EB04 SERIES 2kW ELECTRON BEAM POWER SUPPLY

GENVOLT HIGH VOLTAGE POWER SUPPLIES

- ✓ Flexible high voltage output
- ✓ Output voltage 120kV
- ✓ Output power 0-2000W
- ✓ Maximum grid bias voltage 400V
- ✓ Customisation available

EB04 Webpage

We recommend visiting our website for any updated model information

Specification Summary

The Genvolt EB04 series power supply for electron beam welding machine is designed by Genvolt. t covers power from 100W to 2kW, voltage from 60kV to 225kV. It has inbuilt DC filament power supply and grid bias. The current of filament and grid bias voltage are measured directly at high level and transfer to control system via optical fiber. This series of power supply adopts high-frequency inversion and smart control technologies.

It features advanced technology and high reliability.
Eb04 series power supply adopts high power inverter which is a unique resonant inverter designed by Genvolt. The input rectification, filtering and inversion modules are integrated together on a heat sink supported with a forced air cooling structure. The power supply has well designed protection for overvoltage, overcurrent, overheating and discharge inspection guaranteeing continuous operation.

Typical Features of 120kV Unit

Integrated high power supply, filament and grid bias power.

Output voltage 120kV, customization available.

20kHz high-frequency inverter.

Output power 0-1200W ,customization available.

The device is 0-100% adjustable for all input controls.

Flexible high voltage output, customization available.

Remote analogue control and RS485 control available.

Maximum filament current 20A, customization available.

Protection against discharge, short and arc discharge.

Maximum grid bias voltage 400V, customization available.

Applications

Electron beam.

X-Ray power supply.

Technical Parameters

1. Input voltage: AC Three-phase 380V line and neutral. Allowable voltage fluctuation 5%.
2. High voltage power supply
   Output voltage: -120 kV
   Output voltage stability: <0.2%
   Effective value of ripple of high voltage: < 0.2%
3. Filament power supply
   Output current: 20 A
   Output voltage: 30 V DC
   Filament current stability: < 0.2%
4. Grid bias power supply
   Output current: 20mA
   Output voltage: 400V
   Output voltage stability: <0.2%
   Effective value of ripple of output voltage: <0.2%
5. Output current
   Output current: 10mA
   Output current stability: <0.2%
6. Operating mode: Continuous
7. Cooling: forced air cooling
8. Working environment temperature: -10 - 40℃
9. Ambient humidity: <90% without moisture condensation
10. Power size: 7U
11. Weight: 99kG

Typical Parameters

EB04-220Vac-N1200-120-F30-B400

Output voltage: 120 kV

Output current: 10mA

Filament voltage: 30 V

Filament current: 20 A

Grid bias voltage: - 400 V

Grid bias current: 20mA

This machine contains grid bias of +400V. Positive and negative grid bias switchable.

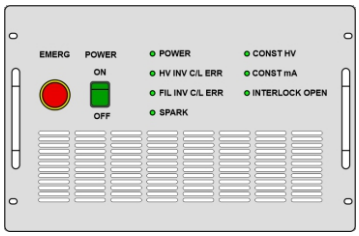
Controls

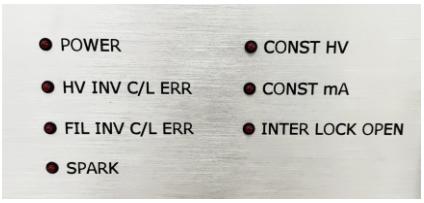
There is a red emergency stop button, green power switch and status indicator on the front panel.

The high voltage can be shut down immediately by pressing the red emergency stop button. Rotate the button clockwise, then the button will resume and cancel inter lock for high voltage.

The green power switch is used to switch on/off main power source.

The status indicator shows the working status of power switch, constant voltage or current status, overvoltage alarm, overcurrent alarm for filament, chain reaction and discharging prompt.

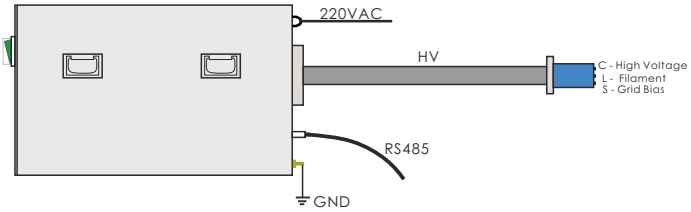




Wiring

Wiring as shown.

Make sure of proper grounding.
Short circuit of interlock pillar.
Do not cover the fan.
Make sure of a proper connection of the high voltage cable.
Make sure of a proper connection of communication cable.



Parameter Settings

All output parameters can have analog value from 0V to 10V for remote setting.
High voltage 0V to 10V refers to 0kV to -120 kV.
Filament voltage 0V to 10V refers to 0A to 20A.
Grid bias 0V to 10V refers to 0V to -400V.

Control Interface

There are three interfaces on the rear panel of the power supply, J1, J2 and J3.

J1 is for DB9, 485 port, which is used to communicate with the computer to control the operating mode.
J2 is DB50, analogue signal transmission port for connection with remote controller.
J3 is RJ45 port. Not available for this machine.

HV Interface

Three-core cable, industrial standard HV connector R24 socket and corresponding cable connectors are integrated. Maximum filament current is up to 20A.

Output of three-core cable: one for common, one for filament, and one for grid bias , especially suitable for applications with large filament current.

