

Side-on PMT

Photon Counting Head H8259 Series



The H8259 series is a photon counting head device containing a 28-mm (1-1/8") diameter side-on photomultiplier tube, high-speed photon counting circuit, and a high-voltage power supply circuit. 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 values, 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

This product can't be used at vacuum environment or reduced pressure environment. Please pay attention when the H8259 series is used for measuring the light below 190 nm.

Specifications

(at +25 °C)

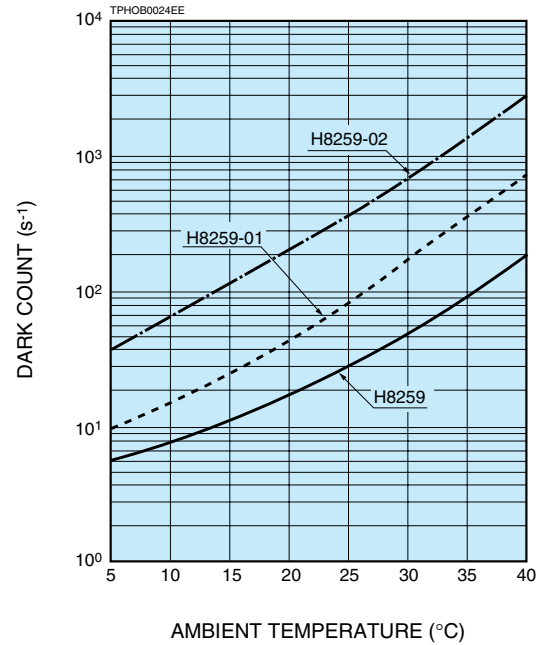
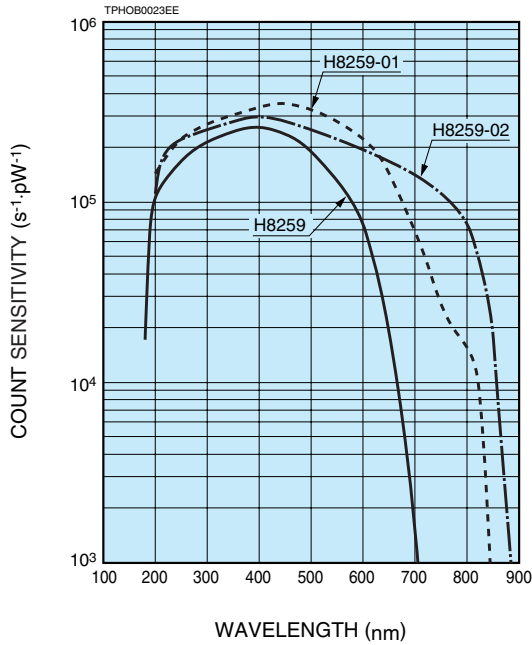
Parameter			H8259	H8259-01	H8259-02	Unit
Input Voltage			+4.5 to +5.5			V
Max. Input Voltage			+6			V
Max. Input Current			80			mA
Effective Area			4 × 20		4 × 6	mm
Peak Sensitivity Wavelength			400	430	400	nm
Count Sensitivity	Typ.	300 nm	2.1 × 10 ⁵	2.7 × 10 ⁵	2.5 × 10 ⁵	s ⁻¹ ·pW ⁻¹
		400 nm	2.6 × 10 ⁵	3.3 × 10 ⁵	3.0 × 10 ⁵	
		500 nm	1.9 × 10 ⁵	3.2 × 10 ⁵	2.5 × 10 ⁵	
		600 nm	7.5 × 10 ⁴	2.3 × 10 ⁵	2.0 × 10 ⁵	
		700 nm	1.5 × 10 ³	6.8 × 10 ⁴	1.4 × 10 ⁵	
		800 nm	—	1.6 × 10 ⁴	7.5 × 10 ⁴	
		900 nm	—	—	3.0 × 10 ²	
Count Linearity *1			2.5 × 10 ⁶			s ⁻¹
Dark Count *2		Typ.	30	80	400	s ⁻¹
		Max.	80	200	800	
Gate	Mode		Normally ON			—
	Switching Ratio		1/1000			—
	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	10			kHz
		Max.				
Pulse-pair Resolution			35			ns
Output Pulse Width			30			ns
Output Pulse Height *3		Min.	2.0			V
		Typ.	2.2			
Recommended Load Resistance			50			Ω
Signal Output Logic			Positive logic			—
Operating Ambient Temperature *4			+5 to +40			°C
Storage Temperature *4			-20 to +50			°C
Weight			220			g

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

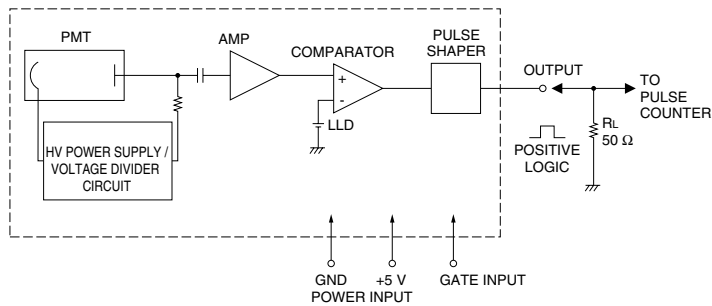
*3: With input voltage +5 V, Load resistance 50 Ω and Coaxial cable RG-174/U (450 mm)

*4: No condensation

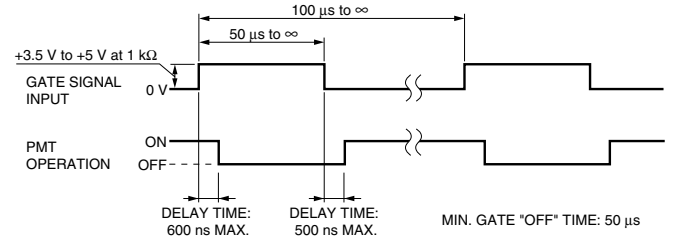
Characteristics (Count sensitivity, Dark count)



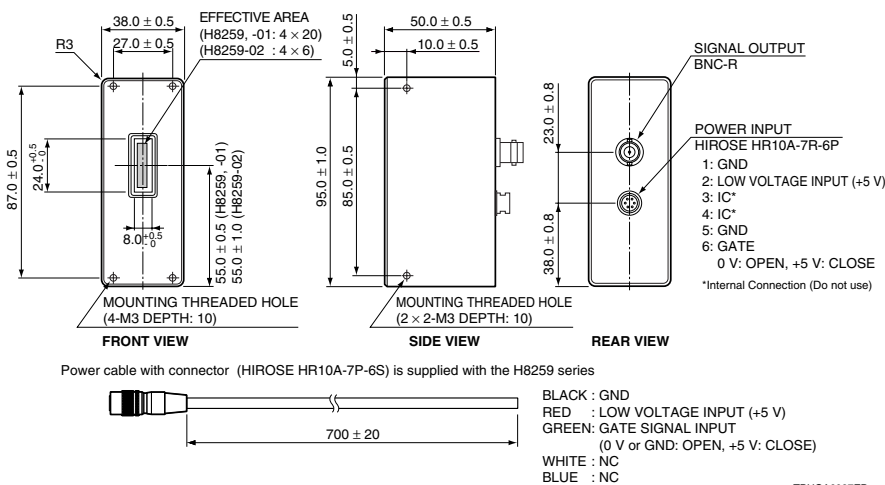
Block Diagram



Gate Timing Chart



Dimensional Outlines (Unit: mm)



DETAILS OF INPUT WINDOW

