SERVO-MATİK ELECTRONICS SYSTEMS

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PREFACE

- This User's Manuel covers all the information for installation and operation of SERVO-REG model microprocessor controlled regulator covering the range from 3-1200kVA .
- Follow all the instructions in the correct order.
- Read the warnings in the manual.
- Make sure you read the manual carefully when you want to perform an action on the regulator. Otherwise the device can be damaged.
- Starting-up the device and all maintenance/service works for the dangerous parts of the system must be done by the authorized personnel who educated for giving technical service.
- Before starting-up the device all safety precautions must be done by authorized personnel.
- If you come across any problem while applying this manual, contact with the service center via phone number/e-mail on the back cover of this manual.

CAUTION

- Danger of electric shock! Do not open cover of the device. The device has spares that users can not interfere. Contact with the authorized technical service center in case of fault.
- All maintenance/service works for the dangerous parts of the system must be done by the authorized personnel who has sufficent technical knowledge.
- It is dangerous stand close to regulator for ones who use devices like cardiac pacemaker etc.
- Change the fuses with the same type and value for decrease the fire risk.
- Provide the environment for the installation.
- Select the appropriate cable sizes which is specified in the manual for the regulator.
- Do not put the device in use without grounding.
- Do not place things that may prevent airflow of the device.
- Do not run the device in places where explosive and flammable materials exist.
- Avoid direct sunlight and heaters.
- Do not wear metal items like rings, watches during the installation .Use isolated tools.
- Keep the items like bank card, hard drives precise electronic devices which can be affected by magnetic field, at least 50 cm away from the regulator.
- Bear in mind that the damages caused by user faults or bad usage will put the device out of warranty.

USER ERRORS

- Connection of abnormal loads that excedeeds device nominal power rate,
- Wrong connection of input and output cables,
- Changing phase sequence of input and output phases,
- Changing fuse rates of input and output phases,
- Changing place of device without information of SERVO-MATİK Electronic Systems
- Being exposed to physical damage to Device or gotten harm
- Being kept out of normal environmental conditions or worked of device.(Temperature, Humidity, Cleaning, Ventilation, Enviromental conditions, Liquid Contact)

INTRODUCTON

The more technology developed, the more Electric, Electronic and Electromechanic devices increase and grow recently. Electrical energy quality doesn't grow with the same rate according to development of these devices because of it is an expensive investment, so the voltage ripples continue rising with the lack of electricity quality.
High technology products which are used in various platforms such as CNC machines and motor drivers in industry, medical devices in hospitals, PC's or electronic devices in our companies, white goods, air conditioning devices and central heaters in our homes etc. affected by that voltage ripples seriously. Furthermore they become faulty with material damage so job loss can occur. Opening or closing all devices in the same time can occur voltage ripple. Likewise when overloadings happen in certain times, voltages may drop heavily and this cause block the critical devices work moreover cause their fault. Therefore voltage regulators that is a protector for the electronic devices, by realizing stability of the voltage and provide healty&safety working environment.

SERVO-REG voltage regulators are intelligent electromechanical devices controlled by microcontroller. For this reason it can be used safely in precise electronic devices which require static voltages. SERVO-REG voltage regulators based on True RMS measurement technic. Thus the device operate with constant output voltage and very fast correction without affected by sudden voltage changes and degeneracy waveform on mains voltage. Our regulators provide protection with its excellent regulation in places where has unregular voltages, degeneracy of mains voltage harmonics and various power factors may occur because of using generator or industry voltages.

SERVO-REG series regulators designed and realized to feed easily nonlinear loads, motors and such devices which draw inrush currents. So devices which draw inrush currents, easily work without affected.

Maintenance and installation is very easy thanks to its modular design

It is a high tech solution where mains voltage untrusted and unregular. It is made with high quality semiconductor materials. Our regulators be produced to work with high efficiency in full load and where the mains voltages change rapidly with high rates.

DESIGN AND OPERATION TECHNICS

Microprocessor Controlled Servo-REG regulator consist of the following parts below:

Variac for Voltage Adjustment (toroidal transformator),
Power (boost) Transformator,
Supply Transformator,
Variac Engine,
Control Board-Display Panel,
Current Transformer,
Mains-Regulator Selector Pacco Breaker
Contactor (optional).

Microprocessor controlled Servo-REG regulator continuously senses input/output RMS voltages. When the mains voltage is below/above of the predefined limit, control board drives the servo engine. Servo engine driven by the control board moves on variac and stops when set value for the nominal voltage (factory setting: 220V) is achieved so that output voltage is kept at the factory setting. Regulator cuts the control power via switch for the voltages out of the range. In this case output power is available. Regulator continues its normal operation when the mains voltage is in predefined range. Regulators with protection units turn “OFF” the output power to protect the load when the output voltage is out of the predefined range or if an overload situation occurs.

