

Multispectral Agricultural Detector

NY3300Pro

Features

- Online operation with real-time data transmission
- 360° rotation for wide-area monitoring
- Multi-parameter precision measurement
- Compatible with data aggregation platforms
- Fixed-position operation, unaffected by weather
- 33× optical zoom for accurate positioning
- Simple and convenient operation

Applications

- Agriculture and Crop Management
- Environmental Monitoring
- Land Use and Planning
- Water Resource Management
- Natural Disaster Monitoring
- Resource Exploration

Model	Description
NY3300Pro	6-Band Multispectral Camera

Description

NY3300PRO is a visible light 6-band multispectral agricultural detector that uses four lenses with multiple detectors, covering six bands: 450nm, 530nm, 555nm, 650nm, 685nm, and 840nm. Users can freely select each channel based on application requirements to perform calculations and obtain the needed spectral information. This flexibility makes the camera suitable for various agricultural, environmental monitoring, and resource management tasks. Whether used for crop monitoring, soil analysis, or vegetation coverage assessment, NY3300PRO can provide accurate spectral information and rich data support.

It can monitor crop growth status and health conditions, including indicators such as crop nutritional levels, chlorophyll content, and growth rates. At the same time, it can also provide field-level change information, helping to evaluate the growth conditions of different fields and enabling precise agricultural management. In soil quality assessment, multispectral technology can reveal organic matter content, moisture, salinity, and nutrient levels such as nitrogen, phosphorus, and potassium in the soil, providing data support for precision fertilization and irrigation management. Additionally, it can identify pest and disease conditions in crops, including disease spots, leaf damage caused by pests, etc., helping to detect issues in a timely manner and take control measures, reduce pesticide use, and lower production costs.



1. Detection Principle

The principle of a filter array-based multispectral camera involves placing a filter array above an optical sensor array to achieve spectral separation and multispectral imaging. When light enters the camera system through the lens, it passes through the filter array. This filter array consists of multiple filter units, each corresponding to a specific wavelength range of spectral response. Each filter unit is designed to selectively transmit or block light of specific wavelengths. This means that as light passes through the filter array, each filter unit only allows light within a specific wavelength range to pass while blocking light in other wavelength ranges.

After passing through the filter array, the light enters the corresponding optical sensor array. Each optical sensor is aligned with a filter unit and is responsible for receiving and converting the light signal transmitted through its corresponding filter unit. The optical sensor converts the light signal into an electrical signal, which is then amplified and processed. The output of each optical sensor represents the light intensity within the wavelength range selected by its corresponding filter unit.

By collecting and processing the outputs of multiple sensors in the optical sensor array, the filter array-based multispectral camera can simultaneously capture image data from multiple spectral bands. This multi-channel image data can be used for applications such as spectral analysis, object identification, vegetation monitoring, and more.

