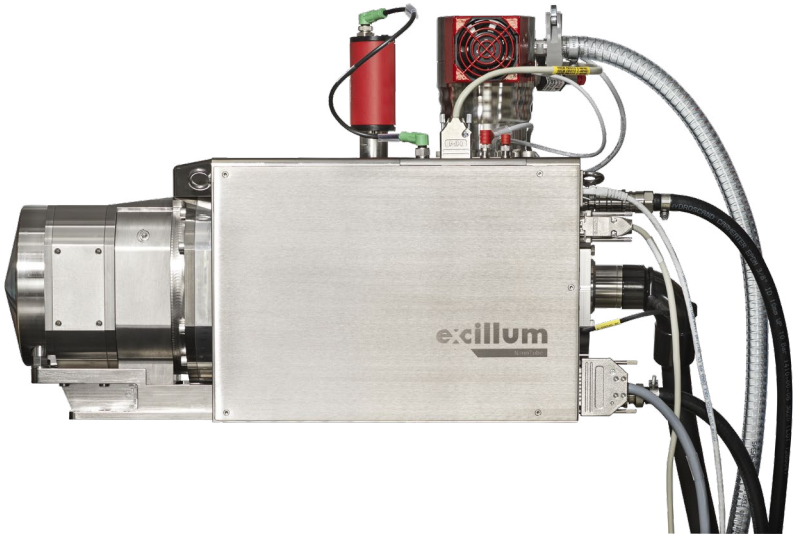
excillum

NanoTube N3



The Excillum NanoTube N3 enables industry-leading resolution and stability in geometric-magnification X-ray imaging systems with no need for manual tuning. It is based on advanced electron optics and the latest tungsten-diamond transmission target technology. Automatic e-beam focusing and astigmatism correction ensures that the smallest possible, truly round spot is achieved every time, every day.

Technical specifications NanoTube N3 60 kV			
Voltage	40-60 kV	**Max. power on target**	3.6 W
High brightness emitter	LaB_6	**Target material**	Tungsten (W) on diamond
Min. resolution	150 nm	**Target type**	Transmission
Min. focus-object distance	150 µm	**Long term spot stability**	< 100 nm[1]

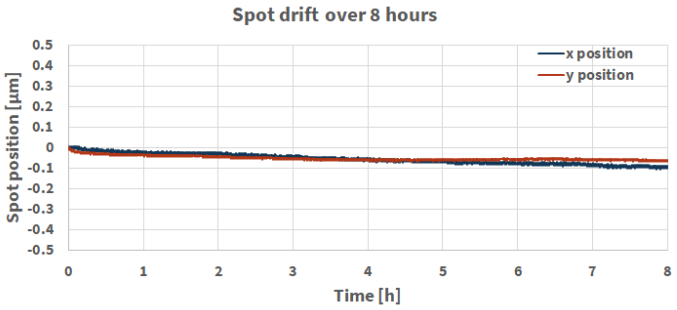
Technical specifications NanoTube N3 110 kV			
Voltage	40-110 kV	**Max. power on target**	9.2 W
High brightness emitter	LaB_6	**Target material**	Tungsten (W) on diamond
Min. resolution	150 nm	**Target type**	Transmission
Min. focus-object distance	150 µm	**Long term spot stability**	< 100 nm[1]

Technical specifications NanoTube N3 160 kV			
Voltage	40-160 kV	**Max. power on target**	16.6 W
High brightness emitter	LaB_6	**Target material**	Tungsten (W) on diamond
Min. resolution	150 nm	**Target type**	Transmission
Min. focus-object distance	150 µm	**Long term spot stability**	< 100 nm[1]

1) Standard deviation over >8 hours when operating at fix settings after >30 minutes thermal settling.

Long term positional stability

Thanks to the advanced e-beam system of the NanoTube N3 and the integrated thermal control, excellent long-term stability is achieved. This graph illustrates the motion of the spot relative to a fix point on the anode over 8 hours as measured internally by the source when at thermal equilibrium. Naturally, great care must be taken regarding the stability of the imaging system to maintain the same stability throughout the imaging chain.



Excellent geometrical access

The end of the transmission target is the most protruding surface to allow for a sample to get as close as possible to the X-ray focal spot. The front is furthermore cone-shaped to allow for a sturdy cone-shaped sample holder.

Installation and operation

The NanoTube N3 can be remotely operated through TCP/IP or directly through the GUI. The GUI can be operated on the source itself if it is equipped with monitor, keyboard and mouse, or on most computer platforms with a TCP/ IP connection to the source.

The source cannot be operated as a standalone unit and must be integrated into a system providing the proper interlock connections.

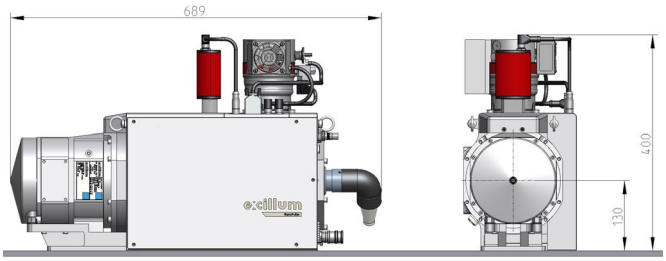
Mains: AC, single phase, 120-240 V, 16 A, 50/60 Hz.
Ambient: 20-30°C (stable within ± 0.2°C for optimal source stability), max 85% relative humidity.

Dimesions

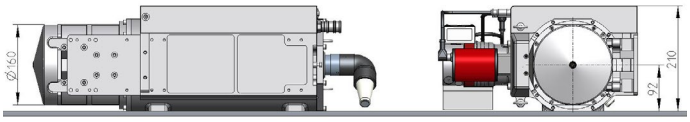
The NanoTube N3 X-ray source consists of the head with dimensions 617 x 210 x 391 mm (L x W x H) excluding cables etc. and length 689 mm including cables etc. The head has several mounting holes consistent with metric optic table mounting and is designed for upright or flat fastening, in any orientation including vertical or horizontal. In addition, the NanoTube N3 consists of a power module and a chiller, both 4U (176 mm height, 19” rack), as well as a 1U (44 mm, 19” rack) control computer and a floor standing high-voltage generator, that all can be mounted up to 5m from the head.

Source head

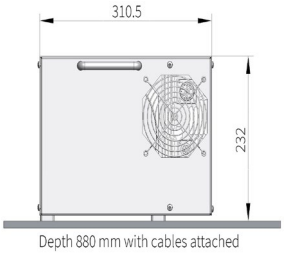
Upright mounting



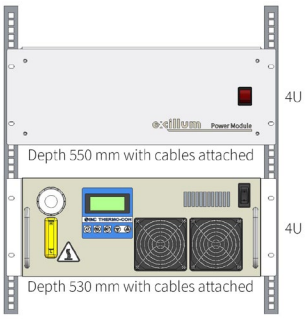
Flat mounting



HV power supply



19" rack units



Safety and compliance

For information about the safety and compliance of all Excillum X-ray sources, please visit our website: www.excillum.com/compliance

Intellectual property

This product contains features partly developed with funding from the European Union’s Horizon 2020 research and innovation program under grant agreement No 768883, and from the EUREKA cluster co-financing program of the Swedish Innovation Agency, No 2020-02235.