Instruction Manual
X 2K+ MINI PTZ — CNU01P-5PW-AB1



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CNU01P-5PW-AB1

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lorex.com



WARNING

RISK OF ELECTRIC SHOCK
DO NOT OPEN



WARNING: TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT REMOVE COVER. NO USER SERVICEABLE PARTS INSIDE.

REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

CAUTION: TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF THE PLUG TO THE WIDE SLOT AND FULLY INSERT.

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1 Introduction



1.1 Overview

The X 2K+ MINI PTZ Camera is a compact surveillance solution designed for advanced security applications. Featuring remote pan, tilt, and zoom (PTZ) functionality, the camera enables flexible monitoring with precision control.

The camera supports Auto Tracking, AI analytics, and 5× optical zoom, making it ideal for commercial and business environments.

1.2 Key Features

- 2K+ resolution (2880 × 1620)
- 5× optical zoom with motorized lens
- Remote PTZ control (pan / tilt / zoom)
- Auto tracking for person and vehicle detection
- AI analytics (intrusion, line crossing, etc.)
- IR night vision range up to 98 ft (30 m)
- Built-in microphone for audio recording
- PoE (Power over Ethernet)
- MicroSD local storage (up to 1 TB, not included)
- IP66-rated weather-resistant housing

1.3 System Compatibility

This camera is compatible with select Lorex X Series Network Video Recorders. For the most up-to-date compatibility list, visit lorex.com/compatibility.

2 Safety Instructions

- Read and follow all instructions before installing or operating the camera. Retain this guide for future reference.
- Use the camera only within the specified temperature, humidity, and power ranges. See 11 *Technical Specifications*, page 31.
- This product is rated for outdoor use (IP66) and is weather-resistant when properly installed. It is not intended for submersion in water. Installation in a sheltered location is recommended.
- Disconnect all power connections before installation. The camera may move automatically when power is applied.
- Clean the camera using a soft, slightly damp cloth only. Do not use solvents or abrasive cleaning agents, as they may damage the camera lens.
- Do not disassemble or modify the camera. There are no user-serviceable parts inside.
- Do not point the camera directly toward the sun or other intense light sources.
- Install the camera in a location that is visible but out of reach.
- Ensure the mounting surface can support the combined weight of the camera and mounting hardware.
- Make sure the camera is securely attached to the mounting base. Rotate the camera to the lock position and tighten the locking screw to prevent accidental detachment.
- Always support the camera when attaching it to or removing it from the mounting base to prevent accidental drops.
- Verify that no electrical wiring or utilities are present in the installation area before drilling.
- Ensure all cabling is properly routed and protected to prevent damage, moisture exposure, or tampering. Avoid pinching cables between the camera and mounting surface.
- Install the included weather-resistant RJ45 cable gland to protect the Ethernet connection from moisture. Keep all unused cable connections protected from water exposure.
- Keep the microSD card and reset compartment dry. Do not open the compartment in rain or high-humidity conditions. Ensure the compartment cover is securely closed after use.
- Use only the specified power source. The camera supports 12V DC or PoE (IEEE 802.3af). Using an incorrect power supply may damage the camera.
- If using a 12V DC power adapter, use a compatible power supply with the correct voltage and polarity. Do not place tension on the power cable or connectors.
- Before installing, removing, or servicing the camera, disconnect all power connections, including the Ethernet / PoE connection and the 12V DC power supply, if connected.
- Do not lift or hold the camera by its cables. Always support the camera by its housing.
- Comply with all applicable local building and electrical codes.

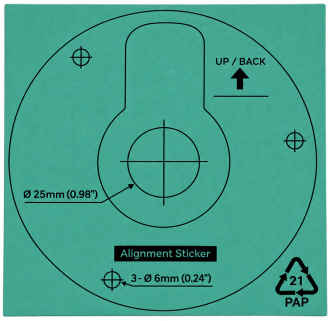
3 Getting Started

3.1 Package Contents

Your PTZ camera package includes the following accessories:



X 2K+ MINI PTZ



Mounting Template



3 × Mounting Anchors



3 × Mounting Screws



Torx Key

 Weather-Resistant RJ45 Cable Gland	

4 Installation

4.1 Installation Notes

- Ensure the mounting surface can support the weight of the camera and mounting hardware. The camera weighs 1.168 lb (0.53 kg).
- The camera can be mounted on a wall or ceiling.
- Install the camera approximately 10 ft (3 m) above the ground for optimal coverage.
- This camera is rated for outdoor use (IP66) when properly installed.
- Choose a mounting location that provides a clear view of the monitoring area and allows the camera to pan and tilt without obstruction.
- Avoid installing the camera near walls, branches, or reflective surfaces that may interfere with infrared night vision.
- Plan cable routing in advance and ensure all cables are protected from moisture and physical damage.
- It is recommended to install the camera in a sheltered location (for example, under eaves) to prolong product life.
- Use appropriate safety equipment when installing at height.

NOTE

Before permanent installation, connect the camera to a compatible NVR and confirm that live video is displayed. Disconnect the camera before mounting. See 4.5 *Connect the Camera*, page 10.

4.2 Mounting the Camera

Follow these steps to install the camera:

CAUTION

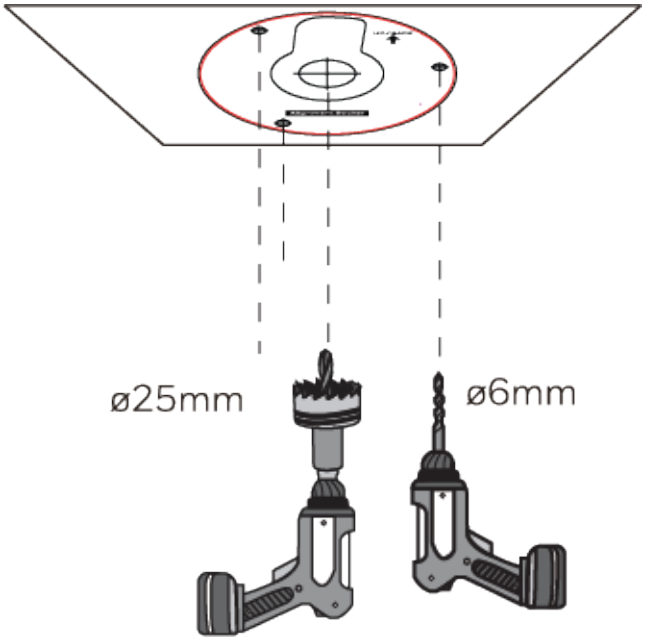
- Do not connect power until installation is complete.
- Always support the camera when attaching it to or removing it from the mounting base.

Before you begin:

- Use the included mounting anchors and screws for suitable mounting surfaces. Use alternative mounting hardware if required for your installation surface.
- User-supplied tools: drill, appropriate drill bits, PZ3 Pozidriv screwdriver, and CAT5e or higher Ethernet extension cable.

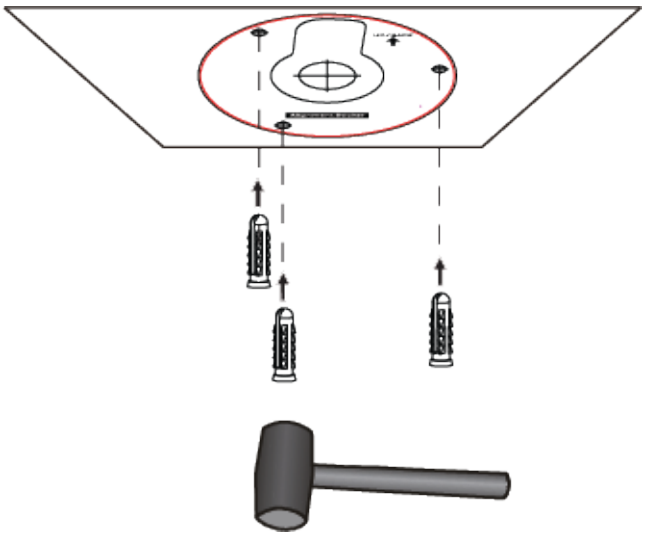
1. Position the included mounting template on the installation surface.
2. Mark the three mounting screw holes and the cable opening shown on the template.

3. Drill holes at the marked positions:

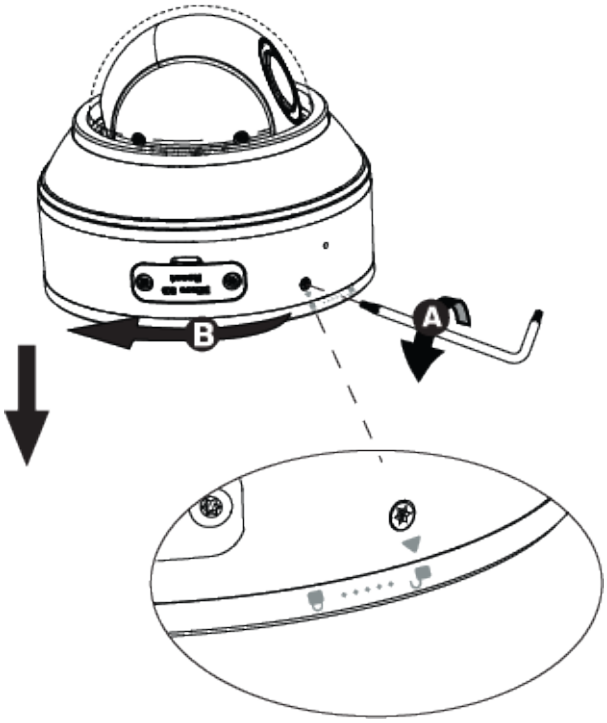


- Mounting holes: 0.24 in (6 mm) diameter.
- Cable opening: 0.98 in (25 mm) diameter.