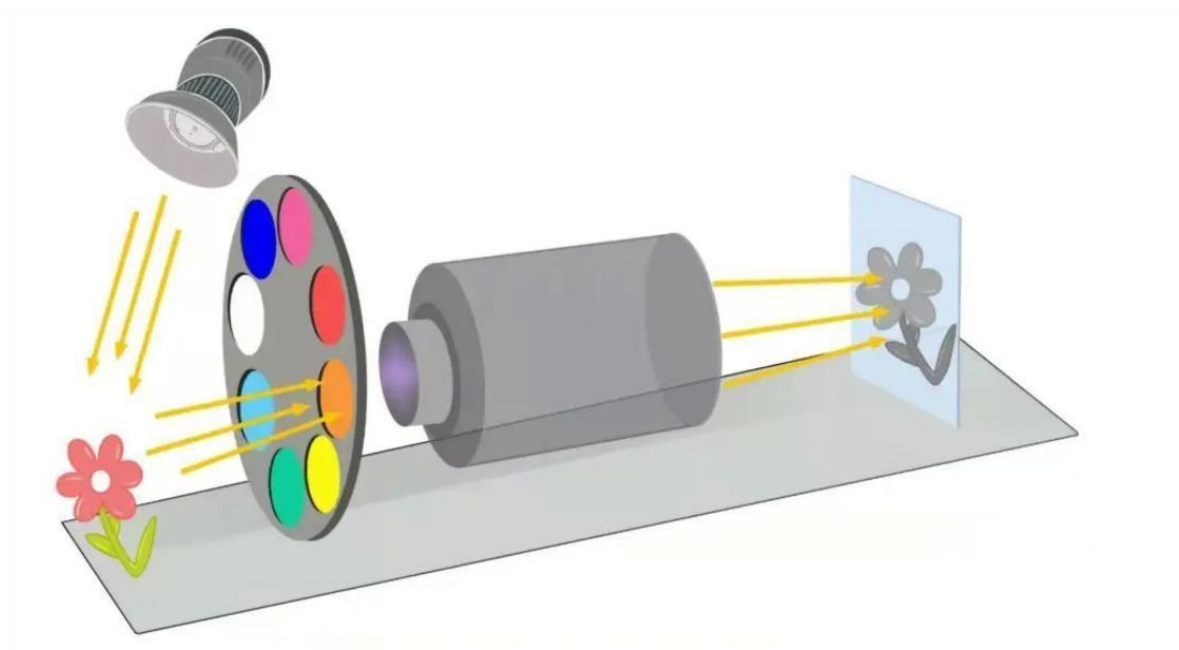


Figure 2 Schematic Diagram of Multispectral Camera

2. Parameter

Parameter Category		
Spectral Performance	Spectral Channels	450nm, 530nm, 555nm, 650nm, 685nm, 840nm Upgradable and customizable to include other spectral channels such as 840nm, 900nm, 940nm. Maximum support for 12 spectral channels.

	Index Inversion	Supports Nitrogen Index, Plant Pigment Ratio, Soil Adjustment, Chlorophyll, Anthocyanin, Red Edge Normalized Difference, Vegetation Difference, New Vegetation, Attenuation Index, Physiological Reflectance, Stress Index, Yellowness Index, etc.
Imaging Lens	Pixels	4 Megapixels
	Maximum Resolution	2688 × 1520
	Lens Aperture	F1.2
	Spectral Resolution	2 cm/pixel @ 1 KM
Camera Performance Parameters		
Sensor	Type	1/1.8-inch CMOS
	Pixels	4 Megapixels
	Maximum Resolution	2560 × 1440
	Electronic Shutter	1/1s ~ 1/30000s
	Minimum Illumination	Color: 0.001 Lux @ F1.6
		B&W: 0.0001 Lux @ F1.60 (IR lights on)
	Maximum Illumination Distance	250m (IR)
	Number of Illuminators	6 (IR lights)
Lens	Focal Length	5.8 mm ~ 192 mm
	Aperture	F1.5 ~ F4.8
	Field of View (FOV)	Horizontal: 61.6° ~ 3.6°
		Vertical: 35.2° ~ 2°
		Diagonal: 66.6° ~ 4°
	Optical Zoom	33x
	Focus Mode	Auto / Semi-Auto / Manual
	Minimum Object Distance	0.5 ~ 5 m
Pan-Tilt	Rotation Range	Horizontal: 0° ~ 360° continuous rotation
		Vertical: -30° ~ +90°, continuous monitoring after auto-flip 180°
	PTZ Speed (Manual)	Horizontal: 0 ~ 180°/s
		Vertical: 0 ~ 75°/s
	Preset Speed	Horizontal: 0 ~ 180°/s
		Vertical: 0 ~ 75°/s
	Number of Presets	300
	Auto Cruise	8 routes, each supporting up to 32 preset points
	Auto Track	5 routes
	Auto Line Scan	5 routes

	Power-Off Memory	Supported
	Idle Action	Preset; Patrol; Cruise; Line Scan
	Timed Task	Preset; Patrol; Cruise; Line Scan
	Preset Video Freeze	Supported
	3D Positioning	Supported
	Field-of-View Function	Supported
Professional Intelligence	Video Metadata	Supports detection of motor vehicles, non-motor vehicles, human faces, and human bodies; supports optimal selection; supports snapshot; supports reporting optimal snapshots with attributes (license plate, color, vehicle type, body color, brand, model/year, sun visor, seatbelt, smoking, calling, interior accessories, inspection sticker for vehicles; type, body color, rider count, upper garment type/color, hat for non-motor vehicles; upper/lower garment type/color, backpack, hat, gender, umbrella for humans; gender, age, expression, glasses, mask for faces).
	Perimeter Protection	Supports area intrusion, fence crossing, loitering detection, object left/removed, fast movement, parking detection, crowd gathering, human/vehicle classification alarm, linkage tracking.
	Face Detection	Supports face detection, face tracking frame, optimal selection, snapshot, reporting optimal face snapshots, face enhancement, face attribute extraction (6 attributes, 8 expressions: gender, age, glasses, expression [angry, sad, disgusted, afraid, surprised, calm, happy, confused], mask, beard); supports configurable face cropping area (face, ID photo); supports three snapshot strategies: real-time, optimal selection, quality priority.
	Intelligence Note	SMD and Perimeter can be enabled simultaneously; Perimeter, Video Metadata, and Face Detection are mutually exclusive.
Video	Compression Standard	Smart H.265 / H.265; Smart H.264 / H.264 / H.264B / H.264H; MJPEG
	Default Bitrate at Default Resolution	6144 Kbps (2560 × 1440)

