

# VISION SENSORS



## PRODUCT OVERVIEW



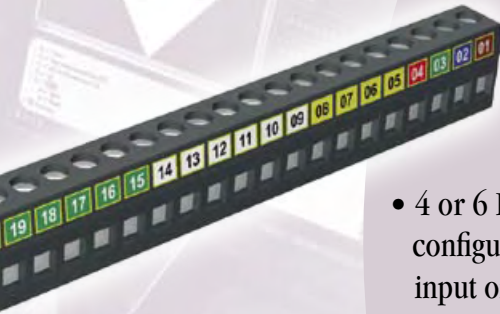


## Trigger Input

- Easy synchronization with your process
- Accepts a PNP or an NPN signal from any sensor or PLC
- Configure trigger delay, minimum trigger length, skip trigger count
- Separate output controls strobe on Banner LED lighting options

- Graphically develop your application on a single reference image
- Common user interface for all devices
- Automatically recognizes the characteristics of the connected sensor

## Flexible I/O



- 4 or 6 I/O lines, configurable for input or output
- Combine inputs and outputs with AND and OR logic
- Configure PNP or NPN, normally open (N.O.) or normally closed (N.C.)
- Dedicated input lines allow selecting one active inspection for up to 150 stored inspections

## PresencePLUS Vision Systems



## Data Communication

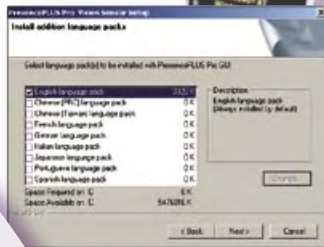
- 10/100 RJ-45 Ethernet port allows connection to a PC network
- Peer-to-peer Ethernet connection using a crossed-over cable
  - RS232 serial port
  - An easy-to-use communication tool is part of the Graphical User Interface (GUI)





## Graphical User Interface

- 9 different languages, such as: German, French, Italian, ...



## Video Output

- Provides a real-time representation of the captured image
  - Pass or Fail information
    - Greatly facilitates sensor alignment
    - Ensures optimal lens focus
- C- and CS-mount lenses available in standard, high-performance and megapixel versions
- Complete range of lighting options in red, white, blue, green, IR and fluorescent



## Lenses & Lighting



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PresencePLUS® Pro

PresencePLUS® P4 GEO

PresencePLUS® P4 AREA

PresencePLUS® P4 EDGE

PresencePLUS® P4 BCR



**PresencePLUS P4 OMNI & PresencePLUS 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)
<ul style="list-style-type: none"> <li>• PresencePLUS P4 GEO</li> <li>• PresencePLUS P4 EDGE</li> <li>• PresencePLUS P4 AREA</li> </ul>	<ul style="list-style-type: none"> <li>• PresencePLUS P4 OMNI</li> <li>• PresencePLUS P4 BCR</li> <li>• PresencePLUS PRO</li> </ul>	<ul style="list-style-type: none"> <li>• PresencePLUS P4 OMNI 1.3</li> <li>• PresencePLUS P4 GEO 1.3</li> <li>• PresencePLUS P4 EDGE 1.3</li> <li>• PresencePLUS P4 AREA 1.3</li> </ul>

PresencePLUS® Pro

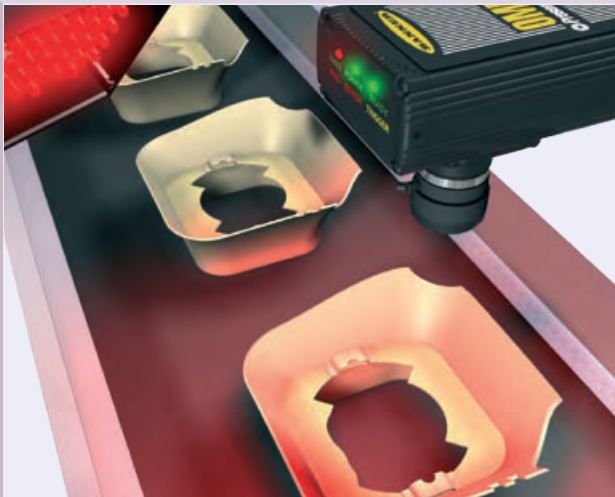
PresencePLUS® P4 GEO

PresencePLUS® P4 AREA

PresencePLUS® P4 EDGE

PresencePLUS® P4 BCR

PresencePLUS® P4 OMNI

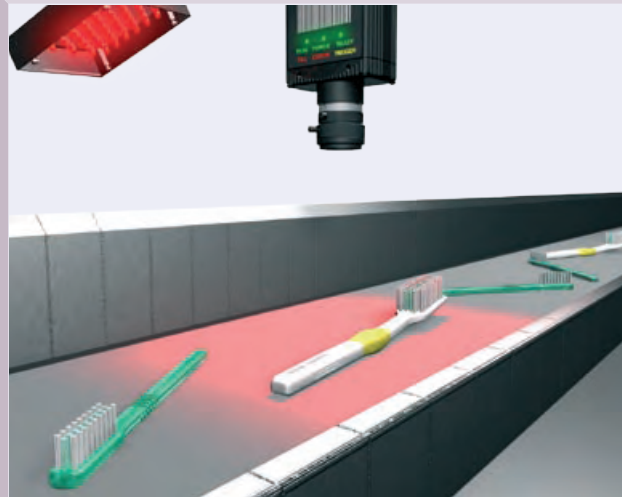


### Component Moulding Inspection

**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.

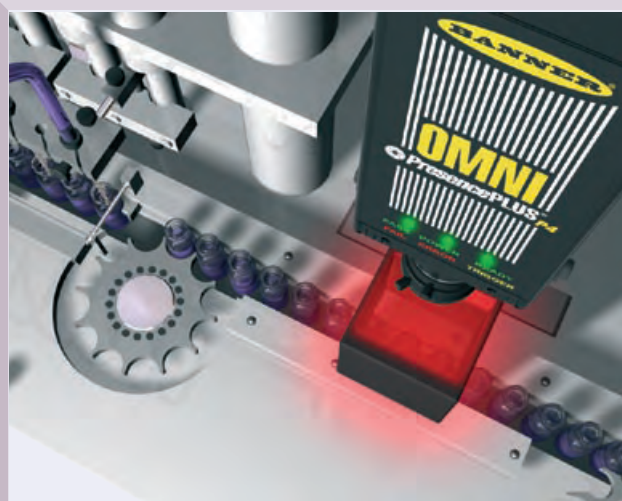


### Food Packing Inspection

**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 LEDR050N 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.



## PresencePLUS® P4 OMNI: The Most Versatile Vision Solution

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

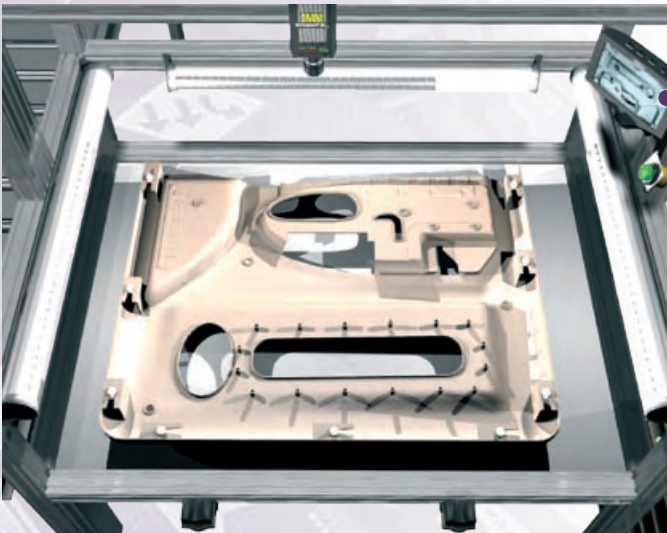
The Presence PLUS P4 OMNI includes all the P4 vision tools in a single sensor: Locate, Geometric Find, Edge, Object, Blob, Average Greyscale, Geometric Count and Measure.

The P4 OMNI has a 640 x 480 CCD imager. The P4 OMNI 1.3 has a 1280 x 1024 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.

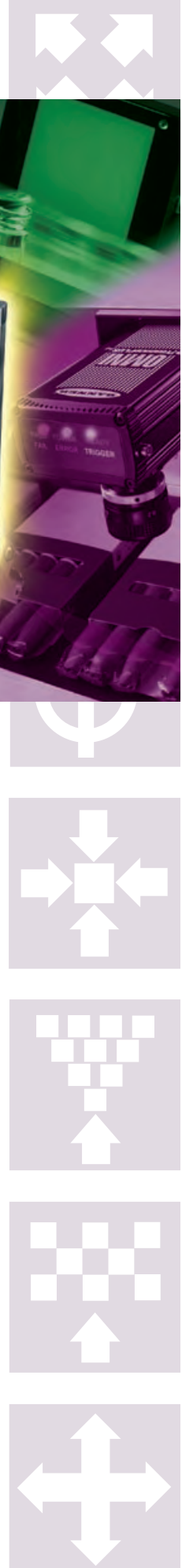
Like the other P4 sensors, the OMNI has a Graphical User Interface; namely, a single PC program configures all Banner vision sensors and features Quick TEACH for rapid sensor set-up.

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

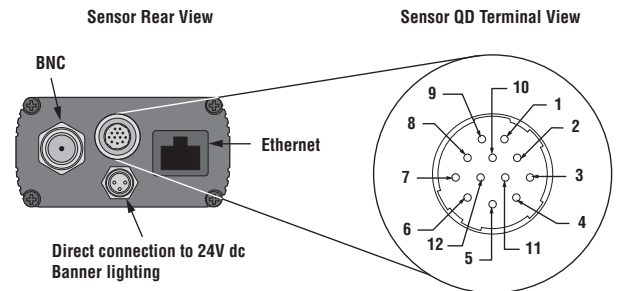
Red = FAIL

Red = ERROR

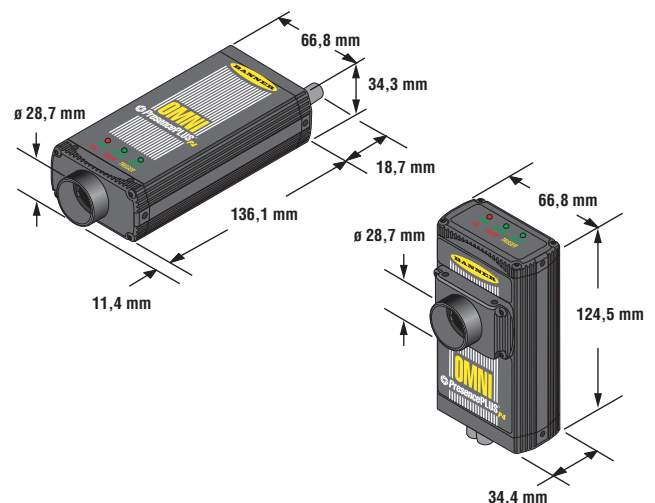
Yellow = TRIGGER

## 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



## PresencePLUS® Pro: Full-function vision sensor

### Features that rival more expensive systems.

The *Presence PLUS Pro* provides advanced image-based visual inspection. Banner has transformed costly, complex machine vision systems into a simple, easy-to-use and affordable sensor that solves real-world applications. The sensor captures images and analyses them using one or more vision tools to generate results.



