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# **Chargemaster VCM30 and VCM60 Electrostatic Generating Power Supplies**

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**INSTALLATION AND OPERATING INSTRUCTIONS**

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# 1. SAFETY AND WARNINGS

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**PLEASE READ INSTRUCTIONS COMPLETELY BEFORE STARTING INSTALLATION**

**ALL INSTALLATION AND TROUBLESHOOTING OPERATIONS MUST BE PERFORMED BY QUALIFIED TECHNICAL PERSONNEL**

This instruction manual uses symbols to identify dangerous situations as follows:



**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:

1. The Chargemaster VCM high-voltage power supply is intended to generate high voltages for charging bars and electrodes.
2. A skilled and qualified electrical engineer must carry out all work on this equipment.
3. Disconnect the equipment prior to working on it.
4. 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



**WARNING – Fire Hazard**

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

## 2. DESCRIPTION

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Each Chargemaster VCM 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 VCM30 and VCM60 power supplies are manufactured in either positive or negative polarity, and feature remote ON/OFF capability. The output voltage can also be controlled from a remote location via a 0-5V, 0-10V, 0-20 mA or 4-20 mA voltage or current source. The power supplies also supply a 0-5V, 0-10V, 0-20 mA or 4-20 mA output signal to remotely monitor the output voltage and current.

### Features

- 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 or current setting
- Remote monitoring of the output voltage, current and overload status
- Large digital readout with back light
- Run feature for displaying preset voltage level during remote operation

### 3. SPECIFICATIONS

Output Voltage	VCM30: 0-30 kV <sub>DC</sub> , VCM60: 0-60 kV <sub>DC</sub>
Output Current	VCM30: 0-5.0 mA, VCM60: 0-2.5 mA
Output Power	150W max
AC Input Voltage	85-264V $\sim$
AC Input Frequency	47-63 Hz
Fuse (rear-panel)	3.15 AT
Output Connections	4 output ports (Simco-Ion SLCC type)
Remote Control Connection	25-pin D-Sub connector
Cooling	Convection
Polarity	N = Negative, P = Positive
Short-Circuit Protection	Output electronically protected at max output current
Input Power Connection	IEC-320 AC receptacle (North American 115 and 230 line cords are provided with each VCM unit)
Resolution of Display	0.2 kV, 0.05 mA
Voltage Stabilization	2% of maximum output voltage with input voltage between 85 and 264V
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, 12V = ON (typical) Control Voltage Range: 10V <sub>DC</sub> , 10 mA min 30V <sub>DC</sub> , 25 mA max
Internal Power Supply	12V <sub>DC</sub> ( $\pm 20\%$ ), 20 mA ( $U_{\text{ripple}} = 0.5V_{\text{tt}}$ max) for remote on/off and external overload signaling, if necessary
Remote Programming	0-5V, 0-10V, 0-20 mA or 4-20 mA
Ambient Temperature	32-131°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 &amp; current control via standard industry control signals</li> <li>– Output voltage &amp; current monitoring</li> <li>– Overload indication monitoring</li> <li>– Easy to configure via D-Sub connector</li> </ul>

## 4. INSTALLATION

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### 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 Simco-Ion, 2257 North Penn Road, Hatfield PA 19440. See Section 9 (Warranty) for Return Shipment information.

### 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. As a point of reference, the AC Power Cord and the grounding wire are 7.5 feet in length.



#### **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.

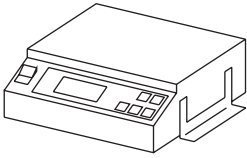
### Mounting the Power Supply



#### **CAUTION – Fire Hazard**

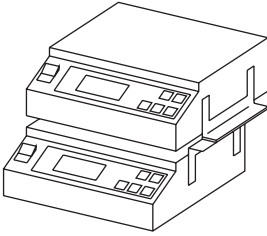
Do not install or operate equipment in close proximity to any flammable solvents or flammable materials.

The unit can be mounted above or below an appropriate mounting surface. 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. Hardware is provided to mount the mounting brackets to the power supply. There are three mounting configurations for the Chargemaster VCM (see Figure 1).



