

# PCCD2M | DATASHEET

# Catadioptric lenses for 360° top and lateral view with just one camera



# **KEY ADVANTAGES**

# 360° imaging with just one camera

Complete top and lateral view without multiple cameras

# Compactness

The lens can be easily held and integrated in any vision system

Extra wide lateral viewing angle

#### **Perfect chromatic correction**

For RGB camera applications and color inspections



**PCCD series** features catadioptric lenses exclusively developed and manufactured by Opto Engineering® to enable the 360° top and side view of objects with a single camera. Their innovative optical design, based on a catadioptric system, makes it possible to image objects of different diameters, ranging from 7.5 mm to 110 mm.

#### **SPECIFICATIONS**

## **Optical specifications**

Image circle	(mm)	9.6
Min sensor size		1"
Working distance with minimum object size <sup>3</sup>	(mm)	50.5
Working distance with medium object size <sup>3</sup>	(mm)	9.2
Working distance with maximum object size <sup>2,3</sup>	(mm)	0
$f/N^4$		1.4 - C
Viewing angle	(°)	35

# **Mechanical specifications**

•		
Mount		С
Length <sup>5</sup>	(mm)	113.8
Diameter	(mm)	143.0
Mass	(g)	1002

#### **FIELD OF VIEW**

## Field of view (diameter x height)

Minimum <sup>1</sup>	(mm x mm)	7.5 x 4.2
Medium <sup>1</sup>	(mm x mm)	35.0 x 24.2
Maximum <sup>1,2</sup>	(mm x mm)	75.0 x 2.5

- <sup>1</sup> For the complete information about the inspectable field of view, see the datasheet of the objective.
- <sup>2</sup> The maximum inspectable field of view is given considering zero working distance. Depending on the application, a working distance greater than zero will decrease the height of the inspectable object accordingly.
- 3 Working distance: distance between the front end of the mechanics and the object.
- <sup>4</sup> The f-number could be changed using the variable iris.
- <sup>5</sup> Measured from the front end of the mechanics to the camera flange.

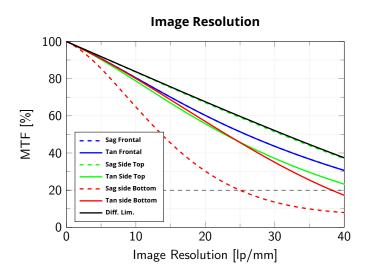
# **COMPATIBLE PRODUCTS**

# Full list of compatible products available here.



A wide selection of innovative machine vision components.

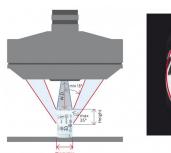




Modulation Transfer Function (MTF) vs. Image Resolution, wavelength range 486 nm - 656 nm at wf/1.4 - C of cylindrical object of diameter 25 mm and height of 17 mm

# **PCCD IMAGING SETUP**

The image of the external walls of the object, captured through the catadioptric system, is inscribed into the short side of the camera detector within a circular crown. On the other hand, the top of the object is directly imaged onto the central part of the detector area: both the lateral and top view of the object are in perfect focus at the same time.





# **RECOMMENDED ACCESSORIES**

Opto Engineering® Suggests the following accessories when using PCCD Lenses:

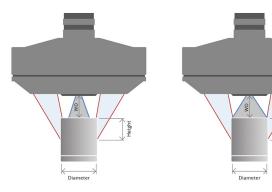
- **PCCDLFAT**, interchangeable attachment for extra-wide TOP view. By replacing the pre-assembled protective window on PCCD0xx, PCCD2M and PCCDL with the PCCDLFAT attachment, the TOP view of the object is increased.
- **CMHOPCCD**, clamping mechanics for PCCD0xx and PCCD2M lenses.



PCCD optics with CMHOPCCD



PCCDLFAT assembling



PCCD optics (left) and PCCD optics with PCCDLFAT (right)



# **Field Of View**

Diameter	Height	Working distance	Top view	Working distance with PCCDLFAT	Top view with PCCDLFAT
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
7.5	4.2	50.5	22.9	47.2	78.9
10	6.1	46.7	22.3	43.4	73.9
15	9.7	39.2	21.2	35.9	63.9
20	13.3	31.7	20	28.4	53.9
25	17	24.2	18.8	20.9	44
30	20.6	16.7	17.7	13.4	34
35	24.2	9.2	16.5	5.9	24
40	27.9	1.7	15.3	0	16.2
45	25.7	0	15	-	-
50	21.9	0	15	-	-
55	18	0	15	-	-
60	14.1	0	15	-	-
65	10.3	0	15	-	-
70	6.4	0	15	-	-
75	2.5	0	15	-	-