

# PCMP series

Micro-polyview optics for 3D measurement and imaging of small parts



## KEY ADVANTAGES

### Small parts lateral imaging

Inspection of objects whose size ranges from 1 to 10 mm.

### Measurement capability

The top and the lateral views show the same magnification.

### High field depth

The top and the lateral views are imaged without significant defocusing.

**PCMP optics** are 3D, multi-image lenses designed to completely measure and inspect objects whose dimensions range from 1 to 10 mm, such as electronic components, solder paste and micro-mechanical components. Six different lateral views are provided by an array of mirrors interfaced to a bi-telecentric lens; the top of the object is directly imaged at the center of the field of view.

The lateral views feature exactly the same magnification and the images remain in perfect focus even when the object is displaced from its nominal position. All the views can be used to precisely measure the dimension of components from different angles.

The PCMP series integrates LED illumination optimized for this specific assembly.

## CUSTOM FEATURES

- different number of views
- different view angles
- asymmetric or special mirror arrays can be supplied upon request.

Part number		PCMP 012	PCMP 023
<b>Detector type</b>		<b>1/2"</b>	<b>2/3"</b>
Image circle	Ø (mm)	4.8	6.6
<b>Max object inspection height</b>			
With diameter 2.5 mm		6	6
With diameter 5 mm		4.5	4.5
With diameter 7.5 mm		3	3
With diameter 10 mm		1	1
<b>Optical specifications</b>			
Wavelength range	(nm)	450 .. 650	450 .. 650
Working distance	(mm)	1.5 .. 5	1.5 .. 5
CTF @ 50 lp/mm	(%)	> 40	> 40
wF/# <sup>1</sup>		8	8
<b>Mechanical specifications</b>			
Diameter	(mm)	119	119
Length	(mm)	262	262
Weight	(g)	980	980
Mount		C	C
<b>Electrical specifications</b>			
Illuminator voltage	(V, DC)	24	24
Illuminator power	(W)	18	18

Camera phase adjustment feature is available **upon request**.

<sup>1</sup> Working F-number (wF/#): the real F-number of a lens when used as a macro.

The suggested working distance ranges from 1.5 to 5 mm. The best focus can be achieved by adjusting the number of spacers in the C-mount interface or by vertically positioning the illuminator+mirror assembly.

The image orientation can be adjusted by simply rotating the mirror cage or the whole assembly.

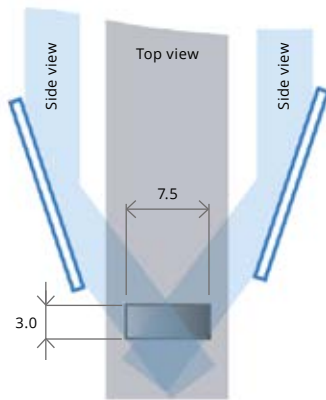
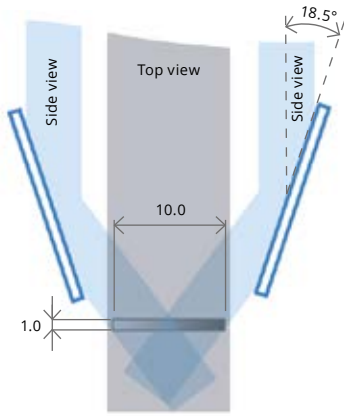
The top and side views show exactly the same magnification; however the side views appear to be compressed because of the perspective angle. Thanks to telecentric imaging such compression is purely linear and therefore very easy to calibrate.

## FULL RANGE OF COMPATIBLE CAMERAS



Area scan cameras

p. 180-185



## Application examples

### Mechanical components inspection

Thread integrity, pitch and diameter can be verified and measured.

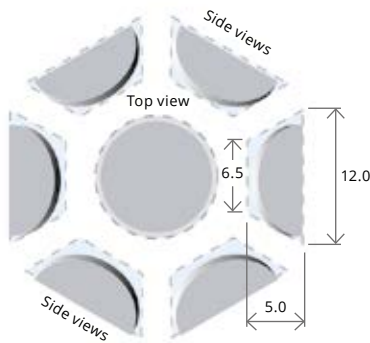


IMAGE ON CAMERA DETECTOR

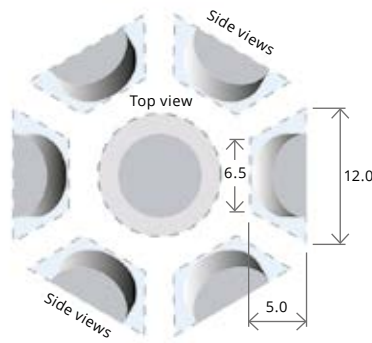


IMAGE ON CAMERA DETECTOR

### SMD components inspection

Integrated circuit position, rotation, pin integrity and bonding can be checked.

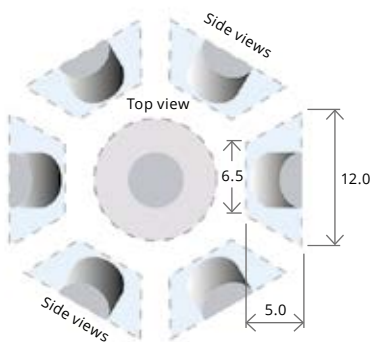
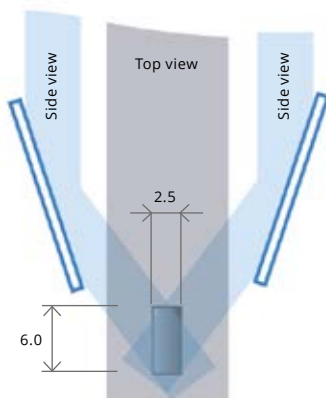
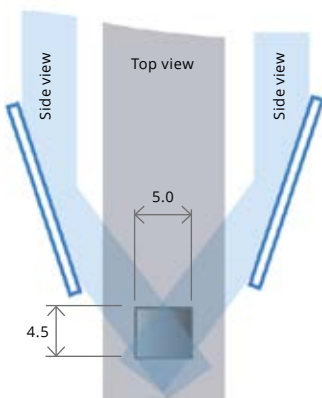


IMAGE ON CAMERA DETECTOR

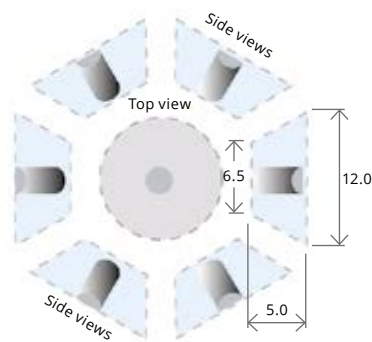


IMAGE ON CAMERA DETECTOR

### Electronic connector check

Presence/absence, alignment and length of pins can be precisely measured.