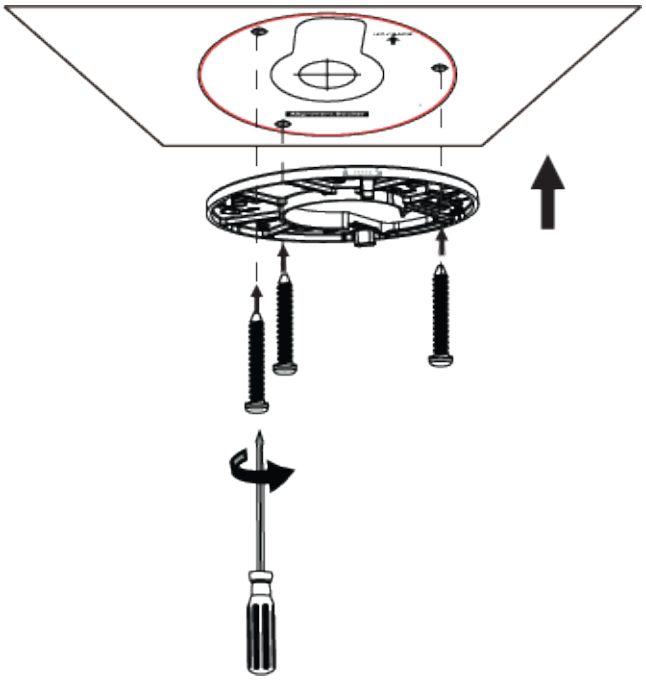
4. Insert the included mounting anchors into the drilled mounting holes.



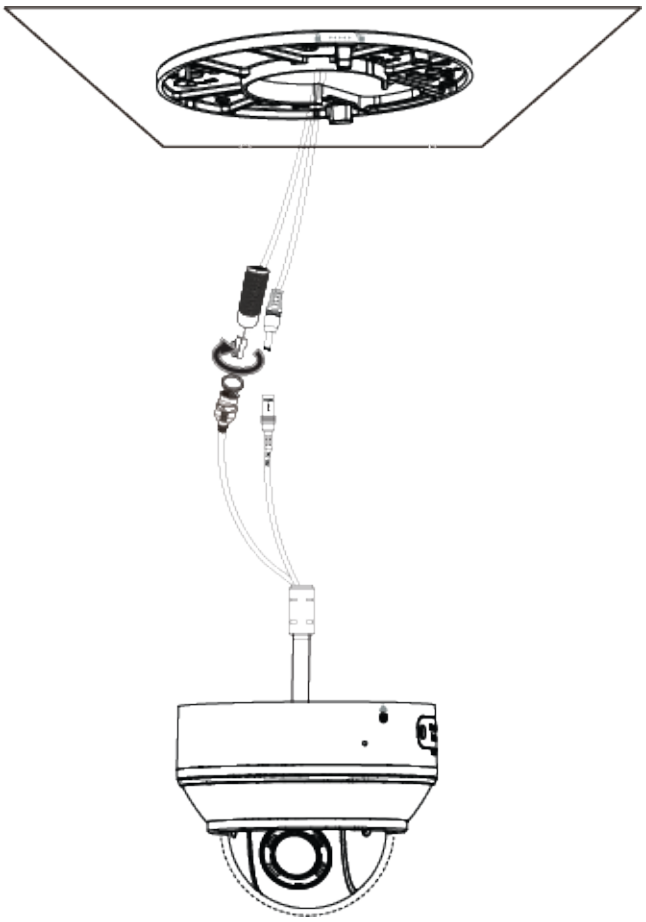
5. Use the included Torx key to completely remove the locking screw on the side of the camera. Set the screw aside for reinstallation.



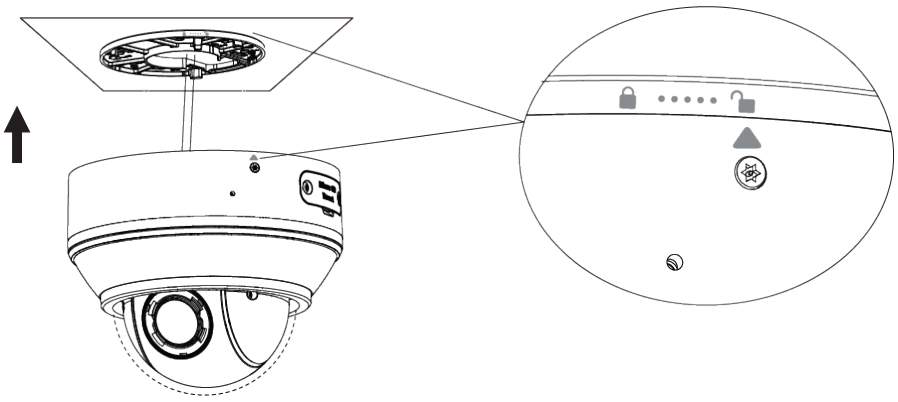
6. Rotate the mounting base counterclockwise from the lock symbol to the unlock symbol.
7. Carefully detach the mounting base from the camera.
8. Position the mounting base over the installed anchors. Align the mounting holes and cable opening with the corresponding openings in the mounting surface.
9. Secure the mounting base to the mounting surface using the included three mounting screws and a PZ3 Pozidriv screwdriver.



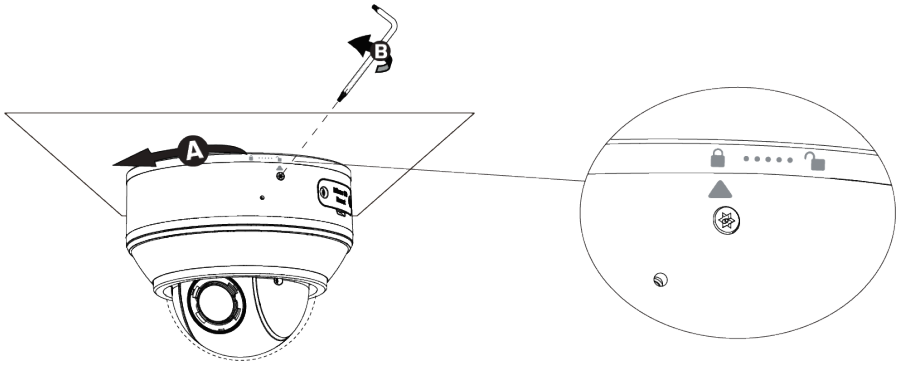
10. Route the CAT5e or higher Ethernet extension cable from the network connection point through the cable opening.



11. Connect the Ethernet extension cable to the camera's Ethernet connector.
    - Install the included weather-resistant RJ45 cable gland over the Ethernet connection to protect it from moisture. Refer to 4.3 *Installing the Weather-Resistant RJ45 Cable Gland*, page 9.
12. Carefully feed the cable connections and excess cable into the mounting opening.
13. Position the camera against the mounting base, aligning the camera with the unlock symbol.
    - Make sure the cables are positioned correctly and are not pinched between the camera and mounting base.



14. Rotate the camera clockwise from the unlock symbol to the lock symbol until it is secured to the mounting base.

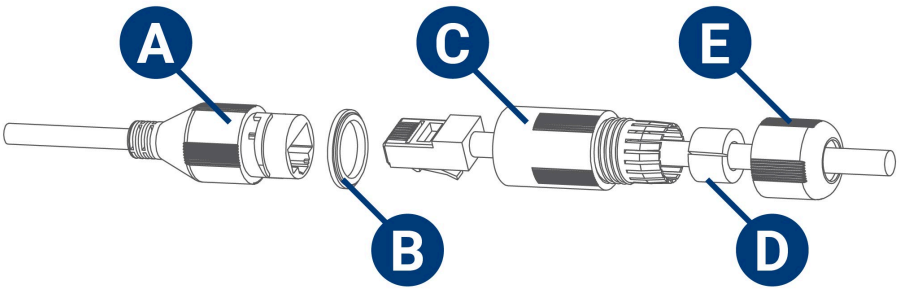


15. Reinsert the locking screw on the side of the camera and tighten it securely using the included Torx key.
16. Remove the protective film from the camera lens.
17. Confirm that the camera is securely attached to the mounting surface and that no objects obstruct its view.
18. Connect the camera to the NVR. Refer to 4.5 *Connect the Camera*, page 10.
19. Verify that live video appears on the NVR and that PTZ controls respond correctly. See 5 *PTZ Controls*, page 14.

4.3 Installing the Weather-Resistant RJ45 Cable Gland

If the Ethernet connection will be exposed to moisture, install the included weather-resistant RJ45 cable gland. The cable gland helps protect the Ethernet connection from water intrusion and corrosion.

