Basler IP Camera

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BASLER
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About This Document

This document is intended to help you install your IP camera on a network. When installation is complete, refer to the camera user's manual for detailed information about operation and features. You can find he camera user's manual on the CD delivered with your camera, or you can find the latest version of the manual in the Downloads section of our website: www.basler-ipcam.com

Precautions

	⚠ **CAUTION**
⚠	**Electrical Shock Hazard** Touching the camera's internal components may result in an electrical shock. 1. Do not open the camera housing. The housing contains no user serviceable parts.

NOTICE
The camera is not designed for unprotected outdoor use and can be damaged by excessively damp or wet conditions.   1. If you are using the camera outdoors, you should mount the camera in a weatherproof housing.

WEEE Directive

The European Union has enacted Directive 2002/96/EC on Waste Electrical and Electronic Equipment (the WEEE Directive). This directive is only applicable in European Union member states.

A WEEE symbol (see left) on this product or its documentation indicates that the product must not be disposed of with other waste. The product must be disposed of via an approved, environmentally safe recycling process. For more information about how you can return unusable equipment for correct disassembly and environmentally friendly disposal, please visit our website: www.basler-ipcam.com

1 Basic Specifications

Specification	BIP-640c / BIP-640c-dn			BIP-1000c / BIP-1000c-dn		
Sensor	1/3" Sony progressive scan color CCD			1/3" Sony progressive scan color CCD		
Effective Pixels	640 (H) x 480 (V)			1024 (H) x 768 (V)		
Frame Rate Full resolution: D1 (720 x 480):	MJPEG 30 fps 30 fps* * scaled (Max sensor readout rate = 30 fps at full resolution)	MPEG-4 30 fps 30 fps*	H.264 25 fps 25 fps*	MJPEG 18 fps 30 fps (Max sensor readout rate = 30 fps at full resolution)	MPEG-4 11 fps 30 fps	H.264 10 fps 25 fps
Specification	**BIP-1300c / BIP-1300c-dn**			**BIP-1600c / BIP-1600c-dn**		
Sensor	1/3" Sony progressive scan color CCD			1/1.8" Sony progressive scan color CCD		
Effective Pixels	1280 (H) x 960 (V)			1600 (H) x 1200 (V)		
Frame Rate Full resolution: D1 (720 x 480):	MJPEG 11 fps 30 fps (Max sensor readout rate = 25 fps at full resolution)	MPEG-4 9 fps 25 fps	H.264 7 fps 25 fps	MJPEG 8 fps 30 fps* * by AOI (Max sensor readout rate = 12.5 fps at full resolution)	MPEG-4 5 fps 25 fps*	H.264 4 fps 25 fps*

Table 1: Basic IP Camera Specifications

Note: For full specifications, see the IP Camera user's manual.
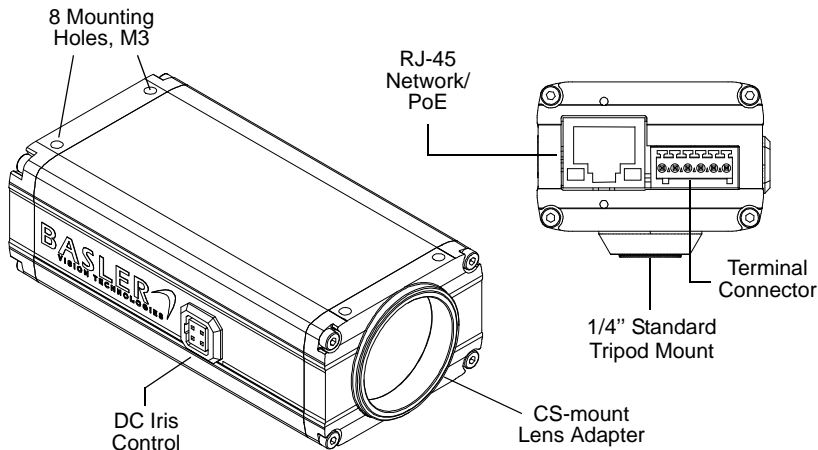
2 Hardware Overview

