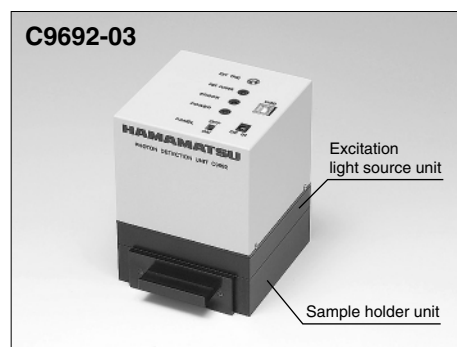
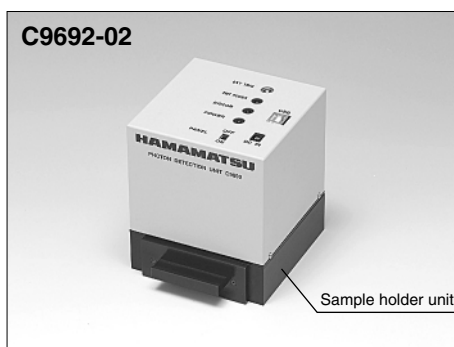
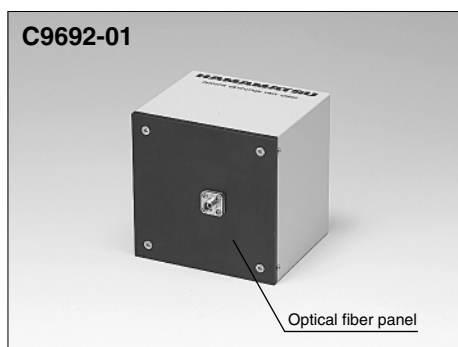


# NEW

# PHOTON DETECTION UNIT

## C9692 SERIES



## OVERVIEW

The C9692 series Photon Detection Units are photon counting units designed to make low-light measurements at single photon levels without a time-consuming measurement setup. All users need to do is prepare the sample the users want to measure and a personal computer (PC).

Three models (C9692-01/-02/-03) are available so the users can select one that best meets your application. When combined with optional modular units (A9859, A9860, A9861), the C9692 is ideal for various types of measurement. The USB interface allows simple plug & play setup when connecting the C9692 to a PC.

## APPLICATIONS

- **Bioluminescence, chemiluminescence**
- **Food oxidation, antioxidant activity luminescence**
- **Activated cell luminescence**
- **UV-excited (UV LED) delayed fluorescence (C9692-03)**
- **Other low-light-level measurements**

## FEATURES

- **Photon counting with high S/N ratio**  
Low noise: 50 s<sup>-1</sup> (Typ. at 25 °C)
- **Computer control**  
Built-in USB Ver. 1.1 interface
- **CE marking compliance**
- **Optical fiber (FC type) compatible (C9692-01)**
- **Interlock function (C9692-02/03)**  
Automatically closes optical shutter to prevent excessive light from entering PMT if sample compartment is accidentally opened during measurement.
- **Built-in UV LED excitation light source (C9692-03)**  
Light source wavelength: 375 nm  
Output power: 10 mW/cm<sup>2</sup>  
Irradiation time: 0.1 to 3600 seconds

# HAMAMATSU

# SPECIFICATIONS

## C9692 SERIES COMMON SPECIFICATIONS

Parameter		Description / Value	Unit
Detection Method		Photon counting method	—
Spectral Response Range		185 to 650	nm
Photocathode Size		16 × 18	mm
Maximum Count Rate		3 × 10 <sup>6</sup>	s <sup>-1</sup>
Counter Gate Time		0.001 to 10 (1, 2, 5 Steps)	s
Dark Count (Typ. at 25 °C)		50	s <sup>-1</sup>
Counter Capacity		32 bits/gate	—
Trigger Section	Trigger Signal Input Mode	External trigger, software trigger	—
	Trigger Signal Level	TTL negative logic	—
	Trigger Signal Pulse Width	100 ns or more	—
Input Voltage (DC)		+7 (supplied from AC adapter)	V
Input Voltage (AC) to Supplied AC Adapter		100 V to 240 V (auto switchable), single phase 50 Hz/60 Hz	—
Operating	Temperature	+5 to +40	°C
	Humidity	Below 80 (no condensation)	%
Storage	Temperature	0 to +50	°C
	Humidity	Below 85 (no condensation)	%
PC and Recommended System Requirements	CPU	Intel® Pentium® 3 or higher	—
	CLK	1 GHz or higher	—
	Memory	512 MB or more	—
	OS	Windows® 98, 98SE, Me, 2000, XP-Pro	—
	Interface	USB Ver1.1	—

