

Quick Start Guide

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Bench Testing Guide

Why Bench Test

When your security system arrives, the first step before installation is to perform a “bench test.” Bench testing ensures that your equipment is functional before installation. Bench testing saves time and helps later if you experience connectivity issues after mounting the camera. Bench testing is also used to troubleshoot cameras that experience issues or connectivity problem after installation.

Required Items

1. Recorder (NVR/DVR)
2. Camera(s)
3. Cat5e Patch Cable
4. Monitor and Display Cable
5. Mouse

Setting Up

Once you have gathered all the required components, it is time to set up your system for bench testing. Follow the steps below to ensure a proper working system before installing.

1. Plug the Recorder into an outlet, Connect the monitor, plug in the mouse.
2. Turn the power switch to the on position, located on the back of the recorder.

3. When The recorder boots up the setup wizard may come up, **Uncheck** the **Box** and **left-click** **exit**.



4. Take the Patch cable and plug one end into a PoE port located on the back of the recorder and Plug the other end into the camera
5. If the Camera has infrared lights, you may see a faint red glow when the camera is connected; this lets us know we have power to the camera. If you cup your hands around the camera when you plug it in you can usually see the IR as well. Certain cameras have LED lights on the circuit board that displays activity and can be an indicator that power is correctly reaching the camera.
6. IP cameras usually take 1-2 minutes to boot up fully. When the camera is fully booted up, you should see the cameras video feed on the monitor that you have connected.
 - a. Make sure you are in the largest grid available for the live view, so you do not accidentally miss a camera.
 - b. You can do this by **Right-clicking** anywhere on the monitor and select **Multi-Screen** and then **left-click** the **largest option** available



7. The IP camera usually appears on the grid of the corresponding port. For example, the 1st grid spot represents PoE port one on the Recorder.
8. If the IP cameras live video feed is on the monitor, you have confirmed that the camera is working and ready for installation.
9. Repeat Steps 3-7 until you have tested each camera. Remember to change PoE ports with each camera as you go; this will also check the PoE ports on the recorder as well.
10. If you have fewer cameras than PoE ports, move a camera over to the other PoE ports to ensure their functionality

Summary

Once you have completed these steps, you know that you have a fully working system. Bench testing also helps isolate issues during installation and prevent unneeded work. If there is a problem with a camera after installation, you can almost guarantee it is due to a cabling issue and not the camera itself.

What type of Cable and cable ends?

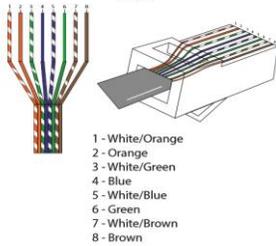
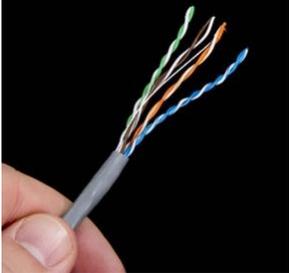
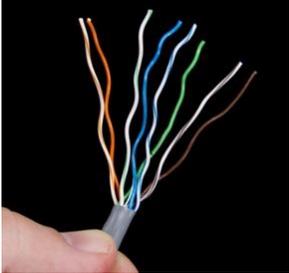
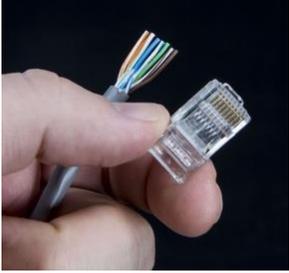
Cabling

IP systems function using cat5e or cat6/6a which is commonly called Ethernet cabling. Regarding IP cameras, cat5e has more than enough bandwidth available for use. If you are looking to future proof your install, you can use cat6A.

