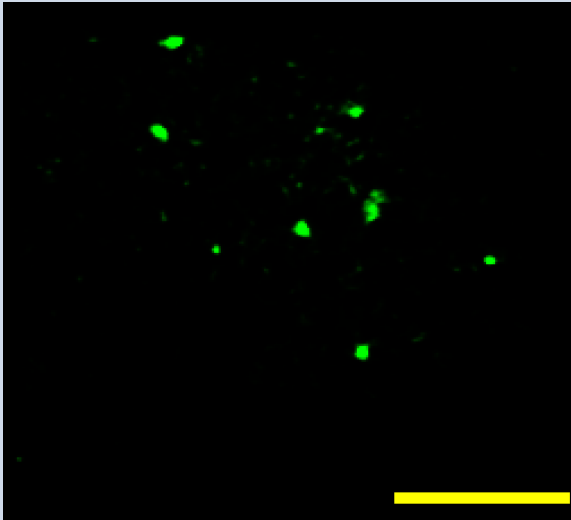
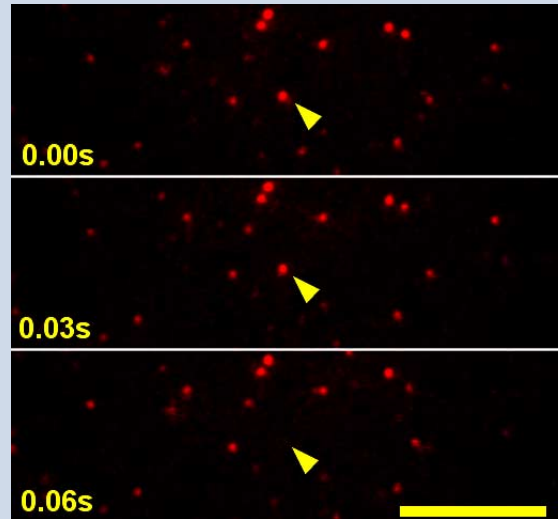


GaAsP Image Intensifier Unit C8600 Series

Real-time imaging of low light level fluorescence. Single molecule fluorescence imaging.



▲ Single molecule observation image of H-Ras, a GFP-binding protein, on the cell membrane of a living cell (C8600-03 with C7190-23 camera) Pseudocolor display, scale bar equal to 5 μm
Data courtesy of: Japan Science and Technology Corporation, Kusumi Membrane Organizer Project (Dr. Takeshi Kobayashi and Prof. Akihiro Kusumi)



▲ Single molecule quantum fading with rhodamine fluorescence dye (C8600-03 with C3077-70 camera) Pseudocolor display, scale bar equal to 10 μm
Data courtesy of: Hamamatsu University School of Medicine Photon Medical Reserch Center (Dr. Takashi Sakurai and Prof. Susumu Terakawa)

Outline

The C8600-Series is a high sensitive image intensifier unit developed for low light level observations such as fluorescence. High quantum efficiency of 50 % (typ.) at the peek wavelength is achieved with our Hamamatsu-original GaAsP (gallium, arsenic, and phosphorous) photocathode. Since high gain and spatial resolution are realized simultaneously, low fluorescence under a microscope can be observed in real time using Hamamatsu cameras.

The field of molecular cell biology has made use of total internal reflection fluorescence microscopy. When used as an image detector, the high detection sensitivity of the C8600-03 efficiently images the single molecule fluorescence in real time.

