PresencePLUS Pro™

quickstart

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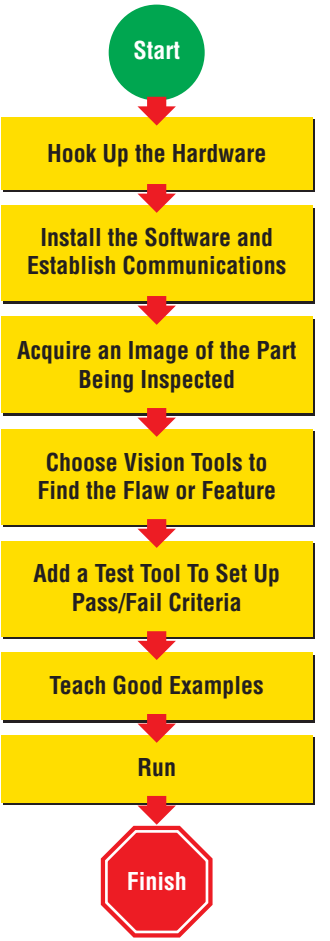
Introducing PresencePLUS Pro

PresencePLUS Pro is an easy-to-use camera system with advanced visual inspection capabilities. With limited knowledge of vision systems, a user can quickly and accurately set up PresencePLUS Pro for an inspection that evaluates product on a production line.

Inspection parameters are set up using a remote personal computer (PC). A digital camera captures images and the sensor software analyzes those images, using one or more vision tools, to pass or fail the product. The PC is not required for running inspections after the inspection files have been stored in the controller's memory.

Quick Start Overview

This guide is designed to provide – even to those new to vision sensing – the information needed to use this system. It provides an overview of the sensor and illustrates how to easily set up the PresencePLUS Pro to inspect a product. The flow chart at right provides an overview for the system setup.



