ESR H SERIES - THREE PHASE - T2F & T3F - 450 to 3125 kVA

STATIC DIGITAL VOLTAGE REGULATION

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

FEATURES

- Automatic Voltage Regulation
- Wide Range of Power Ratings
- Choice of Input Voltage Swing Ranges
- Inbuilt Spikes & Surge Protection
- Precise Output Voltage Regulation
- Transient Voltage Surge Suppression
- Solid State Design
- Inbuilt High Overload Capability
- Independent Phase Control
- Input / Output Protection with Manual Bypass
- Phase Failure Protection
- Automatic Bypass Protection
- Digital LCD Monitoring Panel & RS/485 Interface
- Optional Accessories
- Compliance with International Standards

STATIC ELECTRONIC DIGITAL DESIGN

AC VOLTAGE STABILISERS & REGULATORS

AC THREE PHASE - 450 to 3125 kVA

380/220 - 400/230 - 415/240 - 50 or 60Hz

X4680 MODELS: 440/256V - 690/346V - 50 or 60Hz

ENSURING AN EXTREMELY STABLE AC MAINS SUPPLY VOLTAGE

Suitable for most types of electrical and electronic equipment, the feature rich Ashley-Edison’s ESR Static Electronic Digital AC Voltage Stabilisers continuously monitor the incoming supply. Should the incoming voltage rise or drop, the Stabilisers 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 continually protected against harmful mains born high energy spikes and surges.

Ashley-Edison ESR Series Static Electronic Digital AC Voltage Stabilisers offer -

- Ultra Fast Speed of Response
- Static / Solid State Design
- Automatic Electronic Bypass
- All Digital Controls

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
- Over / Low Voltage Protection
- Phase Failure Protection
- SPD Class II Surge Arrestors
- Input Switch / Breaker with Output Isolation
- Manual Bypass facility, including integrated mechanical / electronic interlocking to prevent inadvertent mis-operation.
- Displaying real time operational status, key system readings and alarm events with RS/485 Interface ability for remote monitoring.
- Designed, manufactured and supplied to comply with leading international standards. Fully CE compliant and labelled.
DIGITAL BUCK BOOST SCR DESIGN TOPOLOGY

Based on the extremely well proven Buck Boost design topology which underlines our SES & SESL AC Voltage Stabilisers, 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 input and output protection, ensures that the SCRs are fully protected against overcurrent conditions and other malfunctions, which historically have been viewed as the primary weakness of Electronic based SCR solutions.

VOLTAGE CHOICES AVAILABLE

4 WIRE SOLUTIONS
THREE PHASE WITH NEUTRAL (+ GROUND / EARTH)

H SERIES
450 to 3125 kVA

- High Voltage Models:
  - 380/220V, 400/230V or 415/240V
  - 4680 Models: 440/254V, 460/265V, 480/277V or 600/346V

LY SERIES
450 to 500 kVA

- Low Voltage Models:
  - 190/110V, 200/115V, 208/120V or 220/127V

Other voltages available on individual request / quotation.

INPUT VOLTAGE WINDOW OPTIONS

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

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

<table>
<thead>
<tr>
<th>Nominal Three Phase Voltage</th>
<th>INPUT VOLTAGE SWINGS / SWING MODEL NO S* VARIANTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S15</td>
</tr>
<tr>
<td>450 to 3125 kVA</td>
<td>L-L</td>
</tr>
<tr>
<td>450 to 3125 kVA</td>
<td>323-437V (±15%)</td>
</tr>
<tr>
<td>380V L-N: 220V</td>
<td>304-456V (±20%)</td>
</tr>
<tr>
<td>400V L-N: 230V</td>
<td>320-480V (±20%)</td>
</tr>
<tr>
<td>415V L-N: 240V</td>
<td>332-498V (±20%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nominal Three Phase Voltage</th>
<th>INPUT VOLTAGE SWINGS / SWING MODEL NO S* VARIANTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S35</td>
</tr>
<tr>
<td>250 to 1200 kVA</td>
<td>L-L</td>
</tr>
<tr>
<td>250 to 1200 kVA</td>
<td>247-513V (±30%)</td>
</tr>
<tr>
<td>380V L-N: 220V</td>
<td>143-297V (±30%)</td>
</tr>
<tr>
<td>400V L-N: 230V</td>
<td>320-656V (±30%)</td>
</tr>
<tr>
<td>415V L-N: 240V</td>
<td>270-560V (±30%)</td>
</tr>
</tbody>
</table>

Also available with Similar Input Voltage Swings for X440 (440V), X460 (460V), X480 (480V) & X600 (600V) Models.
**DESIGNED SPECIFICALLY 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 ±5% output voltage accuracy of nominal and as such they design their equipment so it is able to operate efficiently within this range. ESR Stabilisers 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 Stabilisers are supplied by default with the output voltage accuracy set for ±3% (±5% for S45+ Models), being easily site-adjustable to deliver a more or less precise output voltage accuracy - as considered most appropriate for a particular site’s needs / available options.

