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AVR Manual

AVR(AUTOMATIC VOLTAGE REGULATOR)

MODEL : 638

◈ Contents ◈

Engine, Regulator Products

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Notice

1. To use this product safely, please do understand operation manuals before use.
2. To prevent personal injury or equipment damage, matters that require attention must be followed.
3. The matters that require attention are "Warning" and "Caution", the meaning is as follows.

⚠ Warning	Incorrect use could cause injury or death.
⚠ Caution	Incorrect use could cause personal injury or equipment damage.

4. The symbols in operation manuals mean as follow

⚠	Be careful!, it could damage equipment.
⚡	Be careful!, it could cause electric shock.

5. Keep operation manuals close to the product.

⚠ Warning

1. Do not any wire works when the power is on or the main cable is operated. It could cause electrocution or fire.
2. Do not assemble even if the power is off. The charged current of inside equipment could cause electric shock.
3. Do not touch with a wet hand. It could cause electric shock.
4. Do not touch when wires are damaged. It could cause electric shock.
5. Do set up an earthing device to prevent electric shock.

⚠ Caution

1. Use rated power to prevent equipment damage or fire.
2. Keep foreign substances out to prevent short circuit or fire.
3. To prevent equipment damage or fire. connect a load appropriate to the input or output capacity.
4. Connecting a random wire could cause equipment damage or fire.
5. Incorrect use could cause personal injury or the product and connected products damage. Only qualified technicians and operators should use this device.
6. A test using high voltage such as a voltage withstand test or an insulation resistance test could cause equipment damage. So separate them before testing.
7. Use a rated fuse and wire to prevent fire. .
8. This device is attached to a generator that vibrates a lot. So fasten it tight
9. Check loose part before installation.

1. Introduction

AVR 638 is a voltage regulator that has an over voltage protection relay for generators.

2. Feature

2.1. Available for low exciter field resistance
2.2. Equipped low-frequency protector.
2.3. The output is cut off when AVR's output voltage goes over
2.4. Equipped overvoltage input detecting circuit
2.5. Excited early(When residual voltage is left)
2.6. Small and compact size (W160 * D95 * H37 mm)
2.7. Less trouble (no relay and transformer)
2.8. Durable under dust, damp and vibration (SILICON MOLDING)

