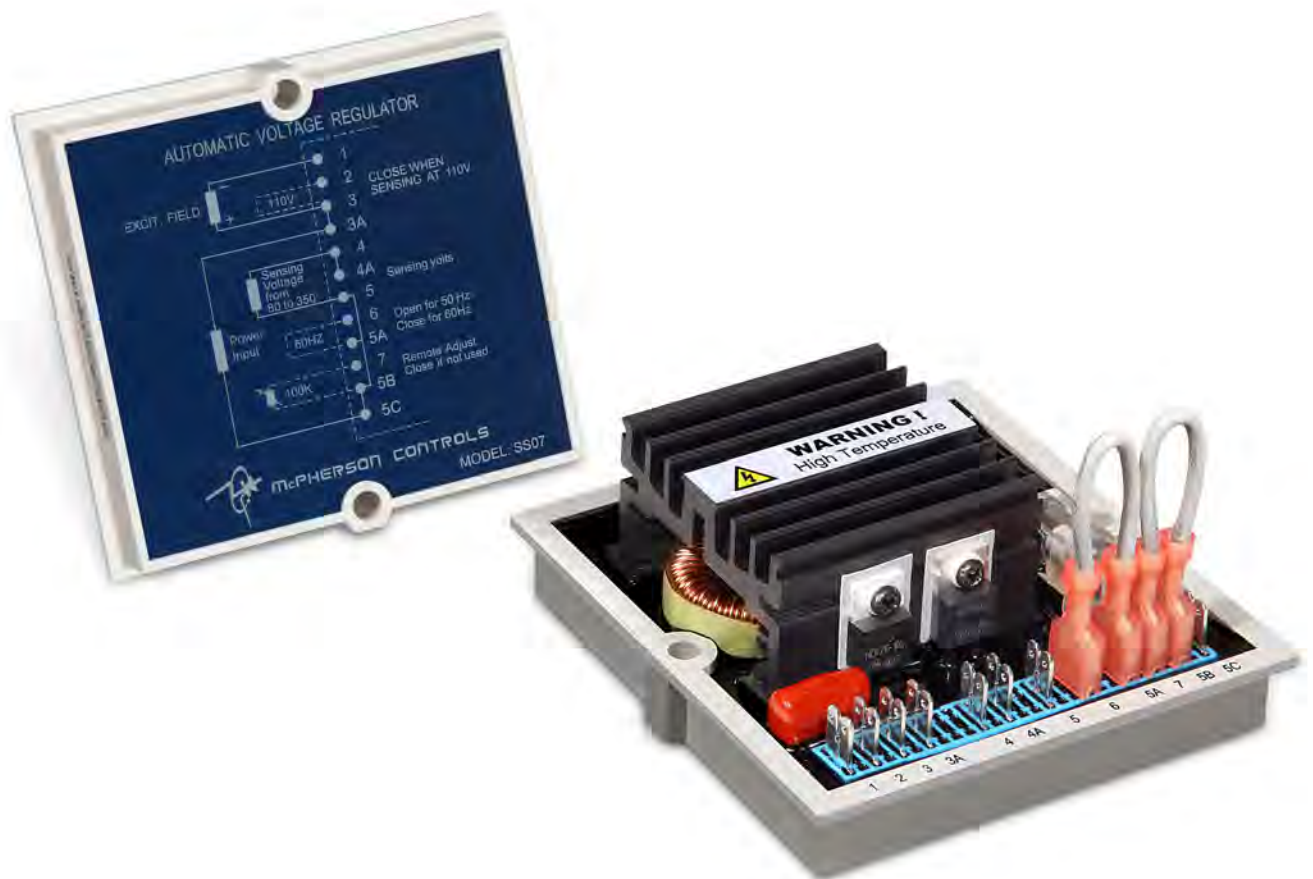


SS07

Operation Manual Generator Automatic Voltage Regulator



Suitable for Single or Three Phase Self Excited Brushless Generator

Compatible replacement for Mecc Alte SR-7

**** Not a genuine Mecc Alte product.***

1. SUMMARY

SS07 is a self excited Analogue Automatic Voltage Regulator. The sensing and power inputs are independent and accept power input from the auxiliary winding. It's wide voltage adjustment range fulfills any voltage adjustment requirements.

