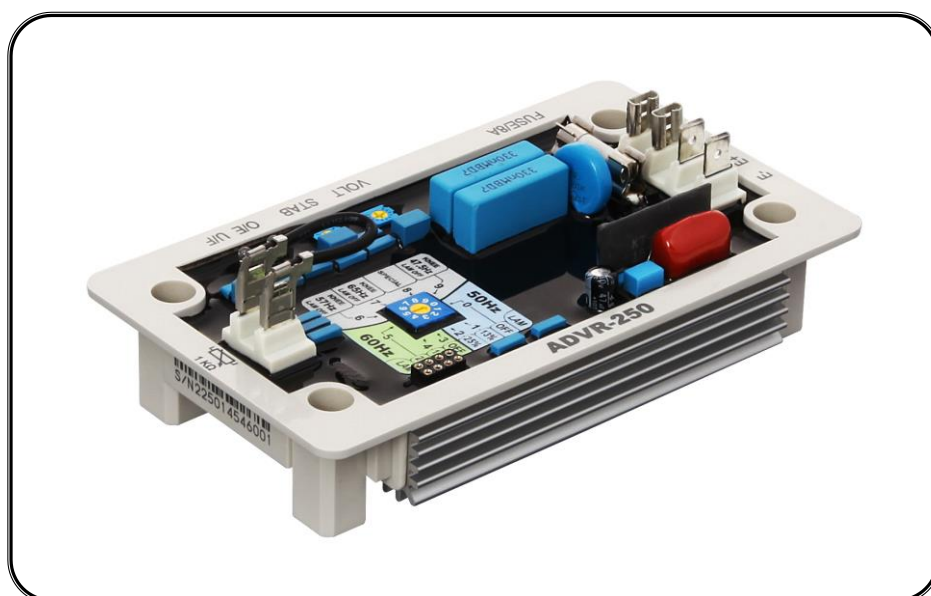


# ADVR-250

## **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

\* All manufacturer names and numbers are used for reference purpose only and do not imply that any part is the product of these manufacturer.



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ISO 9001  
ETC

## SECTION 1 : SPECIFICATION

### Sensing Input ( 0V, 110V ) Average Reading

Voltage 85 – 140 Vac, 1 phase 2 wire  
 Frequency 50/60 Hz, Potentiometer setting

### Excitation Output ( E+, E- )

120V 1 phase Continuous 63 Vdc 3.5A  
 Max. 110 Vdc 5A for 10 secs.  
 Resistance Min. 18 ohms, Max.100 ohms  
 Fuse Spec. Slow blow 5 x 20mm 8A

### External Voltage Adjustment (1K ohm )

Max.+/- 14% @ 1 K ohm 1 watt potentiometer

### Voltage Regulation

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

### Build Up Voltage

5 Vac 25 Hz residual volts at power input terminal

### Soft start ramp time

3 seconds +/- 10%

### Typical System Response

Less than 20 milliseconds

### EMI Suppression

Internal electromagnetic interference filtering

### Static Power Dissipation

Max. 4 watts

### Under Frequency Protection (Factory Presets)

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

### Over Excitation Current Limiting

Excitation Current 5 A +/- 10 %

### Voltage Thermal Drift

Less than 3% at temperature range -40 to +70 °C

### Under Frequency Knee Point Thermal Drift

Less than +/- 0.1 Hz at -40 to +70 °C

### Environment

Operating Temperature -40 to +70 °C  
 Storage Temperature -40 to +85 °C  
 Relative Humidity Max. 95%  
 Vibration 5.5 Gs @ 60 Hz

