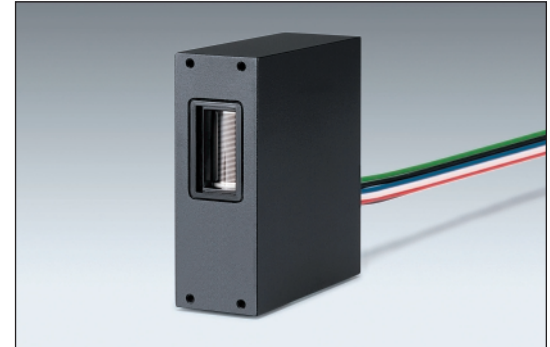


OVERVIEW

The H9306/H9307 series voltage output type photosensor modules contain a high-voltage power supply circuit, low noise amplifier and 13-mm(1/2") diameter side-on photomultiplier tube. The amplifier contained in H9306 series has 1 V/μA of current to voltage conversion factor and 20 kHz of frequency bandwidth. The amplifier contained in H9307 series has 0.1V/μA of current to voltage conversion factor and 200 kHz of frequency bandwidth.



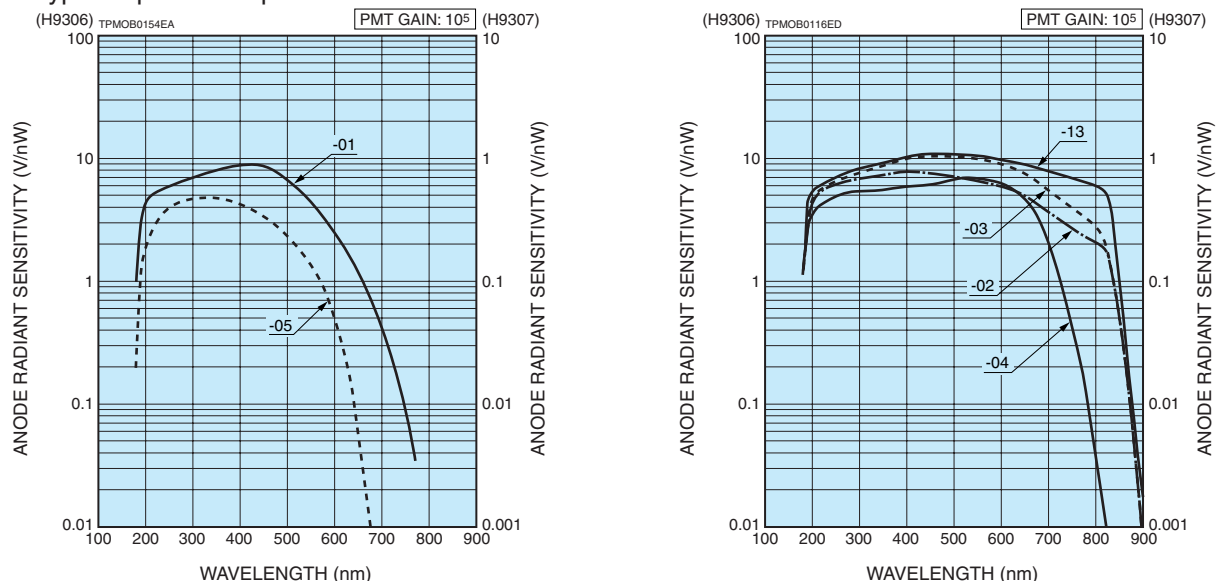
PRODUCT VARIATIONS

Type No.	Spectral response	Photocathode	Window material	Current-to-voltage conversion factor	Frequency bandwidth
H9306-01	185 nm to 750 nm	Bialkali	UV glass	1 V/μA	DC to 20 kHz
H9306-02	185 nm to 900 nm	Multialkali	UV glass		
H9306-03	185 nm to 900 nm	Multialkali	UV glass		
H9306-13	185 nm to 900 nm	Multialkali	UV glass		
H9306-04	185 nm to 830 nm	Multialkali	UV glass		
H9306-05	185 nm to 650 nm	Bialkali	UV glass		

