



PPT T-Series Hardware Guide

Publication # 843-0101 (Rev S)

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Technical Support

If you have technical questions about the operation of any PPT VISION product, contact your distributor or PPT VISION, Inc. Please have the following information available before you call:

- The version number of Impact Software Suite software you are running. To find it, click the information icon on the title bar.
- The type and version number of the operating system software you are running on the client computer.
- The model and serial numbers of the Impact device you are using. They are located on the bottom of the unit.

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C H A P T E R 1

Introduction

Thank you for purchasing a PPT T-Series camera. *Please read the instructions in this document before starting your system setup.*

This manual explains the various parts of the PPT T-Series camera, including the system inputs and outputs available to integrate your system into a production line.

NOTE: This manual covers the entire line of PPT T-Series cameras. Sections that apply to a specific T-Series model number will be indicated.

Contents of This Manual

The *Hardware Guide* consists of the following chapters:

- **Chapter 1: Introduction**
The contents of this manual.
- **Chapter 2: When your system arrives**
This chapter explains the general safety precautions and specifications for the PPT T-Series camera.
- **Chapter 3: Basic Hardware Components**
This chapter illustrates the hardware components and their dimensions.
- **Chapter 4: I/O Reference**
These are the diagrams of the inputs and outputs of your camera.
- **Chapter 5: Cable Reference**
These are the wiring specifications for cables for your camera.
- **Chapter 6: Appendix**
This chapter explains technical configuration, as well as tips for correcting problems you may encounter while using the PPT T-Series camera.

When Your System Arrives

When your system arrives, check the shipping cartons for wrinkled or damaged corners, holes through the cardboard, or other signs of rough handling or abuse. If you find any signs of damage, ask the delivery service to make a note on the delivery receipt describing the damage.

Carefully remove the PPT T-Series camera, cabling, and accessories from the shipping package. Place the equipment on a table and inspect each item. Save all packing materials so you can repack the system in case you need to move or ship it.

Extreme temperature precautions: If your system arrives in very cold or hot weather, allow all the equipment to reach room temperature before plugging it in. Exposing cold equipment to a warm room can cause condensation. If condensation forms, wait for the equipment to dry completely before applying power.

Before You Set Up the System

Before we shipped your PPT T-Series camera, we did the following:

- Ran the setup program and specified a default software and hardware configuration. See page 2-6 for more information about setting up the hardware. Refer to the Impact Reference Guide for software configuration information.
- Set a default Internet Protocol (IP) address and a default IP Mask value. You will need to change the IP address if you have multiple devices on a network. (See Chapter 6 of this manual for more information.)

Hardware Components

The PPT T-Series camera system is available in the following model series: T2x-R, T2x-RA (right angle), T3x-R, T3x-RA (right angle), T3x-S, and T3x-SA (right angle).

The T2x-R, T3x-R, and T3x-S models are mechanically identical. The T2x-RA, T3x-RA, and T3x-SA models are mechanically identical.

All Txx-R, Txx-S, Txx-SA and Txx-RA models are electrically identical, except that the T2x-R and T2x-RA have processors that run at 667 MHZ (1330 MIPS) and the T3x-R, T3x-S, T3x-RA, and T3x-SA have processors that run at 800 MHZ (1600 MIPS).

NOTE: Each camera model requires a minimum Impact Software version to operate as listed in the table below.

Camera Model	Minimum Impact Version Required
T2x-R, T2x-RA	10.0.1
T3x-R, T3x-RA	8.1.7
T3x-S, T3x-SA	10.0.2

The system hardware components are:

- camera
- cable connector kit (Part # 651-0113)
- mounting bracket (Part # 381-1114)
- optional power supply
- optional I/O cable (Part # 606-0568-xx)
- optional Ethernet cable (Part # 606-0457-xx)
- optional Serial cable (Part # 431-0549-xx)

To configure the camera, a computer running the Impact Software Suite software is required. See Chapter 6 of this manual and refer to the Impact Reference Guide for more details.

Note: An optional power supply is available for your PPT T-Series camera. If you provide your own, it must supply 24 VDC @ .50 A (minimum). Its safe operating ambient temperature range is -5° to +45° C (+23° to +113° F).

This equipment is to be powered by a Listed power supply for the U.S. and Canada, or a power supply that meets the requirements for use where either IEC 60950 or EN60950 is applicable.

Safety Precautions



Warning: There are no user-serviceable parts inside the PPT device. To avoid electrical shock, never open the case. Opening the case or removing the tamper-proof sticker will void the product warranty.



Avertissement: Il n'y a aucune partie utilisateur-utile à l'intérieur du dispositif d'PPT. Pour éviter le choc électrique, n'ouvrez jamais la valise. L'ouverture de la valise ou l'enlèvement de l'autocollant de trifouiller-preuve videra la garantie de produit.

1. Read all of the following instructions before setting up your system. **Save this document for later use.**
2. Follow all warnings and instructions in this manual and in other user guides shipped with your camera.
3. To avoid damage to your camera and its components, **never** plug in or unplug a cable when the power is on. Always shut off the power supply first, then make any necessary cable changes.
4. Never use the system if a power cable has been damaged. Do not allow anything to rest on a power cable and keep these cables away from traffic.
5. Do not expose your PPT camera to moisture, rain, or snow, and do not use it near water. If a component gets wet, unplug it and do not use it.

6. To avoid injury, never open the case. Opening the case will void the product warranty.



Service Personnel Only - Caution: Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to battery maker's instructions.

System Specifications

This section lists the general operating specifications for the PPT T-Series camera. More detailed specifications are listed in other appropriate sections of this manual.

Operating Environment

Dimensions	
Straight	(inches) 5.43 L x 2.5 W x 1.81 H (mm.) 138 x 63.5 x 46
Right Angle	(inches) 5.00 L x 3.0 W x 2.54 H (mm.) 126.4 x 76.2 x 64.53
Weight	
Straight	.81 lb. (365.7 grams) with bracket 1.03 lb. (467.8 grams)
Right Angle	1.35 lb. (620 grams)
Input Power	+24 VDC $\overline{\text{---}}$ +/- 20% .50 A (min.)
Temperature	-5° to +45° C (+23° to +113° F)
Humidity	20% to 80% (non-condensing)

Characteristics

Each camera in the T-series has different optical and speed characteristics, depending on the model configuration. Contact PPT VISION or a distributor for a full list of cameras and their capabilities.

