



Dual Phase+ Power Supply

INSTALLATION AND OPERATING INSTRUCTIONS

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1. SAFETY WARNINGS



NOTE – Statements Identified with a NOTE indicate precautions necessary to avoid potential equipment failure.



CAUTION – Statements identified with a CAUTION indicate potential safety hazards.

1. This equipment must be correctly installed and properly maintained. Adhere to the following cautions for safe installation and operation.
2. Read instruction manual before operating or installing device.
3. Qualified service personnel must do installation and repairs.
4. Ground the frame of the machine on which the power supply and neutralizing bars are mounted.
5. Disconnect supply voltage to power supply before connecting neutralizing bar to the high voltage terminal strip.



CAUTION – Electrical Shock Hazard

Do not touch bar when power supply is energized.

Disconnect supply voltage to power supply before connecting bar or performing any maintenance to the system.



CAUTION – Fire Hazard

Do not install or operate neutralizing bar in close proximity to any flammable solvents.

2. DESCRIPTION

Simco-Ion's Dual Phase+ Power Supply is designed to power Simco-Ion's Conveyostat and High Speed Web Bar Static Neutralizers. The Dual Phase+ Power Supply is capable of producing bipolar high voltage currents used to generate both positive and negative ions in extremely high quantities. This allows the neutralization of static charges on products moving at high speeds.

3. SPECIFICATIONS

Input Voltage	120 VAC, 60 Hz, 0.5A 230 VAC, 60 Hz, 0.25A
Output Voltages	120 (4 kV), 4016574 NEMA 12 Enclosure (indoor Conveyostat) 120 (4 kV), 4016576 NEMA 4 Enclosure (outdoor Conveyostat) 230 (4 kV), 4016575 NEMA 12 Enclosure (indoor Conveyostat) 230 (4 kV), 4016577 NEMA 4 Enclosure (outdoor Conveyostat)
Short Circuit Current	5.0 mA (max)
Enclosure	Painted steel with hinged and gasketed cover
Weight	22 lb (approx)
Color	Grey cabinet; white panel

4. INSTALLATION

Before placing the static neutralizer and the Dual Phase+ Power Supply in operation, be sure that all grounds and connections have been made as described in the following steps. Turn the power OFF when the equipment is not in use.

- a. The power unit supplied is selected by the factory depending on the type of static neutralizer to be powered. Therefore the power unit must be used only with the unit for which it was originally supplied. Do not remove equipment from, or add equipment to, the power unit without first consulting Simco-Ion.
- b. A typical power unit consists of two transformers (Phase A and Phase B) housed in an industrial NEMA Type 12/13 enclosure (see Figure-1). Connections to the transformer primary windings are alternated so that a pair of transformers will produce both polarities simultaneously at the outputs. This means that both positive and negative ions are produced at the same time by adjacent static bars within the static neutralizer.
- c. Power requirements for Dual Phase+ Power Supplies: 120 VAC, 60 Hz, approx 1 Amp.

Mounting and Grounding



CAUTION – Failure to properly ground the power unit may result in electrical shock hazard to personnel and inefficient operation of the static neutralizer.

1. Mount the power unit to the machine frame or to a convenient wall or post. Mount the power unit to a flat surface using the mounting flanges at the base of the power unit. Be sure to position it so that the power unit's case is properly grounded in order to ensure safe and efficient operation of the static neutralizer.
2. Ground the Dual Phase+ Power Supply by the following method: When installing the AC line power wiring, use 3-conductor cable. Two conductors will supply the line voltage. The third conductor will provide the ground connection between the ground at the power source (junction box or panel) and the ground post on the inner side of the wiring compartment of the power unit's case.

