

Thermoelectric cooled NIR-PMT unit H10330C-25/-45/-75



Overview

The H10330C 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.

Features

- Compact and lightweight due to vacuum sealed-off thermal insulation technology
- High sensitivity (Applicable to photon counting)
- Fast time response
- 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
- HV power supply with interlock function
- Optional adapters are available
 - For optical fiber
 - For monochromator

Applications

- Photoluminescence measurement
- Singlet oxygen measurement
- LIDAR
- Raman spectroscopy measurement
- Cathodoluminescence measurement
- Fluorescence life time measurement
- Optical communication device evaluation

Type No. guide

H10330C-xx-C□

Number in □ indicates power cable specifications

2: For Japan / For North America

3: For EU

4: For China

5: For UK

6: For Australia

Specifications

General specifications

(at +25 °C)

Parameter			H10330C-25	H10330C-45	H10330C-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
Max. PMT supply voltage			-900			V
Max. average PMT anode current			1			μA
Cathode *1	Quantum efficiency	Min.	1			%
		Typ.	2			
	Radiant sensitivity	Typ.	18	21	25	mA/W
Anode	Radiant sensitivity *1*2	Typ.	1.8 × 10 ⁴	2.1 × 10 ⁴	2.5 × 10 ⁴	A/W
Gain		Typ.	1.0 × 10 ⁶			-
Anode dark current *2*3		Typ.	0.4	4	100	nA
		Max.	4	40	400	
Anode dark count *2*3		Typ.	2.5 × 10 ³	2.5 × 10 ⁴	2.5 × 10 ⁵	s ⁻¹
Time response	Rise time	Typ.	0.9			ns
	Fall time	Typ.	1.7			
	Transit time spread	Typ.	0.4			
PMT operating temperature			-60			°C
PMT operating guaranteed voltage			-500 to -900			V
Operating ambient temperature			+5 to +40			°C
Operating ambient humidity *4			Less than 80			%
Storage temperature			-20 to +50			°C
Storage humidity *4			Less than 80			%

*1: At 1100 nm (H10330C-25), at 1300 nm (H10330C-45), at 1500 nm (H10330C-75)

*2: Supply voltage = -800 V.

*3: After 30 min storage in darkness.

*4: No condensation.

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) *1		1.4 (f=25.7)	-
Cooling time required for operation		Approx. 20	min
Protection function		High voltage interlock for inappropriate temperature	-
Input voltage (AC)		100 to 240 (±10 %) (50 Hz / 60 Hz)	V
Dimensions (W × H × D) *2	Main unit	100 × 186 × 150	mm
	Controller	102 × 131 × 279.5	
Weight	Main unit *3	Approx. 2.13	kg
	Controller *4	Approx. 2.90	

*1: At 1300 nm

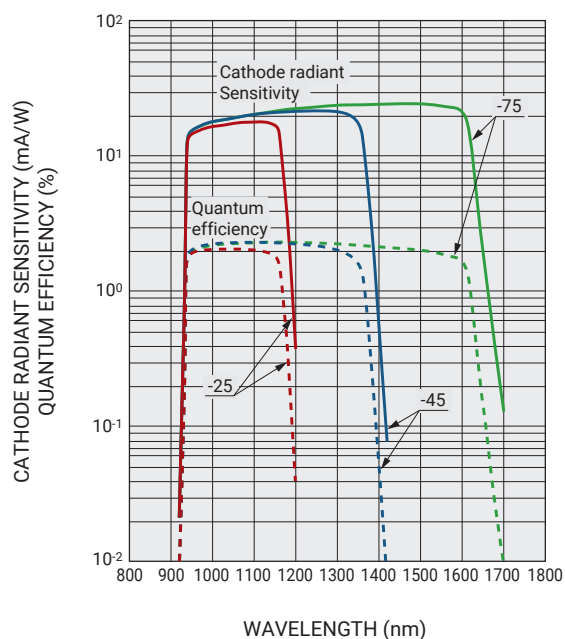
*2: Excluding projections.

*3: Including resistor box with BNC connectors.