NOTE: Each camera model requires a minimum Impact Software version to operate as listed in the table on page 2-2.

T3x cameras have been discontinued. They are included below only for reference.

The following table shows the PPT camera's relative sensitivity to light.

PPT Model	Imager	Pixel Area	CCD Technology	Relative Sensitivity ²
T30, T20-R, T30-R, T30-S	Sony ICX424AL	55 sq. um	HAD	1
T35, T25-R, T35-S, T35-R ¹	Sony ICX204AL	21 sq. um	HAD	$21/55 = 0.38$
T37, T27-R, T37-R, T37-S	Sony ICX274AL	19 sq. um	Super HAD® (2x) ³	$2 * 19/55 = 0.7$

¹The T25-R, T35-R, and T35-S cameras have 2.5 times as many pixels as the T30-R, so each pixel is smaller and gathers less light.

²The color camera models will have the same relative sensitivity to each other (with the T23-R, T33-R, and T33-S sensitivity = 1).

³Super HAD CCDs are twice as sensitive as normal HAD CCDs.

T3x camera models have been discontinued. They are included only for reference.

- T30, T20-R, T30-R, T30-S: 60 frames per second (fps); 640 x 480 pixel resolution
- T31, T21-R, T31-R, T31-S: 60 fps; 640 x 480 pixel resolution; remote head
- T33, T23-R, T33-R, T33-S: 60 fps; 640 x 480 pixel resolution; color imager
- T34, T24-R, T34-R, T34-S: 16 fps; 1024 x 768 pixel resolution; color imager
- T35, T25-R, T35-R, T35-S : 16 fps; 1024 x 768 pixel resolution

- T37, T27-R, T37-R, T37-S: 12 fps; 1600 x 1200 pixel resolution
- T38, T28-R, T38-R, T38-S: 12 fps; 1600 x 1200 pixel resolution; color imager

Setting Up the System

Important: To avoid damage to your unit, *never* plug in or unplug a cable when the unit power is on. Always turn off the power supply first, and then make the necessary cable changes.

1. Familiarize yourself with the major system components that are shown in Chapter 3 of this manual.
2. Mount the camera, lighting, and other hardware components in their desired positions. Mounting instructions are included in Chapter 3 of this manual.
3. You are ready to wire the hardware. Chapter 4 contains the input/output schematics for your T-Series camera. Wiring diagrams for all cables are contained in Chapter 5.
4. Attach the Ethernet, I/O, and serial cables to the camera. Diagrams for attaching cables are shown later in this chapter.
5. Connect the power supply for the unit to an appropriate *grounded* power source. To protect your system, we recommend using a surge protector.
6. Plug the power supply connector into the camera's power connector. Turn on the power supply.
7. Configure the IP address and mask for the camera and client, if necessary.

NOTE: A default network IP mask and address were assigned at the factory. You may need to change them for your installation. See Chapter 6 for more details.

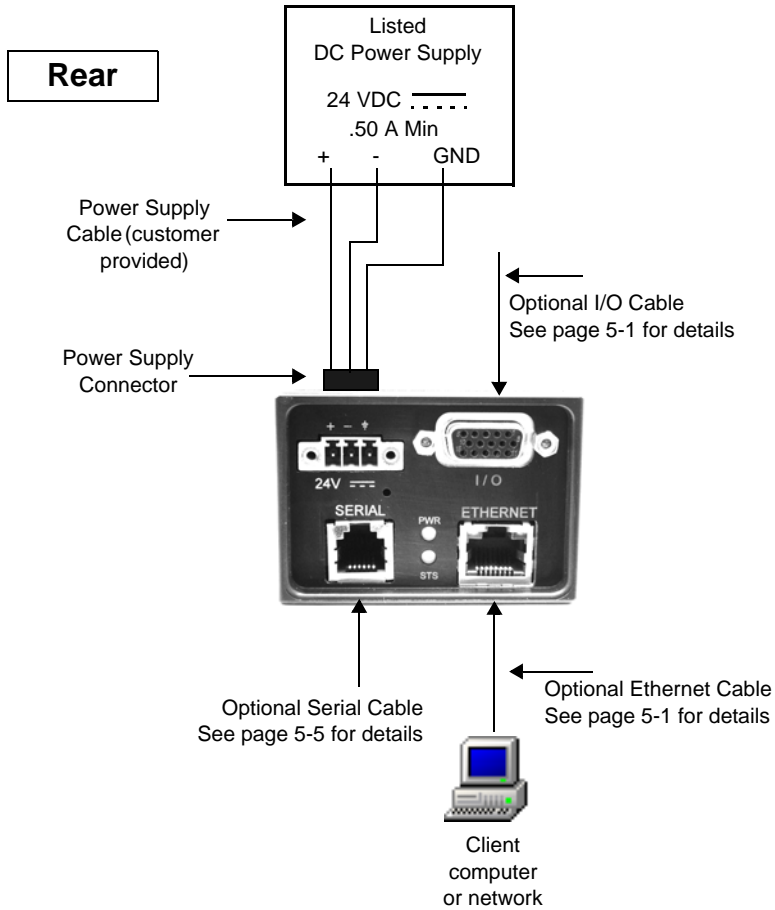
8. From the client computer, start Impact Vision Program Manager (VPM). Use Impact software to check your camera and lighting setup, calibrate the camera, configure your inspection parameters, and put the camera online. For

more information about using Impact software, refer to the Impact Reference Guide.

If your system does not work when you are finished with the setup, review the instructions and diagrams to make sure you made all connections properly. For more help, refer to the troubleshooting guide in Chapter 6 of this manual.

Connection Diagram

This illustration shows the connections for the PPT T-Series camera.



Preventive Maintenance



Warning: There are no user-serviceable parts inside the PPT device. To avoid electrical shock, never open the case.



Avertissement: Il n'y a aucune partie utilisateur-utile à l'intérieur du dispositif d'PPT. Pour éviter le choc électrique, n'ouvrez jamais la valise.

This section contains tips to keep your system trouble-free and operating smoothly.

