*Presence*PLUS *P4* OMNI & *Presence*PLUS *Pro* – Multi-Function Vision Sensors

Multi-function vision sensors that combine all they available vision tools:
Edge, Object, Greyscale, Blob, Geo Count, . . .

Vision Sensors – Overview

High-Speed Vision Sensors CMOS, 128 x 100 pixels 500 frames per second (FPS)	VGA Resolution Vision Sensors CCD, 640 x 480 pixels 40 frames per second (FPS)	High-Resolution Vision Sensors CMOS, 1280 x 1024 pixels 18 frames per second (FPS)
• *Presence*PLUS *P4* GEO • *Presence*PLUS *P4* EDGE • *Presence*PLUS *P4* AREA	• *Presence*PLUS *P4* OMNI • *Presence*PLUS *P4* BCR • *Presence*PLUS *PRO*	• *Presence*PLUS *P4* OMNI 1.3 • *Presence*PLUS *P4* GEO 1.3 • *Presence*PLUS *P4* EDGE 1.3 • *Presence*PLUS *P4* AREA 1.3

*Presence*PLUS® *P4* OMNI: The Most Versatile Vision Solution

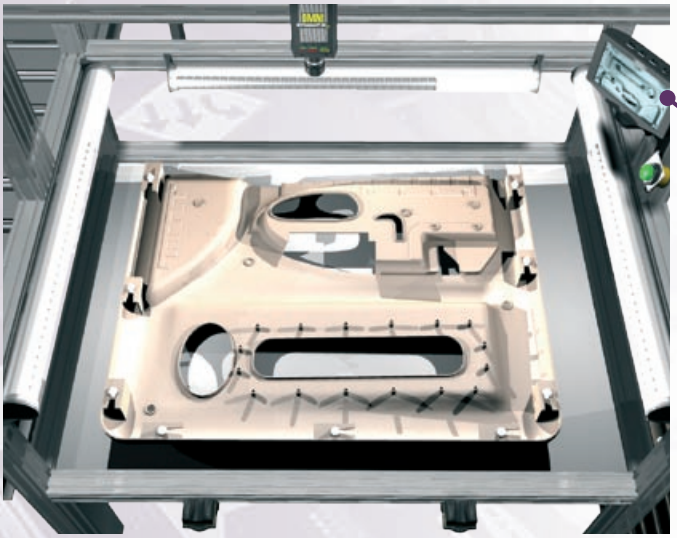
All the *P4* vision tools in a single sensor.

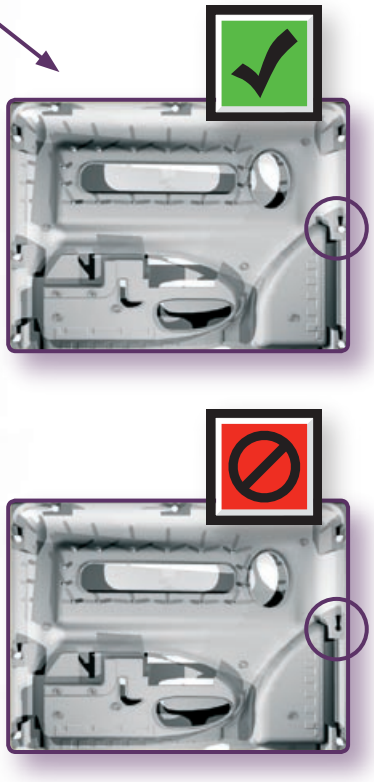
The *Presence* PLUS *P4* OMNI includes all the *P4* vision tools in a single sensor: Locate, Geometric Find, Edge, Object, Blob, Average Greyscale, Geometric Count and Measure.

The *P4* OMNI has a 640 x 480 CCD imager. The *P4* OMNI 1.3 has a 1280 x1024 CMOS imager and allows inspecting of larger areas in great detail. The *P4* OMNI performs inspections up to 2000 parts per minute. Discrete I/O, Ethernet/IP, Modbus/TCP and RS-232 serial communication makes it a very versatile sensor.

Like the other *P4* sensors, the OMNI has a Graphical User Interface; namely, a single PC program configures all Banner vision sensors and features Quick TEACH for rapid sensor set-up.

Typical applications are:
Presence/absence sensing of features, assembly completion, sorting, orientation, counting and other inspections that require flexible positioning.





The P4 OMNI checks for component assembly to make sure that multiple connectors have been inserted into a door panel and are aligned correctly. Panels are rejected when connectors are aligned wrongly or are absent.

