

AHVPS-714-40-MV

14kV/40mA High Voltage Power Supply for Electrostatic Air Cleaner

Specifications and Operating Manual

1. General

The HV Power Supply must be mounted indoors, protected from weather Elements, in a location easily accessible by operating service personnel.

The HV Power Supply is equipped with universal input; power factor corrected (PFC) AC/DC power supply and can operate from 120VAC or 220VAC power lines.

The maximum current draw is 6 Amp from 120 VAC line and 3Amp from 220VAC line.

Use these numbers to select proper wire gage as per applicable standards.

The block diagram of HV Power Supply is shown in Fig.1.

It comprises 4 assemblies:

- Control/Power Board
- HV Transformer
- HV Multiplier
- Display Module

The PFC AC/DC Power Supply produces 450V DC, which powers the Resonant Power Converter.

The Resonant Power Converter drives the step up Power Transformer, which center tap output winding supplies up to 1.5KV RMS to the HV Multiplier. The HV Multiplier has two outputs:

Ionizing Voltage – Labeled as 14kV

Collector Voltage – Labeled as 7kV

The Display Module monitors and displays crucial operating parameters and error codes and controls status LEDs. The HV adjust potentiometer is located below display panel.

AIR CLEANER HV POWER SUPPLY WIRING

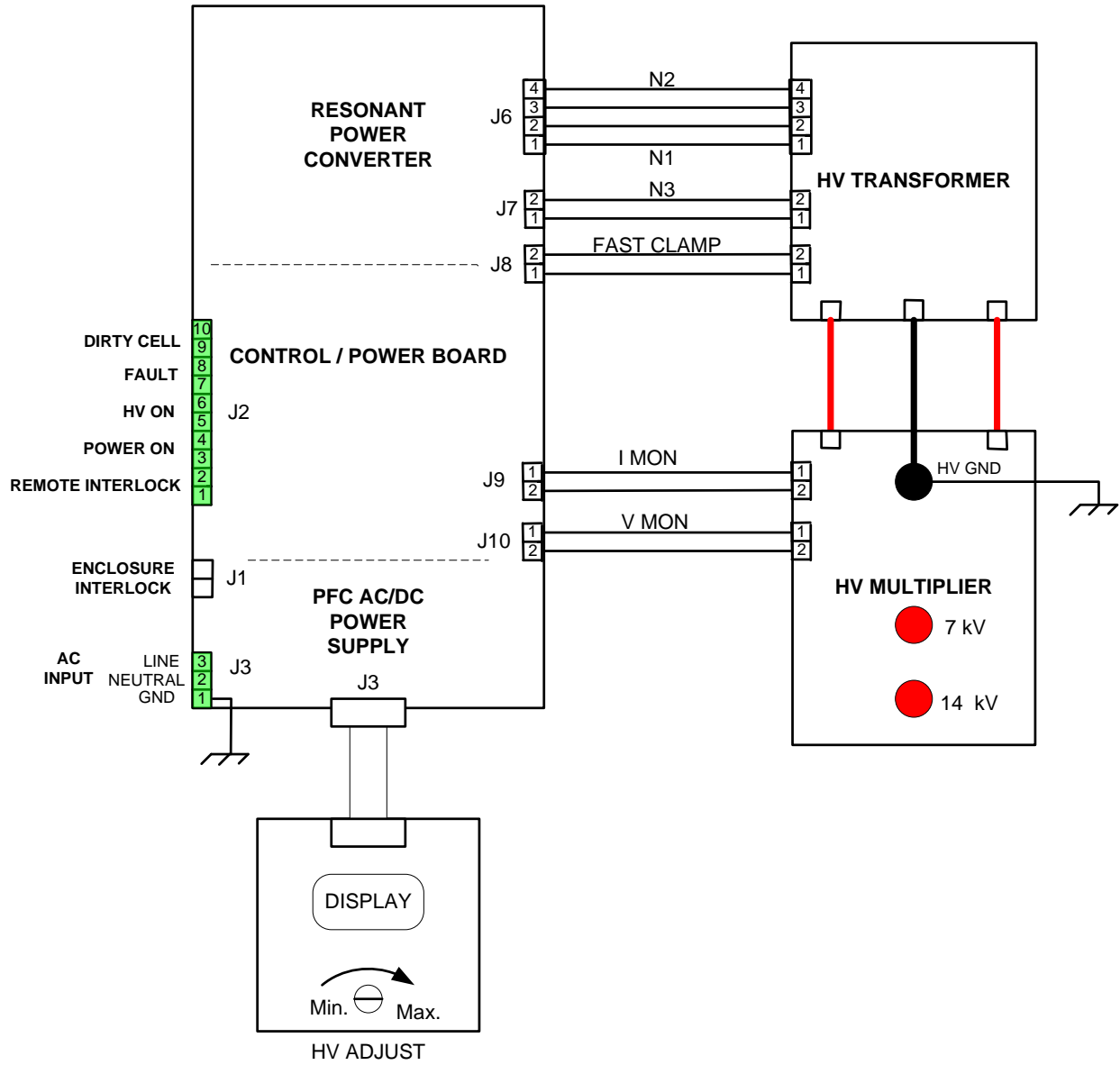


Fig.1 HV Supply wiring diagram

2. Field wiring connections

WARNING - RISK OF ELECTRIC SHOCK

These instructions are for qualified personnel only. To reduce the risk of electric shock, do not perform any servicing other than contained in the instructions unless you are qualified to do so. All wiring must be installed according to national, state and local codes.

DO NOT MODIFY ENCLOSURE.

Modifications of this enclosure would void warranty. Pre-punched knockouts have been provided for conduit attachment.

FOR INDOOR USE ONLY.

This is NEMA 1 rated enclosure intended for indoor use only to provide degree of protection against contact with enclosed power supply.

The HV Power Supply requires the following field connections:

1. AC line connection (J3, highlighted in green)
2. HV Connection (7kV and 14kV terminal studs, highlighted in red)
3. Monitoring/ Diagnostic connection (J2, highlighted in green)

The Monitoring/Diagnostic connections are optional and HV Power Supply will operate normally if they are not connected.

2.1 AC line connections

All primary wiring should be permanently installed in conduit. Under no circumstances should extension cords be used to connect the source of the electrical supply to the equipment. HV Power Supply unit must be grounded to structural steel or earth ground.

- Remove ~ 100mm of conduit and strip off 10mm of wire insulation
- Put the AC line conduit through the knockout Labeled AC In.
- Install the 3 pin plug and connect Line, Neutral and GND wires as shown in Fig.1
- Plug the 3 pin plug to terminal header J3