### C9692-01

Parameter	Description / Value	Unit
Optical Fiber Adapter	FC type (HRFC-R1/Hirose)	—
Distance to Photocathode	26.5 (from fiber end)	mm
Weight	Approx. 0.7	kg

### C9692-02

Parameter	Description / Value	Unit
Effective Size of Sample Compartment (W × D × H)	50 × 50 × 15	mm
Distance to Photocathode	45.5 (from bottom of sample compartment)	mm
Weight	Approx. 1.1	kg

### C9692-03

Parameter	Description / Value	Unit	
Excitation Light Source (UV LED)	Wavelength · Output Power	375 nm · 10 mW/cm <sup>2</sup>	—
	Irradiation Time	0.1 to 3600	sec.
	Irradiation Area	10 dia. (center of sample compartment)	mm
Effective Size of Sample Compartment (W × D × H)	50 × 50 × 15	mm	
Distance to Photocathode	62.5 (from bottom of sample compartment)	mm	
Weight	Approx. 1.2	kg	

## ACCESSORIES (Supplied)

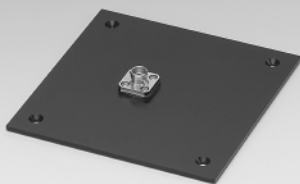
- **CD-ROM (contains control software)**
- **USB cable (1.5 m)**
- **AC adapter**
- **Cable for external trigger (1.5 m)**

## CONTROL SOFTWARE FUNCTIONS

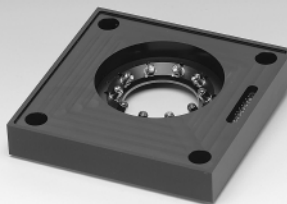
- **Time-resolved measurement**  
Resolves measurement time per unit time (1 ms or more) allowing measurement of various light emission patterns.
- **Optical shutter control**  
Opens or closes optical shutter for excess light protection and dark current pulse measurement.
- **Data display during measurement**  
Continuously transfers measurement data to PC for data monitoring.
- **Measurement data save**  
Saves measurement data in Excel format to make data analysis easier.

