

OVERVIEW

The H12386 series is a photon counting head device consisting of a metal package photomultiplier tube, along with a high-speed photon counting circuit and a high-voltage power supply 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 H12386 series has also over light detection function to output a signal at the state that an output count falls by excessive incident light. By this signal, measurement data can be judged that it is normal or not.



PRODUCT VARIATIONS

Type No.	Spectral response	Photocathode	Window material	Features
H12386-110	230 nm to 700 nm	Super bialkali	Borosilicate glass	For visible range
H12386-113	185 nm to 700 nm	Super bialkali	UV glass	For UV range to visible range
H12386-210	230 nm to 700 nm	Ultra bialkali	Borosilicate glass	For visible range, high sensitive than super bialkali
H12386-01	230 nm to 870 nm	Multialkali	Borosilicate glass	For visible range to near IR range

This product can't be used at vacuum environment or reduced pressure environment.

SPECIFICATIONS

(at +25 °C)

Parameter			H12386-110	H12386-113	H12386-210	H12386-01	Unit
Input voltage			+4.75 to +5.25				V
Max. input voltage			+6				V
Max. input current ①			40				mA
Effective area			φ8				mm
Peak sensitivity wavelength			400				nm
Count sensitivity	200 nm	Typ.	—	9.7 × 10 ⁴	—	—	s ⁻¹ ·pW ⁻¹
	300 nm	Typ.	3.7 × 10 ⁵	—	3.9 × 10 ⁵	2.7 × 10 ⁵	
	400 nm	Typ.	4.9 × 10 ⁵	—	6.1 × 10 ⁵	3.6 × 10 ⁵	
	500 nm	Typ.	3.7 × 10 ⁵	—	4.6 × 10 ⁵	2.8 × 10 ⁵	
	600 nm	Typ.	1.1 × 10 ⁵	—	1.3 × 10 ⁵	2.0 × 10 ⁵	
	700 nm	Typ.	7.7 × 10 ³	—	9.1 × 10 ³	1.2 × 10 ⁵	
	800 nm	Typ.	—	—	—	3.0 × 10 ⁴	
Count linearity ②			5.0 × 10 ⁶				s ⁻¹
Dark count ③		Typ.	50	—	50	600	s ⁻¹
		Max.	100	—	100	1000	
Pulse-pair resolution			20				ns
Output pulse width			10				ns
Output pulse height	Load resistance 50 Ω	Min.	+2				V
		Typ.	+2.2				
	Un-terminated	Min.	+4				
		Typ.	+4.4				
Recommended load resistance			50				Ω
Signal output logic			Positive logic				—
Over light detection output ④	High level	Min.	+3.5				V
	Low level	Max.	+0.5				
Operating ambient temperature ⑤			+5 to +40				°C
Storage temperature ⑤			-20 to +50				°C
Weight			61				g

① At 5.0 × 10⁶ s⁻¹ count rate ② Random pulse, at 10 % count loss ③ After 30 min storage in darkness ④ Load resistance 10 kΩ

