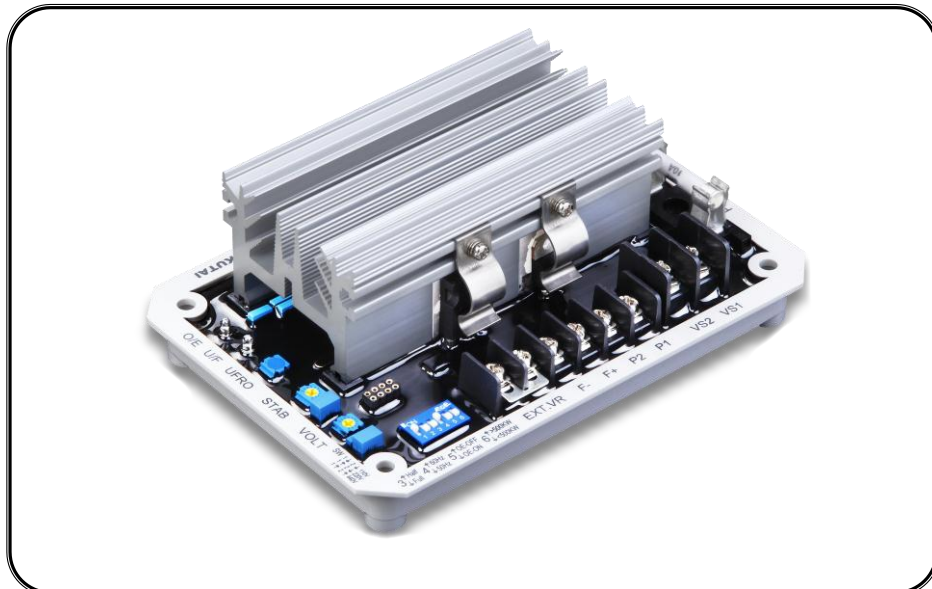


ADVR-07FH

Universal Hybrid Analog-Digital Voltage Regulator Operation Manual



Analog / Digital, Single-phase sensing, Excitation Current 7 Amp
Selectable Full-wave or Half-wave Rectifier Output
For use with self-excited generators.



KUTAI ELECTRONICS INDUSTRY CO., LTD.

TEL : +886-7-8121771

FAX : +886-7-8121775

Website : www.kutai.com.tw

Headquarters : No.3, Ln. 201, Qianfu St., Qianzhen Dist., Kaohsiung City 806037, Taiwan

ISO 9001
ETC

SECTION 1 : SPECIFICATION

Sensing Input (VS1, VS2) Average Readings

Voltage	90 – 540 Vac	1 phase 2 wire
	DIP switch setting	
Adjustment	90 – 130 Vac @ 110 Vac	
	175 – 270 Vac @ 220 Vac	
	350 – 540 Vac @ 440 Vac	
Frequency	50/60 Hz	DIP switch setting

Power Input (P1, P2)

Voltage	60 – 300 Vac	1 phase
Frequency	40 – 60 Hz	

External Voltage Adjustment (EXT.VR)

Max. +/- 10% @ 1 KΩ 1 watt potentiometer

Build Up Voltage

Residual voltage at power input > 5 Vac @ 25 Hz

Soft Start Ramp Time

3 seconds +/- 10%

Voltage Regulation

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

Response Time

Less than 20 ms

EMI

Built-in electromagnetic interference filter

Static Power Dissipation

Max. 4 watts

Under Frequency Protection (Factory Presets)

50 Hz system knee point presets at 45 Hz

60 Hz system knee point presets at 55 Hz

Voltage Thermal Drift

Less than 3% from -40 to +70 °C

Under-Frequency Knee Point Thermal Drift

Less than +/- 0.1 Hz from -40 to +70 °C

Environment

Operating Temperature -40 to +70 °C

Storage Temperature -40 to +85 °C

Relative Humidity Max. 95%

Vibration 5.5Gs @ 60 Hz

Dimensions

162.0 (L) x 112.0 (W) x 59.0 (H) mm

6.38 (L) x 4.41 (W) x 2.32 (H) inch

Weight

640 g +/- 2%

1.41 lb +/- 2%

Excitation Output, Resistance, O/E Voltage Protection and DIP SW Setting

	DIP SW 3	Power Input	Excitation Output (F+ · F-) *1	Exciter resistance	O/E Voltage Protection *2
Half Wave	ON	110 Vac	Continuous 31 Vdc 7A Max. 45 Vdc 10A 10 Sec	Min.4.5 Ohm, Max.100 Ohm	Excitation Voltage 43V +/-10 %
		220 Vac	Continuous 63 Vdc 7A Max. 90 Vdc 10A 10 Sec	Min.9 Ohm, Max.100 Ohm	Excitation Voltage 85V +/-10 %
Full Wave	OFF	110 Vac	Continuous 63 Vdc 7A Max. 90 Vdc 10A 10 Sec	Min.9 Ohm, Max.100 Ohm	Excitation Voltage 85V +/-10 %
		220 Vac	Continuous 125 Vdc 7A Max. 180 Vdc 10A 10 Sec	Min.18 Ohm, Max.100 Ohm	Excitation Voltage 170V +/-10 %

