## Revisions

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<tbody>
<tr>
<td>A</td>
<td>03/2013</td>
<td>New document.</td>
</tr>
</tbody>
</table>
Cautions and Warnings

**WARNING**  IR emitted from this product. Do not view directly with optical instruments (magnifiers). Do not stare directly into the lamp at a distance of less than 3.3 ft (1 m).

**WARNING**  To ensure compliance with electrical safety standards, use an NRTL-listed PoE injector or network switch meeting the IEEE 802.3af standard to power the camera.

**CAUTION**  Class 1 LED product. Invisible LED radiation (850 nm). Avoid exposure to beam.

**CAUTION**  Installation and servicing should be performed only by qualified and experienced technicians to conform to all local codes and to maintain your warranty.

**CAUTION**  Power over Ethernet (PoE) should meet the IEEE 802.3af PoE standard.

**CAUTION**  This equipment can only be powered via the Ethernet cabling. A PoE injector or network switch with PoE support meeting the IEEE 802.3af standard must be used.
Regulatory Statements

FCC Compliance Statement

**Information to the User** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

Canadian Compliance Statement

This Class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la Classe A est conforme à la norme NMB-003 du Canada.

Manufacturer’s Declaration of Conformance

**North America** The equipment supplied with this guide conforms to UL 60950-1 and CSA C22.2 No. 60950-1.

**Europe** The manufacturer declares that the equipment supplied is compliant with the essential requirements of the EMC directive 2004/108/EC, conforming to the requirements of standards EN 55022 for emissions, EN 50130-4 for immunity, and EN 60950-1 for electrical equipment safety.

Waste Electrical and Electronic Equipment (WEEE)

**Correct Disposal of this Product** (applicable in the European Union and other European countries with separate collection systems).

This product should be disposed of, at the end of its useful life, as per applicable local laws, regulations, and procedures.
**Safety Instructions**

Before installing or operating the unit, read and follow all instructions. After installation, retain the safety and operating instructions for future reference.

1. **HEED WARNINGS** - Adhere to all warnings on the unit and in the operating instructions.

2. **INSTALLATION**
   - Install in accordance with the manufacturer’s instructions.
   - Installation and servicing should be performed only by qualified and experienced technicians to conform to all local codes and to maintain your warranty.
   - Do not install the unit in an extremely hot or humid location, or in a place subject to dust or mechanical vibration. The unit is not designed to be waterproof. Exposure to rain or water may damage the unit.
   - Any wall or ceiling mounting of the product should follow the manufacturer’s instructions and use a mounting kit approved or recommended by the manufacturer.

3. **POWER SOURCES** - This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supplied to your facility, consult your product dealer or local power company.

4. **HEAT** - Situate away from items that produce heat or are heat sources such as radiators, heat registers, stoves, or other products (including amplifiers).

5. **WATER AND MOISTURE** - Do not use this unit near water or in an unprotected outdoor installation, or any area classified as a wet location.

6. **MOUNTING SYSTEM** - Use only with a mounting system recommended by the manufacturer, or sold with the product.

7. **ATTACHMENTS** - Do not use attachments not recommended by the product manufacturer as they may result in the risk of fire, electric shock, or injury to persons.

8. **ACCESSORIES** - Only use accessories specified by the manufacturer.

9. **CLEANING** - Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

10. **SERVICING** - Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

11. **REPLACEMENT PARTS** - When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards. Using replacement parts or accessories other than the original manufacturers may invalidate the warranty.

12. **DAMAGE REQUIRING SERVICE** - Unplug the unit from the outlet and refer servicing to qualified service personnel under the following conditions:
   - When the power-supply cord or plug is damaged.
   - If liquid has been spilled, or objects have fallen into the unit.
   - If the unit has been exposed to rain or water.
   - If the unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the unit to its normal operation.
   - If the unit has been dropped or the enclosure has been damaged.
   - When the unit exhibits a distinct change in performance - this indicates a need for service.

13. **SAFETY CHECK** - Upon completion of any service or repairs to this unit, ask the service technician to perform safety checks to determine that the unit is in proper operating condition.
Warranty and Service

Subject to the terms and conditions listed on the Product warranty, during the warranty period Honeywell will repair or replace, at its sole option, free of charge, any defective products returned prepaid.

In the event that you have a problem with any Honeywell product, please call Customer Service at 1.800.323.4576 for assistance or to request a Return Merchandise Authorization (RMA) number.

Be sure to have the model number, serial number, and the nature of the problem available for the technical service representative.

Prior authorization must be obtained for all returns, exchanges, or credits. Items shipped to Honeywell without a clearly identified Return Merchandise Authorization (RMA) number may be refused.
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About This Document

This document contains instructions for installing, configuring, and operating the Honeywell equiP® Series HBD2FR1(X) network camera.

This document is intended for system installers, administrators, and operators.

Overview of Contents

This document contains the following chapters and appendixes:

• *Chapter 1, Introduction*, introduces the HBD2FR1(X).

• *Chapter 2, Installing the Camera*, describes how to mount the camera, connect the cables, and adjust the camera’s field of view.

• *Chapter 3, Installing the Honeywell IP Utility*, describes how to install the Honeywell IP Utility, connect to a network camera, configure the camera’s IP network settings, and change the camera’s password.

• *Chapter 4, Setting Up the Camera*, describes how to configure camera settings using the web client.

• *Appendix A, Troubleshooting*, lists solutions to problems encountered during installation.

• *Appendix B, Specifications*, lists the specifications of the HBD2FR1(X).
Related Documents

For more information, please refer to the following documents:

<table>
<thead>
<tr>
<th>Document title</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
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<tr>
<td>equip® Series HBD2FR1(X) 1080p TDN Network IR Bullet Camera Quick Installation Guide</td>
<td>800-13339</td>
<td>Installation guide</td>
</tr>
</tbody>
</table>

Typographical Conventions

This document uses the following typographical conventions:

<table>
<thead>
<tr>
<th>Font</th>
<th>What it represents</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helvetica</td>
<td>Keys on the keyboard</td>
<td>Press Ctrl+C</td>
</tr>
<tr>
<td>Lucida</td>
<td>Values of editable fields that are mentioned in the body text of the document for reference purposes, but do not need to be entered as part of a procedure</td>
<td>The Time from field can be set to Hours:Minute:Seconds.</td>
</tr>
<tr>
<td></td>
<td>Text strings displayed on the screen</td>
<td>The message Unauthorized displays. (object) entered</td>
</tr>
<tr>
<td></td>
<td>Syntax</td>
<td></td>
</tr>
<tr>
<td>Swiss721 BT Bold</td>
<td>Words or characters that you must type. The word “enter” is used if you must type text and then press the Enter or Return key.</td>
<td>Enter the password.</td>
</tr>
<tr>
<td></td>
<td>Menu titles and other items you select</td>
<td>Double-click Open from the File menu.</td>
</tr>
<tr>
<td></td>
<td>Buttons you click to perform actions</td>
<td>Click Exit to close the program.</td>
</tr>
<tr>
<td>Italic</td>
<td>Placeholders: words that vary depending on the situation</td>
<td>Enter your user name.</td>
</tr>
<tr>
<td></td>
<td>Cross-reference to external source</td>
<td>Refer to the System Administrator Guide.</td>
</tr>
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</table>
Introduction

Honeywell’s ONVIF IR HBD2FR1(X) network camera provides high quality video surveillance over a network connection.

Features

- Outstanding image quality, 1080p (1920 x 1080) resolution
- 30 fps (25 fps PAL) progressive scan
- True day/night, 3–9 mm VFAI MFZ lens with removable IR cut filter
- 48 LEDs provide up to 100 ft (30 m) of illumination, depending on scene reflectance
- Camera tamper detection
- Video motion detection
- NTP time synchronization support
- ONVIF support (Profile S)
- Programmable daylight threshold settings to deliver color or black/white images.
- Dual digital video streams, independently configurable, H.264 and/or H.264/MJPEG
- Remote firmware updates
- Supports both dynamic and static IP addresses
- Date and time stamp embedded in video stream
- Multiple browser support (Microsoft Internet Explorer, Google Chrome, Mozilla Firefox)
- Advanced IP Utility software for easy system setup
- Embedded web server for remote setup of camera video and network parameters
- Power over Ethernet (IEEE 802.3af) power input
- Supports input and output alarm contacts
- Supports bidirectional audio
- IP66 ingress protection rating
- Built-in breather vent
- Adapter plate for installation to 4S electrical box
- Multi-directional mounting bracket and sunshield
Installing the Camera

This chapter describes how to:
• Mount the camera (page 20)
• Connect the cables (page 21)
• Position the camera (page 23)
• Set focus and zoom (page 24)

Before You Begin

Check that the items received match those listed on the order form and packing slip. Your camera packing box should include the following items:

<table>
<thead>
<tr>
<th>Qty</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Camera unit</td>
</tr>
<tr>
<td>1</td>
<td>Hardware kit:</td>
</tr>
<tr>
<td></td>
<td>• M5×20 machine screws (4)</td>
</tr>
<tr>
<td></td>
<td>• Nuts (4)</td>
</tr>
<tr>
<td></td>
<td>• Tamperproof Allen key (1)</td>
</tr>
<tr>
<td>1</td>
<td>Local video (AUX) output cable</td>
</tr>
<tr>
<td>1</td>
<td>Mounting template (&quot;Guide Pattern&quot;)</td>
</tr>
<tr>
<td>1</td>
<td>Adapter plate for mounting camera to a 4S electrical box</td>
</tr>
<tr>
<td>1</td>
<td>Software DVD (includes user guide)</td>
</tr>
<tr>
<td>1</td>
<td>Quick installation guide (800-13339)</td>
</tr>
<tr>
<td>1</td>
<td>Product warranty</td>
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</tbody>
</table>

If any parts are missing or damaged, contact the dealer you purchased the camera from or call Honeywell Customer Service.
Parts of the Camera

Mounting the Camera

You can mount the camera to a wall, ceiling, or to a 4S electrical box using the supplied adapter plate. The mounting surface must be flat and capable of supporting the combined weight of the camera, sunshield, and mounting bracket (approximately 3.92 lb. [1.78 kg]).

