IONICS has designed, developed and supplied regulated power supplies for

**POWER SOURCE FOR ELECTRON BEAM WELDING**

**Upto 20kW**



Electron Beam Welding equipment using the high frequency

resonant / PWM-Controlled switch mode topology.

The entire power source consists of the following:

* Acceleration Voltage Supply
* Filament Heating Supply floating on high voltage
* Bias Supply floating on high voltage
* Focusing Supply
* Beam Oscillation supplies (X and Y) 2 sets
* Beam Deflection supplies (X and Y) 2 sets

The unit is divided into two parts:

* The HT Tank
* The Control Cubicle

The HT tank houses the high voltage section of the Acceleration supply and also the Filament Heating Supply and the Bias Supply, each floating at -100kV.

The control cubicle houses the Beam Oscillation and the Beam Deflection Supplies, electronic controllers for the Acceleration supply, Filament Supply and Bias supply

* OEM Customization available

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| **Technical Specifications** | |
| **PARAMETER** | SPECIFICATION |
| Input Voltage | 415V ±10% A C, 50Hz, three phase |
| Duty | Continuous operation |
| Protections | HRC fuses at mains input Single phasing preventer Line filter at mains input Thermal overload relays Various interlocks |
| Controls & Signals on Control Panel for all the power supplies | Key switch to enable/disable the whole system Emergency OFF push button  Selector switch for local/remote selection ON/ OFF push buttons  10 turn potentiometers for voltage & current control LED indications for ON/ OFF status  LED indications for fault status |
| ACCELERATIO N VO LTAGE SUPPLY | |
| Output Voltage Range\* | Upto -100kV DC |
| Output Current Range\* | Upto 200mA |
| Output Voltage Control | 0 to rated voltage |
| Output Current Control | 0 to rated current |
| Line Regulation | ≤ 0.1% for 10% variation in input voltage |
| Load Regulation | ≤ 1% for 0 to 100% load variation |
| Stability | < 0.1% |
| Ripple | ≤ 1% rms of rated voltage |
| Resolution | 100V for voltage and 0.1mA for current |
| Repeatability in Settings | < 1% |
| Protections | Against over current, over voltage, over temperature, short-circuit |
| FILAMENT HEATING SUPPLY | |
| Output Voltage Range | Upto 10V DC |
| Output Current Range | Upto70A |
| Output Voltage Control | 0 to rated voltage |
| Output Current Control | 0 to rated current |
| Insulation Level | Floating on -100kV DC |
| Protections | Against over current, filament open |
| BIAS (GRID ELECTRO DE) SUPPLY | |
| Output Voltage Range | Upto -3500V DC |
| Output Current Range | Upto 10mA |
| Output Voltage Control | 0 to rated voltage |
| Insulation Level | Floating on -100kV DC |
| Regulation | ±1% |
| Ripple in Voltage | ≤ 1% peak to peak |
| Stability | < 1% |
| Protections | Against short circuit |
| Control Loop | Control loop senses the beam current and required ramp -up timing |
| FOCUSING SUPPLY | |
| Output Voltage | Upto 150V DC |
| Output Current | Upto 15A |
| Output Voltage Control | 0 to rated voltage |
| Output Current Control | 0 to rated current |
| Ripple | ≤ 0.1% rms |
| Mode of Regulation | Constant current-constant voltage |
| Protections | Against over current, short circuit |
| BEAM OSCILLATIO N SUPPLIES (X & Y) 2 SETS | |
| Output Voltage | Upto 10V A C sinusoidal |
| Output Current | Upto 2A |
| Voltage Control | 0 to rated voltage |
| Frequency | Variable from 50Hz to 1kHz |
| Phase Shift | Adjustable phase shift of 0 to 180˚ between the two sets of outputs |
| Line Regulation | ≤ 0.1% for 10% variation in input voltage |
| Load Regulation | ±1% |
| Protections | Against over current |
| BEAM DEFLECTIO N SUPPLIES (X & Y) 2 SETS | |
| Output Voltage | Upto 30V DC |
| Output Current | Upto 5A |
| Output Voltage Control | 0 to rated voltage |
| Output Current Control | 0 to rated current |
| Polarity | Positive / negative (selectable through switch) |
| Line regulation | ≤ 0.1% for 10% variation in input voltage |
| Load regulation | ≤ 0.1% |
| Ripple | ≤ 0.1% rms |
| Mode of Regulation | Constant current-constant voltage |
| Protections | Against over current, short circuit |

\*Optional. To be specified by the user.

For any queries or customization requests contact us at [info@ionics.co.in](mailto:info@ionics.co.in)

For product line information visit us at [www.ionics.co.in](http://www.ionics.co.in)