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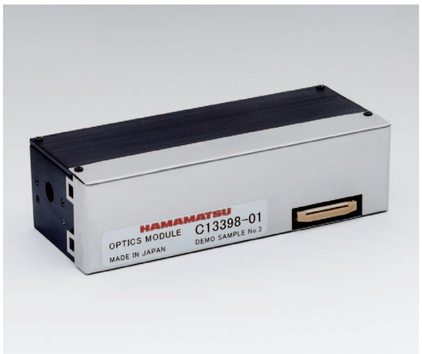


Optics modules

C13398 series

Absorbance measurement module with built-in photodiode array, optical elements, current-to-voltage converter, etc.

The C13398 series is an optics module for absorbance measurement featuring high blocking performance (OD>4) and low noise. It is composed of Si photodiodes, beam splitters, filters, and current-to-voltage conversion circuit. The C13398-01 can detect 10 wavelengths of light simultaneously. The C13398-02 can detect 9 wavelengths of light and a reference light simultaneously. In combination with the dedicated evaluation circuit C13390 (sold separately), the analog output signals of each channel of the C13398 series can be converted into digital signals, and the results can be acquired into the PC.

Features

- **Simultaneous detection of 10 wavelengths**
- **High blocking characteristics: OD>4**
- **Voltage output: Easy handling**
- **Compact: 38 (W) × 89 (D) × 26 (H) mm (2/3 the business card size)**
- **Can be mounted on optical rod (M4)**

Applications

- **Blood analysis device**
- **Absorbance analyzer**

Absolute maximum ratings (Ta=25 °C unless otherwise noted)

Type no.	Supply voltage Vs max (V)	Operating temperature*1 Topr (°C)	Storage temperature*1 Tstg (°C)
C13398-01	±15	0 to +40	-10 to +40
C13398-02			

*1: No dew condensation
When there is a temperature difference between a product and the surrounding area in high humidity environment, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.

Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

Recommended operating conditions (Ta=25 °C)

Type no.	Operating supply voltage*2 Vs (V)		
	Min.	Typ.	Max.
C13398-01	±9.5	±10	±10.5
C13398-02			

*2: Use a multiple output power supply (dual power supply) that can output 100 mA current.

Electrical characteristics (Typ. Ta=25 °C, Vs=±10 V, unless otherwise noted)

Type no.	Conversion impedance Zt	Cutoff frequency fc -3 dB (kHz)		Maximum output amplitude Vfs	Output noise voltage Vn Dark state	Current consumption Is Dark state
	(V/A)	Lower	Upper	(V)	(mVp-p)	(mA)
C13398-01	10^7	DC	1.6	9.8	1	±18
C13398-02						

Note: Customization of detection wavelengths and conversion impedance is possible.

Optical characteristics*3 (Typ. Ta=25 °C, Vs=±10 V, unless otherwise noted)

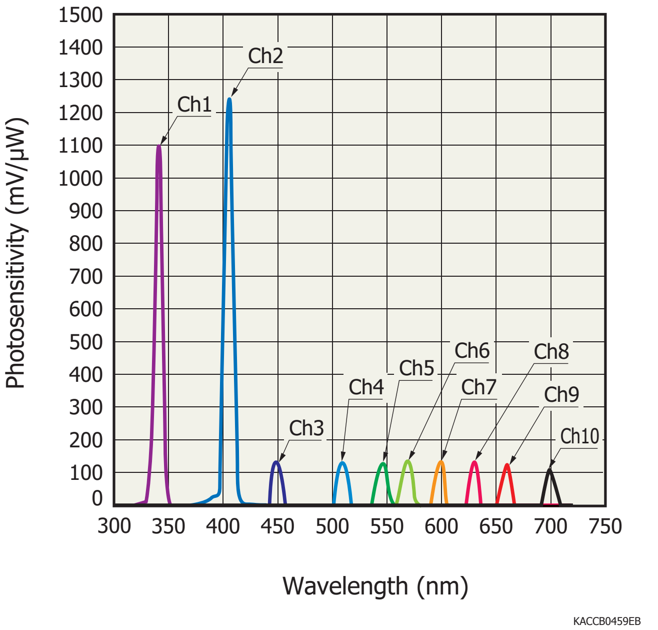
Type no.	Detection wavelength λp (nm)										Full width at half maximum FWHM (nm)	Blocking OD Min.
	1	2	3	4	5	6	7	8	9	10		
C13398-01	340	405	450	510	546	570	600	630	660	700	10	4
C13398-02	340	380	405	492	510	546	578	620	690	Reference light		