- The T-Series camera should be fastened to a flat, stable, solid surface for maximum heat transfer away from the camera.
- Keep the outside of the unit clean and free of oil and dust. You can clean the unit with a mild cleanser. *Do not* use an abrasive cleaner and *never* immerse the unit in water.
- Verify that all cable connections are correct and tight. Secure the cables to prevent accidents or damage to the device connectors.
- Disconnect camera cables when you move the camera. After the camera is moved, verify cable and power cord connections.
- Regularly monitor the condition of all cables. Frayed or damaged cables should be repaired or replaced immediately.

Before You Call

If you have a problem with your system, you can contact your distributor or call PPT VISION. Before calling, however, review the preceding maintenance checklist to ensure you are not overlooking an obvious reason for your problem.

The Troubleshooting Guide in Chapter 6 of this manual is designed to help with some hardware problems. By reviewing that chapter before you call, you may be able to resolve some problems on your own. At the very least you can rule out some

possible causes of a hardware problem. Then when you do call, support can focus on the most likely suspects and resolve your problem more quickly.

When you call for support, be prepared to answer to the following questions:

- What are the model and serial numbers of the PPT device you are using? To find them, look on the bottom of the unit.
- Have you added, replaced, or reconfigured your hardware recently? This includes any changes to the camera or other components.
- What version of Impact Software Suite you are running? To find it, click the information icon on the title bar of one of the Impact components.
- Have you updated or replaced any software on your client computer lately?

Basic Hardware Components

Camera Mounting

The PPT T-Series camera should be fastened to a flat, stable, solid surface for maximum heat transfer from the camera body. You can mount the camera body directly to an appropriate surface, or use the supplied camera mounting bracket (in line camera only).



Warning: There are no user-serviceable parts inside the PPT device. To avoid electrical shock, never open the case.



Avertissement: Il n'y a aucune partie utilisateur-utile à l'intérieur du dispositif d'PPT. Pour éviter le choc électrique, n'ouvrez jamais la valise.

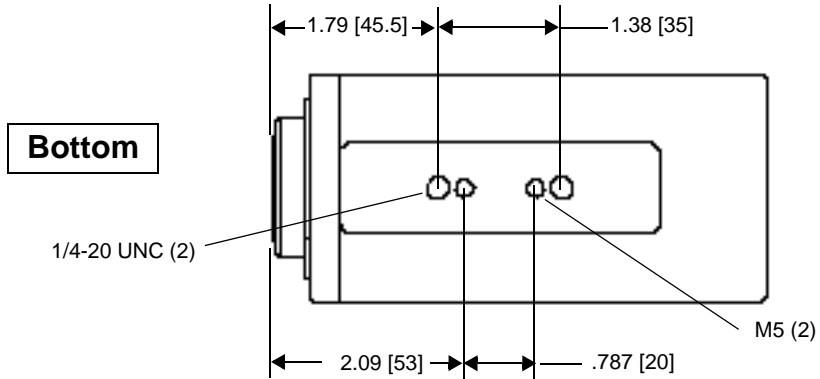
- If the camera is installed in a closed or multi-rack assembly, the operating temperature inside the rack may possibly become greater than the ambient temperature. Be sure the ambient temperature in the system environment does not exceed 113° F (45° C).
- Make sure heavy equipment is loaded evenly in the rack to avoid a hazardous condition. The rack should safely support the combined weight of all the equipment it supports.
- Before the system is connected to the supply circuit, be sure to check equipment nameplate ratings to avoid overloading circuits. Overloading may damage over-current protection devices and supply wiring.
- Be sure to maintain reliable grounding for rack-mounting equipment. Pay particular attention to supply connections.

This equipment is to be powered by a Listed power supply for the U.S. and Canada, or a power supply that meets the requirements for use where either IEC60950 or EN60950 is applicable.

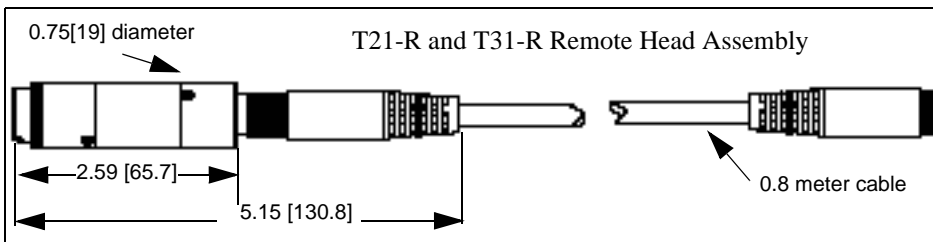
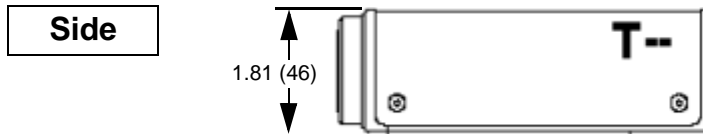
- To ensure safe operation, the system power must be properly grounded. If the unit is mounted within a rack, verify that it is reliably connected to electrical ground. The ground terminal on the +24V power input must be connected to the grounded chassis/enclosure of the power supply. This insures electromagnetic compliance and proper operation.

Flat Surface Mounting (In Line)

These dimensions are for mounting the in line camera (T2x-R, T3x-R, and T3x-S) on a flat surface without using the supplied bracket.