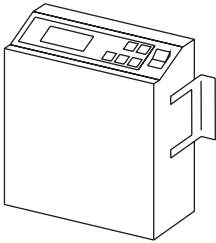
**Standard Chargemaster VCM**

VCM30-N, (Negative), P/N 4012555  
VCM30-P, (Positive), P/N 4012557  
VCM60-N, (Negative), P/N 4012559  
VCM60-P, (Positive), P/N 4012561



**Dual Polarity**

Reversing the mounting brackets on the bottom power supply allows two standard VCM units to be stacked together. Units are supplied with mounting brackets and hardware to affix the brackets to the power supply.



**Wall Mount**

VCM30-N, (Negative), P/N 4012556  
VCM30-P, (Positive), P/N 4012558  
VCM60-N, (Negative), P/N 4012560  
VCM60-P, (Positive), P/N 4012562

The display panel is rotated 180° to allow for easy viewing when the generator is mounted on a vertical wall. Wall mounting brackets and hardware to affix the brackets to the generator are supplied with the generator. Note that this is only a factory installed option on the initial order.

Figure 1. Mounting Power Supply Configurations

To mount the VCM Power Supply:

1. Locate the accessory kit provided with the Chagemaster VCM.
2. Attach two mounting brackets, (see Figure 2), to the VCM with M4 x 8 screws (provided in kit). Use mounting bracket as a template to mark the two mounting hole locations.
3. Drill two 0.201" diameter clearance holes at marked locations.
4. Position mounting bracket's screw holes directly above drilled holes. Secure with #10 screws, nuts and lock washers (fasteners not supplied).

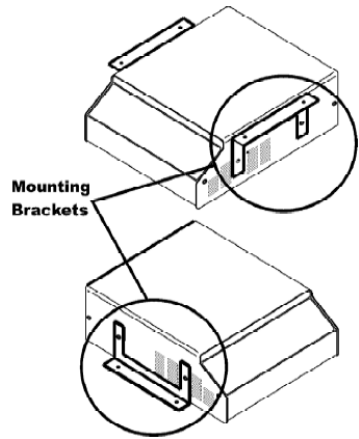


Figure 2. Mounting VCM Power Supply

## Grounding the Chagemaster VCM



### 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 Chagemaster VCM 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.

1. 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.
2. Connect the green wire from ground terminal on the back of the power supply to a well-driven ground rod. Do not ground to a hot water pipe.
3. Mount the unit using supplied mounting brackets to a well grounded metal surface free of paint and / or any non-conductive surface treatment. The unit is also grounded through the supplied mounting brackets.

## Supplying Power to the Unit

1. Connect the AC line cord to the (IEC 320 input) connector on back of unit.
2. 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 Power Supply ON/OFF through the AC input power line cord (see Section 6).



## Installation Options for Charging Bars and Applicators

VCM30 and VCM60 Power Supplies can be used to energize a variety of charging bars and applicators manufactured by Simco-Ion, including the following models:

- Pinner-T Arc Resistant Bar
- Pinner-LP Arc Resistant Bar
- Pinner Arc Resistant Bar
- Tetra Charging Bar
- Pinner 5-Point Applicator
- Linear Pinner
- Pinner Claw Applicator
- Multi-Point Applicator
- FlexTac Applicator

Connecting a Chargemaster 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 Pinner 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 Pinner bar is energized by connecting it to a Simco-Ion Chargemaster VCM Power Supply, which provides the high voltage necessary to power the bar. The energized Pinner 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 Pinner 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

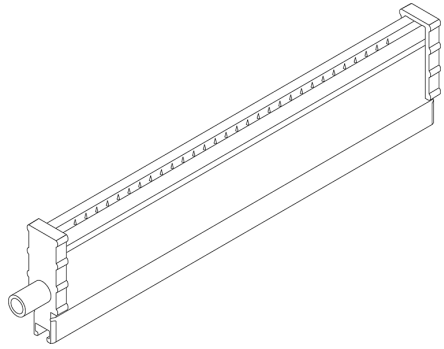


Figure 3. Typical Pinner Bar

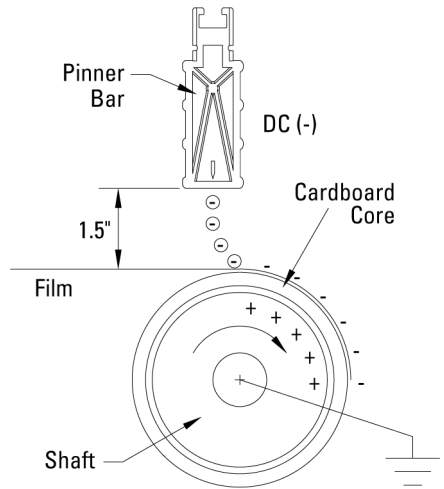


Figure 4. Pinning Against a Grounded Background Roller

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.

