

FEATURES

- High detection efficiency
- Excellent time resolution
- Low gate induced noise

APPLICATIONS

- SLR (Satellite Laser Ranging)
- General laser ranging



Figure 1: Typical instrument response function (I.R.F.)

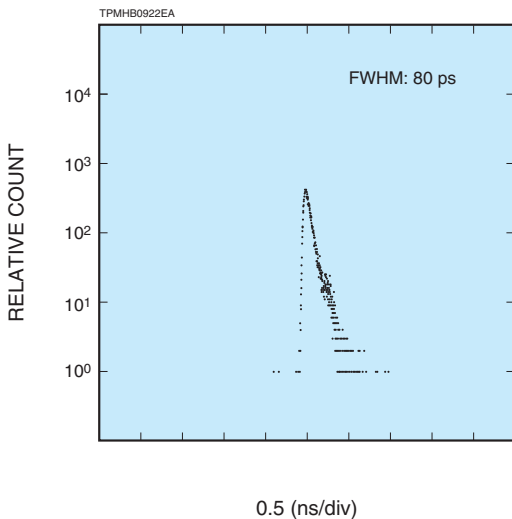


Figure 3: Spectral response

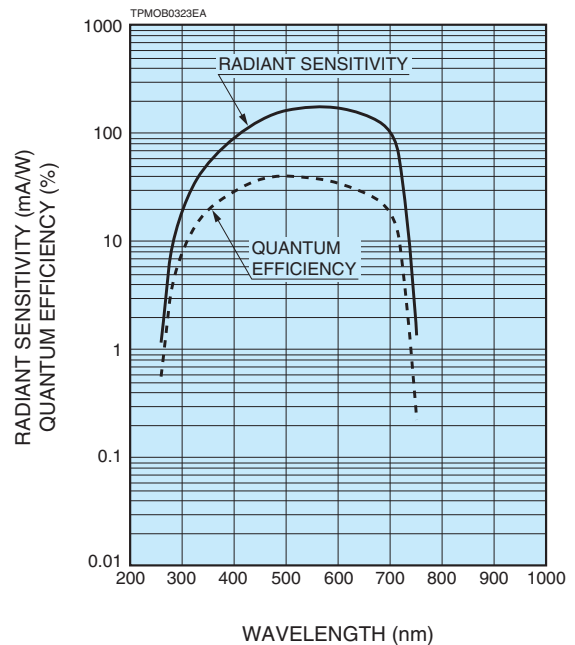
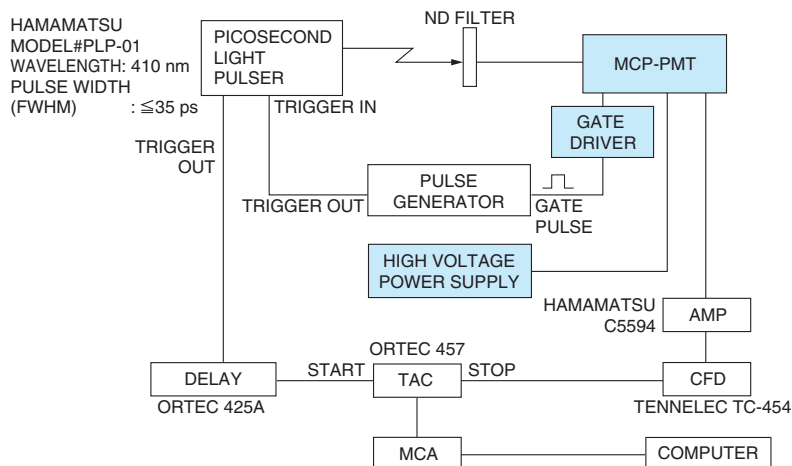


Figure 2: Block diagram of I.R.F. (Instrument Response Function) measuring apparatus



