Series XR1000
1kW X-RAY POWER SUPPLY

FEATURES

- 1kW of output power
- Extensive tube protection facilities
- Robust IGBT converter design
- Short circuit and overload protection
- High stability
- High accuracy filament control
- Low ripple
- Analogue or RS232 interface option
- CE Marked for EU LV Directive 73/23/EEC

DESCRIPTION

The Series XR1000 is intended as a component power supply for use in industrial X-ray systems, elemental analysis equipment, X-ray diffraction spectrometers and materials process monitoring applications. The Series XR1000 incorporates a floating filament supply which is automatically controlled by the integral beam loop. Design is based around HiTek Power's proven IGBT converter, ensuring high efficiency and reliable operation. The Series XR1000 is available with either an analogue or RS232 control interface.

If the version you require is not on this datasheet, please contact our Sales Department as we produce many custom versions for specific requirements.

SPECIFICATION

Output Power:
1kW maximum at full rated output voltage and current.

Output Voltage:
0 to -60kV or 0 to -90kV.

Output Current:
60kV unit, 0 to 16mA.
90kV unit, 0 to 11mA.

Input Voltage:
230VAC ±10% (207VAC to 253VAC) 47-63Hz single phase and earth.

Input Current:
Not exceeding 12Arms.

Polarity:
Negative.

Specification Range:
Specifications apply above 5% of rated output voltage and current.

Ripple:
Less than 0.25% of setting plus 0.25% of rating, peak to peak.

Voltage Regulation:

Line:	Less than 0.05% change in output voltage for a 10% change in line voltage.
Static Load:	Less than 0.05% change in output voltage for a 5% to 100% change in output current.
Dynamic Load:	Less than 5% change in output voltage for a 5% to 100% change in output current, recovery to within 1% of previous setting within 200ms.

Current Regulation:

Line:	Less than 0.05% change in output current for a 10% change in line voltage.
Load:	Less than 0.05% change in output current for a 60% change in rated output voltage.

Filament Specification:

Voltage:	8VDC maximum. Referenced to the negative output voltage.
Current:	0.5 to 5ADC.

Temperature Coefficient:
Less than 100ppm/°C.

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Protection:
Over temperature
Over voltage
Fan failure detection
Filament current limit
Series output resistance

Drift:
Less than 0.1% of rating over an 8-hour period after 30 minutes warm-up.

Arc Count and Extinguish (ACE):
Each time the ACE system detects an arc it blanks the supply off for a brief period to extinguish the arc. The unit is then allowed to recover. If more arcs occur they are counted to determine the arc rate; if this exceeds a safe level the power supply is shut down. The parameters are factory set.

Operating Temperature:
0 to +40ºC.

Storage Temperature:
-20 to +70ºC.

Humidity:
80% maximum relative humidity up to 31ºC, reducing linearly to 50% at 40ºC. Non-condensing (ref BS EN61010-1).

Altitude:
Sea level to 2000 metres (6500 feet).

Safety:
This power supply meets the requirements of the Low Voltage Directive (LVD), 73/23/EEC, by complying with BS EN61010-1:2001 when installed as a component part of other equipment and is CE marked accordingly.

Safety Class:
Equipment Class 1.

Usage:
Indoor use only.

Installation Category:
II (BS EN61010).

Pollution Degree:
2 (BS EN61010).

Portability:
Non-portable.

Cooling:
Fan assisted with fan fail detection. Air inlets at the sides of the unit with exhaust on the rear panel. Minimum air flow required is 3m/s at the air intake on the side panels.

EMC:
This power supply is intended for installation as part of a system. Basic EMC filtering is provided.

RoHS:
The XR1000 is currently built to non-RoHS standard. This unit can, however, be configured to meet the requirements of RoHS where significant customer demand requires it, although please note that this will have an impact on delivery timescales.

Metering:
Provided as part of an alphanumeric display. Voltages are displayed with a resolution better than 0.5% of rated output. Current is displayed with a resolution of better than 1.5% of rated output.

Status Indication:
Uses the alphanumeric display to show the status of the interlock and the reason for any trip condition.

