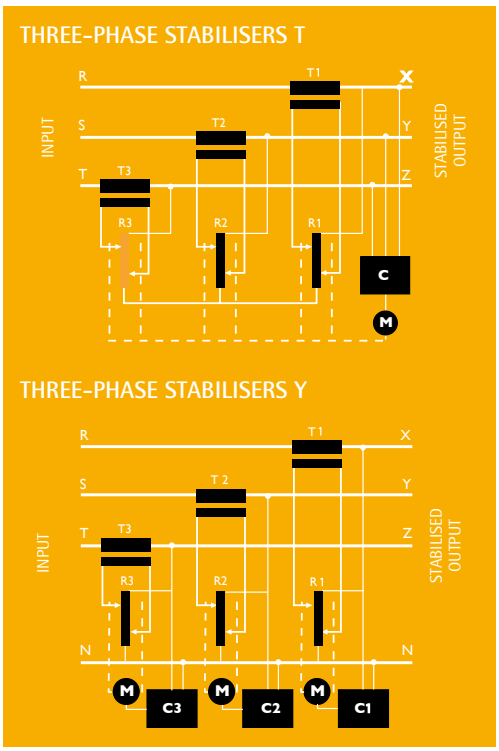
IREM PROPOSAL

Ministab and Sterostab are registered names of two series of electrodynamic voltage stabilisers that offer a reliable and tested economic solution to inconveniences caused by voltage fluctuations. Their use is 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 stabilisers.

Ministab and Sterostab are particularly suitable for 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;
- ✔ stabilisation 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 stabilisers can be supplied in enclosures with protection degree IP00, IP21, IP54 INDOOR, IP54 OUTDOOR.





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

Linear variable transformer used in Sterostab models

OPERATING PRINCIPLE

A motorised variable transformer supplies a series transformer the voltage -in phase or phase opposition- necessary to bring the mains to the rated value. The three-phase models are available in two versions:

T models which regulate on the average of the three phases and are suitable for balanced lines and a maximum load unbalance between the phases up to 50%;

Y models that, having three separate control circuits, individually regulate each phase and ensure a high precision both in case of an important load unbalance between phases and asymmetrical input voltages.

GENERAL FEATURES

Range from 1 to 8000 kVA with compensation of input voltage fluctuations up to ±30% or greater upon request. Stabilisers with the following characteristics can be supplied:

- ✔ Single-phase: 100-110-115-120-127-200-220-230-240-265-277V
- ✔ Three-phase: 208-220-230-240-380-400-415-440-460-480-500V
- ✔ Frequency: 50 or 60 Hz

Accuracy at true RMS value of 0.5% to ±1%, depending on model, even where strong harmonic distortions are present on the line.

Correction speed. The advanced electronic control circuit ensures a fast response, from 11 to 50 ms/Volt depending on model.

Overload capacity up to 10 times the rated current for 10 milliseconds, 5 times for 6 seconds and 2 times for 1 minute.

Efficiency from 96% up to more than 98% depending on model.

Insensitivity to power factor and load variations

Insensitivity to frequency variations up to ±5%.

Waveform distortion is always less than 0.1% in any working condition.

Impedance from 0.52 to 0.0015 ohm according to the model. It does not affect the line impedance. Therefore the installation of Ministab and Sterostab in an already existing plant does not require a new calculation of the protections.

Operating temperature up to +40°C. Models suitable for operation at temperatures higher than 40°C are available on request.

4 degrees of protection: IP00, IP21, IP54 INDOOR and OUTDOOR.

3 cooling systems according to the type of enclosure and the ambient conditions of the installation site:

- ✔ natural air convection for all IP21 models
- ✔ forced ventilation for IP54 indoor and outdoor models
- ✔ air conditioning for IP54 indoor models.

Reliability (MTBF) exceeding 500,000 hours. This is the result of the continuous improvements brought about since 1947.

Compliance to Standards: Electro Magnetic Compatibility 2014/30/UE and following amendments; Low Voltage Electrical Equipment 2014/35/UE and following amendments.

REMOTE CONTROL

It prevents the tripping of automatic protections of the stabiliser which would cause the interruption of the process, or, if these are not available, remove the alarm cause. The communication module Power Meter activates the connection to a remote supervision centre, tablet and smart phone to supply real time information and historical data.