Type No.	Spectral response	Photocathode	Window material	Current-to-voltage conversion factor	Frequency bandwidth
H9307-01	185 nm to 750 nm	Bialkali	UV glass	0.1 V/μA	DC to 200 kHz
H9307-02	185 nm to 900 nm	Multialkali	UV glass		
H9307-03	185 nm to 900 nm	Multialkali	UV glass		
H9307-13	185 nm to 900 nm	Multialkali	UV glass		
H9307-04	185 nm to 830 nm	Multialkali	UV glass		
H9307-05	185 nm to 650 nm	Bialkali	UV glass		

This product can't be used at vacuum environment or reduced pressure environment. Please pay attention when the H9306/H9307 series is used for measuring the light below 190 nm.

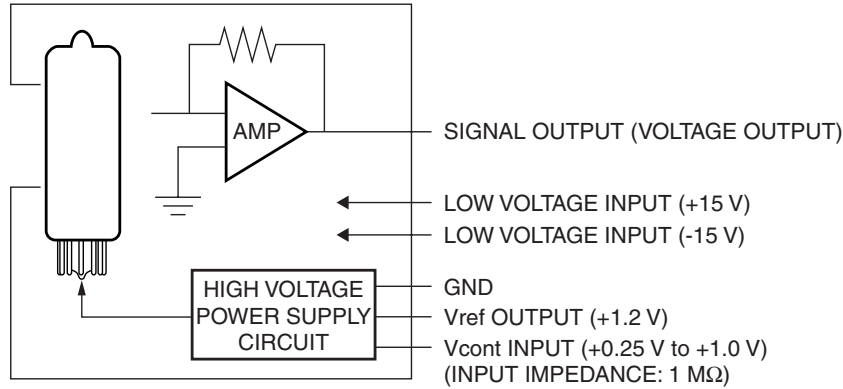
Figure 1: Typical spectral response



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PHOTOSENSOR MODULES H9306/H9307 SERIES

Figure 2: Schematic diagram



SPECIFICATIONS

(at +25 °C)

Parameter		H9306/H9307 Series						Unit	
Suffix		-01	-02	-03	-13	-04	-05	—	
Input voltage		±11.5 to ±15.5						V	
Max. input voltage		±18						V	
Max. input current *1		+9/-1 (H9306), +15/-8 (H9307)						mA	
Max. control voltage		+1.2 (Input impedance: 1 MΩ)						V	
Recommended control voltage adjustment range		+0.25 to +1.0 (Input impedance: 1 MΩ)						V	
Effective area		3.7 × 13.0						mm	
Peak sensitivity wavelength		420	400	450	450	530	340	nm	
Cathode	Luminous sensitivity	Min.	80	200	350	620	140	20	μA/lm
		Typ.	120	300	500	650	200	40	
	Blue sensitivity index (CS 5-58)	Typ.	10	—	—	15	—	5	—
	Red/White ratio	Typ.	—	0.3	0.4	0.43	0.15	—	—
Radiant sensitivity *2		Typ.	90	77	105	109	70	48	mA/W
Offset voltage		Typ.	±3						mV
Ripple noise *3 *4 (peak to peak)		Max.	0.8						mV
Settling time *5		Max.	10						s
Operating ambient temperature *6		+5 to +50						°C	
Storage temperature *6		-20 to +50						°C	
Weight		110						g	

Parameter		H9306 Series (with internal 20 kHz amp)						Unit	
Suffix		-01	-02	-03	-13	-04	-05	—	
Anode	Luminous sensitivity *3	Min.	1.0 × 10 ⁸	4.0 × 10 ⁸	1.0 × 10 ⁹	4.0 × 10 ⁸	3.0 × 10 ⁸	5.0 × 10 ⁷	V/lm
		Typ.	7.0 × 10 ⁸	1.2 × 10 ⁹	2.0 × 10 ⁹	2.6 × 10 ⁹	7.0 × 10 ⁸	3.0 × 10 ⁸	
	Radiant sensitivity *2 *3	Typ.	520	310	420	430	250	360	V/nW
	Voltage output due to PMT dark current *3 *7	Typ.	1	1	2	3	0.1	0.5	mV
Max.	10	10	10	10	1	5			
Max. output signal voltage		+10 (Load resistance 10 kΩ)						V	
Current-to-voltage conversion factor		1						V/μA	