## OPTIONAL MODULAR UNITS (available at additional cost)

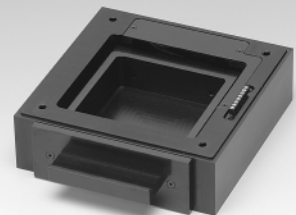
Optical Fiber Panel A9859



Excitation Light Source Unit A9860



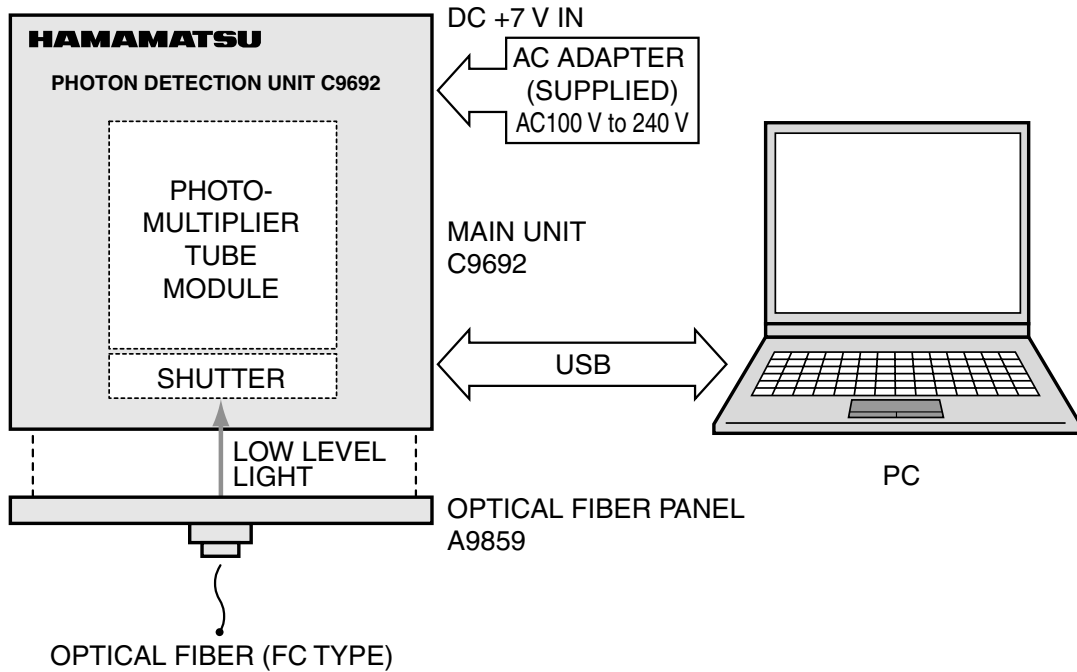
Sample Holder Unit A9861



# SETUP DIAGRAMS

C9692-01

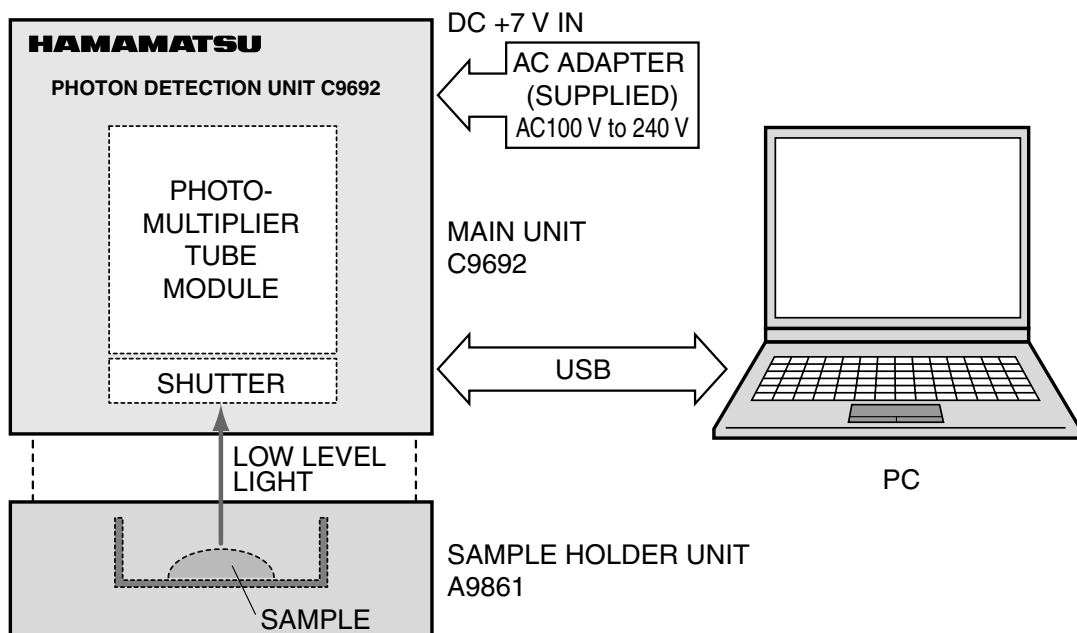
Major applications: Various measurements using optical fiber (FC type)



