

Gated PMT Modules

H7680/-01



The H7680/-01 PMT modules are capable of high-speed, high-repetition gated operation. An optimum design in the combination of circuit and photomultiplier tube delivers excellent gating characteristics including a minimum gate width of 30 ns (H7680-01), 100 kHz repetition rate, and a gate extinction ratio of 10^7 . The H7680/-01 can operate on a low +15 V supply because of incorporating high-voltage power supply circuit. And, the incorporated PMT gain can be controlled by adjusting the control voltage between +2 V to +5 V.

Product Variations

Type No.	Spectral Response	Features
H7680	300 nm to 650 nm	Normally ON type
H7680-01		Normally OFF type

Specifications

Parameter	H7680 / H7680-01	Unit
Supply Voltage	+14 to +16	V
Max. Input Voltage	+17	V
Max. Input Current	400	mA
Max. Surge Current	4.0	A
Effective Area	$\phi 24$	mm
Peak Sensitivity Wavelength	420	nm
Pulse Linearity *1	100	mA
Max. Output Signal Current	100	μ A
Operating Ambient Temperature	+5 to +40	$^{\circ}$ C
Storage Temperature	-20 to +50	$^{\circ}$ C
Weight	850	g

Parameter	H7680 / H7680-01	Unit
Photocathode Material	Bialkali	—
Window Material	Borosilicate glass	—
Dynode Structure	Linear focused type	—
Number of Dynodes	10	—
Cathode	Luminous Sensitivity	95
Characteristics	Radiant Sensitivity *2	88
	Blue Sensitivity Index (CS 5-58)	11.0
Anode	Luminous Sensitivity	475
	Radiant Sensitivity *2	4.4×10^5
Characteristics *1	Dark Current *3	Typ.
		Max.
Gain *1	5×10^6	—
Time *1 Response	Rise Time	1.7
	Transit Time	16
	TTS	500

*1: Control voltage = +4.5 V

*2: Measured at the peak sensitivity wavelength

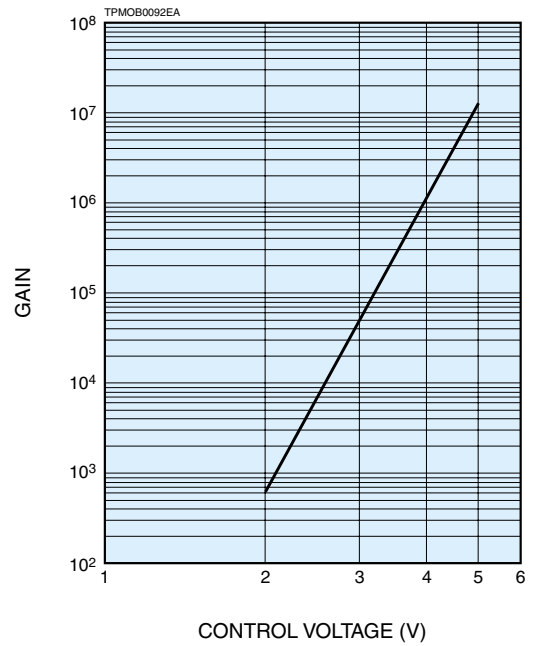
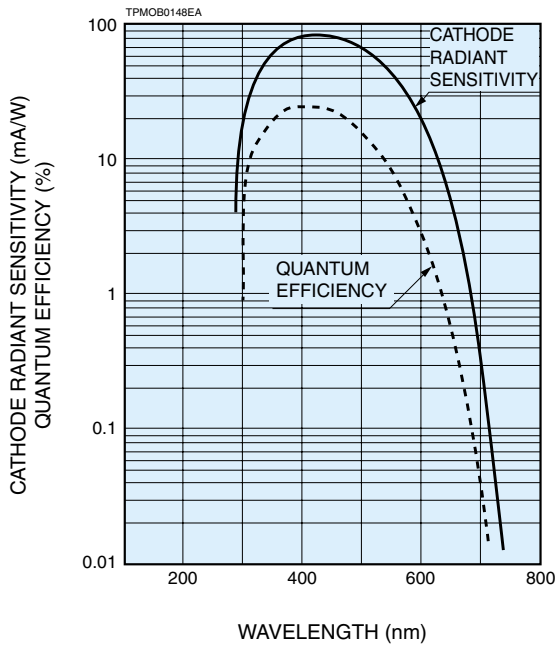
*3: Measured when photomultiplier tube operation is ON. After 30 minute storage in darkness