Pop up alert

SMS plant alarm

E-mail operating status
E-mail alarm

Filing of
historical data

Data publication
on the web

SQUARE SECTION LINEAR VARIABLE TRANSFORMER

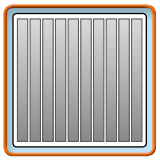
The linear variable transformers are the heart of IREM Sterostab voltage regulators.

They are the most extraordinary, particularly sophisticated to manufacture and technically worked out component. As a matter of fact the mobile contact ensuring the stabilisation is flown by currents of some tens of Ampere.

The square section winding is characterised by a much higher "filling factor" than the typical round section winding. The pictures show in both types of winding the large difference in surface existing between the copper winding and the magnetic sheet core. The smaller the surface, the smaller the leakage magnetic flux, which means higher efficiency and less heat to be dissipated.

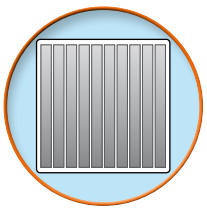
LOW MAGNETIC PERMEABILITY AREA

Copper winding of linear variable transformers used in STEROSTAB AVRs

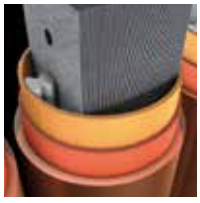


Irem linear vt section

Copper winding of traditional linear variable transformers



Typical linear vt section



COOLING
NATURAL AIR CONVECTION

This is the distinctive characteristic of all models 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. Fans and the relevant filters must be constantly checked, cleaned and periodically replaced.

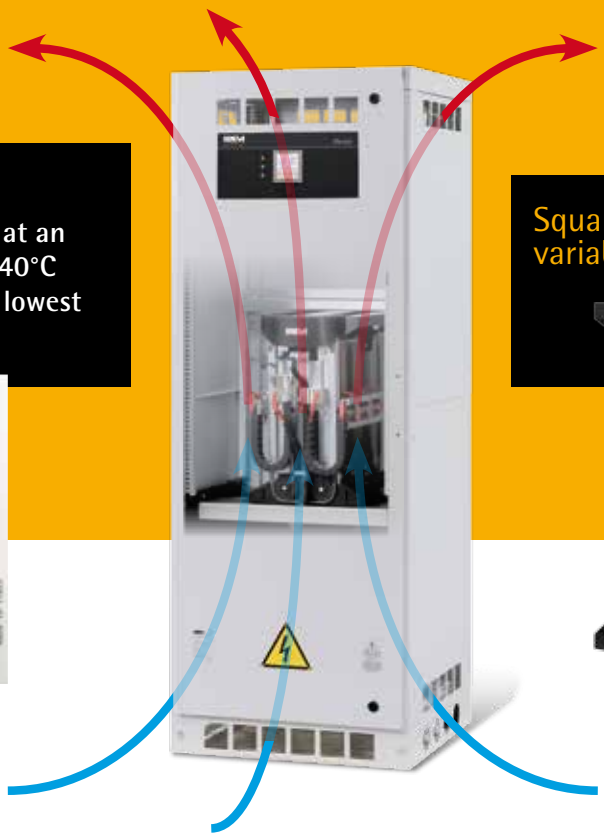
Moreover, the absence of fans avoids sucking of dust which would deposit on the copper tracks reducing the contact surface between the electro-graphite rolls and the transformer tracks. As a consequence, this would cause roughness, sparks and copper smelting, phenomena that in the long run would damage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

When the voltage is stable and the contact point is the same for several minutes, temperature can exceed 200°C. To avoid this problem, many manufacturers of voltage stabilisers install fans on the brush holder.

The pictures clearly show that NO fan is used in IREM 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; it is expressed in kVA and the relevant number, indicated in the name plate, represents the maximum power that the equipment can deliver. The power figure must however be contextualized with reference to the service class, to the input voltage fluctuations and to the ambient temperature.

THE SERVICE CLASS.

The standards define different types of service, i.e. operating conditions, for the electric machines.

An electric machine may have a different nominal power depending on whether it is designed to operate continuously or with intermittent or occasional partial load.