Mechanical:

Dimensions:	See outline drawing.
Weight:	33kg (73lb).

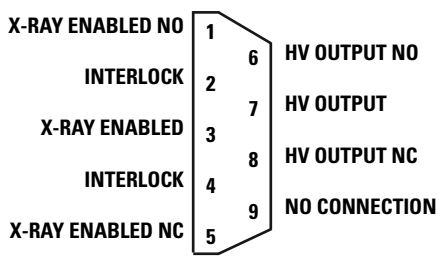
Outputs & Ordering Information:

Model no	Output Voltage	Output Current
XR1000/603	-60kV	-16mA
XR1000/903	-90kV	-11mA

Interface Connections:

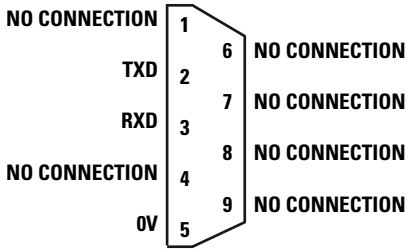
Mains:	IEC320-C20 16A.
Safety Earth:	M5 stud.
HV Output:	R10, 100kV receptacle on rear of unit. (Cable available separately.) Terminal C: HV output Terminal L: Filament Terminal S: No connection

Remote interlock 9-way male D-type connector:



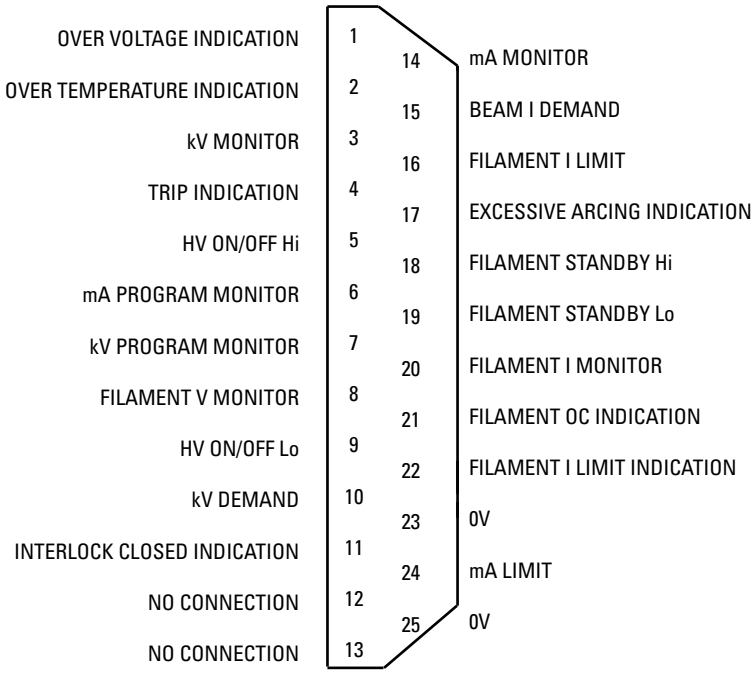
X-ray Enabled and HV Output are both a set of isolated changeover contacts. Interlock is an input; shorting the pins closes the interlock.

Digital remote control 9-way female D-type connector:



RS232 Interface 9600 Baud, 8bit, 1 start, 1 stop, no parity.

Analogue remote control 25-way female D-type connector:



All logical indicators are open collector outputs rated at 16V (max) in the off state. An internal 100Ω resistor is connected in series with the open collector transistor. The pull down voltage is 0.9V plus the internal resistor drop. The rated current is 10mA.

All analogue Voltage and Current Monitors are 0V to +10V ±0.5% ±20mV, with respect to 0V, representing 0 to rated output. Signal impedance is less than 100Ω and minimum external load resistance is 2kΩ.

All analogue Voltage and Current inputs are 0V to +10V with respect 0V, representing 0V to rated output ±0.2% of setting ±0.1% of rating. Input impedance is greater than 50kΩ.

CE These component power supplies meet the requirements of EC Directive 73/23/EEC (LVD).

Series XR1000
1kW X-RAY POWER SUPPLY

Drawing dimensions are in mm (inches)
Design developments may result in specification changes

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