

Choosing the Right Digimerge Camera for your Lighting Conditions

It is important to select the right type of camera for your day and night time lighting conditions, as the appropriate camera technology varies depending on environmental conditions. In this regard, the most important factors to consider are the combination of night vision technology and filters used by the camera.

Digimerge CCTV cameras offer a number of different solutions to satisfy different needs and price points. Please refer to the chart at the end of this guide for a comparison of several different day/night lighting scenarios and Digimerge camera recommendations for each one.

Choosing the Right Infrared Filter to Avoid Discoloration from Sunlight and Incandescent Lighting

Unlike the human eye, cameras are sensitive to Infrared (IR) light. The sun and incandescent lighting produce IR light that is invisible to humans, but that can be seen by cameras. This IR light can affect the colors seen by the camera, especially when viewing porous materials like clothing and fabric.

Cameras compensate for this discoloration using IR filters, which prevent some or all IR light from reaching the camera sensor. In the example below, a person is standing under incandescent lighting wearing a black jacket. The first image is from a camera with a partial IR filter, and the IR lighting in the environment causes the camera to see the jacket as green. The second image is from a camera with a 100% IR filter or mechanical IR cut filter (TDN), and the jacket appears in the correct colors.



With partial IR filter in incandescent light



With 100% IR filter or mechanical IR cut filter (TDN) in incandescent light

There are three main types of IR filter used in CCTV cameras:

1. **100% IR Filter:** This type of filter blocks 100% of IR light from reaching the camera sensor. This will completely prevent any discoloration caused by environmental IR lighting, but would also block the light from the built-in IR LED's in cameras with IR night vision. This type of filter is used in Digimerge cameras with Polaris Vision, which use shutter speed adjustment in combination with ambient lighting for night vision. It is also used in Digimerge day-only cameras, which do not have night vision.

2. **Partial IR Filter:** This type of filter prevents some, but not all, IR light from reaching the camera sensor. This reduces discoloration caused by environmental IR light and still allows IR cameras to see in the dark.
3. **Mechanical IR Cut Filter/TDN:** This type of filter offers the best of both worlds for IR cameras. During the day, it provides a 100% IR filter, which prevents any discoloration in the image. At night, the camera filter is disengaged (you can generally hear a clicking sound when the filter is disengaged), allowing the camera to use all available IR light from the IR LED's. This type of filter is more expensive than a partial IR filter and is used in Digimerge IR cameras with True Day/Night (TDN) technology.

NOTE: A TDN filter is also used in some Polaris Vision and day-only cameras, as it eliminates any discoloration caused by environmental IR light and allows the use of external IR illuminators.

Choosing the Right Night Vision Technology for the Best Night Time Performance

Digimerge cameras use the following technologies to provide images at night:

Infrared Night Vision



- **How it Works:** Built in Infrared (IR) LED's project IR light that reflects off the environment, allowing the camera to render an image even in pitch black conditions.
- **Advantages:** Camera can see in total darkness (0 LUX).
- **Limitations:** Environmental IR light (from IR light sources such as incandescent lighting or sunlight) may cause discoloration in cameras without a TDN filter. Materials that absorb IR light (such as grass) may reduce the effectiveness/range of the night vision.

NOTE: Cameras with Smart IR technology automatically adjust the night time image to reduce the "wash out" effect caused by close up objects or reflective objects in the environment.

Polaris Vision



- **How it Works:** The camera automatically adjusts the shutter speed to amplify ambient light (from light sources such as stars or streetlights) to produce an image at night.
- **Advantages:** Improved night time image; able to produce color images at lower light levels than IR cameras before switching to black and white. Night vision is not affected by objects that absorb IR light (such as grass), so there is no distance limitation. No color alteration from IR light sources such as incandescent lighting or sunlight.
- **Limitations:** Camera requires some degree of ambient light for night vision; cannot see in total darkness.

Digimerge Camera Recommendations for Different Lighting Conditions

Follow the tables below to determine the best Digimerge cameras to use for your specific lighting conditions. Recommendations are based on preventing color alteration caused by environmental IR light.

NOTE: Polaris Vision cameras with a TDN filter can be used in environments with no ambient light at night time if external IR illuminators are used.

Outdoor Environments

Scenario	Day Time Lighting	Night Time Lighting	Technology Recommendation	Digimerge Models
1	Lots of sunlight	Environmental lighting on at night (e.g. street lights)	Polaris Vision /w TDN, Polaris Vision w/o TDN, IR night vision /w TDN	DPP12D, DPD23D, DPD24D, DPV24D, DPV24TLX, DPP22W, DPD24W, DPV34WL, DPB14TLX, DBB23TL-PK4, Digimerge PTZ cameras
2	Lots of sunlight	No environmental lighting	IR night vision /w TDN	DPV24TLX, DPB14TLX, DPV34WL, DBB23TL-PK4
3	Limited sunlight	Environmental lighting on at night (e.g. street lights)	Any	Any
4	Limited sunlight	No environmental lighting	IR night vision /w TDN, IR night vision w/o TDN	DCB23DL, DCB34DL, DCB44DL, DCV23DL, DCV24DL, DBB23TL-PK4, DPD24DL, DPV24DL, DPV24TLX, DPD24W, DPV34WL, DPB14TLX

Indoor Environments

Scenario	Day Time Lighting	Night Time Lighting	Technology Recommendation	Digimerge Models
1	Florescent lighting (No incandescent or mercury lights)	Security / building lights kept on overnight	Night vision optional (Any)	Any
2	Florescent lighting (No incandescent or mercury lights)	Minimal lighting overnight	Any	Any
3	Florescent lighting (No incandescent or mercury lights)	No lighting overnight	IR night vision /w TDN, IR night vision w/o TDN	DCB23DL, DCB34DL, DCB44DL, DCV23DL, DCV24DL, DBB23TL-PK4, DPD24DL, DPV24DL, DPV24TLX, DPV34WL, DPB14TLX
4	Incandescent / mercury lighting	Security / building lights kept on overnight	Night vision optional (Polaris Vision /w TDN, Polaris Vision w/o TDN, IR night vision /w TDN)	DPP12D, DPD23D, DPD24D, DPV24D, DPV24TLX, DPP22W, DPD24W, DPV34WL, DPB14TLX, DBB23TL-PK4, Digimerge PTZ cameras
5	Incandescent / mercury lighting	Minimal lighting overnight	Polaris Vision /w TDN, Polaris Vision w/o TDN, IR night vision /w TDN	DPP12D, DPD23D, DPD24D, DPV24D, DPV24TLX, DPP22W, DPD24W, DPV34WL, DPB14TLX, DBB23TL-PK4, Digimerge PTZ cameras
6	Incandescent / mercury lighting	No lighting overnight	IR night vision /w TDN	DPV24TLX, DPB14TLX, DPV34WL, DBB23TL-PK4