VARSAN DIŞ TİCARET ELEKTRİK LTD. ŞTİ.

MICROPROCESSOR CONTROLLED
SERVO VOLTAGE STABILIZER

SINGLE PHASE 5 – 40 KVA
THREE PHASE 15 – 2400 KVA

TECHNICAL DOCUMENT

WE CAN MAKE PRODUCTIONS IN EVERY VOLTAGE ON ORDER

VARSAN DIŞ TİCARET ELEKTRİK LTD. ŞTİ.
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SINGLE PHASE
5 – 40 KVA
SERVO VOLTAGE STABILIZER

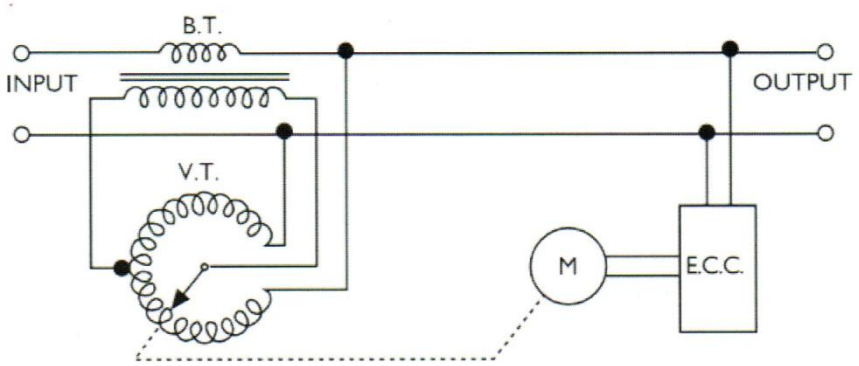
MONOPHASE 160 V - 250 V = 220 V

Code	KVA	SIZES Height	Width	Depth	Cubic Meters	Weight
VSRM 1050	5	27cm	52cm	35cm	0,049	40kg
VSRM 1075	7,5	27cm	52cm	35cm	0,049	46kg
VSRM 1010	10	30cm	55cm	45cm	0,074	53kg
VSRM 1015	15	30cm	55cm	45cm	0,074	70kg
VSRM 1020	20	90cm	55cm	55cm	0,272	125kg
VSRM 1025	25	90cm	55cm	55cm	0,272	130kg
VSRM 1030	30	90cm	55cm	55cm	0,272	165kg
VSRM 1040	40	90cm	55cm	65cm	0,321	200kg

TECHNICAL SPECIFICATIONS

INPUT	Input Voltage Regulation Range	160 - 250 Vac (1 Phase)
	Operating Frequency	50 / 60 Hz ±10%
	System Input Protection	Over Current Fuse, **SURGE ARRESTER (OPTIONAL)**
OUTPUT	Voltage	220 / 230 / 240 Vac
	Regulation Speed	60 - 80 Vac / Second
	Frequency	50 and 60 Hz
	Output Protection	Short Circuit, Over Current, Over and Under Voltage
★	**TRANSFORMER**	**100 % COPPER**
GENERAL	Efficiency	≥ 90%
	Mechanical By-Pass	Manually Controlled Line
	Protection Level	IP 20 (IP54 is optional)
ENVIRONMENT	Cooling	Forced Cooling (Fan)
	Operating Temperature	-10 °C.....+40 °C
	Storage Temperature	-25 °C.....+60 °C
	Relative Humidity	< 90%
	Working Altitude	Max 3.000 meter
	Acoustic Noise	Max 60 dB

SINGLE PHASE VOLTAGE STABILIZER WORKING PRINCIPLE



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THREE PHASE
15 – 150 KVA
SERVO VOLTAGE STABILIZER

