

Spectroscopic module

C15471



Raman spectroscopic module capable of photometry in a wide spectral range

The C15471 is a compact Raman spectroscopic module that incorporates a mini-spectrometer, compact optical system, and other Hamamatsu technologies. This module is configured with a main unit, which includes a spectrometer, laser, optical system, control circuit, etc. and a lens unit which has an adjustable focal distance. It has a temperature adjustment function for stabilizing the emission wavelength of the light source, it is capable of stable measurement even in environments with a fluctuating ambient temperature. It can be used for simple onsite point-of-care testing (POCT) and other screening tests.

Features

- ➔ Built-in laser, spectrometer, and driver circuit
- ➔ Ultra-compact and lightweight

Applications

- ➔ Environment (water quality inspection, pesticide, toxic substance inspection, etc.)
- ➔ Safety control (foreign matter checking in foods and medicine, etc.)

Structure

Parameter	Specification	Unit
Dimensions (W × D × H)*1	130 × 60 × 20	mm
Weight*1	220	g
Interface	USB 2.0	-
Power supply (AC adapter)	AC 100 to 240 V (±10 %), 50/60 Hz	-
Detector	High-sensitivity CMOS image sensor	-
Laser class	Class 3B*2	-

*1: Excluding the lens unit

*2: IEC (EN)60825-1, JIS C6802

☒ Safety measures of laser products

This product is a class 3B laser product designed to be embedded in a device. Therefore, shutters, interlocks, and other requirements defined in IEC (EN) 60825-1 are not met. Be very careful in handling this product.

During use, be sure to provide the safety measures described in IEC (EN) 60825-1 (Radiation Safety Standards for Laser Products).



Absolute maximum ratings

Parameter	Symbol	Condition	Value	Unit
Operating temperature	Topr	No dew condensation*3	+5 to +40	°C
Storage temperature	Tstg	No dew condensation*3	-10 to +70	°C

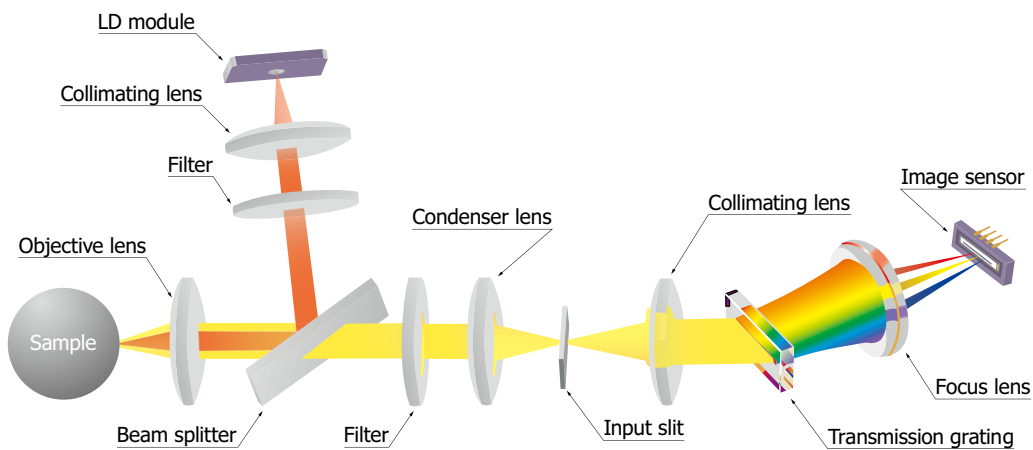
*3: When there is a temperature difference between a product and the surrounding area in high humidity environments, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.

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.

Electrical and optical characteristics (Ta=25 °C)