TPMCC0280EA

GATED MCP-PMT UNIT C13068

SPECIFICATIONS

GENERAL

Parameter		Description / Value	Unit
Spectral response range		280 to 720	nm
Wavelength of peak quantum efficiency range		480 to 530	nm
Input window	Material	Borosilicate glass	—
Photocathode	Material	GaAsP	—
	Minimum effective diameter	10	mm
AC input		100 to 240	V

MAXIMUM RATINGS

Parameter	Description / Value	Unit
Supply voltage [Ⓐ]	-2200	V
Average anode current	100	nA
Pulsed peak current	350	mA
Ambient temperature (Operating and storage)		0 to +40

CHARACTERISTICS

Parameter		Min.	Typ.	Max.	Unit
Photocathode sensitivity	Luminous sensitivity [Ⓑ]	400	700	—	μA/lm
	Quantum efficiency at 532 nm [Ⓒ]	30	40	—	%
Gain (at -2000 V)		4.0×10^5	—	—	—
Anode dark count (+25 °C) [Ⓓ]		—	1.0×10^4	5.0×10^5	s ⁻¹
Time response	Rise time [Ⓔ]	—	180	—	ps
	Fall time [Ⓕ]	—	400	—	
	I.R.F. (FWHM) [Ⓖ]	—	80	—	

GATING CHARACTERISTICS

Parameter		Description / Value	Unit
Gate input signal	Signal level	Gate on: +5 / Gate off: 0	V
	Repetition frequency (Max.)	5	kHz
	Impedance	50	Ω
Gating time		100 ns to 50 μs	—

NOTE: [Ⓐ]The supply voltage will be determined between -1800 V to -2200 V in order to satisfy the specification for luminous gain. This value is referred on the test data sheet for each tube.

[Ⓑ]The light source used to measure the luminous sensitivity is a tungsten filament lamp operated at a distribution temperature of 2856 K. The incident light intensity is 10^{-4} lm and 100 V is applied between the photocathode and all other electrodes connected as an anode.

[Ⓒ]Measured at the peak sensitivity wavelength.

[Ⓓ]At 30 min after high voltage is applied

[Ⓔ]This is the mean time difference between the 10 % and 90 % amplitude points on the output waveform for full cathode illumination.

[Ⓕ]This is the mean time difference between the 90 % and 10 % amplitude points on the tailing edge of the output waveform for full cathode illumination.

[Ⓖ]IRF stands for Instrument Response Function which is a convolution of the δ pulse function (H(t)) of the measuring system and the excitation function (E(t)) of a laser. The I.R.F. is given by the following formula:

$$I.R.F. = H(t) \times E(t)$$

We specify the I.R.F. as an FWHM of the time distribution taken by using the measuring system in Figure 2 that is Hamamatsu standard IRF measurement. It can be temporary estimated by the following equation:

$$(I.R.F. (FWHM))^2 = (T.T.S.)^2 + (T_w)^2 + (T_j)^2$$

where T_w is the pulse width of the laser used and T_j is the time jitter of all equipments used. An I.R.F. data is provided with the tube purchased as a standard.

Transit-time spread (T.T.S.) is the fluctuation in transit time between individual pulse and specified as an FWHM (full width at half maximum) with the incident light having a single photoelectron state.

