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# **Chargemaster VCM-BP30 and VCM-BP60 Electrostatic Generating Power Supplies**

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**INSTALLATION AND OPERATING INSTRUCTIONS**

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## 1. DESCRIPTION

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Each Chargemaster VCM-BP Electrostatic Generating Power Supply incorporates high frequency switch-mode and power factor corrected technology within a compact enclosure. Each unit is electronically current limited and arc protected. The output voltage is adjustable from zero to full rated output at maximum rated current. Refer to specifications for specific models.

The VCM-BP30 and VCM-BP60 power supplies provide both positive and negative polarities, and feature remote ON/OFF capability. The output voltage can also be controlled from a remote location via a 0-5V, 0-10V, 0-20mA or 4-20mA voltage or current source. The power supplies also supply a 0-5V or 0-10V output signal to remotely monitor the output voltage and current.

## 2. SAFETY

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



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



**NOTE** – This equipment must be correctly installed and maintained. Adhere to the following notes for safe installation and operation:

- a) The Chargemaster VCM-BP high-voltage power supply is intended to generate high voltages for charging bars and electrodes.
- b) A skilled and qualified electrical engineer must carry out all work on this equipment.
- c) Disconnect the equipment prior to working on it.
- d) Make sure that the equipment is properly grounded for correct and safe operation.



**CAUTION** – Electrical Shock Hazard

High voltage is hazardous for people with a pacemaker

### 3. FEATURES

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- Operates in either Current Control or Voltage Control mode.
- Front panel orientation is factory selectable for bench top or wall mounting.
- Flat panel with membrane switches.
- Mounting brackets for bottom or top mounting.
- No cooling fan.
- Short circuit protected output.
- Very stable electronically controlled output voltage.
- Remote output voltage control features.
- Keyboard lock to prevent unauthorized adjusting of the output voltage setting.
- Remote monitoring of the output voltage, current and overload status.
- Large digital readout with backlight.
- Run feature for displaying preset voltage level during remote operation.

#### **Standard Chagemaster VCM-BP Part Numbers:**

VCM-BP30 (+/-30kV) P/N: 4012563

VCM-BP60 (+/-60kV) P/N: 4012564

## 4. SPECIFICATIONS

Output Voltage:	VCM-BP30: 0-30 kV $\equiv$ VCM-BP60: 0-60kV $\equiv$ . (output includes both pos. and neg. polarities)
Output Current:	VCM-BP30: 0-5.0mA VCM-BP60: 0-2.5mA
Max. Output Power:	300W (150W per polarity)
AC Input Voltage:	85 - 264 V $\sim$
AC Input Frequency:	47-63 Hz
Fuse (Rear Panel):	3.15 AT (one fuse per polarity)
Output Connections:	8 SLCC Ports (4 positive polarity, 4 negative)
Remote Control Connection:	25 Pin D-Sub Connectors (one per polarity)
Cooling:	Convection
Output Polarity:	Includes both positive and negative polarities
Short-Circuit Protection:	Output Electronically Protected at Max. Output Current
Input Power Connection:	IEC-320 AC Receptacle (North American 115 and 230 Line Cords provided with each VCM-BP unit)
Resolution Of Display:	0.2 kV, 0.05mA
Voltage Stabilization:	2% Of Max. Output Voltage With Input Voltage Between 85 and 264 V.
Load Stabilization:	2% of Maximum Output Voltage at Load Fluctuation between 0 and Maximum Rated Load.
Ripple, peak-peak:	10% of Maximum Output Voltage at Maximum Load
Remote ON / OFF:	0V = OFF, 12 V = ON (Typical) Control Voltage Range: 10 V $\equiv$ , 10 mA min. 30 V $\equiv$ , 25 mA max.
Internal Power Supply:	12 V $\equiv$ ( $\pm$ 20%), 20 mA ( $U_{ripple} = 0.5V_{tt}$ max.) For Remote On/Off And External Overload Signaling, If necessary
Remote programming:	0-5V, 0-10V, 0-20mA or 4-20mA
Ambient Temperature:	32°F - 131°F (0 - 55°C)
Operating Environment:	Vibration-Free Installation
Remote Control Functions:	<ul style="list-style-type: none"> <li>• Switching High Voltage On/Off</li> <li>• Output Voltage and Current Control via Standard Industry Control Signals.</li> <li>• Output Voltage and Current Monitoring</li> <li>• Overload Indication Monitoring.</li> <li>• Easy to configure via D-Sub connector</li> </ul>

## 5. INSTALLATION

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### 5.1 Unpacking

Carefully remove equipment from the carton and inspect the contents.



