HiTek Power

Series XRG70
X-RAY POWER SUPPLY

FEATURES

- 72W high voltage output max
- 20W grounded filament
- Exceptionally compact size
- Local and Remote operation
- CE Marked for EU LV Directive 73/23/EEC
- EU RoHS Compliant to 2002/95/EC
- Safety interlock
- High accuracy and stability

DESCRIPTION

The Series XRG70 has been specifically developed for high performance compact X-ray applications. The combination of surface mount, superior high voltage stress control and packaging techniques ensures a compact but highly reliable product. The Series XRG70 is from the grounded filament range of products designed for grounded cathode applications. The filament is automatically controlled by the integral beam current loop-control, and the power stage utilises a current-fed resonant push-pull converter to give high efficiency whilst ensuring reliable operation. The Series XRG70 is available in many models from 25kV to 70kV. There are many other options for power control, interlock and enable signals, so please enquire about custom versions if you cannot find a product which meets your specific requirements.

SPECIFICATION

Output Power:
Maximum output power 72W, dependent on model.
(Constant power available.)

Output Voltage:
Models available from 25kV to 70kV, full spec above 5% output.

Output Current:
Models available from 1mA to 2mA.

Input Voltage:
24VDC ±10%, 5.5A max (efficiency ≈ 75%).

Ripple:
0.05% +10V peak to peak maximum.

Filament:
5.5VDC 3.5A. Controlled by internal beam control loop.

Controls (Analogue version):

Voltage (Remote):	0 to 10VDC demands 0 to max voltage ±0.25% ±10V
Voltage (Local):	Internal multi-turn potentiometer for full range setting.
Current (Remote):	0 to 10VDC demands 0 to max current ±0.25% ±1µA.
Current (Local):	Internal multi-turn potentiometer for full range setting.
Filament Limit:	Internal multi-turn potentiometer for full range setting.
Filament Standby:	Internal multi-turn potentiometer for full range setting.

Controls (RS232 version):

Voltage (Remote):	12 bit, 0 to FFF demands 0 to max voltage ±0.25% ±10V.
Slew Rate:	12 bit, 0 to FFF demands 50ms to 204s.
Current (Remote):	12 bit, 0 to FFF demands 0 to max current ±0.25% ±2.2µA.
Filament Limit:	12 bit, 0 to FFF demands 0 to 3.5A ±2.5% ±15mA.
Filament Standby:	12 bit, 0 to FFF demands 0 to 3.5A ±2.5% ±15mA.

Monitors (Analogue version):

Output Voltage:	0 to 10VDC demands 0 to max voltage ±0.25% ±10V.
Output Current:	0 to 10VDC demands 0 to max current ±0.25% ±1µA.

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Filament Limit:	Internal multi-turn potentiometer for full range setting.
Filament Standby:	Internal multi-turn potentiometer for full range setting.

Monitors (RS232 version):

Voltage (Remote):	12 bit, 0 to FFF represents 0 to max voltage ±0.45% ±90V.
Current (Remote):	12 bit, 0 to FFF represents 0 to max current ±0.45% ±2µA.
Filament Current:	12 bit, 0 to FFF represents 0 to 3.5A ±2.5% ±15mA.
Filament Voltage:	12 bit, 0 to FFF represents 0 to 10V ±2.5% ±10mV.
Voltage Demand:	12 bit, 0 to FFF represents 0 to max voltage.
Current Demand:	12 bit, 0 to FFF represents 0 to max current.
Filament Standby:	12 bit, 0 to FFF represents 0 to 3.5A.
Filament Limit:	12 bit, 0 to FFF represents 0 to 3.5A.

Load Regulation:

Output Voltage:	0.01% ±1V for a 100% change in output current.
Beam Current:	0.01% ±1µA for a 50% voltage change.

Line Regulation:

Output Voltage:	0.01% for a 10% input voltage change.
Beam Current:	0.01% for a 10% input voltage change.

