

Simco-Ion Power Supply *Model Power Unit 47*

with CE marking, RoHS compliant
(fault detection circuit and high voltage output terminal assembled)

Instructions installation/Operation/Maintenance



⚠ Caution

It is very important that these instructions be read and understood before attempting to install or operate the equipment. Failure to do so could result in serious personal injury and/or damage to the equipment.

**At the end of this manual, a written warranty is provided.
This should be preserved carefully**

Introduction

Thank you for buying Simco-Ion products. This equipment will meet your expectations and provide safe operation when it is properly installed and maintained.

Receipt of equipment

Please carefully remove the equipment from the carton and inspect. Note any damage that might have occurred during shipment. Empty the carton to ensure that small parts are not discarded. If any damage has occurred during shipment, the local carrier should be notified at once. A report should be forwarded to SIMCO JAPAN, INC. The address and other relevant informations are written on the back cover page.

Packing articles and accessories

- | | |
|---|--------|
| (1) Simco-Ion Power Supply, model Power Unit 47 | 1 unit |
| (2) AC line cord, 1.8 m long | 1 unit |
| (3) Instruction Manual / Warranty (this book) | 1 unit |

Please check if any part is missing or does not have satisfactory finish. Contact us or our agents immediately in the event of such occurrence.

Notes To Users

Warning

This equipment is NOT constructed for classified (hazardous) environment. It cannot be used where it will be exposed to ignitable or corrosive materials and gasses

Caution

- This equipment contains a high voltage transformer. Please follow the operating instructions carefully in order to minimize electrical shock hazard
- It is intended for use in electrostatic processes that are free from water, oil and other conductive contaminants as well as condensation. Exposure to such contaminants will cause failure of the electrical insulation system in the product
- It should not be operated in an ambient with corrosive fumes of acid/alkali or corrosive gases such as chlorine
- Use the equipment following this instruction/operating manual. In case of wrong connections/usage, not only damages of the equipment also accidents may happen. Contact your electrostatic and/or electric technician when you use, install, and perform maintenance.
- Check the power output level on the label of this equipment prior to connecting the electrostatic ionizers and connect properly as guided. Do not attempt to use over the power output level described as this equipment' specification.
- The equipment can be connected to an input voltage up to 240 Vac and a line cord outlet (RoHs compliant and PSE marking), which is the other side of the cord can be up to 125 Vac. When you attempt to use between 90 Vac and 125 Vac, it can be used as a default setting. If you attempt to use over 125 Vac, use our recommended 250 Vac input code/cable and it is the special product for Simco-Ion Japan (no use for other products, RoHs compliant and no PSE). Also the 3P input cable plug would NOT be included. Use and connect the proper cable plugs or (3) the crimped terminals prior to usage and its GREEN/YELLOW color is the ground. When you are attempting to place the order of 200 Vac spec equipment, the outlet voltage 250 Vac input cable/cord is included
- The power supply must have proper grounding. Without proper grounding there may be electrical shock/fire hazard. Also the fault detection circuit does not operate properly without ground connection
- Switch the equipment OFF during prolonged periods of non-use, such as plant shut-down, overnights, and weekend.
- This equipment is likely to be damaged if dropped. In such an event, it should be carefully examined and any necessary repairs be made by an authorized technician. The equipment will produce considerable electrical noise and insulation might burn if the unit is damaged and prolonged usage
- The power supply was assembled and inspected at Simco-Ion Japan. Do not attempt to disassemble or modify its construction. If you are not clear about its operation and maintenance, contact Simco-Ion Japan and/or the authorized agents in your area.

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Explanation of Symbols:

 **WARNING**

 **ATTENTION / CAUTION**

 **ELECTRIC SHOCK HAZARD**

Section 1 GENERAL DESCRIPTION

Power Unit 47 is a high voltage transformer, which is compact size and provides a variable AC output and it is intended for use with the static eliminators by Simco-Ion.

Power Unit 47 can provide single-phase output from AC 3.5 kV to 7.0 kV range and also the built-in DC bias transformer can provide DC -150 V to +550 V simultaneously with AC output. (However DC output is for ion balance, not used as DC transformer) Thus various Simco-Ion ionizers can be used with Power Unit 47

Power Unit 47 should be connected to shockless type ionizers to prevent from any electrical shock. So the shockless ionizers have electrostatic bonding with the emitter and high-voltage cable (some of ionizers are shockless type by managing the current limit by high resistance)

Table: The list of the ionizers for Power Unit 47

Type	Model	Output	Appropriate/Permitted load
Static bar	MEB,MEB-RS (RoHS)	6.8 kV	2 units, bar maximum 5 m
	MEB shields, MEB-CE (tooled type, CE marketing)	6.8 kV	2 units, bar and cable of maximum 5 m
	Blue Bar (R50)	5.0 kV	
	MF	4.0 kV	
	SS50,SS50-RS	3.5 kV	2 units, bar maximum 5 m
	SS50 shield, SS50-CE	3.5 kV	2 units, bar and cable of maximum 5 m
Nozzles	HSS-2 (shield CEE)	6.8 kV	2 units, cable maximum 5 m
	HS-2	6.8 kV	Maximum 20 units
	R36 series	5.0 kV	2 units, cable maximum 5 m
	TN series (with/CE mark)	4.0 kV	
	H (shield type), SFN-3	3.6 kV	
	H	3.6 kV	Maximum 20 units
Gun	ES	6.8 kV	2 units, cable maximum 5 m
	HBA	3.6 kV	2 units, cable maximum 6 m
Blower	AS20(F)	6.8 kV	2 units

