



C12710

Portable Raman spectroscopic module with built-in laser, spectrometer, and driver circuit

The C12710 spectroscopic module is a portable Raman spectroscopic module that incorporates a mini-spectrometer, compact optical system, and other Hamamatsu original technologies. The dedicated SERS substrate J12853 is used to perform Raman spectroscopy. It is also possible to perform Raman spectroscopy without using the J12853.

Features

- ➔ Compact module that integrates a laser, spectrometer, and driver circuit
- ➔ Suitable for Raman spectrophotometry using Hamamatsu SERS substrate (J12853)

Applications

- ➔ Analytical chemistry (acquisition of spectral information that reflects molecular structure and intermolecular interaction, etc.)
- ➔ Biotechnology (detection of biomolecules of protein, saccharides, etc.)

Structure

Parameter	Specification	Unit
Dimensions (W × D × H)	150 × 182 × 95	mm
Weight	1.8	kg
Power supply	100 to 240 AC	V
Interface	USB 1.1	-

Absolute maximum ratings

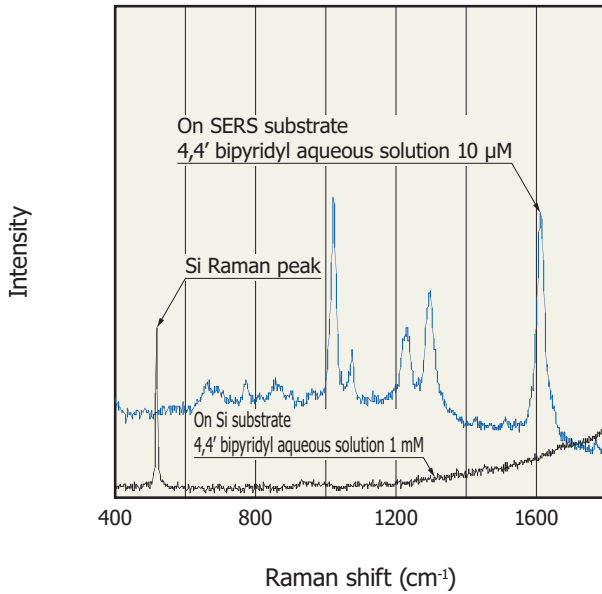
Parameter	Condition	Symbol	Value	Unit
Operating temperature	No dew condensation	Topr	+5 to +40	°C
Storage temperature	No dew condensation	Tstg	-10 to +50	°C
Power supply voltage		Vs	5.25	V

Electrical and optical characteristics (Ta=25 °C)

Parameter		Condition	Min.	Typ.	Max.	Unit
Laser	Excitation wavelength		-	785	-	nm
	Output*1	High mode	-	50	-	mW
		Low mode	-	3	-	
	Line width		-	0.2	-	nm
Detection area	Detector		Back-thinned CCD image sensor			-
	Spectral range		-	400 to 1850	-	cm ⁻¹
	Resolution		-	5	-	cm ⁻¹

*1: Irradiation intensity at the surface of the sample. The output can be changed with the switch on the front panel. Low mode is for the SERS substrate.

Example of Raman measurements using SERS substrate

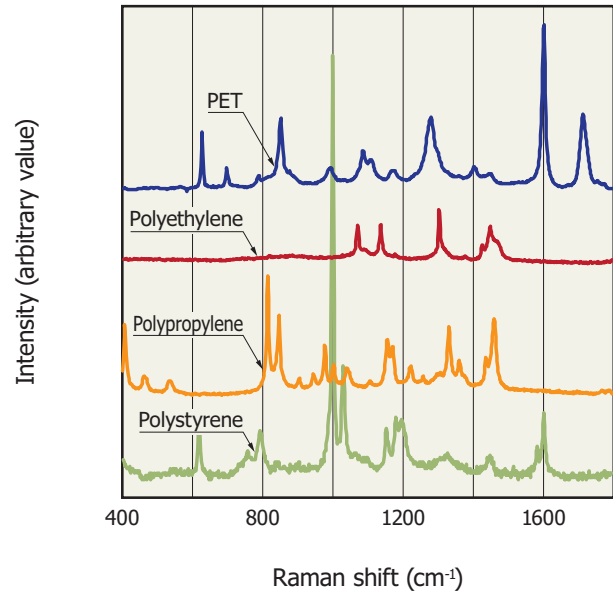


Integration time: 1 s

- When using SERS substrate: Laser intensity: 3 mW
- When using Si substrate: Laser intensity: 50 mW

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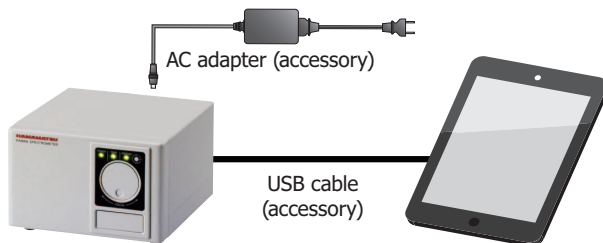
Example of Raman measurements of various polymers (SERS substrate not used)



The vertical scale has been adjusted to make it easier to view. (The baseline is shifted for each sample.)

