# HCBI012 | DATASHEET

OPTO ENGINEERING

## Hypercentric Lens For Bottom Inspection for 1/1.8" sensors

### KEY ADVANTAGES

**Perfect focusing of hollow objects with just one camera**
For precise and high-resolution simultaneous imaging of the inner walls and bottom of cavities

**Cavity inspection from the outside**
No need to put an optical probe into the hole

**Very high field depth and flexibility**
Cavities featuring different shapes and dimensions can be easily imaged by the same lens

**Wide viewing angle, manual focus adjustment and variable iris**

Ideal for the **inspection of bottles and hollow objects**

REACH DOSSIER

INTERNATIONAL PATENT PENDING

**HC series features hypercentric lenses for sensors up to 1.1" designed for the simultaneous inspection of the inner sides and bottom surfaces of hollow cylindrical samples, such as bottles, cans, vials, containers, pipes and bores.**

### SPECIFICATIONS

#### Optical specifications

| | | |
|---|---|---|
| Image circle | (mm) | 5.1 |
| Min sensor size | | 1/1.8" |
| Working distance with minimum object size[1] | (mm) | 473.8 |
| Working distance with medium object size[1] | (mm) | 87.4 |
| Working distance with maximum object size[1] | (mm) | 242.6 |
| Convergence point distance [2] | (mm) | 50 |
| Viewing angle | (°) | 30 |
| w*f*/*N*[1] | | 1.6 - 22 |

#### Mechanical specifications

| | | |
|---|---|---|
| Mount | | C |
| Length[3] | (mm) | 247.3 |
| Front diameter | (mm) | 84.0 |
| Mass | (g) | 1151 |

[1] Working distance: distance between the front end of the mechanics and the object.
[2] Distance between the front end of the mechanics and the point where all the optical rays coming from the object converge (entrance pupil).
[3] Measured from the front end of the mechanics to the camera flange.

### FIELD OF VIEW

#### Field of view (diameter x height)

| | | |
|---|---|---|
| Minimum | (mm x mm) | ⊘ = 20.0 |
| Medium | (mm x mm) | ⊘ = 100.0 |
| Maximum | (mm x mm) | ⊘ = 220.0 |

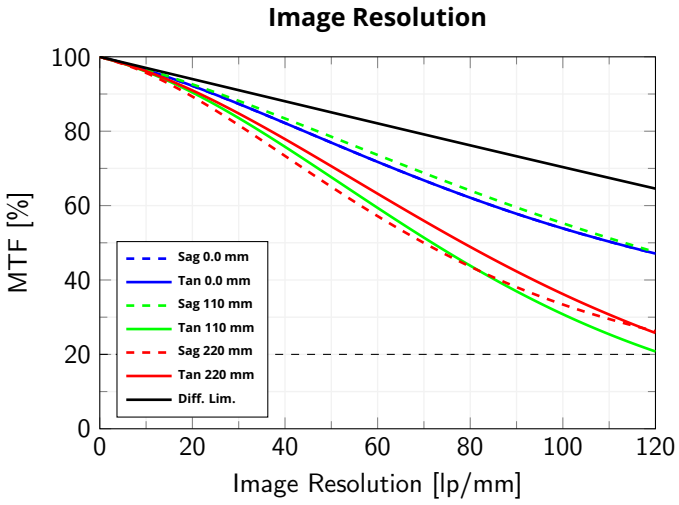
### ADDITIONAL NOTE

The minimum field of view can be achieved by using about 2 mm of back focal spacers betweem the camera and the objective. Even smaller field of views can be achieved by using extension tubes.

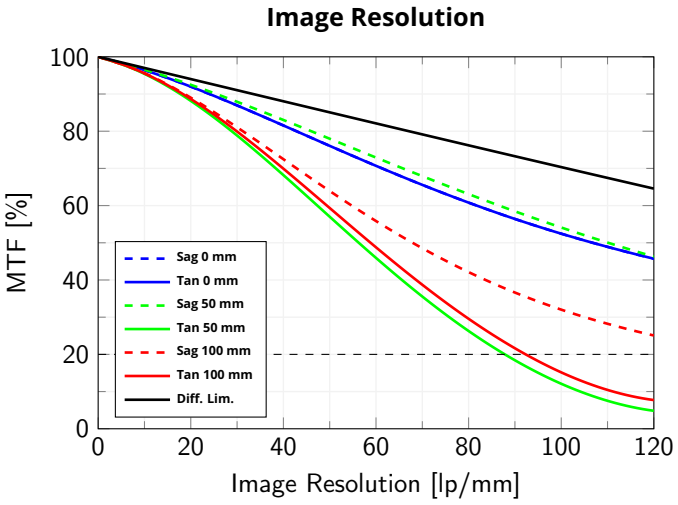
### COMPATIBLE PRODUCTS

**Full list of compatible products available *here*.**


A wide selection of innovative machine vision components.

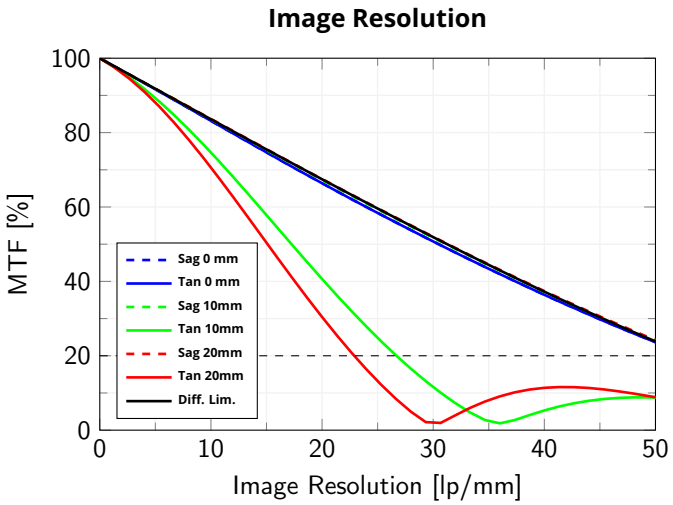



Modulation Transfer Function (MTF) vs. Image Resolution, wavelength range 486 nm - 656 nm of cylindrical object of diameter ⊘ = 220.0mm a at w*f*/*N*= 4




Modulation Transfer Function (MTF) vs. Image Resolution, wavelength range 486 nm - 656 nm of cylindrical object of diameter ⊘ = 100.0mm at w*f*/*N*= 4

## HCBI IMAGING SETUP




Modulation Transfer Function (MTF) vs. Image Resolution, wavelength range 486 nm - 656 nm of cylindrical object of diameter ⊘ = 20.0mm at w*f*/*N*= 22