ATTENTION

- The Table shows the maximum number of eliminators that could be connected to one Power Unit 47. More eliminators, connected to a single Power Unit 47, would overload it and might damage the unit.
- When ion balance is important, please connect only one eliminator to one Power Unit 47. Individual control of ion balance of the eliminators is not possible when more than one ionizer is connected to the same power supply.
- With Power Unit 47 the ion balance for Air nozzle HS-2, HSS-2, TN and Static bar MEB and Air gun ES and Blower AS-20(F) cannot be adjusted.
- The table shows the maximum number of ionizers that could be connected to one Power Unit 47. If you connect more than the number listed, it would overload and damage the unit.
- If more and specific information needed for the ionizers and shield cable, contact our sales representatives and/or distributors of Simco-Ion Japan.

Section 2 FEATURES

Simco-Ion Power Unit 47 can be used under wide range of input voltage as single-phase 90 to 240 VAC, 50 to 60 Hz with the inverter circuit inside. A pilot lamp of high brightness blue LED helps to confirm if the unit is ON from a far-off place.

Simco-Ion Power Unit 47 has three inherent characteristic as follows;

2.1 Variable AC high voltage output

Generally, a power unit for static eliminators is connected with their own ionizers. Thus power unit supplied fixed high voltage output. The demand for power units that could adapt to various ionizers has increased recently because of cost consideration and convenience.

To meet this requirement, AC output voltage of Power Unit 47 can be varied in the range 3,500 VAC to 7,000 VAC.

2.2 1/1000 voltage output terminals for monitoring the high voltage output

Power unit 47 has 1/1000 voltage output terminals intended to be used for output monitoring. The high voltage output of the Power Unit 47 can be monitored by connecting a multimeter. Alternatively the high voltage output of the Power Unit 47 can be checked easily with a multimeter using a connecting cord.

Power Unit 47 features the easiness of control and is the specific designed for electrostatic devices.

2.3 Fault detection circuit

High voltage cable has the limited product cycle. Thus under wrong wiring and installation, dirt, physical damage on cable, and condensation, the cable life would be even shorter (designed lasting for 10,000 hrs) and cause an insulated cable. As the worst case, it would cause burning.

As the ordinary methods to prevent problems above, the user has been doing periodical exchange of cable and/or taking very reactive actions, such as stop the production line, replacing with new ones. Ultimately these are not the countermeasures for root causes.

Power Unit 47 included a fault detection circuit to turn off the high voltage and inform an operator when there is a failure in high voltage output or cable. Also if Power Unit 47 is connected to the equipment fault detection system, it would be available of the remote control.

The users are recommended to read very carefully "Section 7: Maintenance and Inspection" and periodically check the ionizer and Power Unit 47 performances.

Section 3 SPECIFICATIONS

3.1 Model

Model Name: Power Unit 47

Product Type: Inverter Transformer

3.2 Standards

CE

RoHs

3.3 Electrical Specification

Input: 90 ~ 240 Vac (allowable range), 50 ~ 60 Hz, 60 VA max

Inlet: IEC 320 (w/noise filter)

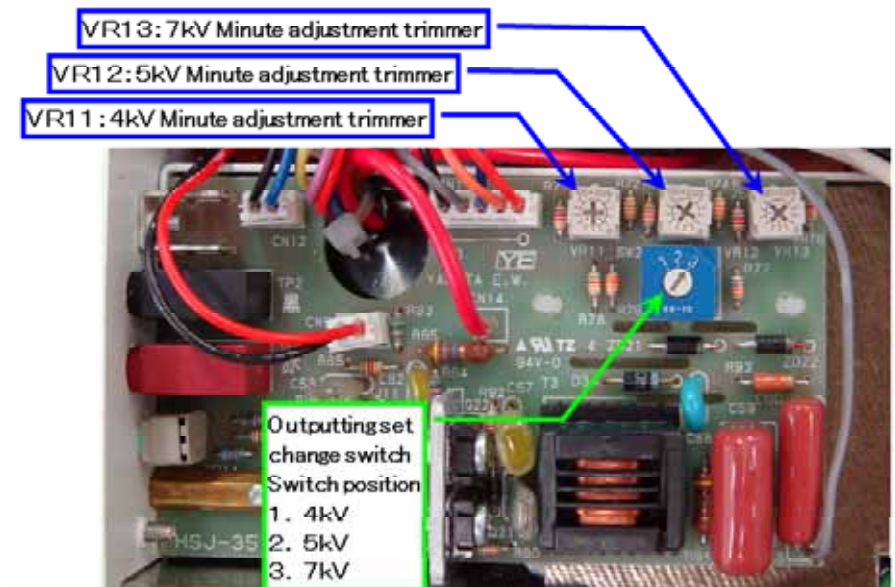
Output: AC 3.5 kVac ~ AC 7.0 kVac (adjustable, internal to the enclosure)

