

Model IRVM Infrared Viewer

Introduction

The IRVM is a high performance CCD camera that allows for viewing and recording of radiation in the 400 to 1700nm spectral range. The IRVM features a built-in 4-inch TFT-LCD monitor for digital viewing of images. Users may operate the device via adapter or 4 AA rechargeable batteries (included). The unit may be hand-held or used with a tripod.

Common applications

- Laser beam diagnostics and analysis
- Spatial intensity distribution
- Coupling alignment, optical components testing
- Telecommunication
- Forensics and art restoration
- Night vision
- Surveillance and investigation in botany, biophysics, and medicine

Specifications

Spectral response (nm)	400-1700
Lens	1X (F1.4/26mm)
Optional lens	2.5X (F2/58mm)
CCD format	1/3 inch (6.3 x 4.7mm)
CCD camera resolution	752 x 582
System resolution	570 TV lines
S/N ratio (dB)	46
Digitizer	8 bit
Visual magnification	1X (or optional 2.5X)
Video output	Standard composite video, 1Vp-p, 75, RCA connector
Power supply (VDC/mA max.)	12/400
Battery type	4 x AA rechargeable
Battery life (hours, min., continuous)	1
Monitor	4-inch TFT-LCD display, 480x220 pixels
Temperature range (°C)	+5 to +40
Dimensions (mm)	139 x 100 x 89
Field of view (degrees)	20
Weight (kg)	0.6 (1.32 lb)

Standard kit includes IR camera with F1.4/26mm lens, IR cut-off filter, AC adapter, distance ring, tripod, and case.

Caution!

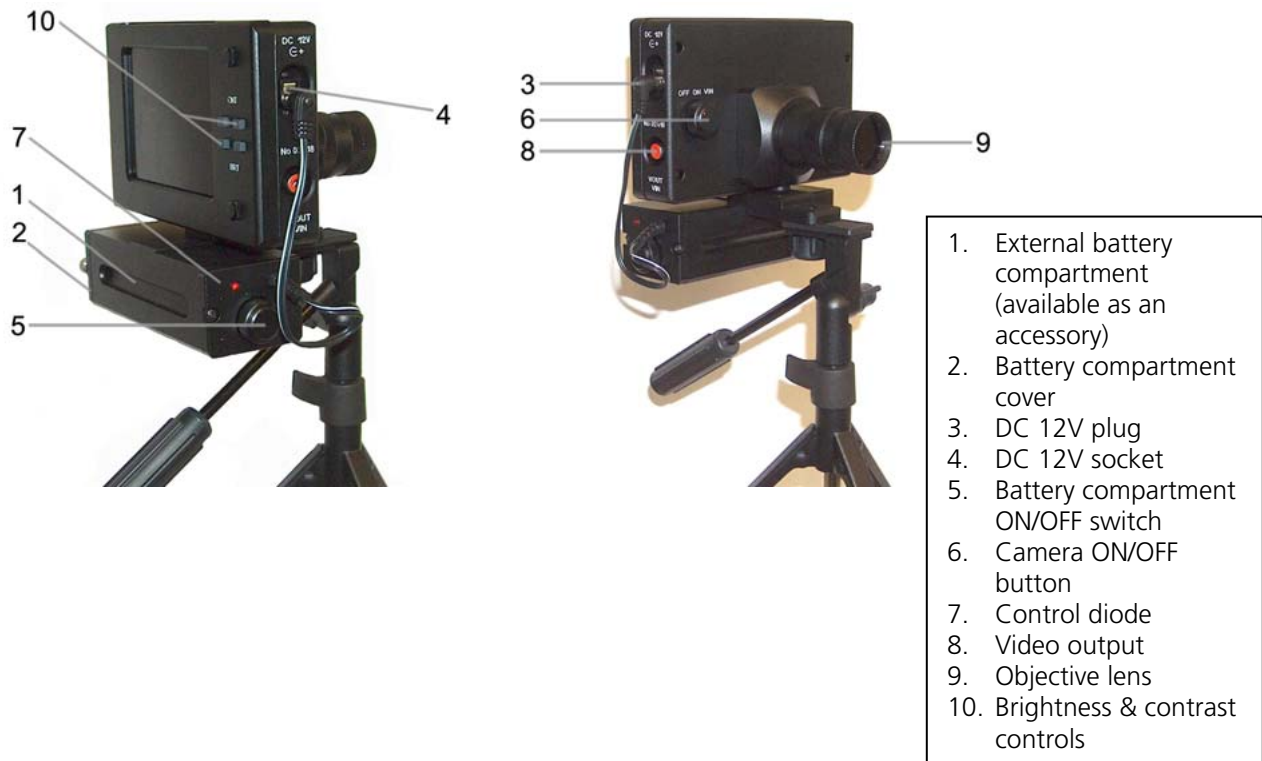
- Do not use the camera for direct beam viewing. Incident light on the objective lens should never exceed 10mW/cm².
- Never attempt your own maintenance. This product contains high voltage components.
- Avoid water and dust. Do not use thinners or other chemical cleaners. Do not expose to temperature extremes or direct sunlight.
- Avoid dropping and strong impact. When you do not use your camera for an extended period, be sure to remove the batteries.



