Automatic Voltage Regulator

1 Introduction (EA63-5)

Sensing Input S1、	220/440Vac 50/60Hz (SW 1 Selectable)	**Voltage Adjustment**	< 0.5% (Engine speed variation within 4%)
Sensing Input S2 (1ψ)	185~290Vac @ 220Vac	**Excitation Resistance**	>9Ω
	330~515Vac @ 440Vac	**Current Compensation**	1 or 5A >0.2VA (SW 2 selectable)
Power Input P1、P2		**(C1、C2)**	MAX ±7% @ P.F ±0.7
Input (1ψ)	30~260Vac 40~500Hz	**Analogue Voltage Input**	Un0~15%@0~10Vdc
Output	85Vdc @110Vac input	**External Volts Adjustment VR**	1KΩ0.5W ±10%
	170Vdc @220Vac input	**C+、C-**	External Filter Capacitor terminal
Output Current	Continuous 5Adc Maximum 40Adc for 60 sec	**Respond Time**	<1 Cycle
Frequency	50/60Hz (SW 3 Selectable)	**Temperature Drift**	<0.45% @-35~+65℃
	49~60Hz@60Hz Preset 57Hz	**Dissipation**	12W
	40~50Hz@50Hz Preset 47Hz	**Dimensions**	140mm L * 125mm W * 51mm H
Voltage Built-up	Residual Voltage>5Vac @25Hz	**Weight**	grams ± 2%

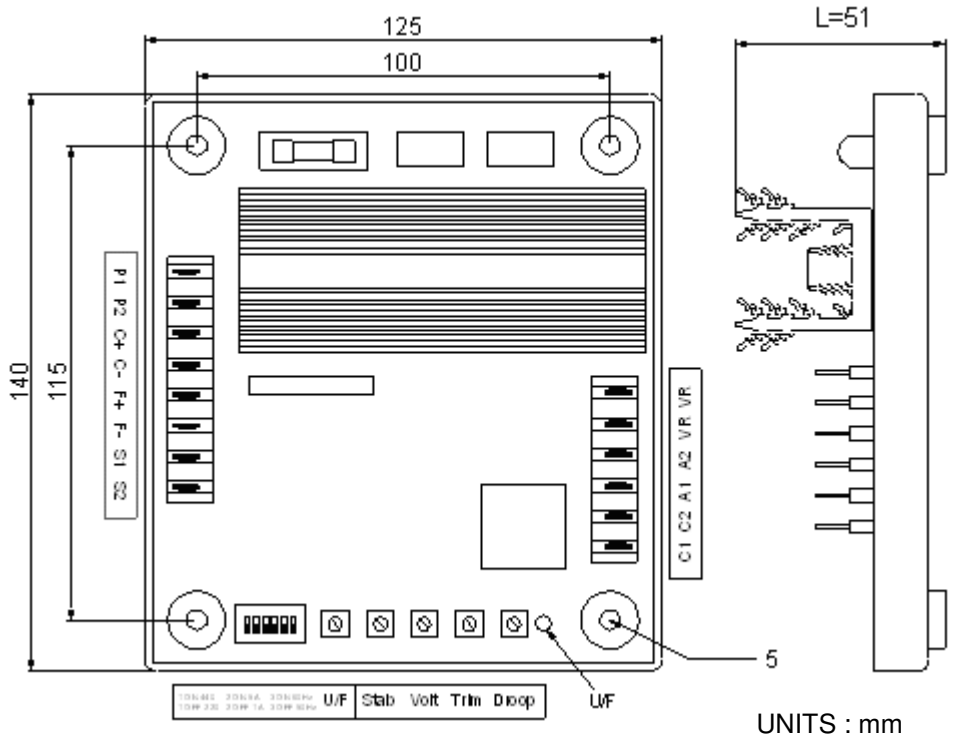

Figure 4-1 AVR Outline Drawing

DIMENSION

For enclosure dimension and mounting hole diameter please reference from Figure 4-1.
The protection fuse capacity is 5A/250V slow blow type
Connection terminal specification：6.35mm(1/4 inch) ("Fast-On" terminals.)

ATTENTION!!

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.

Safely secure all wiring connection. Do not install AVR at place with high vibration to prevent loosen connection. For safety reasons please do not touch the heat sink while operating

NOTE: Performance of AVR EA63-5H same as AVR EA63-5. Thickness of AVR EA63-5H: L＝41 mm.