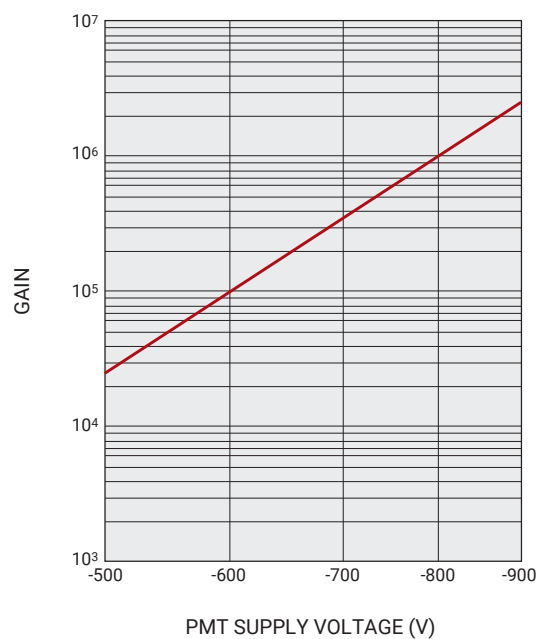
*4: Including high voltage cable and control cable.

Characteristics

Spectral response

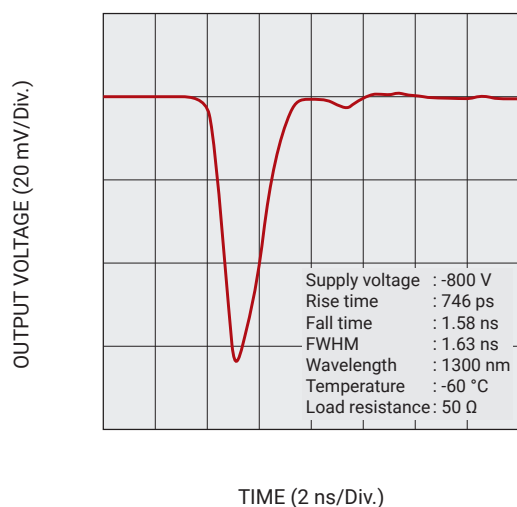


Typical gain

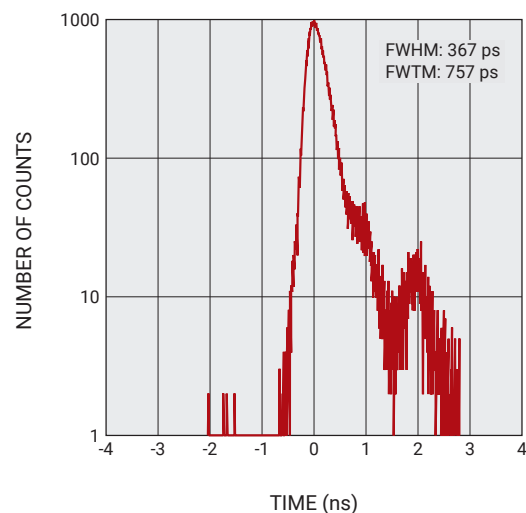


Timing properties

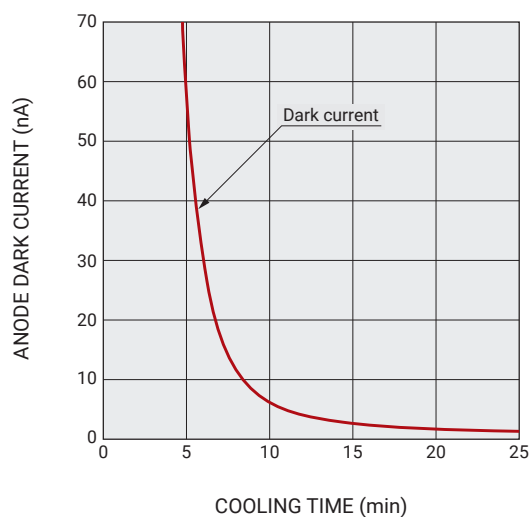
Waveform



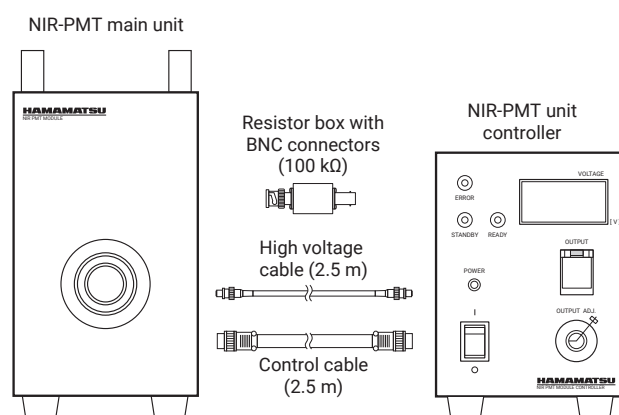
Transit time spread (T.T.S.)



Dark current vs. cooling time (H10330C-45)

