What is a Servo Stabilizer?

The Servo Stabilizers uses an advanced electronic servo-motor concept to control a motorized variable transformer. Because of the motorization, there is a small delay in voltage correction. However, output voltage accuracy is usually ± 1% with input voltage changes up to ± 50%. These machines are not affected unduly by power factor or frequency variation. This type of technology tends to be extremely effective when considering large three phase applications, as it is able to maintain its accuracy of all three phases, both line to line and line to neutral, irrespective of input voltage balance and load balance at any power factor. They are also able to withstand large inrush currents, normally experienced with inductive loads. However due to the mechanics of this type of stabilizer, periodic maintenance is required.

Various Design Topologies:-

Single Phase Input & Single Phase Output
This type of servo stabilizer consists of an AC synchronous motor coupled with an Auto Transformer using gears. Now depending upon the input fluctuation, the servo motors adjusts the output of the Auto-transformer to provide a stabilized output. Autoronica uses embedded software in RISC microcontroller for the control circuitry. Its application is where input supply & load output are single phase operated.

Three Phase Input & Three Phase Output (Balanced Load)
This type of servo stabilizer consists of an AC synchronous motor coupled with three Auto Transformer using a shaft & compatible gears. Now depending upon the input fluctuation, the servo motors adjusts the output of the Auto-transformer to provide a stabilized output. Autoronica uses embedded software in RISC microcontroller for the control circuitry. Its application is where input supply is three phase & output required at load is balanced in all 3 phases. Examples of such applications are:-
- 3 Phase Motor Applications
- CNC Machines
- Coloured Offset Printing Press
- Escalators & Elevators

Three Phase Input & Three Phase Output (Unbalanced Load)
This type of servo stabilizer consists of three independent AC synchronous motors coupled with three Auto Transformer using a shaft & compatible gears. Now depending upon the input fluctuation, the servo motors adjusts the output of the Auto-transformer to provide a stabilized output. Autoronica uses embedded software in RISC microcontroller for the control circuitry of each phase. Its application is where input supply is three phase & load is unbalanced in all the phases. Examples of such applications are:-
- Medical Equipments
- Industrial Loads
- Lighting Load Applications
- Air Conditioning Plants

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SALIENT FEATURES OF RISC MICRO-CONTROLLER DESIGN:

**MICRO-CONTROL MODULE**
This is equipped with Advanced RISC Micro-Controller controlled fully automatic servo control voltage stabilizer.

**DISPLAY MODULE**
This has Digital / LCD display for True RMS Voltage, Current, status indications and parameters. Equipped with soft touch buttons for ease of operations make it a desired product.

**PROTECTION**
- Short circuit
- Single Phase Preventor
- Over-current electronic protection
- Incase output feedback is disconnected or loose connected; it detects the failure and display shows FAIL and Output goes to minimum.
- Overload protection is provided in case load current exceeds the set limit to safeguard the entire stabilizer. Once the overload situation occurs it switches off the system and displays “HI” current and it resets when load is reduced and “SET” button is pressed.

**OUTPUT TIME DELAY**
Output Time Delay is user programmable from 1 second to 180 seconds and also option of bypassing the same through soft touch button.

**HYSTERESIS**
Hysteresis is introduced (to a value, again user programmable from 1 V to 13 V) to minimize hunting of motor, where there is a lot of fluctuation in the incoming power supply.

**LOW VOLTAGE CUT OFF**
Low voltage cut off is user programmable and can be varied up to 210V AC.

**HIGH VOLTAGE CUT OFF**
High voltage cut off is user programmable and can be varied from 220V to 254V

**CUSTOMIZATION**
Customized Voltage Range available to suit any customer requirements.

**EFFICIENCY**
High efficiency of 97% to 99% is achievable

**STANDARDS/APPROVALS**
Defence JSS Standards and ISI Standards are conformed

**EASE OF MAINTENANCE & REDUCTION OF DOWN TIME**
Because of detachable Control modules, our servo stabilizers offer ease of maintenance as there is no need to move the whole equipment; only control module can be moved and replaced if required.

**ALL WEATHER OPERATIONS**
Detachable Control modules offer flexibility of keeping the servo motorized Variac & Power Transformer tank in the open weather and Detachable Control modules inside the premises. This saves the cost of assembling full weather canopy for Servo Stabilizers.