Parameter		H9307 Series (with internal 200 kHz amp)						Unit	
Suffix		-01	-02	-03	-13	-04	-05	—	
Anode	Luminous sensitivity *3	Min.	1.0 × 10 ⁷	4.0 × 10 ⁷	1.0 × 10 ⁸	4.0 × 10 ⁷	3.0 × 10 ⁷	5.0 × 10 ⁶	V/lm
		Typ.	7.0 × 10 ⁷	1.2 × 10 ⁸	2.0 × 10 ⁸	2.6 × 10 ⁸	7.0 × 10 ⁷	3.0 × 10 ⁷	
	Radiant sensitivity *2 *3	Typ.	52	31	42	43	25	36	V/nW
	Voltage output due to PMT dark current *3 *7	Typ.	0.1	0.1	0.2	0.3	0.01	0.05	mV
Max.	1	1	1	1	0.1	0.5			
Max. output signal voltage		+1 (Load resistance 10 kΩ)						V	
Current-to-voltage conversion factor		0.1						V/μA	

*1: Input voltage = +15 V, Control voltage = +1.0 V, Dark current output

*2: Measured at the peak sensitivity wavelength

*3: Control voltage = +1.0 V

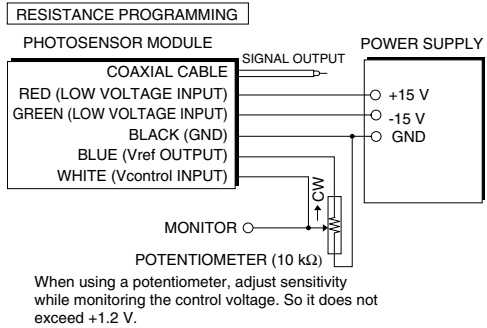
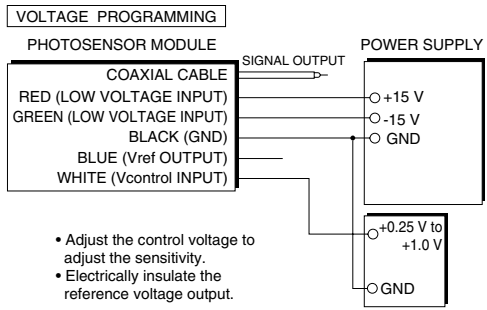
*4: Cable RG-174/U, Cable length 450 mm, Load resistance = 1 MΩ, Load capacitance = 22 pF

*5: 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.

