

# X-RAY SOURCE

# 90 kV MICROFOCUS X-RAY SOURCE L9421-02



## FEATURES

- **Focal Spot Size: 5  $\mu\text{m}$  (at 4 W)**  
The focal spot of 5  $\mu\text{m}$  of the sealed type X-ray tube enables sharp and clear X-ray images even at a high magnification.
- **Easy Handling**  
Fully operable from an external PC.
- **Serial Port Control (RS-232C)**  
One package of a sealed type X-ray tube, a high-voltage power supply and a control function.

## APPLICATIONS

- Non-destructive Inspection
  - X-ray CT
  - In-line X-ray Inspection
- [Applicable Objects]
- Electronic component
  - Printed circuit board
  - Plastic component
  - Metal component

# SPECIFICATIONS

## GENERAL

Parameter	Description / Value	Unit
Input Voltage (DC)	+24	V
Power Consumption (Max.)	96	W
Operating Ambient Temperature	+10 to +40	°C
Storage Temperature	0 to +50	°C
Operating and Storage Humidity	Below 85 (No Condensation)	%
Weight	Approx. 10	kg
Conformance Standards	CE (EMC: IEC 61326-1, Group1, Class A)	—
Operation	Continuous	—
High Voltage Power Supply	Built-in	—

## X-RAY TUBE

Parameter	Description / Value	Unit
X-ray Tube	Sealed Type	—
X-ray Tube Cooling Method	Convection Cooling	—
X-ray Tube Window Material / Thickness	Beryllium / 150	µm
Target Material	Tungsten	—
Tube Voltage Operational Range	20 to 90	kV
Tube Current Operational Range <sup>①</sup>	10 to 200 (8 W Max.)	µA
Maximum Output	8	W
X-ray Focal Spot Size	7 (5 µm at 4 W)	µm
X-ray Beam Angle (Coned)	39	degrees
Focus to Object Distance (FOD)	9.5	mm

## X-RAY CONTROL PART

Parameter	Description	Unit
Function	Tube Voltage and Tube Current Preset / Auto Warm-up	—
Protection	Interlock	—
External Control	RS-232C	—
Applicable OS	Windows® 2000 Professional, XP Professional	—
Computer Operating Conditions	CPU: Intel Pentium or Higher, Memory: 64 MB or More	—

**NOTE:** ① See the graph of the tube current operational range.



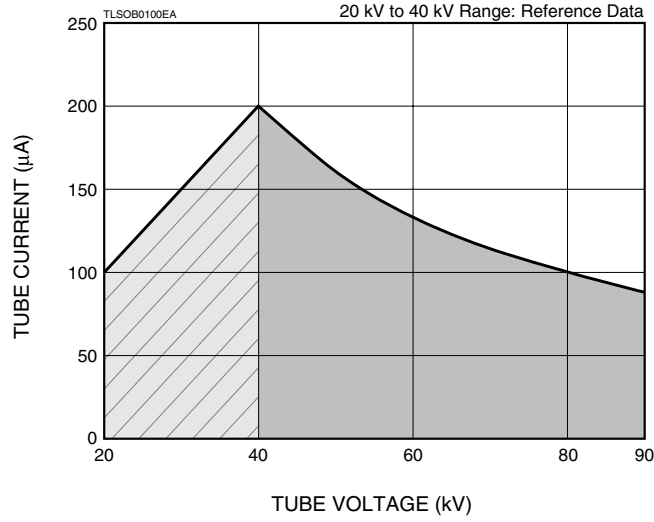
### PRE-CAUTION TO USE

1. X-ray emitted from this device is harmful for human body. And it should be necessary for the operator to protect himself/herself from it.
2. During an operation, the X-ray tube unit should be installed in the X-ray shielded facility or area in order to avoid any X-ray leakage.  
Also the interlock system in X-ray control unit should be always used in order to avoid any misoperation.