2 Dip switch adjustment (SW)

SW1 Voltage Selection：SW 1 is to select the suitable gen-set sensing input voltage (S1、S2).When Sensing input is 440Vac(380~480) Switch the SW 1 to ON. If the sensing input is 220Vac please switch SW 1 to off position

ATTENTION!! If system voltage is 220V but the SW 1 is setting at “ON” (440V) then it will cause genset over voltage and sever damage.

SW

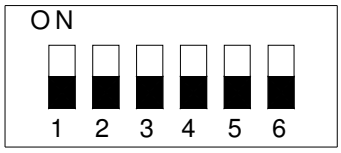

Figure 4-2 Dip Switch (SW)

SW2 C.T. Current Compensation: SW 2 is to select the suitable C.T. (Current Transformer Current input (C1、C2) If C.T. current is 5A then please switch SW 2 to ON. If C.T. current is 1A then please switch SW 2 to OFF position

SW3 Frequency Selection: If gen-set rated frequency is 60Hz please switch SW 3 to ON position and switch to OFF position is rated frequency is 50Hz

ATTENTION!! If the frequency 60Hz is selected while the generator rated frequency is 50hz then it may result in under voltage. If a 60Hz generator is selected at 50Hz, when executing engine stop, the over excitation current may damage then AVR and generator.

If gen-set capacity is below 90Kw please switch SW 4、5、6 to OFF position

If capacity is 90 ~ 200Kw please switch SW 4 to ON position and 5、6 remain in OFF position

If capacity is greater than 200Kw please switch SW 4、5、6 to ON position

ATTENTION!! Each time when SW 4、5、6 position is changed, the STAB (Stability) must be readjusted to achieve the optimum genset performance. The setting of the Dip Switches SW must be conducted while the generator is not in operation.

3 Adjustment

VOLT: Voltage Setting. Adjusting the gen-set rated output voltage

When **SW 1** is "**ON**" (440V) Adjustable range is 330~515VAC

When **SW 1** is "**OFF**" (220V) Adjustable range is 180~270VAC

ATTENTION!! AVR AC voltage readings are all Average Value.

External VR: Connect 500Ω 0.5W VR to the VR terminal, the adjustable voltage range = ±5%Un，1KΩadjustable voltage range = ±10%Un

If this function is not required, please short circuit the two terminals

STAB: Stability adjustment. Correct stability adjustment must be conducted while the generator is operating without load, firstly adjust the STAB potentiometer (POT) clockwise until voltage becomes unstable, then adjust anti-clockwise (approximately 1/5 of rotation) when the voltage just reaches the critical point (knee point) of stabilization where the voltage is stable yet very close to become unstable

U/F: Under Frequency Protection Adjustment. When generator RPM falls below the knee point, the Under Frequency protection circuit will begin to intervene and voltage and frequency begin to decrease in linear descend. Coordinate with the DIP Switch SW 3 Frequency Selection 50/60Hz. When selecting 50Hz the adjustable range is from 40 to 50Hz and the factory presets at 47Hz. When selecting 60Hz the adjustable range is from 49 to 60Hz and the factory presets at 57Hz

U/FL: When Under Frequency protection is activated, the red LED will light up

DROOP: Droop adjustment. When paralleling, the AVR compensate the input rating and voltage shifting basis on load current, through internal circuit calculation and increase or decrease the voltage. When phase current Lag the voltage, it decreases original voltage setting and if the phase current Lead the voltage then it increases the original voltage setting. The increase and decrease range can be preset by the DROOP adjustment

TRIM： Analogue Voltage Input Sensitivity. When terminal A1 and A2 is added with a DC input (0~10V), the TRIM is used to adjust the influence level from the DC input to the rated voltage. If the TRIM potential (POT) is adjusted fully counter-clockwise, then the additional signal will not cause any influence. On the contrary if the TRIM is adjusted fully clockwise, then the additional signal will produce a maximum effect.

4 Connection Terminal

P1、P2: Fundamental / Harmonic Power input. (Input range 30~260Vac40~500Hz 1ψ)

C+、C-: External Filter Capacitor Terminal，filter voltage endurance must be greater than P1、P2*1.7

F+、F-: Excitation Output. Connect to generator excitation winding.

