

Ashley-Edison[®] (UK)

Mains Voltage Control - Without Compromise

AE-HB & AE-LB SERIES

MANUALLY OPERATED VARIABLE TRANSFORMERS

OPERATOR MANUAL

WITH SECTIONS ON
INSTALLATION, MAINTENANCE & FRONT-LINE FAULT FINDING



AE Single Phase



AE Three Phase

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- This manual contains information concerning the safe and proper installation and operating procedures applicable to the AE range of Single and Three Phase Manually Operated Variable Transformers.
- The manual should be read in full before attempting to use or operate the equipment.
- If any problems are encountered with the procedures contained within this manual, then seek assistance from Ashley-Edison or the distributor from whom you purchased the equipment.
- Whilst every precaution has been taken to ensure the accuracy and completeness of this manual, Ashley-Edison assumes no responsibility and disclaims all liabilities for damages resulting from use of this information or any error or omission.



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1. Introduction

1.1 Overview

The Ashley Edison AE range of Manually Operated Variable Transformers are designed to ensure trouble free service. They all deliver an efficient and trouble-free method of varying AC voltages with an output from zero to line voltage.

Suitable for supporting most types of electrical and electronic equipment, the Ashley Edison AE Variable Transformers provide a variable voltage output for a number of input voltage variations within the operating specification of the model in question.

While today there are many modern alternatives to the Variable Transformer for controlling voltage, the load tolerant nature of the Variable Transformer ensures that it is still the best and most reliable method of control for a large variety of applications where stepless control of a distortion-free AC output and dependent parameters are essential.

Typical uses include quality control testing, electronic equipment burn-in, low voltage performance evaluation, DC rectifier / regulator analysis or other industrial and engineering applications.

1.2 Features

- High Efficiency & Excellent Regulation
- Distortion Less Voltage Control
- Low Operating Torque
- Trouble Free Endurable Mechanical Construction for Long Life
- Negligible Maintenance
- Straight forward Installation & Use
- Compliance with International Standards
- CE Conformity & RoHS Compliance
- 1 Year / 12 Months Warranty



2. Safety Instructions



Safety Instructions

Read and follow all Safety Instructions

Please save these instructions for future reference

2.1 Introduction

These instructions are addressed to the Installer and End User / Operator of the AE AC Manually Operated Variable Transformers. We strongly suggest you keep this manual next to the Transformer for future reference.

2.2 General Installation & Usage

- 2.2.1 Do not use the Variable Transformer for other than the intended use.
- 2.2.2 If on delivery there is evidence of visible damage, do not attempt to install or start the Variable Transformer. Advise the transport delivery company and inform Ashley-Edison, or the resale partner from whom you purchased the equipment.
- 2.2.3 The Variable Transformer can contain potentially dangerous voltages – up to 600V AC. Use extreme caution when opening the covers and do not leave the unit unattended with the covers off. If using the Open (no covers) Variable Transformer shock as part of an OEM assembly, it is the responsibility of the manufacturer to ensure that it has adequate protection against electric shock.
- 2.2.4 Hazardous voltages can be present at the unit's output any time AC input power is applied. To avoid possible personal injury, or equipment damage, and to make certain there is no output voltage, turn the unit off and disconnect the AC Input.
- 2.2.5 To reduce the risk of fire, or electrical shock, install the unit in an indoor area free from conductive contaminants.
- 2.2.6 Unless the Variable Transformer is specified as IP54 or NEMA 3 do not use outdoors.



- 2.2.7 Do not place the unit near water or liquids, gas and combustible materials or in an excessively humid environment where condensation is very likely to occur.
- 2.2.8 To reduce the risk of overheating, do not block the unit's ventilation panels and try to avoid positioning the unit in direct strong sunlight or close to other heat sources.
- 2.2.9 Do not allow liquids or foreign objects to enter the unit.
- 2.2.10 The installation and use of this product must comply with all relevant current electrical installations that are in force in the territory of installation.
- 2.2.11 Only qualified electrician shall install the equipment. The electrician shall install the AC input according to the instructions contained in this manual. Standard safety practices should be followed at all times.
- 2.2.12 The unit must be grounded or earthed at all times when in use.

2.3 Symbol Warning Information

The following symbols are used throughout this manual -



Warning Information

This symbol alerts you to important information



Electrical Hazard

This symbol indicates an electrical hazard may be present.

