# ADVR-2200M

***New Type Hybrid Analog/Digital Voltage Regulator, built to substitute some Digital Regulators used with Marathon* Generators With PMG.***
***Easy to Set-Up and Program***


***Installation Manual***

Mounting Plate included

# 1. SPECIFICATION

**Sensing Input E1, E2, E3**

Voltage 220 ~ 600VAC, 60Hz
DIP Switch SW1, 2 Selectable
175 ~ 280VAC @ 220VAC
330 ~ 490VAC @ 380/480VAC
500 ~ 660VAC @ 600VAC

Frequency Single or 3 phase Input
DIP Switch SW3 Selectable

**Power Input P1 & P2**

**Input**

Voltage 30 ~ 260VAC, 60Hz
Single phase

**Output**

Voltage 85VDC @ 110VAC input
170VDC @ 220VAC input

Current Continuous 5A Max.
Intermittent 10A for 60 sec

**Voltage Regulation**

< ± 0.5% ( with 4% engine governing )

**Voltage Build-up**

Residual voltage at AVR terminal > 5 VAC @ 25Hz

**Thermal Drift**

0.45% per ˚C change in AVR ambient

**External Volts Adjustment**

5% with 500ohm 1 watt trimmer
10% with 1000ohm 1 watt trimmer

**Excitation Resistance**

> 9 ohm

**Max. Power Dissipation**

12 watt

**Current Compensation**

1 or 5A > 0.2VA (DIP Switch SW3 Selectable)

**(C1,C2)**

Max. ±7% @ P.F ±0.7

**Analogue Voltage Input**

Un 0 ~ 15% @ 0 ~ 10VDC or 0 ~ ±5VDC

**Frequency Knee Point**

60Hz Factory setting is 57 Hz
50Hz Factory setting is 47 Hz

**Response Time**

<1 Cycle

**Dimensions**

150mm L * 135mm W * 55.5mm H

**Weight**

470g ± 2%

# 2. FIGURE AND SIZE

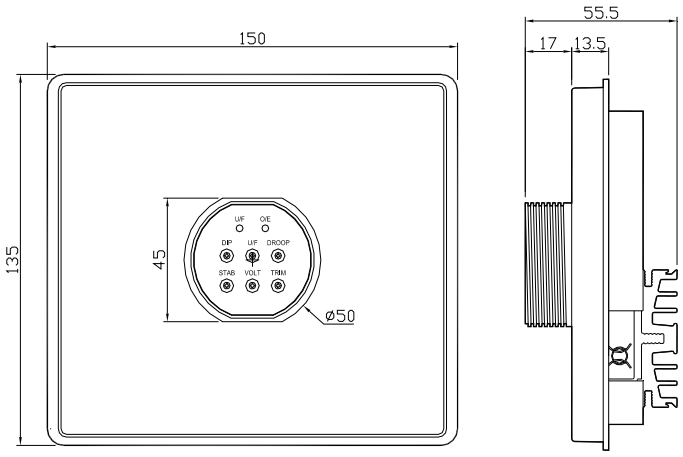


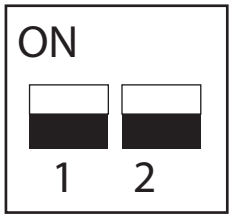

Figure 1 Outline Drawing

**ATTENTION**

1. AVR can be mounted directly on the engine, genset, switchgear, control panel, or any position that will not affects operation. For dimension reference, see Figure 1.
2. 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.
3. Fuse Specification：6.3A / 250V Slow Blow Type
4. Terminal："Fast-On" terminals 6.35mm (1/4 inch).

# DIP SW Programming

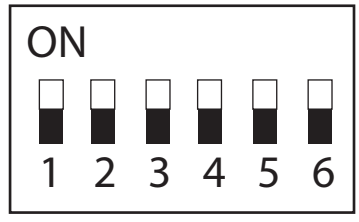
## SW1




| | |
|---|---|
| 1.OFF 2.OFF | 208 to 240V |
| 1.OFF 2.ON | 380 to 480V |
| 1.ON 2.ON | 600V |

SW1 & SW2 Sets the Generators Sensing Voltage

## SW2




| | |
|---|---|
| 4.OFF 5.OFF | <90KW |
| 4.ON 5.OFF | 90-500KW |
| 4.ON 5.ON | >500 KW |

*Generator Size*

| | OFF | ON |
|---|---|---|
| 1 | 1 PHASE | 3 PHASE |
| 2 | 60Hz | 50Hz |
| 3 | O/E PROTECT ON | O/E PROTECT OFF |
| 6 | CT 1A | CT 5A |