**NOTE** – If any damage has occurred during shipment, notify the local carrier at once. A report should also be forwarded to Simc-Ion, 2257 North Penn Road, Hatfield PA 19440. See Section 9 (Warranty) for Return Shipment information.

### 5.2 Determining Power Supply Placement

Place the power supply in a convenient location on or near the machine to allow the charging bar or applicator's high voltage cable to reach the output terminals located on the back of the unit.



**CAUTION** – Electrical Shock Hazard

The power supply unit must be placed in a limited access area to protect operating personnel from accidental electrical shock. Do not install the power supply in a dirty or damp environment where chemicals or other corrosive agents are handled.

### 5.3 Mounting the Power Supply



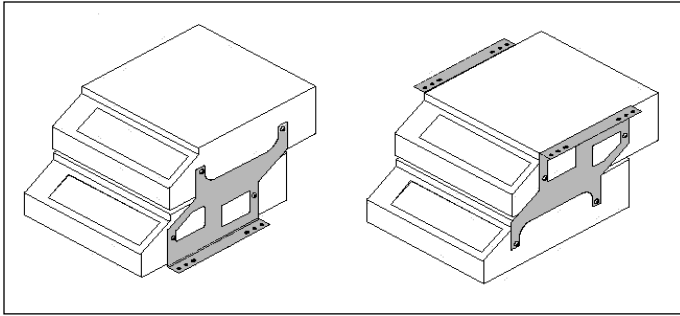
**CAUTION** – Fire Hazard

Do not install or operate equipment in close proximity to any flammable solvents or flammable materials.

The unit can be mounted above or below an appropriate mounting surface (Figure 2). To ensure sufficient airflow, make sure the ventilation openings on the side and underside are not blocked. Mounting brackets are provided to mount the unit directly onto a machine, shelf, other surface or stacked on top of each other.

To mount the VCM-BP Power Supply:

- a) Use mounting brackets as templates to mark mounting hole locations.
- b) Drill four 0.201" diameter holes at marked locations.
- c) Align mounting bracket's screw holes with drilled holes. Secure with #10 screws, nuts and lock washers (fasteners not supplied).



**Figure 2: Chargemaster VCM-BP**

## 5.4 Grounding the Power Supply



### **CAUTION – Electrical Shock Hazard**

It is essential that the machine frame, and all metal parts in the vicinity, be grounded either through well-grounded electrical conduit or by heavy copper wire to a water pipe.

All Chargemaster VCM-BP power supplies must be properly grounded to ensure proper operation and prevent shocks. A proper ground is also required to establish the power supply electrical return and provide the return path for ion generation of the attached bar or applicator.

- a) The power supply should be connected to a grounded 3-terminal polarized AC receptacle. Test the ground pin of the AC receptacle to assure proper grounding.
- b) Connect the two green wires from ground terminals on the back of each power supply to a well-driven ground rod. Do not ground to a hot water pipe.
- c) Mount the unit using supplied mounting brackets to a well grounded metal surface free of paint and / or any nonconductive surface treatment. The unit is also grounded through the supplied mounting brackets.

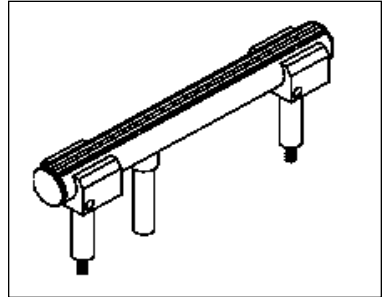
## 5.5 Supplying Power to the Unit

- a) Connect the AC line cord to the two (IEC 320 input) connectors on back of unit.
- b) Plug the AC line cord into outlet. Verify that the voltage and frequency marked on unit serial label match outlet power. If ON/OFF cycling is required, remote switching **MUST BE USED**. Do not cycle the VCM-BP Power Supply ON/OFF through the AC input power line cord (see Section 6).

