VoltPro VPBF8

Automatic Battery Flashing Module

This Manual Covers Both VPBF8-12 and VPBF8-24 Models

VoltPro Products

A Division of Power-Tronics, Inc.

The VoltPro VPBF8 Automatic Battery Flashing Module is an affordable add-on module for VoltPro VP4, VP5 and VP7 voltage regulators that is designed to provide an automatic battery flashing solution for many brushless and brush-type generators up to 300kw.

If you have another brand of voltage regulator, you can add the VPBF8 to your existing system, provided your maximum exciter field current is less than 8ADC at full load.

VoltPro uses only high quality name-brand parts to manufacture the VPBF8, and every single unit is vigorously tested both by static and real generator testing before final packaging to ensure that each unit conforms to our strict manufacturing and performance standards.

The VPBF8 is specifically designed to be very simple to install. It has a minimum of interconnections, all of which are clearly marked. Operation of the unit is fully automated and is voltage-triggered for peace of mind and reliable operation.

Due to its compact design, the VPBF8 is able to fit into tight locations and is designed to complement OEM designs for many popular brands of generator sets, and owing to its totally encapsulated design it is able to withstand extremely harsh vibration and environmental conditions!

Specifications:

	VPBF8-12	**VPBF8-24**
Input / Sensing Voltage	100-240vac	100-240vac
Maximum Continuous Output Amperage	8adc	8adc
Minimum Field Resistance	8Ω	8Ω
Frequency	50/60hz	50/60hz
Battery Voltage	12vdc	24vdc
Automatic Pull-Out Voltage	20-25vac	20-25vac
Dimensions	5.5 x 3.25 x 1in	5.5 x 3.25 x 1in
Weight	8oz	8oz
Customer Fusing Required	**Fast Blow 8A @ 250vac**	**Fast Blow 8A @ 250vac**

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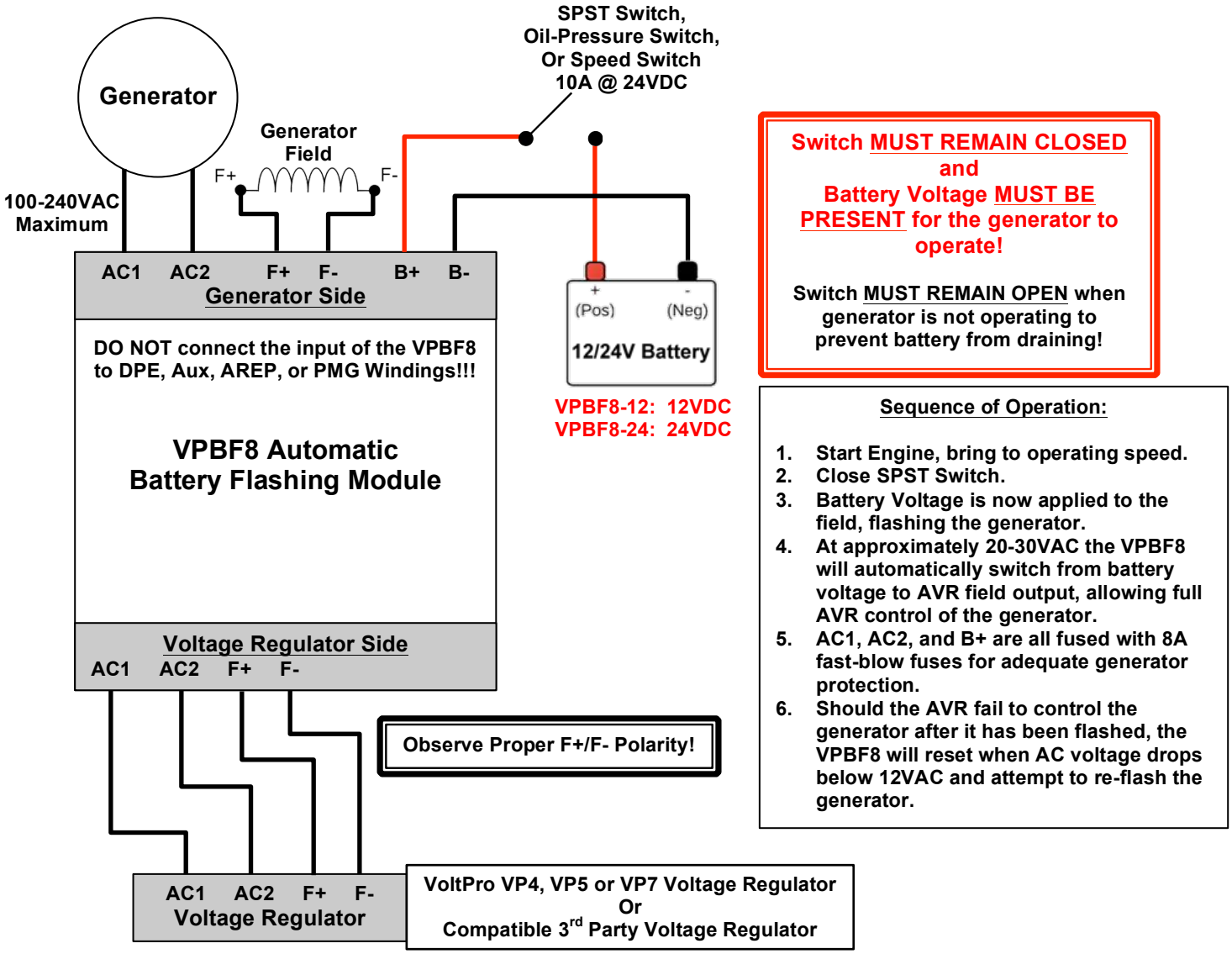
Warning: **Do not use digital equipment to read voltage, Hz, or amperage during this installation. Use only analog sensing equipment! Failure to do so may result in damage to equipment or in personal injury! Make sure that all setup is done off line. Always wear eye protection and NEVER hold the unit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

