Power-Tronics, Inc. Electrical Power Control Systems
P.O. Box 291509 Kerrville, Texas USA 78029 Phone: 830.895.4700 Email: pti@power-tronics.com Web: www.power-tronics.com

XR500B-180

Universal Voltage Regulator

The XR500B-180 is a unique voltage regulator that is designed specifically for Professional Electrical Generator Service and Repair Technicians.

The XR500B-180 incorporates patented electronic circuitry that allows an installer to match the regulator to many differing configurations of exciters without special transformers or inline resistors.

The XR500B-180 can be externally controlled with a PLC or Genset controller by simply adding an optional interface module.

Specifications

Input Volts:	120 / 208 or 240acv
Frequency:	180hz
Voltage Regulation:	+/- 1% From NL to FL
Parallel Operation	Yes
Output Volts:	0-52vdc @ 120vac input 0-105vdc @ 240vac input 0-210vdc @ 240vac input
Maximum Continuous Output:	5adc
Minimum Field Resistance:	10.5Ω @ 52vdc output 21Ω @ 105vdc output 42Ω @ 210vdc output
Min Residual Build up Volts:	3.5 / 7vac
Physical Size:	4.75 x 6 x 1 in.
Weight:	7 oz
Repairable:	Yes
Internal Protection:	Fuses
External Voltage Adjustment:	Yes
System Operating Indicator:	Yes
Optional Static Exciter Modules	Yes
Optional External Controls	Yes

Caution: Read this Installation manual carefully.

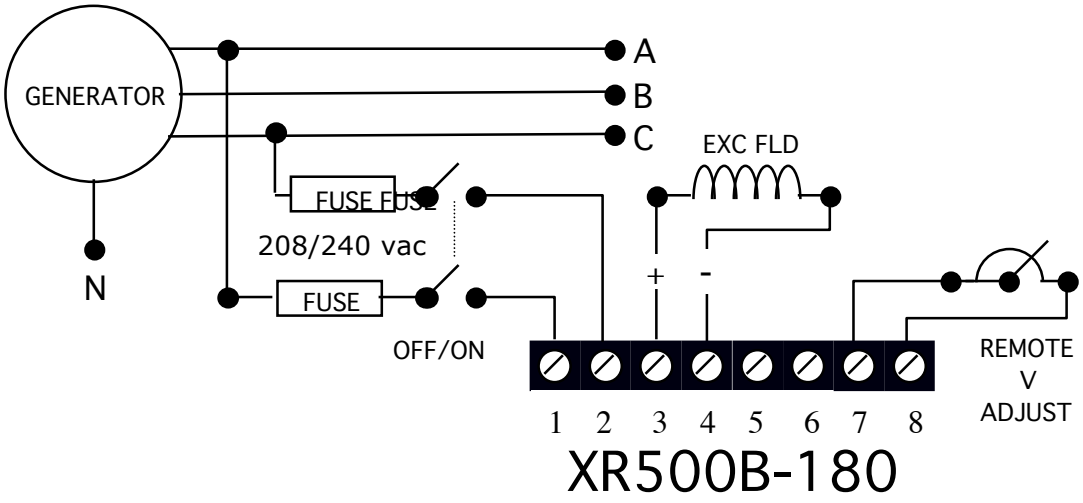
Installation Instructions

Warning: Do not use digital equipment to read voltage, hz or amperage during this installation. Use only Analog sensing equipment! Failure to do so may result in damage to equipment or in personal injury! Make sure that all setup is done off line. Always wear eye protection and never hold the regulator in your hand when energized.

