

ADVR-054

Universal Hybrid Analog-Digital Voltage Regulator Operation Manual



***Self Excited Analog/Digital 5Amp AVR
For use in shunt and generators with
auxiliary windings***

Warning!

1. Only qualified technicians should install and operate the AVR.
2. The voltage regulator may be installed at any suitable location on the generator set (dimensions are shown in Fig. 1). It is recommended that unit is mounted vertically with the green resistors on the regulator upwards to achieve the best cooling effect.
3. All AC voltage sensing readings are average value only.
4. Before using a Megger or a Withstand Voltage Tester, removes the wires connecting to the AVR to prevent high voltage damage to the regulator.
5. Use only the replacement fuses specified in this manual.
6. Appearance and product specifications are subject to change or improvement without prior notice.

Section 1. Specifications

Sensing Input (A to C) Average Reading

Voltage 170 – 520 Vac Single-phase, 2-wire
220/440 Vac (DIP switch setting)
170 – 260 Vac @ 220 Vac
340 – 520 Vac @ 440 Vac
Frequency 50/60 Hz (DIP switch setting)

Input Power (B to C)

Voltage 100 – 300 Vac Single-phase, 2-wire
Frequency 40 – 60 Hz

Excitation Output (F+ to F-)

220V Single phase Continuous 63Vdc 5A
Intermittent 90Vdc 7A 10Sec
Resistance Min.15 Ω , Max.100 Ω
Fuse specification 5 x 20mm S505-5A slow blow

Voltage Regulation

< +/- 0.5% (with 4% engine governing)

Response Time

20ms

Voltage Build-up

Residual voltage at AVR terminal > 5 VAC

Over Excitation Voltage Protection

>35% Input Power Voltage, Delay 5 seconds. This function can be turned off.

External Voltage Adjustment (EXT.VR)

+/- 3.5% 1 K Ω 1 watt potentiometer

Soft Start Ramp Time

3 seconds +/- 10%

Static Power Dissipation

8 watts EMI

Suppression

Internal electromagnetic interference filtering

Under Frequency Protection (Factory Setting)

