

OVERVIEW

The H11903 series is a photosensor module containing a metal package PMT, a low-power consumption high-voltage power supply circuit, and a low-noise amplifier. The amplifier converts the PMT current output to a voltage output so that signal can be easily processed. Also, the amplifier is connected close to the PMT anode output pin to make the signal less affected by external noise. Six types of products are available with a frequency bandwidth of DC to 200 kHz and different sensitivity characteristics such as spectral response ranges.

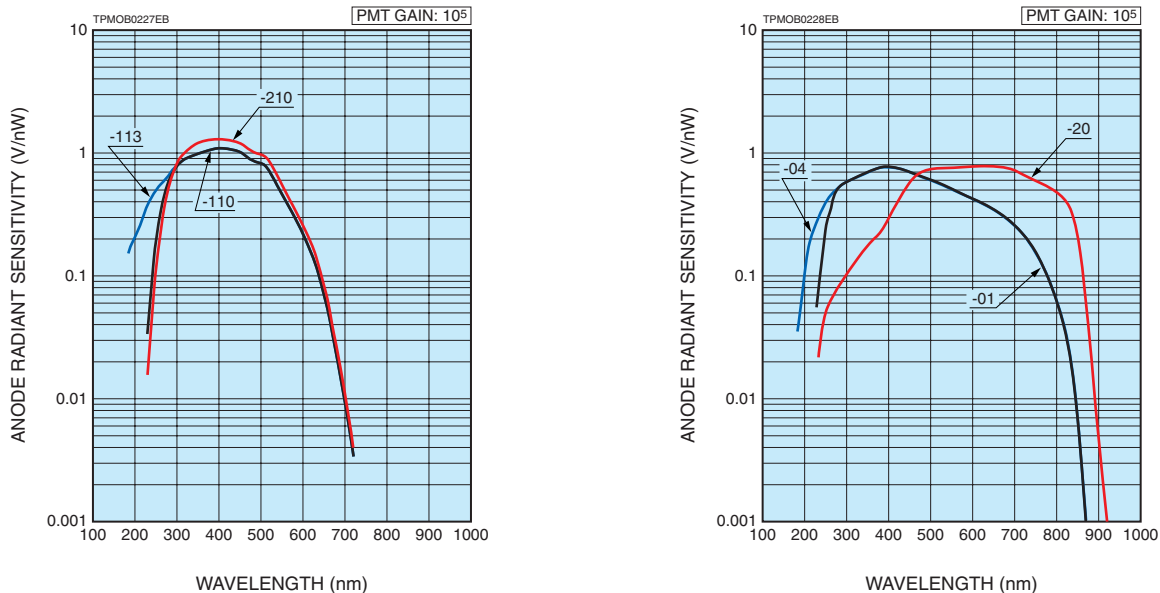


PRODUCT VARIATIONS

Type No.	Spectral response	Photocathode	Window material	Current-to-voltage conversion factor *	Frequency bandwidth *
H11903-110	230 nm to 700 nm	Super bialkali	Borosilicate glass	0.1 V/μA	DC to 200 kHz
H11903-113	185 nm to 700 nm	Super bialkali	UV glass		
H11903-210	230 nm to 700 nm	Ultra bialkali	Borosilicate glass		
H11903-01	230 nm to 870 nm	Multialkali	Borosilicate glass		
H11903-04	185 nm to 870 nm	Multialkali	UV glass		
H11903-20	230 nm to 920 nm	Extended red multialkali	Borosilicate glass		

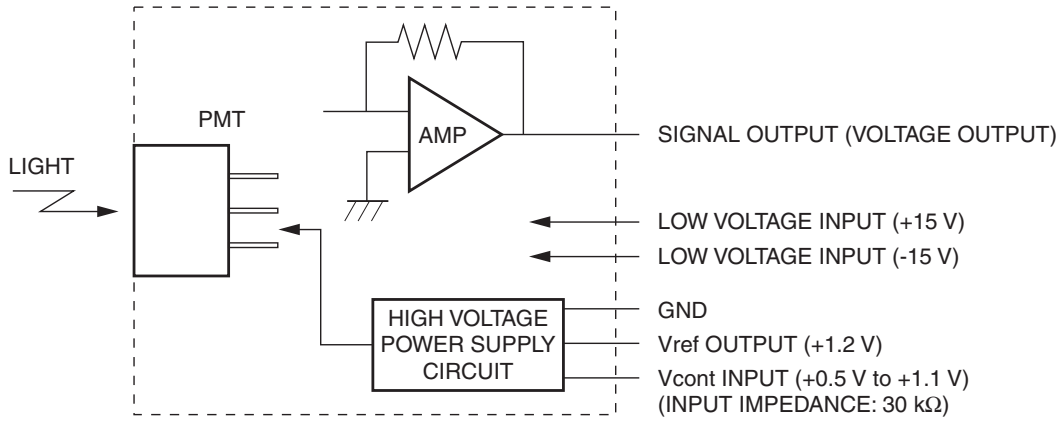
* The amplifier specification can be changed upon request. Feel free to contact our sales office. This product can't be used at vacuum environment or reduced pressure environment.

