

The H11870 series is a wide sensitive area photon counting head device containing a 25 mm (1") diameter head-on photomultiplier tube, a high-voltage power supply circuit and a photon counting circuit. The high voltage supply for photomultiplier tube and the discrimination level are preset to optimum values, allowing photon counting measurement by just connecting a +5 V supply. The H11870 series has a function of over light detection output for indicating the excessive light operating condition. A mount flange (E6264) is provided as an option for easy installation to measurement equipment.



**SPECIFICATIONS**

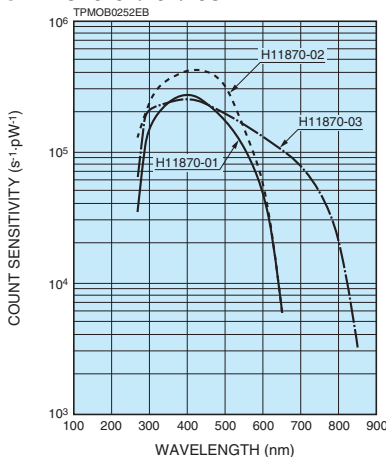
(at +25 C)

Parameter			H11870-01	H11870-02	H11870-03	H11870-09	Unit	
Input voltage			+4.75 to +5.25				V	
Max. input voltage			+6				V	
Max. input current			100				mA	
Effective area			φ22			φ21	mm	
Spectral response			300 to 650		300 to 850	185 to 320	nm	
Peak sensitivity wavelength			375	420	420	240	nm	
Count sensitivity	200 nm	Typ.	—	—	—	$3.0 \times 10^4$	s <sup>-1</sup> ·pW <sup>-1</sup>	
	300 nm	Typ.	$1.4 \times 10^5$	$2.3 \times 10^5$	$2.1 \times 10^5$	$1.2 \times 10^4$		
	400 nm	Typ.	$2.7 \times 10^5$	$4.1 \times 10^5$	$2.5 \times 10^5$	$8.0 \times 10^0$		
	500 nm	Typ.	$1.7 \times 10^5$	$3.4 \times 10^5$	$2.0 \times 10^5$	—		
	600 nm	Typ.	$4.6 \times 10^4$	$5.7 \times 10^4$	$1.3 \times 10^5$	—		
Count linearity *1			$6.0 \times 10^6$				s <sup>-1</sup>	
Dark count *2			Typ.	15	60	5000	15	s <sup>-1</sup>
			Max.	80	300	15000	30	
Pulse-pair resolution			18				ns	
Output pulse width			9				ns	
Output pulse height	50 Ω load	Min.	+2.0				V	
		Typ.	+2.2					
	Un-terminated	Min.	+4.0					
		Typ.	+4.4					
Recommended load resistance			50				Ω	
Signal output logic			Positive logic				—	
Over light detection output *3	High level	Min.	+3.5				V	
	Low level	Max.	+0.5					
Operating ambient temperature *4			+5 to +40				°C	
Storage temperature *4			-20 to +50				°C	
Weight			140				g	

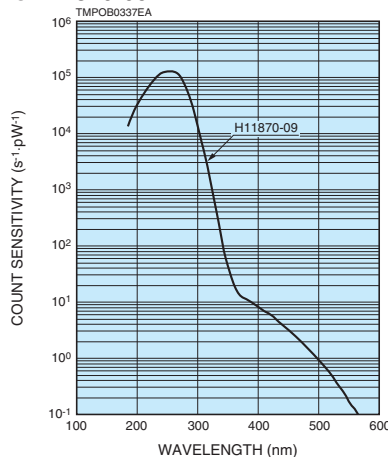
\*1: Random pulse, at 10 % count loss    \*2: After 30 minute storage in darkness    \*3: Load resistance 10 kΩ    \*4: No condensation  
H11870 series can't be used at vacuum environment or reduced pressure environment.

