4 inch / 2 inch DUAL MODE X-RAY IMAGE INTENSIFIER (X-RAY I.I.)
V10905P-01

FEATURES

● Suitable for high magnification (2 inch mode)
● High resolution, high contrast
● Low distortion
● Attachable with various cameras (Analog, Digital etc.)

APPLICATIONS

● Non-destructive inspection
● Industrial X-ray CT
● In-line X-ray inspection

[X-RAY SOURCE] [Sealed type]
X-ray source voltage 90 kV
X-ray tube current 100 µA
Geometric magnification ×4.5
Camera 1.45 megapixel digital CCD
Number of multiplication frames 100 (4.2 s)

Lithium ion battery (4 inch mode)
### SPECIFICATIONS

#### X-ray I.I.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description / Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input window material (Thickness)</td>
<td>Aluminum (t 0.5 mm)</td>
<td>—</td>
</tr>
<tr>
<td>Input phosphor material</td>
<td>CsI</td>
<td>—</td>
</tr>
<tr>
<td>Output phosphor material</td>
<td>P43 or equivalent</td>
<td>—</td>
</tr>
<tr>
<td>Input surface field-of-view size</td>
<td>4 inch mode</td>
<td>φ99</td>
</tr>
<tr>
<td></td>
<td>2 inch mode</td>
<td>φ50</td>
</tr>
<tr>
<td>Output image size</td>
<td>2 inch mode</td>
<td>φ20</td>
</tr>
<tr>
<td>Resolution (on input surface) (Typ.)</td>
<td>4 inch mode</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>2 inch mode</td>
<td>110</td>
</tr>
<tr>
<td>Conversion factor</td>
<td></td>
<td>3.4</td>
</tr>
<tr>
<td>Shading (Min.)</td>
<td></td>
<td>60</td>
</tr>
<tr>
<td>Contrast ratio</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>Operating ambient temperature</td>
<td></td>
<td>+10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>+40</td>
</tr>
<tr>
<td>Storage temperature</td>
<td></td>
<td>-10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>+45</td>
</tr>
<tr>
<td>Operating and storage humidity</td>
<td>Below 85 % (no condensation)</td>
<td>—</td>
</tr>
<tr>
<td>Weight</td>
<td></td>
<td>Approx. 8.0</td>
</tr>
</tbody>
</table>

#### Power supply

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description / Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage (AC)</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>240</td>
</tr>
<tr>
<td>Output voltage (DC)</td>
<td></td>
<td>24</td>
</tr>
<tr>
<td>Power consumption</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>Weight</td>
<td></td>
<td>Approx. 0.5</td>
</tr>
</tbody>
</table>

#### IMAGING EXAMPLES

**BGA (4 inch mode)**

- X-ray source: Sealed type
- X-ray tube voltage: 130 kV
- X-ray tube current: 10 μA
- Geometric magnification: ×17
- Camera: 3 megapixel CMOS
- Number of multiplication frames: 50 (5.0 s)

**LED (2 inch mode)**

- X-ray source: Open type
- X-ray tube voltage: 90 kV
- X-ray tube current: 19 μA
- Geometric magnification: ×56
- Camera: 1.45 megapixel digital CCD
- Number of multiplication frames: 100 (4.2 s)

**Bonding wire (2 inch mode)**

- X-ray source: Open type
- X-ray tube voltage: 90 kV
- X-ray tube current: 19 μA
- Geometric magnification: ×50
- Camera: 1.45 megapixel digital CCD
- Number of multiplication frames: 100 (4.2 s)
X-ray I.I.

ACCELERATING HIGH-VOLTAGE POWER SUPPLY

INPUT SURFACE FIELD-OF-VIEW

INPUT WINDOW PROTECTION PLATE (CARBON FIBER REINFORCED PLASTIC)

REFERENCE PLANE

DETAILS OF OUTPUT SECTION

(1) SCREW HOLE FOR EQUIPMENT INSTALLATION
(2) SCREW HOLE FOR OPTICAL SYSTEM INSTALLATION
(3) OUTPUT PHOSPHOR SCREEN
(4) OUTPUT GLASS \( t = 7 \pm 0.2 \text{ mm} \) \( n_d = 1.50 \pm 0.02 \)
(5) DISTANCE FROM REFERENCE PLANE TO OPTICAL OUTPUT IMAGE PLANE

Power supply

FRONT VIEW

REAR VIEW
**CONFIGURATION**

![Diagram of X-ray image intensifier and related components]

- **X-RAY IMAGE INTENSIFIER**
  - HIGH-VOLTAGE POWER SUPPLY
  - X-RAY IMAGE INTENSIFIER
  - DIGITAL CMOS CAMERA

- **2-WIRE FOR FIELD OF VIEW SWITCHING CABLE**
- **CABLE LENGTH 5 m**
- **CABLE LENGTH 5 m**

- **DC24 V POWER SUPPLY**
  - AC 100 V to 240 V
  - 30 VA

- **PC WITH FRAME GRABBER**

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

---

**RELATED PRODUCTS (X-ray image intensifier camera units)**

**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.

---

**HAMILMATSU PHOTOSONICS K.K.**

HAMAMATSU PHOTOSONICS 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.: Arzbargrund, 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 Trac, Parc de Moulin de Massy, 91882 Massy Cedex, France, Telephone: (33)1 69 53 71 00, Fax: (33)1 69 53 71 10 E-mail: info@hamamatsu.fr

United Kingdom: Hamamatsu Photonics UK Limited: 2 Howard Court 15 Tealwin Road, Welwyn Garden City, Hertfordshire AL7 1BE, 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)-569-031 00, Fax: (46)-569-031 01 E-mail: info@hamamatsu.se

Italy: Hamamatsu Photonics Italia S.r.l.: Strada della Mola, 1 Int. B, 20820 Anese (Milano), Italy, Telephone: (39)03-90 58 17 33, Fax: (39)03-90 58 17 41 E-mail: info@hamamatsu.it

China: Hamamatsu Photonics (China) Co., Ltd.: 1201 Tower B, Jiaoying Center, 27 Donganwan Buji, Chaoyang District, 10020 Beijing, P.R.China, Telephone: (86)10-659-6606, Fax: (86)10-659-2866 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)3-659-0080, Fax: (886)3-659-0081 E-mail: info@hamamatsu.tw