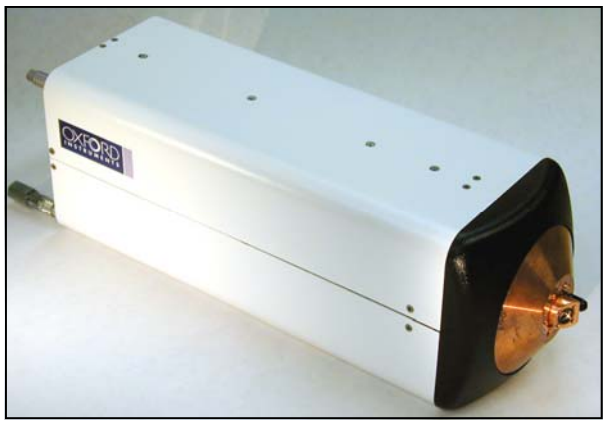
Technical Data Sheet

Nova600

Microfocus X-Ray Source



- 4 mm Anode to Object distance
- True round spot
- Radiation shielded enclosure
- Grounded target = High power, 60 W
- Integrated design — No HV cable
- The choice for use with an X-ray optic due to close coupling (4 mm)
- Applications include: microtomography, microdiffraction, microfluroescence, phase contrast imaging, and many others

Target Material / Part Number	Min. Voltage	Max. Voltage	Min. Power	Max. Power	Power Density
Mo (96016)	20 kV	60 kV	20 W	60 W	1.5 W/µm
Cu (96009)	20 kV	60 kV	20 W	60 W	1.5 W/µm
W (96013)	10 kV	90 kV	10 W	80 W	2.5 W/µm

As part of our continued evolution in microfocus X-ray sources, the Nova600 presents important advances in a high-power small focal spot X-ray source. Designed for those applications requiring high stability of flux and focal spot position, the Nova600 combines this performance with the proven anode target power loading of our previous generation microfocus sources. In use with several OEM systems, the Nova600 features 90 kV, 80 W performance in focal spot sizes as low as 13 microns. Add to this integrated water cooling, thermal and flow protection, and you have the ideal solution for X-ray generation for high flux applications.

X-Ray Source Specifications

Feature	
Anode Current	.3 to 2 mA
Anode Voltage	10 to 90 kV
Maximum Power	80 W
Focal Spot Size	13 to 20 µm
Cone Angle	24.5°
Minimum Distance Focus/Object	4 mm
Target Angle/Viewing Angle	15/30°
Exit Window Diameter	9.50 mm
X-Ray Tube	Integrated/Sealed
Cooling Method	H_20 0.15 l/min @ 15 psi
Be Window Thickness	245 µm
Cathode Type	Dispenser Cathode
Window Position	End Window
Environment Temperature	+10° to +55° C
Operation	Continuous
Approximate Weight	10 kg

X-Ray Controller Specifications

Functions	Key Switched Power, HV On/ Off, kV Adjust, Brightness/ Autofocus Adjust
External Control	Remote control RS232
Power Consumption	100 W maximum
Input Voltage	110/240 AC autosensing
Approximate Weight	4 kg
HV Cable	Not Necessary
LV Cable	Std 25 pin D-type connector
Dimensions	6"H x 17.25"W x 16"D (152mm x 438mm x 406mm)

