



**High Performance Detection**



# **PAV 2000**

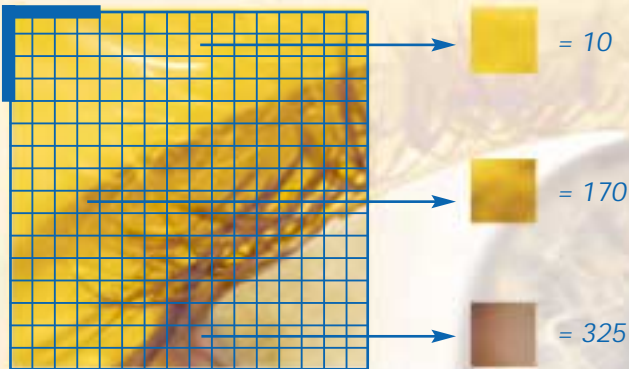
**Vision-Assisted Proximity Detection**

**PAV 2000** A vision of quality.

The PAV 2000 is innovative and easy to use. It combines the simplicity of a proximity detector with built-in computerized image processing.

The PAV 2000 can be used in all situations of simple quality control and compliance. It is an effective solution for all industries aiming to simplify the problem of vision.

## Operating Principle



The reference image is divided into 256 zones defined by a 16 row x 16 column grid of the image.

For each box, the PAV 2000 calculates a coefficient that depends on the brightness of this part of the image.

When the image is memorized as reference, these 256 coefficients are stored.

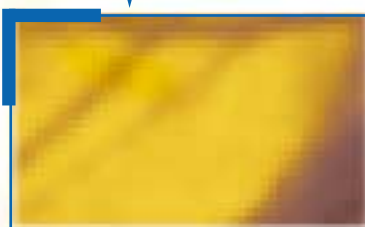
In the analysis process, the 256 coefficients of the new image are recalculated and compared to the reference image that was learned previously.

The level of non-compliance of the image is the sum of the defective boxes.

### Viewing the reference image

When a view is demanded by the user or automatically, the PAV 2000 imager progressively constructs an image.

The resulting image is continuous, even in movement: lines are not interlaced and there is no ripple effect.



## A state of the art product

With "standard" and "zero fault" being the scope of requirements and target point, industry must ensure **reliable and effective quality control**.

This is why we designed the PAV 2000, the result of technological progress in cameras and image processing.

## Simple and effective technology

The **PAV 2000** is a simple proximity detector whose performance is based on a camera and built-in image processing system. It analyzes and compares the brightness of an image to that of a calibration image **in 256 zones** at rate of **more than 1000 images/minute**.

The **PAV 2000** responds in real time and according to a tolerance scale that can be set. Using self-learning and with no focal length adjustment required, it precisely detects the **level of non-compliance** of a product in comparison to the reference product.

## A quality solution for industry

Fulfilling the requirements of reliable detection in quality control, the **PAV 2000** is fully applicable in all sectors of industries whose target is **to simplify the problem of optical control**: packaging, pharmaceuticals, cosmetics, automobiles, metallurgy, agribusiness and many more.

For any additional information on the PAV 2000 or DINEL, contact us at :

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**PAV 2000 A vision of quality.**

## PAV 2000



- Observation distance: 20 to 400 mm depending on the model
- Size of image analyzed: 20 x 12 mm to 300 x 250 mm
- Power supply: 10 to 30 VDC
- Output signal: NPN/PNP
- Processing speed: 1000 images/minute



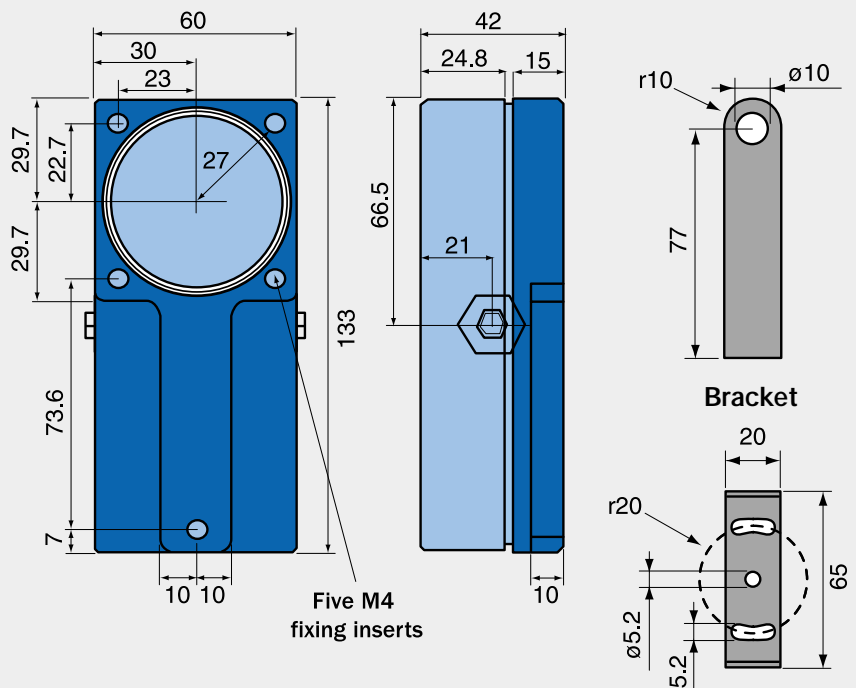
### Description

- Built-in camera and processing system
- LASER centering pointer
- Built-in flash
- Simple and rapid adjustment by learning
- External learning possible
- External imaging intervals
- Synchronous or asynchronous mode
- M8 connectors
- Monitor and RS 232 connections available as options
- Resistant polycarbonate housing