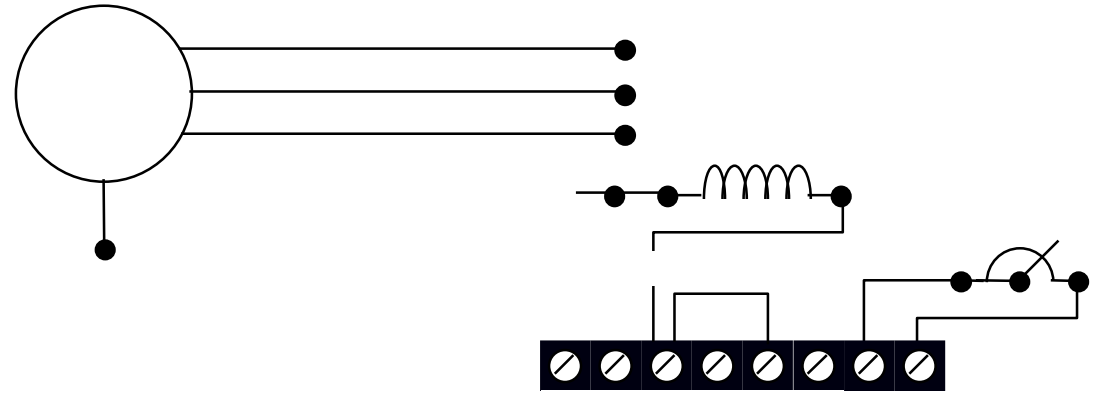
Installation Instructions

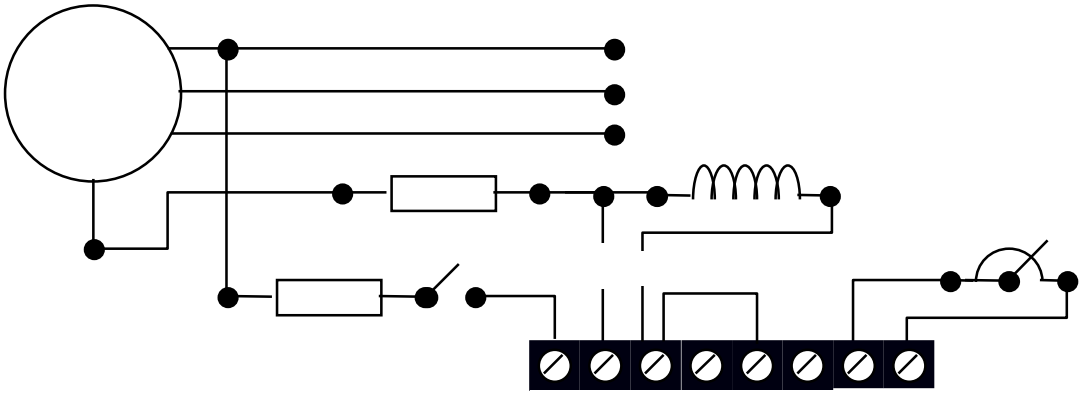
1. Install the regulator as shown in the drawing below:

Connection A **240vac input, 210vdc maximum output**



Connection C B XR5 maximum output





Internal voltage adjustment

Stability adjustment

2. Turn the internal voltage control and stability control 15 or more turns counter clockwise (left). This procedure is necessary in case the original factory settings have been altered.

3. If you are using a remote voltage adjustment, set it at 50% of adjustment.

4. Start up the prime mover and bring up to operating speed and turn on the regulator switch.

5. Set the internal voltage adjustment to the desired voltage setting for the generator output. If the generator voltage is unsteady or flickering, adjust the stability adjustment clockwise (right) until the voltage is steady and the green light is not pulsating. During this adjustment, be sure to keep the generator voltage within 10vac of the original setting with the internal voltage adjustment.

6. Place the generator on line and observe the frequency and voltage.

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.

Fuse: 5aac @ 250v

Internal fuse replacement

14. Load is SCR or Inverter drive effecting generator wave form.

15. Regulator needs external flashing circuit.

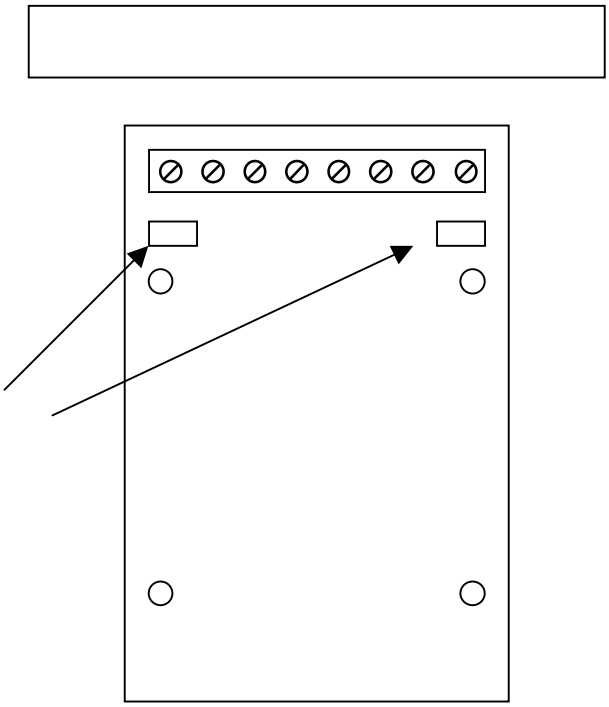
16. Isolation transformer is too small.