Figure 4: Typical gain

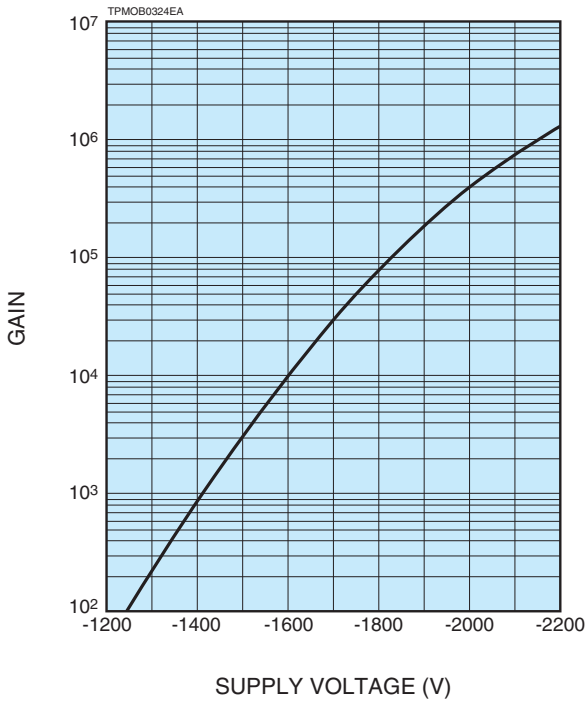
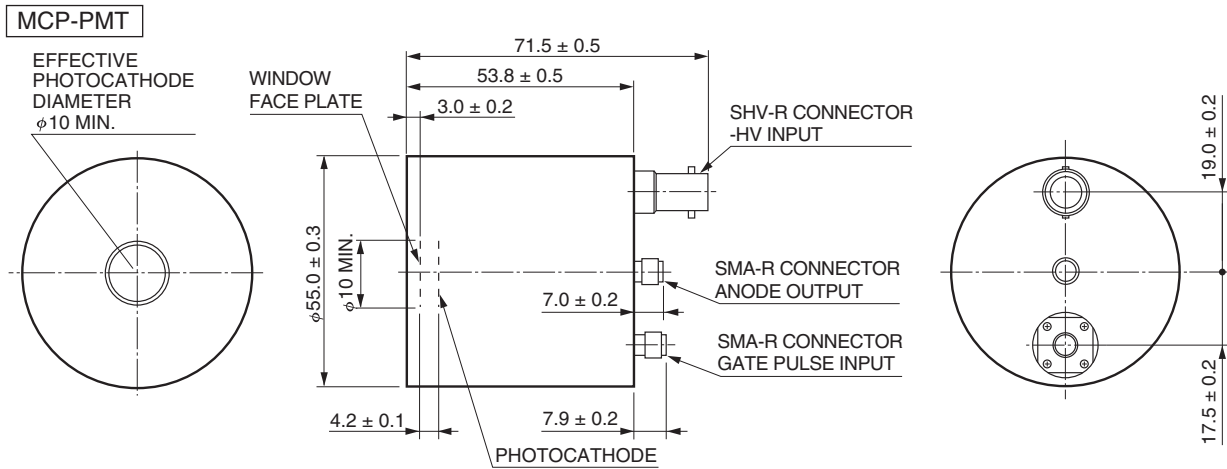
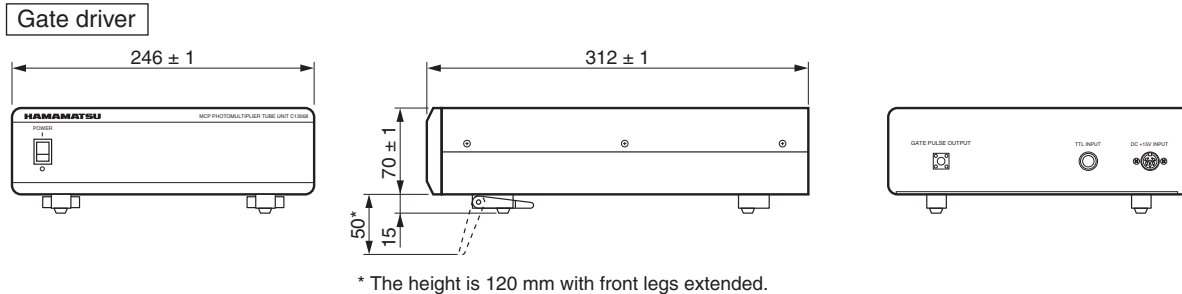


Figure 5: Dimensional outline (Unit: mm)

