

SYSTEM OVERVIEW

Video Detection provides an alternative way to detect and track vehicles in a drive-thru lane or curbside/mobile pick-up environment.

What's required before you begin:

- A Site Survey was completed and the site is approved before beginning the installation.
- The store is already equipped with a ZOOM Nitro timer system (running version 5.0 or later).
- The ZOOM Nitro system is connected to HME CLOUD.
- Completed HME Network & Systems Requirements document attached to the installer's work order.

What's included

- Video Processing Unit (hereafter VPU) with power adapter.
- 5-port PoE Switch(s) (hereafter PoE switch) with power adapter.
- Camera(s) and Mounting Bracket(s) (with hardware).
- Ethernet Cables (CAT6), includes 10 ft (3.05 m) cables, and long outdoor-rated 150 ft (45.7 m) cable(s).

Note: The box contents will vary depending on order.

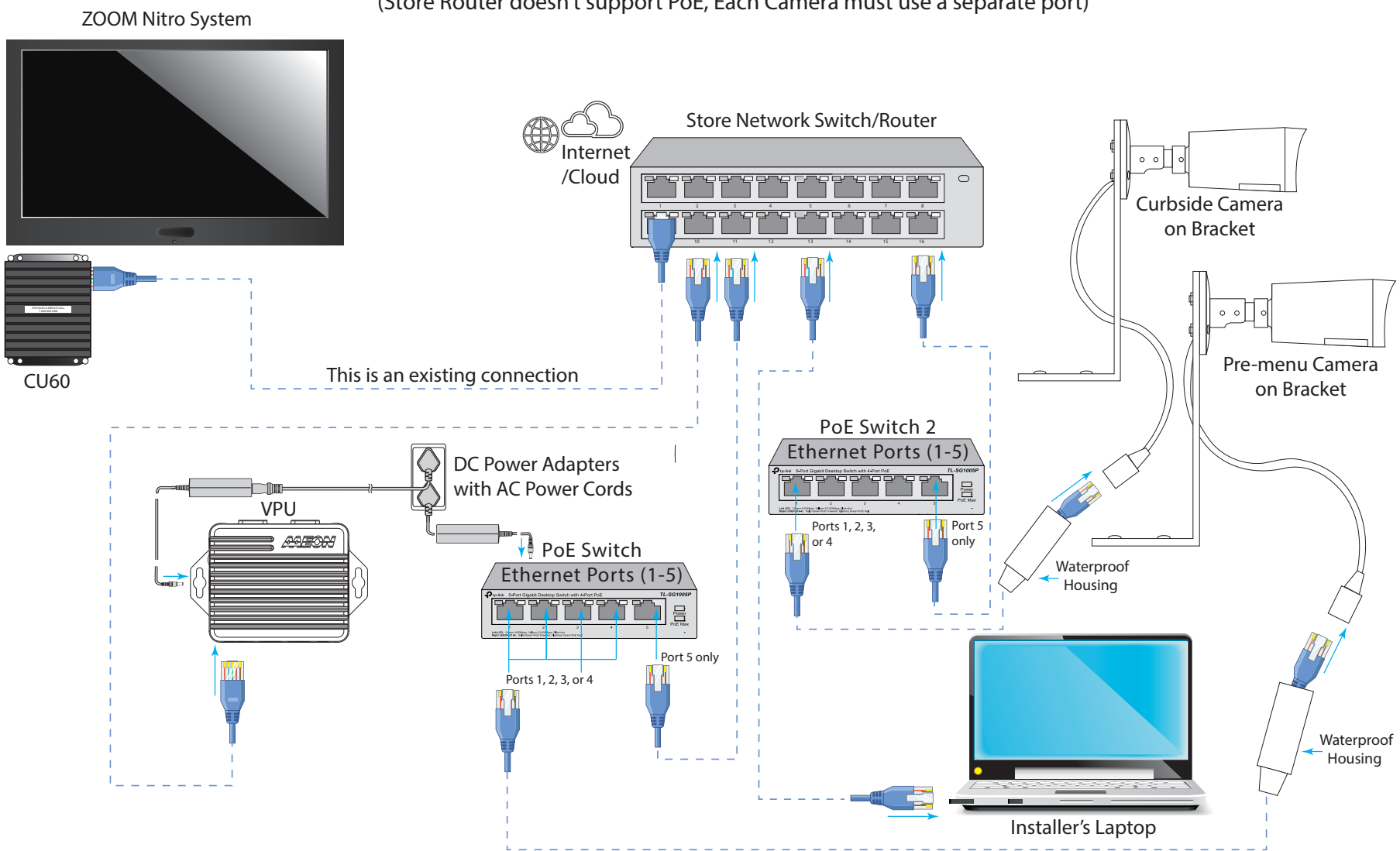
TOOLS/EQUIPMENT NEEDED:

- Standard Hand tools, screws drivers (Phillips and slotted), pliers, cutters, wire strippers, etc.
- Drill with drill bit set (with at least a 5/8" (16 mm) bit required for Ethernet cable entry point).
- Cable ties (including mounting cable ties) and electrical tape.
- Fish sticks/fish tape for routing/pulling cables.
- Specialty hardware required for mounting camera bracket not included with standard hardware (sheet metal/masonry screws, etc.).
- Ladder (if not present on the premises).
- Laptop/PC running Windows 7 or newer. Two browsers: Microsoft Internet Explorer 11 or newer (used for camera setup) and Google Chrome (used for Video Setup Tool). Ethernet port or own Ethernet adapter (for connecting to the network switch). A free network scanner app like Zenmap installed in the event the store doesn't provide you with IP addresses. **Note: Sensitive information should not be on the laptop as HME Technical Support might need to access it.**
- Ethernet cable (medium length for connecting laptop to router).
- A USB mouse (for configuring to the ZOOM Nitro settings).
- Torx/Allen Wrench (included with the Camera hardware kit for adjusting angle and rotation).

ZOOM Nitro® with Video Detection Quick Reference Installation Guide

Wiring Configuration D

(Store Router doesn't support PoE, Each Camera must use a separate port)



Note 1: Components are not drawn to scale and are only representations (may differ to actual components)

Note 2: This setup is for a 2-camera setup, use also for a 1-camera setup (ignore additional camera and PoE switch)

Fig. 1. 1

Materials

- Cable ties (for bundling any cable slack, available at most hardware/home improvement stores).
- Hardware (general hardware is provided for mounting system components, there may be situations when specialty hardware is required, such as masonry screws for brick/concrete walls).
- Electrical tape, twist caps.
- Roof/waterproof sealant or equivalent (for sealing Ethernet cable hole after routing camera cable into the building).