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.

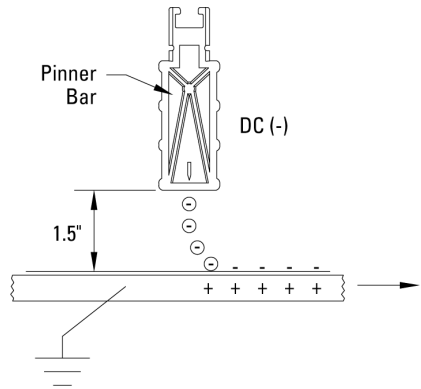


Figure 5. Pinning Against a Grounded Background Plate

**Option 2: Charging Bar with Static Bar**

The second application uses a Pinner 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.

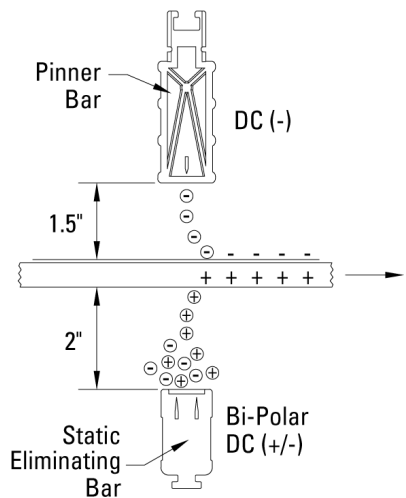


Figure 6. Pinning Using a Charging Bar and Static Eliminating Bar

### Option 3: Two Charging Bars

The third application uses two Pinner 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 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.

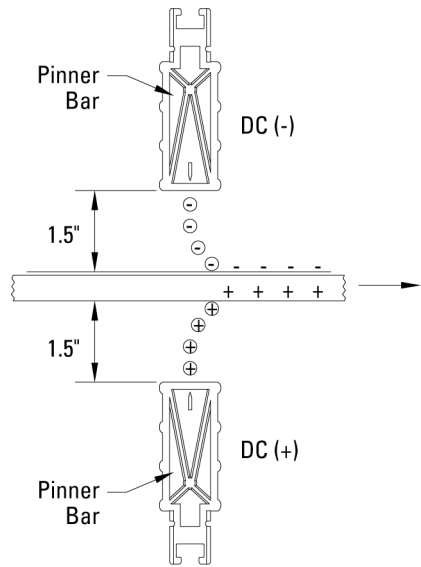


Figure 7. Pinning Using Two Charging Bars

## 5. 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.

### **Turning On/Off**

1. Turn power switch on front panel to OFF (“O”) position.
2. Ensure power supply GROUND TERMINAL is 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.

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



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

## Main Screen

The “Main Screen” of the Chargemaster VCM displays:

1. Measured Voltage (kV)
2. Lightning bolt symbol “⚡” to indicate output is “on”
3. Measured Current (mA)
4. Control Mode: VLT (voltage control) or CUR (current control)
5. Setpoint: Displays voltage/current setpoint or if the unit is in remote operation
6. Key symbol to indicate the keypad is locked
7. HV Output: Displays if HV is on or in remote operation.
8. Status: Displays the status of the unit. If the limit light is on, it will display the reason or condition for the light.

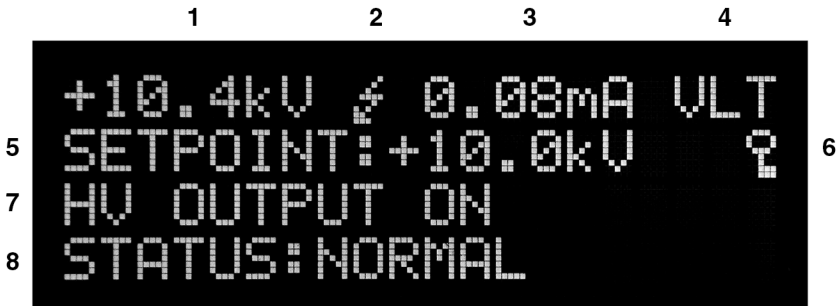


Figure 9. Main Screen Display

## Operating Modes

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

1. 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.
2. 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-Ion Chargemaster power supplies.

