

OVERVIEW

The H14603 series is compact photomultiplier tube modules containing a metal package PMT, a high-voltage power supply circuit and a low-noise amplifier. Despite the size nearly equal to photodiodes, this PMT module provides high gain, wide dynamic range, and high speed response.

The amplifier with a frequency bandwidth of DC to 200 kHz converts the PMT current output to a voltage output so that signal can be easily processed.

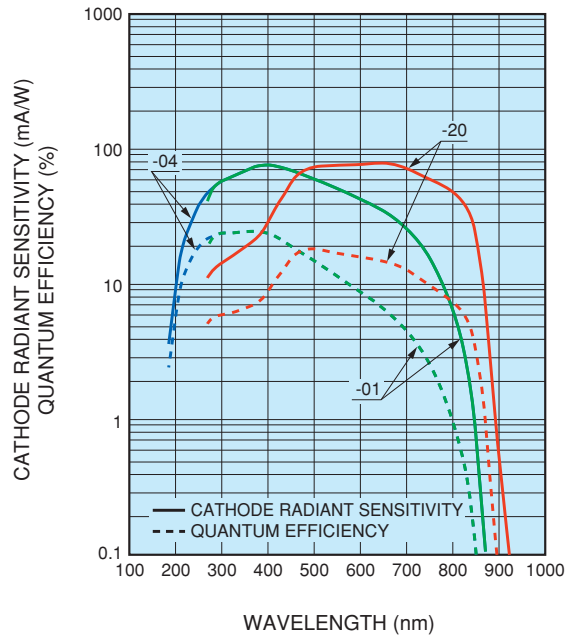
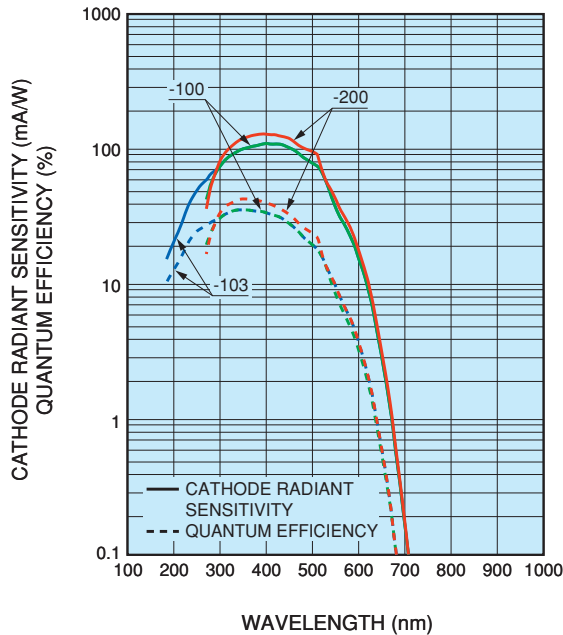


PRODUCT VARIATIONS

Type No.	Spectral response	Photocathode material	Input window material
H14603-100	300 nm to 650 nm	Super bialkali	Borosilicate glass
H14603-103	185 nm to 650 nm	Super bialkali	UV glass
H14603-200	300 nm to 650 nm	Ultra bialkali	Borosilicate glass
H14603-01	300 nm to 870 nm	Multialkali	Borosilicate glass
H14603-04	185 nm to 870 nm	Multialkali	UV glass
H14603-20	300 nm to 920 nm	Extended red multialkali	Borosilicate glass

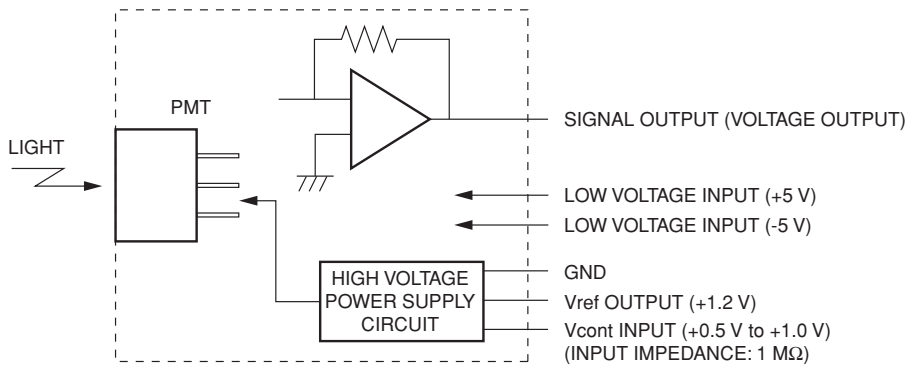
This product can't be used at vacuum environment or reduced pressure environment.