## 5.6 Installation Options for Charging Bars and Applicators

VCM-BP30 and VCM-BP60 Power Supplies can be used to energize a variety of charging bars and applicators manufactured by Simco, including the following models:

- TETRA Charging Bar
- Pinner Arc Resistant Bar
- Pinner NR Arc Resistant Bar
- Pinner 5-Point Applicator
- Pinner Blade Applicator
- Pinner Claw Applicator
- Multi-Point Applicator
- FlexTac Applicator



**Figure 3: Tetra Charging Bar**

Connecting a Chagemaster HV Power Supply to a bar or applicator not manufactured by Simco-Ion for use with that model of power supply, without the written permission of Simco-Ion, will void the power supply's warranty.

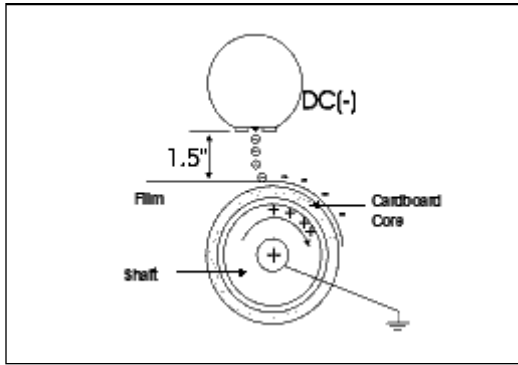
A TETRA Charging Bar (see Figure 3) will be used in this manual for purposes of illustrating the three most common installation options for charging bars and applicators. The three methods of installation generally apply to all types of bars and applicators, except for option 2, which is normally used only with bars.

The TETRA bar is energized by connecting it to a Simco-Ion Chagemaster VCM-BP Power Supply, which provides the high voltage necessary to power the bar. The energized TETRA Charging Bar is used to produce electrostatic adhesion for temporarily bonding or pinning materials.



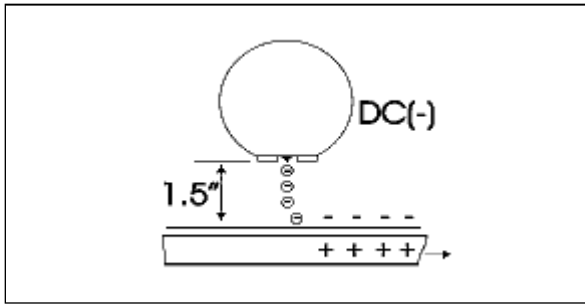
### Option 1 – Charging Bar with Grounded Surface

This application illustrates the use of a TETRA bar facing a grounded surface. The material to be charged should rest on the grounded surface. In the example shown in Figure 4, the charging bar is located facing an empty core in a roll-to-roll changeover application. The empty core is mounted on a grounded metal shaft. The plastic film is between the charging bar and empty core. The negative ions created by the charging bar are driven towards the grounded metal shaft by the electric field between the charging bar and grounded shaft. The plastic film intercepts the ions and becomes electrostatically charged in the process. The electrostatic charge in the plastic film causes adhesion of the film to the empty core.



**Figure 4: Charging Over a Grounded**

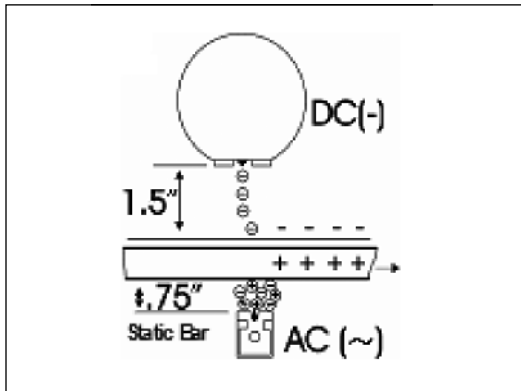
The charging bar may also be located facing a production fixture that moves beneath the charging bar (or the charging bar could also move over the fixture). The materials to be pinned together are positioned on the fixture (Figure 5). As the fixture moves beneath the charging bar, the negative ions created by the charging bar are driven towards the grounded metal fixture by the electric field between the charging bar and fixture. The top material intercepts the ions and becomes electrostatically charged in the process. The electrostatic charge in the top material causes adhesion of the top material to the lower material and to the fixture. This bar arrangement emulates an interleaving application where paper or film is pinned to metal prior to cutting and stacking.



**Figure 5: Charging Against a Grounded Background**

**Option 2 – Charging Bar with Static Bar**

The second application uses a TETRA Charging Bar facing a static eliminating bar (Figure 6). The materials to be pinned together are guided between these bars. The charging bar is facing an insulative film while the static bar faces a sheet of insulative material on the opposite side (glass, plastic, light particle board, etc.). As the materials pass between the bars, the negative ions charge the film and the static eliminating bar attempts to neutralize the apparent charge on the sheet. This deposits a positive charge on the lower sheet. The use of the static bar improves the process of pinning two insulating materials together and increases the electrostatic pinning adhesion dramatically.



