

# PHOTON COUNTER

# USB INTERFACE COMPATIBLE COUNTING UNIT

## C8855-01

### ■ Connection example



\* All the pulsed output type of our PHOTON COUNTING HEAD can be used with C8855-01

## OVERVIEW

The C8855-01 is a counting unit with a USB interface and can be used as a photon counter when combined with a photon counting head, etc.

The counter of the C8855-01 has two counter circuits (double counter method) capable of counting input signals with no dead time.

Since the C8855-01 is hot-swap compatible (plug and play compatible), it helps you set up measurement environment quickly. You can start measurement on the day the C8855-01 is delivered by the sample software.

- **Time-resolved measurement (minimum time resolution: 50  $\mu$ s) for monitoring weak light detection like chemiluminescence or biological clocks**

- **Quick measurement setups (hot-swap compatible)**

You can start measurement by just connecting the USB cable without restarting the PC, if required software (device driver, etc) is installed into your PC beforehand.

- **Applicable to various measurement methods**

The C8855-01 is controlled only by DLL(dynamic link library) supplied.

Hamamatsu Photonics publishes all DLL functions to enable users to construct suitable software for different measurement depending on various applications.

## FEATURES

- **USB interface**

- **Sample software bundled**

- **Accurate measurement with no dead time (Double counter method)**

- **Power supply for photon counting head (Output voltage and current: +5 V / 200 mA)**

- **Multiple units (Max. 16) can be operated from a single PC**

# SPECIFICATIONS

Parameter		Description / Value
Input	Number of input signals	1 ch
	Signal input level	CMOS positive logic (high level: 2 V min.)
	Signal pulse width	8 ns or longer
	Input impedance	50 Ω
Counter	Counter method	Double counter method
	Max. count rate	50 MHz
	Max. counter capacity	2 <sup>32</sup> counts / counter gate
Counter gate	Counter gate mode	Internal counter gate only
	Internal counter gate time <sup>(A)</sup>	50 μs to 10 s (1, 2, 5 step)
Trigger	Trigger method	Software / External trigger
	External trigger signal	TTL negative logic
ID switch <sup>(B)</sup>		0 to F (hexadecimal number)
General output section		Open collector / 2 bits
Voltage output for photon counting head		+5 V / 200 mA Max.
OS		Windows <sup>®</sup> 8.1/10 Pro
Interface		USB
Supply voltage		Supplied by USB bus power <sup>(D)</sup> +7 V / 400 mA Max. (supplied form AC adapter)
Dimensions (W × H × D)		120 mm × 30 mm × 96 mm <sup>(E)</sup>
Weight		250 g
Operating ambient temperature / Humidity <sup>(C)</sup>		+5 °C to +45 °C / Below 80 %
Storage temperature / Humidity <sup>(C)</sup>		0 °C to +50 °C / Below 85 %
CE marking		Conforms to IEC61326-1 GROUP 1, CLASS B
AC adapter	Input	100 V to 240 V
	Output	+7 V / 1.6 A

Supplied: CD-ROM (containing instruction manual, device driver, DLL, sample software\*, etc.) USB cable, AC adapter, AC cable, power output connector

\*: Sample software is configured from Lab VIEW™ of National Instruments, Inc.

<sup>(A)</sup>The C8855-01 is not suitable for applications requiring time resolution higher than 50 μs.

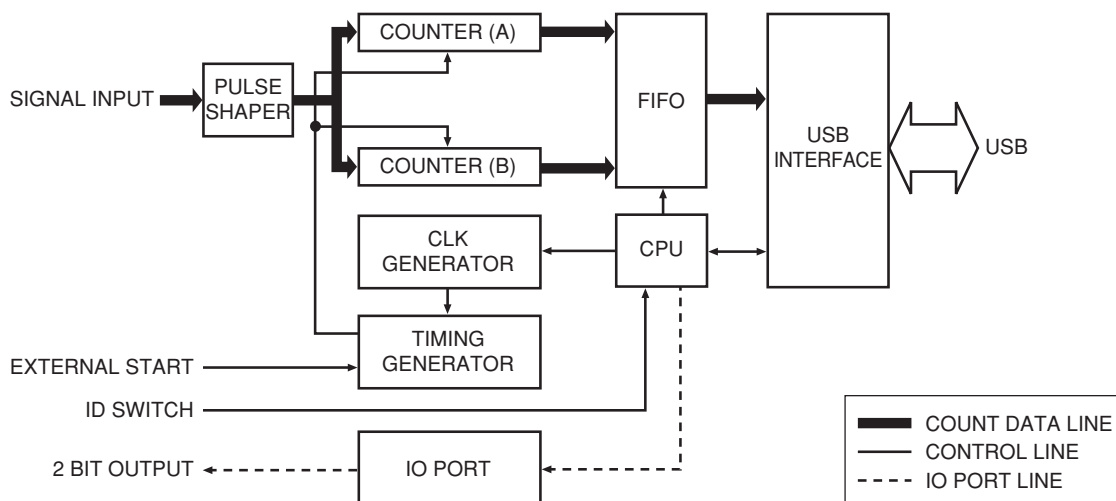
<sup>(B)</sup>The ID switch is used to set ID numbers when two or more C8855-01 units are connected to single PC.

