

## Reliable Four Channel Online Process Raman Laser Spectrometer 1064nm

Our Product Introduction

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### Basic Information

- Place of Origin: CHINA
- Brand Name: JINSP
- Certification: CE ISO9001
- Model Number: RS2100-4
- Minimum Order Quantity: 1
- Price: Negotiable
- Packaging Details: 1PC/BOX
- Delivery Time: 60-80 working days
- Payment Terms: T/T
- Supply Ability: 20PCS Per Month



### Product Specification

- Laser Wavelength: 1064nm
- Wavelength Accuracy: 0.2nm
- Wavelength Stability: 0.01nm
- Output Data Format: Spc Standard Spectrum, Prn, Txt And Other Formats Are Optional
- Communication Protocols: Modbus
- Connectivity: USB 2.0
- Power Supply: 100 ~ 240 VAC, 50 ~ 60 Hz
- Detection Accuracy: 0.5%
- Highlight: **raman laser spectrometer 1064nm,  
Four Channel raman laser spectrometer,  
Four Channel raman spectroscopy detector**



## Product Description

1064nm Laser Cost Effective Four Multi-channel Online Process Raman Spectrometer Analyzer

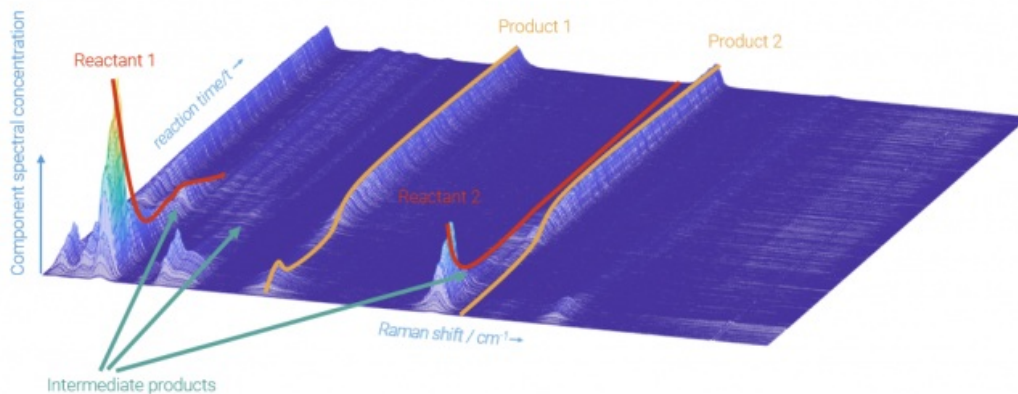


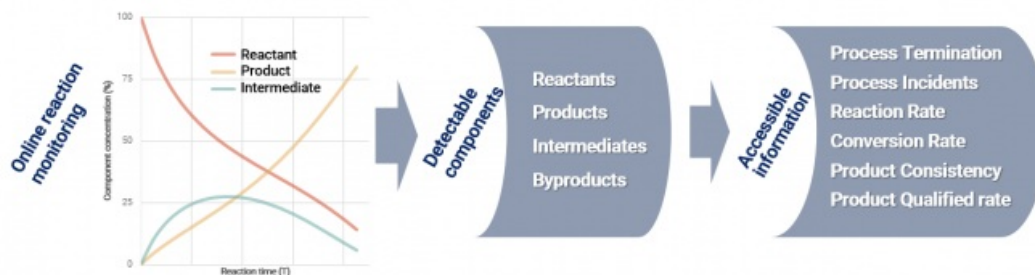
### Product Description:

Chemical/pharmaceutical/materials process development and production requires quantitative analysis of components. Usually, offline laboratory analysis techniques are used, where samples are taken to the laboratory, and instruments such as chromatography, mass spectrometry, and nuclear magnetic resonance spectroscopy are used to give information on the content of each component. The long detection time and low sampling frequency cannot meet many real-time monitoring needs.

JINSP provides online monitoring solutions for chemical, pharmaceutical, and material process research and production. It enables in-situ, real-time, continuous, and rapid online monitoring of the content of each component in reactions.

JINSP RS2100-4 is designed with a 4-channel optical probe for switching online analysis in multiple reaction systems, achieving simultaneous process control for multiple systems.





### Benefits with JINSP Oline analytical instruments:

- Shorten process development period and time-to-market.
- Enhance production efficiency and capacity.
- Enable timely intervention to control the reaction process.
- Reduce product defect rates, and minimize losses.
- Provide alarm for abnormal reactions.
- Avoid dangerous on-site sampling.



Can withstand extreme reaction conditions such as strong acid, strong alkali, strong corrosiveness, high temperature, and high pressure



Real-time response in seconds, no need to wait, providing analysis results promptly.



No sampling or sample processing required, in-situ monitoring without interference to the reaction system.



Continuous monitoring to quickly determine the reaction endpoint and alert for any anomalies.

