



USER MANUAL

STATIC VOLTAGE REGULATOR (SVR)

Uninterruptible Power Systems

INDEX

SAFETY WARNINGS.....	2
Norm appropriateness.....	2
Symbols.....	3
INTRODUCTION.....	4
FRONT PANEL SPECIALITIES AND BUTTONS	5
INSTALLING AND COMMISSIONING.....	7
Installing.....	7
Commissioning.....	8
Operating.....	9
COMMUNICATION INTERFACE	10
UPKEEP.....	12
Storing	12
Cleaning.....	12
ERROR CORRECTION.....	13
TECHNICAL PROPERTIES.....	13
POINTS TO PAY ATTENTION IN SVR USAGE.....	16

SAFETY WARNINGS



**Please read carefully the security recommendations above!
It is important to read this warnings for your safe as well as the
security of your machine!**

- ✓ This machine ensures all safety stipulations about technical information institutions including electronic office machines. In any hesitation have recourse to authorized technical service.
- ✓ In order to pay avoid any kind of stroke or dash, carry the machine only in proper package.
- ✓ Mist can be occurred when the regulator is brought to indoors from a colder surrounding. The machine should be completely dry before operating. Thus; there will be need two hours waiting period.
- ✓ Before installing and operating the machine, take the warnings about surrounding conditions under “Technical Properties” section into account.
- ✓ Make earth connection of the machine.
- ✓ In order to leave from the mains completely, you should have to switch power switch to its middle position and switch the input fuse to its “0” position.
- ✓ Arrange the cables in such an order so that nobody step on them and cause an accident. Pay attention to “installing and commissioning” section while making the connections of the unit.
- ✓ In weather conditions including thunderbolt and lightning, do not put in or out the communication interface unit’s cables.
- ✓ Avoid dropping foreign materials (chain, thumbtack, nail etc.) inside of the unit.
- ✓ In urgent situations (like a damage in front panel and mains connections or foreign materials inside the machine) turn off the machine, put the plug out and call the authorized technical service.

- ✓ The regulator can only be repaired by authorized technical staff. Opening the machine or any effort to repair by someone who is not authorized can pose excessive troubles.
- ✓ Read carefully the “upkeep” section while you are cleaning the machine.
- ✓ Pay attention to leave at least 15 centimeters of space behind the machine for airflow.
- ✓ You can find the other details and information about SVR in “points to pay attention in SVR usage” section.

SYMBOLS

These are the symbols used in this handbook:



This symbol is used to emphasize the points, which are significant for your safe and for the unit's data secure.



This symbol displays the extra information, warnings and suggestions.



This symbol shows the process that you should do.

INTRODUCTION

Static Voltage Regulator (SVR) which is connected between mains and consumer's machine removes the negative effects of the mains' fluctuation to the consumer's machine.

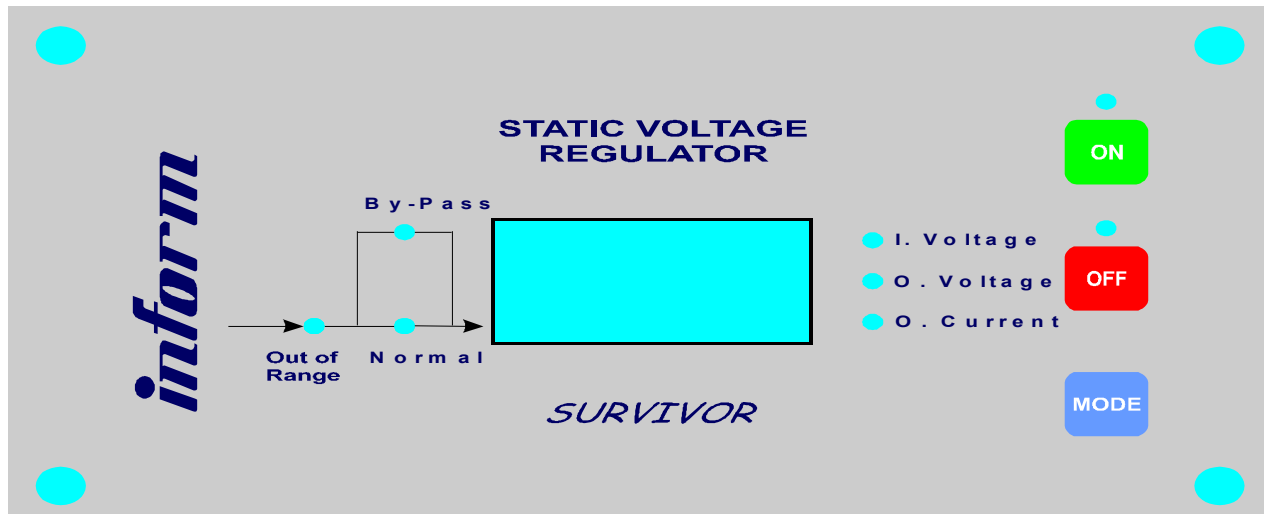
SVR is based on coil selecting principle, which means supplying the consumer machine with auto transformer coils inside of it. SVR ensure machines (like motors, rectifier, and air conditioner) to operate properly and safely with selecting coil if a fluctuation and a deviation occurs in mains.