2. SPECIFICATION

Sensing Input 4, 5C

Voltage Range 80~350VAC 1 phase 50/60Hz

Power Input 3A, 5

Voltage 80 ~ 270V 1 phase 50/60Hz

Output F+, F-

Voltage Max. 63 VDC @ 220VAC

Current Continuous 6A

Max. Intermittent 7A for 10 sec

Exciter Field DC Resistance

10 ~ 100 Ohm

Voltage Regulation

< ±1% (with 4% engine governing)

Voltage Build-up

Residual voltage at AVR terminal > 5 VAC, 25Hz

External VR

100K ohm 1/2 watt ± 7%

The SS07 has adjustable under frequency and over excitation voltage protection, to avoid over loading and over excitation.

Both protections are indicated by two LEDs. Also this AVR has a built in EMI filter to prevent interference to the generator

Over Excitation Protection

40~Max VDC @ 0.3~20sec

Under Frequency Protection

Adjustable range 42 ~ 60 Hz

EMI Suppression

Internal electromagnetic interference filtering

Unit Power Dissipation

Max. 5 watt

Operating temperature

-40 ~ 65 °C

Storage temperature

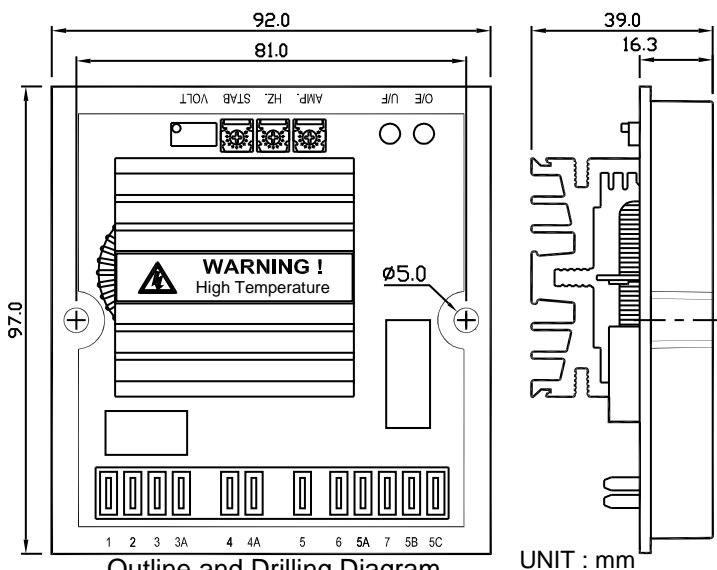
-40 ~ 80 °C

Dimensions

97mm L * 92mm W * 39mm H

Weight

275g ± 2%



Outline and Drilling Diagram
Figure 1

MECHANICAL SPECIFICATION

1. AVR can be mounted directly on the engine, genset, switchgear, control panel, or any position that will not affect operation. For dimension reference, please see Figure 1.
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.
3. Fuse specification : 20mm 6.3A / 250V.

3. WIRING / ADJUSTMENTS

3.1 Field Excitation Wiring 「3 F+, 1 F-」

Connect AVR terminal “3” to field “+”, and terminal “1” to the field “-”.

NOTE

The Exciter field resistance falls from 10 to 100 Ohm.

When resistance is less than 10 Ohm add additional resistance to the fields wattage to make the overall field resistance add up to 10 to 100 Ohm.

additional resistance to the field

3.2 Sensing / Power Input 「4, 5C」

Sensing input voltage is from 80 to 350VAC. If the generator voltage is greater than 350v connect sensing from N (Neutral) to line (see Fig.2).

3.3 Frequency Selection 「6, 5A」

Bridge terminals 6 & 5A for 60 Hz
Open terminals 6 & 5A for use in 50 Hz

3.4 External Voltage Adjustment VR 「7, 5B」

Connect a 100K Ohm 1/2W rheostat on terminals 7 & 5B to enable a 7% remote voltage adjustment

* bridged terminals 7 & 5B when the external voltage adjustment is not used

3.5 Power Input 「3A, 5」

Power input ranges from 80 to 270VAC, use main winding or auxiliary winding.

3.6 VOLT. Voltage Adjustment

Adjust the generator voltage by rotating the “VOLT” potentiometer on the AVR. clockwise to increase voltage.

Voltage adjustment rate is less than 1% when PF equals 1 to 0.8 (PF 1 to 0.8) and frequency variation are within 6%.

3.7 STAB. Stability Adjustment

Adjust the “STAB” control slowly, this potentiometer changes the respond time of the generator. A sloppy

adjustment will cause sudden overly voltage variation under heavy load.

Use an Analogue type multi voltmeter when adjusting stability. Adjust the “STAB” potentiometer until the pointer on the voltmeter stops oscillating when changing load.