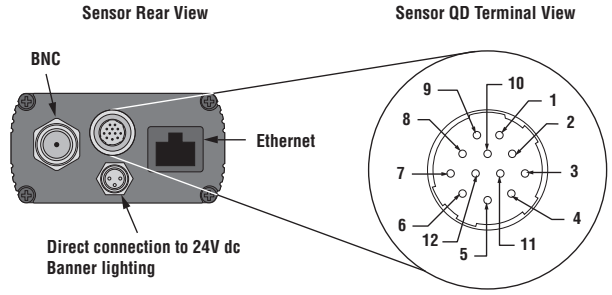
Sensor Specifications

Construction: Black anodized aluminium
Dimensions: Right-Angle: 55,6 x 66,8 x 124,5 mm H x W x L
In-Line: 34,3 x 66,8 x 147,3 mm H x W x L
(measured length does not include lens, connectors or cables)
Weight: Approx. 0,29 kg
Environmental Rating: IEC IP20
Operating Temperature: 0° to +50° C
Maximum Relative Humidity: 90%, non-condensing
Display Options: PC and NTSC video (9 m max. cable length)
Imager: OMNI: 4,8 x 3,6 mm; 6 mm diagonal (1/3" CCD)
OMNI 1.3: 8,60 x 6,90 mm; 11,03 mm diagonal (2/3" CMOS)
Acquisition: OMNI: Frames per second: 48 max.
OMNI 1.3: Frames per second: 26,8 max.
Exposure Time: OMNI: 0,1 ms to 2830 ms
OMNI 1.3: 0,01 ms to 1,67 s
Image Size: OMNI: 307.200 (640 x 480) pixels
OMNI 1.3: 1.310.720 (1280 x 1024) pixels
Pixel Size: OMNI: 7,4 x 7,4 µm
OMNI 1.3: 6,7 x 6,7 µm
Levels of Grey Scale: 256
Lens Mount: Standard C-mount
Discrete I/O: 1 Trigger IN
1 Strobe OUT 5VTTL
4 Programmable I/O
1 Product Change IN
1 Remote TEACH IN
Input Specifications:
NPN: ON <3 V; OFF-State Voltage >10 V at 4 mA max.
PNP: ON >(+V –2) V at 1 mA max.
OFF-State Voltage <3 V at 6 mA max.
Output Configuration: NPN or PNP software selectable
Output Rating: 150 mA (each)
ON-State Saturation Voltage: <1 V at 50 mA max. NPN;
<2 V at 50 mA max. PNP
OFF-State Leakage Current: <100 µA NPN or PNP
Communication: 1 RJ-45 10/100 Ethernet port
RS232 flying leads
Memory: Stores up to 12 inspection files (jobs)
Optional: stores up to 150 inspection files (jobs)
Power: Voltage: 10-30V dc
Current: OMNI: 650 mA max. at 24V dc (exclusive of load)
OMNI 1.3: 550 mA max. (exclusive of load)
Supply Protection Circuitry: Protected against reverse polarity and transient voltages
Bi-Colour Status Indicators:

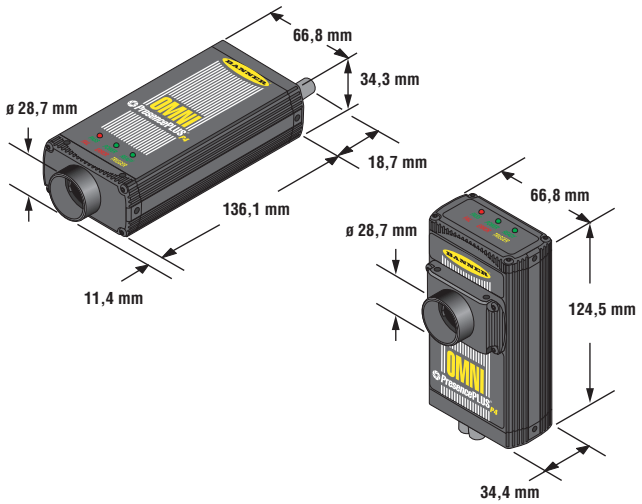
Green = PASS	Green = POWER	Green = READY
Red = FAIL	Red = ERROR	Yellow = TRIGGER

Sensor Pin-out and Hookup

Pin	Wire	Pin Function
1	Yellow	RS232 TX (Transmit Data)
2	Grey	Remote TEACH IN
3	Orange	Product Change IN
4	Pink	Trigger IN
5	Black	Programmable I/O 1
6	Red	Programmable I/O 2
7	White	Programmable I/O 3
8	Light Blue	Programmable I/O 4
9	Violet	RX (Receive Data)
10	Green	Signal Ground
11	Blue	DC Common
12	Brown	10-30V dc IN (24V dc ± 10% if light source is powered by the sensor)
Shield	Bare Metal	Chassis Ground