## 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 “Advanced Settings”. 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 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.

## Control Menu Structure

Menu Item	Possible Values	Resolution	Default
Control Mode	Voltage Control Current Control	--	Voltage Control
Voltage Setpoint *1	0.0 kV 3.0-60.0 kV (VCM60) 3.0-30.0 kV (VCM30)	0.2 kV	0.0 kV
Current Setpoint *2	0.00 mA 0.10-2.50 mA (VCM60) 0.10-5.00 mA (VCM30)	0.05 mA	0.00 mA
Voltage Limit *2	0.0 kV 3.0-60.0 kV 3.0-30.0 kV	0.2 kV	60 kV (VCM60) 30 kV (VCM30)

\*1 = VC mode only \*2 = CC mode only

## Advanced Settings Menu Structure

Menu Item	Possible Values	Resolution	Default
Remote Setpoint	Disable Enable	--	Disable
Remote On-Off	Disable Enable	--	Disable
Remote I/O*	0 - 5 VDC 0 - 10 VDC 0 - 20 mA DC 4 - 20 mA DC	--	0-5 VDC

\* Remote I/O setting will be the same for both voltage/current input setting and voltage/current output monitoring.

## Summary of Buttons and Functions

1. [Menu]: Go to the “Control Menu” or select the next menu item
2. [Up]: Set the HV setpoint or increase a menu item value
3. [Down]: Set the HV setpoint or decrease a menu item value
4. [Run]: Override the HV output in Remote mode
5. [Enter]: Accept new setpoint value after it has been changed
6. [Menu + Enter]: Go to the “Advanced Settings”
7. [Menu + Up]: Escape from a menu
8. [Menu + Down]: Restore a menu item’s default value
9. [Up + Down]: Lock or unlock the keyboard

## Display or Change Setpoints

1. Press [UP] or [DOWN] once.
2. If operating in Voltage Control Mode, the Voltage Setpoint and the Current Limit will be displayed. If operating in Current Control Mode, the Current Setpoint and the Voltage Limit will be displayed.
3. Press [UP] or [DOWN] again and the setpoint will be changed.
4. After 4 seconds the “Main Screen” will be displayed again.

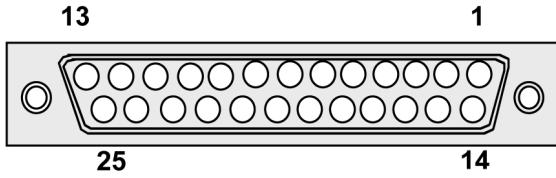
When [UP] or [DOWN] is pressed for a longer time, the setpoint will be incremented or decremented faster. As long as the setpoint information is on the screen, it is possible to release the UP or DOWN button and change the setpoint by pressing it again.

## 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 setpoint settings or to enter one of the available menus. The use of the UP and DOWN buttons can still be used to display the setpoint 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 setpoint values or enter one of the available menus.

## 6. REMOTE OPERATIONS



Pin	Function	Pin	Function
1	Remote On/Off (+)	14	Remote On/Off (-)
2	Remote Current Setpoint	15	GND
3	Remote Voltage Setpoint	16	GND (blue)
4	Remote Voltage Output	17	GND (blue)
5	Remote Current Output	18	GND
6	Not Connected	19	GND
7	+12V Internal Power Supply (50 mA)	20	0V Internal Power Supply
8	(Reserved)	21	(Reserved)
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)	--	--

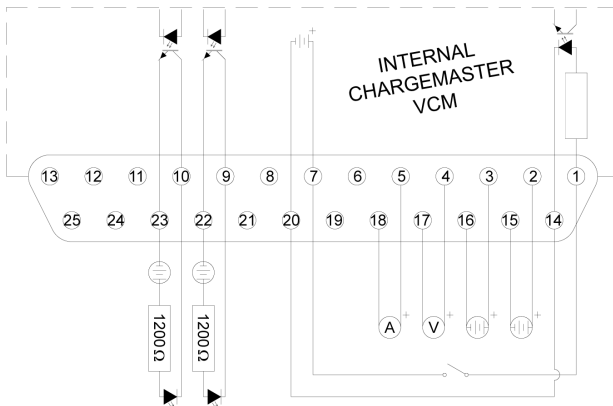


Figure 10. Remote Options Electrical Schematic



## Remote Functions

Several functions may be controlled remotely through the 25-pin D-Sub connector located on the rear of the unit (the mating D-Sub connector and back shell are supplied in the mounting kit with each unit):

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

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

1. The Remote On/Off function enables the power supply to be energized from a remote location. This function switches the output voltage On/Off, **NOT THE AC MAIN VOLTAGE**.