Rear Panel

High power output on rear panel

Fuse

Three signal interfaces: RS485, DB50 and RJ45

Mains AC input

Grounding bolt

INTERLOCK pillar

Output Diagram

All output parameters can have analog value from 0V to 10V for remote setting.
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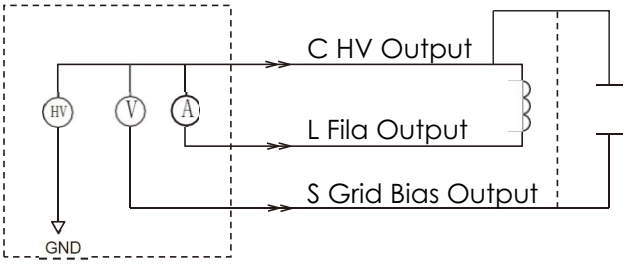
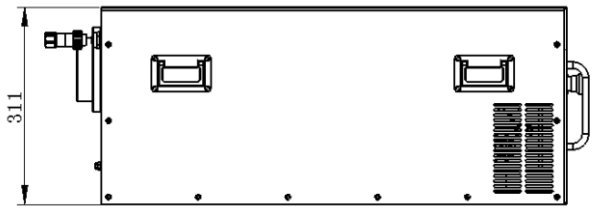


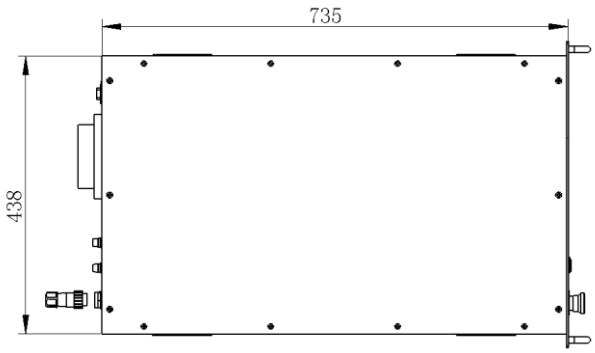
Sizes

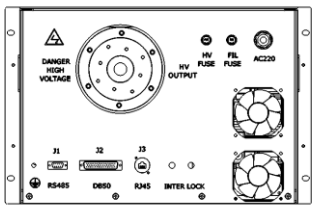
7U to 11U

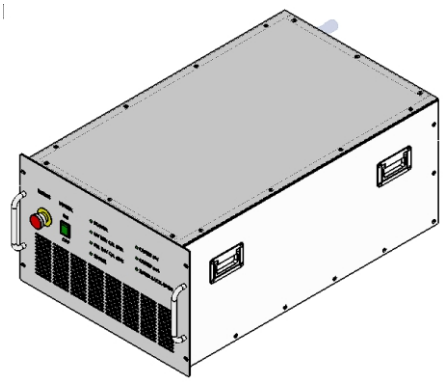
Aluminium alloy shell.

Standard 7U: L:735mm; W: 438mm; H: 311mm.









Safety Announcements

This power supply contains high voltages and power. **Contact with the output may result in fatal injury**. It should only be used and maintained by trained personnel.

Before opening the power supply, please check following:

1. Whether the power supply and its environment is clean and dry;
2. Whether there are irrelevant items nearby the output or load of high voltage;
3. Make sure the return current from the load is well grounded via the grounding bolt at the back.

DB50 Definition

Pin	Name	Note	Pin	Name	Note
1	BIAS NEG FBK	Feedback for negative grid bias	26	NC	undefined
2	FIL I FBK	Feedback for filament current	27	HV ERR	High voltage error
3	mA FBK	Feedback for beam current	28	BIAS ERR	Grid bias error
4	HV FBK	High voltage feedback	29	HV INV OV TEMP	Overheat of high voltage inverter
5	BIAS POS FBK	Positive grid bias feedback	30	FIL INV OV TEMP	Overheat of filament inverter
6	BIAS DEM PLC	PLC negative grid bias setting	31	SPARK	Discharging
7	FIL DEM PLC	PLC filament setting	32	CONST mA	Constant current
8	mA DEM PLC	PLC beam current setting	33	NC	undefined
9	HV DEM PLC	PLC high voltage setting	34	NC	undefined
10	AGND	Analog signal ground	35	HV ON PLC	PLC high voltage on
11	FIL ERR	Filament error	36	NEG BIAS ON PLC	PLC negative grid bias on
12	HV C/L	Overcurrent of high voltage inverter	37	FIL ON PLC	PLC filament on
13	FIL C/L	Overcurrent of filament inverter	38	POS BIAS ON PLC	PLC positive grid bias on
14	PFC OV HV	PFC overvoltage	39	BEAM CLOP ON PLC	PLC close beam current on
15	CONST HV	Constant voltage	40	DGND	Signal ground
16	INTERLOCK	Interlock	41	DGND	Signal ground
17	DGND	Signal ground	42	15	+ 15V
18	NC	undefined	43	AGND	Analog signal ground
19	NC	undefined	44	NC	undefined
20	NC	undefined	45	NC	undefined
21	NC	undefined	46	NC	undefined
22	NC	undefined	47	NC	undefined
23	NC	undefined	48	NC	undefined
24	NC	undefined	49	NC	undefined
25	NC	undefined	50	NC	undefined

Note: All error signals are low level. Refer to DGND.
PLC set signal is 0- 10Vdc, where 0 refers to the maximum. Refer to AGND.
For all switching signal, 0v refers to on, suspend or high level refers to off. Refer to DGND.

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