

# CREATE NEW ENERGY CULTURE

Electrical power conditioning and protection on the principle of digital control offer a reliable and tested economic solution.

## SCVS

Domain of Power Saving

### Servo Controlled Voltage Stabilizer

Generating the new era of Electric Power Saving

The wider use of equipment with non linear absorption such as rectifiers, speed variators, drives, switching power supplies, has caused, besides traditional and well known voltage fluctuations, the spreading of a new insidious type of electrical fault: harmonic distortion.

Companies producing electric energy generate the correct voltage. However, failures on the line, atmospheric conditions, continual load variations and disturbances generated by the actual users make it impossible to guarantee every user a steady voltage within the tolerance bandwidth stipulated in the supply contract.

'Suvik' series of electrodynamic voltage stabilizers offer a reliable and tested economic solution to inconveniences caused by voltage fluctuation. To use 'Suvik' SCVR 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 stabilizers. 'Suvik' SCVRs are particularly suitable for applications that require:

- High reliability
- Capability to compensate wide mains voltage variations
- High precision of stabilized voltage
- Stabilizing of high power services
- Simple and limited maintenance
- Networking

'Suvik' SCVR's regulate through a series transformer. A microprocessor based control circuit drives the variable autotransformer that supplies the required voltage to the series transformer either in phase or phase opposition to bring the mains to the rated value.

## Unique Features

SUVIK has developed state of art DSPIC based controller to stabilize utility voltage. Apart from its standard feature it has three unique features to improve reliability, serviceability and reduce system down time.

### Variac protection

Utility voltage levels are very dynamic and change over time is unpredictable. Higher voltage can generate catastrophic failure in SCVR (mainly Variac) which impacts on higher down time. This feature isolates the VARIAC whenever voltage goes high at cutoff limit and restores the same once utility voltage comes back to normal range.

### Carbon brush failure protection

Carbon brush failure is frequent phenomena due to wear and tear. This failure results in higher down time or uncontrolled voltage to machines. Suvik has developed algorithm to detect carbon brush loss. This feature helps user to take preventive action to reduce down time and MTTR.

### Sensor less voltage feedback

Sensor less control reduces probability of sensing transformer failure and increase system reliability. SUVIK's DSPIC based controller does not use any sensing transformer to sense the input and output voltage. Faster feedback and sensing due to software filter and algorithm inside DSPIC increases system response.



## Difference between Analog and Digital Servo Stabilizer

Sr. No	Digital SCVS	Analog SCVS	Digital Feature Advantage
1	Microchip controller as heart of control board, 20X4 LCD for runtime electrical parameter display and metering	Separate Analog / Digital meter needs for metering	Higher reliability and performance, easy for user to monitor all parameters and fault details to take preventive actions
2	Front panel control for parameter setting	Factory set, can't change	Easy to change output parameter as per customer need
3	Intelligent enough to control overload based on system KVA rating	Factory set only	System will not be allowed more than system power rating other than set overload setting. System and load can be saved from hazard
4	Output voltage upper and lower cutoff based on output set value	Factory set only	Load will be always safe from the output over voltage in case of change in set output voltage, controller itself will take min/max threshold value
5	Individual message for each fault	Common indication for any fault	Easy for user to recognize unhealthy status of servo or load. User can take preventive action based on this indication
6	Single board for control and conditioning	Separate board for control and conditioning	Less component count and board to reduce failure probability
7	On board buzzer	External buzzer with complex hardware logic	User will get buzzer for all kinds of faults to recognize system status without visualizing
8	Buzzer control from front panel	No control	User can control the buzzer as per their need
9	Easy for wiring and maintenance	Complex than Digital control	Reduced wiring will increase reliability in the system, lesser probability of failure or malfunction
10	Fault history storage capability for all faults, can store No. of faults occurred during operation	No history	This is great feature of Digital controller, user will always be aware with load performance input line conditioning. User himself can take preventive actions. This will reduce time to repair system.
11	Can store absolute maximum voltage and current parameters to take preventive action	No such record	This will provide correct information of how much maximum voltage and load current can be sustained by the system. From this preventive action can be taken for the load
12	SCVS ON / OFF control through Front panel soft key for maintenance	Separate hardware for manual operation	User can start and stop output without switch on and off input supply, can do maintenance from line side
13	Independent output control through single board, no separate card required for cutoff, phase sequence error	Three different control and cutoff card required to achieve this requirement	Less component count and board to reduce failure probability
14	RS232 / 485 serial communication with auto baud rate feature for remote configuration as well as monitoring. Can make SCVS on and off as well as can get all system status and history from remote place	No such PC communication	User can check status of the servo from the PC itself and need not go to servo and check the parameters. With RS485 more than one system parameters can be checked in PC. User can start and stop servo from the PC itself. This will generate system status and fault history report to understand line and load voltage behavior
15	System in manual mode alarm message in case the system is bypassed through digital control	No	This feature will help user to remind system is in manual mode, by mistake if user forgets to change from manual to auto mode system will not regulate respected line output and can damage load
16	Carbon loss indication for easy preventive action and maintenance	No	User will come to know that carbon brush has damaged (this will lead system output to be very high voltage) and can ask for early preventive action, load will be safe in case of carbon failure.
17	Can set SCVS Sr. No. and commission date information for easy maintenance	No	User can check system history like Sr. No., installation date and ask for preventive maintenance

