

## High performance thermoelectric coolers for 28 mm Dia. side-on PMTs

# C14760, C14761

The C14760 (water cooled type) and the C14761 (air-cooled type) are thermoelectric coolers designed for 28 mm diameter side-on photomultiplier tubes (PMTs). The C14760 and C14761 improve the S/N (signal to noise ratio) by reducing the noise. Cooling temperature can be precisely controlled and monitored by the controller.

## FEATURES

- Thermoelectric cooling using peltier module
- Built-in electrostatic and magnetic shield
- Internal protective circuits safeguard peltier module
- Controller allows controlling and monitoring the cooling temperature
- Water cooling makes it robust against ambient temperature changes (C14760)
- Air cooling means easier handling (C14761)



▲ Left: Controller  
Right: C14761 and C9145 socket assembly



## SPECIFICATIONS

### Cooling housing

Parameter	C14760	C14761	Unit
Cooling method	Thermoelectric cooling using peltier module		—
Heat exchange medium	Water (Amount of cooling water: 1 L/min to 2 L/min, water pressure: 0.3 MPa or lower)	Forced air	—
Cooling temperature	Approx. -30 <sup>Ⓐ</sup> (with cooling water of +20 °C)	Approx. -25 <sup>Ⓑ</sup> (with ambient temperature of +25 °C)	°C
Maximum cooling temperature	-30		°C
Time to stable cooling temperature	Approx. 70	Approx. 90	min
Optical window material	Evacuated double-pane silica glass (185 nm to 2200 nm)		—
Light Input aperture dimension	8 × 24		mm
Applicable PMTs (sold separately)	φ28 mm Side-on type		—
Applicable socket assembly (sold separately)	C9145 (DP-type), E9146, E9146-01 (D-type)		—
Operating ambient temperature / Humidity <sup>Ⓒ</sup>	+5 °C to +40 °C / Below 75 %	+5 °C to +35 °C / Below 75 %	—
Storage temperature / Humidity <sup>Ⓒ</sup>	-20 °C to +50 °C / Below 85 %		—
Weight	Approx. 1	Approx. 1.7	kg

### Controller

Parameter	Value / Description	Unit
AC input voltage	AC 100 to AC 240 (50 Hz / 60 Hz)	V
Maximum power consumption	150	V·A
Temperature controllable range	-30 to -5 (0.1 °C step) <sup>Ⓓ</sup>	°C
Protection circuit	Protective circuits to safeguard peltier module in case of suspension of water supply or fan-stop and to prevent output short-circuit, output overvoltage, and excessive temperature rise in controller.	—
Serial interface	RS-232C, 9600 bps <sup>Ⓔ</sup>	—
Operating temperature / Humidity <sup>Ⓒ</sup>	+5 °C to +40 °C / Below 75 %	—
Storage temperature / Humidity <sup>Ⓒ</sup>	-20 °C to +50 °C / Below 85 %	—
Weight	Approx. 2	kg

**NOTE:** <sup>Ⓐ</sup>C14760 achieves cooling temperature of approx. -30 °C with water temperature of +20 °C. If the water temperature is higher, the possible lowest cooling temperature becomes higher (Note: Maximum cooling temperature is -30 °C).

<sup>Ⓑ</sup>C14761 achieves cooling temperature of approx. -25 °C with ambient temperature of +25 °C. If the ambient temperature is higher, the possible lowest cooling temperature becomes higher. If the ambient temperature is lower, the possible lowest cooling temperature becomes lower (Note: Maximum cooling temperature is -30 °C).

<sup>Ⓒ</sup>No condensation

<sup>Ⓓ</sup>PMT temperature may not achieve set up cooling temperature controlled by the operator if ambient temperature and/or water temperature is high.

<sup>Ⓔ</sup>When used with a PC that does not have an RS-232C interface board, use an adapter cable.

### Components and Accessories

- Cooled PMT housing
- Controller
- Light shield cap
- AC line cable
- Connection cable (1.5 m) between cooled PMT housing and controller
- Serial communication cable (RS-232C crossing cable 1.5 m)
- CD-ROM (Instruction manual, sample software for control of cooling temperature)
- Spare fuses (2 pcs)

\* To use C14760 series, water hoses with an outer diameter of 6 mm and an inner diameter of 4 mm and a water supply line with the matching round faucet are required. Prepare those hoses of the desired length. In addition, prepare a filter for removing impurities such as chlorine ions.

### Information for the order

**C1476x-C**  “” shows the kind of the attached AC cable.  
2: For Japan and USA 3: For EU

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Figure 1: Cooling characteristics

