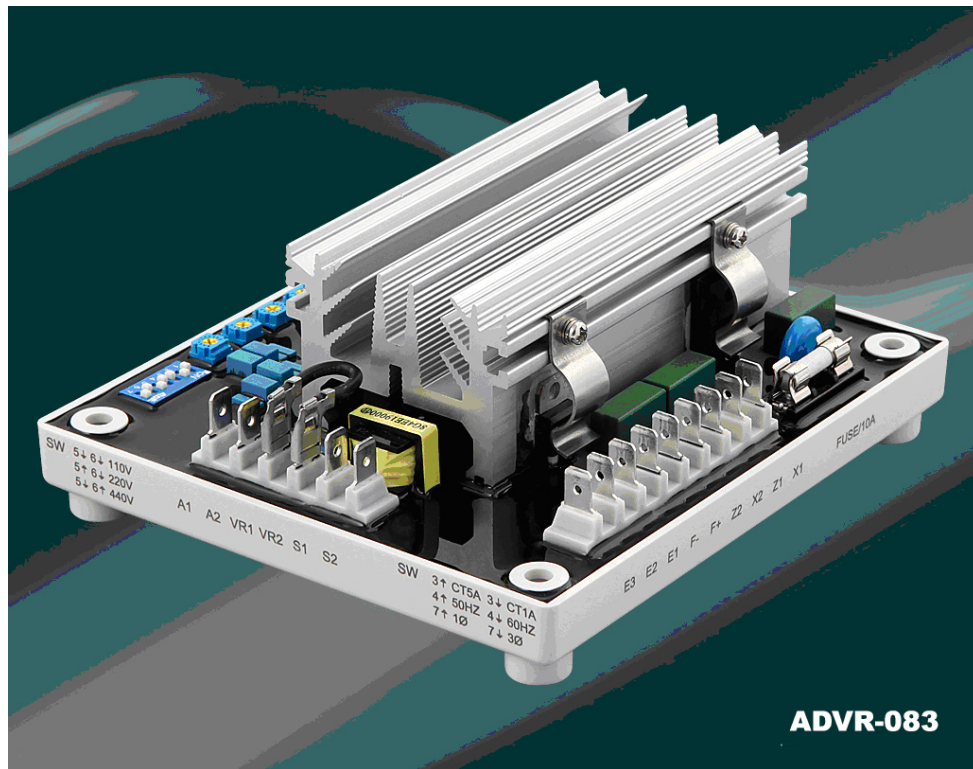


# ADVR-083

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



Analog / Digital AVR, Single-phase / Three-phase Voltage detection, 8 Amp, Voltage Regulator for use with Auxiliary Winding, Harmonic Winding, Harmonic + Auxiliary Winding, PMG, and self-excited (SHUNT) self-excited brushless-type generators.

## SECTION 1 : SPECIFICATION

### Sensing Input (E1, E2, E3) Average Reading

Voltage	90 – 520 Vac 1 phase / 3 phase DIP switch setting
1 phase (E1, E2) / 3 phase (E1, E2, E3)	90 – 130 Vac @ 110 Vac 180 – 260 Vac @ 220 Vac 340 – 520 Vac @ 440 Vac DIP switch setting
Frequency	50/60 Hz, DIP switch setting

### Power Input (X1, X2, Z2)

Voltage	60 – 300 Vac, 1 phase / 3 phase 1 phase ( X1, X2 ) / 3 phase ( X1, X2, Z2 )
Frequency	60 – 500 Hz

### Auxiliary Input (Z1, Z2)

Voltage	60 – 300 Vac, 1 phase 2 wire
Frequency	40 – 500 Hz

### Excitation Output (F+, F-) depends on input

110V 1 phase Continuous	63 Vdc 8A Max. 90 Vdc 10A for 10 secs.
220V 1 phase Continuous	125 Vdc 8A Max. 180 Vdc 10A for 10 secs.
220V 3 phase Continuous	150 Vdc 8A Max. 215 Vdc 10A for 10 secs.
Resistance	Min.15 ohms, Max.100 ohms @ 220V
Fuse Spec.	Slow blow 5 x 20 mm 10A

