

# Metal Package PMT

## Photosensor Modules H9656 Series



The H9656 series photosensor modules incorporate a metal package photomultiplier tube, a high-voltage power supply circuit with low power consumption and a low noise amplifier. The photomultiplier tube output current is converted into a voltage output for easy signal processing.

The internal amplifier is installed near the anode output pin of the photomultiplier tube to minimize the effects of external noise. The amplifier feedback resistance of 100 k $\Omega$  allows a current-to-voltage conversion coefficient of 0.1 V/ $\mu$ A and covers a wide frequency bandwidth from DC to 200 kHz.

### Product Variations

Type No.	Spectral Response	Current-to-voltage Conversion Factor	Frequency Bandwidth	Features
H9656	300 nm to 650 nm	0.1 V/ $\mu$ A	DC to 200 kHz	For general applications in visible range
H9656-01	300 nm to 850 nm			For general applications in visible to near IR range
H9656-02	300 nm to 880 nm			High sensitivity in near IR range
H9656-03	185 nm to 650 nm			For UV to visible range
H9656-04	185 nm to 850 nm			For UV to near IR range
H9656-06	185 nm to 650 nm			For UV to visible range (synthetic silica window) with higher sensitivity below 300 nm than -03 type
H9656-20	300 nm to 920 nm			Infrared-extended multialkali photocathode with enhanced sensitivity

### Specifications

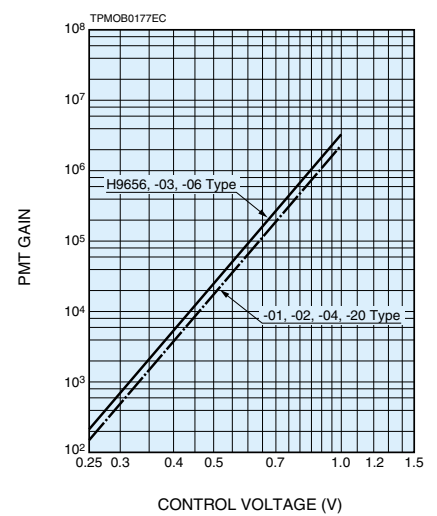
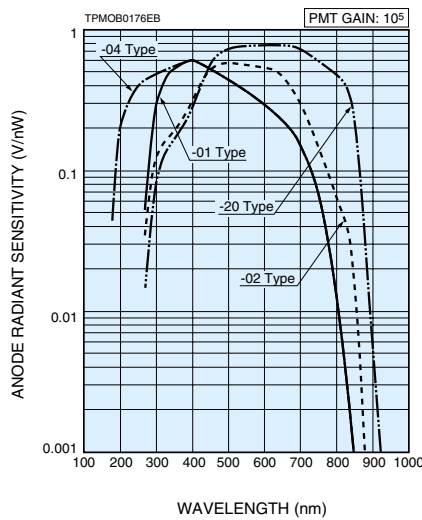
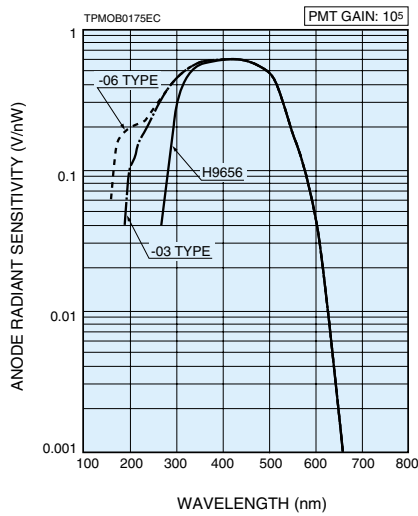
Parameter			H9656 Series				Unit
Suffix			None/-03/-06	-01/-04	-02	-20	—
Input Voltage			±11.5 to ±15.5				V
Max. Input Voltage			±18				V
Max. Input Current			+38/-8				mA
Max. Output Signal Voltage			+10 (Load resistance 10 kΩ)				V
Max. Control Voltage			+1.0 (Input impedance 100 kΩ)				V
Recommended Control Voltage Adjustment Range			+0.25 to +0.9				V
Effective Area			φ8				mm
Sensitivity Adjustment Range			1: 10 <sup>4</sup>				—
Peak Sensitivity Wavelength			420	400	500	630	nm
Cathode	Luminous Sensitivity	Min.	40	80	200	350	μA/lm
		Typ.	70	150	250	500	
	Blue Sensitivity Index (CS 5-58)	Typ.	8	—	—	—	—
	Red/White Ratio	Typ.	—	0.2	0.25	0.45	—
	Radiant Sensitivity *1	Typ.	62	60	58	78	mA/W
Anode	Luminous Sensitivity *2	Min.	1.0 × 10 <sup>6</sup>	1.5 × 10 <sup>6</sup>	2.5 × 10 <sup>6</sup>	3.5 × 10 <sup>6</sup>	V/lm
		Typ.	5.0 × 10 <sup>6</sup>	7.5 × 10 <sup>6</sup>	1.25 × 10 <sup>7</sup>	2.5 × 10 <sup>7</sup>	
	Radiant Sensitivity *1 *2	Typ.	4.3	3.0	2.9	3.9	V/nW
	Voltage Output Depending on PMT Dark Current *2 *3 *4	Typ.	0.02	0.04	0.2	0.2	mV
		Max.	0.2	0.4	2.0	2.0	
Current-to-Voltage Conversion Factor			0.1				V/μA
Offset Voltage		Typ.	±1				mV
Ripple Noise *2 *5 (peak to peak)		Max.	1.5				mV
Settling Time *6		Max.	0.2				s
Operating Ambient Temperature *7			+5 to +45				°C
Storage Temperature *7			-20 to +50				°C
Weight			90				g