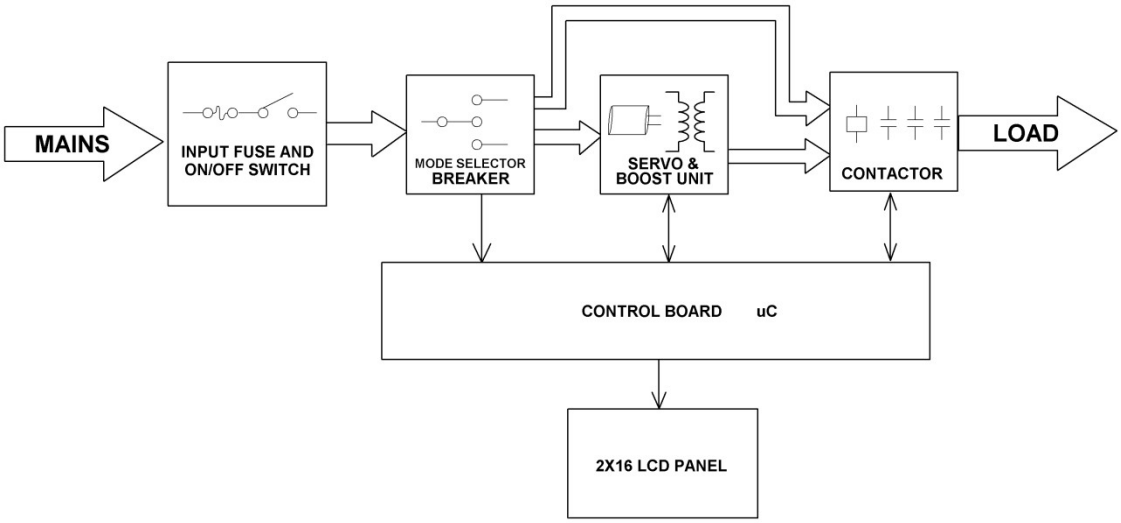
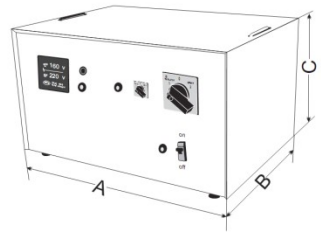
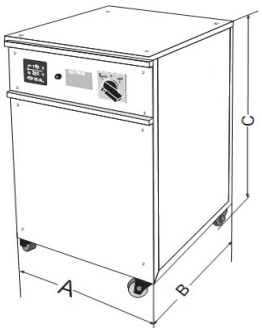


Figure 1: REGULATOR BLOCK DIAGRAM

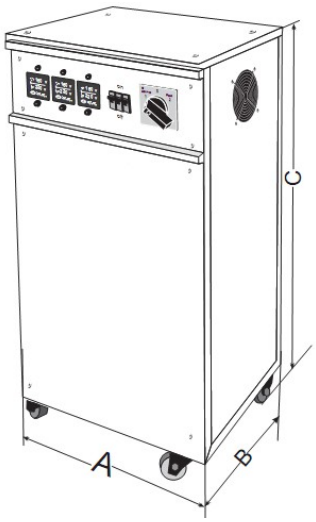
PHYSICAL FEATURES



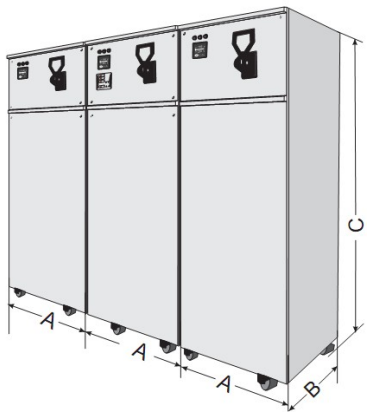
Model: SERVO-REG Monophase(1-15kVA)				
POWER(kVA)	**A**	**B**	**C**	**WEIGHT**
1	42 cm	23 cm	23 cm	15 kg
2	45 cm	35 cm	27 cm	23 kg
3,5	45 cm	35 cm	27 cm	30 kg
5	45 cm	35 cm	27 cm	41 kg
7,5	55 cm	35 cm	27 cm	48 kg



Model: SERVO-REG Monophase (20-50kVA)				
POWER (kVA)	**A**	**B**	**C**	**WEIGHT**
20	50 cm	50 cm	85 cm	120 kg
25	50 cm	50 cm	85 cm	130 kg
30	50 cm	50 cm	85 cm	150 kg
40	50 cm	60 cm	85 cm	160 kg
50	50 cm	60 cm	85 cm	180 kg



