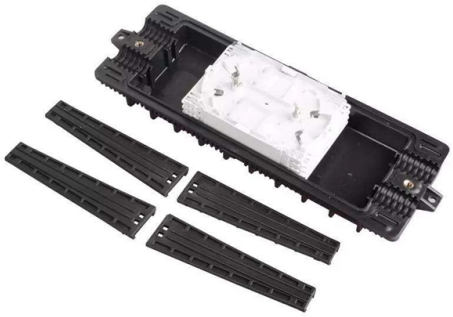
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The connection method for a simple beam splitter is as follows



Overview

A beam splitter divides one light beam into two separate beams by reflecting part of the light and transmitting the rest.

Key Takeaways

A simple beam splitter is typically mounted in an optical holder at a 45° angle to the incident beam, ensuring proper orientation of the coated surface for reflection and transmission.Mounting and Orientation

For cube beam splitters, the device is formed by two right-angle prisms glued together, with one hypotenuse surface coated to reflect part of the light. The coated surface should face the incoming light to avoid damaging the adhesive and to achieve the designed reflection/transmission ratio (commonly 50/50) . Cube splitters are usually placed in a rotatable optical mount to allow precise alignment with the incident beam. For plate beam splitters, which are thin glass plates with a reflective coating on one surface, the plate is positioned at a 45° angle relative to the incoming beam. The transmitted beam continues straight, while the reflected beam is deflected at 90° . Anti-reflection coatings on the opposite surface help reduce unwanted reflections. Plate splitters can be mounted in standard optical holders or kinematic mounts to maintain stability and alignment. Pellicle beam splitters, which are very thin membranes, are also mounted at a 45° angle but require minimal mechanical stress to avoid deformation, as even slight bending can affect beam quality .

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Connection to Optical Systems
• Secure the splitter in a compatible optical mount that allows rotation and tilt adjustments.

• Align the incident beam so it strikes the coated surface at the intended angle (usually 45°).

• Adjust the mount to ensure the reflected and transmitted beams follow the desired optical paths.

• Check polarization and intensity ratios if using polarizing or non-polarizing splitters, as orientation affects performance .
Practical Considerations
• Ensure the coated surface faces the light source for cube and plate splitters.

• Avoid touching the optical surfaces to prevent contamination.

• Use beam alignment tools like irises or alignment lasers to verify correct beam paths.

• For high-precision applications, consider temperature and vibration isolation to maintain stable alignment . By following these steps, a simple beam splitter can be effectively connected and integrated into an optical setup, providing reliable splitting or combining of light beams.

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For example, they are typically used in interferometers in order for a single beam to interfere with itself.

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Schematic diagram of the experimental setup. BS1-2, beam splitters ...

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ExQBS_v3.dvi

Quantum theory of the beam splitter Consider the model of beam-splitter that is sketched in the figure. Light is incident from the a, b

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