*6: No condensation

*7: After 30 minutes storage in darkness

Figure 3: Sensitivity adjustment method



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Figure 4: Gain

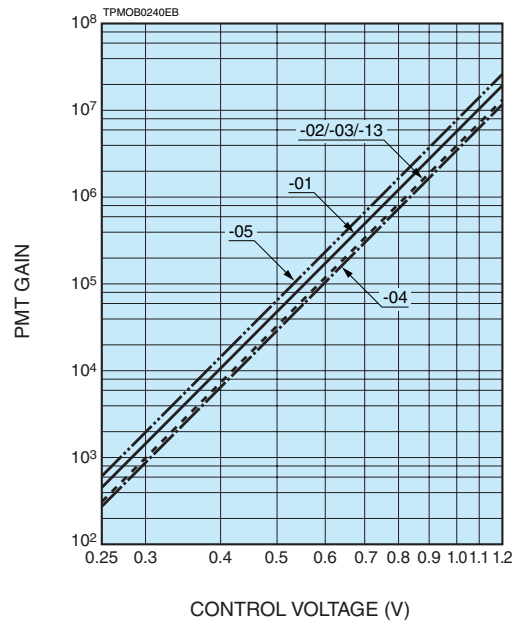


Figure 5: Frequency characteristics

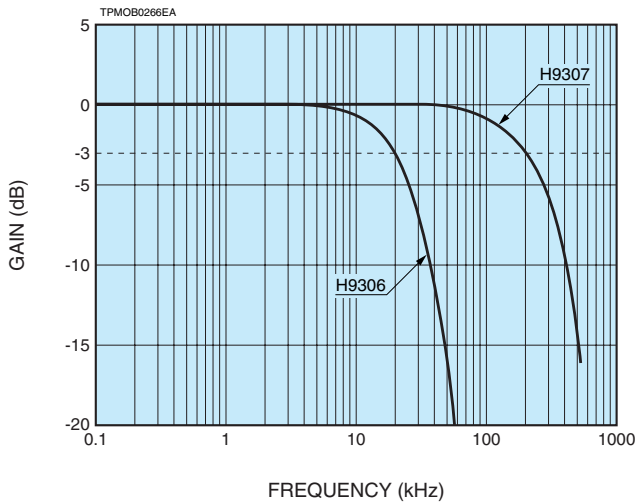


Figure 6: Ripple noise

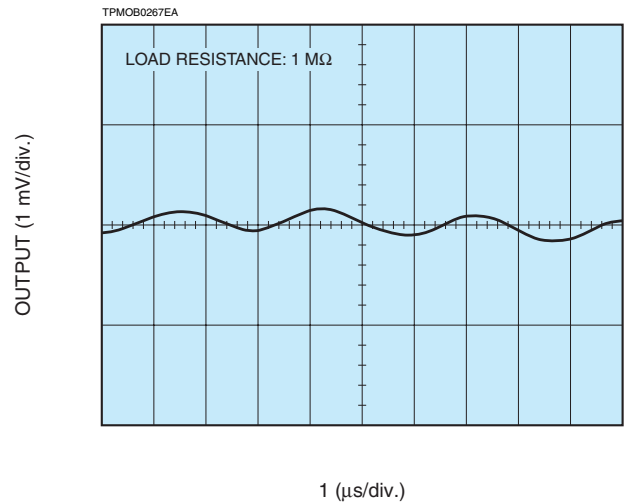
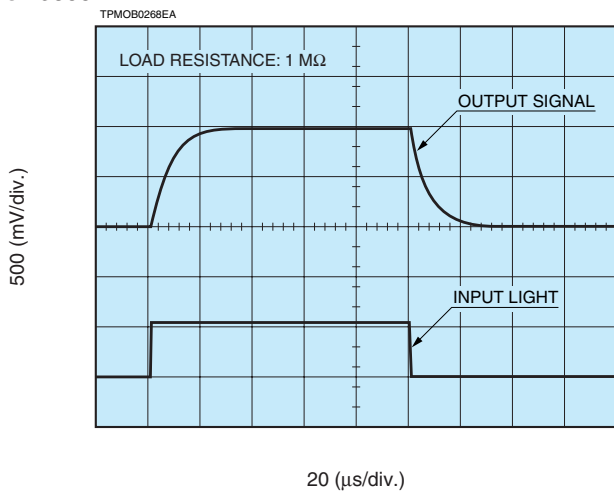
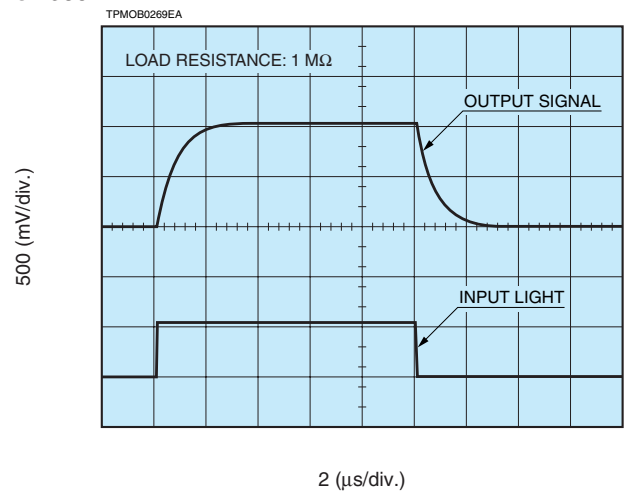