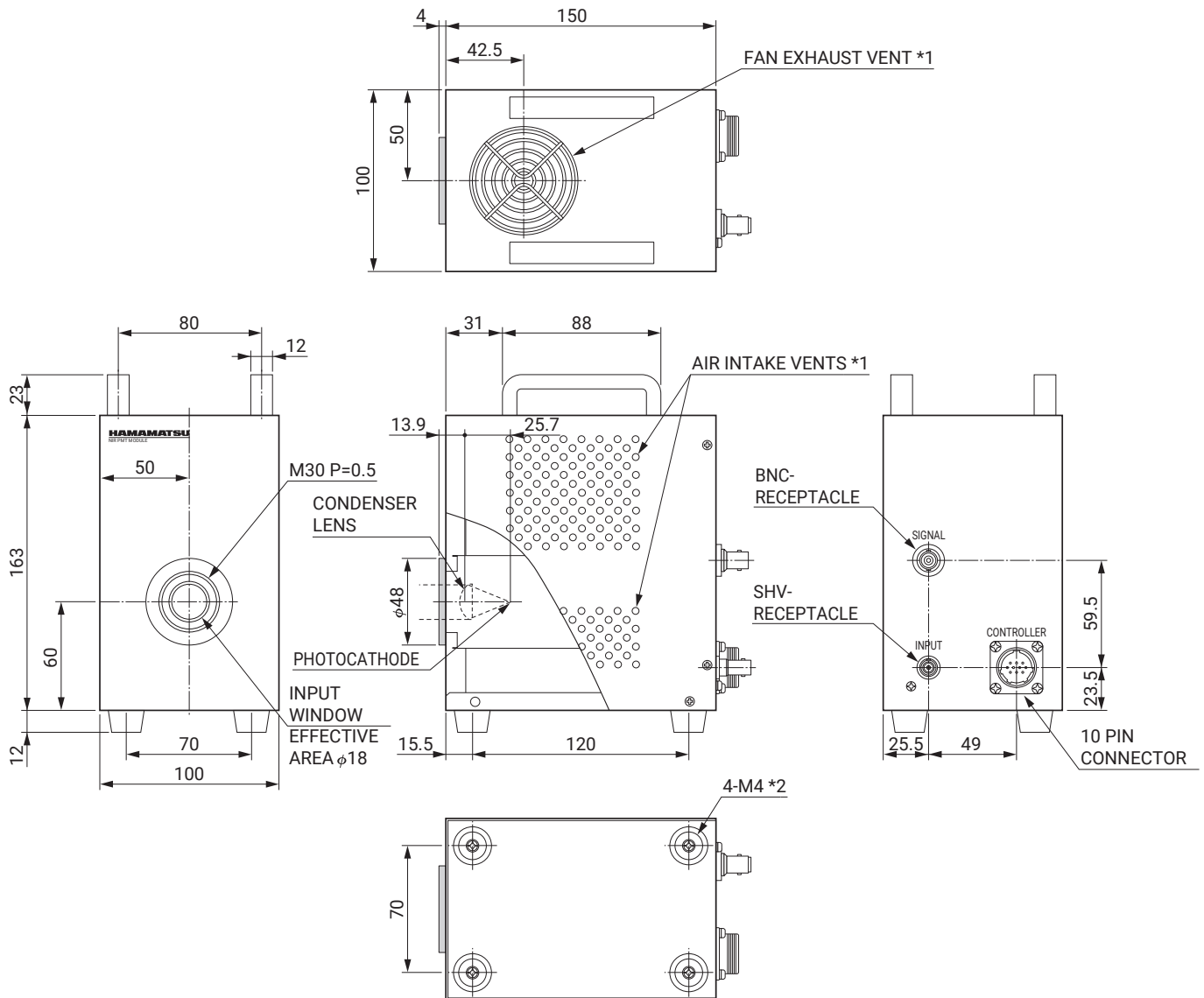


System configuration (Connection diagram)



Dimensional outline (Unit: mm)

NIR-PMT main unit



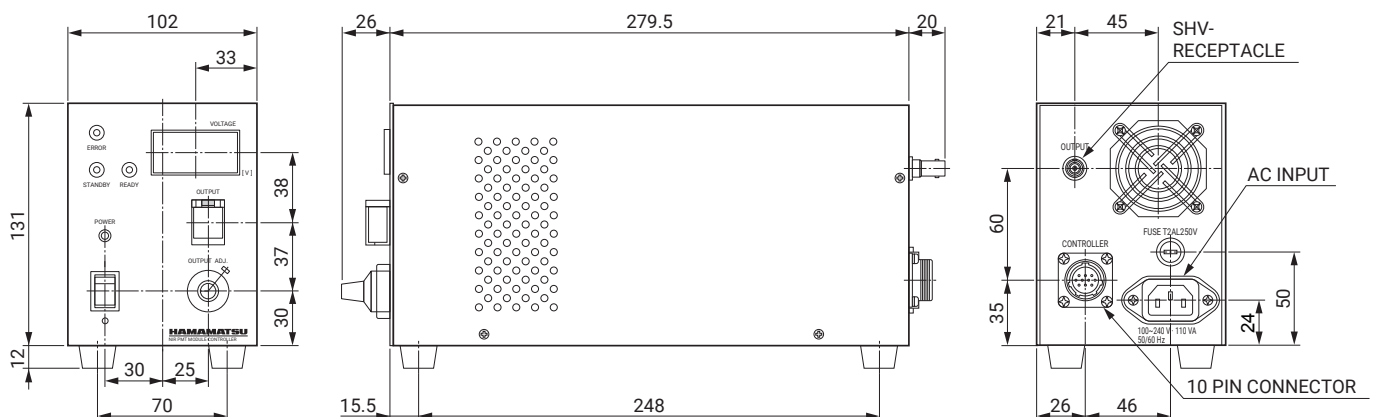
*1: Do not block the air intake vents and fan exhaust vent.

Otherwise, heat builds up in the unit causing poor performance or failure.

*2: The rubber feet are mounted with M4 screws.

If they are removed, the screw holes (M4) can be used for fixing purpose.