Figure 1: Count sensitivity

●H11870-01/-02/-03



●H11870-09



# PHOTON COUNTING HEAD H11870 SERIES

Figure 2: Dark count

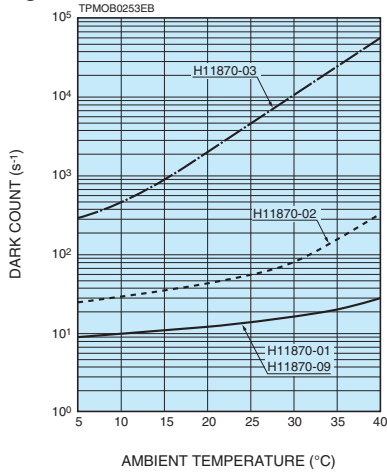


Figure 3: Output waveform

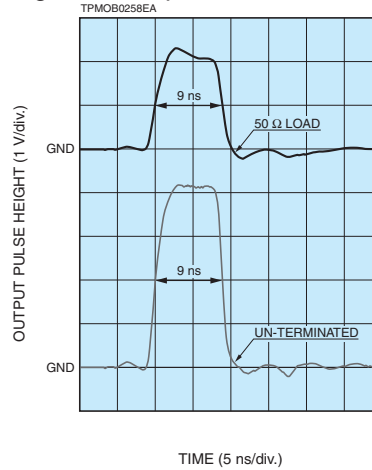


Figure 4: Count rate linearity and over light detection output

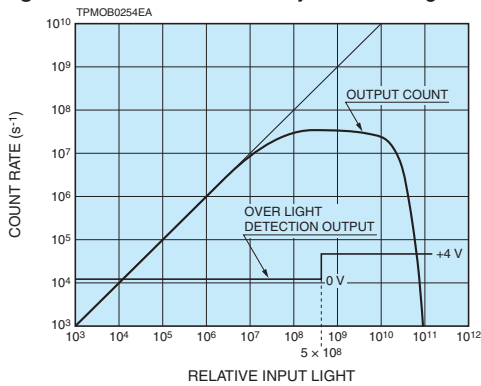


Figure 5: Count rate linearity correction

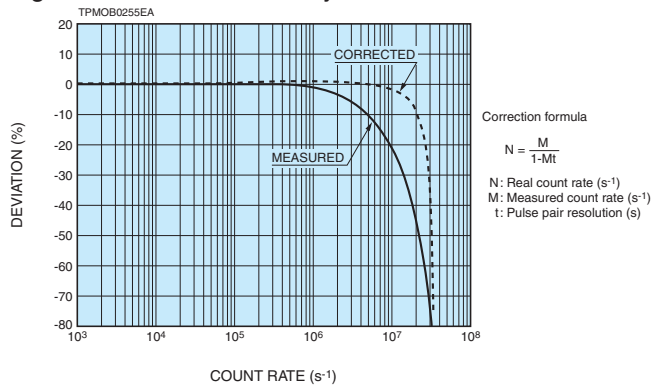


Figure 6: Block diagram

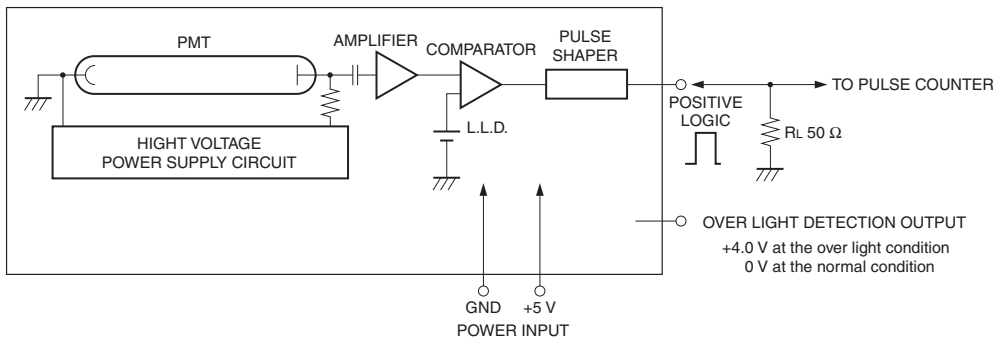
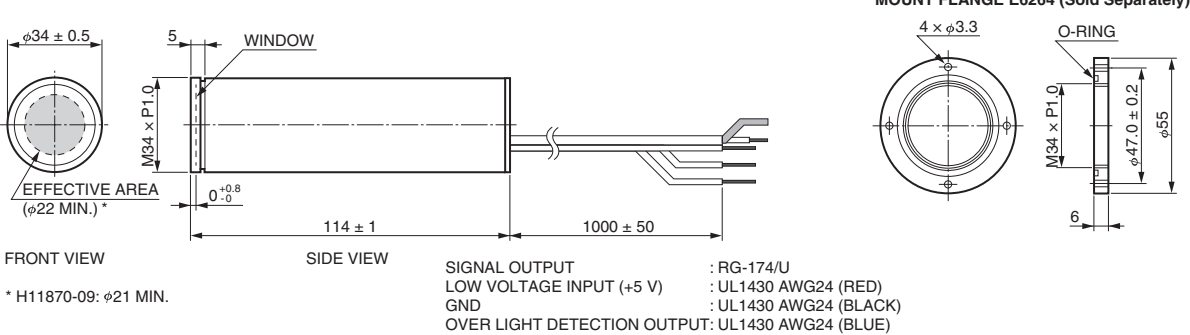


Figure 7: Dimensional outlines (Unit: mm)



## HAMAMATSU PHOTONICS K.K. [www.hamamatsu.com](http://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: info@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 inf. 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 TPMO1061E02

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 AUG. 2018 IP