At 50 Hz - knee point set at 45 Hz

At 60 Hz - knee point set at 55 Hz

Voltage Thermal Drift

-40°C to +70 °C · < 3%

Low Frequency Knee Point Thermal Drift

-40°C to +70° C · < +/- 0.1 Hz

Operating Environment

Operating Temperature -40°C to +70 C

Storage Temperature -40°C to +85 C

Relative Humidity < 95%

Vibration 5g @ 60 Hz

Dimensions

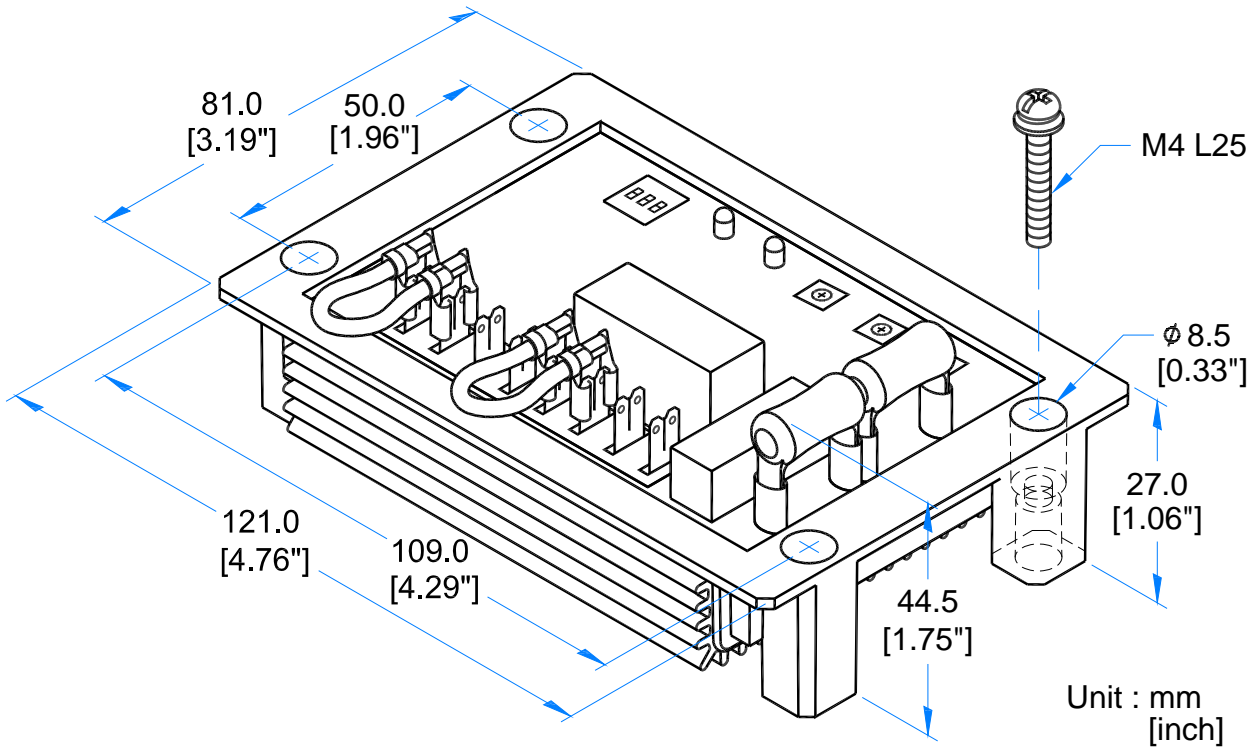
121.0 (L) x 81.0 (W) x 44.5 (H) mm

4.76" (L) x 3.19" (W) x 1.75" (H) inch

Weight

270 g +/- 2%

Section 2. Appearance / Dimensions / Installation Drawing



WARNING

Some generators even when working at high voltage are factory set to sense at lower voltages. Remember to set the ADVR DIP SW 2 to the sensing voltage not the working voltage of the generator even do sometimes it can be the same.. It you have a 480/277V generator but you have the sensing wires C and A connected to 240 Volts move DIP SW 2 to ON.

Another example are rental units with multi-voltage output with a switches for Y, YY, Delta & ZZ output, but sensing is always at 240V from T7 and T9 even though the generator is running sometimes at 480/277V.

Section 3. DIP Switch settings, Indicator Lights and Adjustments

O/E LED

The over excitation LED is activated after a 5 sec. delay when the output voltage is 35% higher then the input voltage. The SW3 setting determines whether this function is on

