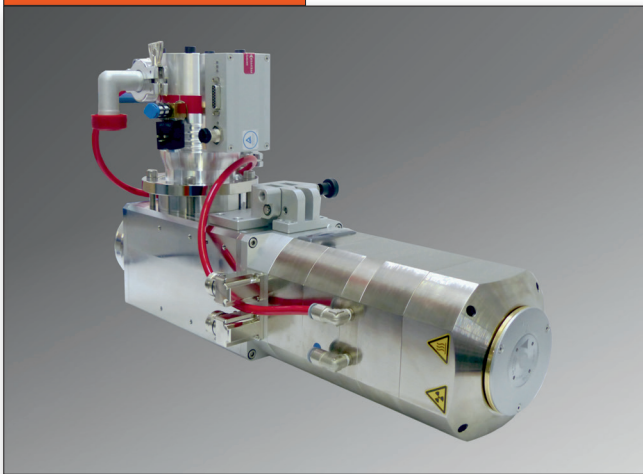


# MICROFOCUS X-RAY TUBES

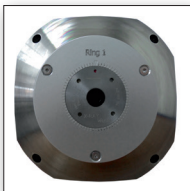
## PRODUCT LINE TCNF



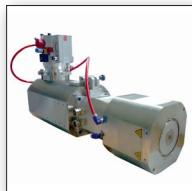
### Product image



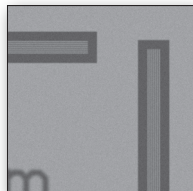
Microfocus X-ray tube XWT-190-TCNF



Target with scale



XWT-225-TCNF



JIMA resolution 0.5 μm

### Technical data

Data	Product line TCNF			
	160	190	225	240
Max. voltage (kV)	160	190	225	240
Min. voltage (kV)	20	20	20	20
Max. current (mA)	1.0	1.0	1.0	1.0
Min. current (mA)	0.05	0.05	0.05	0.05
Max. power, target (Watt)	25	25	25	25
Tube type	Transmission			
Target type	High Resolution Diamond			
Target material (substrate/active layer)	Diamond / Tungsten			
Min. focus-object-distance (FOD, mm)	0.3	0.3	0.3	0.3
Opening angle (approx. °)	160	160	160	160
Mounting length incl. 90° HV plug (mm)	739	739	810	901
Tube weight (approx. kg)	38	38	58	58
Operation Mode	Target power range (W)	JIMA resolution range (μm)		
Submicron	0.1 - 1.5	0.5 - 1.5		
Microfocus	1.0 - 10.0	1.5 - 3.0		
High Power	10.0 - 25.0	3.0 - 15.0		

### Highlights

- ▶ Ultimate JIMA resolution and magnification for semiconductor, electronics, and composite applications
- ▶ Developed for inline and offline two- and three-dimensional X-ray inspection
- ▶ Internal cooling of tube head to stabilize focal spot position – less than +/- 1μm focal spot movement\*
- ▶ Liquid cooling of turbo pump to avoid vibrations
- ▶ Automatic venting valve for long life of vacuum components

\* in laboratory setup

See our new catalogue **Options and Accessories** to find additional auxiliary equipment for your X-RAY WorX tube.

### Scope of delivery

- ▶ Open microfocus X-ray tube with transmission target, turbo vacuum pump, vacuum gauge, and electronic drive unit
- ▶ Cooling element for turbo pump
- ▶ Internal water cooling of tube head
- ▶ High voltage generator and high voltage cable
- ▶ Prevacuum pump with vacuum hose
- ▶ Peltier-type chiller with hoses and cooling agent
- ▶ Tube controller, power supplies, and safety relays on 19" mounting panels
- ▶ Set of cables for electrical connection of X-ray tube and components
- ▶ Spare parts case, documentation, and operating software

