AUTOMATIC GENERATOR VOLTAGE REGULATOR

Model: SS15A3Phase
Operation Manual

1. GENERAL DESCRIPTION

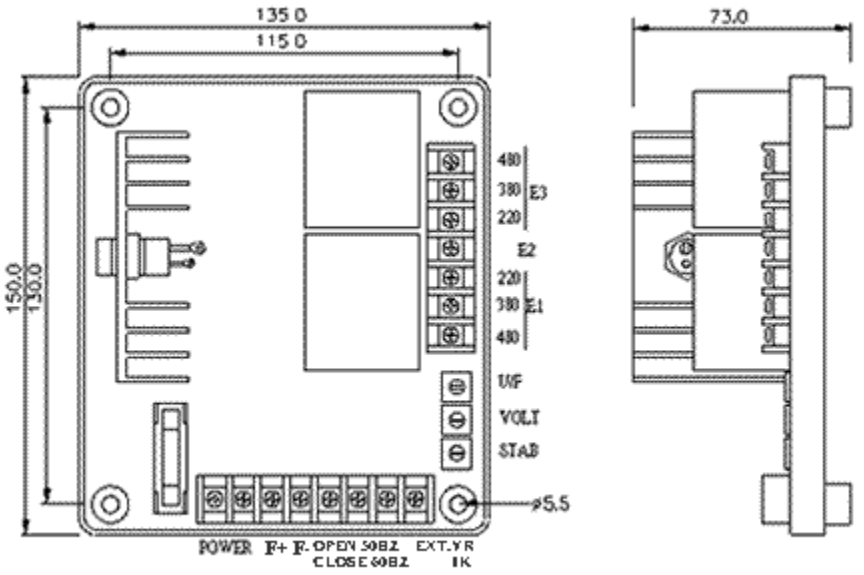
The SS15A3PHASE voltage regulator is solid state AVR module, with 3 Phase sensing for use in brushless generators.

2. Electrical Specification

Power Input	100~300VAC
Sensing Power	220V, 380V, 440/480V 3 phase
Output	Current-Continuous 16A dc Transient 20A dc for 30 second
Regulation	1%
Exciter field resistance	2.8 Ohm minimum at 45v max output
External Voltage Adjustment	15% with 1k Ohm potentiometer minimum 0.5 watt rated
Residual voltage	Over 5V at 25Hz residual voltage is requited for voltage build up
Under Frequency Protection:	On 50Hz operation- output voltage attenuated at approx.45Hz. On 60Hz operation- output voltage attenuated at approx.55Hz.
Operation Temperature:	- 40 Degree C to 60 Degree C
Storage Temperature:	- 60Degree C to 85Degree C
Size:	150 mm Long x 135 mm Wide x 75mm High
Weight:	800 grams
Voltage Soft Start function	

3.

4.



Outline Drawing
Figure 1

5.

6. NOTICE OF USE

3-1

The SS15A3PHASE can be mounted in any position, inside generator control panel, switchgear cabinets, etc. Avoid high temperatures, moisture, or severe vibration. See figure 1 for mounting dimensions.

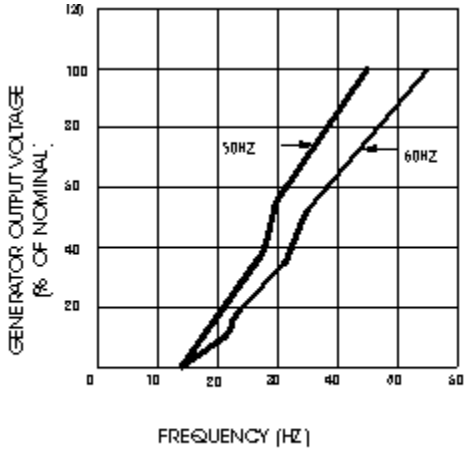
3-2

The SS15A3PHASE surface temperature can be over 60Degree C when in operations. DO not touch the heat sink.

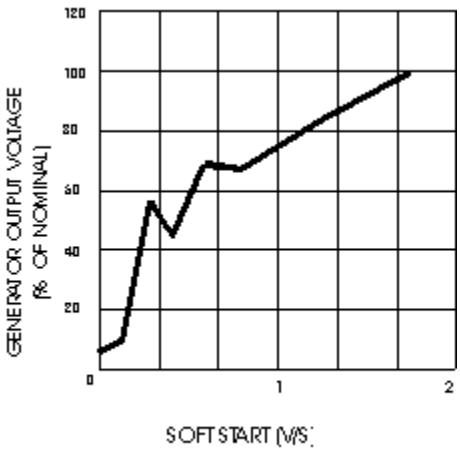
3-3 STARTUP PROCEDURE

1. Ensure all the wire of the regulator is correctly connected and the proper fuse (15A500V) is installed.
2. Turn voltage potential meter full anticlockwise (the lowest voltage level).
3. If used, turn external voltage potential meter to the middle position.
4. Turn stability potential meter full clockwise (highest stability level).
5. Connect an 110VDC meter across the field with proper polarity.
6. Connect a 300VAC meter across line (dry phase) to neutral of generator.
7. Start and run the generator with no load and at rated speed. The generator output voltage should build up to a normal level. If voltage does not build up, it may be cause by low residual voltage. Refer to field flashing section in generator manual.
8. Slowly adjust voltage potential meter until the generator voltage reach the proper value.

9. Turn the stability potential meter clockwise until instability is shown, and then turn it counterclockwise slightly until both meter mention in (5) and (6) are shown stable.
10. Interrupt regulator power for a short time (approximately 1 to 2 second). If the voltage still stable, the adjustment is now completed. Otherwise increase the stability slightly, repeat procedure (10) until stability is reached



(Frequency Compensation Curves Figure 2.)



