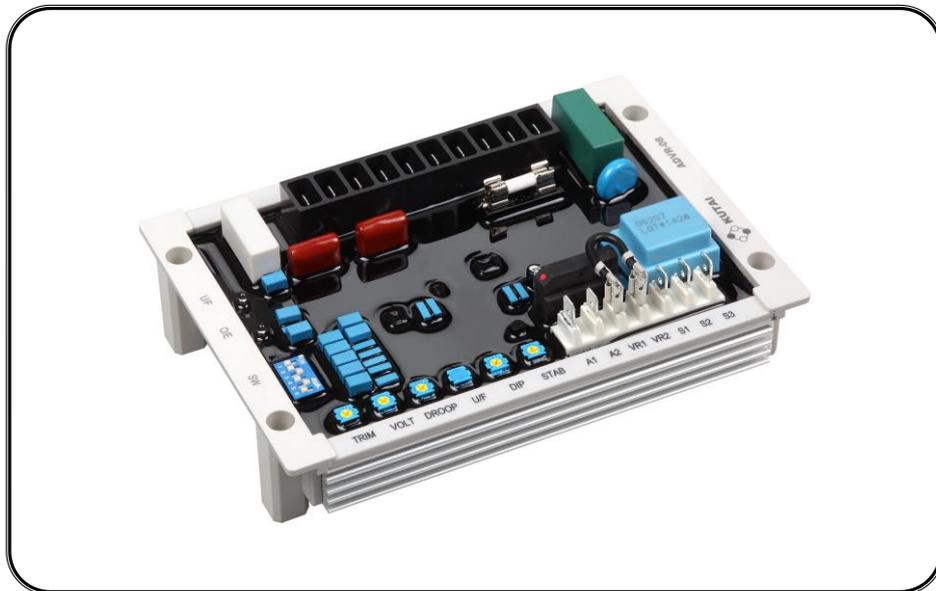


# ADVR-08

## ***Universal Hybrid Analog-Digital Voltage Regulator Operation Manual***



An Universal Hybrid Analog/Digital 2 lines sensing 8 Amp AVR with multiple power input capability such as Full Harmonic (Compound Windings), Harmonic + Auxiliary Winding, PMG and SHUNT.

Compatible with Leroy Somer\* R438, R448, R449 and more.  
Use with KUTAI IVT-1260 / IVT-2460 add-on module can boost generator motor starting capacity.



**KUTAI ELECTRONICS INDUSTRY CO., LTD.**

TEL : +886-7-8121771

FAX : +886-7-8121775

Website : [www.kutai.com.tw](http://www.kutai.com.tw)

Headquarters : No.3, Lane 201, Chien Fu St., Chyan Jenn Dist., Kaohsiung 80664, TAIWAN



## SECTION 1 : SPECIFICATION

### Sensing Input (E1, E2)

Voltage 110 – 480 Vac, 1 phase  
90 – 130 Vac @ 110 Vac  
180 – 260 Vac @ 220 Vac  
340 – 520 Vac @ 380 Vac  
Frequency 50/60 Hz, DIP switch setting

### Power Input (X1, X2, Aux1)

Voltage 40 – 300 Vac, 1 phase / 3 phase  
Frequency 50 – 500 Hz  
1 phase (X1 · X2) / 3 phase (X1 · X2 · Aux1)

### Auxiliary Input (Aux1, Aux2)

Voltage 40 – 300 Vac, 1 phase  
Frequency 50 – 500 Hz

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

Voltage Max. 63 Vdc @ power input 110 Vac  
Max. 125 Vdc @ power input 220 Vac  
Current Continuous 8A  
Intermittent 12A for 10 secs.  
Resistance  $\geq$  8 ohms @ power input 110 Vac  
 $\geq$  16 ohms @ power input 220 Vac  
Fuse Spec. Slow blow 5 x 20mm S505-10A

### External Voltage Adjustment (VR1, VR2)

Max. +/- 4% @ 500 ohms 1 watt potentiometer  
Max. +/- 8% @ 1K ohm 1 watt potentiometer

### Voltage Regulation

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

### Build Up Voltage

6 Vac 25 Hz residual volts at power input terminal

### Soft Start Ramp Time

4 seconds +/- 10%

### Typical System Response

Less than 20 milliseconds

### EMI Suppression

Internal electromagnetic interference filtering

### Static Power Dissipation

Max.6 watts

### Burden in SHUNT & PMG Wiring

880 VA @ power input 110 Vac  
1760 VA @ power input 220 Vac

### Quadrature Droop Input (S1, S2, S3)

CT 5A (S1-S2) or 1A (S2-S3) greater than 5VA  
Max. +/- 5% @ P.F +/- 0.7

### Analogue Voltage Input (A1, A2)

Input resistance greater than 2K ohms  
Max. Input +/- 5 Vdc  
Sensitivity +/- 25% Generator Volts (adjustable)

