Common CCTV Problems and Their Fixes

Many common CCTV problems are simply a symptom of imperfect installation or incorrect configuration.
Fortunately, some of these problems are easy to fix. Here are some of the most common CCTV problems — and their fixes!

CCTV Camera Colour Problems

The Colours on My Camera Are Off

If your CCTV camera's footage reminds of you those peculiar psychedelic rock videos from the 1960s, there's a good chance it has a problem with the white balance settings.
When we look at a white object, our eyes will perceive it as white even if it's not illuminated by a perfectly white light. That's because our eyes have a fairly wide colour range, and because our brains can compensate, to some extent, for a certain range of ambient lighting parameters. Cameras attempt to do the same thing, through a setting called "white balance", which can be either manually or automatically adjusted. When it's not set correctly — and that's especially common on cameras that can adjust it automatically — it can visibly distort colours.

Here's how to fix it:

- If your camera is rated for both indoors and outdoors use, check its settings and make sure it's configured for outdoors use. Sometimes, this won't be a global setting, but a colour-related setting.

- If your camera adjusts white balance automatically (two common names for this feature are ATW — Auto Tracking White Balance — and AWB — Auto White Balance) and it's installed outdoors, angle it down so that it points further away from the sky. If the colours are distorted only in the presence of a certain type of ambient light, such as street lights during the night, re-position the camera so that it points further away from the light source.

- If your camera has ATW and AWB support but repositioning it doesn't help, disable ATW or AWB and adjust the white balance manually until the colours are right.

- If your camera doesn't have ATW or AWB support, adjust the white balance manually until the colours are right.

- If your camera offers any additional colour settings, which allow you to adjust parameters such as the image's hue or gamma levels, adjust these until the colours are no longer distorted.

You may need to repeat this exercise under different ambient lighting conditions until you get a setting that works right at all times. And if you have to reposition the camera, make sure it's still covering the areas that you need it to cover!

At the same time, it's important to remember that cameras don't have an unlimited colour range. Depending on the sensor's capabilities, some cameras may simply not be able to show the right picture under all ambient conditions.

I Only Get Black and White Images

There are two common reasons why colour CCTV cameras will give you black-and-white footage.

CCTV cameras can "see" colours only if the ambient lighting level is high enough.

Cameras that are rated for night use ("see in the dark" cameras) can record pictures in low-intensity ambient lighting conditions by illuminating the scene with infra-red LEDs. However, they can't distinguish colours under infra-red light.

So even a colour CCTV camera will get black-and-white pictures when it's dark. Some high-end cameras have limited support for colour output even in low ambient lighting conditions, but even that will only take you so far.

Here's how to fix this problem:

- Ensure that the ambient lighting conditions match your CCTV camera's requirements. If they don't, you can look into installing additional light sources before changing the camera.

- If there's sufficient ambient light, make sure the optical path is unobscured, and check the camera for damage.

- If your camera outputs analogue, composite or component video signals, make sure the input video type matches the output video type. Plugging a composite video signal into a component video input, or vice-versa, can sometimes result in black-and-white picture rather than a black screen. Some monitors have a single set of video inputs — you need to manually configure these and set them to the right mode.

A test monitor may come in handy here: if you get a colour image on the test monitor, there's likely nothing wrong with the camera. If the lighting conditions are right and there's no problem with the connectors, reaching out to the camera manufacturer for help may be your best option.