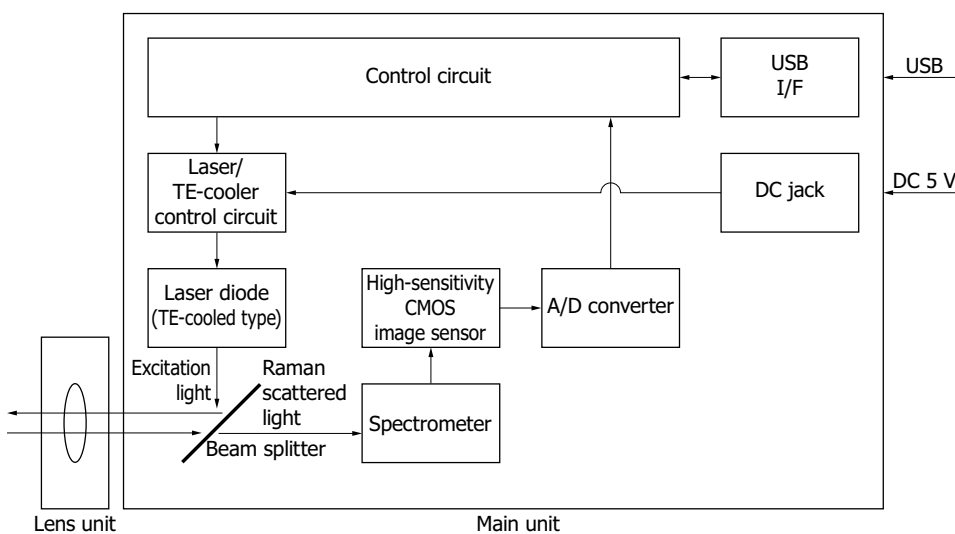
Parameter		Min.	Typ.	Max.	Unit	
Laser	Excitation wavelength	783	785	787	nm	
	Output	Low	4.25	5	5.75	mW
		Middle	21.25	25	28.75	
		High	42.5	50	57.5	
Line width		-	0.2	-	nm	
Detection area	Total number of pixels	2048			pixels	
	Spectral range	-	200 to 2500	-	cm ⁻¹	
	Resolution	-	10	-	cm ⁻¹	
	A/D conversion	16			bit	
	Integration time	0.1	-	10	s	
USB bus power current consumption		-	-	350	mA	
Power supply (AC adapter) current consumption		-	-	0.4	A	

Optical component layout



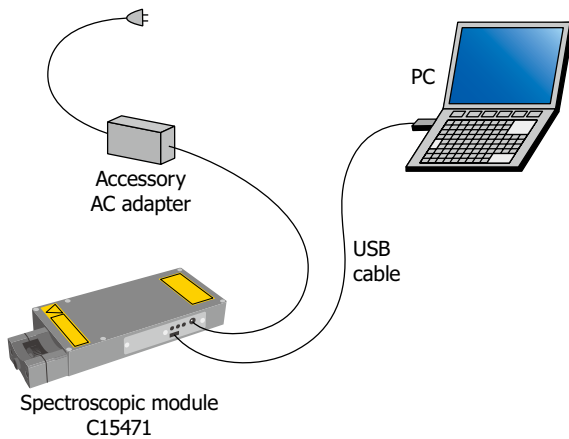
KACCC1027EA

Block diagram



KACCC1193EB

Connection example



KACCC1038EC

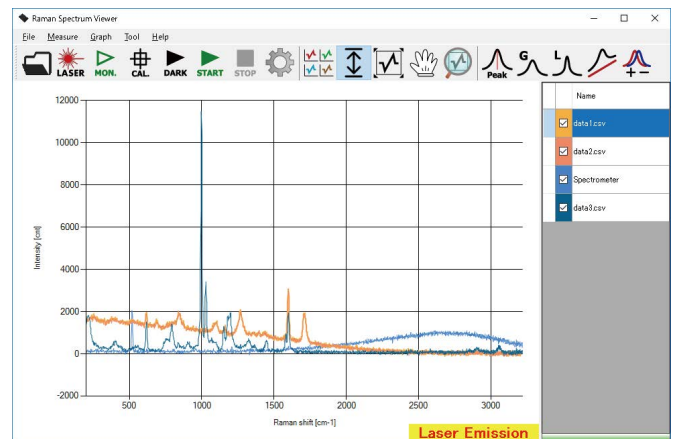
Sample software (accessory)

By installing the sample software (RamanSpectrumViewer)*4 into a PC, you can perform the following basic operations.

- Acquire, save measurement data
- Set measurement conditions
- Display graphs
- Arithmetic functions
 - Wavenumber calibration
 - Dark subtraction
 - Peak search
 - Gaussian fitting
 - Lorentz fitting
 - Baseline collection

*4: Compatible OS

- Microsoft Windows 10 (32-bit, 64-bit)
- Microsoft Windows 11 (32-bit, 64-bit)



A DLL for controlling the hardware is available.