### 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

### Weight

300 g +/- 2%  
 0.66 lb +/- 2%

## SECTION 2 : APPEARANCE / DIMENSIONS / INSTALLATION DRAWING

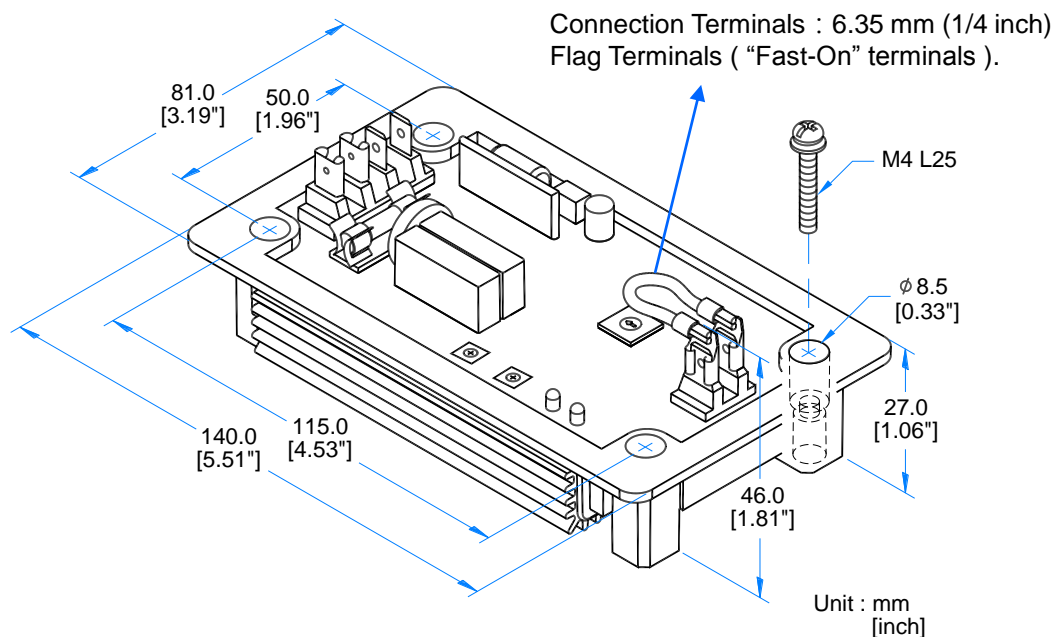


Figure 1 Outline Drawing

### SECTION 3 : POTENTIOMETER ADJUSTMENT

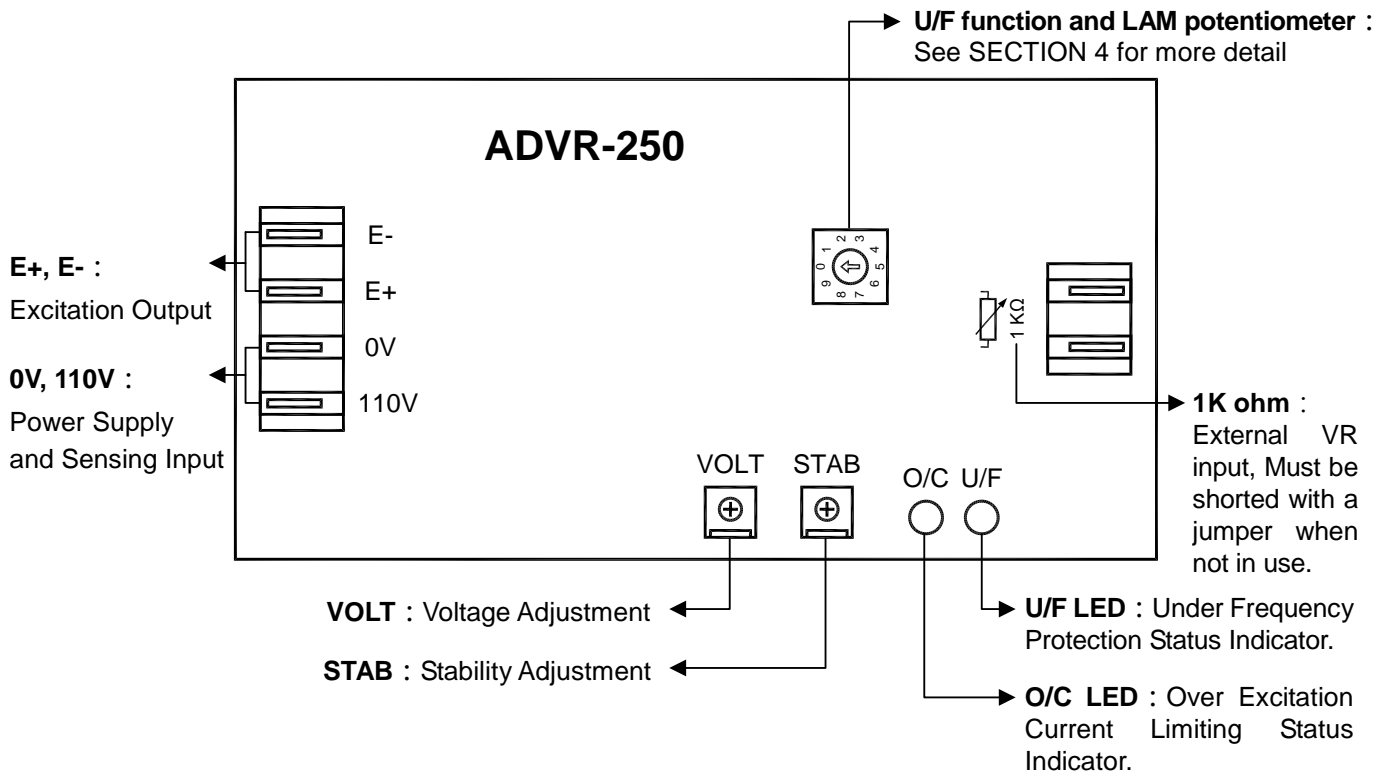


Figure 2

When over excitation current limiting function is operating (Excitation Current > 5A) · this LED will light up.

#### \* Over Excitation Current Limiting (O/C)

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 2 Hz 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 4 : U/F PROTECTION & LAM FUNCTION SELECTION

The Under Frequency Protection (U/F) and LAM function can be selected using the potentiometer.

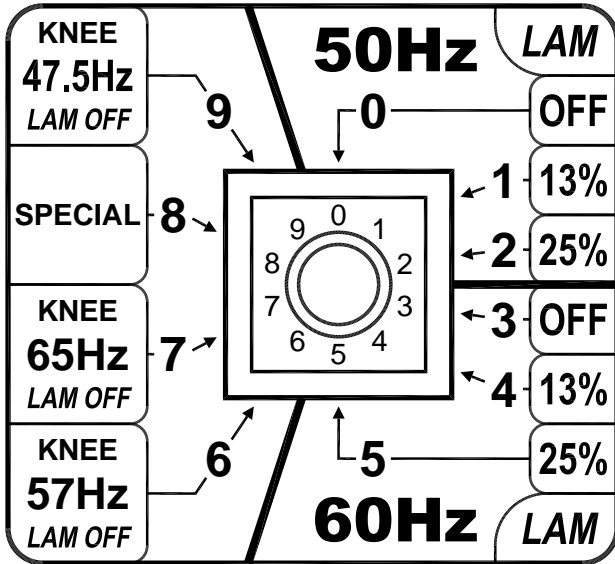


Figure 3

### ATTENTION

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

### 50 Hz Systems

- 0 : Under Frequency knee point 48 Hz, LAM function "OFF". Use when transient loads are below 40% of rated generator capacity.
- 1 : Under Frequency knee point 48 Hz, LAM function set to (13%), Use when transient loads are between 40 – 70% of rated generator capacity.
- 2 : Under Frequency knee point 48 Hz, LAM function set to (25%). Use when transient loads are greater than 70% of rated generator capacity.

### 60 Hz Systems

- 3 : Under Frequency knee point 58 Hz, LAM function "OFF". Use when transient loads are below 40% of rated generator capacity.
- 4 : Under Frequency knee point 58 Hz, LAM function set to (13%), Use when transient loads are between 40 – 70% of rated generator capacity.
- 5 : Under Frequency knee point 58 Hz, LAM function set to (25%). Use when transient loads are greater than 70% of rated generator capacity.

### Special Systems

- 6 : Under frequency knee point 57 Hz, LAM function "OFF". Under a load, engine speed variations can be greater than 2 Hz.
- 7 : Under frequency knee point 65 Hz, LAM function "OFF".
- 8 : Factory setting of the Under Frequency knee point is 48 Hz 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 47.5 Hz · LAM function "OFF". Under a load, engine speed variations can be greater than 2 Hz.