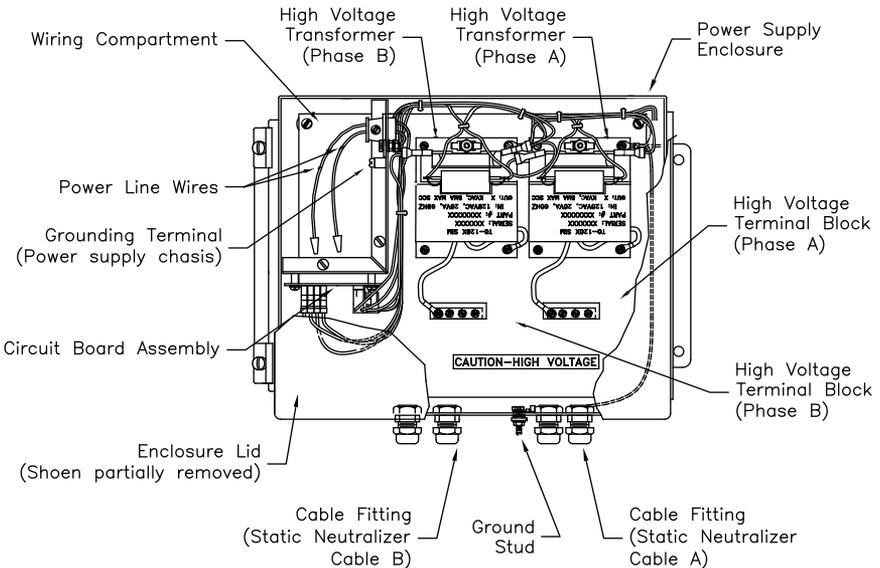


Figure 1. Dual Phase+ Enclosure

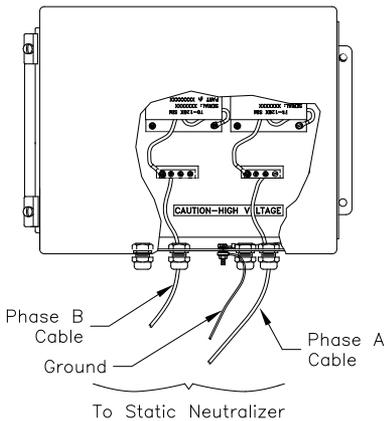


Figure 2. High Voltage Wiring to Static Neutralizer

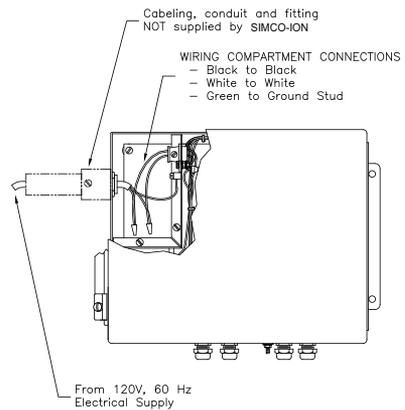


Figure 3. Low Voltage Wiring to Electrical Supply

High Voltage Connections

1. Make certain the power is OFF.
2. Open the door to the Power Unit.
3. Feed the high voltage cables through the grey bushings on the bottom side of the box (see Figures 2&3 above).
4. Cut the high voltage cable to the desired length. Be sure to allow additional length to reach the high voltage output terminal blocks inside the power unit's case.
5. Strip 3/8" insulation from the end of the high voltage cable and insert the cable through a straight-through fitting.
6. Loosen one of the connection screws on the high voltage output terminal block. Insert the stripped end of the cable under the screw and tighten. Tighten the straight-through fitting until snug. Pull gently on the cable to make certain the connection is secure.
7. If the HV cable is to be run in conduit then non-metallic conduit (1/2" PVC or similar) must be used for the HV cable. Metal conduit can interfere with proper system operation and should not be used.
8. When utilizing non-metallic conduit, the HV cable from multiple units cannot be combined in the same conduit. The HV cables must also be isolated from each other. Each HV cable should be its own dedicated conduit. Isolating the HV cables from each other, and from ground, will deliver the best system performance.



NOTE – Failure to follow the above guidelines may result in poor system performance, exhibited by nuisance alarms, power supply tripping and/or cable insulation failure.

AC Line Power (Low Voltage) Connections



CAUTION – Do not apply line voltage to the Power Unit until all grounds and high voltage connections have been completed and the static neutralizer has been installed.

1. Connection should be made only to a 3-wire 120V, 60 Hz AC source.
2. For rigid cable connection to the power unit: the use of local code approved solid 3-conductor cable through ½” size conduit with approved fittings is recommended (not supplied). On installations subject to Canadian Standards Approval: the use of conduit is required.
3. For flexible connection to power unit: the use of local code approved 3-conductor line cord is recommended (not supplied). Secure line cord to power unit with an approved cable clamp.
4. Connect the power source to the black and white leads using proper size wire nuts. Connect the grounded conductor to the ground post.