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Operation of IRVM

1. If purchased as an accessory, attach battery compartment (1) to the bottom of camera via fixing screw.
2. Remove battery compartment cover (2). Then remove socket and take out the battery holder.
3. Install four AA rechargeable batteries into the battery compartment, observing the polarity. Replace the battery holder and cover.
4. Insert DC 12V plug (3) into socket (4).
5. Switch ON (5) the battery compartment. The battery compartment features a ¼"-20 threaded hole for attaching a tripod and the control diode of a feed (7).
6. If operating the viewer via AC adapter only (no battery compartment), simply plug adapter into both 12V viewer socket (4) and wall. Tripod attaches to bottom of camera.
7. To turn the camera on, turn the rotary switch (6) clockwise into the middle position (ON). In position ON, the video output (8) is switched on automatically. In position VIN (far right position), the video input is switched on for displaying of images from external video sources.
8. Focus the objective lens (9) to achieve a clear picture of your object.
9. Use the brightness and contrast controls (10) to adjust the brightness and contrast of the picture. The brightness of the screen varies with the viewing angle.
10. Turn rotary switch (6) to OFF position when viewer is not in use.



Accessories available upon request:

1. 2.5x lens with IR cut-off filter and distance ring
2. Neutral density filter (2-5%)
3. Iris diaphragm
4. Microscope adapter
5. Autonomous battery compartment for 4-AA rechargeable batteries



Spectral sensitivity of IRVM

Please note that the minimum detectable signal for a near-infrared viewer depends on the following.

- Power density
- Wavelength of incident radiation (nm)
- Effective aperture of the objective lens
- Distance between the spot and the viewer
- Time duration of the signal (pulsed or continuous)
- Reflectivity of the diffusing surface
- Sensitivity of the human eye or device used in viewing the output of the IR viewer

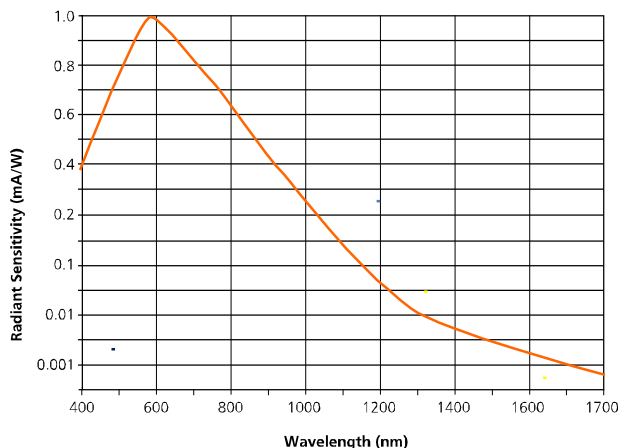
The minimum power densities required to view an IR beam from a distance of one meter are approximately

- 20 μ W/cm² for 1.0 μ m
- 500 μ W/cm² for 1.3 μ m
- 3mW/cm² for 1.5 μ m
- 50mW/cm² for 1.7 μ m

To determine the minimum power density in mW/cm² required to yield a detectable signal, use the following procedure. Divide the laser power in milliWatts by the area of the beam at the distance to be measured. For an elliptical beam, the area is equal to $2/3 \times w \times h$. For example, if $h = 10\text{mm}$ and $w = 40\text{mm}$, then the area of the beam = $2/3 \times 10\text{mm} \times 40\text{mm} = 2/3 \times 400\text{mm}^2 = 266.7\text{mm}^2$. To convert to cm², divide by 100. Therefore, the area = approximately 2.7 cm². To determine the required power density, divide the laser power by the 2.7 cm² figure. For example, if the laser output is 5mW, the required power density will be $5\text{mW}/2.7 \text{ cm}^2$, or 1.85mW/cm².

For a circular beam, area is equal to $\pi \times r^2$, where r = the radius of the beam. For example, if both the height and width of a beam at the distance to be measured are 5mm, then the area of a beam at this distance = $3.14 \times 2.5\text{mm}^2$ (half the diameter, squared) = $3.14 \times 6.25\text{mm} = 19.6\text{mm}^2$. Divide by 100 to convert to cm², so the area = approximately 0.19cm². Now divide laser power by 0.19cm² to determine the required power density. For example, if the laser output is 5mW, the required power density will be $5\text{mW}/0.19\text{cm}^2$, or 26.31mW/cm².

The drawing below illustrates the typical spectral response of our IRVM viewer.



Warranty and repair return policy

IRVC Series viewers are warranted for twelve (12) months for all parts and twelve (12) months for all labor from the date of the first consumer purchase.

No return of merchandise will be accepted by PTI without an RMA, Return Material Authorization, number, issued by the factory and prominently displayed on the return package.

No return shipments will be accepted "Collect" or "COD". On warranty returns PTI will pay for shipping charges on return of merchandise to the customer.

When contacting the factory for an RMA number, please have the following information available: model number, serial numbers, and a description of the problem.



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