3. Transport, Delivery, Storage & Unpacking

3.1 Transport

- 3.1.1 The Variable Transformer should only be transported in an upright position.
- 3.1.2 The Variable Transformer should be positioned in its operation location while enclosed in its original packaging taking due note of its centre of gravity whilst manoeuvring into position.
- 3.1.3 Do not stack other packages on top of the unit.
- 3.1.4 If the Variable Transformer has to be lifted ensure that the correct lifting equipment is used.
- 3.1.5 Before using any form of lifting equipment be it crane, forklift or elevator ensure that it has a lifting capacity suitable for the application.

3.2 Delivery

- 3.2.1 When delivered carefully check the integrity of the packaging for any physical damage or signs of mishandling that may have occurred during transportation.
- 3.2.2 On completion of unpacking check again for any signs of any physical damage to the Variable Transformer.
- 3.2.3 Should any damage be observed immediately notify the shipping agent/transport company involved with the shipping and inform Ashley Edison, or the resale partner from whom you purchased the equipment A detailed report including photographs of any damage observed will be required to support any indemnity/insurance claim.

3.3 Storage

- 3.3.1 The units are carefully packed for shipment to ensure that when they are installed they are in perfect condition.
- 3.3.2 Never leave a Variable Transformer (whether packed or not) outside with exposure to the elements.



- 3.3.3 Do not store on top of other packages or allow other packages to be stored on top of the Variable Transformer.
- 3.3.4 Should it be necessary to place the Variable Transformer in storage it should be stored in its original shipping packaging in a clean, dry, dust free environment away from any chemical substances.

3.4 Unpacking

- 3.4.1 AE Variable Transformers are despatched from the factory in purpose designed ruggedized carton boxes or wooden crates.
- 3.4.2 Once on site it is strongly recommended that the unit should be moved to its final location whilst still in its shipping packaging.
- 3.4.3 Open the shipping container carefully taking special care when utilising opening tools to ensure that the unit is not inadvertently damaged.
- 3.4.4 After removal of the external packaging and prior to commencement of installation works remove any vapour barriers and internal support fixings.
- 3.4.5 If any damage, as a result of shipping is observed immediately notify the shipping agent /shipping company and inform Ashley Edison, or the resale partner from whom the unit was purchased.
- 3.4.6 Do not install the Variable Transformer if there is any sign of damage.

WARNING



Do Not Leave the Variable Transformer Door/s Opened / Covers Off For Long Periods Of Time Or In The Absence Of Authorised Personnel.

Only Qualified Personnel Are Allowed To Service This Equipment.

4. Positioning, Ventilation & Cooling

4.1 Positioning

- 4.1.1 The unit should be installed indoors in a clean, dust-free location, which has adequate ventilation or air-conditioning Do not block the transformer's air vents.
- 4.1.2 Do not operate the Variable Transformer near gas, electric or other heat sources or in direct sunlight.
- 4.1.3 Do not site the Variable Transformer next to magnetic storage media, monitor screens (VDU's) or any other equipment sensitive to magnetic fields.
- 4.1.4 Move the Variable Transformer in an upright position, in its original packaging, to its final destination.
- 4.1.5 If required use the appropriate lifting equipment to manoeuvre the Variable Transformer into position.
- 4.1.6 Check for sufficient floor and elevator loading capacity.
- 4.1.7 Check the integrity of the Variable Transformer equipment carefully.

4.2 Ventilation & Cooling

- 4.2.1 AE Variable Transformers are naturally air-cooled and the airflow paths should not be obstructed.
- 4.2.2 The Variable Transformer can be installed in sites with ambient temperatures from 0 to 45 degrees C up to 1000 m, relative humidity of up to 90% (non-condensing). The Variable Transformer is designed to operate within an ambient temperature range of -15 to 45°C - up to an altitude of 1000 metres. When installed in greater ambient temperatures and / or altitudes, the maximum rating of the machine should be de-rated by 2% for each additional °C, up to a max of 60°C, and 2.5% for each additional 500 metres.
- 4.2.3 The temperature of the ambient air surrounding the Variable Transformer must not exceed the temperature shown above.
- 4.2.4 When operational, the Variable Transformer itself will generate a certain amount of heat, which will be dissipated naturally by



convection. The User should ensure that the room where the Variable Transformer is located has sufficient adequate cooling / ventilation facilities to remove the heat. It is imperative that the air should be able to freely circulate around the Variable Transformer.