Cable Gland Components:



A: Camera Ethernet Connector

B: O-ring

C: Barrel

D: Rubber Grommet

E: End Cap

Install the Cable Gland:

1. Disassemble the weather-resistant RJ45 cable gland.

2. Route the Ethernet cable through the gland components in the following order:
   - End cap
   - Rubber grommet
   - Barrel
3. Ensure the threaded end of the barrel faces toward the PTZ camera.
4. Place the O-ring over the PTZ camera Ethernet connector.
5. Connect the Ethernet cable to the camera Ethernet connector.
6. Slide the barrel over the Ethernet connection.
7. Tighten the barrel onto the PTZ camera Ethernet connector so that the O-ring is compressed between the barrel and the connector.
8. Insert the rubber grommet into the back of the barrel.
9. Slide the end cap forward.
10. Tighten the end cap onto the barrel until the cable is sealed securely.

NOTE

Do not overtighten the cable gland components, as this may damage the threads or reduce sealing performance.

4.4 Removing the Camera

Follow these steps to remove the camera from the mounting base:

1. Disconnect all power connections, including the Ethernet / PoE connection and the 12V DC power supply, if connected.
2. Support the camera securely.
3. Use the included Torx key to completely remove the locking screw on the side of the camera. Keep the screw in a safe place for reinstallation.
4. Rotate the camera counterclockwise from the lock symbol to the unlock symbol.
5. Carefully pull the camera away from the mounting base.
6. Disconnect the camera cables while supporting the camera to prevent damage to the connections.

CAUTION

Always support the camera when unlocking and removing it from the mounting base to prevent accidental drops.

4.5 Connect the Camera

The camera supports two power options: 12V DC or Power over Ethernet (PoE, IEEE 802.3af).

The camera can be connected directly to a compatible NVR with PoE ports or to the same Local Area Network (LAN) as the NVR.

4.5.1 Option 1: Connecting the Camera to an NVR

For the simplest installation, connect the camera directly to a compatible NVR with PoE ports. This allows the camera to receive power and transmit video and control data through a single Ethernet cable.



1. Connect the camera Ethernet cable to a CAT5e or higher Ethernet extension cable.

2. Connect the Ethernet extension cable to an available PoE port on the back panel of the NVR.
3. Allow the camera to power on and complete its startup sequence.
4. Verify that live video appears on the NVR and that PTZ controls respond correctly. See 5 *PTZ Controls*, page 14.

NOTE

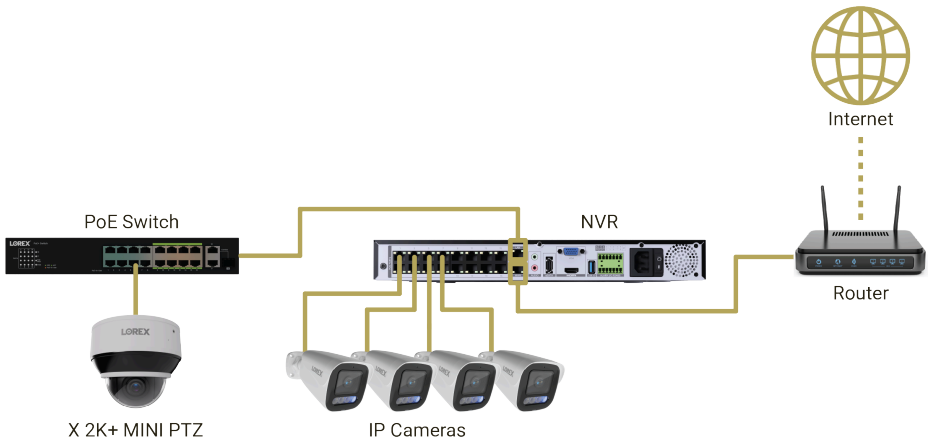
- You can use a CAT5e or higher Ethernet cable of up to 300 ft (91 m), not included.
- Make sure the NVR supports PoE (IEEE 802.3af).
- For the most up-to-date list of compatible NVRs, visit lorex.com/compatibility.

4.5.2 Option 2: Connecting the Camera Using a PoE Switch or Power Adapter

For added installation flexibility, the camera can also be connected through an external PoE switch or a compatible 12V DC power adapter. The connection method depends on the selected power option and network configuration.

Cameras connected using either method must be added manually to the NVR before they will appear in Live View or record to the system.

Step 1 of 2 — Option A: Connecting the Camera Using a PoE Switch

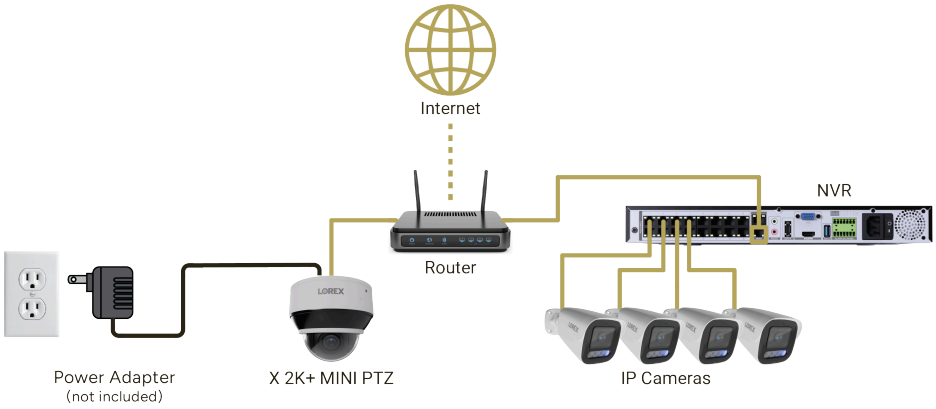


1. Connect the PoE switch to a power source.
2. Connect the PoE switch to the **LAN port** on the back of the NVR using an Ethernet cable.
3. Connect the PTZ camera to the PoE switch using a CAT5e or higher Ethernet cable.
4. Connect the **WAN port** on the back of the NVR to the router using an Ethernet cable.
5. Add the PTZ camera to the NVR. Refer to Step 2 of 2 — Adding the Camera to the NVR.

NOTE

- Make sure the PoE switch supports IEEE 802.3af and has sufficient power available for the camera.
- The PoE switch provides both power and network connectivity to the camera.

Step 1 of 2 — Option B: Connecting the Camera Using a 12V DC Power Adapter



1. Connect the PTZ camera to a compatible 12V DC power adapter (not included).
2. Connect the power adapter to a suitable power outlet.
3. Connect the camera to the router or a standard network switch using a CAT5e or higher Ethernet cable.
4. Connect the **WAN port** on the back of the NVR to the same router or network switch using an Ethernet cable.
5. Add the camera to the NVR. Refer to **Step 2 of 2 — Adding the Camera to the NVR**.

NOTE

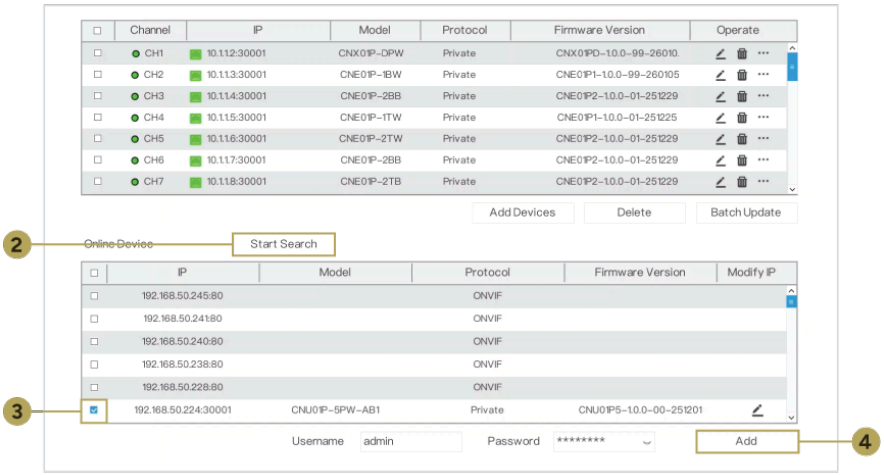
- The 12V DC power adapter is not included. Use only a compatible 12V DC power adapter with the correct polarity and sufficient power capacity.
- The power adapter supplies power to the camera, while the Ethernet cable provides network connectivity.
- The camera and NVR must be connected to the same local network.

Step 2 of 2 — Adding the Camera to the NVR

These instructions apply only to cameras connected through the LAN, such as through a PoE switch or router.

You must have at least one empty channel before adding the camera to the NVR.

1. In Live View, click + on an empty camera channel.
   - You can also navigate to **Main Menu > Settings > Channel > Camera**.



2. Click **Search Device**. The NVR will search the network for compatible cameras.
3. Select the camera you want to add.
4. Click **Add**.

The status indicator will turn green when the camera is successfully connected.

If the camera does not appear in the device search results, see 10 *Troubleshooting*, page 27.

5 PTZ Controls

PTZ (Pan/Tilt/Zoom) cameras are specialty cameras that can move and adjust their viewing angle based on commands from the recorder. You can control PTZ cameras manually in Live View, or configure automatic movements using presets, scans, and tours.

PTZ cameras allow you to **pan, tilt, and zoom** remotely, making them ideal for monitoring large or dynamic areas.