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ADVANTAGES OF USING SERVO STABILIZERS:-

- CONTROLLED & CONSTANT VOLTAGE
- REDUCED FAILURE RATE OF ELECTRICAL EQUIPMENTS
- REDUCTION IN THE DOWNTIME / MAINTENANCE EXPENSES
- IMPROVEMENT IN THE POWER FACTOR
- REDUCTION IN THE MDI (MAXIMUM DEMAND)
  
  \[ \text{MDI} = \text{Rating of the equipment} \times \text{Power Factor} \times \text{Efficiency} \]

- IMMEDIATE RESPONSE TO INPUT TRANSIENT SURGES
- ENERGY SAVER-REDUCTION IN POWER WASTAGE (LOWER ELECTRICITY BILLS)
- 100% DEPRECIATION CAN BE CLAIMED UNDER INCOME TAX RULES BEING ENERGY SAVER EQUIPMENT
- PREVENTS FIRE, ACCIDENTS, PRODUCTION AND HUMAN LIFE LOSS.

APPLICATIONS:-

- OFFSET PRINTING MACHINES
- CNC MACHINES
- SIGNALLING RADARS
- TELECOMMUNICATION EXCHANGES
- AIR CONDITIONING PLANTS
- ESCALATORS & ELEVATORS
- MEDICAL EQUIPMENTS
- GENERAL LABORATORY EQUIPMENTS
- HOSPITALS
- INDUSTRIAL & LIGHTING LOADS
- AC MOTORS
- HOTELS
- PETROL PUMPS
- LATHE MACHINES ETC.
### Specifications:

