

BladeCam series
WinCamD series
TaperCamD series

WinCamD ISO 11146 Setup

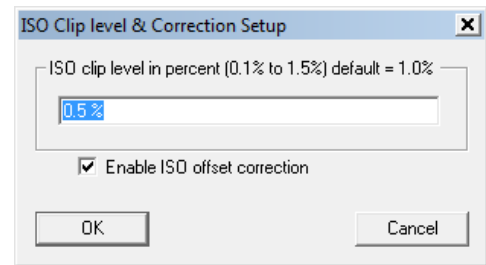
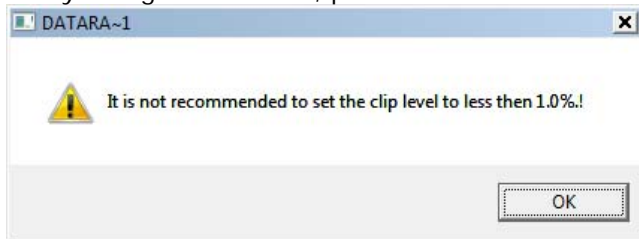
Applies to: All *current* BladeCam, WinCamD & TaperCamD series products.

Software versions 7.1a10 and higher.

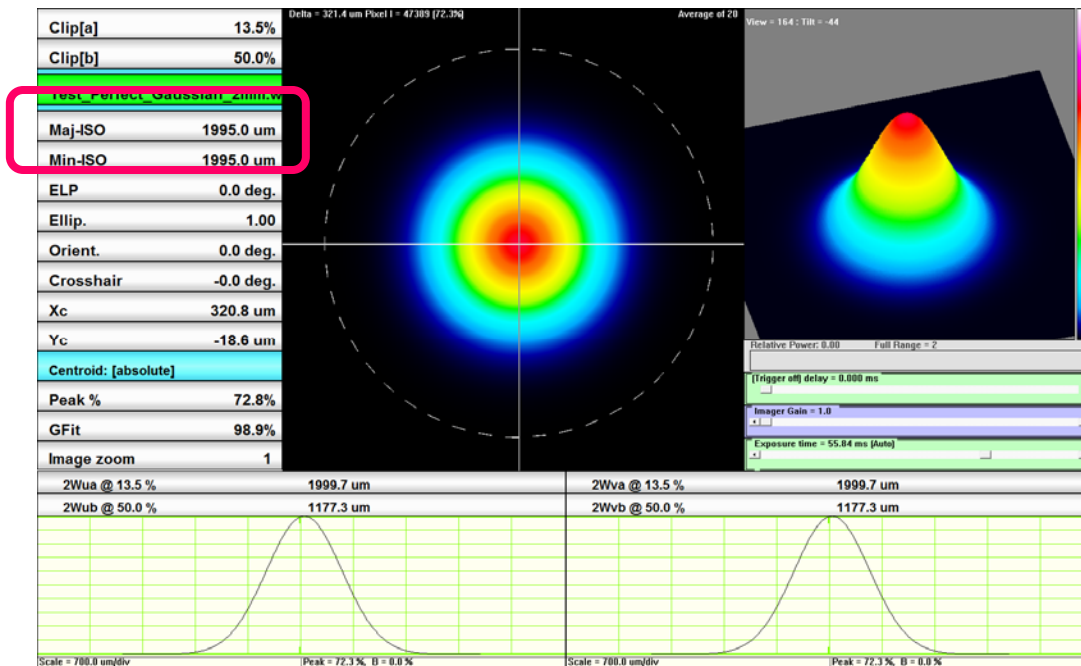
Issue addressed: Correct ISO 11146 diameter measurements and related correction factor.

1) Setup on the beam.

- Open the software. In the **Device** pull-down menu select **WinCamD**, go **File, Load defaults**.
- Set up on the beam. As necessary in the **Setup** pull-down menu select **Capture setup dialog** and set the **Capture Block** size and position and **FULL** or **FAST** resolution appropriate to the beam diameter.
- In the **Setup** pull-down menu select **Use ISO 11146 compliant diameters and angle**.
- In the **Setup** pull-down menu select **Set ISO cliplevel** and set as shown right. If you see the warning below, appropriate for noisy background beams, press **OK**.



- In the **Average** pull-down menu set **Average 5**, or higher.
- Use the **Background Subtraction** feature, per page 57 in the User Manual.
- Measure the beam using the **Maj-ISO** and **Min-ISO** values highlighted below. The baseline subtraction level is set based on 'zero' levels in the whole **Capture Block**.
- The dashed circle (or ellipse) is set at twice the iterated ISO diameters and shows the area processed *for levels above the set clip level*, for the ISO diameter calculations.