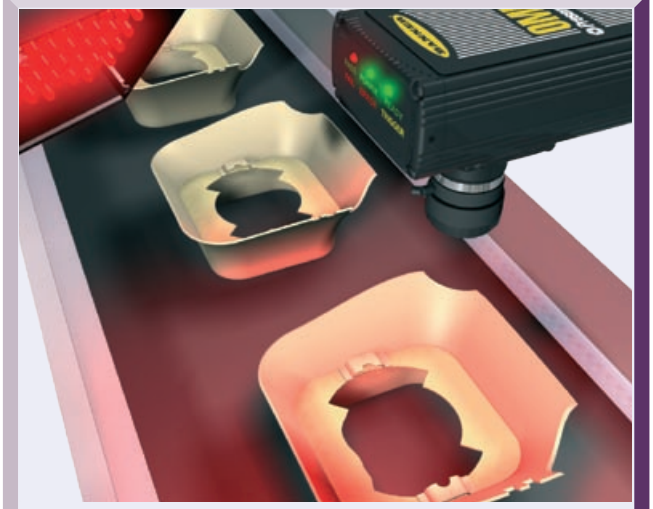


Sensor Dimensions



Sensor Selection

Camera		
P40R	Sensor OMNI Right-Angle	30 752 99
P40I	Sensor OMNI In-Line	30 753 00
P401.3R	Sensor OMNI 1.3 megapixel Right-Angle	30 753 16
P401.3I	Sensor OMNI 1.3 megapixel In-Line	30 753 19

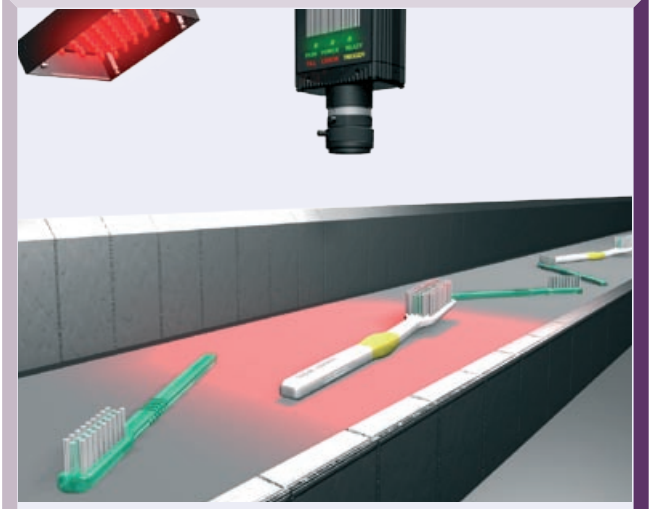


Component Moulding Inspection

Objective: To inspect moulded plastic steering wheel components for excess or deficient material.

Sensors: *Presence* PLUS *P4* OMNI 1.3, with LCF08LT lens and LEDRA80X80M red area light.

Operation: After a steering wheel component is removed from the mould, the *P4* OMNI 1.3 inspects it for areas that received too much or too little material during the moulding process. Defective components are diverted from the line.



Toothbrush Sorting

Objective: To sort different styles of toothbrushes before they are packaged.

Sensors: *Presence* PLUS *P4* OMNI, with LCF08LT lens and LEDRA80X80M red area light.

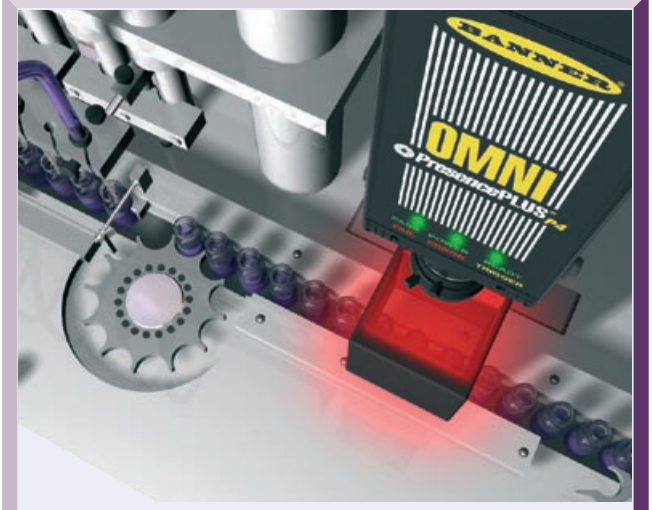
Operation: As toothbrushes pass on a conveyor, the *P4* OMNI detects shape differences, regardless of their orientation on the conveyor. The different styles are automatically separated at the end of the line, before they are packaged.

Food Packing Inspection

Objective: To inspect boxes of chocolates for missing or damaged pieces to make sure each nest contains a candy and that the candies are not damaged.

Sensors: *Presence* PLUS *P4* OMNI with LEDR80x80M light and LCF16LMP lens.

Operation: After boxes of chocolates are filled, the *P4* OMNI checks whether the box contains the correct number of pieces. It also checks that the shapes of the candies are within tolerance, to verify that none are damaged.



Glass Vial Integrity Check

Objective: To check for damaged lips on glass vials on a high-speed filling line.

Sensors: *Presence* PLUS *P4* OMNI with LEDRO50N light and LCF50LMP lens.

Operation: Glass vials can be damaged during filling and transfer. The *P4* OMNI inspects the opening, or lip, of each vial as it passes on a high-speed conveyor to detect vials with chipped or cracked lips. If it detects any damage, it diverts the vial from the line before it is sealed and capped.

126430 • OMNI-EC003/0206