

# Objective

July 2001

# HAMAMATSU

H8353 series

## 32-channel fast photo sensor module

This complete photosensor module accommodates a high sensitive photo sensor with 32 independent linear multi channels and signal processing behind.

The photo sensor system can measure 32 signals independently and simultaneously at high speed. Signal processing system consists of high performance charge amplifiers, A/D converters and 2 type of Interface.



Senso32ch Photo r Module with USB interface (computer is not included)

## Features

- Complete compact package to measure 32 signals simultaneously, using the fast photo sensor
- 2 type of Interface available, USB (Universal Serial Bus) and SPI (Serial Peripheral Interface).
- Using high performance charge amplifiers, achieve 200  $\mu$  second sampling for USB Interface type and 300  $\mu$  second sampling for SPI Interface type
- Capable to transfer 12 bit serial digital signal
- Data acquisition by a trigger signal from outside

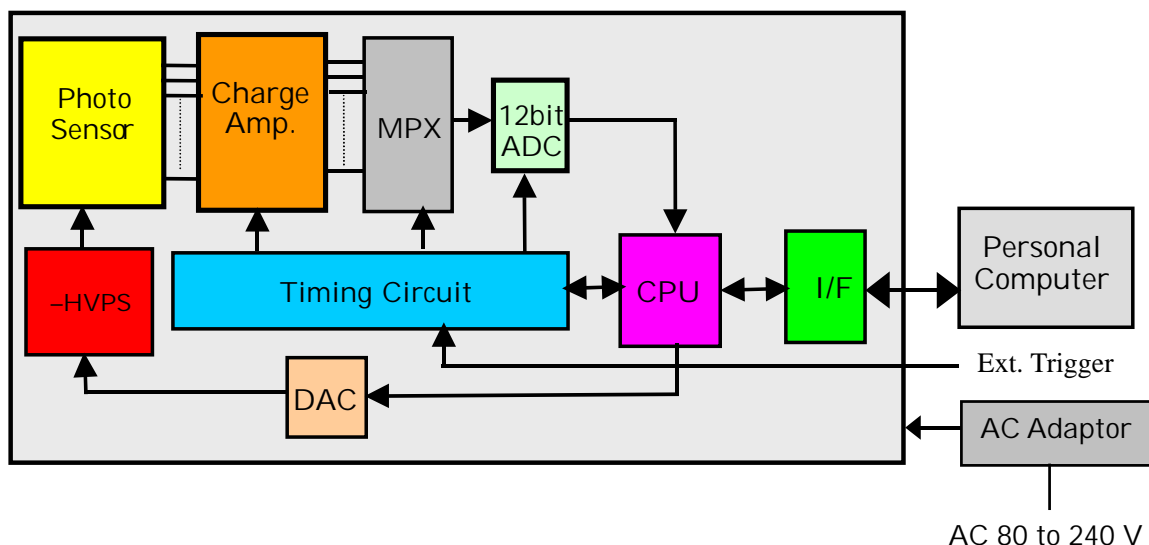
## Applications

- Position sensing of low light object
- Fast spectrum analysis with a spectrometer

## Option

- Mixing Fiber and Lens
- Interference filters

Fig.1 Block Diagram



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## Explanation of Part Number & Suffix Number

Part No.	Type	Filter	Interface
H8353-01	Bialkali	-	USB
H8353-02	Multialkali	-	USB
H8353-01F	Bialkali	Yes	USB
H8353-02F	Multialkali	Yes	USB

Part No.	Type	Filter	Interface
H8353-01S	Bialkali	-	SPI
H8353-02S	Multialkali	-	SPI
H8353-01FS	Bialkali	Yes	SPI
H8353-02FS	Multialkali	Yes	SPI

## Specifications

### PMT

Parameter	-01	-02	Unit
Photocathode Material	Bialkali	Multialkali	-
Window Material	UV glass	UV glass	-
Spectral Response	300 to 650	300 to 850	nm
Peak Wavelength	420		nm
Number of channels	16		-
Gain Adjustment	100 to 900 (10V step)		V
Photosensitive Area	0.8×7.0		mm
Channel Pitch	1		mm