Model: SERVO-REG Threephase (3-150kVA)				
POWER (kVA)	**A**	**B**	**C**	**WEIGHT**
3	50 cm	44 cm	110 cm	95 kg
6	50 cm	44 cm	110 cm	100 kg
10,5	50 cm	44 cm	110 cm	110 kg
15	50 cm	44 cm	110 cm	130 kg
22,5	50 cm	44 cm	110 cm	145 kg
30	60 cm	44 cm	119 cm	170 kg
45	60 cm	44 cm	119 cm	220 kg
60	85 cm	64 cm	140 cm	350 kg
75	85 cm	64 cm	140 cm	380 kg
100	85 cm	64 cm	140 cm	450 kg
120	90 cm	69 cm	163 cm	550 kg
150	90 cm	69 cm	163 cm	650 kg
200	60 cm	117cm	125 cm	1051 kg



Model: SERVO-REG Threephase (200-600kVA)				
POWER (kVA)	**A**	**B**	**C**	**WEIGHT**
250	60 cm	117cm	125 cm	1150 kg
300	60 cm	117cm	125 cm	1400 kg
400	60 cm	117cm	170 cm	2000 kg
500	60 cm	117cm	170 cm	2400 kg
600	60 cm	117cm	170 cm	2700 kg
700	70 cm	180cm	190cm	3000 kg
800	70 cm	180 cm	190 cm	3500 kg
1000	70 cm	180 cm	190 cm	4000 kg
1200	100 cm	200 cm	210 cm	5000 kg

*The data given in the chart is for information only. It can be changed without prior notice.

TECHNICAL FEATURES

INPUT	**Voltage**	(Monophase+neutral) 220/230/240V, (Three phase+Neutral) 380 / 400 / 415V
	Input Voltage Range	165-255 VAC (Monophase+neutral) 280-450 VAC (Three phase+Neutral)
	Frequency	45-65 Hz
ÇIKIŞ	**Voltage**	220/230/240V (Monophase+neutral) , 380 / 400 /415V (Three phase+Neutral)
	Voltage Tolerance	≤%1 (Selectable)
	Frequency	45-65 Hz
	Regulation Speed	100V/s -200 V / s
	Harmonic Distortion	Zero
	Independent Phase Regulation	Standard for Three Phase Models
	Overload Operation Capacity	10 min. at %100-125 load, 60s at %126-150 load, 10s at %151-191 load , 3s over %200 load
BYPASS	**Manual Bypass**	Manual Mains-Regulator Pacco Breaker

DISPLAY	**Front Panel**	Separate panels for each phase (in three phase models)
		2x16 Character LCD Display
		True RMS Input/Output Voltage, Output Load Percentages, Output Frequency
		Mimic Diagram, fault/warning LEDs
		Real Time 1024 piece event/warning memory
	Dry Contacts (Optional)	Regulator normal working mode (C,NO, NC); High/low output voltage warning (C, NO, NC)
GENERAL	**Technology**	Fully Automatic Servo Regulator
	Control Method	RISC microprocessor, H-Bridge MOSFET PWM Engine Drive Technics
	Efficiency	Up to %98
	Protection System	Output excessive load, Output Short Circuit, Output High/Low Voltage, Over temperature Motor Fault, Neutral-Ground (Optional) Protection
	Cooling System	Intelligent Fan Cooling System
	Protection Class	IP20
	Standards	CE, ISO-9001
ENVIROMENT	**Audible Noise**	<55dB(A)
	Working Temperature	-5°C - +55°C
	Storage Temperature	-30°C - +70°C
	Relative Humidity	Up to %95 (non-condensing)
	Altitude	Up to 2000m

(*Technical specifications may change according to models*)

INSTALLATION

POSITINING

- Keep the device in an air conditioned place for the cooling system of the device to operate well.
- Do not place things/close holes that may prevent airflow for the device. Keep at least 50 cm place free for each side of device.
- Make sure the installation place to comply with environmental conditions described in TECHNICAL FEATURES.
- Do not operate the device in dusty, humid, hot and corrosive places.
- Do not keep flammable/explosive materials next to the device.
- Keep the device in a dry place, avoid contact with liquids.

TRANSPORTATION

- Carry the device without remove its transportation pallet with a forklift where will it be installed like in Figure 2.
- Package protect the device against problems while transportation since carry the device to its location with its cargo package.
- Pay attention that the device is kept vertical position at all transportation process.
- Device must be carried at least two person.