All IREM stabilisers 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 stabilisers are sized to work continuously with 100% duty-cycle and the materials used bear the maximum power expected for an unlimited time.

INPUT VOLTAGE FLUCTUATIONS.

A voltage stabiliser 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 work of the stabiliser is to supply the additive or subtractive compensation voltage which will act as a corrective for the mains voltage. The most heavy working condition is in presence of the minimum mains voltage in input.

All IREM voltage stabilisers 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 to an element at a lower temperature, according to the principles of physics.

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 requires that the energy losses are reduced to the minimum value allowed by the technology, using qualified materials and adopting a generous sizing criterion.

All IREM voltage stabilisers are designed and manufactured exploiting the air cooling capacity by applying the principle of heat subtraction by conduction and natural convection in the absolute absence of fans (fan-free), with IP21 protection class.

HIGHLIGHTS

WARRANTY

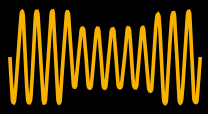
Extended warranty to 5 years.

NATURAL CONVECTION

The cooling in IP21 models is ensured by natural convection only. The total absence of fans (fan-free) increases the reliability of the product dramatically and makes the use of filters, which would need constant maintenance, unnecessary.

RELIABILITY

The criteria used to size the electrical and electronic parts guarantee the greatest reliability. The declared performance is always ensured in the worst operating conditions simultaneously and for unlimited time (heavy duty): nominal power with minimum input voltage, highest input current and at the declared ambient temperature.



BROAD RANGE

Single-phase and three-phase voltage stabilisers from 1 kVA up to 8000 kVA.

Voltage range from 110V to 500V.

All products are available in symmetrical configuration ±10%, ±15%, ±20%, ±25%, ±30% and in asymmetrical configuration -35% +15%.

Different configurations are available on request.

MAINTENANCE FREE

IREM voltage stabilisers are characterized by long life, no degradation of performance over time and reduced maintenance requirements, thanks to the robustness of construction and the high quality of the materials used.

FLEXIBILITY

The whole product range has a very high level of customization, both in terms of electrical characteristics as well as mechanical and aesthetic. A staff of technicians specially dedicated to "special" projects can satisfy the most demanding requests.

SHORT DELIVERY TIMES

The particular architecture of IREM voltage stabilisers allows to satisfy in a short time even the most demanding project, reducing design and production times. Moreover, the modular system used for higher power models simplifies transport and reduces time and cost.

MINISTAB AND STEROSTAB OVERVIEW

M — SINGLE-PHASE

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

Y T — THREE-PHASE

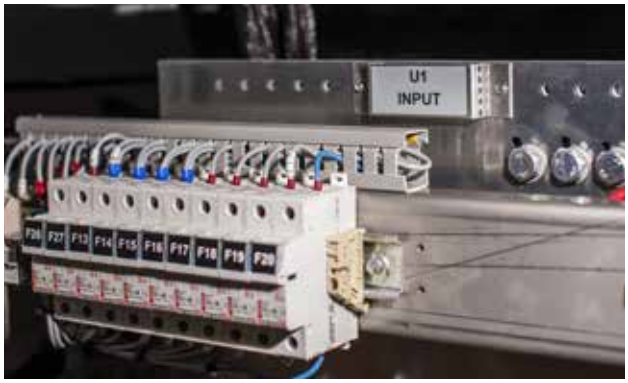
Ministab Y	independent regulation of each phase	3-120 kVA
Sterostab Y	independent regulation of each phase	45-8000 kVA