### Compact light-weight camera.

The *Presence PLUS Pro* camera weighs only 90 g and measures 32 x 30 x 78 mm. The 640 x 480 pixel CCD can capture 30 images per second in 256 grey scale levels.

In addition to the full range of Banner lenses, the camera accepts any C-mount lens available on the market. Optical filters can be mounted inside the camera. Banner Engineering ring lights can be attached directly on the camera, eliminating the need for additional mounting brackets.



*Compact camera fits in tight spaces.*

### Ethernet and flexible I/O in the same full-featured sensor.

The *Presence PLUS Pro* features Ethernet, serial and flexible I/O in a single sensor. It communicates data, measurements and information for system process control over the Ethernet or standard serial protocols. The controller's removable terminal block accommodates configurable inputs (NPN/PNP) and configurable outputs (NPN/PNP). The controller allows you to select 1 from 12 stored inspections.

*Separate video output allows direct connection to optional real-time video display.*







## All the tools you need.

### Location Tools

Compensate for translational and rotational movement.



**Locate.** Determines translation and rotation by detecting relative movement of edges.



**Pattern Find.** Determines translation and rotation by detecting relative movement of a pattern.

### Vision Tools

Analyse the image.



**Grey Scale.** Determines the average grey scale value of an area.



**Blob.** Determines the presence, connectivity and location of selected features.



**Edge.** Determines the presence, number, classification and location of edges.



**Object.** Determines the presence, number, classification, size and location of objects.



**Pattern Count.** Determines the presence, number and location of a pattern(s).

### Analysis Tools

Measure or evaluate the results of the Vision Tools.



**Measure Tool.** Measures distance between two specified points. These points can be edges, centroid locations or pattern centres.



**Test Tool.** Evaluates results of selected vision and analysis tools to determine whether an inspection passes or fails. It also performs logical operations and activates outputs.



**Communication Tool.** Sends results of selected location, vision and analysis tools over the Ethernet or RS232 serial communication ports.

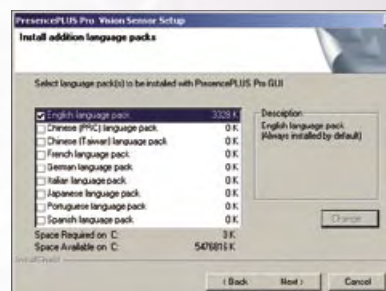
### Automatic TEACH or custom setup.

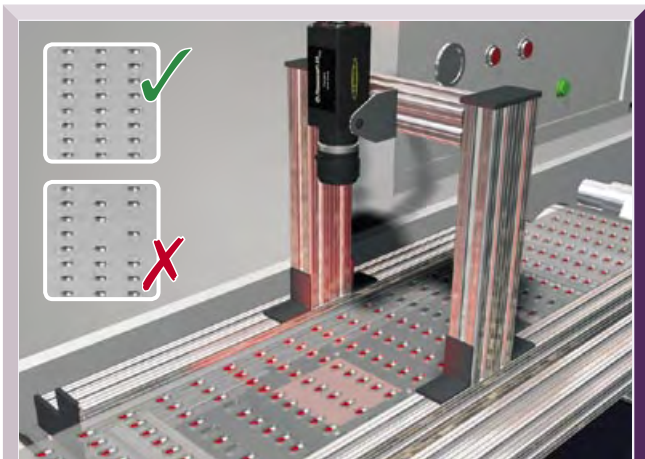
The *Presence PLUS Pro* offers point-and-click setup without programming. Set up an inspection by simply illuminating the target, focusing the camera and selecting the features to analyse. You can teach or manually configure inspection tolerances. New users can follow the guided setup sequence, while advanced users can override automatic settings and create customized inspections.



### Multi-lingual user interface for all sensors.

The multi-lingual user interface software allows setup and seamless operation in any of nine languages via the installation of additional language packs.



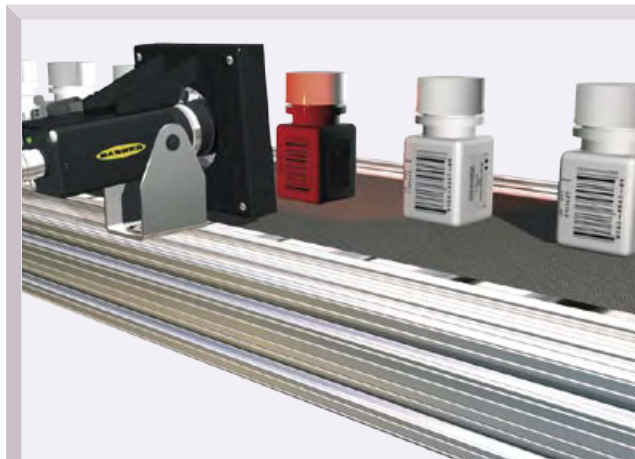


### Blister Package Verification

**Objective:** To verify that the blister packet is filled with a complete tablet of medication in each cell and that the blister is free of debris.

**Sensors:** Presence PLUS Pro vision sensor, LEDRB85X220W red dif-fused backlight, PLC used as a trigger.

**Operation:** A blister machine fills each cell on a web of blister packets with a tablet. Before the packets are sealed and cut, the Presence PLUS Pro uses the Blob tool function to inspect each row to verify each cell has a complete tablet inside and also ensures no broken tablets or other debris are incorrectly packaged. If a missing or partial tablet is found, the blister is rejected.

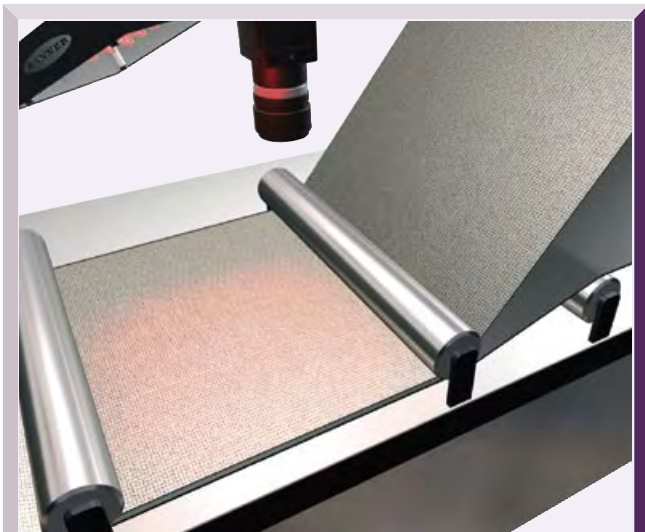


### Label Positioning

**Objective:** To verify correct label placement on bottles of tablets.

**Sensors:** Presence PLUS Pro vision sensor, with LCF16 lens, LEDRR80X80W red ring light, photoelectric sensor used as a trigger.

**Operation:** As bottles of tablets pass on a conveyor, the Presence PLUS Pro verifies that the label is present and positioned correctly. The Edge and Measure tools measure the distance between the top of the label and the top of the bottle to check height. The distance between the side of the label and the side of the bottle is also measured to make sure the label is centred on the face of the bottle.



### Assembly Verification

**Objective:** To verify that cloth belting has been added to a band of tire rubber.

**Sensors:** Presence PLUS Pro vision sensor, with LCF25R lens, LEDRA80X80W red area light, PLC used as a trigger.

**Operation:** On a web, cloth belting is bonded to one side of a band of hot rubber. Using the Average Grey Scale tool, the Presence PLUS Pro detects the difference between the brightness of the cloth and the darkness of the rubber to make sure the cloth has been applied to the rubber.



### Part Orientation Verification

**Objective:** To verify that a ring is placed correctly on a component of an assembled part.

**Sensors:** Presence PLUS Pro vision sensor, with LCF08 lens, LEDRR80X80W red ring light, PLC used as a trigger.

**Operation:** An assembler places the ring over the part. The ring fits in two possible positions, but only one position is correct. The Presence PLUS Pro uses the Edge tool to check that the gasket is in the correct position, within an accepted variation of rotation.



## Controller Specifications

- Construction:** Steel with black zinc plating
- Dimensions:** 158 x 127 x 30,9 mm (measured length does not include lens, connectors or cables)
- Weight:** Approx. 0,55 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)
- Discrete I/O:** 1 Trigger IN (pin 3)  
1 Strobe OUT (pin 4) 5V TTL  
6 Programmable I/O (pins 9 – 14)  
1 Product Change IN (pin 15)  
4 Product Select IN (pins 16 – 19)

### 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 (sinking) or PNP (sourcing) 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 Ethernet port, 1 RS232 DB-9 port and 1 RS232 port on terminal block

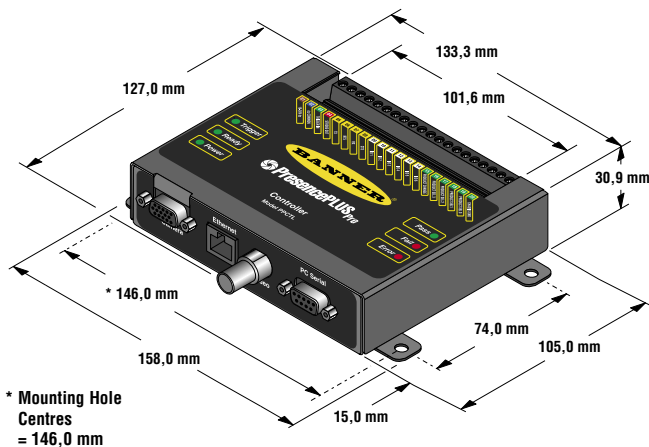
**Memory:** Stores up to 12 inspection files (jobs)  
Optional: stores up to 64 inspection files (jobs)

