

X-RAY SOURCE

110 kV MICROFOCUS X-RAY SOURCE L12531



FEATURES

- **High resolution: 2 μm (at 2 W)**
Transmission target
- **High magnification**
FOD (Focus to object distance): 1 mm
- **Wide X-ray beam angle: 120°**
- **Maintenance free**
Sealed type microfocus X-ray source

APPLICATIONS

- Non-destructive inspection
- X-ray CT

[Applicable objects]

- Electronic components
- Printed circuit boards
- Plastic components
- Metal components

SPECIFICATIONS

GENERAL

Parameter	Description / Value	Unit
X-ray tube voltage setting range	0 to 110	kV
X-ray tube current setting range	0 to 200	μA
X-ray tube voltage operational range ^①	40 to 110	kV
X-ray tube current operational range ^①	10 to 200	μA
Maximum output	16	W
Minimum resolution ^②	2	μm
X-ray output window material	Beryllium	—
X-ray beam angle ^③	Approx. 120	degree
Focus to object distance (FOD)	Approx. 1	mm
Target material	Tungsten	—
Weight ^④	Approx. 18	kg
Communication method	Interface: RS-232C (9-pin D-sub connector)	—

RATINGS

Parameter	Description / Value	Unit
Input voltage (DC)	+24 (+2.4, -0)	V
Power consumption	Less than 80	W
Rated output	Continuous rating	—
Operating ambient temperature	+10 to +40	°C
Storage ambient temperature	0 to +50	°C
Operating and storage ambient humidity	20 to 85 (No condensation)	%

REGULATION AND STANDARD

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

CONTROL SOFTWARE^⑤

Parameter	Description	Unit
Applicable PC	PC / AT compatible	—
Applicable OS	Windows® 7, 8.1, 10	—
Interface	RS-232C interface	—

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

② By JIMA RT RC-02B

③ Reference value: With 50 % of maximum X-ray emission.

④ This weight includes the accessories of 0.3 kg.

⑤ The control software is provided as a sample software for the purpose of MFX operation.

The performance of the software is not guaranteed.

