

# Variable Transformer

## Operator Manual

# Ashley-Edison (UK)

### Head Office UK / Europe:

#### Ashley-Edison International Limited

PO Box 1220, Kempston Bedford

MK43 9WX, England

Phone: +44(0)870 240 6162

Fax : +44 (0)870 486 0956

Emails :

Sales: [sales@ashleyedison.com](mailto:sales@ashleyedison.com)

General: [info@ashleyedison.com](mailto:info@ashleyedison.com)

Support: [support@ashleyedison.com](mailto:support@ashleyedison.com)

### Sales & Support Asia-Pacific & Middle-East

#### Ashley-Edison Asia Pte Ltd

89 Short Street #02-08

Golden Wall Centre

Singapore 188216

Tel: +65-6339 9433

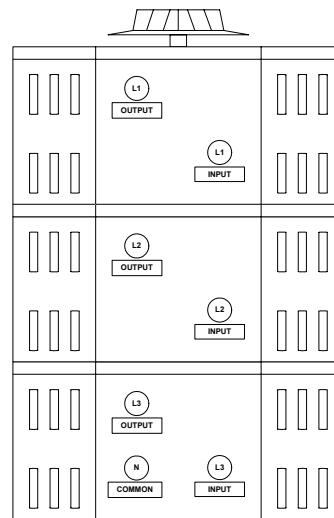
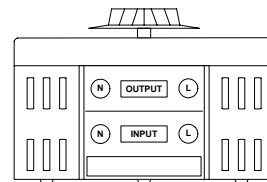
Fax: +65-6339 7379

Emails :

Sales: [sales@ashleyasia.com](mailto:sales@ashleyasia.com)

General: [info@ashleyasia.com](mailto:info@ashleyasia.com)

Support: [support@ashleyasia.com](mailto:support@ashleyasia.com)



# Table of Contents

# Page

<b>Safety Note</b> -----	<b>3</b>
<b>Important Safety Instructions</b> -----	<b>3</b>
<b>Pre-installation Check</b> -----	<b>3</b>
<b>Installation Safety Note</b> -----	<b>4</b>
<b>Installation Check Before Turn On</b> -----	<b>4</b>
<b>Connection</b> -----	<b>5</b>
<b>Maintenance</b> -----	<b>7</b>
<b>Technical Specification</b> -----	<b>8</b>

## **SAFETY NOTE**

The product described in this book operates up to 400/230Volts 3 Phase. It is dangerous to open the case without first isolating the incoming mains supply.

The equipment must be installed and maintained by qualified personnel. Local legislation and regulations for electrical instructions must be strictly adhered to.

## **Important Safety Instructions**

- This Variable Transformer contains voltages of up to 400/230 Volts 3 Phase. All repairs and services must be performed by authorised service personnel only.
- The Variable Transformer must be grounded or earthed at all times when in use.
- Switch Off the Variable Transformer before disconnecting the input cable from the AC mains supply.
- The Variable Transformer must be protected by overcurrent protection device in the input distribution system.
- These units are suitable for indoor use.
- Always site the Variable Transformer on higher ground to prevent it from being submerged in flooded waters.

## **Pre-installation check**

### **Unpacking and Installation**

Upon receiving your Variable Transformer, the installer should perform the following steps to ensure a quality installation.

### **Unpacking and Preliminary Inspection**

A quality installation begins on the receiving dock.

1. Inspect the shipping crate(s) for damage or signs of mishandling before unpacking the unit(s).
2. Open the shipping crates carefully. (Use care to avoid puncturing the container with sharp objects that would damage the contents inside).
3. Remove the packing and vapour barriers and inspect the equipment for any obvious shipping damages.
4. If any damage, as a result of shipping is observed, immediately file a damage claim with the shipping agency.
5. Do not install the equipment if there is any sign of damage.