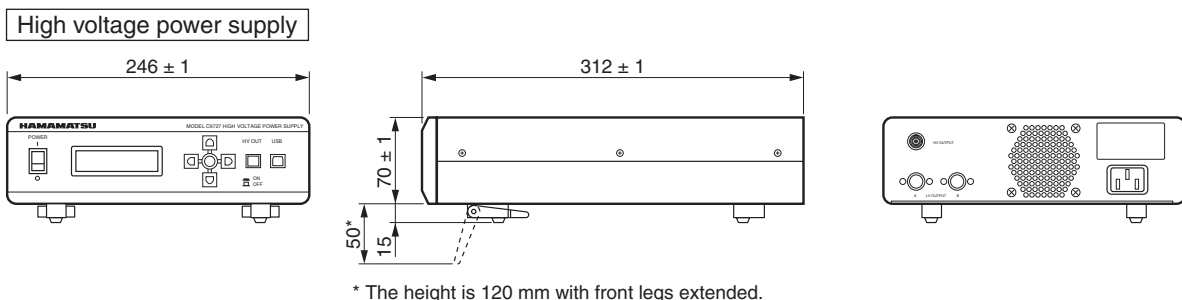


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* The height is 120 mm with front legs extended.

TPMOA0104EA

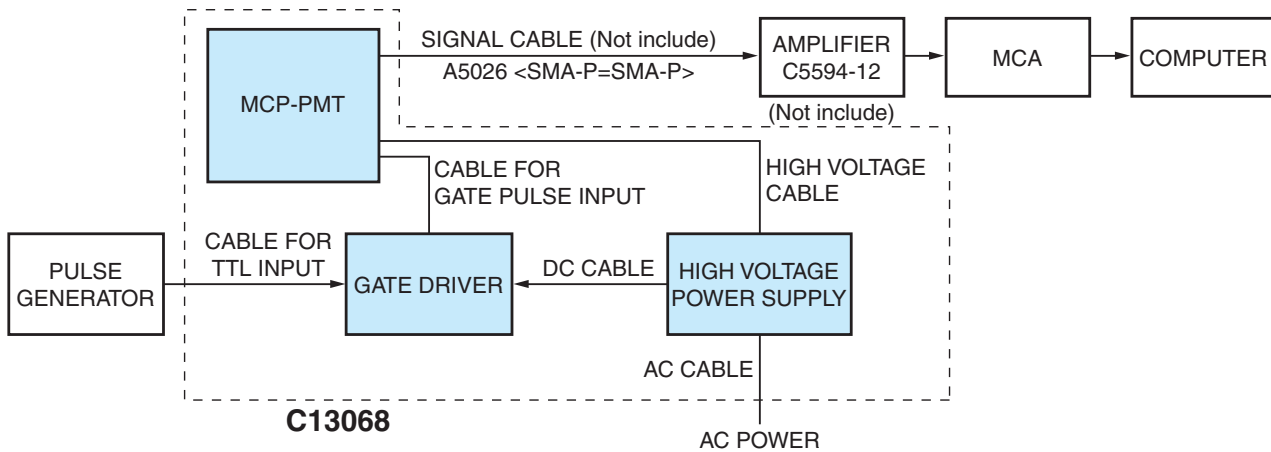


* The height is 120 mm with front legs extended.

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GATED MCP-PMT UNIT C13068

Figure 6: Connection example



TPMOC0279EA

ACCESSORIES

HIGH SPEED AMPLIFIER C5594 Series

Suffix number and input / output connector

Type No.	Input connector	Output connector
C5594-12	SMA plug (male)	SMA receptacle (female)
C5594-22	SMA receptacle (female)	SMA receptacle (female)
C5594-44	BNC receptacle (female)	BNC receptacle (female)



Specifications

Parameter	Description / Value
Frequency response range	50 kHz to 1.5 GHz
Voltage gain	Typ. 36 dB
Current-to-Voltage conversion factor	3.15 mV/A
Input / Output impedance	50 Ω
Noise figure (NF)	Typ. 5 dB
Supply voltage	+12 V to 16 V
Supply current	Max. 95 mA

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