DataRay Inc. Application Note
CamIR Adapter^{1550} Focusing & Setup

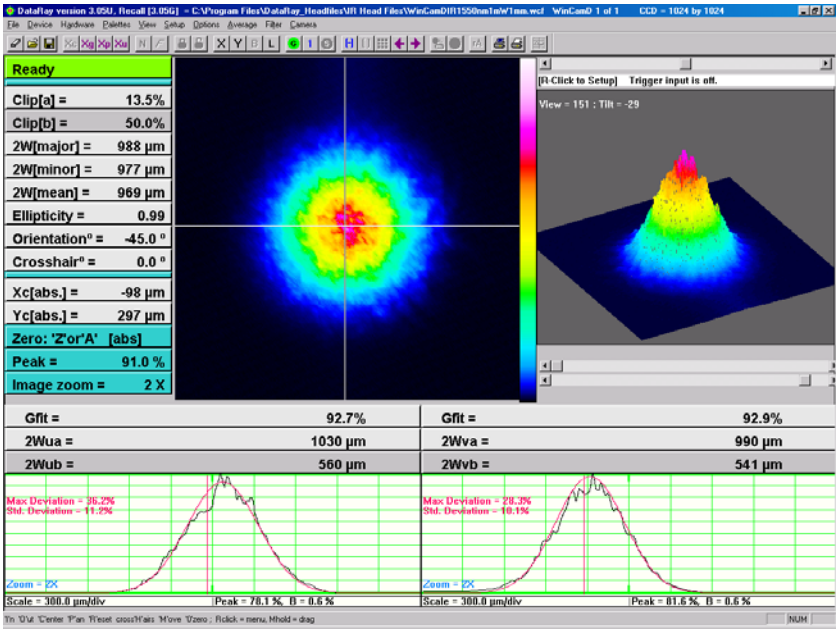
- 1475 to 1600 nm, IR to visible conversion phosphor
- ≈70 μm FWHM point spread function due to phosphor
- ±10% spatial response non-uniformity due to phosphor
- **Gamma**: Signal = (Incident Irradiance)$^{\gamma}$ where **γ** =1.414. Gamma (**γ**) correction is included in the software.

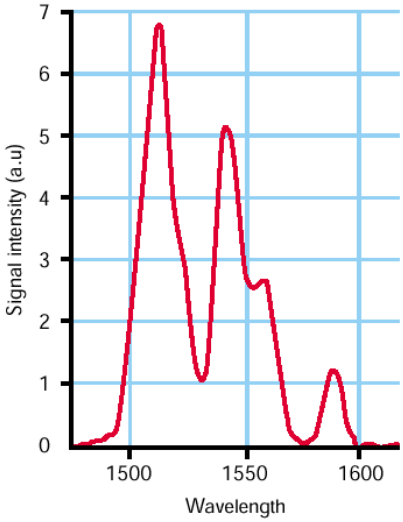
The CamIR Adapter^{1550} is nominally designed for use with C-mount systems, implying a distance of 17.512 mm from the flange to the chip. Spacers set this at the correct distance from the WinCamD camera.

In practice, as supplied, it has a 5.5 mm spacing reducing this distance to 12.0 mm. WinCamD has a chip to case flange distance of ~7.5 mm, so the extra distance required is 5.5 mm.

Spacers: When sold *with* a WinCamD, the Adapter is delivered separately packaged as a pre-focused assembly with the correct spacers installed.

Separately purchased/Customer focused CamIR Adapter^{1550}?
See also Appendix A.





Cam-IR Adapter Use.

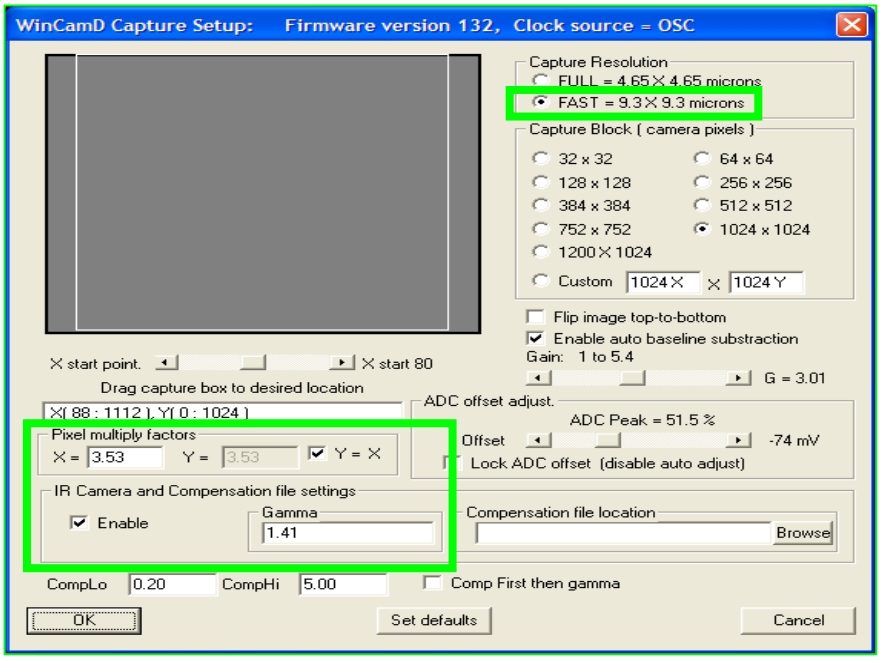
1) **Remove the ND4 neutral density filter** supplied with the camera. Then remove the rear dust cap and screw on the adapter. You can perform a crude alignment on the fluorescent spot on the screw-on target before unscrewing it.

