future's in the making
Portable Raman analyzers RAMOS
Ostec Instruments produces and offers hi-tech innovative scientific and analytical equipment.

Our mission is to be a company that finds, selects, protects and develops cutting-edge ideas to create new products and technologies and deliver technological progress. That is why the symbol of our company is a growing sprout.

We provide complete solutions for our clients: the best equipment to meet customer’s requirements, deep knowledge of customer’s applications, qualified and reliable maintenance support.

OUR other products:

- Raman Microscope RAMOS W532
- Confocal Raman Microscope RAMOS
- Optical components OCOS
- Laser elemental analyzer LIOS-500N
- Vibration Control Solutions AVOS
- Optical emission spectrometer for metal and alloy analysis SEOS-02
- Nanomechanical Testers NIOS
- Accessories for Scanning Probe Microscopes
- FTIR spectrometers and microscopes iROS
- Analytical metallographic systems OMOS M-series
RAMOS HH532 – Handheld Raman Analyzer

The only high-end level handheld instrument on the market combining portability and superior quality of measurements.

Features & Benefits
- Identification of substance at the concentration as low as 1%
- Real-time in-situ identification
- Operating temperature 0-40°C
- Android/Windows software
- Independent power supply and line supply
- Large database can be complemented by user
- Simplicity and usability

Specifications
- Laser 532 nm, 30 mW
- Resolution from 6 cm⁻¹
- Weight 2 kg without laptop/touchpad/computer
- Up to 6 hours of off-line operation
- Time per measurement < 3 s
- Operating mode start - 2 min

Enjoy the simplicity of RAMOS HH532 analyses with your tablet or smartphone using RAMOS Android/Windows software!
Security

RAMOS HH532 identifies hazardous materials and compounds through package: narcotic drugs, explosives and their plasticizers and precursors, toxic solvents and nitro compounds.

- Customs & Cargo inspection
- Forensic identification
- Security check

Pharmaceutics

- Raw Material identification right in the warehouse
- Long off-line operation time (up to 6 hours)
- Saves expenses and time on laboratory analysis

In-Field Research

Bringing qualities of laboratory molecular analysis to the field, RAMOS HH532 secures precise material identification with utmost mobility.

- Geology and Mineralogy
- Archeology
- Gemstone identification
- Chemical substances identification
RAMOS HH1064 – Handheld Raman Analyzer

The only high-end level handheld instrument on the market combining portability and superior quality of measurements.

Features & Benefits

- Identification of substance at the concentration as low as 1%
- Real-time in-situ identification
- Bluetooth connection
- Android/Windows software
- Independent power supply and line supply
- Large database can be complemented by user
- Simplicity and usability

Specifications

- Laser 1064 nm
- Resolution from 10 cm\(^{-1}\)
- Weight 2 kg without laptop/touchpad/computer
- Up to 6 hours of off-line operation
- Operating mode start - 2 min

Enjoy the simplicity of RAMOS HH analyses with your tablet or smartphone Android/Windows software!
RAMOS RA532 Raman Analyzer

RAMOS RA532 is a unique instrument that combines the advantage of a portable probe system with the performance of a highly specified laboratory instrument. It is the perfect choice for Raman analyses where high quality data is essential.

Features
- Superior sensitivity and low noise
- Non-contact real-time identification
- Analysis of ultra-low concentrations
- Based on SERS proprietary technology

Benefits
- Precisely tailored to customer’s requirements
- Fast and trustworthy results
- Portable device
- Easy to use

Applications
- Semiconductor & Solar Industry
- Food & Agriculture Industry
- Pharmaceutical Industry
- Geology and Mineralogy
- Environmental Science
- Chemical Processes
- Medical Diagnosis
- Forensic Analysis
- Gemology
Real-time and accurate identification of an unknown substance occurs by comparing its unique Raman spectrum of molecular vibrations (molecular “fingerprint”) to Raman spectra of reference substances stored in a spectral database. RAMOS RA532 identifies through walls of sealed bags, transparent bottles, vials, and ampoules. The ease of use, single-hand operation, small size and weight of RAMOS RA532 allows testing chemical substances at the point of receipt, use, or delivery. Results are displayed within seconds and can be accessed via an intuitive user interface. Data are retrieved remotely via USB port.

RAMOS RA532 utilizes a 20 (30 optional) μm entrance slit, 1200 gr/mm holographic grating, cutting-edge low pass filter, as well as a 30 mW single mode laser emitting at 532 nm to provide high accuracy Raman and luminescent measurements in a broad spectral range from 100 to 6000 cm⁻¹. The spectrometer has no moving parts which yields excellent wavelength reproducibility.

RAMOS RA532 comes with a low-noise 3648-element linear-array CCD detector operating at room temperature and a state of the art system for suppressing the Rayleigh scattering signal and the straight laser light. RAMOS RA532 has an onboard programmable microcontroller that provides flexibility in controlling the spectrometer and accessories.