If an overload (more than the 150% of nominal power) occurs, consumer machines (loads) are directly supplied with Bypass from the mains. After the normal conditions restate, machines again begin to be supplied with SVR.

SVR contains a communication interface unit. By the help of this unit's signs it is possible to get information from SVR. In order to take the advantage of this facility a communication kit can be assured.

You will find whole information for installation and usage of SVR in this booklet.

FRONTFACE SPECIALITIES AND BUTTONS



FRONT PANEL

Picture above, displays the front panel and lightened displays and 3 piece of 7-segment display and buttons.

OUT OF LIMIT (LD)

A red light warns the consumer when the mains voltage is less than 180V AC or more than 242V AC.

NORMAL (WORKING FROM REGULATOR)

When SVR is working this green light displays to the consumer there is output voltage.

BYPASS (WORKING FROM SYSTEM MAINS)

This means SVR is giving output mechanically from the mains.

DISPLAY

This display shows “input voltage”, “output voltage”, “output current” and “output frequency” numerically. You can comb these functions with the help of the select button.

“ON” BUTTON AND “ON” LIGHT

This button operates the regulator. While the machine is working from regulator the red light is on. Be careful! In this case there is voltage at the output of the unit and output voltage is shown on the display.

“OFF” BUTTON AND “OFF” LIGHT

This button shuts the regulator down. In this case there is no voltage at the output of the machine and the red light is on. When first voltage is given the unit is “OFF” too. In this case the unit displays the input voltage.

SELECT BUTTON

You can comb input voltage, output voltage, and current with this button. In standards unit displays input voltage in “off” position, output voltage in “ON” position and output current in “BYPASS” position.

INPUT VOLTAGE IS LOW (Er1)

If the out put voltage is less than 90V AC then display shows Er1 massage and all lights go on.

INPUT VOLTAGE IS HIGH (Er2)

If the input voltage is higher than 280V AC then display shows Er2 massage and all lights go on. In this case there is no voltage at the output of the unit. If the voltage decreases lower than 270V AC then the increase occurs automatically and the machine starts to operate again.

OUTPUT VOLTAGE IS LOW (Er1)

If the output voltage is less than 190V AC, then display shows Er3 massage and all lights go on. In this case there is no voltage at the output of the unit. Please, do not open the regulator in this situation. If it does not recover call the authorized technical service.

OVER CURRENT (Er5)

If the output current starts to use up more than the machine’s capacity continuously, then display shows Er5 massage and all lights go on. In this case turn off the regulator and check your loads.

BYPASS ERROR (Er6)

If the output current starts to use up more than the machine’s capacity continuously and if the input voltage is out of limits, then display shows Er6 massage, all lights go on and the output is closed. In this case turn off the unit and check your loads.

INSTALLING AND COMMISSINING

► Check the package if there is any damage or not.

i If you recognize a damage on the package, have recourse to transporter agency. Check inside the package if all equipment is delivered over.