- 4.2.6 **DO NOT** put anything on top of the cabinet or restrict the flow of air to and from the system.



5. Electrical Installation & Cabling

5.0 Electrical Installation of the equipment should only be carried out by a qualified electrician following best safety practices at all times.

5.1 Cabling

5.1.1 The cabling of the Variable Transformer should be sized according to the actual rating of the Variable Transformer. The current capacity of the supply cable should be chosen to suit the specified current rating of the Variable Transformer.

5.1.2 The cable size and construction should comply with local regulations for installation.

5.1.3 When cutting holes for cable entry/glanding care must be taken that no swarf from the cutting enters the enclosure and that any swarf is removed.

5.1.4 Cover / Block-off any unused holes.

5.2 Protection

5.2.1 It is recommended that the installer should fit suitable circuit protection.

5.2.2 Care must be taken to ensure that the supply fuses/circuit breaker is correctly sized to provide tripping discrimination between the circuit protection devices in the event of a fault.

5.3 System Grounding

5.3.1 The safety of any Variable Transformer depends upon proper grounding. Grounding is primarily for safety. Correct implementation of grounding also enhances equipment performance.

5.4 Voltage & Load Checks

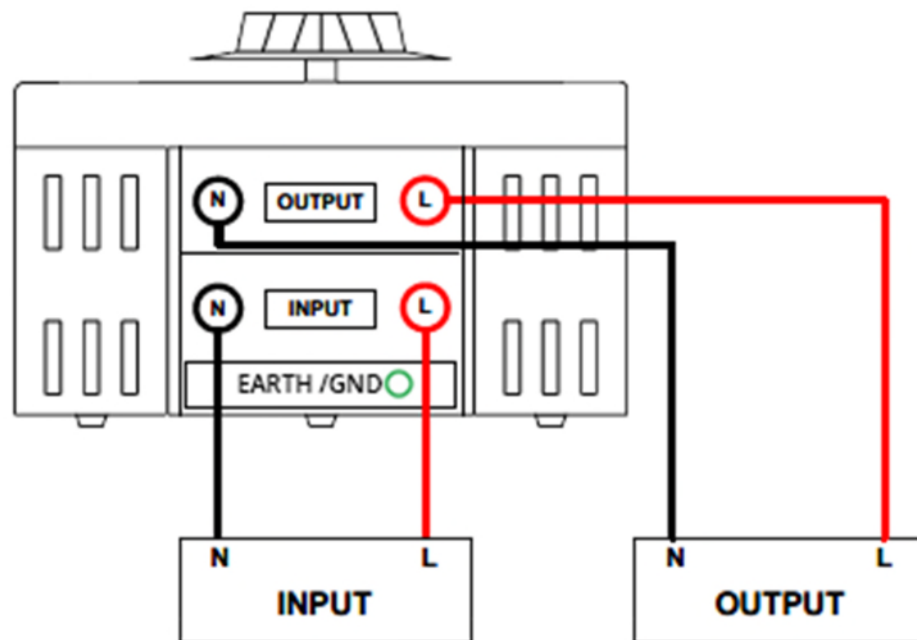
5.4.1 Before connecting the unit it is essential that the utility mains voltage is verified and that the Variable Transformer input voltage range is within the specified requirements.

5.4.2 Check that the rating of the load does not exceed the rating of the Variable Transformer current rating as shown on the rating plate. The load should be measured using a true RMS reading meter.

5.5 Cable Connections For AE-H/LB Single Phase Manually Operated Series Models

5.5.1 Connect the mains input supply to terminals marked **INPUT (L)** and **NEUTRAL (N)**. This Neutral cable **MUST** be connected. Also ensure that the equipment is connected to **Earth**.

