

# 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 fully controlled by DLL (dynamic link library) supplied.  
User can create own software program, which is adequate for various type of user measurement, based on the DLL functions.

## 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> 2000 / XP Pro / Vista Business (32) / 7 Pro (32)
Interface		USB
Supply Voltage		+7 V / 500 mA Max. (supplied from AC adapter)
Dimensions (W × H × D)		120 mm × 30 mm × 96 mm (excluding rubber feet and projecting parts)
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 IEC61236-1 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

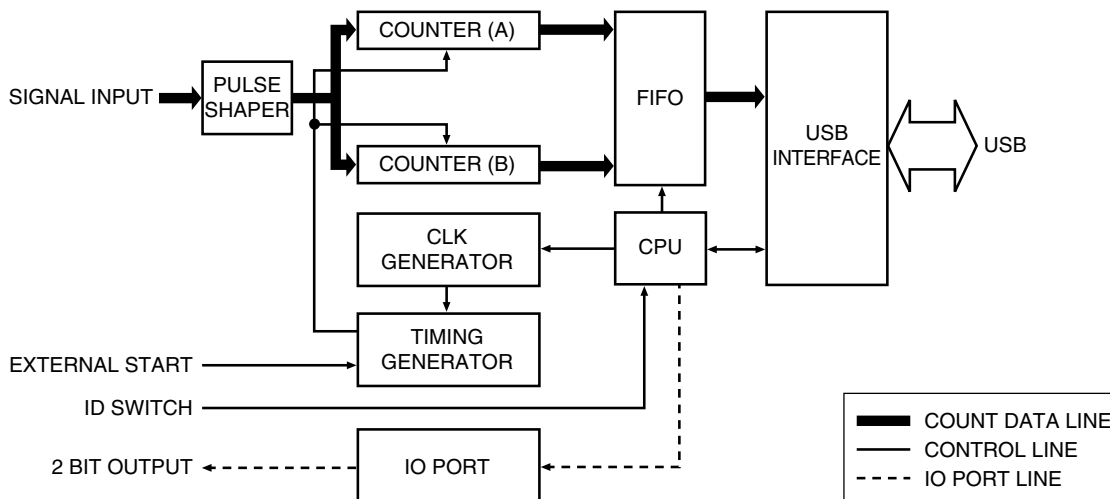
\*: Sample software is configured from Lab VIEW™ of National Instruments, Inc.

<sup>(A)</sup>The C8855-01 is not suitable for applications requiring time resolution higher than 50 μs. In such applications, use a counting board M9003-01.

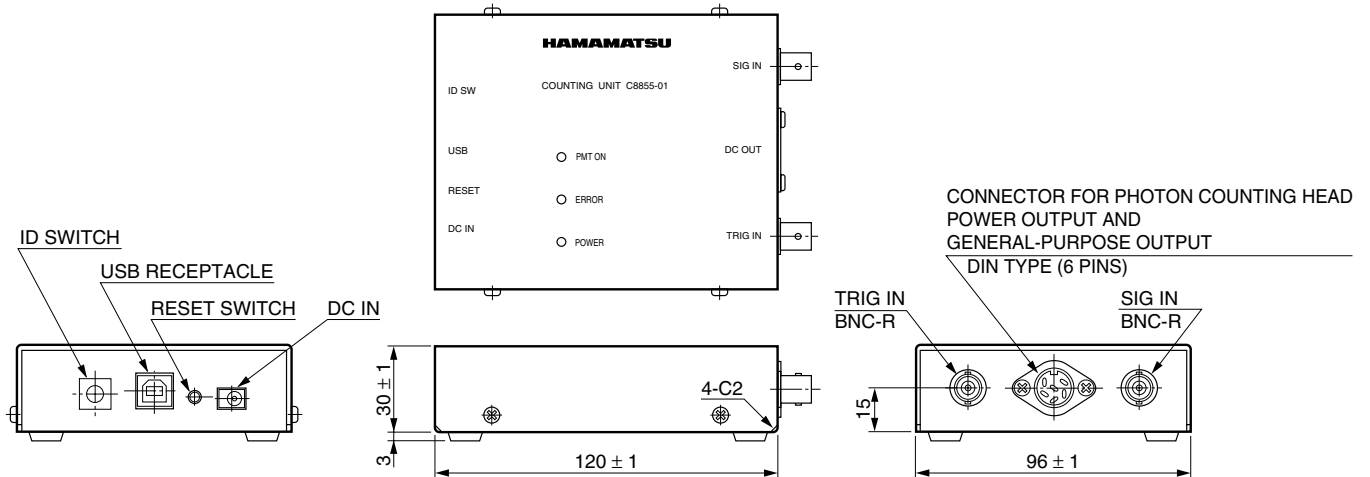
<sup>(B)</sup>The ID switch is used to set ID numbers when two or more C8855-01 units are connected to single PC.