### External Voltage Adjustment (VR1, VR2)

Max. +/- 10% @ 1K ohm 1 watt potentiometer

### Quadrature Droop Input (S1, S2)

CT N:5A or N:1A (DIP switch selected), greater than  
5VA Sensitivity +/- 7% @ PF +/- 0.5 (Droop  
adjustable)

### Analogue Voltage Input (A1, A2)

Input resistance greater than 2K ohms  
Max. Input +/- 5 Vdc or + 10 Vdc  
Sensitivity 1 Vdc for 5% (Trim adjustable)

### Build Up Voltage

5 Vac 25 Hz residual volts at power input terminal

### Soft Start Ramp Time

4 seconds +/- 10%

### Voltage Regulation

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

### Typical System Response

Less than 20 milliseconds

### EMI Suppression

Internal electromagnetic interference filtering

### Static Power Dissipation

Max. 6 watts

### 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 Current Limiting

Input Power 25 – 105% (EXC. Adjustable)  
O/E acts after a 10 sec. delay, this function can be  
turned OFF (EXC. set to Max clockwise

### 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

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

### Dimensions

150.0 (L) x 135.0 (W) x 61.0 (H) mm  
5.91 (L) x 5.31 (W) x 2.40 (H) inch

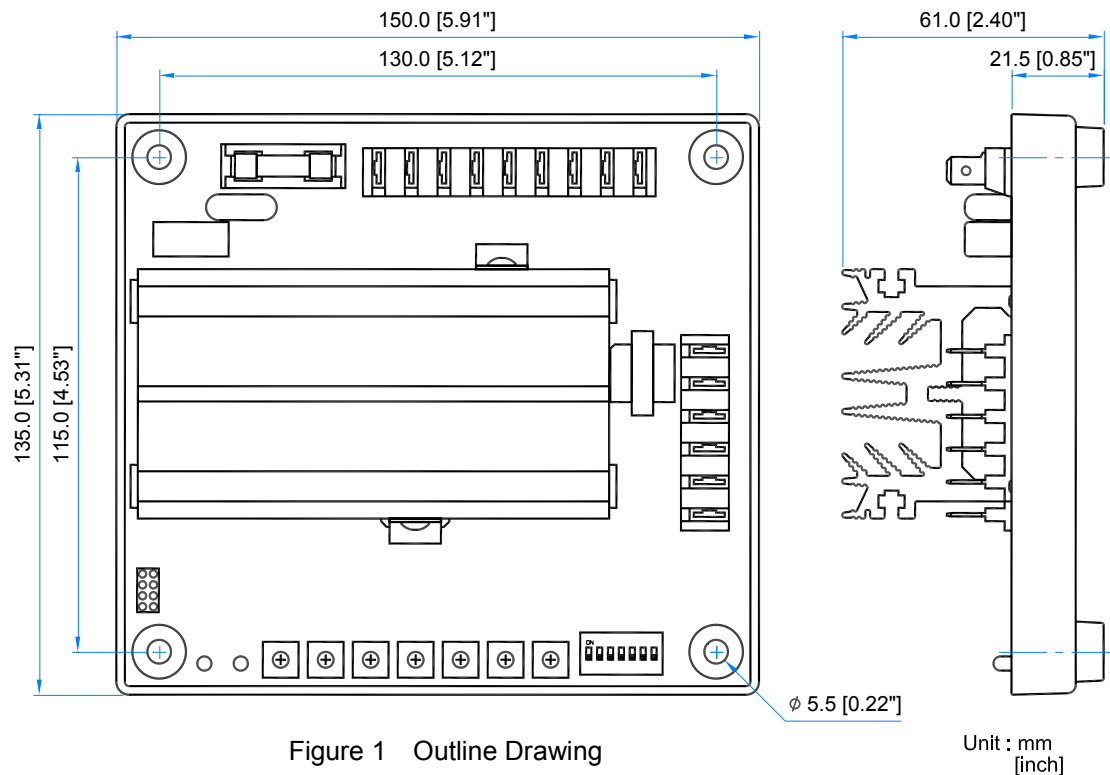
### Weight

750 g +/- 2%  
1.654 lb +/- 2%

### ATTENTION

Confirm the voltage sensing input setting before use (DIP switches SW5 and SW6) in order to avoid permanently damaging the AVR.

