

VR504A VOLTAGE REGULATOR

GENERAL INFORMATION

The VR504A Voltage Regulator is designed for new and replacement applications on any model or manufacture of generator that requires a full load exciter field input of less than 5 adc and a maximum exciter voltage of less than 105 vdc and operates between 50 and 60 hz. The VR504A Voltage Regulator contains a patented electronic circuit that allows the regulator to actually be matched to the exciter response time of a generator. This feature enables the user to adjust the VR504A to operate on all types of generator fields and kw ranges without any special wiring, transformers or resistors.

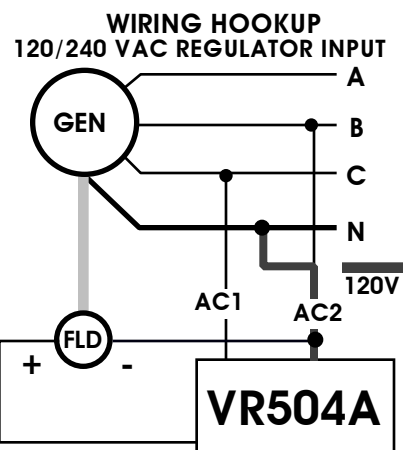
A unique feature of the VR504A regulator is that It can be used with optional static exciter modules that can replace all types of high amperage rotary and static exciter systems from 30 to 600 adc simply by connecting the VR504A to the exciter module with 3 small wires!



This feature makes the VR504A Voltage Regulator truly a universal voltage regulating system that is simple, affordable and reliable!

SPECIFICATIONS

Voltage input required	100 to 240 vac
Operational output voltage range	.75 to 105 vdc
Maximum operational amperage	5 adc (internal fuse)
Minimum field resistance	10.5 ohms @ 120 vac input
	21 ohms @ 240 vac input
Maximum field resistance	400 ohms
Operational frequency range	40 to 80 hz
Regulation accuracy	+/- 1% of voltage setting
Physical size	1.25 x 6 x 4.75 inches
Total weight	7 ounces
Internal fusing	5A @ 250v 5 x 20 mm fuse
Maximum / minimum kw	unlimited
Minimum residual voltage for build up	3.5 vac @ 60 hz
Voltage response time	1/2 cycle
Voltage sensing	Waveform (true rms)
Warranty period	1 year



SPECIAL FEATURES:

UNIVERSAL APPLICATIONS
REPLACEABLE INTERNAL FUSING
REMOVABLE COVERS
STATIC EXCITER OPTIONS AVAILABLE
LARGE CONNECTORLESS TERMINAL BOARD
VISUAL INDICATOR LIGHT
WIDE RANGE VOLTAGE INPUT
SIMPLIFIED INSTALLATION

EXTERNAL VOLTAGE ADJUSTMENT
RUGGED CONSTRUCTION
OVERSIZED HEAT SINK
100% SOLID STATE ELECTRONICS
NO TRANSFORMERS OR CHOKE COILS
100% REPAIRABLE
1 YEAR WARRANTY
SMALL PHYSICAL SIZE

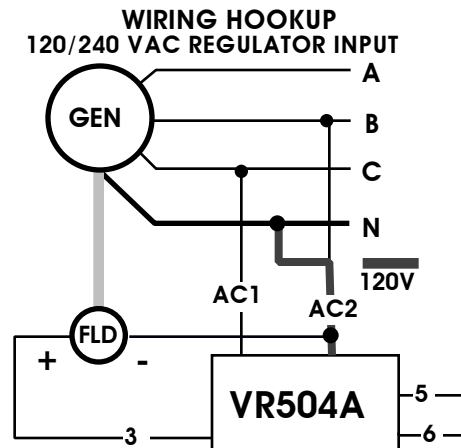
Manufactured by:

Power-Tronics, Inc.

INSTALLATION INSTRUCTIONS

DO NOT DO THE FOLLOWING:

- Hold the unit in your hand while adjusting it.
- Use a digital meter for setting up voltage.
- Open the field circuit while the generator is operating.
- Supply the input and field circuit thru a common cable.
- Connect the input power to a switched circuit such as a phase selector switch.
- Install voltage control equipment without using protective eye wear.