There Are Horizontal Lines on My CCTV Video

Horizontal lines on CCTV footage can make it difficult to distinguish fine details, and they make it difficult for staff to monitor sensible areas for long periods of time.
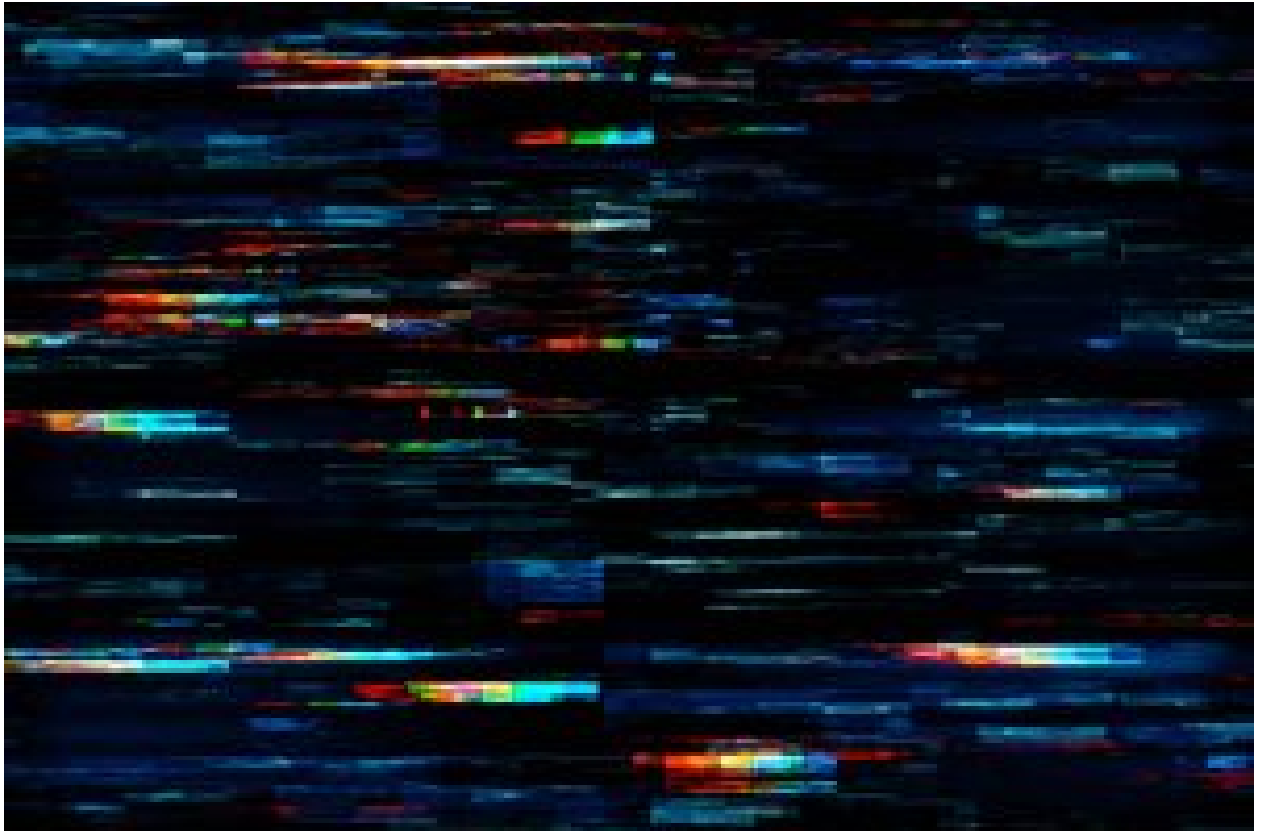
The good news is that there are just two typical root causes — interference from ambient lighting or electrical interference. The bad news is that the latter can be tricky to diagnose.

Here's how you can troubleshoot these problems:

- Make sure there's no electrical light that falls directly on the camera. Bright lights, and light from some types of electrical light sources, can interfere with single-chip CCD sensors and result in flickering or horizontal lines on CCTV footage.

- Check the power supply for damage and, if you can do that, ensure that it has adequate power filtering. A damaged or inadequate power supply can leak interference from the electrical network into the equipment it's

powering. That, in turn, interferes with the CCD sensor, and can result in distortions — such as horizontal lines on CCTV pictures.

- Check the cables for shielding damage.

- If you are using particularly long cables, Cat 5 or coaxial cables, make sure that all cables are routed correctly. Ensure that the cables are routed away from high-frequency equipment like satellite transmitters, that they are not touching any electrical equipment, and make sure that all cables are correctly grounded.

If the problem is lighting, rather than electrical interference, and you cannot avoid it, you can look into using a WDR (Wide Dynamic Range) camera or a CMOS sensor camera. However, it's a good idea to cover all other avenues before looking into additional equipment.

My CCTV Video Is Flickering

CCTV flickering may be difficult to deal with because they may occur intermittently. In some cases, CCTV video flickering is caused by interference, either due to incorrect installation, malfunctioning equipment or power supplies, or bad ambient conditions. Another typical cause is insufficient powering — often as a result of incorrect design or installation.

