Quick Guide

Roughneck Pro License Plate Recognition Box Camera

V2008-WNL-LPR Box Camera and

V2008-W1250-LPR Box Camera and Housing

XX324-30-01

Cybersecurity Notification: All network connected devices should use best practices for accessing the device. To that end, these network cameras do not have a default password. A user defined password with minimum password strength requirements must be set to access the device. **See page 16** of this Quick Guide for set-up instructions.

Document Number: 8009-8324-30-01 Product specifications subject to change without notice.

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WARNING

- This camera operates at 12 VDC/24 VAC/PoE (IEEE 802.3af Class 3).
- Installation and service should be performed only by qualified and experienced technicians and comply with all local codes and rules to maintain your warranty.
- We are NOT liable of any damage arising either directly or indirectly from inappropriate installation which is not depicted within this documentation.
- To reduce the risk of fire or electric shock, do not expose the product to rain or moisture.
- Wipe the camera with a dry soft cloth. For tough stains, slightly apply with diluted neutral detergent and wipe with a dry soft cloth.
- Do not apply benzene or thinner to the camera, which may cause the surface to melt or lens fog.
- Avoid aligning the lens with extremely bright objects (e.g., light fixtures) for long periods of time.
- Avoid operating or storing the camera in the following locations:
  - Extremely humid, dusty, or hot/cold environments (recommended operating temperature: 14°F to +131°F/-10°C to +55°C)
  - Close to sources of powerful radio or TV transmitters
  - Close to fluorescent lamps or objects with reflections
  - Under unstable or flickering light sources

CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN	THIS SYMBOL INDICATES THAT DANGEROUS VOLTAGE CONSTITUTING A RISK OF ELECTRIC SHOCK IS PRESENT WITHIN THE UNIT.
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE THE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.	THIS SYMBOL INDICATES THAT IMPORTANT OPERATING AND MAINTENANCE INSTRUCTIONS ACCOMPANY THIS UNIT.

WEEE (Waste Electrical and Electronic Equipment). 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.

Get Started

This quick guide is designed as a reference for installation of the camera. For additional information on the camera's features, functions, and detailed explanation of the web interface controls, refer to User's Manual for details. Please read this quick guide thoroughly and save it for future use before attempting to install the camera. From this guide you will get:

- Product Overview: The physical parts, features and dimensions of the camera and housing option.
- Installation and Connection: The instructions on installation and wires connection for the camera.

FCC Compliance Statement

Information to the user: This unit has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This unit generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this unit does cause harmful interference to radio or television reception, which can be determined by turning the unit off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the unit and receiver.
- Connect the unit to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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

CE Statement

Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. The manufacturer declares that the unit supplied with this guide is compliant with the essential protection requirements of EMC directive and General Product Safety Directive GPSD conforming to requirements of standards EN55022 for emission, EN 50130-4 for immunity, EN 300 and EN 328 for WIFI.

This product meets regulations required to be NDAA, GSA schedule and TAA approved.

1 Product Overview

1.1 Camera Physical Characteristics

The V2008-WNL-LPR box camera requires a customer-supplied lens and environmental housing. Follow the instructions provided with the lens and housing for installation of the camera. The V2008-W1250-LPR is supplied with the V12-50VF-P lens and the HPOE-100 camera housing. Both models include an SD card.

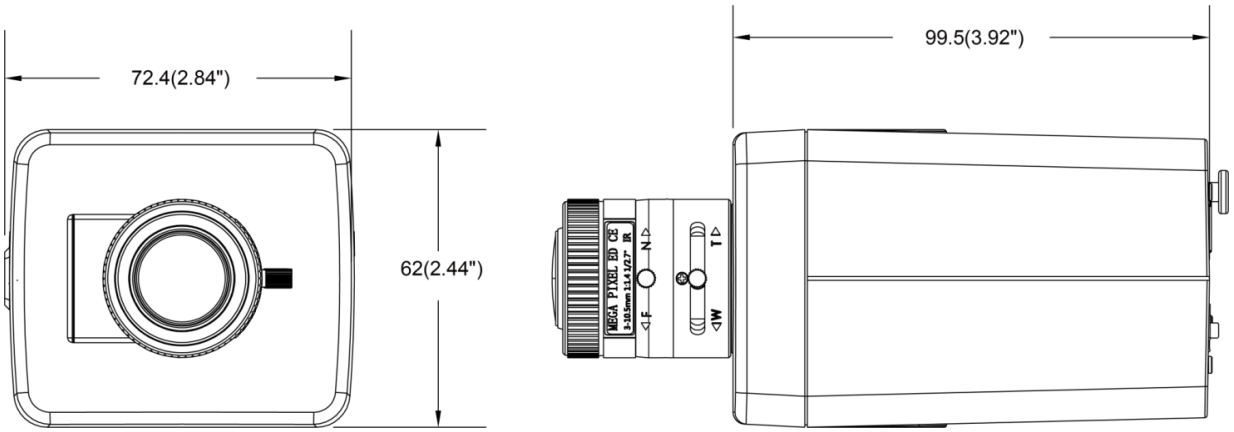
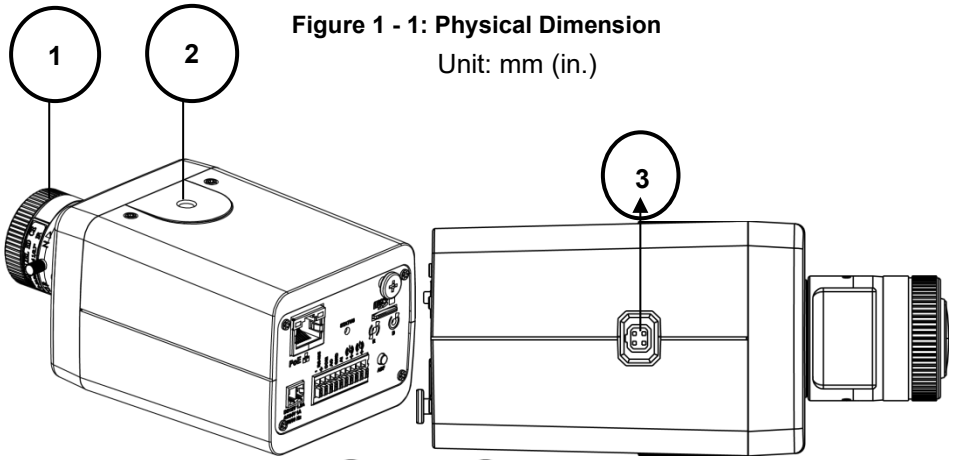


Figure 1 - 1: Physical Dimension

Unit: mm (in.)