SW1 -Set Sensing for 1 Phase or 3 Phase

SW2 - Set Generator Frequency

SW3 - Set Over Excitation Protection ON or OFF

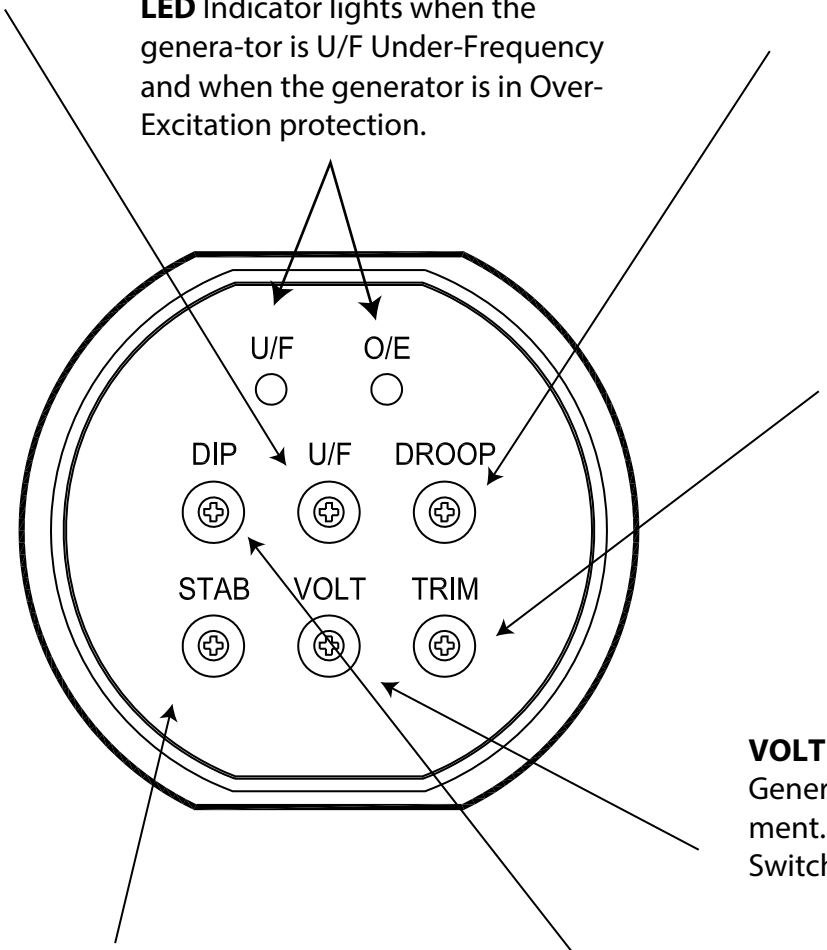
SW4 and SW5 - Sets Generator Size

SW6 - Sets Size of Droop CT

# Adjustments

**U/F** Under Frequency Protection Adjustment When generator RPM falls below the knee point, the under frequency protection circuit will activate and the voltage and frequency begin to decrease in linear descend.
Select frequency 60 or 50Hz according to the genera-tor in use.

**LED** Indicator lights when the genera-tor is U/F Under-Frequency and when the generator is in Over-Excitation protection.




**DROOP** Droop Adjustment
When paralleling, the AVR increase or decrease its voltage output, when phase current leads or lag the voltage. The increase and decrease range can be preset by the DROOP adjustment.

