HYPERSPECTRAL IMAGING TECHNOLOGY

Lab Hyperspectral Imager

RL Series · 400 nm – 2500 nm · VNIR + NIR + SWIR

The RL Series is a laboratory-grade hyperspectral imaging system integrating a proprietary spectrometer module, high-resolution camera, and uniform illumination in a compact dark-box enclosure. Spatiotemporal radiometric correction ensures stable, standardized data across VNIR, NIR, and SWIR bands for forensic, food, pharmaceutical, and materials research.

Large-Format Sensor

Large-area CCD or CMOS for high spatial resolution

Dark Box + Uniform Source

Enclosed cabinet with linear light eliminates ambient interference

Spatiotemporal Radiometric Correction

Time + space calibration for consistent, repeatable results

Auto-Focus & Auto-Scan

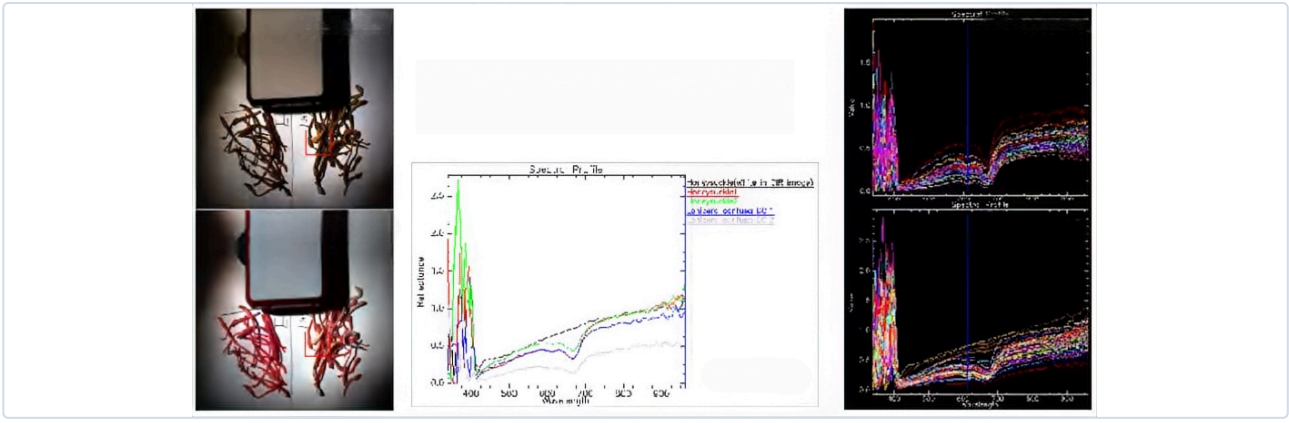
Motorized height adjustment and one-click data acquisition

RELIABLE INSTRUMENT MANUFACTURING & SERVICES

Call us: +86 189-6516-4839 Email: sales@nwspec.com Address: Xiongan Pilot Free Trade Zone, Hebei, China

Application Showcase

The RL Series captures spectral fingerprints from 400 nm to 2500 nm, enabling non-destructive identification and quantification of materials in forensic, food, pharmaceutical, and cultural heritage applications.



Hyperspectral analysis: spectral curves and sample classification

Hyperspectral imaging enables rapid, non-destructive quality inspection and material identification — fast, green, and damage-free.

Forensic & Document Examination

Seals & Signatures

Authenticate seal impressions and handwritten signatures via spectral ink differentiation.

Alteration Detection

Reveal document tampering, overwritten text, and chemically distinct ink layers invisible to the eye.

Fingerprints & Evidence

Enhance latent fingerprint contrast and identify trace substances on forensic samples.

ID & Currency Verification

Verify security features in identification documents and banknotes by spectral signature.

Key Features

Integrated Dark Box

Light-tight enclosure blocks ambient interference for consistent measurements.

Uniform Line Source

Full-spectrum linear illumination matched to camera FOV for even exposure.