**Power:** Voltage: 10-30V dc  
Current: 1,5 A max. (exclusive of load)

**Supply Protection Circuitry:** Protected against reverse polarity and transient voltages

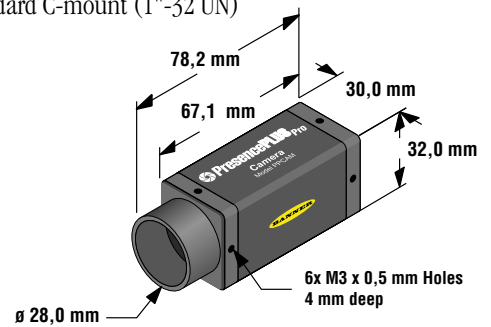
**Indicators:** 6 LEDs: Trigger, Ready, Power, Pass, Fail, Error, Ethernet Connection, Ethernet Data Transfer

## Controller Dimensions

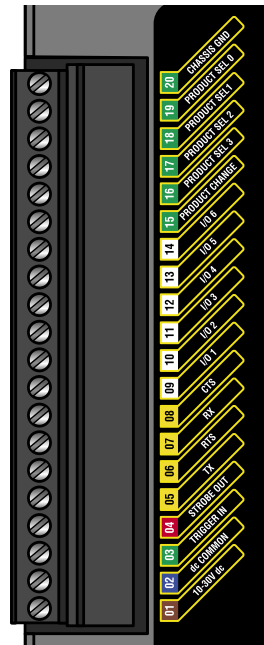


## Camera Specifications & Dimensions

- Construction:** Black anodized aluminium
- Dimensions:** 32 x 30 x 78,2 mm
- Weight:** Approx. 0,09 kg
- Environmental Rating:** IEC IP20
- Operating Temperature:** 0° to +50° C
- Maximum Relative Humidity:** 90%, non-condensing
- Imager:** 4,8 x 3,6 mm; 6 mm diagonal (1/3" CCD)
- Acquisition:** Frames per second: 30 max.
- Exposure Time:** 0,10 ms to 3600 ms
- Image Size:** 307.200 (640 x 480) pixels
- Pixel Size:** 7,4 x 7,4 µm
- Levels of Grey Scale:** 256
- Interface:** LVDS
- Max. Cable Length:** 7 m
- Lens Mount:** Standard C-mount (1"-32 UN)

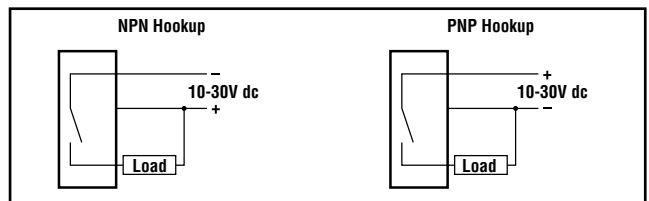


## Controller Terminal Block and Hookup



Pluggable Terminal Block Pin-Out Diagram

Nr.	Pin Function
20	Chassis ground
19	Product Select 0 IN
18	Product Select 1 IN
17	Product Select 2 IN
16	Product Select 3 IN
15	Product Change IN
14	Programmable I/O 6
13	Programmable I/O 5
12	Programmable I/O 4
11	Programmable I/O 3
10	Programmable I/O 2
09	Programmable I/O 1
08	RS232 CTS (Clear To Send)
07	RS232 RX (Receive Data)
06	RS232 RTS (Request To Send)
05	RS232 TX (Transmit Data)
04	Strobe OUT
03	Trigger IN
02	dc Common
01	10-30V dc





## PresencePLUS® P4 GEO: Push-button pattern matching

### High performance inspections, easy as pie.

The PresencePLUS® P4 GEO is a vision solution that performs like a vision sensor yet sets up and operates as easily as a standard photoelectric sensor. Now you can use vision in machines and on manufacturing lines where it was previously impractical.

### A compact, self-contained sensor.

The P4 GEO is a small 67 mm x 125 mm single housing sensor that functions without requiring a separate controller or PC. You can mount it directly on machines, conveyors or production processes – wherever inspections are required.



### Simple, Remote TEACH push-button programming without a PC.

After initial settings are established, the P4 GEO can be easily and accurately reconfigured for a new product by simply pushing a button. For production lines inspecting similar products, it's the easiest and fastest possible setup procedure.



### 360° inspections.

The P4 GEO easily performs full 360° inspections at a fraction of the cost of competitive solutions. Regardless of the orientation of your products, the GEO automatically locates the features to inspect.



### Eliminate product alignment and fixturing.

Because the P4 GEO locates inspection details regardless of product rotation, you eliminate expensive and complex mechanical fixturing. You get a powerful solution that allows fixture-free inspections.



## PresencePLUS® P4 GEO 1.3: High resolution

### Accurately inspect highly detailed objects.

With its extremely high resolution, the P4 GEO 1.3 performs highly detailed inspections – including small type on packages and products and very fine details on industrial parts and consumer products – with high reliability.

### 1.3 megapixel resolution.

With more than 100 times the resolution of the standard P4 GEO, you can now perform highly accurate inspections not previously possible. With its ability to resolve over 1,300,000 pixels, the P4 GEO 1.3 is ideal for applications in the packaging, pharmaceutical, bottling, metal stamping, automotive material handling and semiconductor industries.



### Easily cost-justify for multiple products, production lines & OEM use.

Presence PLUS P4 sensors represent a vision platform affordable enough to install on every manufacturing line, eliminating the need for inefficient batch inspections, while helping assure zero defects and better production throughput. They are simple and cost effective enough for numerous OEM applications requiring vision inspection.

### Frame Inspection.



*The P4 GEO is programmed to locate each bolt to inspect.*



*A detailed inspection of each bolt location checks for presence and proper position.*

PresencePLUS® P4 GEO





**10.000 objects per minute!**

The P4 EDGE can accurately sense and evaluate more than 10.000 objects per minute, making it ideal for a broad range of high-speed applications in the packaging, pharmaceutical, bottling, metal stamping, automotive and semiconductor industries.

Applications include validation of height and width of parts, location of labels, rejecting incorrect parts before assembly and detection of edges on a continuous web.



*P4 EDGE is configured to detect stopper placement within acceptable limits to determine if the stopper is inserted correctly.*

*P4 EDGE checks for proper level by locating minimum acceptable height of the visual edge the liquid creates. Bottles are rejected when the liquid falls below the specified level. Vision software provides count totals of products passed and failed and total count.*



**Program “on the fly” without a PC.**

The P4 EDGE is extraordinarily fast and easy to deploy and operate. For applications where product lines are constantly being changed, a Remote TEACH feature allows the sensor to learn new elements to inspect – without connecting to a PC or shutting down the line.

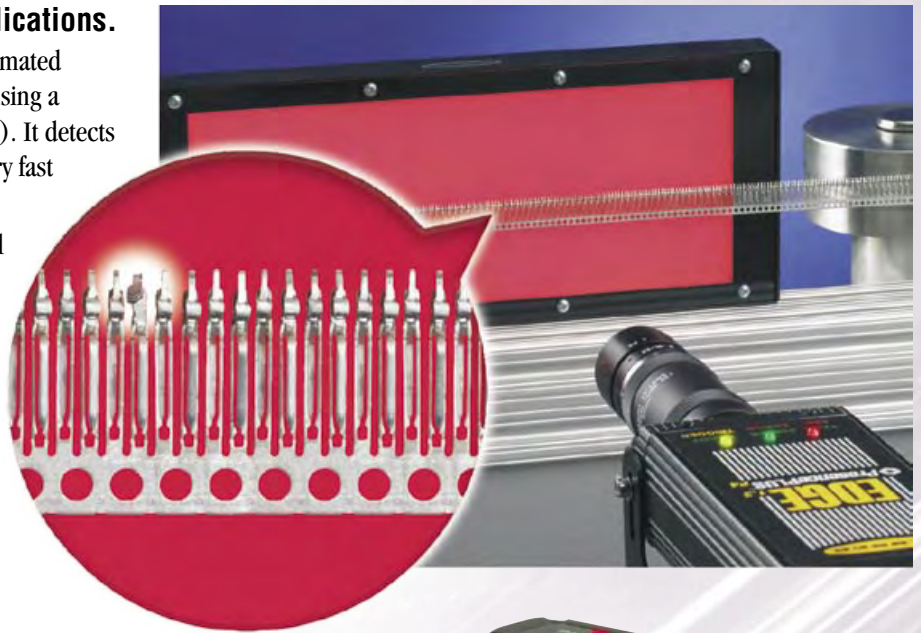
The P4 EDGE vision sensor can interface to machines and factory networks through its built-in 10/100 Ethernet connection, RS232 or discrete input/outputs.



## Precision for high-throughput applications.

The P4 EDGE 1.3 makes highly detailed automated error proofing and inspections possible by using a 1280 x 1024 pixel imager (1.310.720 pixels). It detects subtle differences in target dimensions at very fast throughput rates.

High speed and high resolution make it ideal for precision inspections, like measuring stamped metal parts as well as validating the location of objects such as labels or components of an assembly.



## Powerful inspection capabilities that fit in the palm of your hand.

Banner is committed to packaging the power of much larger vision products in a sensor-sized solution. P4 vision sensors pack the inspection throughput and analysis capabilities of much larger systems in a single, self-contained sensor small enough to fit in your hand. Available in both in-line and right-angle versions, the vision sensors measures only 67 mm wide, with in-line models measuring 136 mm long and right-angle models just 125 mm long.

67 mm x  
136 mm x  
125 mm



PresencePLUS® P4 AREA

PresencePLUS® P4 EDGE



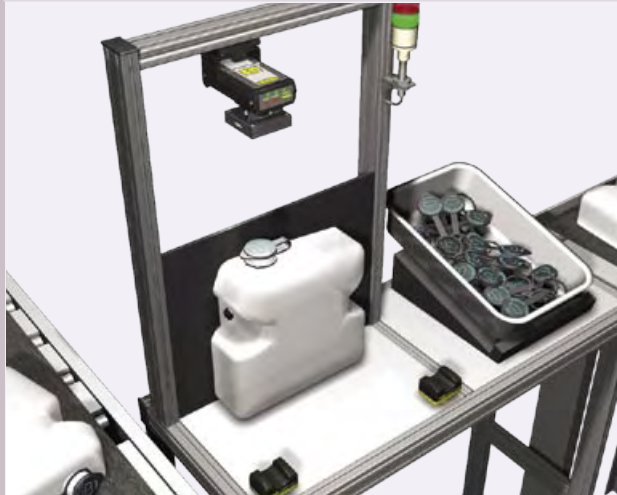
# AREA

## Greyscale and Binary Large Objects.

The P4 AREA and the P4 AREA 1.3 are other members of the P4 family. These sensors look for object features without knowing their exact shape or location.

