

# 150 kV MICROFOCUS **X-RAY SOURCE**

L12161-07



### **FEATURES**

- •Focal spot size: 5 μm (at 4 W)
  The focal spot of 5 μm of the sealed type X-ray tube offers
  - sharp and clear X-ray images even at a high magnification.
- High power: Maximum output 75 W
- External control via RS-232C interface
- High speed ramping-up

Ramping-up speeded up to 3 times faster than conventional 150 kV microfocus X-ray source.

No high voltage cable connection required High voltage power supply is integrated.

# **APPLICATIONS**

- Non-destructive inspection
- X-ray CT

#### [Applicable objects]

- Semiconductor device
- Electronic component
- Printed circuit board
- •Ceramic
- Plastic component
- Die casting
- Metal component





#### **GENERAL**

Parameter		Description / Value	Unit
X-ray tube voltage setting range		0 to 150	kV
X-ray tube current setting range		0 to 500	μΑ
X-ray tube voltage operational range <sup>①</sup>		40 to 150	kV
X-ray tube current operational range ①		10 to 500	μA
Maximum output	Small focus mode	10	W
	Middle focus mode	30	
	Large focus mode	75	
X-ray focal spot size (Nominal value)	Small focus mode	7 (5 µm at 4 W)	μm
	Middle focus mode	20	
	Large focus mode	50	
X-ray beam angle <sup>②</sup>		Approx. 43	degree
Focus to object distance (FOD)		Approx. 17	mm
Rated output		Continuous rating	_
Communication method		Interface: RS-232C (9-pin D-sub connector)	_

#### X-RAY TUBE UNIT

Parameter	Description / Value	Unit
X-ray output window material / Thickness	Beryllium / 0.2	mm
Target naterial	Tungsten	_
Operating ambient temperature	+10 to +40	°C
Storage ambient temperature	0 to +50	°C
Operating and storage humidity	20 to 85 (No condensation)	%
Weight	Approx. 13.5	kg

#### X-RAY CONTROL UNIT

Parameter	Description / Value	Unit
Input voltage (AC)	Single phase 100 to 240 (50 Hz / 60 Hz)	V
Power consumption	Less than 220	W
Operating ambient temperature	+10 to +40	°C
Storage ambient temperature	0 to +50	°C
Operating and storage humidity	20 to 85 (No condensation)	%
Weight <sup>3</sup>	Approx. 6	kg

#### **REGULATION AND STANDARDS**

Parameter	Description	Unit
RoHS directive	EN 50581 Category 9	_
EMC	IEC/EN 61326-1 Emission limits: CISPR 11 Group 1 Class A	_
2.00	Immunity requirements: Table 2	
Safety	IEC/EN 61010-1	_

#### **CONTROL SOFTWARE** <sup>(4)</sup>

Parameter	Description	Unit
Applicable PC	PC / AT compatible	_
Applicable OS	Windows® 8.1, 10	_
Interface	RS-232C interface	_

**NOTE:** ①See the graph of the X-ray tube voltage / current operation range.

- ②Reference value: With 50 % of maximum X-ray emission.
- 3 This weight includes the accessories of approx. 1.5 kg.
- (4) The control software is provided as a sample software for the purpose of MFX operation.

The performance of the software is not guaranteed.



#### PRECAUTIONS TO USE

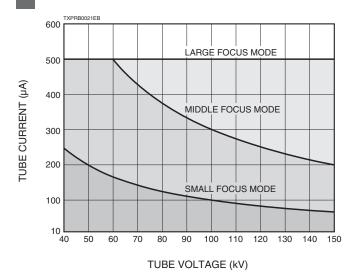
· This microfocus X-ray source generates X-rays harmful to the human body. Use sufficient caution when handling the equipment to avoid direct or inadvertent exposure to X-rays.

Install the X-ray source or the X-ray tube unit in an X-ray shielded cabinet or room equipped with safety interlock functions to prevent accidental exposure to X-rays.

#### **OPERATIONAL CAUTION**

- · This microfocus X-ray source generates X-rays and must therefore be used only under the supervision of qualified personnel.
- This microfocus X-ray source shall be used in compliance with health and safety regulations enforced in order to prevent health hazards problems due to ionizing radiation.

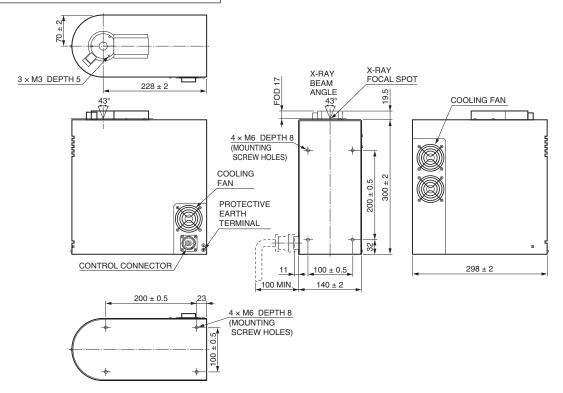
### X-RAY TUBE VOLTAGE / CURRENT OPERATION RANGE



- \* The X-ray tube voltage guaranteed range is 40 kV to 150 kV.
- $^{\star}$  Operation is not guaranteed when the tube current is below 10  $\mu\text{A}.$

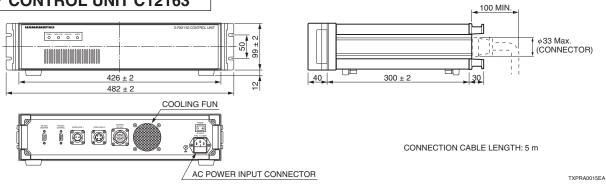
# DIMENSIONAL OUTLINES (Unit: mm)

#### X-RAY TUBE UNIT L8122-01



TXPRA0014EB





# RELATED PRODUCTS

#### X-RAY IMAGE INTENSIFIER DIGITAL CAMERA UNIT C7336-06/-07

Camera units C7336-06/-07 consist of a high resolution, high contrast 4-inch X-ray image intensifier (X-ray I.I.) and a 2.35 mega-pixel or 3 mega-pixel CMOS image sensor respectively.

The X-ray I.I. has 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.

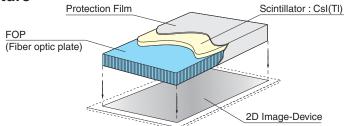
The captured images can be transferred to PC directly by interface of Mini Camera-Link or USB3.0.



#### 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.







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