PTZ Control Tips

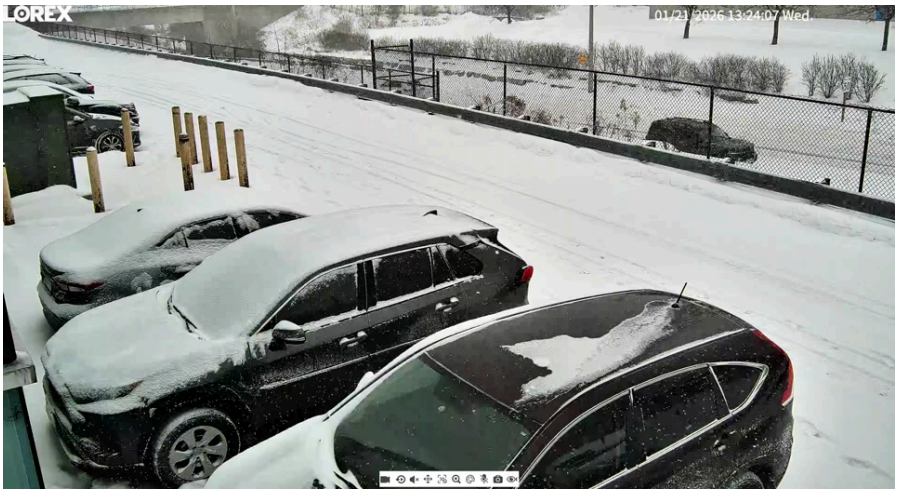
- Use presets for frequently monitored areas.
- Use tours for continuous monitoring of multiple zones.
- Adjust speed settings for smoother movement.
- Combine PTZ with smart analytics for automation.

5.1 Open PTZ Controls

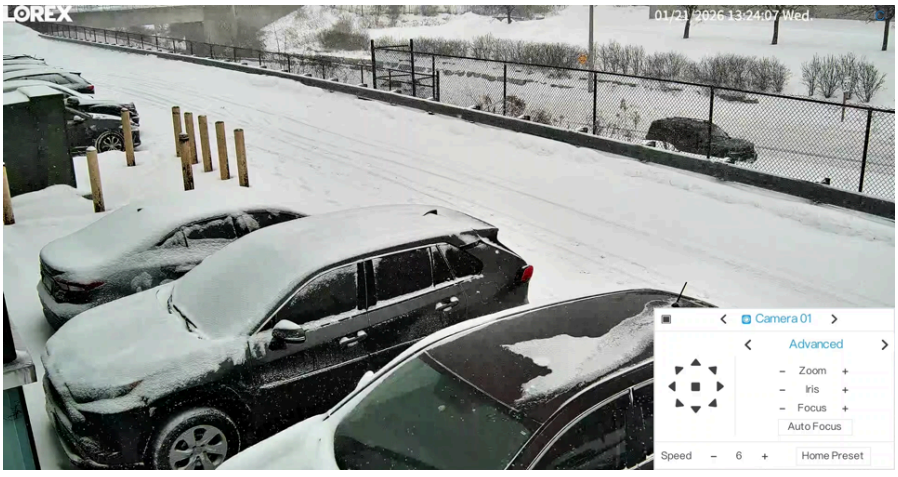
PTZ controls are available directly from Live View when a supported PTZ camera is connected.

Open PTZ Controls

1. In **Live View**, select a channel with a connected PTZ camera.



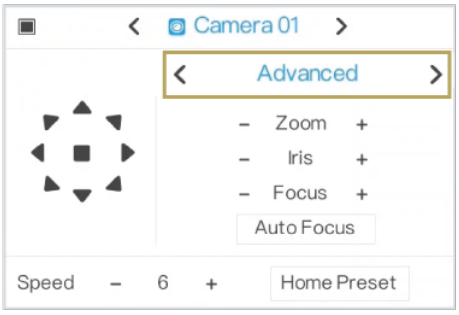
2. Click **PTZ** in the **Quick Camera Toolbar**.
3. The PTZ control panel appears in the bottom-right corner of the screen.



By default, the PTZ panel opens to the **Advanced** menu.

5.2 Switch Between PTZ Menus

To move between PTZ menus

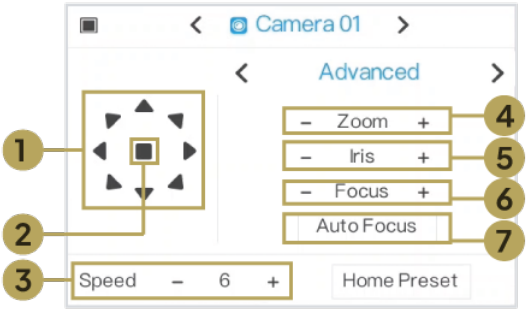


- Click the **arrow button next to the menu name** to cycle through:
  - **Advanced**
  - **Preset**
  - **Scan**
  - **Tour**

5.3 Use Advanced PTZ Controls

The **Advanced** menu provides manual control of the PTZ camera.

Available Controls



1. **Direction Arrows:** Move the camera up, down, left, right or diagonally to adjust the viewing position
2. **Stop:** The button located at the center of the directional arrows is used to **manually stop all PTZ movement**.
3. **Speed:** Adjust the speed of **manual camera movement** when using the directional arrows
4. **Zoom:** Zoom in or out
5. **Iris:** Adjust image brightness (light entering the lens)
6. **Focus:** Adjust image sharpness
7. **Auto Focus:** Automatically adjust focus

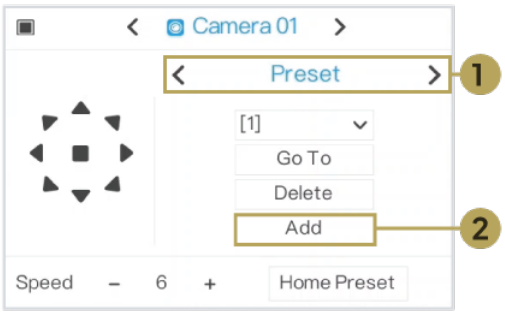
NOTE
If the PTZ camera is configured with **AI motion detection or auto tracking**, the camera may move automatically when events are triggered. Manual controls may not override this behavior.

5.4 Create and Use Presets

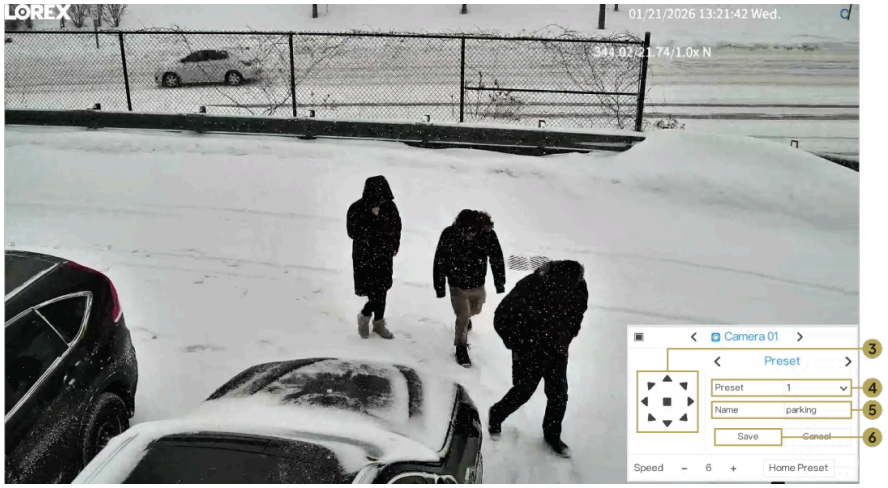
A **Preset** saves a specific camera position for quick access.

To create a preset

1. Open the **Preset** menu.



2. Click **Add**.



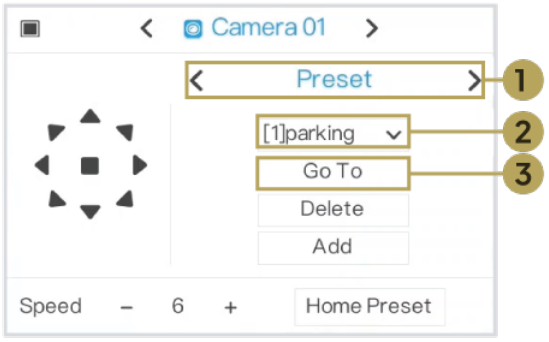
3. Use the directional controls to move the camera to the desired position.
4. Select a **Preset** number.
5. Enter a **Name**.

> **NOTE**
>
> Use descriptive preset names when available, such as **Gate Entrance**, **Loading Bay**, or **Parking Lot North**, so operators can easily identify the correct position.

6. Click **Save**.

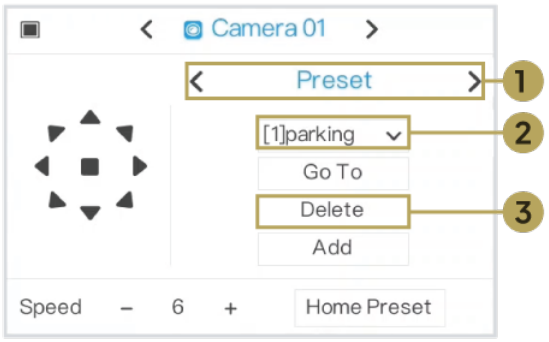
PTZ presets can also be linked to AI detection events. Refer to 8 *IVS / AI Analytics and PTZ Linkage*, page 24.

