P1130-1S Dynamometer, 0,1 N, transparent

Very popular product; very good price-performance ratio:

The most economical way to measure tensile force, therefore well suited for student experiments;

precise spring force gauge with long and therefore clearly legible Newton scale, zero-point correction, protection against overstretching of the spring, the function of the coil spring can be recognized through the transparent sleeve, robust suspension hook, metal tension rod, with load hook

P1130-1S Dynamometer, 0,1 N, transparent



Measuring range: 0,1 N

Graduation: 0,001 N

Measuring accuracy: ±2%

Scale length: 100 mm

Force gauge sleeve: L=215 mm

Colour: orange

Dimensions: D=16 mm, L-total= approx. 275 mm

Mass: approx. 35 g

P1130-1A Dynamometer, 0,2 N, transparent, grey

Very popular product; very good price-performance ratio:

The most economical way to measure tensile force, therefore well suited for student experiments;

precise spring force gauge with long and therefore clearly legible Newton scale, zero-point correction, protection against overstretching of the spring, the function of the coil spring can be recognized through the transparent sleeve, robust suspension hook, metal tension rod, with load hook

P1130-1A Dynamometer, 0,2 N, transparent, grey



Measuring range: 012 N

Graduation: 01002 N

Measuring accuracy: ±2%

Scale length: 100 mm

Force gauge sleeve: L=215 mm

Colour: grey

Dimensions: D=16 mm, L-total= approx. 275 mm

Mass: approx. 36 g

P1130-1B Dynamometer, 1 N, transparent yellow

Very popular product; very good price-performance ratio:

The most economical way to measure tensile force, therefore well suited for student experiments;

precise spring force gauge with long and therefore clearly legible Newton scale, zero-point correction, protection against overstretching of the spring, the function of the coil spring can be recognized through the transparent sleeve, robust suspension hook, metal tension rod, with load hook

P1130-1B Dynamometer, 1 N, transparent yellow

Measuring range: 1 N

Graduation: 0,01N

Measuring accuracy: ±2%

Scale length: 100 mm

Force gauge sleeve: L=215 mm

Colour: yellow

Dimensions: D=16 mm, L-total= approx. 275 mm

Mass: approx. 36 g



P1130-1C Dynamometer, 2 N, transparent, dark red

Very popular product; very good price-performance ratio:

The most economical way to measure tensile force, therefore well suited for student experiments;

precise spring force gauge with long and therefore clearly legible Newton scale, zero-point correction, protection against overstretching of the spring, the function of the coil spring can be recognized through the transparent sleeve, robust suspension hook, metal tension rod, with load hook

P1130-1C Dynamometer, 2 N, transparent, dark red

Measuring range: 2 N

Graduation: 0,02N

Measuring accuracy: ±2%

Scale length: 100 mm

Force gauge sleeve: L=215 mm

Colour: dark red

Dimensions: D=16 mm, L-total= approx. 275 mm

Mass: approx. 36 g



P1130-1D Dynamometer, 5 N, transparent, blue

Very popular product; very good price-performance ratio:

The most economical way to measure tensile force, therefore well suited for student experiments;

precise spring force gauge with long and therefore clearly legible Newton scale, zero-point correction, protection against overstretching of the spring, the function of the coil spring can be recognized through the transparent sleeve, robust suspension hook, metal tension rod, with load hook

P1130-1D Dynamometer, 5 N, transparent, blue

Measuring range: 5 N

Graduation: 0,05N

Measuring accuracy: ±2%

Scale length: 100 mm

Force gauge sleeve: L=215 mm

Colour: blue

Dimensions: D=16 mm, L-total= approx. 275 mm

Mass: approx. 39 g



P1130-1E Dynamometer, 10 N, transparent, green

Very popular product; very good price-performance ratio:

The most economical way to measure tensile force, therefore well suited for student experiments;

precise spring force gauge with long and therefore clearly legible Newton scale, zero-point correction, protection against overstretching of the spring, the function of the coil spring can be recognized through the transparent sleeve, robust suspension hook, metal tension rod, with load hook

