

Writing Sample - Hardware Troubleshooting

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Background

To develop the hardware troubleshooting guide for the [Company] security cameras, I used the following workflow:

- Prerequisites
- Identifying the problem
- Explaining a theory of probable cause
- Establishing a plan of action and documenting the solution

Audience

- Technicians responsible for servicing and repairing the security cameras.
- Individuals who are using the security cameras.

Scope

Hardware troubleshooting documentation is for the hardware device which includes parts such as the camera, camera lens, camera housing, camera mounts, camera wiring, and so forth.

About writing sample - Hardware Troubleshooting

The following writing sample includes the security camera night mode function problems that a user may encounter and provides the solutions to these problems.

Note: To prevent proprietary issues, I have removed the original formatting and changed the company name, document name, product names, licenses, trademarks, components (including third-party components), applications, guides, codes, and sample codes where applicable.

[Company] Security Cameras Troubleshooting Guide

Important safety precautions

Before you begin, read these safety instructions carefully.

Warnings:

- Always completely disconnect the power cable from the security camera whenever you work with the components of the security camera.
- To prevent damaging the sensitive electronic components, do not make connections while the power is on.

Caution

Always ground yourself to remove any static charge before touching the sensitive electronic components and place all electronic components in a static-dissipative surface or static-shielded bag when removed from the case.

Warranty

To prevent voiding the device warranty, have the security camera inspected by service personnel every six to eight months, from the time of installation.

Abbreviations, acronyms, and initialisms

IR	Infrared radiation
LED	Light-emitting diode

About security camera night mode

Note: The following information applies to the CB, CD, and CM series security cameras.

Your security camera has a night mode option that uses LEDs that emit IR to illuminate images in the dark or in low-light conditions. The following topics explain:

- How to access the night mode
- How to find the IR LEDs on the security camera

Common issues with night mode

IMPORTANT! The following issues are not evident when the security camera is capturing images during the day. If you notice these issues when the security camera is capturing images during the day, then contact [Company] technical support team at: companysupport@domain.com.

The following topics explain how to resolve the following issues:

- Night mode is active during the day
- IR LEDs reflect back to the lens
- Image hides a part of another image
- Bright spots on images
- Out of focus security camera
- Loss of contrast

Night mode is active during the day

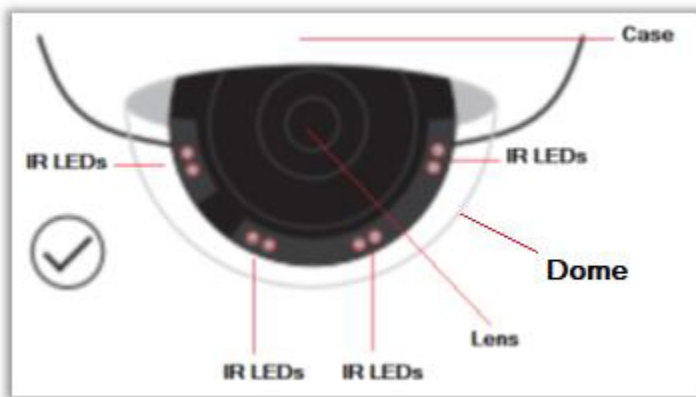
Cause: The IR LEDs are obstructed by the security camera case.

Solution: Rotate the lens barrel assembly 180 degrees, so the sensor and IR LEDs are visible through the security camera case.

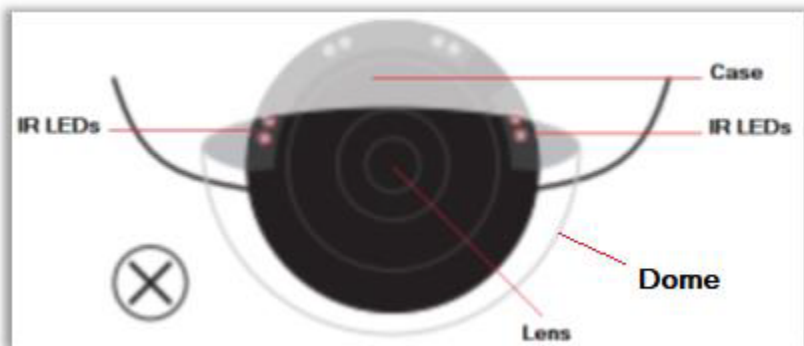
IMPORTANT! After you rotate the lens barrel, ensure that you check the orientation of your security camera and adjust it, if needed. Refer to the "Changing a Camera's Orientation" topic in the [Company] Security Cameras User Manual for details.