Auto-Focus & Auto-Scan

Motorized Z-axis adjusts for sample thickness; one-button scan and save.

HD Reference Camera

5 MP to 40 MP visible camera co-registers high-res spatial detail with spectral data.

Technical Specifications

Table 1. VNIR Lab Hyperspectral Imager — 400 nm to 1000 nm

Parameter	RL-10-U	RL-10-S
Product No.	423-336	423-337
Spectral Range	400 – 1000 nm	400 – 1000 nm
Spectral Resolution	< 2.5 nm	< 2.3 nm
Spectral Bands	300	270
Spatial Pixels	480	480
F-Number	F/2.6	F/2.4
Detector	CCD	CCD
Detector Interface	GigE	GigE
Detector Power Supply	12-24V DC, 3W	12V DC, 4.3W
Detector Format	1/1.2"	1.1"
Detector Resolution	1920 x 1200	1600 x 1100
Pixel Size	5.86 μm x 5.86 μm	9 μm x 9 μm
Effective Bit Depth	12 bit	12 bit
Slit Width	25 μm	30 μm
Binning Mode	4 x 4	4 x 4
Max Frame Rate	128 fps	80 fps
Objective Focal Length	8 mm / 12 mm / 25 mm / 35 mm (optional)	
HD Camera Resolution	5 MP	24 MP
Application	Standard lab bench, forensic analysis	Lightproof darkroom, high-res imaging
Light Source	High-Energy Linear, Full Spectrum	
Enclosure	Standard Test Stand / Dark Box (optional)	
Scan Range	200 x 300 mm	
Sample Thickness	0 – 100 mm	
Spatiotemporal Correction	Time + Spatial Radiometric Calibration	
Auto-Focus	Motorized Z-Axis, Thickness Adaptive	
Auto-Scan	One-Click Data Acquisition & Storage	
Software	Acquisition + SDK, ENVI Compatible	
Operating Temperature	0 – 40 °C	
Storage Temperature	0 – 50 °C	

Technical Specifications

Table 2. NIR / SWIR Lab Hyperspectral Imager

Parameter	RL-30-U	RL-30-S	RL-50-U
Product No.	423-338	423-339	423-340
Spectral Range	900 – 1700 nm	900 – 1700 nm	1000 – 2500 nm
Spectral Resolution	< 4 nm	< 4 nm	< 8 nm
Spectral Bands	256	512	256
Spatial Pixels	320	640	320
F-Number	F/2.4	F/2.0	F/2.0
Detector	InGaAs	InGaAs	HgCdTe
Detector Interface	GigE	CameraLink	CameraLink
Detector Power Supply	12V DC, 4.2W	12V DC, 8.4W / 16W	24V DC
Detector Format	9.6 x 7.68 mm	9.6 x 7.68 mm	9.6 x 7.68 mm
Detector Resolution	640 x 512	640 x 512	640 x 512
Pixel Size	15 μm x 15 μm	15 μm x 15 μm	15 μm x 15 μm
Effective Bit Depth	12 bit	14 bit	14 bit
Slit Width	30 μm	30 μm	30 μm
Binning Mode	1 x 1	1 x 1	1 x 1
Max Frame Rate	300 fps	300 fps	340 fps
Objective Focal Length	8 / 12 / 25 / 35 mm	25 mm	25 mm
HD Camera Resolution	5 MP	24 MP	40 MP
Application	SWIR lab analysis	High-res SWIR, CameraLink	Extended MWIR imaging
Light Source	High-Energy Linear, Full Spectrum		
Enclosure	Dark Box (optional)		
Scan Range	200 x 300 mm		
Sample Thickness	0 – 100 mm		
Spatiotemporal Correction	Time + Spatial Radiometric Calibration		
Auto-Focus	Motorized Z-Axis, Thickness Adaptive		
Auto-Scan	One-Click Data Acquisition & Storage		
Software	Acquisition + SDK, ENVI Compatible		
Operating Temperature	0 – 40 °C		
Storage Temperature	0 – 50 °C		