Type no.	Photosensitivity*4 S (mV/μW)									
	1	2	3	4	5	6	7	8	9	10
C13398-01	1080	1220	120	130	130	130	120	130	120	110
C13398-02	1080	670	1190	140	130	120	120	140	130	-

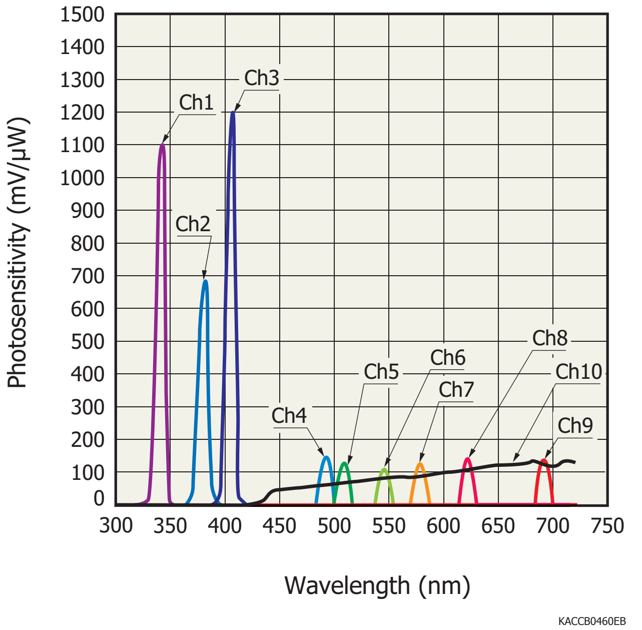
*3: When collimated light that ϕ4 mm or less is incident
*4: λ=λp

Spectral response (typical example)

