

PRELIMINARY

PHOTON COUNTING HEAD H7421 SERIES

With Cooler and Built-in High Voltage Power Supply
GaAsP: H7421-40/GaAs: H7421-50

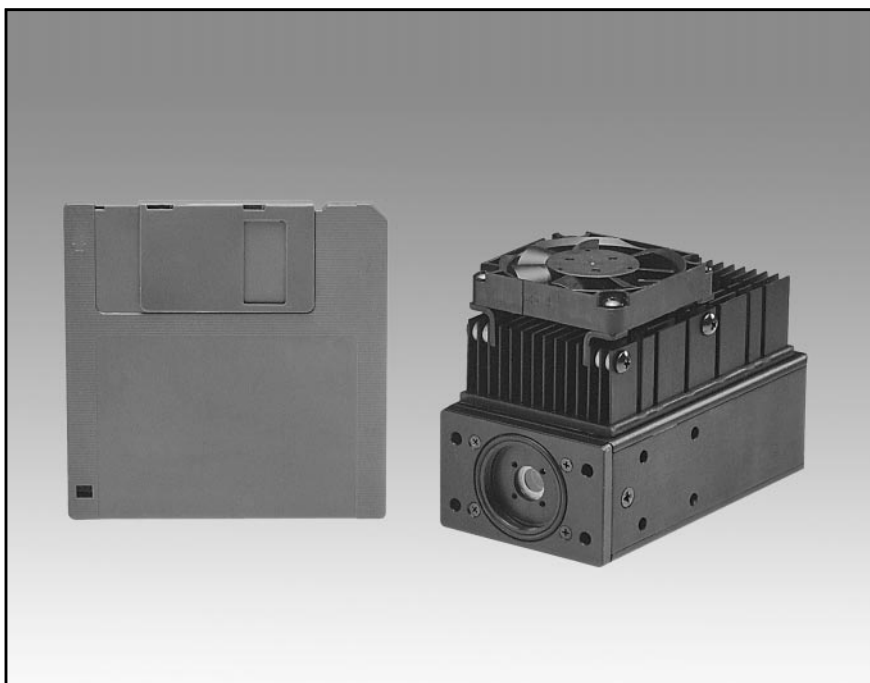
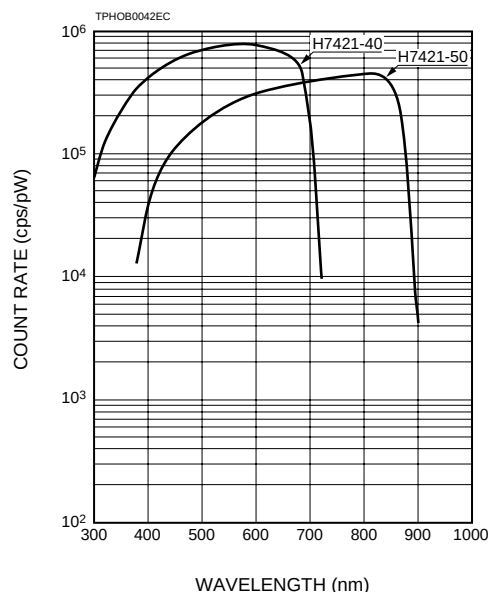


PHOTO : H7421 with A7423 (HEATSINK WITH FAN)

■ SPECTRAL RESPONSE



The H7421 series is a compact photon counting head consisting of the metal package PMT with a cooler, a high speed photon counting circuit and a high voltage power supply. The H7421-40 utilizes a GaAsP semiconductor photocathode which detects single photons from 300 to 720nm in wavelength. The H7421-50 utilizes a GaAs semiconductor photocathode which detects single photons from 380 to 890nm in wavelength. Both types have higher Quantum Efficiency compared to the conventional alkali metal Photocathode in their peak wavelength.

By using a temperature monitor output thermistor, an operating temperature of the H7421 series can be monitored.

The output signal is handled easily by simple connecting to a counter so that it is a TTL mode.

To obtain a better performance, the H7421 should be kept between +5°C to +35°C in operation.