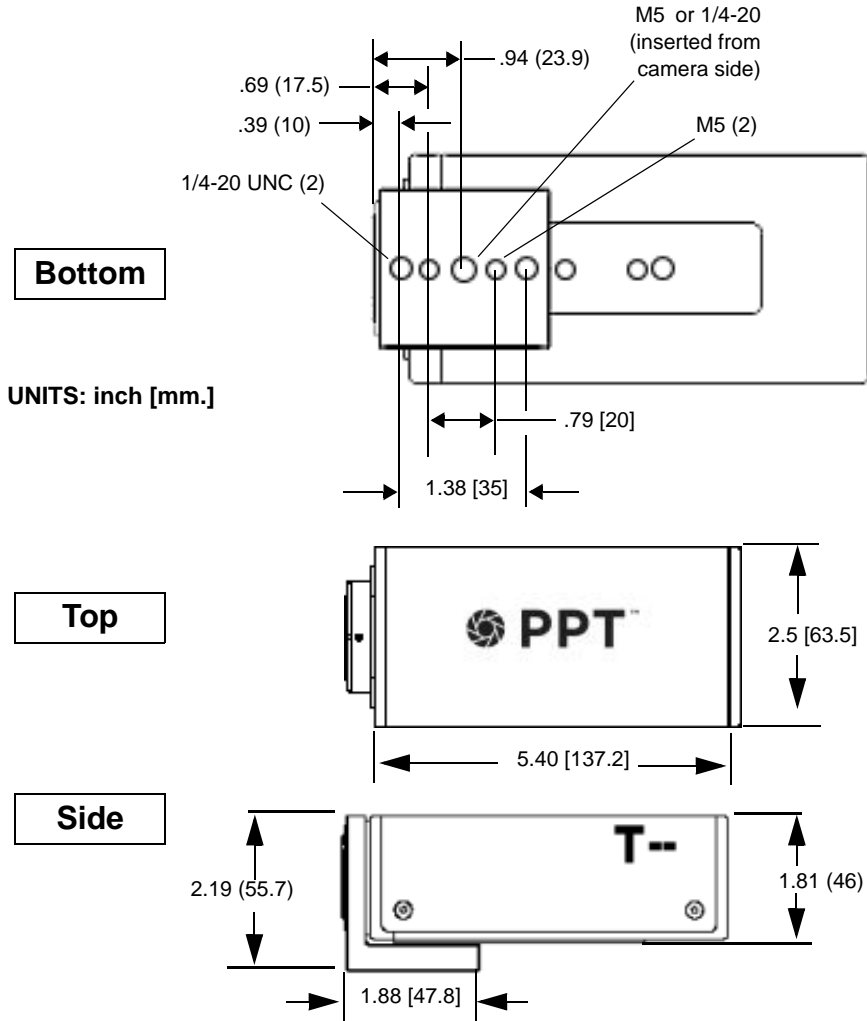


UNITS: inch [mm.]



Bracket Mounting (In Line)

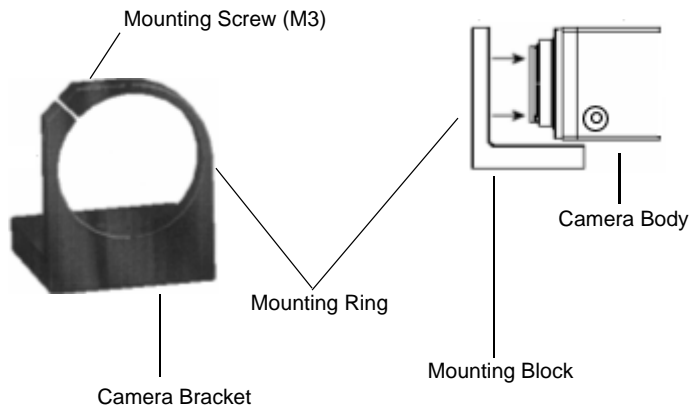
These dimensions are for mounting the in line camera (T2x-R, T3x-R, and T3x-S) using the supplied bracket. See “Fastening the Camera bracket” on page 3-5.



Fastening the Camera bracket

To use the camera bracket (Part # 381-1114), you must mount it on the in line camera body.

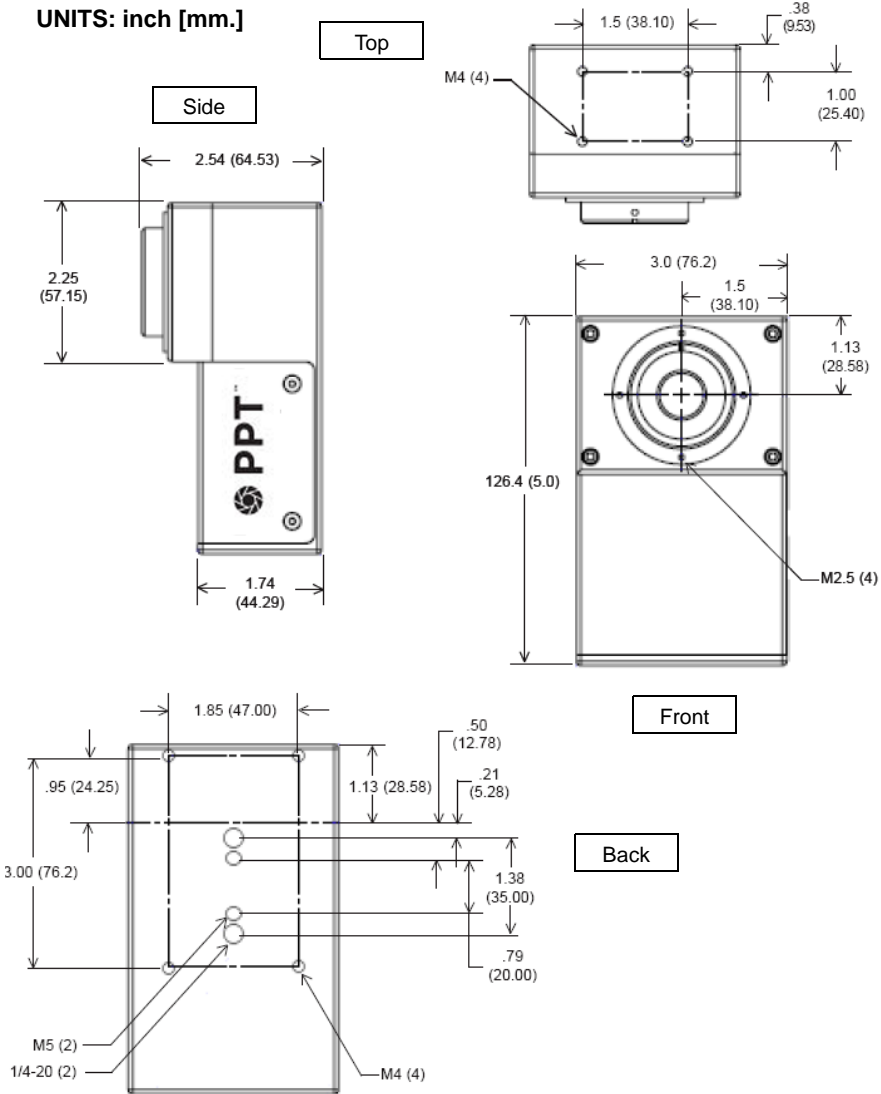
1. Remove the lens from the camera body.
2. Turn the bracket mounting screw counterclockwise to loosen the mounting ring.
3. With the camera body rotated so the image will be correctly oriented when the camera is mounted, place the mounting ring over the front of the camera body. Be sure the mounting block faces the rear of the camera body.
4. With the ring held tightly against the camera body, turn the mounting screw clockwise to tighten the ring and secure it to the camera. (To adjust camera orientation up to five degrees after it is mounted, loosen the screw slightly, rotate the camera body, then tighten the screw.)
5. Secure the mounting block to a rigid surface for proper stability and heat transfer from the camera case.