**PRODUCT SELECTION TABLE**

<table>
<thead>
<tr>
<th>ESR Models</th>
<th>Output Power Capacity</th>
<th>Standard Switch Arrangement</th>
<th>Max Rating (Amps per Phase)</th>
<th>Dimensions</th>
<th>Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>kVA</td>
<td>T2F</td>
<td>H SERIES @ 380V @ 400V @ 415V</td>
<td>H-X4680 SERIES @ 440V (X440) @ 460V (X460) @ 480V (X480) @ 600V (X600) W x H x D (mm) Kg</td>
<td></td>
</tr>
<tr>
<td>ESR-450H-3P-T2F-S*</td>
<td>450</td>
<td>T2F</td>
<td>683 @ 649 625 @ 650 590 @ 564 541</td>
<td>432</td>
<td></td>
</tr>
<tr>
<td>ESR-500H-3P-T2F-S*</td>
<td>500</td>
<td>T2F</td>
<td>759 @ 721 695 @ 655 627 @ 601 481</td>
<td>417</td>
<td></td>
</tr>
<tr>
<td>ESR-600H-3P-T2F-S*</td>
<td>600</td>
<td>T2F</td>
<td>911 @ 865 834 @ 787 752 @ 721 577</td>
<td>417</td>
<td></td>
</tr>
<tr>
<td>ESR-650H-3P-T2F-S*</td>
<td>650</td>
<td>T2F</td>
<td>987 @ 937 904 @ 852 815 @ 781 625</td>
<td>417</td>
<td></td>
</tr>
<tr>
<td>ESR-700H-3P-T2F-S*</td>
<td>700</td>
<td>T2F</td>
<td>1063 @ 1010 973 @ 918 878 @ 841 673</td>
<td>417</td>
<td></td>
</tr>
<tr>
<td>ESR-750H-3P-T2F-S*</td>
<td>750</td>
<td>T2F</td>
<td>1139 @ 1082 1043 @ 983 941 @ 901 721</td>
<td>417</td>
<td></td>
</tr>
<tr>
<td>ESR-800H-3P-T2F-S*</td>
<td>800</td>
<td>T2F</td>
<td>1215 @ 1154 1112 @ 1049 1003 @ 962 769</td>
<td>417</td>
<td></td>
</tr>
<tr>
<td>ESR-900H-3P-T2F-S*</td>
<td>900</td>
<td>T2F</td>
<td>1367 @ 1298 1251 @ 1180 1129 @ 1082 865</td>
<td>417</td>
<td></td>
</tr>
<tr>
<td>ESR-1000H-3P-T2F-S*</td>
<td>1000</td>
<td>T2F</td>
<td>1518 @ 1443 1390 @ 1311 1254 @ 1202 962</td>
<td>417</td>
<td></td>
</tr>
<tr>
<td>ESR-1200H-3P-T2F-S*</td>
<td>1200</td>
<td>T2F</td>
<td>1822 @ 1731 1669 @ 1574 1505 @ 1443 1154</td>
<td>417</td>
<td></td>
</tr>
<tr>
<td>ESR-1250H-3P-T2F-S*</td>
<td>1250</td>
<td>T2F</td>
<td>1898 @ 1803 1738 @ 1639 1568 @ 1503 1202</td>
<td>417</td>
<td></td>
</tr>
<tr>
<td>ESR-1500H-3P-T2F-S*</td>
<td>1500</td>
<td>T2F</td>
<td>2278 @ 2164 2086 @ 1967 1882 @ 1803 1443</td>
<td>417</td>
<td></td>
</tr>
<tr>
<td>ESR-1600H-3P-T2F-S*</td>
<td>1600</td>
<td>T2F</td>
<td>2430 @ 2308 2225 @ 2098 2007 @ 1924 1539</td>
<td>417</td>
<td></td>
</tr>
<tr>
<td>ESR-2000H-3P-T2F-S*</td>
<td>2000</td>
<td>T2F</td>
<td>3037 @ 2885 2781 @ 2623 2509 @ 2404 1924</td>
<td>417</td>
<td></td>
</tr>
<tr>
<td>ESR-2500H-3P-T2F-S*</td>
<td>2500</td>
<td>T3F</td>
<td>3797 @ 3607 3477 @ 3279 3137 @ 3006 2404</td>
<td>417</td>
<td></td>
</tr>
<tr>
<td>ESR-3000H-3P-T2F-S*</td>
<td>3000</td>
<td>T3F</td>
<td>4556 @ 4328 4172 @ 3935 3764 @ 3607 2885</td>
<td>417</td>
<td></td>
</tr>
<tr>
<td>ESR-3125H-3P-T2F-S*</td>
<td>3125</td>
<td>T3F</td>
<td>4746 @ 4509 4346 @ 4099 3921 @ 3757 3006</td>
<td>417</td>
<td></td>
</tr>
</tbody>
</table>

