IN-VACUUM CAMERAS

# VacCam




## In-situ video camera to monitor operations and processes inside a vacuum chamber

**VacCam** captures high-quality images and video inside high-vacuum systems for industrial, scientific, and space applications, including manufacturing, testing, and process monitoring.

Built from **low-outgassing materials** to meet strict contamination standards, it features integrated LEDs for built-in illumination, a USB interface for power and communication, and a compact, modular design for flexible positioning and customisability.

The camera design includes mounting points which must connect to a heat-dissipative mounting block for effective thermal management and reliable in-vacuum operation.

### VacCam Optics and Integration

VacCam supports **C-mount lenses** for easy integration with your choice of vacuum-compatible lens.

XCAM Scientific offers an optical lens for basic operation and system testing of the VacCam in laboratory.

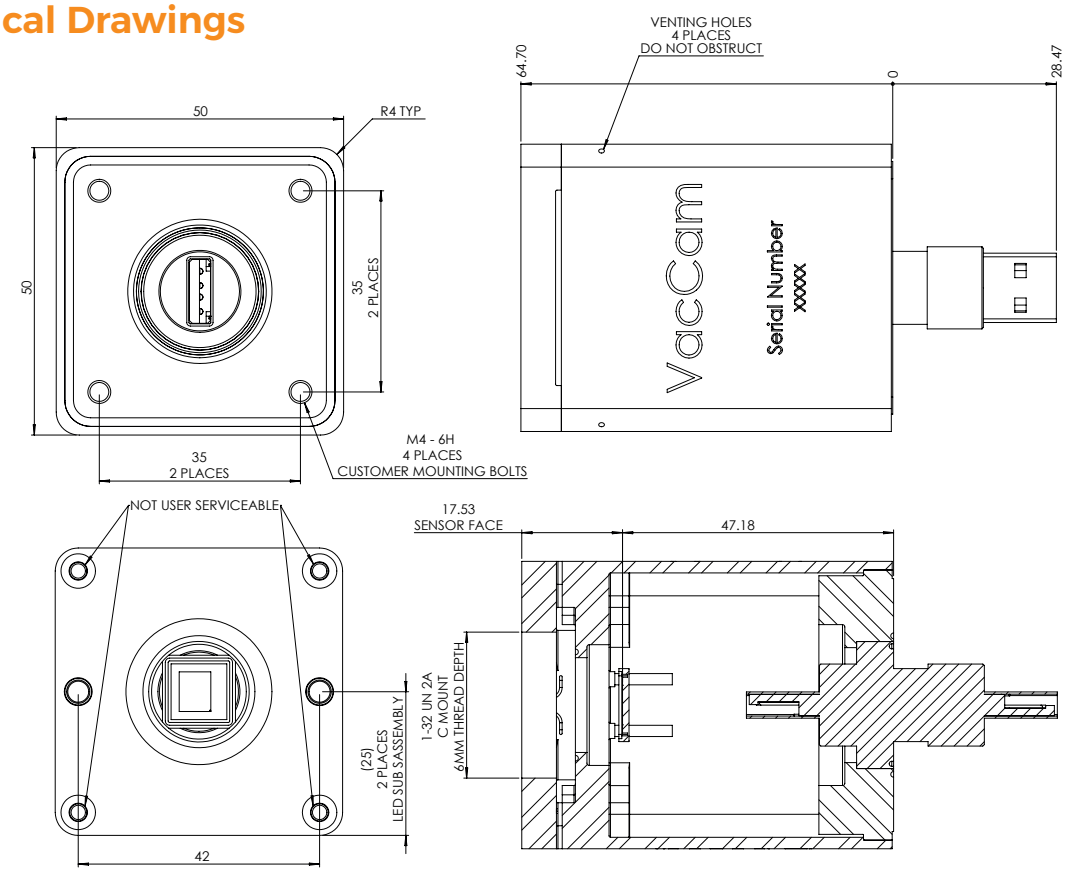


The system includes fully featured application software and a software developer's pack, enabling seamless integration into custom control and data acquisition workflows. Its design allows flexible adaptation to specific experimental setups, ensuring that optical and software configurations can be tailored to unique vacuum monitoring requirements.

## Features & Benefits

- **Fully Immersible in a Vacuum Chamber** allows real-time imaging of processes without needing viewpoints or external optics.
- **Fully Vacuum Compatible Down to $10^{-6}$ mbar** ensures reliable operation in ultra-high vacuum conditions.
- **RGB Colour or B&W Greyscale Imaging** provides flexibility to capture either colour images for visual inspection or B&W images for higher sensitivity and contrast in low-light conditions.
- **Video Frame Rates of up to 10 fps** supports slow-moving or static process monitoring; sufficient for most in-vacuum experiments without excessive data storage or processing needs.
- **USB2 Interface for Communications and Power** simplifies installation with a single cable for both data and power, reducing complexity in vacuum feedthrough setups.
- **Fully Featured Application Software** enables easy image capture, analysis, and integration with custom software or automation systems, speeding up setup and operation.

## Technical Drawings




## Key Specifications

| Parameter | Specification |
|---|---|
| Mechanical Dimensions | 50 x 50 x 60 mm³ (excl. lens and USB connector) |
| Weight | 650 g |
| Image Sensor Options | 1.3 MP CMOS: 1/1.8" format: 5.5 µm pixels: RGB or B&W |
| Lens | C-mount interface. Wide-angle lens with fixed focus as standard |
| Wavelength Range | 400 - 1000 nm |
| Exposure | Auto or fixed |
| Readout Modes | Single image and up to 10 fps video |
| Electrical Interface | USB 2.0 |
| Power | Supplied by USB 2.0: 2 W max. |
| Operating Temperature | Electronics: -30°C to +50°C<br>Sensor: -30°C to +65°C |

| Optical Lens (Not vacuum compatible - for in-air setup only) | |
|---|---|
| Focal Length | 9.6 mm |
| Relative Aperture | F/3 |
| Field of View approx. | 45 degrees |
| Image Aspect Ratio | 1:1.25 |

### Supplied by XCAM Scientific:

- VacCam in-vacuum video camera
- Operating Manual
- Software dll and application software to enable image capture and integration with user's software application

### Supplied by Customer:

- USB2 in-vacuum cable
- Vacuum-compatible lens
- Mounting system inside the vacuum capable of sinking and dissipating up to 2W heat load
- Additional illumination inside vacuum chamber - if required



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