Fig. 1: Camera Connections

- **RJ-45 Network / PoE** - Provides a 10/100 Ethernet connection and can be used to connect Power over Ethernet (IEEE 802.3af) to the camera.
- **Terminal Connector** - Provides connections for a direct power input to the camera, connections for the camera's input and output lines, and connections for a standard RS-232 serial port that can be used to control an external device.
- **DC Iris Control** - Provides a connection for a DC auto iris.
- **CS-mount Lens Adapter** - Provides a point to mount a CS-mount lens or a C-mount lens on the camera (a 5 mm extension tube is required with a C-mount lens).

3 The Terminal Connector

The 6-pin terminal connector on the back of the camera can be used to:

- provide power to the camera (when PoE is not used)
- access the camera's input line
- access the camera's output line
- access the camera's RS-232 connection

The terminal connector on the camera is a Phoenix header (part number 1881480).

The recommended mating connector is a 6-pin Phoenix plug (part number 1881367). A Phoenix plug of this type is included with each camera.

NOTICE

Do not apply AC voltages or voltages out of specification to the camera.

1. Apply only DC voltages. Applying AC voltages can seriously damage the camera.
2. Make sure that the voltages are within the limits specified in Table 2 on page 6. Applying voltages outside of the specifications can seriously damage the camera.

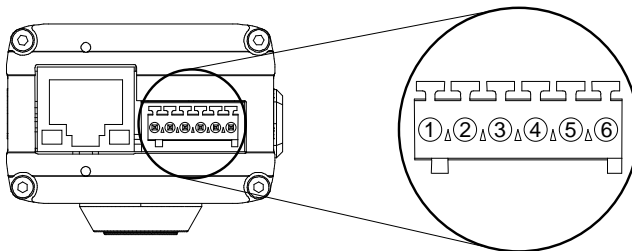The pin numbering for the terminal connector is as shown below.

Fig. 2: Terminal Connector Pin Numbering

The pinout for the terminal connector is as described in Table 2.

Pin	Function	Description
1	Ground	Ground (for camera power, for the IO signals, and for the RS-232 serial port)
2	Camera Power	Use this connection to supply power to the camera (if you are not supplying camera power via PoE)
		Nominal operating voltage: +12 VDC
		Voltage applied: between +7 and +20 VDC
		Maximum power consumption: 5 W

Table 2: Camera Pinout

Pin	Function	Description
3	Input	Normally, the input is connected to ground via a switch as shown in Figure 3 on page 10. As shown in the table below, the input will be detected by the camera as active or inactive depending on whether the switch is open or closed and whether the input mode is set to normal or inverted. See the camera User's Manual for more information about setting the input mode.

Switch Condition	Input Mode	Input Detected As
Open	Normal	Inactive
Closed	Normal	Active
Open	Inverted	Active
Closed	Inverted	Inactive

As an alternative, voltage from a device can be applied directly to the input. As shown in Figure 4 on page 11, the voltage should be applied directly to the input and not through a switch.

As shown in the table below, the input will be detected by the camera as active or inactive depending on the voltage level applied and whether the input mode is set to normal or inverted.

Voltage Applied	Input Mode	Input Detected As
0 to +2.6 VDC	Normal	Active
+5.7 to +24.0 VDC	Normal	Inactive
0 to +2.6 VDC	Inverted	Inactive
+5.7 to +24.0 VDC	Inverted	Active

The area between +2.6 and +5.7 VDC is a transition zone and should be avoided. The voltage applied to the input must not exceed +24 VDC.

Table 2: Camera Pinout

Pin	Function	Description
4	Output	The output employs an open collector transistor connected to ground as shown in Figure 3 on page 10. As shown below, the output will or will not be connected to ground via the transistor depending on the state of the output and whether the output is set for the normal or the inverted mode. See the camera User's Manual for more information about setting the output mode. **Note:** If the output has been set to the inverted mode and you restart the camera or you power it off and back on, the output will be in the normal mode during the camera bootup process and will return to the inverted mode once the bootup process is complete.