INSTALLATION:

1. Install wiring as show above. For best results on fields requiring a full load voltage of more than 50 vdc, connect the unit up with a 240 vac input. For fields requiring less than 50 vdc, connect the unit up with a 120 vac input. It is always recommended to install a run/idle switch in the input to terminal #1 especially if the prime mover is going to operate at less than 50/60 hz.
2. If an external voltage adjustment is used, connect it to terminals 5 and 6. If you are not going to use an external voltage adjustment, short terminals 5 and 6 to each other.
3. Turn all adjustment pots counter clockwise ← 10 or more turns. These adjustment pots are 25 turn with protective ratchets at each end.
4. Turn run/idle switch to off and start up the prime mover and bring up to rated rpm of the generator.
5. Turn on run/idle switch and turn the voltage adjustment on the regulator clockwise → until the output voltage of the generator is at 80% of rated voltage.
6. If the voltage is not stable, turn the stability adjustment clockwise → until the voltage becomes stable. If the voltage rises during this process, keep it within 80% of rated voltage with the voltage adjustment.
7. If the voltage is stable and there is no flickering, adjust the voltage adjustment clockwise → until the desired output voltage is obtained.
8. Place generator on line and observe voltage.

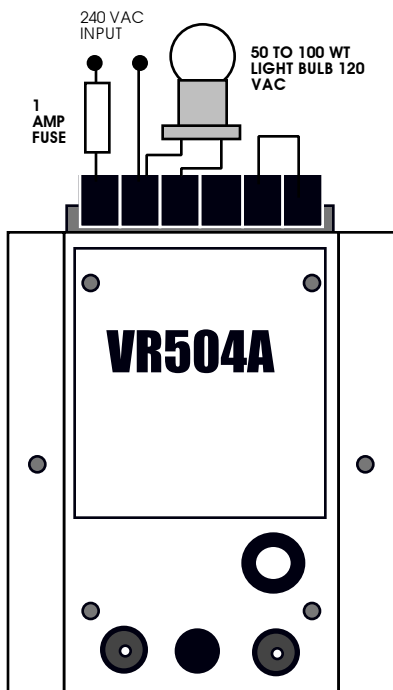
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TROUBLESHOOTING

PROBLEMS	POSSIBILITIES	
NO VOLTAGE	1, 2, 3, 5, 7, 9, 11, 13, 16, 21	1. Residual input voltage to the voltage regulator is below 3.5 vac.
PULSATING VOLTAGE	4, 5, 6, 12, 17	2. Internal fuse is open or blown.
FLICKERING VOLTAGE	6, 7, 14	3. Open exciter field or defective generator.
HIGH VOLTAGE	6, 7, 8, 9, 12, 13, 18, 19, 21	4. Stability adjustment is not properly adjusted.
VOLTAGE DROP ON LOAD	5, 8, 10, 12, 17	5. Open diode in exciter or shorted rotor in generator.
LOW VOLTAGE	5, 8, 12, 13, 15	6. Loose component in voltage regulator.
POOR VOLTAGE REGULATION	4, 10, 12, 13, 17	7. Loose wiring connections.
NO VOLTAGE CONTROL	13, 15, 20, 21	8. Input voltage to regulator is too low.
Mfg. by: POWER-TRONICS, INC. Kerrville, Texas USA		9. Exciter field is grounded.
		10. Stability adjustment is set too far clockwise.
		11. Exciter fields are reversed.
		12. Wrong selection of regulator model.
		13. Defective voltage regulator.
		14. SCR or Inverter drive effecting generator wave form.
		15. Open circuit on remote voltage adjustment or 5 and 6 are not shorted with each other.
		16. Regulator needs external flashing circuit.
		17. Isolation transformer is too small.
		18. Isolation transformer is needed.
		19. Exciter fields are not isolated from other circuits.
		20. Input and field circuit are being fed by a common cable or conduit.
		21. Incorrect hookup or wiring.
		Need Help ??? Call (210) 895-4700

BENCH CHECK PROCEDURES



1. Turn all adjustments counter clockwise ← 25 turns or until a click is heard while turning the adjustment screw.
2. Wire up regulator as shown for test.
3. Input 240 vac into the regulator. The test light bulb across terminals 2 and 3 should not glow. The orange indicator light should be on. (If the indicator light is not glowing, the internal fuse is blown. Remove the 4 screws in the cover, remove the cover and replace the fuse.)
4. Turn the voltage adjustment clockwise → until the test light bulb glows brightly. The test light should go from off to on almost as if turned on by a switch.
5. Turn the voltage adjustment counter clockwise ← until the test light goes out.
6. Turn the stability adjustment clockwise → until the test light is glowing brightly.
7. Turn the voltage adjustment counter clockwise ← until the test light is dimmed out or almost out. The test light should have dimmed as if using a light dimmer.

IF ALL OF THE TESTS SHOWN ABOVE COULD BE PERFORMED, THE UNIT IS GOOD. IF ANY OF THESE TESTS COULD NOT BE PERFORMED, THE UNIT IS DEFECTIVE.