Mounting the Camera to a Wall or Ceiling

To mount the camera to a wall or ceiling

1. Pre-drill four holes in the mounting surface using the supplied template as a guide.
2. Attach the bracket to the mounting surface using suitable mounting hardware (not supplied).
Mounting the Camera to a 4S Electrical Box

To mount the camera to a 4S box using the adapter plate

1. Attach the base of the camera mounting bracket to the supplied adapter plate using the four supplied M5×20 machine screws and nuts.
2. Attach the adapter plate to a 4-inch square electrical box using suitable mounting hardware (not supplied).

Note 4S boxes have either two or four screw holes.

Connecting the Cables

Power over Ethernet (PoE)

Connect a Category 5/5e Ethernet cable to the RJ45 jack on the camera’s PoE cable to create a network connection and to power the camera.

⚠️ WARNING To ensure compliance with electrical safety standards, use an NRTL-listed PoE injector or network switch meeting the IEEE 802.3af standard to power the camera.
Audio and Alarms

Connect the audio and alarm wires.

<table>
<thead>
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<th>Alarm</th>
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<tr>
<td>IN+ Orange</td>
<td>IN+ Yellow</td>
</tr>
<tr>
<td>IN– Red</td>
<td>IN– Green</td>
</tr>
<tr>
<td>OUT+ Brown</td>
<td>OUT+ Blue</td>
</tr>
<tr>
<td>OUT– Black</td>
<td>OUT– White</td>
</tr>
</tbody>
</table>

Connecting Audio

The camera supports bidirectional audio. There are two supported voice band channels that function in full duplex mode. The camera can transmit audio from the camera to the client (PC) using any audio source that provides an industry-standard line-level input.

The camera can also receive audio from the client (PC) and provide an industry-standard line-level output suitable to connect to audio devices.

Audio input and output have 600 ohm impedance. See Configuring Audio on page 55 to configure audio options.

Connecting Alarms

The camera has one alarm input and one alarm output. Connect mechanical or electrical switches to the alarm input connection to enable event-triggered recording. An alarm is triggered when the normal alarm state (open or closed) changes (see Figure 2-1).

![Figure 2-1 Normal Open States](image)

See Configuring Alarms on page 57 to configure the alarm input.

Connect external devices, such as sirens or flashing lights, to the alarm output connector to signal to the user that an alarm is activated. The alarm output can be configured to provide normally open or normally closed contacts.
Positioning the Camera

Position the camera to achieve the desired view. To adjust the camera’s position, loosen the bracket screws with the supplied Allen key, reposition the camera, and then tighten the screws.

Sunshield

The camera comes with a sunshield already installed. If you want, you can reposition the sunshield or you can remove it. To reposition the sunshield, slide the sunshield forward or backward as required.
Setting Focus and Zoom

You can set the camera's focus and zoom locally or remotely.

To set the focus and zoom locally

1. Unscrew the cap on the underside of the camera using a coin.

2. Connect the supplied video output cable to the VIDEO 2-pin connector. Connect the other end of the cable to a spot monitor.

3. To set the focus, move the built-in joystick to NEAR to focus near or to FAR to focus far.

4. To set the zoom (field of view), move the built-in joystick to TELE to zoom in or to WIDE to zoom out.

5. Disconnect the video output cable from VIDEO, and then replace the cap on the underside of the camera.

Note To set focus and zoom remotely, see Configuring Zoom and Focus on page 54.
Installing the Honeywell IP Utility

This chapter describes how to:

• Install the IP Utility (page 27)
• Connect to a HBD2FR1(X) camera (page 29)
• Configure the camera’s network settings (page 30)
• Change the camera’s password (page 32)
• Uninstall the IP Utility (page 33)

About the Honeywell IP Utility

The Honeywell IP Utility is a software application used to discover and configure equiP Series and Performance Series products residing on an IP network. Using the IP Utility, you can change your HBD2FR1(X) camera’s network settings (including device name), upgrade the camera’s firmware, and manage the camera’s user settings. You can also use the utility to launch a web client application in your browser that lets you view live video and access additional camera configuration settings.

For an overview of the Honeywell IP Utility interface, see Figure 3-1.
The **About** menu displays the software version installed.

From the **User** tab, Administrators can change the web client user passwords.

The **Discovery** pane lists the IP devices found on the network and groups by device type.

Use **Batch Firmware Upgrade** to select a group of devices and upgrade the firmware for all.

The **Status** bar displays how many devices are on the network, which one you are connected to, and which user is logged on.

Use the Product Filter drop-down menu to select a specific device, such as all H3D1F cameras.

Use the **Connect** button and **Disconnect** button to connect to and disconnect from devices.

The **Refresh** button updates the discovery list.

The **Limited/No connectivity** button indicates connectivity issues.

The **Connect button** is available when unconnected, and the **Disconnect button** is available when connected.

The **User** tab allows Administrators to change web client user passwords.

**Figure 3-1   Overview of Honeywell IP Utility User Interface**

**Honeywell IP Utility**

**Discovery**

- **Discovery pane**
  - Lists IP devices found on the network and groups by device type.

**Status bar**

- Displays the number of devices on the network, which one you are connected to, and which user is logged on.

**Connect button**

- Available when unconnected.

**Disconnect button**

- Available when connected.

**Refresh button**

- Updates the discovery list.

**Limited/No connectivity**

- Indicates connectivity issues.

**About menu**

- Displays the software version installed.

**User tab**

- Allows Administrators to change web client user passwords.

**Batch Firmware Upgrade**

- Selects a group of devices and upgrades the firmware for all.

**Use the Product Filter drop-down menu** to select a specific device, such as all H3D1F cameras.
Installing the Honeywell IP Utility

You can install the IP Utility from the DVD that came with your camera or you can download the latest version from Honeywell’s Download Center (recommended):


To receive a user name and password for accessing the Download Center, contact the customer service center within your region. This information is provided on the Download Center webpage.

**Note**  If you have an older version of Honeywell IP Utility installed on your computer you may need to uninstall it before you can install the new version. For instructions on how to uninstall the IP Utility, see *Uninstalling the Honeywell IP Utility* on page 33.

**Before You Begin**

Before you begin installing the IP Utility, do the following:

1. Ensure that your workstation meets the following system requirements:

   **Operating System**  Windows XP Professional, SP3
                       Windows Server 2003 R2 (32 bit)
                       Windows Vista, SP1
                       Windows 7 (32/64 bit)
                       Windows Server 2008 R2 (64 bit)

   **CPU**  Pentium 4, 3.1 GHz or faster

   **System Memory**  1 GB (32 bit) or 2 GB (64 bit)

2. Ensure that you have Windows administrator privileges for the workstation on which you are installing the IP Utility.

3. Confirm that your camera is connected to the network (see *Connecting the Cables* on page 21).

**Installing the IP Utility**

The IP Utility is installed on your workstation using InstallShield. When you install the IP Utility, a networking protocol (Bonjour) is also installed that enables the automatic discovery of IP network devices.
To install the IP Utility

1. Close any open applications. If you are using Norton AntiVirus software, disable it.
2. Do one of the following:

   **Install from DVD**
   • Insert the DVD that was shipped with your camera into your workstation’s DVD-ROM drive.

     If the InstallShield wizard does not open automatically, browse to [DVD drive]\Honeywell_IP_Utility\ and double-click Honeywell_IP_Utility_Setup.exe.

3. Follow the InstallShield wizard’s on-screen instructions to complete the installation.
4. Open the IP Utility by double-clicking the Honeywell IP Utility icon on the desktop. The IP Utility opens on your desktop (see Figure 3-2).