Lens shown for illustration purposes only



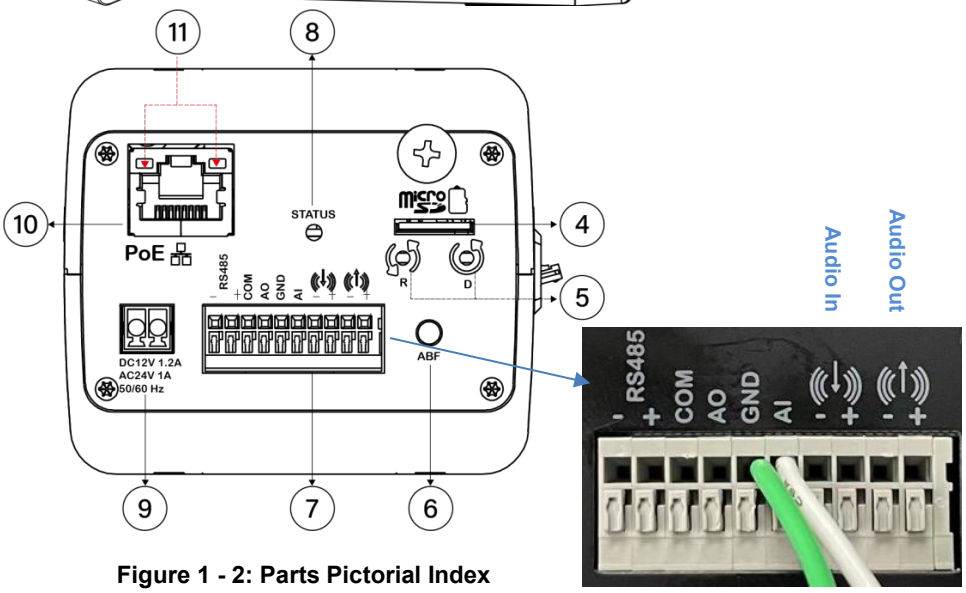


Figure 1 - 2: Parts Pictorial Index

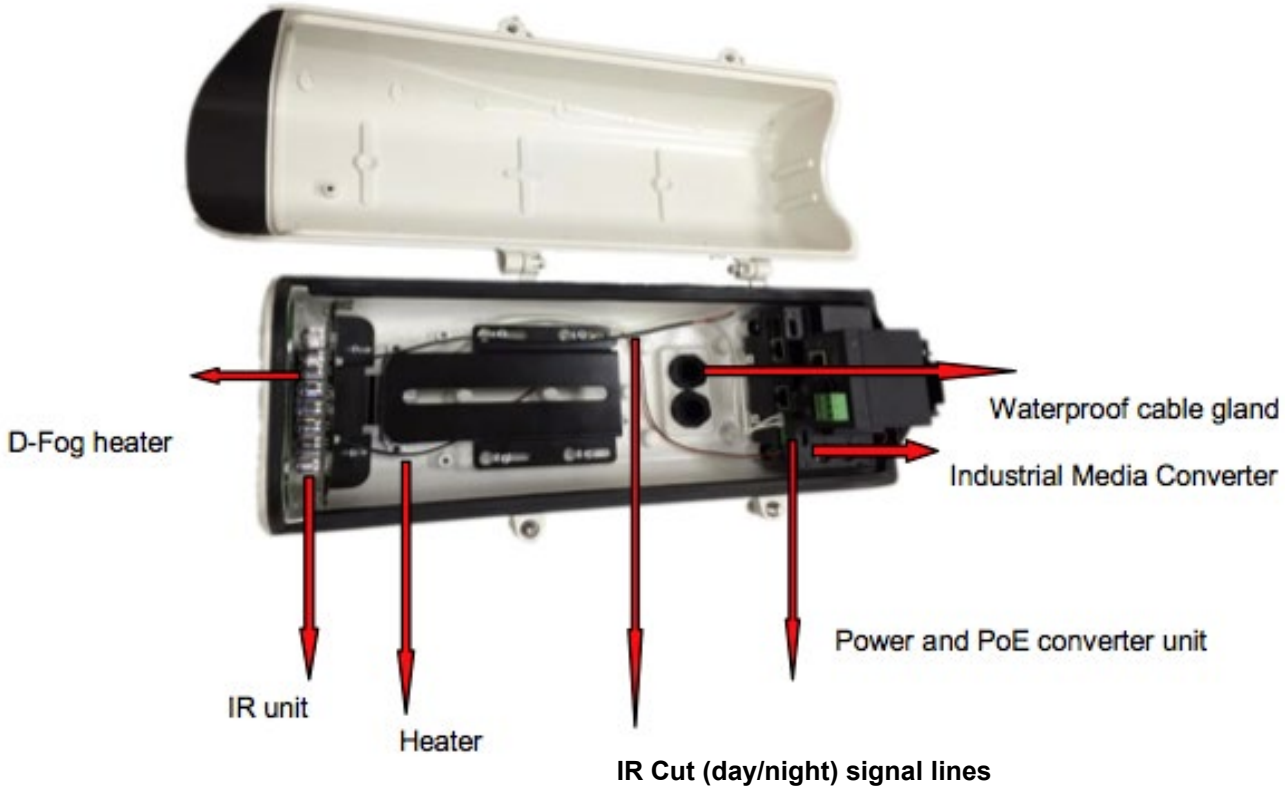
No	Name	Description	
1	Lens	Lens (V12-50VF-P supplied with V2008-W1250-LPR) is attachable to the camera's lens mounting ring.	
2	Mount Screw Hole	Both top and bottom of the camera housing have one mount screw hole (1/4"-20) for mounting the camera. With V2008-W1250-LPR, use mounting screw provided to mount camera on to camera mounting plate of HPOE-100 housing.	
3	DC (Auto) Iris Control Port	When mounting the lens, connect the DC iris control line with the port.	
4	Micro SD Card Slot	Insert a micro SD card (supplied) into the slot for recording and file storage.	
5	Reset Button	Press the button for 1 second to reboot the camera.	
	Default Button	Press the button for 6 seconds to restore camera's settings to factory default settings.	
6	ABF	Press the button for approximately 1 second to get the right focus automatically and immediately.	
7	DI/DO Port	DI/DO (Digital Input/Output) ports are equipped for external devices, e.g., smoke detector, siren, microphone. • **RS-485:** Via "-" and "+" ports under "RS485"; connect to external RS-485-based device that can be used to perform pan/tilt action. • **Alarm Out**: Via "COM" and "AO" ports; connect to external device to be triggered through alarm output signals. • **Alarm In**: Via "GND" and "AI" ports; connect to external device that can trigger alarm input signals. • **Audio In**: Via "+" and "" ports; connect to external device such as microphone that receives sound for camera. • **Audio Out**: Via "+" and "" ports; connect to device such as speaker to transmit sound.	
8	Status LED	Solid Red	Indicates **boot up** is running. After 2 ~ 3 seconds: - Solid Red to Flashing Green if boot up is normal. - Remains Solid Red if an error occurs. - Turns off 3 minutes after a successful boot.
		Flashing Amber	Indicates firmware upgrade is running.
9	12 VDC or 24 VAC Port	Power the camera via **12 VDC** or **24 VAC** power source.	
10	RJ-45 Ethernet/ PoE Port	Connect an Ethernet cable terminated with RJ-45 connector to the PoE RJ-45 port for both power supply and network connectivity purposes simultaneously.	
11	LED Indicators	Solid Green	Indicates a live connection is established.
		Flashing Orange	Indicates data is being transmitted/received between camera and the network.

Table 1 - 1: Parts Pictorial Index Description

1.2 Housing Physical Characteristics

The V2008-WNL-LPR can be installed in the HPOE-100 camera housing; this is included with the V2008-W1250-LPR.

Mounting Configuration and Dimensions:



Housing Power Consumption:

D-Fog Heater	Always On (9 W)
Heater	59°F/15°C On, 77°F/25°C Off (10 W)
IR LEDs	3 W

2 Installation and Connection

2.1 Package Contents

Check if all items listed below are included in the packing box.

1. Box Camera * 1
2. V12-50VF-P Lens * 1 (if V2008-W1250-LPR is purchased)
3. Terminal Block * 1
4. SD Card * 1
5. HPOE-100 Camera Housing * 1 (if V2008-W1250-LPR is purchased); the housing includes an accessory pack with all necessary hardware for installation, including a CAT5 cable assembly. Note that an optional HPOE-PA Pole Mount Adapter is also available.

