LOW-LIGHT-LEVEL MEASUREMENT IN THE NIR

THERMOELECTRIC COOLED

NIR-PMT UNIT

H10330B-25/-45/-75

Wavelength Range: 950 nm to 1200 nm / 950 nm to 1400 nm / 950 nm to 1700 nm, TE Cooled, High Speed, Suitable for Photon Counting

Left: NIR-PMT Main Unit, Right: Controller

OVER VIEW

The H10330B series is an NIR-PMT unit using a compact NIR-PMT (near infrared photomultiplier tube) developed by our advanced photocathode technology. The NIR-PMT is contained in a thermally insulated sealed-off housing evacuated to a high vacuum. The internal thermoelectric cooler eliminates the need for liquid nitrogen and cooling water. The light input window of these unit use a condenser lens to provide a virtually larger photosensitive area allowing easy optical coupling. Adapters for connection to an optical fiber and monochromator are also available as options.

APPLICATIONS

- Photoluminescence Measurement
- Singlet Oxygen Measurement
- LIDAR
- Raman Spectroscopy Measurement
- Cathodoluminescence Measurement
- Fluorescence, Fluorescence Life Time Measurement
- Optical Communication Device Evaluation

FEATURES

- Compact and lightweight due to vacuum sealed-off thermal insulation technology
- High Sensitivity (Applicable to Photon Counting)
- Fast Time Response
  Rise Time: 0.9 ns, T.T.S.: 400 ps
- Simple Operation by Air Cooled TE Cooler
  No Liquid Nitrogen, No Cooling Water is Necessary
- Operable in 20 min after Switched ON
- Large Detection Area
  ϕ18 mm for Collimated Light
- HV Power Supply with Interlock Function
- Optional Adapters are Available
  For Optical Fiber
  For Monochromator

HAMAMATSU

PHOTON IS OUR BUSINESS

SPECIFICATIONS

GENERAL

Parameter	H10330B-25	H10330B-45	H10330B-75	Unit
Spectral Response	950 to 1200	950 to 1400	950 to 1700	nm
Photocathode Material	InP/InGaAsP	InP/InGaAsP	InP/InGaAs	—
Detection Area for Collimated Light	ϕ18			mm
Effective Area of PMT	ϕ1.6			mm
PMT Operating Temperature	-60			°C
PMT Operating Guaranteed Voltage	-500 to -900			V
Operating Ambient Temperature	+5 to +40			°C
Operating Ambient Humidity ①	Less than 80			%
Storage Temperature	-20 to +50			°C
Storage Humidity ①	Less than 80			%

① No condensation

MAXIMUM RATING

Parameter	H10330B-25	H10330B-45	H10330B-75	Unit
PMT Supply Voltage	-900			V
Average PMT Anode Current	1			µA

CHARACTERISTICS (at -800 V, -60 °C)

Parameter		H10330B-25			H10330B-45			H10330B-75			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
Cathode Sensitivity ②	Quantum Efficiency	1	2	—	1	2	—	1	2	—	%
	Radiant	—	18	—	—	21	—	—	25	—	mA/W
Anode sensitivity ②	Radiant	—	1.8×10^4	—	—	2.1×10^4	—	—	2.5×10^4	—	A/W
Gain		5×10^5	1×10^6	—	5×10^5	1×10^6	—	5×10^5	1×10^6	—	—
Anode Dark Current ②③		—	0.4	1	—	4	10	—	40	100	nA
Anode Dark Count ③		—	2.5×10^3	—	—	2.5×10^4	—	—	2.5×10^5	—	s^{-1}
Time Response	Anode Pulse Rise Time	—	0.9	—	—	0.9	—	—	0.9	—	ns
	Anode Pulse Fall Time	—	1.7	—	—	1.7	—	—	1.7	—	ns
	Transit Time Spread	—	0.4	—	—	0.4	—	—	0.4	—	ns

② At 1100 nm (H10330B-25), at 1300 nm (H10330B-45), at 1500 nm (H10330B-75)
③ At 30 minutes after high voltage is applied with shutter closed and anode radiant sensitivity = 10000 A/W.