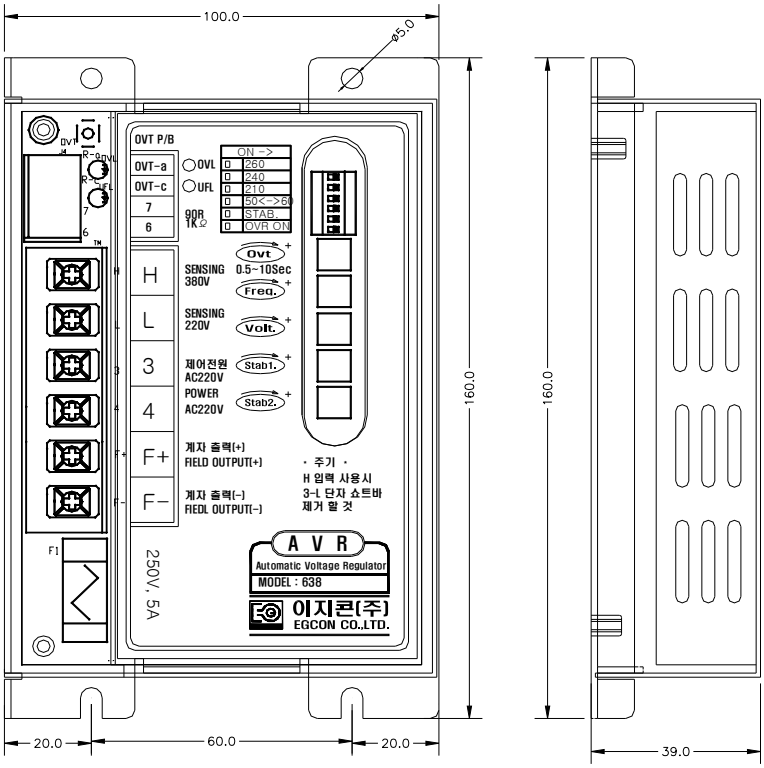
3. Specification

3.1. Maximum continuous output : 63 Vdc 5 Adc (315 W)
3.2. Output for 1min: 107 Vdc 8.5 Adc (910 W)
3.3. Exciter field resistance: Min 3 Ω Max 100 Ω
3.4. AC POWER input(terminal 3.4): Single phase 190-277 Vac ±10, 60 Hz, 650 VA
3.5. External voltage control resistor
3.6. Voltage build-up: raised by residual voltage(min 3 Vac) of the generator
3.7. Over excitation break: When exciter field voltage rises over 85 ± 5 Vdc for a while or just over 85 ± 5 Vdc. AVR stops. To return to normal, the engine should be stopped or the input should be shut off for 20 secs.
3.8. Over input voltage detector : When detecting the voltage supplying to terminal 3, 4, if they are over set point, OVT-C, OVT-E terminals open after standby time. (Contacting to signal)
3.9. weight: 520g
3.10. Attaching interval: W150 * D60 *5 mm , D-4Holes

4. Working condition

4.1. Operating temperature: -10° ~ 40°C
4.2. Storage temperature : -24° ~ 45°C
4.3. Relative humidity: 0% ~ 90% with no condensation
4.4. Vibration : Amplitude-0.35mm, Frequency-0~30Hz
4.5. Max operating altitude: 3,000m
4.6. Max storage altitude: 4,500m
4.7. Max transporting altitude: 10,668m

5. Structure



6. Variable resistance

6.1. OVT : Over input voltage standby time (0.5 ~10 Secs)

6.2. Freq : Low-frequency protector resistance (preset in a factory)

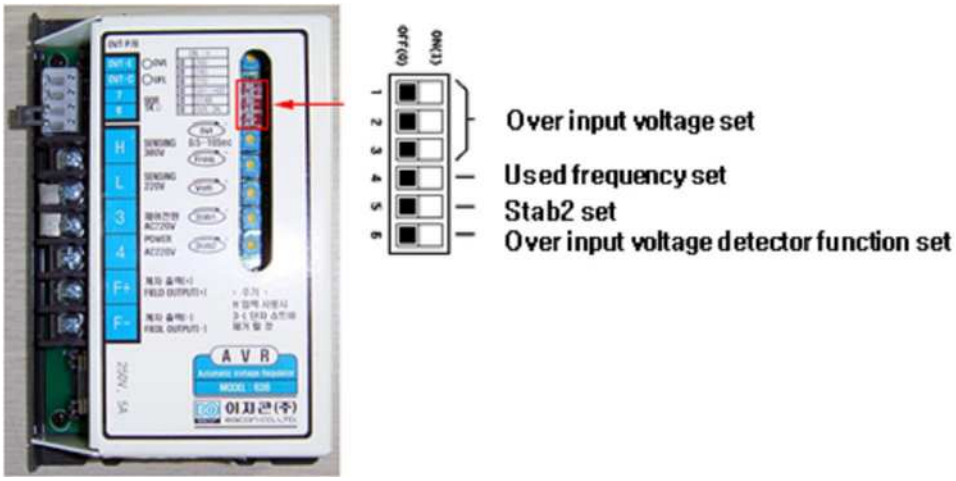
6.3. Volt : Variable resistance for setting voltage

6.4. Stab1 : Answering speed regulation resistance

6.5. Stab2 : Answering speed regulation resistance for under 20KW generators (When stab switch is on)

7. Switch

7.1. OVT P/B : Test button for detecting over input voltage



7.2. DIP S/W

Order	Name	Function
1	260	Set to 260V for detecting over input voltage
2	240	Set to 240V for detecting over input voltage
3	210	Set to 210V for detecting over input voltage
4	50 <-> 60	Working frequency setting
5	STAB2.	ON when using under 20KW generators
6	OVR ON	ON when using over input voltage detector function