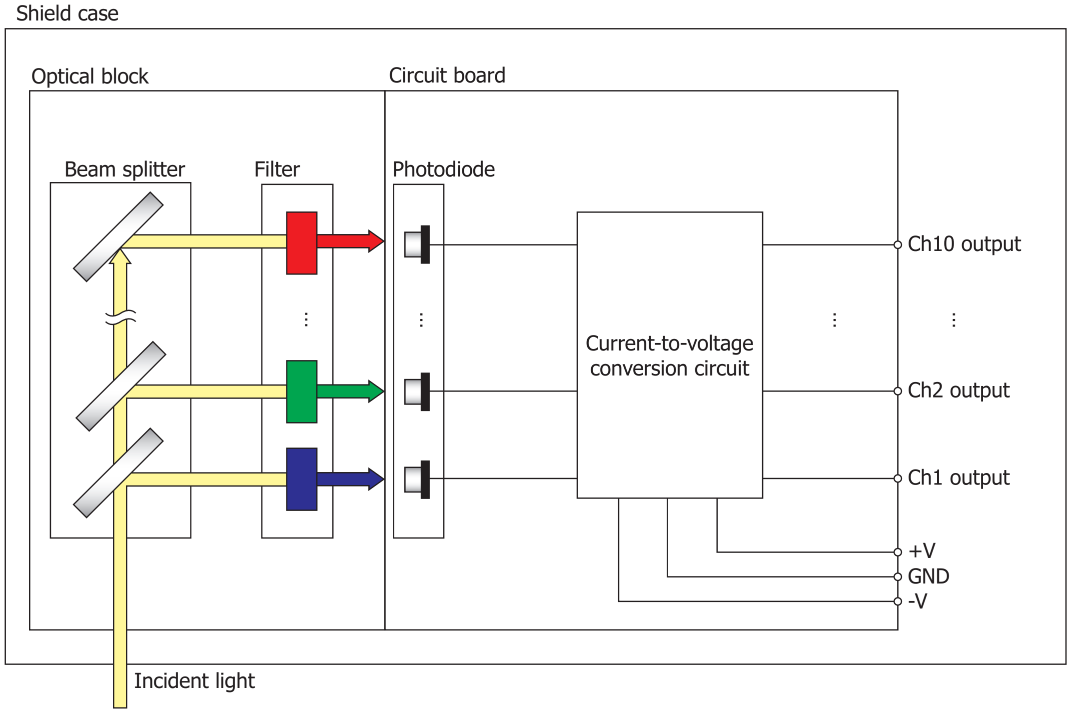
C13398-01



C13398-02



Block diagram



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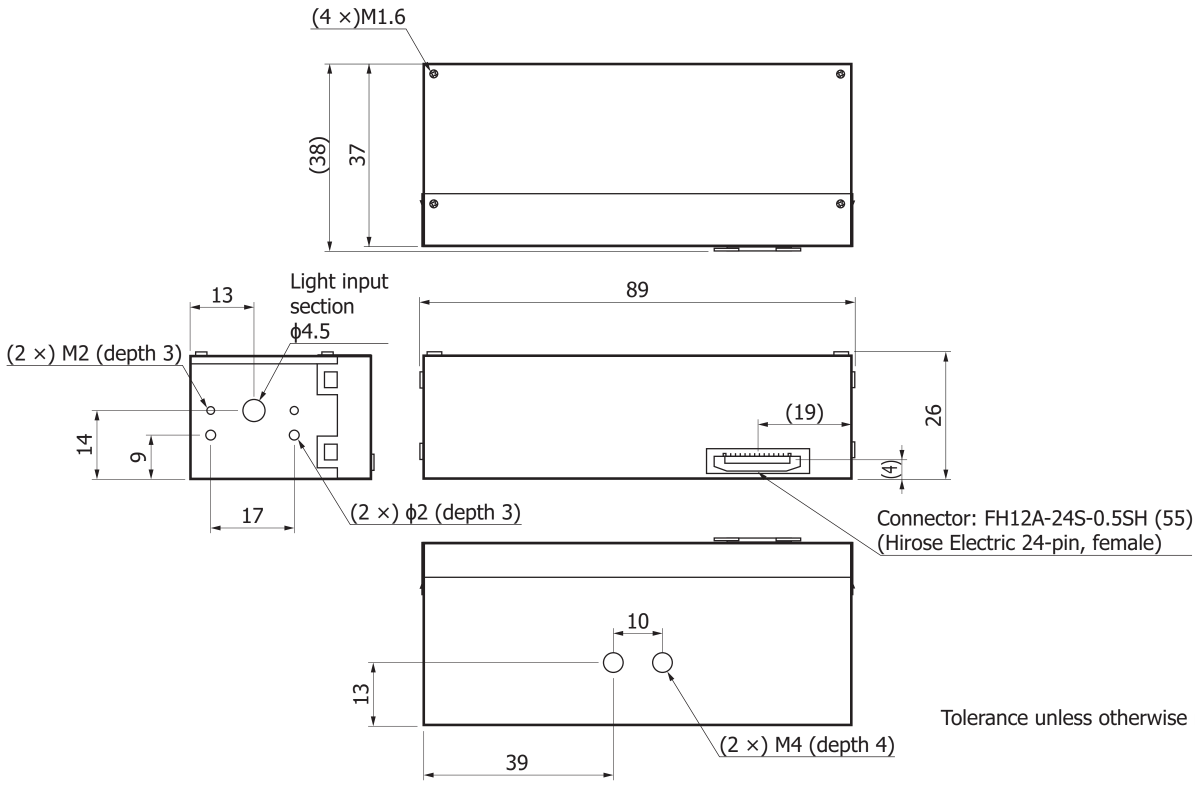
Dimensional outline (unit: mm)



Tolerance unless otherwise noted: ±0.3

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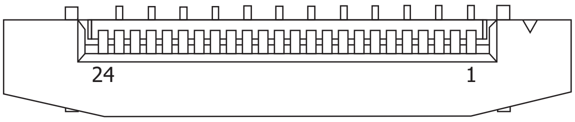
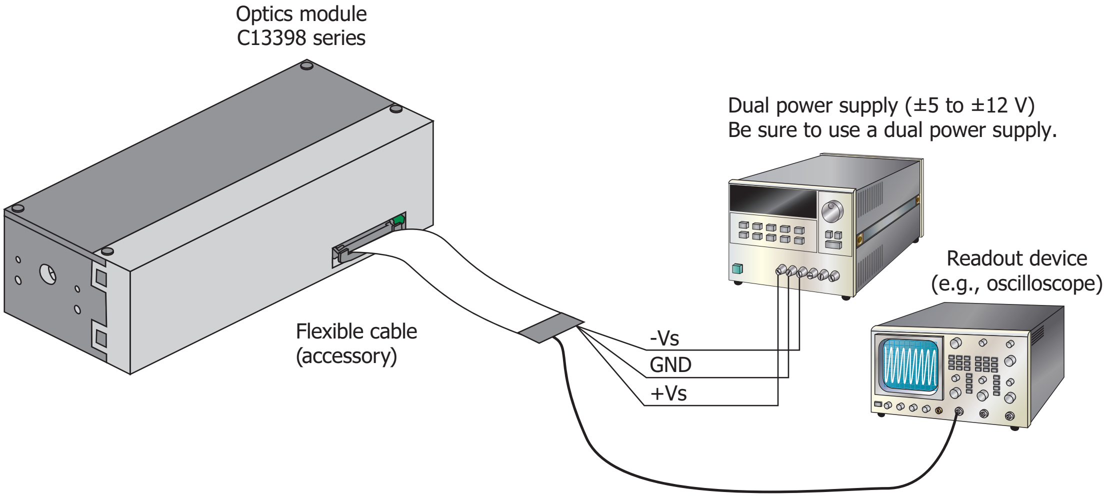
Pin connections



