Related Products

Power Supply for PMT Modules C7169

The C7169 is a power supply unit for driving photosensor modules. Both drive voltages and control voltages can be supplied from this one unit.

Applicable products:

H5773/H5783/H6779/H6780 Series, H5784 Series
H7710/H8567 Series, H7711/H7712/H8568/H8569 Series
H7732 Series, H7826 Series, H7827 Series, H8249 Series

Parameter		Value	Unit
Output Voltage		±15	V
Input Current	Max.	0.3 (+15 V), 0.2 (-15 V)	A
Control Voltage (variable voltage range)		0 to +1.2	V
AC Input Voltage		100 to 240	V
Input Power Frequency		50/60	Hz
Operating Ambient Temperature		+5 to +50	°C
Storage Temperature		-20 to+50	°C
Output Connector		Binding post	—
Dimensional Outlines		147 × 61 × 200	mm
Weight		Approx.1.2	kg

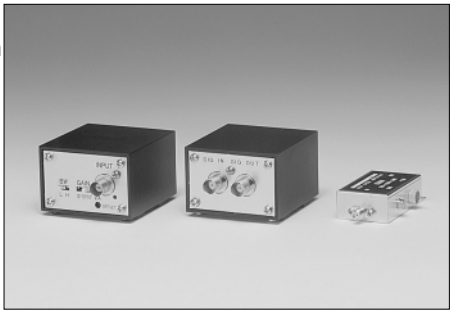
Amplifier Units

These are amplifier units for photomultiplier tubes and current output type PMT modules.

C7319: Switchable between 2 frequency bandwidths and 3 current/voltage conversion coefficients. Ideal for applications requiring low noise and high gain.

C6438: Wide bandwidth from DC to 50 MHz and gain of 20 dB. (-01 type is 54 dB)

C5594: High cut off frequency of 1.5 GHz. Faithfully amplifies high-speed output pulses. The input/output connector can be selected from the SMA or BNC types.



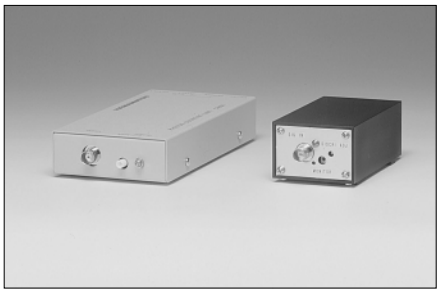
▲ From left: C7319, C6438, C5594-44

Parameter		C7319	C6438	C6438-01	C5594-44 *6	Unit
Frequency Bandwidth (-3 dB)		DC to 20 kHz or DC to 200 kHz (switchable)*1	DC to 50 MHz	DC to 50 MHz	50 kHz to 1.5 GHz	—
Voltage Gain		—*2	20 ± 3 *4 (approx. 10 times)	54 ± 3 *4 (approx. 500 times)	36 *4 (approx. 63 times)	dB
Current-to-Voltage Conversion Factor		100 mV/µA, 1 V/µA or 10 V/µA (switchable)	0.5 mV/µA *5	25 mV/µA *5	3.15 mV/µA *5	—
Amplifier Input (output)		±Current (inverted)	±Voltage (non-inverted)	±Voltage (non-inverted)	-Voltage (non-inverted)	—
Input Impedance		—*2	50	50	50	Ω
Recommended Load Resistance		—	50	50	50	Ω
Max. Output Signal Voltage		±13 *3	±1 *4	±1 *4	-2.5 *4	V
Connector	Input	BNC-R	BNC-R	BNC-R	BNC-R	—
	Output	BNC-R	BNC-R	BNC-R	BNC-R	—
	Power	DIN (6-pin)	DIN (6-pin)	DIN (6-pin)	—	—
Input Voltage		±5 to ±15	±5	±5	+12 to +16	V
Input Current	Max.	±16	±55	±80	+95	mA
Dimensions		60 × 43.2 × 65	60 × 43.2 × 65	60 × 43.2 × 65	54 × 17 × 33	mm
Weight		Approx.170	Approx.160	Approx.160	Approx.80	g

*1: Frequency bandwidth is limited to DC to 100 kHz at conversion coefficient of 10 V/µA. *2: C7319 is current input type.
*3: At ±15 V Supply voltage and 10 kΩ load resistance. *4: At 50 Ω load resistance.
*5: Value after current-to-voltage conversion by input impedance. *6: Contact our sales office for other connectors for C5594.

