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 µs) 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

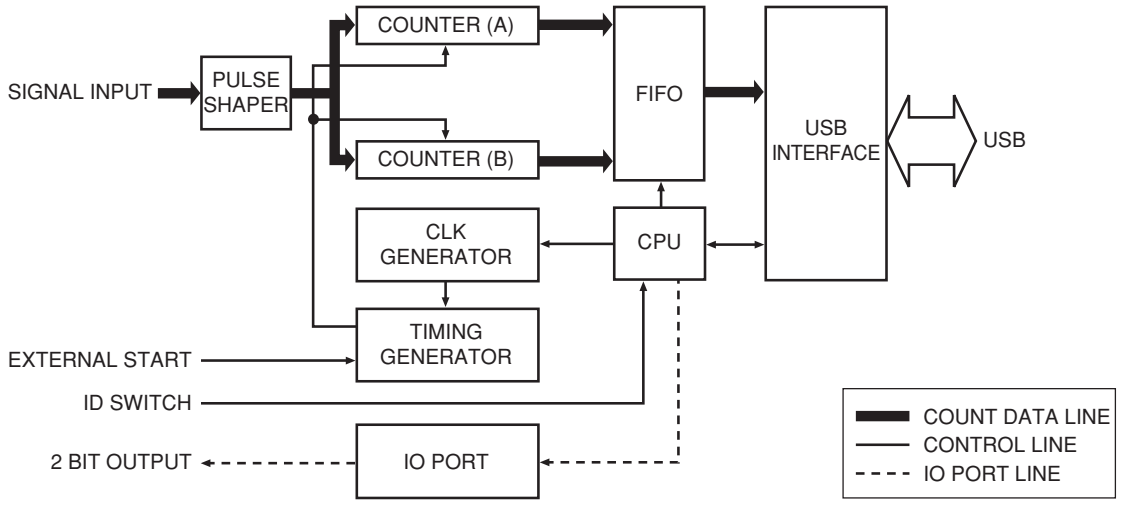
- **USB interface**
- **Sample software bundled**
- **Accurate measurement with no dead time (Double counter method)**
- **Power supply for photon counting head (Output voltage and current: +5 V / 200 mA)**
- **Multiple units can be operated from a single PC**

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^{32} counts / counter gate
Counter gate	Counter gate mode	Internal counter gate only
	Internal counter gate time Ⓐ	50 µs to 10 s (1, 2, 5 step)
Trigger	Trigger method	Software / External trigger
	External trigger signal	TTL negative logic
ID switch Ⓑ		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® 10 Pro / 11 Pro
Interface		USB
Supply voltage		Supplied by USB bus power Ⓓ +7 V / 400 mA Max. (supplied form AC adapter)
Dimensions (W × H × D)		120 mm × 30 mm × 96 mm Ⓔ
Weight		250 g
Operating ambient temperature / Humidity Ⓒ		+5 °C to +45 °C / Below 80 %
Storage temperature / Humidity Ⓒ		0 °C to +50 °C / Below 85 %
CE marking		• EN 61010-1/A1 • EN 61326-1 Emission Limits :CISPR 11 Group 1, Class B Immunity requirements :Table 1 • EN IEC 63000
AC adapter	Input	100 V to 240 V
	Output	+7 V / 1.6 A