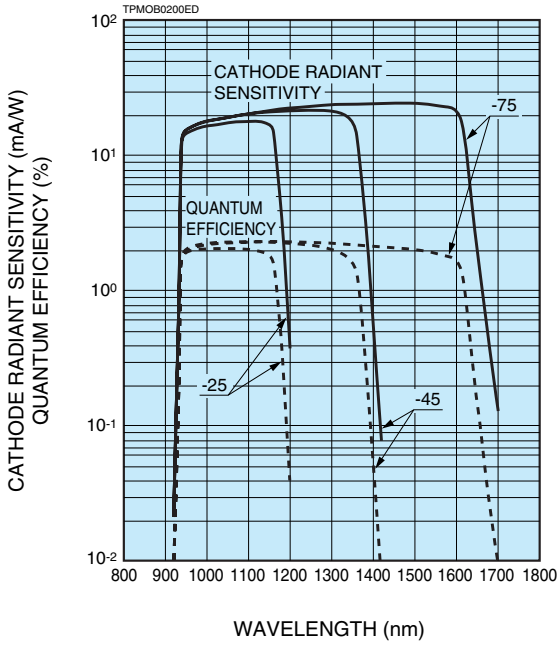
MAIN UNIT, CONTROLLER

Parameter		Value / Description	Unit
Cooling Method		Thermoelectric (Forced Air Cooling)	—
Condenser Lens Material		BK7 AR Coating (λ 900 nm to 1700 nm)	—
Diameter of the Condenser Lens (Effective Area)		ϕ20 (ϕ18)	mm
F Number of the Condenser Lens (Focal length) ④		1.4 (f=25.7)	—
Cooling Time Required for Operation		Approx. 20	min
Protection Function		High Voltage Interlock for Inappropreate Temperature	—
Input Voltage (AC)		100 to 240 (±10 %) (50 Hz / 60 Hz)	V
Dimensions (W × H × D) ⑤	Main Unit	100 × 186 × 150	mm
	Controller	102 × 131 × 279.5	
Weight	Main Unit ⑥	Approx. 2.13	kg
	Controller ⑦	Approx. 2.90	

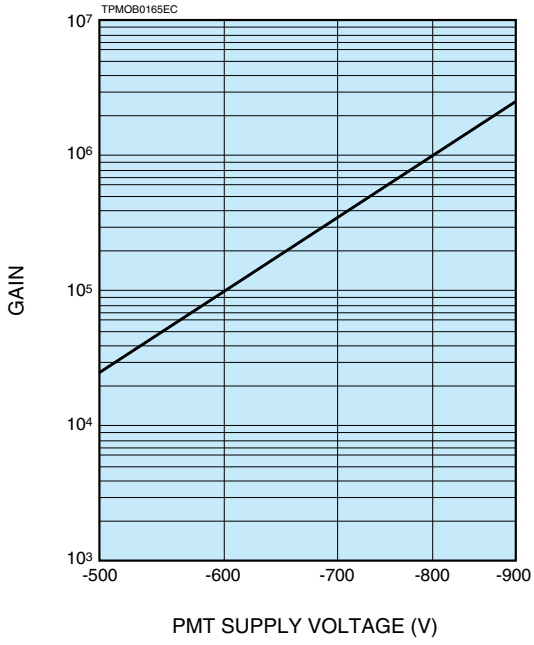
④ At 1300 nm
⑤ Excluding projections.
⑥ Including resistor box with BNC connectors.
⑦ Including high voltage cable and control cable.