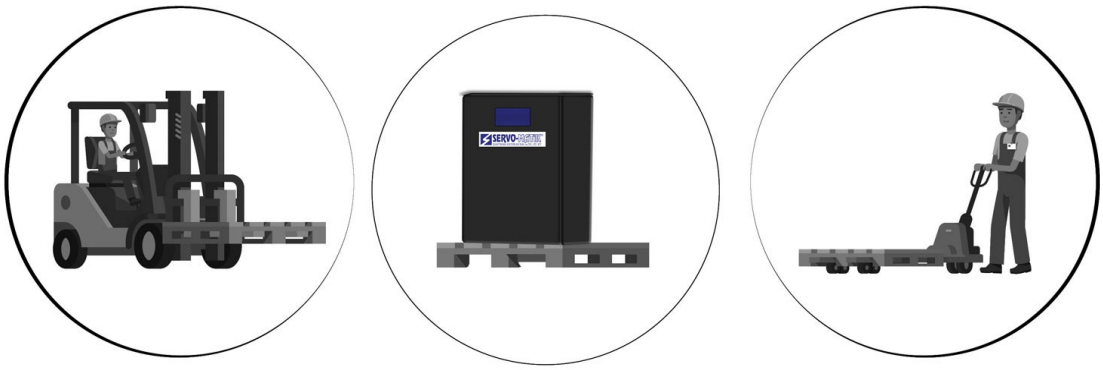


Figure 2

UNPACKING

- Contact with the technical service before using the product and the product with damaged packing material.
- Carefully unpack the device, avoid damaging.
- After unpacking the device, check if the device is damaged during transportation or not. To do this, W-Automat, Pacco Breaker and Compact Breaker on the device are checked and make sure the panel is not damaged.
- Check the device physically to make sure the electrical connections are not broken.
- Do not run the device if any noise comes from inside when it is removed. In this case, please contact with the manufacturer company.
- Before installation, contact with the technical service or installation must be performed by authorized personnel.

ELECTRICAL CONNECTIONS

CONNECTION OF THE MONOPHAZE REGULATOR

Input and output connections must be done suitable points according to back cover of the Servo Voltage Regulator. The appropriate cable size must be chosen for the connection of one phase regulator and distribution panel. Please see Table 1 for the recommended cable sizes.

MONOPHASE REGULATOR CABLE DIMENSIONS -NYAF			
DEVICE POWER(kVA)	**INPUT CABLE DIMENSION (mm^2)**	**OUTPUT CABLE DIMENSION (mm^2)**	**EARTH CABLE DIMENSION (mm^2)**
3,5	2X4	2X2,5	1X2,5
5	2X6	2X4	1X4
7,5	2x10	2x6	1x6
10	2x16	2x10	1x10
15	2x35	2x25	1x25
20	2x50	2x35	1x35
25	2x70	2x50	1x50
30	2x95	2x50	1x50
40	2x(2x50)	2x95	1x95
50	2x(2x70)	2x120	1x120

Table 1: Monophase Voltage Regulator Cable Size Chart

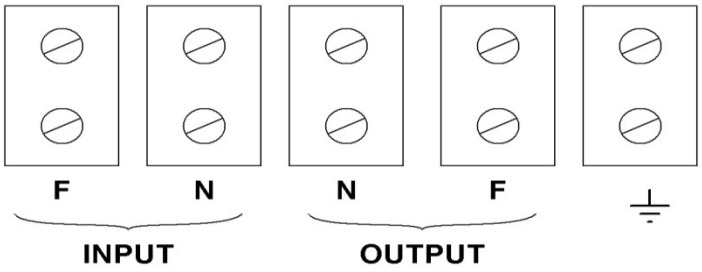


Figure 3: Monophase Regulator Input/Output Connections

ELECTRICAL CONNECTIONS OF THREE PHASE REGULATOR

Remove the top cover to reach the input/output connection terminals. The appropriate cable size must be chosen for the connection of three phase regulator and distribution panel. Please see Table 2 for the recommended cable sizes.

THREEPHASE REGULATOR CABLE DIMENSIONS -NYAF			
DEVICE POWER(kVA)	**INPUT CABLE DIMENSION (mm^2)**	**OUTPUT CABLE DIMENSION (mm^2)**	**EARTH CABLE DIMENSION (mm^2)**
3	4x2,5	4x2,5	1x2,5
6	4x2,5	4x2,5	1x2,5
10	4X4	4X2,5	1x2,5
15	4x6	4X4	1X4
20	4X10	4X6	1X6
30	4X16	4X10	1X10
45	4X35	4X25	1X25
60	4X50	4X35	1X35
80	4X70	4X50	1X50
100	4X70 (Air)	4X50 (Air)	1X50 (Air)
120	4X95 (Air)	4X70 (Air)	1X70 (Air)
160	4X150 (Air)	4X95 (Air)	1X95 (Air)
200	2X(4X70) (Air)	4x120 (Air)	1X120 (Air)
250	2X(4x95) (Air)	4X185 (Air)	1X185 (Air)
300	3X(4x70) (Air)	4X240 (Air)	1X240 (Air)
400	4X(4X70) (Air)	2X(4X120) (Air)	2X120 (Air)

Table 1: Threephase Regulator Cable Size

Cable dimensions calculated according to current capacity in the tubes!

