

# PCPW series

Polyview optics for multiple side views in one image



## KEY ADVANTAGES

### Just one camera

No need for multiple cameras placed around and over the object.

### Wide viewing angles

45° side view makes otherwise hidden features visible.

### Complete surface inspection

Both inner and outer object surfaces can be imaged in one shot.

### Very high resolution

Even the tiniest defects can be detected.

| DEDICATED COMPATIBLE OBLIQUE RINGLIGHTS  |              |        |
|--|--------------|--------|
|   | LTRN 050 x45 | p. 124 |
|  | LTRN 245 x45 | p. 124 |

**PCPW optics** provide eight different views of the side and top surfaces of an object.

The wide view angle (45°) enables the inspection of the side features of an object (for example the threads of a screw or a nut) otherwise impossible to acquire with a single camera.

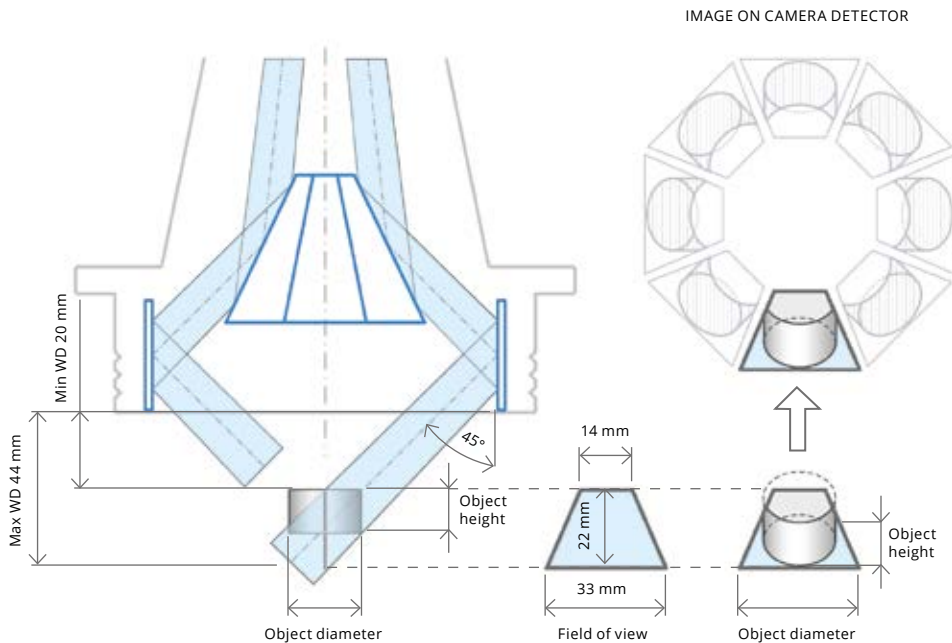
Both the external walls of an object and its top can be imaged at the same time, while internal surfaces of holed objects can be completely inspected from the outside. A combined view of the internal and external surfaces is possible and an image displaying both the inner walls and the bottom of a cavity can be obtained.

In addition to these unique features, PCPW optics also ensures excellent image resolution and image brightness.

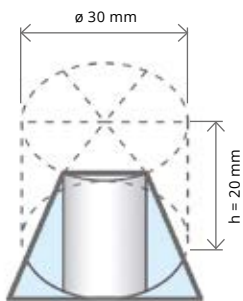
## Sample images taken with PCPW optics



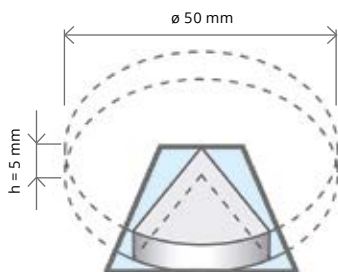
| Part number  |        | PCPW 013   | PCPW 012   | PCPW 023   |
|--|--------|------------|------------|------------|
| <b>Detector type</b>                                 |        | 1/3"       | 1/2"       | 2/3"       |
| Image circle   | Ø (mm) | 3.6        | 4.8        | 6.6        |
| <b>Max object diameter for SIDE inspection</b>       |        |            |            |            |
| Height 20 mm   | (mm)   | 30         | 30         | 30         |
| Height 5 mm  | (mm)   | 50         | 50         | 50         |
| <b>Max object diameter for SIDE + TOP inspection</b> |        |            |            |            |
| Height 10 mm   | (mm)   | 30         | 30         | 30         |
| <b>Optical specifications</b>                        |        |            |            |            |
| Wavelength range                                     | (nm)   | 450 .. 650 | 450 .. 650 | 450 .. 650 |
| Working distance                                     | (mm)   | 20 .. 40   | 20 .. 40   | 20 .. 40   |
| CTF @ 50 lp/mm                                       | (%)    | > 60       | > 50       | > 40       |
| F/#  |        | 4-12       | 6-16       | 8-16       |
| <b>Mechanical specifications</b>                     |        |            |            |            |
| Diameter   | (mm)   | 140        | 140        | 140        |
| Length   | (mm)   | 224        | 224        | 224        |
| Weight   | (g)    | 990        | 990        | 990        |
| Mount  |        | C          | C          | C          |



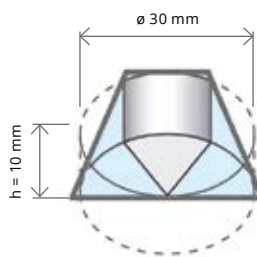
The diagram shows how PCPW optics image a cylindrical object. The object is observed at 45° from eight different points of view. Eight different trapezoidal fields of view are obtained: all the object features included in such a trapezoid will be imaged on the corresponding image portion. The 45° view angle allows both the sides and the top of a cylindrical object to be imaged. If the object is a hollow cylinder (hole or cavity), the inner wall of the cavity will be imaged instead of the top, thus enabling both outer and inner side inspection.



When the object height is maximum (20 mm) up to 30 mm diameter objects can be inspected.



Up to 50 mm diameter objects can be inspected, provided their thickness doesn't exceed 5 mm.



Combined view of both the inner sides and the bottom of a cavity is possible when objects are up to 30 mm diameter and 10 mm height.

### Maximum field of view

In order to perform a complete 360° inspection, each of the eight image portions should image at least 1/6 of the cylindrical surface; this condition ensures a good overlapping between two different lateral views, since part of the object features will be shared by two neighboring image portions.

| Part number             |         | LTRN 050 W 45           |
|-------------------------|---------|-------------------------|
| Light color             |         | white, 6300 K           |
| <b>Dimensions</b>       |         |                         |
| Outer diameter          | (mm)    | 54.0                    |
| Inner diameter          | (mm)    | 15.2                    |
| Height                  | (mm)    | 18.0                    |
| Weight                  | (g)     | 30.0                    |
| Mount                   |         | threaded retaining ring |
| Voltage                 | (V, DC) | 24                      |
| Power                   | (W)     | 3                       |
| Compatible PC lenses    |         | PCPW 0xx, PCHI 0xx      |
| Other compatible lenses |         | TC 23 00x, MC3-03X      |



**LTRN 050 W 45** is a small LED ring illuminator compatible with different products and suitable for a variety of inspections. This illuminator is also perfectly suitable for illuminating the inner sides of a cavity imaged by a Polyview lens; the illuminator flange is threaded to fit PCPW series inner mounting interface.