5.5.2 Connect the load to terminals marked **OUTPUT (L, N)**.

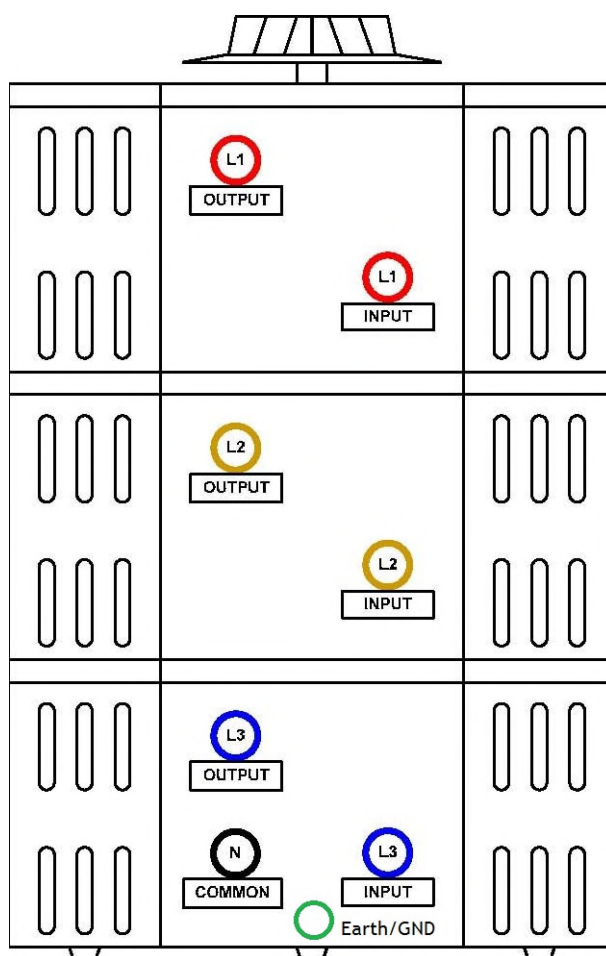


NB: Please ensure the casing is suitably earthed.

5.6 Cable Connections For AE-H/LB Three Phase Manually Operated Series Models

5.6.1 Connect the mains input supply to terminals marked **INPUT (L1, L2, L3)** and **NEUTRAL (N)**. This Neutral cable **MUST** be connected. Also ensure that the equipment is connected to **Earth**.

5.6.2 Connect the load to terminals marked **OUTPUT (L1, L2, L3, N)**.



NB: Please ensure the casing is suitably earthed.

6. Commissioning

6.1 Pre-Commissioning Checks For MAE-H/LB-DM-CB Enclosed Motorised Series

6.1.1 Before you switch ON the mains, inspect the Variable Transformer visually to ensure that dust has not accumulated during installation. As necessary clean the Variable Transformer thoroughly with compressed air or with a soft brush.

6.1.2 Check the Ground connection. Ensure it is tight.

6.1.3 Check all wiring connections to ensure they have not been loosened in transit. Tighten all connections as necessary.

6.1.4 Ensure that the incoming supply is available and the voltage is suitable for the Variable Transformer connected.

6.2 Commissioning Procedure

Follow the Switch On procedure as described in Section 7.1

7. Operation

7.1 START-UP PROCEDURES

7.1.1 The illustrations in section 5.5.2 and 5.6.2 shows the power connections for the Variable Transformer supply input and the output.

7.1.2 It is the User's responsibility to ensure that the Variable Transformer is suitably protected against an overload condition.

7.1.3 Increasing and decreasing the output voltage is achieved by rotating the operating handle / dial clockwise and anti-clockwise depending upon whether the desired output voltage needs to be increased or decreased.



8. Maintenance & Servicing

8.1 Introduction

Variable Transformers require an exceptionally low level of on-going annual (or biennial) maintenance or servicing.

Front line servicing, maintenance and most remedial work can usually be performed by universally available skill sets held by most competent qualified electricians.

With our strategically located dedicated teams of technical support specialists and field service engineers, we are always on-hand to offer email or telephone technical support and, where deemed appropriate, direct on-site assistance.

8.2 Routine Maintenance Procedures

In order to ensure reliability and optimise the service life of the unit, we recommend that the Variable Transformer is subjected to periodic (annual or biennial) inspections and maintenance. However, after monitoring the performance and duty of the Variable Transformer in question by on-site personnel it may be deemed that this inspection, maintenance should be carried out on a more regular basis.

WARNING


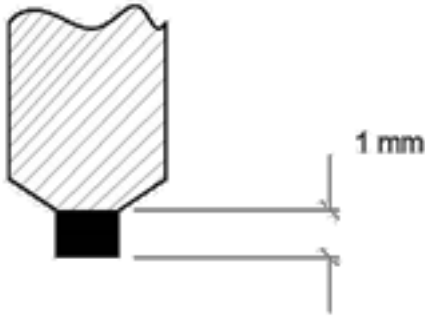


The procedures detailed below should only be carried out by duly qualified personnel.

Variable Transformers can contain potentially dangerous and life-threatening voltages – up to 600V AC. Use extreme caution when opening the covers and do not leave The Variable Transformer Door/s Opened / Covers Off unattended.