8. Connection

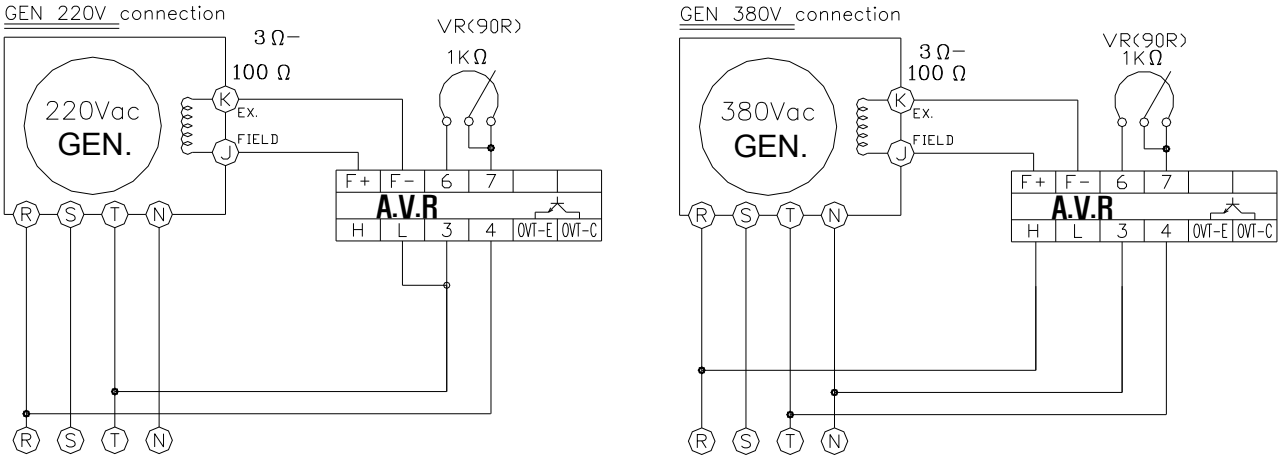
8.1. After checking the AVR is suitable with generator exciter capacity, connect wires like below [Drawing1].

8.2. When using the external voltage control resistor, connect it to the terminal 6,7. Otherwise block terminal 6, 7.

8.3. Connect exciter field to the terminal F+, F- . Conform with their electrode.

8.4. Supply 220 Vac to the terminal3, 4. ➡To detect the generator's line voltage, connect it to the terminal6, 7. It is better not using neutral line.

8.5. When using high voltage (380 Vac), use the terminal H. Be sure to use the N for the terminal3.



[Drawing 1]

⚠ Warning When connecting high voltage (380 Vac), connecting the neutral line(the N) to the terminal4 cause overvoltage and equipment damage. Be sure connect the neutral line(the N) to the terminal3.

9. Test

9.1. .Start the engine generator and drive at rated speed.

9.2. Check built up voltage.

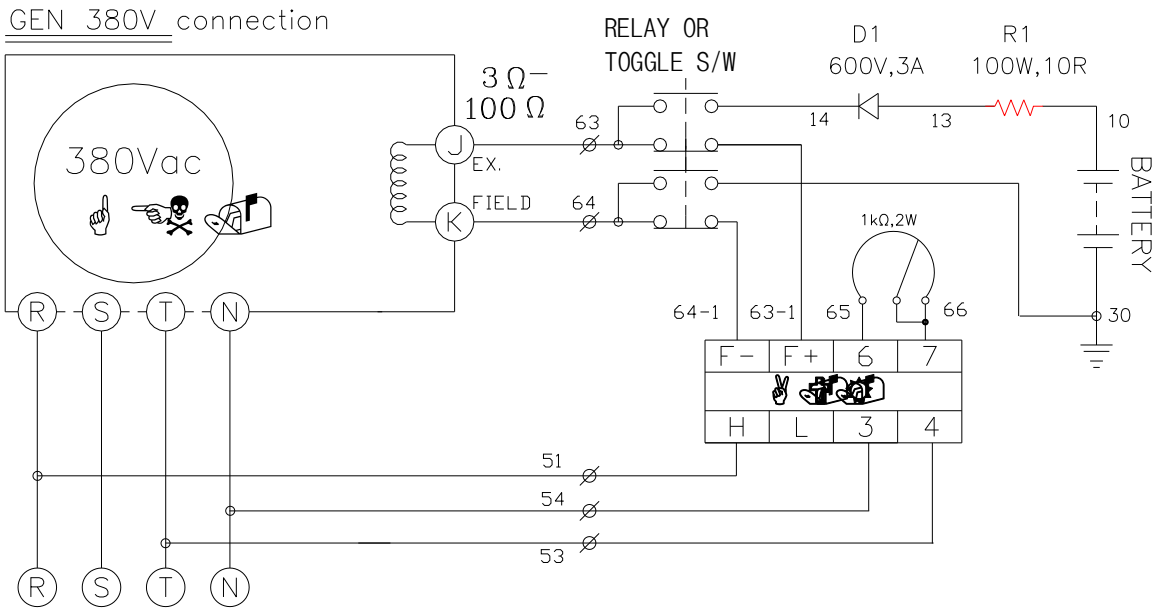
9.3. If the voltage is not built up by residual voltage at generator, disconnect AVR's F+ and F-wires and connect them to DC12V battary's electrode. Check the generator voltage is built up.

