

**POWER SOURCE FOR ELECTRON BEAM MELTING**

**Upto 15kW**

IONICS has designed, developed and supplied regulated power supplies for

Electron Beam Melting equipment using the transformer-rectifier topology.

The entire power source consists of the following:

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

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| **Technical Specifications** |
| **PARAMETER** | SPECIFICATION |
| Input Voltage | 415V ±10% A C, 50Hz, three phase |
| Ambient temperature | 40˚C |
| Method of cooling | Air-cooled |
| Type of Transformer | Epoxy cast dry type rectifier transformer |
| Duty | Continuous operation |
| Installation | Indoor |
| Protections | Input HRC fusesSingle phasing preventerHarmonic filter at the mains inputThermal overload relaysLinear reactor for limiting short circuit current |
| Digital Monitoring | Acceleration voltage - 0 to -15kV DC averageBeam current - 0 to 1A DC mean |
| Controls & Signals on Control Panel | Push buttons for ON/ OFF10 turn potentiometer for voltage, current controlLED indications for ON/ OFF, fault status |
| Construction | The unit is to be divided into three parts viz.,The transformer cubicle, control cubicle and control console |
| ACCELERATIO N VO LTAGE SUPPLY |
| Output Voltage Range | -0.5kV DC to -15kV DC average |
| Output Current Range | 0 to 1A mean |
| Line Regulation | Upto 4% for 10% variation in input voltage |
| Load Regulation | Upto 4% for 0 to 100% load variation |
| Stability | < 10% |
| Ripple at frequencies ≤ 1 kHz | Upto 4% rms of set value – within working range |
| Resolution | 0.5kV for voltage and 10mA for current |
| Protections\* | Against over load, over current, over voltage, over watts and short -circuitDuring short circuit power supply trips |
| FILAMENT HEATING SUPPLY (EHT INSULATED) |
| Output Voltage Range | 0 to 7V AC rms |
| Output Current Range | 0 to 40A |
| Insulation Level | This supply will be floating at -15kV DC |
| Protections | The power supply will incorporate trip circuit for over current fault. |
| Topology | Thyristorised primary controller followed by single phase step downtransformer, independent close loop control |
| FOCUSING SUPPLY |
| Output Voltage Range | Upto 70V DC |
| Output Current Range | 0 to 1A |
| Ripple | ≤ 0.1% |
| Resolution | 1mA |
| BEAM OSCILLATIO N SUPPLIES (X & Y) 2 SETS |
| Output Voltage Range | 0 to 10V A C sinusoidal |
| Output Current Range | 0 to 1A (max) continuously variable by multi-turn potentiometer. |
| Frequency | Variable from 3Hz to 50Hz, sinusoidal and saw tooth with selector switch |
| Phase Shift\* | Adjustable phase shift of 0 – 180˚ between the two sets of output |
| Line Regulation | Upto 0.1% for 10% variation in input voltage |
| Load Regulation | Upto 0.1% |
| BEAM DEFLECTIO N SUPPLIES (X & Y) 2 SETS |
| Voltage | 0 to 5V DC |
| Current | 0 to 0.5A (max) continuously variable by multi turn potentiometer. |
| Polarity | Positive / negative (selectable through switch) |
| Line regulation | Upto 0.1% for all changes in line voltage of ±10% |
| Load regulation | Upto 0.1% |
| Ripple | < 1mV rms |

\*Optional. To be specified by the user.

For any queries or customization requests contact us at info@ionics.co.in

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