## **Installation Safety Note**

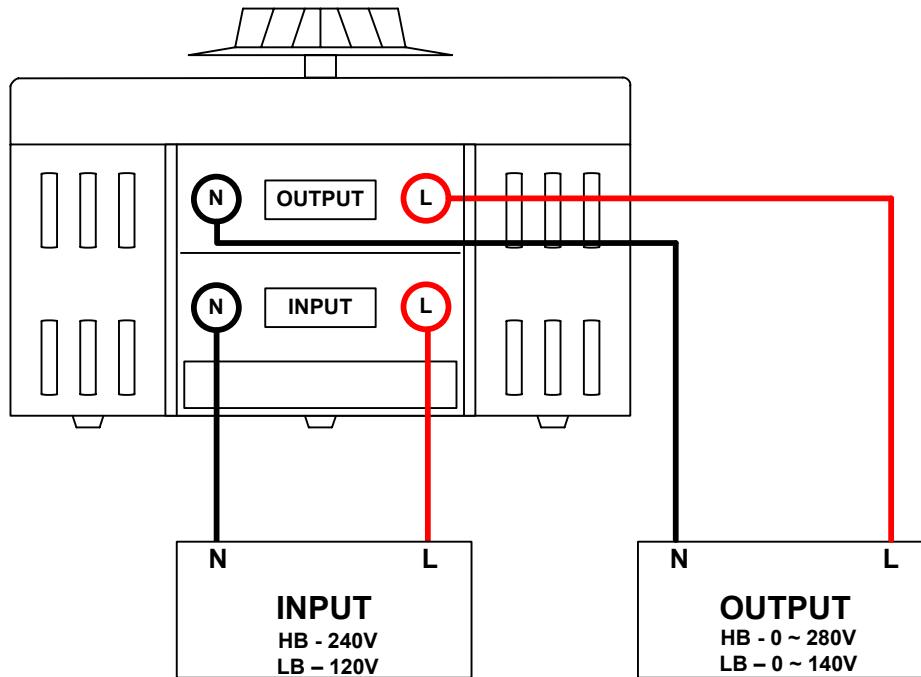
- This equipment must be installed and maintained by qualified personnel. They are to comply to local regulation for installation requirements.
- Variable Transformer complies to BS171, 9720 and 2754.  
To ensure safe and satisfactory operation, follow instructions as mentioned in this manual.
- **Input Protection**  
If the input circuit breaker is not installed in the Variable Transformer, then the installer must include a circuit breaker or fuse in the input circuit.
- **System Grounding**  
The safety of any Variable Transformer depends upon proper grounding. Grounding is primarily for safety. Correct implementation of grounding also enhances equipment performance.
- The Variable Transformer is air-cooled and free airflow must not be obstructed.
- Position unit to ensure easy access. Ensure that no swarf enters the unit when cutting holes. Block off all unused holes.
- Check that the current rating of the load will not exceed the rating shown on the rating plate. The load current must be measured using an RMS reading meter.

## **Installation Check Before Turn On**

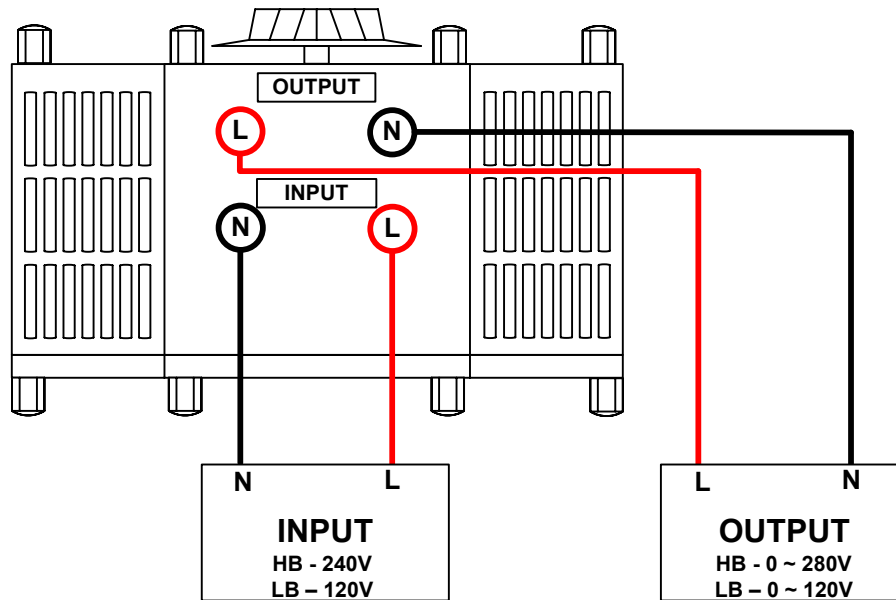
- Before you switch ON the mains, inspect the Variable Transformer visually if dust has accumulated during installation. Clean the Variable Transformer thoroughly with compressed air or with a soft brush.
- Check Ground connection. Ensure it is tight.
- Check all wiring connections to ensure it is not loosened on transit. Tighten all connections.
- Please ensure that annual maintenance is carried out.

