

# Side-on PMT

## Photon Counting Head H8259 Series



The H8259 series are photon counting head devices containing a 28 mm (1-1/8") diameter side-on photomultiplier tube, high-speed photon counting circuit, and high-voltage power supply circuit. Three types of photomultiplier tubes are provided as standard lineups to meet various needs for spectral response range. The photomultiplier tube sensitive in the near IR region usually has a large dark count due to thermal noise but high S/N measurements can be obtained since a low-noise photomultiplier tube is selected. The high voltage supply for photomultiplier tube and the discrimination level are preset to optimum levels, allowing photon counting measurement by just connecting a +5 V supply. An electronic gate circuit (shutter circuit) is also included to eliminate extraneous light such as excitation light from the measurement.

### Product Variations

Type No.	Spectral Response	Features
H8259	185 nm to 680 nm	Low dark count in UV to visible range
H8259-01	185 nm to 850 nm	Low dark count in UV to near IR range
H8259-02	185 nm to 900 nm	High sensitivity and low dark count in UV to near IR range. Sensitive area 4 mm × 6 mm

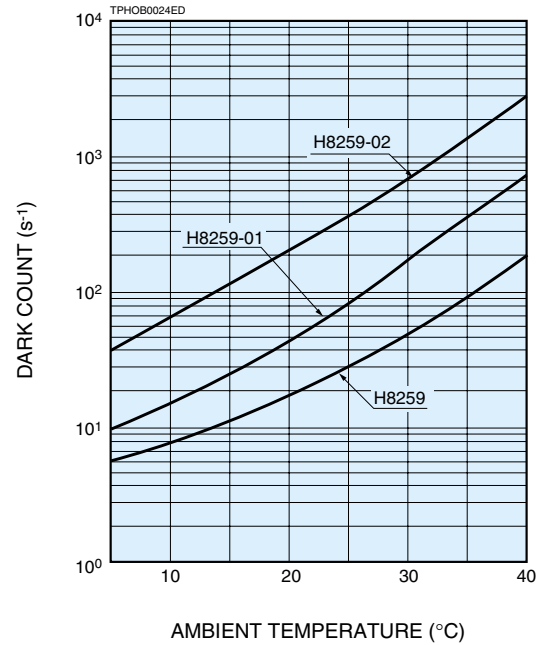
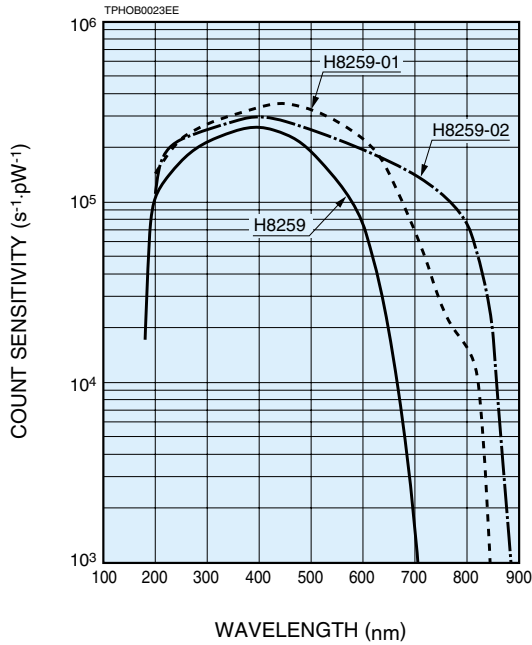
### Specifications

Parameter		H8259	H8259-01	H8259-02	Unit	
Input Voltage		+4.5 to +5.5			V	
Max. Input Voltage		+6			V	
Max. Input Current		80			mA	
Effective Area		4 × 20		4 × 6	mm	
Peak Sensitivity Wavelength		400	430	400	nm	
Count Sensitivity	Typ.	300 nm	$2.1 \times 10^5$	$2.7 \times 10^5$	$2.5 \times 10^5$	
		400 nm	$2.6 \times 10^5$	$3.3 \times 10^5$	$3.0 \times 10^5$	
		500 nm	$1.9 \times 10^5$	$3.2 \times 10^5$	$2.5 \times 10^5$	
		600 nm	$7.5 \times 10^4$	$2.3 \times 10^5$	$2.0 \times 10^5$	
		700 nm	$1.5 \times 10^3$	$6.8 \times 10^4$	$1.4 \times 10^5$	
		800 nm	—	$1.6 \times 10^4$	$7.5 \times 10^4$	
Count Linearity *1		$2.5 \times 10^6$			s <sup>-1</sup>	
Dark Count *2		Typ.	30	80	400	
		Max.	80	200	800	
Gate	Mode		Normally ON		—	
	Switching Ratio		1/1000		—	
	Gate Input	Level		C-MOS (High level: +3.5 V to +5.0 V)		—
		Input Impedance		1		kΩ
		Gate Width (FWHM)		50 μs to ∞		—
Repetition Rate		Max.	10		kHz	
Pulse-pair Resolution		35			ns	
Output Pulse Width		30			ns	
Output Pulse Height *3		Typ.	2.2		V	
		Min.	2.0			
Recommended Load Resistance		50			Ω	
Signal Output Logic		Positive logic			—	
Operating Ambient Temperature		+5 to +40			°C	
Storage Temperature		-20 to +50			°C	
Weight		220			g	