Applications

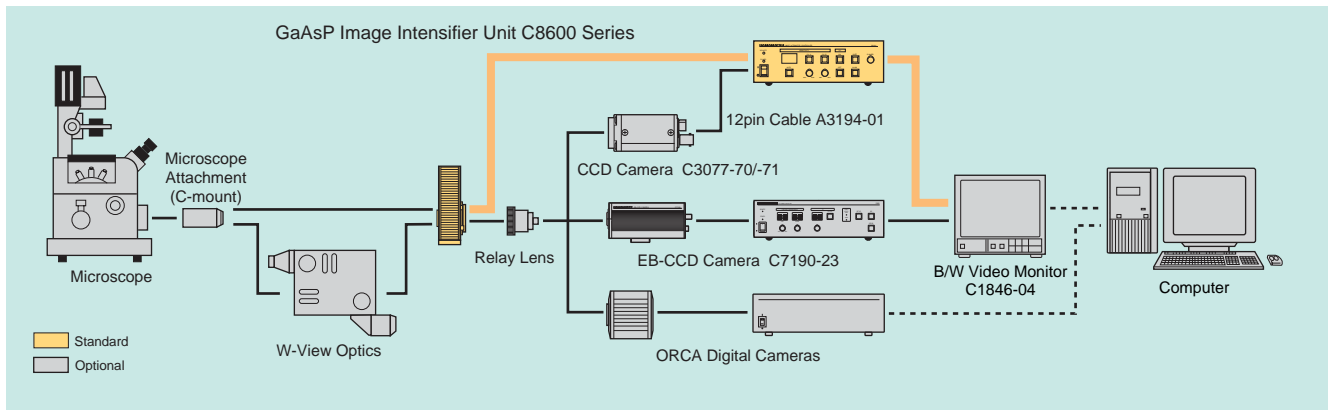
- Real-time imaging of low light level fluorescence
- Single molecule fluorescence imaging
- Total Internal reflection fluorescence microscopy (Evanescent lighting fluorescence microscopy)
- Real-time confocal microscopy

Features

- GaAsP (gallium, arsenic, and phosphorous) photocathode
- High quantum efficiency of 50% (typ.) at the peek wavelength
- High sensitivity in visible light wavelength region
- Low ion noise(C8600-03)
- High resolution (C8600-02)
- High gain (1 stage MCP: C8600-02, 2 stage MCP: C8600-03)
- Good linearity (non auto-gain)
- Attachable with various Hamamatsu cameras
 - Analog CCD camera (ex. C3077-70)
 - Digital CCD camera (ex. ORCA-HiSCA)
 - EB-CCD camera (ex. C7190-23)
- Gate function (200 ns to DC)



System Configurations



Specifications

Product name	GaAsP Image Intensifier Unit	
Type number	C8600-02	C8600-03
Photocathode	GaAsP	
Photocathode size	φ 18 mm	
Spectral response (typ.)	280 nm to 720 nm	
Quantum efficiency (typ.)	50 % (at the peak wavelength)	
Radiant sensitivity (typ.)	213 mA/W	
Phosphor screen	P43	
10 % Decay time (typ.)	1 ms	
MCP	1 stage	2 stages
Type number of MCP	V8070D-74-G132	V8070D-74-G232
Gain ⁽¹⁾ (typ.)	10 000 (W/m ²) / (W/m ²)	1 000 000 (W/m ²) / (W/m ²)
Horizontal center resolution (typ.)	50 lp/mm	32 lp/mm
Vertical center resolution (typ.)	450 TV lines (C3077-70) 650 TV lines (ORCA)	420 TV lines (C3077-70) 550 TV lines (ORCA)
Distortion (max.)	1 %	
Linearity	γ = 1	
Blemish ⁽²⁾	Exceeding blemish size 120 μm : none Blemish size from 90 to 120 μm : Less than one piece (Regulation region: Central part φ 5.59 mm)	
Overlight protection	Screen current or video signal	
Input lens mount	C-mount	
Output lens mount	Special relay lens mount	
Coupling optics	Relay lens (optional)	
Gate time	200 ns to DC	
Gate repetition rate	10 kHz	
Interface	RS-232C	
Ambient operating temperature	0 °C to +40 °C	
Ambient operating humidity	70 % max. (with no condensation)	
Ambient storage temperature	-10 °C to +50 °C	
Ambient storage humidity	90 % max. (with no condensation)	
Line voltage	100 to 240 V AC, 50Hz/60Hz	
Power consumption	Approx 50 VA	

¹ Radiant emittance gain at 550 nm wavelength.