**Install from Website**

2. Follow the instructions on the page to log in and find your camera.
3. Run the InstallShield wizard.

4. Open the IP Utility by double-clicking the Honeywell IP Utility icon on the desktop. The IP Utility opens on your desktop (see Figure 3-2).

**Figure 3-2  IP Utility User Interface**
Connecting to a Camera

When you open the IP Utility, the devices on the network—including devices on other subnets—are automatically discovered and listed in the Discovery pane on the left of the screen. After the initial discovery, the list of discovered devices auto-refreshes at regular intervals. You can manually refresh the list by clicking (Refresh).

**To connect to a network camera**

- In the Discovery pane, double-click the camera you want to connect to. Alternatively, click the camera name, and then click (Connect).

  When connecting to an ONVIF camera for the first time, the ONVIF credentials login window appears (see *Figure 3-3*). Enter your user name and password, and then click OK.

  ![ONVIF Login Window](image)

  If the connection is successful, the message **Connected to Device [device name]** appears in the status bar at the bottom of the screen.

  If the connection is unsuccessful, (Limited/No Connectivity) replaces (Connect) in the Discovery pane. Check the the network settings of the camera and the workstation. The camera must be on the same subnet as the workstation. Contact your network administrator for additional support.

**To disconnect from a network camera**

- In the Discovery pane, click the camera you want to disconnect from, and then click (Disconnect).

  If you try to disconnect without saving configuration details, you will be prompted to save your changes. Click Yes to save the changes and disconnect. Click Cancel to discard the changes and disconnect.
Configuring the Camera’s IP Network Settings

You can configure a connected camera’s IP network settings either automatically or manually using the IP Utility. Contact your network administrator if you experience any network-related issues or if you have questions about your network.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device Name</td>
<td>By default, the device name is the device type plus the MAC address. For security purposes it is recommended that you change the device name.</td>
</tr>
<tr>
<td>MAC Address</td>
<td>A unique address assigned to the device in the factory. Not configurable.</td>
</tr>
<tr>
<td>IP Address</td>
<td>The IP address of the device on the network. The camera can be assigned a static or a dynamic IP address. A static IP address is assigned by the user. A dynamic IP address is assigned automatically by a DHCP or APIPA service.</td>
</tr>
<tr>
<td>Subnet Mask</td>
<td>The subnet mask, or netmask, value of the device on the network. IP networks can be subdivided into a series of smaller networks called subnets. When a network is subnetted, the subnet mask specifies which smaller network (subnet) the device belongs to. If the subnet mask is incorrect, the camera cannot communicate with other devices on the network.</td>
</tr>
<tr>
<td>Default Gateway</td>
<td>The default gateway address that connects the device to the network. The gateway allows communication between devices on different networks. If the gateway is incorrect, the camera cannot communicate with other devices that are not in the same network address range.</td>
</tr>
</tbody>
</table>

To configure the camera’s network settings automatically

1. Connect to the camera (see Connecting to a Camera on page 29).
2. In the System tab, under IP Network Settings, confirm that the Obtain an IP address automatically check box is selected.
3. Enter a descriptive name for the camera in the Device Name field. For example, Front\Lobby\Dome\01. (By default, the device name is the device type plus the MAC address.)
4. Click Apply to save the changes.

The network automatically assigns the IP address based on the DHCP network server details. If no DHCP server is present on the network, the camera defaults to an APIPA address (169.254.x.x).

To configure the camera’s network settings manually

1. Connect to the camera (see Connecting to a Camera on page 29).
2. In the System tab, under IP Network Settings, clear the Obtain an IP Address automatically check box.
3. Enter a descriptive name for the camera in the **Device Name** field. For example, *FrontLobbyDome01*. (By default, the device name is the device type plus the MAC address.)

4. Enter values for the **IP Address**, **Subnet Mask**, and **Default Gateway** (see Table 3-1). The MAC address is a factory-assigned address and is not configurable.

---

**Note**  The IP address of the camera must be in the same range as the IP address of the workstation. For example, if the workstation’s IP address is 192.168.1.xx, the camera’s IP address should start with 192.168.1 (as in 192.168.1.xy).

---

**CAUTION**  Confirm the network settings before clicking **Apply**. Incorrect values may prevent the IP Utility from connecting to the device.

5. Click **Apply** to save the changes.

The network settings are updated and a message confirming the change appears in the status bar at the bottom of the screen.
Changing the Camera’s Password

You can change a connected camera’s administrator (admin) or guest password using the IP Utility.

**To change the camera administrator or guest password**

1. Connect to the camera (see *Connecting to a Camera* on page 29).
2. Click the **Users** tab.

![Figure 3-5 Camera Password Configuration](image)

3. In the **User Name** field, select **admin** or **guest**.
4. In the **Old Password** field, type the old password.
5. In the **New Password** field, type the new password.
6. In the **Verify Password** field, type the new password again.
7. Click **Apply** to save the changes.
Using an ONVIF IP Device with a Network Video Recorder

Your camera features ONVIF support and open API for software integration. Refer to www.onvif.org for the ONVIF specification and to the Honeywell Open Technology Alliance website at www.security.honeywell.com/hota/ to learn more about our open and integrated solutions. There is no support for legacy equiP and equiP2 protocols.

For additional information, refer to the documentation supplied with your NVR or contact your NVR network administrator.

Uninstalling the Honeywell IP Utility

To uninstall the IP Utility in Windows 7
1. Click the Start button, click Control Panel, click Programs, and then click Programs and Features.
2. Click Honeywell IP Utility, and then click Uninstall.

If you are prompted to confirm that you want to uninstall Honeywell IP Utility, click Yes.

To uninstall the IP Utility in Windows XP
1. Click Start, click Control Panel, and then double-click Add or Remove Programs.
2. Click Honeywell IP Utility, and then click Remove.

You are prompted to confirm that you want to uninstall Honeywell IP Utility. Click Yes.
Setting Up the Camera

This chapter describes how to:

- Start the web client (page 40)
- View live video (page 43)
- Configure camera setup, including IR settings (page 44)
- Configure camera compression settings (page 48)
- Remotely adjust camera zoom and focus (page 54)
- Configure camera audio settings (page 55)
- Configure camera alarm settings (page 57)
- Configure camera tamper detection and motion detection settings (page 58)
- Configure camera date and time settings (page 65)
- Reset the camera to factory default settings (page 71)
- View camera network settings and firmware details (page 73)

About the Web Client

The web client is an Internet-based application that lets administrators monitor live video and make adjustments to the camera setup.

Guest users can monitor live video but cannot access the setup functionality of the web client.

The camera’s default user names and passwords are listed in Table 4-1. To change the administrator or guest password, see Changing the Camera’s Password on page 32.

<table>
<thead>
<tr>
<th>Login Profile</th>
<th>User Name</th>
<th>Password</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrator</td>
<td>admin</td>
<td>1234</td>
</tr>
<tr>
<td>Guest</td>
<td>guest</td>
<td>guest</td>
</tr>
</tbody>
</table>
Before You Begin

You must have Windows administrator privileges and your workstation must meet the following minimum requirements to run the web client application.

Operating System
- Windows XP Professional, SP3
- Windows Server 2003 R2 (32 bit)
- Windows Vista, SP1
- Windows 7 (32/64 bit)
- Windows Server 2008 R2 (64 bit)

CPU
- Pentium 4, 3.1 GHz or faster

System Memory
- 1 GB (32 bit) or 2 GB (64 bit)

Graphics Card
- Display driver with Direct3D enabled (for Internet Explorer only)

Web Browser
- Microsoft Internet Explorer 8 or 9 (32 bit)
- Google Chrome v23.0.1271.97 or later (32 bit)
- Mozilla Firefox v17.01 or later

Preparing for ActiveX Installation (Internet Explorer Only)

Configuring Windows 7 (32 bit/64 bit) and IE Security Settings

Note
Make sure your Windows user account has administrator privileges.

Configure Windows Firewall

The Windows Firewall Settings page opens.

   Figure 4-1   Windows Firewall Settings

2. Click Allow a program or feature through Windows Firewall.
The Allowed Programs list appears.
3. Do one of the following:
   • If Internet Explorer is already in the **Allowed** list, then select all the check boxes (Domain, Home/Work, Public, Group Policy).
   • If Internet Explorer is not already in the **Allowed** list, click **Allow another program**, browse for **iexplore**, and then click **Open**. Once in the Allowed list, select all the check boxes (Domain, Home/Work, Public, Group Policy).

**Configure User Account Control (UAC) Settings**
1. Click **Start** ➤ **Control Panel**.
2. In the **Search Control Panel**, type **UAC**.
3. Click **Change User Account Control settings**.
   The User Account Control Settings page appears.

**Figure 4-2  Preferred UAC Settings**

If the UAC level is not configured to the lowest level, then please run Internet Explorer as administrator. Click **Start**, right-click **Internet Explorer**, and then click **Run as administrator**.