15 KVA to 100 KVA

120 and 150 KVA

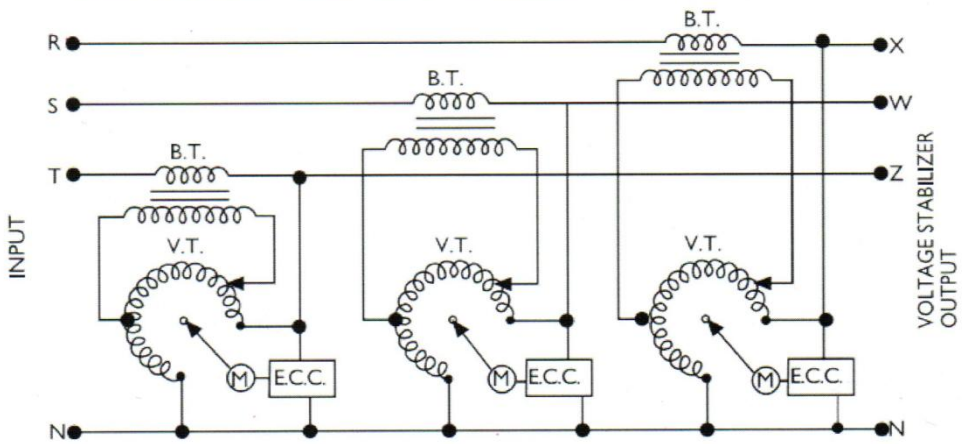
THREEPHASE 275V - 430 V = 380 V

Code	KVA	SIZES			Cubic Meters	Weight
		Height	Width	Depth		
VSRT 3015	15	100cm	50cm	45cm	0,225	145kg
VSRT 3022	22,5	100cm	50cm	45cm	0,225	155kg
VSRT 3030	30	125cm	65cm	45cm	0,365	195kg
VSRT 3045	45	125cm	65cm	45cm	0,365	238kg
VSRT 3060	60	140cm	85cm	70cm	0,833	345kg
VSRT 3075	75	140cm	85cm	70cm	0,833	360kg
VSRT 30100	100	140cm	85cm	70cm	0,833	470kg
VSRT 30120	120	160cm	100cm	80cm	1,280	615kg
VSRT 30150	150	160cm	100cm	80cm	1,280	675kg

TECHNICAL SPECIFICATIONS

INPUT	Input Voltage Regulation Range	275 - 435 Vac (3 Phase)
	Operating Frequency	50 / 60 Hz ±10%
	System Input Protection	Over Current Fuse, **SURGE ARRESTER (OPTIONAL)**
OUTPUT	Voltage	380 / 400 / 415 Vac
	Regulation Speed	60 - 80 Vac / Second
	Frequency	50 and 60 Hz
	Output Protection	Short Circuit, Over Current, Over and Under Voltage
★	**TRANSFORMER**	**100 % COPPER**
GENERAL	Efficiency	≥ 90%
	Mechanical By-Pass	Manually Controlled Line
	Protection Level	IP 20 (IP54 is optional)
ENVIRONMENT	Cooling	Forced Cooling (Fan)
	Operating Temperature	-10 °C.....+40 °C
	Storage Temperature	-25 °C.....+60 °C
	Relative Humidity	< 90%
	Working Altitude	Max 3.000 meter
	Acoustic Noise	Max 60 dB

THREE PHASE VOLTAGE STABILIZER WORKING PRINCIPLE



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THREE PHASE
SERVO VOLTAGE STABILIZER
200, 250, 300 KVA 400,500,600 KVA

THREEPHASE 275V - 430 V = 380 V

Code	KVA	SIZES Height	Width	Depth	Cubic Meters	Weight
VSRT 30200	200	130cm	170cm	62cm	1,370	850
VSRT 30250	250	135cm	207cm	70cm	1,956	1,000
VSRT 30300	300	135cm	207cm	70cm	1,956	1,150

THREEPHASE 275V - 430 V = 380 V

Code	KVA	SIZES Height	Width	Depth	Cubic Meters	Weight
VSRT 30400	400	205cm	207cm	70cm	2,970	1,500
VSRT 30500	500	205cm	207cm	70cm	2,970	2,200
VSRT 30600	600	205cm	207cm	70cm	2,970	2,400