Safety Equipment

- Safety glasses and safety harness if working a sloped/uneven roof or roof without a parapet.



Also read the Safety Notice in the full online Installation Guide.

BEFORE YOU BEGIN

Determine where all components will be mounted and the location of the devices they are connecting to.

- The VPU and PoE switch should be close to several vacant outlets and network switch.
- Determine the cable routing path from the camera to the PoE switch and/or store router.
- Determine the routing path of the cables between the VPU, PoE switch, and store router.
- Make a note of the MAC address for each device (Camera, VPU, and ZOOM Nitro CU). The MAC address is found on device labels.
- Use Fig. 1.1 as a visual reference for wiring connections during the installation process. Fig. 1.1 is Wiring configuration Type D which is the most commonly used configuration (for two cameras). However, wiring configurations may differ from store to store, so please consult Wiring Configurations Type A, B, and C found in the full online Installation Guide; if type D does not work.
- A laptop is needed to configure this system. In the event IP addresses are not provided by the store's IT personnel, make sure you have a free network scanner such as Zenmap or equivalent downloaded. You will need it to locate the IP addresses for the devices once they are installed.

SYSTEM INSTALLATION

CAMERA MOUNTING AND POSITIONING

Wiring Configuration D (Fig. 1.1) is used for this installation procedure. Other wiring configurations can be found in the full online installation guide.

NOTE: Repeat this procedure for each camera.

1. Refer to the installation work order for the suggested camera mounting locations and zones.
2. Access the store roof, but before mounting, note:
 - The camera's field of view needs to cover an area called the Region of Interest (ROI). Point the camera towards the Pre-Menu or Pull-Forward/Mobile area. Later, you will define zones within these areas. See "Zone Drawing" on page 4 for more details.

- Ideally, the camera should look down on the ROI at a distance of 13 to 23 feet.
 - Center the camera's view to capture the ROI while ignoring everything else outside of it.
 - Ideally, vehicles driving through the ROI in the camera's field of view should be along a 30° to 50° diagonal, with the driver's side driving from top to bottom of the field of view screen.
 - The horizon should also be as close to a flat horizontal line as possible (if sloped or curved, the camera can be rotated to level the horizon).
3. Use the mounting holes in the black mounting bracket as a template to mark the tentative mounting locations on the roof (keep in mind that the camera, once mounted, will need to be physically adjusted to capture the ROI, so this mounting location should allow for such adjustments). Drill a single mounting hole to begin with (this will allow you to pivot the bracket on a single screw when adjusting the camera position).
 4. Use the hardware package that came with the mounting bracket to mount the camera to the mounting bracket, see Fig 2.1.

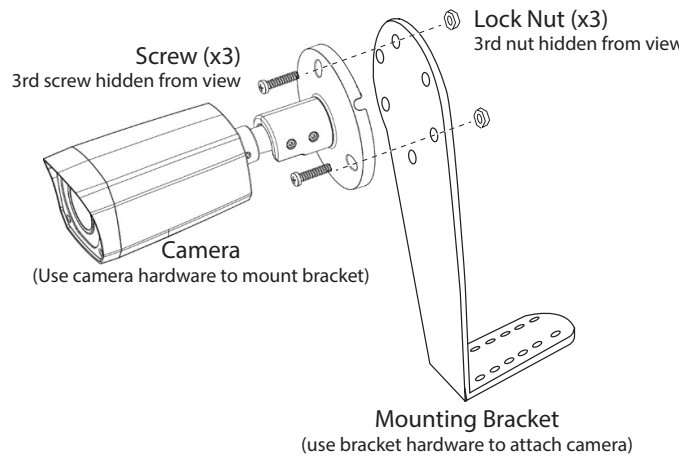


Fig. 2.1

NOTE: Observe the orientation of the cable exit notch on the bracket base. Use sealant to seal the notch on the camera base where the cable exits if it is pointing upward when mounted.

5. Mount the bracket to the rooftop ledge, using just one screw, to begin with. See Fig 2.2.

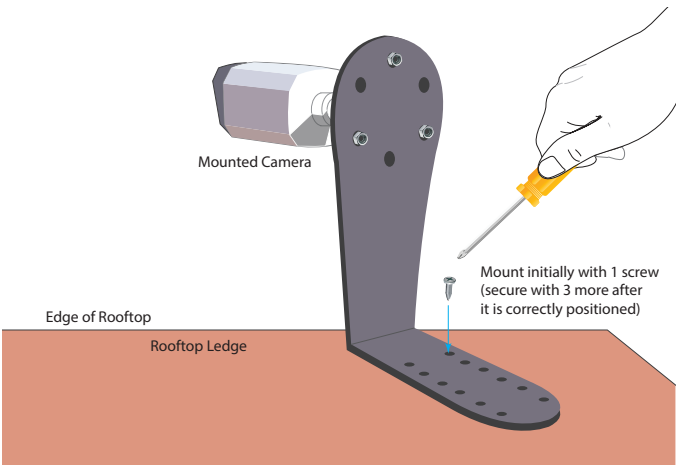


Fig. 2.2

6. Before connecting the long outdoor Ethernet cable to the camera, pull the strain relief boot back from the RJ45 plug and slide it away to make room for the waterproof housing, see Fig. 2.3.

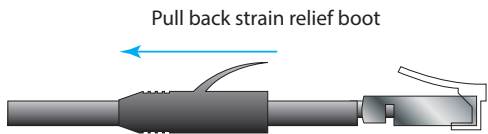


Fig. 2.3

7. Install the four-piece waterproof housing kit that came with the camera. Three pieces (1, 2, and 3) are installed over the Ethernet cable, while the fourth piece, the thin washer (4), is inserted over the RJ45 port of the camera cable, see Fig. 2.4.

