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Laser diode red and green light



Overview

Green or Red Laser Diode Module: How to choose?

An overview of the decision-making process behind a red or green laser diode module for your alignment, posi.

Key Takeaways

Red laser diodes typically emit at 635–670 nm and are easier and cheaper to produce, while green laser diodes emit at 515–532 nm, appear brighter to the human eye, but are more complex and costly to manufacture.Wavelengths and Visibility

Red laser diodes commonly emit light at 635, 650, and 670 nm, while green laser diodes typically emit at 515, 520, or 532 nm ( ). Green light is more visible to the human eye than red light at the same power, making green lasers appear brighter even at lower output powers ( ). This is due to the eye's peak sensitivity being closer to green wavelengths.

Production Mechanisms

Red laser diodes are relatively simple to manufacture. They use a semiconductor diode, optics, and electronics, making them inexpensive and widely available ( ). Green laser diodes, however, require a more complex setup: an infrared diode (often 808 nm), a second laser crystal, and a frequency-doubling crystal to convert infrared light into green light. This process requires precise alignment, which increases production complexity and cost ( ).

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Applications

Red laser diodes are commonly used in laser pointers, barcode scanners, CD/DVD/Blu-ray reading, and low-power alignment tools due to their affordability and availability ( ). Green laser diodes are preferred in applications requiring high visibility, such as long-distance alignment, surveying, and outdoor laser pointers, because they appear brighter under ambient light conditions ( ).

Output Power and Safety

Typical red laser diodes range from a few milliwatts up to hundreds of watts in specialized diode bars, while green diodes are usually limited to lower powers for compact devices, though higher-power green lasers exist with more complex setups ( ). Safety considerations are important, as higher-power lasers can cause eye damage regardless of color.

Summary
• Red lasers: 635–670 nm, cheaper, simpler, widely available, less visible at the same power.

• Green lasers: 515–532 nm, more visible, complex and costly, better for high-visibility applications.

• Choice depends on: visibility requirements, ambient lighting, output power, and budget ( ). Understanding these differences helps in selecting the appropriate laser diode for your specific application, balancing cost, visibility, and technical requirements.

Article Content

Green versus Red Laser Diode Module | Red & Green Laser

IntroductionThe BasicsAmbient LightDetection SchemeProjection and Observation DistancesOutput Power/Laser Safety RequirementChoosing between a green or red wavelength in your laser alignment, positioning, or targeting application is a common cause for concern. However, by evaluating the ambient lighting conditions in which your application takes place, the projection and observation distances involved, the laser output power/safety requirement, and by knowing the means ...See more on rs-online ProPhotonix

Laser Diode Colors - Blue, Green, Red, IR, Violet Laser

IR laser diodes, red laser diodes, green laser diodes, blue laser diodes, and violet laser diodes are

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