## SECTION 2 : OUTLINE / SIZE / INSTALLATION REFERENCE



### Switch

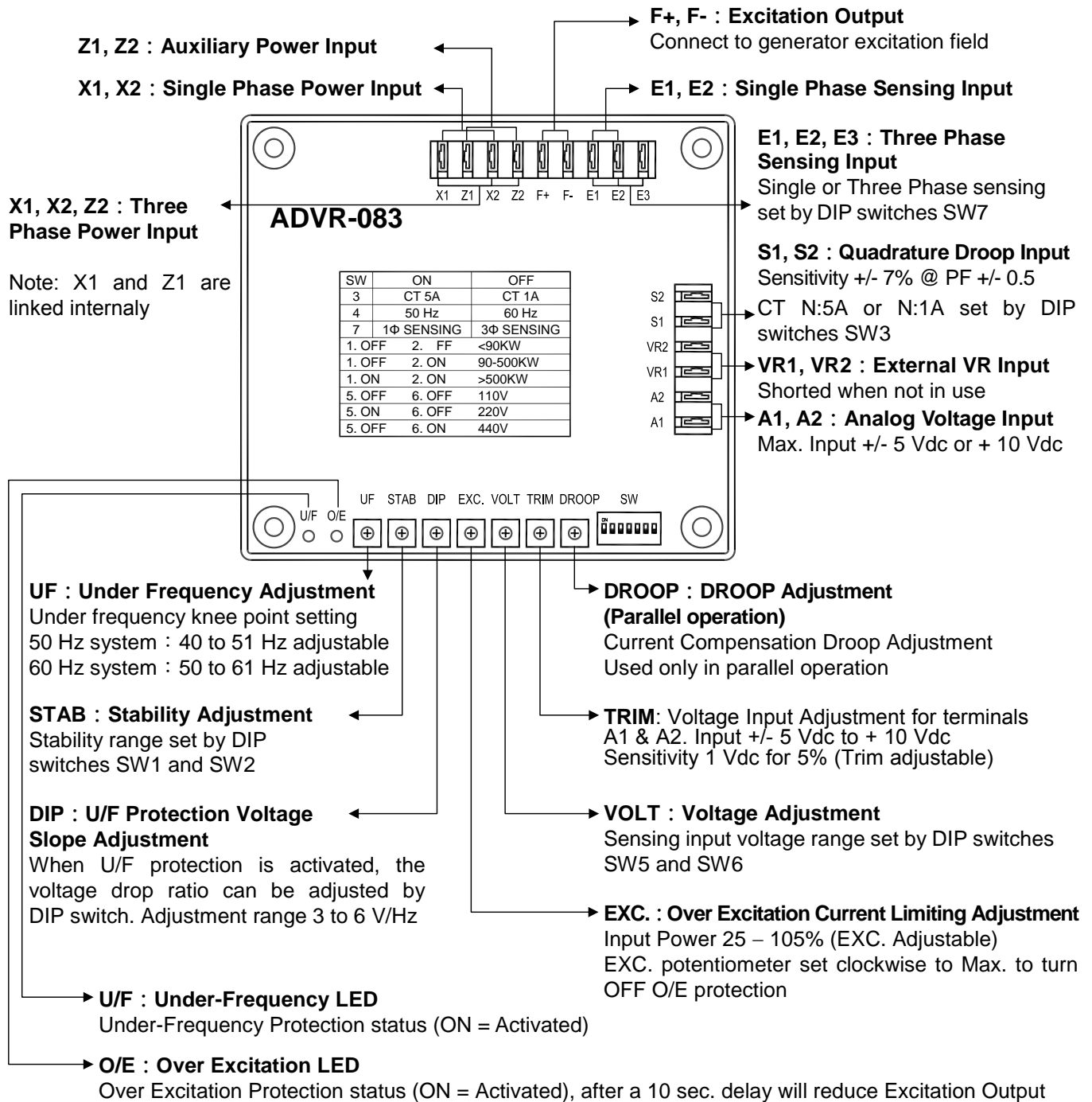
Set Sensing 7 ON for single Phase sensing  
7 OFF for 3 phase sensing