Output State	Output Mode	Output Connected to Ground
Inactive	Normal	No
Active	Normal	Yes
Inactive	Inverted	Yes
Active	Inverted	No

The maximum load is 100 mA and the maximum voltage is +24 VDC.

If an inductive load such as a relay is used with the output, a diode must be connected in parallel with the load as shown in Figure 3.

Table 2: Camera Pinout

Pin	Function	Description
5	RS-232 Transmit	RS-232 transmit. **Note:** RS-232 transmit on the camera should be connected to RS-232 receive on your device.
6	RS-232 Receive	RS-232 receive. **Note:** RS-232 receive on the camera should be connected to RS-232 transmit on your device.

Table 2: Camera Pinout

We recommend that connections to the input and the output be made with shielded cable and that the cable shields be connected to ground. If you are unable to connect the cable shields to ground or if you use unshielded cable, we recommend that you install a ferrite bead on each cable near to the camera to minimize electromagnetic interference.
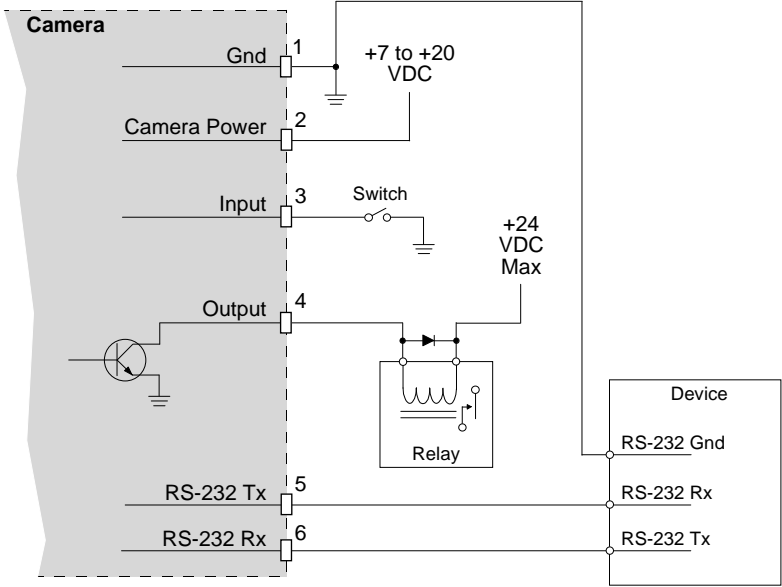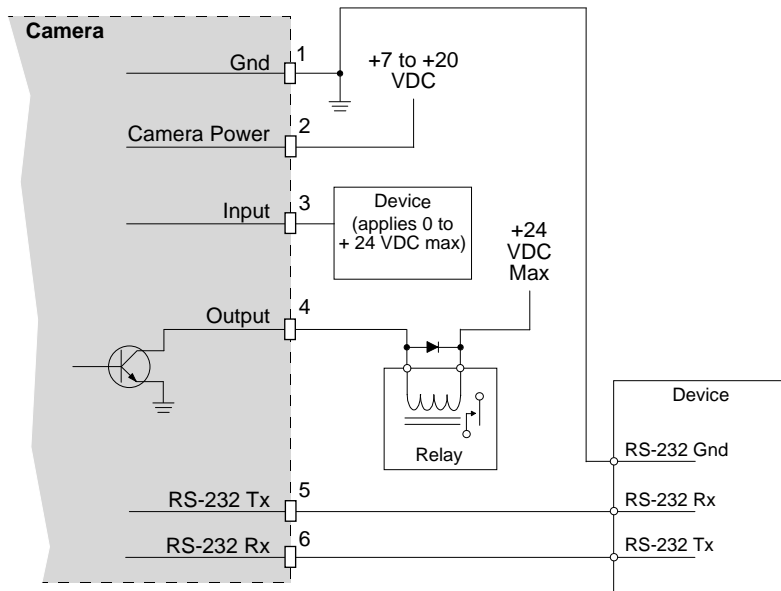
Fig. 3: Switched Ground Input

Fig. 4: Direct Device Input

4 Installing the Camera on a Network

Installation Procedure

1. Take the camera and an appropriate lens and move to an environment that is as dust free as possible.

2. Remove the cap from the lens adapter on the camera:

   - If you are using a CS-mount lens, carefully screw your lens into the adapter as far as it will go.