### Signal Processing

Parameter	USB type	SPI type	Unit
Interface	USB	SPI	-
Sampling Time	200 X 10 <sup>-6</sup> to 0.1	300 X 10 <sup>-6</sup> to 0.1	s
A/D conversion (Serial)	12 bit		-
A/DC Input Range	0 to 4		V
Delay Time Adjustment	10 X 10 <sup>-6</sup> to 0.1		s
Trigger mode	Internal / External		-
External Trigger Input	+5 V TTL		-

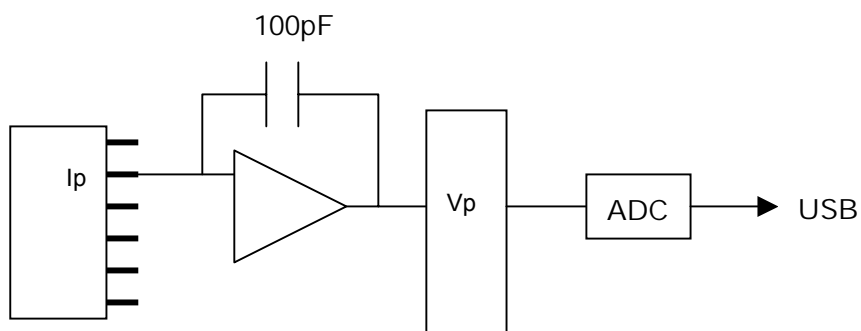
### General Rating

Parameter	Specifications	
Input Voltage (AC)	80 to 240	V
Power Consumption	15	VA
Operating Temperature	0 to +40	°C
Storage Temperature	-20 to +60	°C
Humidity	Below 70 (non condensation)	%
Dimension	77(W) x 56(H) x 194(D)	mm
Weight	1	Kg
USB Cable Length	1.0	m

Note 1: A rush current generates when the power is turned on.

Use a power supply with a rated capacity of about 1A to ensure stable operation.

## Conversion Factor



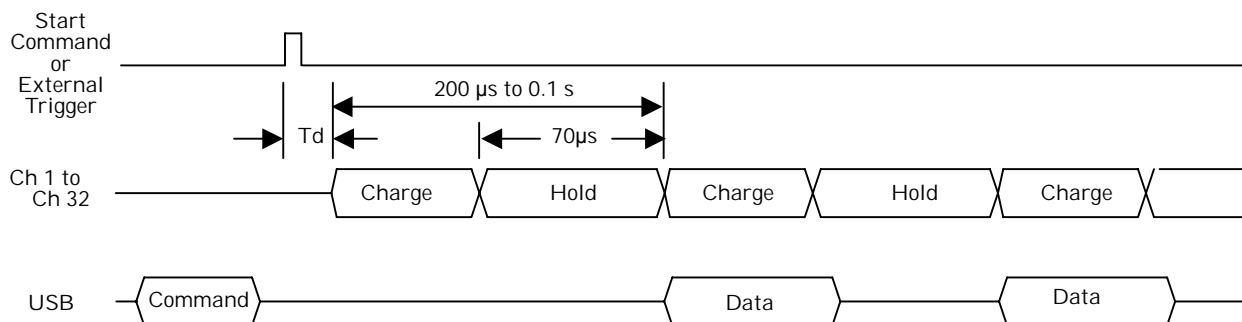
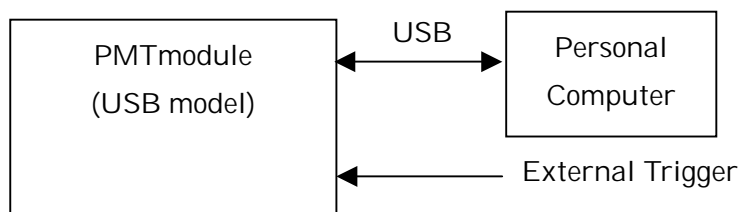
$$V_p = I_p \cdot T_s / (1.0 \times 10^{-10})$$