FEATURES

- **H7421-40 (GaAsP)**
 - : Higher Photon Detection Efficiency
- **H7421-50 (GaAs)**
 - : Wide Spectral Range
- **Sensitive Area: 5 mm in Diameter**
- **Easy Operation**

APPLICATIONS

- **Chemiluminescence detection**
- **Bioluminescence detection**
- **Fluorescence detection**
- **Other low level light detections**

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SPECIFICATIONS

PHOTON COUNTING HEAD H7421

MAXIMUM RATINGS (Absolute Maximum Values)

Parameter	H7421-40	H7421-50	Unit
Main Unit Input Voltage	+6		V
Peltier Cooler Input Current	2.2		A
Peltier Cooler Input Voltage	2.6		V
Storage Ambient Temperature	-20 to +50		°C
Operating Ambient Temperature	+5 to +35		°C

CHARACTERISTICS (at 25 °C)

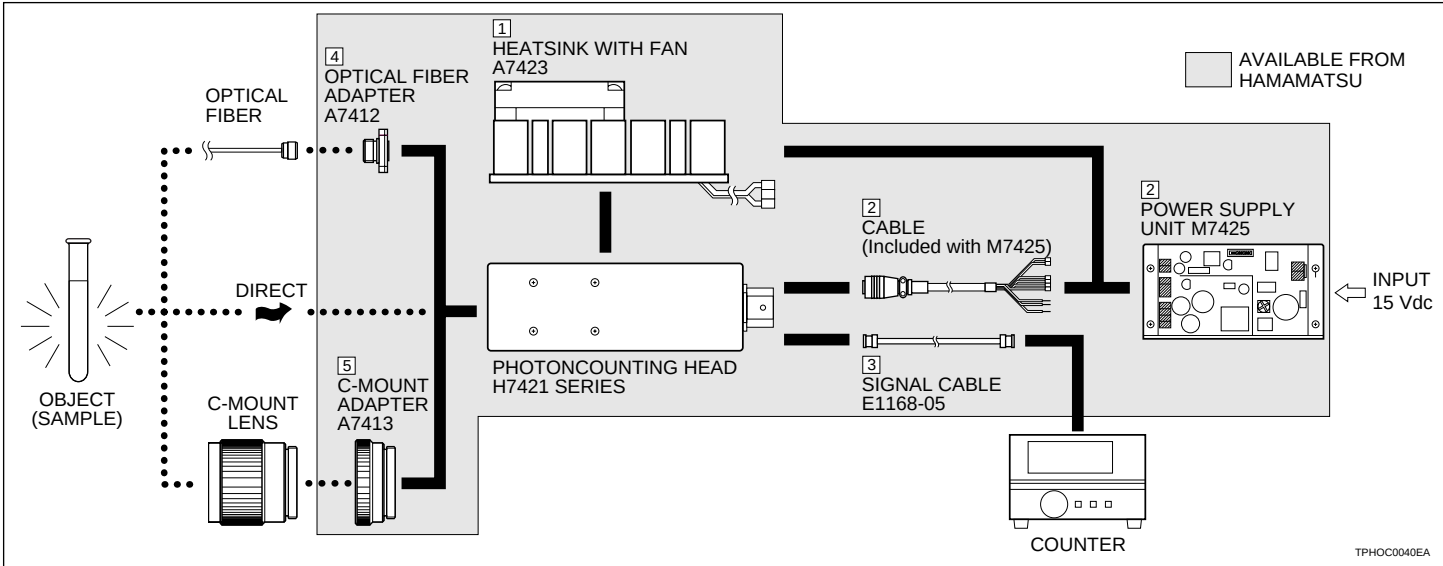
Parameter	H7421-40	H7421-50	Unit
Photocathode Area	5		mm dia
Spectral Response Range ^①	300 to 720	380 to 890	nm
Dark Counts ^{①,②}	80	100	cps (Typ.)
Counting Linearity ^③	1.5		Mcps
Pulse Pair Resolution	70		nS
Output Pulse Width	30		nS
Output Logic	TTL Positive		—
Main Unit Input Voltage Range	+4.5 to +5.5		V
Main Unit Input Current at 1.5 Mcps output ^①	50		mA
Weight	Approx. 340		g

COOLING CHARACTERISTICS

Parameter	H7421-40	H7421-50	Unit
Cooling Method	Thermoelectric effect		—
Cooling Temperature (ΔT ^①)	25		°C
Cooling Time	Approx. 5		min.
Peltier Cooler Input Current	2.0		A

NOTE: ① Input Current of Peltier: 2.0 (A)
Operating with A7423 (Heatsink with Fan)
② After 30 min. storage in darkness
③ at -10% deviation from linear output (random pulse)
* ΔT means temperature difference from an ambience.

