The Camera Lens Design of 3D Low Light Level Color Night Vision System

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NIR-optimized industrial cameras are designed for use in poor lighting conditions. Read all about near-infrared cameras in the Vision Campus. Typical application examples are traffic monitoring installations that need to work in poor lighting conditions and at night, fruit and vegetable inspections to detect damaged spots using location-sensing spectroscopy, and the inspection of solar wafers through electro-luminescence.

Some advantages of cameras with NIR sensors are

- The digital ColorVision reconnaissance LLL (Low Light Level) true Color night vision CMOS sensor is a technological breakthrough in night-vision technology. It utilizes specialty algorithms that allow the sensor to see in extreme low-light environments traditionally unseen before.
- The X27 is a 10 megapixel fully-digital solid-state system. It comes with a 32 mm lens, but you have the option of adding 22mm, 37mm, 60mm, 88mm, 152mm to your kit. For military purposes, obvious uses include integration with night vision sights, scopes, binoculars and UAV. For filmic purposes it could also be great, but unfortunately it does lack the resolution, as do all current Starlight cameras. One thing to consider, though, is if it would take away the feeling of night. In any night vision system, the tube gain is reduced by the system's lenses and is affected by the quality of the optics or any filters. Therefore, system gain is a more important measurement to the user. Gallium Arsenide (GaAs): The semiconductor material used in manufacturing the Gen 3 photocathode. Photocathode sensitivity measured with a different color spectrum light source will yield different readings.
- Resolution: The ability of an image intensifier or night vision system to distinguish between objects close together. Image intensifier tube resolution is measured in line pairs per millimeter (lp/mm) while system resolution is measured in cycles per milliradian. Two camera lenses for 3D low light level color night vision system are designed in CODE V. The panchromatic sensitive camera lens works in a wide spectral band 400nm-1000nm, yellow green-sensitive camera lens works in a band of 400nm-600nm. The two camera lenses have same parameters, such as focal length 120mm, relative aperture. 1/2, the field angle of 5.26 °. In the design of two camera lenses, we split and complex cooke triplet lens, the chromatic aberration is balanced by adding a binary diffractive surface. The results of design show that sensitive panchromatic camera lens and
- Choosing the right lens: Most cameras designed for low light situations have interchangeable lenses. This makes selecting the right lens that can gather the most light extremely important. How much light a lens gathers is determined by its aperture. Lower numbers are better, and for low light video, F/2.8 is as dark as you want to go and is typical of expensive, high-end zoom lenses. Prime lenses can go down to F/1.8, F/1.4, F/1.2, or even F/0.95 and will drastically improve your ability to shoot in low light. Keep in mind, however, that prime lenses brighter than F/1.8 tend to be exponential!
Abstract:
Two camera lenses for 3D low light level color night vision system are designed in code V. The panchromatic sensitive camera lens works in a wide spectral band 400nm-1000nm, yellow green-sensitive camera lens works in a band of 400nm-600nm. The two camera lenses have same parameters, such as focal length 120mm, relative aperture 1/2, the field angle of 5.26°. In the design of two camera lenses, we split and complex cooke triplet lens, the chromatic aberration is balanced by adding a binary diffractive surface. The results of design show that sensitive panchromatic camera lens and yellow-green-sensitive camera lens, in the all field of view, when the Nyquist frequency is 77.5 (lp / mm), all MTF is larger than 0.6; the axial chromatic aberration of sensitive panchromatic camera lens is 0.056mm. Two camera lenses have good imaging performance.