$$I_p (\mu A) = 1.0 \times 10^{-10} \cdot D_n / T_s$$

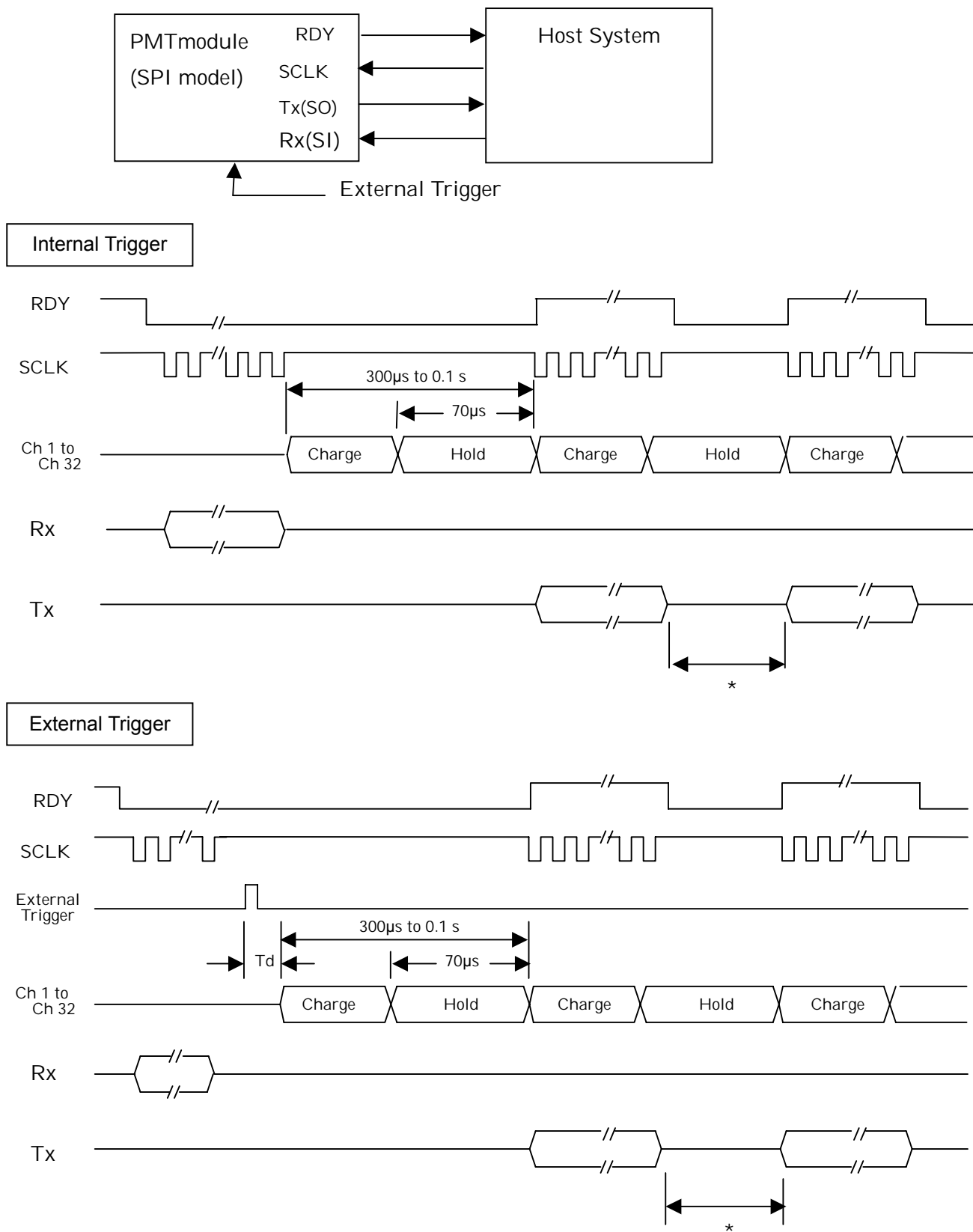
$T_s$  : Sampling Time

$D_n$  : Digital value in decimal ( 0 to 4095 )