## Higher KVA Oil Cooled



## Dimensions

Sr. No.	Model No.	Rating (KVA)	FLA (Amp)	Cooling	DIMENSIONS			WT	DIMENSIONS			WT
					Type	340-480			KG	300-500		
				H		W	D	H		W	D	
1	VS 3203	3	4	Air	760	305	665	65	760	305	665	65
2	VS 3205	5	6.6	Air	760	305	665	75	760	305	665	75
3	VS 3207	7.5	10	Air	760	305	665	75	760	305	665	83
4	VS 3210	10	14	Air	760	305	665	84	760	305	665	95
5	VS 3215	15	20	Air	760	305	665	95	760	305	665	110
6	VS 3220	20	27	Air	760	305	665	111	760	375	775	130
7	VS 3225	25	32	Air	760	375	775	134	760	375	775	143
8	VS 3230	30	41	Air	760	375	775	145	760	375	775	158
9	VS 3240	40	54	Air	760	375	775	162	1370	450	720	198
10	VS 3250	50	68	Air	1370	450	720	225	1370	450	720	260
11	VS 3250	50	68	Oil	750	1120	885	150	750	1205	940	200
12	VS 3260	60	82	Air	1370	450	720	294	1680	500	870	330
13	VS 3260	60	82	Oil	750	1205	940	240	750	1205	940	260
14	VS 3275	75	102	Air	1680	500	870	340	1680	500	870	385
15	VS 3275	75	102	Oil	1155	1455	1070	300	1155	1455	1070	345
16	VS 32100	100	136	Air	1680	500	870	470	1680	500	870	475
17	VS 32100	100	136	Oil	1155	1455	1070	375	1155	1455	1070	420
18	VS 32125	125	170	Air	1680	500	870	510	1680	500	870	550
19	VS 32125	125	170	Oil	1155	1455	1070	450	1185	1775	1040	460
20	VS 32150	150	205	Air	1680	500	870	560	1680	500	870	575
21	VS 32150	150	205	Oil	1185	1775	1040	485	1185	1775	1040	508
22	VS 32200	200	275	Oil	1185	1775	1040	518	1185	1775	1040	585
23	VS 32250	250	340	Oil	1185	1775	1040	665	1185	1775	1040	710
24	VS 32300	300	410	Oil	1185	1775	1040	750	1185	1775	1040	850
25	VS 32400	400	550	Oil	1760	1760	1370	1000	1890	2530	1285	1100
26	VS 32500	500	685	Oil	1325	2070	1360	1400	1670	2175	1380	1500
27	VS 32600	600	820	Oil	1670	2175	1380	1500	1525	2730	1865	1650
28	VS 32750	750	1044	Oil	1670	2175	1380	1800	1525	2730	1865	1975
29	VS 321000	1000	1391	Oil	1525	2730	1865	2300	1880	2705	2525	2450
30	VS 321200	1200	1670	Oil	1900	2730	1865	2625	1700	2300	2750	2825
31	VS 321500	1500	2100	Oil	1900	2730	1865	3100	1900	2300	2700	3300
32	VS 322000	2000	2800	Oil	1700	2300	2800	3675	1900	2300	2700	3900
33	VS 322500	2500	3500	Oil	1900	2300	2700	4225	2175	2300	2700	4475

## Models

### Rating

Air cooled → 3 KVA to 75 KVA

Oil cooled → 75 KVA to 4000 KVA

\* Above 4000 KVA models are customized

### Input Voltage Range

Standard → 340 V to 480 V

Standard (Wide range) → 300 V to 500 V

Standard (Narrow range) → 360V to 460 V or 380 V to 480 V

## Specifications

Input Voltage	: 300V to 500V or 340V to 480V line-to-line, 3 phase 4-wire system (Balanced or unbalanced to be specified) or as specified by customer.
Output Voltage	: 415 Volts $\pm$ 1%, line to line Nominal or as specified by customer.
Rate of Correction	: Up to 100V / Sec.
Response Time	: 10 m sec.
Efficiency	: 98 %
Waveform distortion	: Nil
Effect of power factor	: Nil
Line Frequency	: 47 to 63 HZ
Cooling	: Air-Cooled up to 75 KVA, Oil-Cooled for higher KVA Rating.
Protections	: Automatic High / Low voltage cut off. Overload and short circuit protection. Single phasing preventor.

## Accessories / Options

- Audio alarm at extreme input voltage
- Line noise and surge suppression network
- Ultra Isolation Transformer at output
- Healthy Phase Selector
- Harmonic filter for non-linear load
- Input out of range protection
- EMI/RFI filter
- Phase sequence protection
- Non-standard rate of correction
- By-pass feature

## USP

- True digital control
- Electronic overload protection
- Network connectivity
- Energy Calculator
- Variac protection against high voltage (Optional)
- Phase Reversal Protection (Optional)
- Carbon brush failure protection (Optional)
- Highly reliable sensorless control (Optional)

## Typical Applications

- CNC Machines
- Plastic Moulding Machines
- Spark Erosion and Wire-cut Machines
- For BTS/Mobile Towers
- Communication equipments like Radio and TV transmitters, Space application
- Operation theatres, large X-ray machines, CAT Scanners
- Airconditioning plants

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