3.8 Circuit Protection

1 AMP. Over excitation protection (Overload protection)

Set the AMP Overload protection to the generators maximum excitation voltage (40~Max VDC). If over excitation occurs the AVR maintains a short time short circuit excitation gradually decreasing output to off. When activating the overload circuit the yellow LED turns on. Proportionally, the higher the over excitation the shorter the delay time becomes. You need to STOP the generator to reset the AVR.

NOTE

To disabled the Over Excitation protection, turn the AMP adjustment full clockwise.

3.9 Hz. Under Frequency Protection Adjustment

「Hz.」 Is used to set the under frequency protection knee point. When the generator frequency declines the generator voltage needs also to decline to prevent high excitation current from damaging the AVR or the exciter.

3.9.1 Adjustment procedure

1. Start generator and let it build up voltage.
2. Adjust engine frequency to the appropriate low frequency value.
3. Slowly adjust Hz. Potentiometer until the red LED turns on.
4. Then adjust the engine frequency until the LED turned off.

4. OPERATION PROCEDURE

4.1 Please confirm the following before starting the generator :

Starting Setting

1. Check if the AVR conforms to the Generator
2. Check wiring

3. Check frequency settings
4. Confirm the generator rated voltage with the AVR sensing input
5. Set "VOLT" adjustment CCW
Set "STAB" adjustment to center position
Set "AMP" adjustment fully CW

4.2 Starting Generator

1. Check all setting and wiring before starting.

ATTENTION

The AVR reading AC voltage are all average value.

- 2.- Start the genset and slowly adjust the "VOLT" pot to the rated voltage. If the generator becomes unstable, adjust the "STAB." pot until the oscillation stops. Over adjustment causes short oscillations when loads change.

SUGGESTION

Adjust the "STAB." control to the point where the oscillation occurs and then adjust the potentiometer CCW by 1/6

4. If voltage can not be adjusted or to the rated value, check to see if the generator frequency is low (Under frequency protection activated). If residual voltage is below 5VAC, then field flashing the genset to build up residual voltage.
5. Check is the generator and AVR are both under normal operation conditions.
6. Voltage regulation should be $\pm 1\%$ from no load or full load. If below $\pm 1\%$ check:
 - Generator under frequency (under knee point setting).
 - Severely deformed generator output wave form. Capacitive load (Leading Power Factor)
 - Check if the generator is working under over excitation voltage protection (Overload protection).

4.3 Field Flashing

When operating with the generator for the first time, the polarity -- residual magnetism may not be correct or the voltage to low. If the generator does not build-up after startup, shut down the prime mover and proceed with the following steps:

1. Stop the generator, disconnect AVR + and – field wires and apply a DC source (Not grounded) of not more than 12VDC, to generator F+ (Positive) and F– (Negative) in series with a limiting resistor of 3 to 5 ohms 20 watt.
2. Allow approximately 3 seconds before removing the dc source.
3. Start generator and measure residual voltage at generator leads 3A, 5. If voltage is greater than 5VAC carefully reconnect the AVR. But if less the 5VAC repeat field flashing procedure
4. If residual voltage is greater than 5VAC, but AVR still unable to build up voltage, replace with another AVR.

WARNING

Excessive field flashing may damage the AVR or generator excitation winding.

4.4 Maintenance

Keep the AVR surface clean and free from oil and moisture. All wires and connections must be tight and with no sign of oxidation or erosion.

ATTENTION

All voltage readings are to be taken with an average-reading voltmeter Meggers and high-potential test equipment must not be used. The use of such equipment will damage the AVR.