U/F LED

Under Frequency Protection LED

VOLT Voltage Adjustment

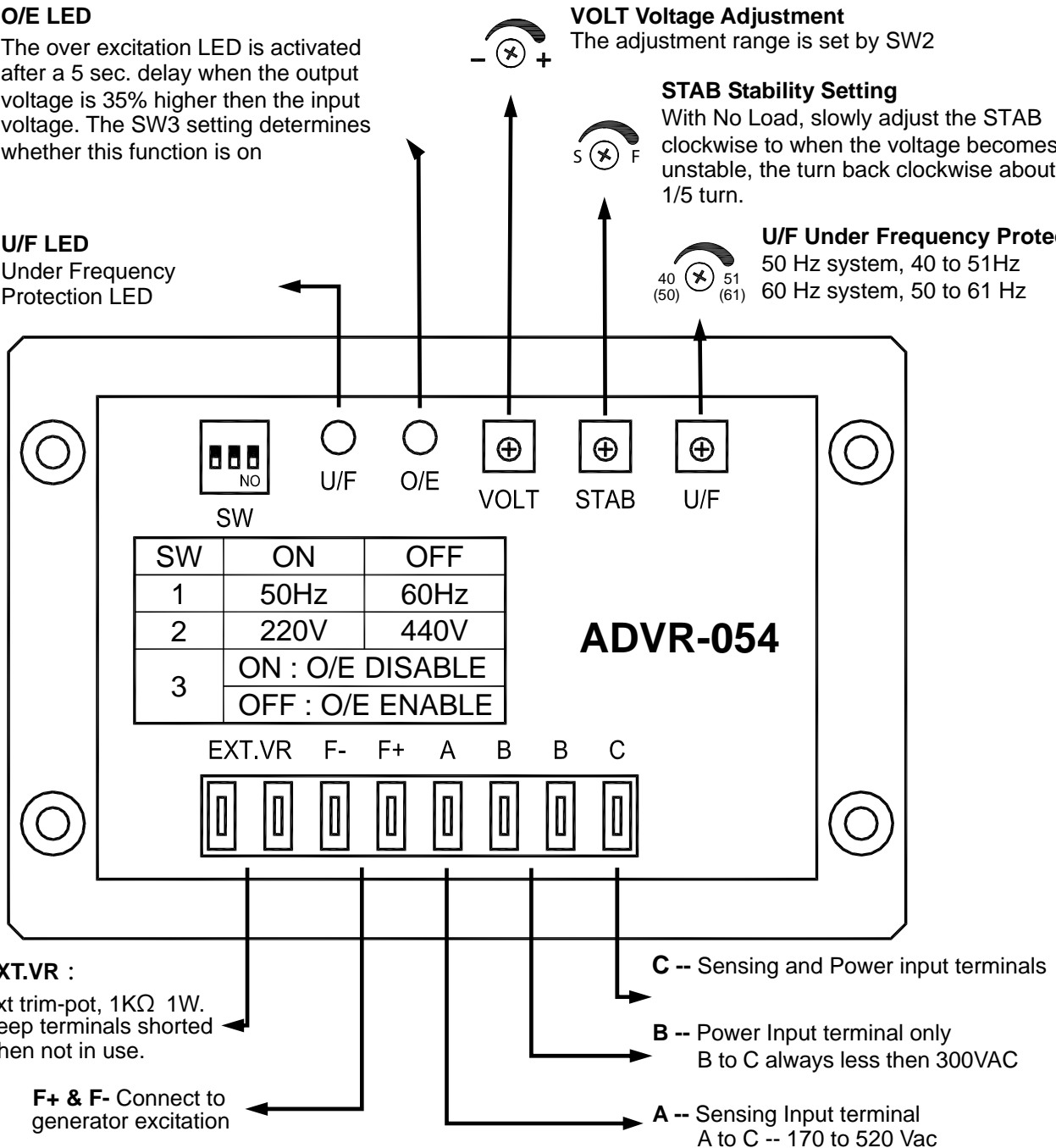
The adjustment range is set by SW2

STAB Stability Setting

With No Load, slowly adjust the STAB clockwise to when the voltage becomes unstable, the turn back clockwise about 1/5 turn.

U/F Under Frequency Protection

50 Hz system, 40 to 51Hz
60 Hz system, 50 to 61 Hz



Adjustments after generator is started

1. First, set VOLT and STAB trim-pots completely counterclockwise, set the engine governor to 50 or 60 Hz. Now slowly turn the VOLT trim-pot clockwise to increase the working voltage (If you have an external Trim-pot set it to center position). Keep EXT. VR shorted when not in use.
2. Next, slowly adjusting the STAB trim-pot (clockwise) this changes the response time of the AVR to changing loads. If the setting is too high the voltage is unstable but if set too low the response is sluggish. We recommend using an analog DC voltage meter on F, F+ and adjust STAB for the lowest amount of voltage fluctuation. (needle movement)
3. Last, setting the Under Frequency (U/F) trim-pot. (The U/F is Factory preset and needs no adjustments) put in rare applications --- Use the U/F LED as a guide. When this LED is ON the circuit is operational turning off the regulators output. To recalibrate, adjust the generator speed to the new U/F kneel point, usually 5 Hz under rated speed (Hz) then set the U/F trim-pot to the point at which the U/F LED just changes from off to on