## USB Cable Connection & Timing Diagram



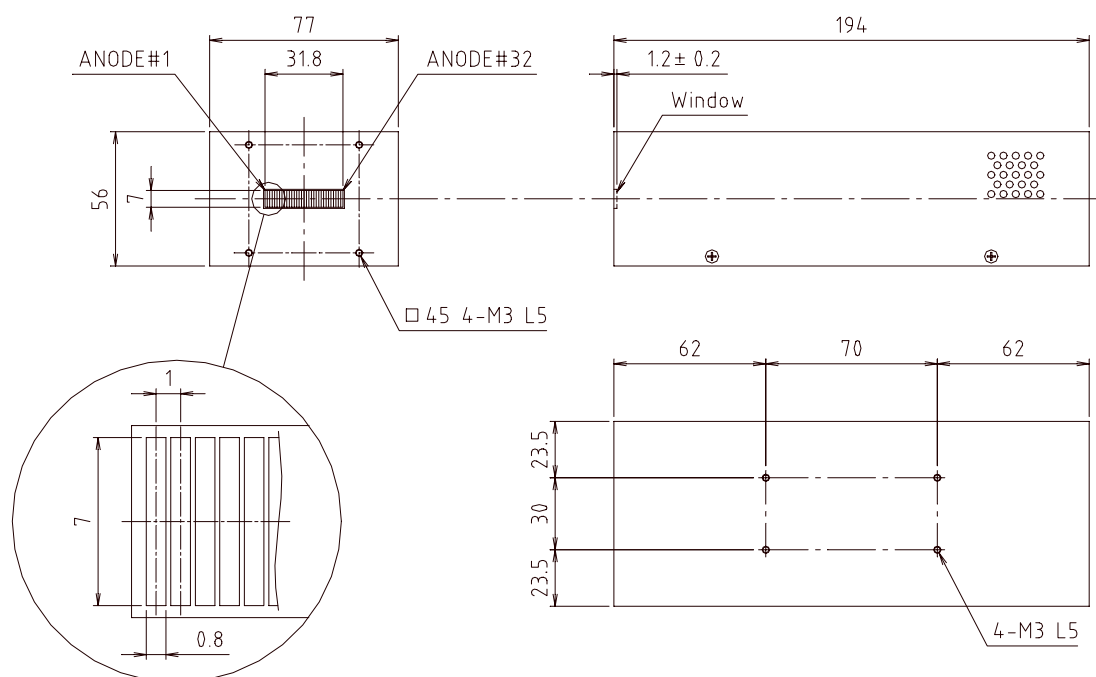
## SPI Cable Connection & Timing Diagram



\* Stop Command can be received during this period

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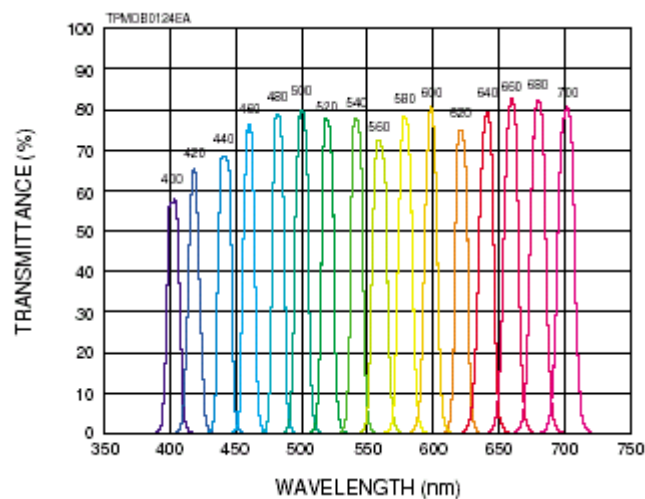
## Dimensional Outline ( Unit : mm )



## Filter Characteristic

Based on the PMT spectral response, user may select any wavelength below on each channel.

400nm to 700nm (10nm step), 720nm to 800nm (20nm step)



example of filter transmittance

Information in this technical information is believed to be accurate and reliable. However, no responsibility is assumed for possible inaccuracies or omissions. Specifications are subject to change without notice.

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