Installation Instructions:

Before installing the VPBF8 Automatic Battery Flash Module, you must verify that your exciter field current is less than 8adc at full load and your exciter field resistance is greater than 8Ω to determine if the VPBF8 is compatible with your application.

REFER TO THE WIRING DIAGRAM FOR YOUR VOLTAGE REGULATOR TO DETERMINE THE CORRECT INTERCONNECTION WITH YOUR GENERATOR! THE VPBF8 IS DESIGNED TO GO IN-LINE WITH THE POWER/FIELD CONNECTIONS OF YOUR VOLTAGE REGULATOR!

After performing a complete check of the generator and verifying that the VPBF8 is compatible with your generator, install the VPBF8 Automatic Battery Flashing Module and wire it in-line with your voltage regulator as shown in the diagram below:



Sequence of Operation:

1. **Start Engine, bring to operating speed.**
2. **Close SPST Switch.**
3. **Battery Voltage is now applied to the field, flashing the generator.**
4. **At approximately 20-30VAC the VPBF8 will automatically switch from battery voltage to AVR field output, allowing full AVR control of the generator.**
5. **AC1, AC2, and B+ are all fused with 8A fast-blow fuses for adequate generator protection.**
6. **Should the AVR fail to control the generator after it has been flashed, the VPBF8 will reset when AC voltage drops below 12VAC and attempt to re-flash the generator.**

Install the VPBF8 as shown in the diagram above. Refer to the wiring information that came with your voltage regulator for interconnection with the generator and/or setup instructions. The VPBF8 is designed to be an in-line flashing solution.

- Observe correct battery polarity
- Observe correct F+ / F- field polarity
- Switch should be rated at 10ADC @ 24VDC or greater. Switch can be an auxiliary contact on a run/idle switch, oil-pressure switch, or relay contact.

Start up the generator without load and bring up to rated speed, then close the main operating switch. The VPBF8 should build AC voltage to roughly 25VAC, then switch the internal relay to AVR control. **Battery voltage MUST REMAIN PRESENT at B+ and B- for the VPBF8 to operate!**

Run the generator for a few minutes and observe for proper operation before adding load and operating as normal.

When shutting down the generator, ensure the control switch is OPEN to prevent discharging the battery.

