



STATIC DIGITAL VOLTAGE REGULATION
highly efficient with exceptionally ultra fast speed of response – ideal for highly sensitive / mission critical loads and applications.

FEATURES

- **Automatic Voltage Regulation**
Digitally controlled voltage stabilization
- **Wide Range of Power Ratings**
Three Phase 6 to over 400 kVA
- **Choice of Input Voltage Swing Ranges**
Input Swing - $\pm 15\%$ (S15), $\pm 20\%$ (S20), $\pm 25\%$ (S25), & $\pm 30\%$ (S30) - customer to specify.
- **Precise Output Voltage Regulation**
Output Voltage Accuracy $\pm 3\%$ ($\pm 1\%$ to $\pm 5\%$)
- **Transient Voltage Surge Suppression**
TVSS - Protects loads against harmful high-energy surges, transients and spikes.
- **Solid State Design**
Electronic static design with no moving parts, delivering a virtually 'Maintenance Free' solution.

**STATIC ELECTRONIC DIGITAL DESIGN****AC VOLTAGE STABILIZERS & REGULATORS****AC THREE PHASE - 6 TO 400 kVA**

190/110V - 200/115V - 208/120V - 220/127V - 50 or 60Hz

ESR

4 WIRE - WITH NEUTRAL

LY - THREE PHASE **ENSURING AN EXTREMELY STABLE AC MAINS SUPPLY VOLTAGE**

Suitable for most types of electrical and electronic equipment, Sinalda's ESR Electronic AC Voltage Stabilizers continuously monitor the incoming supply. Should the incoming voltage rise or drop, the Stabilizers will automatically control the output to ensure the voltage reaching the load equipment always remains constant at the requisite voltage.

Inbuilt spike protection ensures the load is continuously protected against harmful mains born high energy spikes and surges.

Sinalda ESR Series AC Voltage Stabilizers offer -

- **Ultra Fast Speed of Response**
Compact in size and quiet in operation, ESR Series AC Voltage Stabilizers deliver an unsurpassable speed of response making them ideal for highly sensitive loads.
- **Static / Solid State Design**
ESR Series AC Voltage Stabilizers use solid state devices (SCRs) to select transformer taps to regulate the output. Unlike other similar solutions, ESR Stabilizers by nature of their design do not require the SCRs to carry the full load, just a fraction - thereby delivering far superior reliability to similar systems found on the market. With no moving parts, they are virtually 'Maintenance Free' solutions.
- **Automatic Electronic Bypass**
Inbuilt as standard on all models, the automatic bypass maintains power to the load and unit functionality, except regulation, in the event of a problem.
- **All Digital Controls**
All digital microprocessor control and operation ensures ESR AC Voltage Stabilizers provide the highest level of performance and accuracy. The standard LCD display provides information on the operational status and loading on the stabilizer, and enables the configuration of a number system parameters for more demanding applications where customization is required.

- **Independent Phase Control** Independent phase voltage sensing and control to ensure the individual phase voltages remain stable - regardless of load unbalance .
- **Inbuilt High Overload Capability** Ideal for loads with an inherent initial high current draw on start up.
- **Over / Low Voltage Protection** Ability to automatically shutdown the Voltage Stabiliser in the event of the input supply voltage going outside pre-set input voltage parameters.
- **Phase Failure Protection** Protection of the load in the event of phase failure.
- **SPD Class II Surge Arrestors** Protection against extremely high voltage surges and transients caused by lightning induced strikes on the utility supply line.
- **Automatic Bypass Protection** Fully automatic transfer to bypass in the event of a problem.
- **Input & Output Protection with Manual Bypass** Input Switch with Output Isolation and Manual Bypass facility, including mechanical interlocking to prevent inadvertent mis-operation.
- **Digital LCD Monitoring Panel & RS/485 Interface** Displaying real time operational status, key system readings and alarm events with RS/485 Interface ability for remote monitoring.
- **Optional Accessories** Input Isolation, IP54 / NEMA 3 Style Outdoor Enclosures & alternative Switching Arrangements.
- **Compliance with International Standards**
Designed, manufactured and supplied to comply with leading international standards.



