ADVR635

Operation Manual
Universal Hybrid Analog-Digital
Voltage Regulator

Analog/Digital 5 Amp AVR replaces many models

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 connected to the AVR to prevent high voltage damage to the regulator.**
5. **Use only the replacement fuses specified in this manual.**
6. **Appearance, product specifications, or improvements are subject to change 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.10Ω , Max.100Ω
Fuse specification5 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 KΩ 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

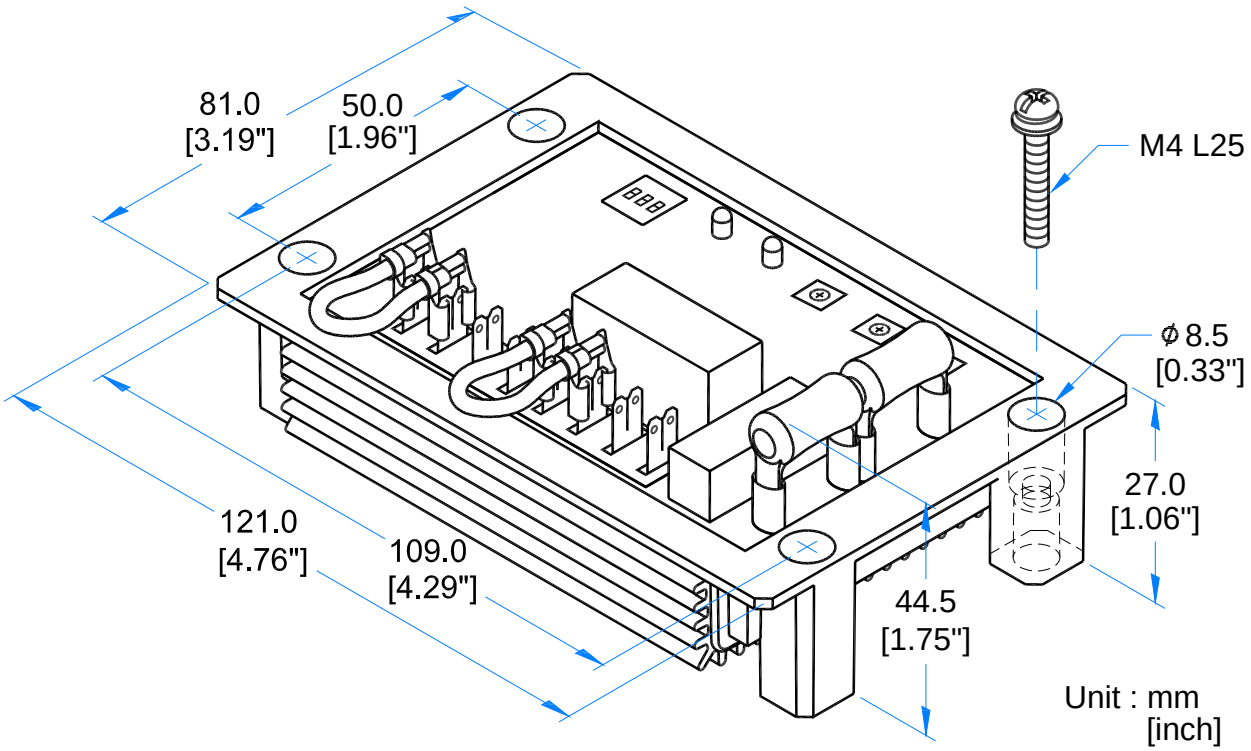