### Technical Parameters:

Technical Parameter	Value
Product	Online Raman Analyzer
Measurement Type	Raman Spectrometer
Laser wavelength	1064nm
Wavelength accuracy	0.2 nm
Wavelength stability	0.01 nm
Sample Type	Liquid

Number of detection channels	four-channel switching detection
Standard Probe	1pc 1.3 m non-immersed fiber optic probe (PR100)
Software functions	1. Online Monitoring: Continuous real-time collection of single-channel signals, providing real-time substance content and trend changes, enabling intelligent analysis of unknown components during the reaction process; 2. Data Analysis: Capable of processing data through smoothing, peak finding, noise reduction, baseline subtraction, difference spectra, etc; 3. Model Establishment: establishes a quantitative model using known content samples and automatically builds a quantitative model based on real-time data collected during the reaction process.
Power supply	100 ~ 240 VAC ,50 ~ 60 Hz
Operating temperature	0 ~ 40
Dimensions	496x312x185mm
N. Weight	≤10 kg

## Applications:

### Li-ion battery industry

Research on the synthesis process of bis(fluorosulfonyl)amide

### Biopharmaceutical industry

Drug crystal form research and consistency evaluation  
Quality Control in Biofermentation Engineering

### Fine chemical industry

**Research on the process of producing furfuryl alcohol by hydrogenation reaction of furfural**

**Process control of bioenzyme catalytic reactions of nitrile compounds**

**A certain ultra-low temperature nitrification reaction**

**Research on o-xylene nitration reaction process**

**Eg:** Chemical Reactions/Biological Processes Requiring Timely Intervention upon Abnormal Reactions or Reaction Endpoints  
In processes like bio-fermentation and enzyme-catalyzed reactions, the activity of cells and enzymes can be significantly affected by related components in the system. Therefore, real-time monitoring of these components' levels and timely intervention are crucial for maintaining efficient reactions. Online monitoring provides immediate component information, whereas offline detection, with its delayed results and limited sampling frequency, can miss the intervention window, leading to reaction anomalies.

**Typical users:** Research and production personnel in bio-fermentation companies, pharmaceutical/chemical companies involved in enzyme-catalyzed reactions, and companies synthesizing peptide and protein drugs

## 1. Analysis of Chemical Reactions/Biological Processes under extreme conditions



Under conditions of strong acids, strong alkalis, high temperature, high pressure, strong corrosion, and toxicity, conventional instrument analysis methods may face challenges in sampling or cannot withstand active

active samples. However, online monitoring optical probes, specially designed to adapt to extreme reaction environments, stand out as the sole solution.

Typical Users: Researchers involved in extreme chemical reactions at new material companies, chemical enterprises, and research institutes.

## 2. Research and Analysis on Intermediate Reaction Components/Unstabl



Short-lived and unstable reaction intermediates undergo rapid post-sampling changes, making offline detection inadequate for such components. In contrast, real-time, in-situ monitoring through online analysis has

no impact on the reaction system and can effectively capture changes in intermediates and unstable components.

Typical Users: Experts and scholars from universities and research institutes interested in the study of reaction intermediates.

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### 3. Time-Critical Research and Development in Chemical/Bio-processes



In research and development with tight timelines, emphasizing time costs in chemical and bioprocess development, online monitoring provides real-time and continuous data results. It promptly

reveals reaction mechanisms, and big data assists R&D personnel in understanding the reaction process, significantly accelerating the development cycle. Traditional offline detection provides limited information with delayed results, leading to lower R&D efficiency.

Typical Users: Process development professionals in pharmaceutical and biopharmaceutical companies; R&D personnel in new materials and chemical industries.

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### 4. Timely Intervention in Chemical Reactions / Biological Processes with Reaction Anomalies or Endpoints



In chemical reactions and biological processes such as biofermentation and enzyme-catalyzed reactions, the activity of cells and enzymes is susceptible to the influence of relevant components in the system.

Therefore, real-time monitoring of abnormal concentrations of these components and timely intervention are crucial for maintaining efficient reactions. Online monitoring provides real-time information about the components, while offline detection, due to delayed results and limited sampling frequency,

may miss the intervention time window, leading to reaction anomalies. Typical Users: Research and production personnel in biofermentation companies, pharmaceutical/chemical companies involved in enzyme-catalyzed reactions, and enterprises engaged in the research and synthesis of peptides and protein drugs.

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## 5.Product quality/Consistency Control in Large-Scale Production

In the large-scale production of chemical and biological processes, ensuring the consistency of product quality requires batch-by-batch or real-time analysis and testing of reaction products. Online monitoring technology, with its advantages of speed and continuity, can automate quality control for 100% of batch products. In contrast, offline detection technology, due to its complex processes and delayed results, often relies on sampling, posing quality risks for products not sampled.