Photon Counting Units C3866, C6465

These photon counting units contain an amplifier and discriminator to convert the single photoelectric pulses from a photomultiplier tube into a 5 V digital signal.
The C3866 has an output linearity up to 1×10^7 s^{-1}, and a high-speed counter is not required when set to division by 10.
The C6465 has an output linearity up to 1×10^6 s^{-1}, and an output pulse width of 30 ns allows it to be used with a general-purpose counter.



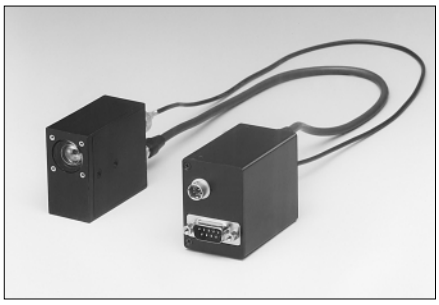
▲Left: C3866 Right: C6465

Parameter		C3866		C6465	Unit
Input Impedance		50		50	Ω
Discrimination Level (input conversion)		-0.5 to -16		-2.2 to -31	mV
Gain Required in PMT		3×10^6		5×10^6	—
Prescaler		1/1	1/10	—	
Count Linearity		4×10^6	1×10^7	1×10^6	s^{-1}
Pulse-pair Resolution		25	10	60	ns
Output Signal Level		C-MOS		TTL positive logic	—
Output Pulse Width		10	Depends on count rate.	30	ns
Supply Voltage		+5.2 ± 0.2 V, 150 mA/-5.2 ± 0.2 V, 300 mA		+5 V, 60 mA/-5 V, 120 mA	—
Connector	Input	BNC-R		BNC-R	—
	Output	BNC-R		BNC-R	—
	Remote	BNC-R		—	—
	Power	HIROSE SR30-10R-4S *1		DIN (6-pin) *2	—
Dimensions		88 × 32 × 170		60 × 43.2 × 105	mm
Weight		Approx. 320		Approx. 250	g

*1: Supplied with a cable (1 m) attached to the mating plug (HIROSE SR30-10PQ-4P).
*2: Supplied with a cable (1.5 m) attached to the mating plug.

Data Acquisition Units C8907, C8908

The C8907 and C8908 data acquisition units have a signal processing circuit that converts analog signals of a PMT module into digital data for output to a PC (personal conputer). Gate time/Integration time, number of reading and photomultiplier tube gain can be controlled from the PC. The C8907 and C8908 also provide output voltage necessary to operate a PMT module, making device setup and connection easier.

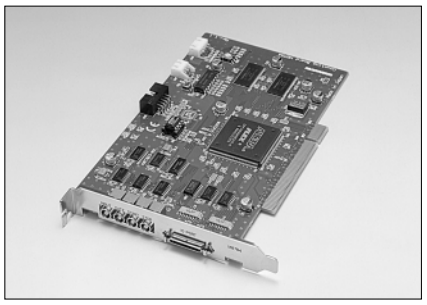


Left: PMT module (sold separately)▶
Right: C8907, C8908

Parameter	C8907	C8908	Unit
Configuration	Photon counting circuit + counter + CPU + interface	Charge amp + ADC + CPU + interface	—
Pulse-pair Resolution	20	—	ns
ADC Resolution	—	12	bit
Interface	RS-232C		—
Gate Time / Integration Time	10 to 1000 (10 step)	0.04 to 500	ms
Dead Time	—	0.01 to 500	ms
Number of Reading at Fixed Set Reading	—	1 to 127	—
Supply Voltage	+5		V
Accessories (supplied)	Power cable (6-pin) RS-232C cross cable		—
Applicable PMT Modules	H7826P, H7826P-01, H7732P-01, H7732P-11, H5783P*	H7826 Series, H7732 Series, H6780 Series* H5783 Series*, H7710 / H8567 Series*	—

*: We can install a signal connector (BNC-P) and a power input connector (HIROSE HR 10A-7P-6P) to the cable ends of an applicable PMT module if needed (extra charge). Please specify the type of connector when placing your order.

Counting Board M8784



The M8784 counting board is a PCI bus add-in board type counter. The M8784 functions as a photon counter when combined with a photon counting head, etc.
The counter of the M8784 includes two counting circuits (double counter method) capable of counting input signals with no dead time. The internal memory allows pulse counting over extended periods with a high time resolution (10 μs).
A maximum of two M8784 boards can be simultaneously controlled from a PC, making it possible to perform simultaneous dual-channel measurements.
Initial setting for the M8784 is simple and easy due to PnP (plug and play). You can start measurement on the day you receive the M8784.
The M8784 is designed to install into a PCI bus slot of desktop computers and cannot be used with notebook-sized computers. When using a notebook computer, use the C8855 counting unit also available from Hamamatsu.