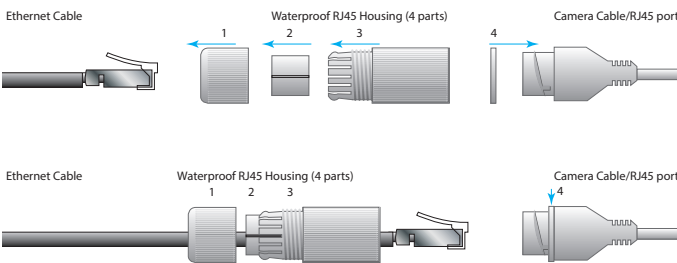


Fig. 2.4

8. Seal the end of the extra unused camera cable with tape.
9. Connect the Ethernet cable to the RJ45 port on the camera cable.
10. Assemble the plastic waterproof housing together to seal the connection.

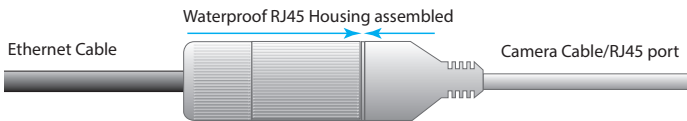


Fig. 2.5

11. Adjust the camera until the correct position is established (pointing at the ROI). You can pivot the mounted bracket around the one screw holding it. The set screws on the camera neck also allow it to be adjusted up, down, or rotated, see Fig. 2.6.

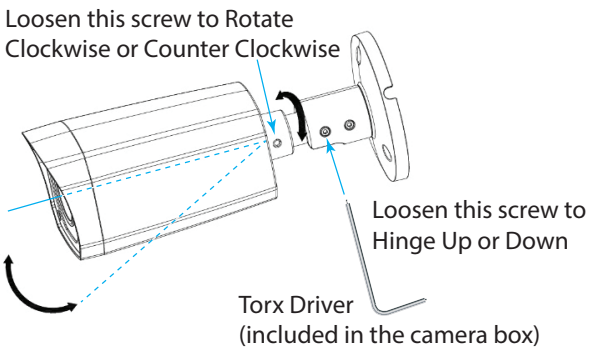


Fig. 2.6

12. With the camera now positioned correctly, secure the mounting bracket to the roof using two additional screws/bolts (and anchors if needed).
13. Route the Ethernet cable from the roof to where the PoE switch will be mounted (or the store router is located if using a different configuration).

NOTE: Please review "Running Cables" in the full online Installation Guide before performing this step.

14. Back inside the store, mount the VPU to the wall and connect its power adapter to an outlet. The VPU mounting holes can be used as a template to mark the wall before drilling.
15. Mount the PoE switch on the wall close to the VPU and its power adapter to an outlet. The distance between the PoE switch mounting holes is 39 mm (1.54"). See template at end of guide.
16. Connect the short Ethernet cable from the LAN/RJ45 port on the VPU to a vacant port on the store router (or PoE switch if different config type).
17. Connect the short Ethernet cable from the fifth RJ45 Port (5) on the PoE switch to a vacant port on the store router.

18. Connect the long Ethernet cable from the camera to any of the vacant ports (1-4) on the PoE switch.
19. Use an Ethernet cable to connect a laptop to the store router. Disable WiFi.

GETTING IP ADDRESSES

1. Record the MAC address for each device in Table. 3.1 and provide them to the store’s IT personnel if requested (the MAC address is located on the label of each device).
2. Normally you will be provided with the IP addresses. These will be required to configure the system (or see work order for this information). Record the IP addresses here in Table. 3.1.

Note: The ZOOM Nitro IP address can also be found by going to the Dashboard, logging in, and navigating to the Network>Local Network page. The laptop IP address is only required if using a network scanner to get IP addresses. See full online guide for details.

Device	MAC Address	IP Address
Laptop	N/A	
CU60		
VPU		
Camera 1		
Camera 2		

Table. 3.1

CAMERA SETUP

This section assumes all system connections are made, and your laptop is connected. The laptop you will use in this section should also have the following browser loaded:

- Internet Explorer for Windows (Only Explorer 11 or later is supported)

NOTE: Repeat this procedure for each camera.

1. With your IE browser open, enter the camera’s IP address in the URL field. See Fig. 3.1.

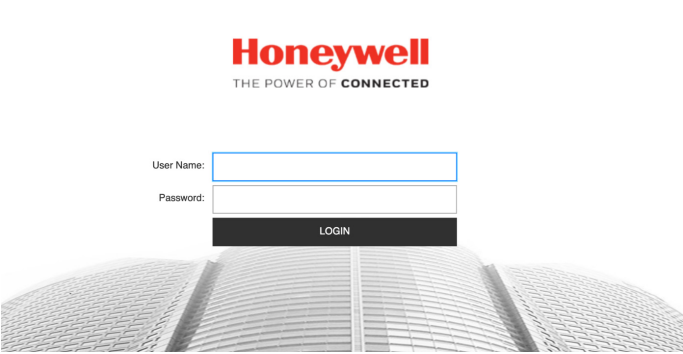


Fig. 3.1

2. Log in to the portal using the following credentials (these credentials are case-sensitive):
User Name: admin
Password: 1234

You will then be prompted to change the password. Change it to:
User Name: admin
Password: evdHME2020!

- After you enter the IP address, you may see a screen saying this site is not secure. Click on the ‘More Information’ link and select ‘Go to the webpage...’ After this, you’ll be asked to log in using the HME login provided above.
3. In the camera’s portal, click “Setup” in the options on the top right side of the screen. See Fig. 3.2.



Fig. 3.2

4. Then select “Camera Setup” from the sidebar menu and then “Video.”
5. Select the following parameters from the drop-down list of each field (see Fig. 3.3):
In the Frame Rate (FPS) field: 20
Deselect “Watermark Settings”
Click “Save.”

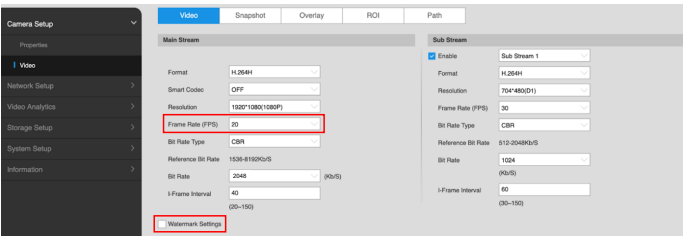


Fig. 3.3

6. While still on the Camera Setup page, select “Properties” located on the sidebar menu.
7. Select the “Profile Management” tab and then check the “Schedule” option
8. Use the blue slider bar (Day) to configure the “Period Setting” time covering 7:00 hours to 19:00 hours, see Fig. 3.4. Save your settings.

