HAMAMATSU

PHOTON IS OUR BUSINESS

PHOTOSENSOR MODULE WITH THERMOELECTRIC COOLER

H7844

Improved detection limit for near infrared (to 900 nm)

FEATURES

- Low dark current (1/50 of that at room temperature)
- Fast cooling (3 minutes) by thermoelectric cooler directly coupled to the photocathode
- Wide dynamic range
- Free of condensation

APPLICATIONS

- NOx Gas Detection
- Fluorescence Detection (LIF, Fluorescence Spectrophotometer)
- Chemiluminescence Detection
- NIR Spectroscopy

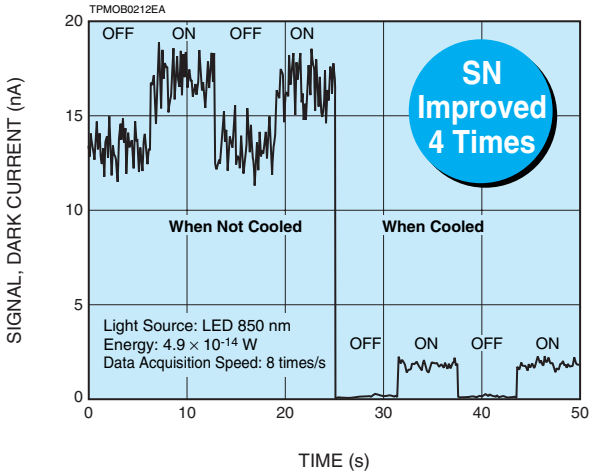
COOLING SPECIFICATIONS

Parameter	Description / Value	Unit
Cooling Method	Thermoelectric cooling	—
Max. Cooling Temperature (ΔT) *1 *2	20	°C
Cooling Time *1	Approx. 3	min

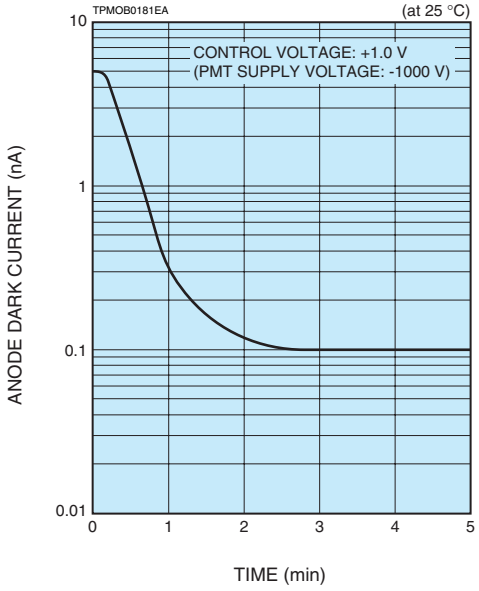
*1: Input current to thermoelectric cooler = 2.1 A *2: Photocathode temperature difference from ambient

COOLING CHARACTERISTICS

● S/N Ratio During Cooling



● Anode dark current after cooling has started



PHOTOSENSOR MODULE
WITH THERMOELECTRIC COOLER H7844

SPECIFICATIONS

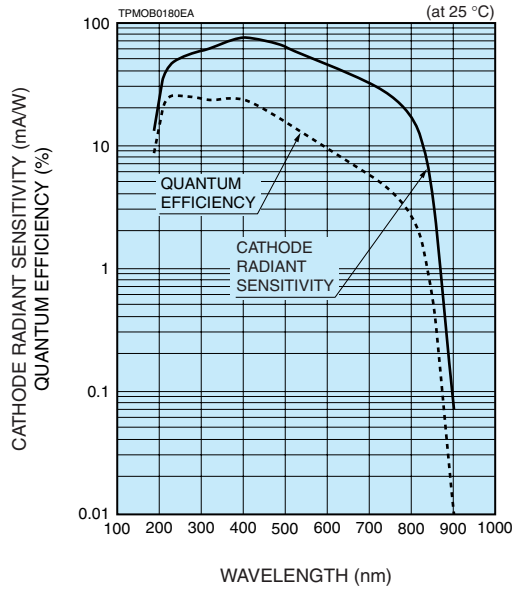
(at 25 °C)

