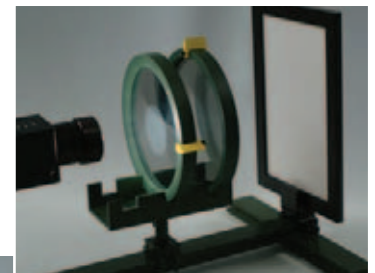




polarization, interference, diffraction



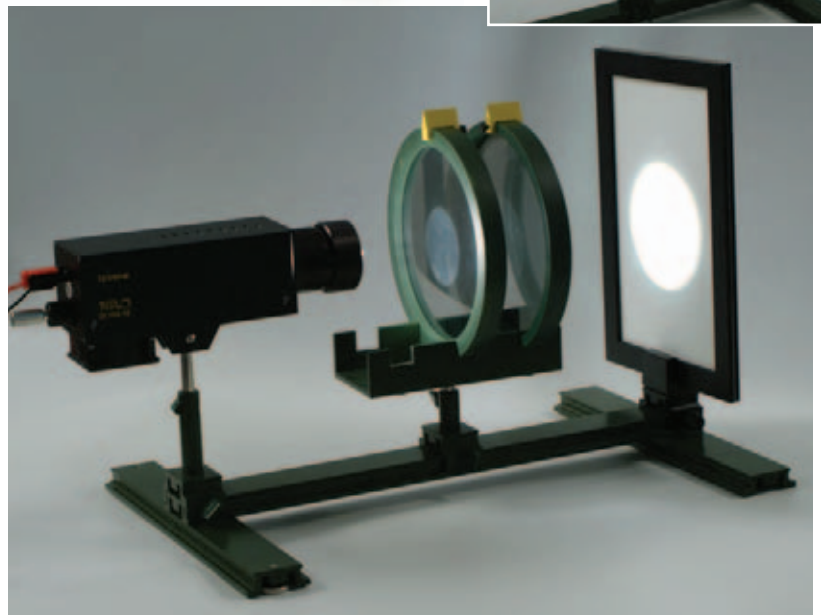
Experiment: Photoelastic analysis
With "jumbo" polarization filter set DL401-3P



DL401-3P Polarization filter set "jumbo", D=200 mm

For creating linearly polarized light; polarization filters mounted between glass plates in a plastic frame with a yellow pointer; the polarization filters are mounted to pivot on an aluminium u-profile; slots allow the filters to be spaced various distances apart, e.g. when doing the experiment "photoelastic analyses"; frame is green powder-coated; u-profile includes a threaded rod for mounting it on the optics bench

Diameter of the polarization filters: approx. 200 mm
Accessories included: two test objects of epoxy material (DL403-2S)



Series of experiments: Polarization of light - parallel polarizers; no light transmittance when using crossed polarizers



DL 401-1P Polarization filter, "demo", on support

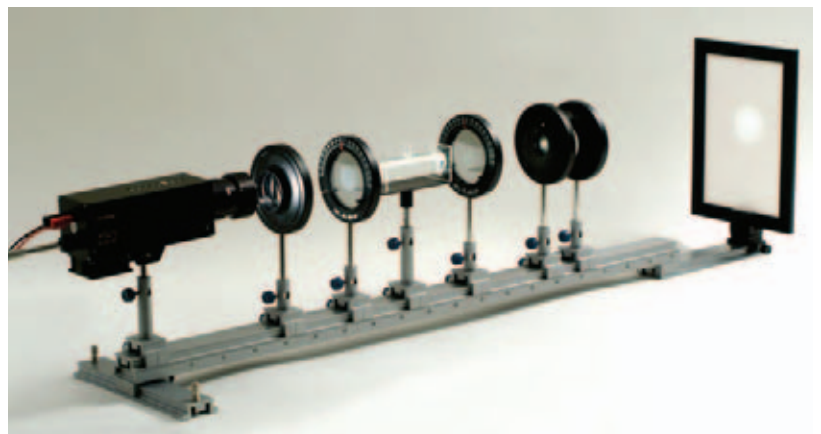
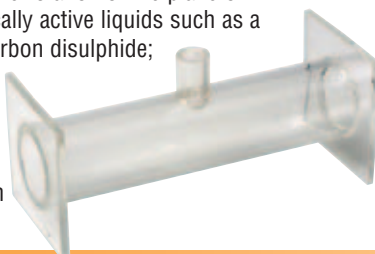
For creating linearly polarized light; plastic foil between glass plates mounted in a frame pivoting on a support
Scale: 0°... +/-90°

Filter diameter: 80 mm
Support: L=90 mm, D=10 mm

Frame diameter: 120 mm
Distance from centre of frame to support end: 150 mm

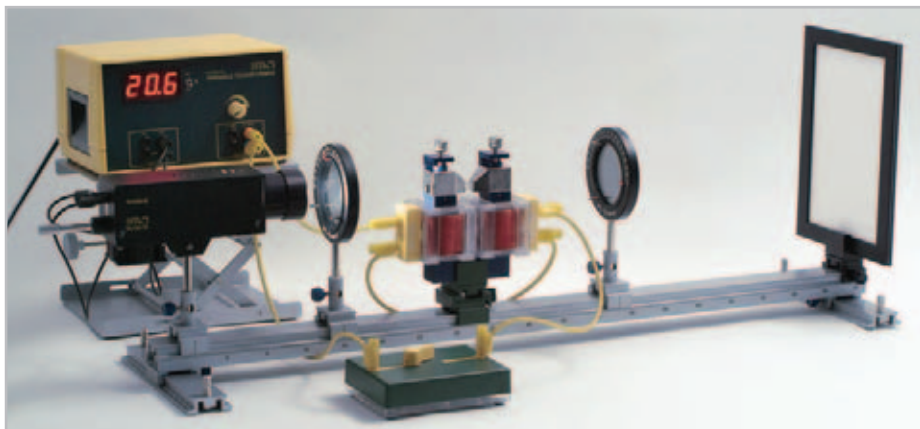
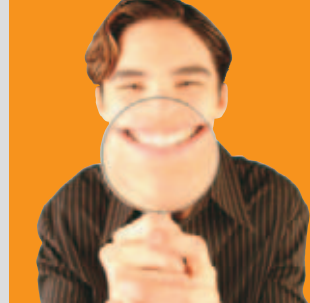
DL401-6P Polarimeter tube