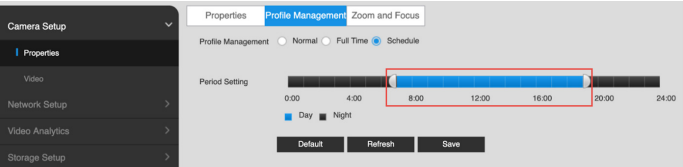


Fig. 3.4

Day Settings

9. From the menu options to the right of the black window, select: “Lighting Compensation.” See Fig. 3.5.
- Select “Day” from the Profile field drop-down list.
 - Select “WDR” from Mode field drop-down list.
 - Adjust the slider bar beneath the field to 25. Save your settings.

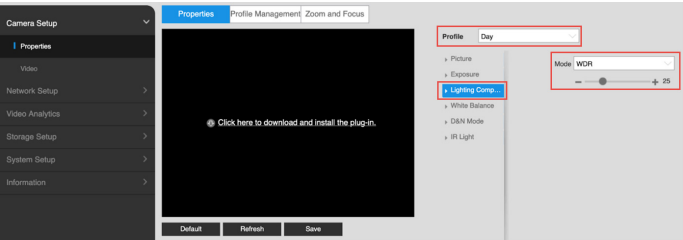


Fig. 3.5

Night Settings

10. Next, select the “Properties” tab.
11. From the menu options to the right of the video preview window, select: “Lighting Compensation.” See Fig. 3.6 (if the video preview image from the camera blocks the ‘Lighting Composition’ option, make your browser window smaller, and you should be able to access it if you use the scroll bars).
- Select “Night” from the Profile field drop-down list.
 - Select “HLC” from Mode field drop-down list.
 - Adjust the slider bar beneath the field to 40.

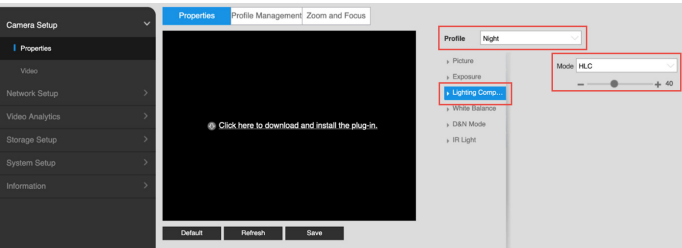


Fig. 3.6

12. Next, from the menu options to the right of the black window, select: “D&N Mode.”
- Select “Color” from Mode field drop-down list. Save your settings (you may need to scroll down to see the Save option).

Date and Time Settings

13. Select “System Setup” from the sidebar menu and then “General” (from the sidebar menu). See Fig. 3.7.
- With the “Date & Time” tab selected, press the “Sync PC” to the right of the “Current Time” field (this assumes your laptop has the correct date and time).

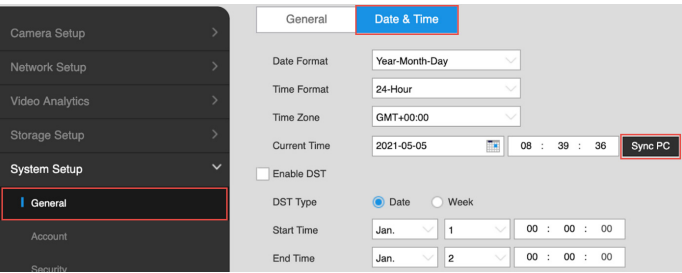


Fig. 3.7

14. Save your settings.

CONFIGURING THE VIDEO SETUP TOOL

1. Open the Google Chrome browser (do not use IE as your browser). enter the IP of the VPU provided by the IT person. This will open the ZOOM Nitro Video Setup Tool.
2. Log in as an Installer (same password used for ZOOM Nitro timer).
3. Go to NETWORK page and type the IP address of the CU in the ZOOM Nitro CU field.
4. Click “Save” and the STATUS field will change to “Connected”.
5. Click “Test All Connections,” all connections should

change to “Passed.” (Contact HME Technical Support if any ports fail the scan.)

6. Go to the CAMERA Page, the system will display the Camera Settings as shown in Fig. 4.1, verify or set the following fields to match the content in Table 4.1 under Value/Description. Do not change any values except Camera Name unless the camera is not auto-detected.

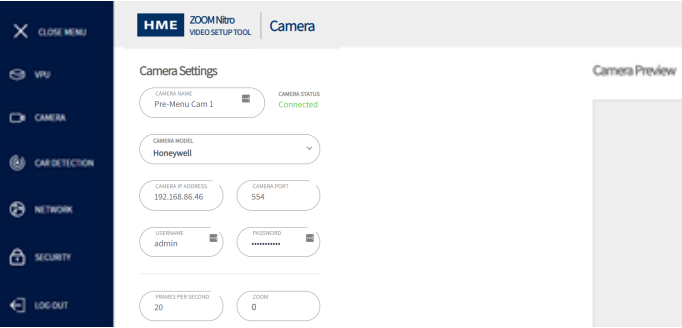


Fig. 4.1

Field	Value/Description
Camera Name	Default: “Pre-Menu Cam 1,” you can edit
Camera Model	Default: Honeywell is selected
Camera IP Address	Normally auto-detected
Camera Port	Normally auto-detected
Username	Normally “admin”
Password	Normally “evdHME2020!”
Frames Per Second	Default: 20
Zoom	Default: 0 (Positive integer range is 0 - 100). Begin with 20 and adjust value from there.

Table 4.1

7. The Camera Status will display “Connected” and the Camera Preview section of the page will load with the camera’s view, as shown in Fig. 4.2 (Click “Refresh Image” if the current view isn’t displayed). Press Save.

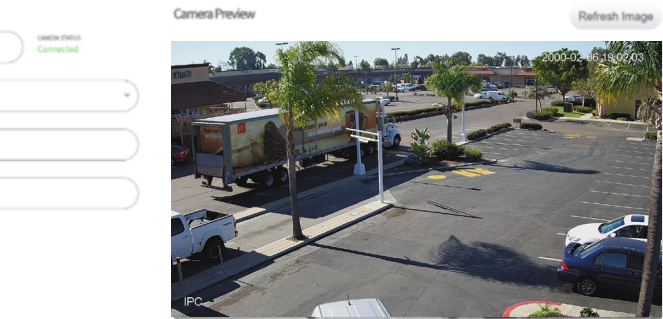


Fig. 4.2

8. If the field of view displayed does not contain the complete ROI, you may have to return to the rooftop to manually adjust the camera.