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

	Single-phase		Three-phase			
General features	Ministab M	Sterostab M	Ministab Y	Sterostab Y	Ministab T	Sterostab T
Toroidal variable transformer	•	-	•	-	•	-
Linear square section variable transformer	-	•	-	•	-	•
Natural air convection - fan free	vers.IP21	vers.IP21	vers.IP21	vers.IP21	vers.IP21	vers.IP21
Forced ventilation with fans	vers.IP54	vers.IP54	vers.IP54	vers.IP54	vers.IP54	vers.IP54
Forced ventilation with air conditioner	vers.IP54	vers.IP54	vers.IP54	vers.IP54	vers.IP54	vers.IP54
Electronic control	•	•	•	•	•	•
Output accuracy: ±1% RMS	•	•	•	•	•	•
Harmonic distortion	<0.2%	<0.2%	<0.2%	<0.2%	<0.2%	<0.2%
Admitted load variation up to 100%	•	•	•	•	•	•
Admitted overload: 200% x 1 mn	•	•	•	•	•	•
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	•	•	•	•	•	•
Alarm LEDS	•	•	•	•	•	•
Remote control	•	•	•	•	•	•
USB port	•	•	•	•	•	•
RS485 port	•	•	•	•	•	•
Ethernet module	•	•	•	•	•	•
Storage of electrical parameters and alarms	•	•	•	•	•	•
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	•	•	•	•	•	•
Manual by-pass	•	•	•	•	•	•
Automatic by-pass	•	•	•	•	•	•
Galvanic isolation	•	•	•	•	•	•
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	-	-	-	•	-	-

• = standard
• = optional
- = not available

OPTIONAL FITTINGS



DISPLAY OF ELECTRICAL PARAMETERS

Digital network analyser displaying input and output voltage, output current, frequency, power factor, active/reactive/apparent power, total harmonic distortion.

REMOTE MONITORING SYSTEM

Permits the remote monitoring of the electrical parameters as well as the acquisition of real time information and historical data. The analysis of this information and the alarm warnings allows to prevent the tripping of the AVR protections which would cause the interruption of the process or, if these are not available, to remove the cause of the alarm. Communication via USB port, RS485 port, Ethernet module (Modbus, SNMP protocol, BMS compatible).

STORAGE OF ELECTRICAL AND PHYSICAL PARAMETERS AS WELL AS ALARM CONDITIONS.

All electrical measures are stored in the memory module every 15 minutes during 250 days. The recorded data can be downloaded and processed by means of the specific supervision software.

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.

EARTH LEAKAGE PROTECTION

Ensured by means of earth leakage circuit breaker.

OVERLOAD PROTECTION

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

OVER/UNDER VOLTAGE PROTECTION

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.

INTERNAL 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.

OUT OF RANGE FREQUENCY PROTECTION

A sensor detects when the frequency value exceeds the alarm threshold. It is possible to disconnect the AVR

- ✔ either by means of a contactor, or
- ✔ by means of a thermal magnetic circuit breaker with tripping coil in input.

ALARMS/INDICATIONS ON TERMINAL BOARD (DRY CONTACTS) IN CASE OF:

- ✔ Out of range voltage
- ✔ Out of range frequency
- ✔ Reversed phase sequence / phase failure
- ✔ Over temperature
- ✔ Overload
- ✔ Earth leakage
- ✔ Short circuit
- ✔ Exhausted surge arresters
- ✔ Disconnect switch activated

SOFT START

It ensures a stabilised power supply to the load immediately after a power failure. Often, after a blackout, a high voltage can be present on the line. The soft start is performed by a time delay relay and a contactor. Capacitors or battery packs

are never used as these components are subject to periodical maintenance/replacement.

INTERNAL 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

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

f. 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.

ATTENUATION OF COMMON MODE AND TRANSVERSE MODE NOISE

By means of EMI/RFI filters.

NEUTRAL-POINT REACTOR

This is a magnetic component designed to create a clean neutral in those plants where neutral is not available or not stable.

DELTA-STAR ISOLATION TRANSFORMER

It ensures the galvanic isolation of the plant, attenuates common mode noise, creates a "clean neutral" and allows to transform the nominal voltage to the value required by the load.

ADAPTING TRANSFORMER

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

HARMONIC FILTER

Can be active or passive.

POTENTIOMETER TO ADJUST THE NOMINAL OUTPUT VOLTAGE

Allows to adjust the output voltage within ±5% of the nominal value.

MANUAL OUTPUT VOLTAGE ADJUSTMENT

It permits to modify the output voltage value and perform the regulation manually.

SMART MANAGEMENT OF THE PLANT

AUTOMATIC SWITCHING ON A RESERVE STABILISER.

After detecting a malfunctioning or a strange operation of the main stabiliser, the supervision module automatically switches the load on the reserve equipment.

