Model IRVE Infrared CCD Camera

Introduction

The IRVE infrared viewing device is a compact CCD camera designed for viewing, registering, and recording radiation in the 400 to 1700nm spectral range. The device features a highly sensitive, low noise silicon CCD sensor with increased sensitivity in near-infrared light regions. The IRVE does not include a TFT-LCD display, so users must supply a monitor for image viewing.

Common applications

- Observing, registering, and recording of images emitted by IR sources, such as GaAs IR LEDs, diode lasers, and solid-state lasers
- Laser beam alignment and inspection, optical fiber alignment, telecommunications, inspection of silicon surfaces
- Surveillance and investigation in botany, biophysics, and medicine
- Forensics and art restoration; examination of documents, records, engravings, and paintings for hidden differences; viewing of aged, worn, or charred documents; studying of plant pathologies; examination of fossils and segments; characterization and examination of inks and pigments; examination of obliterated/censored documents
- Infrared microscopy, infrared luminescence (by ultraviolet stimulation), fluorescence

Specifications

Spectral response (nm)	400-1700
Lens	1X (F1.4/26mm)
Optional lens	2.5X (F2/58mm)
Sensor size (in)	1/3 (582 x 752)
Synchronization	internal/external
Resolution	570 TV lines
S/N ratio (dB)	48
Video output/input	Standard composite video
Power supply (VDC/mA)	10-14/150
Temperature range (°C)	+5 to +40
Dimensions (mm)	56 x 110
Field of view (degrees)	20
Weight (kg)	0.3 (0.66 lb)

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

Caution!

- Do not use the camera for direct beam viewing. Incident light on the objective lens should never exceed 10mW/cm^2.
- Never attempt your own maintenance.
- 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.

Power Technology Incorporated
Mailing: P. O. Box 191117, Little Rock, AR 72219-1117 ◦ Shipping: 16302 Alexander Road, Alexander, AR 72002
Tel: 501.407.0712 ◦ Fax: 501.407.0036 ◦ Email: sales@powertechnology.com ◦ Web: www.powertechnology.com

Operation of IRVE

1. Connect camera to power source.
2. Switch ON the camera.
3. Camera features an ELK-ALK switch. Use position ELK to turn on an automatic electronic shutter if your objective lens does *not* have a built-in iris. Use position ALK if your objective lens is equipped with a built-in iris.
4. Focus the objective lens to achieve a clear picture of your object.

Accessories available upon request:

1. 2.5x lens with IR filter and distance ring
2. Neutral density filter (2-5%)
3. Iris diaphragm
4. Microscope adapter

Spectral sensitivity of IRVE

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

- 20μW/cm^2 for 1.0μm
- 500μW/cm^2 for 1.3μm
- 3mW/cm^2 for 1.5μm
- 50mW/cm^2 for 1.7μm

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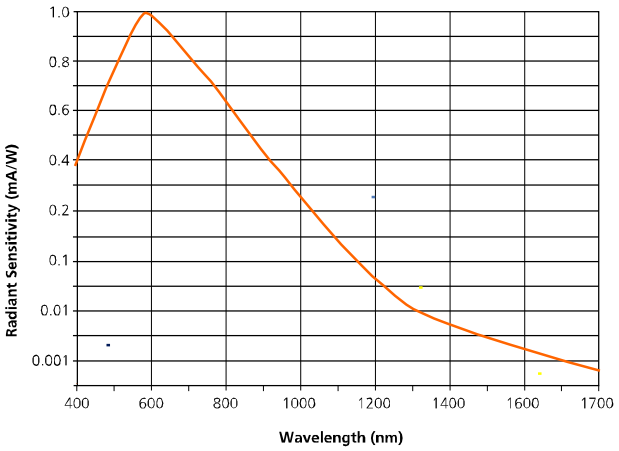
To determine the minimum power density in mW/cm^2 required to yield a detectable signal, use the following procedure. Divide the laser power in milliWatts by the area of the beam at the distance to be measured. For an elliptical beam, the area is equal to 2/3 x w x h. For example, if h = 10mm and w =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

For a circular beam, area is equal to $\prod \mathbf{x\ r^2}$, 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 x $2.5mm^2$ (half the diameter, squared) = 3.14 x 6.25mm = 19.6mm. Divide by 100 to convert to cm^2, so the area = approximately $0.19cm^2$. Now divide laser power by $0.19cm^2$ to determine the required power density. For example, if the laser output is 5mW, the required power density will be 5mW/$0.19cm^2$, or $26.31mW/cm^2$.

The drawing below illustrates the typical spectral response of our IRVE 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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