

## Model IRV2 Infrared Viewing Device

### Application

The IRV2 is a high performance infrared viewer designed to observe radiation emitted by infrared sources.

The lightweight, compact device can be used handheld, post mounted with the ¼-20 internal thread, or facemask-mounted for hands-free operation. The IRV2 works from one AAA type battery with 35 hours of permanent work or from an external power supply with 3VDC. It is a very convenient device for any OEM integration.

### Specifications

	IRV2(270)	IRV2(2000)	IRV2(1700)	IRV2(1300)
<b>Spectral response (nm)</b>	270-1700	350-2000	350-1700	350-1300
<b>Resolution (lp/mm, center)</b>	30		60	
<b>Magnification</b>	1X		1X or 2.5X	
<b>Objective lens</b>	F1.6/26mm quartz without iris	F1.4/26mm without iris (1X) or F2/58mm with iris (2.5X)		
<b>Field of view (degrees)</b>	20	40 with 1X lens, 18 with 2.5X		
<b>Focus (m)</b>	0.15 to ∞	0.15 to ∞ with 1X, 0.25 to ∞ with 2.5X		
<b>Battery type</b>	1 x AAA	1 x AAA		
<b>Input voltage from external power source (VDC/mA max)</b>	3/20	3/20		
<b>Weight (kg)</b>	0.38	0.38 with 1X, 0.58 with 2.5X		
<b>Dimensions (mm)</b>	155 x 78 x 55	155 x 78 x 55mm with 1X, 220 x 78 x 55mm with 2.5X		
<b>Temperature range (°C)</b>	-10° to +40°	-10° to +40°		

NOTE: Tripod or handle connection – R1/4”  
Standard kit includes: IR viewer, IR filter, handle, case

### Caution!

Do not use the device for direct beam viewing. Damage to the highly sensitive photocathode material will occur if the incident light on the objective lens exceeds 10mW/cm<sup>2</sup>.

Long-term over-exposure may cause satiation of screen and decrease in resolution or irreversible reduction of photocathode response.

### Operation

- 1.) Install the battery into cell compartment (1), observing the polarity.
- 2.) To switch on the unit, press button (2).
- 3.) By focusing **both** the objective (3) and eyepiece (4) in turn, try achieving a bright image of the object under observation.
- 4.) For “goggle” operation, place the IR viewer onto the “swallow tail” of the facemask, and clamp it with screw. Using the facemask screws, adjust the unit position to achieve the most convenient operation.
- 5.) When observations are made in the near-IR, use the IR cut-off filter.





- 1.) Cell compartment
- 2.) ON/OFF switch
- 3.) Objective lens 1X (2.5X optional)
- 4.) Cut-off filter (700-1700nm)
- 5.) Eyepiece
- 6.) Plug for DC 3V power
- 7.) Handle
- 8.) DC 3V control diode

### Please note

You may notice an occasional small black spot on the viewer screen. These spots do not affect performance or reliability of the viewer and are due to cosmetic blemishes in the image converter. They are inherent in the manufacturing process.

### Accessories available upon request:

- |   |                          |
|---|--------------------------|
| 1.) Facemask for hands-free operation.          | 5.) C-mount adapter ring |
| 2.) Infrared illuminator (810-950nm wavelength) | 6.) Microscope adapter   |
| 3.) Neutral density filter                      | 7.) Iris diaphragm       |
| 4.) CCD camera adapter                          | 8.) Video adapter        |

### Spectral Sensitivity of IRV2

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

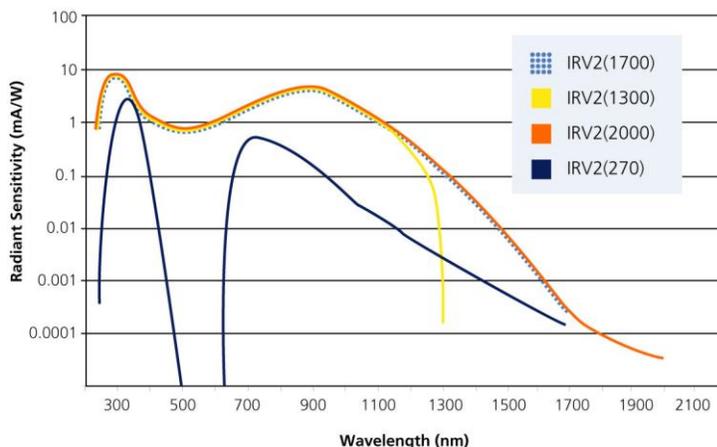
- $20\mu\text{W}/\text{cm}^2$  for a 1, 06 $\mu\text{m}$
- $500\mu\text{W}/\text{cm}^2$  for a 1, 3 $\mu\text{m}$

To determine the minimum power density in  $\text{mW}/\text{cm}^2$  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  $2/3 \times w \times h$ . 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  $\text{cm}^2$ , divide by 100. Therefore, the area = approximately  $2.7\text{cm}^2$ . To determine the required power density, divide the laser power by the  $2.7\text{cm}^2$  figure. For example, if the laser output is  $5\text{mW}$ , the required power density will be  $5\text{mW}/2.7\text{cm}^2$ , or  $1.85\text{mW}/\text{cm}^2$ .



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) =  $3.14 \times 6.25\text{mm} = 19.6\text{mm}$ . Divide by 100 to convert to  $\text{cm}^2$ , so the area = approximately  $.19\text{cm}^2$ . Now divide laser power by  $.19\text{cm}^2$  to determine the required power density. For example, if the laser output is 5mW, the required power density will be  $5\text{mW}/.19\text{cm}^2$ , or  $26.31\text{mW}/\text{cm}^2$ .

The drawing below illustrates the typical spectral response of our IRV2 viewer.



## Warranty and Repair Return Policy

The IRV2 is 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.

### Models- IRV2(1300), IRV2(1700), IRV2(2000), IRV1(1700), IRV1(2000)

**CE** Certificate Number- 00083/101/1/2006/CE

These models meet the essential safety requirements of the following directives:

**EMC Directive 89/336/EEC, amended by 92/31/EEC and 93/68/EEC**

A sample of the product was tested and found to be in conformity with the following standards and/or technical specifications applied:

**EN 55011: 1998+A1; 1999+A2:2002      Test Report No. 410/05**

**EN 61000-6-2:2001**



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  
Copyright 2011 Power Technology Inc.