# Connection

## SINGLE PHASE CONNECTION



**MODEL AE-203-HB ~ AE-215-HB (3A ~ 15A) High Voltage**  
**MODEL AE-103LB ~ AE-125-LB ( 3A ~ 25A) Low Voltage**

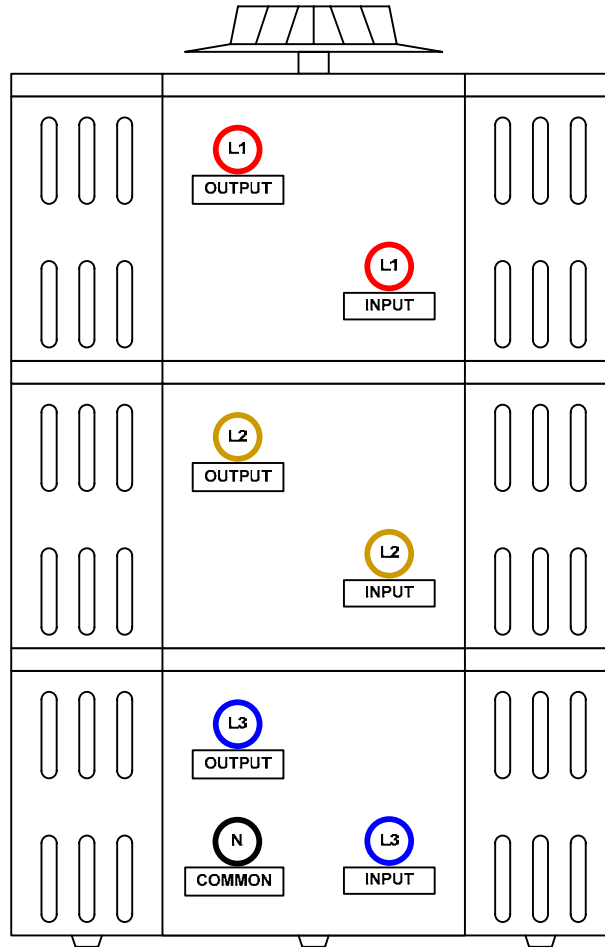


**MODEL AE-220-HB ~ AE-240-HB (20A ~ 40A) High Voltage**  
**MODEL AE-130LB ~ AE-140-LB (30A ~ 40A) Low Voltage**

Connect the mains input supply to terminals marked INPUT (L) and (N) Neutral.  
Connect the load to terminals marked OUTPUT (L) & (N) Neutral.

---

## THREE PHASE CONNECTION



Connect the mains input supply to terminals marked INPUT (L1, L2, L3) and (N) Neutral.  
Connect the load to terminals marked OUTPUT (L1, L2, L3) and (N) Neutral (Common).

## Maintenance

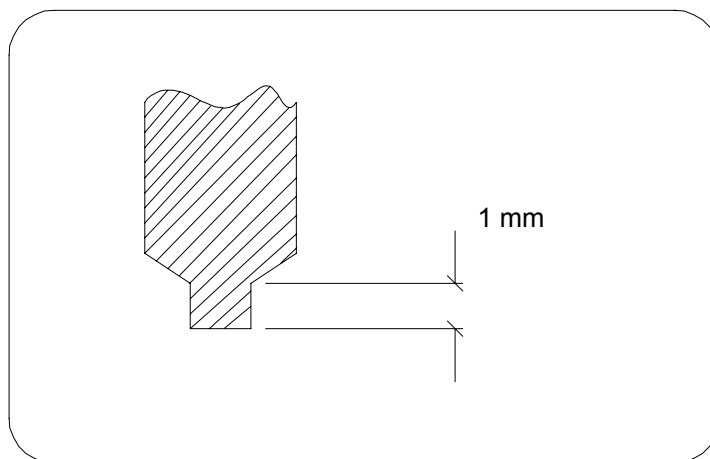
**Annual general inspection, cleaning, and operation checks are recommended to ensure the Variable Transformer performance and long service life.**

**The mains supply to the Variable Transformer must be switched OFF before proceeding.**

Please ensure that the Variable Transformer is kept free from dust and dirt. Using a compressed air will be most effective in this cleaning operation. Otherwise use a soft brush.

Check the carbon brushes once a year.

Ensure that the tip of carbon brushes in the variable transformers are at least 1mm thick.



# Technical Specifications

**Input Voltage** + 6% of nominal i.e. 240V models are continuous rated at 254V

**Output Voltage** Continuously variable from 0 – 117% of input voltage

**Frequency** 50/60 Hz

**Efficiency** 98%

**Power Factor** Any lagging to 0.95 leading

**Surge ratings**  
10 x max current rating for 1 second  
3 x max current rating for 60 seconds  
2 x max current rating for 5 minutes

**Total Harmonic Distortion** <1%

**Environment**  
Temperature range –15 to 45 °C  
Derate by 2% for each additional °C  
Up to max 60 °C . Suitable for indoor  
tropical use 95% RH (non-condensing).