2) Set PMF & Gamma

The magnification of the adapter at the focus position ≈0.285. The inverse of this is 3.50 (within ±2%). This value must be entered in the **WinCamD Capture Setup** screen. Found in the **Setup** pull-down menu.

Also set **Enable IR camera** and set the **Gamma** to **1.41**.

There is little point in setting on **FULL** mode except for the smallest beams. In **FAST** mode the effective pixel size of 33 μm is below the ≈70 to 100 μm FWHM (Full Width Half Maximum) point spread function of the phosphor.



3) FWHM ≈70 μm

Remember. This means that the minimum measurable beam diameter at a 50% clip level is ≈250 μm. Anything below this is going to be significantly broadened by the point spread function of the phosphor.

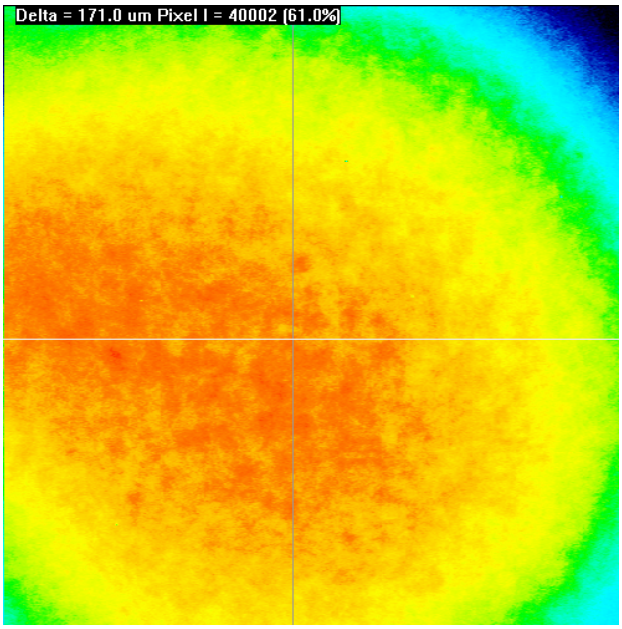
Appendix A. Customer Focused Cam-IR Adapter.

If the Adapter is acquired separately for use with the WinCamD, to mount the adapter to the WinCamD requires spacers between the Adapter and the

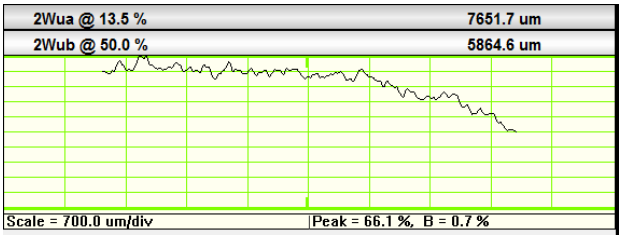
Focusing: In the button bar select **Xu** and place the crosshairs in the approximate center of the screen. Then right-click on the 2D screen and select **Force Crosshairs to zero degrees**. In the **Setup** pull-down menu, select **Capture Setup dialog**. Select **Full** resolution and set the **Capture Block** to **384 x 384**. In the **Filter** pull-down menu, select **No filtering**.

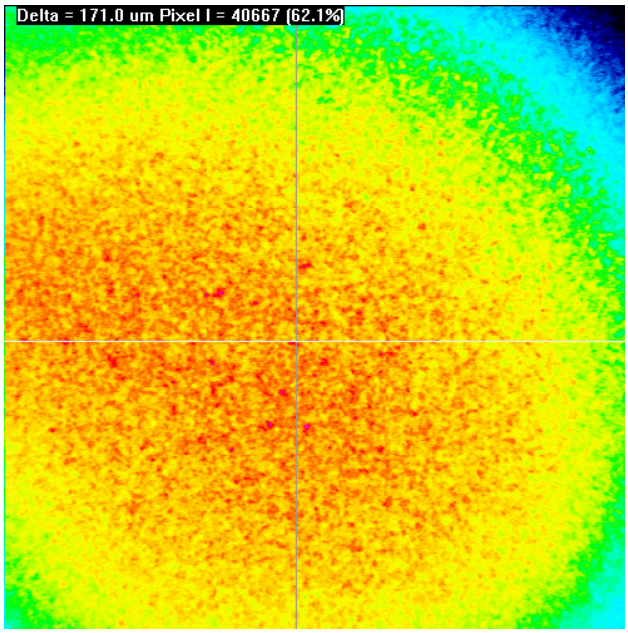
The Adapter is focused under ambient illumination by rotating the rear focus ring until the image and profiles show the maximum modulation (due to the granular structure of the phosphor converter coat). If you do this is daylight rather than room lights, the focus will normally coincide with a maximum value of the **Peak %** value on the left of the screen. If the focus is beyond either end of the adjustment, a different brass spacer ring will be required.

Once focused, it is recommended that the position by marked on the focus ring, adjacent to a mark on the fixed part of the barrel, using the provided label. As seen in the photo on the first page, attach the mark across the intersection between the rear of the focus ring and the body, and then slit it along the intersection.



Out-of-focus





In-focus