Required Items

1. Cable
2. RJ45 Crimping Tool
3. RJ45 Connectors
4. Electrical Scissors or Cable Strippers
5. T-568B Pinout format.

Making your cable

<ol style="list-style-type: none">1. Measure the cable and cut it to the desired length, giving yourself a little bit of extra slack and keep in mind that the maximum distance you can run a single cable is 300ft. It is always good practice to leave some extra cable looped above a wall before dropping a cable to a camera or wall jack or exiting an exterior wall. These loops are commonly referred to as "service loops" and ensure that future maintenance to the cable is possible.	<p>RJ45 Pinout T-568B</p>  <p>1 - White/Orange 2 - Orange 3 - White/Green 4 - Blue 5 - White/Blue 6 - Green 7 - White/Brown 8 - Brown</p> <p>Figure 1</p>
<ol style="list-style-type: none">2. Trim back about 1.5"-2" of the outermost shielding to reveal the twisted pairs. Be careful to not nick or cut into the twisted pairs as this can weaken the wire and break the cable	 <p>Figure 2</p>
<ol style="list-style-type: none">3. Untwist each twisted pair and arrange the cables in the proper order. In this case, we are using the T-568B Pinout format (O/W, O,G/W,Bl,Bl/W,G,Br/W,Br).	 <p>Figure 3</p>
<ol style="list-style-type: none">4. Hold the ordered pairs with your thumb and index finger to keep the wires in the correct order and flat. Trim the wires so that they are long enough to "bottom out" inside the connector while the cable shield extends into the RJ45 connector.	 <p>Figure 4</p>
<ol style="list-style-type: none">5. With the RJ45 connector clip side down, slide the trimmed off pairs into the RJ45 connector, being sure that each pair settles into its groove	 <p>Figure 5</p>

<p>6. Place the RJ45 connector with the cable inserted in the corresponding slot of your Crimping Tool. Press down firmly until it is secure. Some crimping tools will click to indicate your connector is fully crimped. Check the end of the connector. You should see the shiny ends of each copper pair in each groove up against the inside of the connector; this is a good indicator of a healthy crimp. Also, double check the order of your pairs to ensure a wire did not jump to the wrong groove.</p>	 <p>Figure 6</p>
<p>7. If you have a cable tester, test your cable for connectivity. If not, plug your new cable into your IP camera or NVR and wait about a minute for the camera feed to appear on your monitor. You can tell if power is reaching your camera if the IR LEDs glow red or link lights begin flashing on the NVR camera port. Although, don't assume that your cable is good if you get link lights. A bad cable can still behave normally at times.</p>	 <p>Figure 7</p>
<p>8. You can also check out our videos on making cable ends & waterproofing your connections at https://www.arcdyn.com/resources/video-guides.html</p>	

Cable Troubleshooting

If you are having issues getting the camera to connect after pulling the cable and crimping the ends on here are a couple of things you can check. These steps assume that you have already bench tested your system.

1. Inspect the RJ45 connector ends.
 - a. Make sure you have used the T-568B Pinout.
 - b. Make sure both ends Match
 - c. Make sure the wires are properly terminated and seated inside of the RJ45 Connector
2. Inspect the cable run
 - a. Did the cable get bent or damaged in the run
 - b. Does it make any sharp turns or corners
 - c. Re-Run the cable if the cable is damaged
3. Distance
 - a. The max length of an Ethernet run is 100M or 328 FT, beyond this distance packet loss may or may not cause dropped signal from the camera and disconnections
 - b. Bulk Cabling usually has 1-foot increments marked on the cable for easy measurement
 - c. If you need to run further than 328 FT, you need to use a PoE Extender or PoE Switch

Summary

Usually, you just need to re-crimp one of the ends again if your camera does not connect after pulling and crimping your cable. If you find yourself getting stuck along the way, don't hesitate to call and ask questions. The Support team is here to help.

Weatherproofing your connection

Why Weatherproof your connections

Connections exposed to weather, humid or dusty environments require weatherproofing. Failure to weatherproof the connections can ultimately lead to camera failure and possibly irreversible damage. Almost all our cameras come with a provided solution for weatherproofing the connection. Waterproofing the connection is easy and only requires a couple of steps.

Weatherproofing the Camera Connection

1. You need the following supplies
 - a. Cable Crimping Tools & Materials. ([See Cabling section](#))
 - b. Camera
 - c. Waterproof connector
2. Locate the waterproof connector and make sure you have all the parts.
 - a. Compression Cap
 - b. Compression Gasket
 - c. Compression Body
 - d. O-ring



3. Place the following components on the cable **before** you crimp the RJ45 connector on, they should put on the wire in this order:
 - a. Compression Cap
 - b. Compression Gasket
 - c. Compression Body
4. Put the O-ring onto the female RJ45 connector coming from the camera
5. Plug the male RJ45 end into the female RJ45 connector coming from of the camera
6. Make sure the connection is good, and the camera comes online, if not, redo the connection.
7. Grab the compression body and screw it onto the female RJ45 camera connection.