TECHNICAL SPECIFICATIONS

INPUT	Input Voltage Regulation Range	275 - 435 Vac (3 Phase)
	Operating Frequency	50 / 60 Hz ±10%
	System Input Protection	Over Current Fuse, **SURGE ARRESTER (OPTIONAL)**
OUTPUT	Voltage	380 / 400 / 415 Vac
	Regulation Speed	60 - 80 Vac / Second
	Frequency	50 and 60 Hz
	Output Protection	Short Circuit, Over Current, Over and Under Voltage
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	Working Altitude	Max 3.000 meter
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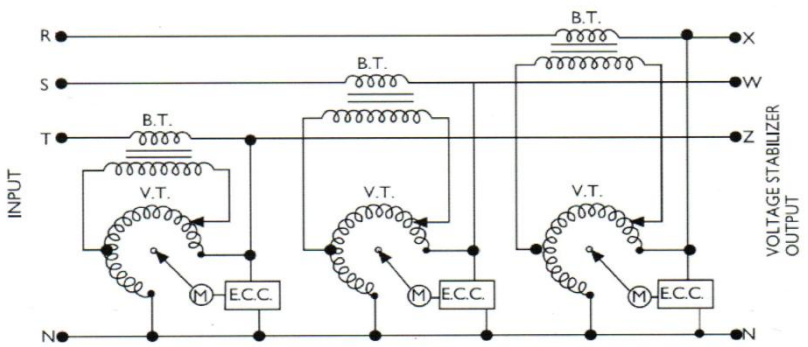
THREE PHASE VOLTAGE STABILIZER WORKING PRINCIPLE



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GENERAL

The production, testing and last check was made with special care. It is guaranteed for 1 (one) year if used according to the guidelines stated in the user's manual.

The maintenance and part changes which are caused by the changes made without the consent of the Manufacturer Company or usage of the placement of the parts that are not original are outside the scope of the warranty.

We recommend that you read the manual carefully and behave according to warnings and cautions so that you use the machine with highest efficiency.

We thank you for choosing our product and hope that you will use it for years happily.

VOLTAGE AREA

In standard models;

Single phase 160/250 volt input	±2% tolerance output
Three phase 275/450 volt input	±2% tolerance output

Output tolerance can modified.

VOLTAGE STABILIZER WORKING PRINCIPLE

Servo Controlled voltage stabilizer is made up of toroidal transformer (variable transformer), assistant transformer and electronic circuits that control changing transformer.

With the control system which includes fast replying time, high starting torque dc engine, and the system, it regulates the small tension changes at the beginning very fast. Servo-engine, is put out of service by limit-switchers when it is out of working limits, and it is put out of service by control circuit when output tension is configured automatically to desired value. When the regulation is complete the energy of the engine is cut by the help pf electronic braking circuit and it works silently.

ATTENTION..!

Voltage stabilizer is affected by no phase cuts as the phases in tree phase voltage stabilizers are produced separately. As the voltage stabilizers are produced as KVA and VA, count the expenses of the device to which you will attach the voltage stabilizer as KVA and VA. If needed, call our company for information.

OPERATING INSTRUCTONS

Keep all the devices that are attached to the voltage stabilizer closed before putting the voltage stabilizer into service, operate your devices after you are sure that your voltage stabilizer operates normally.

Use the upper section of the cable that you choose as connection cable. Thus keep the line losses on minimum level.