The following images show the proper and improper security camera orientation:

Proper Security Camera Orientation: The IR LEDs are not obstructed by the case.



Improper Security Camera Orientation: The IR LEDs are obstructed by the case.



IR LEDs reflect back to the lens (internal reflection)

Cause: The security camera case is not attached to the camera properly.

When the security camera case is not attached to the camera properly, the IR LEDs beam angle changes. In such cases, the IR LEDs beam hits the dome and reflects back to the lens causing internal reflection.

Solution: Attach the security camera case to the security camera, properly. Refer to the "Installation" topic in the [Company] Security Cameras User Manual for instructions on how to attach the security camera case to the security camera, properly.

When IR LEDs reflect back to the lens (internal reflection)



When security camera case to the security camera, properly



Image hides a part of another image (occlusion in an image)

Occlusion in an image occurs when an image hides a part of another image, based on the position of the security camera relative to the scene.

Cause: The lens protector (protective film on the glass dome) was not removed after installing the security camera, causing glare.

Solution: Remove the protective film on the glass dome.

IMPORTANT! After removing the protective film, clean the surface with a microfiber cloth and rubbing alcohol, and finally ensure that you adjust the security camera focus. Refer to the "Changing a Camera's Orientation" topic in the [Company] Security Cameras User Manual for details.

When protective film has not been removed



When protective film has been removed, and the camera focus adjusted



Bright spots on images

Cause: Dust or debris have accumulated on, or inside of, the glass dome.

Dust or debris reflect the IR LEDs causing bright spots and loss of contrast in the image.

Solution: Use canned air to blow away the dust and debris and always use a microfiber cloth and rubbing alcohol to wipe the glass dome (outside or inside). Allow time for the cleaned surfaces to dry, before putting your security camera back into service. After cleaning, ensure that the glass dome is attached to the case properly.

IMPORTANT! If you are cleaning the inside of the glass dome, then ensure that you replace the desiccant pack (drying agent). Refer to the "How to replace the desiccant pack" topic in the [Company] Security Cameras User Manual for details about replacing the desiccant pack (drying agent).

Note: The following security camera models do not have a dome (glass dome) in front of their lenses:

- CB51-E
- CB61-E
- CB51-TE
- CB61-TE

When image shows bright spots with loss of contrast



When dome has been cleaned



Out of focus security camera

Cause: Fingerprints on, or inside of, the glass dome.

The fingerprints reflect the IR LEDs beam hit the fingerprints and reflect back to the lens.

Solution: Use a microfiber cloth and rubbing alcohol to wipe the glass dome (outside or inside).

IMPORTANT! If you are cleaning the inside of the glass dome, then ensure that you replace the desiccant pack (drying agent). Refer to the "How to replace the desiccant pack" topic in the [Company] Security Cameras User Manual for details about replacing the desiccant pack (drying agent).

Allow time for the cleaned surfaces to dry, before putting your security camera back into service. After cleaning, ensure that the glass dome is attached to the case properly.

Note: The following security camera models do not have a dome (glass dome) in front of their lenses.

- CB51-E
- CB61-E
- CB51-TE
- CB61-TE

Loss of contrast

Cause: Condensation or moisture have accumulated inside of the glass dome.

Condensation can evaporate during the day light, leaving mineral residues on the lens and glass dome.

WARNING! Condensation or moisture inside of the glass dome can evaporate during the day light, leaving mineral residues on the lens and glass dome. This occurrence will have catastrophic effects on your security camera and may void your equipment warranty.

Solution: Use a microfiber cloth and rubbing alcohol to wipe the glass dome from inside.

IMPORTANT! If you are cleaning the inside of the glass dome, then ensure that you replace the desiccant pack (drying agent). Refer to the "How to replace the desiccant pack" topic in the [Company] Security Cameras User Manual for details about replacing the desiccant pack (drying agent).

Allow time for the cleaned surfaces to dry, before putting your security camera back into service. After cleaning, ensure that the glass dome is attached to the case properly.

Refer to the "Preventing water damage to outdoor cameras" topic in the [Company] Security Cameras User Manual for details.

Note: The following security camera models do not have a dome (glass dome) in front of their lenses.

- CB51-E
- CB61-E
- CB51-TE
- CB61-TE

When condensation or moisture has accumulated inside of glass dome



When glass dome has been cleaned