Flat Surface Mounting (Right Angle)

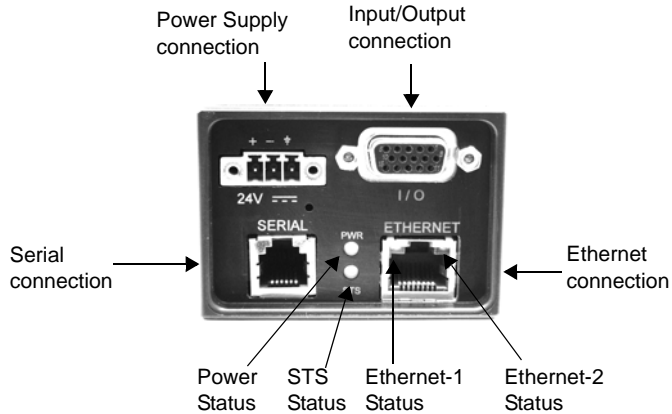
These dimensions are for mounting the right angle camera (T2x-RA, T3x-RA, and T3x-SA) on a flat surface.

UNITS: inch [mm.]



Rear/Bottom Panel Connections

This section shows the connections and status lights on the rear of the PPT T-Series camera (bottom of the right angle T-Series).



Name	Status LED State
Ethernet-1	On when Ethernet link is established.
Ethernet-2	Blinks during data transmission.
POWER	On when 24 VDC power is on.
STS	<p><u>Camera Offline</u></p> <p>LED is off</p> <p>LED blinks during flash memory access</p> <p><u>Camera Online</u></p> <p>LED is On</p> <p>LED blinks during image and flash memory access</p>

Characteristics

This section provides a basic description of the T-Series camera's characteristics.

General Notes

- All camera settings must be configured using the Impact Software Suite Vision Program Manager (VPM). Refer to the Impact Reference Guide for more information.
- The longer the shutter is open, the brighter the image. A shutter open time that is too short can cause the inspected image to be too dark. Longer shutter open times will decrease the number of frames per second acquired and may result in a blurred image if the inspected part is moving quickly.
- If you use a strobe in combination with the camera's shuttering ability, a shroud is not necessary in most cases, provided you set the shutter open time to a low value.
- All cameras provide a C-type lens mount.
- Each camera in the T-series has different optical and speed characteristics, depending on the model configuration. Contact PPT VISION or a distributor for a full list of cameras and their capabilities.
See "Characteristics" on page 2-4 for some camera details.

Trigger Source

The T-Series camera acquires an image when a signal is present on the trigger input (Pins 1 and 2) of the Input/Output cable. See page 4-1 for required input signal characteristics.

The camera may also be triggered using the Software Trigger setting. In VPM, select the Utilities tab, then the Trigger Setup tab.

Strobes

The camera triggers the strobe simultaneously with the camera shutter. Technical strobe specifications are listed in the applicable strobe users guide.

A strobe is connected via the I/O connector on the rear of the camera using the optional Input/Output cable (Part # 606-0568-xx) and the optional terminal block (Part # 248-0136). See “Input/Output” on page 5-1.

Strobe output signals on terminal 3 and 4 provide optically isolated, current-mode signals (300 mA maximum continuous DC current at 20° C (68° F) – derated at higher temperatures).

If you use a strobe in combination with the camera's shuttering ability, a shroud is not necessary in most cases, provided you set the shutter open time to a low value.

For more detailed information on configuring PPT VISION strobe timing and duration, refer to the Impact Reference Guide.

Power Supply



Warning: To avoid electrical shock, disconnect all power to the power supply before working on it.

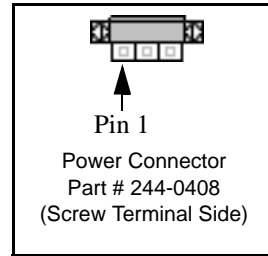


Avertissement: Pour éviter le choc électrique, débranchez toute la puissance à l'alimentation d'énergie avant de travailler à lui.

This section provides a basic description of the power supply wiring. There is a power connector in the connector kit supplied with the camera.

Power Connector

- Pin 1 24VDC Supply Output Plus
- Pin 2 24VDC Supply Output Minus or Ground
- Pin 3 Power Supply Circuit Ground



The ground terminal (pin 3) on the camera +24V power input must be connected to the power supply's grounded chassis/enclosure. This connection is needed to insure electromagnetic compliance and proper operation.

I/O Reference

Refer to this section when wiring the T-Series cameras's inputs and outputs.

Note: The camera does not provide a voltage source for inputs and outputs – that must be provided by an external source. Refer to the characteristics tables below for detailed voltage requirement information.

Inputs

The T-Series camera contains three input connections: two inputs that serve as both event and polled inputs, and one camera trigger.

The camera and event inputs are interrupt-driven and edge-triggered. Interrupt-driven means that a change of state on the input will immediately cause an action. For the camera input, this means an image will be snapped. For the event inputs, this means that any inspection task that uses that input will run. Polled input means that the input's status is checked based on conditions defined in the inspection task.

The active trigger edge (rising, falling, or both), and input pulse duration, are configured in the Utilities tab of Vision Program Manager (VPM). Event detection is configured in the inspection task using VPM.