To go to a preset



1. Open the **Preset** menu.
2. Select a preset from the list.
3. Click **Go To**.

To delete a preset



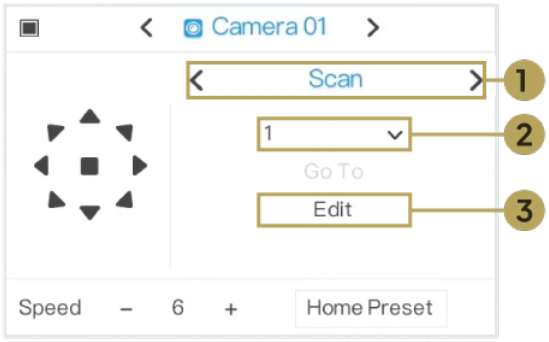
1. Open the **Preset** menu.
2. Select a preset.
3. Click **Delete**.

5.5 Create and Run a Scan

A **Scan** moves the camera automatically between two positions.

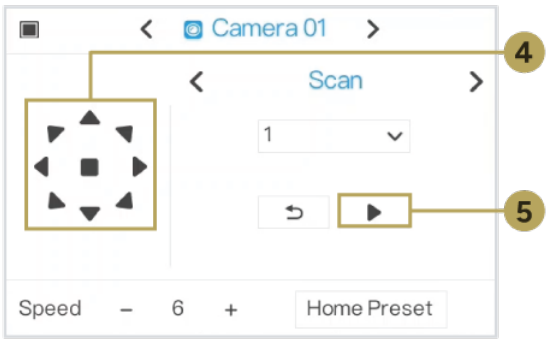
This is useful for scanning wide areas such as parking lots, driveways, hallways, or perimeters.

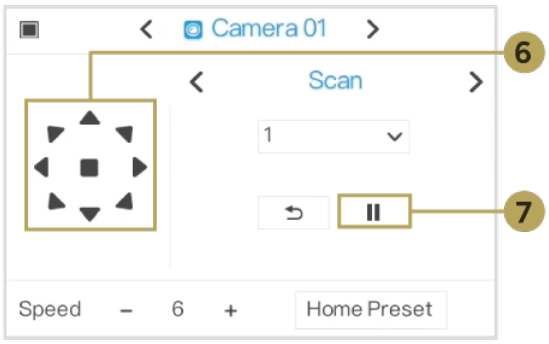
To create a scan



1. Open the **Scan** menu.
2. Select a **Scan** number.
3. Click **Edit**.

4. Use the directional arrows to move the camera to the first scan position.
5. Click **Start** to set the first position.





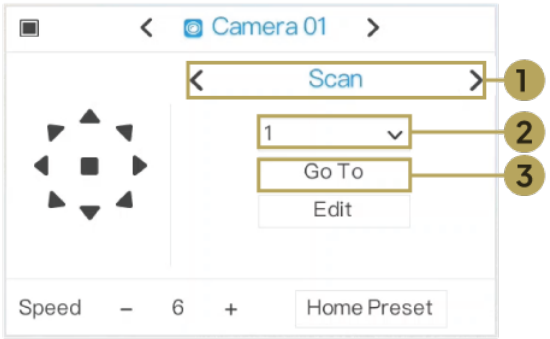
6. Use the directional arrows to move the camera to the next position.
7. Click **Pause** to set the second position and save the scan.

The camera will save the scan between the two defined positions.

NOTE

Scans cannot be deleted from the Scan menu. To change a scan, edit the same scan number and overwrite it with new start and end positions.

To start a scan



1. Open the **Scan** menu.
2. Select the desired **Scan** number.
3. Click **Go To**.

The camera will begin moving between the defined positions.

NOTE

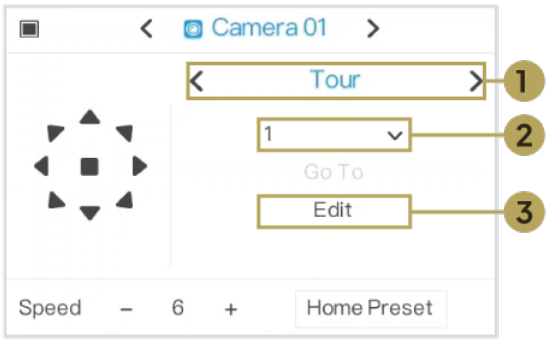
Go To is only available if a scan has already been created for the selected scan number.

5.6 Create and Run a Tour

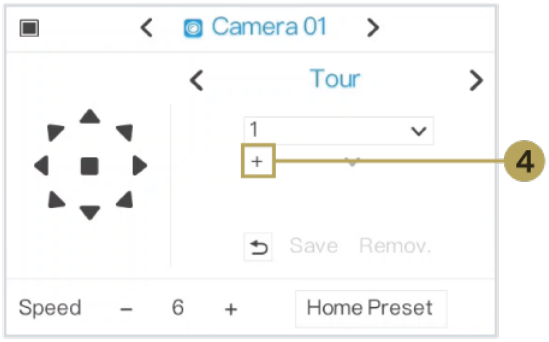
A **Tour** cycles the camera through multiple preset positions automatically.

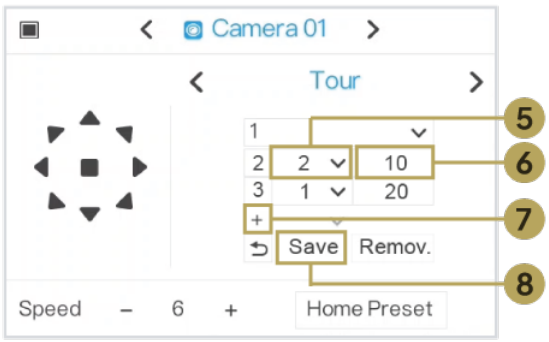
This allows the camera to monitor several areas in sequence.

To create or edit a tour



1. Open the **Tour** menu.
2. Select a **Tour** number.
3. Click **Edit**.
4. Click + to add a preset to the tour.





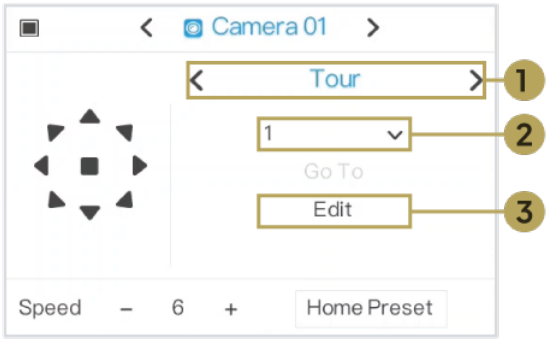
5. Select a **Preset** from the list.
6. Set the **dwell time (in seconds)** for how long the camera will remain at that preset.
7. Repeat steps 4–6 to add additional presets to the tour.
8. Click **Save**.

To start a tour

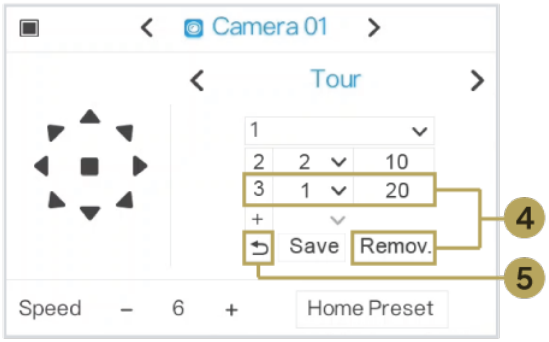
1. Open the **Tour** menu.
2. Select the desired **Tour**.
3. Click **Go To**.

The camera will begin cycling through the saved presets.

To remove all presets from a tour



1. Open the **Tour** menu.
2. Select a **Tour** number.
3. Click **Edit**.

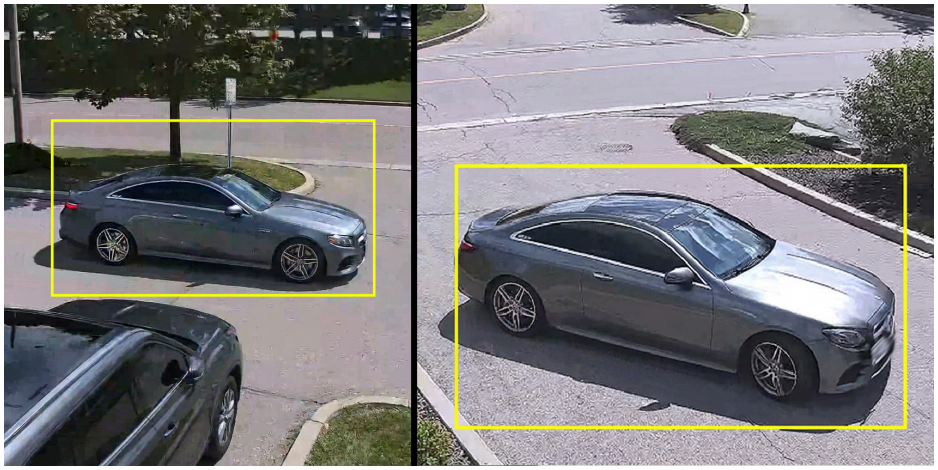


4. **To remove all presets:** Click **Remove All**, then **Save**.
5. Click **Return** to go back.