Set Sensing Voltage 5 OFF 6 OFF 110Volts sensing  
5 ON 6 OFF 220Volts sensing  
5 OFF 6 ON 380/480Volts sensing

Set generator size 1 OFF 2 OFF Less then 90KW  
(Turbo Lag) 1 OFF 2 ON from 90 to 500KW  
1 ON 2 ON more then 500KW

Set Paralleling CT size 3 ON for 5A CT OFF for 1A CT  
Set Hz 4 ON for use at 50 Hz  
4 OFF for use at 60 Hz

## SECTION 3 : DIP SWITCH PROGRAMMING & VR ADJUSTMENTS



### ATTENTION

The adjustment range of External VR and TRIM are limited by SW5, SW6 settings.

Dotted lines represent a three-phase input. Do not connect it for the single phase connection.

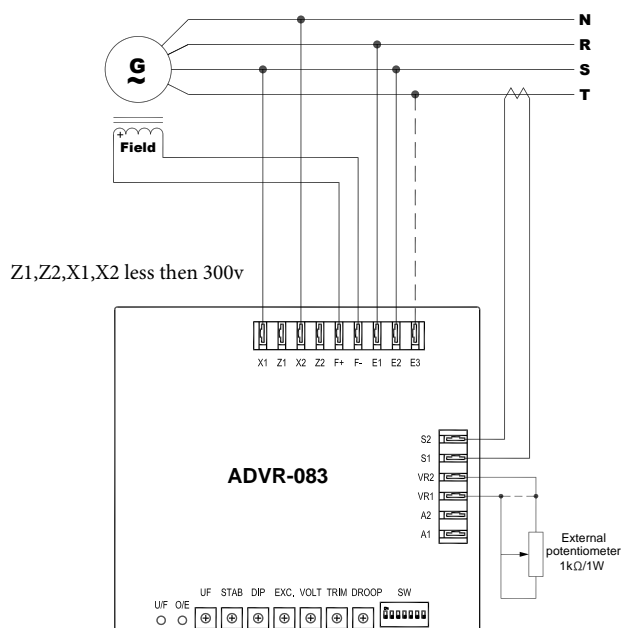


Figure 4 Self-Excited (SHUNT) 440 Vac  
Single phase / Three phase

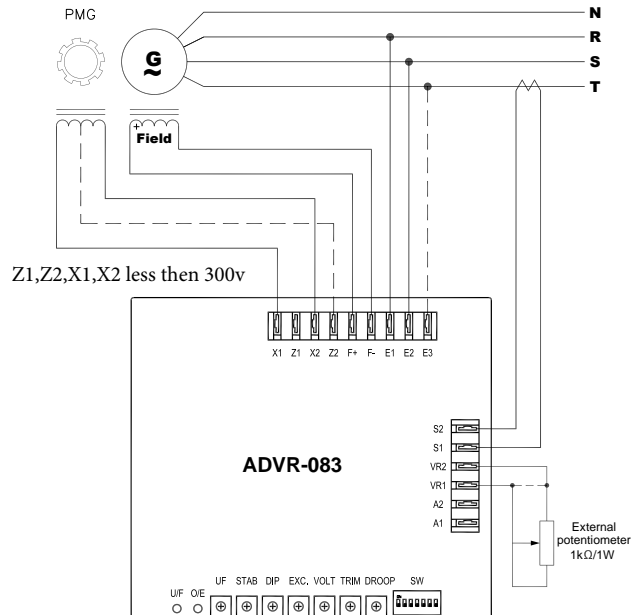


Figure 6 PMG 110/220/440 Vac  
Single phase / Three phase

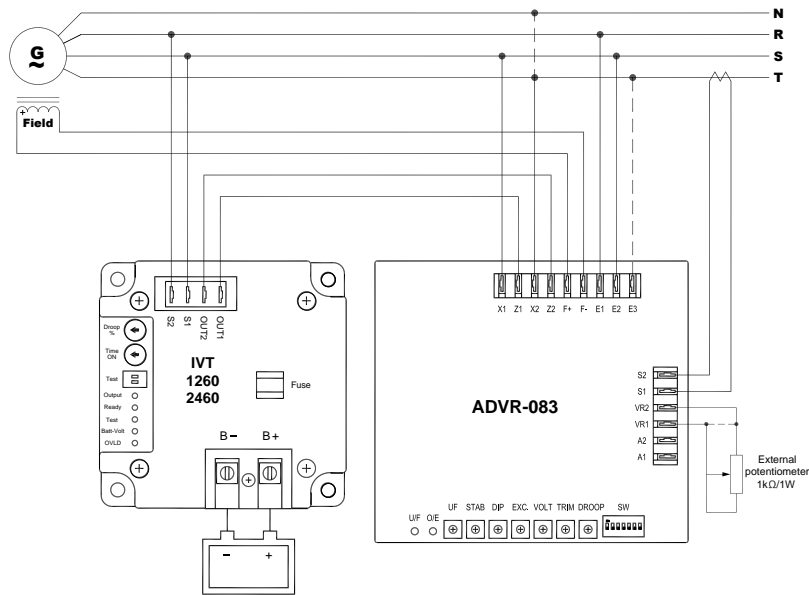


Figure 7 ADVR-083 & IVT-1260 / IVT-2460 Wiring Connection Self-Excited (SHUNT) 110/220 Vac Single phase / Three phase

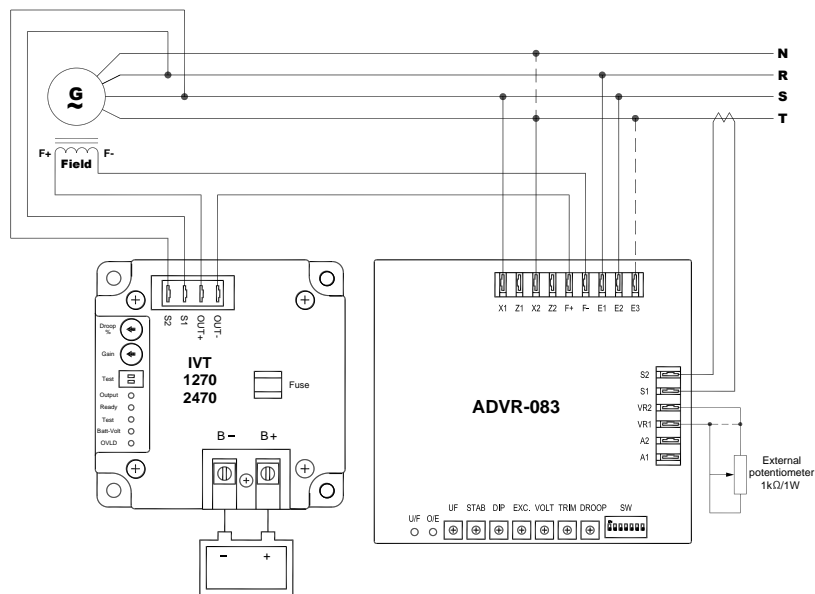


Figure 8 ADVR-083 & IVT-1270 / IVT-2470 Wiring Connection Self-Excited (SHUNT) 110/220 Vac Single phase / Three phase

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