

1.2 Specifications

(1) Laser Unit

Note 1 Laser differs depending on the type of the main system unit.

Note 2 The output implies the value at the oscillation source of laser.

1) RMP-510

Configuration	Laser head and power supply
Laser output	Single-line output 20 mW or over (532.0 ± 0.3 nm)
Mode	Single mode, TEM ₀₀ (M ² < 1.1)
Output stability	< ±2 %
Beam diameter (1/e ²)	0.32 ± 0.02 mm
Beam spread angle	< 2.5 mrad
Polarization ratio	> 1001 (vertical)

2) RMP-520

Configuration	Laser head and power supply
Laser output	Single-line output 100 mW (785±1 nm)
Mode	Single mode, TEM ₀₀ (M ² < 1.5)
Output stability	< ± 2 %
Beam diameter (1/e ²)	1.9 ± 0.3 mm
Beam spread angle	< 1.1 mrad
Polarization ratio	> 1001 (vertical)

3) RMP-530

Configuration	Laser head and power supply
Laser output	Single-line output 600 mW (1064.6±0.6 nm)
Mode	Single mode, TEM ₀₀ (M ² <1.1)
Output stability	< ± 2 % (< 8 hours)
Beam diameter (1/e ²)	0.8 ± 0.1 mm
Beam spread angle	< 2.0 mrad
Polarization ratio	> 1001 (horizontal)

(2) Laser Introduction Unit

Laser light introduction device by using the optical fiber

Fiber core diameter	50 μm
Standard fiber length	1 m
Coupling	FC connector
Attenuator	Optical filter selection device by manual switching Light transmittance: 100%, 50%, 25%, 10%

(3) Probe Sample Chamber

Irradiation/focusing optics	Long working distance objective lens (RMP-510/520 : <i>Olympus LMPLFLN20x</i> ; RMP-530 : <i>Olympus LCPLN 20x IR</i>)
Working distance	12 mm (RMP-510/520), 8.3 mm (RMP-530)
N.A.	0.40 (RMP-510/520), 0.45 (RMP-530)
Removal of Rayleigh scattered light	Removal device by using rejection filter
Rayleigh scattering removal rate	> O.D.6
Shutter for laser light and beam attenuation filter (O.D.4) are built in.	
CCD camera for sample observation is built-in Image magnification Approx. x250 (for standard specification)	
Simple XYZ stage and probe stand are furnished.	

(4) Raman Light Introduction Device

Laser light introduction device by using the optical fiber

Fiber core diameter	50 μm
Fiber length	1 m
Coupling	FC connector

(5) Spectrograph

Optical layout	Aberration correction Czerny-Turner type single monochromator
Focal length	200 mm
Wavenumber drive	High-precision direct drive device (Precision control by using the high-precision rotary encoder)
Diffraction grating	900 gr/mm B500nm(RMP-510), 400 gr/mm B850 nm (RMP-520) 150 gr/mm B1250nm RMP-530 Computer-controlled automatic switching
Slit	Automatic switching by software $\phi 100 / 50 \times 1000 / 100 \times 1000 / 200 \times 1000$ (unit μm)
Measurement range (Raman shift)	Approx. $8000 - 100 \text{ cm}^{-1}$ (RMP-510 standard system) Approx. $3500 - 100 \text{ cm}^{-1}$ (RMP-520 standard system) Approx. $3500 - 100 \text{ cm}^{-1}$ (RMP-530 standard system)

Note When the optional E-grade edge filter is used, the measurement of 50 cm^{-1} is possible.

Spectral resolution	Approx. $2.4 \text{ cm}^{-1}/\text{pixel}$ (RMP-510 standard system) Approx. $2.2 \text{ cm}^{-1}/\text{pixel}$ (RMP-520 standard system) Approx. $3.0 \text{ cm}^{-1}/\text{pixel}$ (RMP-530 standard system)
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(6) Detector

1) CCD detector (RMP-510/520 standard system)

Cooling system	Electronic cooling type with a Peltier element
Max. cooling temperature	$-60 \text{ }^\circ\text{C}$ (Max. value at room temperature of $25 \text{ }^\circ\text{C}$)
No. of pixels	1650 pixels \times 200 pixels
Pixel size	$16 \times 16 \text{ } (\mu\text{m})$
Resolution	2 pixels or below
Quantum efficiency	55% or over (650 nm)
Controller	A/D 16 bit or over

2) InGaAs detector (RMP-530 standard system)

Cooling system	Liquid nitrogen cooling type
Max. cooling temperature	-100°C
No. of pixels	1024 pixels × 1 pixel
Pixel size	25 × 500 (μm)
Resolution	3 pixels or below
Quantum efficiency	80% or over
Controller	A/D 16 bit or over

(7) System control and data processing unit

CPU	Intel Core i3 3.3 GHz or better
Memory	2 GB or over
OS	Microsoft Windows 7 Professional 32-bit or 64-bit
Spectrograph control Controller	dedicated for main unit (built in to the main unit)
Measurement program	Spectrum measurement, Wide-range measurement
Data processing function	Spectra analysis, JASCO canvas, Curve-fitting, Wavenumber calibration, Cosmic ray removal

(8) Dimensions/weight/power requirement of main unit

RMP-510/520 main unit	Dimensions Approx. 500(W) × 360(D) × 290(H) mm (excluding PC, laser power supply unit) Weight Approx. 30 kg (excluding PC)
RMP-530 main unit	Dimensions Approx. 500(W) × 360(D) × 290(H) mm (excluding PC, laser power supply unit) Weight Approx. 35 kg (excluding PC)
Power requirement	100–240 V AC, 50/60 Hz RMP-510/RMP-520 150 VA, max; RMP-530 800 VA, max.