DC - 150 C ~ +550 V

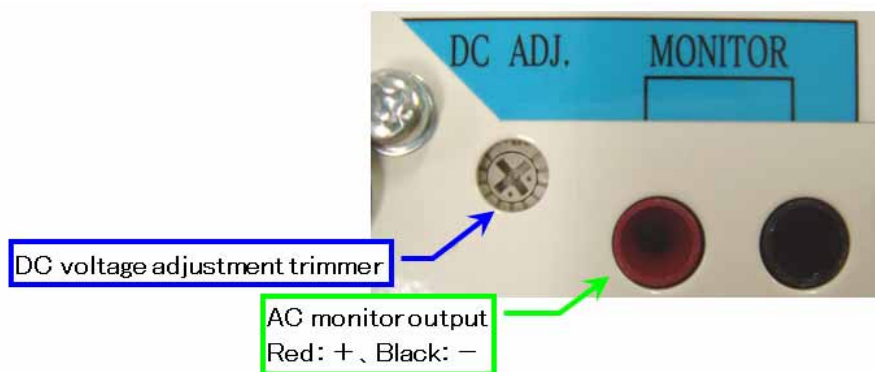
Output frequency: 55 ± 5 Hz

Output setting: AC high voltage setting can be adjusted with the internal switch (Open top case) and fine tuning by the volume control

Output	AC		
Output setting	4 kV	5 kV	7 kV
Range of output adjustment	3.5 ~ 4.2kV	4.2 ~ 5.2kV	6.0 ~ 7.2kV



AC voltage output setting
Can be adjusted by the volume on the side of case



AC monitoring output: 1/1000 V \pm 5 % of AC high voltage output
Check terminal F6101 (FUJIKON), tester pin dia 2 mm

High Voltage output terminal: Two Ceramic high voltage connector
recommended connector SIMCO
A3030/A3031 or A3030R/A3031R

Short circuit current: 4 mA max

Maximum Load: See the table (page 4)

Electrical noise: Adapted to VCCI Class A

International Protection: IP20

Indicator: High brightness blue LED is turned on by the power switch. With the power switch off or the activation of the fault detection circuit, blue LED is turned off

Fuse: 250 Vac, 3.15 A, E67006 on the PCB

Fault Detection circuit: (overloaded) It operates when AC output is higher than 4 mA

Fault Detection circuit: (under loaded) When the high voltage falls below approx. 75% of output voltage and/or short-circuit and/or the abnormal spark

Fault Detection: It terminates the high voltage transformer input and AC and DC output. At the same time, the pilot lamp is turned off and the alarm signal is out and shows the abnormal condition.

Response Time: Adjustable by the volume
HIGH(Fast): 40 ~ 60 msec (default setting)
LOW(Slow): 180 ~ 250 msec
The total time to respond may be affected by the nature of the spark

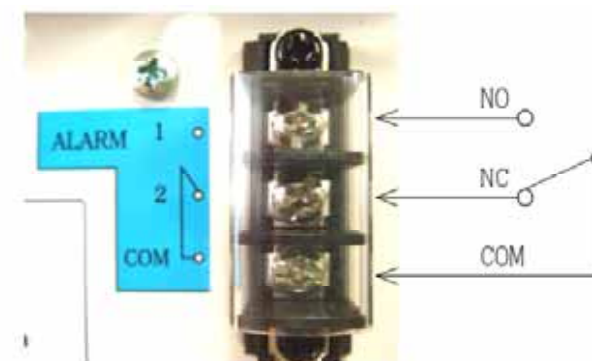
Reset: Turn the power switch off and ON again after 2.5 sec or longer

Relay Contacts: The output terminal is used for 1.2, COM 3P and the operation is below table

Relay Contact	Power OFF	Power ON Normal	Power OFF Abnormal
1-COM	OFF	ON	OFF
2-COM	ON	OFF	ON

ON: Conduction OFF: Non-conduction

Terminal block: 3 P (three the alarm output terminal)
FUJIKON terminal block F2362AX-3P-CT
Screw: M3×0.5×6L, Torque: 0.6N·m



The following is the specification of the high voltage transformer (excludes the fault detection circuit)

Short Circuit current: 4 mA max

Insulation resistance: More than 20 MΩ between the primary and secondary windings or the enclosure at 500 Vdc

Dielectric strength:	Test voltage applied between the primary winding and the enclosure. Test voltage is 1500 Vac 1 minute or 1800 Vac 1 second
Conductive Test:	Between the secondary and the ground, no breakage with 10.5kV, 1 minute
Non conductive class:	A class

3.4 Mechanical specifications

Dimensions:	157 (W) × 165 (L) × 115 (H) [mm] (includes flanges) Refer to a drawing in page 23.
Weight:	Approx. 5 kg
Enclosure:	Sheet thickness: 1.2 mm (box metal), Paint: White, gloss finish
Power cable:	1.8 m long with a 3 prong plug (125 Vac max.), PSE marking, RoHS compliant; Color: white 200 Vac line cord (250 Vac max.): RoHS compliant, usable for SIMCO products only, 3P-Plug NOT attached (green/yellow wire is for grounding); Color: white
Output terminals:	2 ceramic high voltage connectors
Others:	IEC 320 power inlet, main switch, pilot lamp (blue LED), alarm output terminals, delay adjustment for fault detection circuit, voltage output terminals for monitoring the high voltage output, ground terminal, flanges, nameplate, RoHS compliant, CE marking

3.5 Ambient condition

For operation:	0 ~ 50 , 10 ~ 90 % RH
For storage:	-30 ~ 70 , 10 ~ 95 % RH

3.6 Product Life:

10,000 hours (based on 8 h/d, 250 d/y, 5 years)
Warranty: 1 year after shipment.