Figure 1: Typical spectral response



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Figure 2: Schematic diagram



TPMOC0270EA

SPECIFICATIONS

(at +25 °C)

Parameter		-110, -113	-210	-01, -04	-20	Unit
Input voltage		±11.5 to ±15.5				V
Max. input voltage		±18				V
Max. input current *1		+20 / -8				mA
Max. output signal voltage *2		+10 (Load resistance 10 kΩ)				V
Max. control voltage		+1.1 (Input impedance 30 kΩ)				V
Recommended control voltage adjustment range		+0.5 to +1.1 (Input impedance 30 kΩ)				V
Effective area		φ8				mm
Peak sensitivity wavelength		400	400	400	630	nm
Cathode	Luminous sensitivity	Min.	80	100	100	350
		Typ.	105	135	200	500
	Blue sensitivity index (CS 5-58)	Typ.	13.5	15.5	—	—
	Red / White ratio	Typ.	—	—	0.2	0.45
	Radiant sensitivity *3	Typ.	110	130	77	78
Anode	Luminous sensitivity *4	Min.	8.0×10^6	1.0×10^7	1.0×10^7	3.5×10^7
		Typ.	2.1×10^7	2.7×10^7	4.0×10^7	1.0×10^8
	Radiant sensitivity *3 *4	Typ.	22	26	15	15
	Voltage output depending on PMT dark current *4 *5	Typ.	0.1	0.1	0.1	1
	Max.	1	1	1	10	
Frequency bandwidth (-3 dB)		DC to 200 kHz				—
Current-to-voltage conversion factor		0.1				V/μA
Output offset voltage		Typ. ±1				mV
Ripple noise *4 *6 (peak to peak)		Max. 1.0				mV
Settling time *7		Max. 0.2				s
Operating ambient temperature *8		+5 to +50				°C
Storage temperature *8		-20 to +50				°C
Weight		Typ. 90				g

*1: At ±15 V input voltage, +1.0 V control voltage, and output current equal to dark current

*2: At ±15 V input voltage

*3: Measured at the peak sensitivity wavelength

*4: Control voltage = +1.0 V

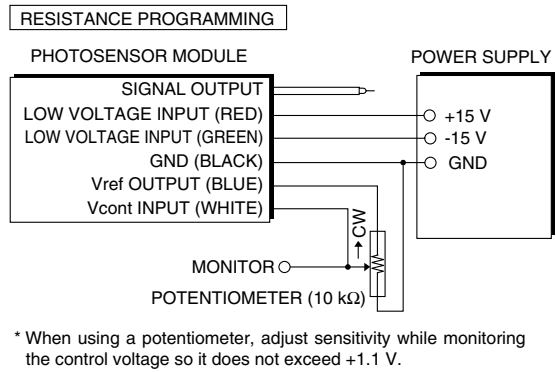
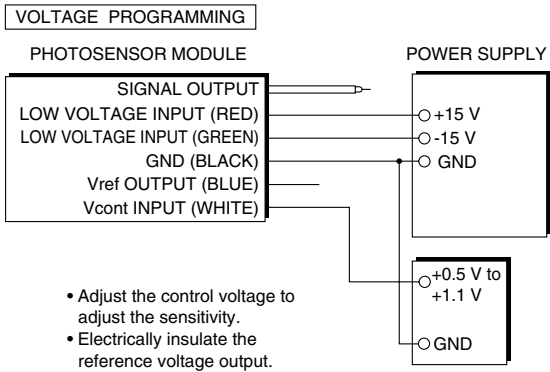
*5: After 30 minutes storage in darkness. The actual output value in darkness is the sum of dark current and offset voltage.