Before operating your voltage stabilizer having attached to the device, turn the Main switch on your device to 0 (zero) position. Tum the Automatic switches to (W automat) 0 position, (it is turned off when the handle is downwards). (Picture 1-2)

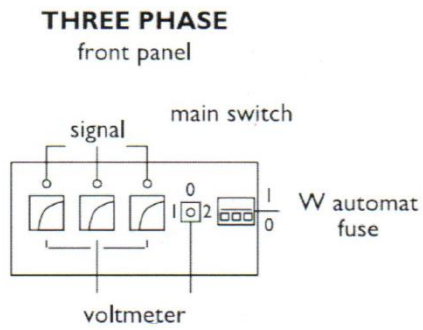
While putting your voltage stabilizer into service first turn the W automat up position (for small powers). Turn it to I position. Secondly, turn the Main switch of your voltage stabilizer to 2 (two) position (Picture 1-2). Your voltage stabilizer will be on service working.

When you want to put your voltage stabilizer out of service and instead use city current, turn your Main switch to number I (one) position NETWORK. (For small powers) W automat, turn the handle of the automatic fuses downwards. Turn it to 0 position. In this way, your voltage stabilizer will be out of service and you will be using city current.

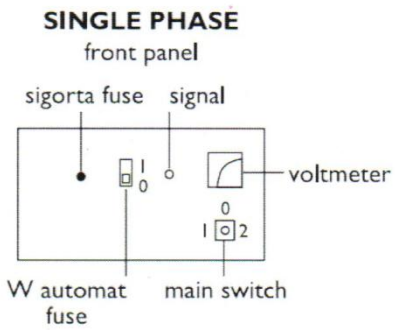
If your voltage stabilizer is not working orderly, check whether the city voltage has went beyond the adjusting capacity of your voltage stabilizer. You can see the city current in the VOLTMETER (Picture 1-2) by turning the MAIN switch to NETWORK position. If your voltage stabilizer is giving disorderly voltage while the city current is inside the voltage capacity of your voltage stabilizer, check the fuses on it. While doing this, turn the voltage stabilizer to NETWORK position and turn the W automat fuses downwards.

For the powers 120 KVA and higher

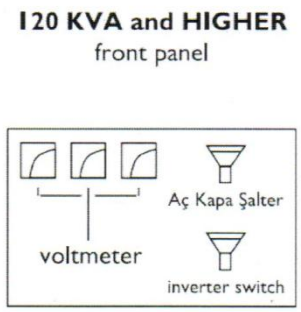
The switch with turn on-off handled on the upper part of the 2 units of three phase handled switches on your voltage stabilizer (picture 3) is the switch that conveys the voltage coming from the network to the bobbin and variable transformer part of the voltage stabilizer. The inverser handled switch on the below part, connects the output of the voltage stabilizer to network or voltage stabilizer output whenever needed. Both switches' handle shall be downwards position to connect directly to city current. Both switches' handle shall be upwards to connect to voltage stabilizer's current.



Picture I



Picture 2



Picture 3

<u>If you don't have the possibility of tracking the operation of your voltage stabilizer (daily voltages should be checked from the voltmeter once) you should buy one with a protective unit.</u>

<u>If your voltage stabilizer has protective unit to high voltage and phase</u>, when your voltage stabilizer outputs high or low voltage because of an/problem, current is cut and if the voltage gets into order it starts operating automatically. If protective unit is not getting into service that means the problem continues. So as not to be left without energy, you can operate your voltage stabilizer by eliminating High Voltage Protection switch and protective unit on your voltage stabilizer.

When one of your phases are cut protective unit will be out of service. It won't come back until the phase is back; if you want to use it with two phases you can connect your voltage stabilizer to network directly.

You can get information from our company when needed.