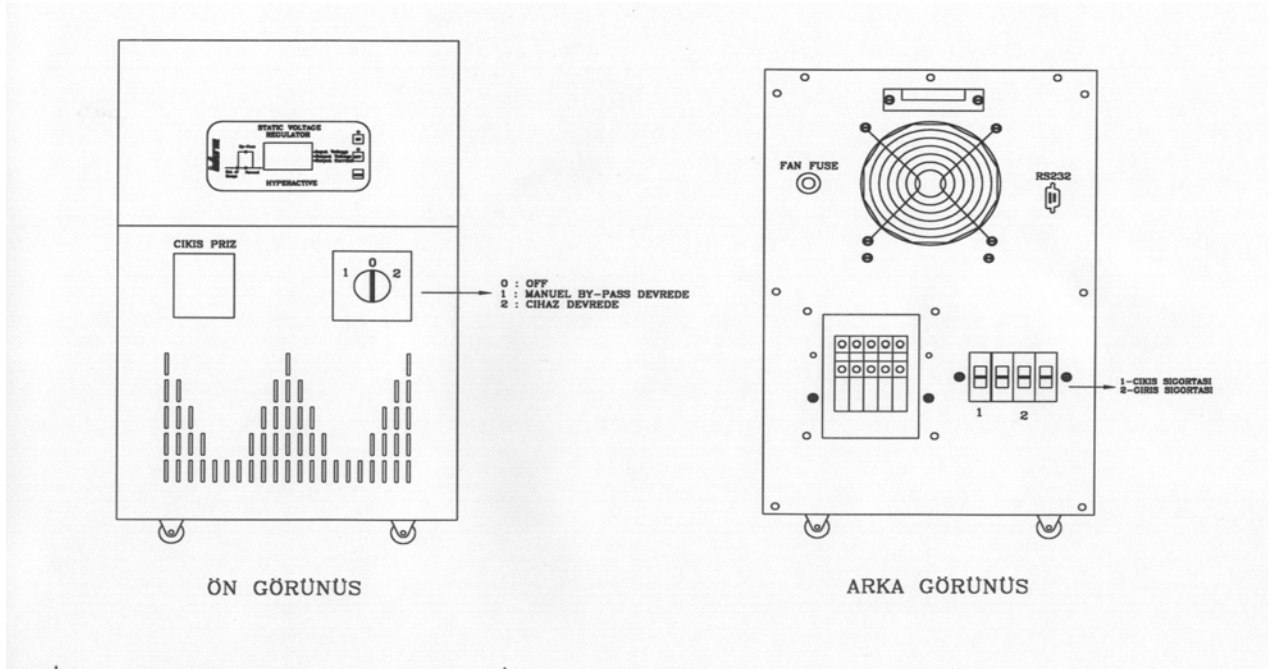
i Delivery consists of:

- Static voltage regulator
- User's manual

There are wheels at the bottom of the regulator, which enables easy movement and easy installation.

INSTALLATION

SVR's front panel views are at the diagrams below.



Assemble the input power cable to well-earthed mains.



Despite of SVR input connections are fixed, there is not voltage at the output unless you press the “ON” button.

COMMISSIONING

- ▶ Check the connections before replacing by input, output and BYPASS key to their proper positions.
- ▶ Raise Input and Output key upwards while the MANUAL BYPASS key is on middle position. Switch the MANUAL BYPASS key to “2” position.
- ▶ Regulator displays Input Voltage and “OFF” light is on now.
- ▶ Switch the machine to “ON” position. In this case machine displays Output Voltage and the “ON” light is on. From now on there is proper voltage at the output of the SVR.
- ▶ You can connect your loads to the regulator.
- ▶ If you switch MANUAL BYPASS key to “0” position, machine goes off and the output is cut off. If you switch the key from “2” position to “1”, then output is supplied from the mains directly.



If the display shows “ErX” and the all lights are on at the same moment this is an error. You will learn the causes of the errors in “ERROR CORRECTION” section.

OPERATING

STAND BY (SVR IS WAITING)

If the “OFF” light is on and display shows output voltage, machine is stand-by mode. In this case there is no output voltage.