*1 Fuse specification 6.3 x 32 mm 10A Fast Blow type.

*2 Excitation output will be turned off in 10 seconds time delay, Inverse-time curve. This function can be turned OFF

SECTION 2 : EXTERNAL APPEARANCE / DIMENSIONS / INSTALLATION DRAWING

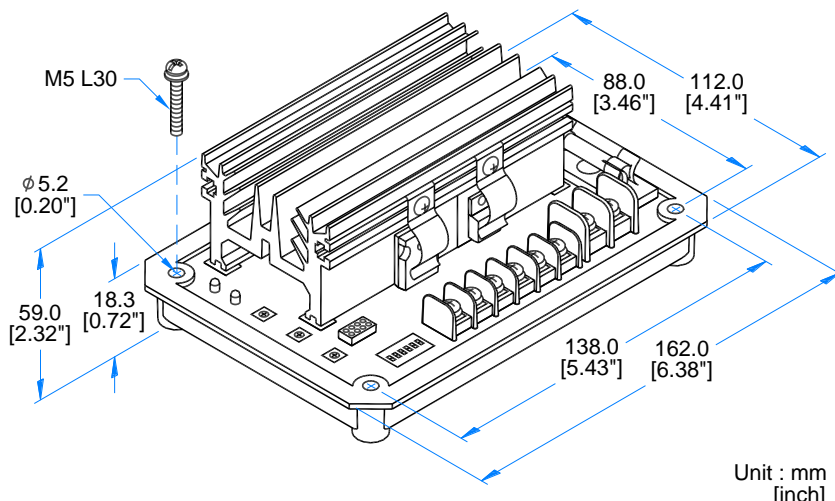


Figure 1 Outline Drawing

ATTENTION!!

1. AVR can be mounted directly on the engine, genset or any position that will not affect operation. Please see Figure 1 for dimension.
2. Secure all wiring connection. Do not install AVR at a place with high vibrations to prevent loose connections. For safety do not touch the heat sink while in operation.

SECTION 3 : DIP SWITCH SETTING & VR ADJUSTMENTS

O/E : Over Excitation Indicator

When excitation output voltage is greater than setting value, the O/E LED will illuminate.

If SW5 O/E Protection setting is OFF, the excitation output will be turned off in 10 seconds time delay (the higher percentage in exceed voltage, the shorter time in turn off)

U/F LED : Under Frequency Indicator

Illuminated when U/F protection active

UFRO : Under Frequency Roll Off Protection

Frequency system set by DIP SW4
50 Hz system factory preset at 45 Hz
60 Hz system factory preset at 55 Hz

STAB : Stability Adjustment

Under no-load operation, slowly adjust the STAB VR counterclockwise until the voltage is unstable, and then adjust it clockwise for one small scale (about 10 degree angle) until voltage is stable.

Generator respond speed can set by DIP SW6. Generator with larger capacity has slower respond speed

VOLT : Voltage Adjustment

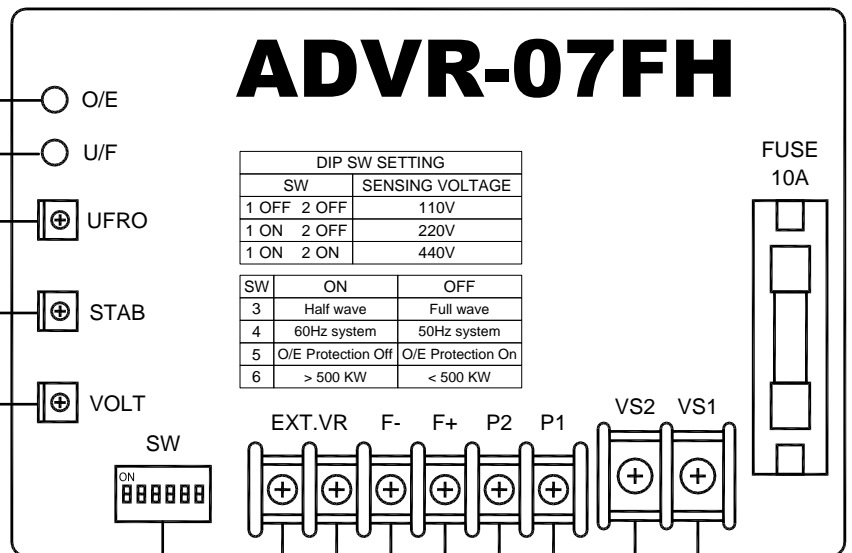
Voltage set by DIP SW1 & SW2
110V : 90 to 130V adjustable
220V : 175 to 270V adjustable
440V : 350 to 540V adjustable

