

Frequently Asked Questions

Why are custom lenses so much more expensive than lenses from stock?

A: The cost of manufacturing optics is extremely volume dependent. Mass-produced lenses provide excellent performance at low cost. Lenses produced in small quantity can cost five to twenty times as much. It is always worth attempting to use or adapt a mass-produced lens for an application before designing a custom lens.

How can I prevent my vision optics from moving out of adjustment?

A: Optical mounts for on-line applications should be rigid, have positive locks, and have no more than the required adjustments. Laboratory mounting fixtures are generally not rugged enough for permanent on-line installations.

How should I mount my video camera and lens?

A: Machine vision optics should be mounted firmly but not stressed by excessive force. Do not rely on the camera C-mount thread to support heavy lenses. Either mount the lens and let the camera be supported by the lens, or provide support for both. Avoid overtightening the lens mounting clamps.

How can I increase the DOF of my lens?

A: Increase the f-number (decrease the aperture size). This may require increased lighting. However, very large f-numbers ($>f/22$ image side working f-number) will significantly degrade the lens resolution.

Do telecentric lenses have larger DOFs than other lenses?

A: No. The image from a telecentric lens remains in focus over the same DOF as that of a conventional lens working at the same f-number. Telecentric lenses provide constant magnification at any object distance. Therefore, they make accurate dimensional measurements over a larger range of object distances than a conventional lens.

Do telecentric lenses have less distortion than other lenses?

A: In optics, "distortion" is the name of a specific aberration inherent in lens designs. Telecentric lenses offered by CVI Melles Griot have low distortion. Low distortion and telecentricity are separate, unrelated lens parameters.

Can I change the magnification of my telecentric lens?

A: No. By definition, a telecentric lens has a fixed magnification. CVI Melles Griot offers a variety of telecentric lenses with a large selection of magnifications.

Is there a telecentric lens with a very large FOV?

A: Because the first element of a telecentric lens must be larger than its FOV, telecentric lenses are generally restricted to fields of less than 150 mm. Larger FOVs are possible in some applications, including web inspection, using line-scan cameras.

CVI Melles Griot Optical Systems

The two photos shown below are examples of optical systems designed and manufactured by the CVI Melles Griot manufacturing facility in Japan.



CVI Melles Griot developed this high-performance projection lens for use in semiconductor manufacturing equipment.



CVI Melles Griot designed and manufactured this MegaVision™ ultrawide FOV HDTV lens with an aspect ratio of 48:9.