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

2. To enable/disable the remote On/Off function:
  - Press [MENU + ENTER] for the Advanced Settings
  - 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
3. Provide a dry contact between D-Sub connector pins 1 & 7.
4. Jumper D-Sub connector pins 14 & 20 to make available 12V with which power to the contact.
5. 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 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.

### Controlling the Voltage Setpoint Remotely

1. The output voltage can be controlled from a remote source that provides any of the following control signals:
  - 0-5 VDC
  - 0-10 VDC
  - 0-20 mA DC
  - 4-20 mA DC

2. 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 Advanced Settings
  - Press [DOWN] to toggle from “DISABLE” to “ENABLE”
  - Press [ENTER] to accept the change (asterisk will flash)
  - Press [MENU] until “Remote I/O” 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
3. Connect the reference signal to D-Sub connector pins 3 & 16.
4. Inputting a high signal will drive the VCM Power Supply to its maximum output; a low signal (or absence of a signal) will drive it to zero output.

### **Controlling the Current Setpoint Remotely**

1. The output current can be controlled from a remote source that provides any of the following control signals:
  - 0-5 VDC
  - 0-10 VDC
  - 0-20 mA DC
  - 4-20 mA DC
2. 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 Advanced Settings
  - Press [DOWN] to toggle from “DISABLE” to “ENABLE”
  - Press [ENTER] to accept the change (asterisk will flash)
  - Press [MENU] until “Remote I/O” 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
3. Connect the reference signal to D-Sub connector pins 2 & 15
4. Inputting a high signal will drive the VCM Power Supply to its maximum output; a low signal (or absence of a signal) will drive it to zero output.

## Monitoring the Output Voltage Remotely

1. The output voltage 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 0.5 mA.
2. Connect external multimeter to D-Sub connector pins 4 and 17. If the Remote I/O setting is 0-5V or 0-10V, set multimeter to a DC voltage meter. If remote I/O setting is 0-20 mA or 4-20 mA, set the multimeter to a current meter.
3. In order to determine the output voltage, multiply the multimeter reading by the scale factor in the table.


30 kV Units Voltage Output		60 kV Units Voltage Output	
Remote I/O Setting	Scale Factor	Remote I/O Setting	Scale Factor
0-5V	6	0-5V	12
0-10V	3	0-10V	6
0-20 mA	1.5	0-20 mA	3
4-20 mA*	1.875	4-20 mA*	3.75
* Subtract 4 from the meter reading, then multiply by scale factor.			

## Monitoring the Output Current Remotely

1. The output current 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 0.5 mA.
2. Connect external multimeter to D-Sub connector pins 5 and 18. If the Remote I/O setting is 0-5V or 0-10V, set multimeter to a DC voltage meter. If remote I/O setting is 0-20 mA or 4-20 mA, set the multimeter to a current meter.
3. In order to determine the output current, multiply the multimeter reading by the scale factor in the table.

30 kV Units Current Output		60 kV Units Current Output	
Remote I/O Setting	Scale Factor	Remote I/O Setting	Scale Factor
0-5V	1	0-5V	0.5
0-10V	0.5	0-10V	0.25
0-20 mA	0.25	0-20 mA	0.125
4-20 mA*	0.312	4-20 mA*	0.156
* Subtract 4 from the meter reading, then multiply by scale factor.			

## Monitoring the High Voltage On Indicator Remotely

1. The High Voltage “On” indicator (lightning bolt symbol “”) can be monitored externally by an LED or PLC input. An opto-isolated transistor provides the signal; maximum load must not exceed 50 VDC/10 mA.
2. Connect an external monitoring circuit to D-Sub connector pins 10 & 23. Refer to electrical schematic (p.14).