6 Auto Tracking

Auto Tracking enables the PTZ camera to automatically detect, follow, and maintain focus on moving targets within the camera's field of view. This feature combines AI-based object detection with PTZ motion control to dynamically track subjects such as people or vehicles.

When Auto Tracking is enabled, the camera will:



- Detect supported object types (person and/or vehicle)
- Automatically pan, tilt, and zoom to center the target
- Adjust zoom level dynamically based on subject distance
- Return to a predefined position when tracking ends

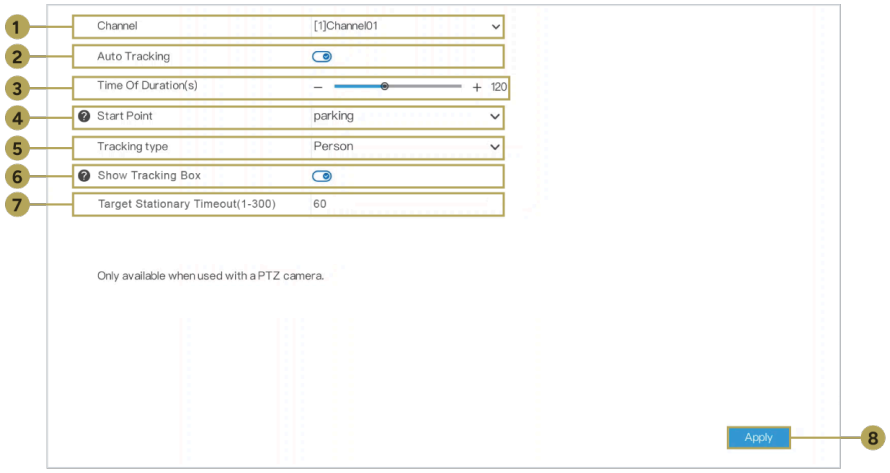
NOTE
Auto Tracking is disabled when Presets, Scan, or Tour functions are active.

6.1 Auto Tracking Configuration

Open Auto Tracking Settings

1. **Right-click** twice to open the **Main Menu**.
2. Click **Settings**.
3. Select the **Channel** tab at the top of the menu.
4. Click **Auto Tracking** from the left-side menu.

Auto Tracking Settings

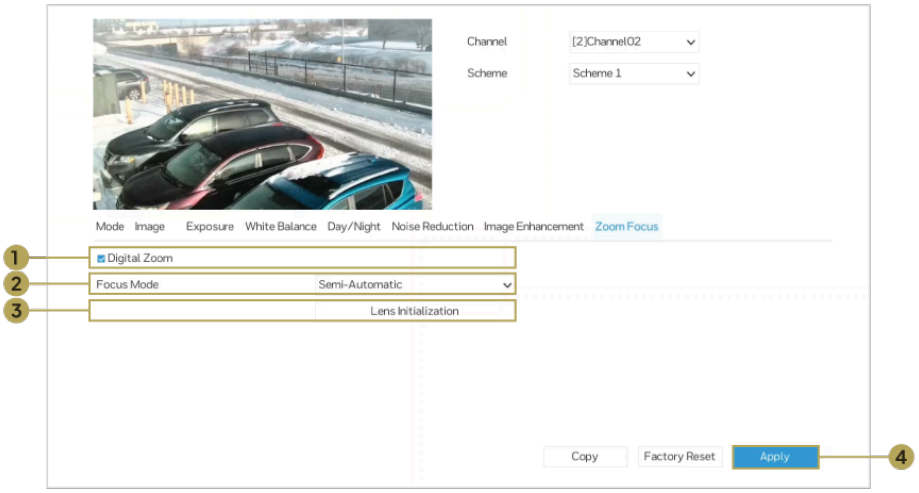


1. **Channel:** Select the channel where a PTZ camera is connected.
2. **Auto Tracking:** Enable or disable automatic tracking for the selected camera.
3. **Time of Duration (s):** Using the slider, set how long the camera continues tracking a detected target before returning to its original position.
4. **Start Point:** Select the preset position where the PTZ camera will return after tracking is completed. This preset must be created before it can be selected as the Start Point. See 5 *PTZ Controls*, page 14.
5. **Tracking Type:** Select the type of object the camera should track, such as **Person**.
6. **Show Tracking Box:** Enable or disable the display of a bounding box around the target being tracked by the camera.
7. **Target Stationary Timeout (1–300):** Set how long (in seconds) the PTZ camera waits when a tracked target stops moving before ending tracking of that target.
8. **Apply:** Click **Apply** to save the settings.

7 Zoom and Focus Settings

The Zoom Focus settings provide direct control over the PTZ camera's lens behavior, including digital zoom and focus operation modes. These options help optimize image clarity depending on the viewing distance and scene.

Zoom Focus Settings



1. **Digital Zoom:** Enable or disable digital zoom for the selected PTZ camera channel. When enabled, you can zoom in on the image during live view.
2. **Focus Mode:** Select how the PTZ camera handles focus adjustments:
   - **Auto:** The PTZ camera automatically adjusts focus based on scene changes.
     When **Auto** is selected:
     - **Auto Focus Sensitivity:** Adjust how quickly the PTZ camera responds to changes in focus.
     - **Shortest Focus Distance:** Select the minimum focusing distance: 10 m / 6 m / 3 m / 2 m / 1.5 m
   - **Manual:** Focus is adjusted manually using on-screen controls.
     When **Manual** is selected:
     - **Zoom Out:** Decrease the zoom level.
     - **Zoom In:** Increase the zoom level.
     - **Near Focus:** Adjust focus for closer objects.
     - **Far Focus:** Adjust focus for distant objects.
     - **Auto Focus Once:** Perform a one-time automatic focus adjustment.
   - **Semi-Automatic:** Allows manual focus adjustments with optional automatic assistance.
3. **Lens Initialization:** Click **Lens Initialization** to reset the lens position. This may help resolve focus issues or recalibrate the PTZ camera.
4. **Apply:** Click **Apply** to save the settings.

Additional Options

- **Copy:** Click **Copy** to apply the current settings to other PTZ camera channels.
- **Factory Reset:** Click **Factory Reset** to restore the default image settings for the selected channel.

NOTE

If the PTZ camera image remains out of focus after adjustment, see 10 *Troubleshooting*, page 27.

8 IVS / AI Analytics and PTZ Linkage

The camera supports integration between IVS / AI analytics and PTZ functionality. This allows the camera to automatically move to predefined positions when specific events are triggered.

For detailed instructions on configuring IVS detection areas, lines, schedules, and event actions, refer to your compatible NVR's instruction manual.

8.1 Link PTZ Presets to IVS Analytics Events

You can link a PTZ camera preset position to an IVS analytics event so that the camera automatically moves to a predefined view when the event is detected. This is useful for business installations where one PTZ camera is used to monitor multiple areas, such as entrances, loading bays, parking lots, fence lines, or restricted zones.

Before configuring PTZ linkage, make sure the following setup is complete:

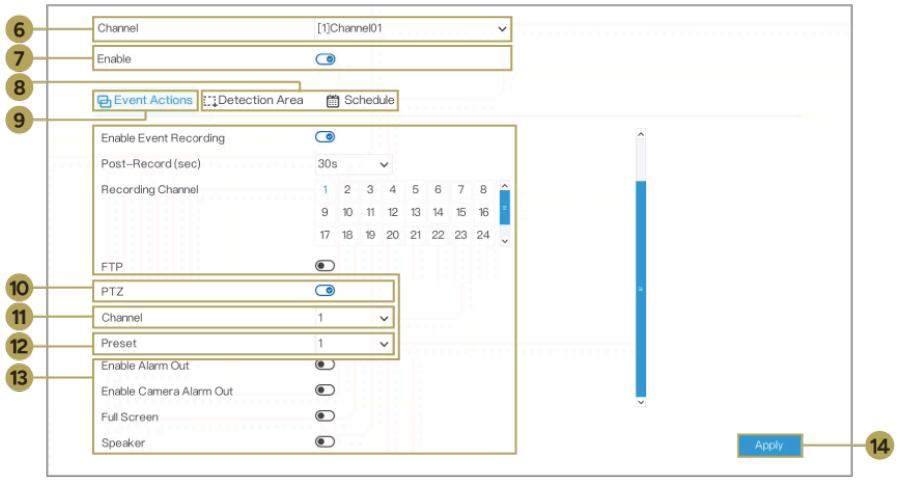
- The PTZ camera is connected to a compatible Lorex Network Video Recorder.
- The PTZ camera has been added to the recorder and is displaying video.
- One or more PTZ preset positions have already been created. See 5.4 *Create and Use Presets*, page 15.
- The IVS analytics feature you want to use has been enabled and configured.
- The camera view, detection area, or detection line has been adjusted for the intended scene.

For best detection performance, position the camera so that targets move across the detection area or line rather than directly toward the camera. IVS features require defining a detection area or line and selecting the actions that occur when the event is triggered.

8.2 Configure PTZ Linkage for an IVS Event

When an event is detected, the recorder triggers the PTZ action and moves the selected PTZ camera to the configured preset position.

1. From live view, right-click twice to open the **Main Menu**.
2. Click **Settings**.
3. Select the **IVS** tab.
4. Open the analytics menu that contains the detection type you want to configure. For most event-based analytics, click **Smart Analysis**.
5. Select the detection type you want to use, such as **Intrusion**, **Smart Motion**, **Single Line Crossing**, **Double Line Crossing**, **Loitering**, **Wrong Way**, **Illegal Parking**, or **People Counting**.