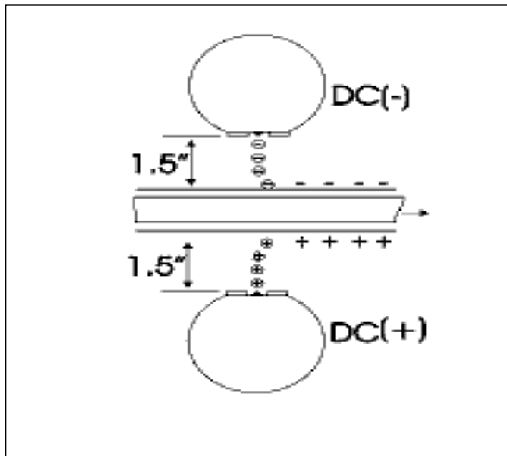
**Figure 6: Charging Opposite a Static Bar**

### Option 3 – Two Charging Bars

The third application uses two TETRA Charging Bars of opposite polarity facing each other (Figure 7). The materials to be pinned together are guided between the charging bars. The ions created by each charging bar are attracted towards each other due to their opposite polarity. This method of charging materials is generally used in the most difficult pinning applications and is most successful when arc-resistant bars are used.

Chargemaster VCM-BP Power Supplies are designed to power the approved Simco-Ion charging bars and applicators identified in Section 4.

The Remote On/Off function should be used to cycle the power supply On and Off whenever possible. The power supply requires about 60ms to achieve maximum output voltage when energized.



**Figure 7: Charging with Two Charging Bars**

## 6. OPERATION

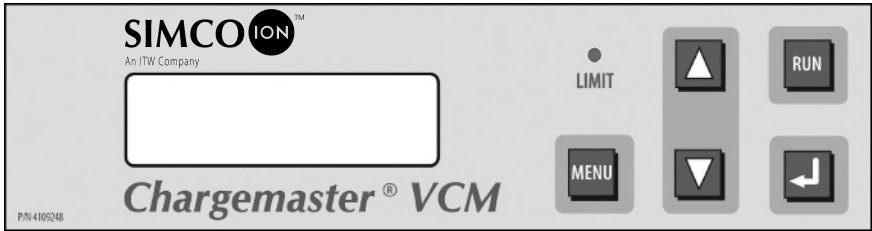


Figure 8: Front Panel



**CAUTION – Electrical Shock Hazard**

Do not touch Charging Bar during operation.



**CAUTION – Fire Hazard**

Do not operate equipment in close proximity to any flammable solvents or flammable materials.

### 6.1 Turning On/Off

- Turn power switches of both front panels to OFF (“O”) position.
- Ensure power supply GROUND TERMINALS are properly grounded. See Section 5 for details.



**CAUTION – Electrical Shock Hazard**

Failure to properly ground the unit will result in damage to the unit and create shock hazards for personnel.

- Connect the charging bar(s) or applicator(s) to the high voltage output connectors on rear of the Chargemaster VCM-BP.
- Insert the AC line cord into a properly grounded receptacle.
- Turn front panel power switches to ON (“I”) position.



**NOTE –** It takes a few seconds for the display backlights to illuminate fully.

## 6.2 Main Screen

The “Main Screen” of each Chargemaster VCM-BP displays:

- a) Measured Voltage (kV)
- b) Lightning bolt symbol “7” to indicate output is “on”
- c) Measured Current (mA)
- d) Control Mode: VLT (voltage control) or CUR (current control)
- e) Operating Mode:
  - KEYPAD CONTROL – No external control features enabled.
  - KEYPAD+REM I/O – Remote HV On/Off is the only control feature enabled.
  - REM:SETPOINT CTRL – Remote setpoints are the only external features enabled.
  - REM:SETPOINT+I/O – All external control features enabled.
- f) Key symbol to indicate the keypad is locked
- g) Time remaining before the bar is scheduled to be cleaned