2.2 Installation

The following tools might help you complete the installation:

- Drill
- Screwdrivers
- Wire cutters

2.2.1 Checking Appearance

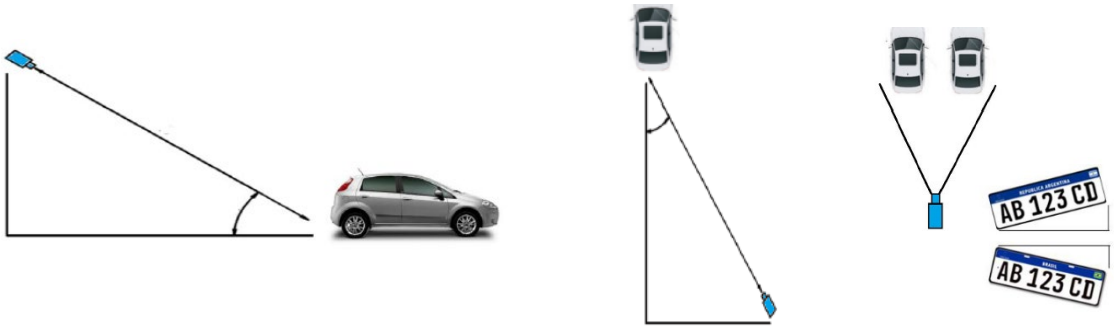
When unpacking, check to see if there is any visible damage to the appearance of the camera and its accessories. The protective materials used for the packaging should protect the camera from most accidents during shipment. Remove the protective materials from the camera after every item is properly checked in accordance with the list in ***Package Contents***.

2.2.2 LPR Installation Guidelines

When used to capture license plates, in order to obtain the maximum recognition rate, the LPR camera must be installed properly to capture license plate images that meet the required quality. There are three (3) aspects that must be taken into account when installing the LPR camera: minimum size of the plate, scene lighting and camera angle. This section will outline how the camera must be installed and what the most common mistakes are.

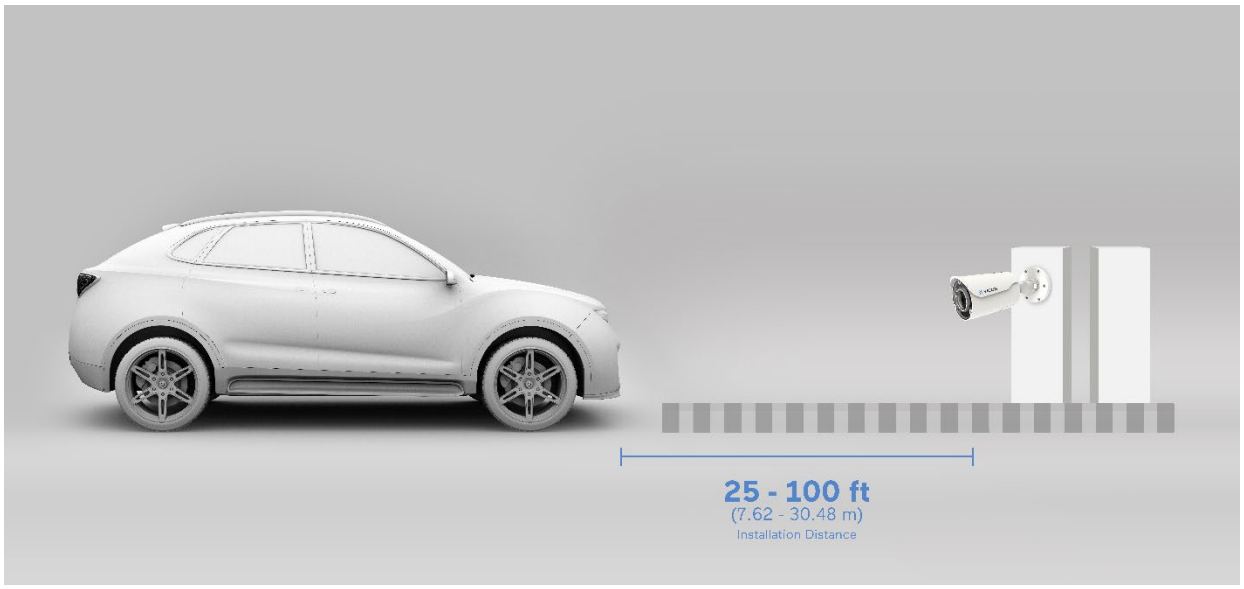
- **Installation Requirements**
  - License Plate Size: On the image, the characters on the license plate should have an average height between 20 and 70 pixels, with 25 pixels being a good reference value. While the software will recognize letters of 10 pixels in height, there are certain characters in some countries that would be difficult to discern at this size; the camera sensitivity also affects the ability to read characters of this size. This should be taken into account when setting up the detection range.

- **Camera Position**
  - The recommended vertical angle is about 20°. The maximum recommended value is 35°. The recommended horizontal angle is about 20°. The maximum recommended value is 35°. In a two-lane situation, the angle between the plates and the X axis of the scene must be less than 25°.

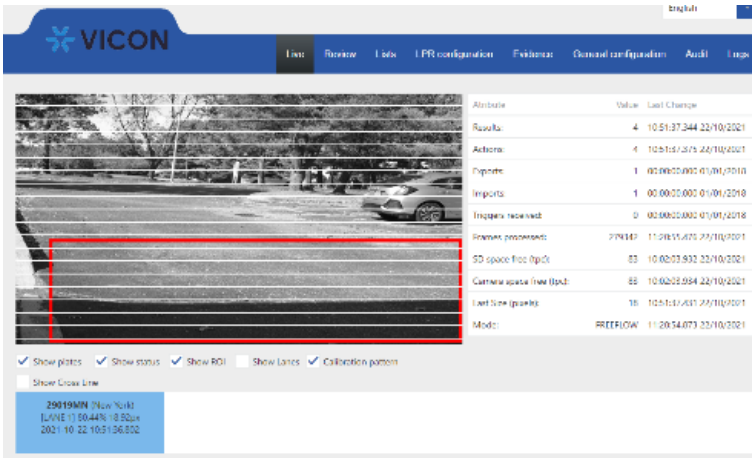


Vertical Horizontal Angle between Plates

  - The suggested installation distance is 25 – 100 ft (7.62 – 30.48 m) for the 12-50mm lens supplied with the V2008-W1250-LPR.
    When using a customer-supplied lens, the distance is based on the focal length of the lens and should be calculated for a 720p image with a horizontal Pixels per Foot (PPF)=80.



Refer to the Vicon LPR Camera Setup and Integration Guide for details on setting up the proper field-of-view (FOV). On the Live screen on the camera interface, the Calibration pattern can be enabled; calibration lines are shown at 20 pixels. Verify that license plates are at or above 20 pixels for optimal reading. Adjust FOV from the main camera page.



2.2.3 Installing the Lens

1. Attach the supplied V12-50VF-P lens (if V2008-W1250-LPR is purchased) or the customer-supplied lens onto the camera's lens mounting ring. Screw the lens onto the lens mount. Be careful to prevent dust from entering the space between the lens and the imager. If necessary, use clean, compressed air to remove any foreign matter (refer to the instructions for the lens as needed).

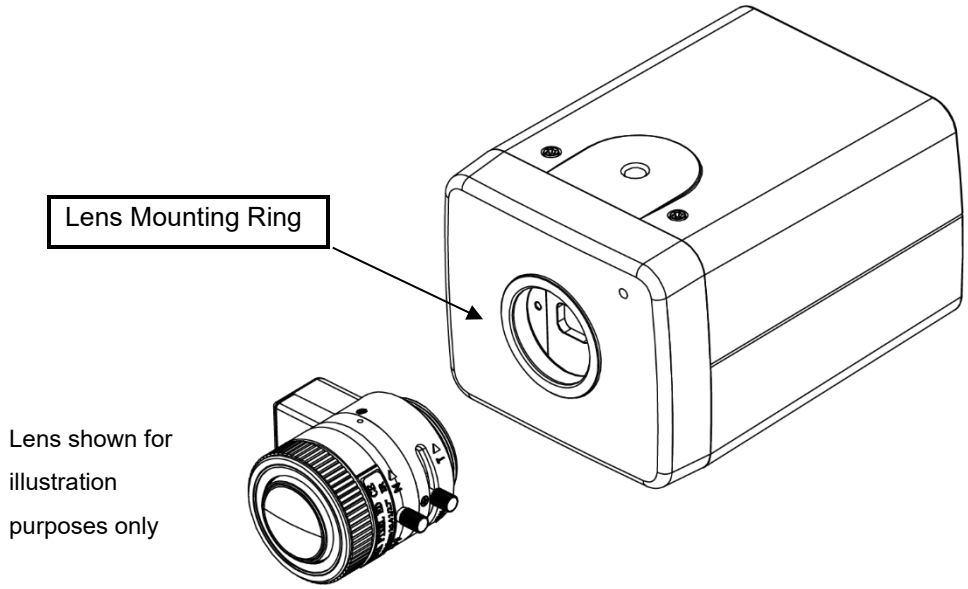


Figure 2 - 1: Installing the Lens

Note	Make sure the lens does not touch the camera imager when installed.