8. Turn the compression cap onto the compression body until the Compression gasket has made a secure seal around the cable.
9. Inspect all seals, and connections made. The connector is designed to prevent the ingress of water and dust and prevent corrosion.
10. Video Guide for waterproof Connection: <https://www.arcdyn.com/resources/video-guides.html>

Mounting Solutions

Using the correct mount when installing the camera makes the camera easier to service and adds another layer of protection for your connections. A mounting solution should be used when installing your cameras.

General Mounting Guidelines

1. When is a mounting solution required?
 - a. When the camera is outdoors
 - b. Humid/Dusty Environments
2. When is a mounting solution optional?
 - a. Inside a structure that has a temperature-controlled environment

General guidelines for all models

1. Weatherproof the connection at the camera, always.
2. Know your devices environment limits such as temperature, humidity.
 - a. You can find this on the product page.
3. Use a mounting solution when required.
4. Understand and know your devices Ingress Protection(IP) Rating
 - a. **IP65 Enclosure** - IP rated as "dust tight" and protected against water projected from a nozzle. Water projected by a nozzle (6.3 mm) against enclosure from any direction shall have no harmful effects.
 - b. **IP66 Enclosure** - IP rated as "dust tight" and protected against heavy seas or powerful jets of water. Water projected in powerful jets (12.5 mm nozzle) against the enclosure from any direction shall have no harmful effects.
 - c. **IP 67 Enclosures** - IP rated as "dust tight" and protected against *immersion*. Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time (up to 1 m of submersion).
 - d. **IP 68 Enclosures** - IP rated as "dust tight" and protected against *complete, continuous submersion in water*. The equipment is suitable for continuous immersion in water under conditions which shall be specified by the manufacturer.

Dome Cameras

The ingress protection rating on dome cameras relies on proper installation. Follow these easy steps to ensure your dome cameras are correctly installed.

1. The base of dome camera should have no gaps between it and the mounting surface.
2. The dome cap should be securely fastened to the dome base and should have no gaps.
3. Some cameras come with desiccant packets attached to the Circuit board inside, **Do Not Remove it**. The package helps control humidity inside the camera enclosure.

4. If you are mounting the camera outside or in a Humid/dusty environment use the proper mounting box for the camera.

Bullet Cameras

The ingress protection rating on Bullet cameras relies on proper installation. Follow these easy steps to ensure your bullet cameras are correctly installed.

1. The base of bullet camera should have no gaps between it and the mounting surface.
2. Some cameras come with desiccant packets attached to the Circuit board inside, **Do Not Remove it**. The package helps control humidity inside the camera enclosure.
3. If you are mounting the camera outside or in a Humid/dusty environment use the proper mounting box for the camera.

PTZ Cameras

The ingress protection rating on PTZ cameras relies on proper installation. Follow these easy steps to ensure your PTZ cameras are correctly installed.

1. If the PTZ has a dome around the camera, follow the steps for a dome camera
2. Most PTZ's have specific mounting solutions that are included or can be purchased with the camera.
3. Some cameras come with desiccant packets attached to the Circuit board inside, **Do Not Remove it**. The package helps control humidity inside the camera enclosure.
4. If you are mounting the camera outside or in a Humid/dusty environment use the proper mounting box for the camera.

Cabling

Various types of cable are available for installations. Make sure you are using the correct cable when installing your cameras. If you run your cables underground, you may want to consider a direct bury cable or use conduit and standard cat5e cable.

Summary

While some cameras are designed to withstand extreme environments, bad camera placement or poor installation exposes the best cameras to failure or poor performance. Be mindful of your camera placement and installation methods and your surveillance system should perform great for many years.

Protecting your RJ45 ends from corrosion

Weatherproofing your Ethernet (RJ45) connector plays a vital role in keeping your monitoring system working reliably. When improper weatherproofing is done, it leads to corrosion of the RJ45 connection. Corrosion caused by improper installation or the absence weatherproofing is not covered under warranty.