ZONE DRAWING

The CAR DETECTION window of the Video Setup Tool now requires you to define zones within the field of view. The wheels and front windshield are the main parts of a vehicle used by EVD to identify and track the vehicle. All zones are color-coded by the system which helps identify each at a glance. This here is a quick overview of Zone Definitions:

- Region of Interest (ROI):** This is the selected area within the camera’s field of view that the system is concerned about. This region defines the overall region of interest which includes the Danger and Pre-Menu Zone(s) and/or Mobile/Pull-forward Zone(s). Fig. 4.6 defines the Region of Interest for a Single-Lane configuration. The green boundary line indicates this region.
- Danger Zone (DZ):** This is an area of the drive-thru where cars get in line to join the queue for the drive-thru, but still have the ability to drive off without placing an order. Vehicles might do this if the wait time is too long or they simply decide they don’t want to order anything. In Fig. 4.6, the red area defines the Danger Zone.
- Pre-Menu Zone (PM):** This is an area approaching the menu board where vehicles are captive or bound in by the lane. Vehicles at this point have already passed through the Danger Zone and cannot easily drive off. In Fig. 4.6, the blue area defines the Pre-Menu Zone.
- Mobile/Pull-Forward Zone:** These are parking stalls designated by the restaurant for curbside, pull-forward, or mobile pickup customers (i.e., it does not have a combined danger zone and pre-menu zone). See Fig. 5.1 to 5.3 for an example of these zones.
- Occlusion:** These are objects such as signs or vegetation blocking the camera’s view of vehicle movement within the ROI. Occlusions within the ROI blocking the wheels or windshield of the moving vehicle should be identified so the system can account for them.

Important: Danger and Pre-Menu Zones cannot overlap, and these zones need to be within the ROI boundary line. As you define your zones in the following instructions, a red prompt will alert you when zones overlap.

1. Go to Car Detection to configure the Lane Lay-out, choose the appropriate Lane Configuration (Lane Configuration must match the Lane Configuration used on the ZOOM Nitro timer system). The first zone to be defined is the Region of Interest (hereafter referred to as ROI). Within the ROI are other zones that must also be defined. See Fig. 4.3.

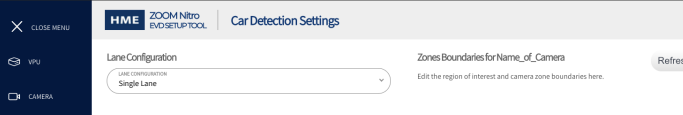


Fig. 4.3

2. In the Camera Preview window the image will appear with a green bounding box in the middle. This box represents your ROI. You will now need to adjust the size and shape to define the ROI you wish the camera to focus on in the image. See Fig. 4.4.

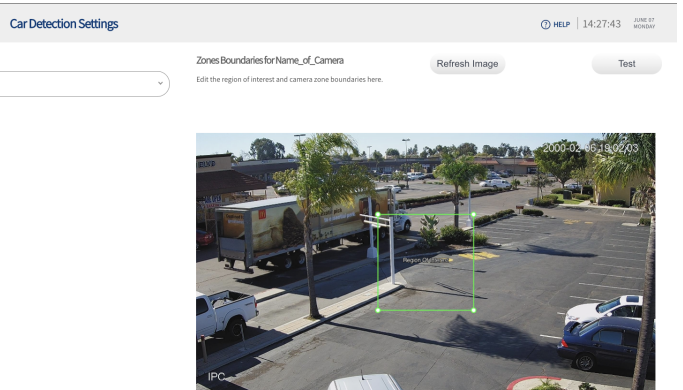


Fig. 4.4

3. Each corner has a anchor point (indicated by a dot) which can be grabbed using your cursor and independently moved to a desired location within your field of view. Use these anchor points to define the ROI, (see new boundary lines in Fig. 4.5). You can also insert additional anchor points to create more complex shapes or delete anchor points to simplify.
- To add an anchor point: Click anywhere along any line segment of the displayed box to insert another anchor point at that location.
 - To delete an anchor point: Click on the anchor point to select it (the dot fill changes from white to green). Then, press the “Delete” key to remove it.



Fig. 4.5

4. After you draw the ROI, click Save (the “+ Add a Zone” button appears).
5. Click on “+ Add a Zone” and the Pre-Menu Zone field appears with a new bounding box (blue) in the image (it will be yellow if it overlaps the ROI). Adjust this box as you did with the ROI to define this zone and click Save when you are finished.
6. Note: When a zone extends beyond the boundary line of another zone, a red prompt will appear advising you to adjust the new zone to within the ROI boundary.
7. Finally click + Add a Zone button again, the Danger Zone fields appear with a new bounding box (red) in the image (it will be yellow if it overlaps the ROI). Adjust this box as you did with the ROI to define this zone and click Save when you are finished. You should now have three zones in your image, one ROI zone (green boundary line), one Pre-Menu zone (blue area), and one Danger zone (red area). This completes the Zone Drawing section, see Fig. 4.6.

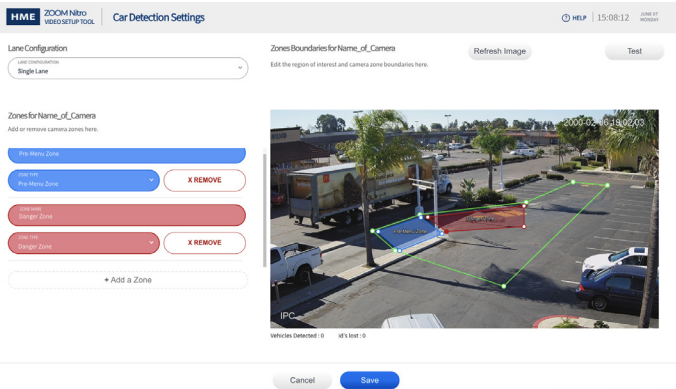


Fig. 4.6

NOTE: Please refer to the full online Installation Guide for examples of good and bad zone definitions.

Curbside/Mobile and Pull-Forward Zone Drawing:

Fig. 5.1 shows a designated area in the parking lot of a QSR. Four stalls are reserved, two Pull-Forward areas and two Mobile Pick-up areas.