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Connection example



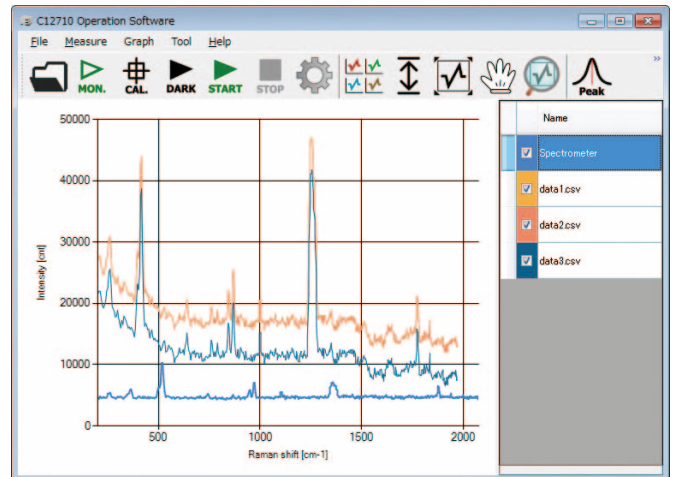
Sample software (accessory)

By installing the sample software*2 into a PC, you can perform the following basic operations.

- Acquire and save measured data
- Set measurement conditions
- Display graphs
- Arithmetic functions
 - Wave number calibration
 - Dark subtraction
 - Peak search
 - Gaussian fitting
 - Lorentz fitting
 - Baseline collection

*2: Compatible OS

- Microsoft® Windows® 7 (32-bit, 64-bit)
- Microsoft Windows 8.1 (32-bit, 64-bit)
- Microsoft Windows 10 (32-bit, 64-bit)



A DLL for controlling the hardware is available.

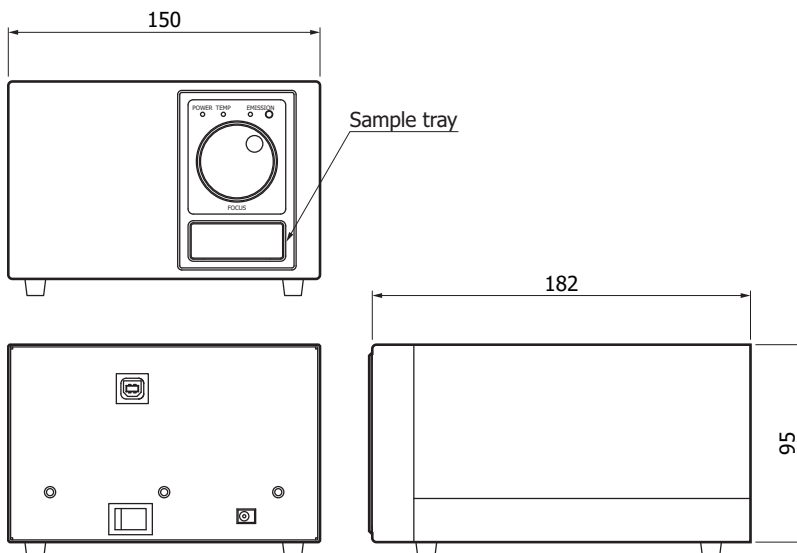
Users can develop original measurement programs using the following development platform.

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: ± 1

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Sample tray

Pushing the center of sample tray's front panel opens the tray.



Accessories

- AC adapter
- USB cable
- Si substrate for calibration
- CD-ROM (sample software*3)

*3: Software development materials can be provided.

CLASS 1
LASER PRODUCT
IEC 60825-1 : 2007 / 2014

SERS substrate J12853 (sold separately)

A surface-enhanced Raman spectroscopy (SERS) substrate enhances the Raman scattered light from the molecules, making high-sensitivity Raman spectroscopic analysis possible. A fine metal structure (chip) is mounted on Hamamatsu original handling plate to protect the active area. The active area of the handling plate has a well structure for easy attaching solution or the like. Note that this is a disposable product and cannot be reused.



Parameter	Specification	Unit
Substrate size	76 × 26 × 3.6	mm
Chip size	4 × 4	mm
Active area	2.7 × 2.7	mm
Activated surface structure	Metal nanostructure	-
Handling plate material	Polypropylene	-
Raman excitation wavelength (recommended)	785	nm

Note: This is a disposable product and cannot be reused.

Estimated expiration date: 3 months after purchase in a sealed, unopened condition

Related information

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

- Precautions
- Disclaimer

The content of this document is current as of April 2018.

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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