NIR-PMT unit controller



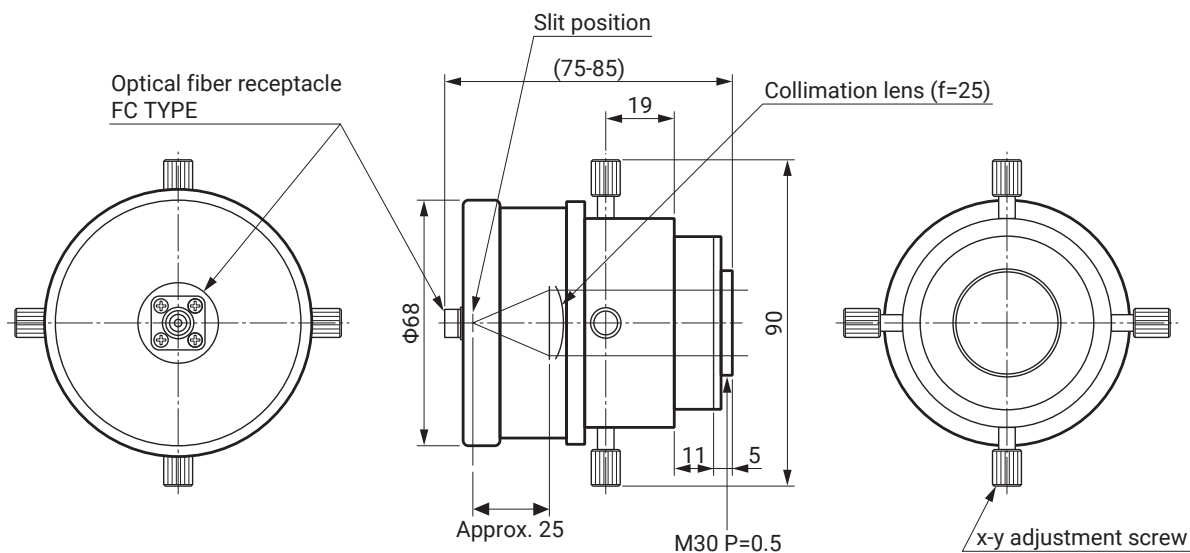
Related products (A10463 series)

These adapters allow light from an optical fiber to efficiently enter the PMT.
Specify an FC type *1 or SMA type *2 adapter when ordering.

*1: A10463-01, *2: A10463-02

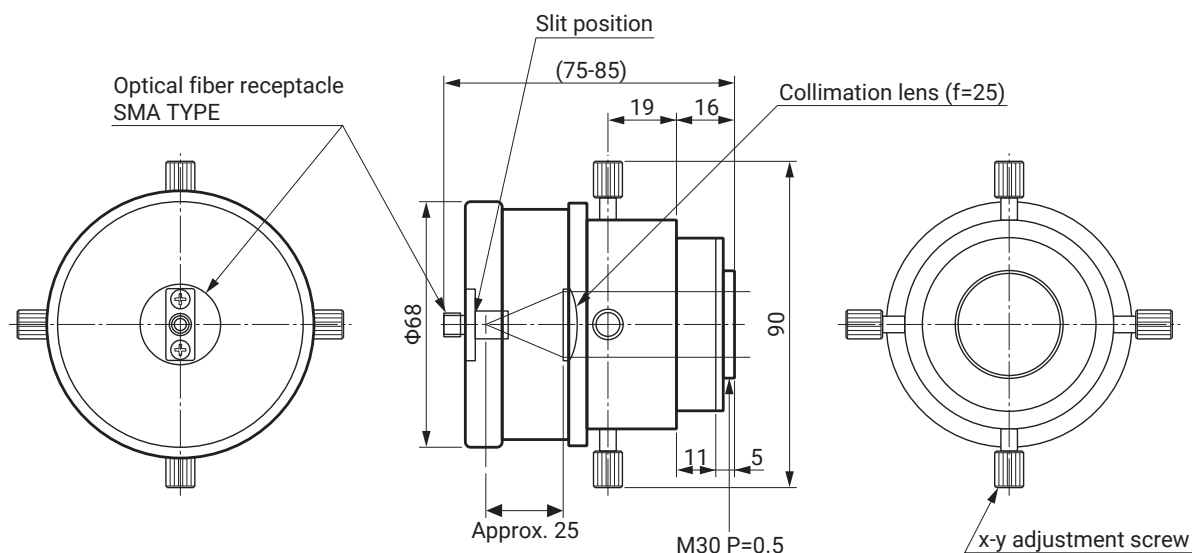
Optical fiber adapters A10463-01

■ Dimensional outline (Unit: mm)



Optical fiber adapters A10463-02

■ Dimensional outline (Unit: mm)



Options (Sold separately)

Adapters to match optical fiber connectors or monochromators are available.
Please contact your local Hamamatsu office for any assistance.

Monochromator adapters A10464 series

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

Resistor box with BNC connectors A9267 series

A 50 Ω resistor box with BNC connectors^{*1} is available.
Use the 100 k Ω resistor box^{*2} for use with a lock-in amplifier.

*1: A9267-01, *2: A9267-02 (supplied with H10330C)