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Bench-Test Procedure

1. Wire up the VPBF8 as shown below.

2. Connect up Multimeter set to a scale capable of reading 24VDC at the "Generator Side" F+ and F- Terminals.

3. Attach a 12/24V battery to B+ and B- Terminals.

4. **Observation:** You should read battery voltage across the "Generator Side" F+ and F- Terminals. **If there is no battery voltage present, or if any fuse blows, do not continue this test! VPBF8 is damaged or defective!**

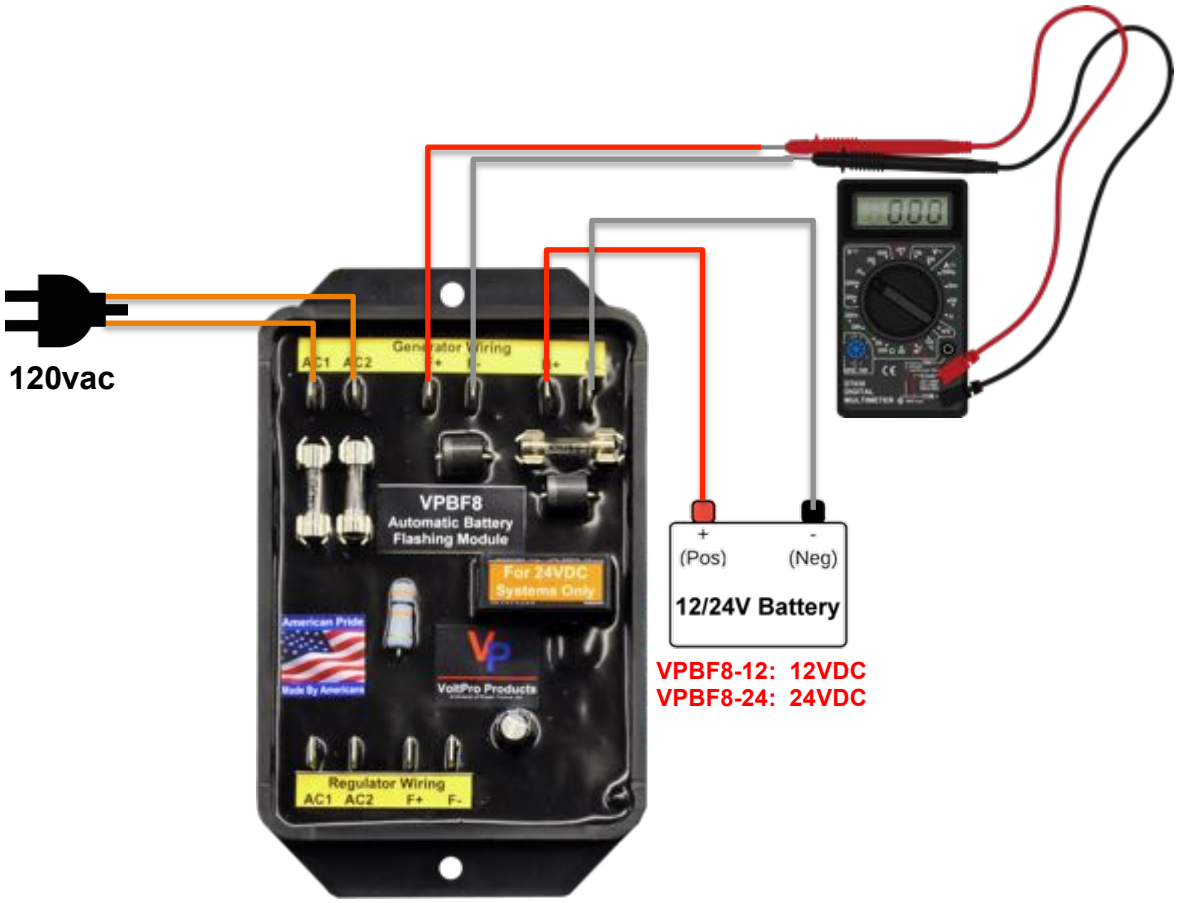
5. Input 120vac into the VPBF8 "Generator Side" AC1 and AC2 Terminals.

6. **Observation:** You should hear a click and battery voltage across the "Generator Side" F+ and F- Terminals should disappear (0V). **If battery voltage does not disappear, or if any fuse blows, do not continue this test! VPBF8 is damaged or defective!**

7. Disconnect 120vac from the VPBF8 "Generator Side" AC1 and AC2 Terminals.

8. **Observation:** After a short delay, you should hear a click and battery voltage across the "Generator Side" F+ and F- Terminals should reappear (12/24V). **If battery voltage does not reappear, or if any fuse blows, do not continue this test! VPBF8 is damaged or defective!**

9. **If you were able to successfully perform all of these tests, the VPBF8 is good.**



VPBF8 FAQ's

Features & Sizing:

Q: ***Can the VP4 be used with generators over 240V?***
A: Yes. The VPBF8 can be used with higher voltage generators with a proper step-down transformer or by center-tapping your stator leads at T7 and T8 on 10 and 12 lead generators. See your AVR's instruction manual for more information.