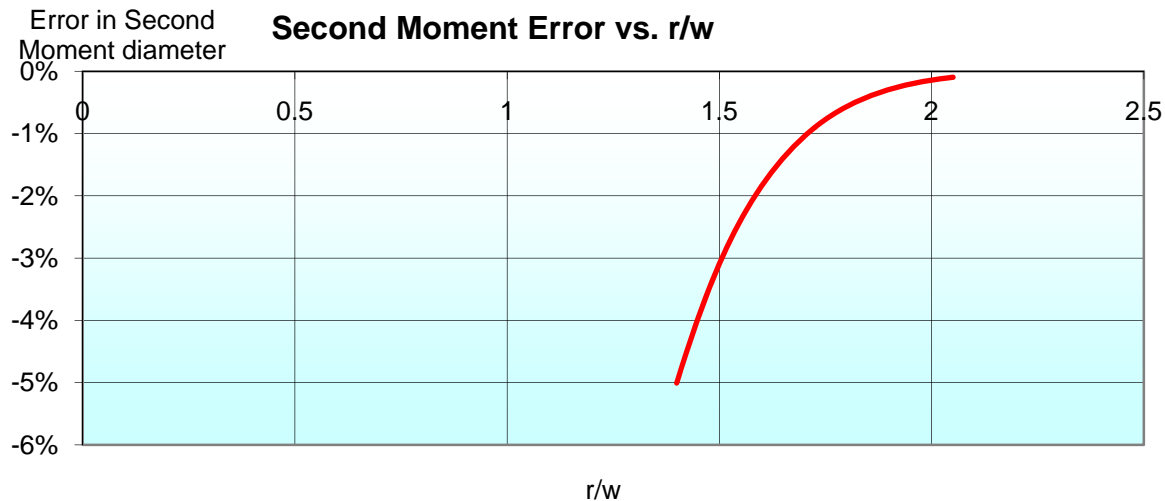
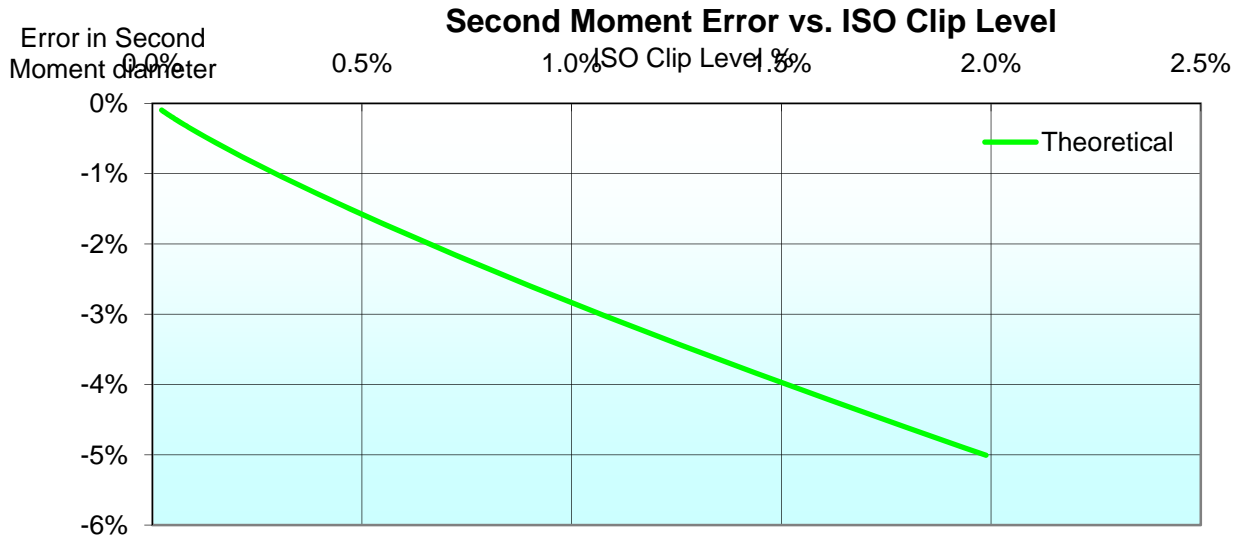


2) ISO 11146 Comments

The ISO standard recommends using at least 99% of the energy in the beam. For a perfect Gaussian, this occurs at a clip level of 1% and a diameter of $3.03w$. (where the $1/e^2$ beam diameter is $2w$.)

At this diameter, a perfect measurement of a perfect 1 mm Gaussian with a perfect camera would give ISO diameters of 0.971 mm, 2.9% below the actual diameter.

The curves below shows the theoretical error versus clip level and r/w .



An 0.5% clip level is a diameter of $3.26w$ on a Gaussian and a nominal ISO diameter error of -1.6%.

A diameter of $4w$ (the default dashed line on the image) corresponds to a clip level of 0.034% on a Gaussian, but as noted previously, only the parts of the profile above the clip level set in the dialog box should be processed.

DataRay software now implements a linear approximation correction algorithm to compensate for the choice of clip level, for clip levels between 0.1% and 1.5%. The correction algorithm is good to better than 0.3% on a perfect Gaussian.

Questions/Problems? Go **Stop**, **File**, **Save**, **Save Current data as wcf** and email the file plus your comments to support@dataray.com.