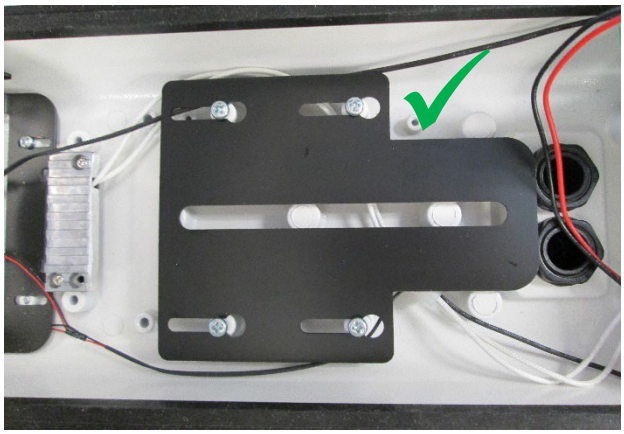
2.2.4 Install the SD Card

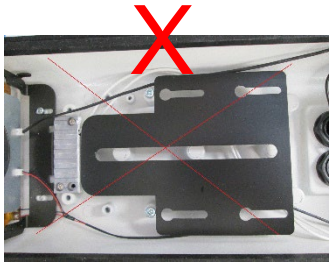
Insert the supplied SD card into the slot on the rear of the camera. Refer to Figure 1-2. The SD card then has to be recognized and formatted in the camera's GUI, Event Setting, SD Card tab. Refer to the LPR Camera Setup Guide for details.

2.2.5 Mounting the Camera in the HPOE-100 Housing

Installation Recommendation: If the camera housing is to be installed in a tropical, sea coastal, or an environment where salt water or corrosive industrial waste-water/moisture are present, be sure to seal each stainless steel screw and fitting with a silicon grease compound. This helps prevent electrolysis and extend the life span of the camera and housing. If the camera is installed in an inverted position, use the camera software to reconfigure the camera orientation for normal operation.

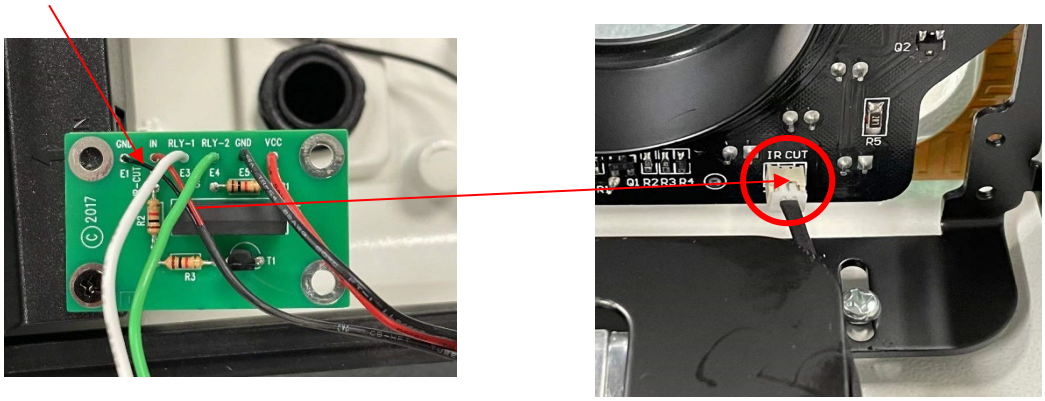
1. Open the camera housing using the Allen key provided.
2. Remove the mounting plate that comes installed in the housing. For this installation, use the flat mounting plate that is supplied. This mounting plate should be oriented with the tongue oriented toward the rear of the housing. Refer to graphics below.





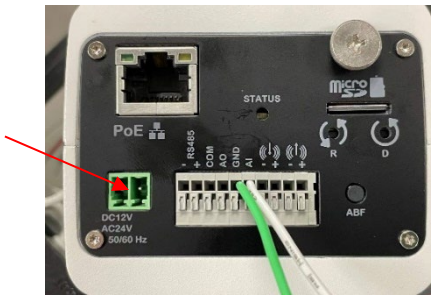
3. Mount the camera to the mounting plate through the slot in the plate using the supplied ¼-20 hex screw, lock washer, black plastic spacer (oriented so that the spacer guide pins in the slot are towards the back of the housing) and washer (used as a spacer). This hardware is in a separate bag in the housing accessory bag (labelled 8006703601).
4. The housing has a small day/night PC board pre-mounted into the rear of the housing. Disconnect the red/black wire connected to the IR OUT on the IR board and replace it with the similar red/black wire with connector from the day/night PCB. The IR PCB, via its light sensor, controls the relay on the day/night PC board mounted in the rear of the housing. The day/night mode relay connection enables the synchronization of IR light and the automated day/night switching mechanism on the camera.

Day/Night PC Board

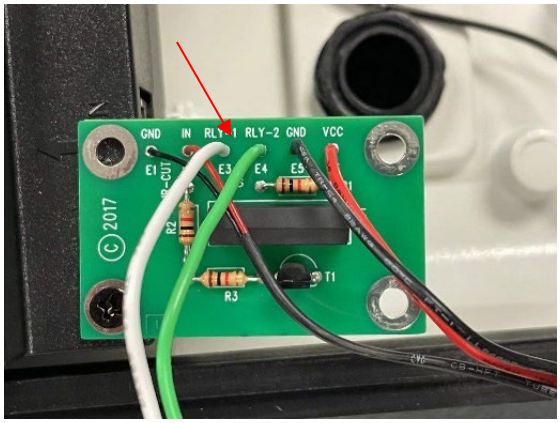


For ease of installation, it is recommended to make the following connections before installing the camera mounting assembly into the housing.

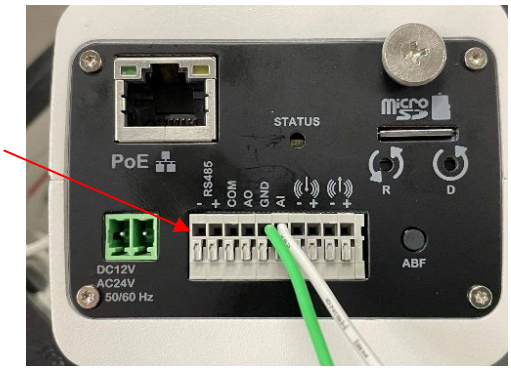
5. Two (2) additional red and black wires with stripped/tinned ends on the day/night PC board connect to the housing's 12 VDC interface board screw connector.