A word of caution first: troubleshooting CCTV flickering — and troubleshooting interference problems in general — takes patience, because interference sources can be hard to track down. If the problem goes away, you should continue to monitor the footage for a while, because the flickering may be intermittent.

Here's what you can do:

- It never hurts to check first: make sure that the monitor is not the problem. If you only see flickering on a particular monitor, and only in full-screen mode, make sure the monitor is working correctly.

- Check your connectors and cables — especially the shielding — for damage. If your CCTV camera has an analogue output, or if you are using particularly long cables, make sure that the cables are correctly routed, and ensure that they are correctly grounded.

- If your camera has an analogue output, check if the video continues to flicker even in the absence of video signal by disconnecting the video cable at the camera output. If the flickering continues, check the monitor's power supply, cables and connectors for damage. This is a likely sign that the video signal is clean and the root cause of the flickering is at the monitor's end.

- If your camera is connected to a loop-through equipment with additional video outputs, make sure that all video outputs are correctly terminated.

- If your CCTV camera flickers only when it's dark, make sure that the power supply is adequate for your camera's requirement. CCTV flickering under low ambient lighting conditions is often a result of the IR LEDs themselves flickering — which commonly happens when the power supply is insufficient. Cameras require additional power for the LEDs. It's common for CCTV cameras — especially PoE cameras — to draw more power than your installation can supply when it's dark.

- If your CCTV camera flickers only when it's dark, make sure that it's pointing away from electrical light sources. Sudden changes in lighting conditions, such as sudden increases and decreases in lighting due to cars passing by, may also cause the image to flicker for a few seconds, while the camera is adjusting its infra-red LEDs. If that's the case, re-angling the camera can also help.

- Check if disconnecting any camera or recording equipment causes the flickering to stop. If that's the case, and your installation meets your CCTV cameras' power requirements, check the equipment for damage. Damaged cameras or video boxes can interfere with other equipment.

- Make sure your camera and all other devices are rated for 50 Hz operation. Most equipment is rated for both 50 Hz and 60 Hz operation, but some power supplies and PoE switches require you to choose the operating mode manually, through a physical switch or a configuration option.

- Last, but not least, check your camera — and especially the IR LEDs — for damage. IR light is not visible to the naked eye, so you can't *see* if an LED is flickering — all you see is the flickering footage. Aging or damaged cameras will flicker inherently, especially if it's the LEDs or the light sensors that are damaged.

My CCTV Camera Footage is Noisy

Noisy CCTV footage is generally a result of electrical or RF interference. As with flickering, you should check and eliminate typical sources of interference:

- Check connectors and cables for damage, especially analogue video cables. Make sure all cables are routed correctly, away from interference sources, and correctly grounded if required.

- If your camera has an analogue output, disconnect the video cable from the camera and check if you still see noise on your monitor. That's usually a sign of interference at the monitor's end: check its power supply and cables.

- Check if disconnecting any other cameras or video equipment reduces the noise level. Damaged or improperly shielded equipment can interfere with other devices.

No Video Signal

This is, by far, the most frustrating CCTV problem. You can live with flickering or noise for a little while, but what if you can't get a picture in the first place? This problem manifests itself in various ways:

Check that your camera is correctly powered. It may seem obvious, but we've all been bit by this. Even experienced security engineers will

occasionally realize, with an embarrassed look on their faces, that a CCTV camera has no video signal because it's not powered on.

- First, and most obvious: check the power connectors and the cables — make sure they're plugged in and undamaged. If your CCTV camera has an external power brick, make sure it works. If you have access to that sort of equipment, try to power on your CCTV camera with a test cable and power supply.

- If your CCTV camera is connected to mains, or if it's connected through a CCTV power supply with a fuse box, check the fuse box.

- If your camera uses PoE, check the PoE switch and make sure the camera is really being powered on.

Check your camera's video or data connection. If you can't get a picture on your CCTV camera but it *is* powering up, perhaps the images aren't making their way to the monitor.

- If your camera connects to a DVR box, check the cable and the connectors at both ends. Make sure they're correctly plugged in and undamaged. A CCTV test monitor can help in this case.

- If your camera is IP-enabled, make sure the network settings are correct. If it's a wired camera, check the cable and the connectors for damage.