AUTOMATIC SWITCHING TO AN EMERGENCY LINE.

Connects the AVR to an emergency line after an abnormal condition of the main power supply has been detected by the supervision module.

DEVICE FOR UNPRIVILEGED LOAD SWITCHING-OFF

Automatically switches off unprivileged loads in case of overload or to achieve energy saving.

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.

1PH VOLTAGE STABILISERS
M MODELS

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

Ministab

Sterostab

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
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

M MODELS

Power kVA	±10%	±15%	±20%	±25%	±30%	-35% +15%
1	M204E3.5	M204E2,5	M204E2	M204E1.5	M204E1	M204E1.1AS
1,5					M206E2	M206E2.5AS
2				M206E3		
2,5			M206E4		M208E3	
3		M206E5				M208E3.5AS
3,5				M208E4.5	M210E6	
4	M206E7					M210E7AS
4,5			M208E6			
5				M210E8		
6		M208E7.5				
7			M210E10		M211E9	
7,5	M208E10					M211AN10AS
8						
9		M210E15		M211E12		
10					M212E12	
12	M210E24		M211E15			M212AN14AS
14				M212E15	M213AN15	
15						M213AN17AS
17		M211E22	M212E20	M214AN30	M214AN24	
20						M214AN25AS
22			M213AN25			
24		M212E30			M216AN30	
25	M211E35					
30			M214AN40	M216AN40	M217AN45	M216AN35AS
33		M213AN35				
35						
40	M212E45	M214AN55	M216AN55	M218AN60		M217AN50AS
45					M218AN60	
50	M213AN60					
55						M218AN70AS
60		M216AN75	M217AN80	M218AN80		
70	M214AN90				M219AN90	
75						M219AN103AS
80		M217AN110	M218AN100	M219AN120		
85						
90						
100	M216AN120		M219AN160			
103						
110						
120		M218AN150				
150	M217AN180					
160		M219AN230				
180						
200	M218AN240					
230						
240						
250	M219AN350					
300						
350						

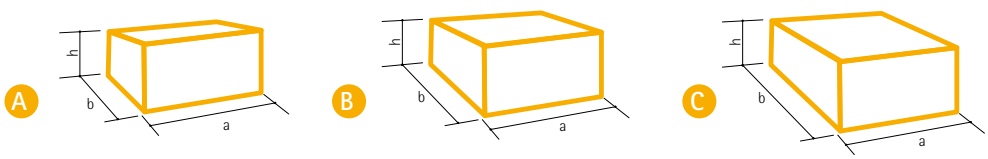
VOLTAGE STABILISERS
MINISTAB M
SINGLE-PHASE 230V 50/60 HZ, PROTECTION DEGREE IP21

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	55	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.



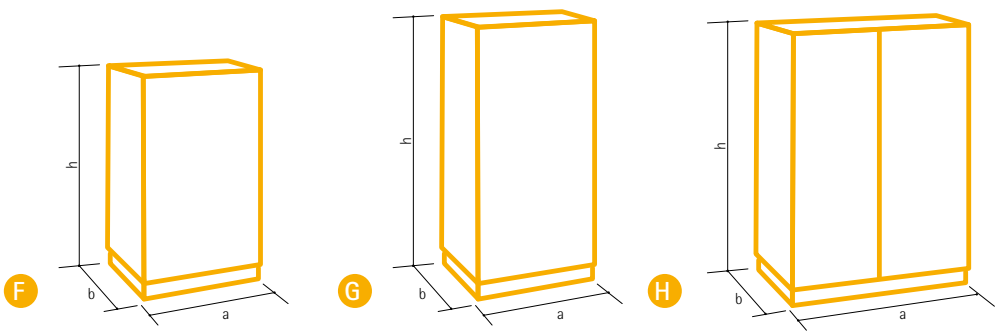
VOLTAGE STABILISER
STEROSTAB M
SINGLE-PHASE 230V 50/60 HZ, PROTECTION DEGREE IP21

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)*	*Case*
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	1100x650x1800	455	H
M218AN80	80	±25	21						
M218AN100	100	±20	23						
M218AN150	150	±15	26						
M218AN240	240	±10	31						
M219AN90	90	±30	23	±1	V, L	21	1100x650x1800	670	H
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.