Fig. 5.1

Fig. 5.2 shows how these zones will look when drawn on the VPU page. These zones are created in the same way as described in step 3.

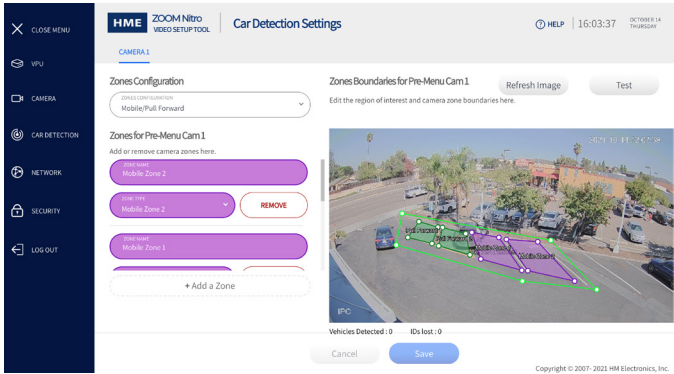


Fig. 5.2

Fig. 5.3 shows a closer view of the zones specified in Fig. 5.2. Note that there is a ROI around four individual parking zones but no preceding danger zones as in a drive-thru lane.

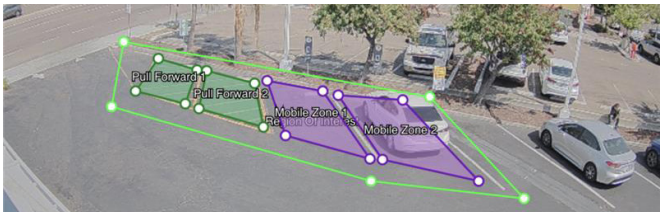


Fig. 5.3

VIDEO DETECTION MAPPING ON ZOOM NITRO

The following example is for a store with a Y-Lane configuration. The actual layout will vary from store to store.

1. Take a photo of the ZOOM Nitro Dashboard before you begin configuring it.
2. Connect a mouse to a vacant USB port on the CU60.
3. With the Dashboard visible on the store monitor, click on the Menu (Hamburger) icon in the upper left corner of the Dashboard.
4. Log in as an Installer using the installer password. See Fig. 5.4.

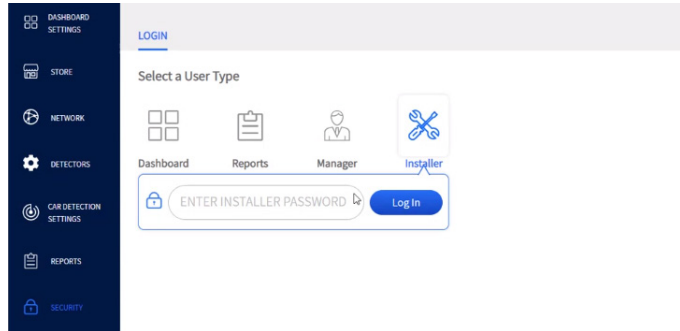


Fig. 5.4

5. Select the DETECTORS option, and then select the CAMERA tab. Toggle the Enable switch to connect to the EVD Video Processing Unit. Click the Save button to save your change. See Fig. 5.5



Fig. 5.5

6. Select CAR DETECTION SETTINGS from the sidebar menu. Under Add/Remove Detection Types, expand the PRE-MENU option and click Add to add detectors. See Fig. 5.6.
7. The PREVIEW graphic is dynamic and reflects the store's lane layout when changes are made. (If in a store with an existing Timer system, the layout should be the same as it was previously was but with a new PM dot (solid blue) added to the beginning of the graphic, as shown in Fig. 5.6.

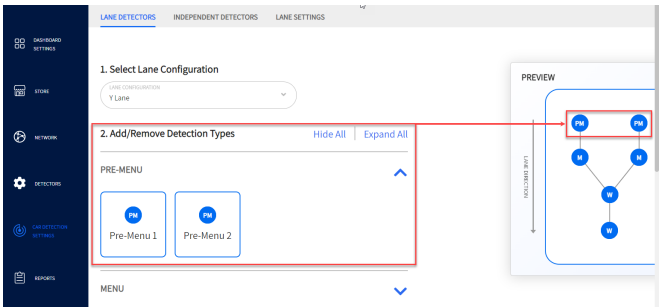


Fig. 5.6

8. Scroll down to Configure Detector Mappings. You will see the Pre-Menu EVD included. See top two rows of Fig. 5.7. Click the Save button to save changes.

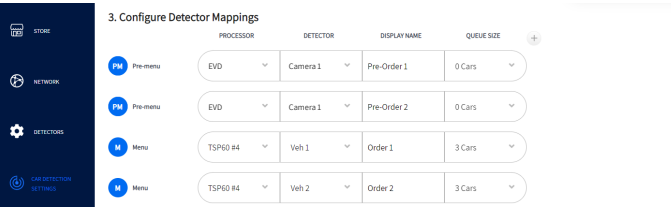


Fig. 5.7

Displaying Lane Totals on the Dashboard

The user also has the ability to configure one of the Dashboard panes to include Pre-Menu info such as a Total Experience Time (TET). Select the Lane Settings tab. Fig. 5.8 changes the Start Total field of Lane Total 2 to Pre-Menu, to now include it up until the vehicle departs from the last lane detector (Service in this example). Save your changes.

NOTE: Lane Total or Lane Total 2 can be used depending on how the user wishes to display the information on the Dashboard. Lane Total directly impacts the cars visually displayed on the dashboard lane, whereas Lane Total 2 is a section/pane metric.

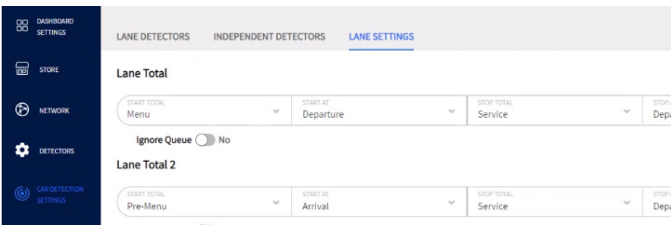


Fig. 5.8

1. Under DASHBOARD SETTINGS, click on the dashboard pane you wish to change, and under the

Dashboard Template, choose the option from the drop-down menu of the second field "Metric." In this example, it's Lane Total 2. See Fig. 5.9.