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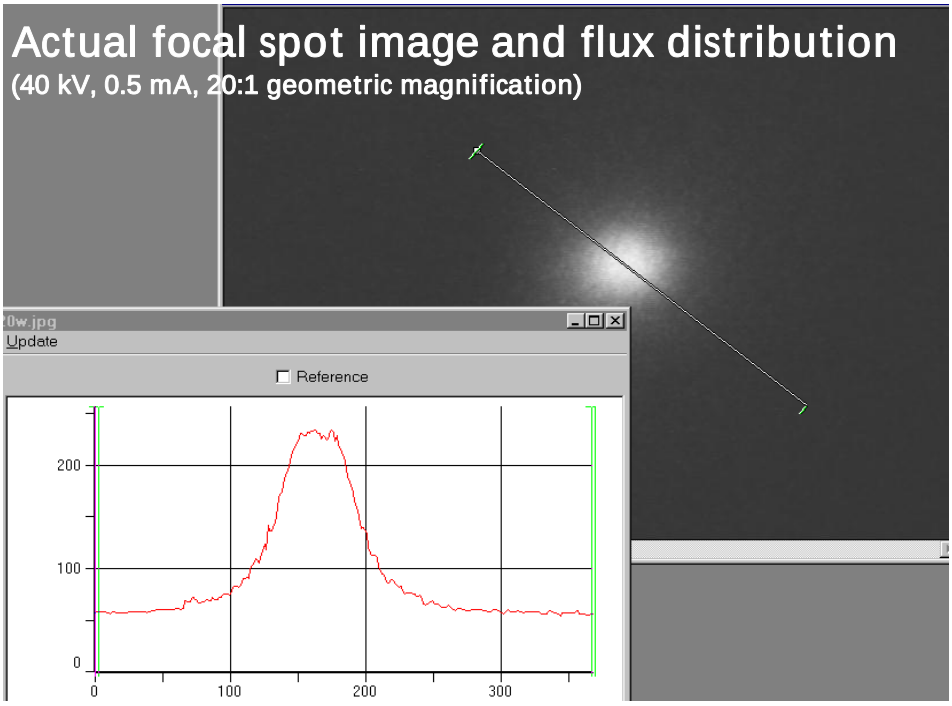
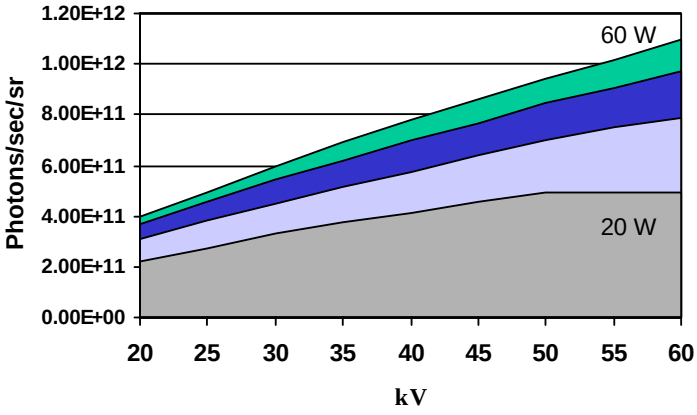
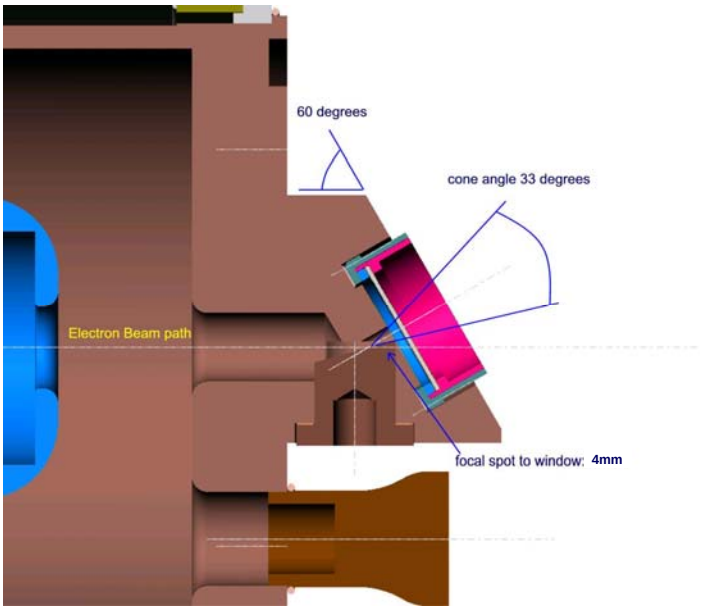


True round focal spot provides for high flux, uniformly distributed.