Applications include counting the holes in a stamped plate, foreign object detection in containers, counting pills, coating verification, verify the correction operation of indicator lights and finding the centre of an object for a vision-guided robot.

The standard resolution P4 AREA sensor provides a high-speed operation. The P4 AREA 1.3 gives megapixel resolution for inspection of large surfaces.



### Part Presence/Absence & Orientation

**Objective:** To verify that the cap of a washer reservoir is present and oriented within an accepted range of rotation.

**Sensors:** Presence PLUS P4 with LCF16 lens, LEDRR62X62 red ring light, Verification Touch Button (VTB) used as a trigger.

**Operation:** An operator places a capped reservoir on the inspection stand. The Presence PLUS P4 GEO's Geometric Count tool verifies that the cap is on the reservoir, that the logo is printed on the label, and that the cap is not rotated beyond the accepted range.



### Component Inspection

**Objective:** To verify that all weld nuts in an automobile door component are present, oriented with the right side up and in the correct location.

**Sensors:** Presence PLUS P4 GEO 1.3 with LCF16LMP lens, HFFW24AC tubular fluorescent light, PLC used as a trigger.

**Operation:** Nuts are welded to a component of an automobile car door. The Presence PLUS P4 GEO uses four Geometric Count tools check whether the weld nuts are correctly oriented and aligned over the bolt holes.



### Complete Assembly Inspection

**Objective:** To verify that each end flap on a cardboard carton is glued down.

**Sensors:** Presence PLUS P4 EDGE, with LCF08 lens, LEDRB85X220M red backlight, fixed-field photoelectric used as a trigger.

**Operation:** After a cardboard carton is packed, the flaps on both ends are glued down. The Presence PLUS P4 EDGE's Locate tool finds the edge of the box, then the Edge tools checks whether the upper and lower horizontal edges are the same distance from the centre of the box. If not, the flap is not glued, and the box fails the inspection.



### Label Alignment

**Objective:** To verify that the labels on a bottle are aligned with each other and both are straight.

**Sensors:** Presence PLUS P4 EDGE, with LCF08 lens, HFFW12DC tubular fluorescent light, PLC used as a trigger.

**Operation:** Two labels are glued to the front of a bottle – one on the neck and another on the body. The Presence PLUS P4 EDGE's Locate tool finds the edge of the bottle, and then the two Edge tools verify that the top and bottom labels are lined up and not skewed.





## 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:** GEO & EDGE: 2,56 x 2,06 mm; 3,25 mm diagonal  
(1/5" CMOS)

GEO & EDGE 1.3: 8,60 x 6,90 mm; 11,03 mm diagonal  
(2/3" CMOS)

**Acquisition:** GEO & EDGE: Frames per second: 500 max.

GEO & EDGE 1.3: Frames per second: 26,8 max.

**Exposure Time:** GEO & EDGE: 0,01 ms to 20,47 ms

GEO & EDGE 1.3: 0,01 ms to 1,67 s

**Image Size:** GEO & EDGE: 12.800 (128 x 100) pixels

GEO & EDGE 1.3: 1.310.720 (1280 x 1240) pixels

**Pixel Size:** GEO & EDGE: 20 x 20 µm

GEO & EDGE 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: GEO & EDGE: 500 mA max. (exclusive of load)

GEO & EDGE 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

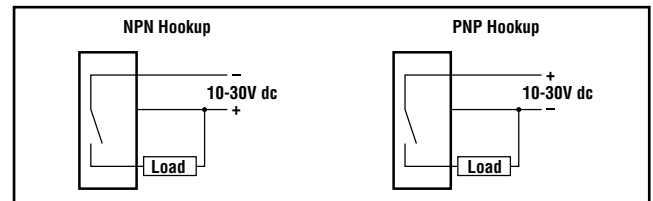
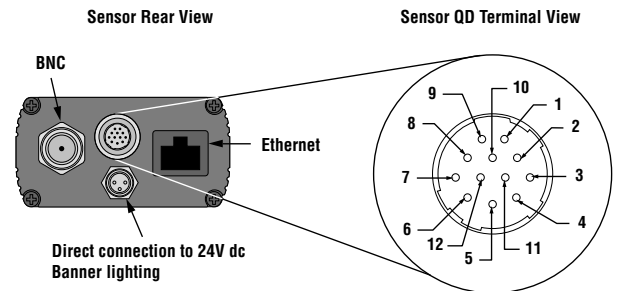
Red = FAIL

Red = ERROR

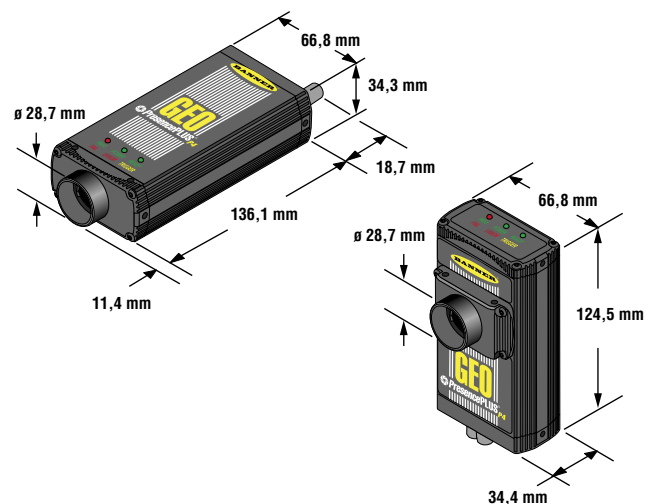
Yellow = TRIGGER

## 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





## PresencePLUS® P4 BCR: Advanced 2D & 1D reading capabilities



### Industry standard.

Industry-standard bar code metrics and grading capabilities make the P4 BCR ideal for a wide range of applications such as error-proofing of product codes or verifying content codes for the pharmaceutical industry. Validating recipient information or providing traceability in the automobile assembly industry are also suitable to typical P4 BCR applications, as well as equipment and process protection.



### Advanced 2D & 1D reading capabilities.

The P4 BCR vision sensor reads advanced 2D and 1D bar codes including Data Matrix ECC200 as well as linear codes such as Code 39, Code 128, Codabar, Interleaved 2 of 5, EAN-8 and EAN-13 (supports UPC-A).

### Easy to install.

Several features of the P4 BCR make it particularly easy to install and use. Remote TEACH allows the sensor to learn new features to inspect for, and built-in live video output allows users to view the sensor's inspections in real time and to view failed inspection images without a PC.





## 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:** 4,8 x 3,6 mm; 6 mm diagonal (1/3" CCD)

**Acquisition:** Frames per second: 48 max.

**Exposure Time:** 0,1 ms to 2830 ms

**Image Size:** 307.200 (640 x 480) pixels

**Pixel Size:** 7,4 x 7,4 µm

**Levels of Grey Scale:** 256

**Lens Mount:** CS-mount

**Discrete I/O:** 1 Trigger IN

1 Strobe OUT

4 Programmable I/O

1 Product Change

1 Remote TEACH

### 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 150 mA max. NPN;  
>V ±2 V

OFF-State Leakage Current: <100 µA NPN or PNP

**Communication:** 1 RJ-45 10/100 Ethernet port

RS232 flying leads

**Memory:** Stores up to 8 inspection files (jobs)

**Power:** Voltage: 10-30V dc

Current: 650 mA max. at 24V dc (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

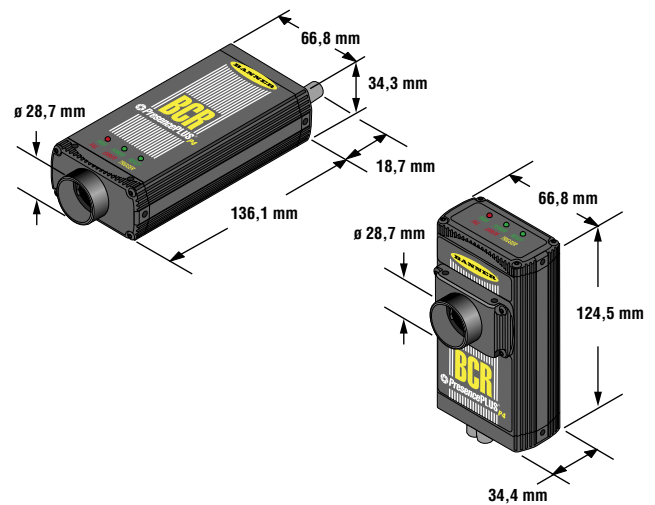
Red = ERROR

Yellow = TRIGGER

## Supported Barcodes

Barcode	Format	Example
Codabar (USD4, 2 of 7)	linear	
Interleaved 2 of 5 (Code 25, ITF, "I" 2 of 5, 125)	linear	
Code 39 (USD-3, 3 of 9, LOGMARS)	linear	
EAN-13 (UPC-A)	linear	
EAN-8	linear	
Code 128 (UCC-128)	linear	
Data Matrix (ECC-200)	2D	

## Sensor Dimensions



## Sensor Selection

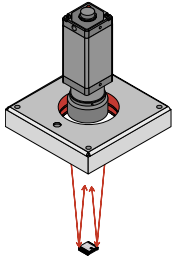

Camera		
P4BR	Sensor BCR Right-Angle	30 742 93
P4BI	Sensor BCR In-Line	30 742 92

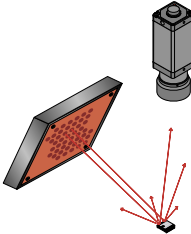
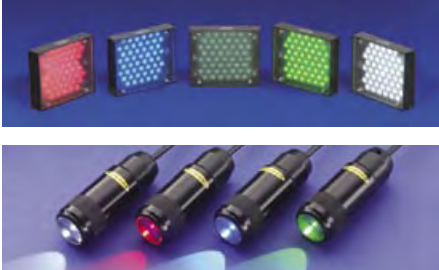


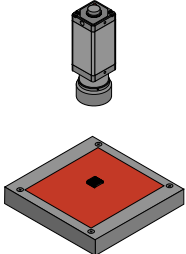

## High quality lighting options.


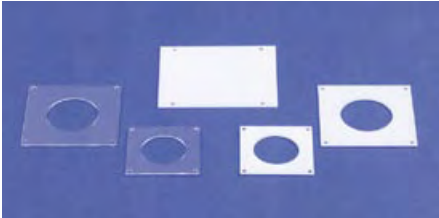
A vision based application solution is inherently sensitive to external light. Direct sunlight, 50 Hz flickering of a fluorescent tube or the shadow of passing objects may cause inspections to fail. This can be avoided by using a brighter, more consistent light source that overpowers the ambient light.