9.4. If generator residual voltage is lower than 5 Vac, set an early exciter circuit like below [Drawing2].

9.5. Adjust voltage to rated voltage. (VOLT variable resistance)

9.6. If voltage is not stable, adjust STAB. resistance to stabilize. (STAB1 variable resistance)

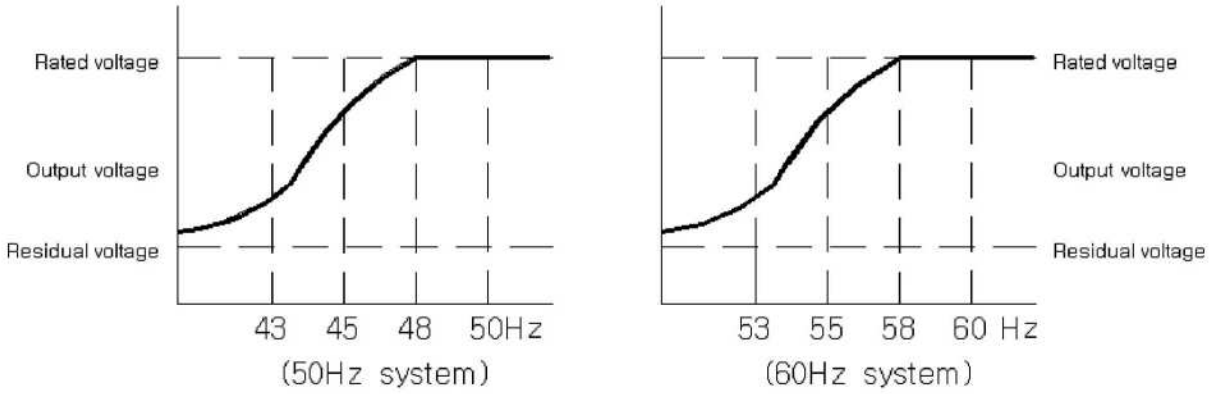
9.7. To set generator frequency, select a frequency setting switch. When generator frequency falls, it drops generator's output voltage so that prevents demage of generator and AVR. (low-frequency protector function)



[Drawing2]