### Under Frequency Protection (Factory Presets)

50 Hz system presets knee point at 45 Hz  
60 Hz system presets knee point at 55 Hz

### Over Excitation Protection

Set point 170 Vdc +/- 5 % @ power input 220 Vac

### 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 3 Gs @ 100 – 2K Hz

### Dimensions

171.0 (L) x 120.0 (W) x 50.0 (H) mm

### Weight

820 g +/- 2%

### ATTENTION

Carefully set the AVR sensing voltage from 110 to 480 Vac using DIP Switch SW 4 & 5.

## SECTION 2 : OUTLINE / SIZE / INSTALLATION REFERENCE

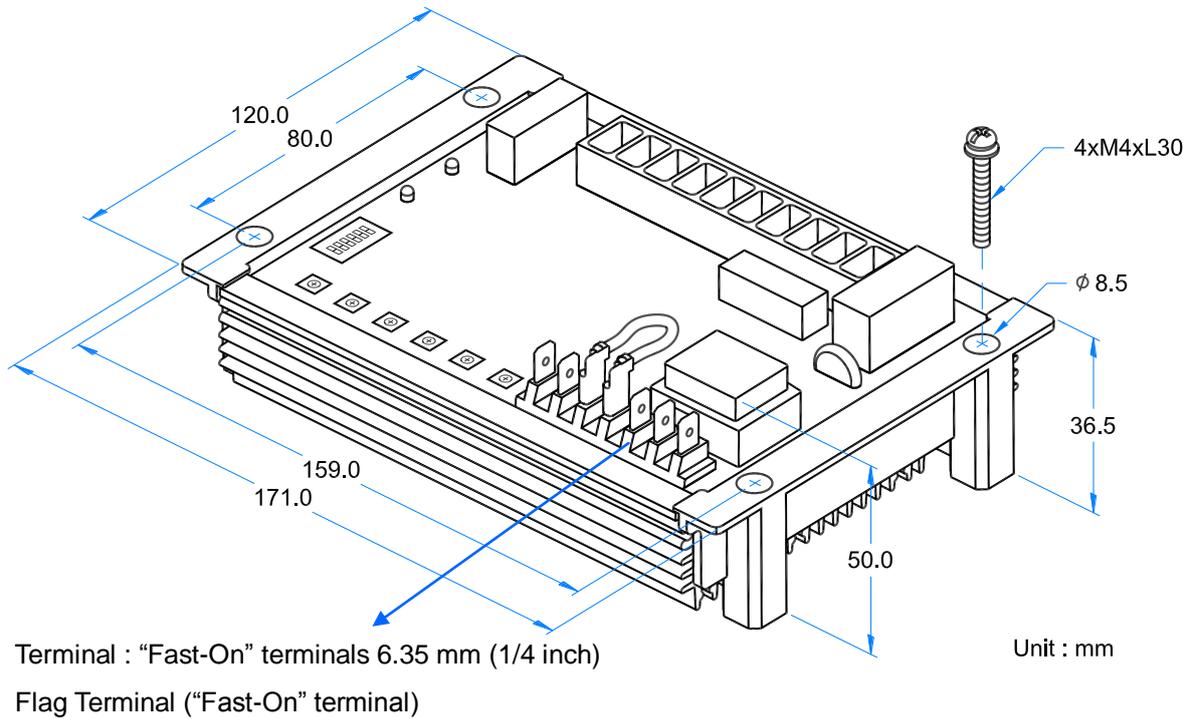
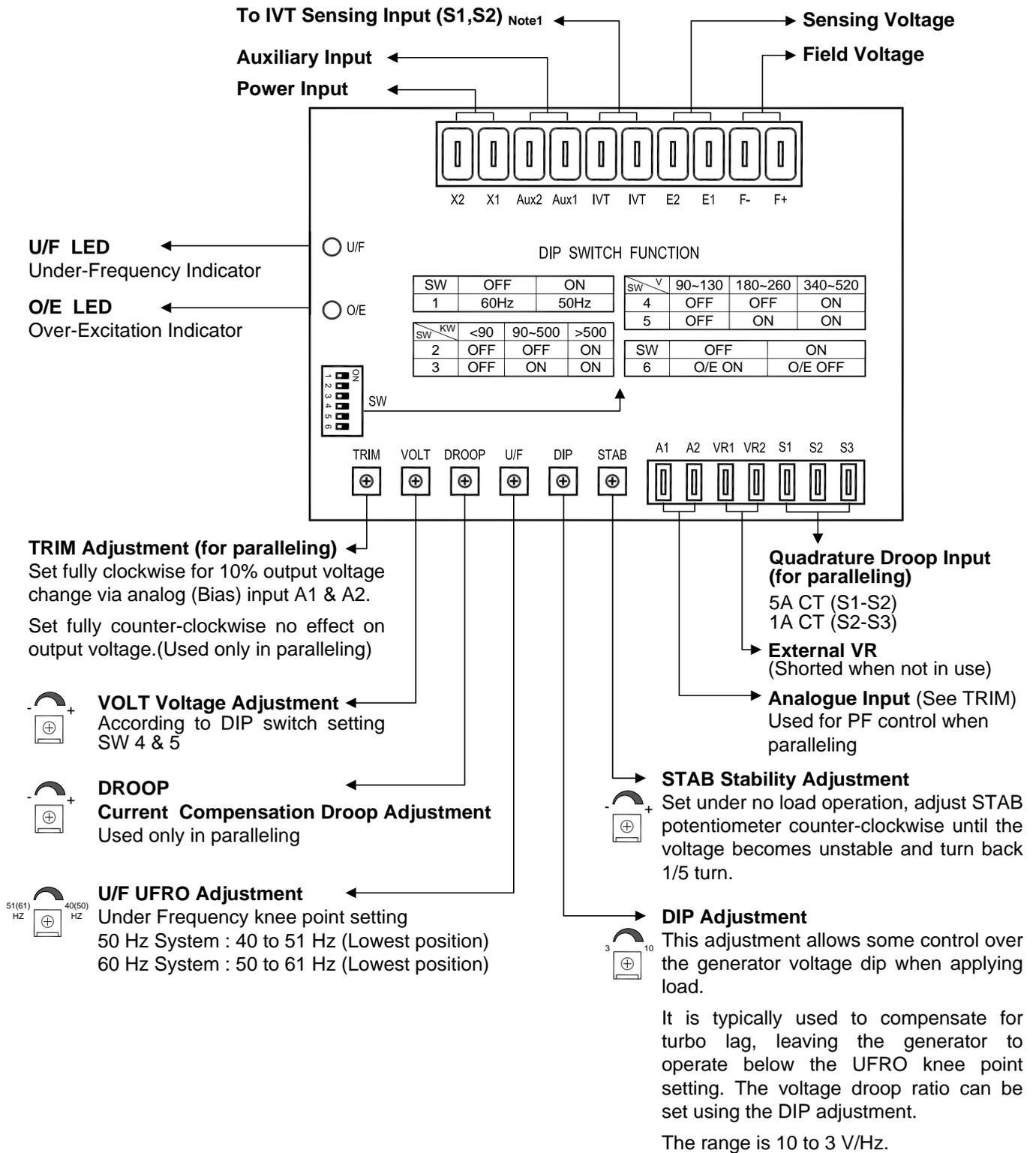


