

Electron Beam High Voltage Power Supply Range



The Genvolt range of Electron Beam power supplies consists of a range of high powered PSU's.

Designed by High Voltage engineers at Genvolt in the United Kingdom and manufactured and tested to our exacting standards.

Power ranges available at present are from 60kV all the way up to 150kV. The DC filament power supply and the Bias power supply are integrated within the mechanical build.

The current of the filament and bias voltages are directly measured at high potential, then the measurement is sent via a fibre optic connection to the control system.



All the power supplies within the range adopt high frequency inversion and intelligent control technologies, alongside several patented technologies, featuring advanced techniques, inbuilt redundancies and high performance.

The high power inverter technology adopted by the Genvolt range is a resonant inverter designed and manufactured by Genvolt, which incorporates; integrated input rectification, filtering and inversion on a single radiator. The unit is water cooled.

The high voltage transformer is a patented rectification transformer with low stored energy and high reliability.

The Genvolt range has complete protection inbuilt including, overvoltage, and overcurrent, overheat and discharge detection. Which all enable the unit to perform in a continuously over an extended period of time.

Example Specification
Genvolt Electron Beam High Voltage Power Supply
Range

Product Specification

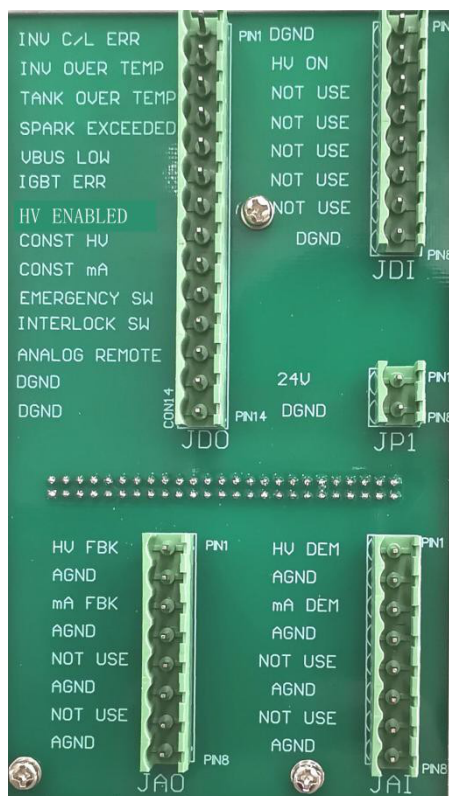
1. Input voltage: AC three phase 360-440V, + neutral
2. High voltage power supply
 - Output voltage: 150kV
 - Output power: 5 - 100kW
 - Stability of output voltage: <0.2%
 - RMS of high voltage ripple: <0.2%
3. Filament power supply
 - Output current: DC 0 - 50A
 - Output voltage: 0 - 240V
 - Stability of filament current: <0.2%
4. Bias power supply
 - Output current: 0.5mA Maximum
 - Output voltage: DC 0 – 2.5kV
 - Stability of output voltage: <0.2%
 - RMS of output voltage ripple: <0.2%
5. Output current: 50 - 1500mA
 - Stability of output current: <0.2%
6. Working mode: Continuous
7. Cooling method: water cooling
8. Operating temperature: -10 to +40° C
9. Working Humidity: <90%, non-condensing
10. Dimensions: Model dependent (on specification)
11. Weight: Model dependent (on specification)

Product Features

- Integrated high voltage power supply with isolated filament power supply and bias power supply
- High frequency Inverter technology has been adopted for all products
- Able to withstand discharge, short circuit and arc discharge for sustained periods of time
- Local and remote modes available
- Voltage ranges from 60kV to 150kV
- Output power ranges from 5kW to 100kW, giving the ability to fulfil the requirements of numerous applications, Electron Beam Welding, Smelting and Electron Beam Printing
- Flexible and custom high voltage output connector
- Maximum bias voltage is 2.5kV which can be customised

Control Ports

User Interface Connector and Rear panel connections



There are five sets of wiring terminals on the rear panel of the power supply, which are the ports for remote control of the power supply.

JD0 and JD1 are digital ports.
JA0 and JA1 are analogue ports.
JP1 is the supporting power supply providing 24V for external use.

The maximum current allowed for output is 1500mA.

JD0 Status indication includes fault Indication and working status

JD1 Switch connector: initiation switch and indication. 14-pin connector.
Working mode selection. 8-pin connector.