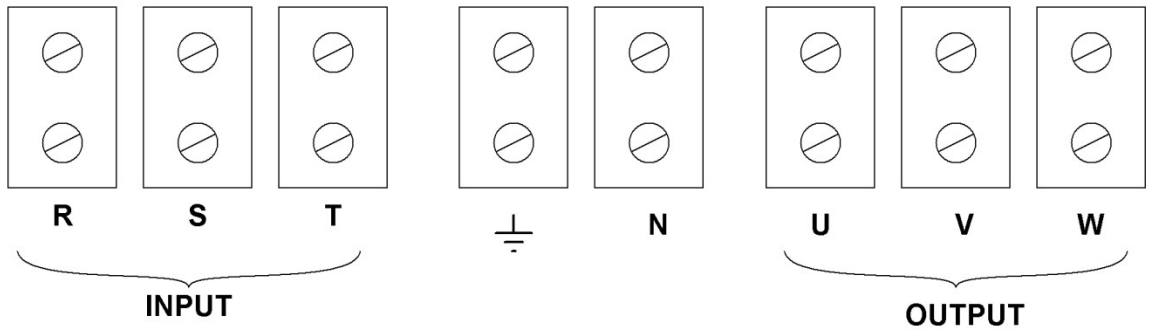


Figure 4: Threephase Regulator Input/Output Connections

Before making cable connections, all the breakers/fuses must be in 'OFF' or '0' position.

EARTH CONNECTION

Connect the grounding cable to the terminal (E).

For a Safe and Trouble Free Operation, Grounding must be done properly. Make The Earth Connection before doing any other connections. Ground-Neutral Voltage Difference must be lower than 3 Volts.

INPUT/OUTPUT CONNECTIONS

- Connect Input and Output Cables to the terminals (R), (S), (T) in the correct order.
- Connect the Input Neutral Cable to the Terminal (N).

Be careful about the phase sequence when connecting the Input-Output Cables.

TURNING THE DEVICE “ON” and “OFF”

1) Make sure properly done earth connection before energized the device.
2) Make sure the electrical connections are done properly.
3) If the device do not work long time change the position of the input and output fuses to “0” position.
4) Input and output electric wirings must be suitable for the device power and nominal current.
5) Do not prevent air flow of the device.
6) Do not place things flammable and liquid materials near the working environment of the device.

The device does not start up when it is connected to the load. Do not change devices operating mode from breaker when the loads are energized from the device. Do not change operating mode unless turn breaker “0” position for other modes.

TURNING THE DEVICE ON (REGULATOR MODE)

1) Make sure mains voltage is available at the input of the regulator turning Fuse/Breaker “ON” on the input distribution panel of regulator input.
2) Turn the input breaker/fuse of the regulator “ON”.
3) With the alert tone, displays are turned on.
4) Turn the pacco breaker to “REGULATOR” position.
5) Make sure the output voltage is correct.
6) Turn the output breaker on the output distribution panel “ON” to provide regulated output power for the load.

Please Contact with The Service If An Unexpected Situation Occurs.

BYPASS OPERATION

1) Turn all the devices connected to regulator and output supply breaker on distribution panel "OFF".
2) Turn the breaker to "0" position.
3) Turn the breaker to "BYPASS" position.
4) Make sure the output voltage is correct
5) Turn the output breaker on the output distribution panel "ON" to provide mains voltage for the load.

⚠ ***Please Contact with The Service If An Unexpected Situation Occurs.***

TURNING THE DEVICE OFF

1) Turn all the devices connected to regulator or output supply breaker on distribution panel "OFF".
2) Turn the breaker to "0" Position.
3) Turn input Fuse/Breaker "OFF".