## Product Line TCNF

### JIMA resolution

High Resolution Diamond target		Voltage [kV]					
		60	100	150	190	225	240
Sub-micron	0.5	0.8	0.6	0.5	0.5	0.5	0.5
	1.0	1.0	0.6	0.5	0.5	0.5	0.5
	1.5	1.5	0.6	0.5	0.5	0.5	0.5
Microfocus	1.0	1.5	1.5	1.5	1.5	1.5	1.5
	2.0	1.5	1.5	1.5	1.5	1.5	1.5
	3.0	1.5	1.5	1.5	1.5	1.5	1.5
	5.0	2.0	1.5	1.5	1.5	1.5	1.5
	7.0	2.0	1.5	1.5	1.5	1.5	1.5
High Power	10.0	3.0	1.5	1.5	1.5	1.5	1.5
	17.5	7.0	5.0	4.0	3.0	3.0	3.0
	25.0	15.0	10.0	7.0	7.0	7.0	7.0

JIMA resolution in microns (µm)

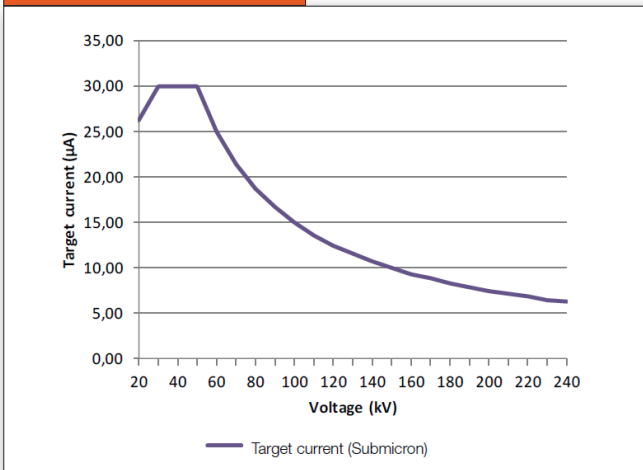
### JIMA resolution

High Energy target*		Voltage [kV]					
		60	100	150	190	225	240
Sub-micron	0.5	0.9	0.9	0.9	0.9	0.9	0.9
	1.0	0.9	0.9	0.9	0.9	0.9	0.9
	1.5	1.5	0.9	0.9	0.9	0.9	0.9
Microfocus	1.0	2.0	2.0	2.0	2.0	2.0	2.0
	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	3.0	2.0	2.0	2.0	2.0	2.0	2.0
	5.0	3.0	2.0	2.0	2.0	2.0	2.0
	7.0	3.0	2.0	2.0	2.0	2.0	2.0
High Power	10.0	4.0	2.0	2.0	2.0	2.0	2.0
	17.5	7.0	5.0	4.0	3.0	3.0	3.0
	25.0	15.0	10.0	7.0	7.0	7.0	7.0

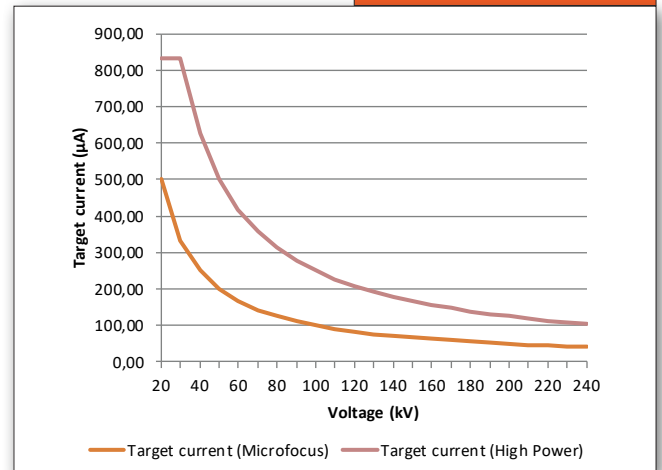
JIMA resolution in microns (µm)

\* Option

### Power rating chart



### Power rating chart



### Tube dimensions

