

# PCBP013-AF | DATASHEET

## Boroscopic probe for 1/3" detectors, liquid lens focusing



### SPECIFICATIONS

#### Optical specifications

Image circle	(mm)	3.4
Min sensor size		1/3"
Viewing angle	(°)	60
$wf/N^1$		14
Focusing		Liquid lens
Light color		white

#### Electrical specifications

Supply voltage <sup>2</sup>	(V)	24
Current <sup>3</sup>	(mA)	40
Power consumption <sup>3</sup>	(W)	1
Typical pulse voltage <sup>4</sup>	(V)	40
Max pulse current <sup>5</sup>	(mA)	100
Peak power consumption	(W)	4
Max pulse duration	(ms)	1
Max duty cycle	(%)	1.5

#### Liquid lens specifications

Liquid lens model		Optotune EL-3-10
Temperature sensor		Yes
Focal power mode		Yes
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

### KEY ADVANTAGES

#### Inspection of cavities from inside

Hidden internal features and defects are clearly viewed

#### High resolution

The catadioptric design enables the detection of tiny defects over a very wide view angle

#### Flaw detection

Coarse deformations revealed using direct illumination

#### Surface defect enhancement

Mixing direct and indirect illumination makes it possible to emphasize tiny and scarcely visible defects.

#### Small diameter inspection

Now down to 5.5 mm

**PCBP probes** are used to inspect holed objects such as engine parts, containers and tubes whose hidden features can only be controlled by introducing a probe into the cavity.

#### Mechanical specifications

Mount		C
Phase adjustment		Yes
Probe length	(mm)	139.3
Total length <sup>4</sup>	(mm)	168.2
Probe diameter	(mm)	21
Mass	(g)	121

#### Environment

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

#### Eye safety

Risk group (CEI EN 62471:2010)		Risk group 1
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<sup>1</sup> working  $f/N$ : the real  $f/N$  of a lens in operating conditions.

<sup>3</sup> Tolerance  $\pm 2\%$

<sup>3</sup> Used in continuous (not pulsed) mode

<sup>4</sup> Measured from the front end of the mechanics to the camera flange.

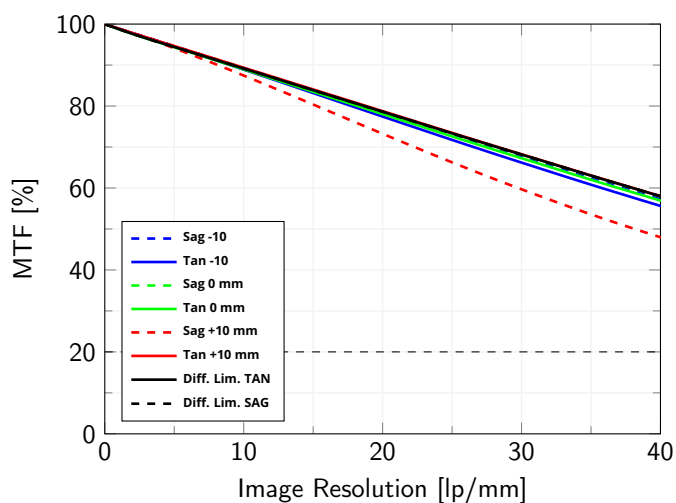
### FIELD OF VIEW

#### Diameter x Height

	(mm x mm)
Minimum	25.0 x 11.0
Maximum	inf x inf

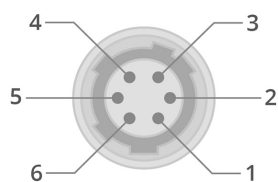
## DATA WITH CAVITY DIAMETER OF 40MM

Image Resolution



Modulation Transfer Function (MTF) vs. Image Resolution, wavelength range 486 nm - 656 nm. Fields in legend are represented as distance from the center of the boroscope tip

## CONNECTOR PINOUT



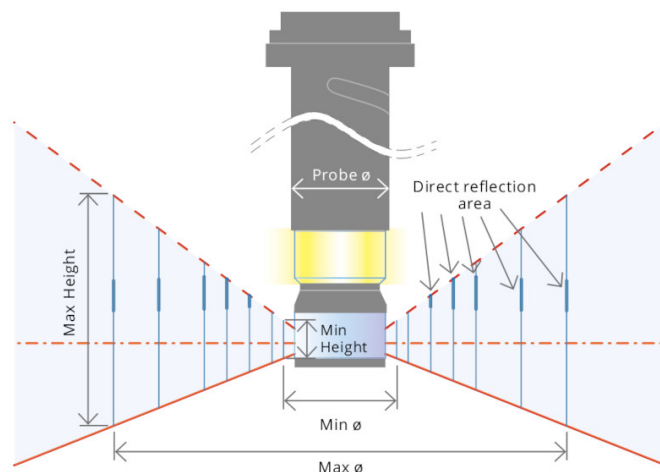
Device side

Pin	Description
1	Control current +
2	Control current -
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

## WORKING PRINCIPLE AND FOV OF PCBP LENSES



## ILLUMINATOR PINOUT

Function	Cable color
GND	Black
+24 V	Black/White

## COMPATIBLE PRODUCTS

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



A wide selection of innovative machine vision components.