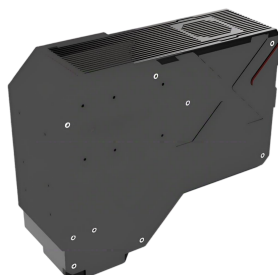


HYPER SPECTRAL IMAGING TECHNOLOGY

Industrial Hyperspectral Camera

IC Series · 400 nm – 2500 nm · VNIR + NIR



The IC Series employs proprietary prism-grating dispersion technology, delivering high spectral resolution and exceptional throughput for inline industrial inspection. Pushbroom acquisition captures the full spectral cube in a single scan, ensuring every spatial pixel retains authentic, wavelength-accurate data.

**Prism-Grating Dispersion
Pushbroom Imaging**

Line-scan captures complete per-pixel spectra in a single pass

**Up to 8,800 fps
with ROI**

Full-spectrum >1,400 fps; ROI boosts to 8,800 fps

FOV Exceeding 75°

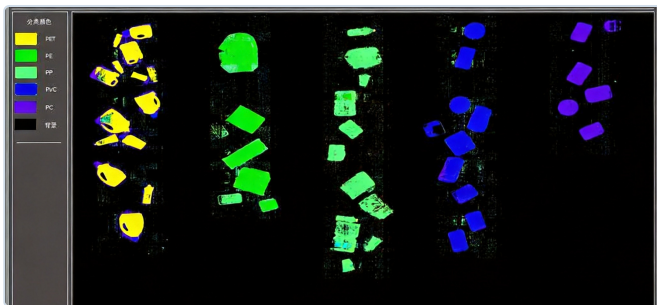
Wider coverage reduces hardware and system cost

**High Performance
Cost Less**

Domestic manufacturing at lower total cost

Application Showcase

Hyperspectral imaging identifies materials by their unique spectral signatures. The IC Series NIR camera, paired with deep-learning classification, enables automated high-speed sorting for recycling and waste management.



Real-time polymer classification by spectral signature



Multi-stream conveyor sorting in production

Automated Plastic Waste Sorting & Recycling

Camera & Optics

IC-17 NIR camera (900–1700 nm), TE-cooled InGaAs, C-mount, CameraLink.

Software & Algorithm

Deep-learning engine for PET, PE, PP, PVC, PC, PS identification.

Sorting Performance

>5 m/s conveyor, >95% accuracy, pneumatic ejection.

Economic Impact

High-purity recovery improves recycling economics and ESG compliance.

How It Works

1 Spectral Acquisition

The IC NIR camera captures the full reflectance spectrum (900–1700 nm) per pixel in a continuous pushbroom scan. Different polymers exhibit distinct NIR absorption features.

2 Material Classification

A trained CNN maps each pixel's spectral curve to a polymer type, validated across varying surface conditions and contamination levels.

3 Ejection & Separation

Classified objects are tracked with predictive motion modeling. High-speed pneumatic nozzles divert each polymer into its designated collection bin.

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Technical Specifications

Table 1. VNIR Hyperspectral Camera — 400 nm to 1000 nm

Parameter	IC-10C		IC-10U		IC-10S	
Disperser Type	Inline Grating	Transmission	Inline Grating	Transmission	Folded Grating	Transmission
Spectral Range	400 – 780 nm		400 – 1000 nm		380 – 1000 nm	
Spectral Resolution	< 2.5 nm		< 2 nm		< 5 nm	
F-Number	F/2.6		F/2.4		F/1.7	
Detector	CMOS		CMOS		CMOS	
Detector Interface	CameraLink		CameraLink		CameraLink	
Detector Power Supply	12V DC, <10W		12V DC, <10W		12V DC, <10W	
Detector Pixel Size	9 μm x 9 μm		9 μm x 9 μm		9 μm x 9 μm	
Effective Pixel Bit Depth	12 bit		12 bit		12 bit	
Spatial Pixels	1,200		≥ 1,568		≥ 1,150	
Spectral Bands	360 (2x)		228 (4x)		224 (2x)	
Field of View (FOV)	≥ 65° @ f=8mm		≥ 80° @ f=8mm		≥ 80° @ f=8mm	
Instantaneous FOV (IFOV)	1.56 mrad @ f=8mm		1.56 mrad @ f=8mm		1.95 mrad @ f=8mm	
Full Spectrum Frame Rate	≥ 750 fps		≥ 500 fps		≥ 1,000 fps	
Lens Mount	C-Mount		C-Mount		C-Mount	
Dimensions (w/o lens)	220 x 80 x 80 mm		250 x 80 x 80 mm		200 x 160 x 30 mm	
Weight	< 2.5 kg		< 2.5 kg		< 3 kg	
Operating Temperature	0 – 40 °C		0 – 40 °C		0 – 40 °C	
Storage Temperature	0 – 50 °C		0 – 50 °C		0 – 50 °C	
Software	Acquisition + SDK		Acquisition + SDK		Acquisition + SDK	

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Technical Specifications

Table 2. NIR Hyperspectral Camera — 900 nm to 1700 nm

Parameter	IC-17U		IC-17S		IC-17X	
Disperser Type	Inline Grating	Transmission	Folded Grating	Transmission	Folded Grating	Transmission
Spectral Range	900 – 1700 nm		900 – 1700 nm		900 – 1700 nm	
Spectral Resolution	< 6 nm		< 8 nm		< 8 nm	
F-Number	F/2.0		F/2.0		F/2.0	
Detector	InGaAs (TE-Cooled)		InGaAs (TE-Cooled)		InGaAs (TE-Cooled)	
Detector Interface	CameraLink		CameraLink		CameraLink	
Detector Power Supply	12V DC, 8.4W / 16W		12V DC, 8.4W / 16W		12V DC, 8.4W / 16W	
Detector Pixel Size	15 µm x 15 µm		15 µm x 15 µm		15 µm x 15 µm	
Effective Pixel Bit Depth	12 bit		12 bit		12 bit	
Spatial Pixels	640		640		640	
Spectral Bands	512		> 224		> 224	
Field of View (FOV)	≥ 60° @ f=8mm		≥ 75° @ f=8mm		≥ 75° @ f=8mm	
Instantaneous FOV (IFOV)	0.94 mrad @ f=8mm		1.25 mrad @ f=8mm		1.25 mrad @ f=8mm	
Full Spectrum Frame Rate	700 fps		1,400 fps		2,500 fps	
Lens Mount	C-Mount		C-Mount		C-Mount	
Dimensions (w/o lens)	326 x 105 x 85 mm		244 x 205 x 98 mm		244 x 205 x 98 mm	
Weight	< 3 kg		< 4 kg		< 4 kg	
Operating Temperature	0 – 40 °C		0 – 40 °C		0 – 40 °C	
Storage Temperature	0 – 50 °C		0 – 50 °C		0 – 50 °C	
Software	Acquisition + SDK		Acquisition + SDK		Acquisition + SDK	

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