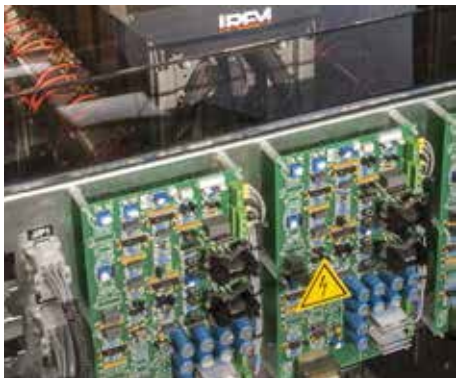
3PH VOLTAGE STABILISERS Y MODELS INDEPENDENT REGULATION OF EACH PHASE

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

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
Colour	RAL 7035
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.



*Y model output power factor 0.95~1

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

MORE APPLICATIONS

Y MODELS

Power kVA	±10%	±15%	±20%	±25%	±30%	-35% +15%
3	Y304ES10	Y304ES8	Y304ES6	Y304ES4	Y304ES3	Y304AN3.3AS
3.3					Y306ES7	
4						Y306AN7.5AS
6				Y306ES8.5		
7			Y306ES12		Y308ES10	
7,5						Y308AN10.5AS
8						
8,5		Y306ES15				
10				Y308ES12		
10.5	Y306ES24				Y310ES18	
12						Y310AN21AS
15			Y308ES18	Y310ES24		
18		Y308ES25			Y311ES27	
21			Y310ES30			Y311AN30AS
24				Y311ES35		
25						
27		Y310ES45			Y312ES35	
30	Y308ES30					Y312AN40AS
35	Y310ES70		Y311ES45	Y312AN45	Y313AN45	
40						Y313AN50AS
45						
50		Y311ES65	Y312ES60	Y313AN60	Y314AN70	
55						Y314AN75AS
60						
65			Y313ES80	Y314AN100		
70		Y312ES85				
75	Y311ES100				Y316AN90	
80						Y316AN105AS
85						
90			Y314AN120			
100		Y313AN110			Y317AN140	
105						
110	Y312ES120			Y316AN120		Y317AN150AS
120						
140		Y314AN170	Y316AN160	Y317AN180		
150					Y318AN190	
160	Y314AN180					Y318AN210AS
170						
180			Y317AN250			
190		Y316AN230		Y318AN240		
210					Y319AN280	
230	Y314AN270					Y319AN310AS
240						
250				Y319AN370		
270		Y316AN350	Y318AN320			
280					Y320AN420	
310						Y320AN440AS
320	Y316AN370					
350			Y319AN500			
370		Y318AN460		Y320AN550		
420					Y322AN550	
440						Y322AN560AS
460	Y317AN550					
500		Y319AN700				
550			Y322AN1000		Y323AN700	
560				Y322AN730		
700	Y318AN730				Y324AN800	Y324AN820AS
730						
800		Y320AN1000		Y323AN900		
820					Y326AN1000	
900	Y319AN1100					
950				Y324AN1000		
1000						
1100						

Power kVA	±10%	±15%	±20%	±25%	±30%	-35% +15%
1100	Y320AN1500	Y322AN1350	Y323AN1200	Y326AN1250	Y328AN1100	ON REQUEST
1200					Y330AN1250	
1250			Y324AN1400			
1350				Y328AN1400	Y332AN1400	
1400		Y323AN1700				
1450			Y326AN1700	Y330AN1600	Y334AN1500	
1500						
1600	Y322AN2200				Y338AN1650	
1650				Y332AN1800		
1700					Y338AN1800	
1750		Y324AN2000	Y328AN1900			
1800						
1900				Y334AN2000	Y340AN2000	
1950			Y330AN2200			
2000						
2100		Y326AN2400		Y336AN2200	Y342AN2100	
2200						
2250	Y323AN2700		Y332AN2360	Y338AN2300		
2300						
2360				Y340AN2500		
2400			Y334AN2600			
2500		Y328AN2700				
2600				Y342AN2700		
2700			Y336AN3000			
2800	Y324AN3200	Y330AN3100				
2900						
3000						
3100			Y338AN3100			
3200		Y332AN3400	Y340AN3300			
3300	Y326AN3800					
3400			Y342AN3600			
3500		Y334AN3800				
3600						
3700						
3800						
4100	Y328AN4400	Y336AN4100				
4400		Y338AN4500				
4500	Y330AN5000					
4700		Y340AN4700				
5000		Y342AN5000				
5500	Y332AN5500					
6000	Y334AN6000					
6500	Y336AN6500					
7000	Y338AN7000					
7500	Y340AN7500					
8000	Y342AN8000					