For demonstrating the rotation of the plane of polarization by optically active liquids such as a sugar solution or carbon disulphide; acrylic tube sealed at both ends, with an opening for filling, D = 30 mm, L = approx. 120 mm



Experiment: Model of a saccharimeter
(Rotating the plane of polarization using a sugar solution)

polarization, interference, diffraction



Experiment: Farady effect



DE454-3N Pole shoes, with axial holes, pair

For assembling within limited space an electro-magnet with a homogeneous magnetic field; two nickel-plated iron cores with smooth front surfaces and axial holes; may be placed on u-shaped core DE452-2B
Length: 48 mm each; hole diameter: 11 mm

DE454-3F Flint glass rod

Round flint-glass rod with polished front surfaces; designed for use with the pole shoes with axial holes (DE454-3N); L=24 mm, D=10 mm



DL404-1K Calcite

For demonstrating double refraction; piece of natural, unfinished calcite; Dimensions: approx. 25x20x10 mm



P5420-3A Object for photoelastics

Simple model for demonstrating, using polarized light, the distribution of strain evident when objects are deformed elastically; acrylic object with a slit and a circular cutaway area; dimensions: 80x30 mm

P5420-2A Quartz polarization preparation

Solid substance capable of rotating the plane of polarization; polished quartz disc with the cut surface perpendicular to the optical axis and mounted on a plastic base (50x50 mm) Quartz disc: D=10 mm; 2 mm thick

DL402-1G Glass plate for strain experiments

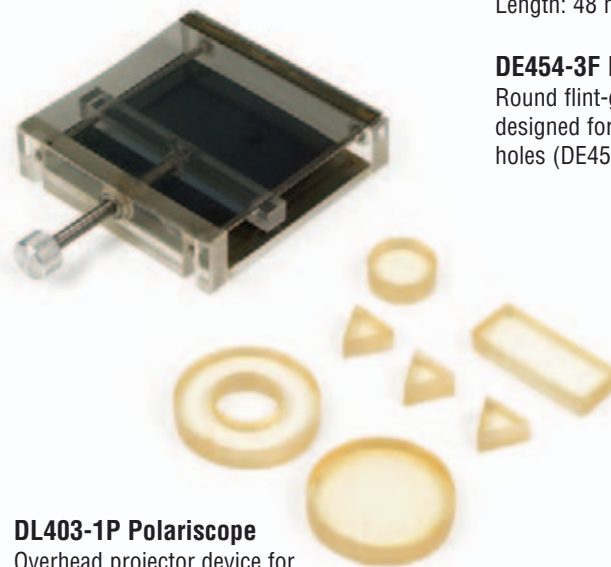
For demonstrating, using polarized light, internal strain caused by heat treatment

DL402-1M Matte glass foil slide

Matte glass foil mounted in slide frame, 50x50 mm

DL401-2P Polarization filter slides, pair

Plastic polarization filters mounted in slide frames



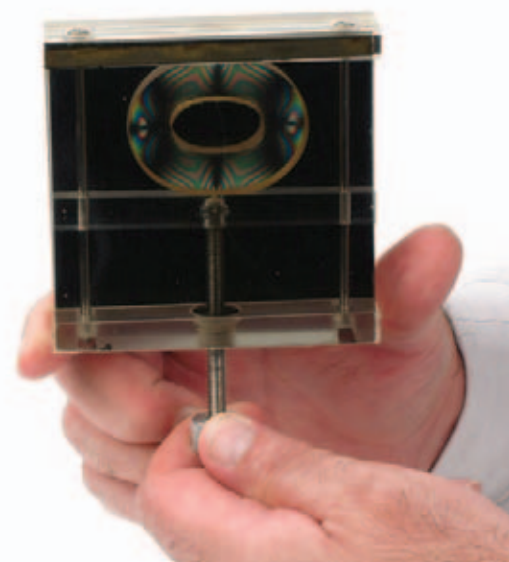
DL403-1P Polariscope

Overhead projector device for demonstrating, using polarized light, the distribution of strain evident when test objects are deformed elastically (photoelastic analysis); acrylic frame with one fixed and one hinged polarization filter; screw clamp for applying pressure to the inserted epoxy test object from set DL403-1S (not included) Dimensions: 100x100 mm

DL403-1S Test objects, set, for photoelastics

For demonstrating, using polarized light, the distribution of strain evident when objects are deformed elastically; may be used together with polariscope DL403-1P or "jumbo" polarization filter set DL401-3P; seven test objects made of epoxy material: 1 ring (D=60 mm), 1 disc (D=60 mm), 1 disc (D=30 mm), 1 rectangle (60x25 mm), 3 triangles (20 mm sides); each 10 mm thick

Experiment: Photoelastic analysis
With "jumbo" polarization filter set DL401-3P and test objects DL403-1S