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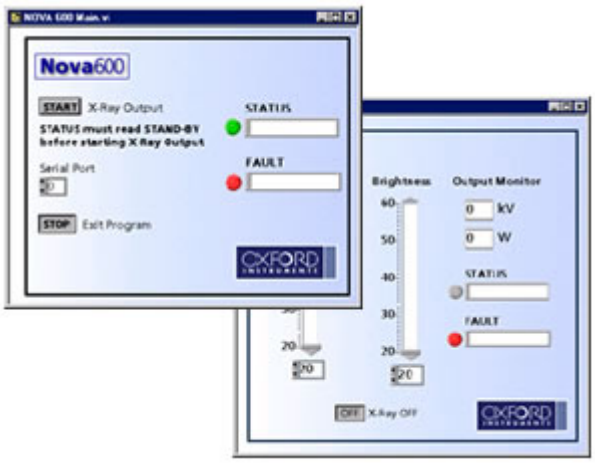
RS232 Control & Command Set

Protocol:	RS-232-C
Baud Rate:	9600 ASYNC
Flow Control:	None
Data Bits:	8
Stop Bits:	1
Parity:	None
Connector	Type: 25 pin
Functions:	
Anode Voltage Set:	10 to 90 kV (example: VCN 50 = set 50 kV)
Brightness set:	10 to 80 Watts (example: WCN 40 = set 40 watts)
G3 voltage set:	0 to 5 kV (example: GCN 03 = set 3 kV)
Command:	X-ray ON/OFF
Command:	Voltage min-max set
Command:	Brightness min-max set
Read back:	
Voltage:	(example: VM 30 = 30 kV)
Brightness:	(example: WM 20 = 20 watts)
Status:	Stand-by, warm-up, output, fault modes in ASCII format
Fault:	Display panel information except remote/local mode will be in ASCII format
Other:	ROM version number

Power on can be accomplished remotely by X-ray on/off command. However, if filament is turned off, power is restored only through front panel on/off switch.

- Runs under LabVIEW RT & MS-Windows 95/98/NT
- Works in conjunction with RS232 Control Interface
- Complete control of Voltage, Power, and Focus
- Dynamic Status display
- Dynamic Fault display
- Ideal for R&D applications
- Open software architecture allows for modification to user interface with available additional develop-ment software



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Microfocus X-Ray Source

Microfocus source with the following specifications:

(A) Microfocus Source has a fully integrated electron-impact X-ray tube. High voltage power supply and controller, capable of providing variable electron accelerating beam current from .33-2 milliamps, with full control of "Brightness". Autofocus controller calculates spot size for a given power setting for maximum flux output.

(B) Voltage and current rating are subject to maximum power dissipation rating of 60 watts. The electron-impact tube assembly is sealed, water cooled, and rated for continuous operation. De-rating may be required on certain targets.

(C) X-ray microfocus spot size is continuously adjustable from 13 microns to 20 microns. Power de-rating is provided at low spot sizes but source power is limited to 1.75 watts per micron (Cu or Mo).

(D) Distance from microfocus X-ray spot to outside of exit window nominally 4.0 mm. The exit window is comprised of 0.010 inch thick Be.

(E) The anode target material is comprised of Cu, Mo, or W. Target is inclined at a takeoff angle of 15 degrees with respect to the electron beam, and the exit window is aligned at an angle of 30 degrees with respect to the electron beam, therefore, a round microfocus X-ray spot is projected through the exit window.

(F) The stability of the microfocus X-ray spot shall be less than 5 microns RMS over a period of 8 hours, as verified by test. A warm-up time of up to two hours is necessary in order to meet this specification. Requires closed loop water chiller.

Optional: Rack mount closed loop temperature controlled water chiller. Provides a minimum flow rate of .15 liters per minute at 10 psi, 100 watts cooling at 20 degrees C. Water temperature stable within +/- 0.1 C.

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