Section 4 FAULT DETECTION

Power Unit 47 includes a fault detection circuit

4.1 Purpose

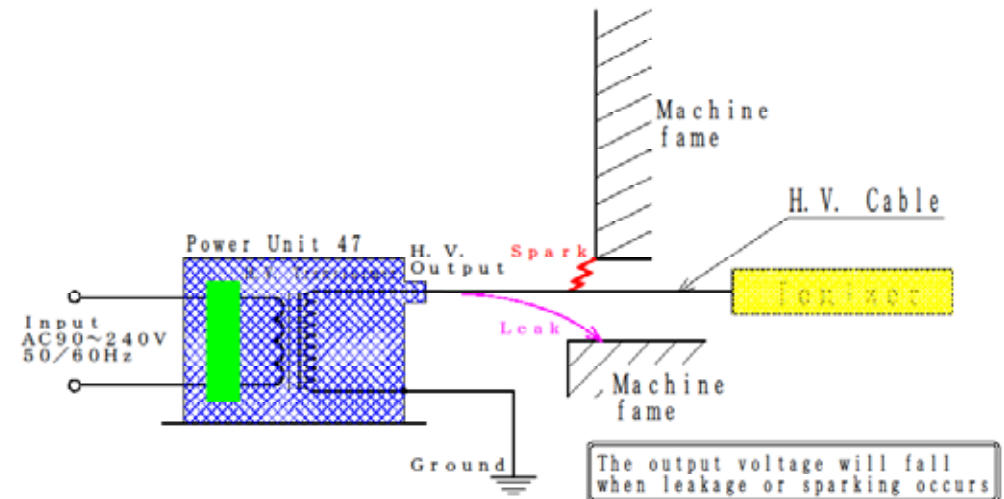
Static eliminators employ high voltage for the generation of ions that are used to neutralize static charges. The types of fault that might occur in such a high voltage circuit are: i) insulation degradation and failure and ii) accidental short circuit with grounded objects in the vicinity.

Contamination of high voltage insulation causes insulation degradation with time and provides leakage path for current to flow. Excessive leakage current, accidental short circuit with grounded object, arcing -- all these could burn insulation and can, potentially, become fire hazard.

A fault detection circuit interrupts the supply to the primary of the transformer (used in a Power unit) under such abnormal conditions

4.2 Operating Principle

Power Unit 47 uses an inverter type transformer and can generate the secondary circuit being 3.5 to 7 kVac by providing the primary circuit voltage being 90 to 240 VAC. One of the two terminals of the secondary winding is grounded. Abnormally high secondary current would result in significant reduction of the secondary output voltage.



Section 5 ION BALANCE CIRCUIT

Power Unit 47 would be over-loaded if the ionizers are connected as over permitted load and/or there are voltage leaking, short circuit, and the abnormal discharges.

If the current leakage and short-circuit occurred, the objects along with the current path (usually ground) could be over-heated and may cause burning. The abnormal discharge also may cause the electric noise and ignition.

When overloaded, the secondary high voltage output of Power Unit 47 will provide lower output then the permitted load.

When there is a spark over or short circuit on the high voltage side of the Power Unit 47, a fault detection circuit operates to cut off the high voltage by disconnecting the input to the primary of the transformer. The threshold point is approx. 75 % of the rated output voltage.

43 Operation

An alarm circuit and/or an emergency light circuit, if used (optional), should be activated. The pilot lamp is turned off indicating that the static eliminator is not energized.

Power Unit 47 will not start automatically although the alarm condition is over. To activate Power Unit 47, turn the power switch OFF. Wait three (3) seconds at least, then turn on switch ON.

However, if the abnormal conditions still continue, Power Unit alarm system detect the problem and shut down.

Caution

- The fault detection circuit will operate improperly and possibly shutdown the static eliminator when there is a large momentary fluctuation in the line voltage either because of an intermittent discharge to ground, or a large capacity motor switching on the same supply circuit.
- If Power Unit 47 is turned ON/OFF periodically because of the nature of the duty cycle, special precaution should be taken to take care of situations following a failure in the neutralizer/high voltage cable. The supply to the unit must be disconnected automatically to avoid further damage to the high voltage cable/neutralizer. In order to do this, the supply line to the unit should be interlocked with the operation of the fault detection system.

5.1 Purpose

Generally under the application of AC voltage, the numbers of positive and negative ions produced by an ion emitter are different. Therefore, often, there will be residual charge left on an object during static elimination.

Figure 5-1 shows a static voltage decay curve with time during static elimination when ion balance is good. If the numbers of positive and negative ions are equal the static charge of both polarities can be eliminated to zero volt.

Figure 5-2 shows a decay curve when ion balance is bad. The positive and negative charged decay curves are not the same. The final ion balance voltage deviates from zero volt. The ionizer produces more negative ions than that of positive.

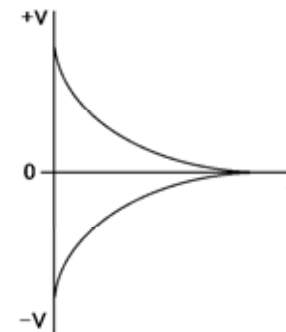


Fig 5-1

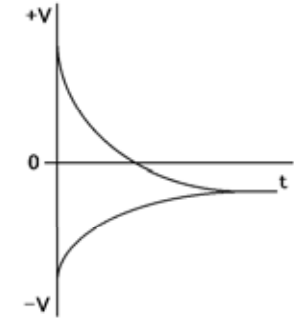


Fig 5-2

As Power Unit 47 can generate variable DC bias voltage superimposed on AC high voltage ion balance adjustment is possible except on some type of ionizers. The table below indicates where ion balance adjustment is effective

Table: Ionizer models for Power Unit 47

Ion balance	Type	Eliminator model	Construction
Adjustabl	Static Bar	R50	register
		MF	direct or register
		SS50	direct
	Nozzle	R36	register
		H , SFN-3	direct
	GUN	HBA	
Non-Adjustabl	Static Bar	MEB	Condenser coupling
	Nozzle	HSS-2 (shield type, CE)	
		HS-2	
		TN (CE))	
	Gun	ES	
	Blower	AS20(F)	

5.2 Operating Principle

The extent of unbalance would depend upon applied high voltage on the emitters, the emitter shape, humidity, airflow, etc.

