RAYN Growing Systems

RAYN Vision System Camera

Research Systems

Type(s)

Project

Date

Notes

GENERAL INFORMATION

The RAYN Vision System Camera (RVS-C) is a compact research tool for observing and recording across multiple wavelengths of light, and includes a variety of connectivity options for remote and automated image capture, processing, and analysis. The RVS-C uses LEDs to measure the reflection of surfaces in a range of wavelength bands. The RVS-C can non-destructively analyze multispectral images, which contain information that can't be seen by the human eye or in a traditional photo.

Unlike large stationary traditional multispectral cameras, the RAYN Vision System Camera is compact and allows the choice of pre-scheduled stand-alone operation with local data storage and full wireless integration with your lab system.

The hardware of the RAYN Vision System Camera comes with a convenient plant analysis application which is designed to connect, download and analyze multispectral images.

PRODUCT FEATURES

- Wi-Fi connection for wireless communication
- Intuitive web interface
- Easy Connection via built in Wi-Fi access point for initial set-up
- Open-source analytics application included via download
- Multispectral images in ENVI format, stored on the SD-Card, remote download via the analytics application
- REST API to connect and automate lab-based workflows
- Streaming view, still RGB and multi-spectral image generation
- Built-in real time clock for scheduled image taking
- Generation of "pseudo color" RGB images for human consumption

APPLICATIONS

- Analyzing vegetation
- Painting analysis
- Assessing food quality

ORDERING INFORMATION

Model*	Description	Part Number
RVS-C*	RAYN Vision System Camera	7435A1001

* Ships with 24 V power supply

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an ETC Company

SPECIFICATIONS

ELECTRICAL

- 12–24 VDC input
- 24 V power supply (included)
- Self-resetting input fuse for short circuit and overcurrent protection
- Serial I/O for future integration with automation equipment
- Input trigger 5–24 V for image synchronization with research equipment
- 5–24 V “off” signal for 0–10 V dimmed external lighting
- Switching output supports up to 200 mA
- Configurable dry contact output, e.g. “off” signa
- Galvanically isolated configurable input, e.g. Trigger

HARDWARE

Optical	
F/number	2.2
Focal length	2.88 mm
Field of view	74.2° (D), 65.6° (H), 44.4° (V)
Field of view at 1 m	128x80 cm
Sensor Specification	
Sensor	OV9281 Global Shutter (CMOS)
Resolution	1 MP (1,280x800 px)
Multispectural Image Output	
Format	ENVI standard
Interleave	bip
Bit depth	8-Bit

- Standard SD card (32 GB) for internal storage of images

SOFTWARE AND INTERFACE

- Streaming modus
- Image preview (single wavelength, monochrome image)
- RGB image preview (up to three wavelength bands, RGB image)
- MQTT-based control system integration for purpose of darkening space
- Light intensity correction (light distribution)
  - Factory presets for 30, 40, 60, 80, 100, 150 cm distances
  - Factory presets include internal white references
  - Dark level (for subtracting ambient light)
- REST API remote control for lab software integration
- MQTT interface for communication with lighting control system
- RAYN Vision Analytics available for download at rayngrowingsystems.com

MOUNTING

- Mounting via universal 7 mm (1/4 in) camera tripod mount or 2x M5/3/16 in screws

INTEGRATED LIGHTING

- 9 narrow band LEDs and white LEDs (5700 K/90 CRI)
- Automated sequencing of lights for imaging

ENVIRONMENTAL

- Operation temperature and humidity: -20°C to 45°C (-4°F to 113°F), 20%–95% RH, non-condensing
- Storage temperature and humidity: -20°C to 85°C (-4°F to 185°F), 10%–95% RH, non-condensing
- Ingress Protection:
  - IP40 when camera is facing upwards or sideways
  - IP42 when camera is facing downwards

MECHANICAL

- Housing: Polycarbonate, impact-resistant, IK05
- Lamp Cover: Polycarbonate with integrated LED array

WIRELESS FREQUENCY

- Frequency range: 2412–2472 MHz
- Channel spacing: 5 MHz
- Transmit power: 19.9 dBm EIRP
- Modulation: DPSS, OFDM
- Comms device: ESP32-S3-WROOM-1

COMPLIANCE

- CE Compliant (DofC)

WARRANTY

- 5 year warranty

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WAVELENGTH CHART

Color	Half-max min. wavelength (nm)	Mean peak wavelength (nm)	Half-max min. wavelength (nm)	Half-max range (nm)
Blue	463	475	488	25
Cyan	484	500	513	29
Green	510	526	545	35
Amber	594	603	609	15
Red	629	940	647	18
Deep-red	651	665	672	22
Far-red	717	740	752	35
NIR-850	827	850	862	35
NIR-940	917	940	952	35

PHYSICAL

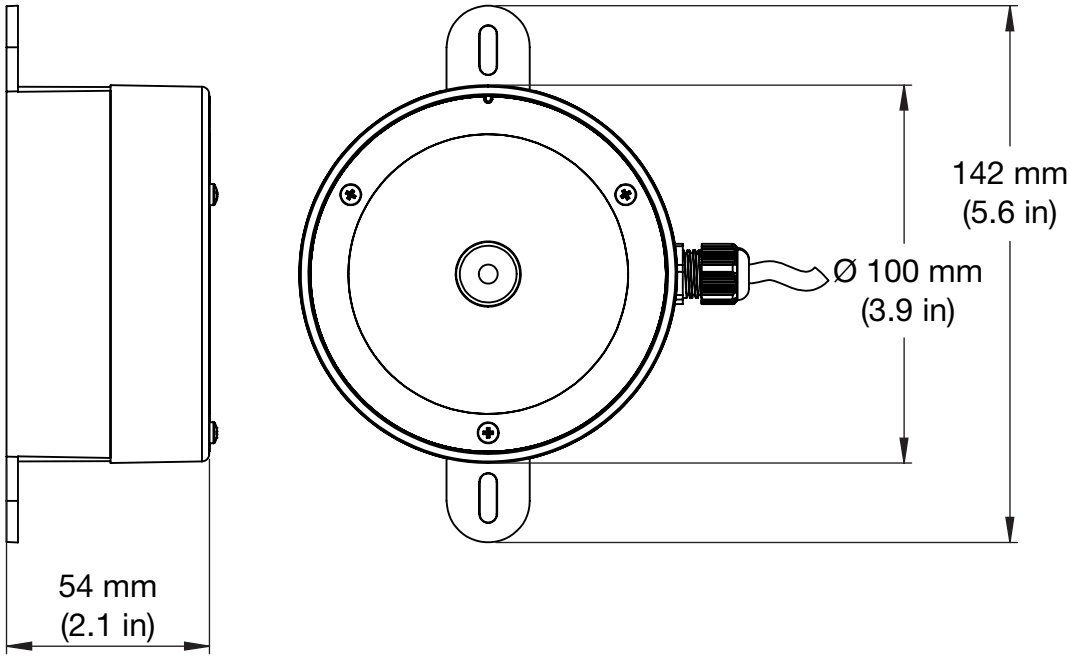
Weights

Model	Weight		Shipping Weight	
	kg	lb	kg	lb
RVS-C	0.4	0.7	0.7	1.5

Dimensions

Model	Height*		Width		Depth	
	mm	in	mm	in	mm	in
RVS-C	100	3.9	100	3.9	54	2.1

*Dimensions with mounting plates: 142x100x54 mm (5.6x3.9x2.1 in)



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