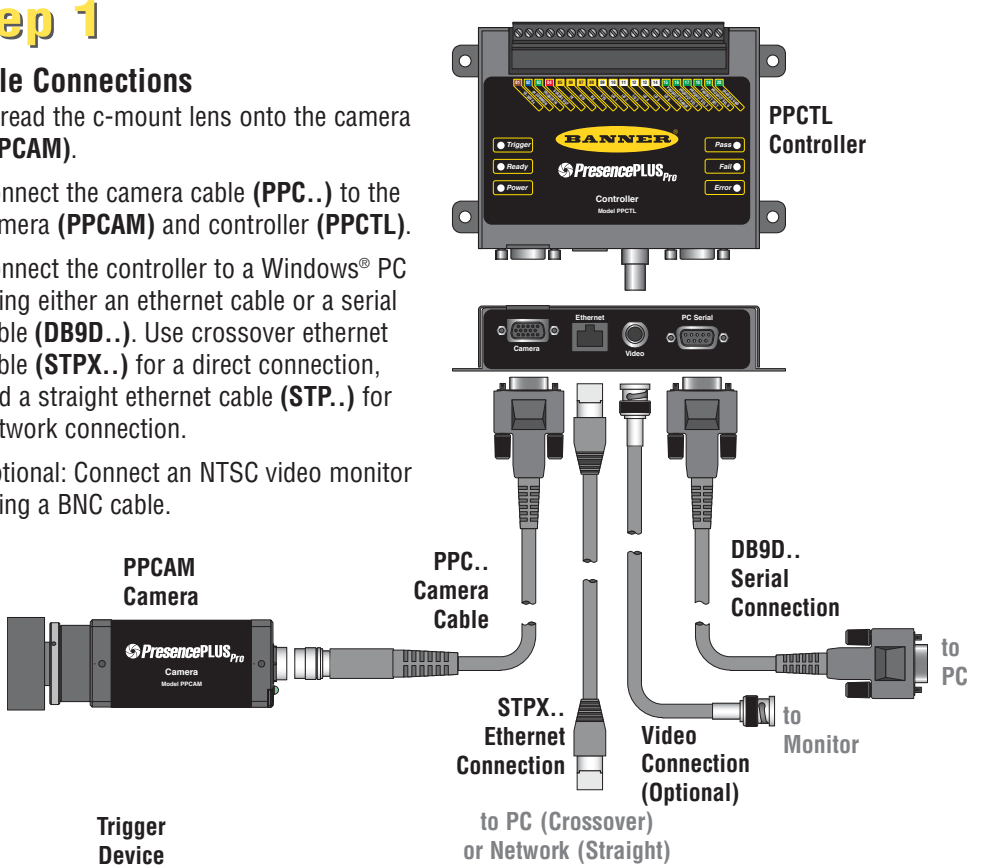
TIPS

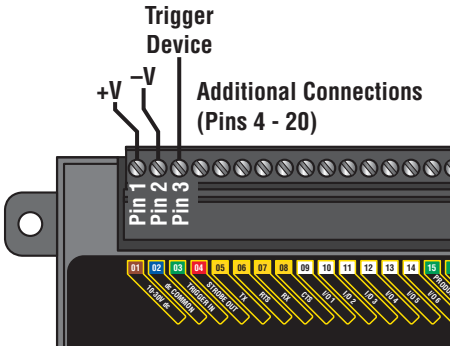
For more detailed instructions, both the Installation Manual and the Operator's Guide are on the PresencePLUS Pro installation CD.

step 1

Cable Connections

1. Thread the c-mount lens onto the camera **(PPCAM)**.
2. Connect the camera cable **(PPC..)** to the camera **(PPCAM)** and controller **(PPCTL)**.
3. Connect the controller to a Windows® PC using either an ethernet cable or a serial cable **(DB9D..)**. Use crossover ethernet cable **(STPX..)** for a direct connection, and a straight ethernet cable **(STP..)** for network connection.
4. Optional: Connect an NTSC video monitor using a BNC cable.





step 2

Electrical Connections

Connect the following to the controller's terminal block

- +V to Pin 1 (10-30V dc)
- –V to Pin 2 (dc common)
- Trigger device to Pin 3 (Trigger In)
- Additional connections (Pin 4 - Pin 20)

TIPS

The trigger device can be any 10-30V dc photoelectric sensor, or a device with a similar output.

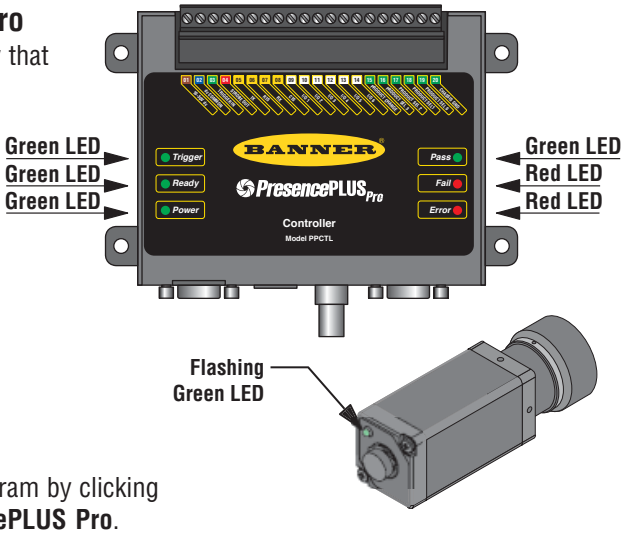
step 3 Lighting

Install the dedicated light source, according to the instructions included with the light source.

step 5

Starting the PresencePLUS Pro

1. Power up the hardware and verify that the Error light turns OFF (during power-up, all the controller LEDs will come ON for 15-20 seconds).
2. Verify that the LED on the camera is ON and has started to flash.



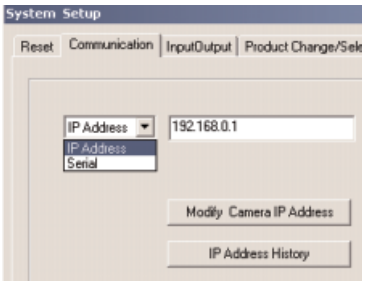
step 6

Launching Software

1. Start the PresencePLUS Pro program by clicking **Start** > **Program Files** > **PresencePLUS Pro**.
2. At start-up, PresencePLUS Pro will try to communicate with the camera.
   - If communication with the camera is successful, the application will launch and display the Setup or Run screen.
   - If the current communication port is not available, the application will prompt you to select a different port. Click **OK** to access the communications window.