Figure 1: Typical spectral response



PHOTOMULTIPLIER TUBE MODULE H14603 SERIES

Figure 2: Schematic diagram



SPECIFICATIONS

(at +25 °C)

Parameter		H14603 series					Unit
Suffix		-100, -103	-200	-01, -04	-20	—	
Input voltage		±4.5 to ±5.5					V
Max. input voltage		±5.5					V
Max. input current *1*2		+6.5 / -3.5					mA
Max. output signal voltage *1		+4 (Load resistance 10 kΩ)					V
Max. control voltage		+1.0 (Input impedance 1 MΩ)					V
Recommended control voltage adjustment range		+0.5 to +1.0 (Input impedance 1 MΩ)					V
Effective area		φ8					mm
Peak sensitivity wavelength		400					nm
Cathode	Luminous sensitivity	Min.	80	100	100	350	μA/lm
		Typ.	105	135	200	500	
	Blue sensitivity index (Blue filter)	Typ.	13.5	15.5	—	—	—
	Red/White ratio	Typ.	—	—	0.25	0.45	—
	Radiant sensitivity *3	Typ.	110	130	77	78	mA/W
Anode	Luminous sensitivity *1	Min.	3.0 × 10 ⁶	4.0 × 10 ⁶	4.0 × 10 ⁶	1.4 × 10 ⁷	V/lm
		Typ.	1.1 × 10 ⁷	1.4 × 10 ⁷	2.0 × 10 ⁷	5.0 × 10 ⁷	
	Radiant sensitivity *1*3	Typ.	11	13	7.7	7.8	V/nW
	Voltage output depending or PMT dark current *1*4	Typ.	0.05	0.05	0.1	1	mV
	Max.	0.5	0.5	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 *1*5		Max.	0.5				mV
Settling time *6		Max.	10				s
Operating ambient temperature *7		+5 to +50					°C
Storage temperature *7		-20 to +50					°C
Weight		42					g

*1: Input voltage=±5.0 V, Control voltage=+0.9 V

*2: Control voltage=+0.9 V

*3: Measured at the peak sensitivity wavelength

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

*5: Cable RG-178B/U, Cable length 450 mm, Load resistance=1 MΩ, Load capacitance=14 pF

*6: The time required for the output to reach a stable level following a change in the control voltage from +0.9 V to +0.5 V.

