White Paper

Supreme Night Visibility- IP8330

VIVOTEK
BUILT WITH RELIABILITY

Contents

1. Introduction

A security camera has to provide clear, stable video 24/7 under all types of lighting conditions and environments. From applications such as a street outdoors at midnight to a dark indoor storage room, maintaining excellent visibility is an important function of a dependable security camera. However, cameras with traditional CMOS can experience certain limitations in these types of low light environments.

VIVOTEK is pleased to introduce the next generation of image signal processing technology, which, when incorporated into our cameras, offer **Supreme Night Visibility**, demonstrating great strides in low light performance.

*Fig. 1 The IP8330 is the first camera featuring **Supreme Night Visibility** technology to provide excellent video quality and detailed nighttime performance.*

2. Night Vision

The video quality and nighttime performance of a security camera is mainly dependant on two attributes: the lux rating and the infrared (IR) response. Under low light conditions with IR Illumination, the sensor employed in the camera plays a crucial role in the video quality ultimately seen by the viewer.

The low lux rating means the camera can capture more light, even under low light conditions. Cameras with this feature display improved image clarity and drastically reduced grain such that the user can monitor in lower lighting conditions with better results.

Fig. 2 A low lux rated camera can capture clearer nighttime video, even without any additional external lighting.

Infrared light is used in nighttime surveillance when there is insufficient visible light. Night vision devices operate through a process of converting ambient light photons into electrons, which are then amplified by a chemical and electrical process, and then converted back into visible light. Infrared light sources can be used to augment the available ambient light for conversion by night vision devices, increasing in-the-dark visibility without actually using a visible light source.

Fig. 3 A sensor displaying excellent response in near IR environments can also function perfectly in total darkness.

3. Sensor Technology

VIVOTEK is leading the industry in low lux performance by utilizing a sensor from Aptina™ built with **DigitalClarity®** technology for amazing imaging capability and powerful video performance. As the latest high-quality IP camera for demanding security applications, the IP8330, featuring Supreme Night Visibility, has excellent near IR response for night vision and incorporates all features of the Aptina™ sensor per specification.

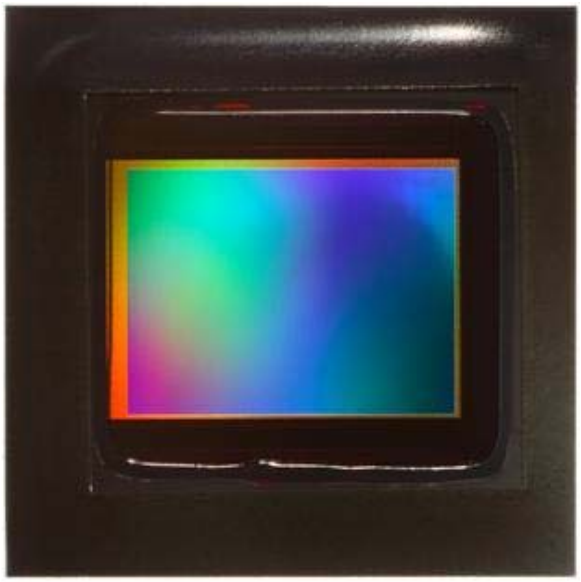

*Fig. 4 **DigitalClarity**® offers exceptional low light performance exceeding the performance expected from CCD sensors (based on signal-to-noise ratio and low-light sensitivity) and provides excellent Near Infrared (NIR) response for night vision. The sensor maintains the inherent size, cost, low power, and integration advantages of Aptina's™ advanced active pixel CMOS process technology.*

The on-chip image flow processor performs important image processing such as color recovery/correction, sharpening, gamma, lens shading correction, on-the-fly defect correction, auto white balance, and auto exposure.

This sensor performs sophisticated processing functions including color recovery, color correction, sharpening, programmable gamma correction, auto black reference clamping, auto exposure, 50Hz/60Hz flicker avoidance, lens shading correction, auto white balance (AWB), and on-the-fly defect identification and correction.

4. Image Signal Processing

High quality video and images rely on not only the image sensor, but also the image signal processing (ISP) technology. With decades of experience in image processing, VIVOTEK has the experience and expertise for complete integration of all components of camera sensor technology, allowing for peak camera performance.

For example, color reproduction technology can capture vivid colors under various lighting environments. The technology results in a radiant, colorful image, even in low light environments.

As another example, noise reduction technology provides unparalleled image quality, whereby unwanted noise is reduced from a video signal. The result brings out the minutest detail in the captured video, improving the overall image quality.

Enhanced IR is another feature in which VIVOTEK has particular expertise, and allows for more IR light to pass to the sensor in low light conditions with a better color filter, resulting in clearer, sharper black & white images in night mode.

VIVOTEK is a leading developer of enterprise digital video surveillance products, offering unparalleled image quality, reliable integration technology, and professional video solutions with robust, advanced, and easy-to-use systems.

■ **Conventional CMOS**

■ **Conventional CCD**

■ **IP8330**

With decades of experience in image processing, VIVOTEK continues to design and provide comprehensive product lines in digital surveillance. We focus on the employing innovative technology in digital surveillance cameras to create outstanding image quality and product reliability. A prime example is the IP8330, where VIVOTEK has focused effort in capturing the sufficient lighting at variable speeds to provide the best illumination possible. The IP8330 represents a huge step forward in low light technology, offering clarity close to that under normal lighting conditions.

Fig. 5 Low light performance - IP8330 is capable of performing 0.1 lux rate at 10 IRE.

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