- **Also ideal for long-term data collection such as in biological clock monitoring** *)

  This is an ideal feature when the time needed to record count data in the memory is longer than the time needed to transfer the count data to a PC and write it into the storage medium. This allows time-resolved measurement (minimum resolution: 10 μs) over a long period of time . Memory recording time is calculated from "counter operation time × memory length".
  (Example: minimum resolution 10 μs × maximum memory length 256 000 = 2.56 s)

  *) Standard sample software may not work at some conditions depending on the combination of measuring time and time resolution. Please consult with our sales office in advance with information of your condition.

- **Time-resolved measurement of chemiluminescence (minimum resolution 10 μs)**
- **Supports different kinds of measurements**

  The M8784 is fully controlled by DLL (dynamic link library) functions that come with the M8784.
  All information on these DLL functions is available to support software programming that handles various types of user measurement applications.

Parameter		Description / Value
Input	Number of Input Signals	1 ch
	Signal Input Level	TTL positive logic
	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, external, START-STOP
	Internal Counter Gate Time	10 μs to 10 s (1, 2, 5 step)
	External Counter Gate Time	100 ns or more
Trigger	Trigger Method	Software or external trigger
	External Trigger Signal	TTL negative logic
Memory	Memory Method	Double memory method
	Memory Capacity	128 000 (when capacity of 2^{32} is selected) / 256 000 (when capacity of 2^{16} is selected)
	Memory Date Width	2^{32} (32 bit) / 2^{16} (16 bit)
General Output Section	Signal Input	TTL negative logic / 8 bit
	Signal output	Open collector / 8 bit
Compatible OS		Windows® 98/98SE/Me/2000
Bus Type		PCI
Supply Voltage		5 V / 1 A (supplied from PCI bus)
Size		Half size
Weight		150 g
Operating Ambient Temperature/Humidity		+5 °C to +45 °C / 80 % or less (no condensation)

Supplied: CD-ROM (containing instruction manual, device driver, DLL, sample software, etc.), Signal input cable (E1168-22), General-purpose I/O connector (JAE: TXA20A-26PH1-D2P1-D1), Connection cable set (JAE: XHP-3, XHP-4)

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

CE : Conforms to the EMC directive (89/336/EEC) of the European Union.

Counting Unit C8855

The C8855 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 has two counter circuits (double counter method) capable of counting input signals with no dead time. The USB interface easily connects to a notebook PC allowing measurement in an even wider application field. When used with a photon counting head, the C8855 supplies power (+5 V / 200 mA) necessary to operate the photon counting head.
Since the C8855 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 is delivered by using the sample software that comes with the C8855.
The C8855 cannot be used in simultaneous dual- channel measurements or long-time measurements with a fast time resolution. In such applications, use the M8784 counting board also available from Hamamatsu.

- **Time-resolved measurement (minimum resolution: 50 μs) for monitoring chemiluminescence and biological clocks**
- **Quick measurement setups (hot-swap compatible)**
  When software such as a device driver is installed into your PC beforehand, you can start measurement by just connecting the USB cable, without restarting the PC.
- **Applicable to various measurement methods**
  The C8855 is fully controlled by DLL (dynamic link library) functions that come with the C8855.
  All information on these DLL functions is available to support software programming that handles various types of user measurement applications.

Parameter		Description / Value
Input	Number of Input Signals	1 ch
	Signal Input Level	TTL positive logic
	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 or external trigger
	External Trigger Signal	TTL negative logic
General Output Section		Open collector / 2 bits
Voltage Output		+5 V / 200 mA Max.
Compatible OS		Windows® 98/98SE/Me/2000
Interface		USB (Ver. 1.1)
Supply Voltage		+5 V / 500 mA Max. (supplied from accessory AC adapter)
Dimensions		(W): 148 mm × (D): 96 mm × (H): 30 mm (excluding rubber feet and projecting parts)
Weight		300 g
Operating Ambient Temperature/Humidity		+5 °C to +45 °C / 80 % or less (no condensation)
AC Adapter	Input	AC 90 V to AC 260 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.

CE : Conforms to the EMC directive (89/336/EEC) and the low voltage directive (73/23/EEC) of the European Union.