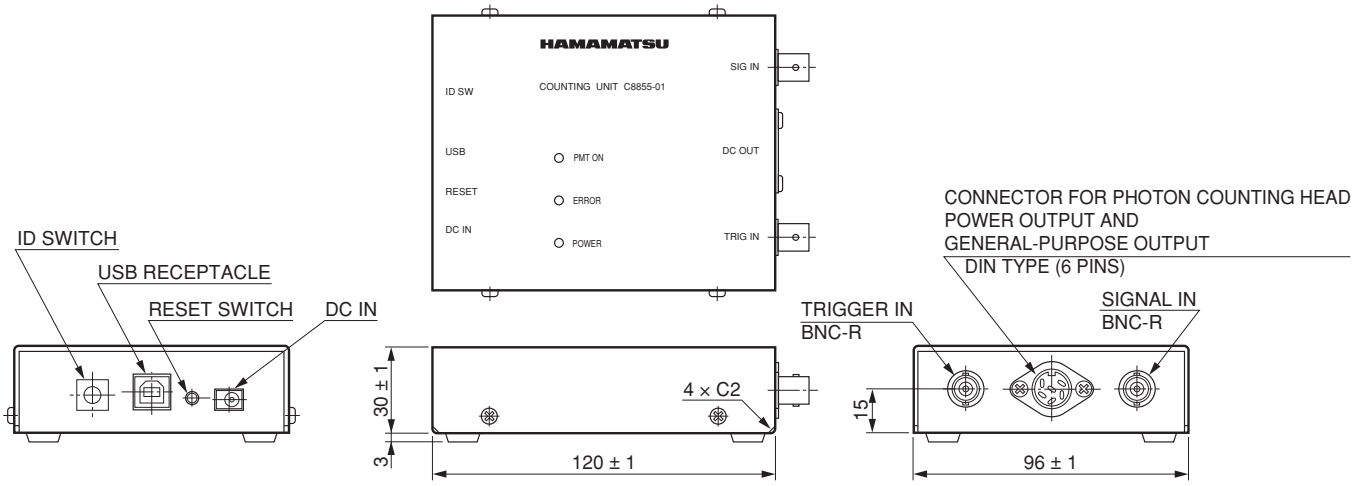
Supplied: CD-ROM (containing instruction manual, device driver, DLL, sample software*, etc.) USB cable, AC adapter, AC cable, power output connector
*: Sample software is configured from Lab VIEW™ of National Instruments, Inc.
ⒶThe C8855-01 is not suitable for applications requiring time resolution higher than 50 µs.
ⒷThe ID switch is used to set ID numbers when two or more C8855-01 units are connected to single PC.
ⒸNo condensation
ⒹWhen using the general-purpose output section or the constant voltage output for the photon counting head, supply from the supplied AC adapter.
ⒺExcluding the projection and the cable