6. Locate the white and green wires that are on the small day/night PC board mounted in the housing.



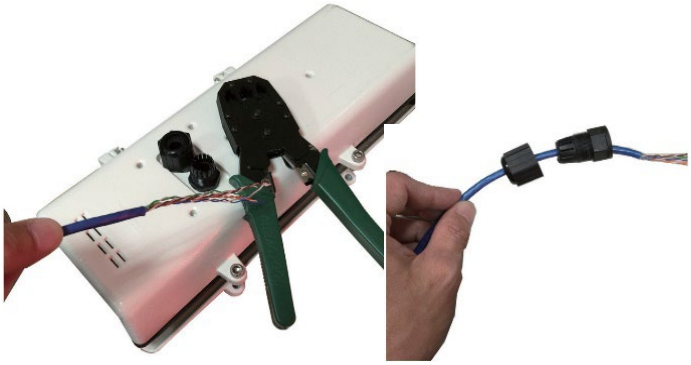
7. The I/O interfaces are on the rear panel of the box camera. The white wire connects from RLY-1 on PCB to AI (Alarm In) on the camera and the green wire connects from RLY-2 on PCB to GND on the camera (ground; be sure to use the GND for AI/AO alarm connection). Insert the pre-tinned wires into the correct hole on the terminal connector of the camera. This alarm connection will be set up in the camera GUI, explained later in this manual, section 2.2.7.



8. Insert audio in/out cables and RS-485 cables to the corresponding terminals of the camera if required.
9. Insert the camera mounting assembly into the housing, nosing the camera lens end in first towards the window. Position the camera mounting plate assembly; proper positioning will have the slots in the mounting plate over the four (4) mounting bosses (the keyholes will not align with the bosses). The camera lens should be as close to the window as possible. Secure the mounting plate assembly back into the housing using the screws provided.

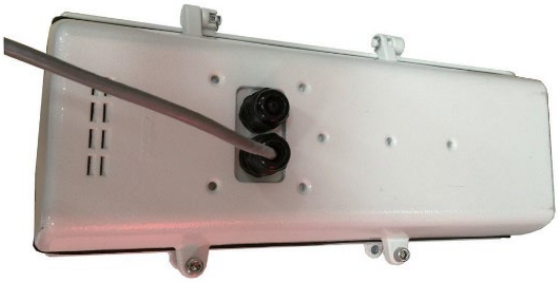
Once the camera is secured into the housing, complete the camera wiring.

10. Connect one end of the CAT5 cable assembly provided into the RJ-45 connector on the camera and the other end into the RJ-45 (DATA OUT) connector in the housing.
11. Prepare a CAT5e Ethernet cable; pass it through the waterproof cable glands.



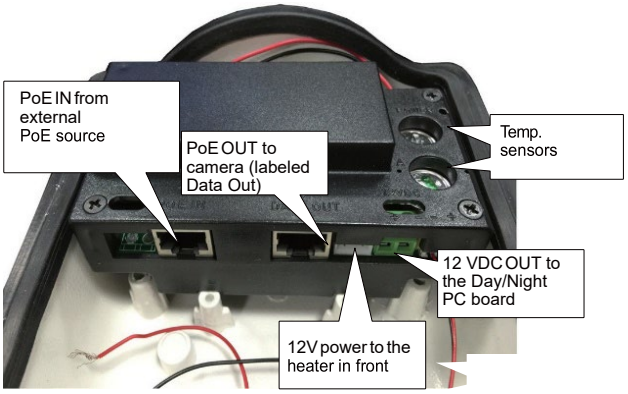
12. It may be necessary to remove the RJ-45 connector and use a crimp tool to connect the Ethernet wires to the RJ-45 connector inside the enclosure. Use an Ethernet cable of 5 ~ 6 mm width.

When complete, tighten the waterproof cable glands.



13. Connect PoE input to the power unit.

Housing shown without PC Board for illustration



2.2.6 Mounting the Camera Enclosure

When wiring is complete, the mounting bracket can be installed at the selected location; be sure the location can support the combined weight of the housing and camera.

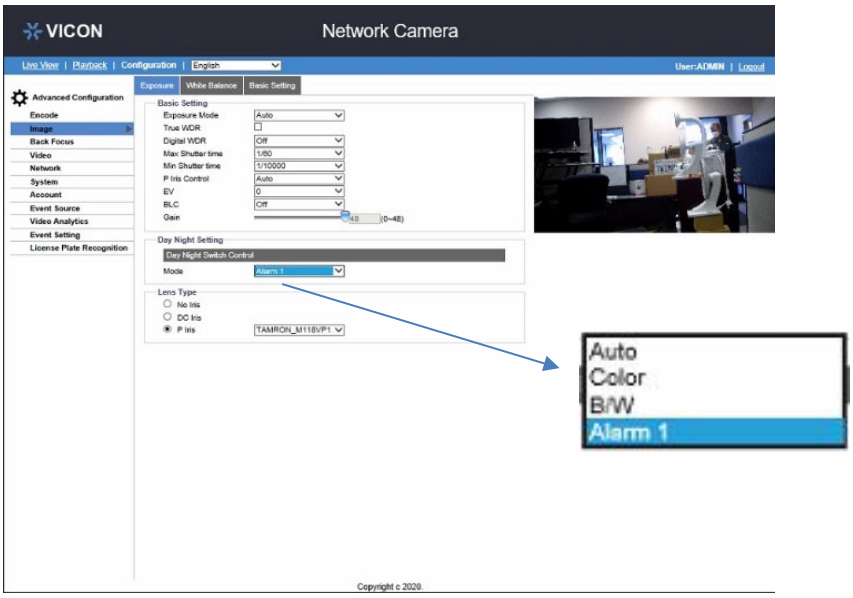
1. Drill mounting holes and a cable routing hole (as needed). Secure the mounting bracket using appropriate hardware for the mounting surface.

2. Lift the entire enclosure up to the installation location and pass the Ethernet cable through the bracket.

3. Mount the enclosure on to the installed bracket and secure the connection by tightening the four (4) socket screws; this may require two installers to handle the weight of the enclosure.

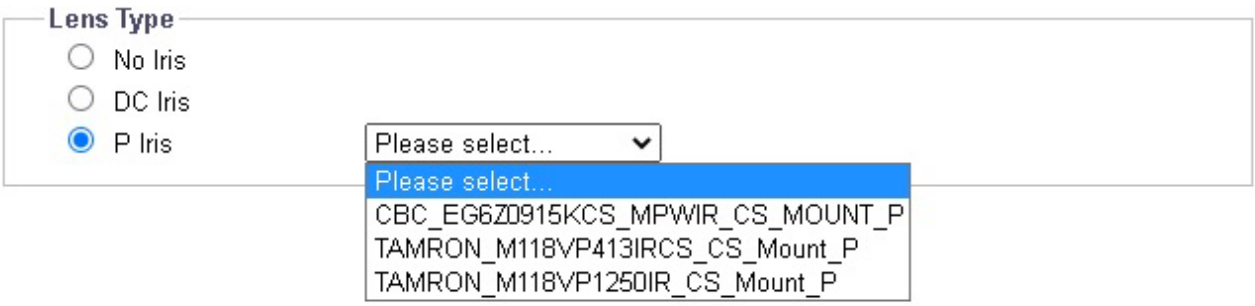
2.2.7 Setting the Day Night Switch Control Mode and Lens Type

1. From the camera GUI Advanced Configuration tree, select Image page; select Exposure. From the Day Night Switch Control Mode dropdown, select Alarm 1.



2. It is also necessary to select the lens type for the lens to function correctly according to its iris type. If the lens type does not match, the video will show a black screen.
3. Go to the Image page, Exposure, Lens Type.
4. Select a lens type corresponding to the lens that was mounted to the camera; the V12-50VF-P is P-Iris.

5. If using a lens other than the V12-50VF-P: No Iris is used if the lens does not support either DC Iris or P Iris functionalities. If DC Iris is selected, the DC Iris Control will display for iris adjustment.
6. When P Iris is selected, select the lens from the Please select dropdown list; for the V12-50VF-P select TAMRON M118VP1250IR_CS_Mount_P. The P Iris Control will display for adjusment. Note that the full P Iris functionality is only available when one of the supported lenses is mounted to the camera.



