SIMCO ION™
An ITW Company

PFC
PulseFlow Controller

User's Manual

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1. DESCRIPTION

The PulseFlow Controller incorporates both Pulse and Steady State DC technologies and is the power source for the PulseBar line of products. The PulseFlow controller has four operational ranges from 10hz to 1.0hz in pulse mode and SS for Steady State DC operation. One PulseFlow Controller can power up to 20 electrode pairs of PulseBar. The compact size of the PulseFlow Controller offers versatile mounting in almost any application.

2. SAFETY PROCEDURE

CAUTION - The maximum current available at any emitter electrode is less than 100 microamps. A person touching an electrode may experience a mild nuisance shock.

WARNING! When working on ANY electrical equipment be sure to disconnect the unit from its power source to prevent any kind of electrical shock.

As with any electrical appliance, do not operate any PulseBar or ionizer system in an area where flammable vapors, chemicals, or explosives are present.

IMPORTANT - All Simco-Ion equipment and power cords MUST be properly grounded to ensure proper operation and operator safety.

Prior to installation, insure that any outlets being used to power Simco-Ion equipment are correctly polarized and grounded.

3. SPECIFICATIONS

Input Power:	4W		
Nominal Line Voltage:	100 - 120 / 230 VAC 50/60 Hz.		
Output Voltage Range:	3.5 kv. to 8.0 kv. D.C. (Pos. & Neg.)		
Output Current Range:	3.0 ua to 7.0 ua D.C.		
Pulse Rate:	Sw. Pos.	Freq. Time	Cycle
	2.2Hz	2.2Hz.	450ms.
	1.3Hz	1.3Hz	750ms.
	1.0Hz	1.0Hz.	1000ms.
	SS	0Hz	Steady State (DC)
Temp. Range:	+32ºF to 122ºF (0ºC to +50ºC)		
Dimensions:	5.75” x 5.00” x 1.65” (14.60cm x 12.7cm x 4.19cm)		
Weight:	20.5 oz (637 gr.)		
Emitter Electrodes:	20 pairs (20 Pos. 20 Neg.) maximum		
Fuse:	Two 80 ma. (5x20mm) slo-blow type		
Power Terminal:	Meets FCC part 15J.MP-4 class B; ITE Standard (VDE 0871106.78)		
EMI Radiation:	Meets FCC part 15J.MP-4 @ 3 meters		

4. INSTALLATION

The PFC can simply be placed on a benchtop or mounted vertically to a wall, workbench or machine using the keyhole slots on the back of the case. The keyhole slots can also be used to secure the PFC to the workbench top. The feet used on the PFC Controller are made of durable polyurethane so that they will not mark benchtops or shed particles in a cleanroom environment.

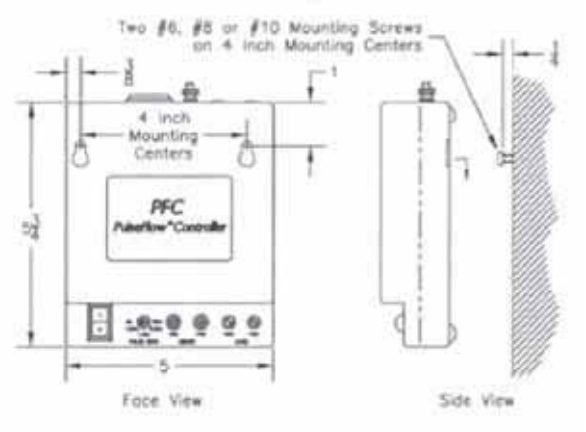

Figure 1. PFC mounting to wall

The PFC Controller can be attached to almost any surface using a variety of screws and wall anchors. Check your particular installation to determine the type of fastener you should use.