Dimensions

121.0 (L) x 81.0 (W) x 44.5 (H) mm
4.76” (L) x 3.19” (W) x 1.75” (H) inches

Weight

270 g +/- 2%

Section 2. Appearance / Dimensions / Installation Drawing

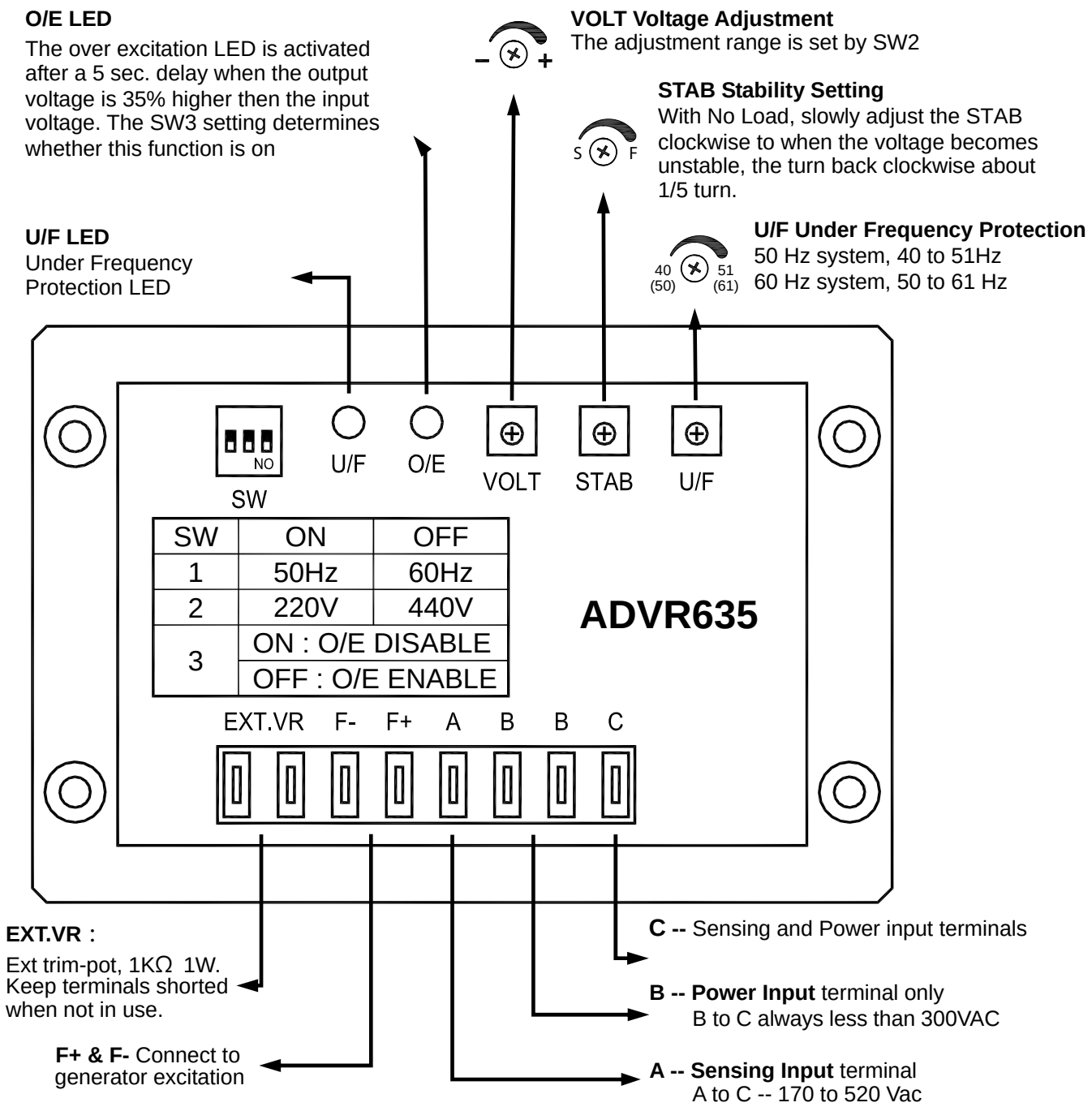


WARNING

Some generators even when set at high voltage (380-480V) 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 though sometimes it can be the same.
If 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 is rental units with multi-voltage output with a switches for Y, YY, Delta & ZZ output, but sensing is always at approximately 240V from T7 and T9 even though the generator is running sometimes at 480/277V.