NOTE – If the static neutralizer is to be used on machinery, it is recommended that the power unit’s input wiring be connected to the machine’s RUN button. This will enable the power unit to be turned ON and OFF with the machine.

Warning / Fault Conditions

The Dual Phase+ generates warning and fault conditions based on the operational conditions of connected hardware. Warning conditions indicate that material (typically metalized film) is congesting the connected Conveyostat and impeding the output of one or more ionizer bars. The Warning condition is indicated by a yellow light. It is normal that the warning condition may be intermittent. Even with the Warning indicated, the Dual Phase+ continues to produce ionization in the Conveyostat system. If the Warning is indicated continuously, service should be scheduled to remove material trapped in the Conveyostat.

The Dual Phase+ indicates a fault condition with a flashing red light. The flashing red light indicates that a hard arc has been detected by the system. For safety the high voltage generators of the Dual Phase+ are shut down under this condition. To correct this condition it is required to inspect the connected Conveyostat for wiring faults or other short circuit conditions in the high voltage wiring. The fault condition can be cleared by cycling power or depressing the reset button on the front of the unit.

Remote Interface

The Dual Phase+ includes a 12 position connector that allows the user to remotely interface to the unit. The remote interface provides relay contacts reflecting the conditions of power, warning and fault. The remote interface also has an on/off input allowing the unit to be switched on/off remotely.

The remote on/ off input of the Dual Phase+ requires on 24 VDC. Application of 24 VDC to the remote on/off pins of the interface turns the unit on. Note that cycling power to the unit through this interface can also be used to reset a fault condition. To use the remote on/off feature the front panel switch of the unit must be in the off position.

The Power state of the Dual Phase+ is indicated on Power Relay pins of the remote interface. When the unit is powered the state of the power relay changes and it is held in this state. This allows detection of AC power loss to the Dual Phase+, as well as an off condition.

The Warning state of the Dual Phase+ is indicated on the Warning pins of the remote interface. The relay contacts change with the illumination of the Yellow warning light on the front of the unit. It is normal for the warning condition to be intermitted, if the warning indication is continuous servicing the connect Conveyostat should be completed. Typically with warning light indicates that ion generation of one or more bars is impeded by debris.

The Fault state of the Dual Phase+ is indicated on the Fault pin of the remote interface.

The relay contacts change state with the illumination of the Red fault light on the front of the unit. In a fault condition the red light flashes, relay contacts for fault toggle accordingly. In this case ionization is shut down for safety, the installation should be checked for high voltage wiring faults or other conditions that would create an high voltage arc.

NOTE – Wiring to the remote interface connector should be routed clear of the high voltage generators internal to the Dual Phase+.

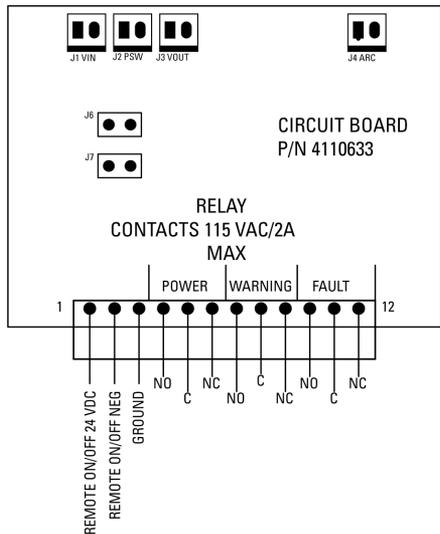


Figure 4. Remote Interface Pinouts

Remote Interface Box (Option)