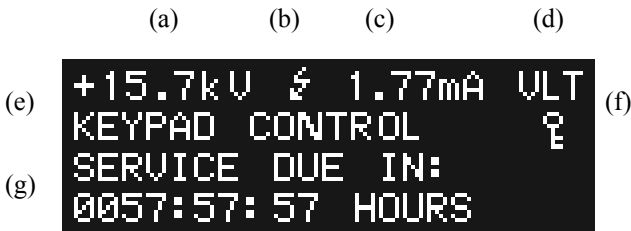


Figure 9: Main Screen Display

## 6.3 Operating Modes

Simco-Ion’s Chargemaster VCM-BP Electrostatic Generating Power Supplies can be run in either Constant Current or Constant Voltage mode. Select the mode that is best for your application:

- a) In the Constant Current mode, the power supply maintains stable and strong pinning power even as ambient conditions change, or the ionizing electrodes get contaminated with time, or the material’s properties vary.
- b) In the Constant Voltage mode, the power supply provides stable and consistent pinning voltage, even with varying load impedance. This is the traditional control mode employed by earlier versions of Simco Chargemaster power supplies.

## 6.4 Navigating the Menus

Enter one of the two available menus by pressing [MENU] to enter the “Control Menu”, or pressing [MENU + ENTER] to enter the “Service Menu”. Navigating through menu items is done by pressing [MENU]. To change the value of a selected item, press [UP] or [DOWN]. Accept the newly selected menu item by pressing [ENTER] (an asterisk will flash to confirm the change).

The Chargemaster VCM-BP also has the possibility to reset the changed item back to its original value. To do so, press [MENU + DOWN] and the original value will be restored.

To escape from the menu system, press [MENU + UP]. If no buttons are pressed for a period of 30 seconds, the “Main Screen” will be displayed automatically.

## 6.5 Control Menu Structure

Menu Item	Possible Values	Resolution	Default
Control Mode	Voltage Control Current Control		Voltage Control
Set point Voltage *1	0.0 kV 3.0 - 60.0 kV 3.0 - 30.0 kV	0.2 kV	0.0 kV
Set point Voltage *2	0.00 mA 0.10 - 2.50 mA 0.10 - 5.00 mA	0.05 mA	2.50 mA (VCM-BP 60) 5.00 mA (VCM-BP 30)
Voltage Limit *2	0.0 kV 3.0 - 60.0 kV 3.0 - 30.0 kV	0.2 kV	0.0 kV
Reset Bar Timer	No Yes		No
Restore Factory Settings	No Yes		No

\*1 = VC mode only

\*2 = CC mode only

## 6.6 Service Menu Structure

Menu Item	Possible Values	Resolution	Default
Remote Set Point	Disable Enable		Disable
Remote On-Off Control	Disable Enable		Disable
Readout Stretched	0.0 to 5.0 Sec (Range)	0.1 Sec	0.7 Seconds
Limited Stretched	0.5 to 5.0 Sec (Range)	0.1 Sec	0.7 Seconds
Limited Pos Delay	10 to 500 mSec (Range)	10 mSec	300 mSec
Limited Neg Delay	10 to 1000 mSec (Range)	10 mSec	500 mSec
Bar Timer Interval	48 Hrs 96 Hrs 168 Hrs 360 Hrs 1080 Hrs 1440 Hrs	48 Hrs	360 Hrs
Remote I/O Mode OutU	0 - 5 V DC 0 - 10 V DC 0 - 20 mA DC 4 - 20 mA DC		0 - 5 V DC
All analog I/O same	Yes No		No
Remote I/O Mode Out I	0 - 5 V DC 0 - 10 V DC 0 - 20 mA DC 4 - 20 mA DC		0 - 5 V DC
Remote I/O Mode SetU	0 - 5 V DC 0 - 10 V DC 0 - 20 mA DC 4 - 20 mA DC		0 - 5 V DC
Remote I/O Mode Set I	0 - 5 V DC 0 - 10 V DC 0 - 20 mA DC 4 - 20 mA DC		0 - 5 V DC

## 6.7 Summary of Buttons and Their Functions

- a) **[Menu]**: Go to the “Control Menu” or select the next menu item.
- b) **[Up]**: Set the HV set-point or increase a menu item value.
- c) **[Down]**: Set the HV set-point or decrease a menu item value
- d) **[Run]**: Override the HV output in Remote mode.
- e) **[Enter]**: Accept new set-point value after it has been changed.
- f) **[Menu + Enter]**: Go to the “Service Menu”.
- g) **[Menu + Up]**: Escape from a menu.
- h) **[Menu + Down]**: Restore a menu item’s default value.
- i) **[Run + Enter]**: Reset the Clean Bar Timer (only when the Clean Bar Alarm message is on the screen).
- j) **[Up + Down]**: Lock or unlock the keyboard.