CONNECTION DIAGRAM



SPECIFICATIONS

ACCESSORIES

HEATSINK WITH FAN A7423

Parameter	Value	Unit
Input Voltage	12	V
Input Current	Locked: 140 Moved: 90	mA
Operating Voltage	10.2 to 13.8	V
Weight	Approx. 120	g

POWER SUPPLY UNIT M7425

Parameter	Main Unit	Value	Unit
Input Voltage		+15 $\pm$ 1.5	Vdc
Input Current		600	mA
Input Rush Current (100 μ s)	—	—	A
Operating Temperature		-10 to +60	°C
Output Voltage	+5	+12	Vdc
Output Current	—	2.0	A
Weight (without cable)		Approx. 120	g

ACCESSORIES FOR H7421 SERIES

1 HEATSINK WITH FAN A7423

Using the A7423, the rated case temperature of the H7421 is less than 40 °C, so it is necessary to ensure good heatsinking and ventilation.
The A7423 is fixed with 4-M3 screws to the H7421.
It is recommended to put the thermal grease between the H7421 and the A7423.

2 POWER SUPPLY UNIT M7425

Simply adding +15 Vdc, the M7425 supplies 3 different outputs for a main unit, a peltier and a heatsink with fan.

POWER SUPPLY CABLE (Included with M7425)

The cable for the H7421 which provides the power to the peltier element, main unit and outputs the thermistor to monitor the temperature of the peltier.

3 SIGNAL CABLE E1168-05

The E1168-05 is a signal cable with BNC-P for connection between the H7421 and the counter.

4 OPTICAL FIBER ADAPTER (FC TYPE) A7412

An adapter for connection between the H7421 and a FC type plug.
To fix the A7412 to the H7421, it is necessary to use the M2-3 mm length screws.

5 C-MOUNT ADAPTER A7413

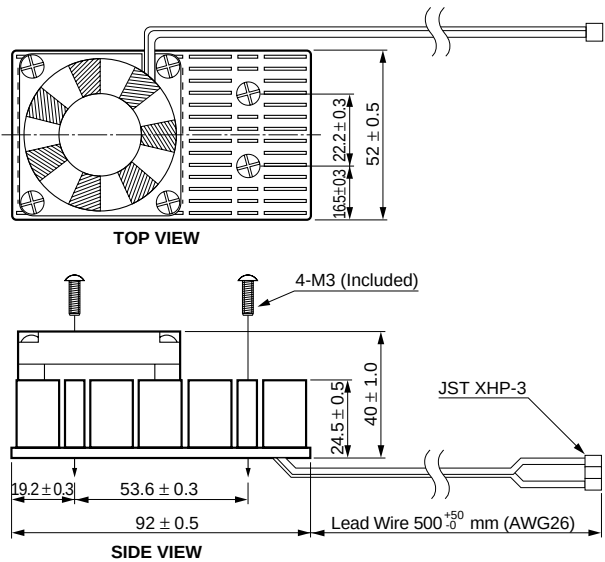
An adapter for installing a C-mount objective lens to the H7421.
The distance from the front surface of the A7413 to the photo cathode is 26.3 mm, the lens focus should be adjusted.

NOTE: To obtain the rated cooling performance, the H7421 series must be used with the A7423.

DIMENSIONAL OUTLINE (Unit: mm)