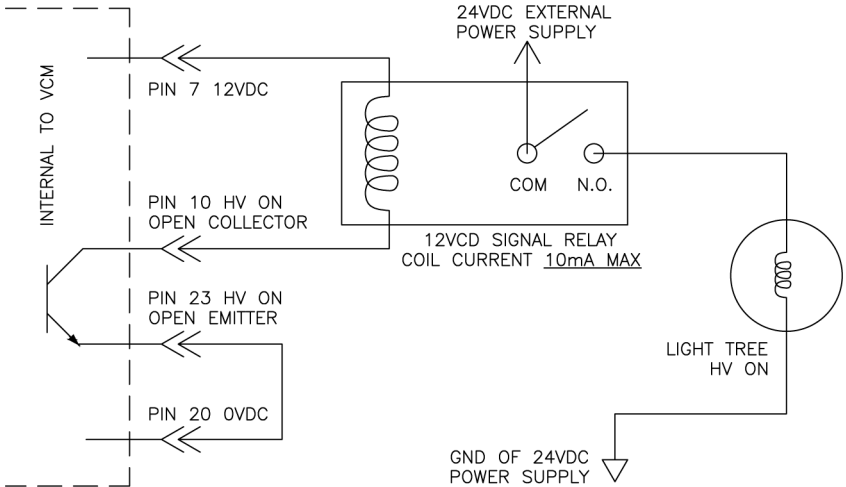


Figure 11. Example HV On Light Tree Schematic

## Monitoring the Limit Alarm Remotely

1. The Limit Alarm indicator can be monitored externally by an LED or PLC input. An opto-isolated transistor provides the signal; maximum load must not exceed 50 VDC/10 mA.
2. Connect an external monitoring circuit to D-Sub connector pins 9 & 22. Refer to electrical schematic (p.14).

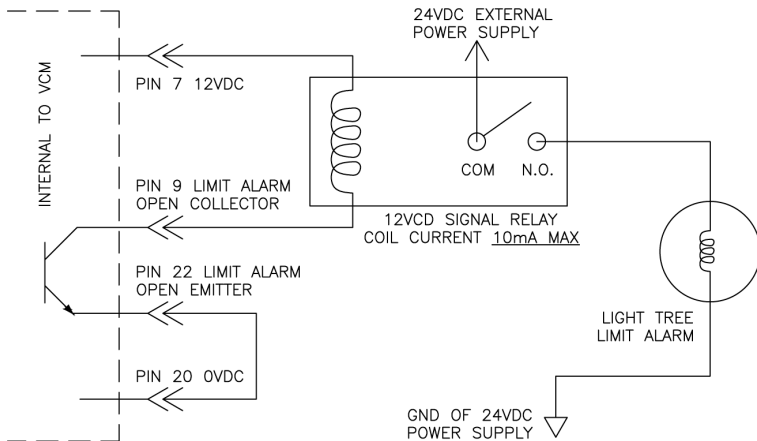


Figure 12. Example Limit Alarm Light Tree Schematic

## 7. MAINTENANCE



**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.

### Maintenance Tasks

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

## 8. 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 5 x 20 mm 3.15A Little fuse 218 3.15 or Bussman GDC 3.15A
	Power supply is defective	Return power supply to factory for repair
No output voltage readings on the front display	A setpoint has not been specified through the [▲]/[▼] buttons or the Remote Voltage Programming is activated	Specify setpoint 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
5051259	Mounting Kit <ul style="list-style-type: none"><li>• Mounting Brackets, Qty. 2</li><li>• 25 Pin D-Sub Connector and Shell, Qty. 1</li><li>• Bumper, Rubber, Qty. 4</li><li>• Hardware, Mounting Kit, M4x8 Screws, Qty. 4</li></ul>
4100286	SLCC HV Connector Kit (30 kV) <ul style="list-style-type: none"><li>• Contact Spring, Qty. 1</li><li>• Connector, Qty. 1</li><li>• Insulative Tube, Qty. 1</li><li>• Knurled Plug, Qty. 1</li><li>• Set Screw, Qty. 1</li></ul>
5050328	SLCC HV Connector Kit (60 kV) <ul style="list-style-type: none"><li>• Contact Spring, Qty. 1</li><li>• Connector, Qty. 1</li><li>• Insulative Tube, Qty. 2</li><li>• Knurled Plug, Qty. 1</li><li>• 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.

**Simco-Ion**

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