By selecting the appropriate lighting technique and by using filters and colours, the contrast on the features of interest can be enhanced while disturbing factors can be weakened.

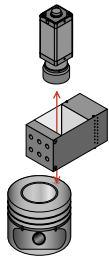
Ring Lights		
	<ul style="list-style-type: none"> <li>• Mounts directly on the camera without the need for additional mounting hardware</li> <li>• Provides bright illumination for smaller objects</li> <li>• Use of an optional polarizing kit eliminates glare of shiny surfaces</li> <li>• Available in 2 sizes (62 x 62 mm and 80 x 80 mm)</li> <li>• Available in 5 colours (Red, White, Green, Blue and Infrared)</li> </ul>	

Area and Spot lights		
	<ul style="list-style-type: none"> <li>• Lights objects under a specific angle, creating shadows or avoiding glare</li> <li>• Illuminates from a distance up to 1 m</li> <li>• 80 x 80 mm area lights available in 5 colours (Red, White, Green, Blue and Infrared)</li> <li>• Diameter 30 mm spotlights with adjustable focus</li> <li>• IP67 spotlights</li> </ul>	

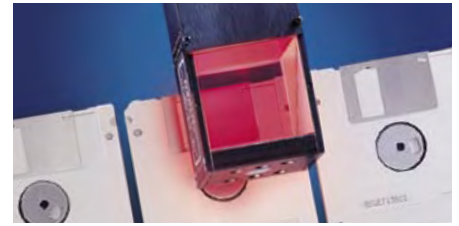
Backlights		
	<ul style="list-style-type: none"> <li>• Optimal contrast for contour verification</li> <li>• Highlights through-holes in target objects</li> <li>• Choose from 2 standard sizes (70 x 70 mm or 220 x 85 mm)</li> <li>• Choose from 2 colours (Red or Infrared)</li> </ul>	

Filters and Diffusers		
	<ul style="list-style-type: none"> <li>• Colour filters can be fitted easily between the lens and the imager chip</li> <li>• Red, Green, Blue or Infrared filters can enhance the contrast on the features of interest</li> <li>• Polarizing filter kit reduces the glare from reflective surfaces</li> <li>• Diffusers create an even reflection from slightly tilted surfaces</li> </ul>	

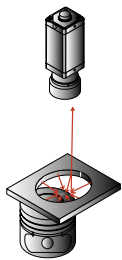
**On-Axis Lights**



- Provides an even illumination over the covered area
- Allows illumination inside narrow holes
- Enhances the contrast between texture difference
- Brightens perpendicular surfaces, darkens slanted surfaces
- Requires a 12V dc power supply



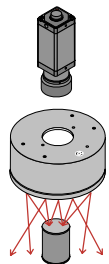
**Low Angle Ring Lights**



- Highlights surface irregularities like dust and scratches
- Creates shadows and hot spots on elevated parts
- Detects texture, minimizes colour differences (print)
- Requires a 12V dc power supply



**Highly Diffused Lights**



- Eliminates glare and shadows
- Illuminates curves surfaces evenly
- Minimize texture, highlight colour differences (print)
- Requires a 12V dc power supply



**Laser Line Emitters**

- Allows 3-D inspection with a 2-D vision sensor
- Versatile QS18 housing with M18 threaded “nose” allows easy mounting
- Class II red laser, combined with red filter, provides a clear line
- Available with vertical or horizontal line, cross or circle
- Requires 10-30V dc power supply



**Tubular Fluorescent Lights**



- For illumination of large objects
- 7 different lengths, from 200 mm to 1,2 m fluorescent tubes
- Models with internal or external ballast available
- 20 kHz ensures flicker free illumination
- IP67 housing
- Requires 120-240V ac power

**Wide variety of lens options.**

The lens projects the image on the CCD or CMOS image chip. The most important parameter of a lens is focal distance. The focal distance determines ratio between the field of view and working distance. If the working distance in relation to the focal length of the lens is very short, spacers or extension tubes may be required to allow the lens to focus on the inspection target.

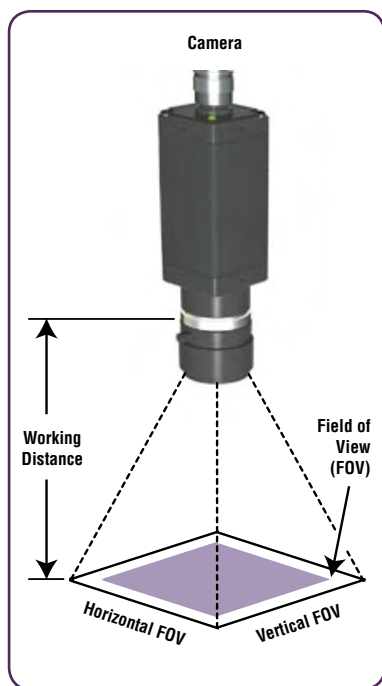
The tables below provide information on the field of view, the working distance and the required spacers or extension tubes for the different imager chips used in Presence PLUS vision sensors.



**Standard Lenses**

- Low cost lenses for simple presence/absence detection
- C-mount with 4 mm and 8 mm focal length for largest field of view
- 12 mm and 16 mm with focus locking and minimum working distances of 60 mm
- 25 mm, 50 mm and 75 mm have focus locking and adjustable aperture

**Choosing a lens: Working Distances & Field of View Tables**



**Field of view (FOV):**

The area of the inspection to be captured by the sensor.

**Working Distance (WD):**

The distance between the front of the sensor and the target object.

**Extension Tubes:**

Spacers between the lens and the sensor that allow the lens to focus at closer working distances.

For more detailed lens charts, visit Banner on-line at: [www.bannereurope.com](http://www.bannereurope.com)

PresencePLUS Pro & PresencePLUS P4 BCR								
FOV H x V (in mm)	Working Distance in mm (+ Extension Tube in mm)							
	Lens Choices							
	6,5 mm (+ ext)	8 mm (+ ext)	12 mm (+ ext)	16 mm (+ ext)	25 mm (+ ext)	50 mm (+ ext)	75 mm (+ ext)	
5 x 4						168 40*		
15 x 11					113 5*	270 10*	396 20*	
25 x 19					166 3*	372 5*	539 5*	
40 x 30			116 2,0*	159 3,0*	244 2*	525 5*	753	
60 x 45	142 0,5*	140 1,0*	167 0,5*	227 1,0*	349 2*	729 0	1039	
80 x 60	157 0,25*	171	218 0,5*	296 0,5*	453	933	1325	
100 x 75		202	268 0,5*	364 0,5*	558	1137	1611	
120 x 90		232	319	432	663	1341	1897	
140 x 105		263	369	501	767	1545	2183	
150 x 113		278	395	535	819	1647	2326	
160 x 120		293	420	569	872	1749	2469	
180 x 135		324	471	638	976	1953	2755	
190 x 143		339	496	672	1029	2055	2898	
200 x 150		355	521	706	1081	2157	3041	
220 x 165	322	385	572	774	1186	2361	3327	
230 x 173	334	401	597	809	1238	2463	3470	
240 x 180	345	416	622	843	1290	2565	3613	
250 x 188	357	431	648	877	1342	2667	3756	
260 x 195	368	446	673	911	1395	2769	3899	
270 x 203	380	462	698	945	1447	2871	4042	
280 x 210	391	477	724	980	1499	2973	4185	
300 x 225	414	508	774	1048	1604	3177	4471	
320 x 240	437	538	825	1116	1709	3381	4757	
340 x 255	460	569	875	1185	1813	3585	5043	
360 x 270	483	599	926	1253	1918	3789	5329	
380 x 285	506	630	977	1322	2022	3993	5615	
390 x 293	518	645	1002	1356	2075	4095	5758	
400 x 300	529	661	1027	1390	2127	4197	5901	

\* Use lens extension kit (LEKS) (0,25 and 0,5 mm) and/or LEK (0,5/1,0/5,0/10/20 and 40 mm).



## High-Performance lenses

- Less image distortion
- Greater depth of focus
- Focus locking on all lenses
- UV filter can be mounted on the lens



## Megapixel lenses

- For use with the Banner megapixel sensors
- Available with 8 mm, 12 mm, 16 mm, 25 mm and 50 mm focal distance
- 8 mm lens gives shortest field of view
- 50 mm lens gives least distortion



## 10-40 mm Zoom lens

- Allows adjusting the field of view without moving the sensor
- Zoom and focus locking
- Adjustable aperture from closed to F/1.4
- Not for use in combination with a Banner ring light

PresencePLUS P4							
FOV H x V (in mm)	Working Distance in mm (+ Extension Tube in mm)						
	Lens Choices						
	8 mm (+ ext)	16 mm (+ ext)	25 mm (+ ext)	50 mm (+ ext)			
5 x 4				216	20*		
15 x 12			176	3*	394	5*	
25 x 20		178	2,0*	274	2*	572	2*
40 x 31	143	0,3*	275	0,5*	420	2*	839
60 x 47	207		405	0,5*	616		1195
80 x 62	270		535		811		1551
90 x 70	302		599		909		1729
100 x 78	334		664		1006		1907
120 x 94	398		794		1202		2263
140 x 109	461		923		1397		2619
150 x 117	493		988		1495		2797
160 x 125	525		1053		1593		2975
180 x 140	588		1183		1788		3331
190 x 148	620		1247		1886		3509
200 x 156	652		1312		1983		3687
220 x 172	716		1442		2179		4043
230 x 179	747		1507		2276		4221
240 x 187	779		1571		2374		4399
250 x 195	811		1636		2472		4577
260 x 203	843		1701		2570		4755
270 x 211	875		1766		2667		4933
280 x 218	906		1831		2765		5111
300 x 234	970		1960		2960		5467
320 x 250	1034		2090		3156		5823
340 x 265	1097		2219		3351		6179
360 x 281	1161		2349		3547		6535
380 x 296	1224		2479		3742		6891
390 x 304	1256		2543		3840		7069
400 x 312	1288		2608		3938		7247