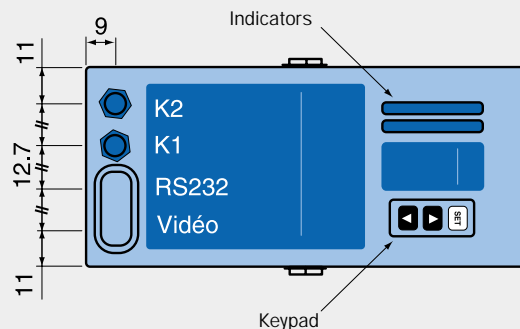
### Applications :

- Packaging:
  - control of presence and positioning
  - control of presence of printing
- Agribusiness:
  - verification of appearance of tins of canned foods (swelling)
- Automobiles:
  - control of presence or absence of continuous band (of glue, e.g.)

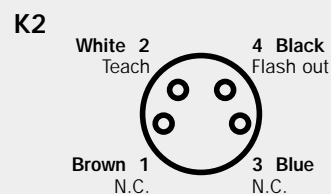
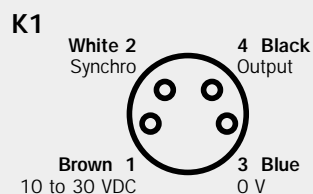
### Dimensions and Interface



### Adjustment and viewing



### Connection



**RS 232**  
Female DB9

**Video**  
Male HD 15

**Technical Characteristics**

<b>Power supply</b>	operating voltage	10/30 VDC ripple < 10% within the authorized voltage range
	consumption	3 VA
<b>Response time</b>	t <sub>on</sub> or t <sub>off</sub>	60 ms
	switching frequency	1000/mn
<b>Outputs: flash and signal</b>	max. rated current	100 mA
	residual V at 100 mA	< 2 V
	residual V at 10 mA	< 1 V
<b>Time interval</b>		0 to 8 seconds
<b>Optical adjustments</b>		none
<b>Flash</b>	characteristics	white LEDs
	working distance	20 to 100 mm
<b>Temperature</b>	working	10° to 40°
	storage	-20° to 80°
<b>Resistance to stray light</b>		200 lux (casing recommended)
<b>Protection</b>	tightness	IP 65

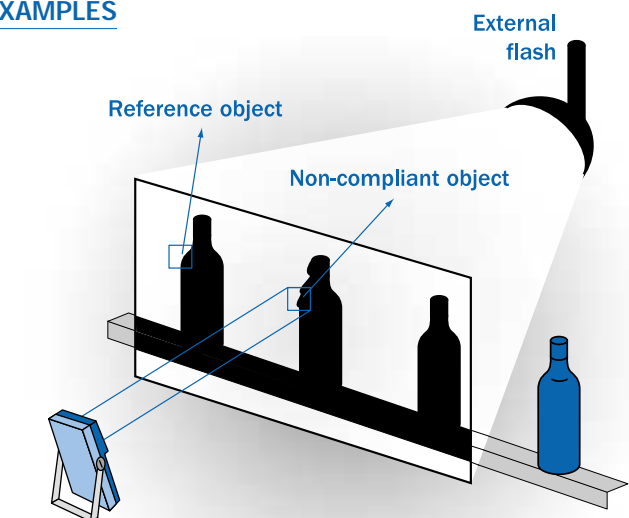
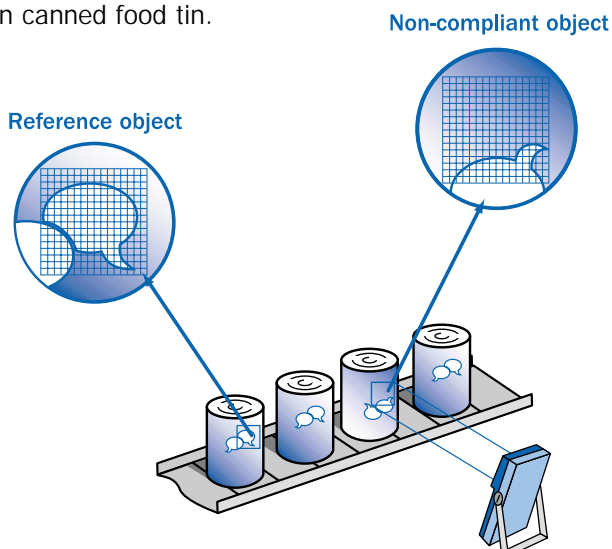
Observation Distance	PAV 2050			PAV 2100			PAV 2300				
<b>Model</b>	50 mm			100 mm			300 mm*				
Observation distance (mm)	20	50	100	50	100	150	150	200	300	400	
Surface observed	dX mm	20	53	86	53	86	120	120	156	224	298
	dY mm	12	41	69	41	69	97	97	127	185	244

\* for these distances, the built-in flash is not effective

To order	PAV 2050	PAV 2100	PAV 2300
<b>Product</b>	Vision-Assisted Proximity Detector		
<b>Product No.</b> two CM 82 cords supplied	PAV 2050	PAV 2100	PAV 2300
<b>With VGA + RS 232 option</b>	PAV 2050 RV	PAV 2100 RV	PAV 2300 RV

**APPLICATION EXAMPLES**
**Example 1**

Verification of label position on canned food tin.


**Example 2**

Recognition of form as shadow cast on a screen.