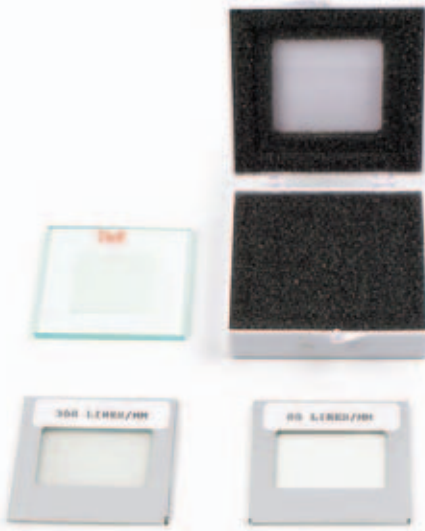


Recommended for mounting optics components in the standard size of 50x50 mm:
DL300-1E slide and screen holder on support; or P5310-2B plug-in slide holder



polarization, interference, diffraction

Diffraction objects printed on foil mounted in slide frames for wave optics experiments using laser DL100-3L; may be mounted in slide and screen holder on support DL300-1E or plug-in slide holder DL300-1F; frame dimensions: 50x50 mm; screen dimensions: 36x24 mm



Diffraction gratings

For experiments in diffraction and interference; Printed on foil mounted between 50x50 mm glass plates; may be inserted in the slide and screen holder on a support (DL300-1E) or the plug-in slide holder (DL300-1F)

DL402-1J Slide with line grating, 80 lines/mm

P5820-1B Slide w. line grating, 300 lines/mm

(Not shown:)

DL402-2R Slide with line grating, 600 lines/mm

DL402-5A Slide with cross-grating, 77 squares/cm

DL402-5C Slide with cross-grating, 130 squares/cm

DL402-5F Slide with cross-grating, 180 squares/cm

DL402-5H Foil of cross-grating, size A4, 200 squares/mm

DL402-3R Slide with line grating, 600 lines/mm, glass

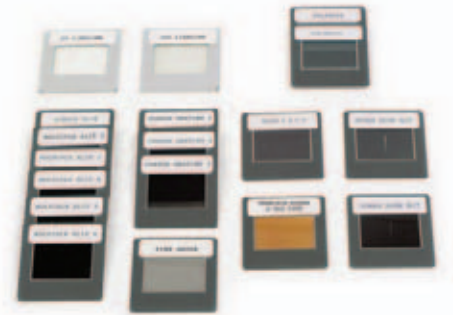
High-quality grating on a glass plate; for quantitative experiments in spectrometry; supplied in stiff cardboard packaging; grating size: 25x25 mm
Dimensions: 50x50 mm



DL402-1B Laser diffraction set B

Set of 13 objects consisting of:

- 6 slides with apertures shaped like the letters O and T, Y and Q, I and A, L and X, H and Z, K and V
- 5 slides with regularly and irregularly arranged square and circular apertures
- 2 slides displaying diffraction phenomena through a hole and an x-shaped aperture



DL402-1C Laser diffraction set C

Set of 18 objects consisting of:

- 6 slides with 1 to 6 slits (slits 0.06 mm wide and 0.2 mm apart)
- 3 slides with line gratings: 40 lines/cm (line width 0.2 mm); 40 lines/cm (line width 0.1 mm); 80 lines/cm (line width 0.03 mm)
- 1 slide with line grating, 80 lines/mm
- 1 slide with line grating, 300 lines/mm
- 1 slide with a single slit (conically shaped)
- 1 slide with a double slit (conically shaped)
- 1 slide with wire grating, 300 squares/mm
- 1 slide with apertures 0.3, 0.4, 0.6 and 1 mm in diameter
- 1 hologram (transmission)
- 2 polarization filters

(Not shown:)

Laser diffraction set A

Set of 9 objects consisting of:

- 6 slides with 1 to 6 slits (slits 0.06 mm wide and 0.2 mm apart)
- 3 slides with line gratings: 40 lines/cm (line width 0.2 mm); 40 lines/cm (line width 0.1 mm); 80 lines/cm line width 0.03 mm



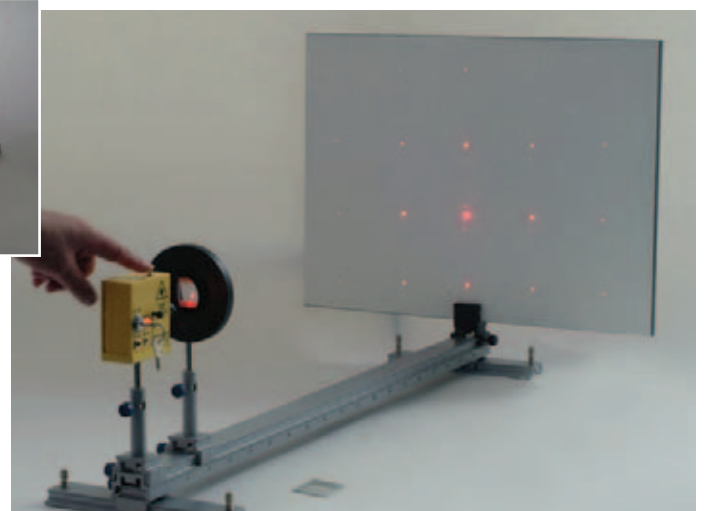
DL405-2G Mica sheet

For demonstrating interference along thin layers

Dimensions: approx. 100x100 mm



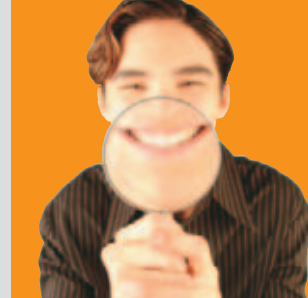
Experiment: Diffraction through a line grating