	Image Processing	Supports Backlight Compensation (BLC), Wide Dynamic Range (WDR), Strong Light Suppression, 2D/3D Noise Reduction, Electronic Image Stabilization (EIS), Optical Defog, ROI, Digital Zoom (16x), Privacy Masking, etc.
	White Balance	Auto / Indoor / Outdoor / Tracking / Manual / Sodium Lamp / Natural Light / Street Lamp
	Gain Control	Auto / Manual
	Signal-to-Noise Ratio	≥55 dB
Network	Network Interface	1 × RJ-45 (10M/100M)
	Network Protocols	Supports mainstream protocols: HTTP/HTTPS, TCP/IP, RTSP, ONVIF, GB/T28181, etc.
	Access Standards	GB/T28181; ONVIF; CGI; GB/35114A; GA/T1400; SDK
	Storage	Micro SD Card (up to 512 GB); FTP/SFTP; NAS
Interfaces	Audio Input	1 channel (LINE IN; bare wire)
	Audio Output	1 channel (LINE OUT; bare wire)
	Two-Way Audio	Supported
	Alarm Input	2 channels (dry contact, 0~5V DC)
	Alarm Output	1 channel
	Alarm Linkage	Supports snapshot, preset call, cruise, recording, alarm output, audio, email sending, etc.
Power & Environment	Power Supply	DC24V / 2.5A ±25% (Standard)
	Power Consumption	Typical: 18.5 W
		Maximum: 26.5 W (with illuminators on and PTZ moving)
	Operating Temperature	-40°C ~ +70°C
	Operating Humidity	≤95%
	Ingress Protection (IP)	IP67; TVS 8000V lightning, surge, and transient protection
Physical	Product Dimensions	415.9 mm (H) × Φ262.0 mm (D)
	Package Dimensions	364 mm × 364 mm × 603 mm (L × W × H)
	Net Weight	8.5 kg
	Gross Weight	13.1 kg
	Installation	Wall Mount; Ceiling Mount; Pole Mount (Vertical/Horizontal)

3. Application

- **Precision Agriculture**

Accurately identifies crop growth status, occurrence of pests and diseases, weed conditions, drought situations, and soil nutrient content. Enables early warning of crop nutrient deficiencies, pests, and diseases, as well as precise fertilization and pesticide application.

- **Agriculture and Crop Management**

Multispectral cameras can be used for crop monitoring, growth assessment, pest and disease detection, and irrigation management. By capturing different spectral bands reflected by plants, they can assess vegetation health, nutritional status, and water requirements to optimize crop growth and yield.

- **Environmental Monitoring**

Cameras can be used to monitor and assess environmental pollution, soil quality, water quality, and vegetation coverage. By analyzing image data from different spectral bands, they can monitor environmental parameters such as air pollution, water eutrophication, and forest cover changes, aiding in environmental protection and sustainable development.

- **Land Use and Planning**

Multispectral cameras provide high-resolution surface image data for land use planning, urban planning, and land resource management. By acquiring land use information, land type classification, and surface change monitoring, they assist decision-makers in making more accurate land management and planning decisions.

- **Water Resource Management**

Cameras can be used to monitor water quality, storage capacity, and hydrodynamic characteristics of reservoirs, lakes, and rivers. By obtaining optical properties and color information of water bodies, they can provide critical water resource management data, such as water quality changes, algal bloom monitoring, and water flow velocity measurement.

- **Natural Disaster Monitoring**

Multispectral cameras can be used for emergency response monitoring and assessing the impact and damage of natural disasters, such as floods, earthquakes, and forest fires. By capturing image data of disaster areas, they facilitate disaster assessment, post-disaster reconstruction planning, and emergency response.

- **Resource Exploration**

Cameras can be used for geological exploration, mineral resource exploration, and energy surveying. By analyzing surface images and spectral features, they assist in identifying underground mineral resources, geological structural features, and energy potential.