- Check any additional network or video equipment. If your CCTV camera connects to any network switches or routers, DVR boxes or video multiplexers, make sure they're in working order.

Check your CCTV software. Advanced video surveillance software allows you to disable access to some cameras or to protect some streams with a password. If that's the case, make sure that you can really view the stream you're looking for.

Check your camera for damage. We're at the end of the road here. If the camera is properly powered on and there are no connectivity problems, it's time to check that there's no problem with the camera itself. Make sure the lens and any protective domes are undamaged and the optical path is unobstructed. If the camera shows no external signs of damage, reaching out to the manufacturer for tech support is your next best option.

My CCTV Camera Shows a Black Screen

If your CCTV camera doesn't show a picture and all you get is a black screen, there is a good chance that the DVR box or the monitoring application can't get a video signal. Just to make sure, have a look at the steps above.
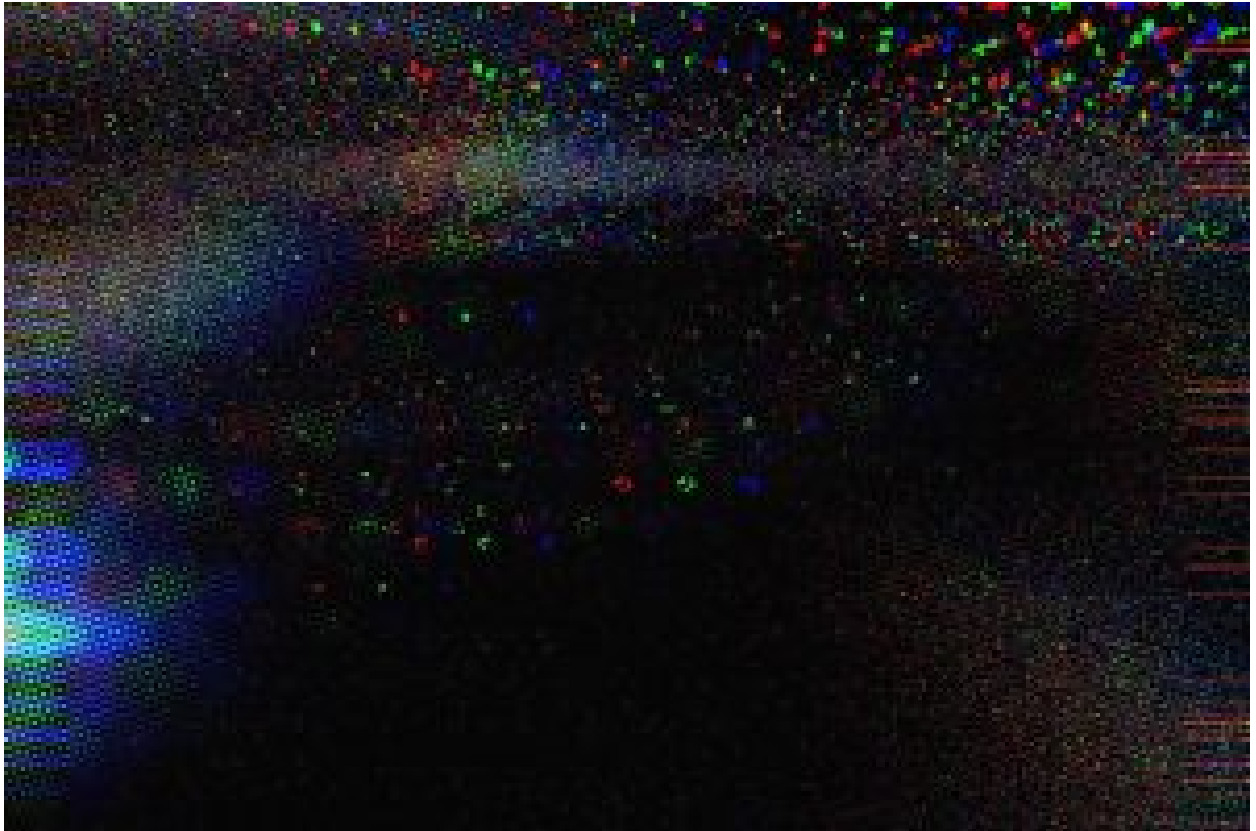
If that doesn't help, or if you have reason to suspect that a video signal is, in fact, available, but all it's carrying is a pitch black image, here are a few things that you can check:

- Ensure that the optical pathway is not obstructed. This may not be very obvious: small lenses at high zoom levels can be easily blocked by leaves or branches, for example.