Corrosion Symptoms

Corrosion on the RJ45 connection causes cameras to have odd connectivity issues, and sometimes they will not even power up. Corroded connectors can also be temperamental; the smallest cable movement can cause pins to lose contact with each other, thus, dropping the connection.

Corrosion Repair

If corrosion symptoms are detected early a simple cotton swab, and Isopropyl Alcohol solution greater than 90% may be enough to clean the connector and re-establish a good connection between pins. If the corrosion is bad, you might try a contact cleaning solution specific to low voltage electrical connectors. In extreme cases of corrosion, the only way to save the camera is to replace the female RJ45 connector that comes from the camera. There is not a way to replace the original female RJ45 connector, and cutting the connector is going to void the warranty. In these rare cases, this is the only way the camera connection can be fixed so the camera can be salvaged.

Replacing Connectors

If you must replace the female RJ45 connector on a camera, it is a pretty simple process that just requires a little bit of time.

1. Cut the female connector off the camera cable, leave as much extra wire as you can
2. Expose the pairs of wires and note their colors
3. The wire colors are different from your standard cat5e/cat6 cable, and you need to put them in the correct order when placing them in the male RJ45 connector. Remember to use the 568B pinout unless for some reason you have installed the system with 568A.

	Camera Wire Color	T568A	T568B
1	White		
2	Brown		
3	Blue		
4	Grey		
5	Purple		
6	Green		
7	Yellow		
8	Orange		

4. Crimp the end onto the cable. ([Making your cable](#))
5. A coupling is needed to connect the two ends together.

Weatherproofing the new connection

Once you have replaced the female RJ45 connector with the male RJ45 connector, you need to provide a weatherproofing solution since the original solution provided will no longer work.

Junction Box

A junction box the easiest and one of the best ways to protect your connections. Junction boxes are in stock at most hardware and home improvement stores for relatively cheap. A junction box is a sealed box that prevents moisture and dust from entering and corroding the connection.

Coupler

A coupler is also an alternative solution and may provide a cleaner look when compared to a junction box. Different coupling styles exist so make sure that you are informed about how to use the coupler before you start crimping wires.

Summary

Weatherproofing your connections is one of the most important installation tasks and should never be overlooked. Corrosion and improper install are the biggest causes of system failure. Take the time to weatherproof all your connections, and you can save tons of time and frustration in the future.

Types of Recording

Various methods can accomplish recording on your NVR/DVR. You can have 24/7 continuous recording, recording by motion, recording based on an event action, or a combination of all of them together. This guide covers the two basic types of recording, motion-based recording, and continuous 24/7 recording.

Continuous 24/7

The continuous or constant recording captures footage 24 hours a day, 7 days a week. The continuous recording is the most secure way record but comes at the cost of storage. Make sure to size your system Hard Drive storage accordingly so you can retain the required amount of footage that you need.

Motion Based

Motion or event based recording captures footage when certain events are triggered. In this case, the motion in the video feed is the event that tells the recorder to start capturing footage. While motion based recording is an excellent way to utilize hard drive space efficiently, it is not as reliable when compared to continuous recording.

How to set up Continuous Recording with a Monitor & Mouse

1. Required Items for Console Setup
 - a. Recorder (NVR/DVR)
 - b. Camera(s) connected to the recorder
 - c. A monitor plugged into the HDMI/VGA port on the recorder
 - d. A USB Mouse connected to a USB port on the Recorder
2. Connect all the equipment and turn on the recorder
3. **Right Click** & Select **Start Recording** and then **Left Click Continuous Recording**. (The NVR may prompt you for a password, the default is **changeme123**)



