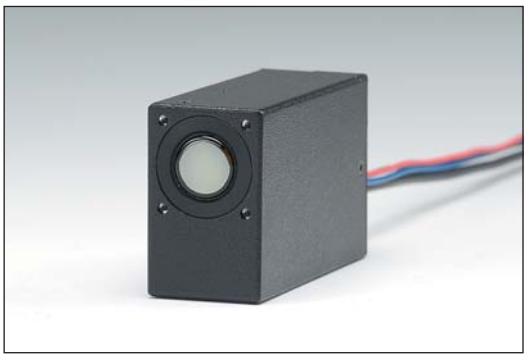
HAMAMATSU

PHOTON IS OUR BUSINESS

PHOTON COUNTING HEAD
H12775

OVERVIEW

The H12775 is a photon counting head device containing of a 10-mm (1/2") diameter head-on 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 H12775 has a function of over light detection output for indicating the excessive light operating condition.



PRODUCT VARIATIONS

Type No.	Spectral response	Photocathode	Window material	Features
H12775	300 nm to 650 nm	Bialkali	Borosilicate glass	For visible range

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

SPECIFICATIONS

(at +25 °C)

Parameter			Description / Value	Unit
Input voltage			+4.75 to +5.25	V
Max. input voltage			+6	V
Max. input current			40	mA
Effective area			ϕ10	mm
Peak sensitivity wavelength			420	nm
Count sensitivity	300 nm	Typ.	2.5×10^5	$s^{-1} \cdot pW^{-1}$
	400 nm	Typ.	4.4×10^5	
	500 nm	Typ.	3.6×10^5	
	600 nm	Typ.	1.2×10^5	
Count linearity *1			5.0×10^6	s^{-1}
Dark count *2		Typ.	30	s^{-1}
		Max.	100	
Pulse-pair resolution			20	ns
Output pulse width			10	ns
Output pulse height	Load resistance 50 Ω	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			79	g

*1: Random pulse, at 10 % count loss *2: After 30 minutes storage in darkness *3: Load resistance 10 kΩ *4: No condensation

PHOTON COUNTING HEADS H12775

Figure 1: Count sensitivity

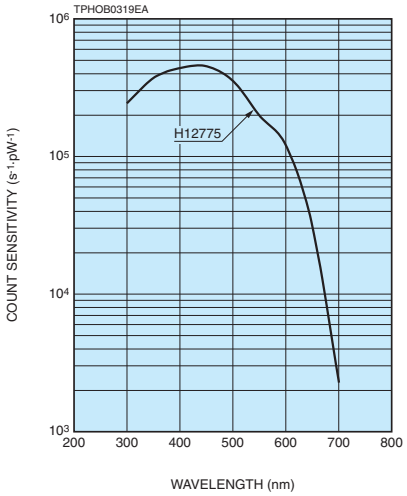


Figure 2: Dark count

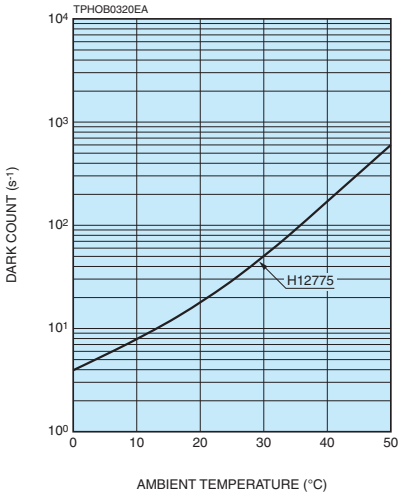


Figure 3: Output waveform

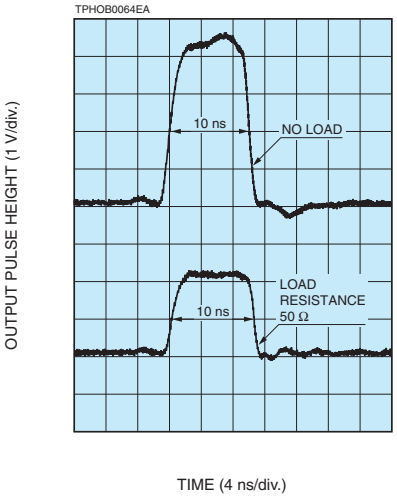


Figure 4: Count rate linearity and over light detection output

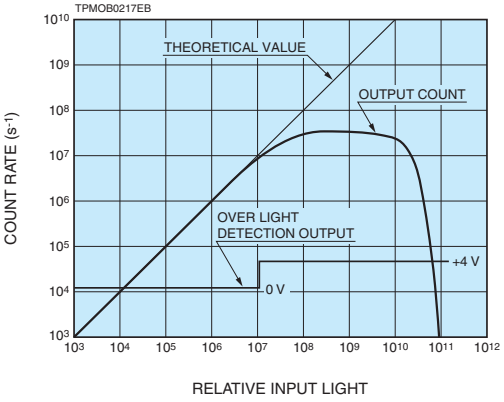
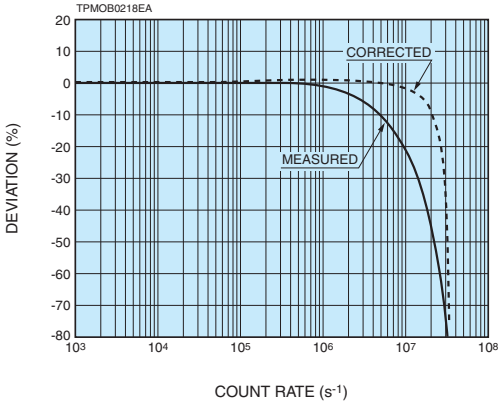


Figure 5: Count rate linearity correction



Linearity correction formula

$$N = \frac{M}{1-Mt}$$

N: real count rate (s^{-1})
M: measured count rate (s^{-1})
t: pulse pair-resolution (s)

Figure 6: Block diagram

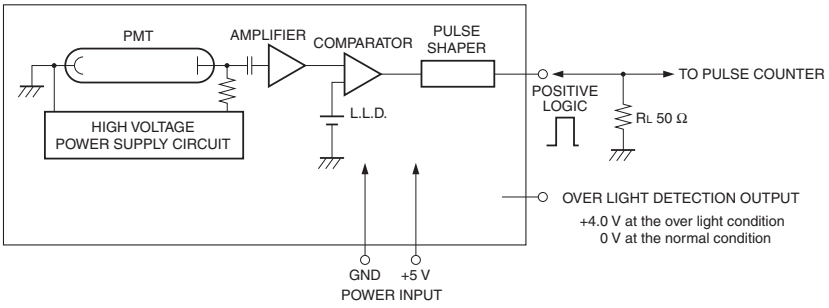


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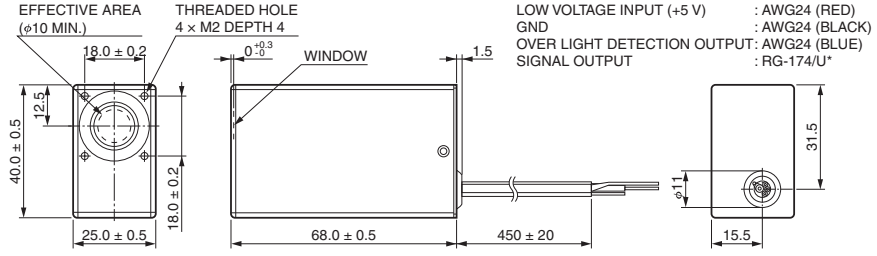
Figure 7: Dimensional outline (Unit: mm)



* Option: Available with BNC/SMA connector.

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