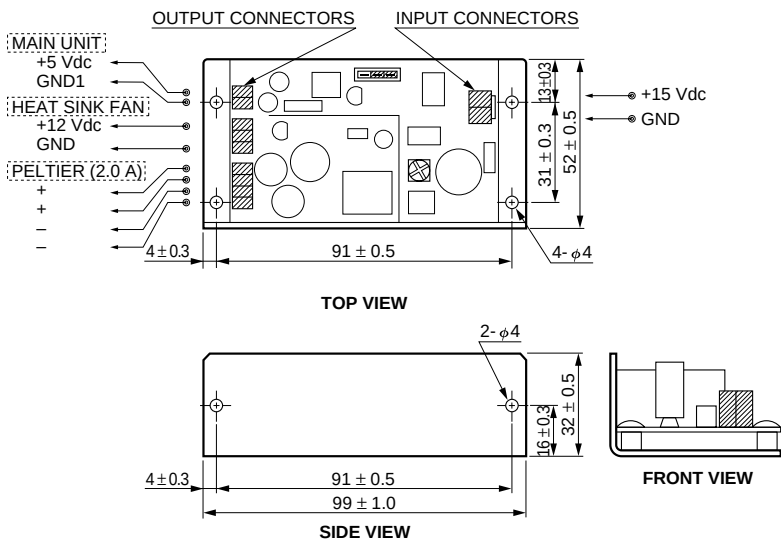
ACCESSORIES

1 HEATSINK WITH FAN A7423

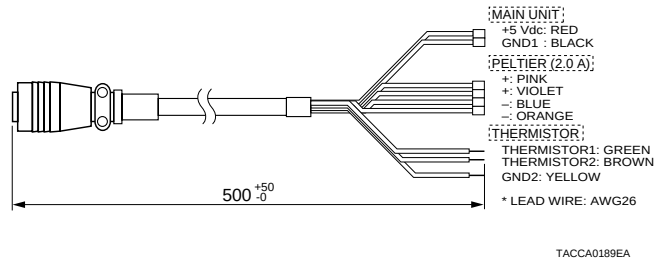


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2 POWER SUPPLY UNIT M7425

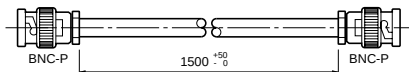


POWER SUPPLY CABLE (Included with M7425)



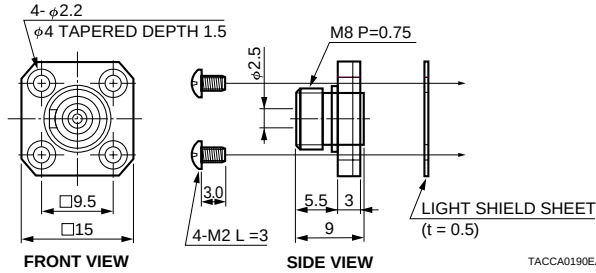
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3 SIGNAL CABLE E1168-05



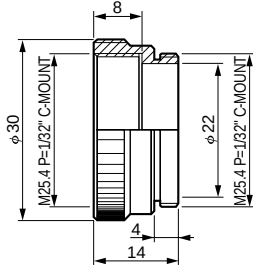
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4 OPTICAL FIBER ADAPTER (FC TYPE) A7412