<sup>(C)</sup>No condensation

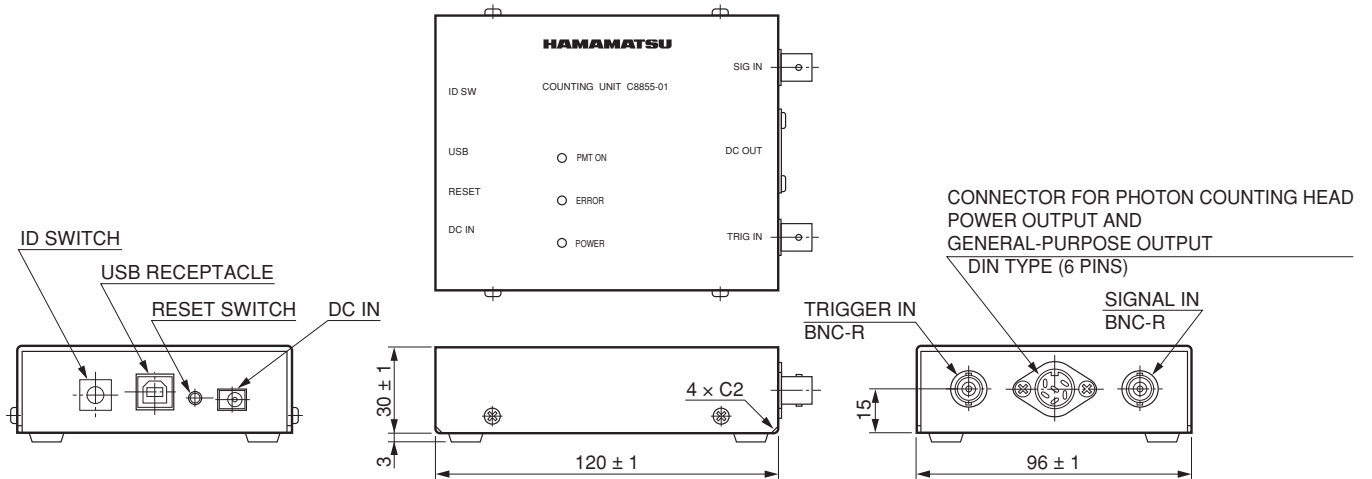
<sup>(D)</sup>When using the general-purpose output section or the constant voltage output for the photon counting head, supply from the supplied AC adapter.

<sup>(E)</sup>Excluding the projection and the cable

# BLOCK DIAGRAM

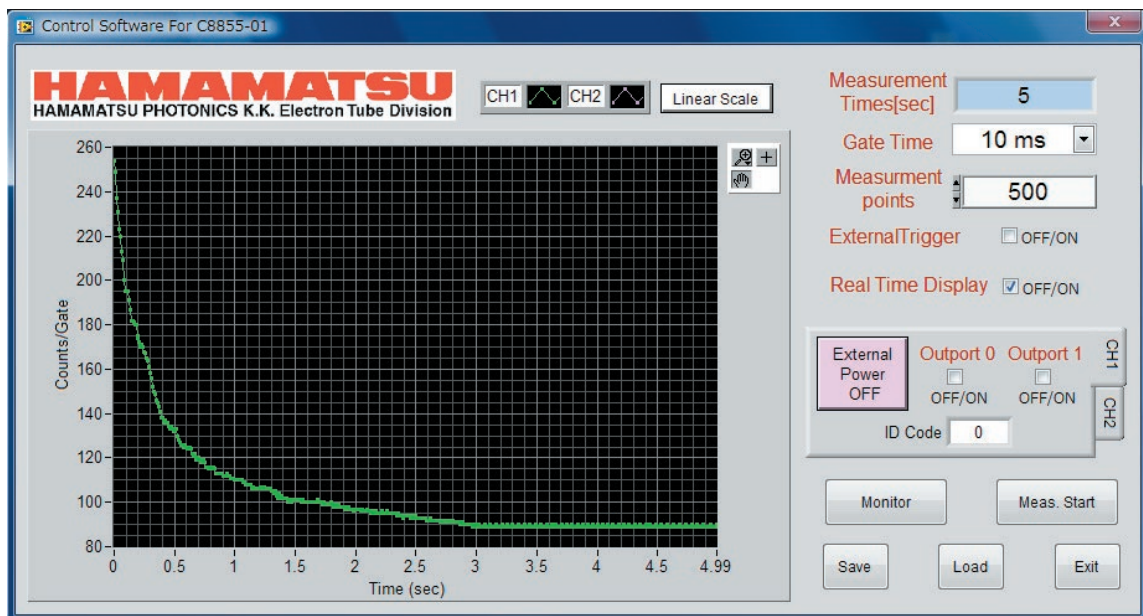


# DIMENSIONAL OUTLINES (Unit: mm)



TPHOA0035EB

# SAMPLE SOFTWARE SCREEN



## ● Specifications

Counter gate time: 50  $\mu$ s to 10 s (in 1, 2 or 5 steps)