TPMOC0190EA

C9692-02

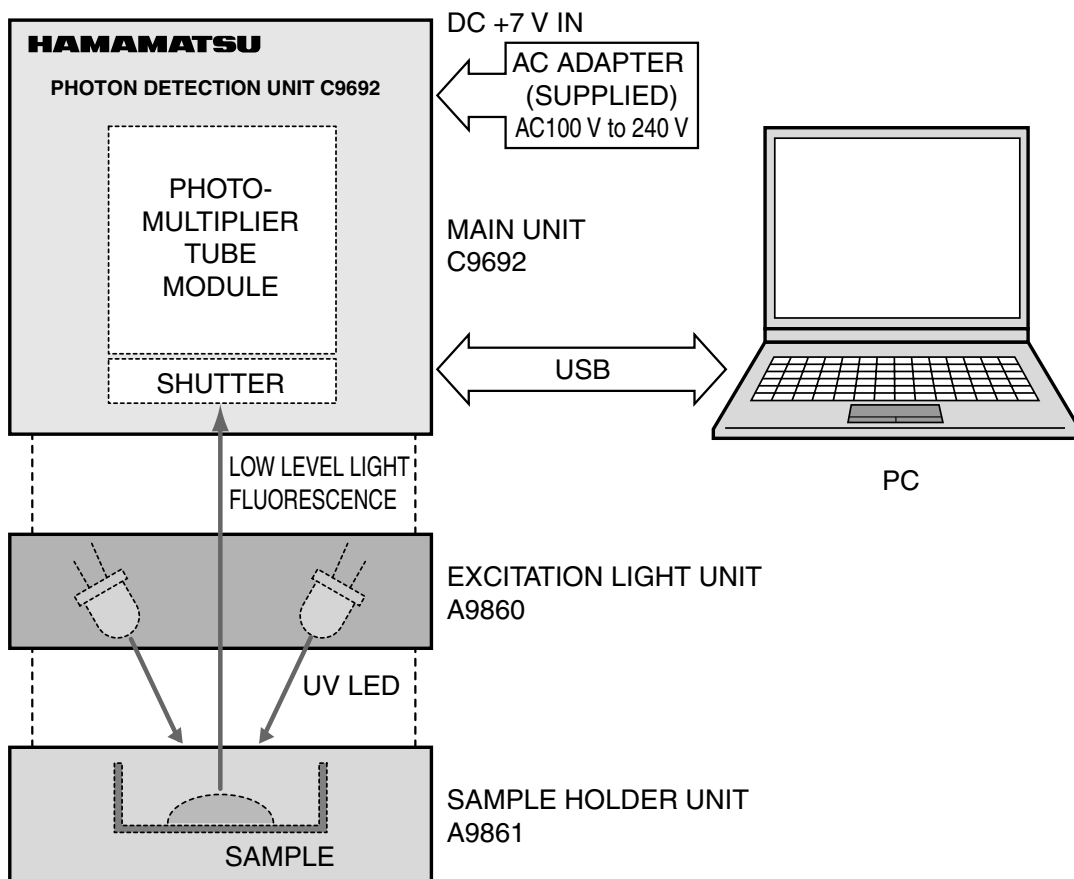
Major applications: Bioluminescence, chemiluminescence



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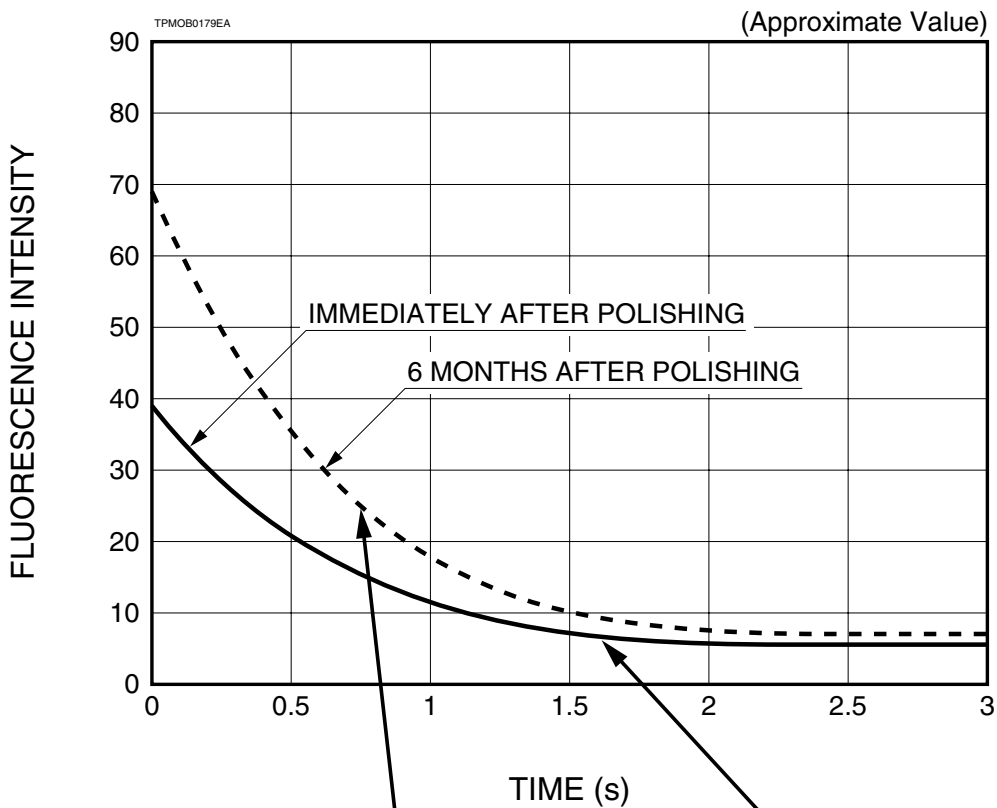
**C9692-03**