   - If you are using a C-mount lens, carefully screw a 5 mm extension ring into the lens mount on the camera as far as it will go and then carefully screw your lens into the extension tube as far as it will go.

3. Make the Ethernet connection and apply camera power:

   - If camera power will be supplied to the camera via PoE, follow the instructions on page 13.

   - If camera power will be supplied via the camera's terminal connector, follow the instructions on page 14.

If camera power will be supplied via PoE:

1. Connect a straight-through (patch) Ethernet cable from the RJ-45 connector on the camera to a PoE network switch,

   or

   connect a crossover Ethernet cable from the RJ-45 connector on the camera to a passive PoE injector.

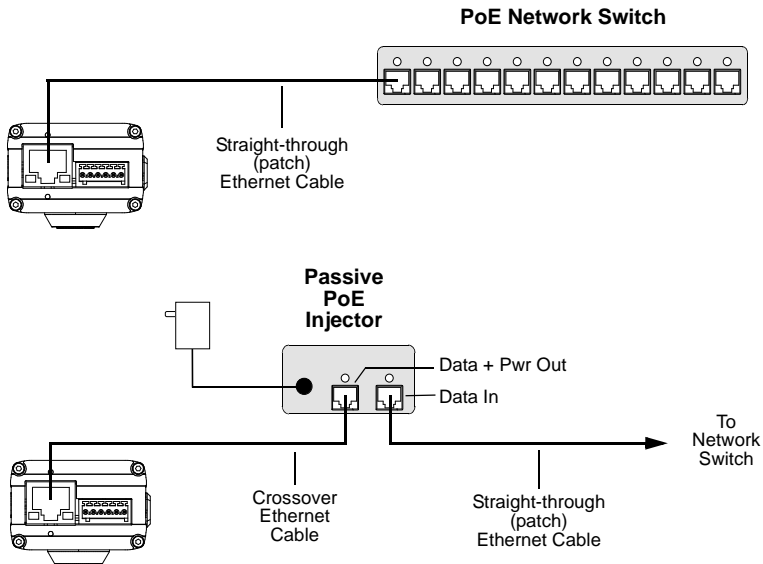2. When the connections are complete, go on to Section 5 on page 16.

Fig. 5: PoE Cabling

If camera power will be supplied via the terminal connector:

1. Make sure that your power supply meets the requirements stated in Table 2 on page 6.

2. Locate the two output wires on the power supply.

   The positive wire will typically be marked with a white stripe, a colored stripe, or some similar type of marking (see Figure 6).

   If you are unsure which output wire is positive, check the output from the supply with a voltmeter and mark the positive wire now.

3. Unplug or switch off the power supply.

4. Make sure that the output wires on the power supply have the following characteristics:

   ■ A minimum cross section of 0.14 mm^2 (AWG 25) and a maximum cross section of 0.5 mm^2 (AWG 20).

   ■ 8 mm (5/16") of insulation has been stripped from the end of each output wire.

   ■ If the output wires are stranded rather than solid, they must have an 8 mm (5/16") long ferrule (end terminal) applied to the end of each wire as shown in Figure 6.
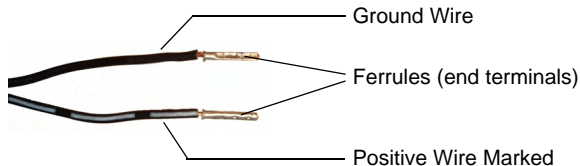

Ground Wire

Ferrules (end terminals)

Positive Wire Marked

Fig. 6: Ferrules Applied to Stranded Wire

5. Obtain the 6-pin Phoenix plug that is included with the camera.

6. Insert the end of the ground wire into pin 1 (see Figure 7) of the Phoenix plug as far as it will go. The plug has spring-cage connections and will grip the wire.