**Figure 4-3  Run IE as Administrator**
Add Camera URL to Trusted Sites in Internet Explorer

1. Open the Honeywell IP Utility.
2. Connect to your camera.
3. Click Launch Browser to open the camera login page.
4. In the browser, click Tools ➤ Internet Options ➤ Security ➤ Trusted Sites.

**Figure 4-4 Trusted Sites Configuration Page**

1. Click Sites. The Trusted Sites window opens.
2. Clear the Require server verification (https:) for all sites in the zone check box.
3. Do one of the following:
   - To add one camera to the Trusted Sites list, enter the URL in the Add this website to the zone: field.
   - To add a whole subnet to the Trusted Sites list, enter the partial URL with a * at the end in the Add this website to the zone: field. Use a * to add the whole network.
8. Click Add to add the website to the list of trusted websites, and then click Close.

### Configuring Windows XP Service Pack 3 and IE Security Settings

**Note** Make sure your Windows user account has administrator privileges.

#### Configure Windows Firewall

1. Click Start, click Control Panel, and then double-click Windows Firewall.
2. Click the **Exceptions** tab.
3. If the firewall is on, configure it to allow IE through the firewall, and then click OK to save the changes.

### Add Camera URL to Trusted Sites in Internet Explorer

See Add Camera URL to Trusted Sites in Internet Explorer on page 38.
Starting the Web Client

To start the web client in Internet Explorer

1. Open the Honeywell IP Utility.
2. Connect to your camera.
3. Click Launch Browser.

Alternatively, you can enter the IP address of the camera directly into the address bar of the browser.

The login window is displayed.

4. In the Username field, select admin.
5. In the Password field, type the default admin login password 1234, and then click Login.
The first time you open the web client you will be prompted to install Honeywell ONVIF ActiveX® on your computer.

If a previous version of Honeywell ActiveX is installed, you will be prompted to upgrade. Follow the on-screen instructions to install the ActiveX control.

**Note**  You may need to disable your firewall to install Honeywell ONVIF ActiveX on your computer. You will need Windows administrator privileges to do this.

The web client application opens and live video is displayed in your browser.

**To start the web client in Chrome or Firefox**

1. Install VLC media player from the installation DVD that was shipped with your camera.

**Note**  It is strongly recommended that you install VLC media player from the supplied installation DVD rather than from the Web.
2. Follow the on-screen instructions to install the VLC player. Select Full installation.

![VLC media player 2.0.3 Setup](image)

3. Open your browser.

   **Note**  You may need to restart Firefox after installing VLC media player.

4. Type the IP address of the camera (listed in the IP Utility) in the address bar of the browser, and then press Enter.
   The login window is displayed.

5. In the **Username** field, select **admin**.

6. In the **Password** field, type the default admin login password **1234**, and then click **Login**.
   The web client application opens and live video is displayed in your browser.

   If VLC media player is not installed, the following warning message will appear:
Viewing Live Video

Live view (Figure 4-7) displays live real-time video from the selected camera.

**Figure 4-7  Live View**

Taking a Snapshot

The Snapshot function lets you save an image from Live view to a default folder on your computer (for example, C:\Documents and Settings\User\My Documents\Honeywell Video Systems\Snapshot). Files are saved as: *DeviceName_Date_Time*.jpg.

The Snapshot function is available to both administrators and guests.

**To take a snapshot in Microsoft Internet Explorer 8 and 9**

- Click the **Snapshot** button .

A message appears confirming that the snapshot was saved successfully.
To configure the settings for Snapshot, including the file type and save path, see System Setup on page 71.

To take a snapshot in Google Chrome and Mozilla Firefox

1. Click the Snapshot button.
   A window opens displaying the snapshot (your browser must be configured to allow pop-ups).

2. Right-click the window, and then click Save Image As.

3. In the Save Picture dialog box, browse to the folder where you want to save the file, enter a file name, and then click Save.

Configuring Camera Settings

The Camera Setup view (Figure 4-8) lets you configure auto exposure, day/night operation, and white balance for both primary and secondary video streams.
Basic Camera Setup Process

1. Aim and focus the camera locally (see Setting Focus and Zoom on page 24).
2. Create a typical scene. Add the motion, scene complexity, and lighting levels (day or night) expected in normal operation.
3. Log in to the web client, and then click Setup.
4. Click Camera Setup, and then adjust the image parameters under Auto Exposure, Day/Night, and White Balance to achieve the desired exposure and white balance.
5. Click Compression Setup, and then select the Statistics check box at the bottom of the screen (available in Internet Explorer only).
6. In Compression Setup, under Primary, set the resolution, frame rate, and priority mode (Quality, Bit Rate, or Frame Rate).
7. Is the delivered picture quality, bit rate, and frame rate acceptable with the appropriate motion, scene complexity, and day/night transitions?
   - Yes - Camera setup is complete.
   - No - Additional configuration is required (see below).

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes - Increase the maximum bit rate</th>
<th>No - Set the compression ratio to High or Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can you increase the target bit rate value?</td>
<td>Yes - Increase the target bit rate.</td>
<td></td>
</tr>
<tr>
<td>Can you increase the delivered bit rate close to the maximum bit rate?</td>
<td>Yes - Increase the maximum bit rate.</td>
<td></td>
</tr>
<tr>
<td>Can you increase the delivered bit rate?</td>
<td>Yes - Increase the maximum bit rate.</td>
<td></td>
</tr>
<tr>
<td>Can you increase the target bit rate value?</td>
<td>No - Reduce the resolution and/ or frame rate.</td>
<td></td>
</tr>
</tbody>
</table>
Setting Auto Exposure

To configure Auto Exposure settings, see Table 4-2. Click Apply to save your changes.

Table 4-2  Auto Exposure Settings

<table>
<thead>
<tr>
<th>Setting</th>
<th>Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALC (Automatic Light Compensation)</td>
<td>Level 1–25</td>
<td>The shutter speed is constant and brightness is controlled through the lens iris by opening and closing it. Adjust the ALC level so that the image is correctly exposed (neither too bright nor too dark). Recommended for indoor scenes, especially under fluorescent light.</td>
</tr>
<tr>
<td>ELC (Electronic Light Compensation)</td>
<td>Level 1–25</td>
<td>The lens iris is fully open at all times and brightness is achieved by controlling the electronic shutter. Adjust the ELC level to attain the desired scene brightness. Recommended for outdoor scenes.</td>
</tr>
<tr>
<td>AGC (Automatic Gain Control)</td>
<td>Off, 20 dB, 30 dB, 40 dB</td>
<td>Default is 30 dB. Increase the gain setting to increase the scene brightness. Note As AGC levels are reduced, the threshold ranges for Day-to-Night and Night-to-Day are decreased.</td>
</tr>
<tr>
<td>DSS (Digital Slow Shutter)</td>
<td>Disable, Low, High</td>
<td>Automatically provides a clear image under low-light conditions by increasing scene brightness. However, motion blur may result. The higher the setting, the likelier motion blur will occur.</td>
</tr>
<tr>
<td>Flickerless</td>
<td>[Enabled], [Disabled]</td>
<td>Eliminates flickering caused by certain lighting conditions (such as fluorescent lighting). Note Flickerless is unavailable when ELC is selected.</td>
</tr>
<tr>
<td>DNR (Digital Noise Reduction)</td>
<td>[Enabled], [Disabled]</td>
<td>DNR improves the picture quality in low light by reducing video noise. Note DNR is unavailable when AGC is set to Off.</td>
</tr>
</tbody>
</table>
Setting Day/Night and IR

To configure Day/Night settings, see Table 4-3. Click Apply to save your changes.

**Table 4-3 Day/Night Settings**

<table>
<thead>
<tr>
<th>Setting</th>
<th>Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day/Night</td>
<td>Day, Night,</td>
<td>Controls true day/night (TDN) operation. When Auto is selected, the IR cut</td>
</tr>
<tr>
<td></td>
<td>Auto</td>
<td>filter is removed automatically in low-light scenes. When Day is selected,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the IR cut filter is on at all times. When Night is selected, the IR cut</td>
</tr>
<tr>
<td></td>
<td></td>
<td>filter is off (removed) at all times.</td>
</tr>
<tr>
<td>Night Mode</td>
<td>B/W, Color</td>
<td>Sets the color mode to B/W (monochrome) or Color when in Night mode. Day/</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Night must be set to Night.</td>
</tr>
<tr>
<td>Detect Time</td>
<td>5–60 seconds</td>
<td>Sets the time (5 to 60 seconds) before the camera switches to Day or Night</td>
</tr>
<tr>
<td></td>
<td></td>
<td>mode after detecting a low-light condition or a normal light condition,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>respectively. Day/Night must be set to Auto.</td>
</tr>
<tr>
<td>Day to Night</td>
<td>2–7</td>
<td>Determines the light detection level when the camera switches to Night mode.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The lower the value, the darker the lighting conditions before the camera</td>
</tr>
<tr>
<td></td>
<td></td>
<td>switches. Day/Night must be set to Auto.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Note</strong> The Day to Night threshold must be set at least 2 less than the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Night to Day threshold setting.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Note</strong> The Day to Night threshold is decreased if the AGC level is</td>
</tr>
<tr>
<td></td>
<td></td>
<td>reduced.</td>
</tr>
<tr>
<td>Night to Day</td>
<td>4–9</td>
<td>Determines the light detection level when the camera switches to Day mode.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The higher the value, the brighter the lighting conditions before the camera</td>
</tr>
<tr>
<td></td>
<td></td>
<td>switches. Day/Night must be set to Auto.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Note</strong> The Night to Day threshold is decreased if the AGC level is</td>
</tr>
<tr>
<td></td>
<td></td>
<td>reduced.</td>
</tr>
<tr>
<td>IR Level</td>
<td>Off, Low,</td>
<td>Controls IR LED intensity. Select setting based on desired scene illumination.</td>
</tr>
<tr>
<td></td>
<td>Medium, High</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Note</strong> IR Level is unavailable when Day/Night is set to Day.</td>
</tr>
<tr>
<td>Dynamic IR</td>
<td>Off, On</td>
<td>Controls overexposure. When set to On, the camera automatically adjusts to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>minimize overexposure occurring from reflective objects in the scene.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Note</strong> Dynamic IR is unavailable when IR Level is set to Off.</td>
</tr>
</tbody>
</table>
Setting White Balance