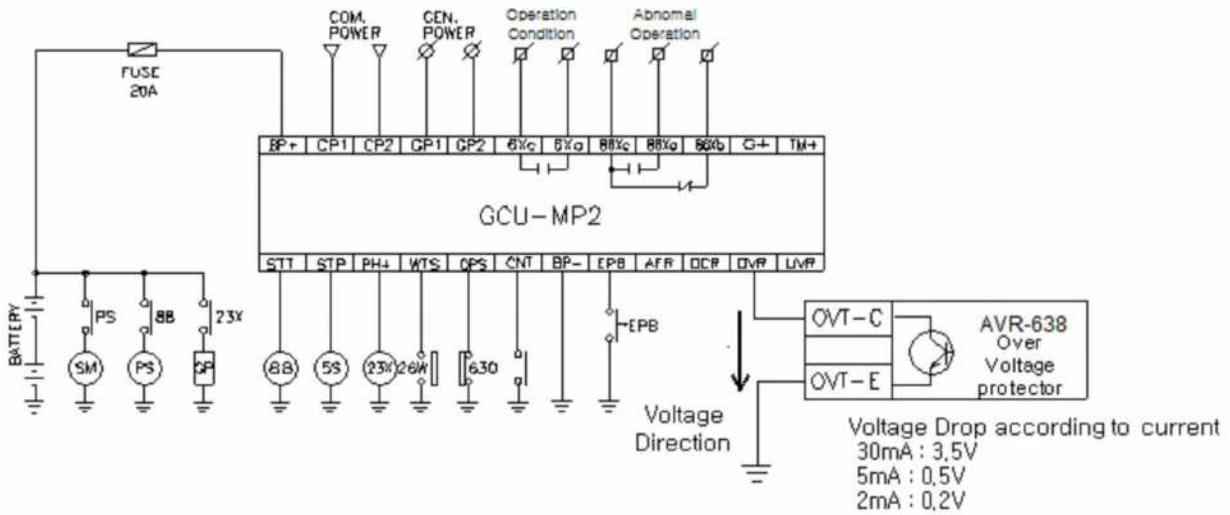
Caution Set early excitation short. When 24V battery is connected to the field without a R1 resistance and D1 diode, that could cause overvoltage.

10. Frequency-output voltage characteristic curve according to frequency system



[Frequency-output voltage characteristic curve]

11. OVT-c, OVT-a sample drawing



12. Trouble causes and solutions.

Symptom	Cause	Solution
Generator output voltage is below 30Vac. (Line voltage)	No residual voltage in the generator	Set an early exciter circuit with reference [Drawing2]
	AVR fuse is burnt out	Replace the fuse with a same capacity one.
	Disconnected wire or incorrect connection	Correct wiring work referring circuit diagram.
Generator output voltage is over 50Vac and not adjustable.(Line Voltage)	Terminal6 and 7 are not connected.	If external variable resistance is not connected, connect the terminal6 to terminal7 with a short bar
	Generator speed is not sufficient so frequency is lower than standard.(UFL LED lighting)	Control generator speed to make out rated frequency.
	Incorrect wire connection	Correct wiring work with the circuit diagram.
Generator output voltage is over 400V and not adjustable.(Line Voltage)	When inputting 380V in terminal H, the neutral line is connected with terminal4.	Connect the terminal H to the terminal 3 with a neutral line.
	Incorrect wire connection	Correct wiring work with the circuit diagram.
OVR is not working	Relay is connected with OVT-a, OVT-c.	Output of OVT-a, OVT-c terminal is lower than 10mA so it is available for TTL. It is available only for a circuit which input resistance is higher than 1kΩ.
Hunting occurs.	Generator is below 20kW.	Switch the Stab2 on and adjust answering speed with Stab2 variable resistance.

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ENGINE, GENERATOR CONTROL ENTERPRISE

EGCON®

엔진, 발전기 제어 전문기업

PRODUCTS ITEM

- □ AVR / 자동전압조정기
- □ ABC / 자동밧데리충전기
- □ GCU / 발전기기제어장치
- □ ECU / 엔진제어장치
- □ ESD / 엔진속도검출기
- □ EPD / 엔진보호장치
- □ SCR / 동기검출기
- □ BCU / ACB 제어장치
- □ ACU / ATS 제어장치
- □ MPU / 속도검출센서
- □ GCP / 발전기 운전반
- □ ECP / 엔진 운전반
- □ ATS / ATS 운전반
- □ FGP / 별치형 운전반

AVR
MODEL : 635/631

ABC
MODEL : SMP

ABC
MODEL : SMF

ECU
MODEL : DG1

GCU
MODEL : MP2

DMM
MODEL : 961

ACU
MODEL : MP3

ETS
MODEL : Y, B TYPE

이지콘(주)

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