3 Connection

3.1 Network Topology

The camera, which is equipped with Ethernet RJ-45 network interface, can deliver live view image in real time via both Internet and Intranet environments. Review the topology drawings shown below.

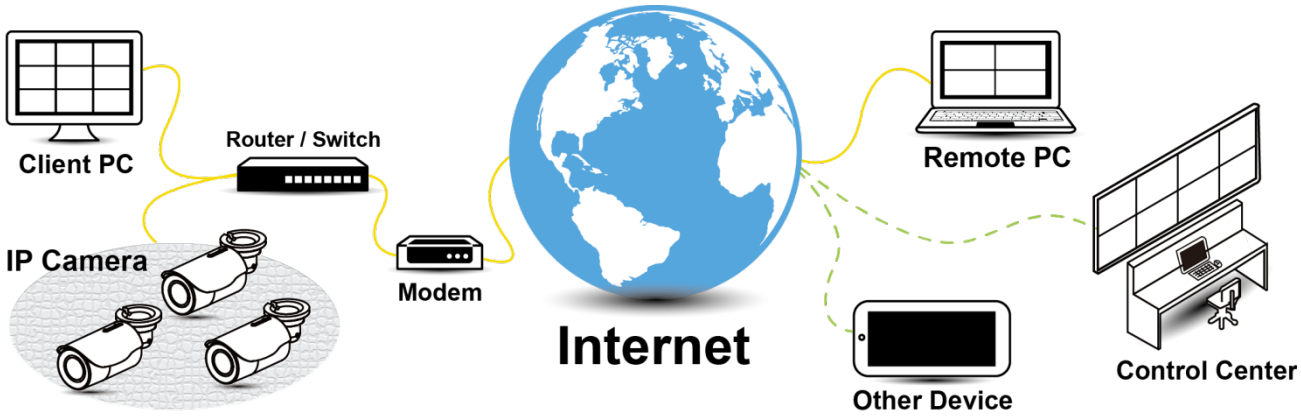


Figure 3 - 1: Network Topology

3.2 System Requirements

The table below lists the minimum requirement to implement and operate the camera. It is recommended not to use any hardware/software component below these requirements for proper performance.

Table 3 - 1: System Requirements

System Hardware	
CPU	i5-2430M CPU@ 2.40GHZ
RAM	6 GB or above
Display	NVIDIA GeForce 6 Series or ATI Mobility Radeon 9500
System Software	
Operating System	Windows 7 SP1, Windows 8, Windows 10
Browser	Internet Explorer 11, Mozilla Firefox, Chrome, Safari, Microsoft Edge
Unit	
Power Supply	12 VDC/24 VAC/PoE (IEEE 802.3af Class 3)
Networking	
Wired*	10/100BASE-T Ethernet (RJ-45 connector)

**A switch is required for surveillance on multiple cameras.*

Note	All the installation and operations should comply with your local electrical codes.

Caution	When powering via PoE, this camera is to be connected only to PoE networks without routing to heterogeneous devices. A heterogeneous network is a network connecting computers and other devices where the operating systems and protocols have significant differences

3.3 Connecting Process

3.3.1 Default IP address

Since this is a network-based camera, an IP address must be assigned. The camera's default IP address is obtained automatically through a DHCP server in your network; be sure to enable DHCP in "Network Settings." If DHCP is not available, the camera will use APIPA (link-local address); IPv4 link-local addresses are assigned from address block 169.254.0.0/16 (169.254.0.0 through 169.254.255.255.

3.3.2 Connecting from a Computer & Viewing Preparation

Connecting from a computer

1. Make sure the camera and your computer are in the same subnet.
2. Check whether the network available between the camera and the computer by executing ping the default IP address. To do this, simply start a command prompt (Windows: from the "Start Menu", select "Program". Then select "Accessories" and choose "Command Prompt"), and type Ping" and then type in your IP address. If the message "Reply from…" appears, it means the connection is available.
3. Start a browser, e.g., Internet Explorer, and enter IP address. A login window as shown below should pop up. In the window, enter the default user name: **ADMIN**; it is required to change the password when you login for the first time for added security**,** which requires at least 8 characters including 1 uppercase letter, 1 special character, alphanumeric characters to log in.
   Further administration on the unit can be found in "**User Manual**".

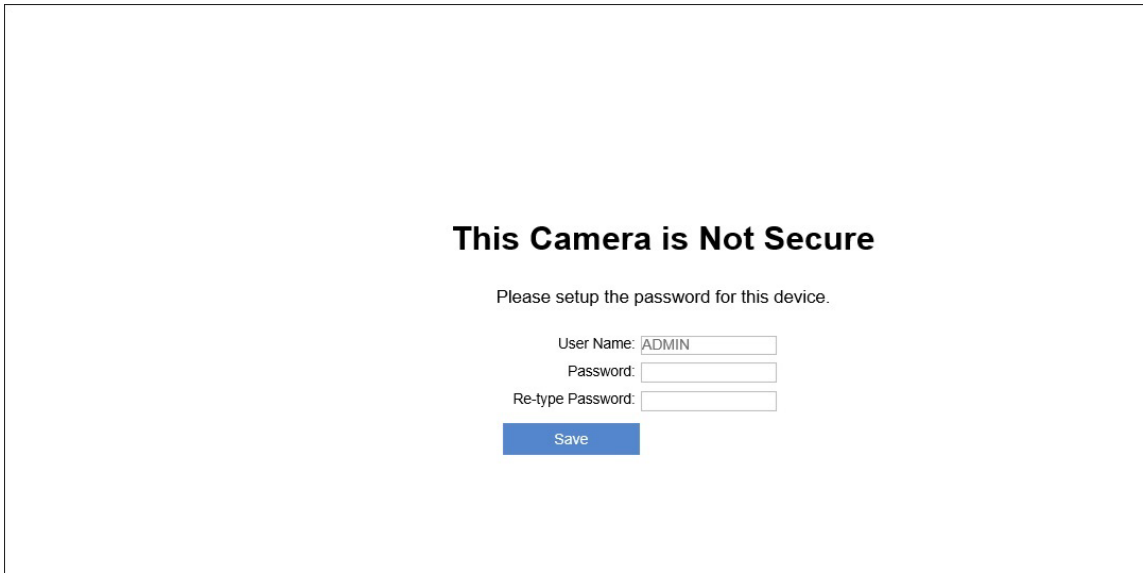


Figure 3 - 2: Login Window

Viewing Preparation

Images of the unit can be viewed through various browsers. Before viewing, follow these steps to enable the display.

1. Enable Cookies per instructions below:
   - In Internet Explorer, click **Internet Options** on the **Tools** menu.
   - On the **Privacy** tab, move the settings slider to **Low** or **Accept All Cookies**.
   - Click **OK**.
2. When a proxy server is used, click **Internet Options** on the Tools menus of Internet Explorer, select **Connect** tab, click **LAN** button and set proxy server.
3. Change Security in Internet options per instructions below:
   - On tool menu, click **Internet Options**.
   - Press the **Security** tab.
   - If the camera operates inside of the intranet, click the **Intranet** icon.
   - If the camera operates outside of the intranet, click the **Internet** icon.
   - Click **Custom Level**. This will open the Security Settings – Internet Zone screen.