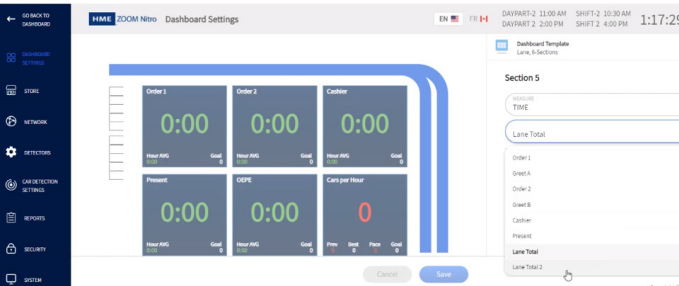


Fig. 5.9

2. In the third field, add a new Title, in this example, it is Total Experience Time (TET). Click the Save button to save your change.
3. Return to the Dashboard to see the affected change. See Fig. 5.10 (lower middle pane).

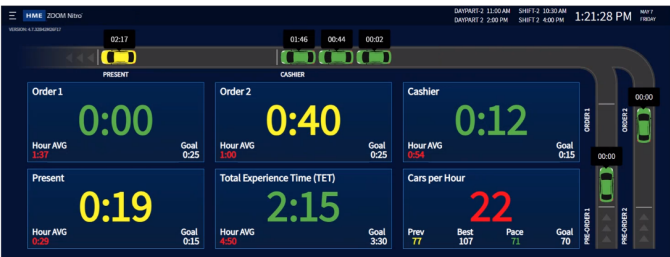


Fig. 5.10

Displaying lane Drive Offs on the Dashboard

NOTE: This feature is only applicable when the camera is used in a drive-thru lane environment.

To enable Drive Off Counter and Notifications:

1. Select DASHBOARD SETTINGS in the sidebar menu to open the page.
2. Toggle all three Drive Off buttons to enable the counter and notifications, see Fig. 5.11

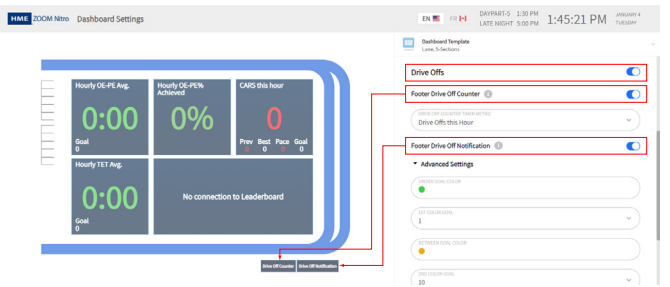


Fig. 5.11

Displaying Drive Off metrics in a Data Section:

1. Under DASHBOARD SETTINGS, click on the dashboard section/pane you wish to change (Section 3 in this example, upper right pane).
2. Under the Dashboard Template, choose DRIVE OFFS from the drop-down menu of the first field "MEASURE." Give your section a Title, and finally choose a metric from the drop-down menu of the third field. See Fig. 6.1. Click the Save button to save your change.

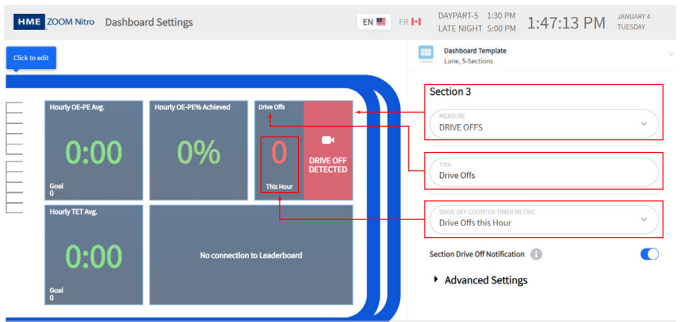


Fig. 6.1

Pull-Forward Zones

The following is an example of the ZOOM Nitro setup for when the camera is used for a Pull-Forward zone. The example in Fig. 6.2 shows the LANE DETECTORS page with two Pull-Forward detectors added. The update is automatically reflected in the PREVIEW graphic.

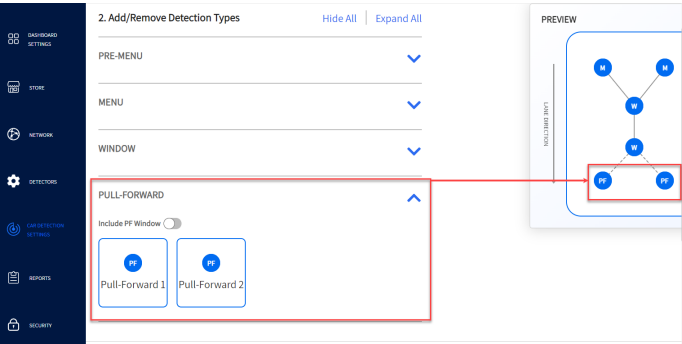


Fig. 6.2

Under "3. Configure Detector Mappings" select VPU from the PROCESSOR drop-down menu and then a label from the DETECTOR drop-down menu. The user can create a descriptive DISPLAY NAME. See Fig. 6.3.

NOTE: Pull-Forward windows are not currently supported using video detection.

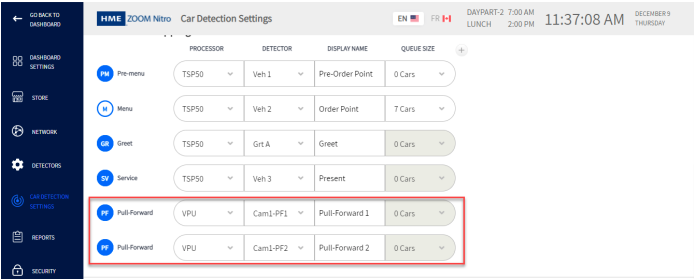


Fig. 6.3

Curbside/Mobile Zones

The following is an example of the ZOOM Nitro setup for when the camera is used for a Curbside/mobile zone.

Curbside/mobile detector are configured under INDEPENDENT DETECTORS, see Fig. 6.4.