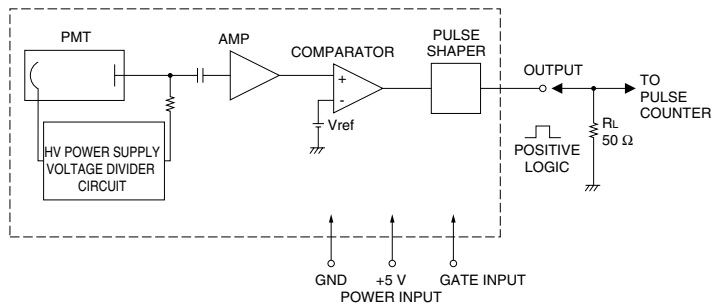
\*1: Random pulse, at 10 % count loss      \*2: After 30 minute storage in darkness

\*3: With input voltage +5 V, Load resistance 50 Ω and Coaxial cable RG-174/U (450 mm)

## Characteristics (Count sensitivity, Dark count)

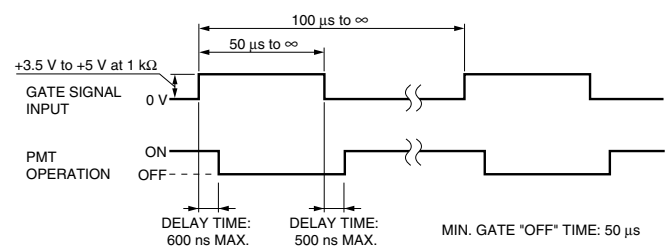


## Block Diagram



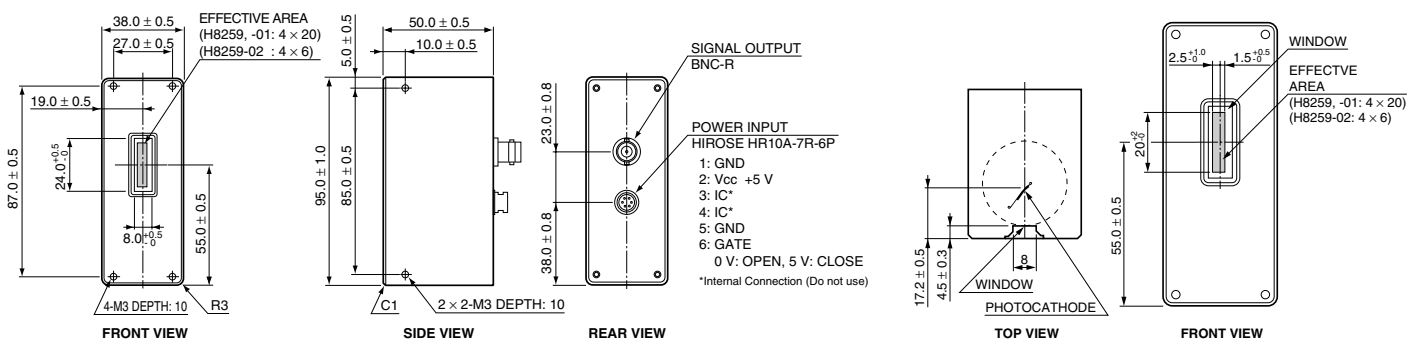
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## Gate Timing Chart

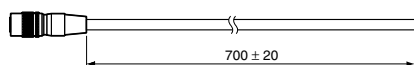


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## Dimensional Outlines (Unit: mm)



POWER CABLE WITH CONNECTOR (HIROSE HR10A-7P-6S) IS SUPPLIED WITH THE H8259 SERIES



BLACK : GND  
 RED : LOW VOLTAGE INPUT (+5 V)  
 GREEN: GATE SIGNAL INPUT  
 (0 V or GND: OPEN, 5 V: CLOSE)

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