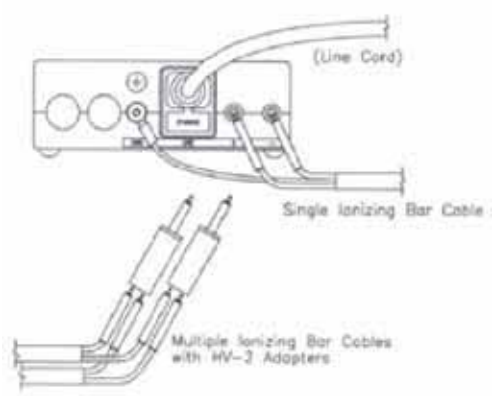

Figure 2. A single PulseBar can be attached to a controller or in multiple hookups using the HV-1 adapter

PulseBar Installation

For best results, do not block or hinder the flow of ionizing air by placing large objects directly in front of or below the PulseBar.

Mount the PulseBar at least 4” above the work surface with its adjustable mounting brackets. Refer to your PulseBar owners manual for details.

Connecting a single PulseBar to the PFC Controller

Plug the two high-voltage cables from the PulseBar into the two connectors located on the rear panel of the PFC.

Connecting two Pulse Bars to the PFC Controller

1. Insert one HV-2 (two-to-one) Adapter into the positive output connector and one into the negative output connector located on the back panel of the PFC. There are two positive and two negative positions now available.

2. Insert one of the plugs from a PulseBar into one of the positive outputs and the other into one of the negative outputs. Only one positive and one negative output will now be available.

3. Insert the plugs from the second PulseBar the same as the first. All four output connectors will now be used.

NOTE! – DO NOT use an MC-2 adapter if only one PulseBar is in use because arcing or contamination buildup may occur. Consult your PulseBar owners manual for further information.

Ground connection

Secure the green ground wire and lug to the power supply case using the grounding post located on the back of the power supply.

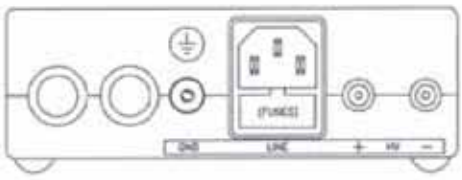

Figure 3. PulseFlow Controller Rear Panel

5. OPERATING INSTRUCTIONS

CAUTION! - Do not turn on any Simco-Ion power supply until all Pulse Bars and other devices are connected to the completed system assembly.

1. Make sure that all connections are made as outlined above.

2. Plug the PFC Controller power cord into a grounded AC outlet with the appropriate line voltage.

3. Turn the power to the PFC on. The lamps on the front panel will light up after a few moments and will pulse back and forth when the PFC Controller is in the pulse mode and will light continuously in the steady state mode.
4. Select the desired Pulse Rate by rotating the Pulse Rate switch with a flatblade screwdriver from positions 10 hz to 1.0 hz. Position SS is Steady State DC.

5. Adjust the ion balance with the high voltage adjustment controls located on the front panel. Turning the high voltage controls clockwise increases the HV output to the emitters.

6. Turn the PFC Controller power switch off when not in use.

If your unit does not operate after turning it on, refer to the section on troubleshooting.

Avoiding Nuisance Shocks

When an ionizer is disconnected from the controller, a charge may remain in the high voltage wiring. To avoid a mild nuisance shock from the ionizer plugs, touch the contacts on the plugs together immediately after removing them from the controller.

Setup and Adjustments

Although the PFC Controller is calibrated at the factory, it may require additional adjustments for your specific work area. Use a Charge Plate Monitor, such as Simco-Ion's EA-2, to check for decay times as well as ion balance. Refer to the respective Owners Manual for set up and operational procedures. A complete check of any ionization system should be made before doing any type of calibration or adjustments. This includes inspection of the emitter assemblies for cleanliness and wear (refer to the section on Cleaning & Maintenance). Simco-Ion recommends that ionizing equipment be tested every month for ion balance.

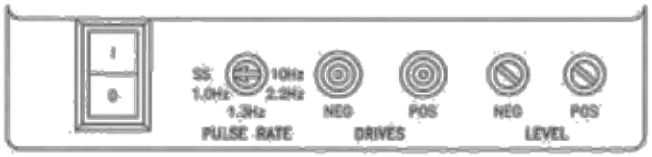

Figure 4. PFC PulseFlow Controller Front Panel

NOTE! – When the PFC is first turned on, one of the lamps will come on and remain on for a few moments. This is normal operation. After the PFC power supplies stabilize, both lamps will start to flash at the selected rate.

