

# EA63-2.5

## *Generator Automatic Voltage Regulator Operation Manual*



Self Excited Automatic Voltage Regulator  
Compatible with Basler AVC63-2.5\*

\* Use for reference only and not a genuine Basler product

# 1. SPECIFICATION

## Sensing Input

Voltage 120 VAC ( 90 ~ 130 VAC) or  
240 VAC (180 ~ 260 VAC)  
1 phase 2 wire, DIP switch selectable

Frequency 45 ~ 65 Hz, adjustment

## Output

Voltage Max. 50 VDC @ 120 VAC input  
Max. 63 VDC @ 240 VAC input

Current Continuous 2.5A  
Intermittent 4A for 60 sec

Resistance Min. 25 ohm

## Voltage Regulation

< ± 1% ( with 4% engine governing )

## Voltage Build-up

Residual voltage at AVR terminal > 5 VAC

## Thermal Drift

0.05% per °C change in AVR ambient

## External Volts Adjustment

±15% with 5K ohm 1 watt trimmer

## EMI Suppression

Internal electromagnetic interference filtering

## Unit Power Dissipation

Max. 10 watt

## Under Frequency Protection

Knee point adjustable range 45 ~ 55 Hz

## Dimensions

101mm L \* 69mm W \* 22mm H

## Weight

107g ± 2%

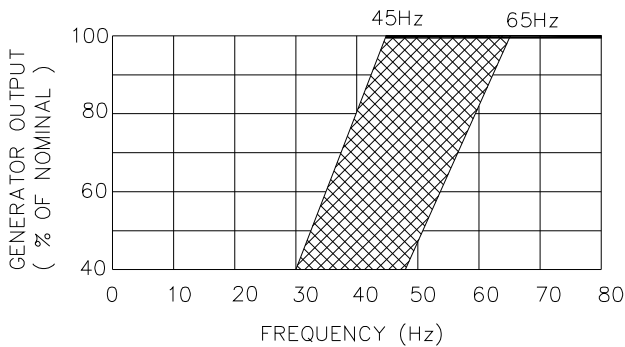


Figure 1 Typical Frequency Compensation Curves

**TYPICAL FREQUENCY COMPENSATION CURVES (See Figure 1)**

- a. When the frequency of the generator is lower than the factory setting, the rated phase voltage will decrease to protect the regulator or exciter because of over exciter current,
- b. Factory Setting : 45Hz ±4%

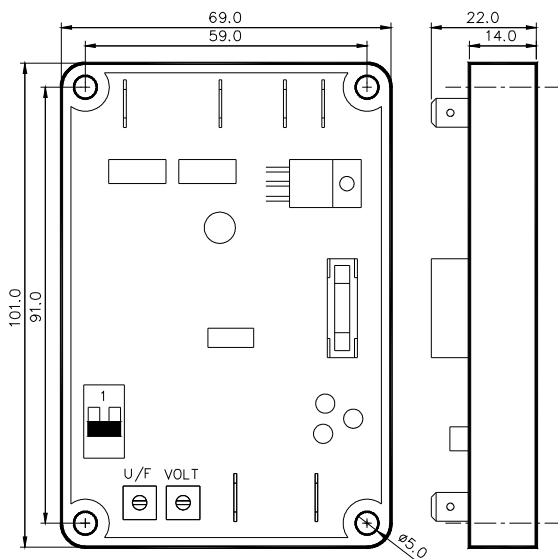


Figure 2 Outline Diagram UNIT : mm

**ATTENTION**

1. AVR can be mounted directly on the engine, genset, switchgear, control panel, or any position that will not affects operation. For dimension reference, please see Figure 2.
2. All voltage readings are to be taken with an average-reading voltmeter Meggers and high-potential test equipment must not be used. Use of such equipment could damage the AVR.

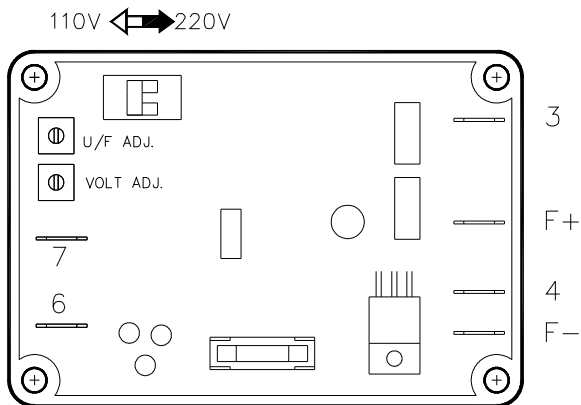


Figure 3 Potentiometer and Connector Locations

## 2. WIRING

### 2.1 Operation

The following system operation procedures provide instructions for adjusting the EA63-2.5 voltage regulator. Symptoms resulting from a faulty regulator and certain generator system problems are included, together with suggested remedies.

Complete the following steps before proceeding with the system start-up.

#### CAUTION

**Meggers and high potential test equipment must not be used. Incorrect use of such equipment could damage the semiconductors contained in the regulator.**

### 2.2 Preliminary Set-Up

1. Verify that the voltage regulator specifications conform with the generator system requirements.
2. Ensure the voltage regulator is correctly connected to the generator system.
3. Install the fuses as described in Fuses.
4. Set the regulator "VOLT ADJ" and external "VOLT ADJ" ( if used ) as follows :

Regulator "VOLT ADJ" : Fully CCW

Remote "VOLT ADJ" : Centered

### 2.3 System Start-Up

1. Perform preliminary set-up as described in the above paragraphs.

#### NOTE :

All voltage readings are to be taken with an average reading voltmeter.