NORMAL OPERATING (SVR IS ACTIVE)

Main exists and load is supplied by the regulator. Lights and Display situation is shown in figure-b.

BY-PASS OPERATING (OVER LOAD)

If the SVR is converted to Bypass mode, then LED is on.



If the mains go off at the By-pass mode consumer machine cannot be supplied. (There is no voltage at the output)

COMMUNICATION INTERFACE

SVR has a Sub-D connector with 9 pins as a communication interface.

Communication interface enables;

- Communication without operator
- Directly communication between SVR and the computer
- Adding to the network as client
- Informing the operation situation to a outside unit

In order to use these facilities a communicator which is given as an accessory interface kit is needed.

- RS232 serial communication unit is connected to Sub D connector with 9 pins as below:

GND	Pin 5
TXD	Pin 2
RDX	Pin 3

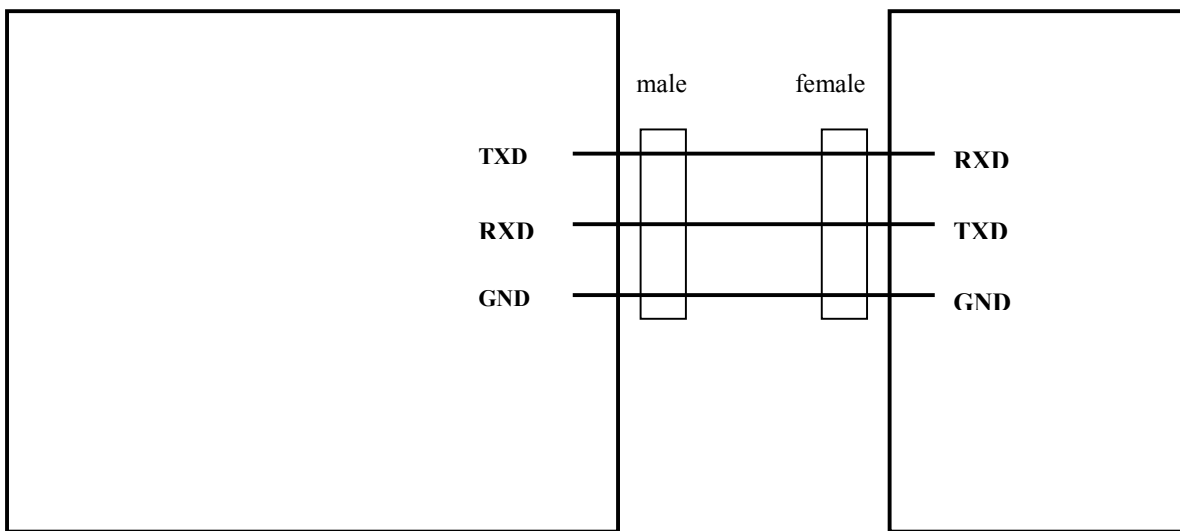
- RS232 free contact communication unit is connected to Sub D connector with 9 pins as below:

Common pin	Pin 5
Main is active	Pin 7
Regulator is active	Pin 9

Picture below is given as an example of serial communication connection with RS232 interface unit.

SVR

RS323



UPKEEP

Any special upkeep is not needed for SVR. Just cleaning the dust over the fan periodically with a vacuum cleaner will be enough.

STORAGE

The regulator should be stored in a dry place between –30 centigrade and 70 centigrade.

CLEANING



It is excessively important for human health not to clean the regulator unless BYPASS MANUEL key is on “0” position and pressing “OFF” button.

Do not use cleaning powder or other cleaning specialties, which are harmful for the plastic part of the unit.

Pay attention not to leak liquid inside the machine.

Pay attention to ventilation holes to be open.
You can clean the body of the unit by a dry dustcloth.

ERROR CORRECTION

If any error occurs, make these controls below before calling authorized service:

- Is SVR receiving energy?
- Had entrance fuses/automatons blown? (As it is mentioned in “INSALLATION” section fuses are front side of the unit.

If you call the authorized service:

- Information in the product introduction card (model, no) should be described completely.

Authorized services’ phone number is given at the end of this booklet.