In film, paper and plastic industries, the static problems during manufacturing processes are contamination attraction or repulsion of sheet and components or electrical shock from charged products, etc. In these cases, a good ion balance is not needed. The acceptable offset voltage by an unbalanced ionizer can be tens or several hundreds of volts.

In electric industries, low offset voltage as much as 100V could breakdown a product. In this case, the static charge should be controlled to low levels. Therefore the ion balance adjustment is important.

Generally higher voltage produces more ions. With Power Unit 47 the ion balance can be adjusted by adding a desired polarity of DC bias on the AC high voltage output. The wide range of adjustable DC bias voltage can result in good ion balance for many kinds of ionizers and operating conditions.

5.3 Operation

AC high voltage and DC bias voltage are turned ON/OFF the power switch on Power Unit 47.

Before shipment, AC high voltage and DC bias voltage are set to suitable value corresponding to the type of ionizer to be used. No further adjustment is necessary by a user. The factory settings for ionizers, operation conditions, AC high voltage levels and DC bias voltage are shown in the table in Section 7.

DC bias voltage should be varied to readjust ion balance when the operating conditions are changed (ex. Different distance between a charged object and ionizer, the use of the compressed air for ionization). For procedure of adjustment please refer to Section 7.

Section 6 INSTALLATION

Warning

Do not install Power Unit 47 in an ambient that contains organic solvents or flammable gases.

Caution

- Do not apply input voltage to the Power Unit 47 until all ground and high voltage connections have been completed and static elimination device has been installed.
- Please handle it with care; avoid mechanical shocks because of sensitive electronic circuit inside.
- Proper grounding of the power unit enclosure is essential for safe operation of the equipment.
- Proper orientation in placing the unit is needed so as to avoid water from going into high voltage connection

6.1 Mounting of Power Unit 47

The unit can be easily mounted using the mounting flanges at the base of the unit by four M5 screws. Do not drill the enclosure of the unit. The machine on which static charges are to be eliminated, the static eliminators and the Power units should have common ground connection.

6.2 High Voltage Cable and Connectors

Power Unit 47 is designed specially for use with Simco static neutralizing equipments. For the maximum load please refer the table on page 4.

The high voltage cable on the static eliminators may be shipped with a spring loaded male connector at its end. After installing the static eliminator, the spring loaded male connector of the voltage cable can be inserted in the high voltage female connector of the Power Unit and finger tightened (do not use any tool). Either type A3030, A3031 or A3030R, A3031R (RoHS compliant) high voltage connectors can be used with Power Unit 47. The ground lead of high voltage cable must be connected to the ground terminal of the unit.

Caution

- Please consult the instructions for the static eliminating device for information on its proper installation.
- If the load exceeds the specified maximum PU47 neutralizing equipment and high voltage cable may be damaged. Also, if the load is high the fault detection circuit may activate when turning on the power switch.

6.3 Optional Alarm Circuit

Power Unit 47 will signal abnormal conditions by lighting a red lamp. A separate power supply (customer supplied) is needed to use this feature. When using an alarm device, connect it to the alarm output terminals located on the side of PU47. During an abnormal condition the signal closes or opens a relay contact (COM, 1, 2). The maximum rating of the relay contacts are; AC 250 V, 0.2 A or DC 30 V, 2A.

After switching PU47 on high voltage output needs several hundred milliseconds to reach the final value. The relay contact of the alarm shows abnormality during the time. Therefore when checking the alarm function using a sequencer one second will be needed after the power is on.

Connect	Power OFF	Power ON normal	Power ON abnormal
1-COM	OFF	ON	OFF
2-COM	ON	OFF	ON

ON ; Conduction OFF ; Non-Conduction

6.4 Utility Line Connection

The adapter can be connected to an input voltage range of 100-240 Vac, 50/60 Hz. Normally a line cord with a 3-pin plug is provided. This cord must be changed when connected to 200 Vac line. The line cord for 250 Vac is not supplied by Simco. However, the line cord for 250 Vac is enclosed if specified that the power unit is to be used under 230 Vac in advance at time of order.

Caution

- Proper grounding of the power unit enclosure is essential for safe operation of the equipment. The resistance to ground must be less than 100 ohms.

Section 7 ADJUSTMENT

6.5 Using a Multimeter

The high voltage output of PU47 can be quickly checked by using an AC voltmeter (multi-meter).

Connect the measuring leads to a multi-meter set to AC voltage measurement mode. Polarity is not important during AC voltage measurement. Connect other end (check pins) to the monitor terminals of PU47. The terminals are FUJIKON check terminals F6101. The check pin size should be 2 mm diameter.

When the multi-meter is in AC voltage measurement mode and PU47 is turned on the multi-meter will display 1/1000 voltage of the high voltage output of PU47. The value should be 3.5 to 7 Vac which represents PU47 output voltage in kVac directly.