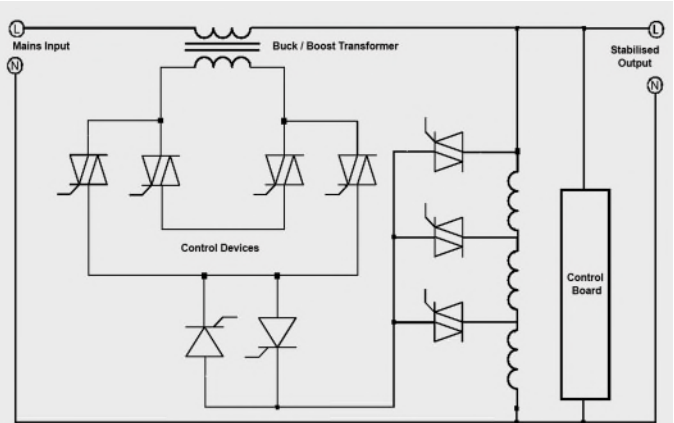
ESR LY SERIES - THREE PHASE - 6 to 400 kVA

DIGITAL BUCK BOOST SCR DESIGN TOPOLOGY

Based on the extremely well proven Buck Boost design topology which underlines our SVS AC Voltage Stabilizers, ESR Static Voltage Regulators utilise SCRs (Silicon Controlled Rectifiers) to select transformer taps to deliver a highly stable output voltage with an extremely fast correction time.

Unlike traditional Electronic SCR based solutions, the underlying Buck Boost topology ensures that the SCRs are not required to handle the full load current, but merely a fraction of the load current. By suitably sizing the ratings of the SCRs, ESR Stabilisers are able to deliver impressive overload capabilities and considerable enhanced reliability.

The utilisation of the latest in microprocessor control and the inclusion as standard on all models of an input circuit breaker, ensures that the SCRs are fully protected against over-current conditions and other malfunctions, which historically have been viewed as the primary weakness of Electronic based SCR solutions.



VOLTAGE CHOICES AVAILABLE

Also available as 3 Wire Solutions (No Neutral)
- ESR-LD-3P & ESR-HD-3P SERIES

4 WIRE SOLUTIONS

THREE PHASE WITH NEUTRAL (+ GROUND / EARTH)

LY SERIES

6 to 400 kVA

Low Voltage Models:

190/110V, 200/115V, 208/120V or 220/127V

Other voltages available on individual request / quotation.



H SERIES

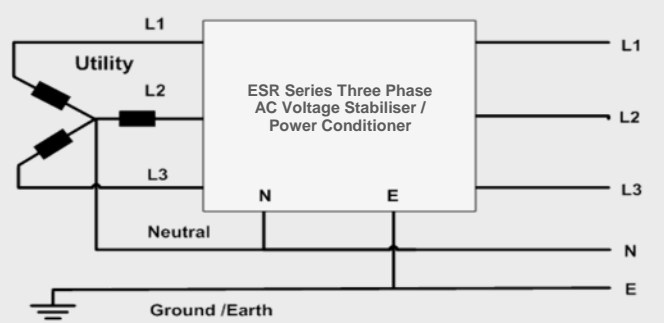
6 to 3750 kVA

High Voltage Models:

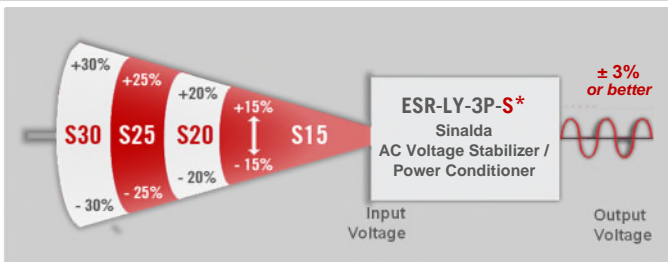
380/220V, 400/230V or 415/240V

HX Models - 440/254V, 460/265V or 480/277V

Other voltages available on individual request / quotation.