7. Insert the end of the positive wire into pin 2 of the Phoenix plug as far as it will go.

8. Insert the Phoenix plug into the terminal connector on the back of the camera.

9. Connect a straight-through (patch) Ethernet cable to the RJ-45 connector on the camera and to your network switch as shown in Figure 7.

10. Plug in or switch on the power supply.

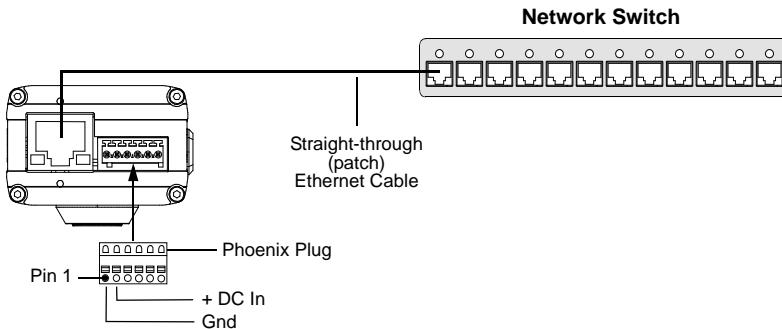11. When the connections are complete, go on to Section 5 on page 16.

Fig. 7: Camera Power Via a Terminal Connector

5 Locating the Camera on Your Network

- The location procedure assumes that your camera is on the same network subnet as your PC and that you have a Windows® operating system on your PC.
- The procedure uses a web browser to access your Basler IP camera. The recommended web browser is Microsoft Internet Explorer version 6.0 or higher.
- If your network includes a proxy server and your web browser is set to use the proxy server, the browser will not be able to access the camera. To avoid this problem, change your web browser's connection settings so that the proxy server will not be used with local addresses.
- To avoid possible problems, temporarily disable firewall and antivirus software on your computer.
- Close all Windows programs, including web browsers, before starting the location procedure.

To locate your IPCam on your network:

1. Obtain the CD that was delivered with your camera and place it in your computer's CD-ROM drive.
2. Copy the **BIPFinder.exe** program from the CD to a location on your computer's hard drive.
3. Create a shortcut to the program on the desktop and then close Windows Explorer.

4. Double click on the **BIP Finder** shortcut. The BIP Finder software will locate the IP camera(s) on your network and will display them in a tree format as shown below.

The IP cameras will be listed in the **Camera Finder** window by their host name.

If you double click on an IP camera host name in the **Camera Finder** window, your web browser will open and the browser will access the Basler Surveillance Web Client in the camera. (See Section 6 for more information about the Basler Surveillance Web Client.)

If you hover the cursor over an IP Camera host name in the **Camera Finder** window, information about the camera will be displayed in a tip window as shown below. The information will include the camera's model, current firmware version, serial number, host name, IP address(es), port number, and an indication of when the camera was located by the finder. (This "hover" feature will only work correctly if you are using version 1.2 or higher of the BIP Finder software and you have version 1.4 or higher firmware in your camera.)
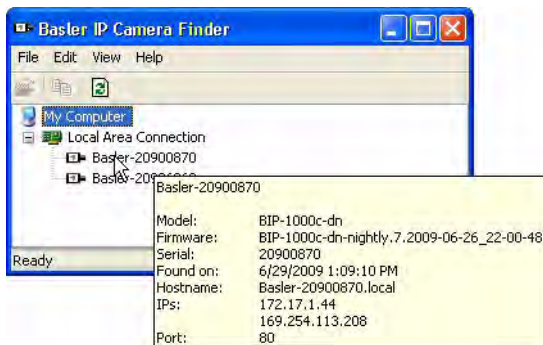
Note: If a camera is set to use a DHCP assigned IP address or to use a fixed IP address, the tip window will display two IP addresses for the camera. This happens because the camera always acquires an auto IP address in addition to the DHCP assigned address or the fixed address. In this situation, the camera will have two IP addresses and it can be accessed by using either IP address.

