

# ADVR-250

## *Generator Automatic Voltage Regulator Operation Manual*



Analog / Digital · Single-phase detection · Excitation Current 3.5 Amps. For use in brushless, self-excited (shunt) generators  
Compatible with Leroy Somer\* R250/R230, AVR

\*Notice : Technical terms, brand names and model numbers used here are only for reference · these are not original manufacturer products · however, are compatible with these products.

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## 1. Specification

### Sensing Input ( 0V · 110V ) Avg. reading

Voltage 85 – 140 Vac single phase, 2-wire  
 Frequency 50/60 Hz (DIP switch setting)

### Excitation Output ( E+ · E- )

120V single-phase Continuous 63 Vdc 3.5A  
 Max. 110 Vdc 5A 10Sec  
 Resistance Min.18Ω · Max.100Ω  
 Fuse Spec. 5 x 20mm 8A (slow blow)

### External Voltage Adjustment( 1KΩ )

Max.+/- 14% @ 1 KΩ 1 watt potentiometer

### Build Up Voltage

Residual voltage at AVR terminal > 5 VAC, 25Hz

### Soft start ramp time

3 secs +/- 10%

### Voltage Regulation

Less than +/- 0.5% (with 4% engine governing)

### Response Time

Less than 20 milliseconds

### EMI Suppression

Internal electromagnetic interference filtering

### Static Power Dissipation

Max. 8 watts

### Under Frequency Protection(Dip switch setting)

50 Hz system knee point at 48 Hz  
 60 Hz system knee point at 58 Hz

### Over Excitation Protection

Excitation Current 5 A +/- 10 %