The camera input's electrical characteristics:

Input Current (nominal)....	3.75 mA @ 12Vdc; 5 mA @ 24 Vdc
Input Voltage.....	0-26 Vdc
Turn On Voltage	>2.8 Vdc
Turn On Delay	10 μ S
Min On Current	2.5 mA
Turn Off Voltage.....	<1.5 Vdc
Turn Off Delay	50 μ S

Max Off Current 500 μ A

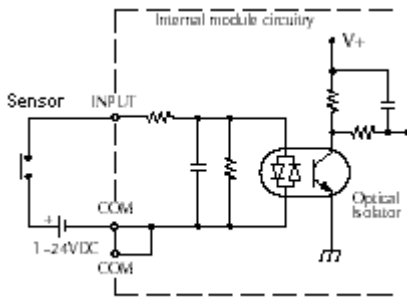
This table lists the connector/terminal number for the input signals. See page 5-1 for more details.

Connector and terminal block number	Signal Name
1	Trigger Input +
2	Trigger Input -
6	Input 1 and Shift Event+
7	Input 1 and Shift Event -
11	Input 2 and Event Input +
12	Input 2 and Event Input -

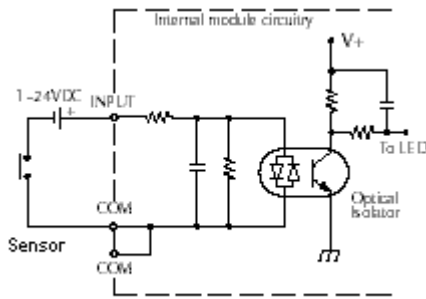
Sample Wiring Diagram

The diagram below shows a common way to wire an input.

Note: All connections to inputs must be made using properly grounded shielded cable.



Configuration shown is sensor current sourcing



Configuration shown is sensor current sinking

Outputs

Each T-Series camera contains three general-purpose and one dedicated output connection (strobe).

The camera output's electrical characteristics:

Supply Voltage (max)	26 Vdc
Turn On Time	250 μ S
On Current (max)	300 mA
Off Current (max)	100 μ A
Turn On Delay	50 μ S (24 Vdc into 1K-ohm resistive load)
Max Off Current	500 μ A

Note: An external power source is require to power an output load. The outputs are merely switches that are open or closed. All output connections must use properly grounded and shielded cable.

WARNING: Output 3 is only available on T2x-R, T2x-RA, T3x-R, T3x-RA, T3x-S, and T3x-SA camera models. IF THE MODEL NUMBER DOES **NOT** END IN -R or -S, MAKING ANY CONNECTIONS TO OUTPUT 3 WILL DAMAGE THE CAMERA.

This table lists the connector/terminal number for output signals. See page 5-1 for more details.

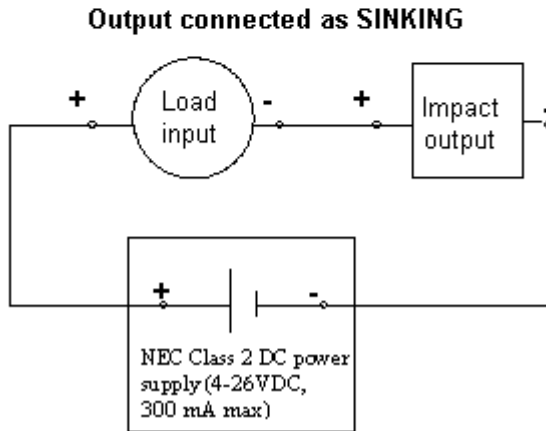
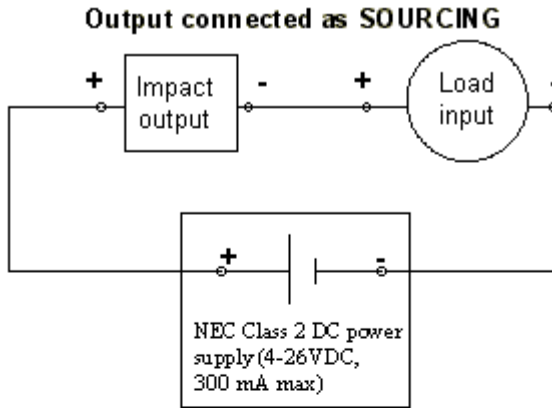
Connector and terminal block number	Signal Name
3	Strobe Output +
4	Strobe Output -
8	Output 1 +
9	Output 1 -

Connector and terminal block number	Signal Name
13 14	Output 2 + Output 2 -
CONNECT ONLY ON CAMERA MODELS ENDING IN -R 5 15	CONNECT ONLY ON CAMERA MODELS ENDING IN -R *Output 3 + *Output 3 -

*Impact Software Version 8.4.0 or greater is required to program output 3 on the T3x-R camera. Version 10.0.1 or greater is required to program output 3 on the T2x-R camera. Version 10.0.2 or greater is required to program output 3 on the T3x-S camera.

Sample Wiring Diagrams

The diagrams below depict two common schemes for wiring a T-Series camera output.



Complete this worksheet to document T-Series I/O wiring connections. See page 5-1 for details.

WARNING: Output 3 is only available on T2x-R, T2x-RA, T3x-R, T3x-RA, T3x-S, and T3x-SA camera models. IF THE MODEL NUMBER DOES **NOT** END IN -R or -S, MAKING ANY CONNECTIONS TO OUTPUT 3 WILL DAMAGE THE CAMERA.

Terminal #	Signal Name	External Signal Description
1	Trigger Input +	
2	Trigger Input -	
3	Strobe Output +	
4	Strobe Output -	
5	Output 3 + CONNECT ONLY ON CAMERA MODELS ENDING IN -R	
6	Input 1 and Shift Event+	
7	Input 1 and Shift Event -	
8	Output 1 +	
9	Output 1 -	
10	Do Not Use	
11	Input 2 and Event Input +	
12	Input 2 and Event Input -	
13	Output 2 +	
14	Output 2 -	
15	Output 3 - CONNECT ONLY ON CAMERA MODELS ENDING IN -R	

Cable Reference

This section provides details of the cables used with the T-Series camera. A cable connector kit (Part # 651-0113) is provided with each camera if you want to assemble your own I/O and power cables. You can also purchase the optional cables from PPT VISION.

Ethernet

An Ethernet cable (Part # 606-0457-xx) is used to connect the PPT T-Series camera to the client computer. (The last two digits of the part number indicate the cable length in feet.) PPT VISION recommends you use at least Cat5e Ethernet cable to connect the client and the T-Series camera. If a switch or router is used, two cables will be needed.