## 6.8 Display or Change Set Points

- a) Press [UP] or [DOWN] once.
- b) If operating in Voltage Control Mode, the Voltage Set Point and the Current Limit will be displayed. If operating in Current Control Mode, the Current Set Point and the Voltage Limit will be displayed.
- c) Press [UP] or [DOWN] again and the set point will be changed.
- d) After 4 seconds the “Main Screen” will be displayed again.

When [UP] or [DOWN] is pressed for a longer time, the set point will be incremented or decremented faster. As long as the set point information is on the screen, it is possible to release the UP or DOWN button and change the set point by pressing it again.

## 6.9 Lock/Unlock the Keypad

Lock the keypad buttons by pressing [UP + DOWN] for about 1 second. A key character will display on the “Main Screen” indicating the keypad is locked. It is no longer possible to change the set-point settings or to enter one of the available menus. The use of the UP and DOWN buttons can still be used to display the set-point values.

To unlock the keypad buttons, press [UP + DOWN] for about 1 second. The key character in the display will disappear. It is again possible to change the set-point values or enter one of the available menus.



## **6.10 Clean Bar Timer**

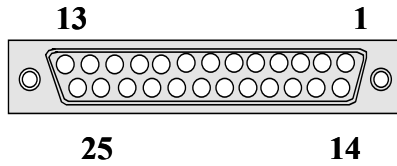
The Clean Bar Timer monitors the time that the high voltage output is present, and counts down from a preset cleaning interval.

To set the cleaning interval:

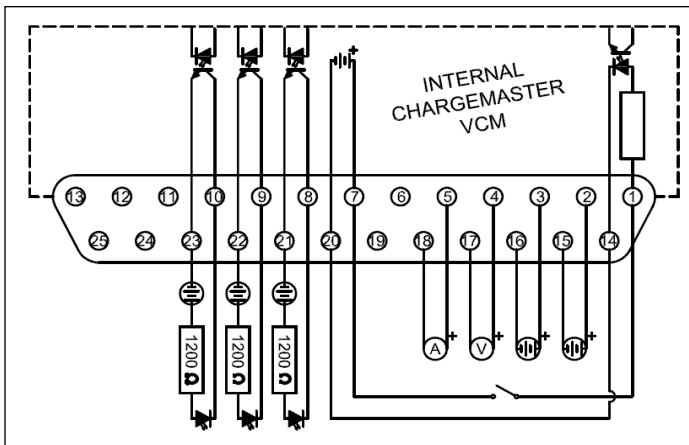
- Press [MENU + ENTER] for the Service Menu.
- Press [MENU] until “Bar Timer Interval” is displayed.
- Press [UP] or [DOWN] until desired interval is displayed.
- Press [ENTER] to accept the setting (asterisk will flash).
- Press [MENU + UP] to return to the Main Screen.

When the Clean Bar Timer reaches zero, the cleaning interval has expired and the “Clean Bar Alarm” message is displayed. After the bar has been properly cleaned, the Clean Bar Timer can be reset by pressing [RUN + ENTER].

## 7. REMOTE OPTIONS INTERFACE



Pin	Function	Pin	Function
1	Remote On/Off (+)	14	Remote On/Off (-)
2	Remote Current Set Point	15	GND
3	Remote Voltage Set Point	16	GND (blue)
4	Remote Voltage Output	17	GND (blue)
5	Remote Current Output	18	GND
6	+24V Internal Power Supply	19	GND
7	+12V Internal Power Supply	20	0V Internal Power Supply
8	Clean Bar (Open Collector)	21	Clean Bar (Open Emitter)
9	Limit Alarm (Open Collector)	22	Limit Alarm (Open Emitter)
10	HV On (open Collector)	23	HV On (open Emitter)
11	(Reserved)	24	GND
12	(Reserved)	25	GND
13	(Not Connected)		



**Figure 10: Remote Options Electrical Schematic**



**NOTE** – The VCM-BP pinouts for Remote Options are incompatible with other power supplies.

## 7.1 Remote Functions

Several functions may be controlled remotely through the two 25-pin D-Sub connectors located on the rear of the unit (one connector for each polarity):

- Turning On/Off the High Voltage Output
- Controlling the Voltage and Current Set Points
- Monitoring the Output Voltage, Current, and Alarms

## 7.2 Turning On/Off the High Voltage Output Remotely

- a) The Remote On/Off function enables each polarity to be energized from a remote location. This function switches the output voltage On/Off, NOT THE AC MAIN VOLTAGE.