Experiment: Diffraction through a cross-grating

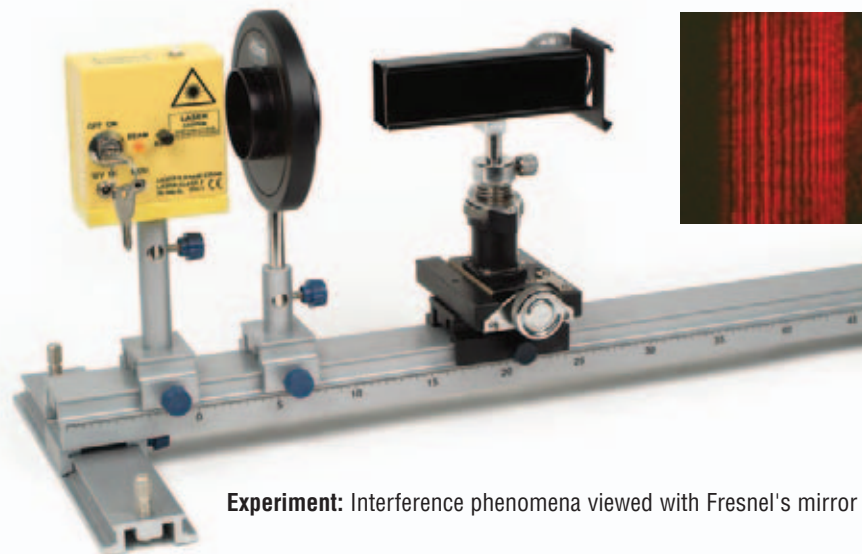
Experiment: Watching a candle flame through the cross-grating foil DL402-5H

polarization, interference, diffraction

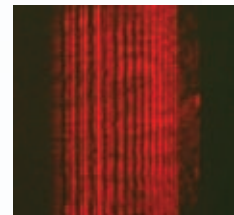


**DL407- 2F
Fresnel's mirror**

For demonstrating the interference of light after being reflected from two mirror surfaces; flexible, black planar mirror mounted in a frame; fine screw adjustment of angle of inclination; mounted on support (D=10mm, L=70 mm)
Mirror surface area dimensions: 130x32 mm



Experiment: Interference phenomena viewed with Fresnel's mirror



DL406-1N Newton's rings demo apparatus

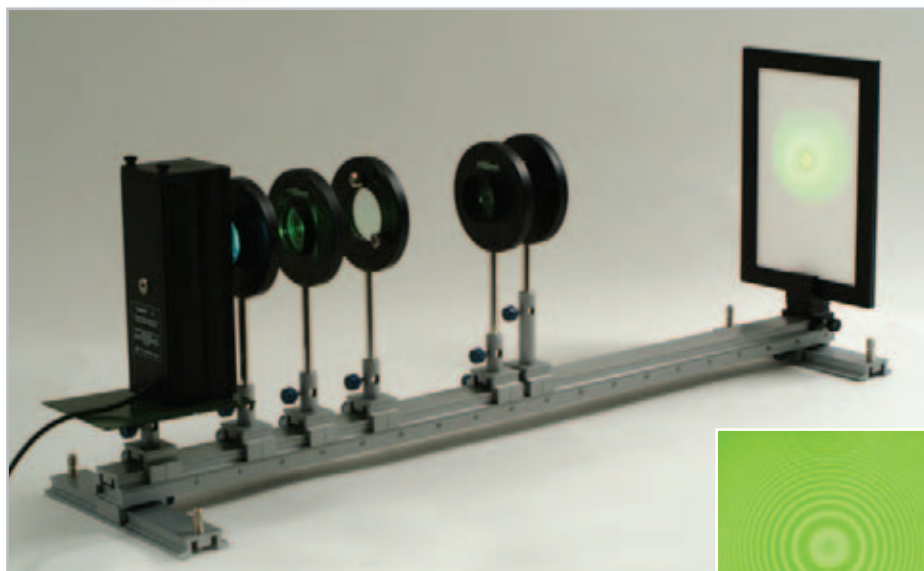
For generating Newton's rings by means of interference; a plano-convex lens mounted together with a glass plate in a metal frame embedded in a plastic mount on a support; angle of wedge may be varied by means of three knurled-head screws

Lens diameter: 55 mm

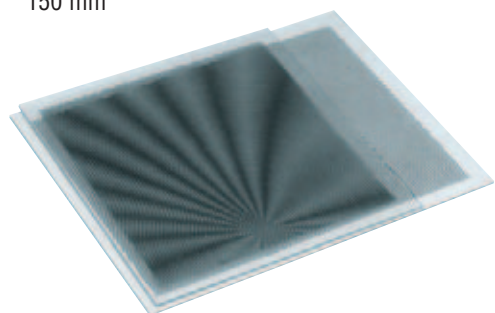
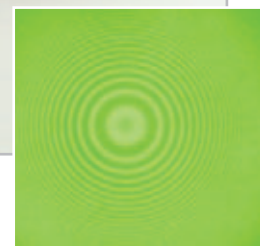
Support: L=90 mm, D=10 mm

Frame diameter: 120 mm

Distance from centre of frame to support end: 150 mm

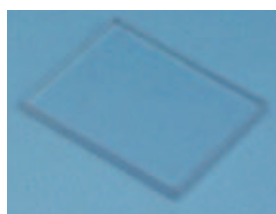


Experiment: Newton's rings



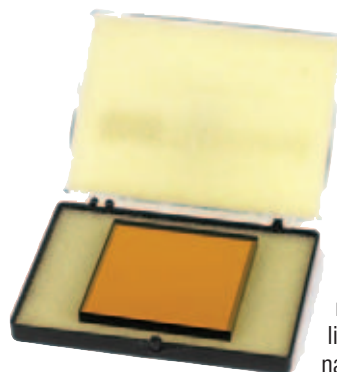
DL408-11 Interference model

Interference phenomena are simulated using two transparent plastic sheets, printed with concentric circles, laid on top of each other (may also be used with an overhead projector)
Dimensions: 120x90 mm and 90x90 mm



DL406-1B Bi-prism

For demonstrating and studying interference of light caused by differing degrees of refraction
Height: 40 mm
Length: 48 mm



