

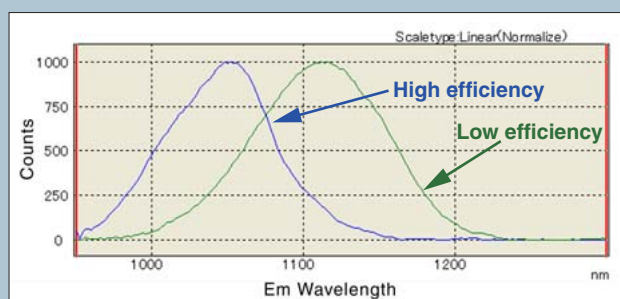
# Near Infrared Fluorescence Lifetime Measurement System C7990 Series



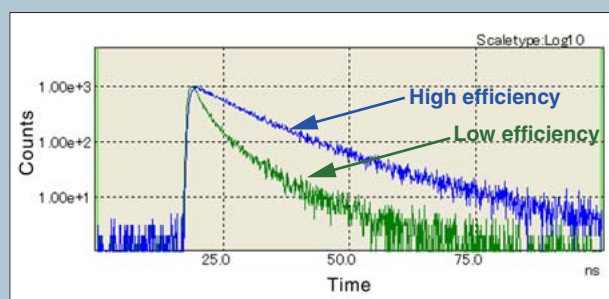
▲ C7990-01, -02 (Liquid nitrogen cooling PMT type)



▲ C7990-11, -12 (Thermoelectric cooling PMT type)



▲ ex. Photoluminescence spectrum measurement



▲ ex. Photoluminescence lifetime measurement

C7990 series enables fluorescence lifetime measurement in the near-infrared region with sub-nano second time resolution, difficult with conventional detectors. As fluorescence spectrum can also be measured with standard configuration, it is possible to measure fluorescence lifetime after the spectrum is checked.

- **Fluorescence spectrum measurement with standard configuration**
- **Fluorescence lifetime measurement in the near-infrared region; 650 nm to 1700 nm (C7990-02)**
- **300 ps temporal resolution ( detector only ) (600 ps temporal resolution for the C7990-01,-02)**
- **Both liquid nitrogen cooling and thermoelectric cooling type are available**

## ■ Measurement example

- Compound Semiconductor PV (CIGS)
- Excitation wavelength : 532 nm
- CIGS fluorescence wavelength : 1052nm and 1112nm

Two CIGS cells with different power generation efficiencies are measured by C7990. The difference of PL lifetime provide the relationship between conversion efficiency and PL lifetime such that Longer PL lifetime gives higher power generation efficiency.

## SYSTEM CONFIGURATION

- **Liquid nitrogen cooling PMT type**
    - C7990-01 (wavelength range 650 nm to 1400 nm)
    - C7990-02 (wavelength range 650 nm to 1700 nm)

(Including detector, optics, data analyzer, container of liquid nitrogen)
  - **Thermoelectric cooling PMT type**
    - C7990-11 (wavelength range 950 nm to 1400 nm)
    - C7990-12 (wavelength range 950 nm to 1700 nm)

(Including detector, optics, data analyzer)
- \* Please contact us about sample cooling with Cryostat

## SPECIFICATIONS

Function		Performance	Recital
Excitation light	Excitation wavelength	1064 nm (C8597-01) 532 nm (C8597-02)	
	Output	>75 mW (C8597-01) >30 mW (C8597-02)	Average value
	Pulse width	<1.3 ns (C8597-01), <1.0 ns (C8597-02)	Laser only
	Repetition rate	Approx. 15 kHz (C8597-01,-02)	
	Excitation power adjustment	Variable ND Filter	For the A8598-01,-02
Measurement wavelength range	C7990-01	650 nm to 1400 nm	Liquid nitrogen cooling (cooling time : approx. 2 h)
	C7990-02	650 nm to 1700 nm	Liquid nitrogen cooling (cooling time : approx. 2 h)
	C7990-11	950 nm to 1400 nm	Thermoelectric cooling (cooling time : approx. 30 min)
	C7990-12	950 nm to 1700 nm	Thermoelectric cooling (cooling time : approx. 30 min)
Measurement time range		2.5 ns to 50 $\mu$ s/full scale	Depends on light source frequency
Time axis channel		512 ch, 1024 ch, 2048 ch, 4096 ch	
Detector time resolution	C7990-01, -02	Approx. 600 ps (Detector alone)	
	C7990-11, -12	Approx. 300 ps (Detector alone)	
System time resolution (for the C8597-01,-02)		<1.5 ns (FWHM of IRF:Instrumental Response Function)	
Analysis function		Multi-exponential fitting with 3 components at maximum	
Analysis scheme		Manual fitting with laser and decay profile	
OS		Windows 7, XP	

## OPTIONS

### ● C8597-01,-02 YAG Laser unit

(wavelength : 1064 nm, 532 nm)

### ● A8598-01,-02 YAG Laser trigger unit

\* Other Type of Laser, such as Ti-sapphire laser can also be used with the system as an excitation light source.

## RATING / OPERATING CONDITIONS

### ● Rating : AC 100 V to AC 240 V , 50 Hz/60 Hz

### ● Operating conditions

Ambient operating temperature	+10 °C to +40 °C
Ambient storage temperature	-10 °C to +50 °C
Ambient operating / storage humidity	70 % max. (with no condensation)
Ambient operating storage temperature	No corrosion gas, ventilation required
Coolant* (for cooling detector)	Liquid nitrogen (approx. 0.5 L/h)

\* C7990-01, -02

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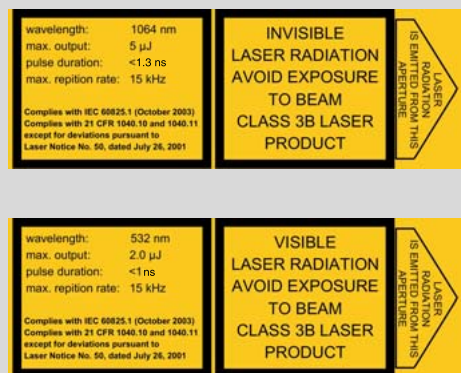
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## SAFETY STANDARD / APPLICABLE STANDARD

Laser : class 3B (Laser only)

### ■ Laser Safety



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**HAMAMATSU PHOTONICS K.K., Systems Division**

**812 Joko-cho, Higashi-ku, 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.:** Hamamatsu Corporation: 360 Foothill Road, Bridgewater, N.J 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)02-93581733, Fax: (39)02-93581741 E-mail: info@hamamatsu.it

**China:** Hamamatsu Photonics (China) Co., Ltd.: B1201 Jiaming Center, No.27 Dongsanhuan Beilu, Chaoyang District, Beijing 100020, China, Telephone: (86)10-6586-6006, Fax: (86)10-6586-2866 E-mail: hpc@hamamatsu.com.cn

Cat. No. SDSS0011E03  
MAR/2014 HPK  
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