VR: External Voltage Adjustment. Use an 1KΩ 1W VR (Voltage adjustable range ±10%)， If this function is not required, please short circuit the two terminals

C1、C2: Load Current Compensation. Input range 1A or 5A (Selected by SW 2) >0.2VA.

S1、S2: Sensing Input. Input range 220 or 440Vac (Selected by SW 1) Input resistance >2MΩ.

A1、A2: Analogue Voltage Input Terminal.

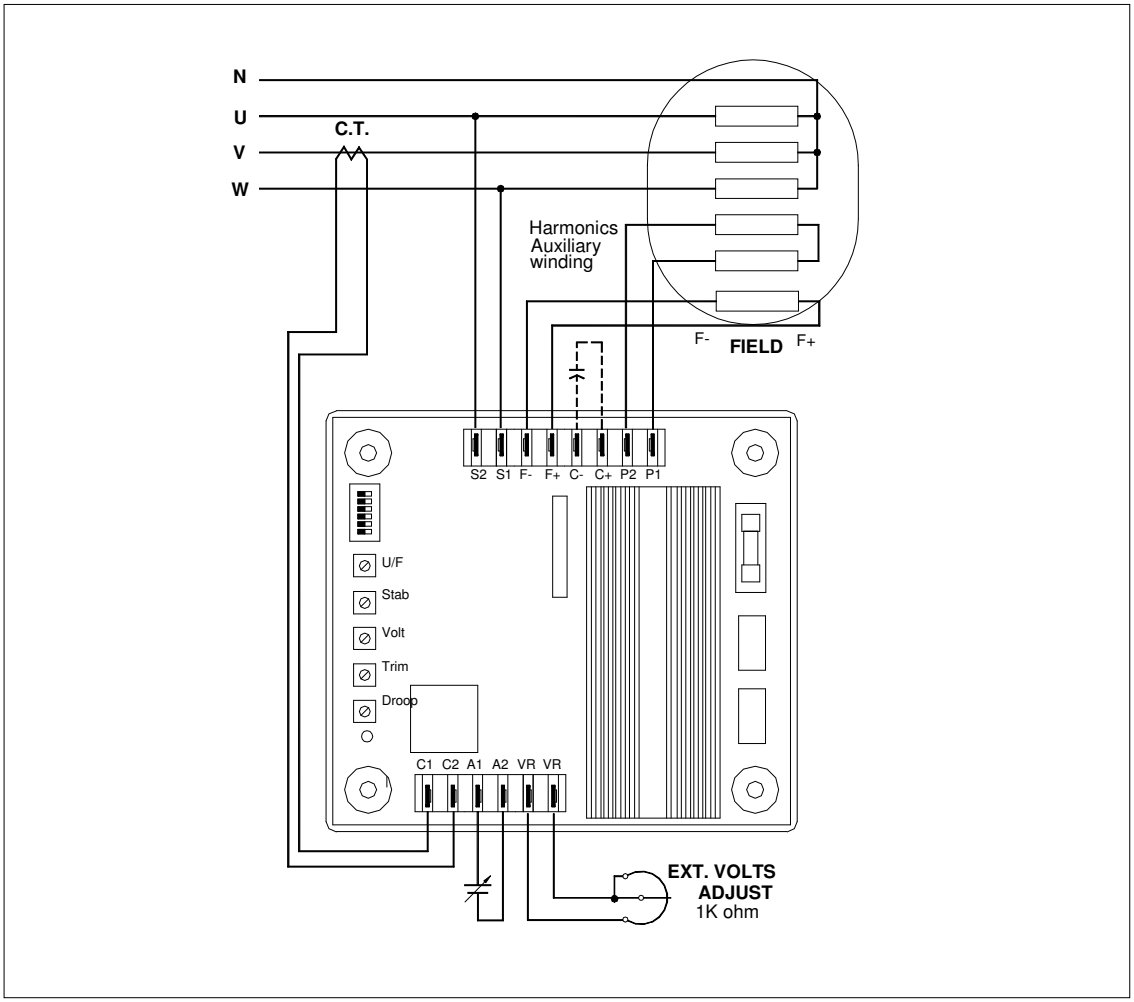

Figure 4-3 Wiring Drawing