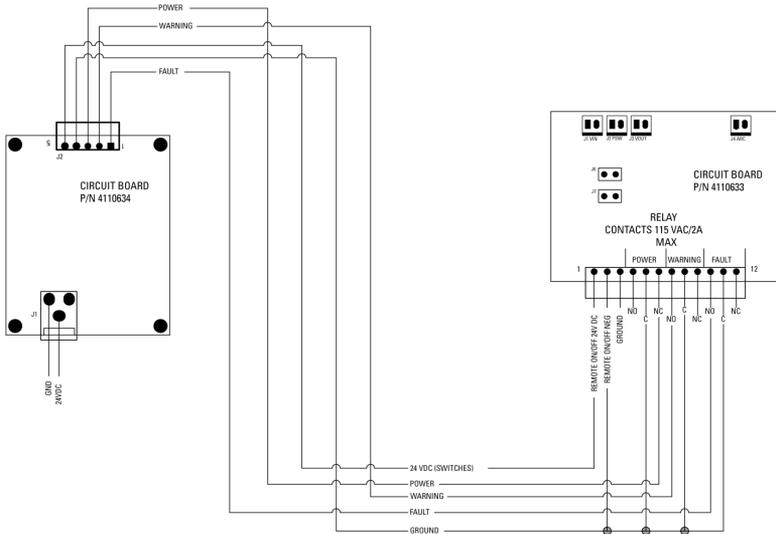


Figure 5a. Remote Interface Box Wiring Diagram

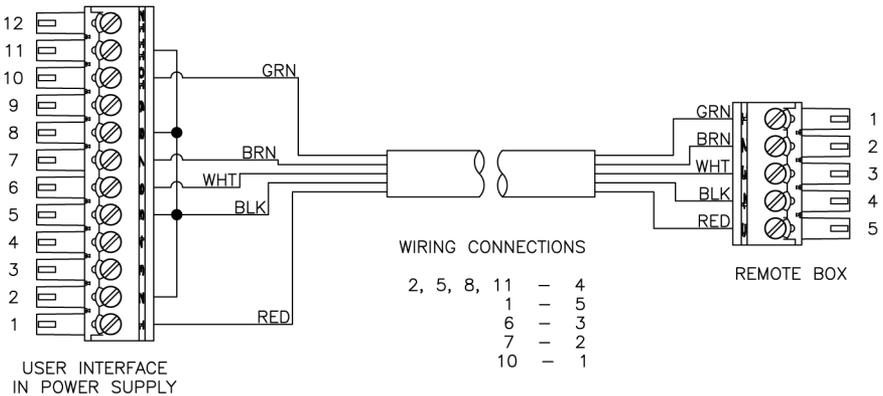


Figure 5b. Remote Interface Wiring Connections

An optional remote box is available. This box interfaces to the remote interface of the dual phase and allows the unit to be powered and monitored remotely. This can be beneficial to the installation by allowing the Dual Phase+ to be located close to the Conveyostat thereby shortening the required high voltage wiring to a minimum.

The remote interface box incorporate an on/off switch used to remotely turn the Dual Phase+ on/off and includes LED indicators for Power, Warning and Fault conditions. The remote box should be used in conjunction with the 24 VDC power source supplied.

5. OPERATION

1. Before operating the equipment, make certain all grounds and connections have been made as described in Section 2. Make certain the static neutralizer has also been properly installed.
2. To begin operating the equipment, simply apply line power to the Power Supply. The green light indicates power to the unit.
3. Always turn the power OFF when the equipment is not in use.
4. The **FAULT** and **WARNING** indicators are located on the face of the Power Supply. Loss of high voltage, or a short circuit within the attached static neutralizing device or its cables, will disable the Power Supply's high voltage output and cause the indicator to flash.
5. To reset a fault condition and extinguish the flashing indicator, you must first remedy the cause of the fault. Then simply press and hold the RESET button until normal operation is resumed.
6. The Warning function senses an imbalance in ion current. In some cases, this may cause nuisance trips of the power supply. To eliminate nuisance trips due to the Warning function, remove J5, located on the circuit board mounted inside the hinged cover. This will disable the Warning function, eliminating nuisance trips.

6. TROUBLESHOOTING

1. For safety and proper operation, Simco-Ion's static neutralizers must be connected to Simco-Ion power supplies as supplied by the factory to operate. Standard line voltage is converted to an output of approximately 4000 volts AC. In the event of a direct short circuit to ground at the output of power, the output current is limited to a maximum of 5 mA.
2. Precautions must be taken to avoid contacting the output of the Power Supply, the inner conductor of the high voltage cable, and the emitter points of the Simco-Ion Static Neutralizer. These points must be shielded and interlocked to prevent personnel contact with high voltages. Failure to do so may result in danger of electrical shock to personnel.

7. MAINTENANCE

Occasionally check to make certain that all ground and electrical connections are clean and tight. Periodically inspect all cables and wiring to ensure that there are no cuts, abrasions, or damage that can lead to operator shock or equipment damage.

8. 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, 2257 North Penn Road, Hatfield PA 19440, transportation prepaid and insured for its replacement cost. Prior to returning any goods for any reason, contact Simco-Ion Customer Service at (215) 822-6401 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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