Parameter			Value	Unit
Input Voltage			+11.5 to +15.5	V
Max. Input Voltage for Main Unit			+18	V
Max. Input Current for Main Unit			40	mA
Max. Input Voltage for Thermoelectric Cooler			3.75	V
Max. Input Current for Thermoelectric Cooler			3.9	A
Max. Output Signal Current			58	µA
Max. Control Voltage			+1.2 (Input impedance: 100 kΩ)	V
Recommended Control Voltage Adjustment Range			+0.3 to +1.1	V
Effective Area			10 × 14	mm
Spectral Response Range			185 to 900	nm
Peak Sensitivity Wavelength			400	nm
Cathode	Luminous Sensitivity	Min.	140	µA/lm
		Typ.	300	
	Blue Sensitivity Index (CS 5-58)	Typ.	9.0	—
	Red / White Ratio (R-68)	Typ.	0.3	—
	Radiant Sensitivity *3	Typ.	76	mA/W
Anode	Luminous Sensitivity *4	Min.	400	A/lm
		Typ.	3000	
	Radiant Sensitivity *3 *4	Typ.	7.6×10^5	A/W
	Gain *4	Typ.	1.0×10^7	—
	Dark Current *4 *5	Typ.	0.1	nA
		Max.	1.0	
Equivalent Noise Input (ENI) *3 *4 *5			2.4×10^{-17}	W
Rise Time *4			2.2	ns
Settling Time *6			0.2	s
Operating Ambient Temperature *7			+5 to +40	°C
Storage Temperature *7			-20 to +50	°C
Weight			296	g

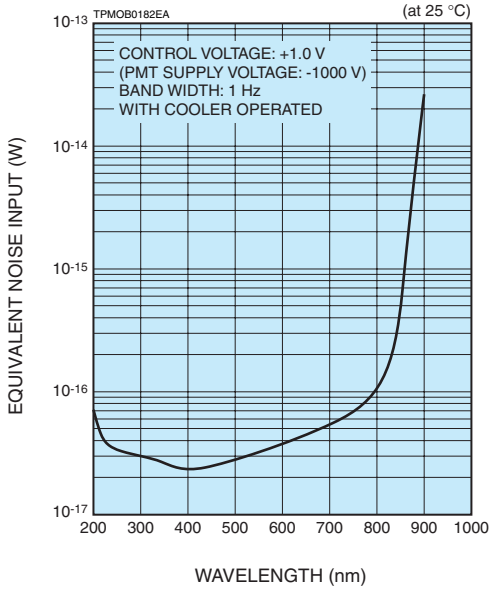
*3: At peak sensitivity wavelength
*4: Control voltage +1.0 V (PMT supply voltage -1000 V), with cooler operated
*5: After 30 minutes storage in darkness
*6: The time required for the output to reach a stable level following a change in the control voltage from +1.0 V to +0.5 V.
*7: No condensation

CHARACTERISTICS

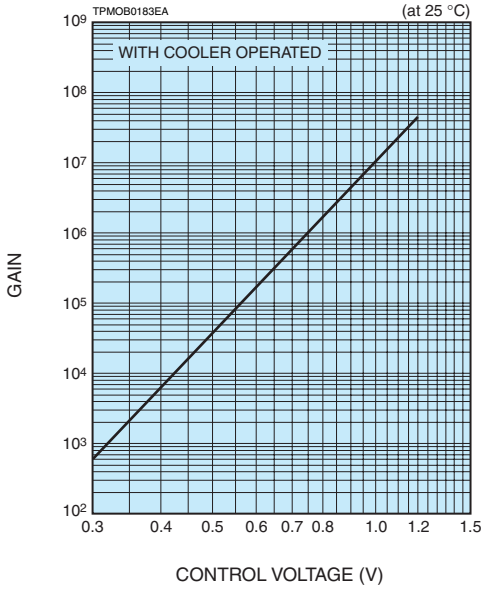
●Spectral Response



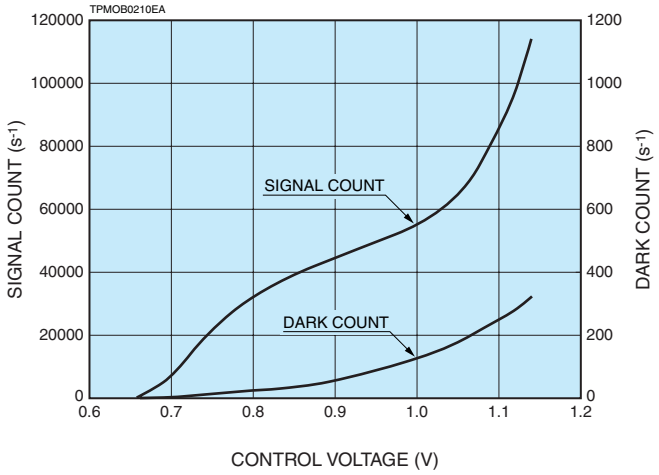
●Equivalent Noise Input (ENI)