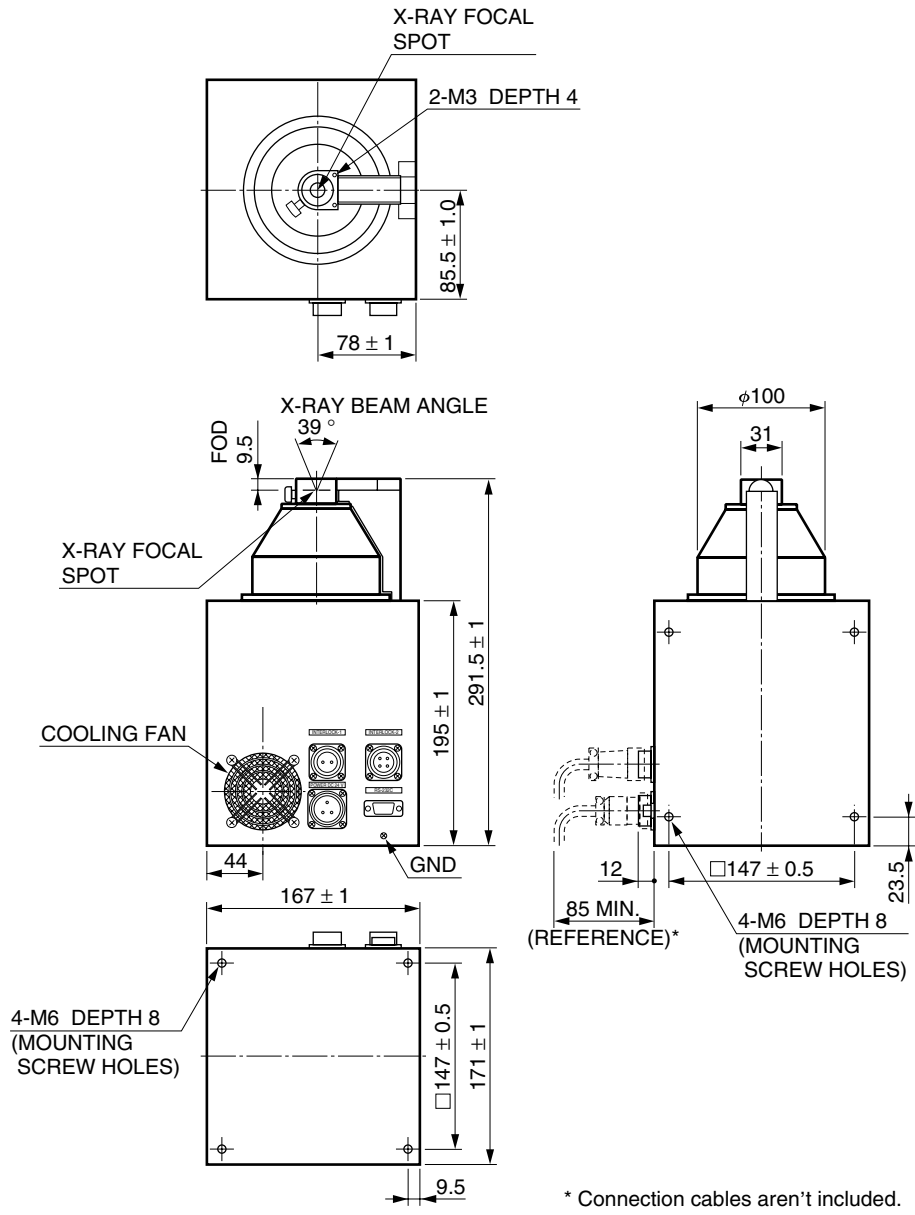
### OPERATIONAL CAUTION

The product may be subject to governmental occupational radiation hazardous regulation therefore the necessary application must be field according to the local regulation.

# TUBE CURRENT OPERATIONAL RANGE



# DIMENSIONAL OUTLINE (Unit: mm)



\* Connection cables aren't included.

# RELATED PRODUCTS

## X-RAY IMAGE INTENSIFIER CAMERA UNIT (4-inch Beryllium Window) C7876, C7876-10

The C7876 is an X-ray image intensifier camera unit ideal for non-destructive inspection of light-element materials and radiation imaging at low energy X-ray levels.

The C7876 remarkably improves X-ray transmittance at low energy X-ray levels by using a beryllium window instead of an aluminum window currently used for most X-ray image intensifiers.

The results are sharp and clear, high contrast images taken in real time even at low energy X-ray levels down to a few keV.

An Aluminum window type is also available.



TXPRF0005

## X-RAY IMAGE INTENSIFIER DIGITAL CAMERA UNIT C7336-03

The C7336-03 consist of a high resolution, high contrast 4-inch X-ray image intensifier (X-ray I.I.) and a 1.45 megapixel digital CCD camera.

The X-ray I.I. used has a fixed field-of-view of 100 mm diameter and an input window made of thin aluminum which is excellent in X-ray transmission and causes less scattering of X-rays. These features allow real-time detection at X-ray energy levels from about 20 keV.

The 1.45 megapixel digital CCD camera captures high-quality images which are clearer than those taken with conventional analog cameras.



TIIF0170

## X-CUBE™ (COMPACT X-RAY CCD CAMERA) H8480, H8953, H8481

X-CUBE™ is a compact X-ray CCD camera designed for non-destructive inspection.

Using a general-purpose CCD chip mounted in a rugged but lightweight camera head, X-CUBE™ makes X-ray imaging as easy as an ordinary CCD camera in handling.



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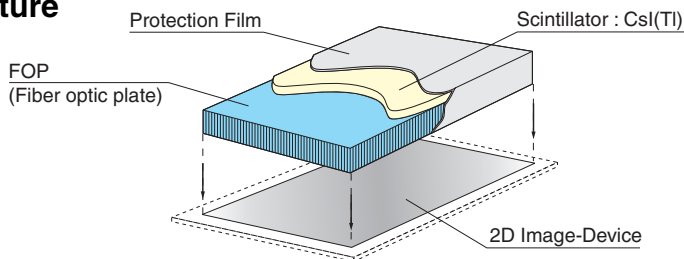
Left: H8480 Center: H8953 Right: H8481

## FOS (Fiber optic plate coated with X-ray scintillator)

The FOS is an optical device for X-ray imaging, fabricated by coating an X-ray scintillator material over a fiber optic plate consisting of more than tens of million glass fibers each a few micrometers in diameter. The FOS provides higher sensitivity and resolution than currently used sensitized paper films and also allows real-time digital radiography when directly coupled to a commercially available CCD. The fiber optic plate used in the FOS has excellent X-ray absorption characteristics, so that X-rays penetrating the X-ray scintillator and directly entering the CCD are minimized to less than 1 %. This protects the CCD from the deterioration and increased noise caused by X-ray irradiation, assuring a long service life and maintaining high image quality.

Various sizes and shapes of FOS are available to meet your particular needs, including tapered FOP types.

### Structure



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