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5 C-MOUNT ADAPTER A7413

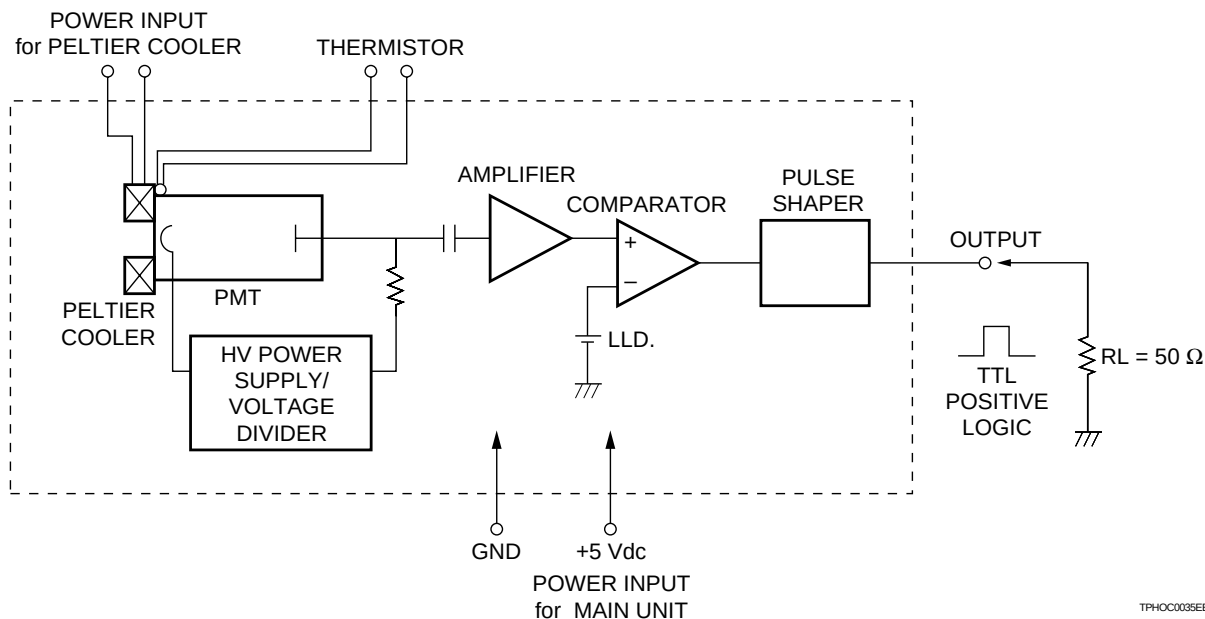


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INTERNAL DIAGRAM

PHOTON COUNTING HEAD H7421

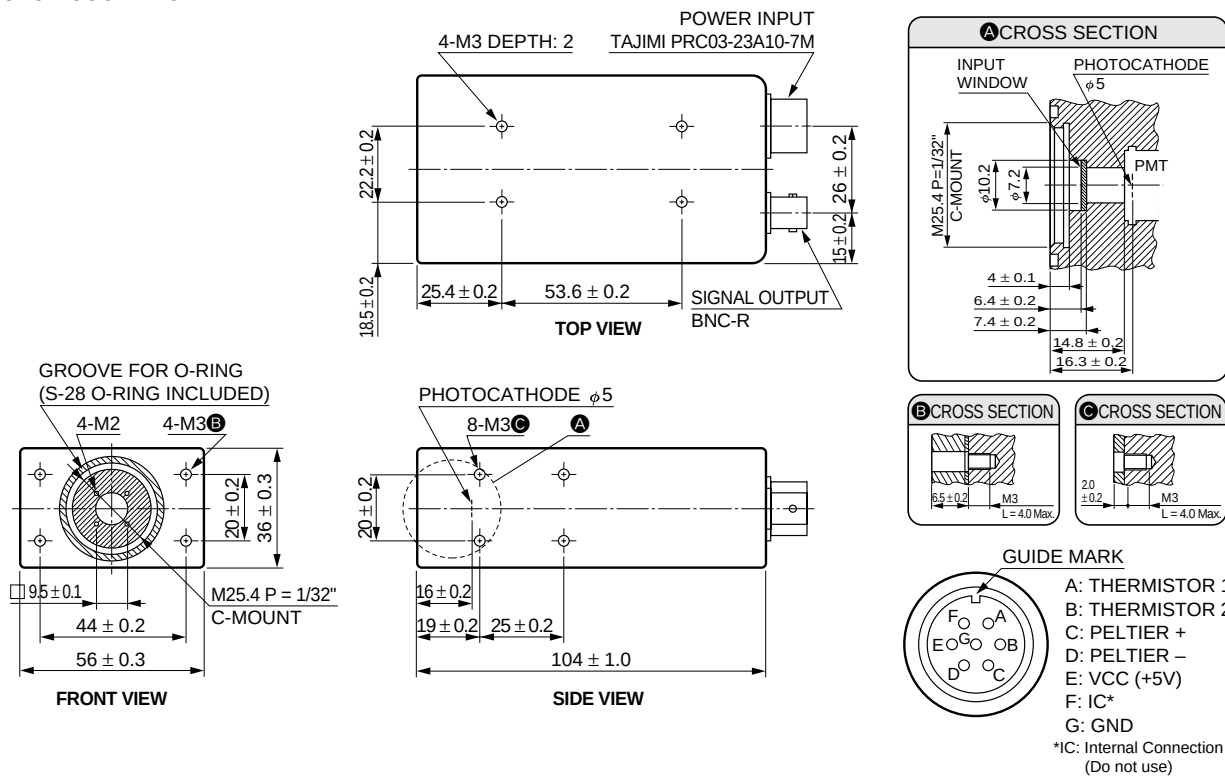
PHOTON COUNTING HEAD H7421 SERIES



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DIMENSIONAL OUTLINE (Unit: mm)

PHOTON COUNTING HEAD H7421



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