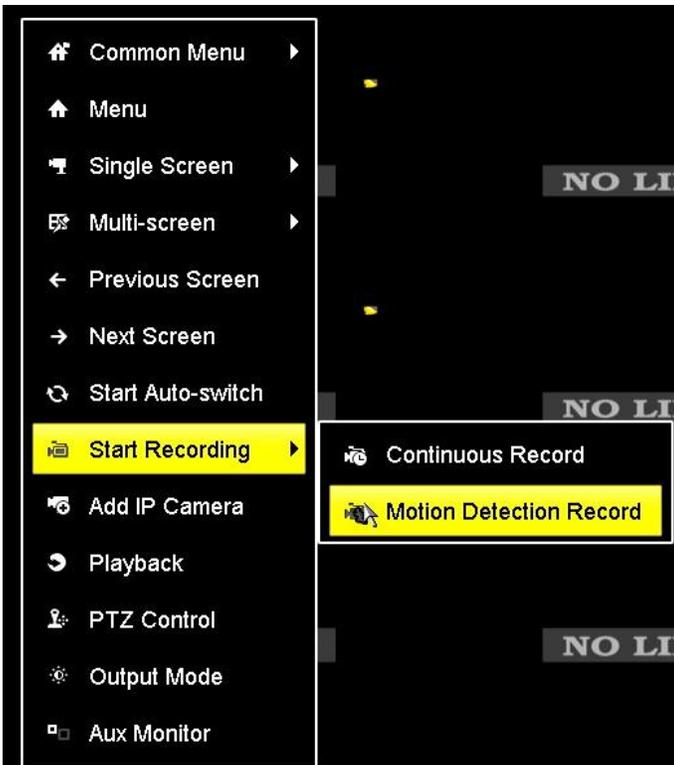
4. Confirm your Selection, **Left-Click Yes.**



5. Congratulations! You have just setup your system for 24/7 Continuous recording.

How to set up Motion Recording with a Monitor & Mouse

1. Required Items for Console Setup
 - a. Recorder (NVR/DVR)
 - b. Camera(s) connected to the recorder
 - c. A monitor plugged into the HDMI or VGA port on the recorder
 - d. A USB Mouse connected to a USB port on the Recorder
2. Connect all the equipment and turn on the recorder
3. **Right Click & Select Start Recording** and then **Left Click Motion Recording.** (The NVR may prompt you for a password, the default is **changeme123**)



4. Confirm your Selection, **Left-Click Yes.**



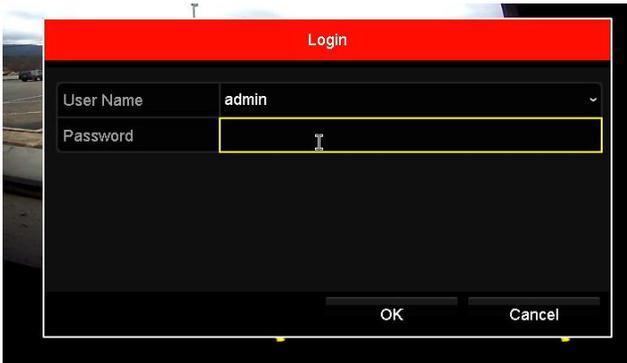
5. Congratulations! You have setup motion recording.

Motion Recording Configuration

1. **Right-Click** anywhere on the Screen and then **Left-click Menu**



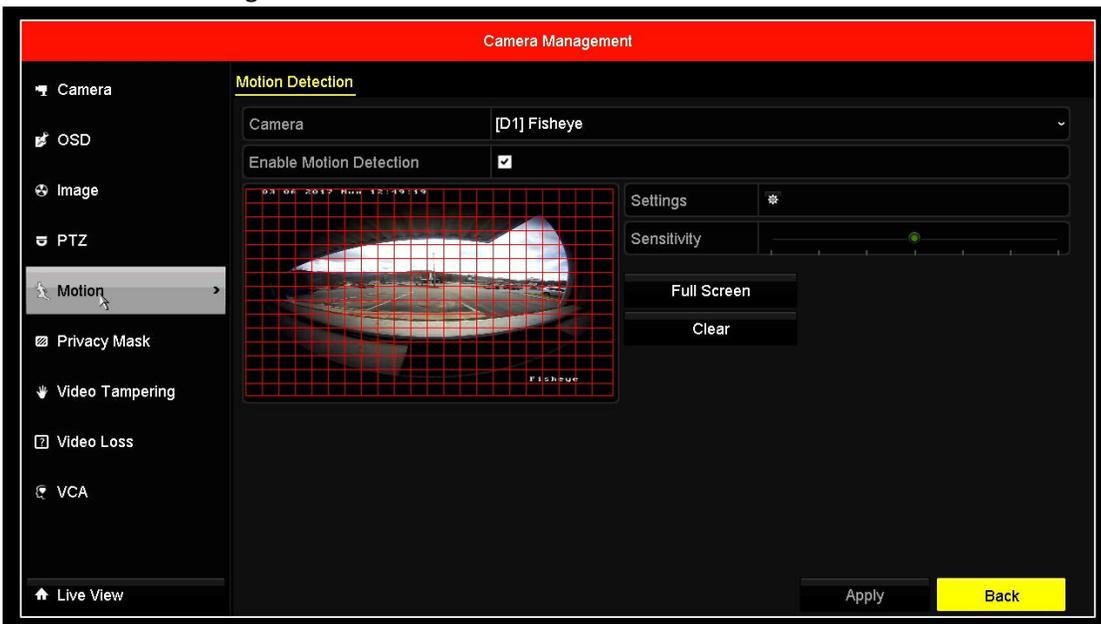
2. If you are prompted for a Password, enter the recorder password that you set up or use the default password **changeme123**