**S** = Selected permissible input voltage window - $S15$ (±15%), $S20$ (±20%), $S25$ (±25%), $S30$ (±30%), $S35$ (±35%), $S40$ (±40%), $S45$ (±45%) or $S50$ (±50%)

**Note:** Smaller kVA and alternative voltage options available to order / individual request.

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

Dimensions & Weights For S15 to S50 models available on individual request.
TECHNICAL SPECIFICATION

- Technology: Digital Buck Boost SCR design topology
- Input Voltage Swing: Available: (3)
  - Model: S15 - S45
  - Input Swing: ±15% - ±45%
  - Output Accuracy: ±3% (Default) - adjustable from ±1% to ±5% (dependent on input swing - see above)
- Available Ratings: Available
- Frequency: 50 - 63Hz
- Correction Time: Within 60 Milliseconds (3 to 4 Cycles) per Step
- Efficiency: ≥98%
- Power Factor: The Power Factor has no effect on performance
- Overload Capability: 5 x max. current rating for 1 second
- 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: Protects 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: As standard RAL 1013 (Oyster White) - Epoxy Powder Coating. Other colours available as an option on specific request.
- EMC Conformance: Complies with BS EN 55022 and the relevant parts of the BS EN 61000 series of standards.
- Standard Warranty: Two Years / 24 Months from date of supply - with extendable option to 5 Years.

LCD DIGITAL DISPLAY PANEL

- 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 -
  - Voltage: Over - Voltage
  - Voltage Accuracy: Under - Voltage
  - Correction Time: Over – Current Value
  - Voltage Regulation Method

Typical AE Model: ESR-1000H-3P-T2F-S15 (400V)
1000kVA Three Phase Static Electronic Digital AC Voltage Stabiliser
**SOLID & ROBUST CONSTRUCTION**

ESR Series Stabilisers 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 or as standard on T3 systems), ESR Stabilisers offer IP20 / NEMA 3 Style Ingress Protection and are supplied complete with an epoxy powder heavy duty Oyster White (RAL 1013) orange peel paint finish.

**STANDARD TYPE 2F SWITCH ARRANGEMENTS - on 450 kVA to 2000 kVA Models**

The Type 2F style switch arrangement consists of a motorised input air switch and output / bypass changeover switch – as depicted below - with full electronic interlocking to prevent inadvertent mis-operation.

**STANDARD TYPE 3F SWITCH ARRANGEMENTS - 2500 kVA & Above Models**

Similar to the Type 2F arrangement, T3F systems utilise separate motorised air output and bypass switches – as depicted below - whilst still offering full electronic interlocking to prevent inadvertent mis-operation.

**RS-485 COMMUNICATION**

All ESR Voltage Stabilisers 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
  - Current Overload
  - Under Voltage
  - Fuse Blown
**UNSURPASSED TOTAL PROTECTION FEATURES**

Offered with an impressive **2 Years Warranty** (extendable to 5 Years), ESR Three Phase Static Electronic AC Voltage Stabilisers are widely considered to be the finest in class and incorporate as **standard** many advanced protection features which ‘others’ only deem fit to offer as expensive add-on options.

+ Inclusion of an **optional** screened Input Isolation Transformer (-PC) enhances Transient Voltage Surge protection and ensures defence against less prevalent common and normal mode electrical noise – delivering what is commonly referred to as a ‘Clean Supply’.