6. Select the camera **Channel**.
7. Enable the detection type.

8. Configure the detection area, detection line, target type, direction, sensitivity, or time threshold as required for the selected detection type.
9. Click the **Event Actions** tab.
10. Enable **PTZ**.
11. Under **Channel**, select the PTZ camera channel that should respond to the event.
12. Under **Preset**, select the preset position that the PTZ camera should move to when the event is triggered.
13. Configure any other event actions as needed, such as recording, email, buzzer, FTP upload, alarm output, full screen display.
14. Click **Apply** to save the settings.

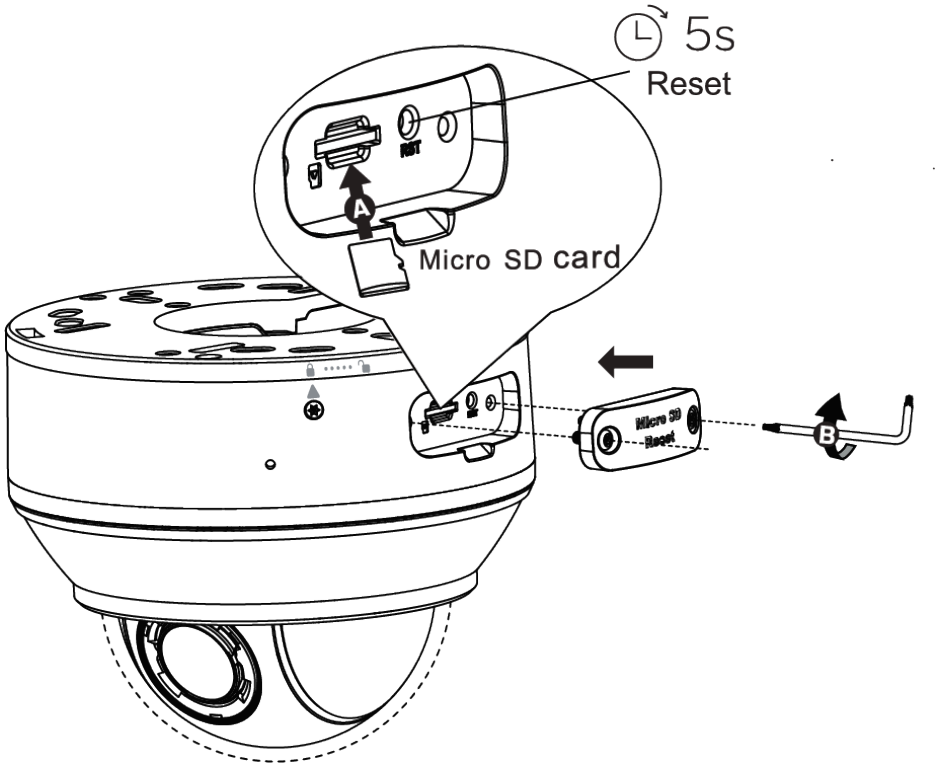
NOTE

If PTZ linkage is not working, confirm that the preset exists, the correct PTZ channel is selected, the IVS event is enabled, and the event schedule is active.

9 Inserting the microSD Card (Optional) and Resetting the Camera

The camera supports a microSD card up to 1 TB (not included) for local recording. It also features a reset button that restores the camera settings to their default values.

The microSD card slot and reset button are located inside a compartment on the side of the camera.



To insert a microSD card or reset the camera:

1. Locate the microSD/reset compartment on the side of the camera.
2. Use the included Torx key to loosen the two screws securing the compartment cover. Carefully remove the cover.
3. The microSD/reset compartment allows you to perform the following:
   - **Insert a microSD card:** Insert a microSD card (up to 1 TB) into the slot and gently press it until it clicks into place.
   - **Remove a microSD card:** Gently press the card inward to release it, then pull it out.
   - **Reset the camera:** Make sure the camera is powered on. Press and hold the reset button for 5 seconds to restore the camera to its default settings.
4. Replace the compartment cover and tighten both screws securely using the included Torx key.

NOTE

- The microSD card is not included. Recordings stored on the microSD card can be accessed through the camera using a web browser but will not upload to the NVR or cloud for mobile app viewing.
- It may take a few minutes for the camera image to reappear after resetting.
- Keep the inside of the compartment dry. Do not open the compartment in rain or high-humidity conditions. Always secure the compartment cover after use.

10 Troubleshooting

1. **No image at startup.**
   - The camera may take a few minutes to start after power is connected. Wait at least 2 minutes before continuing troubleshooting.
   - Check that the camera is properly connected. See 4.5 *Connect the Camera*, page 10.
   - If the camera is connected directly to an NVR, make sure it is connected to a PoE port on a compatible NVR.
   - If using a PoE switch, make sure the switch supports PoE (IEEE 802.3af) and has sufficient power available for the camera.
   - If using a 12V DC power adapter (not included), make sure the adapter is compatible and connected to a working power outlet.
   - If the camera is connected through an external PoE switch or router, make sure all Ethernet cables are connected to the correct ports. See 4.5 *Connect the Camera*, page 10.
   - If the camera is connected through the LAN, add the camera to the NVR manually.
   - Make sure the Ethernet cable is CAT5e or higher and does not exceed 300 ft (91 m).
   - Check the Ethernet cable for damage or loose connections. Try a different Ethernet cable if needed.
   - Reset the camera to factory default settings. See 9 Inserting the microSD Card (Optional) and Resetting the Camera.
2. **The camera does not appear when searching for devices on the NVR.**
   - Make sure the camera is powered on.
   - Verify that the camera is properly connected to the NVR through the appropriate network connection. See 4.5 *Connect the Camera*, page 10.
   - Make sure there is at least one empty channel available on the NVR.
   - Check that the Ethernet cable is securely connected to the camera, switch, router, or NVR.
   - If using a PoE switch, confirm that the switch is powered on and connected to the network.
   - If using a 12V DC power adapter, confirm that the camera is also connected to the network using an Ethernet cable.
   - Check that the camera is connected to the correct network and that the NVR can communicate with it.
   - Restart the camera and search again from the NVR.
   - For the most up-to-date list of compatible NVRs, visit lorex.com/compatibility.
3. **PTZ controls are not responding.**
   - Make sure the selected channel is the PTZ camera channel.
   - Wait until the camera finishes its startup sequence before using PTZ controls.
   - Check that the camera is connected to a compatible NVR.
   - If the camera is connected through the LAN, make sure it has been successfully added to the NVR.
   - If a Scan or Tour is running, stop the automatic PTZ action before using manual controls.
   - Check the network connection and Ethernet cable.
   - Make sure there are no physical obstructions preventing the camera from moving.
4. **The camera moves on its own.**
   - Auto Tracking may be enabled. The camera can automatically pan, tilt, and zoom to follow supported targets. See 6 *Auto Tracking*, page 21.
   - A Scan or Tour may be running. Stop the Scan or Tour from the PTZ controls. See 5 *PTZ Controls*, page 14.
   - IVS / AI analytics may be linked to a PTZ preset. When an event is detected, the camera can automatically move to the selected preset. See 8 *IVS / AI Analytics and PTZ Linkage*, page 24.

5. **Auto Tracking is not working.**
   - Make sure Auto Tracking is enabled for the correct camera channel. See 6 *Auto Tracking*, page 21.
   - Make sure the correct Tracking Type is selected.
   - Confirm that the target is within the camera's field of view.
   - Make sure the Start Point preset has been created. See 5 *PTZ Controls*, page 14.
   - Auto Tracking is disabled when Presets, Scan, or Tour functions are active. Stop the active PTZ function and try again.
   - Check that the camera has a clear view of the monitored area and that lighting conditions are sufficient for detection.
6. **The camera does not return to the correct position after Auto Tracking.**
   - Make sure the Start Point is set to the correct preset in the Auto Tracking settings.
   - Confirm that the selected preset still exists.
   - Recreate the preset if the saved position is no longer accurate.
   - Check the Time of Duration setting. The camera returns to the Start Point after tracking ends or after the configured tracking duration.
7. **A preset does not work.**
   - Make sure the preset has been saved. See 5 *PTZ Controls*, page 14.
   - Select the preset from the Preset menu and click Go To.
   - If the camera does not move, try creating the preset again.
   - Make sure the camera is not currently running a Scan, Tour, Auto Tracking action, or IVS-triggered PTZ action.
   - Restart the camera and try again.
8. **PTZ linkage is not working with IVS / AI analytics.**
   - Make sure the IVS detection type is enabled.
   - Make sure the detection area or detection line has been configured correctly.
   - Make sure the IVS event schedule is active for the current day and time.
   - Confirm that PTZ is enabled in the Event Actions tab.
   - Confirm that the correct PTZ camera channel is selected.
   - Confirm that the selected preset exists.
   - Test the preset manually from the PTZ controls. See 5 *PTZ Controls*, page 14.
   - If using target filtering, make sure the selected target type matches the object being detected, such as Person, Vehicle, or Person or Vehicle.
   - For line-crossing detection, make sure the detection direction is configured correctly.
   - For loitering or unauthorized parking, make sure the time threshold is not set too high.
   - Refer to the compatible NVR manual for detailed IVS event configuration.
9. **IVS / AI analytics are not detecting events.**
   - Make sure the selected detection type is supported by the connected camera and compatible NVR.
   - Make sure the detection type is enabled.
   - Make sure the detection area or detection line covers the correct part of the scene.
   - Position the camera so that people or vehicles move across the detection area or line rather than directly toward the camera.
   - If available, adjust sensitivity, target type, direction, or time threshold settings.
   - Make sure the event schedule is active.
   - Check lighting conditions and image clarity. Poor lighting, glare, heavy rain, snow, fog, or obstructions may affect detection performance.
   - Clean the camera lens area with a soft, slightly damp cloth.