**SECTION 5 : CONNECTION DIAGRAMS**

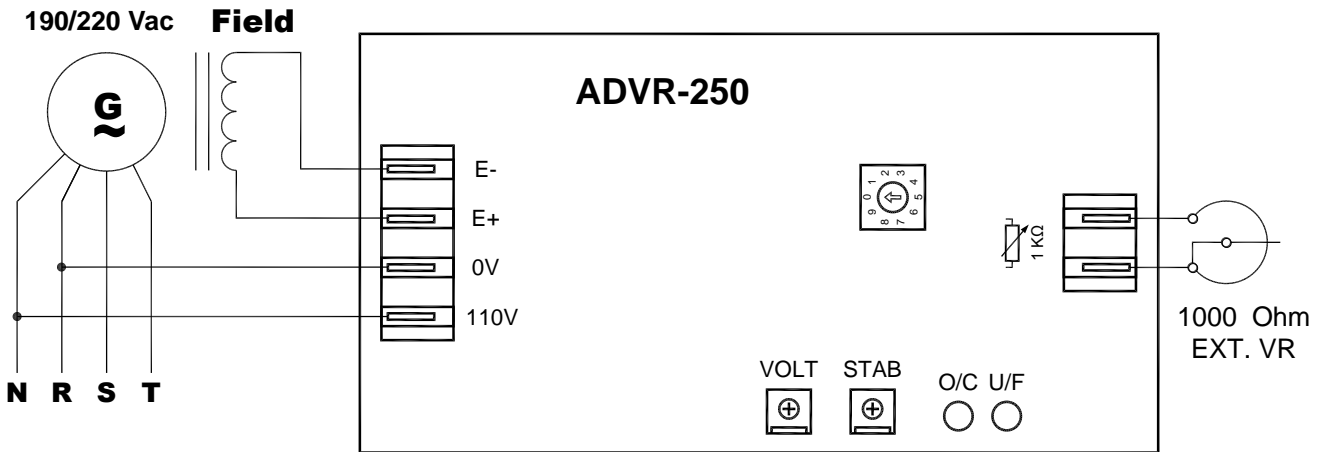


Figure 4

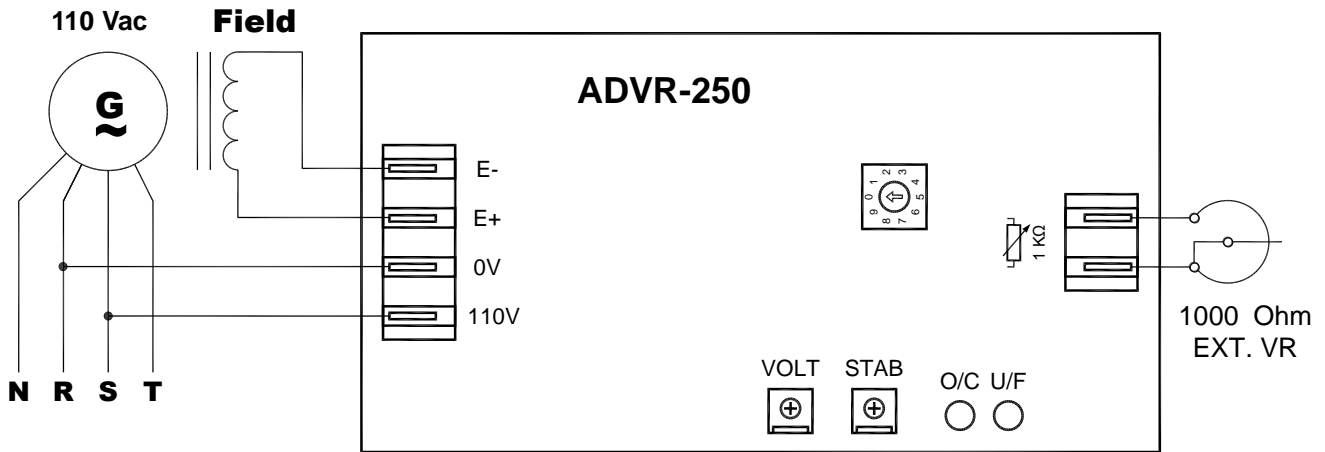


Figure 5

**ATTENTION**

1. Before using a Megger or a Withstand Voltage Tester, removes the wires connecting to the AVR to prevent high voltage damage to the regulator.
2. Improper setting of under-frequency protection could cause the output voltage of the unit to drop or become unstable under with changes in load. Avoid making any changes to the U/F setting unless necessary.

- ※ Use only replacement fuses specified in this user manual.
- ※ Appearance and specifications of products are subject to change for improvement without prior notice.