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.



Installation form

It is very important that you fill out this form completely when installing a voltage regulator. This form serves as a history record on the application. This form also contains the information needed by Power-Tronics, Inc., for repair and troubleshooting of any product you may be having problems with.

Product			Other options			
Serial Number						
Date of Installation						
Type of Generator				Model #		
	Brush type	[ ]				
	Brushless	[ ]				
AC Stator Information						
Wired for	Volts	Phase	Hz			
Generator Configuration: Lead						
Exciter/Rotor Information						
Exciter field resistance		Ω		@	F+ / F-	Ω
Exciter field volts		vdc		@	Slip Rings	Ω
Description of problem with product or generator						
Your phone number			Name:			
Your fax number			Ship to Address:			
Your email address			Ship to City, State, Zip:			

PRODUCT WARRANTY

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.**

Power-Tronics, Inc., warranties **only parts and workmanship** of this product for **a period of 2 years from the original date of purchase from Power-Tronics, Inc.** Under warranty, Power-Tronics, Inc. will replace, exchange or repair the defective product **without labor or parts cost to the customer.** Remaining warranty of the original product will be transferred to the replaced or repaired product. To obtain warranty, a copy of the original purchase receipt must be sent in with the defective product, which clearly shows the purchase date and serial number of the defective part. A repair request form must be sent in with the product before repairs will begin. You can obtain this form through contacting Power-Tronics, Inc.. Send repairs to: Power-Tronics, Inc., 2802 Cobbler Ln., Kerrville Texas USA 78028. Send in repairs only by UPS or FedEx.

Any one of the following conditions will void the warranty:

- Overheating of the power supply resistor on the printed circuit card.
- Overheating of the SCR or freewheeling diode.
- Physical damage to the printed circuit card, housing or components.
- Unauthorized repair or alteration of printed circuit card.
- Installation by anyone other than a qualified professional generator service technician.
- Conductive or corrosive contamination of the circuit card.
- Removal of our company identification from the product.
- Removal of any conformal coating of the printed circuit card or components.
- Overheating of foil on the printed circuit card.
- Inappropriate or infeasible application
- Use on any external device other than manufactured by Power-Tronics, Inc.

No other warranty is expressed or implied.

Figure A
Figure B

Bench Check Instructions

All Checks Must Be with 180hz Input!

1. Wire up the regulator as shown in figure A.
2. Connect up a 120 volt 50 to 150 watt light bulb to the F+ and F- Terminals.
3. Adjust the internal voltage and stability pots fully CCW (25 turns) or until a click is heard.
4. Input 120 vac into the regulator at #1 and #2. (Fuse this input with fuses rated at 120 volts or higher and not more than 5 amps ac)
5. **Observation:** The green status light should be on and the light bulb across F+ and F- should be off. If the green status light is not on, the internal fuses are blown in the regulator or there is internal damage to the regulator! If the green status light is not on, do not continue this test!
6. Turn the internal voltage adjustment CW until the light bulb across F+ and F- turns fully on, then adjust the internal voltage adjustment CCW until the light bulb is very dim.
7. Adjust the stability adjustment CW until the light bulb begins to brighten up.
8. Turn both of the internal voltage and stability pots fully CCW (25 turns) or until a click is heard.
9. Remove the 120 vac from the regulator.
10. Connect up the regulator in configuration B and perform all of the previous steps again. In this mode, the light bulb will only glow at half brilliance!
11. If you were able to successfully perform all of these tests, the regulator is good.