

Head-on PMT

Photosensor Modules H10493 Series



The H10493 series photosensor modules incorporate a 28 mm (1-1/8") diameter head-on photomultiplier tube, a high voltage power supply, and a low noise amplifier. Since it has a wide photosensitive area of 25 mm diameter, light can be collected efficiently. Amplifiers are available with a current-to-voltage conversion factor of 1 V/ μ A or 0.1 V/ μ A and a frequency bandwidth of DC to 20 kHz, DC to 200 kHz or DC to 8 MHz. Photomultiplier tubes with different spectral response characteristics are provided for measurement in the visible range or UV to near IR range.

Product Variations

Type No.	Spectral Response	Current-to-Voltage Conversion Factor*	Frequency Bandwidth*	Features
H10493-001	300 nm to 650 nm	1 V/ μ A	DC to 20 kHz	For visible range
H10493-011	185 nm to 850 nm			For UV to near IR range
H10493-002	300 nm to 650 nm	0.1 V/ μ A	DC to 200 kHz	For visible range
H10493-012	185 nm to 850 nm			For UV to near IR range
H10493-003	300 nm to 650 nm		DC to 8 MHz	For visible range
H10493-013	185 nm to 850 nm			For UV to near IR range

* The amplifier specification can be changed upon request. Feel free to contact our sales office.

This product can't be used at vacuum environment or reduced pressure environment. Please pay attention when the H10493-011/-012/-013 is used for measuring the light below 190 nm.

Specifications

(at +25 °C)

Parameter			H10493 Series		Unit	
Suffix			-001 / -002 / -003		-011 / -012 / -013	—
Input Voltage			±11.5 to ±15.5		V	
Max. Input Voltage			±18		V	
Max. Input Current *1			+4 / -1 (-001/-011), +11 / -8 (-002/-012), +24 / -21 (-003/-013)		mA	
Max. Control Voltage			+1.5 (Input Impedance 1 MΩ)		V	
Recommended Control Voltage Adjustment Range *2			+0.5 to +1.4 (Input Impedance 1 MΩ)		V	
Effective Area			φ25		mm	
Peak Sensitivity Wavelength			420		nm	
Cathode	Luminous Sensitivity	Min.	60	80	μA/lm	
		Typ.	95	150		
	Blue Sensitivity Index (CS 5-58)	Typ.	11	—	—	
	Red / White Ratio	Typ.	—	0.2	—	
	Radiant Sensitivity *3	Typ.	88	64	mA/W	
Suffix (with internal 20 kHz amp)			-001		-011	
Anode	Luminous Sensitivity *4	Min.	5.0 × 10 ⁷	2.0 × 10 ⁷	V/lm	
		Typ.	2.0 × 10 ⁸	8.0 × 10 ⁷		
	Radiant Sensitivity *3 *4	Typ.	180	34	V/nW	
	Voltage Output Depending on PMT Dark Current *4 *5	Typ.	2	3	mV	
		Max.	10	15		
Max. Output Signal Voltage *6			+10 (Load resistance 10 kΩ)		V	
Current-to-Voltage Conversion Factor			1		V/μA	
Suffix (with internal 200 kHz / 8 MHz amp)			-002 / -003		-012 / -013	
Anode	Luminous Sensitivity *4	Min.	5.0 × 10 ⁶	2.0 × 10 ⁶	V/lm	
		Typ.	2.0 × 10 ⁷	8.0 × 10 ⁶		
	Radiant Sensitivity *3 *4	Typ.	18	3.4	V/nW	
	Voltage Output Depending on PMT Dark Current *4 *5	Typ.	0.2	0.3	mV	
		Max.	1	1.5		
Max. Output Signal Voltage *6			-002 / -012: +10 (Load resistance 10 kΩ) -003 / -013: +10 (Load resistance 500 Ω), +5 (Load resistance 50 Ω)		V	
Current-to-Voltage Conversion Factor			0.1		V/μA	
			H10493 series			
Output Offset Voltage		Typ.	±1		mV	
Ripple Noise *4 *7 *8 (peak to peak)		Max.	0.6 (-001 / -002 / -011 / -012), 0.8 (-003 / -013)		mV	
Settling Time *9		Max.	10		s	
Operating Ambient Temperature *10			+5 to +50		°C	
Storage Temperature *10			-20 to +50		°C	
Weight		Typ.	270		g	