**DL407-3A
Interference filter**

Used together with the high-pressure mercury vapour lamp for generating monochromatic light; line filter allowing only a narrow spectral band to pass; mean wavelength:

580 nm; tolerance: +/- 2 nm; half-width: 10 nm; transmittance: >= 45 %
Blocking: 0.1 %
Dimensions: 50x50 mm



polarization, interference, diffraction



DP130-3M Connecting cable for modulation

For connecting an audio device (e.g. radio, CD player, MP3 player) to laser DL100-3L in order to modulate it; connecting cord with 3.5 mm phone plug at each end; cable length: approx. 50 cm

DL100-3R Laser receiver unit, set

Modular equipment set, suitable for a magnetic panel, for receiving and amplifying laser signals and for acoustically rendering modulated laser signals; Set consists of three magnetic modules from the "compact" system (MBCs; 84x84x39 mm) and four jumper plugs:

1x Photodiode, "compact", magnetic
For technical description see page 463

1x MB270-2V LF amplifier "compact", magnetic
For technical description see page 185

1x MB240-1L MBC Loudspeaker
For technical description see page 186

2x P3712-1S Jumper plugs, MBC, black

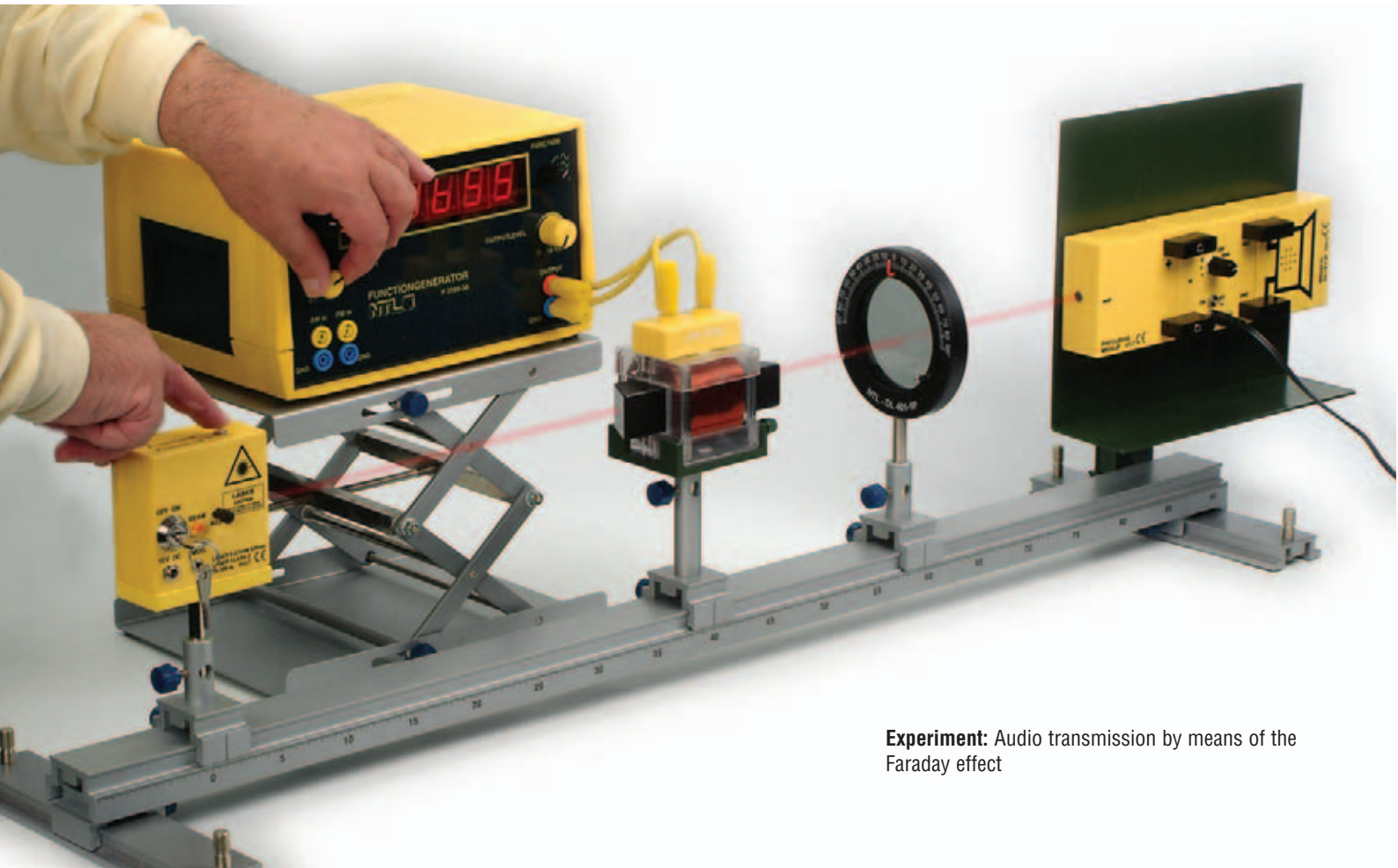
2x P3712-2S Jumper plug with connector terminal, MBC, black

Required power supply:

P3130-1P Mains transformer 12V DC/2A

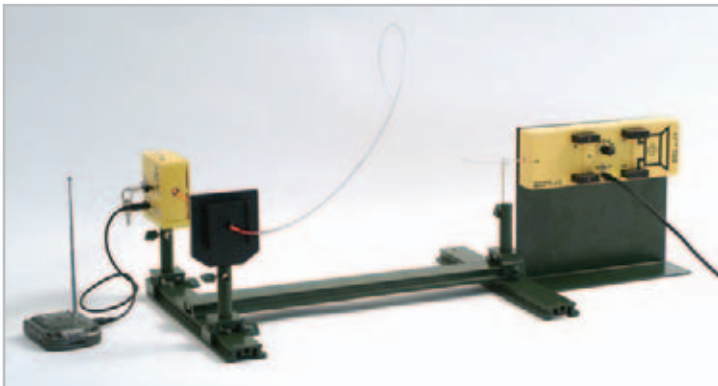
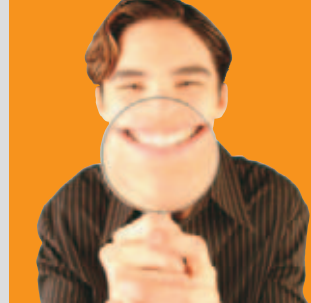
Output voltage: 12 V DC/24 VA supplied by 5.5-mm hollow DC plugs

Voltage source: 100 ...240 V AC/50...60 Hz



Experiment: Audio transmission by means of the Faraday effect

polarization, interference, diffraction



Experiment:
Modulation of laser light - optic fibre cable

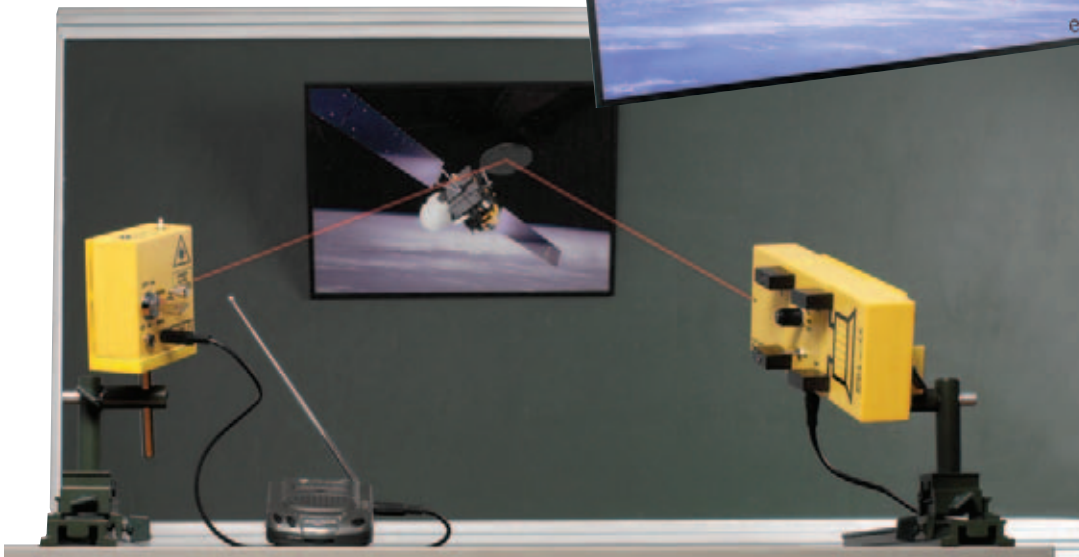


Experiment: Modulation of laser light



DL610-2S Satellite dish, large, with ball joint

Picture of a satellite including a built-in mirror for reflecting (laser) signals; photograph in a frame with a support mounted on a ball joint on the back (image provided for educational purposes courtesy of esa); Dimensions: 60x40 cm



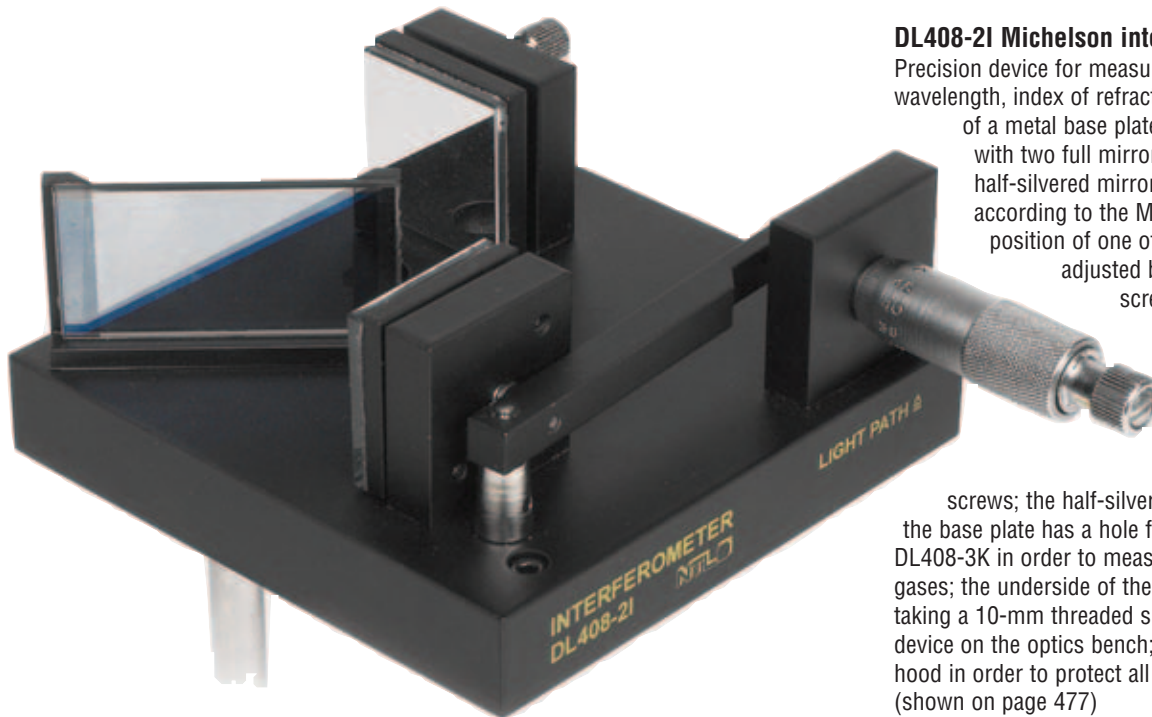
Experiment: "Satellite" communication



Detail: Thanks to the ball joint on support attached to the back, the satellite mirror can quickly be brought into any desired position