Section 7. Connection Diagrams

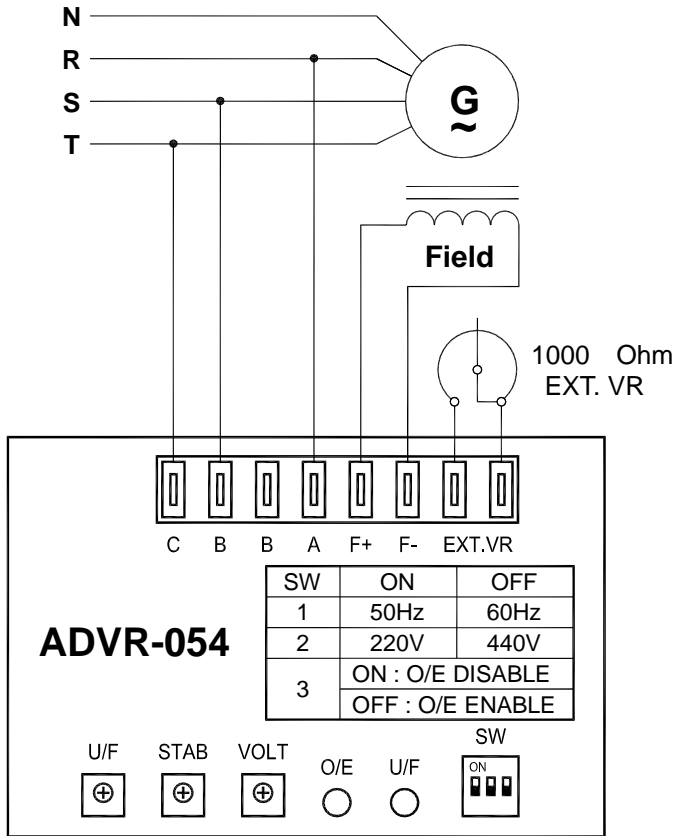


Fig 4 208, 220V sensing connection

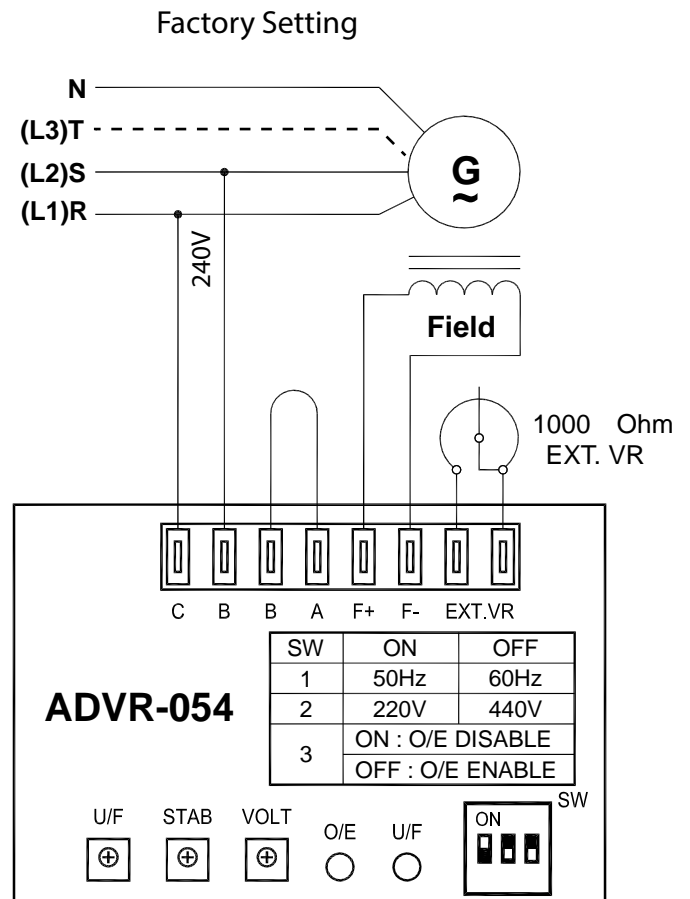