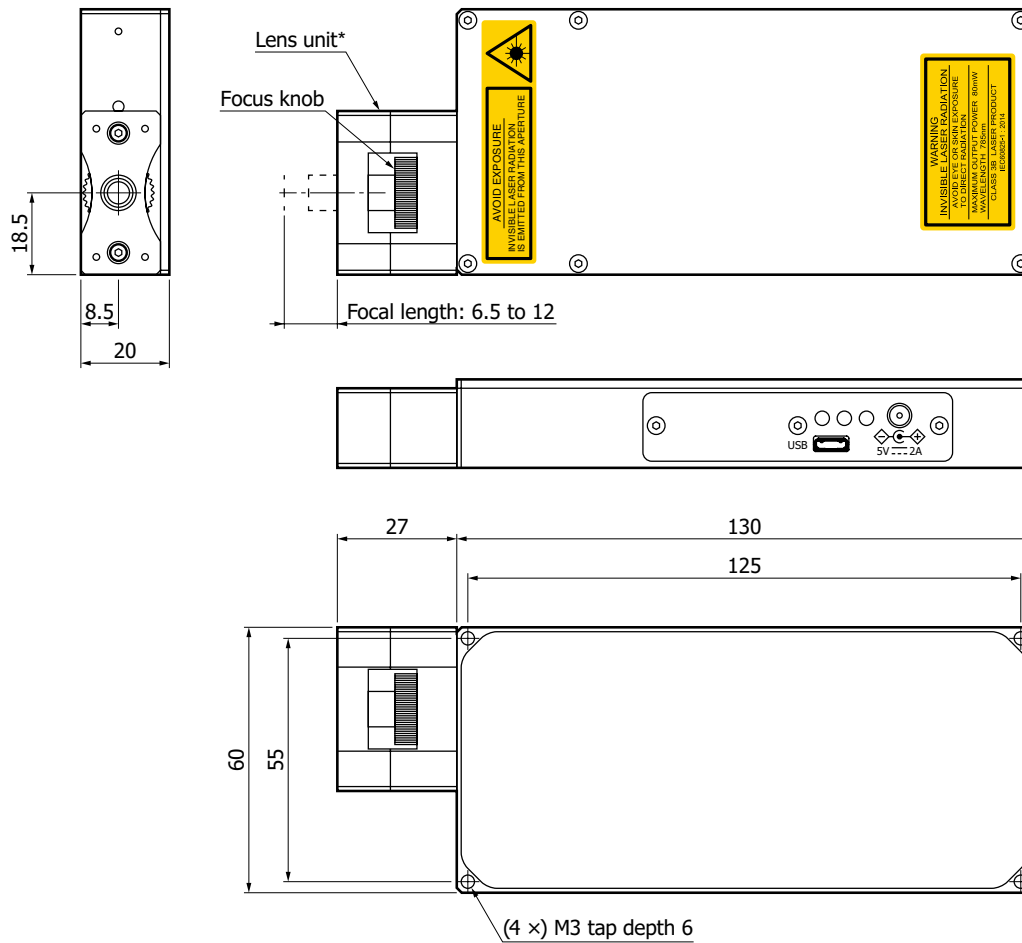
Users can develop original measurement programs using the following development platform.

Microsoft Visual Studio® 2008 (SP1) Visual C++®

Microsoft Visual Studio 2008 (SP1) Visual Basic®

Note: Microsoft, Windows, Visual Studio, Visual C++, and Visual Basic are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

Dimensional outline (unit: mm)



Tolerance unless otherwise noted: ± 0.5

* Laser light is emitted as collimated light when the lens unit is removed. It can be used in combination with a peripheral optical system prepared on the customer side.

KACCA0459ED

Accessories

- CD-ROM (sample software*5)
- USB cable
- AC adapter (driving external power supply)

*5: Software development materials can be provided.

Related information

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

- Precautions
- Disclaimer

The content of this document is current as of October 2024.

Product specifications are subject to change without prior notice due to improvements or other reasons. This document has been carefully prepared and the information contained is believed to be accurate. In rare cases, however, there may be inaccuracies such as text errors. Before using these products, always contact us for the delivery specification sheet to check the latest specifications.

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