Before attempting any maintenance, it is imperative that the AC mains supply to the Variable Transformer is switched off.

8.3 Basic Maintenance procedures should include -

<p>Visual Inspection</p>	<p>Check to ensure that there are no obvious signs of damage to any of the components in the system. Check all wiring connections to ensure none have worked loose. As required, tighten any loose connections.</p>
<p>Cleaning</p>	<p>Ensure the Variable Transformer is kept free from dust and dirt. Blow out any dust or dirt, ideally with compressed air or alternatively remove with a soft brush.</p>
<p>Carbon Brush Inspection</p> <p style="text-align: center;">WARNING</p>  <p>Do not attempt to manually force the Brush Gear and associated Carbon Brushes to rotate. Forced rotation could damage the brush gear and brush.</p>	<p>Ensure that the tips on the variable transformer's carbon brush(es) are at least 1mm in thickness.</p>  <p>If 1mm, or less, replace the carbon brush. Ideally spare carbon brushes should be held on site – see Appendix 2 – <i>Recommended Spares</i> below.</p>

Appendix 1 - Technical Specifications

Technical Specification

Input Voltage:	See rating plate on unit.
Output Voltage:	See rating plate on unit.
Frequency:	47 to 65Hz
Efficiency:	98%
Surge Rating:	10 x maximum current rating for 1 second. 3 x maximum current rating for 60 seconds. 2 x maximum current rating for 5 minutes.
Environment:	Temperature range -15 to 45°C. Derate by 2% for each additional °C up to a maximum of 60°C. Suitable for indoor tropical use 95% RH (non-condensing).
Construction:	Enclosure to IP20, BS EN5490/IEC60529, NEMA 1.
Conformance:	BS EN50081-1;2 / IEC 61000-4-3;4.
CE Conformity:	CE Marked - being fully compliant with European Union Directives 2014/30/EU (<i>The EMC Directive</i>)



Appendix 2 - Recommended Spares Kit

By holding a front-line spares kit on site you can be assured of the highest level of responsiveness and system uptime. By investing in a spares kit, in the unlikely event of a system problem, you'll always have quality replacement parts on hand for a quick swap-out.

Our recommended On-Site Spare Parts holdings include –

Description	AE Part Ref.	Qty
Variable Transformer Carbon Brushes <i>For Single Phase Models</i>	VT1 (XS-xxx-1)	1
Variable Transformer Carbon Brushes <i>For Three Phase Models</i>	VT3 (XS-xxx-1)	3

For more detailed individual model spares listings and pricing, please contact the Service Department at Ashley-Edison, or the resale partner from whom you purchased the equipment.

Warranty Spares Availability

For spares required under valid warranty claim situations, spares are supplied free of charge. Delivery of these spares is normally arranged through the express door to door courier services of UPS, DHL or FedEx.

We have strategic inventory locations and accurate process and stock control to deliver near total availability on commonly requested spares. For most requests we are able to offer delivery direct from inventory and strive to offer in emergency situations a next working day turn around on shipment.



Appendix 3 - Product Warranty

1 Standard Warranty

- 1.1 In purchasing an Ashley-Edison Manually Operated Variable Transformer, you are investing in a standard of Quality which fulfils the highest of requirements.
- 1.2 Subject to the limitations set out below, Ashley-Edison warrants that the products will correspond with their specification at the time of despatch and will be free from defects in material and workmanship for a period of 1 year / 12 months from date of shipment.

2 Warranties & Liabilities

- 2.1 Subject to the conditions set out below, Ashley-Edison (known as 'Seller') warrants that the Goods will correspond with their specification at the time of delivery and will be free from defects in material and workmanship for a period of 12 months from delivery.
- 2.2 The above warranty is given by Ashley-Edison (Seller) subject to the following conditions:-
- 2.3 Seller shall be under liability in respect of any defect in the Goods arising from any drawing, design or specification supplied by the Buyer.
- 2.4 Seller shall be under no liability in respect of any defects arising from fair wear and tear, wilful damage, negligence, abnormal working conditions, failure to follow the Seller's instructions (whether oral or in writing), misuse or alteration or repair of the Goods without the Seller's approval;
- 2.5 Seller shall be under no liability under the above warranty (or any other warranty, condition or guarantee) if the total price for the Goods has not been fully paid by the due date;
- 2.6 The above warranty does not extend to parts, materials or equipment not manufactured by the Seller.
- 2.7 Subject as expressly provided in these Conditions and except where the Goods are sold to a person dealing as a consumer



(within the meaning of the Unfair Contract Terms Act 1977), all warranties, conditions or other terms implied by statute or common law are excluded to the fullest extent permitted by law.

