

1kV - 15kV CONVECTION COOLED

The ESC Series is a high voltage power system with floating outputs up to 15kV ($\pm 7500V$) 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.

Features

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

Models & Ratings

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

ELECTROSTATIC HIGH VOLTAGE SOURCE



Typical Applications



Electrostatic Chucks

Dimensions

9.5" W x 3.25" H x 6.25" D approx. for models $<5kV$
(241.3 x 82.6 x 158.8mm)

9.5" W x 3.25" H x 12.5" D approx. for models $>5kV$
(241.3 x 82.6 x 317.5mm)

19" W x 3.25" H x 12.5" D approx. for 15kV version
(482.6 x 82.6 x 317.5mm)

Electrical Specifications

Description	Specifications
Floating Bipolar Output	Minimum path to chassis ground from any HV output terminal >50MΩ
Output to Input Isolation	>500MΩ based on standard 5kV 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 >35kHz operating frequency
Output Voltage Linearity	Better than ±1% from 10% to 100% output
Output Polarity Reversal	On command or programmable 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 programmable automatic via 100kΩ 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

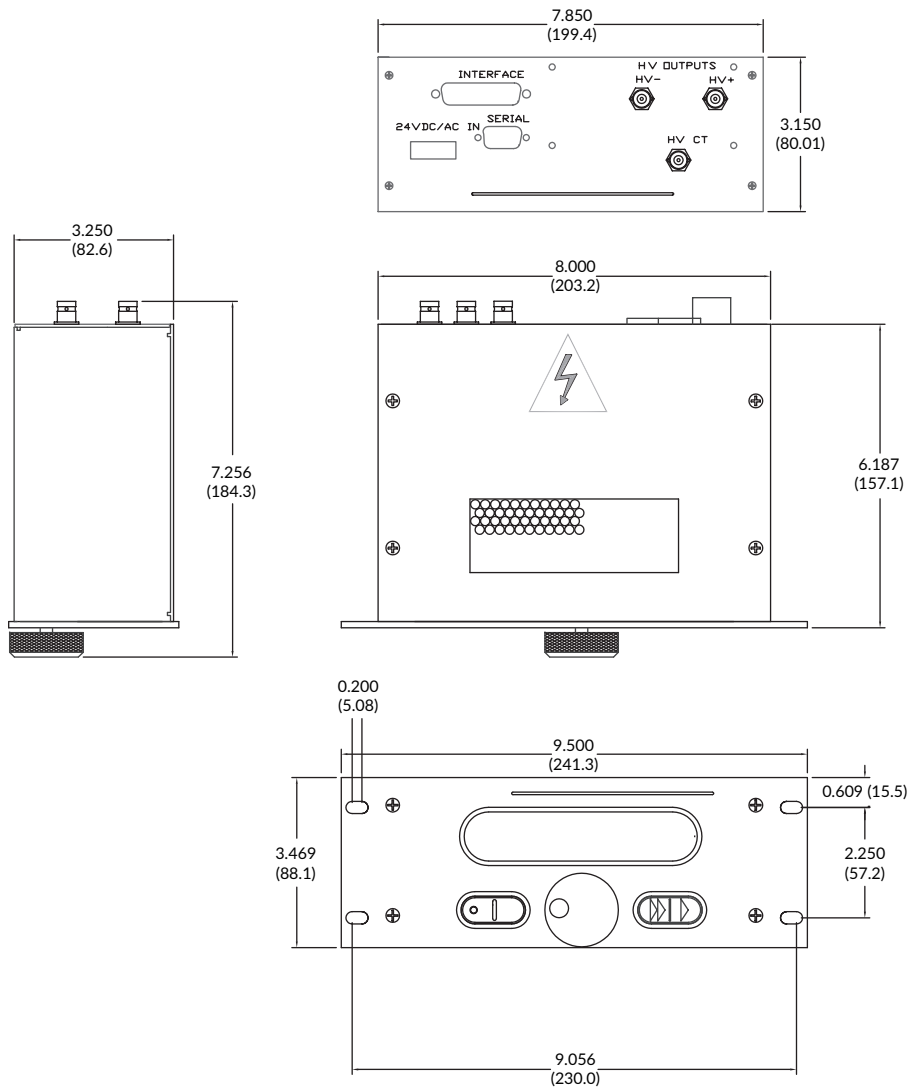
Description	Specifications
DC Power Input Connection	3 pin Molex type, non-reversible quick disconnect. 10ft (3m) included. 24VDC input. Molex P/N - consult factory
DC Output Connection	MHV connectors for HV+ and HV-, (SHV for model ESC-HVXP) BNC connector for HV-CT (not used on models ESC-1D or ESC-3D)
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
Mounting	Standard EIA rack mounting with ½ rack filler panel
Cooling	Convection (do not block vents)
Weight	2 to 5lbs. (907 to 2267g) approx. depending on model

Mechanical Details

Example: 1kV to 3kV



Notes:

1. All dimensions are in inches (mm)
2. Weight: 2 to 5lbs. (907 to 2267g) approx. depending on model

Remote Analog Interface Connections

Signal Pin	Function
1	Voltage set point, analog return
14	Voltage set point, analog positive (10V full scale, 200k Ω input Z)
2	Current set point, analog return
15	Current set point, analog positive (10V full scale, 200k Ω input Z)
3	Output voltage monitor (10V full scale, 2k Ω minimum load)
16	Center tap terminal voltage monitor (input voltage range ± 250 VDC max. Other voltage ranges available on request, consult factory)
4	Positive output current monitor (10V full scale, 2k Ω minimum load)
17	Negative output current monitor (10V full scale, 2k Ω 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 (15VDC) = 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)
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.