PresencePLUS P4 1.3								
FOV H x V (in mm)	Working Distance in mm (+ Extension Tube in mm)							
	Lens Choices							
	8 mm (+ ext)	16 mm (+ ext)	25 mm (+ ext)	50 mm (+ ext)				
5 x 4								
15 x 12								
25 x 20								
40 x 32	53	0,75*	97	2,00*	141	2,00*	328	7*
60 x 48	76		136	0,75*	194	0,25*	465	3*
80 x 64	96		169	0,25*	260		587	2*
90 x 72	106		189		290		604	1*
100 x 80	116		207		319		672	0,75*
120 x 96	136		244		378		781	
140 x 112	156		282		436		905	
150 x 120	166		300		465		967	
160 x 128	176		319		495		1029	
180 x 144	196		356		553		1153	
190 x 152	206		375		583		1214	
200 x 160	216		394		612		1276	
220 x 176	236		431		670		1400	
230 x 184	246		449		700		1462	
240 x 192	256		468		729		1524	
250 x 200	266		487		758		1586	
260 x 208	276		505		788		1648	
270 x 216	286		524		817		1709	
280 x 224	296		543		846		1771	
300 x 240	316		580		905		1895	
320 x 256	336		617		963		2019	
340 x 272	356		654		1022		2143	
360 x 288	376		692		1081		2266	
380 x 304	396		729		1139		2390	
390 x 312	406		748		1168		2452	
400 x 320	416		766		1198		2514	



## PresencePLUS Pro

Select a basic kit, lens, standard light and bracket from this page. For special lights and other accessories, see page 23 – 25.

Basic Kits		
<b>PPK</b>	Basic Kit: camera, controller, CD-ROM and Quickstart Guide	30 722 33
<b>PPK06</b>	Basic Kit + 2 m interconnect cable	30 696 57
<b>PPK23</b>	Basic Kit + 7 m interconnect cable	30 696 51
<b>PPK32</b>	Basic Kit + 10 m interconnect cable	30 716 81
<b>PPK06RA</b>	Basic Kit + 2 m right-angle interconnect cable	30 716 82
<b>PPK23RA</b>	Basic Kit + 7 m right-angle interconnect cable	30 716 83
<b>PPK32RA</b>	Basic Kit + 10 m right-angle interconnect cable	30 716 84

Camera Mounting Brackets		
<b>SMBPPU</b>	Camera U bracket	30 693 80
<b>SMBPPLU</b>	Camera long U bracket	30 705 49
<b>SMBPPRA</b>	Camera right-angle bracket	30 693 81

Controller Mounting Brackets		
<b>SMBPPDH</b>	Controller mounting bracket DIN rail	30 668 13
<b>SMBPPDV</b>	Controller mounting bracket DIN rail vertical	30 668 15
<b>SMBPPDE</b>	Edge-mounted controller DIN rail bracket	30 027 67

Standard Lenses		
<b>LCF04</b>	4 mm Lens	30 688 84
<b>LCF08</b>	8 mm Lens	30 572 98
<b>LCF12</b>	12 mm Lens	30 572 99
<b>LCF16</b>	16 mm Lens	30 565 22
<b>LCF25R</b>	25 mm Lens	30 688 85
<b>LCF25LR</b>	25 mm Lens with focus locking	30 688 86
<b>LCF50L1R</b>	50 mm Lens with focus locking, plastic	30 688 87
<b>LCF50L2R</b>	50 mm Lens with focus locking, metal	30 688 88
<b>LCF75LR</b>	75 mm Lens with focus locking, metal	30 705 45

High-Performance Lenses		
<b>LCF06LT</b>	6,5 mm Lens, focus locking	30 700 31
<b>LCF08LT</b>	8 mm Lens, focus locking	30 700 32
<b>LCF12LT</b>	12 mm Lens, focus locking	30 700 33
<b>LCF16LT</b>	16 mm Lens, focus locking	30 700 34
<b>LCF25LT</b>	25 mm Lens, focus locking	30 700 35
<b>LCF50LT</b>	50 mm Lens, focus locking	30 700 36
<b>LCF75LT</b>	75 mm Lens, focus locking	30 705 46

Zoom Lens		
<b>LCF1040LT</b>	10-40 mm zoom Lens, locking	30 740 80

Lens Extension Kits					
<b>LEK</b>	0,5/1/5/10/20/40 mm	30 690 52	<b>LEKS</b>	0,25 & 0,5 mm Spacers	30 732 90

62 x 62 mm Ring Lights		
<b>LEDRR62X62W</b>	Red LED Ring Light	30 733 09
<b>LEDIR62X62W</b>	IR LED Ring Light	30 733 10
<b>LEDGR62X62W</b>	Green LED Ring Light	30 733 12
<b>LEDBR62X62W</b>	Blue LED Ring Light	30 733 11
<b>LEDWR62X62W</b>	White LED Ring Light	30 733 13

80 x 80 mm Ring Lights		
<b>LEDRR80X80W</b>	Red LED Ring Light	30 700 15
<b>LEDIR80X80W</b>	IR LED Ring Light	30 027 79
<b>LEDGR80X80W</b>	Green LED Ring Light	30 716 42
<b>LEDBR80X80W</b>	Blue LED Ring Light	30 716 43
<b>LEDWR80X80W</b>	White LED Ring Light	30 711 01

62 x 62 mm Area Lights		
<b>LEDRA62X62W</b>	Small Area Light Red	30 738 08
<b>LEDWA62X62W</b>	Small Area Light White	30 733 10
<b>LEDBA62X62W</b>	Small Area Light Blue	30 738 05
<b>LEDGA62X62W</b>	Small Area Light Green	30 738 06
<b>LEDIA62X62W</b>	Small Area Light IR	30 738 09
<b>SMBVLA62X62S</b>	Mounting Bracket Surface Mount	30 742 63
<b>SMBVLA62X62RA</b>	Mounting Bracket Right-Angle Mount	30 742 64

80 x 80 mm Area Lights		
<b>LEDRA80X80W</b>	Area Light Red	30 699 05
<b>LEDWA80X80W</b>	Area Light White	30 718 86
<b>LEDBA80X80W</b>	Area Light Blue	30 718 88
<b>LEDGA80X80W</b>	Area Light Green	30 718 87
<b>LEDIA80X80W</b>	Area Light IR	30 029 02
<b>SMBACM</b>	Mounting Bracket for Area Lights	30 630 40
<b>SMBABM</b>	Base Mounting Bracket for Backlights	30 630 41

Spot Lights		
<b>LEDBSW</b>	Spot Light Blue	30 746 15
<b>LEDGSW</b>	Spot Light Green	30 746 16
<b>LEDRSW</b>	Spot Light Red	30 746 17
<b>LEDWSW</b>	Spot Light White	30 746 18

Backlights		
<b>LEDRB70X70W</b>	Banner Backlight Red 70 x 70 mm	30 699 04
<b>LEDIB70X70W</b>	Banner Backlight IR 70 x 70 mm	30 714 34
<b>LEDRB85X220W</b>	Banner Large Backlight Red 85 x 220 mm	30 731 00
<b>LEDIB85X220W</b>	Banner Large Backlight IR 85 x 220 mm	30 732 73

Ethernet Cable					
<b>STP07</b>	Cordset RJ-45 2,1 m	30 699 85	<b>STPX07</b>	Cordset crossover RJ-45 2,1 m	30 699 87
<b>STP25</b>	Cordset RJ-45 7,6 m	30 699 86	<b>STPX25</b>	Cordset crossover RJ-45 7,6 m	30 699 88





## PresencePLUS P4 – Standard Resolution

Select a basic kit, cable, lens, standard light and bracket from this page. For special lights and other accessories, see page 23 – 25.

Camera					
<b>P4GR</b>	Sensor GEO Right-Angle	30 733 92	<b>P4GR150</b>	Sensor GEO Right-Angle 150 inspections	30 735 02
<b>P4GI</b>	Sensor GEO In-Line	30 733 93	<b>P4GI150</b>	Sensor GEO In-Line 150 inspections	30 746 24
<b>P4ER</b>	Sensor EDGE Right-Angle	30 735 99	<b>P4ER150</b>	Sensor EDGE Right-Angle 150 inspections	30 745 34
<b>P4EI</b>	Sensor EDGE In-Line	30 736 00	<b>P4EI150</b>	Sensor EDGE In-Line 150 inspections	30 746 23
<b>P4AR</b>	Sensor AREA Right-Angle	30 747 71			
<b>P4AI</b>	Sensor AREA In-Line	30 747 72			

Cables		
<b>P4C06</b>	Cordset 2 m	30 734 91
<b>P4C23</b>	Cordset 7 m	30 734 92
<b>P4C32</b>	Cordset 10 m	30 734 93
<b>P4C50</b>	Cordset 16 m	30 741 20

Software & Documentation	
Free Quickstart Guide	118 000
Free GUI Software CD-ROM	30 728 06
Note: The Quickstart Guide and GUI CD-ROM can also be downloaded from the web site: <a href="http://www.bannereurope.com">www.bannereurope.com</a>	

Standard Lenses		
<b>LCF04</b>	4 mm Lens	30 688 84
<b>LCF08</b>	8 mm Lens	30 572 98
<b>LCF12</b>	12 mm Lens	30 572 99
<b>LCF16</b>	16 mm Lens	30 565 22
<b>LCF25R</b>	25 mm Lens	30 688 85
<b>LCF25LR</b>	25 mm Lens with focus locking	30 688 86
<b>LCF50L1R</b>	50 mm Lens with focus locking, plastic	30 688 87
<b>LCF50L2R</b>	50 mm Lens with focus locking, metal	30 688 88
<b>LCF75LR</b>	75 mm Lens with focus locking, metal	30 705 45

High-Performance Lenses		
<b>LCF06LT</b>	6,5 mm Lens, focus locking	30 700 31
<b>LCF08LT</b>	8 mm Lens, focus locking	30 700 32
<b>LCF12LT</b>	12 mm Lens, focus locking	30 700 33
<b>LCF16LT</b>	16 mm Lens, focus locking	30 700 34
<b>LCF25LT</b>	25 mm Lens, focus locking	30 700 35
<b>LCF50LT</b>	50 mm Lens, focus locking	30 700 36
<b>LCF75LT</b>	75 mm Lens, focus locking	30 705 46
Zoom Lens		
<b>LCF1040LT</b>	10-40 mm zoom Lens, locking	30 740 80