VOLTAGE STABILISERS

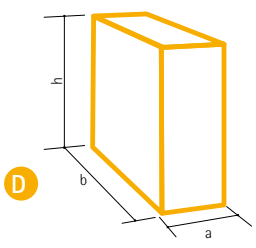
MINISTAB Y INDEPENDENT REGULATION OF EACH PHASE THREE-PHASE 400V 50/60 HZ PROTECTION DEGREE IP21

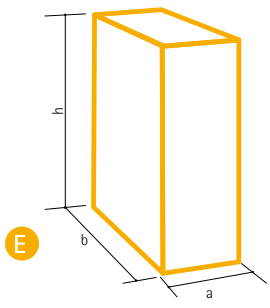
Model	*Rated power (KVA)*	*Voltage variation (%)*	*Response time (ms/V)*	*Output accuracy (±%)*	*Fittings*	*Protection degree IP*	*Dimensions (mm) a x b x h*	*Net weight (kg)*	*Case*
Y304ES	3	±30	13	±1	V, GC, L, R	21	350x580x890	90	D
	4	±25	14						
	6	±20	9						
	8	±15	18						
Y304ES10	10	±10	16		V, L, R				
Y306ES	7	±30	11	±1	V, GC, L, R	21	350x580x890	115	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	135	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	240	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	290	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						
Y314AN100	100	±25	26						
Y314AN120	120	±20	27	±1	V, L	21	1100x650x1800	560	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	625	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	780	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	1100x1270x1800	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	1100x1270x1800	1360	I
Y319AN700	700	±15	17						
Y319AN1100	1100	±10	27						
Y320AN420	420	±30	9						
Y320AN550	550	±25	14						
Y320AN730	730	±20	13	±1	V, L	21	1100x1270x1950	1850	I
Y320AN1000	1000	±15	18						
Y320AN1500	1500	±10	26						
Y322AN550	550	±30	16						
Y322AN730	730	±25	18						
Y322AN1000	1000	±20	14	±1	V, L	21	2130x1350x2150	2700	K
Y322AN1350	1350	±15	26						
Y322AN2200	2200	±10	29						
Y323AN700	700	±30	16						
Y323AN900	900	±25	18						
Y323AN1200	1200	±20	14	±1	V, L	21	2130x1350x2150	3100	K
Y323AN1700	1700	±15	18						
Y323AN2700	2700	±10	29						
Y324AN800	800	±30	16						
Y324AN1000	1000	±25	18						
Y324AN1400	1400	±20	22	±1	V, L	21	2130x1350x2150	3400	K
Y324AN2000	2000	±15	17						
Y324AN3200	3200	±10	29						