●Gain vs. Control Voltage

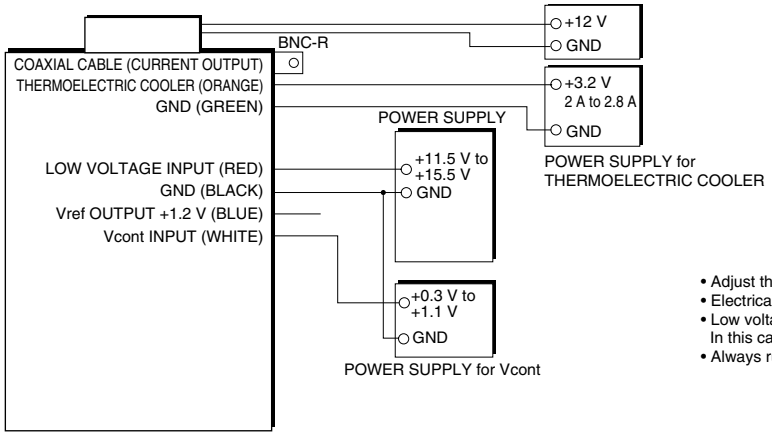


●Plateau Characteristic



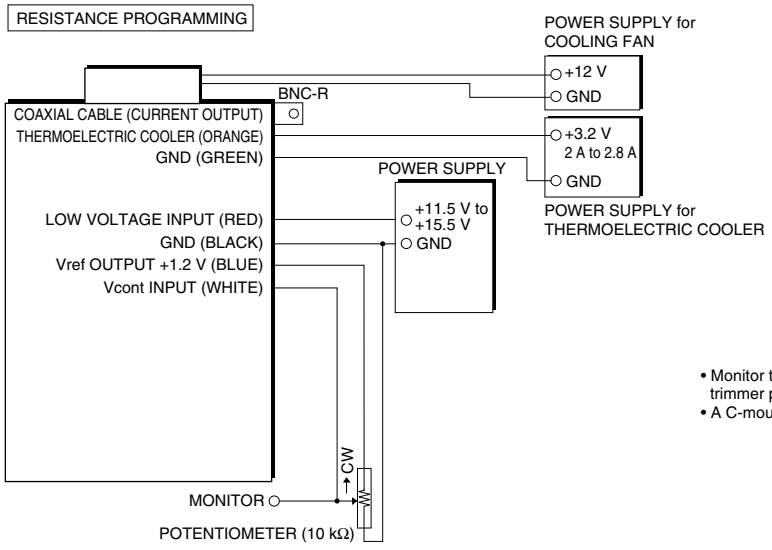
SENSITIVITY ADJUSTMENT AND COOLING OPERATION

VOLTAGE PROGRAMMING



- Adjust the control voltage when adjusting the anode sensitivity of the PMT.
- Electrically isolate the reference voltage output. (This output is not used.)
- Low voltage input can also be used to supply the power to the cooling fan. In this case, the low voltage input must be set to +12 V.
- Always run the cooling fan while the thermoelectric cooler is operating.

RESISTANCE PROGRAMMING



- Monitor the control voltage when adjusting the anode sensitivity of the PMT with a trimmer potentiometer.
- A C-mount adaptor is available for H7844. (Sold separately)