Temperature:

Storage:	-20 to +85ºC.
Operating temp:	0 to +45ºC (max case temperature).
Humidity:	80% maximum relative humidity up to 31ºC, reducing linearly to 50% at 40ºC. Non-condensing.
Altitude:	2000m.
Drift:	100ppm/ºC, applies to all analogue controls and monitors.
Stability:	±0.1% over an 8 hour period after 30 minutes warm-up.

Connectors:

Input DC Power:	Twin 6.35mm (¼ inch) push on spade terminals.
HV Output:	HiTek Power designed detachable connector.
Filament Output:	Molex 2W Minifit 39-29-1028.

Protection:

Input Voltage:	Reverse polarity and over-current.
HV Output:	Continuous short circuit, intermittent arc and over-voltage protection.
Filament Output:	Continuous short circuit and over-voltage protection.

Cooling:

By conduction through the mounting panel (case) and natural convection through the holes in the lid, one side panel and the rear panel.

Safety:

This high voltage module meets the requirements of the Low Voltage Directive (LVD) 2006/95/EC, by complying with BS EN61010-1:2001 when it is installed as a component part of other equipment and is CE marked accordingly. An M5 earth terminal is provided which shall be connected to a safety earth at all times when the unit is operational.

RoHS:

The Series XRG70 meets the requirements of EU Directive 2002/95/EC on the Restriction of use of certain Hazardous Substances in electrical and electronic equipment (RoHS).

Outputs and ordering information:

Model no	Output Voltage	Output Current	Output Power
XRG70-253*	25kV	2mA	50W
XRG70-403*	40kV	1.5mA	60W
XRG70-503*	50kV	1.2mA	60W
XRG70-603*	60kV	1.2mA	72W
XRG70-653*	65kV	1mA	65W
XRG70-703*	70kV	1mA	70W

*Please add the required suffix or suffixes to the model number:

P or N	High voltage output polarity. (Normally positive for grounded filaments.)
F	Specifies if the internal filament is required.
X	Extends the high voltage cable (to give compatibility with other products, eg MH60, and a greater range of X-ray tubes.)
C	RS232 computer control (hard-wired and fibre optic).

Examples:

XRG70-603N	Negative output.
XRG70-603PFC	Positive with filament and RS232.
XRG70-603PFXC	Positive with filament, extended cable and RS232.

Please note that analogue models with fixed constant power and RS232 models with adjustable constant power, as well as many different interlock options, are available on request.

Mechanical:

Dimensions:	See outline drawings.
Weight:	Analogue models: 3kg (6.6 lb) Models with RS232: 3.2kg (7 lb)
Casing:	Aluminium, clear non-chrome passivate finish.

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

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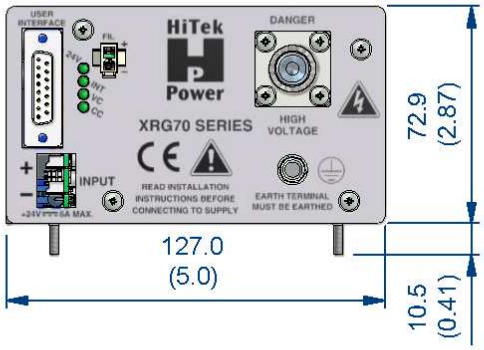
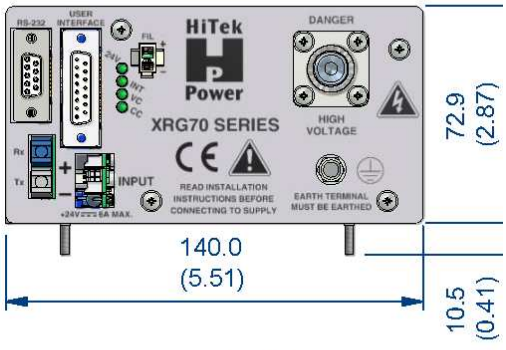
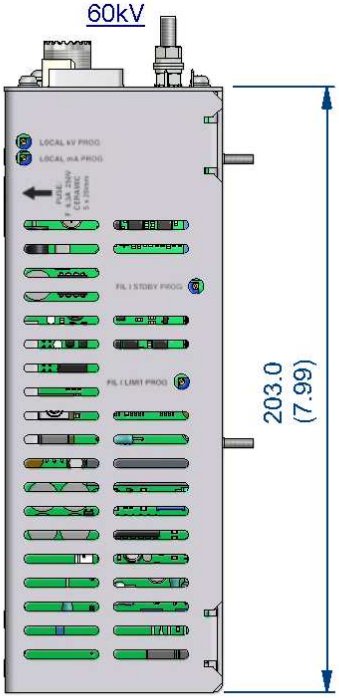
Analogue