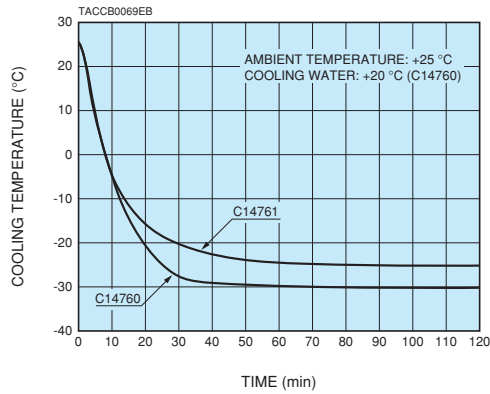


Figure 2: Spectral transmission characteristics of optical window

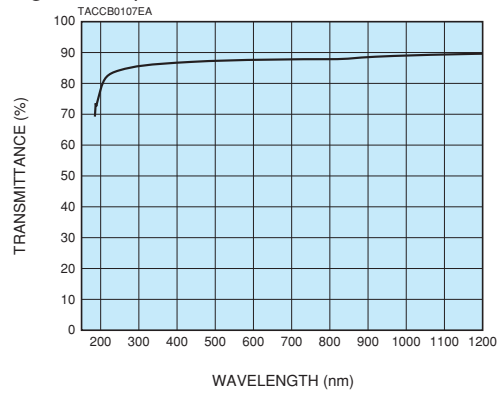
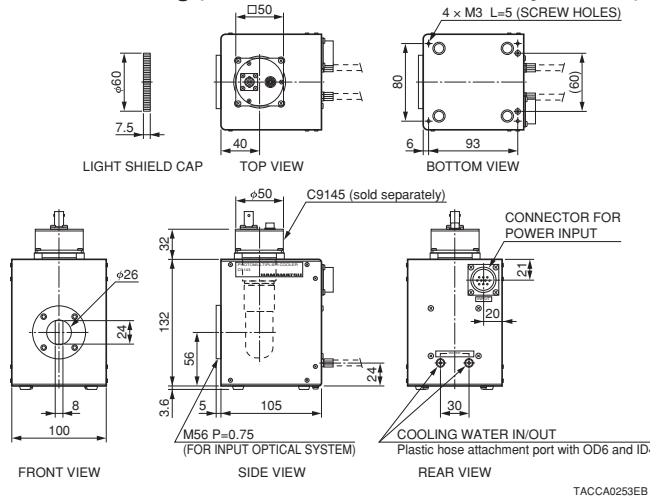
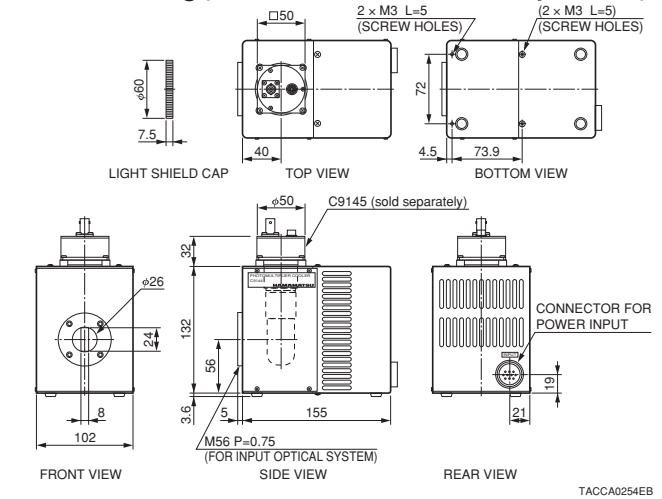


Figure 3: Dimensional outline (Unit: mm)

**C14760 housing (\*With the C9145 socket assembly installed)**



**C14761 housing (\*With the C9145 socket assembly installed)**



**CONTROLLER**

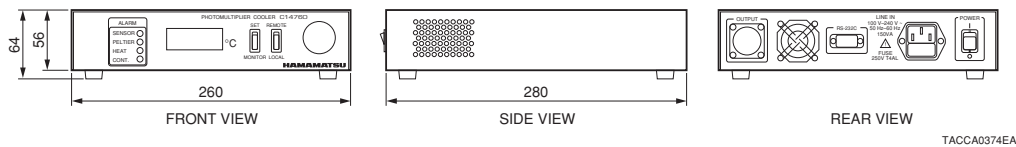
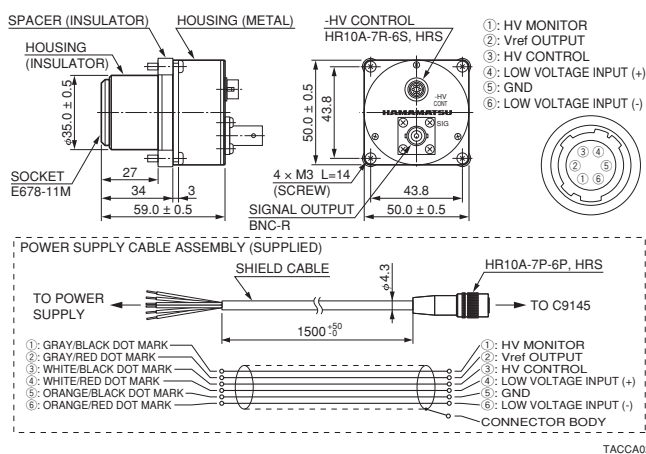
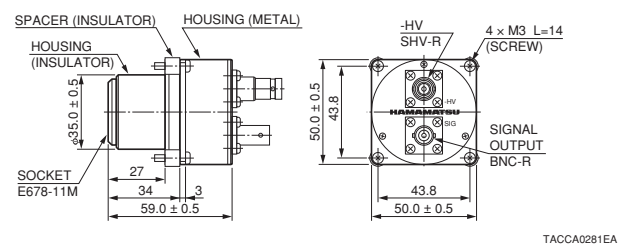


Figure 3: Sold separately (Unit: mm)

**C9145 (DP type) \*MAXIMUM SUPPLY VOLTAGE: -1200 V**



**E9146-01 (D type) \*MAXIMUM SUPPLY VOLTAGE: -1250 V (E9146) -1500 V (E9146-01)**



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