CHARACTERISTICS

●Spectral Response

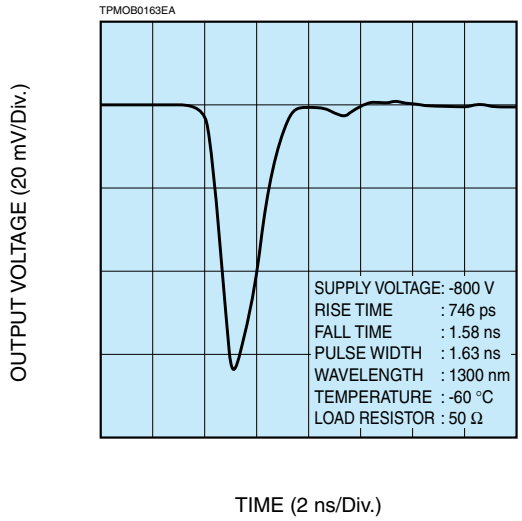


●Typical Gain

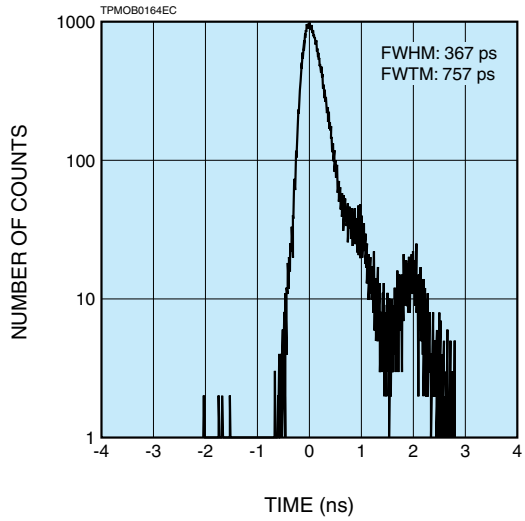


●Timing Properties

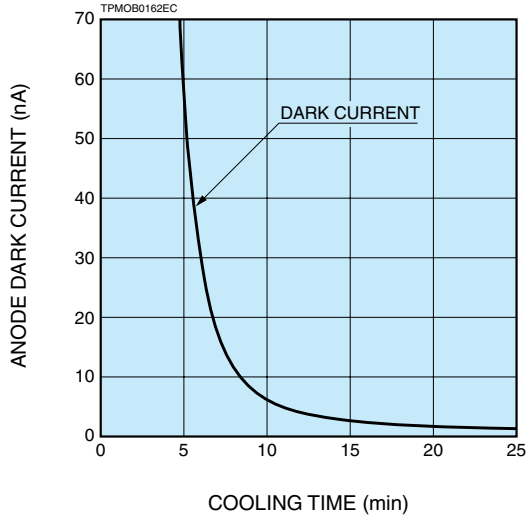
Waveform



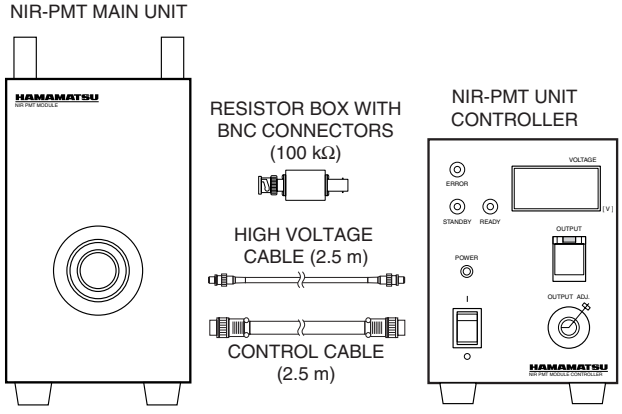
Transit Time Spread (T.T.S.)