### Voltage Thermal Drift

-40 to +70 °C · less than 3%

### Under Frequency Knee Point Thermal Drift

-40 to +70 °C · less than +/- 0.1 Hz

### Environment

Operation Temperature -40 to +70 °C

Storage Temperature -40 to +85 °C

Relative Humidity < 95%

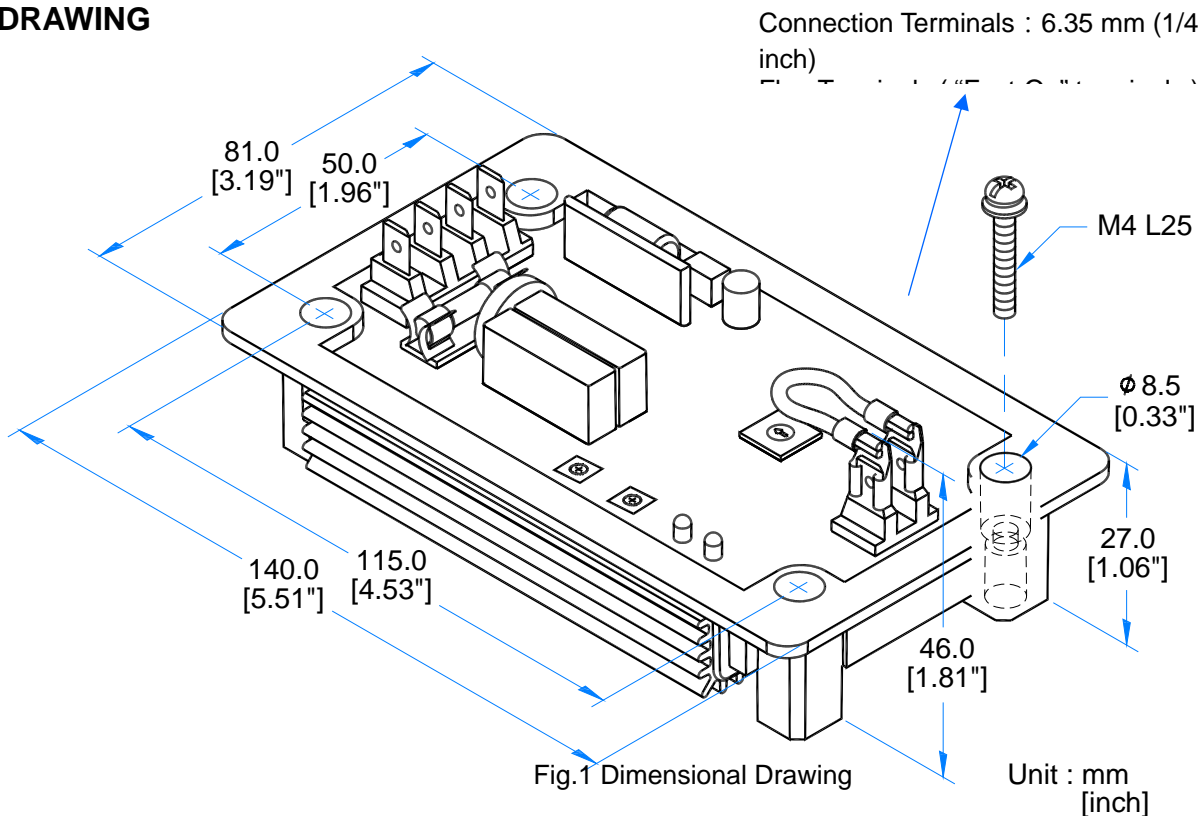
Vibration 5.5Gs @ 60Hz

### Dimensions

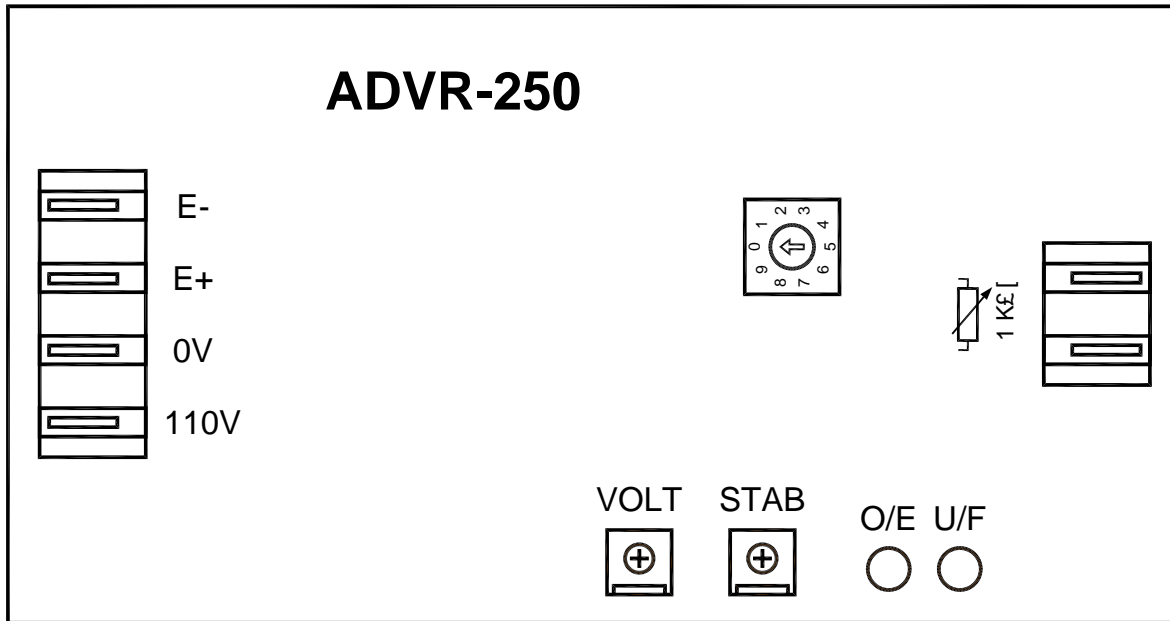
140.0 (L) x 81.0 (W) x 46.0 (H) mm

5.51 (L) x 3.19 (W) x 1.81 (H) inch

## SECTION 2 : APPEARANCE / DIMENSIONS / INSTALLATION DRAWING



### SECTION 3. Potentiometer Adjustment



**0V 110V : Power Supply and Sensing Input**

**E+ E- : Excitation Output**

**VOLT : Voltage Adjustment**

**STAB : Stability Adjustment**

**O/E : Over Current Protection Indicator Lamp**

**When over current protection is operating (Excitation Current >5A) · this lamp will light**

**U/F : Under Frequency Protection Indicator Lamp**

**(1KΩ) : External VR input · Must be shorted with a jumper when not in use.**

**Under Frequency Protection Selection Switch :**

\*Over Current Protection Function (O/E) : When the excitation current is greater than or exceeds 5A the AVR will reduce the excitation output to limit the excitation current. At this time the generator output voltage will be in a very unstable state (the greater the load the lower the voltage). Over current protection will not interrupt the excitation field output.