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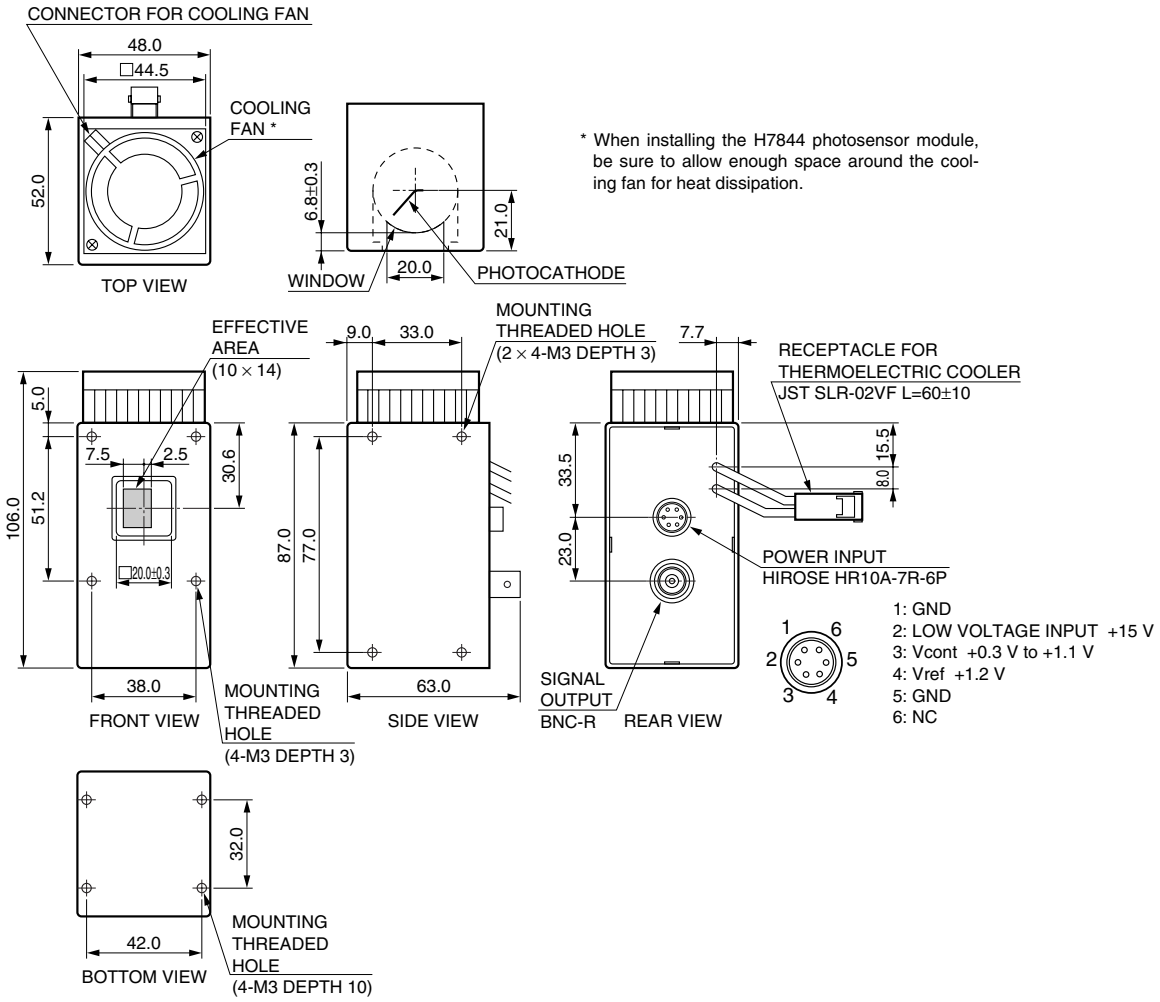
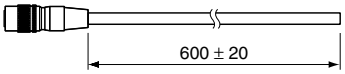
DIMENSIONAL OUTLINE (Unit: mm)

*Dimensional tolerance is ±0.5 mm unless otherwise specified.



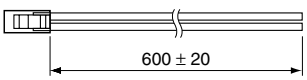
ACCESSORIES (Supplied)

Power cable with connector (HIROSE HR10A-7P-6S)



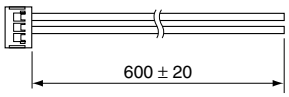
BLACK : GND
RED : LOW VOLTAGE INPUT (+11.5 to +15.5 V)
WHITE : Vcont INPUT (+0.3 V to +1.2 V)
BLUE : Vref OUTPUT (+1.2 V)

Thermoelectric cooler cable (JST SLP-02V)



GND : AWG18 (GREEN)
THERMOELECTRIC COOLER : AWG18 (ORANGE, +3.2 V, 2 A to 2.8 A)

Cooling fan lead wire (AMP 179228-3)



FAN : AWG24 (RED, +12 V)
GND: AWG24 (BLACK)

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