To configure White Balance settings, see Table 4-4. Click Apply to save your changes.

Table 4-4 White Balance Settings

<table>
<thead>
<tr>
<th>Setting</th>
<th>Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WB Control</td>
<td>Auto, Manual,</td>
<td><strong>Auto</strong> adjusts white balance automatically. Recommended for</td>
</tr>
<tr>
<td></td>
<td>WBC Push</td>
<td>environments with changing lighting conditions.</td>
</tr>
<tr>
<td></td>
<td>Manual</td>
<td><strong>Manual</strong> allows user to set red and blue gain manually.</td>
</tr>
<tr>
<td></td>
<td>WBC Push</td>
<td><strong>WBC Push</strong> optimizes white balance for a given scene. Click Lock to lock</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the setting. Recommended for environments with constant lighting conditions.</td>
</tr>
<tr>
<td>R Gain</td>
<td>0–255</td>
<td>When WB Control is set to <strong>Manual</strong>, red gain is selectable from 0 to 255.</td>
</tr>
<tr>
<td>B Gain</td>
<td>0–255</td>
<td>When WB Control is set to <strong>Manual</strong>, blue gain is selectable from 0 to 255.</td>
</tr>
</tbody>
</table>

Configuring Compression Settings

The Compression Setup view (Figure 4-13) lets you configure the way video is displayed in the web client.

Figure 4-9 Compression Setup View
The camera supports two simultaneous video streams. The primary stream delivers H.264-compressed video. The secondary stream delivers either H.264 or MJPEG-compressed video (see Table 4-5).

### Table 4-5  Video Stream Configurations

<table>
<thead>
<tr>
<th>Codec Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H.264</td>
<td>H.264 compression used for primary stream; no secondary stream</td>
</tr>
<tr>
<td>H.264 + H.264</td>
<td>H.264 compression used for primary and secondary stream</td>
</tr>
<tr>
<td>H.264 + MJPEG</td>
<td>H.264 compression used for primary stream and MJPEG compression used for secondary stream</td>
</tr>
</tbody>
</table>

**Note** Your codec configuration may impact composite video (CVBS) output (see Table 4-6).

### Table 4-6  Codec Configurations and CVBS Availability

<table>
<thead>
<tr>
<th>Codec Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H.264</td>
<td>CVBS (Local Video Out) is automatically enabled.</td>
</tr>
<tr>
<td>H.264 + H.264</td>
<td>CVBS (Local Video Out) is automatically disabled.</td>
</tr>
<tr>
<td>H.264 + MJPEG</td>
<td>CVBS (Local Video Out) is automatically disabled.</td>
</tr>
</tbody>
</table>

You can configure the settings for the primary stream (Figure 4-11) and/or the secondary stream (Figure 4-12) based on the codec type you select (Figure 4-10).

**Figure 4-10  Codec Type**

**Figure 4-11  Primary Stream Settings (H.264)**

- Default settings shown for NTSC models
  - Set the Resolution
  - Set the Frame Rate
  - Set the Priority to Quality, Bit Rate, or Frame Rate
  - Set the Compression Ratio
  - Set the Target Bit Rate
  - Set the Maximum Bit Rate (kbps)
  - Set the GOP (Group of Pictures)
Note To configure the secondary stream, either H.264 + H.264 or H.264 + MJPEG must be selected as the codec type.

Figure 4-12 Secondary Stream Settings (H.264 or MJPEG)

MJPEG settings shown for NTSC models

- Set the Resolution
- Set the Frame Rate
- Set the Priority to Quality or Bit Rate
- Set the Compression Ratio
- Set the Target Bit Rate
- Set the Maximum Bit Rate (kbps)

Note GOP is not available if MJPEG is used for the secondary stream.

To configure the Primary and/or Secondary stream compression settings, see Table 4-7. Click Apply to save your changes.

Note Internet Explorer users only: Select the Statistics check box at the bottom of the screen to monitor the received bit rate and received frame rate as you make changes.

Table 4-7 Compression Settings

<table>
<thead>
<tr>
<th>Setting</th>
<th>Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>Primary: 1920×1080, 1280×720, 800×450, 640×360, 320×180</td>
<td>Sets the picture resolution.</td>
</tr>
<tr>
<td></td>
<td>Secondary: 1920×1080 (H.264), 1280×720 (H.264), 800×450 (H.264), 640×360 (H.264), 320×180 (MJPEG)</td>
<td></td>
</tr>
<tr>
<td>Frame Rate</td>
<td>1–30 (NTSC), 1–25 (PAL)</td>
<td>The number of frames displayed per second.</td>
</tr>
<tr>
<td>Priority</td>
<td>Primary Quality, Bit Rate, Frame Rate</td>
<td>Sets whether picture quality, bit rate, or frame rate has operational priority. For more information, see Configuring Priority Settings on page 51.</td>
</tr>
<tr>
<td></td>
<td>Secondary Quality, Bit Rate</td>
<td></td>
</tr>
<tr>
<td>Compression Ratio</td>
<td>Minimum, Low, Medium, High, Maximum</td>
<td>Available when Priority is set to Quality. Minimum provides the highest picture quality. Maximum provides the lowest picture quality.</td>
</tr>
</tbody>
</table>
Configuring Priority Settings

Your camera uses efficient compression technology to provide a high quality picture using minimal bandwidth. The default settings are based on typical user requirements and are adequate for most scenes. However, scenes with higher than average motion may require additional configuration.

About Priority Settings

For the primary stream, you can prioritize the picture quality, bit rate, or frame rate. For the secondary stream, you can prioritize the picture quality or bit rate. These settings are described in Table 4-8.

<table>
<thead>
<tr>
<th>Table 4-7 Compression Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Setting</strong></td>
</tr>
<tr>
<td>Target Bit Rate</td>
</tr>
<tr>
<td>Maximum Bit Rate</td>
</tr>
<tr>
<td>GOP</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 4-8 Priority Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Priority</strong></td>
</tr>
<tr>
<td>Quality</td>
</tr>
<tr>
<td>Bit Rate</td>
</tr>
<tr>
<td>Frame Rate</td>
</tr>
</tbody>
</table>

The range of user-definable bit rate values is dependent on the video stream, codec type, and resolution (see Table 4-9).
Setting Quality as Priority

To set picture quality as the priority

1. Next to Priority, select Quality.
2. Next to Compression Ratio, select Minimum, Low, Medium, High, or Maximum.
   The default setting is Medium. Selecting Minimum or Low will increase the overall picture quality and increase the delivered bit rate.
3. Next to Maximum Bit Rate, enter a value between 250 and 8000 kbps (see Table 4-9).
   If the delivered bit rate exceeds this value, the frame rate will drop.

Setting Bit Rate as Priority

To set bit rate as the priority

1. Next to Priority, select Bit Rate.
2. Next to Target Bit Rate, enter a value between 250 and 8000 kbps (see Table 4-9).
   Increasing or decreasing the target bit rate threshold will increase or decrease the picture quality accordingly.
   If the delivered bit rate exceeds this value, the frame rate will drop.