Fig 5 220, 240V sensing

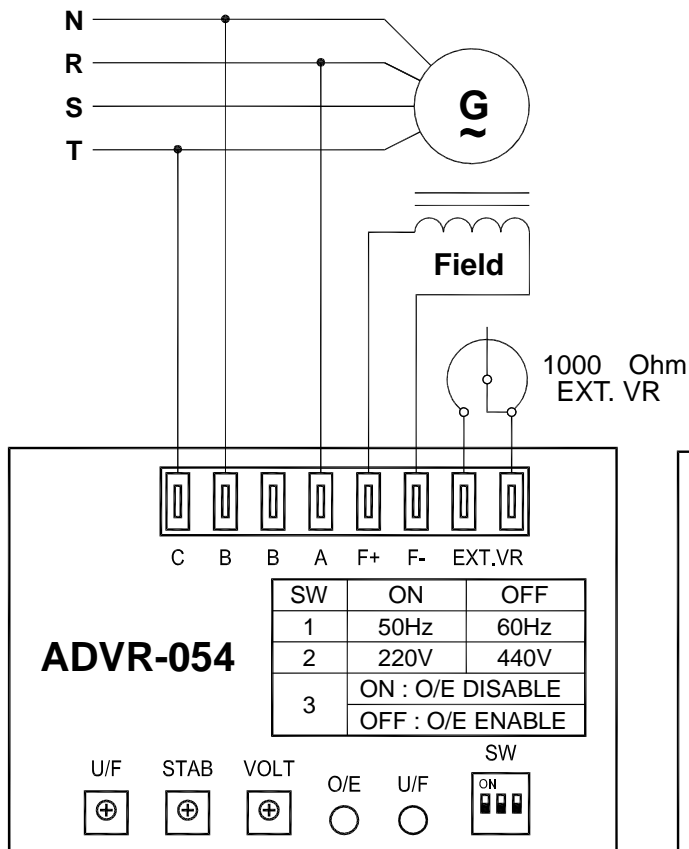


Fig 6 380, 440, 480V sensing

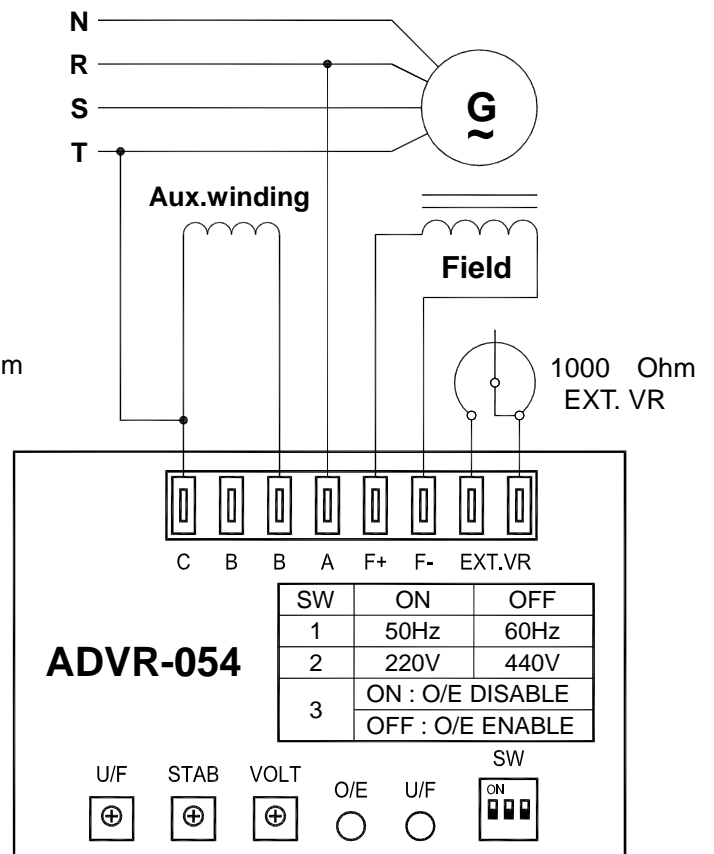


Fig. 7 Using Auxiliary Winding