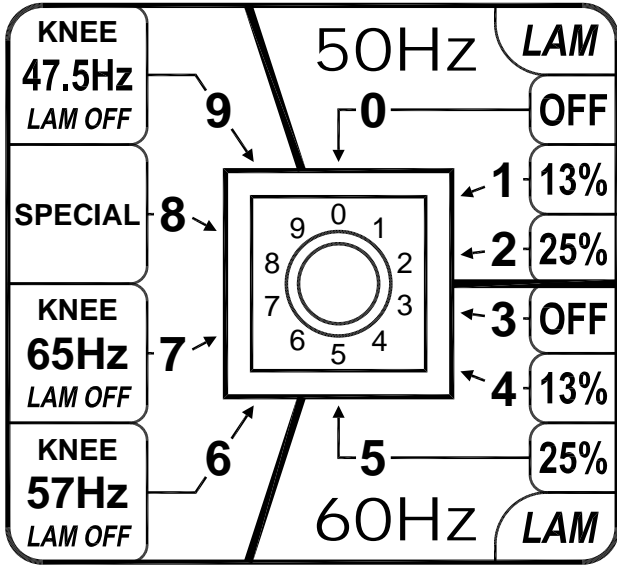
\*LAM (Load Acceptance Module) Outline

When the generator experiences momentary increases in load (more 40% of generator capacity) voltage and engine speed will decrease. The process of recovering voltage and engine speed will produce a situation where output voltage and engine speed fluctuates. In order to reduce the level of volatility, after a load is added the engine speed will slow, lowering the total power output of the generator and delaying recovery. The low frequency knee point setting should be below a nominal setting for 2Hz to cause the output voltage and engine speed to have a smooth recovery

The LAM function allows choice of reduction settings of 13% and 25%. If the generator has a fluid drive (hydro) it is recommended not to use the LAM function.

**SECTION 5 U/F protection & LAM function selection**

The U/F Protection function and LAM function are selected by a switch setting.



**Warning!!**

The switch setting must correspond to the rated frequency. An error in settings could cause damage to the generator.

**50Hz Systems**

0 : Under Frequency knee point 48Hz, LAM function "OFF". Use when transient loads are below 40% of

rated generator capacity.

1 : Under Frequency knee point 48Hz, LAM function set to (13%) · Use when transient loads are between 40%~70% of rated generator capacity.

2 : Under Frequency knee point 48Hz, LAM function set to (25%). Use when transient loads are greater than 70% of rated generator capacity.

**60Hz Systems**

3 : Under Frequency knee point 58Hz, LAM function "OFF" . Use when transient loads are below 40% of rated generator capacity.

4 : Under Frequency knee point 58Hz, LAM function set to (13%) · Use when transient loads are between 40%~70% of rated generator capacity.

5 : Under Frequency knee point 58Hz, LAM function set to (25%). Use when transient loads are greater than 70% of rated generator capacity.