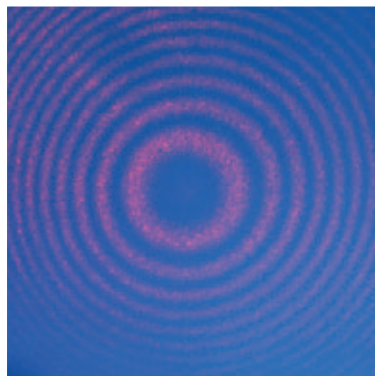


interferometer



DL408-21 Michelson interferometer

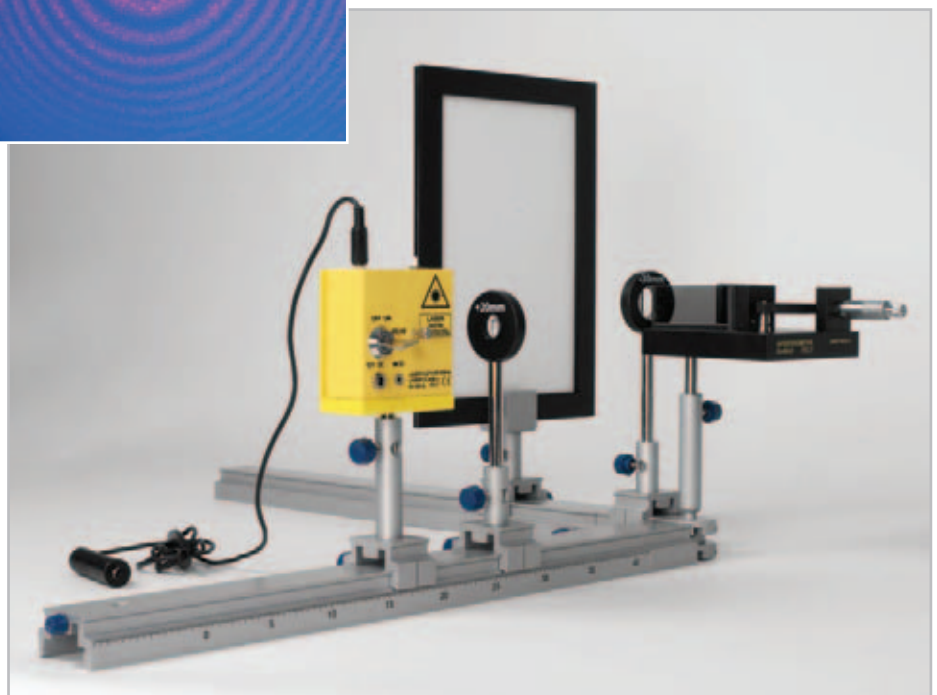
Precision device for measuring phenomena such as light wavelength, index of refraction etc.; apparatus consists of a metal base plate (120x120 mm, 2 cm thick) with two full mirrors (30x30 mm each) and a half-silvered mirror (50x30 mm) mounted on it according to the Michelson configuration; the position of one of the full mirrors can be adjusted by means of a micrometer screw (micrometer 0-10 mm, vernier 1/100 mm) and a lever arm (step-down gear ratio of 1:10), while the other full mirror, which is fixed, can be inclined by means of two screws; the half-silvered mirror is fixed in place; the base plate has a hole for mounting round cell DL408-3K in order to measure the index of refraction of gases; the underside of the base plate has a tapped hole taking a 10-mm threaded support for mounting the device on the optics bench; supplied with a solid plastic hood in order to protect all optical parts (shown on page 477)



Lenses in frames, "demo", on support

Glass lenses in black plastic frames, on supports; frame labelled with the focal length
 Support: $L=125$ mm, $D=10$ mm
 Distance from centre of lens to support end: 150 mm; lens diameter: 18(32) mm; frame diameter: 50 mm