Caution

- The multi-meter has to be set to AC voltage measurement mode. Do not apply any voltage to the monitoring terminals of PU47.
- Do not short circuit the monitor terminals to each other or to the ground. The wrong connection might damage PU47 and the multi-meter.

Attention

-All of the adjustment potentiometers and an output range switch are placed inside of the unit to prevent misuse. Refer the drawing on page 7 for details.

7.1 Adjustment of DC bias voltage and high voltage AC output

AC and DC output voltage of each Power Unit 47 are adjusted to stated voltages for each type of ionizer at the factory with shipment. The following table shows the ionizer model and default output voltage for a typical operating condition.

Type	Product Model	AC Output	DC Output	Distance / Condition
Static Bar	MEB	6.8 kVac	0 Vdc	Not capable of ion balance
	R50	5.0 kVac	380 Vdc	75 mm, 0.2 MPa
	SS50	3.5 kVac	190 Vdc	100 mm, 0.2 MPa
	MF-4	4.0 kVac	220 Vdc	100 mm, 0.2 MPa
	MF-4R	4.0 kVac	270 Vdc	100 mm, 0.2 MPa
Nozzle	HS-2,HSS-2	6.8 kVac	0 Vdc	Not capable of ion balance
	R36	5.0 kVac	220 Vdc	150 mm, 0.1 MPa
	H	3.6 kVac	110 Vdc	150 mm, 0.1 MPa
	TN-2/2R	4.0 kVac	0 Vdc	Not capable of ion balance
	SFN-3	3.6 kVac	0 Vdc	100 mm, 0.2 MPa
Air gun	ES	6.8 kVac	0 Vdc	Not capable of ion balance
	HBA	3.5 kVac	260 Vdc	150 mm, 0.21 MPa
Blower	AS-20(F)	6.8 kVac	0 Vdc	Not capable of ion balance

1 MPa 10 kgf/cm²

For an ionizing bar with an air tube or under the different conditions of use ion balance should be readjusted with a charge plate monitor (CPM). Turn off the power switch of Power Unit 47 and open the top casing by undoing the two upper side screws. Confirm the output range switch is set to proper position for each ionizer. If AC output for an ionizer is 6.8 kVac the output range switch should be set to "3" of the position of 7 kV. For 5.0 kVac ionizer, set to "2" of the position of 5 kV. Other case, it should be set to "1" of the position of 4.0 kVac.

Connect a multi-meter to the monitor terminals (1/1000 output terminals) of Power Unit 47 for the confirmation of the high voltage output. Turn on the Power Unit 47 and check AC output voltage. Adjust the fine adjustment potentiometer if needed. The output voltage has to be properly set for each ionizer. During normal use of any ionizer there should be no visual spark. If an excessive voltage is applied it may spark. Sparking generates electric noise. Moreover, the life of Power Unit 47 and or ionizer connected to the power unit will be shortened considerably.

Install a charge plate in the working area in front of ionizer.

Set the charge plate monitor with ION BALANCE MODE.

Check the voltage on the CPM and adjust the ion balance (DC bias voltage) of Power Unit 47 with a small screwdriver until the ion balance reaches to 0V.

Caution

-Do not raise the output voltage beyond each recommended voltage. The position of 7.0 kV the maximum voltage to be set is 7.0 kV. The position of 5.0 kV and 4.0 kV the maximum voltage are 5.0 kV and 4.0 kV respectively. Overloaded voltage may shorten the life of the ionizer and the high voltage cable.

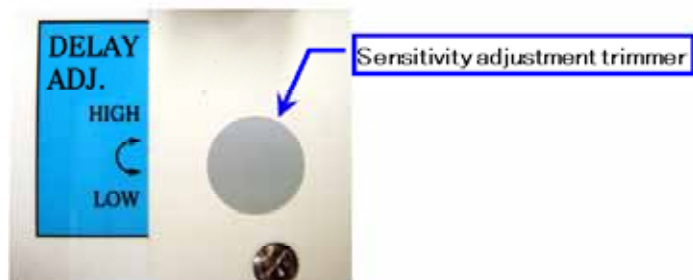
7.2 Delay adjustment for fault detection circuit

The adjustment of delay of the fault detection circuit to act is done by adjusting a potentiometer. It is preset to HIGH.

If the fault detection circuit acts frequently with no apparent reason, then adjust the time delay to LOW. The LOW setting might be required for instance where the utility lines have frequent disturbances.

Turn off the power switch of Power Unit 47. Peel off the round sticker near the power switch and rotate the potentiometer of delay adjustment to counterclockwise with a small screw driver.

In case the duration of abnormal condition is shorter than the adjusted delay the fault detection circuit will not be activated.



Section 8 OPERATION

8.1 Operation

Turn on the power switch. When in remote operation close the terminals REM and GND. In this case the power switch should be off. The pilot lamp, blue LED, which should light up indicates that the static eliminating device is energized and static charge neutralization is occurring. The alarm circuit acts and indicates the normal operation. If a multi-meter is used the meter indicates the output voltage of the Power Unit 47.

8.2 Abnormal Condition

When there is a spark over or short circuit on the high voltage side of Power Unit 47 a fault detection circuit operates to cut off the high voltage and DC bias voltage by disconnecting the input to primary of the transformer. An alarm circuit and or an emergency light circuit, if used (optional), should be activated. The pilot lamp is turned off indicating that the static eliminator is not energized. The display of the multi-meter shows 0V. Turn off the power switch. When remote operation, open the terminals REM and GND.