Maximum number of measurement points: 100 000 points

Measurement time: Counter gate time (50  $\mu$ s to 10 s)  $\times$  Measurement points

Data save: CSV file

Information on how to create operation software is included in the C8855-01 instruction manual, so you can make your own software.

# RELATED PRODUCT

## Photon counting unit C9744



TPHOF0094

Photon counting unit is designed to convert single photoelectron pulses from a photomultiplier tube into digital signals of logic pulse by use of the built-in amplifier and discriminator circuits. Photon counting with a high S/N ratio can be performed by simply connecting a counter to the output of the photon counting unit.

The C9744 uses a high-speed electronic circuit that allows measurement with an excellent output linearity up to  $10^7 \text{ s}^{-1}$ . The C9744 also has a prescaler (division by 10) eliminating the need for a high-speed counter.

### Specifications

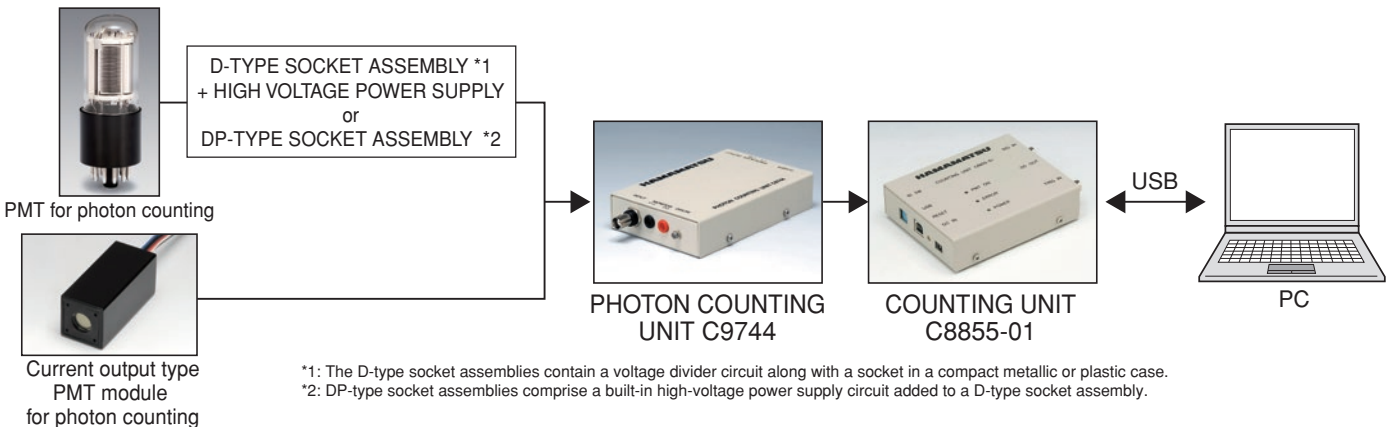
Parameter		Description / Value
Input impedance		50 $\Omega$
Discrimination level (input conversion)		-0.4 mV to -16 mV
Required PMT gain		$3 \times 10^6$
Prescaler		$\div 1 / \div 10$
Count linearity	$\div 1$	$4 \times 10^6 \text{ s}^{-1}$
	$\div 10$	$1 \times 10^7 \text{ s}^{-1}$
Pulse-pair resolution	$\div 1$	25 ns
	$\div 10$	10 ns
Output pulse		CMOS POSITIVE LOGIC
Output pulse width	$\div 1$	10 ns
	$\div 10$	Depends on count rate
Supply voltage		+5.0 V $\pm 0.2$ V, 130 mA / -5.0 V $\pm 0.2$ V, 50 mA
Connector	Input	BNC-R
	Output	BNC-R
	Power	DIN (6-pin) <sup>ⓑ</sup>
Dimensions (W x H x D)		90 mm x 32 mm x 140 mm <sup>ⓒ</sup>
Weight		Approx. 250 g
Operating ambient temperature		0 °C to +50 °C
Operating ambient humidity <sup>Ⓐ</sup>		Below 80 %
Storage temperature		-15 °C to +60 °C
Storage humidity <sup>Ⓐ</sup>		Below 85 %

<sup>Ⓐ</sup>No condensation

<sup>Ⓑ</sup>Supplied with a cable (1.5 m) attached to the mating plug.

<sup>ⓒ</sup>Excluding the projection and the cable

### Connection example



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