- 2.8 Where the Goods are sold under a consumer transaction (as defined by the Consumer Transactions (Restrictions on Statements Order 1976) the statutory rights of the Buyer are not affected by these Conditions.
- 2.9 Any claim by the Buyer which is based on any defect in the quality or condition of the Goods or their failure to correspond with specification shall (whether or not delivery is refused by the Buyer) be notified to the Seller within 7 days from the date of delivery or (where the defect or failure was not apparent on reasonable inspection) within a reasonable time after discovery of the defect or failure. If delivery is not refused, and the Buyer does not notify the Seller accordingly, the Buyer shall not be entitled to reject the Goods and the Seller shall have no liability for such defect or failure, and the Buyer shall be bound to pay the price as if the Goods have been delivered in accordance with the Contract.
- 2.10 Where any valid claim in respect of any of the Goods which is based on any defect in the quality or condition of the Goods or their failure to meet specification is notified to the Seller in accordance with these Conditions, the Seller shall be entitled to repair or modify all defective goods free of charge provided that the goods are returned to the Seller's works carriage paid, if the Buyer does not wish to return the goods, they will be repaired free of charge at the Buyer's nominated premises provided that the Buyer reimburses the Seller for traveling expenses, time and out of pocket expenses. The Seller shall be entitled, at its sole discretion, to replace the Goods free of charge or, refund to the Buyer the price of the goods (or a proportionate part of the price), but the Seller shall have no further liability to the Buyer.
- 2.11 Except in respect of death or personal injury caused by the Seller's negligence, the Seller shall not be liable to the Buyer by reason of any representation, of any implied warranty, condition or other term, or any duty at common law, or under the express terms of the Contract, for any consequential loss or damage (whether for loss of profit or otherwise) costs, expenses or other claims for

consequential compensation whatsoever (and whether caused by the negligence of the Seller, its employees or agents or otherwise) which arise out of or in connection with the supply of the Goods or other use or resale by the Buyer, except as expressly provided in these Conditions.

2.12 Seller shall not be liable to the Buyer or be deemed to be in breach of the Contract by reason of any delay in performing, or any failure to perform, any of the Seller's obligations in relation to the Goods, if the delay or failure was due to any cause beyond the Seller's reasonable control. Without prejudice to the generality of the foregoing, the following shall be regarded as causes beyond the Seller's reasonable control.

- 2.12.1 Act of God, explosion, flood, tempest, fire or accident;
- 2.12.2 wars or threat of war, sabotage, insurrection, civil disturbance or requisition;
- 2.12.3 acts, restrictions, regulations, bye-laws, prohibitions or measures of any kind on the part of any governmental, parliamentary or local authority;
- 2.12.4 import or export regulations or embargoes;
- 2.12.5 strikes, lock-outs or other industrial actions or trade disputes (whether involving employees of the Seller or of a third party);
- 2.12.6 difficulty in obtaining raw materials, labour, fuel, parts or machinery;
- 2.12.7 power failure or breakdown in machinery.





AE-HB & LB SERIES – Operator / User Manual

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<https://www.AshleyEdisonUK.com>

Ashley-Edison (UK)

products available

AC Voltage Stabilisers

- Servo Electronic Design
- Static Digital Electronic Design
- Industrial Magnetic Induction Design

0.5 to 3125 kVA

- 1 to 1500 kVA
- 0.5 to 3125 kVA
- 200 to 3000 kVA

Power Line Conditioners

- Ferrro-Resonant Design
- Servo Electronic Design
- Static Digital Electronic Design

0.5 to 2000 kVA

- 0.5 to 5 kVA
- 1 to 500 kVA
- 6 to 2000 kVA

Constant Voltage Compensators

3 to 1500 kVA

Automatic Voltage Optimisers

10 to 1000 kVA

Variable Transformers

3 to 150 Amps

Static Frequency Converters

- with Fixed Voltage & Frequency
- with Variable Voltage & Frequency

3 to 400 kVA

- 3 to 400 kVA
- 3 to 400 kVA



www.AshleyEdisonUK.com

Your Local Contact-