Lens Extension Kits					
<b>LEK</b>	Tubes & Spacers: 0,5/1/5/10/20/40 mm	30 690 52	<b>LEKS</b>	0,25 & 0,5 mm Spacers	30 732 90

62 x 62 mm Ring Lights		
<b>LEDRR62X62M</b>	Banner Small Ring Light Red	30 725 99
<b>LEDIR62X62M</b>	Banner Small Ring Light IR	30 726 28
<b>LEDGR62X62M</b>	Banner Small Ring Light Green	30 726 27
<b>LEDBR62X62M</b>	Banner Small Ring Light Blue	30 726 26
<b>LEDWR62X62M</b>	Banner Small Ring Light White	30 726 25

80 x 80 mm Ring Lights		
<b>LEDRR80X80M</b>	Banner Ring Light Red	30 722 63
<b>LEDIR80X80M</b>	Banner Ring Light IR	30 722 64
<b>LEDGR80X80M</b>	Banner Ring Light Green	30 722 62
<b>LEDBR80X80M</b>	Banner Ring Light Blue	30 722 61
<b>LEDWR80X80M</b>	Banner Ring Light White	30 722 60

62 x 62 mm Area Lights		
<b>LEDRA62X62M</b>	Banner Small Area Light Red	30 738 03
<b>LEDWA62X62M</b>	Banner Small Area Light White	30 738 02
<b>LEDBA62X62M</b>	Banner Small Area Light Blue	30 738 00
<b>LEDGA62X62M</b>	Banner Small Area Light Green	30 738 01
<b>LEDIA62X62M</b>	Banner Small Area Light IR	30 738 04
<b>SMBVLA62X62S</b>	Mounting Bracket Surface Mount	30 742 63
<b>SMBVLA62X62RA</b>	Mounting Bracket Right-Angle Mount	30 742 64

80 x 80 mm Area Lights		
<b>LEDRA80X80M</b>	Banner Area Light Visible Red	30 722 68
<b>LEDWA80X80M</b>	Banner Area Light White	30 722 69
<b>LEDBA80X80M</b>	Banner Area Light Blue	30 722 71
<b>LEDGA80X80M</b>	Banner Area Light Green	30 722 70
<b>LEDIA80X80M</b>	Banner Area Light IR	30 722 80
<b>SMBACM</b>	Mounting Bracket for Area Lights	30 630 40
<b>SMBABM</b>	Base Mounting Bracket for Backlights	30 630 41

Spot Lights		
<b>LEDBSM</b>	Spot Light Blue	30 746 11
<b>LEDGSM</b>	Spot Light Green	30 746 12
<b>LEDRSM</b>	Spot Light Red	30 746 13
<b>LEDWSM</b>	Spot Light White	30 746 14

Backlights		
<b>LEDRB70X70M</b>	Banner Backlight Visible Red	30 722 67
<b>LEDIB70X70M</b>	Banner Backlight IR	30 722 66
<b>LEDRB85X220M</b>	Banner Large Backlight Red	30 732 71
<b>LEDIB85X220M</b>	Banner Large Backlight IR	30 732 72

Dual Light Cable		
<b>P4CYL</b>	Cordset Y, 2 Light Adapter, for connection of 2 lights to one P4	30 737 63

Ethernet Cable					
<b>STP07</b>	Cordset RJ-45 2,1 m	30 699 85	<b>STPX07</b>	Cordset crossover RJ-45 2,1 m	30 699 87
<b>STP25</b>	Cordset RJ-45 7,6 m	30 699 86	<b>STPX25</b>	Cordset crossover RJ-45 7,6 m	30 699 88



## PresencePLUS P4 – Megapixel Resolution

Select a basic kit, cable, lens, standard light and bracket from this page. For special lights and other accessories, see page 23 – 25.

Camera					
<b>P4G1.3R</b>	Sensor GEO 1.3 megapixel Right-Angle	30 736 09	<b>P4E1.3R150</b>	Sensor EDGE 1.3 megapixel Right-Angle 150 inspections	30 747 68
<b>P4G1.3I</b>	Sensor GEO 1.3 megapixel In-Line	30 736 10		Sensor EDGE 1.3 megap. In-line 150 insp.	30 747 70
<b>P4E1.3R</b>	Sensor EDGE 1.3 megapixel Right-Angle	30 741 53	<b>P4A1.3R150</b>	Sensor AREA 1.3 megapixel Right-Angle 150 inspections	30 747 75
<b>P4E1.3I</b>	Sensor EDGE 1.3 megapixel In-line	30 741 54		Sensor AREA 1.3 megap. In-Line 150 insp.	30 747 76
<b>P4A1.3R</b>	Sensor AREA 1.3 megapixel Right-Angle	30 747 73			
<b>P4A1.3I</b>	Sensor AREA 1.3 megapixel In-Line	30 747 74			

Cables		
<b>P4C06</b>	Cordset 2 m	30 734 91
<b>P4C23</b>	Cordset 7 m	30 734 92
<b>P4C32</b>	Cordset 10 m	30 734 93
<b>P4C50</b>	Cordset 16 m	30 741 20

Software & Documentation	
Free Quickstart Guide	118 000
Free GUI Software CD-ROM	30 728 06
Note: The Quickstart Guide and GUI CD-ROM can also be downloaded from the web site: <a href="http://www.bannereurope.com">www.bannereurope.com</a>	

Megapixel Lenses		
<b>LCF08LMP</b>	8 mm Lens, focus locking Megapixel (Computar)	30 743 00
<b>LCF12LMP</b>	12 mm Lens, focus locking Megapixel (Computar)	30 742 99
<b>LCF16LMP</b>	16 mm Lens, focus locking Megapixel (Pentax)	30 736 72
<b>LCF25LMP</b>	25 mm Lens, focus locking Megapixel (Pentax)	30 736 73
<b>LCF35LMP</b>	35 mm Lens, focus locking Megapixel (Pentax)	30 740 79
<b>LCF50LMP</b>	50 mm Lens, focus locking Megapixel (Pentax)	30 736 74

Lens Extension Kits					
<b>LEK</b>	Tubes & Spacers: 0,5/1/5/10/20/40 mm	30 690 52	<b>LEKS</b>	0,25 & 0,5 mm Spacers	30 732 90

62 x 62 mm Ring Lights		
<b>LEDRR62X62M</b>	Banner Small Ring Light Red	30 725 99
<b>LEDIR62X62M</b>	Banner Small Ring Light IR	30 726 28
<b>LEDGR62X62M</b>	Banner Small Ring Light Green	30 726 27
<b>LEDBR62X62M</b>	Banner Small Ring Light Blue	30 726 26
<b>LEDWR62X62M</b>	Banner Small Ring Light White	30 726 25

80 x 80 mm Ring Lights		
<b>LEDRR80X80M</b>	Banner Ring Light Red	30 722 63
<b>LEDIR80X80M</b>	Banner Ring Light IR	30 722 64
<b>LEDGR80X80M</b>	Banner Ring Light Green	30 722 62
<b>LEDBR80X80M</b>	Banner Ring Light Blue	30 722 61
<b>LEDWR80X80M</b>	Banner Ring Light White	30 722 60

62 x 62 mm Area Lights		
<b>LEDRA62X62M</b>	Banner Small Area Light Red	30 738 03
<b>LEDWA62X62M</b>	Banner Small Area Light White	30 738 02
<b>LEDBA62X62M</b>	Banner Small Area Light Blue	30 738 00
<b>LEDGA62X62M</b>	Banner Small Area Light Green	30 738 01
<b>LEDIA62X62M</b>	Banner Small Area Light IR	30 738 04
<b>SMBVLA62X62S</b>	Mounting Bracket Surface Mount	30 742 63
<b>SMBVLA62X62RA</b>	Mounting Bracket Right-Angle Mount	30 742 64

80 x 80 mm Area Lights		
<b>LEDRA80X80M</b>	Banner Area Light Visible Red	30 722 68
<b>LEDWA80X80M</b>	Banner Area Light White	30 722 69
<b>LEDBA80X80M</b>	Banner Area Light Blue	30 722 71
<b>LEDGA80X80M</b>	Banner Area Light Green	30 722 70
<b>LEDIA80X80M</b>	Banner Area Light IR	30 722 80
<b>SMBACM</b>	Mounting Bracket for Area Lights	30 630 40
<b>SMBABM</b>	Base Mounting Bracket for Backlights	30 630 41

Spot Lights		
<b>LEDBSM</b>	Spot Light Blue	30 746 11
<b>LEDGSM</b>	Spot Light Green	30 746 12
<b>LEDRSM</b>	Spot Light Red	30 746 13
<b>LEDWSM</b>	Spot Light White	30 746 14

Backlights		
<b>LEDRB70X70M</b>	Banner Backlight Visible Red	30 722 67
<b>LEDIB70X70M</b>	Banner Backlight IR	30 722 66
<b>LEDRB85X220M</b>	Banner Large Backlight Red	30 732 71
<b>LEDIB85X220M</b>	Banner Large Backlight IR	30 732 72

Dual Light Cable		
<b>P4CYL</b>	Cordset Y, 2 Light Adapter, for connection of 2 lights to one P4	30 737 63

Ethernet Cable					
<b>STP07</b>	Cordset RJ-45 2,1 m	30 699 85	<b>STPX07</b>	Cordset crossover RJ-45 2,1 m	30 699 87
<b>STP25</b>	Cordset RJ-45 7,6 m	30 699 86	<b>STPX25</b>	Cordset crossover RJ-45 7,6 m	30 699 88



## PresencePLUS – Accessories

For more detailed information, please visit the banner web site at [www.bannereurope.com](http://www.bannereurope.com).