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>KVA RANGE</strong></td>
<td>1 PHASE: - 1, 2, 3, 4, 5, 7.5, 10, 11.5, 15, 20, 25, 30, 35, 40, 50</td>
</tr>
<tr>
<td></td>
<td>3 PHASE: - 5, 6, 7.5, 10, 12, 15, 20, 25, 30, 35, 40, 45, 50, 60, 75, 100, 125, 150, 175, 200, 225, 250, 300, 350, 400, 500, 600, 750, 800, 1000, 1250, 1500 &amp; 2000</td>
</tr>
<tr>
<td><strong>INPUT VOLTAGE CORRECTION RANGE</strong></td>
<td>90 V / 140 V / 160 V-275 V AC for 1 phase</td>
</tr>
<tr>
<td></td>
<td>240 V / 260 V / 300 V-480 V AC for 3 phase</td>
</tr>
<tr>
<td><strong>OUTPUT VOLTAGE</strong></td>
<td>User Programmable; 220 V / 230 V AC RMS ± 1% (1 phase), 400 V / 415 V AC RMS ± 1% (3 phases)</td>
</tr>
<tr>
<td><strong>OPERATING FREQUENCY</strong></td>
<td>50 Hz ± 6 %</td>
</tr>
<tr>
<td><strong>OVERLOADING</strong></td>
<td>10% for 10 minutes</td>
</tr>
<tr>
<td><strong>SPEED OF CORRECTION</strong></td>
<td>~ 35 Volt / Second</td>
</tr>
<tr>
<td><strong>RECOVERY TIME</strong></td>
<td>~ 500 msec. (at change between 165 V AC - 255 V AC)</td>
</tr>
<tr>
<td><strong>COOLING</strong></td>
<td>Air COOLED: - 1-Phase Up to 25 KVA; 3-Phase Up to 30 KVA</td>
</tr>
<tr>
<td></td>
<td>OIL COOLED: - 1-Phase 30 KVA onwards; 3-Phase 35 KVA onwards</td>
</tr>
<tr>
<td><strong>WAVE FORM DISTORTION</strong></td>
<td>NIL</td>
</tr>
<tr>
<td><strong>TOTAL OUTPUT EFFICIENCY</strong></td>
<td>&gt; 98% (under full load)</td>
</tr>
<tr>
<td><strong>CONTROL TECHNOLOGY</strong></td>
<td>RISC Micro-Controller controlled fully automatic</td>
</tr>
<tr>
<td><strong>DISPLAY</strong></td>
<td>True RMS Digital/LCD Voltmeter, Ammeter, system scanning with Micro-Processor</td>
</tr>
<tr>
<td><strong>HYSTERESIS ADJUSTMENT</strong></td>
<td>User Programmable; Can be varied from 1V to 13V</td>
</tr>
<tr>
<td><strong>OUTPUT DELAYED TIME ADJUSTMENT</strong></td>
<td>User Programmable; Can be varied from 15 sec to 180 Sec</td>
</tr>
<tr>
<td><strong>OUTPUT UPPER LIMIT CUT-OFF</strong></td>
<td>User Programmable; Can be varied from 220V to 254V</td>
</tr>
<tr>
<td><strong>OUTPUT LOWER LIMIT CUT-OFF</strong></td>
<td>User Programmable; Can be varied up to 210V</td>
</tr>
<tr>
<td><strong>OUTPUT PROTECTION</strong></td>
<td>✓ Short circuit</td>
</tr>
<tr>
<td></td>
<td>✓ Single Phase Preventor</td>
</tr>
<tr>
<td></td>
<td>✓ Over-current electronic protection</td>
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<td></td>
<td>✓ Incase output feedback is disconnected or loose connected; it detects the failure and display shows FAIL and Output goes to minimum.</td>
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<td></td>
<td>✓ Overload protection is provided in case load current exceeds the set limit to safeguard the entire stabilizer. Once the overload situation occurs it switches off the system and displays “HI” current and it resets when load is reduced and “SET” button is pressed.</td>
</tr>
<tr>
<td><strong>NETWORK INPUT PROTECTION</strong></td>
<td>Over-current thermal fuse and instant over-voltage protection</td>
</tr>
<tr>
<td><strong>BY-PASS SWITCH</strong></td>
<td>Manual &quot;Network-Voltage&quot; selector Bypass Switch</td>
</tr>
<tr>
<td><strong>OPERATING TEMPERATURE</strong></td>
<td>-10° C to + 55° C</td>
</tr>
<tr>
<td><strong>RELATIVE MOISTURE/HUMIDITY</strong></td>
<td>Maximum 95%</td>
</tr>
<tr>
<td><strong>OPERATING HEIGHT</strong></td>
<td>Maximum 3000 meters</td>
</tr>
<tr>
<td><strong>ACOUSTIC LEVEL</strong></td>
<td>Less than 50 dB</td>
</tr>
<tr>
<td><strong>FRONT PANEL CONTROLS</strong></td>
<td>Display module with Voltage and Status indicators and soft touch buttons for ease of operations; Parameter “Set” Switch, High-Low Voltage Indicator, Automatic - Manual Selector Switch, Voltage Buck &amp; Boost Switch</td>
</tr>
<tr>
<td><strong>REAR PANEL TERMINALS</strong></td>
<td>Louvers for Airflow (optional built-in Fan), Separate Input-Output terminal Strips, Input ON MCB (Optional), By-Pass Switch (Optional).</td>
</tr>
<tr>
<td><strong>DEFENCE &amp; JSS STANDARDS PASSED</strong></td>
<td>JSS: 6110-01-1998; JSS: 55555</td>
</tr>
<tr>
<td><strong>IS STANDARDS PASSED</strong></td>
<td>IS 9815 with latest amendments</td>
</tr>
<tr>
<td><strong>EMI / RFI SUPPRESSOR</strong></td>
<td>ECC Part 15 Class B, EMI - RFI filter</td>
</tr>
</tbody>
</table>

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ABOUT AUTORONICA

AUTORONICA is a small sized company, started by a NRI technocrat in Panchkula (Haryana State) in 1992. This small-scale company with its highly dedicated & skilled team has established its name in the field of power conditioning equipments. Autoronica has come a long way since its inception. Started as a small company manufacturing Earth Leakage Circuit Breakers for industrial and domestic use, the company used its knowledge & experience to develop new power conditioning and power generation equipments like Online & Line Interactive UPS, Industrial & Domestic Inverters, Servo Voltage Stabilizers, Automatic Voltage Correctors, Line Conditioners, Float cum Boost Chargers, DC-DC Converters, AC-DC Converters, Solar Photovoltaic Inverters / Chargers, Battery Chargers and Battery Testers.

OTHER PRODUCTS

Online UPS  Line Interactive UPS  Domestic Inverters
On Board Railway Inverters  Under slung Railway Inverters  Automatic Line Voltage Correctors
Composite Power Supply System  Isolation Transformers  Tubular VRLA Cells / Batteries

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Dealers

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