Section 3. DIP Switch settings, Indicator Lights and Adjustments



Adjustments after generator is started

1. First, set VOLT and STAB trim-pots completely counter-clockwise. Set the engine governor to provide 50 or 60 Hz. Now slowly turn the VOLT trim-pot clockwise to increase the voltage (If you have an external Trim POT, set it to the center position). Keep EXT. VR shorted when not in use.
2. Next, slowly adjust the STAB trim-pot (clockwise). This changes the response time of the AVR to changing loads. If the setting is too high, the voltage will be unstable, but if set too low the response is sluggish. It is recommended to use an analog DC voltage meter on F- and F+ and adjust STAB for the lowest amount of voltage fluctuation. (needle movement)
3. Last, set the Under Frequency (U/F) trim-pot. The U/F is Factory preset and usually needs no adjustment, but in rare applications it can be adjusted. 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

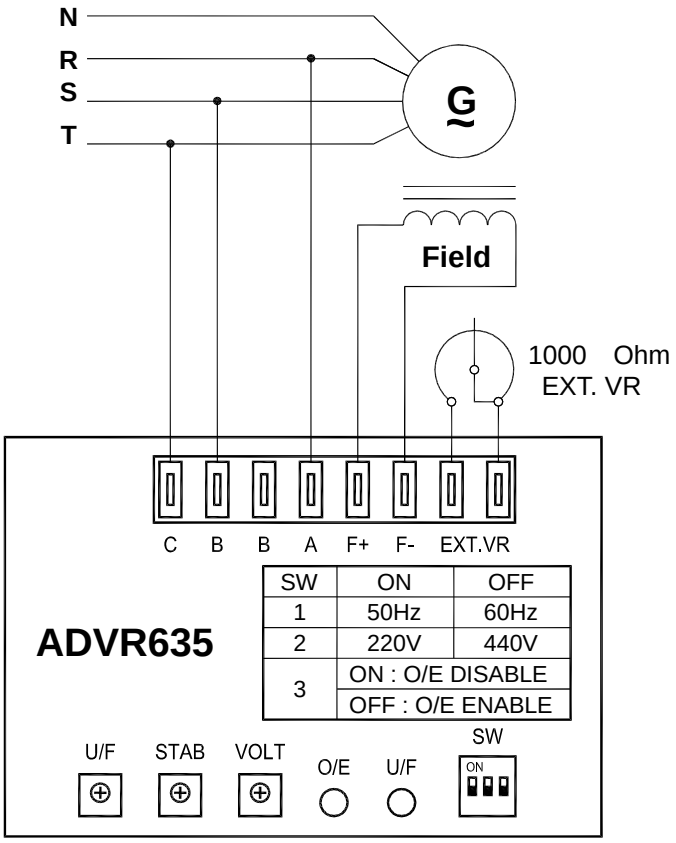


Fig 4 208, 220V sensing connection

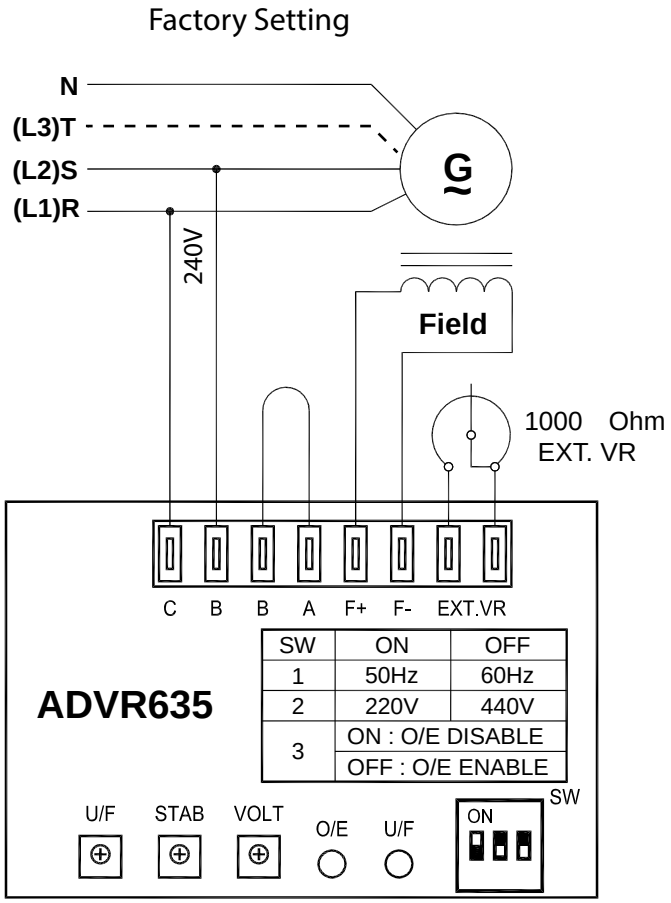


Fig 5 220, 240V sensing

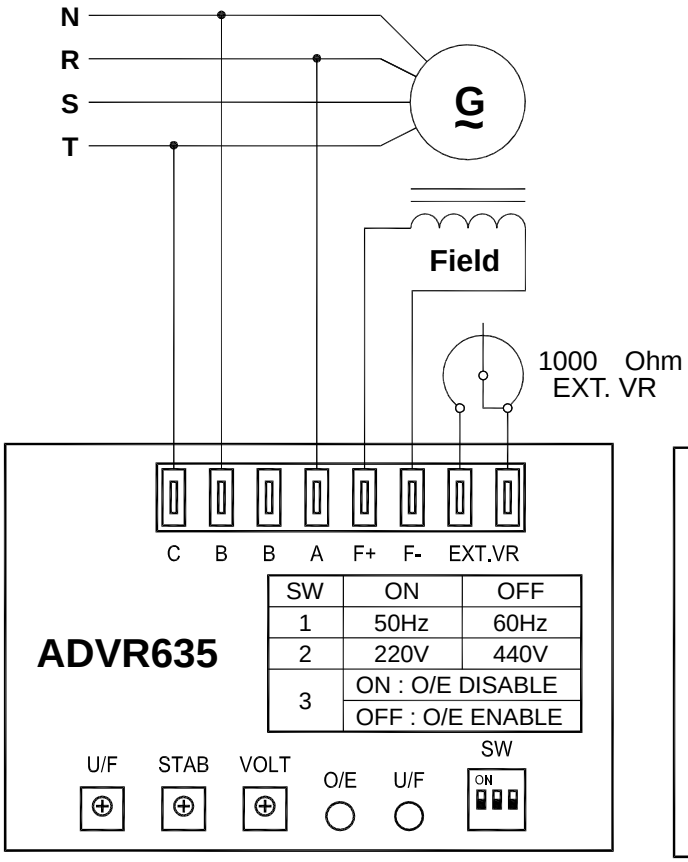


Fig 6 380, 440, 480V sensing

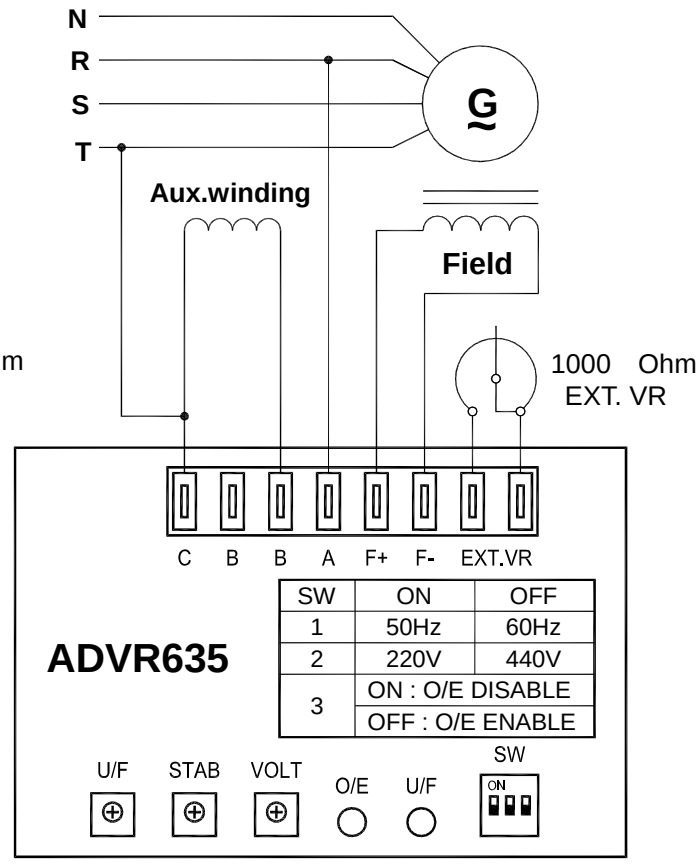


Fig. 7 Using Auxiliary Winding