A crossover cable is not needed because the camera is auto-negotiating; it can tell the difference between a peer-to-peer connection and a router/switch connection and configures itself to suit the environment.

NOTE: Use only a switch or a router between the client and the T-Series camera. Do not use a hub.

Input/Output

To connect the camera to external control devices, use the optional I/O cable and terminal block.

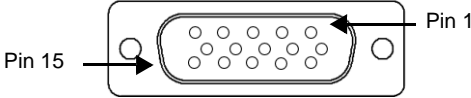
IMPORTANT: Do not use a standard VGA video cable to connect the I/O connector to the terminal block. Use only the Optional I/O Cable listed here.

Optional I/O Cable - 15 pin high density Male to Male (Part # 606-0568-xx) The final two digits of the cable part number indicate the cable length in meters.

Optional Terminal Block - 15 pin high density to Screw Terminal (Part # 248-0136). See page 5-5.

WARNING: Output 3 is only available on T2x-R, T2x-RA, T3x-R, T3x-RA, T3x-S, and T3x-SA camera models. IF THE MODEL NUMBER DOES **NOT** END IN -R or -S, MAKING ANY CONNECTIONS TO OUTPUT 3 WILL DAMAGE THE CAMERA.

Terminal and Pin #	Wire Color	Signal Name
1	Yellow	Trigger Input +
2	Pink	Trigger Input -
3	Orange	Strobe Output +
4	Red	Strobe Output -
CONNECT ONLY ON CAMERA MODELS ENDING IN -R 5	Brown	*Output 3 +
6	Gray	Input 1 and Shift Event+
7	Purple	Input 1 and Shift Event -
8	Blue	Output 1 +
9	Light Green	Output 1 -
10	Green	Do Not Use
11	Black/White	Input 2 and Event Input +
12	Red/Pink	Input 2 and Event Input -
13	Tan	Output 2 +
14	Black	Output 2 -
CONNECT ONLY ON CAMERA MODELS ENDING IN -R 15	White	*Output 3 -

Terminal and Pin #	Wire Color	Signal Name
<div style="text-align: center;"><p data-bbox="490 362 844 475">J1 (15 Pin "D" Hi-Density Male) AMP Part # 748364-1 PPT VISION Part # 244-0158 (Solder Side)</p></div>		

*Impact Software Version 8.4.0 or greater is required to program output 3 on the T3x-R camera. Version 10.0.1 or greater is required to program output 3 on the T2x-R camera. Version 10.0.2 or greater is required to program output 3 on the T3x-S camera.

Strobe

The strobe output signal is provided on pins 3 and 4 of the camera's I/O connector. These pins provide optically isolated, current-mode signals (300mA maximum continuous DC current at 20° C (68° F) – derated at higher temperatures).

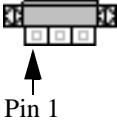
Power Supply Connector

This equipment is to be powered by a Listed power supply for the U.S. and Canada, or a power supply that meets the requirements for use where either IEC 60950 or EN60950 is applicable.

An optional power supply is available for your T-Series camera. See page 3-9 for more details. If you provide your own power supply, it must supply 24 VDC @ .50 A (min.). The connector, provided in the connector kit (Part # 651-0113), should be wired as shown in the following table.

The ground terminal (pin 3) on the +24V power input must be connected to the power supply's grounded chassis/enclosure to insure electromagnetic compliance and proper operation.

Pin Number	Signal Name
1	24VDC Supply Output Plus
2	24VDC Supply Output Minus or Ground
3	Power Supply Circuit Ground



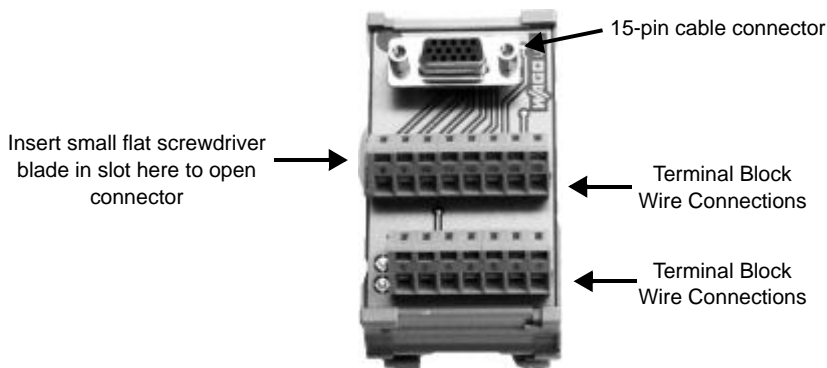
Camera power connector
(Screw Terminal Side)

3 Pin Male (3.81 mm pitch)
 PPT VISION Part # 244-0408
 Phoenix Part # 1827716
 (Screw Terminal Side)
Shell
 PPT VISION Part # 244-0409
 Phoenix Part # 1834356

I/O Terminal Block

This diagram illustrates the 15 pin D high-density to Screw Terminal block (Part # 248-0136). This terminal block can be mounted on a DIN rail, then connected to the camera using an optional 15-pin I/O cable (See page 5-2.). You can then wire from the terminal block to the controlled devices.

See the I/O cable wiring diagram on page 5-1 for the signal identification when you wire the terminal block to the field device.

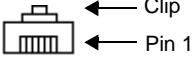


Serial

Use serial cable Part # 431-0549-xx to connect the camera's serial port to a serial device (e.g. terminal, PLC, motion controller, data recorder). You can also make a cable using a 6-position modular connector (RJ-11). This may require "null modem" wiring.

Pin Number	Signal Name
1	DO NOT USE
2	Transmitted Data (TxD)

Pin Number	Signal Name
3	Ground (GND)
4	Signal Ground (GND)
5	Received Data (RxD)
6	DO NOT USE



6-position modular connector
(RJ11)
Wire Side

Appendix

This chapter provides information for configuring an PPT T-Series camera's IP Address so it can communicate with other cameras on a network and the client computer. The troubleshooting information can also help quickly find and fix problems on-site.

