



VR50 Voltage Regulator

The VR50 voltage regulator is designed for use on most types of brushless generators. Its small size allows it to be installed in tight locations and it is also encapsulated to protect itself from extreme vibration and airborne contaminants.

This voltage regulator is designed to be very simple to install and adjust. It offers frequency following regulation and line drop compensation for starting large loads.



Specifications:

Input voltage:	120 / 208 / 240vac
Frequency:	50 / 60hz
Maximum output:	52 / 105vdc
Maximum current:	5adc / 8adc forcing
Minimum field resistance:	10 / 21 Ω
Minimum Residual Voltage	5vac
Physical size:	76 x 140 x 19mm (3 x 5.5 x .75in)
Voltage regulation:	+/- 1% of set point
Weight:	227g (8oz)

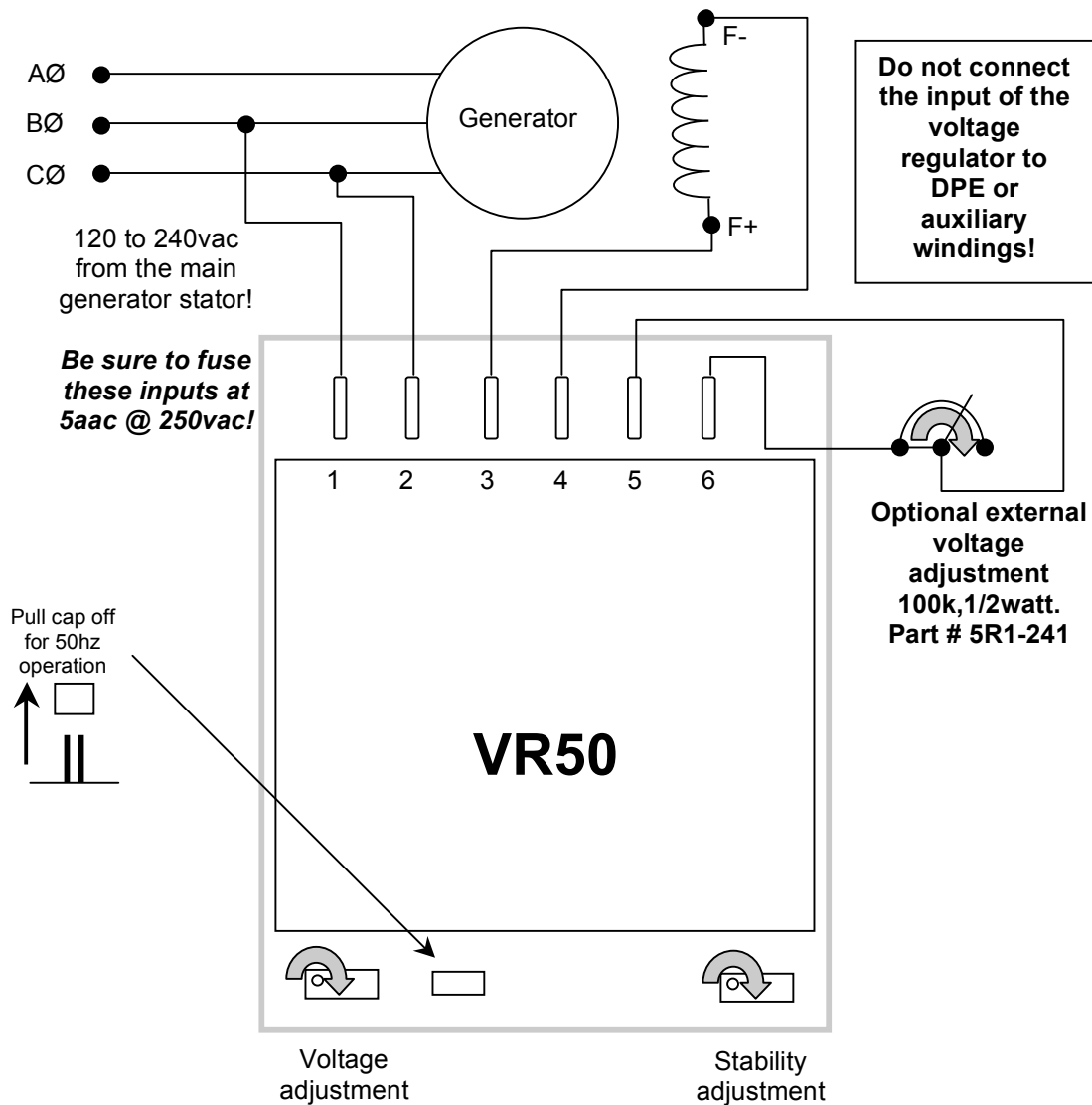
Simple ● Reliable ● Affordable

Made in the USA!

Installation Instructions

Caution: A professional electrical generator technician should only install this product! Always take proper measures to protect yourself from flash burns and electrical shock when installing electrical components and switchgear. Never hold this unit in your hand while energized!