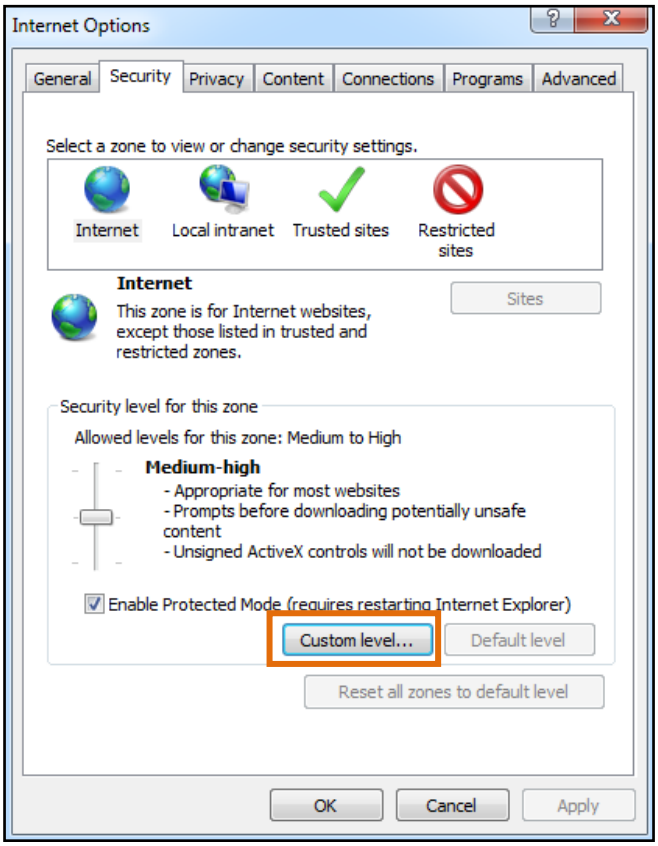


Figure 3 - 3: Security Settings 1/4

- Scroll down to the ActiveX controls and plug-ins radio buttons and set as follows:
  【Download signed ActiveX controls】➔ Prompt (recommended)
  【Download unsigned ActiveX controls】➔ Prompt
  【Initialize and script ActiveX not marked as safe for scripting】➔ Prompt

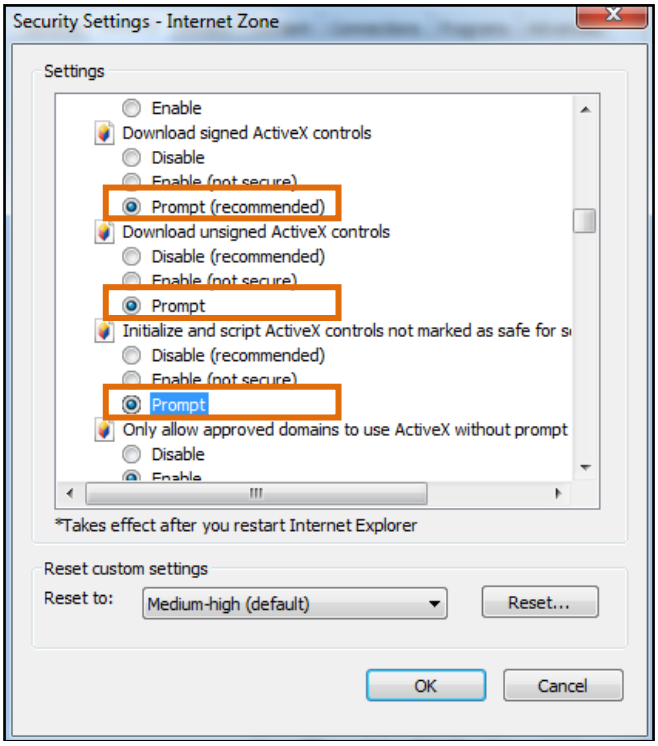


Figure 3 - 4: Security Settings 2/4

【Automatic prompting for ActiveX controls】➔ **Enable**

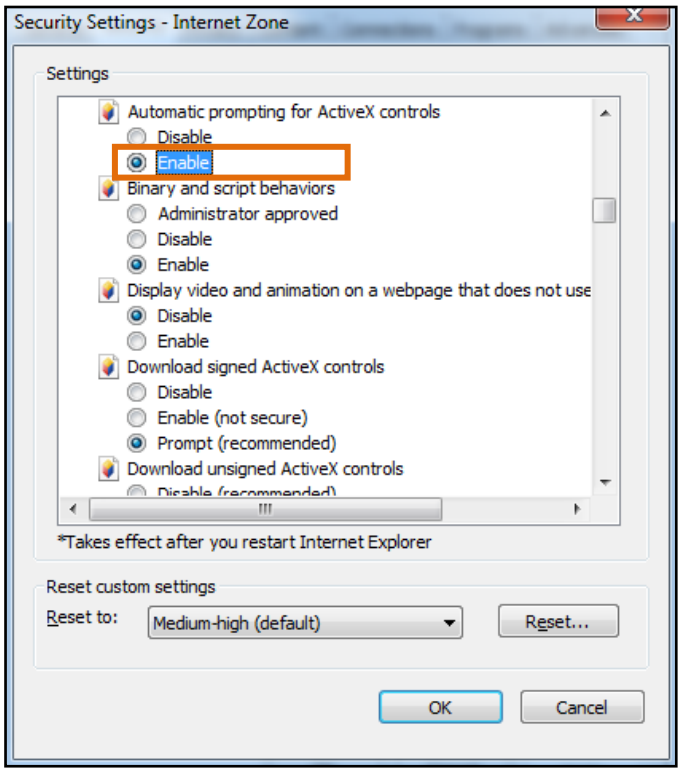


Figure 3 - 5: Security Settings 3/4

【Run ActiveX controls and plug-ins】➔ Enable

【Script ActiveX controls marked safe for scripting*】➔ Enable

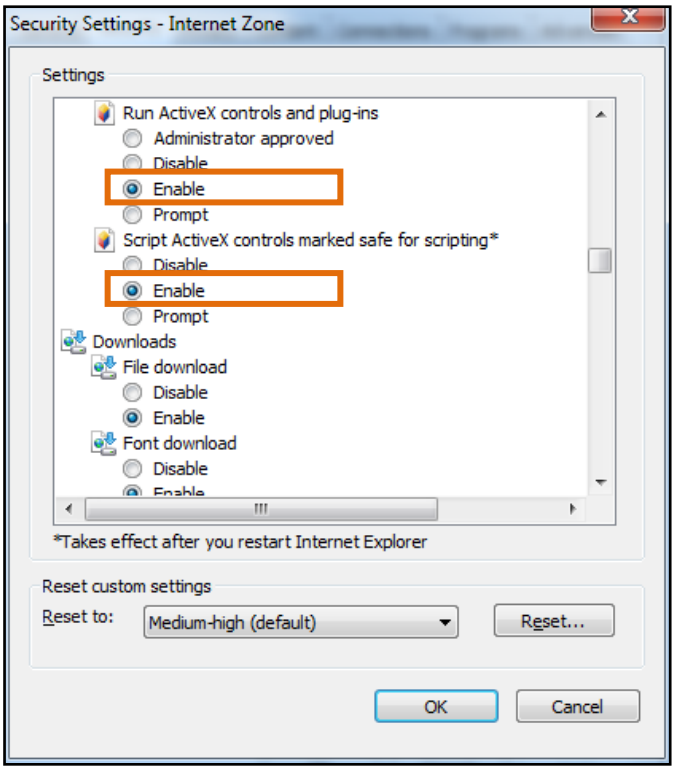


Figure 3 - 6: Security Settings 4/4

- Press **OK** to save the settings.
- Close the all browser windows and restart the browser. This will allow the new settings to take effect.
- Type your IP address into the browser.
- You should be able to see the camera image screen.

3.4 IP Toolbox

IP Toolbox is a utility program that helps users to locate the camera(s) in local area network that computer is connected to. Note that IP Toolbox works only in Microsoft Windows XP, Microsoft Windows Vista, and Microsoft Windows 7 or above. Steps to get the utility program running are listed below.

1. Download the IP Toolbox folder to local computer. The latest IP Toolbox can be found on Vicon's website Camera Software Download page, vicon-security.com.
2. Double click on **IPToolbox.exe** in the IP Toolbox's folder, and the IP Toolbox window should pop up as below.