To Change the Communication Port

- Ethernet connection:
  D choose IP Address
  E type: 192.168.0.1 in the space provided
  F click **OK**
- Serial connection:
  Choose **serial**. Refer to the on-line Instruction Manual (p/n 68367) for detailed instructions on serial port configuration.



3. If using an optional NTSC video monitor, verify that the monitor is displaying an image.
4. When the software launches, create an inspection, configure the discrete I/O, and begin running inspections.

NOTE: Initially, all discrete I/O are configured as inputs. Go to the System window to change the discrete I/O. For detailed configuration information, refer to the Instruction Manual (P/N 68367).

TIPS

DO NOT click Modify Camera IP Address when trying to establish communications. **Modify** works only after communications have been established.

step 7

Software Setup

Use the Main Menu toolbar to navigate the PresencePLUS Pro options. Proceeding from left to right, the buttons in the Menu toolbar step through the process of creating an inspection file.

Inspection Work Flow

1. 

Set up the camera, lens, and lighting, to acquire a reference image.

- **a.** Set up the camera lens and lighting.
- **b.** Choose Trigger option **Continuous** for a live image.
- **c.** Click **Auto Exposure** to adjust the brightness.
- **d.** Focus the lens on the camera by turning the lens until the Focus Number is maximized.
- **e.** When you have the desired image, click **Next** to proceed to the Tools screen, this will acquire the reference image.

2. 

Add tools to the inspection. Build the tools from scratch or add tools from a previous inspection file saved on the PC or controller. To add a vision tool, click the Tool button. To remove a tool, click the "X" in the lower left-hand corner of the screen.

- **a.** Add **Location Tool(s)** to find the target to adjust the following Regions of Interest (ROI) for transitional and rotational changes.

Required

- **b.** Add **Vision Tool(s)** to inspect the part.
- **c.** Add **Measure Tool(s)** to create distance measurements from points found.

Required

- **d.** Add **Test Tool(s)** to set the Pass/Fail criteria. (The Vision and Measure Tools are inputs to the Test Tool.)
- **e.** Click **Quick Teach** to automatically set all the selected parameters in the Test Tool and proceed to the Run screen, or click **Next** to proceed to the Teach screen, to teach a sample set of good products.

NOTE: If you want to keep parameters in a test tool, skip Teach and go directly to Run.

TIPS

Before creating an inspection file, set up the electrical configuration of the external trigger. (Click **System** button, select **Trigger** tab.)

Tool Options

Tool Name		Function	Description
Location Tools	**Pattern Find**	Translation and rotation	Locates the target by searching for a taught pattern and compensates for translation and ±10° of rotation.
	Locate	Translation and rotation	Finds the edge of the part and compensates for translation and rotation.
Vision Tools	**Average Gray Scale**	Determines presence, absence, color sensitivity	Determines the average gray-scale value in the Region of Interest (ROI).
	Blob	Counts and measures areas	Detects groups of connected light or dark pixels within ROI; designates them as “Blobs”. After Blobs are found, they can be counted, sized and located.
	Edge	Counts and locates edges	Detects and counts transitions between bright and dark pixels. The total number of edges can be counted and the position of each edge can be found.
	Object	Locates and counts objects, determines midpoints and measures widths	Detects the edges of dark and bright objects, locates their midpoints, counts dark and bright objects and measures the widths of each dark and bright object.
	Pattern Count	Find one or more patterns	Locates and counts a taught pattern.
Analysis Tools	**Measure**	Measures between points	Measures distance between two prescribed points. These points can be either edges or centroid locations.
	Test	Logic input/output	Evaluates results of selected vision and analysis tools to determine whether an inspection passes or fails. It also performs logical operations and activates outputs.

3. 

This screen automatically configures the parameters chosen in the tools screen.

a. Choose the sample size
b. Click **Start**
c. Trigger the controller with the external trigger device
d. Click **Stop**
e. Click **Next** to proceed to Run

Before entering Run, save the inspection file to one of the 12 memory locations on the controller.

TIPS

- Each inspection must contain at least one Vision tool and one Test tool.
- Save a backup copy of your inspection to the host PC.

4. 

Select an inspection to run, and view the results of the inspection.

To select an inspection, (in the Select tab) enable **Software Override** and select the inspection file from the list of stored inspections on the camera.

Alternate method: Use **Hardware Input** to select an inspection via discrete inputs to the controller.

The following table shows which inputs to activate to select an inspection.