Table below displays the error codes for 6 different errors.

(1) Display and the lights are off.

Possible Cause	Precaution
No main voltage	Mains connection should be controlled by an authorized electrician
Input is blown	Turn on the fuse and switch the MANUEL BYPASS key to “2” position

(2) Er1 message and the lights are on

Possible Cause	Precaution
Input voltage is less than 90V AC	Wait mains voltage to increase

(4) Er3 message and the lights are on

Possible Cause	Precaution
Input voltage is more than 285V AC	Wait mains voltage to decrease

(3) Er2 message and the lights are on

Possible Cause	Precaution
An over loaded machine is connected to the SVR	Turn off the unit and check the loads
Short circuit at the output	Turn off the unit and check the loads

(5) Er4 massage and the lights are on

Possible Cause		Precaution
Output	load affects the machine	Press the “OFF” and “ON” respectively

(6) Er5 massage and the lights are on

Possible Cause		Precaution
Over load at the output		Turn off the unit and check the loads

(7) Er6 massage and the lights are on

Possible Cause		Precaution
Improper BYPASS while there is overload at the output		Press the “OFF” and “ON” respectively

TECHNICAL PROPERTIES

SVR	SVR5000
Width	503mm
Height	265mm
Depth	420mm
Weight	57 mm

SORROUNDING CONDITIONS:

IP 2 type of protection

TEMPRATURE	Operating	-5°C.....+55C
	Storage	-30°C.....+70C
RELATIVE HUMIDITY	Operating	-20°C.....+55C
	Storage	-20°C.....+55C

Do not operate when vapour is occurred.

There must be some empty area around the unit for the enough air circulation of unit.

Front	150 mm
Rear	150 mm
Above	150 mm

ELECTRICAL VALVUES:

SVR	OUTPUT POWER	F	INPUT		OUTPUT		EFFICIENCY
			VOLTAGE	MAX. CURRENT	VOLTAGE	CURRENT	
SVR 5000	5000 VA 5000 W	50/60 HZ	220V -%60 + %30	56 A	220V -%2 + %2	22 A	≥%96

OUTPUT:

Output Voltage	+ %2, -%2
Cos Phi	1
Cresfactor	3
Total Harmonic Distortion	Convey to the load without distortion
Output Frequency	Always the same as the input

SAFETY STANDART:

TSEK

NOISE LEVEL:

Relative noise level according to the working place:
In al models ≤ 45-dB (A)

BYPASS:

Average 0.2 ms, transference conditions:
Overload

OVERLOAD LIMIT:

For loads between % 100 and % 125 is 10 minutes.
For loads between % 125 and % 150 is 1 minute.

RECOVERY SPEED:

350 V/second

POINTS TO PAY ATTENTION IN SVR USAGE

Static voltage regulators are used for protecting sensitive machines from the harmful effects of the bad and insecure electricity mains and ensuring them to work properly. A consumer, who has such poor-qualified mains conditions, can create himself well-qualified artificial electricity mains for his home or office machines.

Professional electricity mains in a building is established by selecting proper conductor quality and thickness and applying necessary earthing and distribution principles. A consumer who wants to establish an artificial regular electricity mains inside office or home should pay attention to some serious points while assembling the connections between regulator and his machine. Contrary, the safety of the consumer and the security of the regulator are not under guarantee.

The points about human health safe and are mention in “**Safety Warnings**” section. In this section these points will be reemphasized and information about connections between SVR and consumer machine will be explained.

- It can be hazardous to use cables with improper cross-sections between SVR and the main.
- SVR’s **earth connection** must be done properly just as written on the label on the front panel. This earthing would do earth connections of all machines, which are supplied with SVR. Bad earth connection or not to earth poses an electric shock danger for the consumers. At the same time possible damage danger in electronic circuits is very high.
- In computer systems, which are connected to the modem with RS232, system can be effected or the hardware can get damage by the loud noise of the communication (phone) cable of the modem. **Since SVR does not have any noise source power line it can not protect the system.** In this case; you should select your modem in such a type that can ensure 6000V of isolation and the authorities should take the precaution for loud noise.