### PresencePLUS Pro – Special Interconnect Cables

Note: When using special cables with the PresencePLUS Pro, order camera & controller separately instead of a basic kit					
<b>PPC06RA</b>	Cordset 2 m, Right-Angle	30 708 27	<b>PPCTL</b>	Standard Controller	30 629 37
<b>PPC23RA</b>	Cordset 7 m, Right-Angle	30 708 28	<b>PPCTL-73628</b>	Controller 64 Inspections	30 736 28
<b>PPC32RA</b>	Cordset 10 m, Right-Angle	30 711 04	<b>PPCAM</b>	Camera	30 625 68
<b>PPC06HF</b>	Cordset 2 m, High-Flex	30 714 35	Free Quickstart Guide		683 69
<b>PPC23HF</b>	Cordset 7 m, High-Flex	30 714 36	Free GUI Software CD-ROM		30 728 06
<b>PPC32HF</b>	Cordset 10 m, High-Flex	30 714 37	Note: The Quickstart Guide and GUI CD-ROM can also be downloaded from the web site: <a href="http://www.bannereurope.com">www.bannereurope.com</a>		
<b>PPC06RAHF</b>	Cordset 2 m, Right-Angle, High-Flex	30 716 76			
<b>PPC23RAHF</b>	Cordset 7 m, Right-Angle, High-Flex	30 716 77			
<b>PPC32RAHF</b>	Cordset 10 m, Right-Angle, High-Flex	30 716 78			

### BNC Cables for Video Connection

<b>BNC06</b>	Cordset 2 m, Coaxial, male BNC on both ends	30 674 58
<b>BNC15</b>	Cordset 5 m, Coaxial, male BNC on both ends	30 674 59
<b>BNC30</b>	Cordset 9 m, Coaxial, male BNC on both ends	30 674 60

### Serial Connection Cables for PresencePLUS Pro

<b>DB9P06</b>	Cordset 2 m, DB9 male to DB9 female	30 674 55
<b>DB9P15</b>	Cordset 5 m, DB9 male to DB9 female	30 674 56
<b>DB9P30</b>	Cordset 9 m, DB9 male to DB9 female	30 674 57

### Filters & Diffusers

<b>FLTI</b>	IR 760 nm high-pass filter kit	30 695 30	<b>LEDRDW</b>	White Diffusing Window Kit Large Ring Light	30 720 96
<b>FLTR</b>	Red 600 nm high-pass filter kit	30 696 27	<b>LEDRDWS</b>	White Diffusing Window Kit Small Ring Light	30 737 65
<b>FLTB</b>	Blue filter kit	30 718 94	<b>LEDRCDW</b>	Clear Diffusing Window Kit Large Ring Light	30 737 66
<b>FLTG</b>	Green filter kit	30 718 93	<b>LEDRCDWS</b>	Clear Diffusing Window Kit Small Ring Light	30 737 67
<b>FLTUV</b>	Clear UV filter 25,5 mm for LCF08-70LT High-Performance Lenses	30 029 87	<b>LEDADW</b>	White Diffusing Window Kit Large Area Light	30 737 79
<b>LEDRPFK</b>	Ring Light polarizing filter kit LEDxR80X80W	30 563 06	<b>LEDADWS</b>	White Diffusing Window Kit Small Area Light	30 743 66
<b>LEDRPFKS</b>	Polarizing Filter kit Small Ring Light	30 734 16	<b>LEDAPFK</b>	Area Light polarizing filter kit LEDxA80X80W	30 713 21
			<b>LEDAPFKS</b>	Polarizing Filter kit Small Area Light C-Mount	30 741 10

### Low Angle Lights

<b>LEDRI100N</b>	Red LED 100 mm diameter	30 656 60
<b>LEDRI150N</b>	Red LED 150 mm diameter	30 656 62
<b>LEDRI150N-3</b>	Red LED 150 mm diameter – 3 LED rows	30 656 64

### Highly Diffused Lights and Dome Light

<b>LEDRS25N</b>	Red LED Highly Diffused Light (25 mm x 25 mm)	30 656 97
<b>LEDRS75N</b>	Red LED Highly Diffused Light (75 mm x 75 mm)	30 656 99
<b>LEDRD150N</b>	Red LED Dome Light (150 mm diameter) 12V dc	30 656 18

### On-Axis Lights

<b>LEDRO25N</b>	Red LED On-Axis Light (25 mm x 25 mm)	30 656 69
<b>LEDRO50N</b>	Red LED On-Axis Light (50 mm x 50 mm)	30 656 74
<b>LEDRO75N</b>	Red LED On-Axis Light (75 mm x 75 mm)	30 656 86
<b>LEDRO100N</b>	Red LED On-Axis Light (100 mm x 100 mm)	30 656 92

### 12V dc Power Supply

Note: Low angle lights, highly diffused, dome lights and on-axis lights require a 12V dc power supply		
<b>PSA-12E</b>	12V dc Power Supply	30 657 16

### High-Frequency Fluorescent Tubular Lights






<b>HFFW8DC</b>	8", 24V dc (18,5" Housing)	30 712 87
<b>HFFW8AC230</b>	8", 230V ac (17,2" Housing)	30 712 89
<b>HFFW12DC</b>	12", 24V dc (23,3" Housing)	30 712 90
<b>HFFW12AC</b>	12", 120-277V ac (26,4" Housing)	30 712 91
<b>HFFW14DC</b>	14", 24V dc (27,5" Housing)	30 712 92
<b>HFFW15AC230</b>	15", 230V ac (32,5" Housing)	30 712 94
<b>HFFW24AC</b>	24", 120-277V ac (38,9" Housing)	30 712 95
<b>HFFW36AC</b>	36", 120-277V ac (50,9" Housing)	30 712 96
<b>HFFW48AC</b>	48", 120-277V ac (63" Housing)	30 712 97
<b>HFFWxxACR</b>	Models with external ballast also available ("R")	

### Laser Emitters



<b>QS186LE</b>	Small spot output	30 702 52
<b>QS186LE10</b>	Circular output	30 702 54
<b>QS186LE11</b>	Vertical line output	30 027 56
<b>QS186LE12</b>	Horizontal line output	30 027 58
<b>QS186LE14</b>	Cross-form output	30 027 88
<b>QS186LE212</b>	Horizontal line, class 2 laser	30 713 66
<b>SMB18SF</b>	18 mm Swivel Mounting Bracket Assembly	30 525 19
<b>SMBWFTLR</b>	Bracket for Tubular Light (Right-Angle)	30 717 46
<b>SMBWFTLS</b>	Bracket for Tubular Light (Straight)	30 717 47





**PresencePLUS Pro Mounting Brackets**

SMBPPU	SMBPPLU	SMBPPRA	SMBPPDH	SMBPPDE
				
30 693 80	30 705 49	30 693 81	30 668 13	30 027 67
<ul style="list-style-type: none"> <li>• U-mounting bracket assembly for camera</li> </ul>	<ul style="list-style-type: none"> <li>• Long U-mounting bracket assembly for camera</li> </ul>	<ul style="list-style-type: none"> <li>• Right-angle mounting bracket assembly for camera</li> </ul>	<ul style="list-style-type: none"> <li>• DIN-rail mounting bracket for controller</li> </ul>	<ul style="list-style-type: none"> <li>• Narrow DIN-rail mounting bracket for controller</li> </ul>

**PresencePLUS P4 Mounting Brackets**







SMBP4RA	SMBP4IL
	
30 726 02	30 726 03
<ul style="list-style-type: none"> <li>• Right-angle bracket assembly</li> </ul>	<ul style="list-style-type: none"> <li>• In-line bracket assembly</li> </ul>

**PresencePLUS Pro Bogen arm**

SMBPPF1	SMBPPFB
	
30 562 45	30 562 65
<ul style="list-style-type: none"> <li>• Bogen arm, metal, with single knob</li> </ul>	<ul style="list-style-type: none"> <li>• Bogen super clamp base</li> </ul>


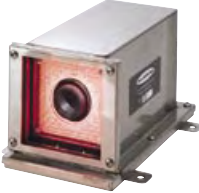
**PresencePLUS Camera Mounting Knuckle Brackets – Kits**

**PresencePLUS Camera Mounting Knuckle Brackets – Parts**


SMBPPK6	SMBPPK3	SMBPPKB	SMBPPK	SMBPPKE6	SMBPPKE3
					
30 713 84	30 713 83	30 710 42	30 710 41	30 710 97	30 710 43
<ul style="list-style-type: none"> <li>• 6" Column, Base and Knuckle, Kit</li> </ul>	<ul style="list-style-type: none"> <li>• 3" Column, Base and Knuckle, Kit</li> </ul>	<ul style="list-style-type: none"> <li>• Mounting Bracket Base</li> </ul>	<ul style="list-style-type: none"> <li>• Mounting Bracket Knuckle</li> </ul>	<ul style="list-style-type: none"> <li>• 6" Mounting Bracket Knuckle Extension</li> </ul>	<ul style="list-style-type: none"> <li>• 3" Mounting Bracket Knuckle Extension</li> </ul>



**PresencePLUS Pro Enclosures**

	IP40 enclosure for camera		
	<b>PPE-P</b>	30 717 72	• Zinc plated steel, polycarbonate window
	<b>PPE-G</b>	30 720 12	• Zinc plated steel, glass window
Mounting brackets, use with PPE-P and PPE-G:	<b>SMBPPES</b>	30 720 88	• Enclosure Straight
	<b>SMBPPEA</b>	30 720 19	• Enclosure Right-Angle
	<b>SMBPPEF</b>	30 720 89	• Enclosure Front
	IP66 enclosure for camera and/or ring light		
	<b>PPE4-P</b>	30 026 95	• Stainless steel, polycarbonate window
	<b>PPE4-G</b>	30 028 03	• Stainless steel, glass window



**PresencePLUS P4 Enclosures**

	IP67 enclosure for camera and/or ring light		
	<b>P4RE67-P</b>	30 736 58	• Polycarbonate window
	<b>P4RE67-G</b>	30 736 57	• Glass window


**PresencePLUS Monitors**  
(Monitors require BNC cable for connection to sensor)

PPM7	PPM9
	
30 717 39	30 683 66
• 7" Flat Panel NTSC Video Monitor	• 9" Black and White NTSC Video Monitor

**PresencePLUS Lighting column brackets**

SMBACM	SMBABM
	
30 630 40	30 630 41
• Bracket – column mounting for lights	• Bracket – base mounting for lights

**PresencePLUS BNC Cables**

	<b>BNC06</b>	30 674 58	• 2 m, video/coaxial cable with male BNC on both ends
	<b>BNC15</b>	30 674 59	• 5 m, video/coaxial cable with male BNC on both ends
	<b>BNC30</b>	30 674 60	• 9 m, video/coaxial cable with male BNC on both ends



For the most current and complete worldwide distributor address listing, go to the Banner web site at <http://www.bannereurope.com/reps/>

## EUROPE

### Corporate Offices:

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<http://www.bannereurope.com>

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<http://www.intermax.at>

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<http://www.multiprox.be>


** Bulgaria**  
**Sensomat Ltd.**  
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