Figure 1 Outline Drawing

### ATTENTION

1. 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.
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.

# SECTION 3 : DIP SWITCH PROGRAMMING & VR ADJUSTMENTS



**ATTENTION**

For more detail about “ IVT Generator Auxiliary Excitation Booster ” please visit KUTAI website.

## SECTION 4 : WIRING CONNECTIONS

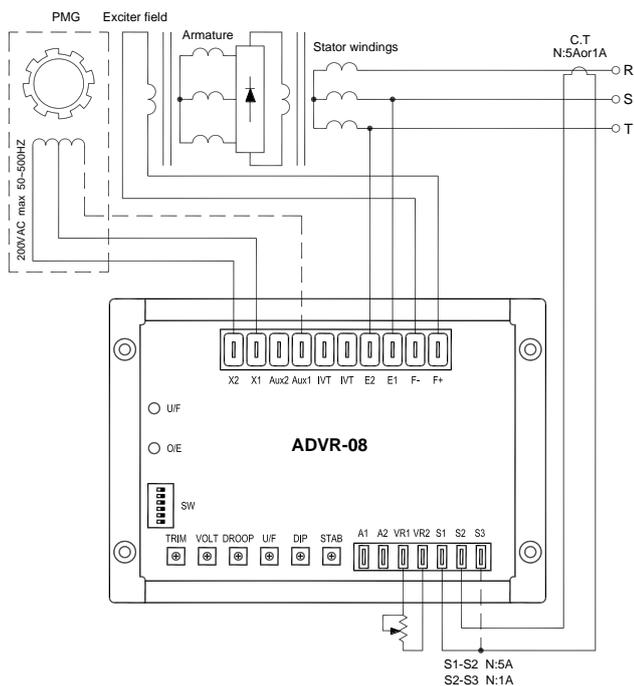


Figure 2 Single & Three Phase PMG

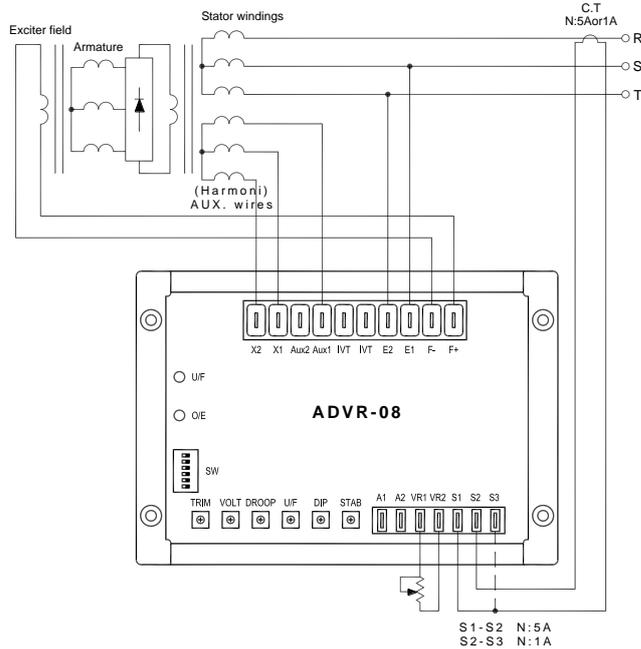


Figure 3 Three Phase Auxiliary Winding (Full Harmonic)

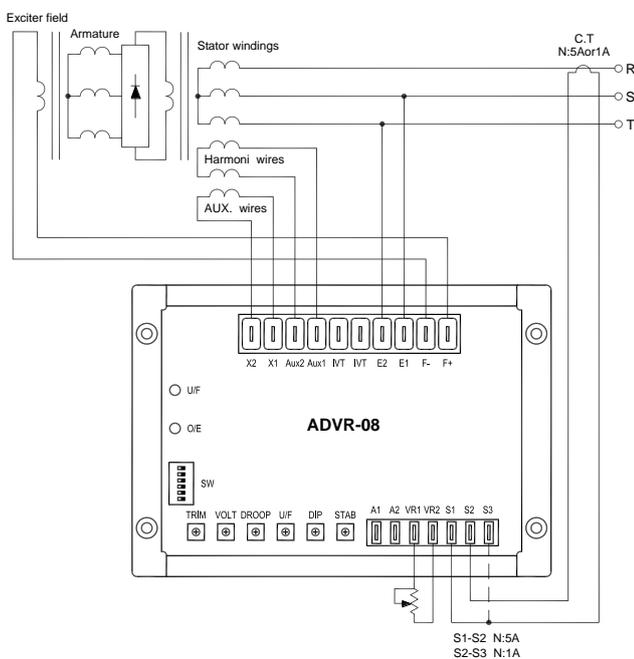


Figure 4 Auxiliary & Harmonic

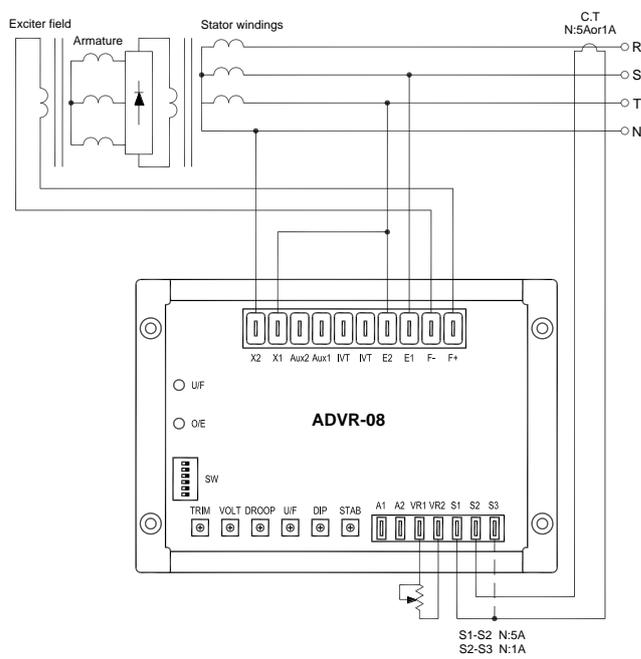


Figure 5 Self-Excited (SHUNT)