ADVR-07FH

DIP SW SETTING		
SW	SENSING VOLTAGE	
1 OFF 2 OFF	110V	
1 ON 2 OFF	220V	
1 ON 2 ON	440V	

SW	ON	OFF
3	Half wave	Full wave
4	60Hz system	50Hz system
5	O/E Protection Off	O/E Protection On
6	> 500 KW	< 500 KW

FUSE
10A



DIP SW Setting

S1 · S2 : Sensing Input
Connect sensing voltage
Max. 600 Vac

P1 · P2 : Power Input

Connect working voltage
Max. 300 Vac
Wire diameter above
2.0mm² (14AWG)

EXT.VR : External Voltage Adjustment

Connect 1 K Ohms 1 Watt
Potentiometer Short EXT.VR
when external VR is not use

F+ · F- : Excitation Output

Connect generator field
Wire diameter above
2.0mm² (14AWG)

ATTENTION!!

- Before using a Megger or a Withstand Voltage Tester remove the wires connecting to the AVR to prevent high voltage damage to the regulator.
- Improper setting of Under Frequency Roll Off 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 UFRO setting unless necessary.
- The connection wire for VEXT.VR must be shielded wire, the grounding wire of shielded wire should be as close as possible to the AVR, it's suggested to directly lock it on AVR mounting screw.
- When power input is 110Vac and Generator excitation field voltage is lower than 20Vdc at full-load, set ADVR-07FH at Half-wave output.
If Generator excitation field voltage is greater than 20Vdc, then ADVR-07FH must set at Full-wave output.
When power input is 220Vac and Generator excitation field voltage is lower than 45V at full-load, set ADVR-07FH at Half-wave output.
If Generator excitation field voltage is greater than 45V, then ADVR-07FH must set at Full-wave output.
If Generator needed Full-wave output but ADVR-07FH was set at Half-wave, it may cause voltage drop in huge range or voltage cannot resume when generator is loaded.
If Generator needed Half-wave output but ADVR-07FH was set at Full-wave, it may cause Generator voltage unstable.
- Do not change DIP SW setting when Generator is running to avoid damage or injury.

※ Use only the replacement fuses specified in this user manual.

※ Appearance and specifications of products are subject to change for improvement without prior notice.