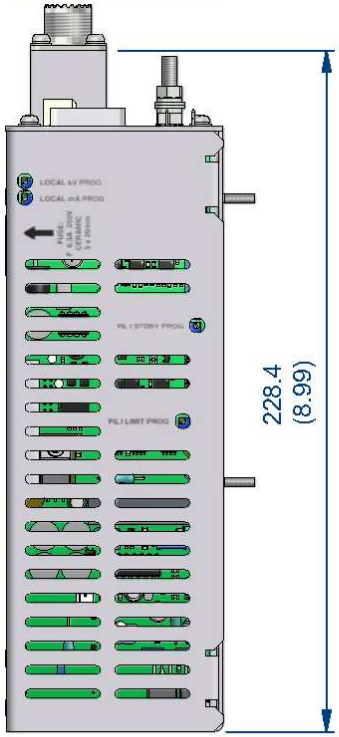
RS232



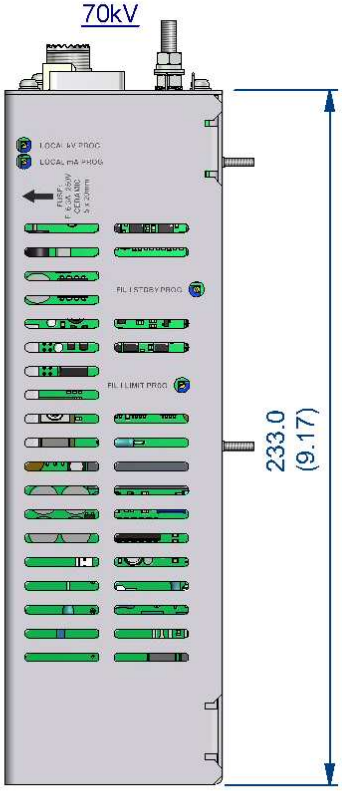
60kV



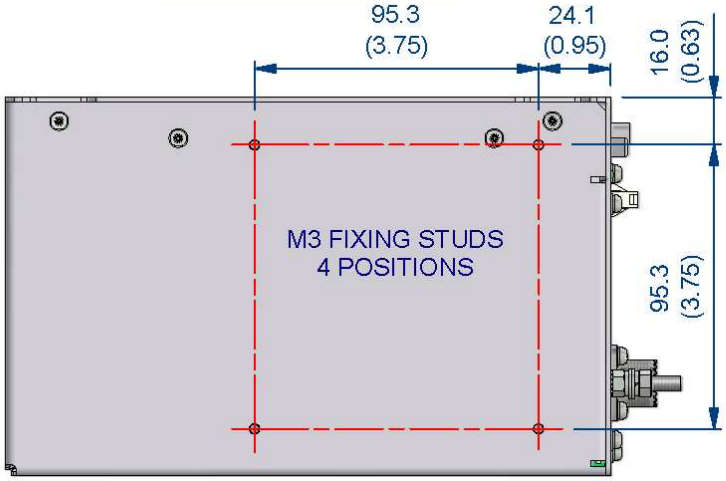
60kV +X OPTION



70kV



COMMON BASE FIXINGS



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

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