10. **The image is out of focus.**

- Use Auto Focus from the PTZ Advanced menu.
- Check the Zoom and Focus settings. See 7 *Zoom and Focus Settings*, page 23.
- If using Manual focus, adjust Near Focus or Far Focus until the image is clear.
- Use Auto Focus Once to perform a one-time focus adjustment.
- Run Lens Initialization to recalibrate the lens position.
- Clean the camera lens area with a soft, slightly damp cloth.
- Avoid pointing the camera directly at intense light sources.
- If the image becomes unclear when zooming in, reduce the zoom level and allow the camera to refocus.

11. **The image is too bright.**

- Make sure the camera is not pointed directly at the sun, spotlights, headlights, or other intense light sources.
- Adjust the image settings on the NVR, such as brightness and contrast.
- Reposition the camera if possible.
- Enable or adjust Wide Dynamic Range / WDR settings on the NVR.

12. **The image is too dark.**

- Check the NVR image settings, such as brightness and contrast.
- Make sure the camera lens area is clean.
- Check that the camera is installed within the specified operating conditions.
- Reposition the camera if the monitored area has very low light or uneven lighting.
- Enable or adjust Wide Dynamic Range / WDR settings on the NVR.

13. **There is no color image at night.**

- The camera may switch to black-and-white IR night vision when there is not enough ambient light for color nighttime video.
- Add ambient lighting to the scene if color nighttime video is required.
- Make sure the camera is not installed in a location where nearby surfaces reflect IR light back into the lens.
- Actual night vision range and image clarity depend on the installation location, viewing area, and light reflection or absorption.

14. **The night image is unclear.**

- Clean the camera lens area with a soft, slightly damp cloth.
- Make sure there are no nearby objects, walls, eaves, or mounting surfaces reflecting IR light into the camera.
- Reposition the camera if the scene contains highly reflective surfaces.
- Check for rain, snow, fog, dust, or insects near the camera.
- Make sure the monitored area is within the camera's IR night vision range of up to 98 ft (30 m).
- Actual night vision range may vary depending on environmental conditions and the installation location.

15. **Motion detection or event recording is constantly triggering.**

- If the camera is moving because of manual PTZ control, Auto Tracking, Scan, Tour, or PTZ linkage, the NVR may detect the camera movement as video motion.
- Adjust motion detection sensitivity or detection areas on the NVR.
- Use AI-based detection filters, such as Person or Vehicle, when available.
- Avoid aiming the camera at moving trees, flags, traffic, reflections, or other sources of repeated motion.
- If using PTZ movement frequently, consider limiting basic video motion detection on that channel and using IVS / AI analytics instead.

16. **Audio recording is not working.**

- Make sure audio recording is enabled on the NVR.
- Make sure the correct camera channel is selected.
- Check the audio settings for the selected camera channel.
- Make sure the camera's built-in microphone is not obstructed.
- Confirm that the NVR, app, or client software volume is not muted.
- Audio recording is disabled by default and must be used in compliance with local laws and regulations.

17. **The microSD card is not detected or local recording is not working.**

- Make sure the microSD card is inserted correctly. See 9 *Inserting the microSD Card (Optional) and Resetting the Camera*, page 26.
- Make sure the microSD card capacity does not exceed 1 TB.
- Restart the camera after inserting the card.
- MicroSD recording is independent local recording. Data can be accessed through the camera using a web browser, but it will not upload to the NVR or to the cloud for mobile app viewing.

18. **The camera does not reset.**

- Make sure the camera is powered on before pressing the reset button.
- Use the included Torx key to open the microSD/reset compartment on the side of the camera. See 9 Inserting the microSD Card (Optional) and Resetting the Camera.
- Press and hold the reset button for 5 seconds.
- Wait a few minutes for the camera to restart and reappear on the network.
- After reset, camera settings return to default values and may need to be configured again.
- If the camera was connected through the LAN, you may need to add it to the NVR again. See 4.5 *Connect the Camera*, page 10.

11 Technical Specifications

11.1 Technical Specifications

Camera

Image Sensor	5M 1/2.7” CMOS
Max Resolution	5MP (2880 × 1620)
Max Frame Rate	30 fps
Aspect Ratio	16:9
Wide Dynamic Range	120 dB True WDR
Min Illumination	Color: 0.01 lux B/W (IR On): 0 lux
Signal-to-Noise Ratio	55 dB

Lens

Type	Motorized Varifocal
Focal Length / Aperture	2.7-13.5 mm / F1.66-F3.03
Optical Zoom	5×
Field of View	Diagonal: 115°-36.5° Horizontal: 111.5°-32.3° Vertical: 57.5°-17.9°

DORI Distance

Detect	216.5-666.0 ft (66-203 m)
Observe	86.6-266.4 ft (26.4-81.2 m)
Recognize	43.3-133.2 ft (13.2-40.6 m)
Identify	21.7-66.6 ft (6.6-20.3 m)

Video

Compression	Nano Codec (Enhanced H.265 Compression), H.265, H.264, MJPEG
Video Streams	Main / Sub / Third Stream
Bit Rate Control	CBR / VBR
Video Format	NTSC

Audio

Microphone	Yes

Night Vision

IR Night Vision	Yes Up to 98 ft (30 m) in total darkness

AI Smart Features

Detection	Person, Vehicle, Intrusion, Loitering, Wrong-Way, Unauthorized Parking, Area People Limit, Perimeter
Perimeter Protection	Line-Crossing, Dual-Line Crossing
Tracking & Monitoring	Smart Motion, Auto Tracking
Crowd Analytics	People Counting

Network & Connectivity

Interface	RJ45 (10/100 Base-T)
Protocols / Integration	ONVIF Profiles G/M/S/T, RTSP

Storage & Power

Local SD Storage	MicroSD Slot (Up to 1 TB)*
Alarm I/O	1 Input / 1 Output
Power Supply	12V DC / PoE (IEEE 802.3af)

Max Power Consumption	< 12 W (PoE)

Physical

Housing Material	Aluminum Alloy
Color	White
Camera Dimensions (D × H)	Ø 4.61 × 3.91 in (Ø 117.2 × 99.3 mm)
Camera Weight	1.168 lb (0.53 kg)

Environmental

IP Rating	IP67
Impact Protection	IK10
Operating Temperature	-22°F to 140°F (-30°C to 60°C)
Operating Humidity	≤ 90% RH

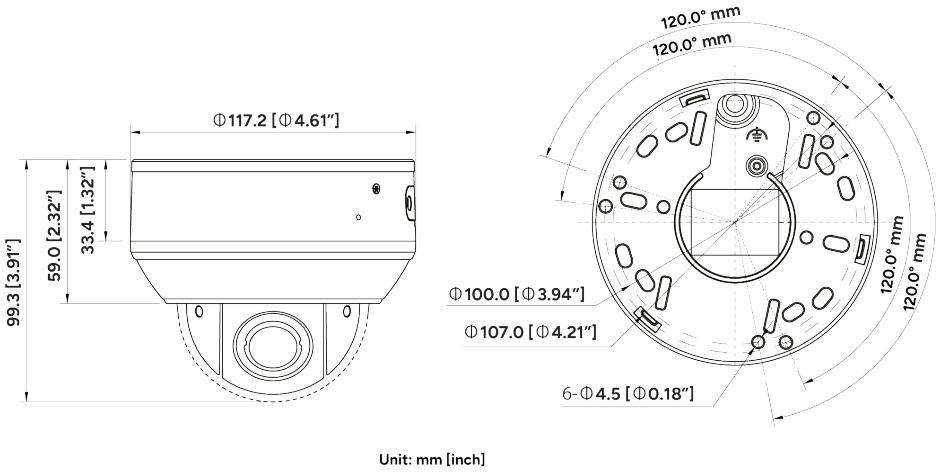
Disclaimers

1. Compatible with select Lorex Network Video Recorders. For a full list of compatible recorders visit: lorex.com/compatibility.
2. Stated IR illumination range is based on ideal conditions in typical outdoor nighttime ambient lighting up to 98 ft / 30 m in total darkness. Actual range and image clarity depends on installation location, viewing area and light reflection/absorption.
3. Audio recording is disabled by default. Audio recording without consent is illegal in certain jurisdictions. Lorex Technology does not assume liability for any use of its product that fails to conform with local laws.
4. Not intended for submersion in water. Installation in a sheltered location recommended.

*A microSD card can be inserted for independent recording. Data can be accessed through the camera using a web browser but will not upload to the NVR or to the cloud for mobile app viewing.

Lorex products are designed for consumer and business use only and not for US federal governments, federally-funded projects or contractors subject to NDAA.

11.2 Dimensions



Unit: mm [inch]

Website
www.lorextechnology.com

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