DL500-0B Linse „demo“, $F_l = +20$ mm
 DL500-2A Linse „demo“, $F_l = -30$ mm

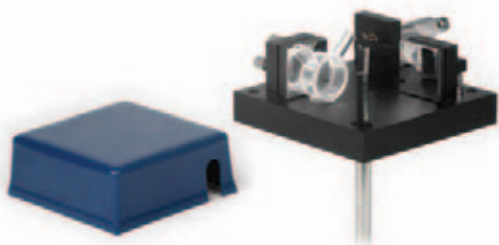
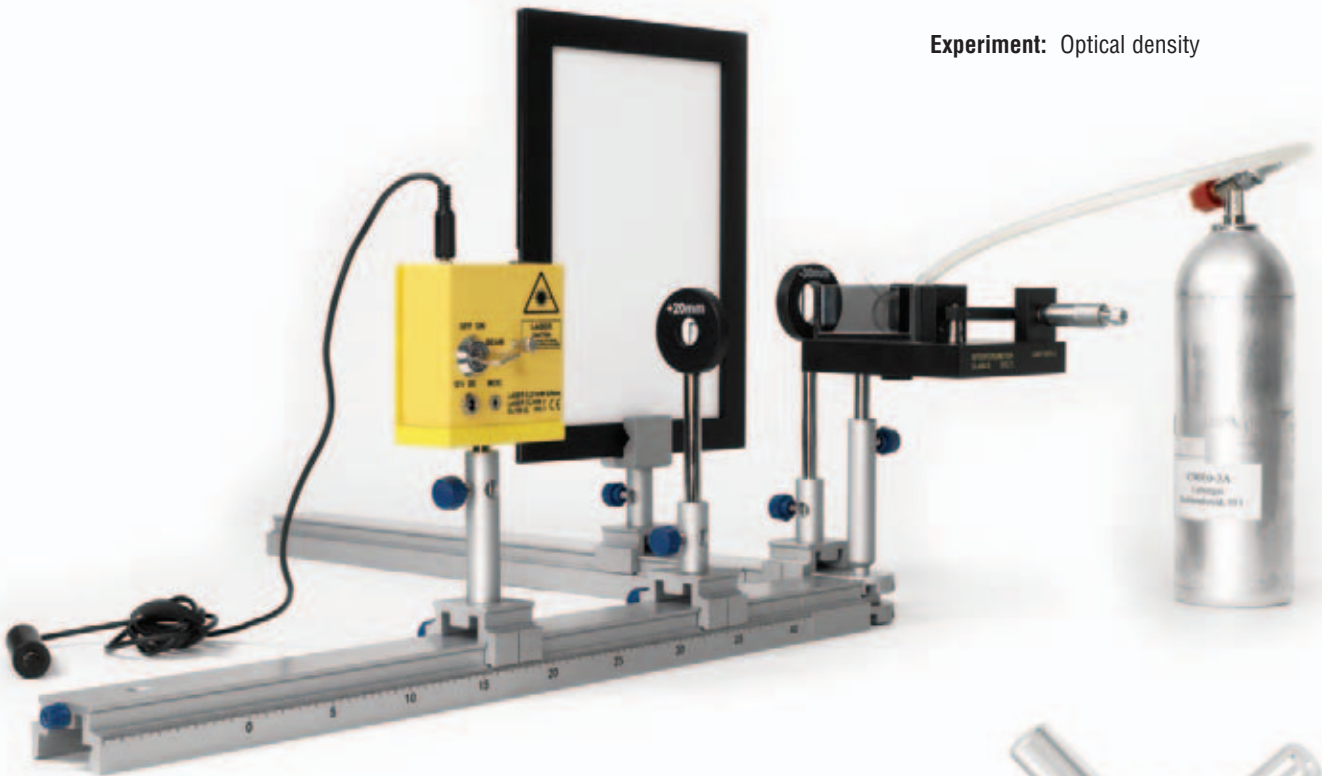


Experiment: Measuring the wavelength of laser light

interferometer

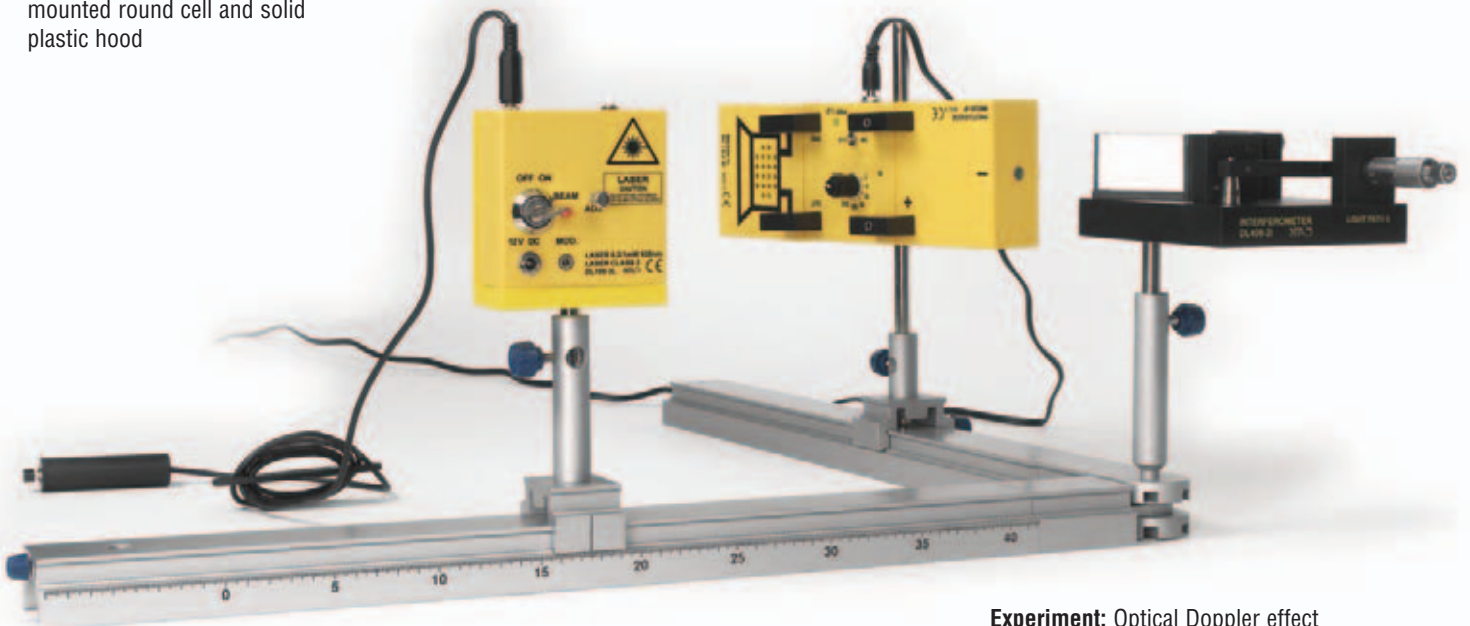


Experiment: Optical density



Detail: Interferometer with mounted round cell and solid plastic hood

DL408-3K Round cell for interferometer
Apparatus used together with Michelson interferometer DL408-21 for measuring the index of refraction of gases; cell with two hose fittings and an M10 threaded support, with a plastic nut, for mounting the apparatus on the interferometer base plate
Cell diameter: 30 mm



Experiment: Optical Doppler effect