PMT Module with Added Functions

Parameter		H7680	H7680-01	Unit
Gate Mode	Mode	Normally ON	Normally OFF	—
	Gate Width (FWHM)	OFF time: 100 ns to ∞ ON time: 30 ns to ∞		—
	Rise Time, Fall Time	Max.	20	ns
	Repetition Rate	Max.	100	kHz
	Switching Ratio		10^7	—
	Switching Noise *4	Max.	60	mV
	Delay Time	Max.	200	ns
Jitter	Max.	1	ns	
Gate Signal Input	Level	C-MOS (High level: +3.5 V to +5 V)		—
	Input Impedance	50		Ω
	Pulse Width	100 ns to ∞	30 ns to ∞	—
Gain Control	Input Voltage	+2.0 to +5.0		V
	Input Impedance	10		k Ω

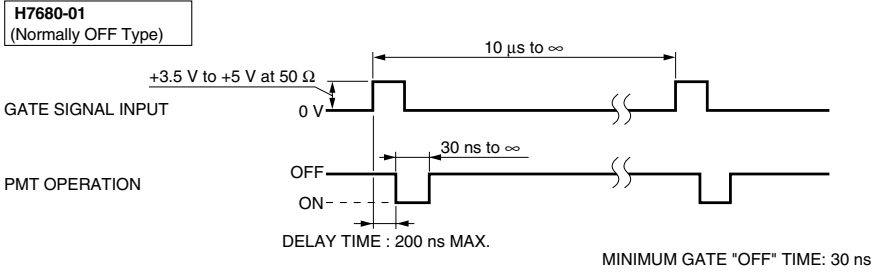
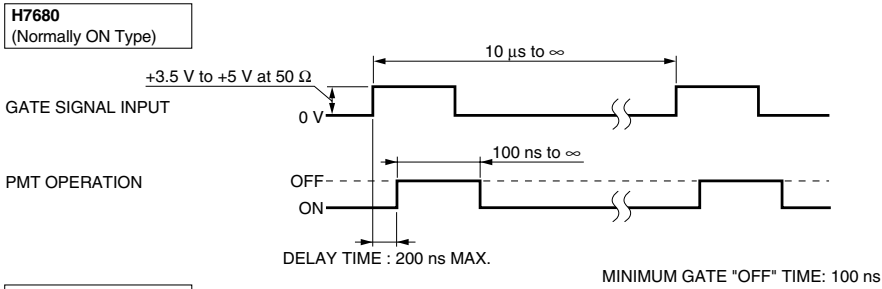
*4: Load resistance 50 Ω , peak to peak

Characteristics (Cathode radiant sensitivity, Quantum efficiency, Gain)



Gated PMT modules

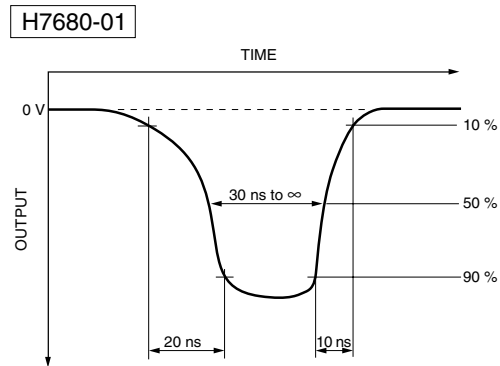
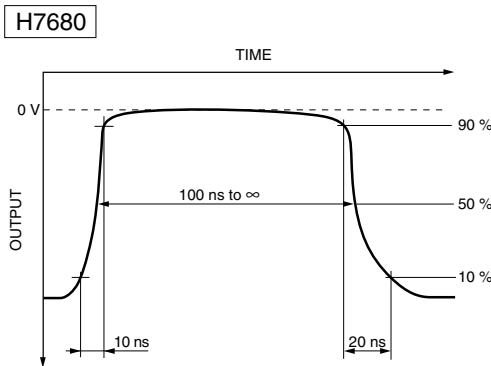
Gate Timing Chart