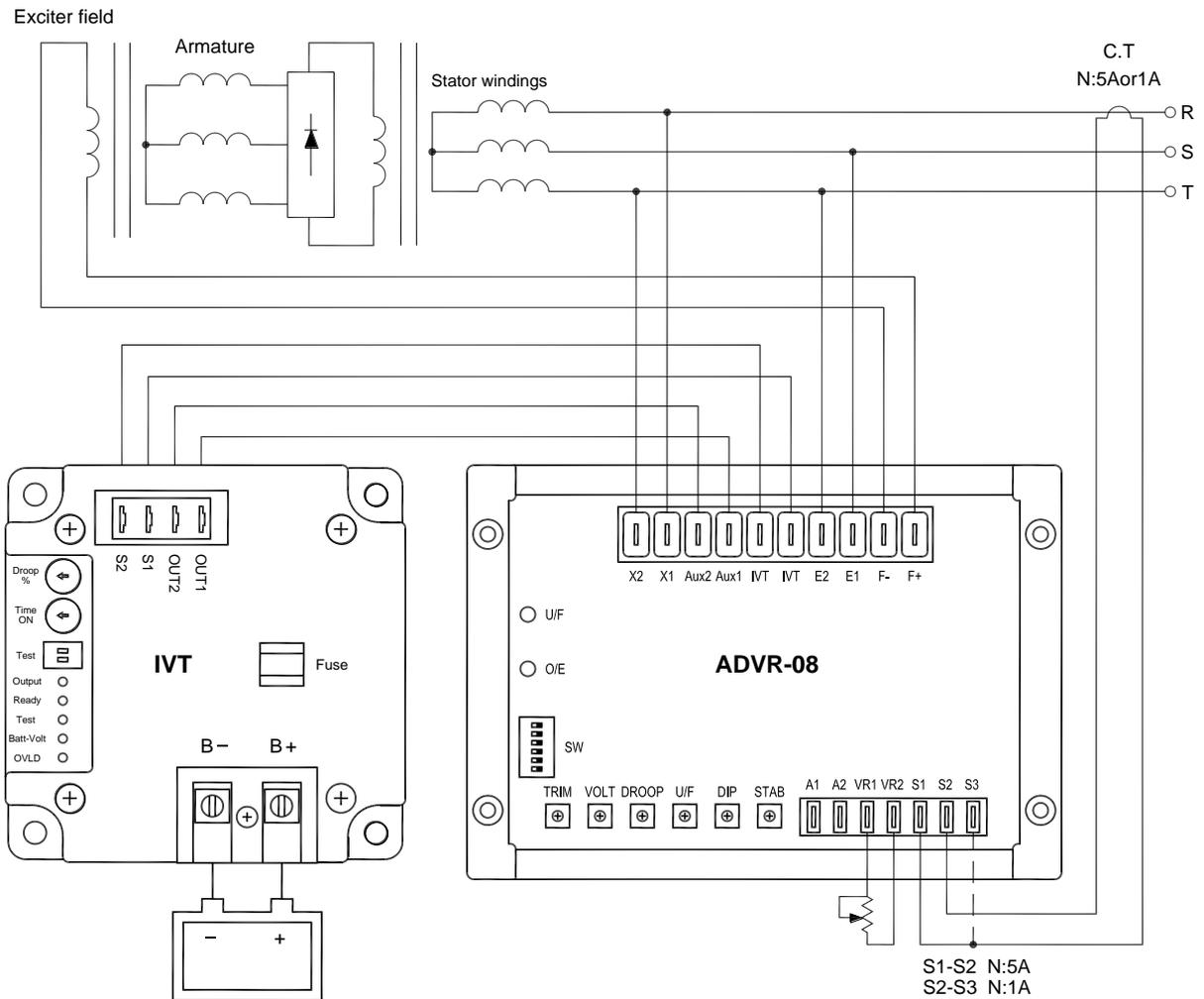


Figure 6 ADVR-08 & IVT-1260 / IVT-2460 Wiring Connection

### ATTENTION

1. All AC voltage readings are average value only.
2. Use a remote 500 ohms 1 watt external VR for +/- 4% adjustment range. (keep shorted if not used)
3. Use a remote 1K ohm 1 watt external VR for +/- 8% adjustment range.
4. If your PMG is not working you can also power the AVR in shunt using terminals X1 & X2 connected to the output of the generator as long as it's less than 300 Vac.

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