Inbuilt **STANDARD** advanced protection features include:-

- Automatic input switch ensuring protection against potential faults and / or short-circuits inside the stabiliser.
- Output isolation / automatic output switch delivers protection against overload, short circuit, over voltage, under voltage and phase failure.
- In addition to the provision of an inbuilt automatic electronic bypass, all ESR stabilisers offer an integral ‘Break Before Make’ bypass switch, enabling the stabiliser to be segregated from the line supplying the load.
- To avoid damage to the stabiliser and load, switch interlocking prevents inadvertent mis-operation of the switches.
- SPD Class II Surge Arrestors ensure protection for the stabiliser and load against extremely high voltage surges and transients caused by atmospheric (eg. lightning induced strikes) or operational issues on the utility supply.

**ADD-ON OPTIONS**

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

<table>
<thead>
<tr>
<th><strong>Input Isolating Transformer (-PC)</strong></th>
<th><strong>Alternative Switch Arrangements (-T2F or -T3F)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Through the integration of a shielded isolation transformer, provides enhanced spike &amp; electrical noise (Common Mode: 120db @ 100kHz &amp; Normal Mode Noise: 60db @ 100kHz) suppression and neutral ground bonding. Delivers what is commonly referred to as a ‘CLEAN’ supply.</td>
<td>Alternative Input, Output and Bypass Switching arrangements - see Switching Arrangement Section.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>IP54 Ingress Protection (-IP54)</strong></th>
<th><strong>4 Pole Switches / Breakers (-FP)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Stabiliser presented in endurable IP54 (BS / EN 60529) / NE-M-A 3 free standing steel cubicles suitable for external use, or more challenging internal environments.</td>
<td>As standard ESR Stabilisers utilise 3 Pole Switches / Breakers. As an option 4 Pole alternatives can be supplied.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>AquaStop (-AS)</strong></th>
<th><strong>eSpec Upgrade (-eSP)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>PCB protective coating offering protection against damp and moisture ingress.</td>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Additional Digital Metering (-ADM)</strong></th>
<th><strong>Alternative Paint Colour (-RAL)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional Digital Metering for Input Voltage and Frequency.</td>
<td>Alternative Paint Colour Finnish - <strong>customer to specify.</strong></td>
</tr>
</tbody>
</table>

**NB:** The inclusion of the above add-on options may increase enclosure sizings and weights - subject to confirmation at time or ordering.
ESR H SERIES - THREE PHASE - T2F & T3F - 450 to 3125 kVA

STANDARD ENCLOSURE TYPES

C05 to C06 Enclosures

Front

Rear

Right Side

C07 to C09 Enclosures

Front

Rear

Side

Physical Size: Bottom Cable Entry (Option for Top Cable Entry)

C05 1200(W) x 1600(H) x 800(D) mm 47.3"(W) x 63.0"(H) x 31.5"(D) inches

C06 1500(W) x 1900(H) x 1000(D) mm 59.1"(W) x 74.8"(H) x 39.4"(D) inches

Physical Size: Top Cable Entry (Option for Bottom Cable Entry)

C07 2850(W) x 1900(H) x 1100(D) mm 110.3"(W) x 74.8"(H) x 43.4"(D) inches

C08 3200(W) x 1900(H) x 1200(D) mm 126.0"(W) x 74.8"(H) x 47.3"(D) inches

C09 3200(W) x 2200(H) x 1200(D) mm 126.0"(W) x 86.7"(H) x 47.3"(D) inches

ESR TYPICAL APPLICATIONS

- Computers & Network Systems
- Medical Equipment
- Electronics Equipment
- Testing Equipment
- Laboratory Equipment
- Process Control Systems
- TV/Radio Broadcasting Stations
- Elevators / Lifts
- Audio/Video Systems
- Production Lines
- CNC Machines
- SMT Equipment

APPLICATIONS IN . . .

- Africa
- Europe
- Middle East
- North America
- Central & South America
- Caribbean
- Asia
- Oceania

Every Voltage Stabilization or Power Conditioning solution we offer is backed by the unrivalled experience we have gained in the world market over the last 25 years or so.

Tried, tested and extensively proven in all corners of the world, including some of the harshest and most remote power environments on this planet, our solutions can be found on duty protecting vital equipment where the supply must never be found wanting . . . not even for a single second.

Only by delivering Quality in product and service have we been able to consistently grow our client base year on year. Today we are an approved supplier to many well-known major international corporations and public organisations.

With an emphasis always on building and maintaining strategic and long-lasting relationships with our Customers, our Clients are drawn from a wide selection of industries and market sectors spread throughout the world.

Want to learn more about us and the Clients we serve?
Check us out online at https://www.ashleyedisonuk.com/at-your-service-746/

CUSTOM BUILT SOLUTIONS

Ashley-Edison, 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.