IP Mask and Address

An IP (or Subnet) mask specifies which bits of the Internet Protocol (IP) address are significant. The IP mask is network dependent, but it will be the same for each PPT camera on a particular network. The IP address indicates the address of each camera. If there is more than one camera on a network, each camera's address must be different. The network administrator will probably be responsible for determining the IP mask and address.

To work with the PPT camera, the client computer's Ethernet port must be connected to the camera's Ethernet connector directly or through a correctly configured network.

During address configuration, we recommend that the client computer and the camera be connected directly to each other and not through a network router, switch, or server.

IMPORTANT NOTE: If you need help configuring the network or the client computer, you should seek professional advice. Network configuration is beyond the scope of this manual.

Do not attempt to change the IP address or mask without the authorization of your network administrator; doing so could disrupt your network connection. The following procedures require technical knowledge and should not be attempted unless you understand the terminology used.

IP addresses and masks consist of from one to four sets of numbers separated by periods. The camera is shipped with a default IP address of 192.168.0.128 and a default mask of 255.255.255.0. To be able to communicate with the PPT camera, a client computer's IP mask must correspond correctly to the camera's mask, and the address must match the camera's address in the first three sets of numbers.

A default IP mask and address were assigned to the camera at the factory. If these values will work for your installation, you do not need to change them. However, if you do change the default IP mask, you will also need to change the default IP address.

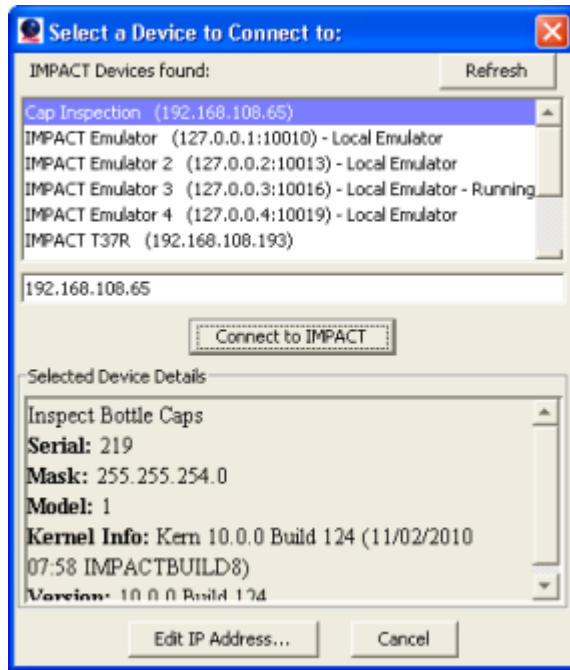
You do not need to know the camera's IP mask and address to change them. However, if you change them, you may also need to change the client computer's IP mask and address so the camera and client can communicate. See "Configuring the Client" on page 6-4.

Configuring the Camera

This section explains how to change the camera's IP address and mask. Be sure the client computer and camera are directly connected with an Ethernet cable.

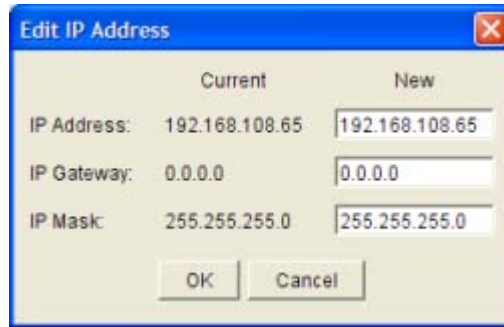
1. Start VPM. When the "Select a Device to Connect to" dialog is displayed, click on the desired camera in the list of PPT Devices found. If the camera is

not in the list, be sure the camera power is on and that it is connected to the client computer, then click the Refresh button.



2. Click the Edit IP Address button at the bottom of the dialog.
3. In the “Edit IP Address dialog,” enter the desired IP address and IP mask. Leave the Gateway unchanged. Remember, to be able to communicate with the client computer, an PPT camera’s IP mask must correspond correctly to

the client computer's mask, and the address must match the client computer's address in the first three sets of numbers.



4. Click OK.

Configuring the Client

Be sure the client computer and camera are directly connected with an Ethernet cable.

Changing the client computer's addresses: Windows 7

1. In the Start Menu, select Computer, Network, then click Network and Sharing Center.
2. Under "View your Active Networks," click Local Area Connection.
3. Click Internet Protocol Version 4 in the list, then click Properties.
4. On the Alternate Configuration tab, select User Configured.
5. Enter the desired IP address and Subnet Mask.
6. Click OK to close all the open dialog windows.

Changing the client computer's addresses: Windows Vista

1. In the Start Menu, select Network, then click Network and Sharing Center.

2. For the Local Area Connection, click View Status.
3. Click Internet Protocol Version 4 in the list, then click Properties.
4. On the Alternate Configuration tab, select User Configured.
5. Enter the desired IP address and Subnet Mask. Remember, to be able to communicate with the PPT camera, a client computer's IP mask must correspond correctly to the camera's mask, and the address must match the camera's address in the first three sets of numbers.
6. Click OK to close all the open dialog windows.
7. Continue with "Configuring the Camera".

Changing the client computer's addresses: Windows XP

1. In the Start menu, right click on My Network Places and select Properties.
2. Right click on Local Area Connections and select Properties.
3. On the General tab, select Internet Protocol (TCP/IP) and click Properties.
4. On the Alternate Configuration tab, select User Configured.
5. Enter the desired IP address and Subnet Mask. Remember, to be able to communicate with the PPT camera, a client computer's IP mask must correspond correctly to the camera's mask, and the address must match the camera's address in the first three sets of numbers.
6. Click OK to close all the dialog windows.
7. Continue with "Configuring the Camera".

Troubleshooting

Problem: The camera does not respond when you try to connect to it through the client computer.

Things to check:

- Be sure the client computer and camera have the correct IP address and mask. See page 6-1 for more help.
- Check the Ethernet cable connection from the client computer to the camera. The Ethernet-1 LED should be on.
- Be sure the vision device is powered on.

Problem: No image appears in the image window when you click the Snap or Live buttons in Utilities.

Things to check:

- Look on the File Camera tab in the Utilities software. If you want to use the File Camera, the check box should be checked and image file names should appear in the FileCamera Images list. If you want to use live camera images, be sure the check box is not checked.

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