Product Select #3 (Pin 16)	Product Select #2 (Pin 17)	Product Select #1 (Pin 18)	Product Select #0 (Pin 19)	Inspection #
OFF	OFF	OFF	ON	**1**
OFF	OFF	ON	OFF	**2**
OFF	OFF	ON	ON	**3**
OFF	ON	OFF	OFF	**4**
OFF	ON	OFF	ON	**5**
OFF	ON	ON	OFF	**6**
OFF	ON	ON	ON	**7**
ON	OFF	OFF	OFF	**8**
ON	OFF	OFF	ON	**9**
ON	OFF	ON	OFF	**10**
ON	OFF	ON	ON	**11**
ON	ON	OFF	OFF	**12**

Viewing Results

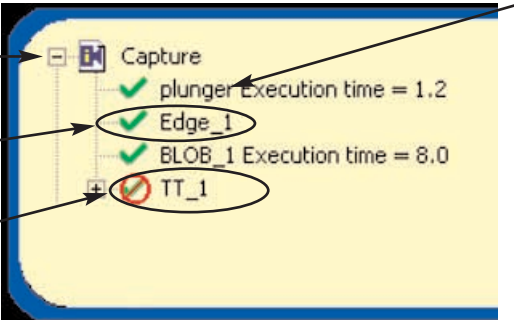
Display Options

Next Pass	Display only the next passing inspection.
Next Fail	Display only the next failing inspection.
Next	Continuously display inspections.
None	Don't display any inspections.

Click + to expand and – to contract category

Passing Tool

Failing Tool



Click on Tool name to show the ROI

TIPS

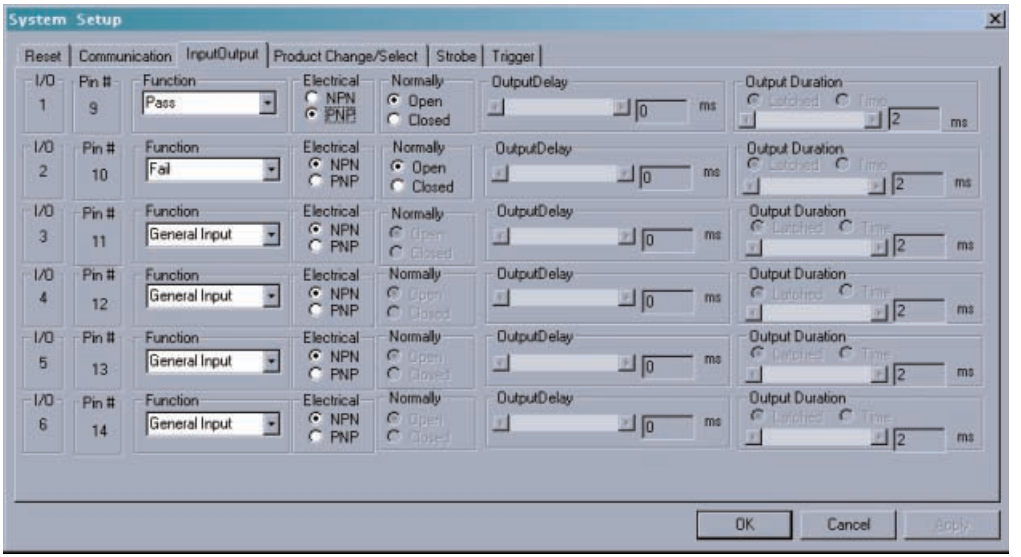
When using the Hardware input, pulse the Product Change input to initiate an inspection change.

To begin inspecting, click the **Start** button in the Run screen.

step 8

System Setup

Use the System Setup screen to change discrete I/O, the communication port, the product change/select inputs, the strobe output (for external lighting control), the trigger input, and to view diagnostic information.



Input/Output Configuration Tab

Save inspections on the controller or PC.

Provides help files and PDFs of the Installation Manual (p/n 68368) and the full-length Operator's Guide (p/n 68367).

Maintenance

Maintenance tasks include keeping the hardware free of dust and dirt and updating the PresencePLUS Pro software as new versions become available.

Cleaning the Camera and Controller

Regularly remove any accumulated dust or dirt from the camera and controller using a soft cloth. If needed, slightly dampen the cloth with a weak solution of neutral detergent. Avoid getting dirt on the camera's imager (the area behind the lens). If the imager is dirty, use anti-static compressed air to blow off the dust.