3. On the Menu screen **left-click Camera**

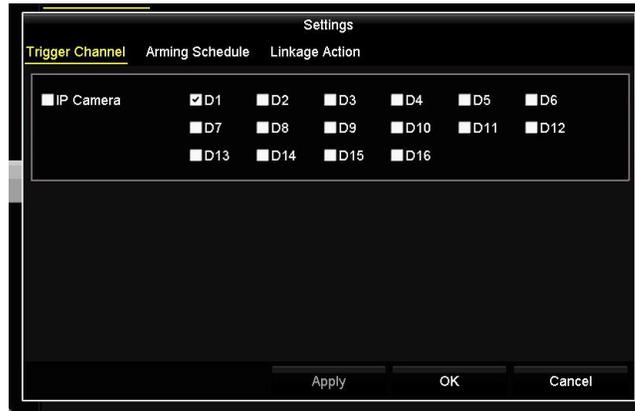


4. In the Camera Management Menu **Left-click motion**



5. You can now adjust the settings for motion on each camera.
 - a. **Camera:** This setting selects the camera that you want to adjust the motion settings on.

- b. **Enable Motion Detection Setting:** Checking this box enables the motion detection for the camera.
- c. **Sensitivity:** The amount of motion required to trigger an event. (Suggested Setting is in the middle)
- d. **Full Screen:** Put a full-screen Grid on the camera View
- e. **Clear:** Clears the current Grid
- f. **Drawing the grid:** You can draw the grid by using the mouse, whatever the **grid is covering** is where the camera is **watching for a motion event** to occur.
- g. **Settings Gear**
 - i. **Trigger Channel:** The trigger channel informs the recorder which camera channel(s) to record when a motion event is triggered on the current camera(D1). Since this camera is on channel one, you want to select D1 as our trigger channel. It is possible to have the camera record multiple channels when a motion event is triggered. For example: if D1, & D2 are checked, that means when the selected camera(D1) detects a motion event the recorder will record channels D1 and D2 for the duration of the motion event on channel 1.



- ii. **Arming Schedule:** The arming schedule allows you to set a window for notifications to be sent. If your business hours are from 9AM-5PM, you may not want receive motion notifications all day long when the building is occupied. So, you would set your arming schedule to only send notifications outside of normal business hours.



- iii. **Linkage action:** The linkage action determines how you want to be notified of a motion event.

1. Full Screen: The camera that detects motion becomes full screen on the monitor
2. Audible: The NVR beeps when a motion event occurs
3. Notify Surveillance Center: A notification is sent to the Smartphone app
4. Send E-mail: An e-mail Notification is sent to the E-mail setup on the NVR.
5. Trigger Alarm Output: Triggers an alarm output event.



6. After you have configured all the settings go ahead and **left-click APPLY** at the bottom right of the screen.

False Positives with motion recording

When recording with motion, it is often normal to get a “false positive” recording. A false positive occurs when motion happens in the camera scene, but it was not the intended motion to capture.

An example of a false positive: A camera is placed above your front door and is watching your sidewalk up to your house. On each side of the walk are bushes with branches that blow on windy days. The camera sees the bush branches blowing into part of the sidewalk where the camera is watching for motion. The camera captures it as a positive motion event, but in the end, it is a false recording because all we see is the bushes blowing in the wind. False positives are not harmful, but they do take up unnecessary disk space and send unwanted notifications.