Q: ***How can I determine if I can use the VPBF8 on my generator?***
A: Your exciter field resistance should be above 8Ω, and your full load exciter field current should be less than 8Adc. Usually this information will be written on the generator nameplate. If you do not have this information, it can be easily calculated:

- Measure your exciter field resistance using a multimeter on your field leads. Record this value. If you have a brush-type generator, also take a resistance reading on your slip rings: the value you obtain on the slip rings should be no more than 1% difference from the value you obtained through the field leads.
- Next, start and run the generator and apply 12V from a battery through your field leads and record the AC voltage produced by the generator. To determine your full load exciter field voltage, use the following formula:

$$E_{Exc.} = \frac{E_{Gen.Conf.}}{\left(\frac{E_{Gen.Output}}{E_{Battery}}\right)} * 2$$

Where $E_{Gen.Conf.}$ is your Generator's configured voltage (eg: 120, 208, 240, 480V, etc), $E_{Gen.Output}$ is your recorded output voltage, and $E_{Battery}$ is your battery voltage (12V usually).

- Next, calculate your maximum exciter field amperage using your measured field resistance and your calculated exciter voltage using the following formula:

$$I = \frac{E}{R}$$

Where I is your maximum exciter field current, E is your calculated field voltage from the above formula, and R is your measured field resistance.

- **If your maximum exciter field current is less than 8Adc, the VPBF8 will probably fit your application.**

Q: ***Is the VP4 compatible with my "X Brand Name" generator?***
A: The VPBF8 is a universal, generic add-on module. It is compatible with all makes and models that fall within its current design limits.

Q: ***I have a generator with a PMG, can I use the VPBF8?***
A: Only if you are using a standard shunt-fed AVR, although these types of generators rarely need to be flashed, even if the PMG is not in use. If you are using a PMG-fed AVR, you cannot use the VPBF8.

Q: ***I have a 480V generator, can I power the VPBF8 with 277V?***
A: No. You will destroy the AVR attached to the VPBF8 if you do! If your generator is a 10 or 12 lead set, simply tap T7 and T8 for 240V input to the regulator. If you have a 4 lead generator, you will need to use a step-down transformer.

Technical Help:

Q: ***My Generator doesn't generate when I start it up with the VPBF8 connected.***
A:

- Verify you have the regulator hooked up properly as shown in its instruction booklet.
- Check the fuses and replace if blown. If you blow fuses when starting up, verify that the VPBF8 fits your application.
- Verify that the battery is producing voltage and the switch is closed to B+ on the VPBF8.
- Perform a bench-test as shown in the instruction booklet to verify that the VPBF8 is good.
- If you have a brush-type generator, check the brush and slip ring contact for potential problems.

Q: ***My Generator doesn't come up to the proper voltage when switched on.***
A: The VPBF8 will only build the AC voltage to ~25-30VAC before it disconnects the battery from the field. This should be more than adequate for any make/model of AVR to continue the buildup process. If the voltage does not build up to an acceptable value, or if you cannot control the AC voltage on your generator, check the AVR settings or perform a bench-test on the AVR per the manufacturers' instructions.

Q: ***The AC voltage on the generator runs high and is not controllable by the AVR.***
A: Check the fuses below AC1 and AC2. If blown, replace them. If the fuses are good, perform a bench test on the VPBF8. If it tests good, inspect the AVR for failure.

Q: ***I have erratic voltage regulation, pulsating voltage, low flickering voltage, or wide voltage swings.***

A: • Check that the AVR is operating correctly. This is often a symptom of AVR failure with the VPF8 switching between battery and AVR sources.

Warranty Disclaimer

VoltPro, a division of Power-Tronics, Inc, assumes no liability for damages, electrical or physical 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.

Because this product is fully encapsulated and it would be impossible to determine cause of failure, there is no warranty offered. We do certify that this product is manufactured with only the highest quality parts and is fully tested by both static testing and functionally tested on an electrical generator before final packaging.

This product should only be installed and maintained by a competent electrical generator technician.

Technical assistance for this product is only available through our web site http://www.voltpro.com . VoltPro does not allow returns or refunds, all sales are final.

No other warranty is expressed or implied.

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