SECTION 4 : WIRING CONNECTIONS

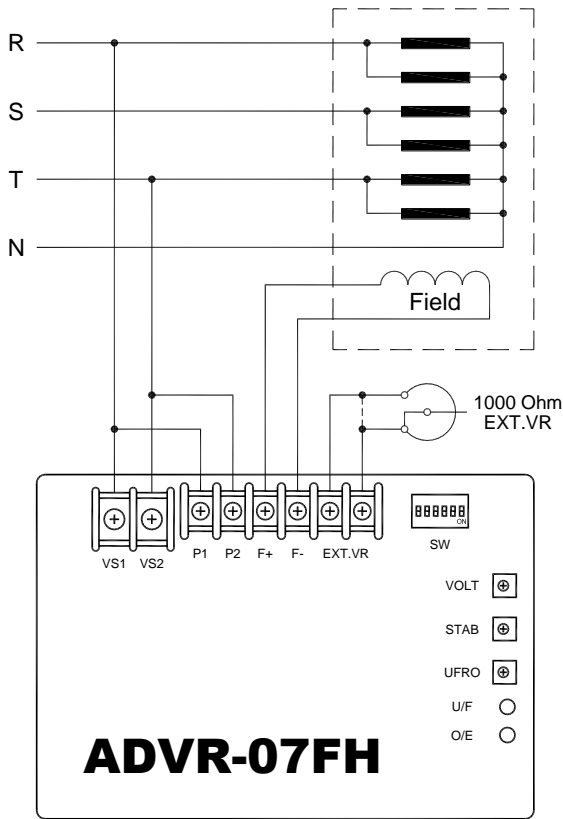


Figure 3 110/220 Vac

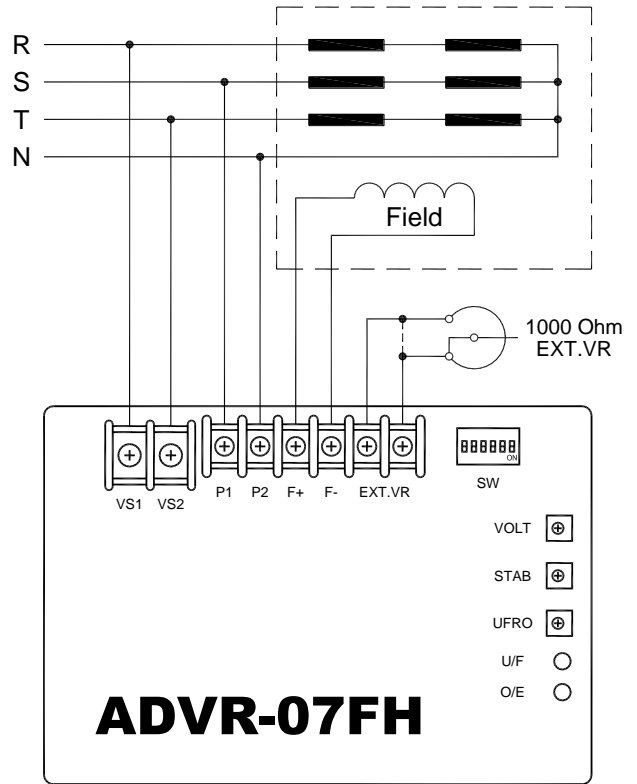


Figure 4 220/380/440 Vac

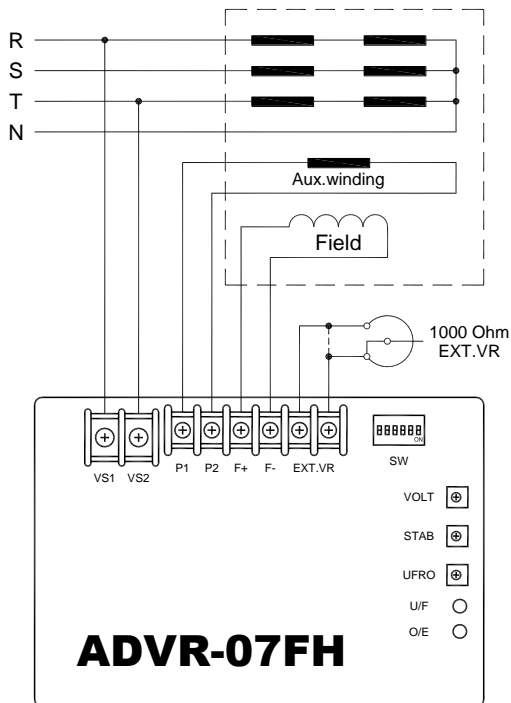


Figure 5 Auxiliary Winding

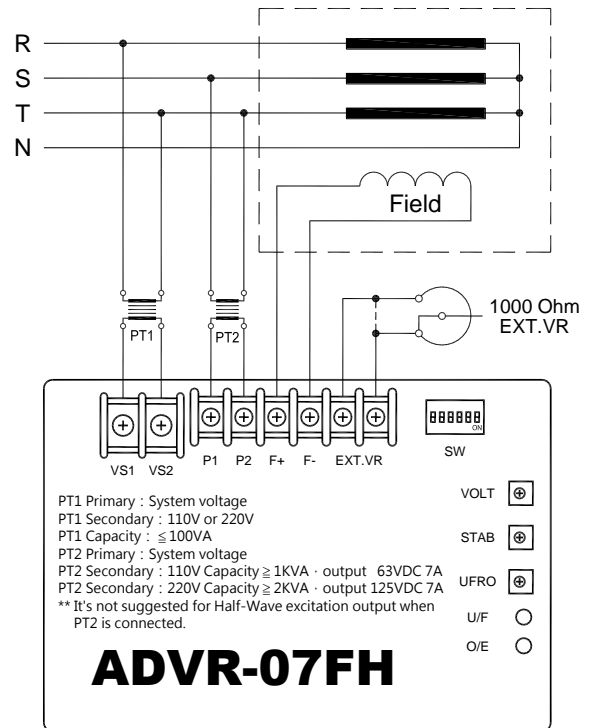


Figure 6 Medium/High voltage generator