BLOCK DIAGRAM



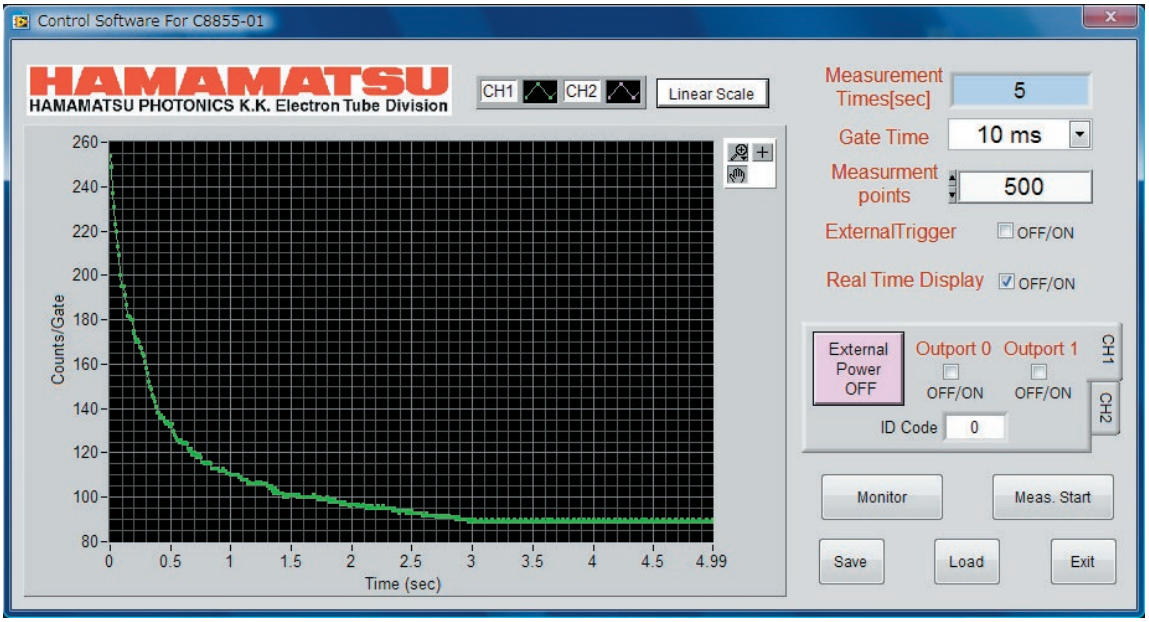
TPHOC0059EA

DIMENSIONAL OUTLINES (Unit: mm)



TPHOA0035EB

SAMPLE SOFTWARE SCREEN



●Specifications

Counter gate time: 50 µs to 10 s (in 1, 2 or 5 steps)
Maximum number of measurement points: 100 000 points
Measurement time: Counter gate time (50 µs to 10 s) × 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

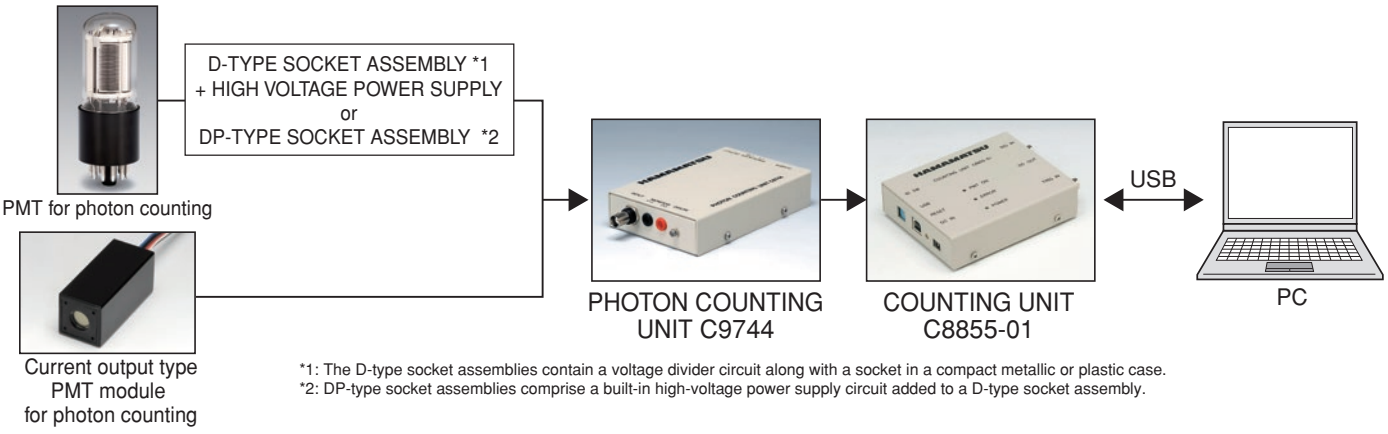
Photon counting unit is designed to convert single photoelectron pulses from a photomultiplier tube into digital signals of logic pulse by use of the built-in amplifier and discriminator circuits. Photon counting with a high S/N ratio can be performed by simply connecting a counter to the output of the photon counting unit.
The C9744 uses a high-speed electronic circuit that allows measurement with an excellent output linearity up to 10^7 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 Ω
Discrimination level (input conversion)		-0.4 mV to -16 mV
Required PMT gain		3×10^6
Prescaler		÷1 / ÷10
Count linearity	÷1	4×10^6 s^{-1}
	÷10	1×10^7 s^{-1}
Pulse-pair resolution	÷1	25 ns
	÷10	10 ns
Output pulse		CMOS POSITIVE LOGIC
Output pulse width	÷1	10 ns
	÷10	Depends on count rate
Supply voltage		+5.0 V ±0.2 V, 130 mA / -5.0 V ±0.2 V, 50 mA
Connector	Input	BNC-R
	Output	BNC-R
	Power	DIN (6-pin) Ⓑ
Dimensions (W × H × D)		90 mm × 32 mm × 140 mm Ⓒ
Weight		Approx. 250 g
Operating ambient temperature		0 °C to +50 °C
Operating ambient humidity Ⓐ		Below 80 %
Storage temperature		-15 °C to +60 °C
Storage humidity Ⓐ		Below 85 %