Cleaning the Camera Lens

Regularly remove dust, dirt, or fingerprints from the lens. Use anti-static compressed air to blow off dust. If necessary, use a lens cloth and lens cleaner or window cleaner to wipe off remaining debris. Do not use any other chemicals for cleaning.

Updating PresencePLUS Pro Software

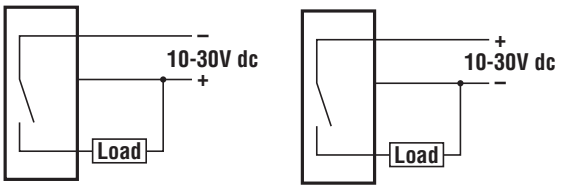
The current version of PresencePLUS Pro software is available for download from the Banner website:

www.bannerengineering.com

Troubleshooting

Problem	Cause/Solution
• Power light is not ON. • Interface cannot connect to controller. • No image on monitor.	**Controller is not getting enough power.** 1. Check the connection to the power supply. 2. Verify that the power supply is 10-30V dc with 1.5 amps. 3. Verify that the terminal block is plugged firmly into the controller.
• No image on PC or monitor. • Camera indicator LED is OFF. • The software seems to be working correctly, but the image is missing.	**Camera is not connected to the controller.** 1. Reconnect the camera cable at the camera and the controller. 2. Power down, then power up.
• Error message, “Failed to capture a full resolution image on the camera.” • Image is frozen on PC and monitor. • Camera indicator LED is ON, but not flashing	**Camera lost the connection to the controller.** 1. Reconnect the camera cable at the camera and the controller. 2. Power down, then power up.
• Image is frozen on PC, but image on monitor properly updates. • Error message, “Unable to communicate with the camera.” • Indicator lights on controller’s RJ-45 port are OFF.	**Ethernet connection is lost.** 1. Reconnect the ethernet cable. 2. Check the cable for breaks, power down, then power up. 3. Replace the cable.

Controller

Model Number	PPCTL
Part Number	62937
Mechanical	**Construction:** Steel with black zinc plating **Dimensions:** 158 x 127 x 30.9 mm (6.22" x 5.0" x 1.22") **Weight:** approx. 0.55 kg (1.2 lbs) **Environmental Rating:** IEC IP20; NEMA 1 **Operating Temperature:** 0° to +50° C (+32° to +122° F) **Maximum Relative Humidity:** 90%, non-condensing
Display Options	PC and NTSC video (9 m [30'] max. cable length)
Discrete I/O	1 Trigger IN (pin 3) 1 Strobe OUT (pin 4) 6 Programmable I/O (pins 9 - 14) 1 Product Change (pin 15) 4 Product Select (pins 16 - 19)
Output Configuration	NPN or PNP software selectable
Output Rating	150 mA (each) **ON-State Saturation Voltage:** < 1V at 150 mA max. NPN > V+ - 2 volts **OFF-State Leakage Current:** <100 microamps NPN or PNP **NPN Hookup** **PNP Hookup** 
Communication	1 RJ-45 Ethernet port for running PresencePLUS Pro software 1 RS232 port for running PresencePLUS Pro software
Memory	Stores up to 12 inspection files
Power	**Voltage:** 10-30V dc **Current:** 1.5 amps max.

Camera

Model Number	PPCAM
Part Number	62568
Mechanical	**Construction:** Black anodized aluminum **Dimensions:** 32 x 30 x 78.2 mm (1.26" x 1.18" x 3.08") **Weight:** approx. 0.09 kg (0.2 lbs) **Environmental Rating:** IEC IP20; NEMA 1 **Operating Temperature:** 0° to +50° C (+32° to +122° F) **Maximum Relative Humidity:** 90%, non-condensing
Acquisition	**Frames per Second:** 30 max. **Image Size:** 640 x 480 pixels **Levels of Gray Scale:** 256
Imager	4.8 x 3.6 mm, 6 mm diagonal (1/3" CCD) **Pixel Size:** 7.4 x 7.4 microns
Interface	LVDS
Max. Cable Length	7 m (23')
Exposure Time	0.01 ms to 3600 ms
Lens Mount	C-mount

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