LY SERIES INPUT VOLTAGE WINDOW OPTIONS



In situations where there is a reasonably good utility supply, a Stabilizer offering an input variation swing of $\pm 15\%$ (S15 Models) will usually be more than acceptable, but in more remote locations, or countries where the national supply infrastructure is less developed, variations of $\pm 20\%$ or greater may be needed to be accommodated by the Stabilizer.

Please Note – These Stabilizers are not designed to support / protect voltage “back feed” applications, where energy is required to be also fed back into the utility supply.

LY SERIES - ESR-LY-3P-S* Input Voltage Windows & Output Accuracy

Nominal Three Phase Voltage	INPUT VOLTAGE SWINGS / SWING MODEL NO S* VARIANTS							
	S15		S20		S25		S30	
	L-L	L-N	L-L	L-N	L-L	L-N	L-L	L-N
190V L-N: 110V	162 to 219V (190/110V $\pm 15\%$)	94 to 127V	152 to 228V (190/110V $\pm 20\%$)	88 to 132V	143 to 247V (190/110V $\pm 25\%$)	83 to 138V	133 to 247V (190/110V $\pm 30\%$)	77 to 143V
200V L-N: 115V	170 to 230V (200/115V $\pm 15\%$)	98 to 132V	160 to 240V (200/115V $\pm 20\%$)	92 to 138V	150 to 250V (200/115V $\pm 25\%$)	86 to 144V	140 to 260V (200/115V $\pm 30\%$)	81 to 150V
208V L-N: 120V	177 to 239V (208/120V $\pm 15\%$)	102 to 138V	166 to 250V (208/120V $\pm 20\%$)	96 to 144V	156 to 260V (208/120V $\pm 25\%$)	90 to 150V	146 to 281V (208/120V $\pm 30\%$)	84 to 156V
220V L-N: 127V	187 to 253V (220/127V $\pm 15\%$)	204 to 276V	176 to 264V (220/127V $\pm 20\%$)	102 to 152V	165 to 275V (220/127V $\pm 25\%$)	95 to 159V	154 to 286V (220/127V $\pm 30\%$)	89 to 165V



ESR LY SERIES - THREE PHASE - 6 to 400 kVA

DESIGNED FOR TODAY'S MODERN NEEDS

Voltage Regulators are designed to stabilize the voltage when it fluctuates, up or down.

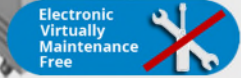
They are essential whenever reliable power is needed or when normal operation of electrical or electronic equipment is disrupted by voltage variations.

In general when suppliers of today's modern electrical and electronic equipment design their products they do so knowing that most electrical utilities around the world cannot provide or promise better than a $\pm 5\%$ output voltage accuracy of nominal and as such they design their equipment so it is able to operate efficiently within this range.

ESR Stabilizers are specifically designed to meet the requirements of today's modern loads, being feature rich and virtually maintenance free static mains control solutions.

They ensure the availability of a constant voltage at a level that always meets the design requirements of the load equipment, even for the most challenging of power environments or site loads.

Configured for optimal energy efficiency and design life expectancy, ESR Stabilizers are supplied by default with the output voltage accuracy set for $\pm 3\%$, being easily site-adjustable to deliver a more or less precise output voltage accuracy - as considered most appropriate for a particular site's needs.



PRODUCT SELECTION TABLE

S* = Selected permissible input voltage window - S15 ($\pm 15\%$), S20 ($\pm 20\%$), S25 ($\pm 25\%$), or S30 ($\pm 30\%$)