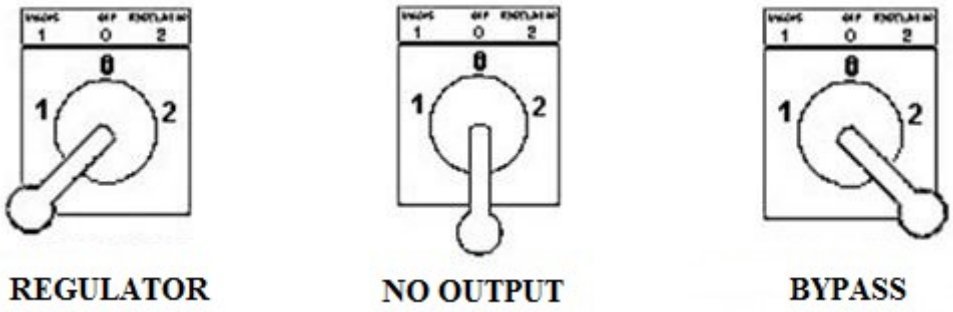


Figure 5: Regulator Breaker Working Modes

PANEL SPECIFICATION

LCD FRONT PANEL

HOW TO USE THE FRONT PANEL

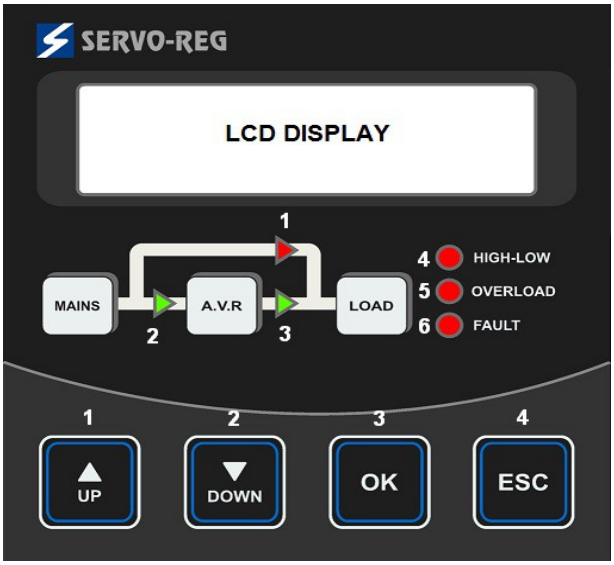


Figure 5: LCD Front Panel

- LEDs

- Bypass: Indicates that the output power is supplied via by-pass.
- Mains: Indicates that there is mains available at the input
- Output: Indicates that the load is supplied via regulated power
- High-Low: Indicates that either input or output is out of the range
- Overload: Indicates that the overload exists.
- Fault: Indicates that the fault exists

- UP: To return the previous menu and increase the value
- DOWN: To enter the next menu and decrease the value.
- OK: To enter the menu and save the set value in the memory.
- ESC: To quit from menu, to quit without saving changes and to shut down audible alarm.

HOW TO USE MENUS

There are 6 main menus and various submenus in SERVO-REG model regulators.

MAIN MENU	DESCRIPTION
1.DISPLAY	Input&output values are displayed.
2.WARNINGS	Previous events/warnings are displayed.

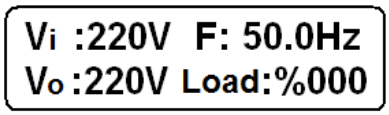
3.SETTINGS	Buzzer, date/time, language, password settings are done.
4.DATE/TIME	Date&time information is displayed.
5.DEVICE INFO	Device information is displayed.

Table 3: Main Menu of the LCD Panel

* To display the service menu, password must have been entered via settings menu.

DISPLAY MENU

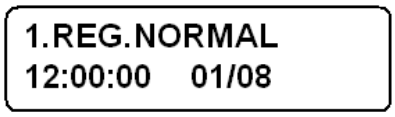
Input Voltage&Frequency, Output Voltage, Load Percentage is displayed in this menu.



WARNINGS MENU

Changes in the operation status, operation modes, faults are displayed in this menu.16 different events/warnings for the regulator are shown in Table 4. All the data for operation status/operation modes and faults are recorded in real time via microprocessor. Latest 1024 events/warnings are saved in the memory. It provides easy trouble shooting for user/technical service

When the menu is entered, the past events are displayed in the chronological order from the present to the past by pressing down button. When the number of the events/warnings exceeds 1024, new events are saved and the oldest events are deleted.