- Secure the conduit entry.

2.2 HV Connections

High voltage cable is supplied to connect the ionizer and collector sections of the electrostatic Cells to the ionizer and collector terminals in the power supply. The red cable is used for the ionizer, and the blue cable is used for the collector.

The high voltage cables should be installed in separate metallic conduits, such as EMT or rigid conduit. Under no circumstances should the high voltage cable be spliced or terminated at locations other than the power supply or electrostatic collectors.

Knockouts for the conduits that carry the high voltage cables are located on the top and side of the power pack. The ends of the high voltage cable should not be terminated until the conduit is installed and the cable is pulled. Terminate the cables at the power pack by stripping off 3/8" of insulation and installing a ring terminal. Securely attach the red cable to the Ionizer "14kV" stud on the HV Multiplier Module, and the blue cable to the Collector "7kV" stud.

2.3 Monitoring/ Diagnostic connections

- Remove ~ 150mm of conduit and strip off 10mm of insulation
- Put the conduit through the knockout Labeled "Status Monitor"
- Install the 10 pin plug and connect all monitoring lines as shown in Fig.1
- Plug the 10 pin plug to terminal header J2
- Secure the conduit entry

If Monitoring/Diagnostic connections are not used install jumper shorting terminals 1, 2 (Remote Interlock) these terminals must be closed to power up the unit.

2.4 MODBUS Communication port RS-485

The HV power supply has a RS-485 communication port Modbus for remote control, set up, and diagnostic.

3. Start - up

Remote Interlock, Enclosure Interlock and Power On/Off switch must be closed for the HV Power Supply to turn On.

Check load cells specifications and number of cells connected before adjusting the HV.

1. Close the enclosure cover and make sure that locking screw is fully engaged otherwise enclosure interlock contacts may not be closed.
2. Turn the HV Adjust potentiometer to the minimum (fully CCW position)
3. Turn Power switch On. Power On Green LED and HV On Blue LED should turn On. Fault and Dirty Cell LEDs should stay Off. If Fault LED comes on follow instruction in Service/troubleshooting manual.
4. Adjust slowly HV by turning the potentiometer clockwise until output current reaches required level.

Output current adjustment is based on the type and number of load cells connected to the HV supply. Typical settings are 1mA per cubic foot of load cell.

For example: if 10 3 cubic feet load cells are connected to the power supply the total load is 30 cubic feet and the HV should be set to provide 30mA current to the load.

Check load cells specifications and number of cells connected before adjusting the HV.

Please refer also to Owner Manual of the Electrostatic Kitchen Exhaust air Pollution Control System.