**NOTE** – The VCM-BP Power Supply needs 60ms to reach maximum output voltage from 0kV. The time needed to reach 0kV from the maximum depends on the load connected.

- b) To enable/disable the remote On/Off function:
- Press [MENU + ENTER] for the Service Menu.
  - Press [MENU] until “REMOTE ON-OFF” is displayed.
  - Press [DOWN] to toggle from “DISABLE” to “ENABLE”.
  - Press [ENTER] to accept the setting (asterisk will flash).
  - Press [MENU + UP] to return to the Main Screen.
- c) Provide a dry contact between D-Sub connector pins 1 & 7.
- d) Jumper D-Sub connector pins 14 & 20 to make available 12V with which power to the contact.
- e) Closing the contact will then energize the high voltage output; while an open circuit will deenergize it.



**NOTE** – If the remote On/Off function is used, the Input Power switch must remain in the “ON”, (I), position.



**NOTE** – If the remote On/Off function is used, the [RUN] button can be used to temporary activate the output voltage manually for testing or verification purposes.

### 7.3 Controlling the Voltage Set Point Remotely

- a) The output voltage of each polarity can be controlled from a remote source that provides any of the following control signals:
- |                |                |
|----------------|----------------|
| 1 0 - 5 V DC   | 1 0 - 10 V DC  |
| 1 0 - 20 mA DC | 1 4 - 20 mA DC |
- b) To enable/disable the remote Voltage Control function:
- Press [MENU] for the Control Menu.
  - Press [DOWN] to toggle to “VOLTAGE CONTROL”.
  - Press [ENTER] to accept the setting (asterisk will flash).
  - Press [MENU + UP] to exit the Control Menu.
  - Press [MENU + ENTER] for the Service Menu.
  - Press [DOWN] to toggle from “DISABLE” to “ENABLE”.
  - Press [ENTER] to accept the change (asterisk will flash).
  - Press [MENU] until “Remote I/O Mode SetU” is displayed.
  - Press [DOWN] until desired control signal is displayed.
  - Press [ENTER] to accept the change (asterisk will flash).
  - Press [MENU + UP] to return to the Main Screen.
- c) Connect the reference signal to D-Sub connector pins 3 & 16.
- d) Inputting a high signal will drive the VCM-BP Power Supply to its maximum output; a low signal (or absence of a signal) will drive it to zero output.

### 7.4 Controlling the Current Set Point Remotely

- a) The output current of each polarity can be controlled from a remote source that provides any of the following control signals:
- |                |                |
|----------------|----------------|
| 1 0 - 5 V DC   | 1 0 - 10 V DC  |
| 1 0 - 20 mA DC | 1 4 - 20 mA DC |
- b) To enable/disable the remote Current Control function:
- Press [MENU] for the Control Menu.
  - Press [DOWN] until “CURRENT CONTROL” is displayed.
  - Press [ENTER] to accept the change (asterisk will flash).
  - Press [MENU + UP] to exit the Control Menu.
  - Press [MENU + ENTER] for the Service Menu.
  - Press [DOWN] to toggle from “DISABLE” to “ENABLE”.

- Press [ENTER] to accept the change (asterisk will flash).
  - Press [MENU] until “Remote I/O Mode SetI” is displayed.
  - Press [DOWN] until the desired control signal is displayed.
  - Press [ENTER] to accept the change (asterisk will flash).
  - Press [MENU + UP] to return to the Main Screen.
- c) Connect the reference signal to D-Sub connector pins 2 & 15
- d) Inputting a high signal will drive the VCM-BP Power Supply to its maximum output; a low signal (or absence of a signal) will drive it to zero output.