LIST FOR WARNINGS/EVENTS/ERRORS FOR SERVO-REG

DESCRIPTION	WARNING
MAINS LOW	DISPLAYED WHEN THE MAINS VOLTAGE IS LOW
MAINS HIGH	DISPLAYED WHEN THE MAINS VOLTAGE IS HIGH
FREQ. LOW	DISPLAYED WHEN THE MAINS FREQUENCY IS LOW
FREQ. HIGH	DISPLAYED WHEN THE MAINS FREQUENCY IS HIGH
OUTPUT LOW	DISPLAYED WHEN THE OUTPUT VOLTAGE IS LOW

OUTPUT HIGH	DISPLAYED WHEN THE OUTPUT VOLTAGE IS HIGH
OVERLOAD	DISPLAYED WHEN THE LOAD IS HIGHER THAN THE RATED POWER
OVERLOAD SHUTDOWN	REGULATOR CUTS THE OUTPUT POWER FOR PROTECTION AFTER AN OVERLOAD OPERATION OF A PREDEFINED PERIOD. (10 min. at %125% load, 60 s at 150% load, 3 s at 200% load.)
OVER TEMPERATURE	DISPLAYED WHEN DEVICE TEMPERATURE IS HIGH
ENGINE FAULT	DISPLAYED IN CASE IF ENGINE FAULT.
CONT. ON	DISPLAYED IF THE OUTPUT CONTACTOR ACTIVE.
CONT.OFF	DISPLAYED IF THE OUTPUT CONTACTOR DISABLED.
GROUND FAULT	DISPLAYED IN CASE OF GROUNDING FAULT (optional).
BYPASS ON	DISPLAYED ON BYPASS MODE OPERATION
BYPASS NORMAL	DISPLAYED IF THERE IS NO WARNING/FAULT IN BYPASS OPERATION.
REG. NORMAL	DISPLAYED IF THERE IS NO WARNING/FAULT IN NORMAL OPERATION.

Table 4 : List of Warnings/Events/Errors

SETTINGS MENU

In this menu, some of the allowed features which the user can control is displayed and controlled.

SETTINGS MENU	DESCRIPTION
1.BUZZER ON/OFF	Used for turning on/off the audible alarm.
2.DATE/TIME	Used for setting date/time.
3.LANGUAGE	Used for selecting menu language.
4.PASSWORD	The necessary password for entering the service menu is entered in this section.
SETTINGS MENU	DESCRIPTION

DEVICE INFORMATION MENU

In this menu, device brand and model information is displayed. When the down button is pressed, version information is displayed.

SERVICE MENU

SERVICE MENU	DESCRIPTION
1.NOM. VOLTAGE	Nominal output voltage is set.
2.TOLERANCE	Output voltage tolerance is set.
3.INPUT LOW	Input low voltage limit is set.

4.INPUT HIGH	Input high voltage limit is set.
5. OUTPUT LOW LIM.	Output low voltage limit is set.
6.OUTPUT HIGH LIM.	Output high voltage limit is set.
7.DELAY TIME	Delay time for protection activation is set.

NOT: In Factory Settings, Output Voltage: 220VAC, Output Tolerance: %2, Input Low: 160VAC, Input High:255VAC, Output Upper Limit:240VAC, Output Lower Limit:200VAC, Delay Time for Protection Unit: 2 s. are set as given.

MAINTENANCE&SERVICE

Manufacturer accepts that the user has enough knowledge and technical experience on the device and the user guarantees that the device will not be used in critical applications which can cause loss of life/injury. All the installation/maintenance/service works must be done by authorized personnel. User manual has been prepared considering the condition that all installation/maintenance/service works will be done by authorized personnel except turning on and off. All the intervention must be done by the authorized personnel which has a deep knowledge on the design. The covers of the device is only allowed to be opened when a maintenance / repair and operation work is to be done. Trouble shooting and repair services is supposed to be done by authorized personnel who has expertise in this field. A detailed trouble shooting is not necessary for authorized personnel. Rules and cautions are for

protecting users from possible dangers. The system is designed to operate safely if the safety, operation and service rules are applied properly by experienced and well trained personnel. All the safety precautions is taken for the parts which may cause danger of shock. When the regulator is used in specified environment conditions, it will serve continuously for years thanks to its design principals. When the covers are open, there is a danger of contacting the points with power despite the precautions taken. To avoid danger of electricity shock, do not touch that places and be informed about the parts which is with power. When the device is running, the covers must be closed.

PERIODICAL MAINTENANCE

When the device is run in specified environment conditions and appropriate place, the device doesn't need regular maintenance. We recommend a regulator preventive maintenance once in two years.

FAULT IDENTIFICATION

Only authorized personnel can do the maintenance and service works for the device. Please contact with the service in case of problem/fault. There is events/warnings displayed on the panel when a fault occurs, please describe the fault that you see on the display when you contact with the service.

BEFORE CONTACTING SERVICE

- Read the user manual carefully.
- Check the connections of input/output of the device.
- In case of fault, restart the device via "ON/OFF" button.
- Identify the problem clearly

Device lifetime is identified and announced on 13/6/2014 dated and 29029 numbered Official Gazzete After Sales Services Regulation Appendix is 5 years.