2. Start prime mover and bring up to rated speed.

#### RESULT :

Voltage should build up. If not, perform Field Flashing.

3. Slowly adjust the regulator VOLT ADJ CW until the generator output voltage reaches the nominal value. If used, adjust the remote VOLT ADJ to set the generator voltage to the exact value desired.

#### RESULT :

Voltage should build up to rated value. If voltage does not build up to rated value, check generator for short or excessive load.

4. Check regulator under normal operating and loading conditions.

#### RESULT :

Voltage regulation should be better than  $\pm 1.0\%$  no-load to full-load. If regulation is not within this range, perform the following steps :

- Voltage reduction under load may be due to speed change from no load to full load. causing the frequency compensation (V/Hz) circuit to reduce voltage at lower frequencies.
- Replace voltage regulator.

#### WARNING

**Please make sure you have read and understand the contents of the instruction manual prior to installation. Incorrect wiring connection may result in irreversible damage to the product and other equipments.**

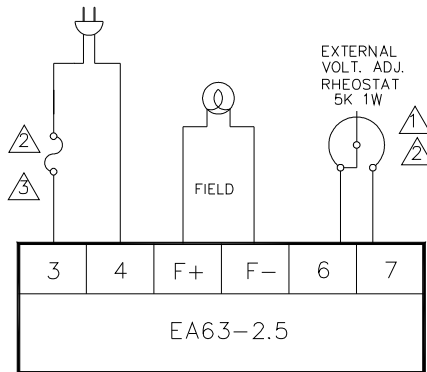
### 2.4 Operational Test

1. Connect the test setup as shown in the following figure, Operational Test. Do not apply power. Ensure that the light bulb is rated for 120V and is less than 100W.
2. Adjust the regulator VOLT ADJ and/or remote VOLT ADJ to maximum CW.
3. Apply 240V, 50/60 Hz power to the regulator. The light bulb should illuminate.
4. Slowly adjust the regulator VOLT ADJ control CCW. At the regulation point, the light bulb should extinguish.

The following notes (Δ) apply to the interconnection diagrams :

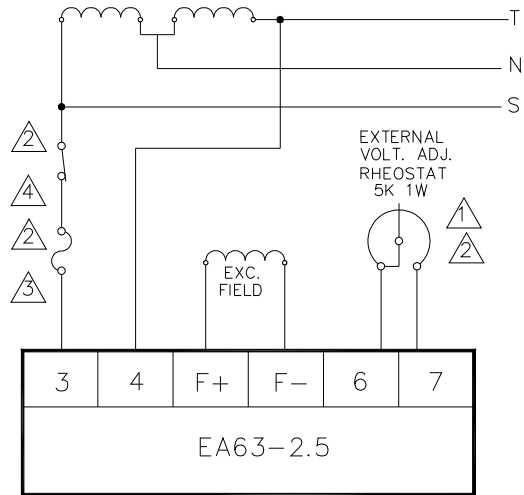
- If external pot is not used, short terminals 6 and 7.

- Item not supplied by KUTAI ELECTRONICS.
- Select fuses with high interrupting capacity.
- Excitation On / Off Switch ( If used).

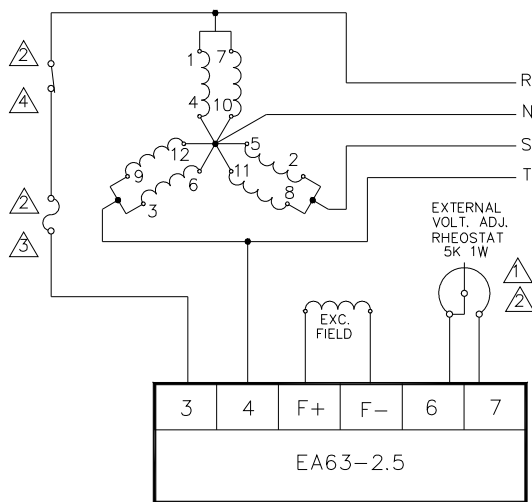


NOTE : IF GLASE TYPE FUSE IS USED,  
 Δ ENCLOSE FOR SAFETY

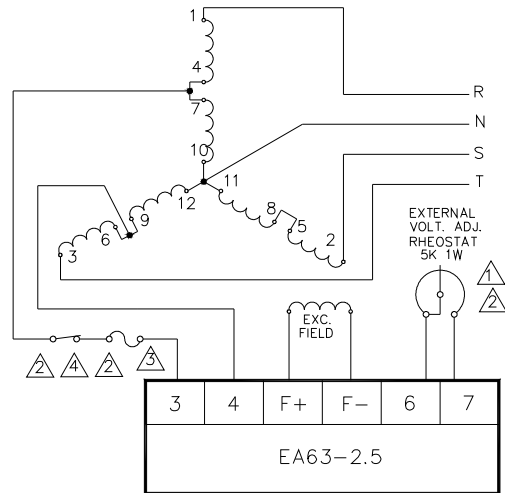
Operational Test  
 Figure 4



Interconnection Diagram, 120 / 240 V Nominal,  
 1-phase, 3-Wire  
 Figure 5



Interconnection Diagram, 120 / 208 V Nominal,  
 3-phase, 4-Wire, Wye Connection  
 Figure 6



Interconnection Diagram, 277 / 480 V Nominal,  
 3-phase, 4-Wire, Wye Connection  
 Figure 7

- ※ Use only original supplied spare protection fuse for fuse replacement.
- ※ Please accept our sincere apology if any modification in performance, specification or appearance is made without prior notice.