



# PCHI023-AF | DATASHEET

## Hole inspection optics for 2/3" sensors, liquid lens focusing



### SPECIFICATIONS

#### Optical specifications

Image circle	(mm)	6.6
Min sensor size		2/3"
Working distance with minimum object size <sup>1</sup>	(mm)	5
Working distance with maximum object size <sup>1</sup>	(mm)	62
Viewing angle	(°)	82
wf/N <sup>2</sup>		8

#### Liquid lens specifications

Liquid lens model		Optotune EL-3-10
Temperature sensor		No
Focal power mode		No
Response time	(ms)	1
Setting time	(ms)	4
Current range	(mA)	-120 to +120
Lifecycles (10%-90% sinusoidal)		>1,000,000,000
Connector		HR10A-7R-6PB

#### Mechanical specifications

Focusing		Liquid lens
Mount		C
Length <sup>3</sup>	(mm)	115.2
Outer diameter	(mm)	40.0
Mass	(g)	264

### KEY ADVANTAGES

#### Perfect focusing of holed objects

Both the walls and the bottom of a cavity are imaged in high resolution

#### Cavity inspection from the outside

No need to put an optical probe into the hole

#### Very high field depth

Objects featuring different shapes and dimensions can be imaged by the same lens

#### Wide viewing angle

Sample surfaces are acquired by the lens under a convenient perspective to clearly display their features

#### New focusing ring version available

Manually adjusting the focus is never been easier!

#### New integration with Optotune® liquid lens technology

PCHI AF allows for an extremely fast and repeatable change in focus

**PCHI Optics** have been developed by Opto Engineering® to easily inspect holes, cavities and containers.

### Environment

Operating temperature	(°C)	0 - 40
Storage temperature	(°C)	0 - 50
Operating relative humidity	(%)	20-85, non condensing
Installation		Indoor use only

<sup>1</sup> Working distance: distance between the front end of the mechanics and the object.

<sup>2</sup> Working f-number (wf/N): the real f-number of a lens in operating conditions.

<sup>3</sup> 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)	10.0 x 6.0
Maximum	(mm x mm)	120.0 x 190.0

### COMPATIBLE PRODUCTS

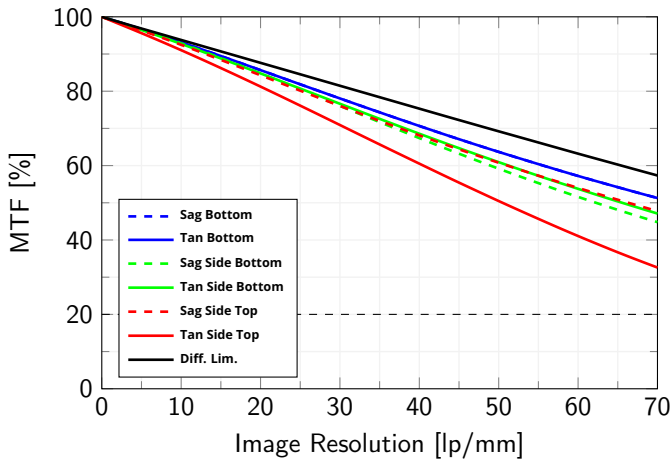
Full list of compatible products available [here](#).



A wide selection of innovative machine vision components.

All product specifications and data are subject to change without notice to improve reliability, functionality, design or other. Photos and pictures are for illustration purposes only. Data are reported by design, actual lens performance may vary due to manufacturing tolerances.

### Image Resolution



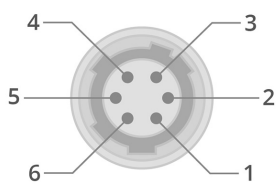
Modulation Transfer Function (MTF) vs. Image Resolution, wavelength range 486 nm - 656 nm of cylindrical object of diameter 30 mm and height of 20 mm

### COMPATIBLE CONTROLLER

The liquid lens must be controlled by a suitable lens driver. Hirose cables and Liquid Lens driver are sold separately. Only the following part numbers are considered fully compatible with PCHI023-AF:

- **CBGPI06PMF-3M**, 6 Pin Hirose Male - Female moulded connector cable, 3 m.
- **RT-EL-E-4i**, USB Controllers for liquid lens modules, industrial version.

### CONNECTOR PINOUT



Device side

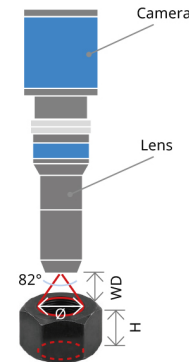
Pin	Description
1	Lens + control pin
2	Lens - control pin
3	GND
4	Power
5	I <sup>2</sup> C SCL
6	I <sup>2</sup> C SDA



**ATTENTION:** observe precaution for handling.  
Electrostatic sensitive device

### PCHI IMAGING SETUP

PCHI optics can image cavities whose diameters and thicknesses span over a wide range of values. PCHI series features 82° view angle and can image both the inner walls and the bottom of cavities.



### TEMPERATURE EFFECTS

Temperature changes affects the lens behaviour resulting in a drift of the optical power. For more information please check the Optotune's datasheet for EL-3-10.