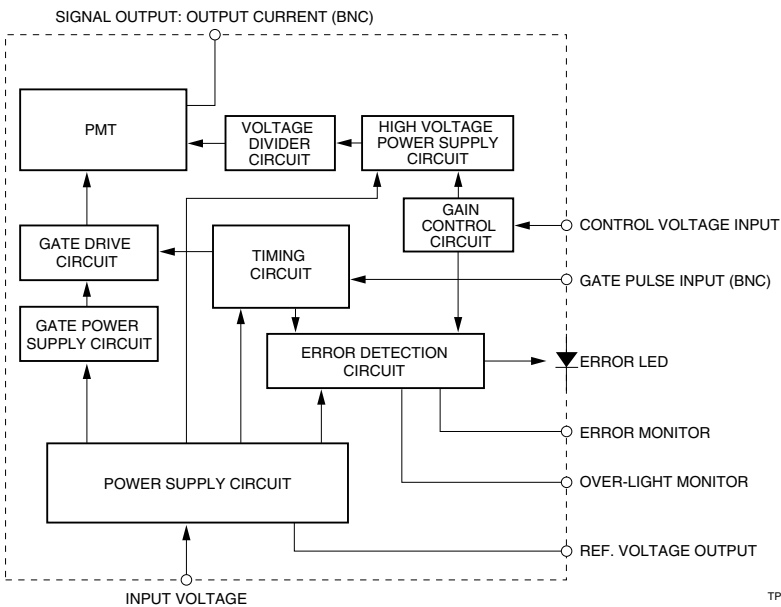
Gate time equals the pulse width of input gate signal.

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Output Examples

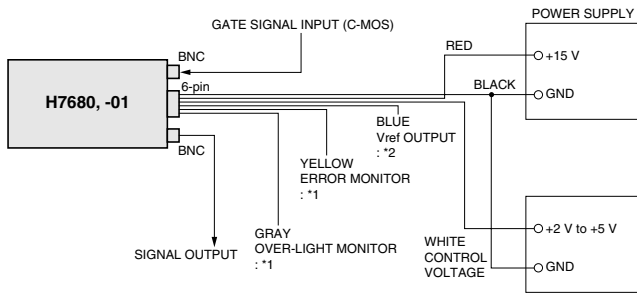


Block Diagram



Sensitivity Adjustment Method

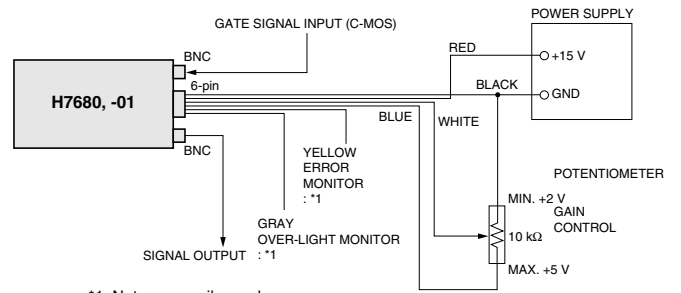
Voltage Programming



*1: Not necessarily used.
*2: Do not use.