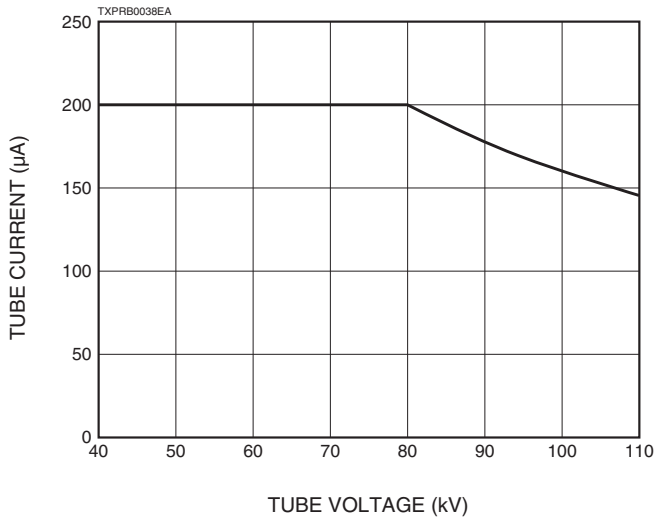
PRECAUTIONS TO USE

- 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

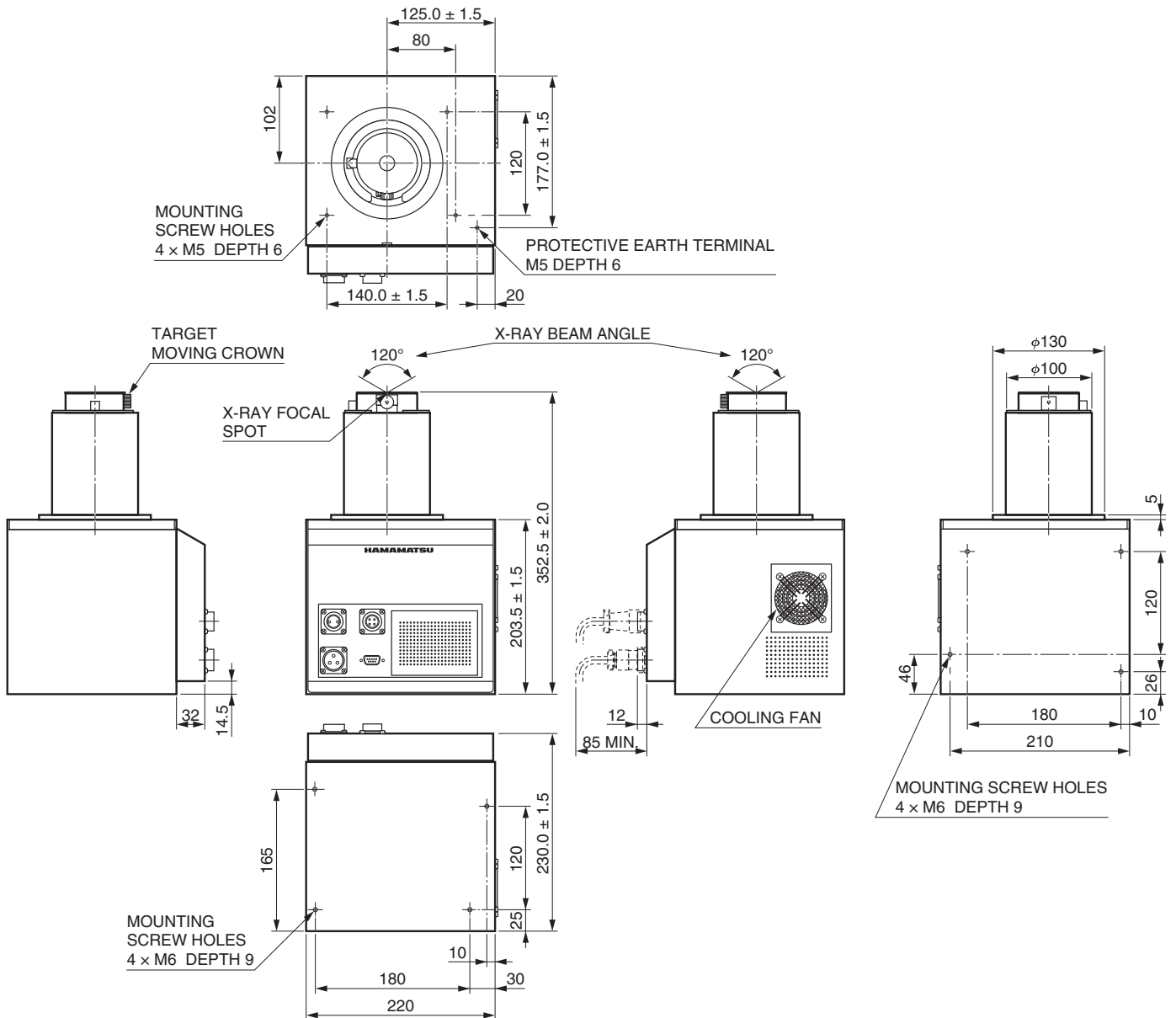
- This microfocus X-ray source generates X-rays and must therefore be used only under the supervision of qualified personnel.
- This microfocus X-ray source shall be used in compliance with health and safety regulations enforced in order to prevent health hazards problems due to ionizing radiation.

X-RAY TUBE VOLTAGE / CURRENT OPERATION RANGE



* The X-ray tube voltage guaranteed range is 40 kV to 110 kV.
 * Operation is not guaranteed when the tube current is below 10 µA.

DIMENSIONAL OUTLINE (Unit: mm)



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.