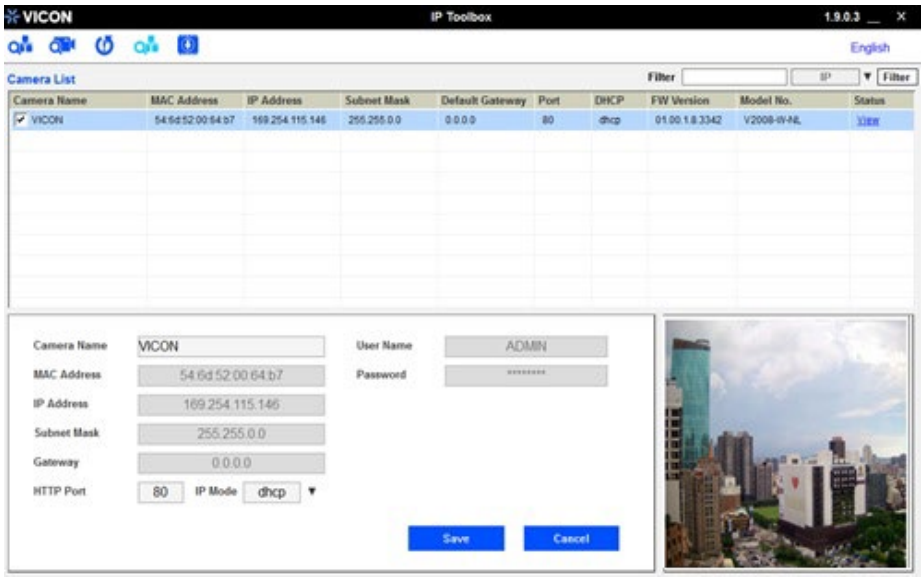


Figure 3 - 7: IP Toolbox

3. The window lists information of camera(s) in operation at the present time. Click the camera in the list for which you want to configure the network settings.
4. Configure the following settings as needed.
   - **User Name & Password:** Before performing any operation to any listed camera, enter user name and password for the selected camera, and then click "**Verify**" for authentication purposes.
   - **Camera Name:** Enter a descriptive name for the camera.
   - **Network Settings:** If you have a DHCP server on your network to assign IP addresses to network devices, enable the "dhcp" option from dropdown menu of **IP MODE**. Otherwise, select "manual" to manually enter the values for **IP Address**, **Subnet Mask**, **Gateway** and **HTTP Port** fields.
   - Click **"Save"** to enable the settings. Click "**Cancel**" to discard the settings.
5. Press **"View"** button; the designated browser page of the selected camera will pop up. Input the corresponding **User Name** & **Password** to log in to the specific page of camera.
6. Press **"Refresh"** button; all the cameras currently connected to the network will appear on the list.
7. Press **"Initialize"** button; there are three options, Software default, Hardware default, and Reboot camera, for user to perform the factory default or reboot the camera. After clicking the preferred item, a warning message will appear. Confirm again before you perform the selected function.
8. The "**Filter**" button on the upper-right corner allows user to perform filtering search, which means you can

input certain keywords into the field and also narrow down the range by selecting the criteria from the dropdown menu for a target search on cameras connected.

9. Press **"Auto Set IP Address"** button to automatically give each camera an IP address from predefined range and connected to predefined network internet controller.
   - **User Name & Password:** Enter username and password for the current auto set IP address setting.
   - **Network Interface Controller:** Select desired network interface controller that each camera(s) will be connected to and also select the IP address and IP address range of the controller.

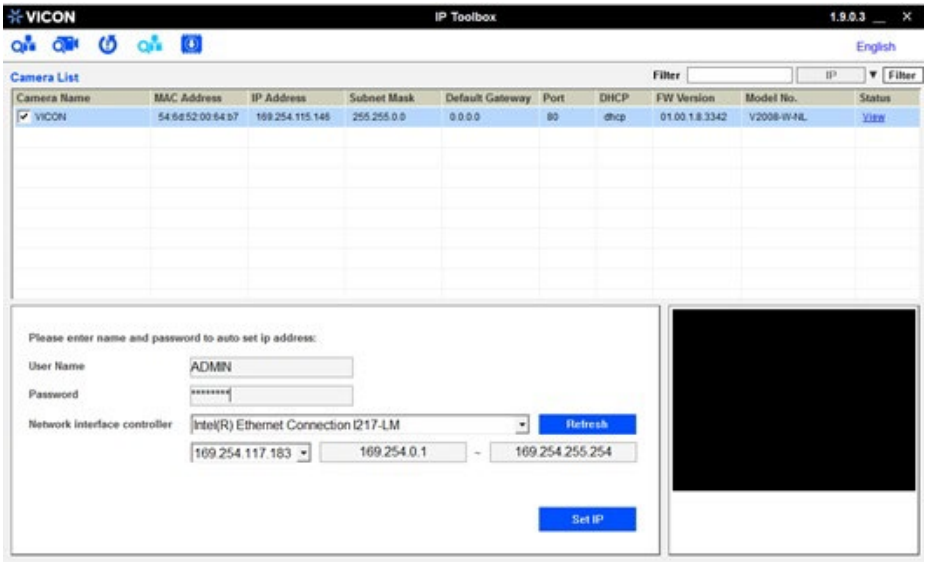


Figure 3 - 8: Auto Set IP Address

10. Click "**FW Upgrade**" button to upgrade the firmware of selected camera. A pop up window like the image below will show up.

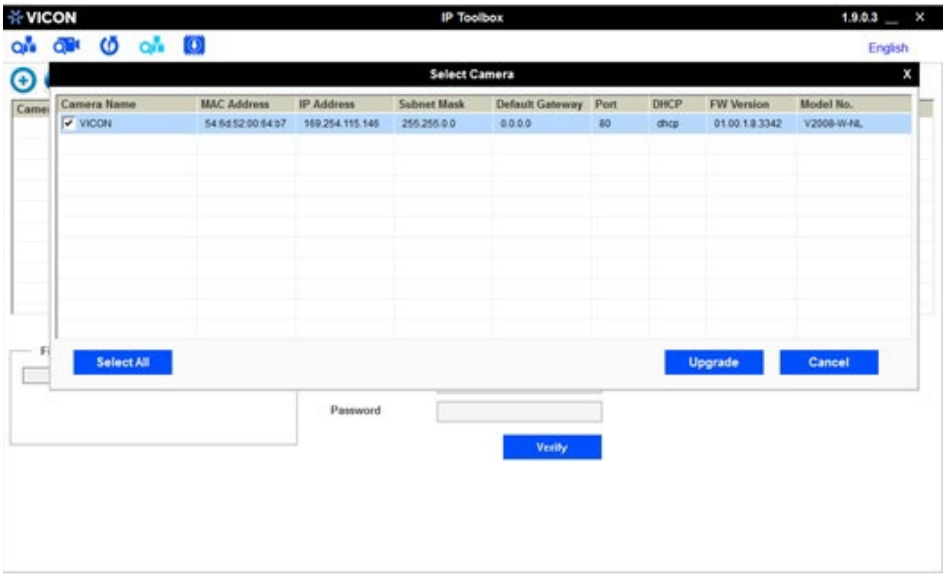


Figure 3 - 9: IP Toolbox FW Upgrade

Follow the steps below to complete firmware upgrade:

- Click or to add or remove camera to be upgraded (only verified cameras will be shown on this list).
- Select a camera or click "**Select All**" button to select a camera or all the cameras on the firmware upgrade list, respectively.
- Click "**Add**" or "**Cancel**" button to confirm the selected cameras for upgrade or to cancel the selection, respectively.
- Enter the path for the desired firmware (.tar) or click ... and then follow the instructions to find and upload the .tar file.
- When the process is complete, click again to return to the list of all cameras located in the local network.

Once the camera is installed and connected to the network, it can be used as a standalone system or integrated into a Valerus system. Refer to the LPR Camera Setup and Integration Guide for details.

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For office locations, visit the website: vicon-security.com