### Table 4-9 Range of User-Definable Bit Rate Values

<table>
<thead>
<tr>
<th>Stream</th>
<th>Codec</th>
<th>Resolution</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>H.264</td>
<td>1920x1080</td>
<td>Between 1000 and 8000 kbps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1280x720</td>
<td>Between 1000 and 6000 kbps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>800x450</td>
<td>Between 500 and 3000 kbps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>640x360</td>
<td>Between 500 and 3000 kbps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>320x180</td>
<td>Between 250 and 1500 kbps</td>
</tr>
<tr>
<td>Secondary</td>
<td>H.264</td>
<td>1920x1080</td>
<td>Between 1000 and 8000 kbps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1280x720</td>
<td>Between 1000 and 6000 kbps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>800x450</td>
<td>Between 500 and 3000 kbps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>640x360</td>
<td>Between 500 and 3000 kbps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>320x180</td>
<td>Between 250 and 1500 kbps</td>
</tr>
<tr>
<td></td>
<td>MJPEG</td>
<td>640x360</td>
<td>Between 1000 and 7000 kbps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>320x180</td>
<td>Between 500 and 3500 kbps</td>
</tr>
</tbody>
</table>
Setting Frame Rate as Priority (Primary Stream Only)

To set frame rate as the priority

1. Next to **Frame Rate**, select the frame rate that you want to maintain.
2. Next to **Priority**, select **Frame Rate**.
3. Next to **Target Bit Rate**, enter a value between 250 and 8000 kbps (see *Table 4-9*).

Increasing or decreasing the target bit rate threshold will increase or decrease the picture quality accordingly.

This priority allows the actual bit rate to fluctuate beyond the target bit rate while maintaining the selected frame rate.
Configuring Zoom and Focus

The Zoom and Focus view (Figure 4-13) lets you remotely adjust the camera’s zoom and focus settings.

Figure 4-13  Zoom and Focus View

By default, the camera’s zoom is set to **Wide** and focus is set to **Far**.

**Zoom**

To adjust the zoom, select one of the following buttons:

A double minus (– –) or a double positive (++) sign indicates a coarse adjustment. A single minus (–) or a single positive (+) sign indicates a fine adjustment.
Focus

To adjust the focus, select one of the following buttons:

A double minus (--) or a double positive (+++) sign indicates a coarse adjustment.
A single minus (-) or a single positive (+) sign indicates a fine adjustment.

Configuring Audio

The Audio Setup view (Figure 4-14) lets you configure the camera’s bidirectional audio settings.

Figure 4-14  Audio Setup View

There are two supported voice band channels that function in full duplex mode. Connect industry-standard line level audio input and output to your camera (see Connecting the Cables on page 21).
Camera-to-Client Settings

To listen to or capture audio from a camera

1. In the Camera to Client(PC) area, do one of the following:
   - Select the Primary Stream check box.
   - Select the Secondary Stream check box.
2. Click Apply to save the setting.

Client-to-Camera Settings

To listen to audio from the client (PC)

1. In the Client(PC) to Camera area, select the Enabled check box.
2. Click Apply to save the setting.

Note: This function is not currently supported in Chrome and Firefox.
Configuring Alarms

The Alarm Setup view (Figure 4-15) lets you configure the camera’s alarm relay settings.

Figure 4-15  Alarm Setup View

Alarm Input and Output

The camera has one alarm input and one alarm output. Connect mechanical or electrical switches to the alarm input connection to enable event-triggered recording. Connect external devices, such as sirens or flashing lights, to the alarm output connector to signal to the user that an alarm is activated.

To set the alarm input and output

1. In the Relay Settings area, set Alarm Input to Normally Open or Normally Close. An alarm is triggered when the normal alarm state (open or closed) changes.
2. Set Alarm Output to Open or Close.
3. Click Apply to save the settings.
Configuring Video Analytics

The Video Analytics view (Figure 4-16) lets you configure the camera’s tamper detection and video motion detection settings.

Figure 4-16 Video Analytics View

Each setting has three threshold levels: high (80%), medium (50%), and low (30%). When these thresholds are exceeded, camera sabotage or motion is detected and an alarm message appears above the video display (Figure 4-17).

Figure 4-17 Video Analytics Alarm Message

Note The Video Analytics screen shows a static video snapshot instead of live video. For this reason, you should open a second web client window for monitoring live video.
Setting Tamper Detection

The tamper detection settings alert the web client user to possible camera sabotage when the following occurs:

- The camera video is blurred.
- The camera is blinded.
- The camera field of view has changed.

To avoid false alarms, tamper detection should be manually disabled when:

- The video display is being configured.
- Text is overlaid on the video.
- The video display becomes too dark.

Blur Threshold

The video blurring may occur when the camera is exposed to rain or other elements or when the lens focus is set incorrectly.

To set the blur threshold

1. Next to **Blur Threshold**, select one of the following options:
   - **High (80%)**  
     Maximum blurring detection. The alarm message appears when the video is blurred by 80% or more.
   - **Medium (50%)**  
     Medium blurring detection. The alarm message appears when the video is blurred by 50% or more.
   - **Low (30%)**  
     Minimum blurring detection. The alarm message appears when the video is blurred by 30% or more.
   - **Disable (Default)**  
     Disables video blur detection.

2. Click **Apply** to save the settings.

Blinding Threshold

Camera blinding occurs when an obstacle is placed in front of the camera lens.

To set the blinding threshold

1. Next to **Blinding Threshold**, select one of the following options:
   - **High (80%)**  
     Maximum blinding detection. The alarm message appears when the camera lens is blinded by 80% or more.
   - **Medium (50%)**  
     Medium blinding detection. The alarm message appears when the camera lens is blinded by 50% or more.
   - **Low (30%)**  
     Minimum blinding detection. The alarm message appears when the camera lens is blinded by 30% or more.
   - **Disable (Default)**  
     Disables camera blinding detection.

2. Click **Apply** to save the settings.
Scene Change

Scene change detection works best detecting objects with distinct edges and corners. Scenes that appear flat or monochrome may trigger false alarms.

To set the scene change threshold
1. Click Reset Scene.
2. Next to Scene Change, select one of the following options:
   - High (80%)  Maximum scene change detection. The alarm message appears when the field of view changes by 80% or more.
   - Medium (50%)  Medium scene change detection. The alarm message appears when the field of view changes by 50% or more.
   - Low (30%)  Minimum scene change detection. The alarm message appears when the field of view changes by 30% or more.
   - Disable (Default)  Disables scene change detection.
3. Click Apply to save the settings.

Setting Video Motion Detection (VMD)
An Administrator can enable and configure up to five zones to be monitored for motion in a scene.

Note  The video analytics screen shows a static video snapshot instead of live video. For this reason, you should open a second web client window for monitoring live video.

Best Practices for Configuring Video Motion Detection
For best results configuring video motion detection, follow these steps:
1. Identify areas in the image where motion detection alarms should be triggered.
   In some applications, motion anywhere in the image needs to be reported. In other applications, users will only want to monitor specific areas such as doors, stairwells, or other areas of interest.
2. Select one of the five available regions for each area of interest, and draw the box so that it fully covers the area of interest.

Note  The camera only measures motion inside the drawn region-of-interest box. So a person or vehicle moving along the boundary of the box may or may not trigger an alarm, because their motion will only be evaluated partially. It is therefore important to adjust the region-of-interest boxes to fully cover the areas of interest.
In cameras with a wide field of view, or where activity happens far away from the camera, people and vehicles might appear rather small in the image and it might not be possible to apply a single area of interest to the whole field of view and reliably detect motion. In such cases, it is recommended that several smaller region-of-interest boxes be applied to areas where motion alarms are of most interest to the user such as entrances, restricted access areas, and so on.

3. Use the medium sensitivity at 50% as the initial setting. This setting can be changed later as needed (see Adjusting Video Motion Detection Sensitivity on page 62).

4. Observe VMD performance in all expected lighting conditions after the initial configuration is applied. Ensure that relevant scene motion does trigger alarms and ensure that the camera is not reporting false alarms (such as VMD alarms triggered due to image noise).

### Setting Video Motion Detection

**To set video motion detection**

1. Next to **Region**, select one of the following:
   - Region 1 (Red)
   - Region 2 (Green)
   - Region 3 (Blue)
   - Region 4 (Magenta)
   - Region 5 (Cyan)

2. Next to **VMD**, select **Enable**.
   A box corresponding to the region you selected in step 1 appears on the video display in its default location.

3. If you want, you can move and resize the box.
   a. To move the box, click inside the box and drag it to a new location on the screen.
   b. To resize the box, hover your mouse over one of the sides of the box until the mouse pointer becomes a double-headed arrow. Then drag the side to its new position.

4. Next to **Motion Threshold**, select one of the following options:
   - **High (80%)** Least sensitive to motion
   - **Medium (50%)** Medium sensitivity to motion (recommended for initial setting)
   - **Low (30%)** Most sensitive to motion

5. Click **Apply**.

6. Repeat steps 1 to 5 to configure additional regions if desired.

7. To confirm that the VMD settings have been applied, go to another screen (such as Camera Setup) and then return to the Video Analytics screen. Check that the VMD settings have not changed.

---

**Note** To disable a region that you have configured, next to **Region**, click the region that you want to disable, and then, next to **VMD**, select **Disable**.
**Adjusting Video Motion Detection Sensitivity**

**Increasing Sensitivity**

If relevant scene motion does not trigger VMD alarms, do the following:

- Decrease the *Motion Threshold* level (from 80% to 50%, or from 50% to 30%). This will increase the sensitivity of the motion detection, causing smaller objects to be detected and decrease the contrast level (amount of noise) required to trigger an alarm. This should be the primary adjustment mechanism.