⑤ No condensation

PHOTON COUNTING HEADS H12386 SERIES

Figure 1: Count sensitivity

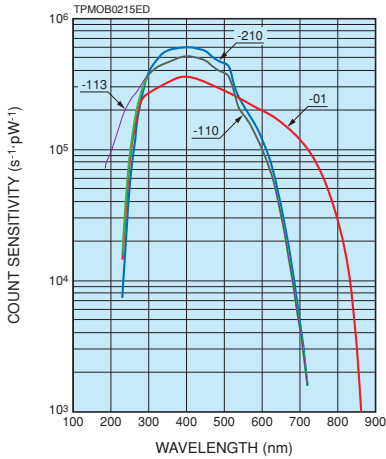


Figure 2: Dark count

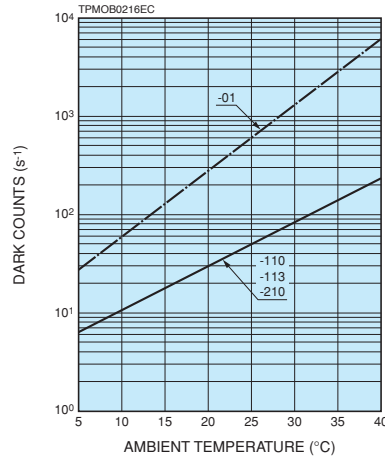


Figure 3: Output waveform

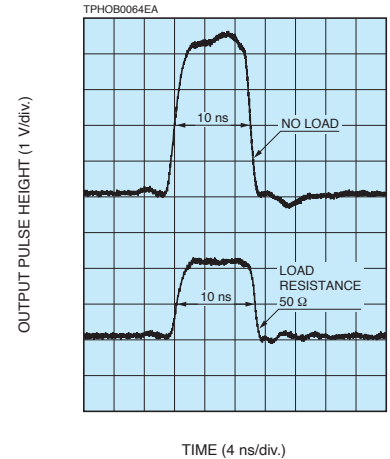


Figure 4: Count rate linearity and over light detection output

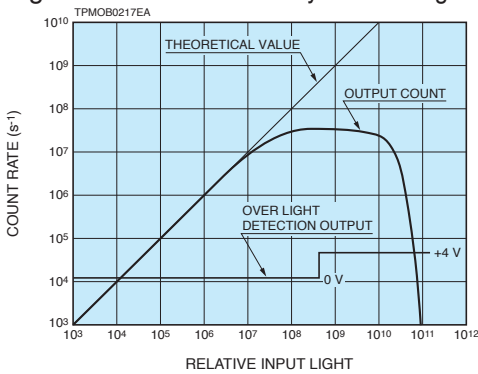


Figure 5: Count rate linearity correction

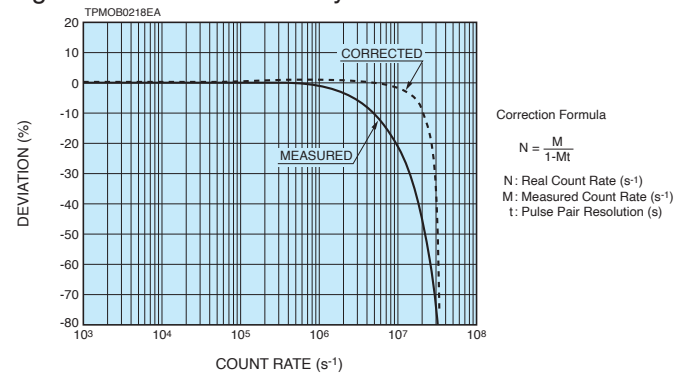


Figure 6: Block diagram

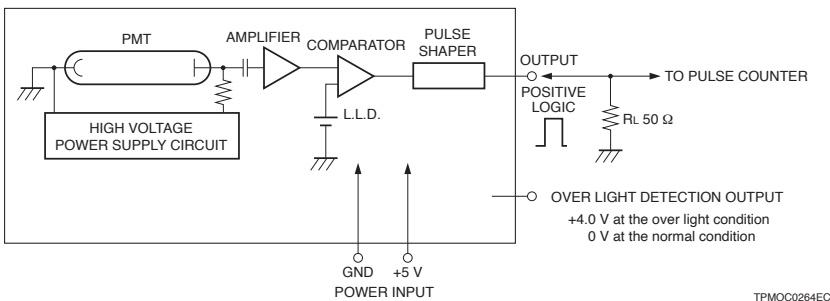
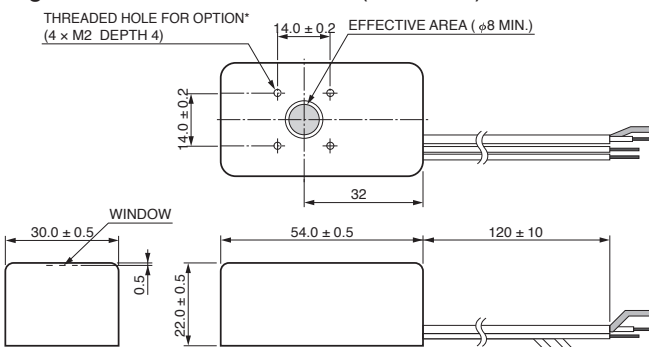


Figure 7: Dimensional outline (Unit: mm)



* OPTION: E5776, E5776-51, A9865, A10030-01
** OPTION: Available with BNC/SMA connector.

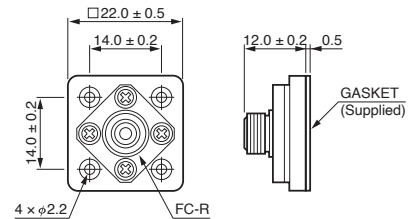
LOW VOLTAGE INPUT (+5 V) : AWG26 (RED)
GND : AWG26 (BLACK)
OVER LIGHT DETECTION OUTPUT: AWG26 (BLUE)
SIGNAL OUTPUT : RG-178B/U**

TPMOA0090EB

OPTIONS

OPTICAL FIBER ADAPTER (Unit: mm)

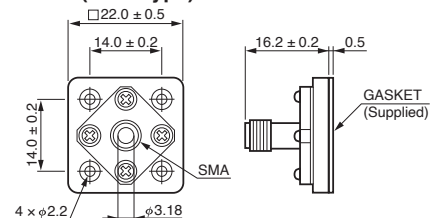
E5776 (FC Type)



FRONT VIEW SIDE VIEW

* Supplied with M2 screws(4 pcs) for fixing to module

E5776-51 (SMA Type)



FRONT VIEW SIDE VIEW

* Supplied with M2 screws(4 pcs) for fixing to module

Note: Optical blocks are available for these photon counting heads to make compact optical systems without light leakage.

HAMAMATSU PHOTONICS K.K. www.hamamatsu.com

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, 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 Twin 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 20044 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, P.R. 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, Section 2, 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.com.tw

TPMO1073E02
DEC. 2022 IP