8.3 Alarm Switch Reset

After finding and correcting the problem, turn on the power switch of Power Unit 47 or close the terminals REM and GND. If an abnormal condition persists, the alarm circuit will be activated again after a delay.

8.4 All stop

Turn off the power switch. Confirm that the pilot lamp is off, the alarm detection function is off, the tester shows 0 Vac.

Caution

-The fault detection circuit will operate improperly and possibly shutdown the static eliminator when there is a large momentary fluctuation in the line voltage either because of an intermittent discharge to ground or a large capacity motor switching on the same supply circuit.

-Wait 3 seconds before turning on the power again. In remote operation, the waiting time should be more than 0.1 second.

-If Power unit 47 is cycled on and off the cycle time must be more than 5 minutes to prevent damage to the unit. In this case, the supply line to the unit should be interlocked with the operation of the fault detection system.

Section 9 MAINTENANCE/INSPECTION

9.1 Maintenance

9.2 Check the ground

Periodically check ground connection and proper functions of the pilot lamp.
The measured distance between the enclosure of static neutralizing equipment, machine frame and Power Unit 47 should be less than 100 ohms.

9.3 Fault detection check

- a) Turn on the power switch.
- b) Take a screwdriver with an insulating handle and connect its metal shaft to the common ground with a connecting lead. If the ground connection is not good the operator might suffer from electrical shock. Insert the metal shaft of the screwdriver to the high voltage connector of the unit until a spark occurs. This would turn off high voltage, DC bias voltage and the pilot lamp.
- c) Remove the screwdriver and turn off the power switch.
- d) After 3 seconds, turn the power switch on again. The pilot lamp should light up and high voltage output and DC bias voltage should be restored.

Caution

- When conducting the following test, be certain that no flammable solvents and gases are in the ambient air. Also, switch off any computer or sequencer in the vicinity to protect these against electrical transients and noise.
- The test of the fault detection circuit should not be repeated frequently as it causes undue stress on the transformer.

9.4 Voltage Output check

Please refer the instruction from Page.16 to Page.18 and follow.

Section 10 TROUBLE SHOOTING

10.1 Troubleshooting

Step 1 : • Trouble

The pilot lamp does not light or there is no output voltage when the power switch is turned on.

• Probable cause

- 1) The supply voltage has not been switched on.
- 2) High voltage cable and static neutralizing equipment (ionizer) need cleaning.

• Countermeasure

Switch on the supply voltage. If the problem continues, the cable and ionizer should be cleaned with a soft cloth or a soft nylon brush. Do not use any solvent or metallic brush. Regular cleaning will maintain a high performance level for a static eliminator.

Step 2 : • Trouble

Power unit shows abnormal condition even after cleaning.

• Probable cause

High voltage cable or static ionizer may be damaged.

• Countermeasure

Turn the power unit off. Disconnect the high voltage connector from the power unit. Test the power unit separately. If it works properly, the high voltage cable or ionizers may need repair or replacement. A power unit with multiple neutralizers may need to be checked with each ionizer separately to locate the source of the problem.

Step 3 : • Trouble

Even after following through steps 1 and 2, the power unit does not work.

• Probable cause

The power unit may be damaged.

• Countermeasure

Repair or replacement may be necessary. Contact Simco Japan, Inc. or our agent with the serial number of the power unit and a description of the problem.

10.2 Abnormal conditions

In case any of the following problems is observed, turn the unit off and contact us or our representatives in your area.

- a) It is impossible to adjust the output voltage correctly
- b) Any persistent visible spark
- c) Any abnormal sound, smell or high temperature

All these problems need inspection/repair/replacement. A request for any of these requirements should be accompanied by a detailed description of the observed abnormality.

Section 11 REPLACEMENT PART

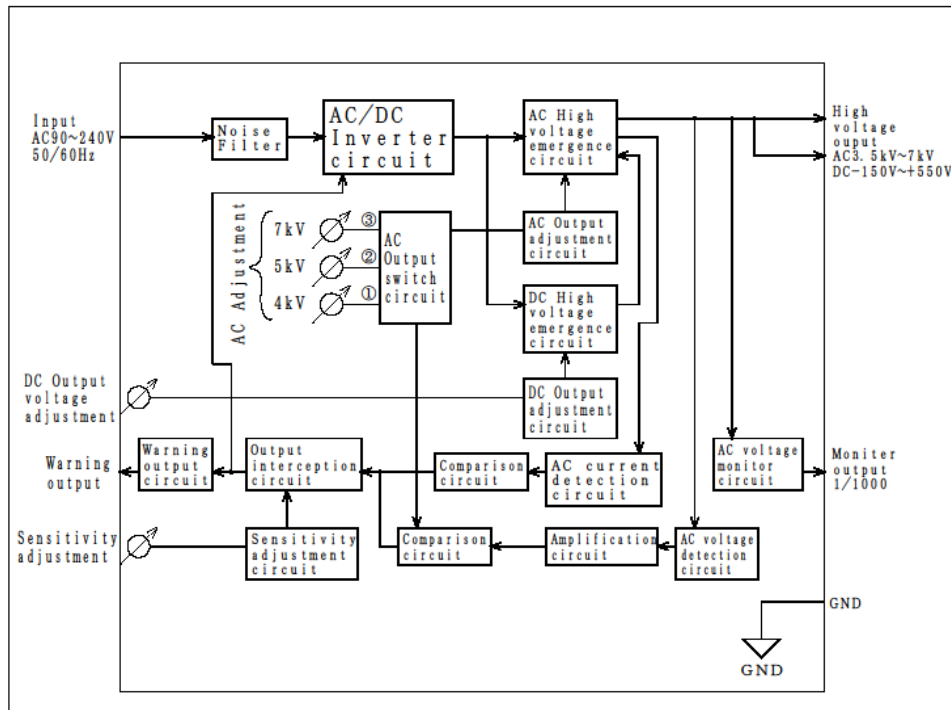
11.1 Replacement Parts

No replacement parts are available for Power Unit 47.
(except fuse, lamp, switch, and general electric parts)