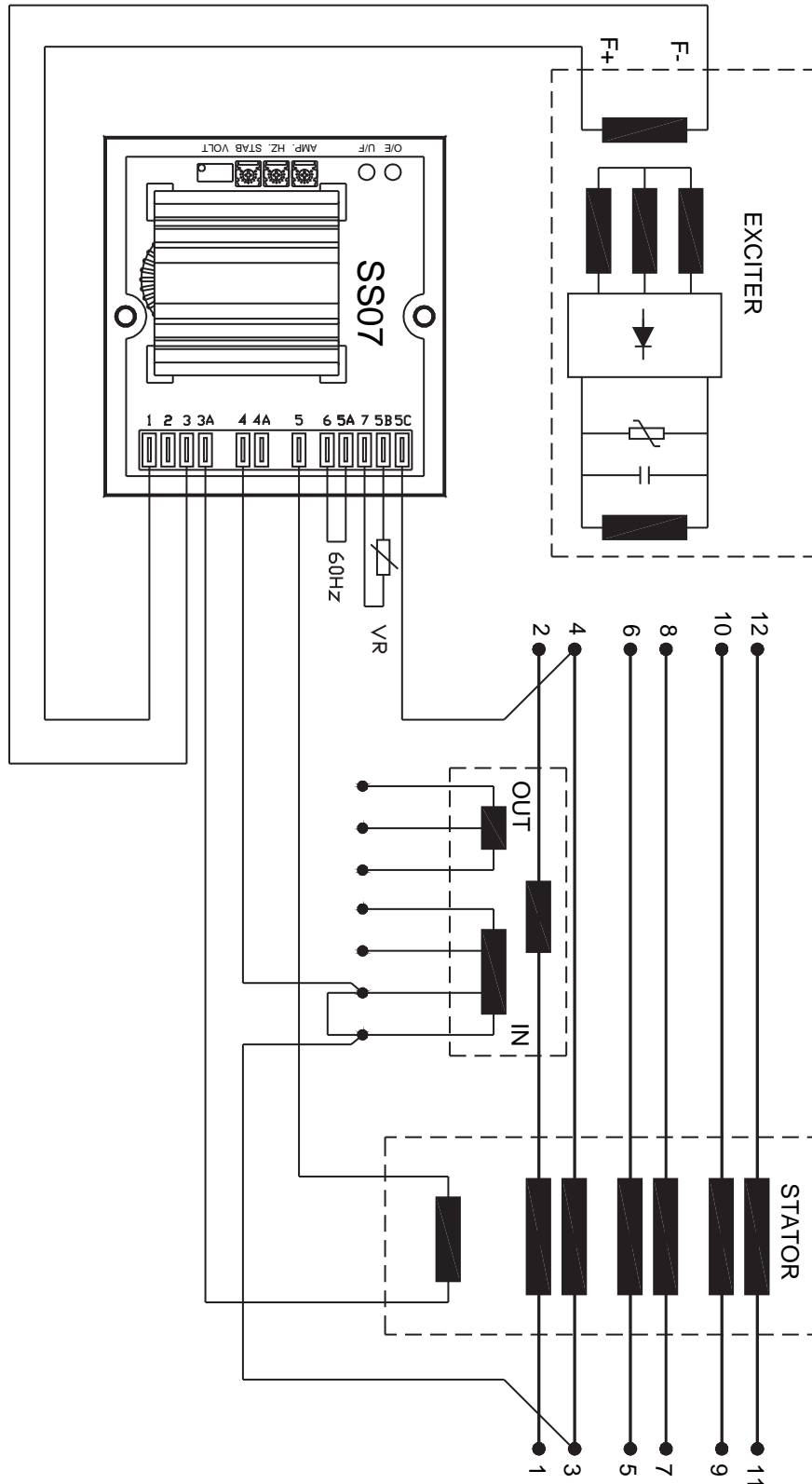
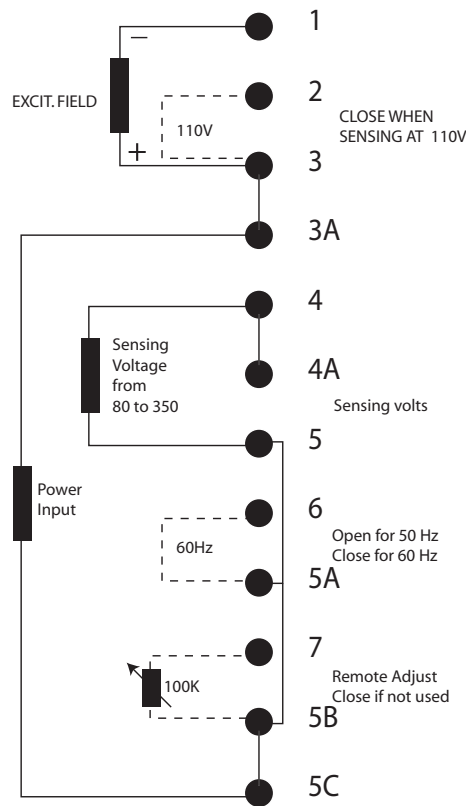


Figure 2 Diagram

Replace fuse only with original style fuse

Modification in performance or specification and appearance can be made without prior notice

This Regulator has many internal connections to make connecting easier. Note that terminals 2 and 3A are the same so is 5, 5A, 5B and 5C



SAE to Mecc Alte

T1=1
T2=5
T3=9
T4=2
T5=6
T6=10
T7=3
T8=7
T9=11
T10=4
T11=8
T12=12

Tricks Of The Trade

If you do not have an auxiliary winding or if the auxiliary windings are defective, you can power and do sensing from the same output lines of the generator. In this case, connect the sensing lines and power connections together. This is a "Shunt Connection". Remember do not go over 350 volts

