



FAQ

Why did you develop GEOCAL? (What does it do?)

We saw a need for a compact optical device that can perform a fast calibration of camera lenses to remove geometric distortion. In addition, GEOCAL can provide the angular orientation of the camera that is useful for aligning two cameras together.

When will the device be available?

We plan to start GEOCAL serial production this summer and deliver the first devices in September.

What is the accuracy?

We have achieved at least the accuracy level of conventional test-chart-based measurements. In addition, GEOCAL provides the outer (angular) orientation that can't be measured with conventional methods. Tests to provide a final statement are still ongoing.

How good is the repeatability?

The repeatability has shown to be extremely good. Tests to provide a final statement are still ongoing.

What is the device-to-device variation?

This can be answered when the first serial devices have been produced. However, we currently do not see a risk for significant device-to-device variation.

In case of calibrating stereo pairs, how long can the stereo base be?

This depends on the diameter of the DOE (Diffractive Optical Element) together with the diameter of the entrance pupil of the camera. For cameras with small lenses we currently expect a stereo base of 60 mm for the first GEOCAL device and much larger ones for future devices with larger beam diameters.



How large can the camera's field of view be?

So far, we have tested to 125° but we currently expect that we can get beyond this level if the camera can be placed right in front of the DOE.

Can the wavelength of the laser be modified?

In principle it can but the laser and the DOE work as a system and therefore a change in one component needs to be verified in the other. For this reason, we start with 633 nm which is a good choice to bridge visible and IR wavelengths to each other.

What is the limit of the distortion model?

We are using a rotationally symmetric distortion model. In some cases, e.g. for cameras behind a windshield, this model may not work accurately. Therefore, we are investigating other models that may be more appropriate in some applications.

What is the Uniformity of the illumination?

We are working with a DOE and a standard frequency-stabilized laser. This creates some variation in the uniformity. But we keep the uniformity high enough to achieve good geometric measurement results within the dynamic range of most cameras.

Will you offer evaluation software for GEOCAL?

Yes, we will. We may start off with a standalone software with GUI interface as well as implementing the solution in our iQ-Analyzer software. At the same time, an API will become available for our customers to implement the solution into their own software.

What about eye safety?

We are using a low power laser-diode and we even reduce its power to get to reasonable exposure times with the devices under test. As long as the housing is not opened and the users do not use magnifiers to look into the beam, eye safety will not be compromised.

Can GEOCAL be used in a production environment?

Yes. With our experience building hardware for production, we see GEOCAL being useful not only in development labs, but also on the production floor, performing geometric calibrations and alignment for a wide variety of cameras.