- Decrease the size of the region-of-interest box (and add more regions if needed). This will cause smaller objects to be detected and trigger VMD alarms.

---

**Note**  
After VMD sensitivity is increased, observe the performance in other lighting conditions in case further adjustments are required to prevent false alarms.

---

**Decreasing Sensitivity**

If VMD alarms are triggered even when there is no motion and no significant changes in the video, do the following:

- Increase the *Motion Threshold* level (from 30% to 50%, or from 50% to 80%). This will decrease the sensitivity of the motion detection by increasing the contrast level (amount of noise) required to trigger an alarm. This should be the primary adjustment mechanism.

- Increase the size of the region-of-interest box. This will prevent smaller objects (or smaller areas of noise) from triggering VMD alarms.

**Sample Video Motion Detection Configurations**

The following examples are provided for illustration purposes only. Factors such as lighting level, contrast, and image noise could affect VMD performance and require further adjustments as described above.

**Normal Field of View**

In a normal field of view, with a person walking in front of the camera, the maximum recommended region-of-interest box sizes would be as shown by the red boxes in *Figure 4-18*, *Figure 4-19*, and *Figure 4-20*. 
Figure 4-18  VMD Configuration (Low Motion Threshold - 30%)

Figure 4-19  VMD Configuration (Medium Motion Threshold - 50%)
Wide Field of View

For cameras with a wide-angle field of view covering a larger scene, people who walk far away from the camera might appear rather small in the image. If motion needs to be detected in the entire field of view, the following region-of-interest box configuration is recommended:

- Three smaller boxes, set to 30%, covering the upper portion of the image where people appear small.
- Two larger boxes, set to 50%, covering the lower portion of the image where objects appear larger.
Configuring Date and Time

The Date and Time view (Figure 4-22) lets you configure the time zone, the NTP server, and text overlay settings.

Figure 4-22  Date and Time View

Setting the Time Zone

To set the time zone

1. Under Time Zone Settings, select the time zone for your location from the drop-down list.
2. If you want to activate automatic compensation for Daylight Saving Time, select the DST check box.

Setting the Network Time Protocol (NTP) Server

Network Time Protocol (NTP) is a networking protocol for clock synchronization between computer systems over packet-switched, variable-latency data networks. Honeywell ONVIF cameras use NTP to synchronize camera time with an NTP server.

Note  Some anti-virus software, such as McAfee, will force-stop the NTP service. Contact your local network administrator and check your anti-virus software filtering policy before using an NTP service.
There are two ways to configure NTP:
- Use a DHCP server to set the NTP server address.
- Specify an NTP server IP address for time synchronization.

**DHCP**

**To use a DHCP server to synchronize time**
- Under **NTP Settings**, select the **DHCP** check box.
  The camera will try to use your DHCP server to set the NTP server address. Contact your local network administrator to confirm that your DHCP server has either a) installed and enabled the NTP server in your workstation, or b) configured the DHCP server to send NTP server address(es) to clients (most cases).

**NTP Server**

There are two types of NTP servers you can use to synchronize time: a public NTP server or a local NTP server.

**To use a public NTP server to synchronize time**
1. Search online for a public NTP server IP address.
2. Enter the IP address of the public NTP server in the **NTP Server** field under **NTP Settings**.
   
   **Note** Before using a public NTP server, contact your local network administrator to ensure that your network settings and firewall will not block the server.

**To use a local NTP server to synchronize time**
- Enter the IP address of your local NTP server in the **NTP Server** field under **NTP Settings**.
- Alternatively, install the Meinberg Network Time Protocol software included on the installation DVD that was shipped with your camera. The software synchronizes your computer clock with an external time source (typically another computer running an NTP server) and can also set up your computer as an NTP server from which other computers can synchronize.
Installing the NTP Software Included With Your Camera

To install the NTP software

1. Insert the DVD that was shipped with your camera into your workstation's DVD-ROM drive, and then browse to the NTP folder.

2. Click one of the following setup files:

   - **ntp-4.2.6p5@london-o-lpv-win32-setup.exe**  

   - **ntp-4.2.4p8@lennon-o-lpv-win32-setup.exe**  
     NTP installation package for Windows NT/2000 (IPv4 only)

   - **ntp-time-server-monitor-1.04.exe**  
     An NTP time server monitor program for Windows operating systems that allows configuration of the local NTP service and graphical monitoring of local and remote NTP servers. (Optional)

   For most applications, use **ntp-4.2.6p5@london-o-lpv-win32-setup.exe**.

3. Follow the on-screen instructions to install the software.

   On the **Choose Components** screen, click **Next** to install the default set of components.
4. On the **Please specify your configuration settings** screen you must do at least one of the following to specify the NTP servers to synchronize with:

- If the computer can access public Internet time servers, then under **Want to use predefined public NTP servers** select the closest geographic region to where the computer is installed. If the computer cannot access the public Internet (for example, if it is not connected to the Internet or if a firewall blocks access to the NTP port), then leave this setting as **None**.
- If you want the computer to be able to synchronize with specific private servers (for example, an NTP server on the corporate network or another computer running the Meinberg NTP service), enter those host names or IP addresses under **You can specify up to 9 NTP servers (comma separated) you want to use**. If you specify more than one computer, separate them with commas.
- If you want the computer to add the local clock as a last resort reference if both of the above options have not worked because your network security settings have blocked them, select the **Add local clock as a last resort reference** checkbox.

You can set up all three options, if appropriate. The NTP service automatically polls all of them and selects the best one to synchronize with.

If the computers that need to have synchronized clocks all have access to public Internet time servers, then you can have all of them synchronize with the same servers.

If most of the computers do not have access to an NTP server, then you can select one computer (for example, the Alarm Management Server) to be the time source, and have it access a reliable NTP server, via the Internet, a corporate intranet, or even a hardware radio clock.

**Note**  
NTP uses UDP on port 123, so this port must be unblocked on the computer you select to act as the time server for the other computers to synchronize with.
5. When prompted to review the generated confi file, click No.

6. On the NTP Service Options screen, accept the defaults, and then click Next.

7. On the Enter the user ID and password used for running the service screen enter a password for the NTPD account, and then click Next.

**Note** Enter a strong security password, such as ASDFGhjk;’, or you will get an error (code 2245).
After clicking **Next**, if a message appears indicating that the computer policy does not allow you to create a new user account, click **Back** and select one of the other account options (either **Use existing account** or **Use SYSTEM account**) from the top of the **Please specify your service settings** screen.

8. Click **Finish**.

### Installing an NTP Time Server Monitor (Optional)

If you want, you can also install an NTP time server monitor program that lets you configure local NTP service and monitor local and remote NTP servers.

**To install the NTP Time Server Monitor**

1. Insert the DVD that was shipped with your camera into your workstation's DVD-ROM drive, and then browse to the **NTP** folder.
2. Double-click **ntp-time-server-monitor-1.04.exe**.
3. Follow the on-screen instructions to install the software.

For more information, visit [http://www.meinbergglobal.com](http://www.meinbergglobal.com) and click **Support ➤ Software Download ➤ NTP Download**.

### Overlay Settings

In the **Overlay Settings** area you can configure the appearance of on-screen text, including color, size, and location.

![Overlay Settings]

- Click to display the camera name.
- Enable/disable date display.
- Enable/disable time display.
- Select a background color: **White**, **Black**, or **Transparent**.
- Choose a text color: **Black** or **White**.
- Select the text size.
- Select the overlay position.
System Setup

The System Setup view (Figure 4-23) lets you configure port allocation settings and the snapshot file type and save path (Internet Explorer only). You can also reset the camera to factory defaults and restart the camera from this screen.

Figure 4-23 System Setup View

Setting the Port Allocation

In the Port Allocation area you can enter values for the HTTP and RTSP ports.

If you are running the web client in Chrome or Firefox, note that the following ports are blocked:

<table>
<thead>
<tr>
<th>Ports Blocked by Chrome</th>
<th>Ports Blocked by Firefox</th>
</tr>
</thead>
<tbody>
<tr>
<td>2049, // nfs</td>
<td>2049, // nfs</td>
</tr>
<tr>
<td>3659, // apple-sasl / PasswordServer</td>
<td>4045, // lockd</td>
</tr>
<tr>
<td>4045, // lockd</td>
<td>6000, // X11</td>
</tr>
<tr>
<td>6665, // Alternate IRC [Apple addition]</td>
<td>6665, // Alternate IRC [Apple addition]</td>
</tr>
<tr>
<td>6666, // Alternate IRC [Apple addition]</td>
<td>6667, // Standard IRC [Apple addition]</td>
</tr>
<tr>
<td>6668, // Alternate IRC [Apple addition]</td>
<td>6669, // Alternate IRC [Apple addition]</td>
</tr>
</tbody>
</table>
Setting the Snapshot File Type and Path (Internet Explorer Only)

In the **Snapshot** area you can set the file type and save path for snapshots.

