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 (not supplied by Newport). It is a very convenient device for any OEM integration.

Specifications

	IRV2-2000	IRV2-1700	IRV2-1300
Spectral response (nm)	350-2000	350-1700	350-1300
Resolution (lp/mm, center)	60		
Magnification	1X or 2X		
Objective lens	F1.4/26mm (1X) or F2/50mm (2.0X)		
Field of view (degrees)	40 with 1X lens, 20 with 2X		
Focus (m)	0.15 to ∞		
Battery type	1 x AAA		
Input voltage from external power source (VDC/mA max)*	3/30		
Weight (kg)	0.38 with 1X, 0.42 with 2X		
Dimensions (mm)	140 x 78 x 52mm with 1X, 145 x 78 x 52mm with 2X		
Temperature range (°C)	-10° to +40°		

* While the IRV2 can be powered from an external power source, Newport recommends against doing so. If the user chooses to power the instrument in this manner, then the user MUST verify that the power supply selected conforms to all applicable safety and EMC regulations.

NOTE: Tripod or handle connection – R1/4"

Standard kit includes: IR viewer, IR filter, handle, 1x and 2x lenses, 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^2.

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

See the Warnings, Cautions, and Symbol Explanations Section of this instruction sheet.

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.

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Newport Corporation, 1791 Deere Avenue, Irvine, CA 92606
Telephone: 800-222-6440, 949-863-3144 • Facsimile: 949-253-1680 • www.newport.com

1. Lid of battery
2. Button ON/OFF
3. Lens F1.4/26mm
4. IR Filter
5. Eyepiece
6. Socket 3B
7. Handle
8. LED
9. Lid of lens
10. Tripod thread
11. Screw
12. Diaphragm
13. Dove tail (for face-mask clamping)

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.
2.) Neutral density filter
3.) CCD camera adapter
4.) Microscope adapter

Spectral Sensitivity of IRV2

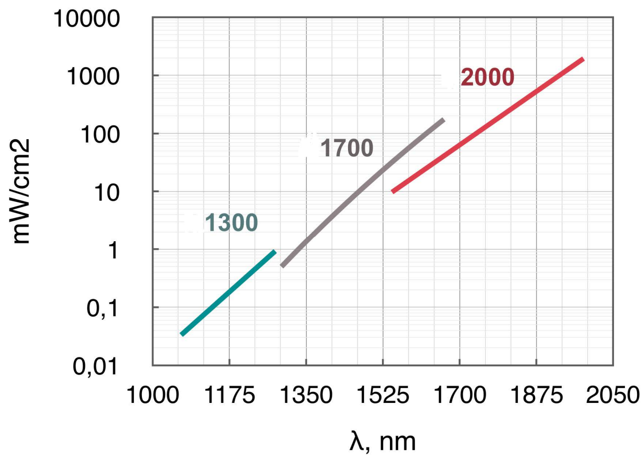
Please note that the minimum detectable signal for a near-infrared viewer depends on the following.

- 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

- 20µW/cm^2 for a 1, 06µm
- 500µW/cm^2 for a 1, 3µm

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 **∏ 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 $.19cm^2$. Now divide laser power by $.19cm^2$ to determine the required power density. For example, if the laser output is 5mW, the required power density will be $5mW/.19cm^2$, or $26.31mW/cm^2$.

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