Authorized service stations and spare part shops address', phone numbers and other informations can be get from +90 533 663 33 04 numbered customer support line.

TROUBLESHOOTING

When a fault occurs, please make the necessary controls below before contacting service.

- Make sure the input/output connections are done properly as described in the manual.
- Make sure the grounding is done properly as described in the manual.
- Make sure the input/output fuses are OK

(1) FRONT PANEL DOES NOT WORK	
Diagnosis/Possible Cause	**Solution**
Input fuse could be faulty	Check the fuse if required change it
Line could be offline	Check the line connections

Panel failure	Change the panel with another one if possible, observe the situation
LCD may have faulted	Call the technical service
Internal fault may have occured	Call the technical service

(2) FRONT PANEL GIVE "ERROR" WARNING	
Diagnosis/Possible Cause	**Solution**
Low Input /Output Voltage	Check the input/output voltage
High Input /Output Voltage	Check the input/output voltage
Variac – Booster Transformer Fault	Check Variac Booster Transformer
Motor Fault	Check the limit switches and input voltage of the motor
Internal fault may have occured	Call the technical service
Airflow holes could be closed	Check the all air holes. Clean dusts if required.
Environment temperature does not suitable	Environment temperature does not suitable shown in technical data. Choose more suitable place.
Temperature sensors may have faulted	Call the technical service
Cooling fans may have faulted	Call the technical service

(3) OUTPUT VOLTAGE LOWER/HIGHER THAN NORMAL VOLTAGE	
Diagnosis/Possible Cause	**Solution**
It could be excessive load out of the device	Check the loads
Nominal Voltage value may have set low or high	Check the nominal voltage value on the service menu.
Internal fault may have occured	Call the technical service

(4) DISPLAYS ARE NORMAL BUT NO OUTPUT	
Diagnosis/Possible Cause	**Solution**
Output Breaker OFF or faulty	Check Breaker change if required
Internal fault may have occured	Call the technical service

(5) PANEL SHOWS VALUES THAT ALWAYS CHANGING OR CONSTANT	
Diagnosis/Possible Cause	**Solution**
Microprocessor fault	Change the panel.
Internal fault may have occured	Call the technical service

(6) ABNORMAL SOUNDS COMING FROM REGULATOR	
Diagnosis/Possible Cause	**Solution**
Contactor or Transformer fault	Check the contactor and transformer.
Internal fault may have occured	Call the technical service

(7) CONTACTOR ALWAYS CHANGE ITS POSITION	
Diagnosis/Possible Cause	**Solution**
Contactor fault	Check the contactor and RLYOUT socket.
Contactor start up time may have faulted	Check the service menu
Contactor closing time may have faulted	Check the service menu
There are ripples on the mains voltage	Check the mains voltage
Internal fault may have occured	Call the technical service

WARRANTY CONDITIONS

Warranty conditions are declared on the proforma invoice of the product. Warranty period begins at the date of invoice and valid for …. year for international markets. Extended warranties are based on contracts between the manufacturer and buyer.

Failures caused by: misuse, neglect, accident, modification, operation outside the Specified Operating Environment (including, but not limited to, lack of a good electrical ground) improper maintenance by the Customer, failure caused by service of the machine by non-authorized servicers, damage caused by the use of the SERVOMATIK product for purposes other than those for which it was designed, or failure caused by a product, which SERVOMATIK doesn't recommend and supply ARE NOT COVERED.

Warranty is not a guarantee of uninterrupted or error-free functioning of a machine.

Restoration of lost data and reinstallation of software are not covered. This policy does not cover damage from a cause other than AC power line transients, except for damage due to telephone line, network or CATV transients, which is covered only if the SERVOMATIK product offers such protection.

SERVOMATIK reserves the right to replace relevant part with the same or equivalent part, rather than repair it. Where a replacement is provided the part replaced becomes the property of SERVOMATIK.

SERVOMATIK may replace parts with refurbished parts. Replacement of the part does not extend or restart the warranty period.

SERVOMATIK On Site Warranty Service is provided in predefined and agreed terms at the site location during the contracted Principal Period of Maintenance (PPM) if any SERVOMATIK Authorized Distributor Exists in the location.. If an Authorized Service Technician is needed immediately in the countries which SASC (SERVOMATIK Authorized Service Center) is not available, the customer has to pay the travel and accommodation costs for the technician from SERVOMATIK TURKEY.

SERVOMATIK on Site Warranty Service is not available for all machines or machines that have been defaced, altered, or damaged beyond repair at any locations. Please contact SERVOMATIK to determine if this option is available for your location and machine model.