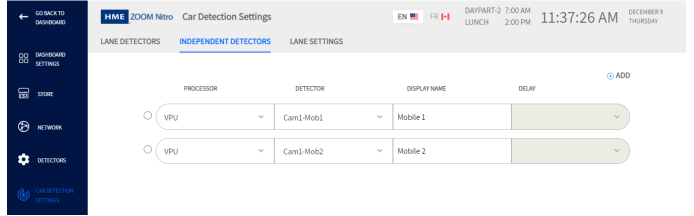


Fig. 6.4

Select VPU from the PROCESSOR drop-down menu and then a detector label from the DETECTOR drop-down menu. The user can create a descriptive DISPLAY NAME, see Fig. 6.5.

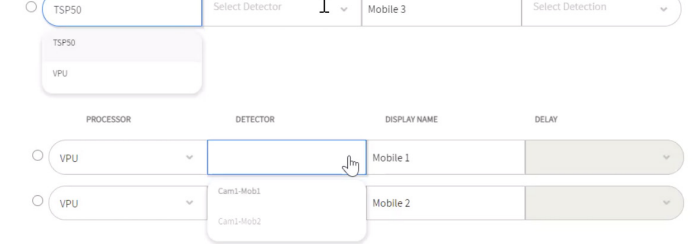


Fig. 6.5

The Video Setup Tool for a 2nd Camera

A second camera is configured the same way as the first camera, see "Configuring the Video Setup Tool" on page 3 for more details.

1. Navigate to the ZOOM Nitro Video Setup Tool.
2. Select CAMERA from the sidebar menu, tap on "+ Add a Camera," see Fig. 6.6.

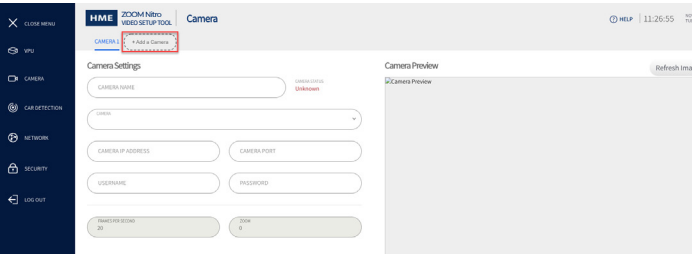


Fig. 6.6

3. The "+ Add a Camera" tab changes to Camera 2, and if the camera is connected to the system the Camera Status will indicate "Connected."

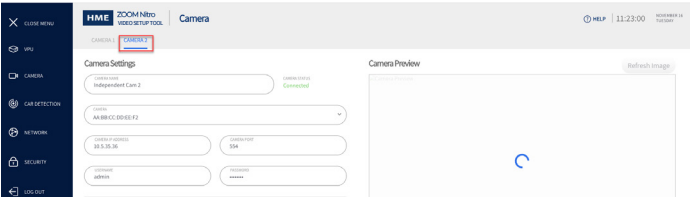


Fig. 6.7

4. Fill in the fields under "Camera Settings" as in Table 4.1 (see "Configuring the Video Setup Tool" on page 3).
5. On the sidebar menu, select "CAR DETECTION" to open the Car Detection Settings page and choose Mobile/Pull Forward from the Zones Configuration drop-down list, see Fig. 6.8.

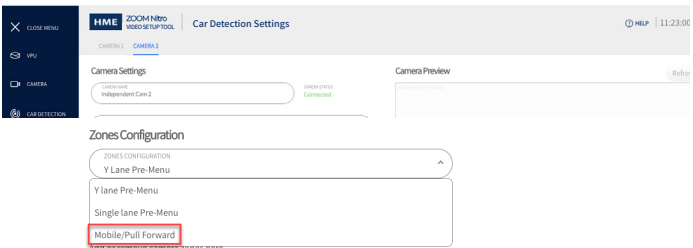


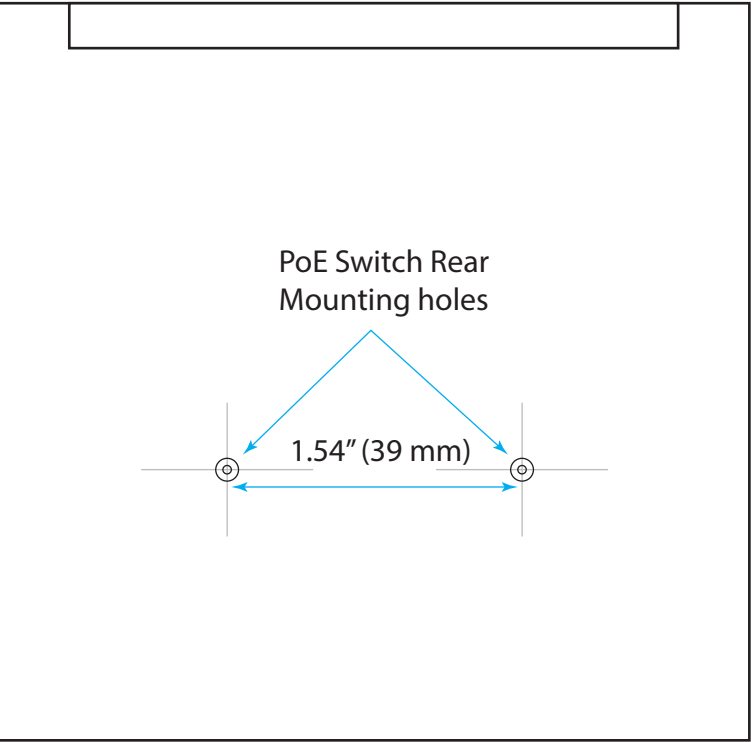
Fig. 6.8

6. In the Camera Preview window of Car Detection Settings, define the ROI and other zones (See Zone Drawing section).

NOTE: More information is available in the full online installation guide.

PoE SWITCH TEMPLATE FOR WALL MOUNTING

1. Place sheet against wall.
2. Use a punch, pencil or other pointed marker to punch through the cross-hairs on the paper to mark the wall for the screw positions.
3. Drill holes and insert screws (and anchors if necessary), but leave enough of a gap (0.125" (3.2 mm)) between the screw heads and wall so that the PoE switch can be mounted over the screw heads.
4. Mount the PoE switch over screw heads until flush against wall and slide the PoE switch down until it is seated on the screw shanks to secure it in place.



사용자 안내문
이 기기는 업무용 환경에서 사용할 목적으로 적합성평가를 받은 기기로서 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다.

A copy of this guide and much more can be found under ZOOM Nitro by scanning this QR code or going to:
<https://www.hme.com/qsr/drive-thru-user-manuals/>

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