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

X-CUBE[™]s are compact X-ray CCD camera designed for non-destructive inspection, which make X-ray imaging as easy as an ordinary CCD camera in handling. The H8480 and H8953 use a 2/3 type CCD coupled to large-diameter tapered FOPs which are coated with CsI. The H8481 uses a straight type FOP instead of the large FOP, achieving a high resolution of 20 Lp/mm.

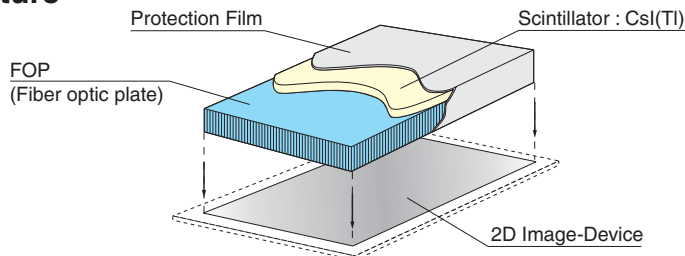


Left: H8480 Center: H8953 Right: H8481

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



Windows[®] is a registered trademark of Microsoft Corporation in the United States and/or other countries.

Other product and software names mentioned herein may be either registered trademarks or trademarks of their respective owners.

Subject to local technical requirements and regulations, availability of products included in this promotional material may vary. Please consult with our sales office.

Information furnished by HAMAMATSU is believed to be reliable. However, no responsibility is assumed for possible inaccuracies or omissions. Specifications are subject to change without notice. No patent rights are granted to any of the circuits described herein. ©2017 Hamamatsu Photonics K.K.

HAMAMATSU PHOTONICS K.K. www.hamamatsu.com

HAMAMATSU PHOTONICS K.K., Electron Tube Division

314-5, Shimokanzo, Iwata City, Shizuoka Pref., 438-0193, Japan, Telephone: (81)539/62-5248, Fax: (81)539/62-2205

U.S.A.: Hamamatsu Corporation: 360 Foothill Road, Bridgewater, NJ 08807, U.S.A., Telephone: (1)908-231-0960, Fax: (1)908-231-1218 E-mail: usa@hamamatsu.com

Germany: Hamamatsu Photonics Deutschland GmbH.: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49)8152-375-0, Fax: (49)8152-265-8 E-mail: info@hamamatsu.de

France: Hamamatsu Photonics France S.A.R.L.: 19, Rue du Saule Trapu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: (33)1 69 53 71 00, Fax: (33)1 69 53 71 10 E-mail: infos@hamamatsu.fr

United Kingdom: Hamamatsu Photonics UK Limited: 2 Howard Court, 10 Tewin Road, Welwyn Garden City, Hertfordshire AL7 1BW, UK, Telephone: (44)1707-294888, Fax: (44)1707-325777 E-mail: info@hamamatsu.co.uk

North Europe: Hamamatsu Photonics Norden AB: Torshamnsgatan 35 16440 Kista, Sweden, Telephone: (46)8-509 031 00, Fax: (46)8-509 031 01 E-mail: info@hamamatsu.se

Italy: Hamamatsu Photonics Italia S.r.l.: Strada della Moia, 1 int. 6, 20020 Arese (Milano), Italy, Telephone: (39)02-93 58 17 33, Fax: (39)02-93 58 17 41 E-mail: info@hamamatsu.it

China: Hamamatsu Photonics (China) Co., Ltd.: 1201 Tower B, Jiaming Center, 27 Dongsanhuan Beilu, Chaoyang District, 100020 Beijing, China, Telephone: (86)10-6586-6006, Fax: (86)10-6586-2866 E-mail: hpc@hamamatsu.com.cn

Taiwan: Hamamatsu Photonics Taiwan Co., Ltd.: 8F-3, No.158, Section2, Gongdao 5th Road, East District, Hsinchu, 300, Taiwan R.O.C. Telephone: (886)03-659-0080, Fax: (886)03-659-0081 E-mail: info@hamamatsu.com.tw

TXPR1029E02
DEC. 2017 IP