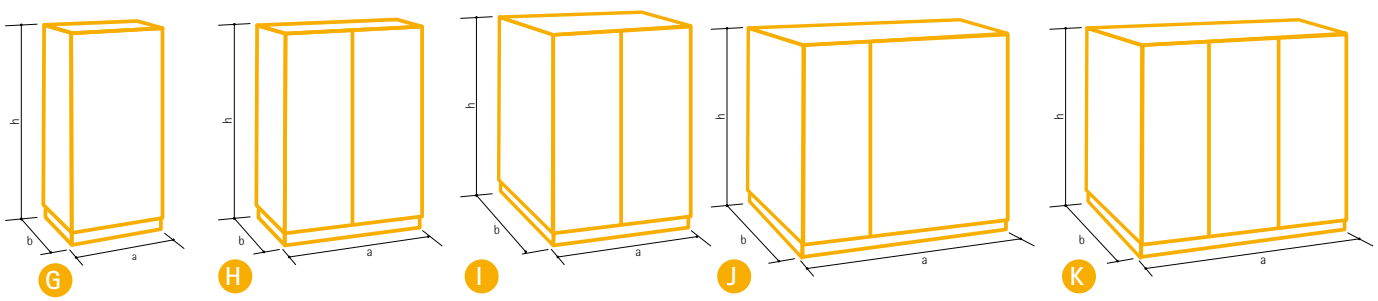
*Y model output power factor 0.95~1

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 1100x1270x1950 each	3800	3 cabinets type I
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 1100x1270x1950 each	5200	3 cabinets type I
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 1100x1270x1950 each	5700	3 cabinets type I
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 each	6300	3 cabinets type J
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 each	6800	3 cabinets type J
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 each	7400	3 cabinets type J
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 2130x1350x2150 each	8000	3 cabinets type K
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 2130x1350x2150 each	8400	3 cabinets type K
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 2130x1350x2150 each	8800	3 cabinets type K
Y342AN2700	2700	±25	20						
Y342AN3600	3600	±20	23						
Y342AN5000	5000	±15	24						
Y342AN8000	8000	±10	27						

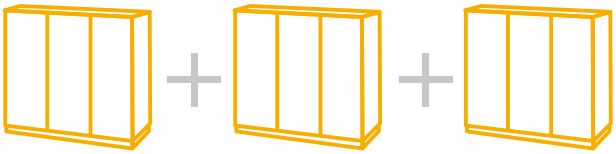
Fittings V: digital voltmeter
L: pilot lamp

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

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.



IREM MODULAR SYSTEM



IREM 3PH AVRs 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.

This solution 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.

3PH VOLTAGE STABILISERS T MODELS COMMON REGULATION OF THE 3 PHASES

MINISTAB T THREE-PHASE 3.5-32 KVA
STEROSTAB T THREE-PHASE 22-800 KVA

Ministab *Sterostab*

GENERAL CHARACTERISTICS

Mains	Three-phase(3PH+N+PE)
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, 5 times during 6 s, 2 times for 1 minute
Harmonic distortion	<0,1%
Efficiency	>98,5%
Cooling	natural air convection
Colour	RAL 7035
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.

*T model output power factor 0.95~1
***Input ±20%; Output 400VAC ±5%
Input ±15%; Output 400VAC ±1%

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

T MODELS

Power kVA	±10%	±15%	±20%	±25%	±30%
3,5	T304E10	T304E8.5	T304E6	T304E4	T304E3.5
4					T306E7
6				T306E8	
7			T306E12		
8					T308E10
8,5				T308E12	
10		T306E15			
12	T306E22				T310AN22
15			T308E18		
18		T308E25		T310AN30	
20			T310AN40		
22					
25	T308AN32				T312AN35
30		T310AN55			
32				T312AN45	
35	T310AN90				T314AN45
40					
45			T312AN60		
50				T314AN60	T315AN70
55					
60		T312AN80			
70			T314AN80	T315AN90	
80					T316AN95
90		T314AN120	T314AN120		
95	T312AN120			T314AN120	
120					T318AN140
130	T314AN185		T316AN160	T318AN180	
140		T315AN170			
160					T319AN200
170			T318AN250		
180		T316AN230			
185				T319AN270	
200	T315AN270				
230					
250		T318AN350			
270			T319AN370		
350	T316AN370				
370		T319AN560			
500			T318AN500		
560					
700					
800					

VOLTAGE STABILISERS

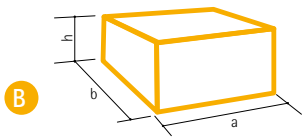
MINISTAB T COMMON REGULATION OF THE THREE PHASES THREE-PHASE 400V 50/60 HZ PROTECTION DEGREE IP21

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	45	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	78	B
	8	±25	15						
	12	±20	16						
	15	±15	21						
T306E22	22	±10	33		L				
T308E	10	±30	15	±1	CG, L	21	450x680x400	125	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	26						
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	900	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	1100x1270x1800	1200	I
T319AN270	270	±25	23						
T319AN370	370	±20	26						
T319AN500	500	±20	29					1320	
T319AN800	800	±10	32						

Fittings V: digital voltmeter
L: pilot lamp

*T model output power factor 0.95~1

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.