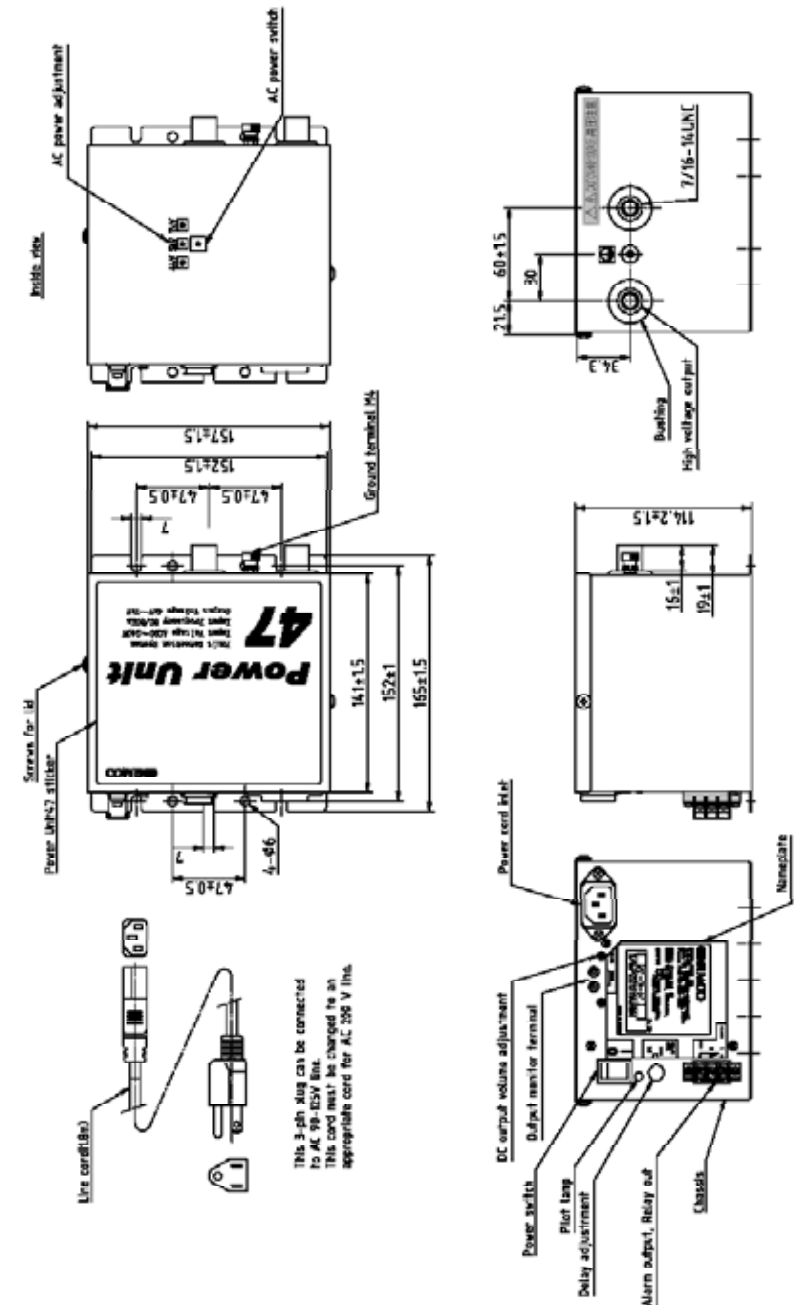
Caution

Contact Simco-Ion Japan and ask the representatives to replace the parts. DO NOT replace by yourselves so that it may cause product and yourselves hurt. After the warranty period, the repair fee would be charged.

BLOCK DIAGRAM POWER UNIT 47



DIMENTION POWER UNIT 47



SIMCO EQUIPMENT REPAIR WARRANTY

Simco-Ion equipment has been carefully tested and inspected at the factory and is warranted to be free from any defects in materials or workmanship.

Simco Japan, Inc. will, under this warranty, repair or replace any equipment, which proves upon their examination, to have become defective within the Warranty period from the date of purchase. A one year Warranty applies to all Simco equipment. The equipment is to be returned by the purchaser to Simco Japan, Inc. or authorized agent of Simco, transportation prepaid and insured for its full purchase price. Prior to returning any goods for any reason, contact Simco Japan, Inc. or authorized agent for an Authorized Return Number. This number must accompany all returns.

The 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 by anyone other than an authorized factory representative. The warranty does not apply when Simco-Ion parts and equipment have been energized by other than appropriate Simco Power unit or generator, or when Simco-Ion Power unit or generator has been used to energize other than Simco-Ion parts and equipment.

Simco Japan, Inc. 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 as stated herein.

Product Name	Simco Ion Power Supply Model Power Unut 47		
Delivery Date	Product's serial number contains information on the shipping date.	Warranty Period	One Year Warranty



We Are Electrostatic Specialist

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