*6: Cable RG-174/U, Cable length 450 mm, Load resistance = 1 MΩ, Load capacitance = 22 pF

*7: 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.

*8: No condensation

Figure 3: Sensitivity adjustment method



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Figure 4: Typical gain

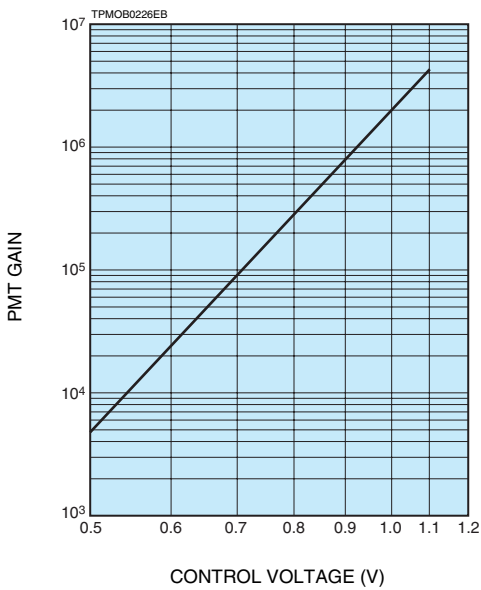


Figure 5: Typical frequency response

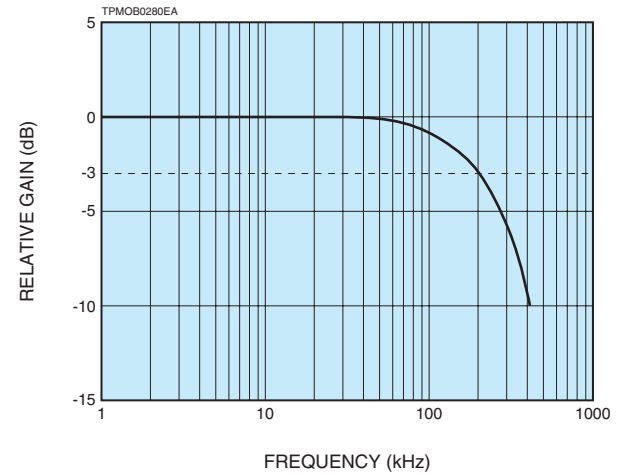


Figure 6: Typical ripple noise

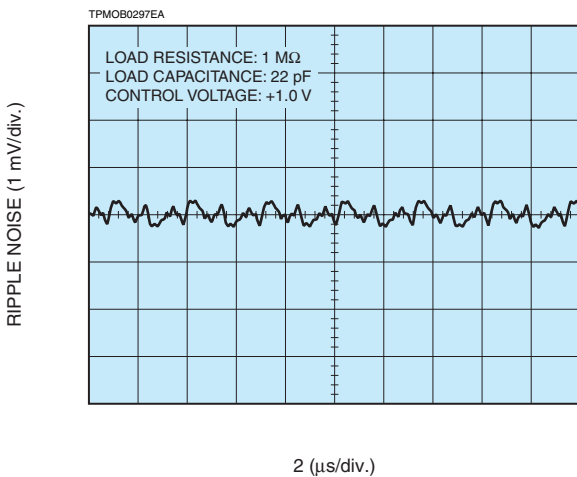
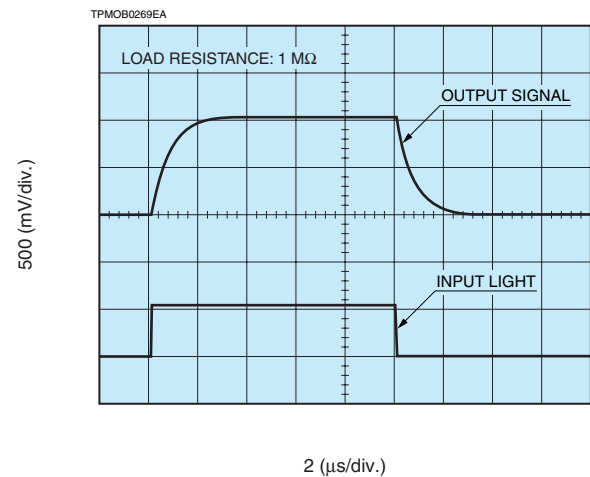
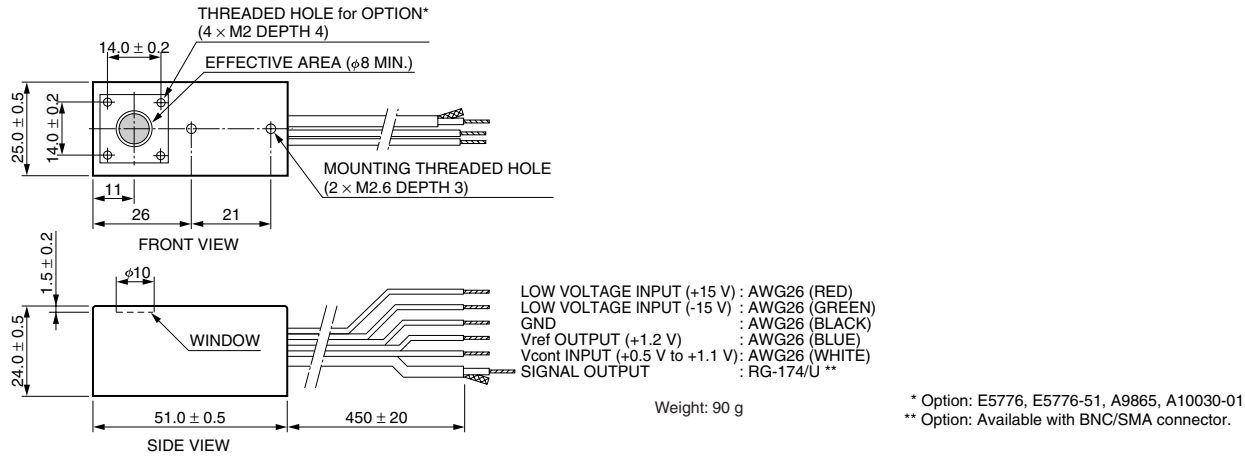


Figure 7: Typical output characteristics



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Figure 8: Dimensional outlines (Unit: mm)

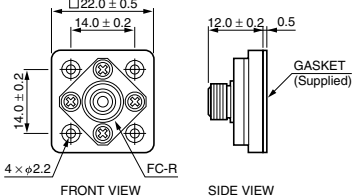


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OPTION

OPTICAL FIBER ADAPTER E5776 / E5776-51

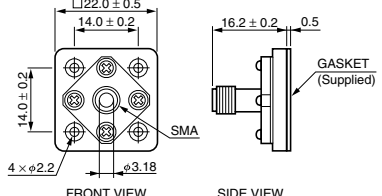
E5776 (FC Type)



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

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E5776-51 (SMA Type)

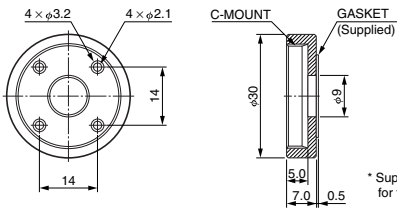


* Supplied with M2 screws(4 pcs) for fixing to module

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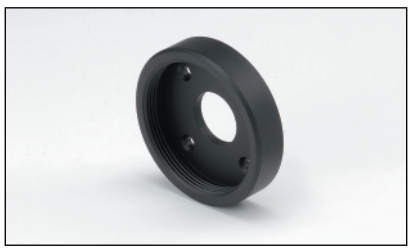


C-MOUNT ADAPTER A9865



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

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Note: Optical blocks are available for these photosensor modules to make compact optical systems without light leakage.

RELATED PRODUCT

POWER SUPPLY FOR PHOTOMULTIPLIER TUBE MODULES C7169

The C7169 is the power supply for photomultiplier tube modules which has 15 V input voltage. This unit can provide both the driving voltage and the control voltage. This feature enables users to operate the modules easily.

Parameter	Description / Value	Unit
Output Voltage	±15	V
Output Current	Max. 0.3 (+15 V), 0.2 (-15 V)	A
Control Voltage ^(A) (variable voltage range)	+0.25 to +1.8	V
Input Voltage	AC 100 to AC 240	V

NOTE: ^(A) Adjust within the recommended control voltage range for the photomultiplier tube module being used.



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