ESR Models	Rating	Max Rating (Amps per Phase)				Dimensions W x H x D (mm)	Weights Kg
		LY SERIES					
	kVA	@ 190V	@ 200V	@ 208V	@ 220V		
ESR-6LY-3P-T1F-S*	6	18	17	16	15		
ESR-10LY-3P-T1F-S*	10	30	28	27	26		
ESR-15LY-3P-T1F-S*	15	45	43	41	39		
ESR-20LY-3P-T1F-S*	20	60	57	55	52		
ESR-25LY-3P-T1F-S*	25	75	72	69	65		
ESR-30LY-3P-T1F-S*	30	91	86	83	78		
ESR-35LY-3P-T1F-S*	35	106	101	97	91		
ESR-40LY-3P-T1F-S*	40	121	115	111	104		
ESR-45LY-3P-T1F-S*	45	136	129	124	118		
ESR-50LY-3P-T1F-S*	50	151	144	138	131		
ESR-55LY-3P-T1F-S*	55	167	158	152	144		
ESR-60LY-3P-T1F-S*	60	182	173	166	157		
ESR-75LY-3P-T1F-S*	75	227	216	208	196		
ESR-80LY-3P-T1F-S*	80	243	230	222	209		
ESR-90LY-3P-T1F-S*	90	273	259	249	236		
ESR-100LY-3P-T1F-S*	100	303	288	277	262		
ESR-120LY-3P-T1F-S*	120	364	346	333	314		
ESR-150LY-3P-T1F-S*	150	456	432	416	393		
ESR-180LY-3P-T1F-S*	180	546	519	499	472		
ESR-200LY-3P-T1F-S*	200	607	577	555	524		
ESR-250LY-3P-T1F-S*	250	759	721	693	655		
ESR-300LY-3P-T1F-S*	300	911	865	832	787		
ESR-350LY-3P-T1F-S*	350	1063	1010	971	918		
ESR-400LY-3P-T1F-S*	400	1215	1154	1110	1049		

Dimensions & Weights available on individual request.

Note: Optional Accessories added may affect dimensions - subject to confirmation.

TYPICAL APPLICATIONS

- Computers & Network Systems
- Medical Equipment
- Electronics Equipment
- Testing Equipment
- Laboratory Equipment
- POS Terminals
- Process Control Systems
- TV / Radio Broadcasting Stations
- Elevators
- Audio/Video Systems
- Security Systems
- Production Line
- CNC Equipment
- SMT Equipment



TECHNICAL SPECIFICATION

Technology:	Digital Buck Boost SCR design topology		
Input Voltage Swing Variant Options Available: (S*)	Model	Input Swing	Output Accuracy
			Default Available
	S15	± 15%	± 3% ±1% to ±5%
	S20	± 20%	± 3% ±1% to ±5%
	S25	± 25%	± 3% ±3% to ±5%
	S30	± 30%	± 3% ±3% to ±5%
	Three Phase, 4 Wire (3 Phase + Neutral + G/E). Other swing options available to special quotation / order.		
Output Voltage:	190/110V, 200/115V, 208/120V or 220/127V (Customer to specify), Three Phase, 4 Wire. The permissible input voltage swing is relative to the preset output voltage.		
Output Voltage Accuracy:	± 3% (Default) - adjustable from ± 1% to ±5%, (dependent on input swing - see above).		
Frequency:	47 - 63Hz		
Correction Time:	Within 40 milliseconds		
Efficiency:	≥98%		
Power Factor:	The Power Factor has no effect on performance providing the stabiliser is being used within its rated capacity		
Overload Capability:	5 x max. current rating for 1 second 1.5 x max. current rating for 1 minute		
Surge Suppression:	TVSS - Protects loads against high-energy Spikes and Transient Voltages.		
Harmonic Distortion:	None introduced		
Independent Phase Control:	Maintains each phase voltage stable irrespective of load unbalance, even up to 100% load unbalance.		
Automatic Bypass:	Automatic transfer to bypass in the event of an overload or system problem.		
Start Up Protection:	Protection of the load equipment from damaging start up voltage surges.		
Environment:	Temperature range 0 to 45 °C. Derate by 2% for each additional °C Up to max 60 °C . Suitable for indoor tropical use 90% RH (non-condensing). Maximum altitude 4000m. Derate by 2.5% for each additional 500m.		
Audible Noise:	< 45 dB (at 1 metre)		
Construction:	Enclosures to IP20 (NEMA 1 Style) - BS EN 60529 (Option - Outdoor IP54 / NEMA 3)		
Paint Colour:	RAL 7032 (Pebble Grey - Epoxy Powder Coating)		
EMC Conformance:	Complies with BS EN 55022 and the relevant parts of the BS EN 61000 series of standards.		
CE Conformity:	CE Marked - being fully compliant with European Union Directives 2014/30/EU (The EMC Directive) and 2014/35/EU (The Low Voltage Directive).		
Standard Warranty:	Two Years / 24 Months from date of supply - with extendable option to 5 Years.		
Standard Features:	Input Switch / Breaker with Output Isolation and Manual Bypass, Phase Failure Protection, Automatic Electronic Bypass, Class II Lightning Surge Arrestors and LCD Display Panel with RS/485 Interface		

