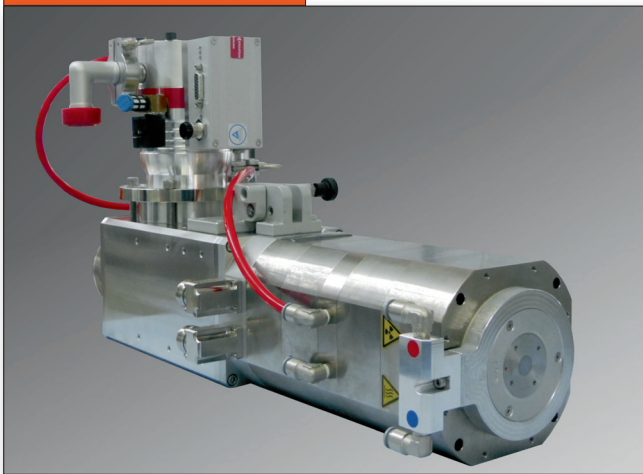


MICROFOCUS X-RAY TUBES

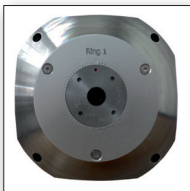
PRODUCT LINE *TCNF PLUS*



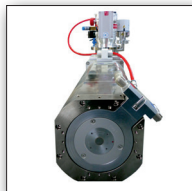
Product image



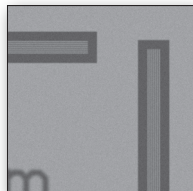
Microfocus X-ray tube XWT-160-TCNF Plus



Target with scale



XWT-190-TCNF Plus with 50 W target power



JIMA resolution 0.5 µm

Technical data

| Data | Product line <i>TCNF Plus</i> | | | |
|--|--------------------------------|------|----------------------------|------|
| 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) | 50 | 50 | 50 | 50 |
| Tube type | Transmission | | | |
| Target type | <i>High Resolution Diamond</i> | | | |
| 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 | 831 | 922 |
| Tube weight (approx. kg) | 38 | 38 | 59 | 59 |
| | | | | |
| 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 – 50.0 | | 3.0 – 35.0 | |

Highlights

- ▶ 50 W target power with internal target cooling
- ▶ 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 time

* 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 Plus

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 |
| | 10.0 | 3.0 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| High Power | 10.0 | 7.0 | 5.0 | 4.0 | 3.0 | 3.0 | 3.0 |
| | 17.5 | 10.0 | 7.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| | 25.0 | 15.0 | 10.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| | 50.0 | 35.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 |

JIMA resolution in microns (µm)

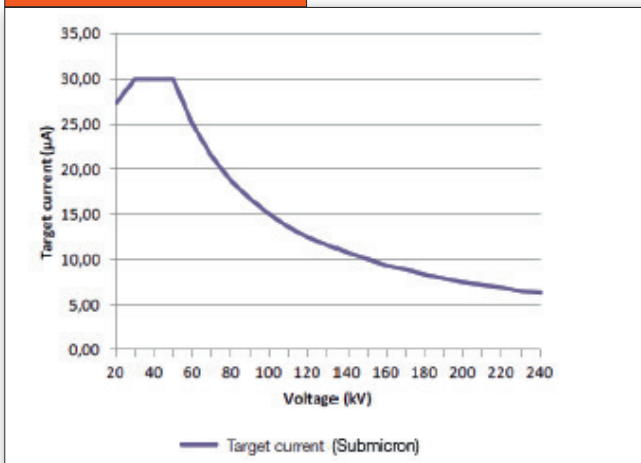
JIMA resolution

| 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 |
| | 10.0 | 4.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| High Power | 10.0 | 7.0 | 5.0 | 4.0 | 3.0 | 3.0 | 3.0 |
| | 17.5 | 10.0 | 7.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| | 25.0 | 15.0 | 10.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| | 50.0 | 35.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 |

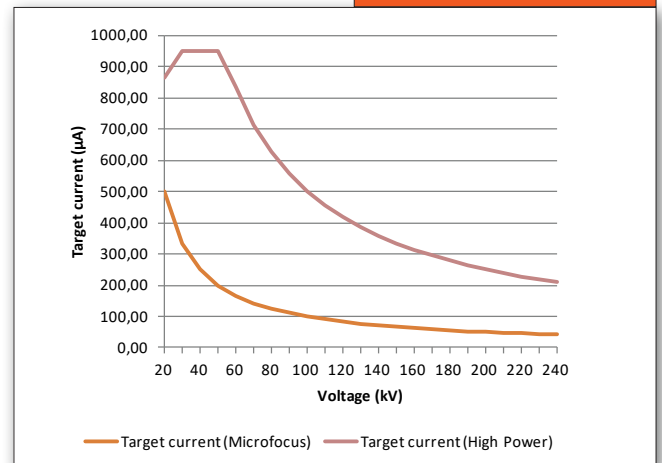
JIMA resolution in microns (µm)

* Option

Power rating chart



Power rating chart



Tube dimensions