### **7.5 Monitoring the Output Voltage Remotely**

- a) The output voltage of each polarity can be monitored externally by a digital meter or analog interface. The maximum output current supplied by the D-Sub connector for this option is 0.5mA.
- b) To enable the remote Voltage Monitoring function:
- Press [MENU + ENTER] for the Service Menu.
  - Press [MENU] until “Remote I/O Mode OutU” is displayed.
  - Press [DOWN] until the desired control signal is displayed.
  - Press [ENTER] to accept the change (asterisk will flash).
  - Press [MENU + UP] to return to the Main Screen.
- c) Connect external voltmeter to D-Sub connector pins 4 & 17

### **7.6 Monitoring the Output Current Remotely**

- a) The output current of each polarity can be monitored externally by a digital meter or analog interface. The maximum output current supplied by the D-Sub connector for this option is 0.5mA.
- b) To enable the remote Current Monitoring function:
- Press [MENU + ENTER] for the Service Menu.
  - Press [MENU] until “Remote I/O Mode OutI” is displayed.
  - Press [DOWN] until the desired control signal is displayed.
  - Press [ENTER] to accept the change (asterisk will flash).
  - Press [MENU + UP] to return to the Main Screen.
- c) Connect external ammeter to D-Sub connector pins 5 & 18

### **7.7 Monitoring the High Voltage On Indicator Remotely**

- a) The High Voltage “On” indicator (lightning bolt symbol “7”) of each polarity can be monitored externally by an LED or PLC input. An opto-isolated transistor provides the signal; maximum load must not exceed 50VDC / 50mA.
- b) Connect an external monitoring circuit to D-Sub connector pins 10 & 23. Refer to electrical schematic (Figure 10).

### **7.8 Monitoring the Clean Bar Alarm Remotely**

- a) The Clean Bar Alarm indicator of each polarity can be monitored externally by an LED or PLC input. An opto-isolated transistor provides the signal; maximum load must not exceed 50VDC / 50mA.
- b) Connect an external monitoring circuit to D-Sub connector pins 8 & 21. Refer to electrical schematic (Figure 10).

### **7.9 Monitoring the Limit Alarm Remotely**

- a) The Limit Alarm indicator of each polarity can be monitored externally by an LED or PLC input. An opto-isolated transistor provides the signal; maximum load must not exceed 50VDC / 50mA.
- b) Connect an external monitoring circuit to D-Sub connector pins 9 & 22. Refer to electrical schematic (Figure 10).

## 8. MAINTENANCE

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**NOTE** – Only qualified service personnel are to perform maintenance tasks.



**CAUTION** – Electrical Shock Hazard

Disconnect power source before performing maintenance tasks.



**CAUTION** – Electrical Shock Hazard

When opening the equipment, you may come into contact with parts connected to dangerous voltages.

### 8.1 Maintenance Tasks

- a) Keep the power supply dry and free of dust, dirt and chemicals.
- b) Regularly check power supply grounding.
- c) Regularly check the high-voltage connectors and cables for mechanical or electrical damage.
- d) The power supply does not contain internal parts that require periodic maintenance.

### 8.2 Troubleshooting

Problem	Cause	Remedy
No output voltage Front display off	AC Main input voltage too low or not present.	Restore or correct AC Main input voltage.
	Fuse at the rear of the unit is defective	Replace fuse. 5X20mm 3.15A Littlefuse: 218 3.15 or Bussman: GDC 3.15A
	Power supply is defective	Return power supply to factory for repair.

<b>Problem</b>	<b>Cause</b>	<b>Remedy</b>
No output voltage readings on the front display	A set point has not been specified through the [▲]/[▼] buttons or the Remote Voltage Programming is activated	Specify set point with the [▲]/[▼] buttons or with the proper signal when Remote Voltage Programming is in use. Disable Remote Voltage Programming function to return to front panel control.
	Remote On/Off function is activated	Close the external contact connected to the D-Sub connector to switch the power supply on. Disable Remote On/Off function to return to front panel control.
	Power supply is defective	Return power supply to factory for repair.
LIMIT indicator lights up.	Arcing or short-circuit in the equipment	Check the equipment for signs of arcing or short-circuit.
	Power supply is overloaded	Reduce output voltage of power supply or increase distance between charging bar and material or ground reference.



## 9. REPLACEMENT PARTS

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Part Number	Description
5050328	SLCC HV Connector Kit (60 kV) <ul style="list-style-type: none"><li data-bbox="304 250 511 277">• Contact Spring, Qty. 1</li><li data-bbox="304 289 472 316">• Connector, Qty. 1</li><li data-bbox="304 328 514 355">• Insulative Tube, Qty. 2</li><li data-bbox="304 367 497 394">• Knurled Plug, Qty. 1</li><li data-bbox="304 406 469 433">• Set Screw, Qty. 1</li></ul>

## **10. WARRANTY**

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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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