SOLID & ROBUST CONSTRUCTION

ESR Series Stabilizers are enclosed in robust floor standing air-cooled cubicles, being built upon a rigid framework construction and offering front door access and removable side panels for ease of installation and servicing.

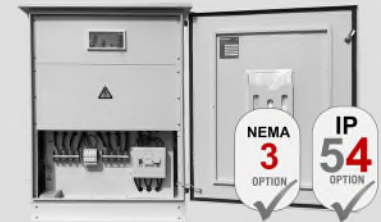
Supplied as standard with bottom cable entry (top entry to specific order), ESR Stabilizers offer IP20 / NEMA 3 Style Ingress Protection and are supplied complete with an epoxy powder heavy duty Pebble Grey (RAL 7032) orange peel paint finish.



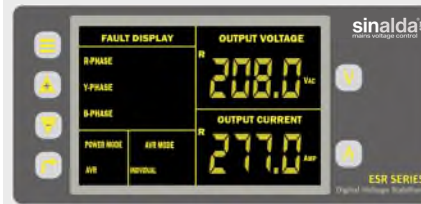
Typical Internal View

ALSO AVAILABLE IN IP54 / NEMA 3 STYLE ENCLOSURES

Suitable for external use, or more challenging internal environments.



LCD DIGITAL DISPLAY PANEL



Comprehensive LCD Digital Monitoring and Control Panel

delivering intuitive control and monitoring of all the key system parameters.

Real Time Display of -

- **Voltage:** Individual & Average Output Phase Voltages
- **Current:** Individual & Average Phase Currents
- **Operational Status:** On AVR & On Bypass
- **Alarm Conditions:** Overload, Over-Voltage, Under-Voltage, Fuse Failure & Phase Failure

Modifiable System Parameter Settings -

- Output Voltage
- Output Voltage Accuracy
- Correction Time
- Voltage Regulation Method
- Over - Voltage
- Under - Voltage
- Over - Current Value

RS-485 COMMUNICATION

All ESR Voltage Stabilizers offer as standard a RS-485 communication facility which will enable the following information to be available for remote monitoring -

Measurements:

- **Input Voltage:** Phase to Phase & Phase to Neutral
- **Output Voltage:** Phase to Phase & Phase to Neutral
- **Current:** Phase Currents

Status Indications:

- Over Voltage
- Under Voltage
- Current Overload
- Fuse Blown



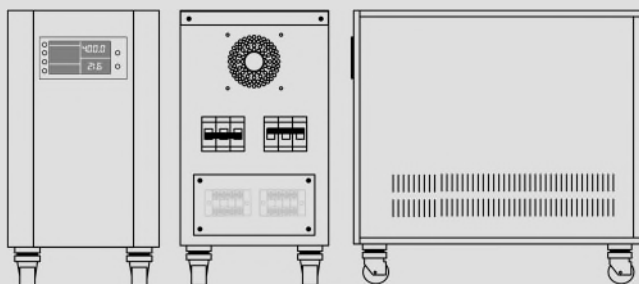
STANDARD ENCLOSURE TYPES

ALSO available in Outdoor IP54 / NEMA 3 Style Enclosures - IP54 OPTION

C02 to C06 Enclosures

Bottom Cable Entry

Front Rear Side



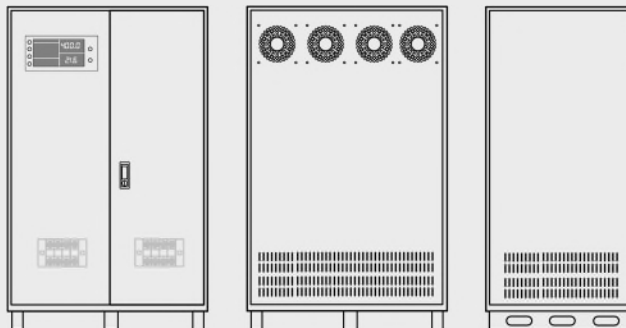
Physical Size:

C02	17.8"(W) x 32.7"(H) x 30.8"(D) inches	450(W) x 830(H) x 780(D) mm
C04	28.8"(W) x 46.1"(H) x 30.8"(D) inches	430(W) x 1170(H) x 780(D) mm
C06	20.5"(W) x 51.2"(H) x 33.5"(D) inches	520(W) x 1300(H) x 850(D) mm

C14 to C36 Enclosures

Bottom Cable Entry

Front Rear Side



Physical Size:

C14	41.4"(W) x 78.8"(H) x 27.6"(D) inches	1050(W) x 2000(H) x 700(D) mm
C15	47.3"(W) x 78.8"(H) x 31.5"(D) inches	1200(W) x 1600(H) x 800(D) mm
C36	59.1"(W) x 78.8"(H) x 47.3"(D) inches	1500(W) x 2000(H) x 1200(D) mm

ADD-ON OPTIONS

Where required ESR Series AC Voltage Stabilizers can be supplied with the following additional accessories / add-on features.

- Input Isolating Transformer (- PC)**

Through the integration of a shielded isolation transformer, provides enhanced spike & electrical noise (Common Mode: 120db @ 100khz & Normal Mode Noise: 60db @ 100khz) suppression and neutral ground bonding.

Delivers what is commonly referred to as a 'CLEAN' supply.

ESR Stabilizers supplied with the above option fitted are typically referred to as 'Power Line Conditioners'.

To withstand harmonic content, Isolation Transformers utilised are available as an additional enhanced option with K-13 (-K13) or K-20 (-K20) factor ratings.

- IP54 Ingress Protection (- IP54)**

Stabilizer presented in durable IP54 (BS / EN 60529) / NEMA 3 free standing steel cubicles suitable for external use, or more challenging internal environments.

- AquaStop (- AS)**

PCB protective coating offering protection against damp and moisture ingress.

- Additional Digital Metering (-ADM)**

Additional Digital Metering for Input Voltage and Frequency

- Alternative Switch Arrangements (-T2F or -T3F)**

Alternative Input, Output and Bypass Switching arrangements - details available on request.

- 4 Pole Switches / Breakers (-FP)**

As standard ESR Stabilisers utilise 3 Pole Switches / Breakers. As an option 4 Pole alternatives can be supplied.

- eSpec Upgrade (-eSP)**

While we endeavour to keep production costs to a minimum by sourcing top specification components from around the globe we realise that some clients have a requirement for their own designated protection devices.

Accordingly we are able to offer our eSpec Pack Upgrade package which offers the client the short circuit and overcurrent protection components from their preferred leading European or American manufacturers.

NB: The inclusion of the above add-on options may increase enclosure sizings and weights - subject to confirmation at time or ordering.

CUSTOM BUILT SOLUTIONS

Sinalda UK, with a strong and wide manufacturing base, is able to meet the requirements of customers from our own in-house professional resources.

Where bespoke / custom built solutions are required we are able to call upon our extensive portfolio of proven standard designs and tailor offerings to accommodate, without breaking the bank, most individual specific requirements.



ESR SERIES

AC Voltage Stabilisers and Power Line Conditioners are available from -

For Stable, Clean & Optimised AC Voltage