●Dark Current vs. Cooling Time (H10330B-45)



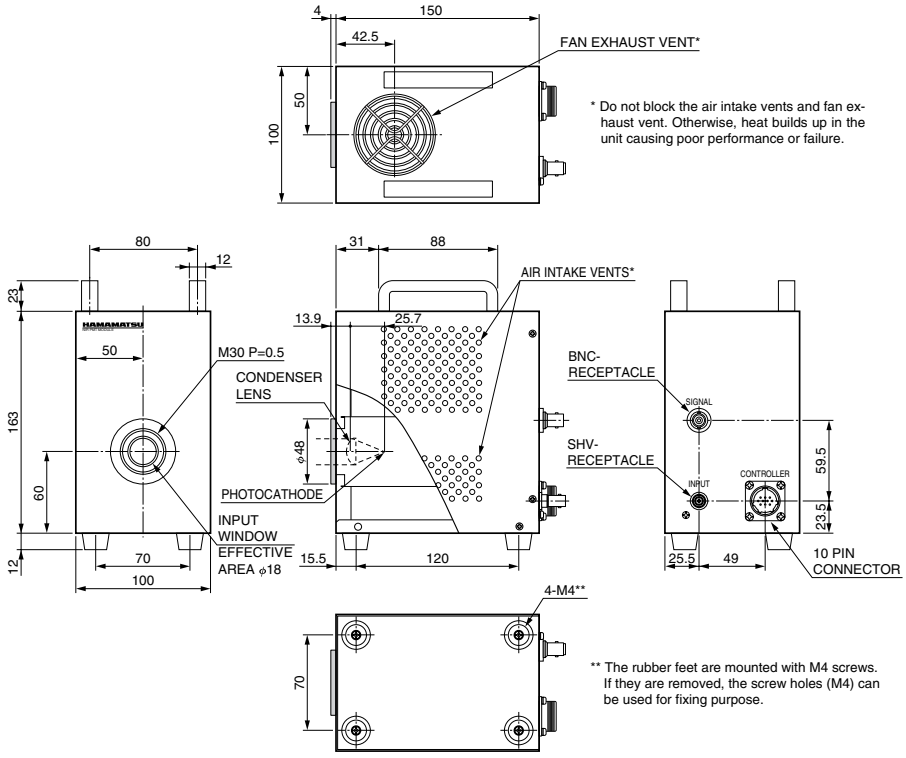
SYSTEM CONFIGURATION
(CONNECTION DIAGRAM)



TPMOC0199EB

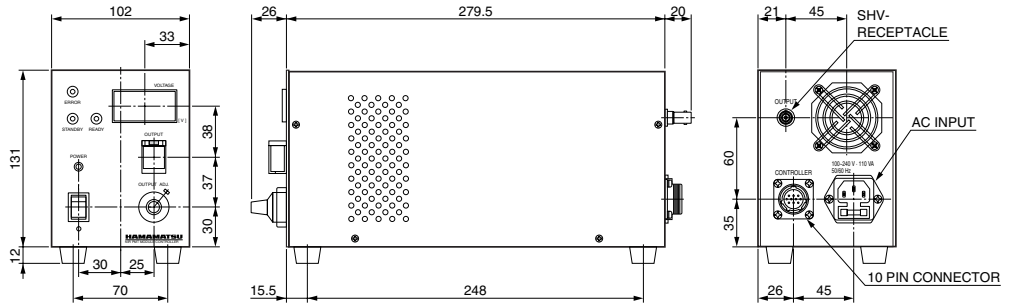
DIMENSIONAL OUTLINES (Unit: mm)

●NIR-PMT Main Unit



TPMOA0040EB

●NIR-PMT Unit Controller



TPMOA0041EC

OPTIONS (sold separately)

Adapters to match optical fiber connectors or monochromators are available.

●Optical Fiber Adapters

These adapters allow light from an optical fiber to efficiently enter the PMT. Specify an FC type or SMA type adapter when ordering.

●Monochromator Adapter

The adapter collects light from a monochromator efficiently. Please inform us of the type of the monochromator.

●Resistor Box with BNC Connectors

A 50 Ω resistor box with BNC connectors is available.
Use the 100 kΩ resistor box (supplied with H10330B) for use with a lock-in amplifier.

*Please contact your local Hamamatsu office for any assistance.

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

TPMO1056E03
OCT. 2015 IP