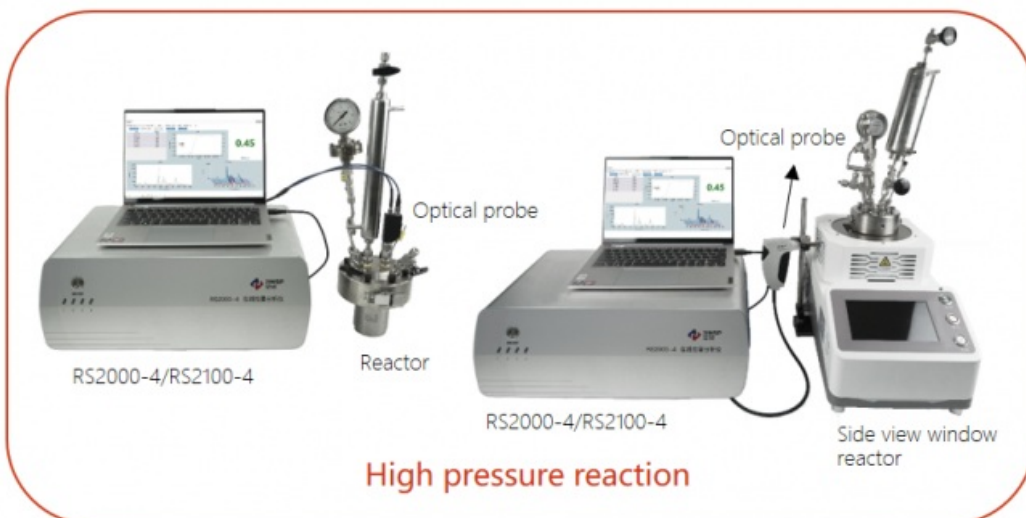
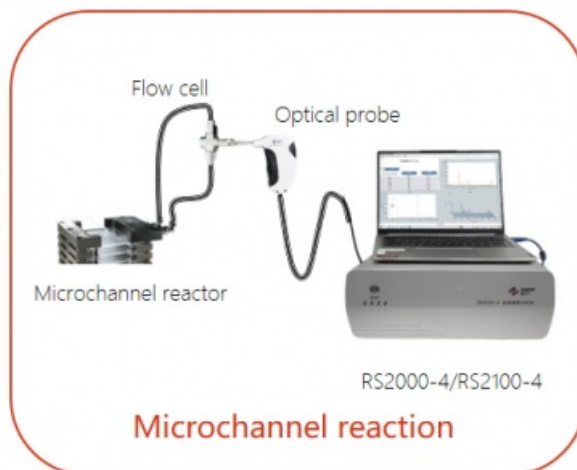
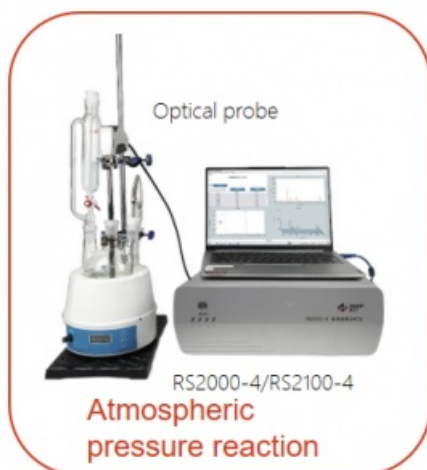
Typical Users: Process production personnel in pharmaceutical and biopharmaceutical companies; production personnel in new materials and chemical companies.

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### Usage models:

RS2100-4 has three usage modes in the laboratory, and each mode requires different accessories.

1. The first mode uses an immersed long probe that goes deep down to the liquid level of the reaction system to monitor each reaction component. Depending on the reaction vessel, reaction conditions, and system, different specifications of probes are configured.
2. The second mode involves using a flow cell to connect a bypass probe for online monitoring, which is suitable for reactors like microchannel reactors. Various probes are configured based on the specific reaction vessel and conditions.
3. The third mode utilizes an optical probe directly aligned with the side window of the reaction vessel for reaction monitoring.



#### FAQ:

**Q1: This is the first time I use it, is it easy to operate?**

A1: We will send you a manual and guide video in English, it can teach you how to operate the spectrometer. Also, our technicians will offer professional technical operation meetings.

**Q2: Can you offer an operation training?**

A2: Your technicians can come to our factory for training. Jinsp engineers can go to your place for local support ( installation, training, debugging, maintenance ).

**Q3: How to receive the best price in the shortest time?**

A3: When you send us an inquiry, please kindly offer details with wavelength, detector, effective pixels, focal length, and so on. We will send you a quotation with details soon to your email.

**Q4: If the spectrometer has a problem in my place, what could I do?**

A4: The spectrometer has a one-year warranty. If it breaks down, our technician will figure out what the problem may be, according to the client's feedback. We can repair for free within one year warranty.

**Q5: What about quality assurance?**

A5: We have a quality inspection team. All goods will go through quality inspection before shipment. We can send you pictures for inspection.



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