6 Accessing the Camera From a Web Browser

Once your camera is installed and connected to a network, it can be accessed from a web browser. The recommended web browser is Microsoft Internet Explorer version 6.0 or higher.

To access the camera:

1. Do one of the following:

   ■ Use the Basler BIP Finder software to find your camera as described in Section 5 and then double click on the camera's host name in the BIP Finder window. Your browser will open and will access the Basler Surveillance Web Client in the camera.

   (If the camera has two IP addresses assigned to it, you can right click on the camera's host name in the BIP Finder window and use the drop down menu that appears to select which address to use to access the camera.)

   ■ Use the Basler BIP Finder software to find the IP address for your camera as described in Section 5.

   Enter the IP address in the **Address** field of your browser. For example, for a camera with an address of 172.17.1.44, you would enter this: http://172.17.1.44

   Press the Return key. The browser will access the Basler Surveillance Web Client in the camera.
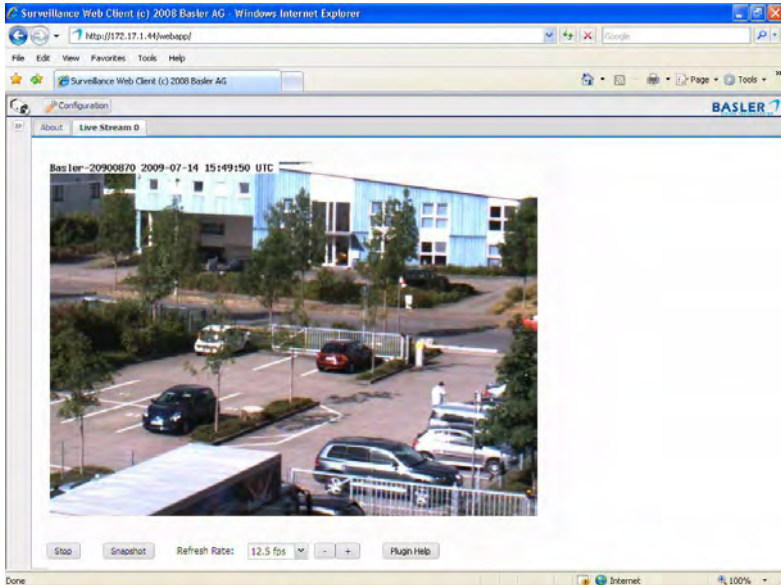
2. The Basler Surveillance Web Client will open in the browser as shown below.

Assuming that this is the first time you are accessing the camera via the web browser, you may see a message asking you to click on the Information Bar to allow installation of an ActiveX control. The ActiveX control that the system wants to install is supplied by Basler and is used to display image streams within the browser. We strongly recommend that you install the control by performing the following steps:

a. Click on the yellow Information Bar and select **Install ActiveX Control** from the menu that appears.

b. When the **Do you want to install this software?** window opens, click the **Install** button.

c. When the installation is finished, click the browser refresh button.

The Basler Surveillance Web Client will display a live MJPEG stream from the camera as shown below.

For complete information about using the Basler Surveillance Web Client to change the camera's settings and view images from the camera, see the camera user's manual. You can find the camera user's manual on the CD delivered with your camera, or you can find the latest version of the manual in the Downloads section of our website: www.basler-ipcam.com

7 Day/Night Cameras

IP Cameras with the letters "dn" at the end of the model name (e.g., BIP-640c-dn) are equipped with day/night functionality. Cameras with day/night functionality are well-suited for use in areas with natural lighting during the day and artificial lighting at night. And when used with a supplemental IR illuminator, these cameras can produce high-quality images in areas with little visible light, which makes then very useful in applications with poor lighting.

If you have a day/night camera, refer to the camera User's Manual for complete details regarding day/night functionality.

8 Firmware Updates

To ensure that your camera's functionality is up to date, you should periodically check the Downloads section of the Basler website to see if a firmware update file is available. The website address is: www.basler-ipcam.com

For information about how to identify the current firmware version on your camera and how to perform a firmware update, see the camera user's manual. The camera user's manual can be found on the CD delivered with your camera or you can download the latest version of the manual from the Basler website.