Genvolt Electron Beam High Voltage Power Supply Typical available user pin out connections

JDO Port

Consists of 14pins which denote Status Indication Signals.

Pin	Name	Function
1	INV C/L ERR	Inverter Over Current
2	INV OVER TEMP	Inverter Over Temperature
3	TANK OVER TEMP	Tank Over temperature
4	SPARK EXCEEDED	Continuous Discharge Fault
5	VBUS LOW	Low Bus Voltage
6	IGBT ERR	IGBT Error
7	HV ENABLED	High Voltage Enabled
8	CONST HV	Constant Voltage Output
9	CONST MA	Constant Current output
10	EMERGENCY SW	Emergency Stop
11	INTERLOCK SW	Interlock Switching
12	ANALOG REMOTE	Analog Remote
13	DGND	Ground
14	DGND	Ground

JDI Port

8 pins port used for HV switching signal. 3 of them are effective.

Pin	Name	Function
1	DGND	Ground
2	HV ON	Initiate High Voltage
3	NOT USE	N/A
4	NOT USE	N/A
5	NOT USE	N/A
6	NOT USE	N/A
7	NOT USE	N/A
8	DGND	Ground

Genvolt Electron Beam High Voltage Power Supply Typical available user pin out connections

JAO Port

8 pins port for feedback signal, 0-10V = 0-Max

Pin	Name	Function
1	HV FBK	High voltage feedback
2	AGND	Ground
3	mA FBK	Current feedback
4	AGND	Ground
5	NOT USE	N/A
6	AGND	Ground
7	NOT USE	N/A
8	AGND	Ground

JAI Port

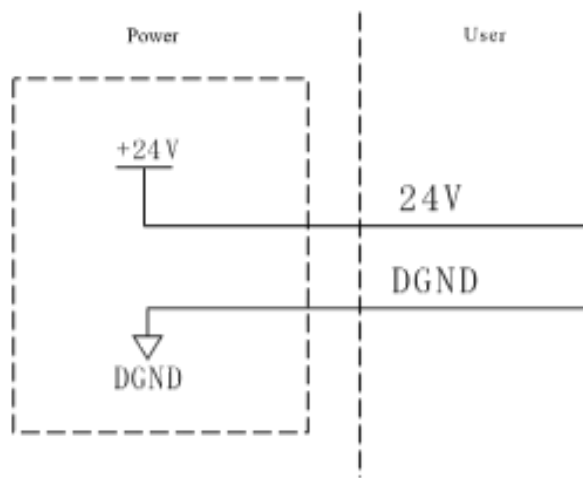
8 pins port for demand signal, 0-10V = 0-Max

Pin	Name	Function
1	HV DEM	High voltage demand
2	AGND	Ground
3	mA DEM	N/A
4	AGND	Ground
5	NOT USE	N/A
6	AGND	Ground
7	NOT USE	N/A
8	AGND	Ground

Mechanical Details

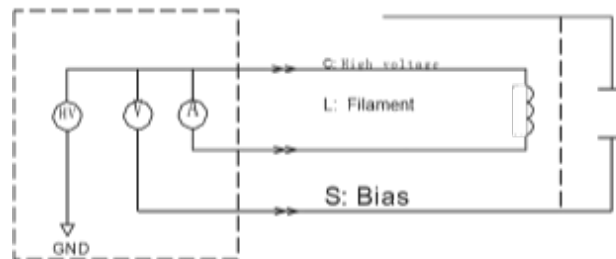
Pin	Name	Remarks
1	24v	+24V DC
2	DGND	Digital Grounding

Diagram 5:



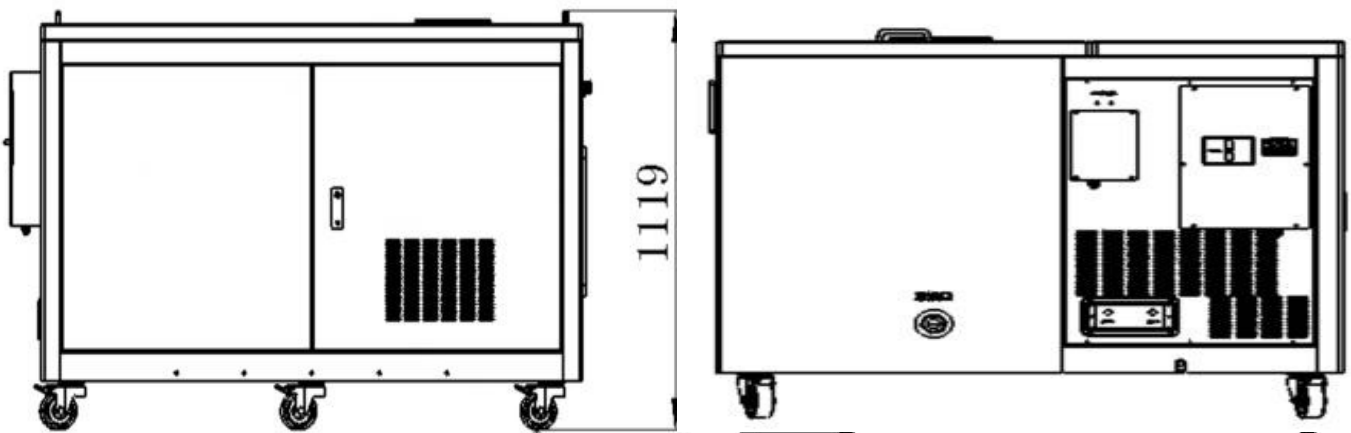
Note: the maximum output current of the supporting power supply is 1500mA

High Voltage Connection

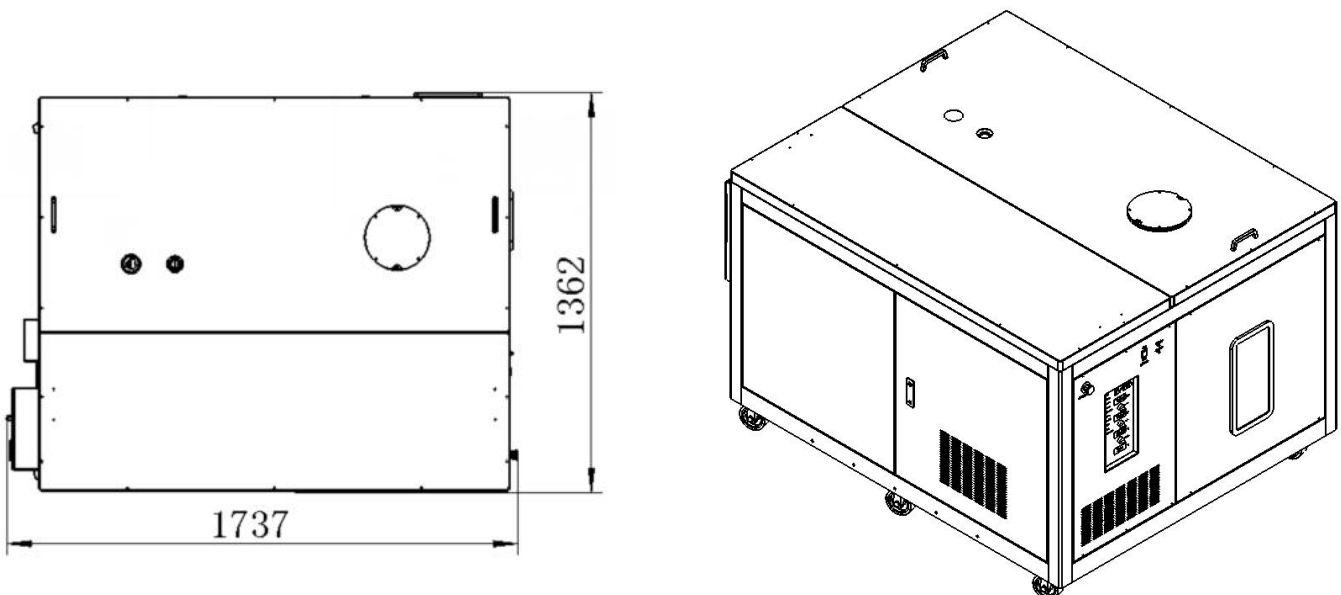


Product Measurements

Front and side view



Vertical view



Wiring connections

1. The main circuit breaker is connected to 3 - 380V live wires.
2. While connecting the wires for 220V input, User needs to be very cautious about the exact wiring positions for Live lines, neutral lines and Earth lines connection. Otherwise it can cause unexpected accidents and safety issues





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