\*1: Measured at the peak sensitivity wavelength      \*2: Control voltage = +0.8 V      \*3: After 30 minutes storage in darkness

\*4: Output of anode dark current      \*5: Cable RG-174/U, Cable length 450 mm, Load resistance = 1 M $\Omega$ , Load capacitance = 22 pF

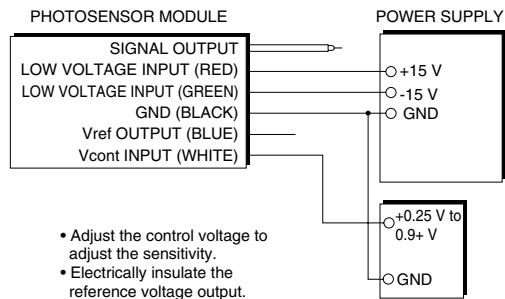
\*6: The time required for the output to reach a stable level following a change in the control voltage from +1.0 V to +0.5 V.      \*7: No condensation

## Characteristics (Anode radiant sensitivity, PMT gain)

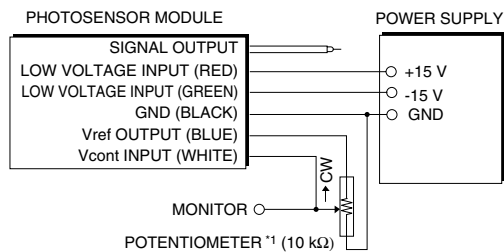


## Sensitivity Adjustment Method

### VOLTAGE PROGRAMMING



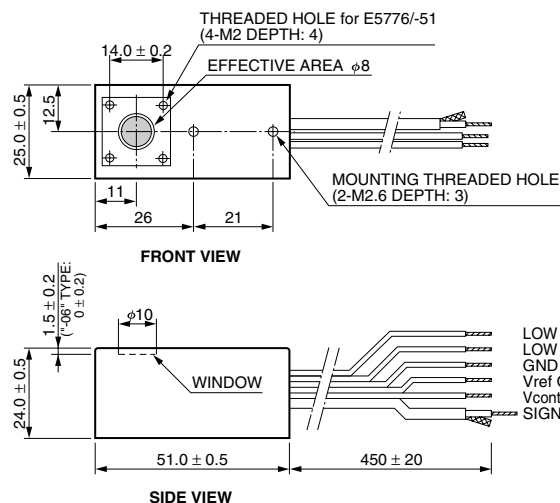
### RESISTANCE PROGRAMMING



\*1: When using a potentiometer to adjust sensitivity, monitor the control voltage so it does not exceed +1.0 V.

TPMOC0186EA

## Dimensional Outlines (Unit: mm)

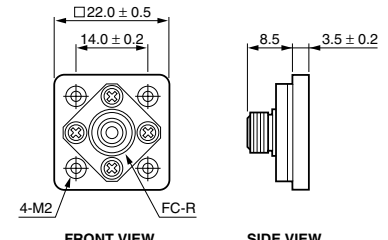


LOW VOLTAGE INPUT (+15 V): AWG26 (RED)  
 LOW VOLTAGE INPUT (-15 V): AWG26 (GREEN)  
 GND: AWG26 (BLACK)  
 Vref OUTPUT (+1.2 V): AWG26 (BLUE)  
 Vcont INPUT (+0.25 V to +0.9 V): AWG26 (WHITE)  
 SIGNAL OUTPUT: RG-174/U

TPMOA0031EA

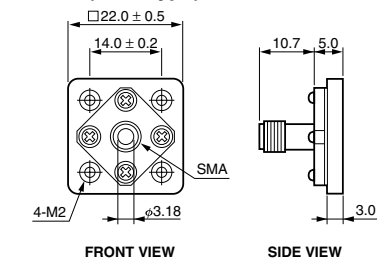
## Options (Optical Fiber Adapter) (Unit: mm)

### E5776 (FC Type)



TACCA0055EA

### E5776-51 (SMA Type)



TACCA0239EA