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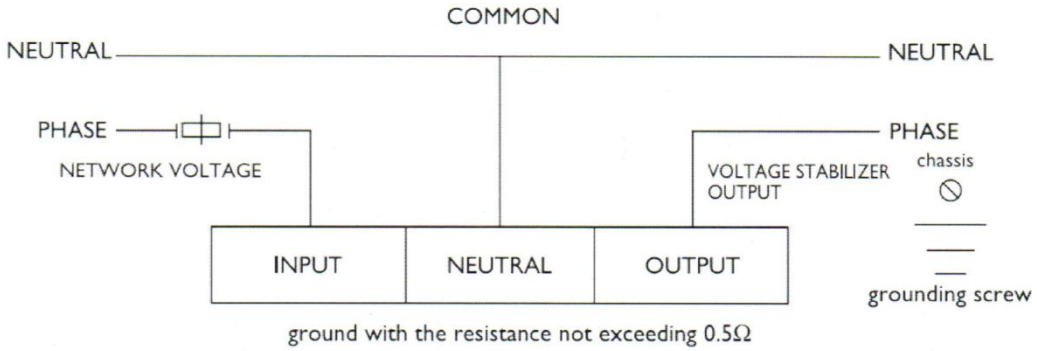
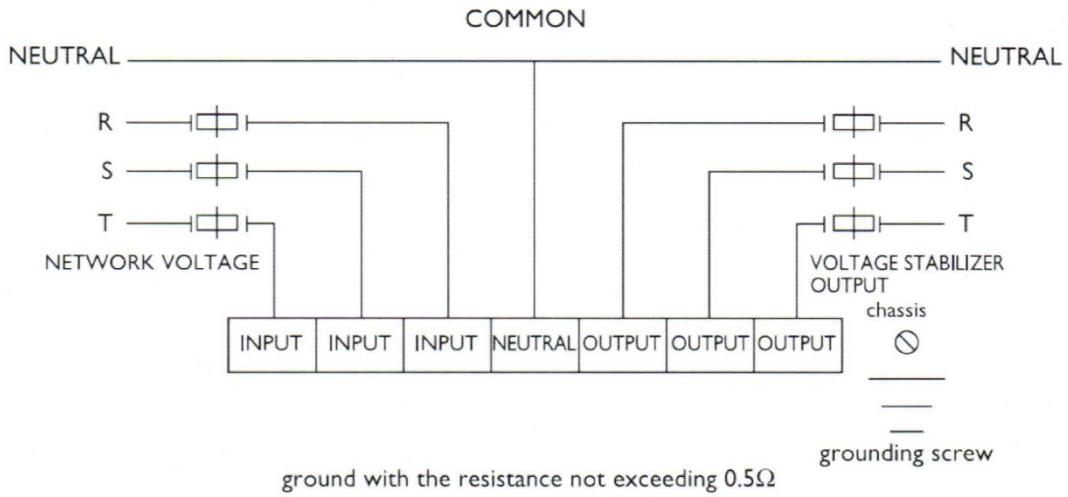
INSTALLATION OF THE VOLTAGE STABILIZER

CONNECTION DIAGRAM OF THE SINGLE PHASE VOLTAGE STABILIZER



CONNECTION DIAGRAM OF THE THREE PHASE VOLTAGE STABILIZER



MAINTENANCE OF THE VOLTAGE STABILIZER

- The maintenance and cleaning of the voltage stabilizer is needed so that it won't be affectedby dust and harmful materials.
- Maintenance and isolation of variable transformer, maintenance of coal and coal keepers, changing if needed.
- Control and modification of electromechanical parts (engine, electronic card, switch, etc.)
- You can prevent bigger failures that can happen in the future by these maintenances.

WARRANTY CONDITIONS

Our voltage stabilizers are guaranteed against production malfunctions for 1 (one) year from the date of the receipt.

- Determination of intervention of unauthorized persons,
- Loading power to the device over its etiquette value,
- Damages while carriage and malfunctions caused by these,
- And the conditions such as the environment's not being suitable for operation are not under the scope of the warranty.
- There should be stamp, signature and date of the dealer or authorized company on the warranty.

SAFETY RULES

- Have your voltage stabilizer installed by an expert person.
- Do not open the cover while there is current in the voltage stabilizer.
- Consult to authorized service for malfunctions.
- Turn the voltage stabilizers into network positions that are not to be used for a long lime.
- Maintenance should be done 1-2 times in a year.
- Do not overload your system or do not exceed the maximum capacity.
- Immobilize your device (to ground or to wall) to protect from earthquakes and knocks.