



Vulcan Range - Specification Sheet

Basic Description

The Vulcan range has been designed principally to address the demanding requirements of electron guns including electron beam welders. Therefore, rapid response to load changes and rugged tolerance of gun arcs is seen as a necessity. X-ray tubes and scientific research are also examples where this product could be successfully utilised.

Full control is offered remotely by RS485 link from a terminal or host computer. Alternatively, analogue inputs can be implemented to control the outputs which also allows diagnostic output via the RS485 port.

As this power supply can be adapted to deliver outputs from 10kW to 20kW and up to 200kV, a specification example is provided below.

Capacitor Charging Option

The Vulcan range can be adapted to suit capacitor charging applications at moderate PRF.

Specification Example

Input voltage	The input voltage range can be between 380/220VAC -10% to 415/240VAC +10%, three phase, four-wire, 50 or 60Hz. The inputs are power-factor corrected. In cases where no neutral connection is available, this should be specified at time of order. Supplies may also be 210/120VAC three wire but this must also be specified at time of order.
Output voltage	The output voltage may be set to any value up to 60kV negative (in this example). Values below 500V are considered to be outside the normal operational range and are not subject to specification.
Output stored energy	The total stored energy in the HV output circuits does not exceed 40 Joules.
Output current	Any level of current may be drawn from the supply up to a maximum of 250mA. Automatic reduction of output voltage occurs above approximately 275mA.
Ripple	60V pk. to pk. at twice the main oscillator frequency. The oscillator operates at 50 to 60kHz and so the main ripple component of the output will be at 100 to 120kHz. This assumes that the high voltage cable is at least 1000pF. There is also a ripple component at 100Hz (for a 50Hz supply). This will be below 60V pk. to pk. but is measured separately from the convertor frequency component. Note that convertor frequency ripple is mainly related to load current, not voltage, while mains frequency ripple is related to output power.



Specification Example (Continued)

Regulation	Line: Less than 15V for a 25VAC change in supply voltage. Load: Less than 15V for a 25mA (10%) to 250mA (100%) change in load current.
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Analogue Inputs & Outputs.

HV command input	0 to +10V = 0 to 60kV
mA command input	0 to +10V = 0 to 250mA
Bias command input	0 to +10V = 0 to -2000V (Standby Mode)
HV feedback output	0 to +10V = 0 to 60kV
mA feedback output	0 to +10V = 0 to 250mA
Bias feedback output	0 to +10V = 0 to -2000V
Filament feedback output	0 to +10V = 0 to 100A

Dimensions	56cm x 78cm x 100cm
Mass	250kg

Design improvements may lead to specification changes.