

F10 Geometrical Optics and Interference



F10 Geometrical Optics and Interference

Experiments:

1. Propagation of light.
2. Colors--Additive and subtractive mixing of colors.
3. Mirrors--Determine the focal length of images on concave or convex mirror.
4. Lenses--Determine the focal length of images on concave or convex lens.
5. Prism--Deviation and inversion from refraction.
6. Snell's Law--Determining the refractive index from rectangular lens or refraction tank.
7. Wave optics--Compare the single slit, double slit and multiple slit, and determine the wave length of laser light source.

Specifications:

1. Aluminum experimental platform x1

Aluminum alloy, an top 3 D biconvex guide track ,on the surface, is fastened by U-shaped clips below and one of both sides is adhered to an meter of inclination of 45-degree. And the type of three-point level supporter of 120 x12x4.5cm is subjected at at both ends.

2. Diffraction optics module set:

2-1. Red diode laser, wave length 645nm, output power <5mW, focus adjustable

include power supply input AC110~240V output DC4.5V

2-2. Kinematic laser mount with slide x1

2-3. Rotating slit samples' wheel with slide set x1

2-3-1. Single slit :a=0.05mm

2-3-1. Single slit :a=0.1mm

2-3-1. Single slit :a=0.2mm

2-3-1. Double slit :a=0.05mm / d=0.25mm

2-3-1. Double slit :a=0.05mm / d=0.5mm

2-3-1. Double slit :a=0.05mm / d=0.5mm

2-3-1. Five slit :a=0.05mm / d=0.25mm

2-3-1 Diffraction grating :33 lines/mm

2-4. Precision viewing screen with micrometer and slide x1

Range : ± 55 mm Subdivision 0.01mm

3. Geometric optics module set x1

3-1. LED light source with slide and power driver x1

White LED 3W power with heat sink and beam expander f:50mm dia 50mm lens, include LED driver input AC90~260VAC output 2-5VDC.

3-2. cross vector red filter x1

3-3. concave mirror Φ :50mm f:+140mm x1

3-4. convex mirror Φ :50mm f: - 115mm x1

3-5. concave lens Φ :50mm f:-95mm x1

3-6. convex lens Φ :50mm f:+ 140mm x1 f:+ 95mm x1

3-7. screen with meter made by iron plate could be magnet by slide

3-8. slide for hold the lens mirror and screen x4

4. Blackboard Optics demonstration set x1

4-1. Multiple functions Ray box (with magnet) x1

Include 20w Halogen lamp adjustable focus ,with beam expander and cooling fan, power DC12V/2A ,two side with reflect mirrors, in front of project lamp with three races for filters or diaphragms, size: 150x100x90mm

4-2. Acrylic prisms and lenses set (with magnet) x1

Include:

4-2-1. Triangular prism $60^\circ \times 60^\circ \times 60^\circ$ x1

4-2-2. Right angle prism $90^\circ \times 60^\circ \times 30^\circ$ x1

4-2-3. Equilateral prism $90^\circ \times 45^\circ \times 45^\circ$ x1

4-2-4. Cylindrical lens, biconcave x1

4-2-5. Cylindrical lens, biconvex x1

4-2-6. Semi-circular Perspex block x1

4-2-7. Rectangular Perspex block x1

4-2-8. Plane mirror x1

4-2-9. Refraction tank x1

4-2-10. 5 steps parabolic mirror x1

4-3. Slit plates set x1

include:

4-3-1. Single and double x1

4-3-2. Triple and five x1

4-3-3. Open mouthed x1

4-3-4. complete shading x2

4-4. Color cards set (with 7 colors) x1

4-5. Color filters set (with 7 colors) x1

4-6. Demo. paper 360 degree graduation x1 with magnets x4