## Single Phase : 220/240V 50/60 Hz

Model:	Current Amps	KVA at max. output volts	Output Volts @ 240V	Dimensions mm (WxDxH)	Weight kgs
AE – 203HB	3	0.84	0 – 280V	164 x 164 x 125	5.3
AE – 205HB	5	1.4	0 – 280V	164 x 164 x 125	6.5
AE – 210HB	10	2.8	0 – 280V	215 x 215 x 125	11
AE – 215HB	15	4.2	0 – 280V	215 x 215 x 125	13
AE – 220HB	20	5.6	0 – 280V	300 x 300 x 145	20
AE – 225HB	25	7.0	0 – 280V	300 x 300 x 145	21
AE – 230HB	30	8.4	0 – 280V	300 x 300 x 185	24
AE – 235HB	35	9.8	0 – 280V	300 x 300 x 185	30
AE – 240HB	40	11.2	0 – 280V	370 x 370 x 226	37
AE – 2252HB	50	14.0	0 – 280V	300 x 300 x 240	43

## Single Phase : 110/120V 50/60 Hz

Model:	Current Amps	KVA at max. output volts	Output Volts @ 120V	Dimensions mm (WxDxH)	Weight kgs
AE – 103LB	3	0.42	0 – 140V	164 x 164 x 125	4.5
AE – 105LB	5	0.7	0 – 140V	164 x 164 x 125	5
AE – 110LB	10	1.4	0 – 140V	164 x 164 x 125	6.5
AE – 115LB	15	2.1	0 – 140V	215 x 215 x 125	10
AE – 120LB	20	2.8	0 – 140V	215 x 215 x 125	11
AE – 125LB	25	3.5	0 – 140V	215 x 215 x 125	13
AE – 130LB	30	4.2	0 – 140V	300 x 300 x 145	22
AE – 135LB	35	4.9	0 – 140V	300 x 300 x 185	25
AE – 140LB	40	5.6	0 – 140V	300 x 300 x 185	27
AE – 1252LB	50	7.0	0 – 140V	215 x 215 x 200	26.5



<b>Technical Specifications</b>	
<b>Input Voltage</b>	+ 6% of nominal i.e. 415V models are continuous rated at 439V
<b>Output Voltage</b>	Continuously variable from 0 – 117% of input voltage
<b>Frequency</b>	50/60 Hz
<b>Efficiency</b>	98%
<b>Power Factor</b>	Any lagging to 0.95 leading
<b>Surge ratings</b>	10 x max current rating for 1 second 3 x max current rating for 60 seconds 2 x max current rating for 5 minutes
<b>Total Harmonic Distortion</b>	<1%
<b>Environment</b>	Temperature range –15 to 45 °C Derate by 2% for each additional °C Up to max 60 °C . Suitable for indoor tropical use 95% RH (non-condensing).
<b>Warranty</b>	One Year

<b>Three Phase : 380/415V 50/60 Hz</b>					
<b>Model:</b>	<b>Current Amps</b>	<b>KVA at max. output volts</b>	<b>Output Volts @ 415V</b>	<b>Dimensions mm (WxDxH)</b>	<b>Weight kgs</b>
AE – 3203H-B	3	2.5	0 – 485V	164 x 164 x 390	18
AE – 3205H-B	5	4.2	0 – 485V	164 x 164 x 390	20
AE – 3210H-B	10	8.4	0 – 485V	215 x 215 x 390	30
AE – 3215H-B	15	12.6	0 – 485V	240 x 240 x 480	38
AE – 3220H-B	20	16.8	0 – 485V	300 x 300 x 500	54
AE – 3225H-B	25	21	0 – 485V	300 x 300 x 500	68
AE – 3230H-B	30	25	0 – 485V	300 x 300 x 620	75
AE – 3235H-B	35	29	0 – 485V	300 x 300 x 620	90
AE – 3240H-B	40	34	0 – 485V	370 x 370 x 620	98

<b>Three Phase : 190/208V 50/60 Hz</b>					
<b>Model:</b>	<b>Current Amps</b>	<b>KVA at max. output volts</b>	<b>Output Volts @ 208V</b>	<b>Dimensions mm (WxDxH)</b>	<b>Weight kgs</b>
AE – 3103LB	3	1.25	0 – 242V	164 x 164 x 390	15
AE – 3105LB	5	2.1	0 – 242V	164 x 164 x 390	16
AE – 3110LB	10	4.2	0 – 242V	164 x 164 x 390	20
AE – 3115LB	15	6.3	0 – 242V	215 x 215 x 410	30
AE – 3120LB	20	8.4	0 – 242V	240 x 240 x 480	37
AE – 3125LB	25	11	0 – 242V	300 x 300 x 500	53
AE – 3130LB	30	13	0 – 242V	300 x 300 x 500	68
AE – 3135LB	35	15	0 – 242V	300 x 300 x 620	72
AE – 3140LB	40	17	0 – 242V	300 x 300 x 620	78