**Special Systems**

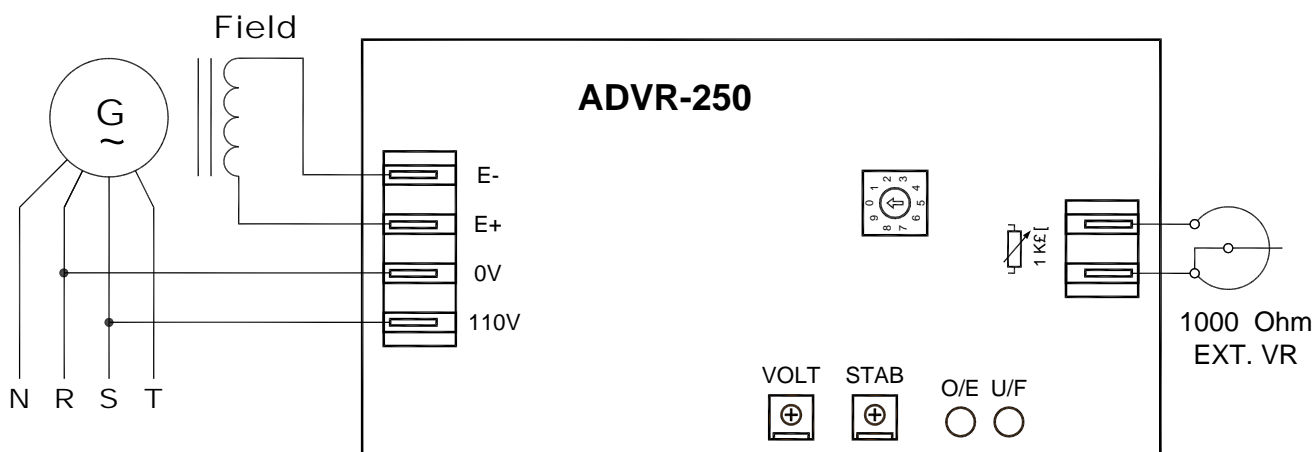
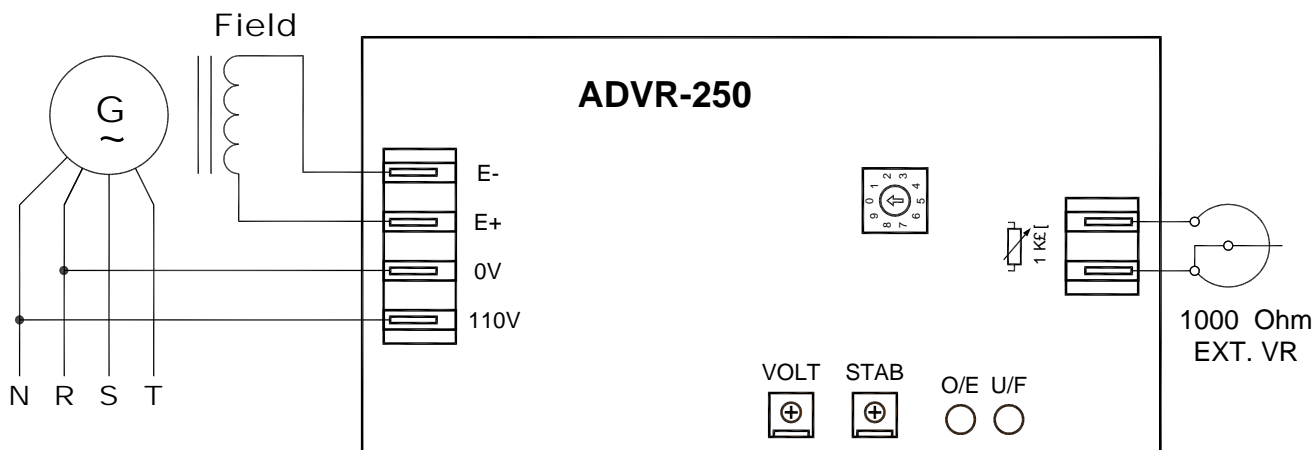
6 : Under frequency knee point 57Hz · LAM function "OFF". Under a load, engine speed variations can be greater than 2Hz

7 : Under frequency knee point 65Hz · LAM function "OFF"

8 : Factory setting of the Under Frequency knee point is 48Hz and LAM function "OFF". This option is supplied for special projects, which must be ordered separately and are set at the factory.

9 : Under frequency knee point 47.5Hz · LAM function "OFF". Under a load, engine speed variations can be greater than 2Hz.

## SECTION 4. Connection Diagrams



- ※ Use only original supplied spare protection fuses as replacements.
- ※ Please accept our apologies if any modifications in performance, specification or appearance are made without prior notice.

**Warning!!**

**Before using a Megger or a Withstand Voltage Tester, removes the wires connecting to the AVR to prevent high voltage damage to the regulator.**