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 ~ 515VAC @ 380/440VAC
  - 420 ~ 660VAC @ 480/600VAC
- 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 affect 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

Programming

**SW1 & SW2** Sets the Generators Sensing Voltage

**SW1**
- 1.OFF 2.OFF 220V
- 1.OFF 2.ON 380V
- 1.ON 2.ON 480V

**SW2**
- 4.OFF 5.OFF <90KW
- 4.ON 5.OFF 90-500KW
- 4.ON 5.ON >500KW

**SW1**
- OFF
- ON
- 1 1 PHASE
- 3 PHASE
- 2 60Hz
- 50Hz
- 3 O/E PROTECT ON
- O/E PROTECT OFF
- 6 CT 1A
- CT 5A

**SW2**
- SW1 - Set Sensing for 1 Phase or 3 Phase
- SW2 - Set Generator Frequency
- SW3 - Set Over Excitation Protection ON or OFF
- SW4 & SW5 - Sets Generator Size
- SW6 - Sets Size of Droop CT

**ADVR-2200M-60Hz**
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 generator in use.

**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.

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

**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 (About 1/5 turn). When the voltage just reaches the critical point (Knee point) of stabilization, where the voltage is stable yet very close to becoming unstable.

**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 adjustment. Must be in accordance with the DIP Switch SW1-1 & 2 voltage range setting

**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

VR1 & VR2 are Normally Bridged and Voltage is Adjusted on the PCB

1K Ohm 1W

0 to 10Vdc Analog Input

Only use when Paralleling to Correct PF

CT is only used when paralleling

ATTENTION
The AC voltages recorded by the AVR are average values.
External VR: 500 ohms 1 Watt gives 5% adjustment range
External VR: 1K ohms 1 Watt gives 10% adjustment range

Sensing Voltage can be set from 200 too 600 Volts Program SW 1 1&2 correctly.

For single phase sensing bridge E2 & E3 and move SW2-1 to OFF

If you have a deflective PMG you can power P1 and P2 in shunt from the output of the generator as long if its less then 277v volts

ADVR-2200M-60Hz