Email Notifications

What are e-mail Notifications

Email Notifications can be sent to your email inbox based on triggers or events that the security system has been configured for. It could be motion in a certain in an area, a smart event, exceptions, video signal loss, and more.

Setting Up

Setting up your e-mail is an enough easy process, and you will need to provide your own e-mail carrier. Some information may need to be gathered from your e-mail carrier if you do not already know it. You can find the required information below and an example in the picture.

- Sender: This is who the **EMAIL** is from. (i.e. House NVR, Work NVR, Garage NVR, etc)

- Senders Address: The **EMAIL** you are using to send notifications
- SMTP Server: The **EMAIL** SMTP server.
- SMTP Port: The emails server SMTP port
- Attached image: With motion detection, you can attach pictures that come in the e-mail
- Interval: The seconds between image captures
- Authentication: The **EMAIL** Credentials that is sending the notifications
- Receiver: The e-mails that need to receive notifications.



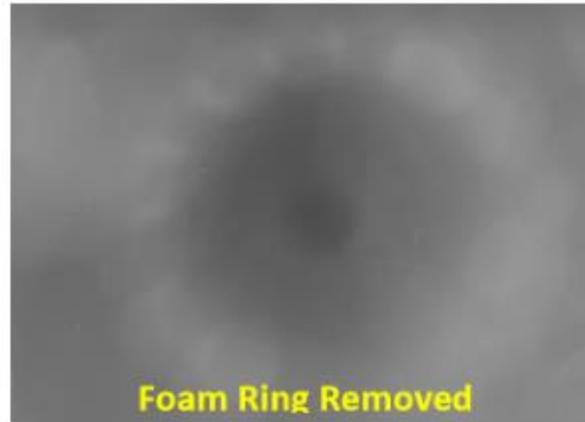
Night vision Guide

What are the LEDs around the camera?

The LEDs around the camera lens are Infrared light-emitting diodes. In the security camera industry, these are called IR LEDs. This enables the security camera to see in the dark. If you were to look directly at one in the dark, there would be a slight red glow emitting from it. Sometimes, the LEDs are not around the lens in a circular array, but beside the lens using a single bright Infrared LED. Most of our models have what's called a mechanical IR cut filter, which slides in front of the lens so that it is capable of "seeing the IR Flood." The mechanical lens is activated by the light sensor, which is the little green circle that is seated inside the LEDs. If you cover the green sensor or put the camera somewhere dark, you may hear a faint clicking sound which is the lens filter engaging.

Foam Gasket Issue

The most severe case of IR Reflection is caused by the foam gasket ring not being firmly pressed against the camera dome. This will create a "halo" effect as shown in the image below.



To minimize the chance of IR light reflection into the lens, please make sure that the dome bubble is sitting snug against of the foam ring. Please note, that upon good contact with the dome cover, the foam gasket ring will appear to be squashed a little bit.



Nearby Objects and Barriers

Nearby objects and barriers are another possible cause of "Foggy" night images. The Image below shows the effect of a small piece of cardboard positioned only 4 inches away from the side of the camera. Even though not visible in the picture (the cardboard is outside of the camera's field of view), the IR-reflection is huge.



To avoid this situation:

- Avoid installing the cameras in tight corners.
- Use wall mount brackets to offset the cameras from walls and close surfaces.
- Try to rotate the camera as much away from background surfaces as possible
- Make sure plants/vegetation are clear of the near Field of View.
- Plants leaves are highly reflective

Dust, wet, moisture on camera cover

Dirty dome cameras also cause IR “bleeding” and poor night vision image. Avoid touching the dome during the installation and try to keep the protective film on the dome unit the very end. Touching the dome cover creates grease stains/spots on the bubble, which create blur. These may not affect the daytime image but will immediately be an issue with nighttime IR images.



Always clean the dome cover with a soft cloth after installation. Commonly, the domes get covered with dust/dirt, raindrops stains, and cobwebs over time. This will cause the image quality to degrade over a period of time (“foggy condition”). Periodic cleaning of the dome cover may be required to maintain a clear picture.

Additionally, fastening the screws to make sure the camera is fully sealed. For moisture climate, you also can put desiccant packets to absorb water inside the dome camera. You should replace any desiccant packets at least once every year. Because they become less effective as time goes by.

Things to Avoid

FAQ's