- Ensure that the ambient lighting conditions of your CCTV camera are met. Not all cameras can see in the dark — at night, or in an unlit room. If the light levels are below the camera's threshold, all you'll get will be a black image.

- Power your camera off and on again. If all cameras, not just one of them, show nothing but a black screen, reboot the DVR box. Modern DVR boxes,

and some cameras, especially very high-end ones, are veritable — if tiny — computers, and they can crash just like computers do.

- Check the lens and the camera for damage. If a camera's optical components or sensor have been damaged, the camera may still power up and send data — but it won't get a picture.

My CCTV Camera Isn't Working at Night

If your CCTV camera is rated for night use, but all you get at night is a black image, it's typically because the IR LEDs aren't working.

Common reasons why that happens include:

- **Camera misconfiguration**. Make sure that your camera is configured to work at night. If it's a day-and-night camera that should automatically switch to night mode, check its ambient light configuration settings, if any.

- **Insufficient power.** The LEDs draw additional current, so a CCTV camera needs more power at night than it does during the day. This problem is particularly common with battery- and PoE-powered cameras. Make sure that your CCTV camera's power requirements are met.

- **Damaged LEDs.** Check the camera for damage. LEDs age, too, so an aging camera may simply no longer be able to provide sufficient light.

My Camera Shows Deteriorated Images at Night

If your CCTV camera does work, but the images are deteriorated at night, there are a few things you can do.

- If you occasionally get images that are completely white or look like they're over-exposed in some areas, make sure that your camera is pointing away from sources of bright light. A car's headlights, for example, can saturate the CCD sensor in low ambient lighting conditions, and the camera won't show anything but a large, white mass.

- If you get white spots on your image, make sure that the camera's visor adequately covers the lens and that the camera is not close to, and pointing at, a glass window. Otherwise, the image may be deteriorated by the light coming from a camera's own IR LEDs, or from another nearby camera's LEDs.

My Camera's Video is Choppy

If real-time video from your CCTV camera appears choppy or suffers from visible tearing, it usually indicates a network problem.

Video footage from IP cameras will appear choppy if the network doesn't have the bandwidth required to carry it. Analogue video signals usually don't get choppy on their own.

If there's a connectivity problem, it will manifest through flickering, noise or blackouts. However, the video output of NVR or network-connected DVR boxes *can* become choppy due to a slow network, regardless of its source.

Some of the things you can check are:

- Check your camera's video settings and ensure that your network is fast enough to carry a video stream at the resolution and quality settings currently in use. A 4 MP, H.264-encoded video stream requires 8 Mbps of bandwidth *per camera*.

- If you have a wireless CCTV camera with choppy video, ensure that the signal strength is adequate in the camera's location. It's not enough for the camera to be close to a Wi-Fi hotspot: high levels or RF interference can drown the Wi-Fi signal in radio noise, which results in slow speeds and frequent disconnects.

- If you have a wired CCTV camera, an NVR, or a DVR, check all cables (and especially the shielding) for damage, and make sure the cable your are using is adequate for its length. A Cat-6 cable, for example, can carry Gigabit signals over no more than 100 meters. Make sure that the cable is routed away from sources of interference.

- Check your NVR's decoding capability and network connection. If the video stream exceeds your NVR's decoding capabilities, some of the frames may be skipped and lost, resulting in choppy, jerky motion. If it has a network connection problem, some of the frames may be lost in transit — which, again, results in choppy videos.

- Check Power connections to camera's and if using a Power Supply Box to power multiple camera's consider using a space between camera's between powered within the unit to see if this helps interference issues

- User Ground Loop Isolator BNC connectors on the Coaxial cable making sure that they are compatible with the camera that they are being used with, it's recommended that they are fitted at the DVR end of the cable's connection and are fitted correctly

- Usually Ground Loop Connectors work with any Camera, but some group loop ground connectors models may only work with CVBS cameras (contact Traders Warehouse Sales Team if you're unsure)

.