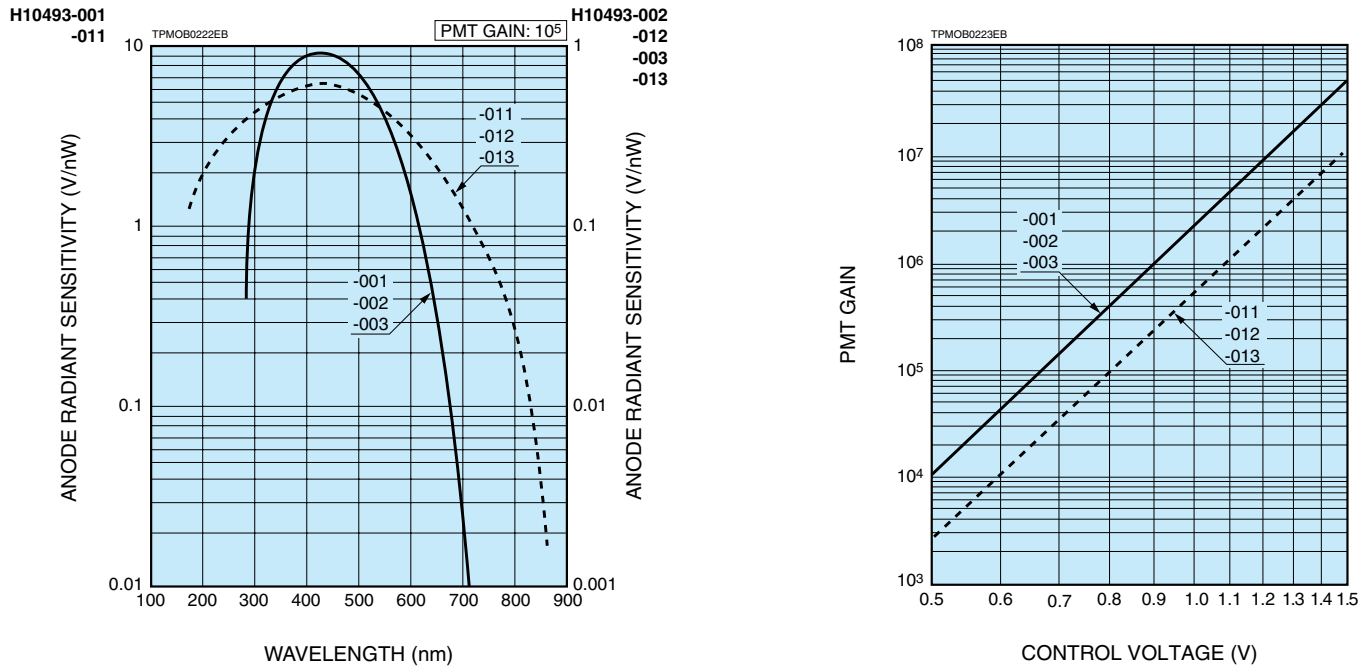
*1: At ± 15 V input voltage, +1.0 V control voltage, and output current equal to dark current *2: DAC (I²C interface) can be installed in the module, please specify when ordering. *3: Measured at the peak sensitivity wavelength *4: Control voltage = +1.0 V *5: After 30 minutes storage in darkness.

The actual output value in darkness is the sum of dark current and offset voltage. *6: At ± 15 V input voltage

*7: Cable RG-174/U, Cable length 450 mm, Load resistance = 1 M Ω , Load capacitance = 22 pF *8: -003, -013 Amplifier noise = 8 mV typ. (peak to peak)

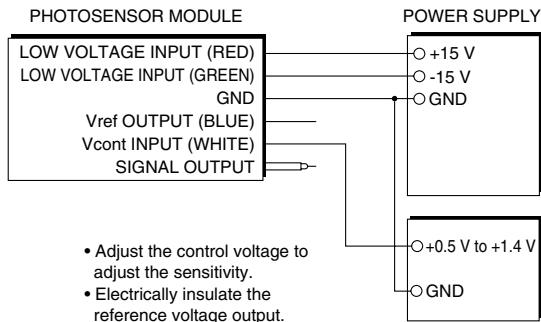
*9: The time required for the output to reach a stable level following a change in the control voltage from +1.0 V to +0.5 V. *10: No condensation.

Characteristics (Cathode radiant sensitivity, PMT gain)

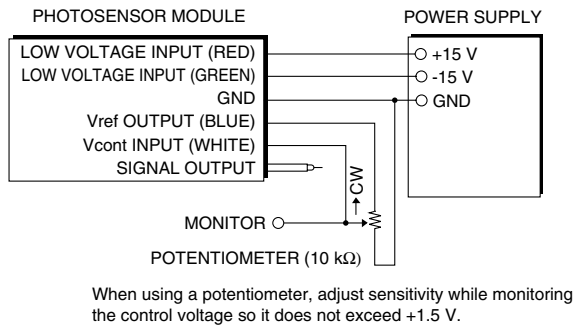


Sensitivity Adjustment Method

VOLTAGE PROGRAMMING

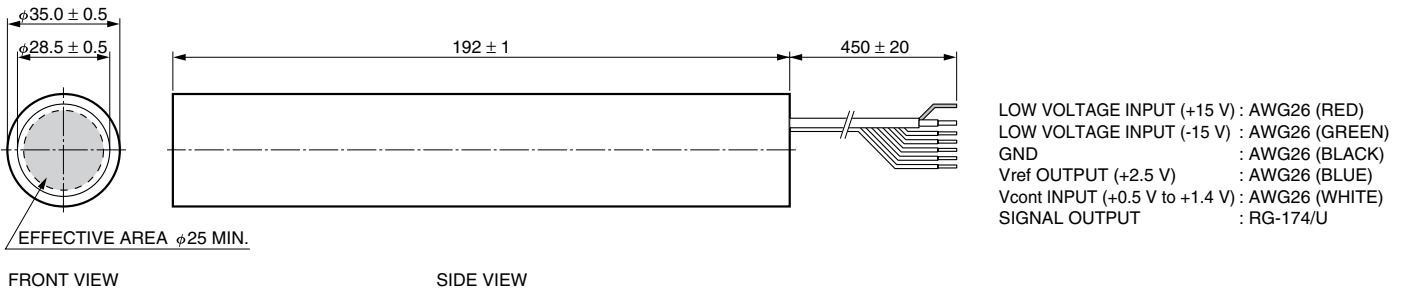


RESISTANCE PROGRAMMING



TPMO0230EA

Dimensional Outlines (Unit: mm)



TPMOA0060EA