(Soft-start Curve Figure 3.)

7. ADJUSTMENTS

4-1 FREQUENCY ROLL-OFF ADJUSTMENT

Connect a jumper from COM to the 50Hz terminal for 50Hz operation, or leave the two terminals open for 60Hz operation. To reset the frequency roll-off, proceed as follow:

(1) Adjust the prime mover RPM to the desired frequency compensation (comer frequency roll-off) point.

(2) Adjust the front panel FREQ control until the output voltage low about 5V than nominal voltage. (For 50Hz applications, the frequency "roll-off" is factory preset to 45Hz, for 60Hz operation, the frequency is 55Hz).

4-2 VOLTAGE ADJUSTMENT

(1) Adjust the front panel VOLT to vary the generator nominal voltage.

(2) If used, a 1k Ohm1/2 watt potentiometer may be connected to terminals EXT VR, refer to Figure4.

4-3 STABILITY ADJUSTMENT

(1) Adjust the front panel STAB control.

(2) Rotation the front panel STAB control in the counter-clockwise (CCW) direction will speed response time if rotated too much for CCW, the generator voltage my oscillate (hunt).

(3) Rotated the front panel STAB control CCW until the system start oscillating and the rotate CW just past the point where oscillation occurred.

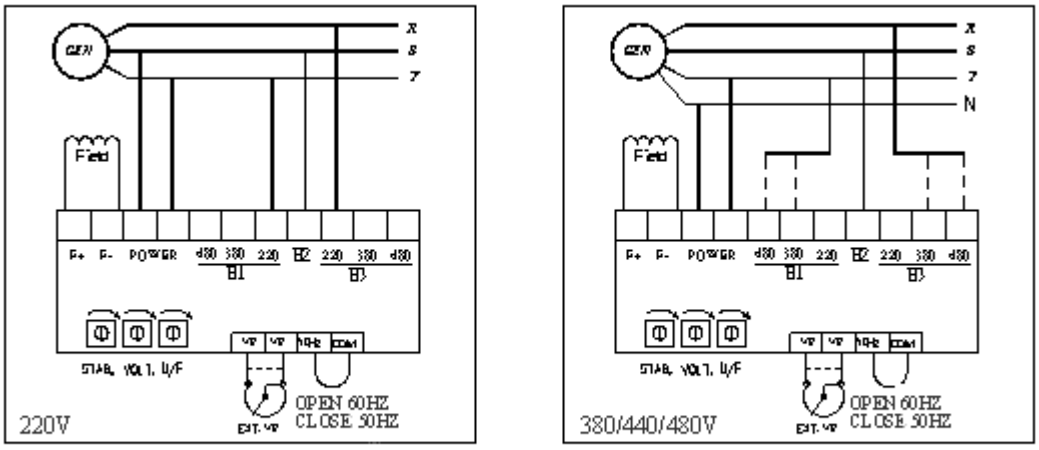
8. FLASH WITH BATTERY

   Lack of the residual voltage of generator, flash field with 3~24 VDC during generator is running. Finish flash when output is 30% of the nominal voltage.

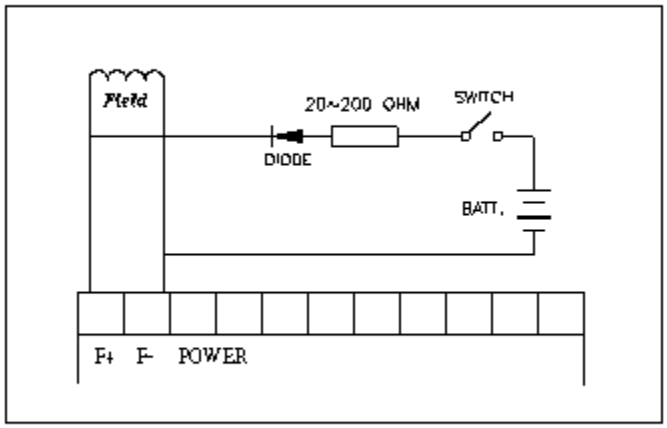
9. WIRING (REFER TO FIGURE 4)

(1) Terminals F+ & F-	the DC output port of the regulator F+ is positive normally connected to the field of generator marked F+, F1, J F- is negative normally connected to the field of generator marked F-¡¦ , F2 or K
(2) Terminals sensing	The power and sensing port of the regulator (Sensing voltage had been connected on 220V, 380V or 480V 3 Phase from generator to work properly. If single phase is used output voltage will exceed nominal value by 27%.
(3) Terminals EXT VR	For external voltage adjustment if required.
(4) Terminals 50 & COM	Under frequency protection selection connect a jumper from COM to the 50Hz terminal for 50Hz operation, or leave the two terminals open for 60Hz operation.

10.



Wiring Diagram
Figure 4



Flash with Battery
Figure 5

11. TROUBLE SHOOTING

SYMPTOM	CAUSE	CORRECTION
Voltage does not build up	Residual voltage below 5VDC	Flash generator field with proper method
	Incorrect wiring	Check wiring diagram for proper connection
	Power/sensing or field wires not connected	Connect the wires properly
	Generator not up to speed	Increase generator speed
Out voltage low	Poor adjustment is made	Read start procedure carefully and adjust again
	Frequency roll-off	Increase generator speed
	Incorrect voltage selection	Read user's manual to select correct voltage
	Sensing wiring not completed	Completed sensing wiring
Out voltage high	Poor adjustment is made	Read start procedure carefully and adjust again
	Incorrect voltage selection	Read user's manual to select correct voltage
Out voltage instability	Poor adjustment is made	Read start procedure carefully and adjust again
	Field voltage requirement lower the rang of regulator	Inquire our distributor to solve