ⒶNo condensation ⒷSupplied with a cable (1.5 m) attached to the mating plug. ⒸExcluding the projection and the cable

■Connection example



*1: The D-type socket assemblies contain a voltage divider circuit along with a socket in a compact metallic or plastic case.
*2: DP-type socket assemblies comprise a built-in high-voltage power supply circuit added to a D-type socket assembly.

Windows® is a registered trademark of Microsoft Corporation in the United States and/or other countries.
Lab VIEW™ is a trademark of National Instruments, Inc.
Other product and software names mentioned herein may be either registered trademarks or trademarks of their respective owners.

Subject to local technical requirements and regulations, availability of products included in this promotional material may vary. Please consult with our sales office.
Information furnished by HAMAMATSU is believed to be reliable. However, no responsibility is assumed for possible inaccuracies or omissions. Specifications are subject to change without notice. No patent rights are granted to any of the circuits described herein. ©2024 Hamamatsu Photonics K.K.

HAMAMATSU PHOTONICS K.K. **www.hamamatsu.com**

Electron Tube Division
314-5, Shimokanzo, Iwata City, Shizuoka Pref., 438-0193, Japan, Telephone: (81)539/62-5248, Fax: (81)539/62-2205

U.S.A.: HAMAMATSU CORPORATION: 360 Foothill Road, Bridgewater, NJ 08807, U.S.A., Telephone: (1)908-231-0960, Fax: (1)908-231-1218 E-mail: usa@hamamatsu.com
Germany: HAMAMATSU PHOTONICS DEUTSCHLAND GMBH.: Arzbergerstr. 10, 82211 Herrsching am Ammersee, Germany, Telephone: (49)8152-375-0, Fax: (49)8152-265-8 E-mail: info@hamamatsu.de
France: HAMAMATSU PHOTONICS FRANCE S.A.R.L.: 19 Rue du Saule Trapu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: (33)1 69 53 71 00, Fax: (33)1 69 53 71 10 E-mail: infos@hamamatsu.fr
United Kingdom: HAMAMATSU PHOTONICS UK LIMITED: 2 Howard Court,10 Tewin Road, Welwyn Garden City, Hertfordshire, AL7 1BW, UK, Telephone: (44)1707-294888, Fax: (44)1707-325777 E-mail: info@hamamatsu.co.uk
North Europe: HAMAMATSU PHOTONICS NORDEN AB: Torshamnsgatan 35, 16440 Kista, Sweden, Telephone: (46)8-509-031-00, Fax: (46)8-509-031-01 E-mail: info@hamamatsu.se
Italy: HAMAMATSU PHOTONICS ITALIA S.R.L.: Strada della Moia, 1 int. 6 20044 Arese (Milano), Italy, Telephone: (39)02-93 58 17 33, Fax: (39)02-93 58 17 41 E-mail: info@hamamatsu.it
China: HAMAMATSU PHOTONICS (CHINA) CO., LTD.: 1201, Tower B, Jiaming Center, 27 Dongsanhuan Beilu, Chaoyang District, 100020 Beijing, P.R. China, Telephone: (86)10-6586-6006, Fax: (86)10-6586-2866 E-mail: hpc@hamamatsu.com.cn
Taiwan: HAMAMATSU PHOTONICS TAIWAN CO., LTD.: 13F-1, No.101, Section 2, Gongdao 5th Road, East Dist., Hsinchu City, 300046, Taiwan(R.O.C) Telephone: (886)3-659-0080, Fax: (886)3-659-0081 E-mail: info@hamamatsu.com.tw

TACC1078E04
MAR. 2024 IP