Features

- RAMOS RA532 identifies substances and tags contactless through a transparent and colored glass or translucent plastic packaging that allows total quality inspection (instead of sample inspection)
- RAMOS RA532 detects substances and tags at least several times superior to the sensitivity available on the market samples and do not require any special skills for a user
- RAMOS RA532 delivered reliable results within seconds
### Portable Raman analyzers RAMOS

<table>
<thead>
<tr>
<th></th>
<th>RAMOS RA532 Raman Analyzer Specification</th>
<th>RAMOS RA532H Raman Analyzer Specification</th>
<th>RAMOS RA532S Raman Analyzer Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Laser</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Wavelength</td>
<td>532 nm</td>
<td>532 nm</td>
<td>532 nm</td>
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<tr>
<td>Laser Power</td>
<td>30 mW</td>
<td>30 mW</td>
<td>30 mW</td>
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<tr>
<td><strong>Spectrometer</strong></td>
<td></td>
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<tr>
<td>Spectral Range</td>
<td>100–6000 cm⁻¹</td>
<td>120–4000 cm⁻¹</td>
<td>140–4700 cm⁻¹</td>
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<td>Spectral Resolution</td>
<td>5-8 cm⁻¹</td>
<td>4-6 cm⁻¹</td>
<td>6-8 cm⁻¹</td>
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<tr>
<td><strong>Detector</strong></td>
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<tr>
<td>Detector Type</td>
<td>Linear CCD Array</td>
<td>Linear CCD Array</td>
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<tr>
<td>Pixel Size</td>
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<td>8 μm x 200 μm</td>
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<tr>
<td>Dark Current</td>
<td>630 e⁻/pixel/s</td>
<td>630 e⁻/pixel/s</td>
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<td>Readout Noise, RMS</td>
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<td>30 e⁻</td>
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<td>Dynamic Range, RMS</td>
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<tr>
<td>Max Quantum Efficiency</td>
<td>90%</td>
<td>90%</td>
<td>90%</td>
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<tr>
<td>Integration Time</td>
<td>10 ms – 500000 ms</td>
<td>10 ms – 500000 ms</td>
<td>10 ms – 500000 ms</td>
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<tr>
<td><strong>Optical Bench</strong></td>
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<tr>
<td>Focal Length</td>
<td>75 mm</td>
<td>75 mm</td>
<td>50 mm</td>
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<tr>
<td>Entrance Aperture</td>
<td>20 μm wide slit</td>
<td>30 μm wide slit</td>
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<td>Grating</td>
<td>1200 gr/mm holographic grating</td>
<td>1800 gr/mm holographic grating</td>
<td>1800 gr/mm holographic grating</td>
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<td><strong>Electronics</strong></td>
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<td>USB</td>
<td>1 External Port 2.0</td>
<td>1 External Port 2.0</td>
<td>1 External Port 2.0</td>
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<tr>
<td>Power Input</td>
<td>100 – 240 VAC, 50–60 Hz</td>
<td>100 – 240 VAC, 50–60 Hz</td>
<td>100 – 240 VAC, 50–60 Hz</td>
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<tr>
<td>System Requirements</td>
<td>Windows XP/Vista/7</td>
<td>Windows XP/Vista/7</td>
<td>Windows XP/Vista/7</td>
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<tr>
<td><strong>Physical</strong></td>
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<tr>
<td>Dimensions</td>
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<td>222 mm x 145 mm x 55 mm</td>
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<td>0.9 kg</td>
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</table>
RAMOS RA1064 Express IR Raman Analyzer

RAMOS RA1064 is a unique instrument that enables to obtain Raman spectra in those applications where the Raman scattering signal is largely exceeded by fluorescence. With RAMOS RA1064 you can easily analyze gas, oils, dyes, paints, organic substances, etc.

**Features**
- Special TE cooling system ensures acquisition of low noise spectra
- Non-contact real-time identification

**Benefits**
- Precisely tailored to customer’s requirements
- Fast and trustworthy results
- Easy to use

**Applications**
- Oil industry
- Food and agriculture industry
- Forensic analysis
- Environmental sciences
- Chemical processes
- Polymers
- Paints and dyes analysis

![Graph showing Raman shift (cm⁻¹)]
RAMOS RA1064 is now the only portable device on the market which can see the water Raman line using a 1064 nm laser owing to its record wide spectral range. This makes it a comprehensive tool for analysis of liquids through transparent and semitransparent packaging. Due to its unique characteristics RAMOS RA1064 is an irreplaceable assistant in transport security and many other fields.

RAMOS RA1064 combines the advantage of a portable probe system with performance of a highly specialized laboratory instrument. Real-time and accurate identification of an unknown substance is achieved by comparing its unique Raman spectrum of molecular vibration (molecular “fingerprint”) to Raman spectra of reference substances stored in the spectral database.

RAMOS RA1064 performs identification through sealed bags, transparent bottles, vials and ampoules. The ease of use, single-hand operation, small size and weight of RAMOS RA1064 enables analysis of chemical substances at the point of receipt, use or delivery. Results are displayed within dozen seconds and can be accessed via the intuitive user interface. The data are retrieved remotely via the USB port.

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**Gasoline Herbal Extract**

![Graph of Gasoline Herbal Extract](image1)

**Potassium Permanganate**

![Graph of Potassium Permanganate](image2)
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<thead>
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<td>Wavelength</td>
<td>1064 nm</td>
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<tr>
<td>Laser Power</td>
<td>300 mW</td>
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<td><strong>Spectrometer</strong></td>
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<tr>
<td>Spectral Range</td>
<td>150–3600 cm⁻¹</td>
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<td>Spectral Resolution</td>
<td>18–22 cm⁻¹</td>
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<td>Pixel Size</td>
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<tr>
<td>Max Quantum Efficiency</td>
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<td>Integration Time</td>
<td>10 ms – 500000 ms</td>
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<tr>
<td>Focal Length</td>
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<td>Entrance Aperture</td>
<td>50 (20, 30 optional) μm wide slit</td>
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<tr>
<td>Grating</td>
<td>300 gr/mm NIR optimized ruled grating</td>
</tr>
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For notes
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