24-electrode flexible cable connector [FH12 A-24S-0.5SH (55)]

Pin no.	Name	Content
1	-Vs	Power input (-)
2	G	GND
3	+Vs	Power input (+)
4	G	GND
5	Vo_ch10	Voltage output (Ch10)
6	G	GND
7	Vo_ch9	Voltage output (Ch9)
8	G	GND
9	Vo_ch8	Voltage output (Ch8)
10	G	GND
11	Vo_ch7	Voltage output (Ch7)
12	G	GND
13	Vo_ch6	Voltage output (Ch6)
14	G	GND
15	Vo_ch5	Voltage output (Ch5)
16	G	GND
17	Vo_ch4	Voltage output (Ch4)
18	G	GND
19	Vo_ch3	Voltage output (Ch3)
20	G	GND
21	Vo_ch2	Voltage output (Ch2)
22	G	GND
23	Vo_ch1	Voltage output (Ch1)
24	G	GND

Connection example



Wiring using shielded wires or AWG#26 or equivalent twisted pair wires (no longer than 150 cm) is recommended.

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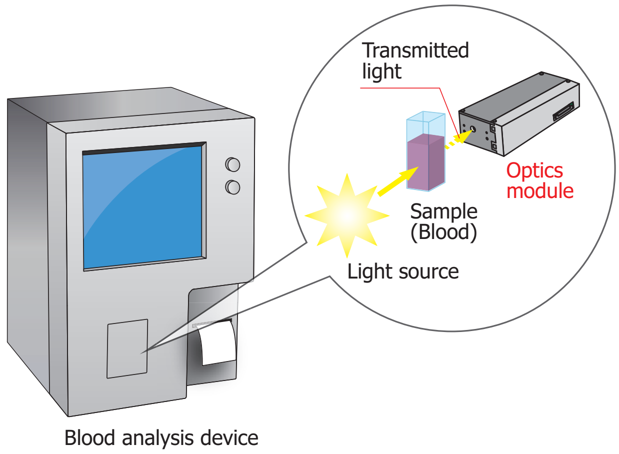
Application example (Blood analysis device)

Optics modules can be used to analyze components contained in blood by directing light on the blood and measure the transmitted light for each wavelength.



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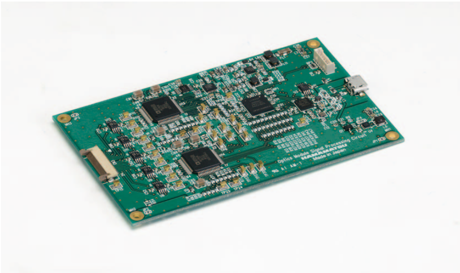
Accessories

· Instruction manual
· Flexible cable (length: 70 mm)

Evaluation circuit for optics module C13390

The C13390 is a dedicated evaluation circuit for the optics module (C13398 series). When the C13390 is connected to the PC through USB, the analog output signals of each channel of the C13398 series can be converted into digital signals, and the results can be acquired into the PC.
Both the C13398 series and the C13390 can be driven off of USB bus power. There is no need to prepare a separate power supply or the like. You can simply connect it to the PC through USB and perform evaluation and measurement.
For the C13390 specifications, refer to the C13390 datasheet.



Related information

www.hamamatsu.com/sp/ssd/doc_en.html

■ Precautions
· Disclaimer

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