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

# BLOCK DIAGRAM

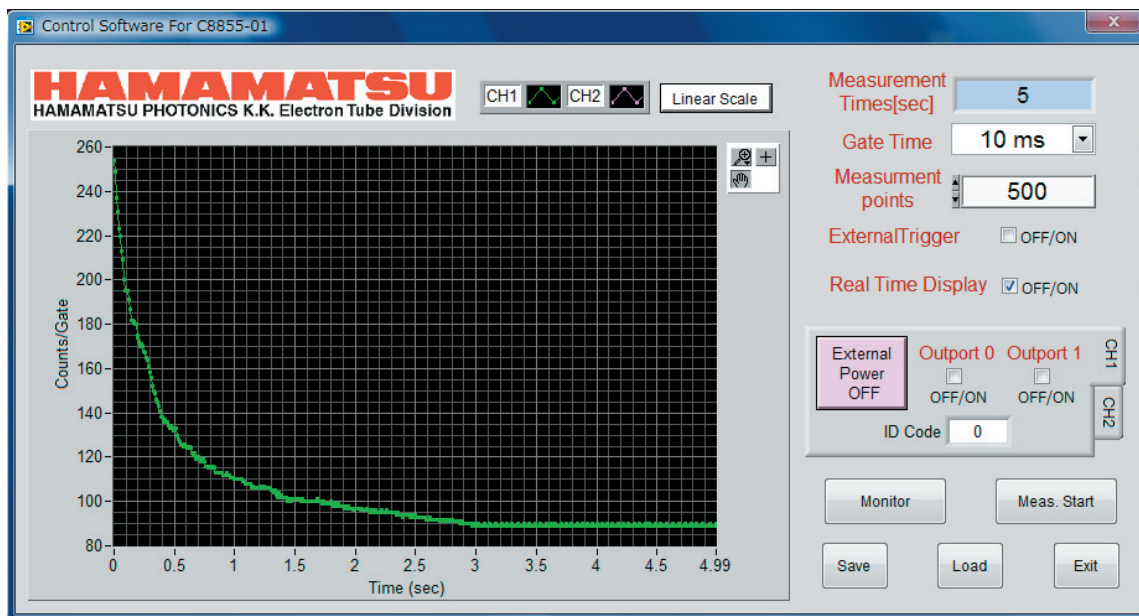


# DIMENSIONAL OUTLINES (Unit: mm)



TPHOA0035EA

# 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 5 V digital signals 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.

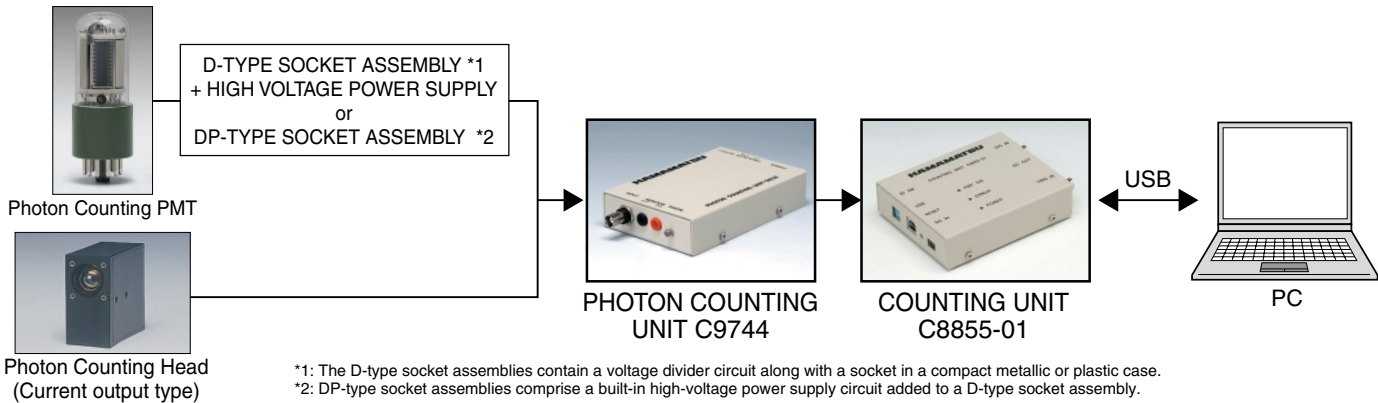
The C9744 uses a high-speed electronic circuit that allows measurement with an excellent output linearity up to  $10^7 \text{ s}^{-1}$ . The C9744 also has a prescaler (division by 10) eliminating the need for a high-speed counter.

### 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		+1 / $\div 10$
Count Linearity	+1	$4 \times 10^6 \text{ s}^{-1}$
	$\div 10$	$1 \times 10^7 \text{ s}^{-1}$
Pulse-pair Resolution	+1	25 ns
	+10	10 ns
Output Pulse		CMOS 5 V, POSITIVE LOGIC
Output Pulse Width	+1	10 ns
	+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 $\times$ H $\times$ D)		90 mm $\times$ 32 mm $\times$ 140 mm (excluding rubber feet and projecting parts)
Weight		Approx. 250 g
Operating Ambient Temperature		0 $^\circ\text{C}$ to +50 $^\circ\text{C}$
Operating Ambient Humidity <sup>(A)</sup>		Below 80 %
Storage Temperature		-15 $^\circ\text{C}$ to +60 $^\circ\text{C}$
Storage Humidity <sup>(A)</sup>		Below 85 %

<sup>(A)</sup>No condensation    <sup>(B)</sup>Supplied with a cable (1.5 m) attached to the mating plug.

### Connection Example



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Lab VIEW<sup>™</sup> is a trademark of National Instruments, Inc.

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