**Major applications: Fluorescence, delayed fluorescence, phosphorescence**



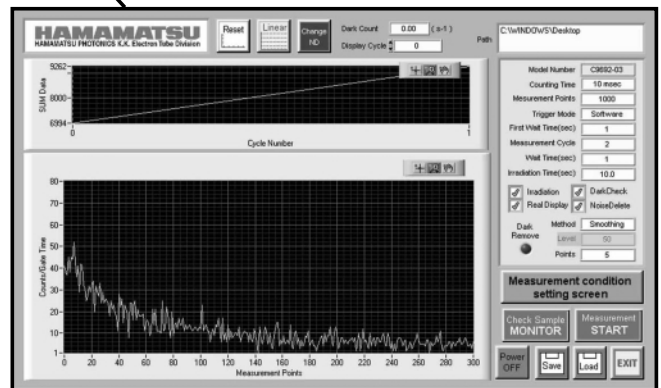
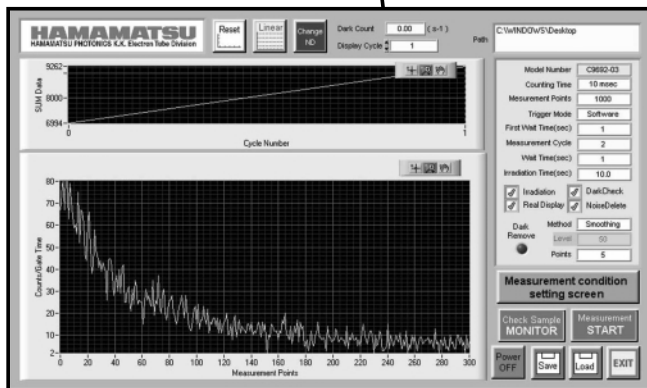
# MEASUREMENT EXAMPLES

– Fluorescence intensity measurement of one grain of polished rice (with husk and outer brown matter removed) –



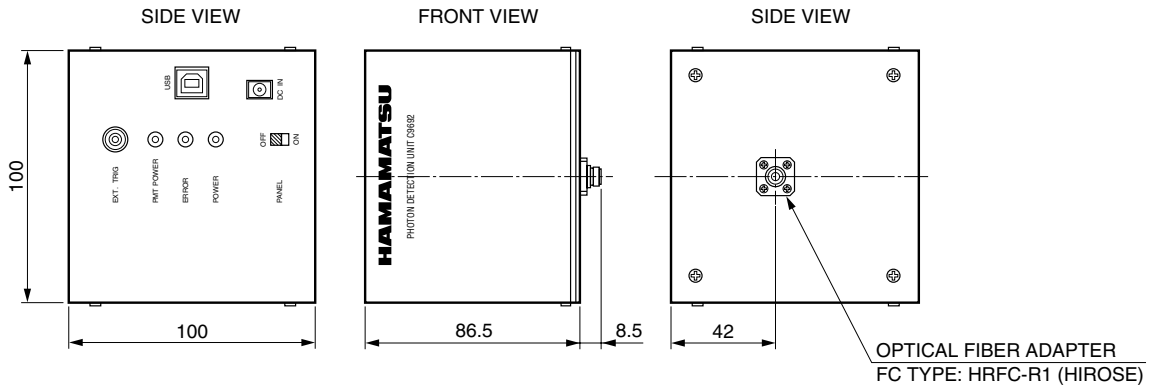
Graph shows changes in fluorescence intensity emitted from a grain of polished rice irradiated with UV light for 10 seconds, and measured with the C9692-03 operated by the control software that comes supplied with the unit.