*7: No condensation

Figure 3: Sensitivity adjustment method

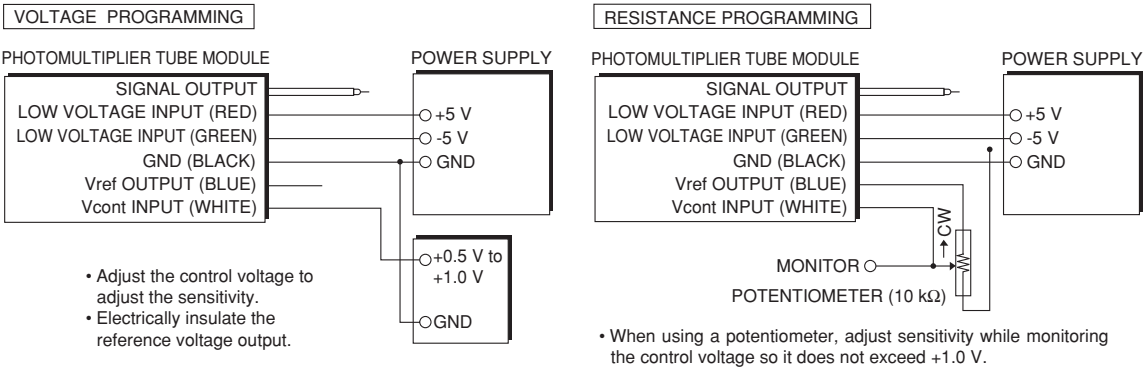


Figure 4: Typical gain

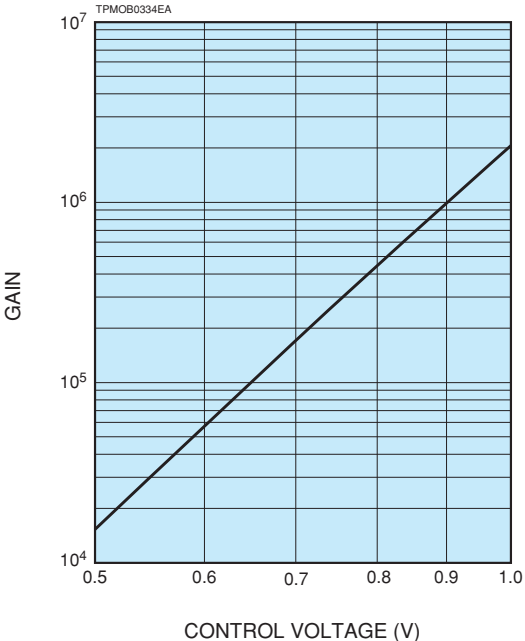


Figure 5: Typical frequency response

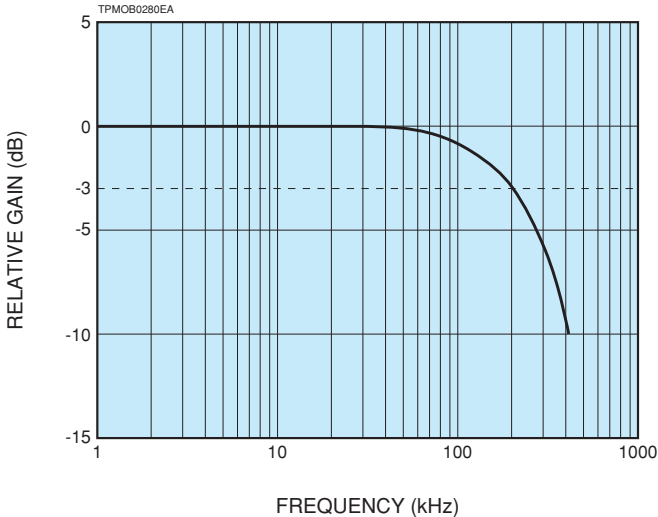


Figure 6: Typical ripple noise

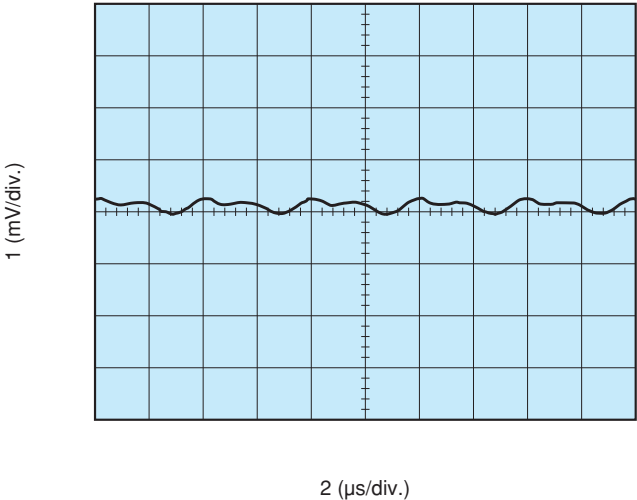
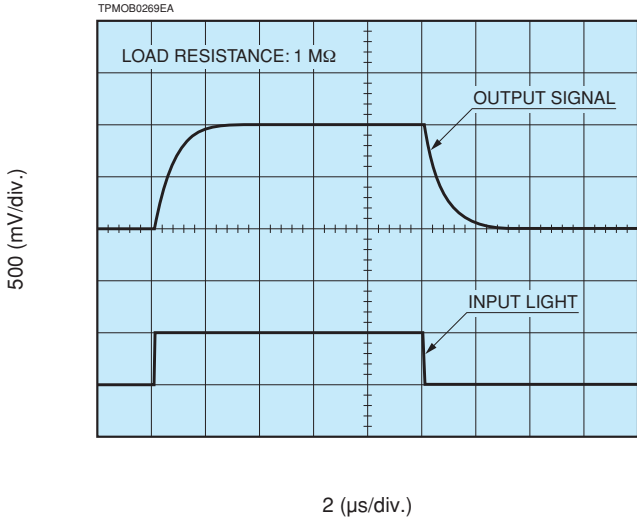
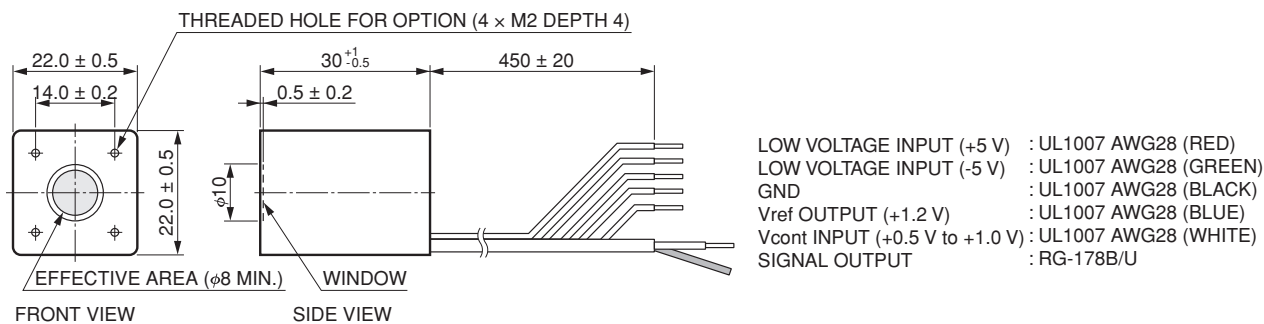


Figure 7: Typical output characteristics



PHOTOMULTIPLIER TUBE MODULE H14603 SERIES

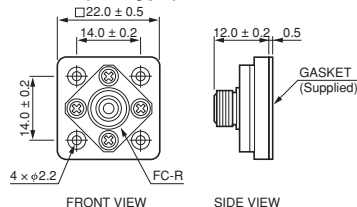
Figure 8: Dimensional outlines (Unit: mm)



OPTION

OPTICAL FIBER ADAPTER E5776 / E5776-51

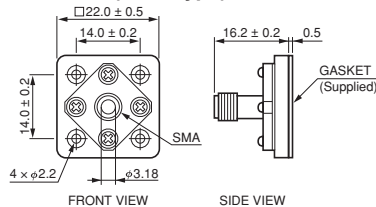
E5776 (FC Type)



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

TACCA0055EB

E5776-51 (SMA Type)

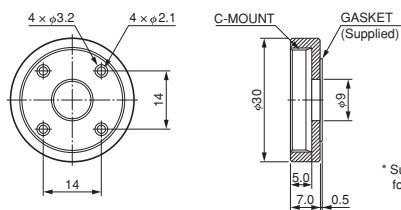


* Supplied with M2 screws(4 pcs) for fixing to module

TACCA0239EB



C-MOUNT ADAPTER A9865



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

TPMOA0056EB



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

RELATED PRODUCT

POWER SUPPLY FOR PHOTOMULTIPLIER TUBE MODULES C10709

The C10709 is the power supply for photomultiplier tube modules which has 5 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	±5	V
Output current	Max. 2.0 (+5 V), 0.2 (-5 V)	A
Control voltage ^(A) (variable voltage range)	+0.25 to +1.8	V
Input voltage	AC100 to AC240	V

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

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