6. CLEANING & MAINTENANCE

1. Turn the power to the PFC Controller off and unplug the unit prior to any servicing or cleaning.

2. Inspect the electrodes on the PulseBar for excessive wear or particle accumulation every month. A hissing sound often occurs when the electrodes have become coated with dust.

3. Clean the electrodes every month using a lint-free cleaning swab and denatured alcohol.

4. Replace any worn electrodes approximately once a year, depending on frequency of usage and environmental conditions.

5. Clean the PFC case and PulseBars using a soft, lint-free cloth and a mild, non-abrasive cleaner.

Line Voltage Conversion

To convert the PFC from 115 VAC to 230 VAC or from 230 VAC to 115 VAC, it is necessary to change a selector switch inside the unit:

1. Turn power to unit off and unplug unit.

2. Turn unit upside down and remove the four screws from bottom of unit. The screws are different sizes so it is necessary to make sure they get replaced in the same holes.

3. The voltage selector switch is located near the power switch on the circuit board. Move selector switch to desired line voltage (115 VAC or 230 VAC). The voltage is printed on the circuit board.

4. Replace cover and turn unit upside down.

5. Replace the four screws, being careful to get each screw in the proper hole.

6. Use a small label to cover the line voltage on the serial label on bottom of unit and note new line voltage.

Troubleshooting

Symptom	Probable Solution
PFC lamps do not flash or turn on at all	Check that the unit is plugged in Check the fuses and replace if required
The PFC lamps do not flash after a reasonable period (less than a few seconds) Both lamps are turned on	The Pulse Rate switch is set to position SS, Steady State DC; turn the switch to the 10 hz to 1.0 hz positons.
One lamp flashes, the other lamp remains turned on after a few a seconds operation	Return the unit to for repair
Only one lamp flashes	Return the unit to for repair

7. CUSTOMER SERVICE

Should any product require service or if you have any questions regarding its usage, contact our Customer Service department between the hours of 8:00 a.m. and 5:00 p.m. Monday through Friday at 510-217-0600 or 800-367-2452
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A Return Authorization (RA) number is required before returning any product for repair, credit or exchange. Please consult the warranty page of your manual for our shipping address and other pertinent information regarding specific units or systems.

8. REPLACEMENT PARTS

Description	Part Number
PFC-2, 115V, 50/60 Hz	4005184
PFC-2, 230V, 50/60 Hz	4005185
PFC, UK, 230 V, 50/60 Hz	4009734
Circuit Board w/connectors	4105828
Wall Bracket	5050718
HV-2 Connector Kit	5050538
HV-4 Connector Kit	5050539

9. WARRANTY

This product has been carefully tested at the factory and is warranted to be free from any defects in materials or workmanship. Simco-Ion will, under this warranty, repair or replace any equipment that proves, upon our examination, to have become defective within one year from the date of purchase.

The equipment being returned under warranty should be shipped by the purchaser to Simco-Ion, 1750 North Loop Rd., Ste 100, Alameda, CA 94502, transportation prepaid and insured for its replacement cost. Prior to returning any goods for any reason, contact Simco-Ion Customer Service at (215) 997-0590 for a Return Authorization Number. This number must accompany all returned items.

This warranty does not apply when the equipment has been tampered with, misused, improperly installed, altered, has received damage through abuse, carelessness, accident, connected to improper line voltage, or has been serviced anyone other than an authorized factory representative.

The warranty does not apply when Simco-Ion parts and equipment have been energized by other than the appropriate Simco-Ion power supply or generator, or when a Simco-Ion power supply or generator has been used to energize other than Simco-Ion parts and equipment. Simco-Ion makes no warranty, expressed or implied, nor accepts any obligation, liabilities, or responsibility in connection with the use of this product other than the repair or replacement of parts stated herein.

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