Figure 7: Output characteristics

●H9306

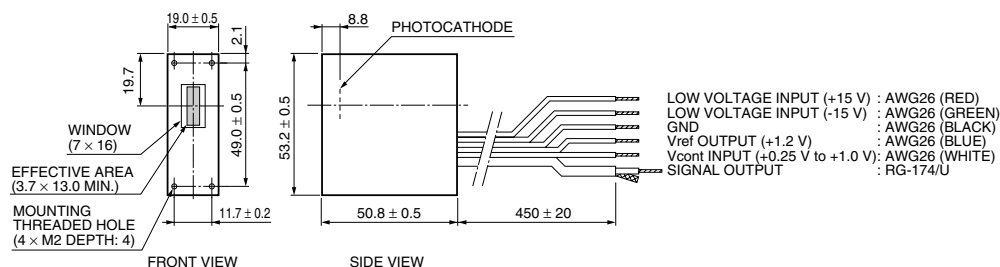


●H9307



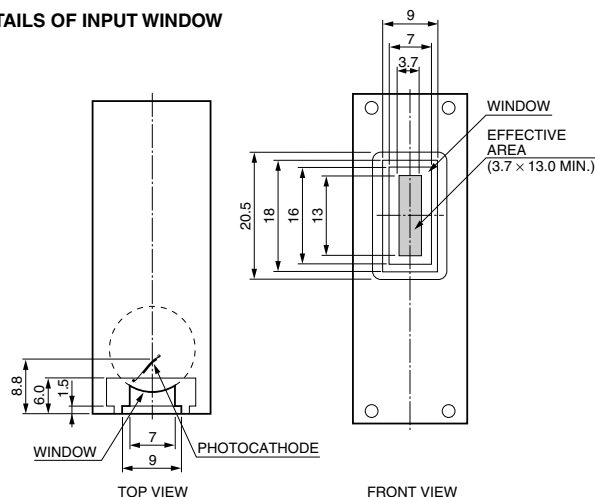
PHOTOSENSOR MODULES H9306/H9307 SERIES

Figure 8: Dimensional outlines (Unit: mm)



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DETAILS OF INPUT WINDOW



TPMOA0018EE

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
Terminal connection method	Binding post	—
Input voltage	AC100 to AC240	V
Operating ambient temperature	+5 to +50	°C
Dimensions (W × H × D) ^(B)	147 × 61 × 200	mm
Weight	Approx. 1.2	kg

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

(B) Excluding protuberance

HAMAMATSU PHOTONICS K.K. www.hamamatsu.com

HAMAMATSU PHOTONICS K.K., Electron Tube Division

314-5, Shimokanzo, Iwata City, Shizuoka Pref., 438-0193, Japan, Telephone: (81)539/62-5248, Fax: (81)539/62-2205

U.S.A.: Hamamatsu Corporation, 360 Foothill Road, Bridgewater, N.J. 08807-0910, U.S.A., Telephone: (1)908-231-0960, Fax: (1)908-231-1218 E-mail: usa@hamamatsu.com

Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49)8152-375-0, Fax: (49)8152-2658 E-mail: info@hamamatsu.de

France: Hamamatsu Photonics France S.A.R.L.: 19, Rue du Saule Trapu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: (33)1 69 53 71 00, Fax: (33)1 69 53 71 10 E-mail: infos@hamamatsu.fr

United Kingdom: Hamamatsu Photonics UK Limited: 2 Howard Court, 10 Tewin Road, Welwyn Garden City, Hertfordshire AL7 1BW, United Kingdom, Telephone: (44)1707-294888, Fax: (44)1707-325777 E-mail: info@hamamatsu.co.uk

North Europe: Hamamatsu Photonics Norden AB: Torshamnsgatan 35 SE-164 40 Kista, Sweden, Telephone: (46)8-509-031-00, Fax: (46)8-509-031-01 E-mail: info@hamamatsu.se

Italy: Hamamatsu Photonics Italia S.r.l.: Strada della Moia, 1 int. 6, 20020 Arese (Milano), Italy, Telephone: (39)02-93581733, Fax: (39)02-93581741 E-mail: info@hamamatsu.it

China: Hamamatsu Photonics (China) Co., Ltd.: B1201 Jiaming Center, No.27 Dongsanhuan Beilu, Chaoyang District, Beijing 100020, China, Telephone: (86)10-6586-6006, Fax: (86)10-6586-2866 E-mail: hpc@hamamatsu.com.cn

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