ESC Series

High Voltage DC Supply System

XP Power

Electrostatic High Voltage Source

- Output Voltage Range: 1kV – 15kV
- Single Output and Bipolar Models
- Input to Output Isolation: > 500 MΩ
- Output Regulation: 1%
- Automatic Polarity Reversal
- Automatic Discharge
- Short Circuit and Open Circuit Protection
- Built-in RF Filtering Available
- Analog / RS232 / DeviceNet (option)

The ESC Series is a high voltage power system with floating outputs up to 15kV (+/- 7500V) with both bipolar and unipolar versions. The output polarity can be reversed automatically with an input signal to the remote interface connector (25 pin D-type female). Input power is 24VDC via 3-pin Molex type, non-reversible quick disconnect. MHV connectors are used for the HV outputs, and a BNC for the center tap connection.

Other features include automatic discharge, short circuit protection, output filtering options, and RS-232 or DeviceNET protocols. The ESC Series is an ideal solution to satisfy your electro-static high voltage needs in a highly controllable rack-mount package that is easily integrated into your industrial environment.

Key Applications:

- **Electrostatic Chucks**

Models & Ratings

Model	Part Number	Max V (kV)	Max I (mA)	Configuration	Bias Voltage (Range)
ESC-1D	FP6293R1	1	2	Monopolar	n/a
ESC-2	FP6251RF	2 (+/-1)	3	Bipolar	-250V to +250V
ESC-3	FP6252RC	3 (+/-1.5)	2	Bipolar	-250V to +250V
ESC-3	FP6272R3	3 (+/-1.5)	2	Bipolar	special monitor
ESC-3D	FP6265R3	3	2	Monopolar	n/a
ESC-4	FP6283R2	4 (+/-2)	1	Bipolar	-250V to +250V
ESC-5	FP6294R1	5 (+/-2.5)	1	Bipolar	-1000V to +1000V
ESC-HV10	FP6269R2	10 (+/-5)	2	Bipolar	-250V to +250V
ESC-HVXP	FP6288R1	15 (+/-7.5)	1	Bipolar	-250V to +250V

Electrical Specifications

Description	Specifications
Floating bi-polar output	Minimum path to chassis ground from any HV output terminal >50 Meg ohm
Output to input isolation	> 500 Meg ohm (based on standard 5 KV dc hi-pot tests)
Output voltage	Output voltage is programmable and continuously variable on all models
Output current limit	Output current limit is programmable and continuously variable on all models
Output stability	1% or better of full output
Output ripple	Less than 0.5% at >35k Hz operating frequency
Output voltage linearity	Better than ±1% from 10% to 100% output
Output polarity reversal	On command or programable automatic. Note: ESC-HV10 does not include polarity reversal
Output voltage balance	Better than 1% for matched loads (dual pole units)
Output safety discharge relay	On command or programable automatic via 100Kohm resistor network from HV output to chassis ground
Operating ambient temperature	0 to 40° C
Storage temperature/humidity/air pressure	0 to +70° C
Humidity	10-90% non-condensing
RF filtering	RF filtering is included on all models except ESC-HVxx

Interface Connections

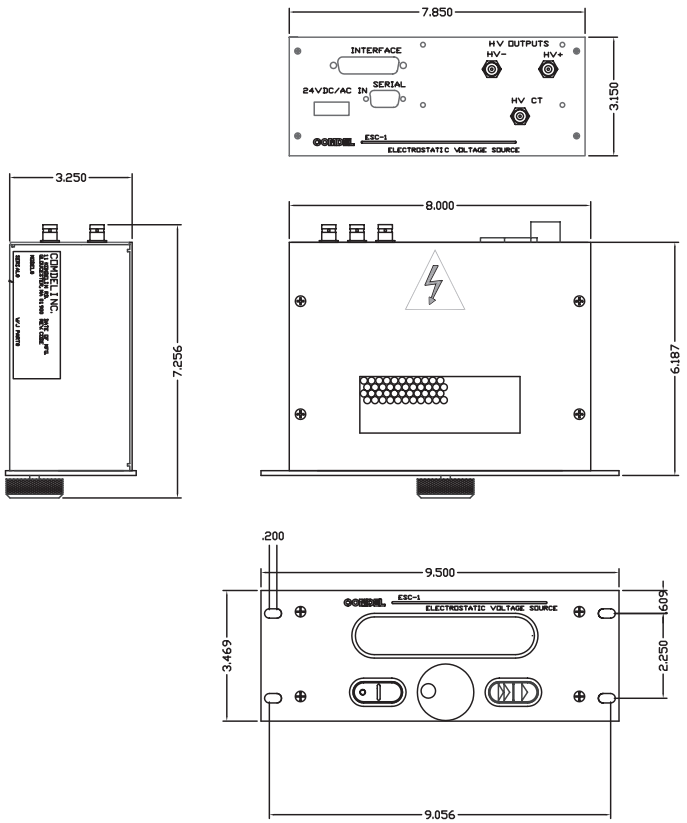
Description	Specifications
DC power input connection	3 pin Molex type, non-reversible quick disconnect. 10ft (3m) included. 24V DC input. Molex P/N - Consult Factory
DC output connection	MHV connectors for HV+ and HV-, (SHV for model ESC-HVXP) BNC connector for HV-CT (not used on models ESC-1D or ESC-3D)
Remote signal interface	25 pin D-type female for analog remote (DB-25s) P pin D-type female for RS-232 (DB9s)
Fusing Requirements	External

Mechanical Specification

Description	Specifications
Size	9.5" W x 3.25" H x 6.25" D approx. for models <5Kv 9.5" W x 3.25" H x 12.5" D approx. for models >5Kv 19" W x 3.25" H x 12.5" D approx. for 15Kv version
Weight	2 to 5 lbs. approx. depending on model
Mounting	Standard EIA rack mounting with ½ rack filler panel
Cooling	Convection (do not block vents)

Mechanical Details

Example: 1kV to 3kV



Remote Analog Interface Connections:

Signal Pin	Function
1	Voltage set point, analog return
14	Voltage set point, analog positive (10V full scale, 200K ohm input Z)
2	Current set point, analog return
15	Current set point, analog positive (10V full scale, 200K ohm input Z)
3	Output voltage monitor (10V full scale, 2K ohm minimum load)
16	Center tap terminal voltage monitor (input voltage range +/- 250Vdc max. Other voltage ranges available on request, consult factory)
4	Positive output current monitor (10V full scale, 2K ohm minimum load)
17	Negative output current monitor (10V full scale, 2K ohm minimum load)
5	Monitor circuit analog return
18	HV enable digital input positive (opto-isolated, digital input, 5-24Vdc capable)
6	HV enable digital return
19	Polarity change digital positive (opto-isolated, digital input, 5-24Vdc capable)
7	Polarity change digital return
20	Discharge command digital positive (opto-isolated, digital input, 5-24Vdc capable)
8	Discharge command digital return
21	HV on indicator positive, open collector (40Vdc/50mA max. rating)
9	HV on indicator negative, open emitter
22	Polarity indicator. Hi (15 Vdc) = positive polarity, Lo = reversed output polarity
10	Polarity indicator return/ground
23	No connection
11	Reserved
24	+15Vdc source (25mA max.)
12	+15Vdc source (25mA max.)
25	Circuit common / 15v return
13	Circuit common / 15v return

Certifications

Models up to 4kV output are TUV certified. Contact factory for model specific details.