CONTROL SOFTWARE SCREEN



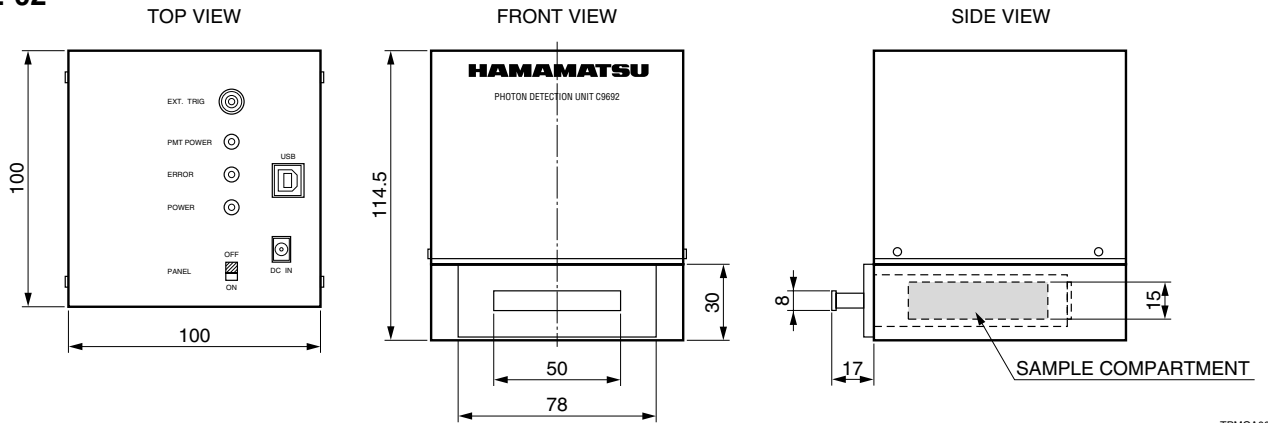
# DIMENSIONAL OUTLINES (Unit: mm)

## ●C9692-01



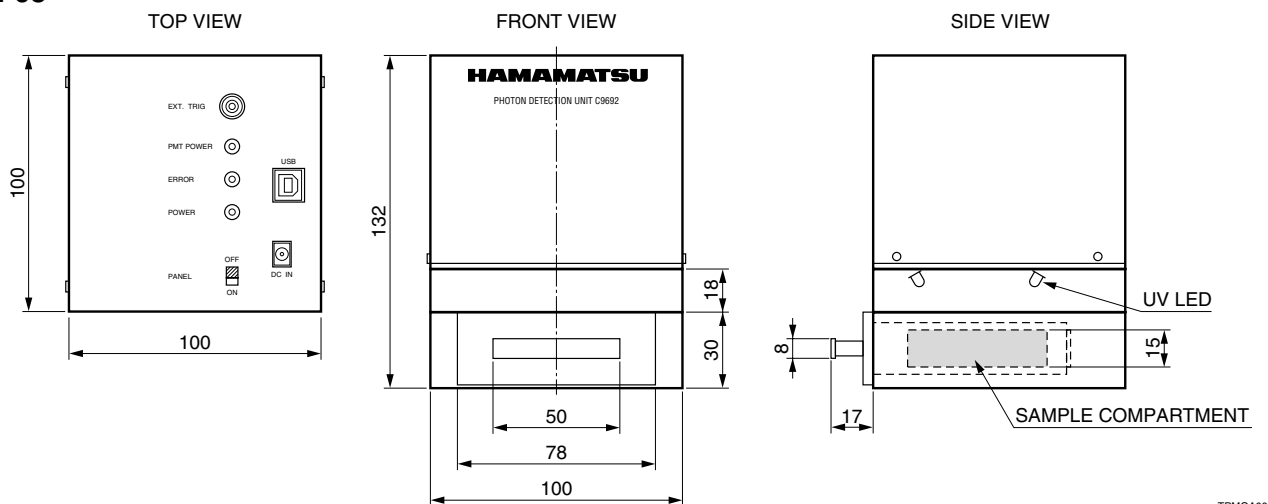
TPMOA0033EA

## ●C9692-02



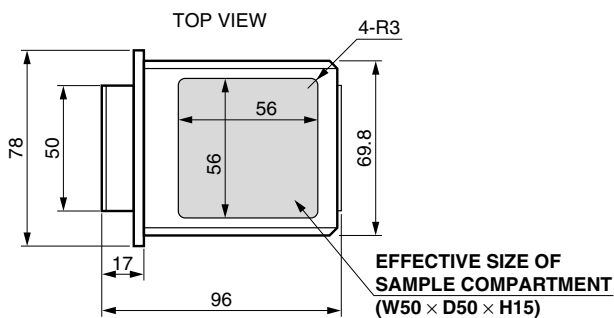
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## ●C9692-03



TPMOA0035EA

## ●Sample compartment tray (same for C9692-02, -03)



TPMOA0034EA / TPMOA0035EA

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