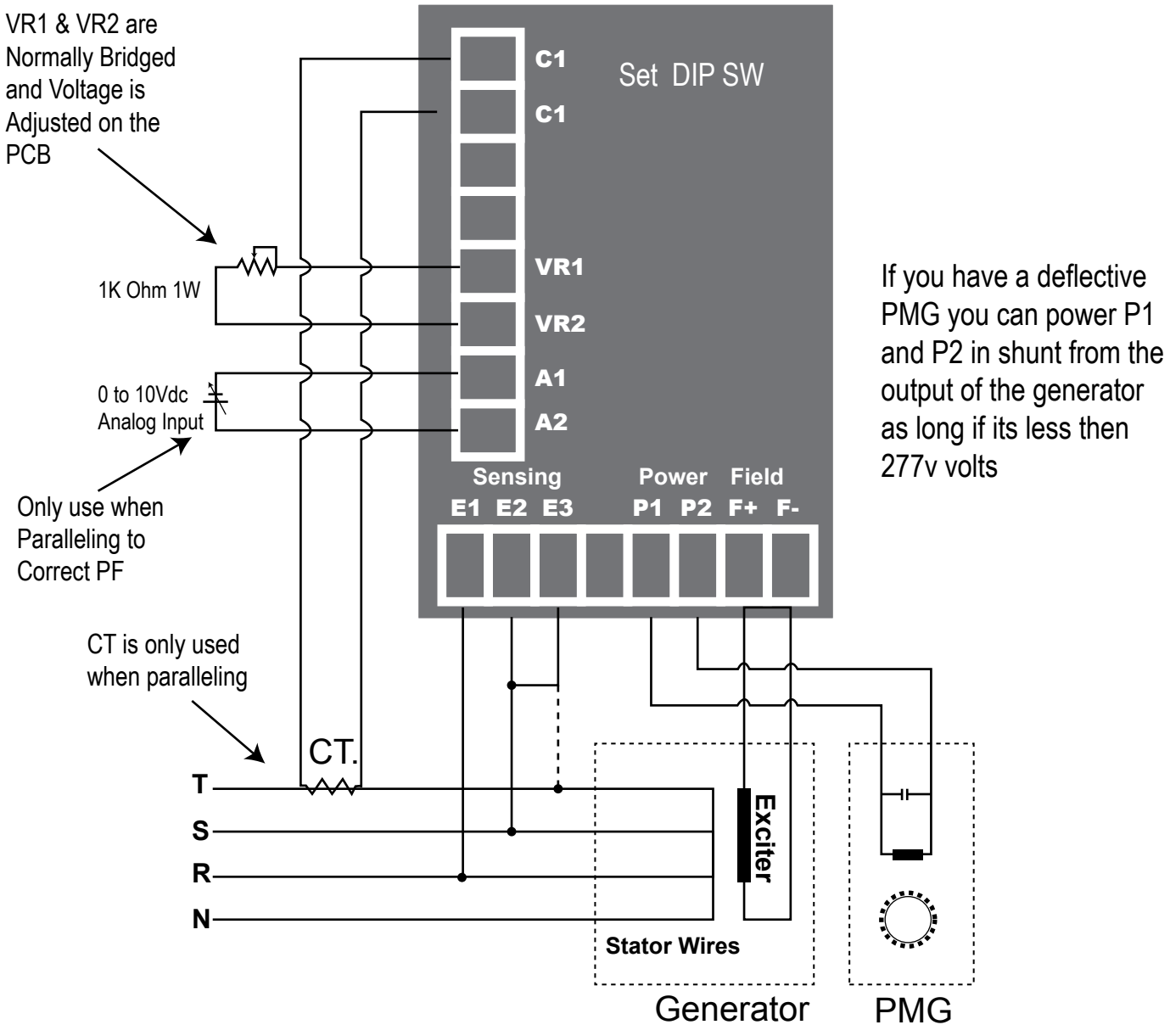
**TRIM** Trim Adjustment
When terminal A1 and A2 are biased with a DC voltage (0~10V), the TRIM is then used to adjust the influence this DC has on the output voltage of the AVR. If the TRIM (POT) is adjusted fully counter-clockwise, any bias voltage will not cause any influence. On the contrary if the TRIM is adjusted fully clockwise, then any signal will produce a maximum 10% effect.

**VOLT** Voltage Adjustment
Generator rated output voltage adjust-ment. Must be in accordance with the DIP Switch SW1-1 & 2 voltage range setting

**STAB** Stability Adjustment
Correct stability adjustment must be conducted while the generator is operating without load. First adjust the STAB potentiometer (POT) clockwise until the voltage becomes unstable, and then slightly adjust it anti-clockwise (About1/5 turn). When the voltage just reaches the critical point (Knee point) of stabilization, where the voltage is stable yet very close to becoming unstable.

**DIP** Adjustment
The DIP adjustment allows some control over the generator voltage dip when applying load. It is used, when the generator uses a turbo-charger that sometimes lags the load and briefly operates below the UFRO knee point, (LED ON). With the DIP pot set CCW, the generator voltage characteristics will follow the normal V/Hz line as the speed falls below normal. Turning the DIP potentiometer CW increases the V/Hz slope, providing a greater voltage dip and aiding engine recovery. The DIP potentiometer can be set at any position to suit any engine type.

# Wiring Connections




| | |
|---|---|
| Sensing Voltage can be set from 200 too 600 Volts Program SW 1 1&2 correctlly.<br>.<br>For single phase sensing bridge E2 & E3 and move SW2-1 to OFF | ATTENTION<br>The AC voltages recorded by the AVR are average values.<br>External VR: 500 ohms 1 Watt gives 5% adjustment range<br>External VR: 1K ohms 1 Watt gives 10% adjustment range |