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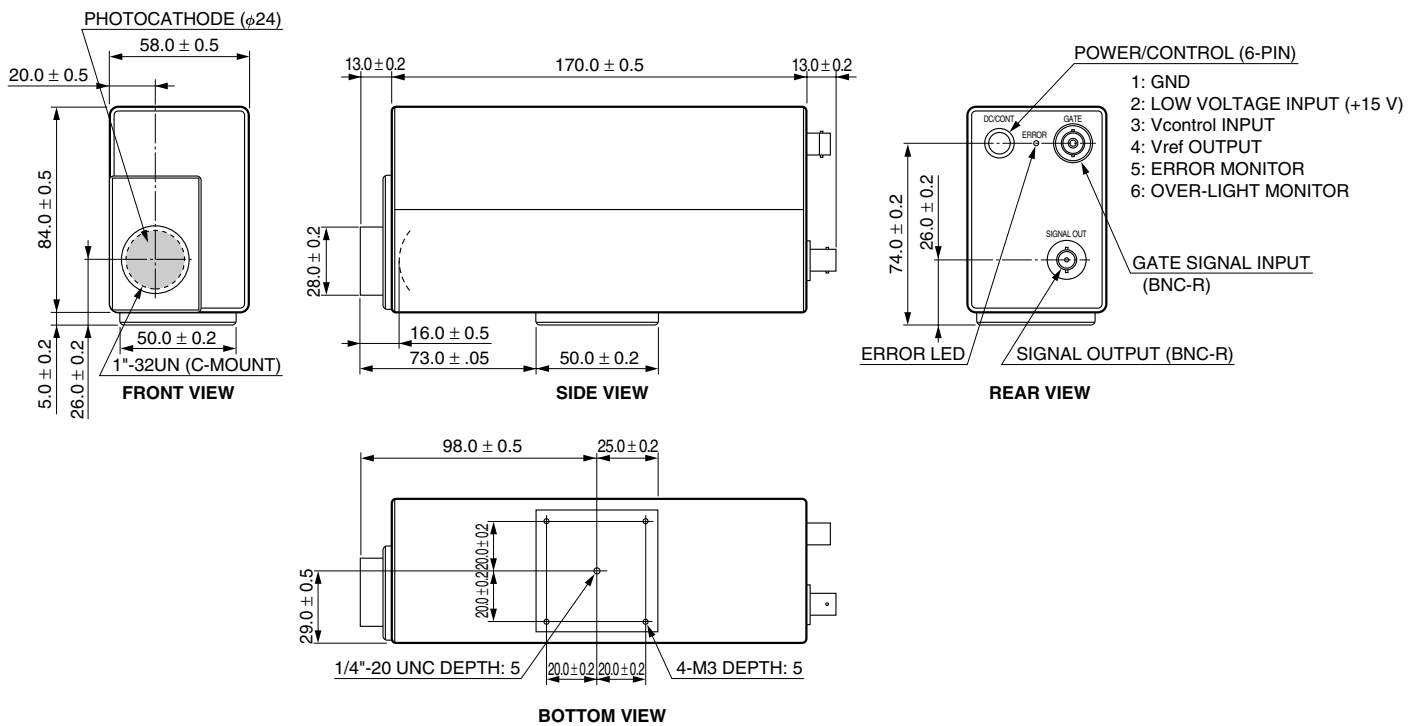
Resistance Programming



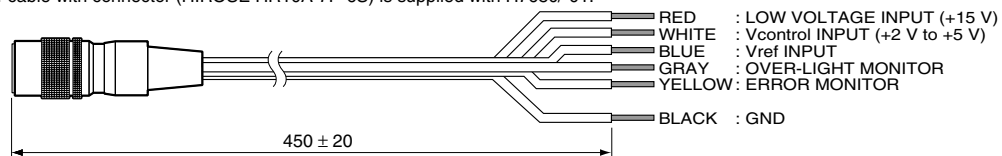
*1: Not necessarily used.

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Dimensional Outline (Unit: mm)



Power cable with connector (HIROSE HR10A-7P-6S) is supplied with H7680/-01.



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