In GaAsP photocathode, 1 000 000 (W/m²) / (W/m²) is equivalent to about 1 650 000 fL/fc.

² The white blemish is defined as the area whose contrast is 30 % or higher than around. The black blemish is defined as the area whose contrast is 30 % or lower than around. The size of blemish is defined as the diameter of the circle that is as same as blemish.

★ Product and software package names noted in this documentation are trademarks or registered trademarks of their respective manufacturers.

- 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 and external appearance are subject to change without notice.

© 2002 Hamamatsu Photonics K.K.

HAMAMATSU

Homepage Address <http://www.hamamatsu.com>

HAMAMATSU PHOTONICS K.K., Systems Division

812 Joko-cho, Hamamatsu City, 431-3196, Japan, Telephone: (81)53-431-0124, Fax: (81)53-435-1574, E-mail: export@sys.hpk.co.jp

U.S.A. and Canada: Hamamatsu Photonics Systems: 360 Foothill Road, Bridgewater, N.J. 08807-0910, U.S.A., Telephone: (1)908-231-1116, Fax: (1)908-231-0852, 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)8152-2658, E-mail: info@hamamatsu.de

France: Hamamatsu Photonics France S.A.R.L.: 8, 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

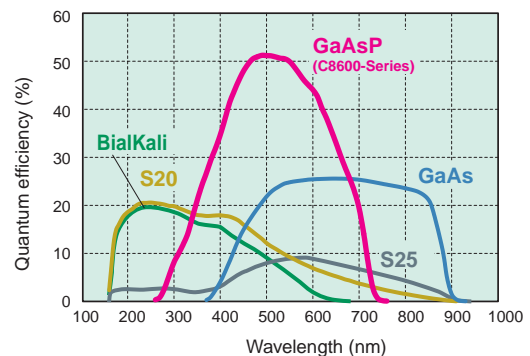
United Kingdom: Hamamatsu Photonics UK Limited: 2 Howard Court, 10 Tewin Road, Welwyn Garden City, Hertfordshire, AL7 1BW, U.K., Telephone: (44) 1707-294888, Fax: (44) 1707-325777, E-mail: info@hamamatsu.co.uk

North Europe: Hamamatsu Photonics Norden AB: Smidesvägen 12, SE-171-41 Solna, 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/E 20020 Arese (Milano), Italy, Telephone: (39)02-935 81 733, Fax: (39)02-935 81 741, E-mail: info@hamamatsu.it

Cat. No. SICS1103E03
APR/2005 HPK
Created in Japan (PDF)

Spectral Response Characteristics



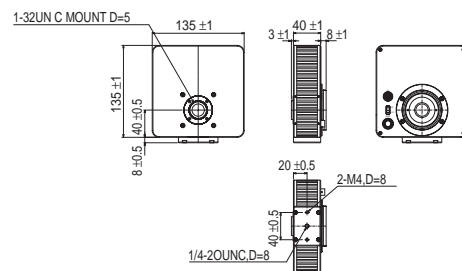
Relay Lens (Optional)

Type No.	Magnification	Camera*
A6110	3 : 1	1/3-inch CCD Camera (C5403-30/-31)
A2098	2 : 1	1/2-inch CCD Camera (C5405-50/-51, HISCA Camera)
A5309	3 : 2	2/3-inch CCD Camera (C3077-70/-71, C7190-23, ORCA-ER)
A5110	1 : 1	1-inch CCD Camera (C4880-21)

* For one inch imaging (about 13 mm × 10 mm view).

Dimensional Outlines (mm)

● I.I. Head (approx. 1.2 kg)



● I.I. Controller (approx. 1.3 kg)