Wiring Connections:



- Wire up the voltage regulator as shown. If you are connecting to a 440/480 wiring configuration, use the center taps of the generator to obtain 240vac input. **Do not connect from the line to neutral!** If the generator is not a 12 lead type, use a transformer to lower voltage to 120/240vac.
- Select generator frequency by removing the jumper at the lower left hand side of the regulator for 50hz. Do not remove it for 60hz operation.

- Turn both the internal voltage and stability adjustments fully CCW. These are 25 turn pots and you will hear a ratchet click when you reach the full travel range. (The default setting for the regulator when it is packaged is 100-125vac)
- Turn the external voltage adjustment to the highest resistance value. It is not necessary to use this pot on all applications. If it is not used, it is **not** necessary to jumper terminals 5 and 6.
- Make sure that all load is remove from the generator.
- Start up the prime mover and bring the unit up to operating speed.
- If the voltage is stable, set the internal voltage adjustment to the desired output voltage. If the voltage is pulsing, turn the stability adjustment CW to stabilize the voltage. (As you turn the stabilizing adjustment CW, the voltage will rise on the generator output. Correct the voltage with the internal voltage adjustment to keep the generator within 10vac of the desired voltage during this adjustment process.)
- When the voltage and stability are set up, place the load on line and observe for proper application.

Application Troubleshooting

Problem:

Possible Cause

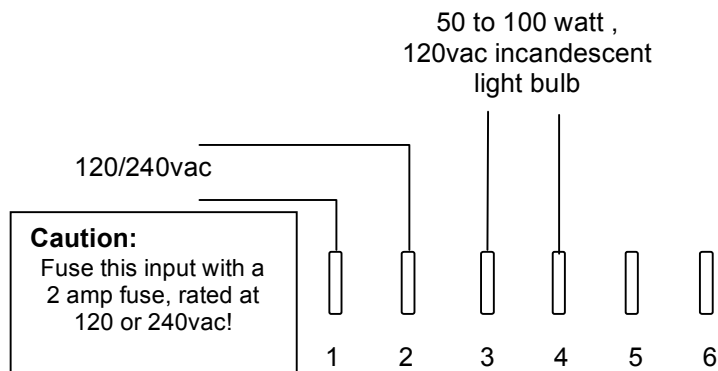
No Voltage	1 3 5 7 9 11 13 15 20
Pulsating Voltage	4 5 6 12 16
Flickering Voltage	6 7 14 4
High Voltage	6 7 8 9 12 13 17 18 20
Voltage Drop on Load	5 8 10 12 16
Low Voltage	5 8 12 13
Poor Voltage Regulation	2 4 10 12 13 16
No Voltage Control	13 19 20

Possible Cause:

1. Residual input voltage to the voltage regulator is below 3.5 vac.
2. Unbalanced generator load.
3. Open exciter field or defective generator.
4. Stability adjustment is not properly adjusted.
5. Open diode in exciter or shorted rotor in generator.
6. Loose component in voltage regulator.
7. Loose wiring connections.

8. Input voltage to regulator is too low.
9. Exciter field is grounded.
10. Stability adjustment is set too far clockwise.
11. Exciter fields are reversed.
12. Wrong selection of regulator wiring configuration.
13. Defective voltage regulator.
14. SCR or Inverter drive effecting generator waveform.
15. Regulator needs external flashing circuit.
16. Isolation transformer is too small.
17. Isolation transformer is needed.
18. Exciter fields are not isolated from other circuits.
19. Input and field circuit are being fed by a common cable or conduit.
20. Incorrect hookup or wiring.

Bench Check for the VR50 Voltage Regulator



VR50

- Connect up the regulator wiring as shown.
- Turn all internal pots fully CCW or until a click is heard.
- Apply 120/240vac into the regulator at pins 1 and 2
- When the power is applied to the regulator, the light bulb across 3 and 4 should not be lit.

- Turn the internal voltage adjustment CW until the light comes on at half brilliance.
- Turn the voltage adjustment CCW until the light goes off.
- Turn the stability adjustment CW until the light begins to come on.
- If all of these tests resulted as described, the regulator is good, if it did not, it is defective!

PRODUCT WARRANTY

This product has been fully tested, both with static testing and actual generator run and load test and has met or exceeded all of our specifications for the product.

Because this product is fully encapsulated, failure assessment is impossible. Therefore, Power-Tronics, Inc. does not provide warranty coverage for this product.

Power-Tronics, Inc., assumes no liability for damages due to incorrect voltage or other voltage related damages resulting from either output of the generator or input to the generator exciter system. These problems should be protected with external devices provided by the customer such as **fuses, surge suppressors, over/under voltage and frequency controls.**

No other warranty is expressed or implied.

For more information on our
products, visit our web site at:

www.power-tronics.com

**All of our products are manufactured
In Kerrville, Texas USA!**