1. Next to **Path**, click ![ellipsis button](image) to choose a save path.
2. Next to **Type**, select either BMP or JPEG (JPEG is the default file type).
3. Click **Apply** to save the changes.

---

**Note**  
In Google Chrome and Mozilla Firefox, the snapshot file type and save path are set when saving the snapshot (see *Taking a Snapshot* on page 43).

---

Resetting and Rebooting the Camera

In the **Camera Reset** area there are three options for resetting the camera.

- **Reset to Factory Defaults**  
  Resets the camera to the factory defaults, including the network settings.
- **Reset**  
  Resets the camera to the factory defaults, except the network settings.
- **Restart**  
  Restarts the camera while maintaining the existing configurations.

---

**Note**  
Each of these functions takes approximately two minutes to complete. During that time, the camera’s connection to the web client is lost.
Viewing Device Information

The Device Information view (Figure 4-24) displays the network settings and firmware details of the camera.

**Figure 4-24  Device Information View**

![Device Information View](image)

In the **Device Information** area you can view read-only network settings, firmware settings, and video formats for the camera without having to access the IP Utility.

- **Firmware Version** including product name and version
- **Video Format** - NTSC or PAL
- **Device Name** as entered in the IP Utility program
- **CVBS** (local video out for aiming and focusing)
- **IP Address** on the network (DHCP/Static/APIPA)
- **Subnet Mask** and **Default Gateway** address that connects the camera to the network
- **MAC Address** is a factory assigned address unique for each device
Logging Out of the Web Client

To log out of the web client
• Click LOGOUT in the upper right corner of the web client window.

Uninstalling Honeywell ONVIF ActiveX (Internet Explorer)

To uninstall the IP Utility in Windows 7
1. Click the Start button, click Control Panel, click Programs, and then click Programs and Features.
2. Click Honeywell ONVIF ActiveX, and then click Uninstall.
   If you are prompted to confirm that you want to uninstall the application, click Yes.

To uninstall the IP Utility in Windows XP
1. Click Start, click Control Panel, and then double-click Add or Remove Programs.
2. Click Honeywell ONVIF ActiveX, and then click Remove.
3. You are prompted to confirm that you want to uninstall the application. Click Yes.

Uninstalling VLC Media Player (Chrome and Firefox)

To uninstall VLC media player in Windows 7
1. Click the Start button, click Control Panel, click Programs, and then click Programs and Features.
2. Click VLC media player 2.0.5, and then click Uninstall.
   If you are prompted to confirm that you want to uninstall the application, click Yes.

To uninstall VLC media player in Windows XP
1. Click Start, click Control Panel, and then double-click Add or Remove Programs.
2. Click VLC media player 2.0.5, and then click Remove.
3. You are prompted to confirm that you want to uninstall the application. Click Yes.
Troubleshooting

If you encounter an issue with your camera, please read this section first. If you require additional assistance, call 1-800-323-4576 (North America only) or visit our website https://honeywellsystems.com/ss/techsupp/index.html. See the back cover for international contact information.

Any equipment returned to Honeywell Video Systems for warranty or service repair must have a Return Merchandise Authorization (RMA) number. The RMA number must be clearly marked on all return packages and internal paperwork.

- **Lens not in optical focus**
  - Check that the lens cap has been removed from the camera.
  - Check the lens and bubble for dust, fingerprints, etc., and clean if needed.

  **Note** Use care when cleaning the lens and bubble that you do not scratch them. Use a soft cloth or lens cleaning paper with alcohol or lens cleaning liquid, and move in a spiral motion from the center outward. Repeat until the lens is completely clean.

- **Live View does not display video**
  - Check that your web browser settings have been configured to allow ActiveX controls
  - Check that the network cable from the camera is connected to both the camera and the network.
  - Check that the camera assembly board DIP switch settings are configured correctly.

- **IP Utility installation fails**
  - Disable Norton AntiVirus software, if present.
  - Check that Microsoft .NET Framework 3.5 is enabled on your PC.

- **Cannot connect to a device**
  - Your PC and the device you are connecting to may be on different subnets. Contact your network administrator for assistance.
**Specifications**

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**Note** These specifications are subject to change without notice.

<table>
<thead>
<tr>
<th><strong>Video Signal</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Video Standard</td>
</tr>
<tr>
<td>Scanning System</td>
</tr>
<tr>
<td>Image Sensor</td>
</tr>
<tr>
<td>Number of Pixels (H×V)</td>
</tr>
<tr>
<td>Minimum Illumination</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Video Output</td>
</tr>
<tr>
<td>S/N Ratio</td>
</tr>
<tr>
<td>Auto Gain Control</td>
</tr>
<tr>
<td>Auto Electronic Shutter</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Lens Type</td>
</tr>
<tr>
<td>Auto Lens Iris Control</td>
</tr>
<tr>
<td>IR LEDs</td>
</tr>
<tr>
<td>IR Illumination Distance</td>
</tr>
<tr>
<td>White Balance</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Electrical</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Voltage</td>
</tr>
<tr>
<td>Power Consumption</td>
</tr>
</tbody>
</table>
## Mechanical

<table>
<thead>
<tr>
<th>Dimensions (W × H)</th>
<th>11.83 × 4.3 in. (300.5 × 109.1 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>3.92 lb (1.78 kg)</td>
</tr>
<tr>
<td>Construction</td>
<td>Housing: Die-cast aluminum</td>
</tr>
<tr>
<td></td>
<td>Finish: Cool gray powder coat</td>
</tr>
<tr>
<td>Connector</td>
<td>Aux video output: 2-pin Molex connector</td>
</tr>
<tr>
<td></td>
<td>Power input: Removable screw terminal block</td>
</tr>
<tr>
<td></td>
<td>Network: RJ45 connector</td>
</tr>
<tr>
<td></td>
<td>Alarm I/O</td>
</tr>
<tr>
<td></td>
<td>Audio input</td>
</tr>
</tbody>
</table>

## Environmental

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Operating: -4°F to 122°F (-20°C to 50°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Storage: -40°F to 158°F (-40°C to 70°C)</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>0% to 85%, non-condensing</td>
</tr>
<tr>
<td>Rating</td>
<td>IP66</td>
</tr>
</tbody>
</table>

## Network

<table>
<thead>
<tr>
<th>Video Compression</th>
<th>Dual stream H.264 and/or H.264/MJPEG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>Primary Stream: 1920×1080, 1280×720, 800×450, 640×360, 320×180</td>
</tr>
<tr>
<td>Software Update</td>
<td>Field upgradeable</td>
</tr>
<tr>
<td>Frame Rate</td>
<td>Up to 30 fps (NTSC) / Up to 25 fps (PAL)</td>
</tr>
<tr>
<td>Video Streaming</td>
<td>Dual streaming: H.264 and/or H.264/MJPEG</td>
</tr>
<tr>
<td></td>
<td>Controllable frame rate and bandwidth</td>
</tr>
<tr>
<td>Security</td>
<td>Multiple user access levels with password protection</td>
</tr>
<tr>
<td>Video Access from Web Browser</td>
<td>Full control of all camera settings available to administrator</td>
</tr>
<tr>
<td>Minimum Browsing Requirements</td>
<td>Pentium 4 CPU 3.1 GHz or faster, 1 GB RAM (32 bit) or 2 GB RAM (64 bit), Windows 7 (32/64 bit), Windows Server 2008 R2 (64 bit), Windows Vista SP1, Windows Server 2003 R2 (32 bit), Windows XP Professional SP3, Internet Explorer 8 or 9, Google Chrome v23.0.1271.97 or later, Mozilla Firefox v17.01 or later</td>
</tr>
<tr>
<td>Installation, Management, and Maintenance</td>
<td>Honeywell IP Utility software identifies the IP address, checks device status, and upgrades firmware over HTTP. Available at <a href="http://www.honeywellsystems.com/support/download-center/index.html">www.honeywellsystems.com/support/download-center/index.html</a></td>
</tr>
<tr>
<td>Supported Protocols</td>
<td>HTTP, TCP, RTSP, RTP, UDP, ARP, DNS, NTP, RTCP, FTP, ICMP, DHCP, Bonjour, IGMP, SSH</td>
</tr>
<tr>
<td>Standards</td>
<td>ONVIF (Profile S)</td>
</tr>
<tr>
<td>Regulatory</td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>-------</td>
</tr>
<tr>
<td>Emissions</td>
<td>FCC Part 15B, EN 55022</td>
</tr>
<tr>
<td>Immunity</td>
<td>EN 50130-4</td>
</tr>
<tr>
<td>Safety</td>
<td>EN 60950-1</td>
</tr>
<tr>
<td></td>
<td>North America ETL listed to UL/CSA 60950-1</td>
</tr>
</tbody>
</table>