P1130-1E Dynamometer, 10 N, transparent, green

Measuring range: 10 N

Graduation: 0,1 N

Measuring accuracy: ±2%

Scale length: 100 mm

Force gauge sleeve: L=215 mm

Colour: green

Dimensions: D=16 mm, L-total= approx. 275 mm

Mass: approx. 38 g



P1130-1F Dynamometer, 20 N, transparent, orange

Very popular product; very good price-performance ratio:

The most economical way to measure tensile force, therefore well suited for student experiments;

precise spring force gauge with long and therefore clearly legible Newton scale, zero-point correction, protection against overstretching of the spring, the function of the coil spring can be recognized through the transparent sleeve, robust suspension hook, metal tension rod, with load hook

P1130-1F Dynamometer, 20 N, transparent, orange

Measuring range: 20 N

Graduation: 0,2 N

Measuring accuracy: ±2%

Scale length: 100 mm

Force gauge sleeve: L=215 mm

Colour: orange

Dimensions: D=16 mm, L-total= approx. 275 mm

Mass: approx. 38 g



P1130-1F Dynamometer, 100 N, transparent, black

Very popular product; very good price-performance ratio:

The most economical way to measure tensile force, therefore well suited for student experiments;

precise spring force gauge with long and therefore clearly legible Newton scale, zero-point correction, protection against overstretching of the spring, the function of the coil spring can be recognized through the transparent sleeve, robust suspension hook, metal tension rod, with load hook

P1130-1H Dynamometer, 100 N, transparent, black

Measuring range: 100 N

Graduation: 1 N

Measuring accuracy: ±2%

Scale length: 100 mm

Force gauge sleeve: L=215 mm

Colour: orange

Dimensions: D=20 mm, L-total= approx. 310 mm

Mass: approx. 84 g



DM125-4A Digital scales 06, 500 / 0,01 g

Best price-performance ratio:

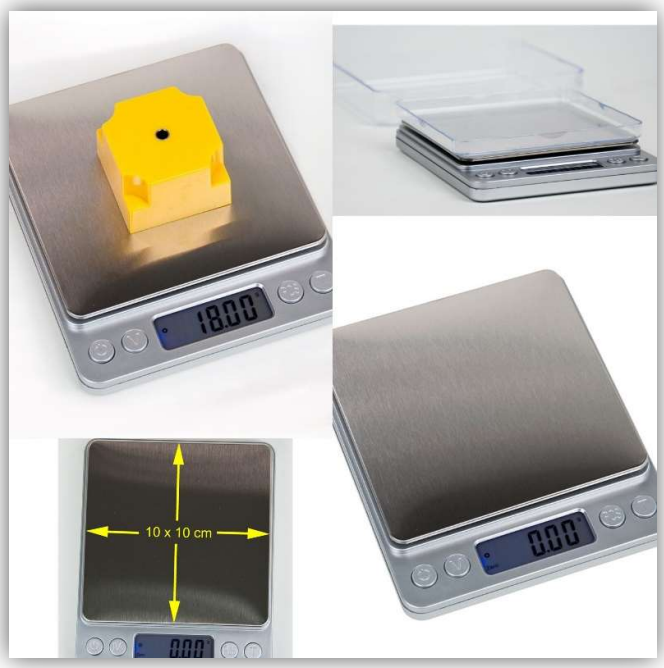
- easy to use with 4 buttons
- fast operation thanks to quick self-calibration after switching on

- tare and zeroing function
- switch between gram, ounce, rain and carat

- unit counter function
- automatic turn-off

- easily readable display with backlight, size of digits: 10 mm
- battery driven (2 x AAA batteries included)

- incl. two transparent scale pans (also serve as protective lids)



Dimensions:
Weighing plate: 100 x 100 mm
Scale pan, small: 102 x 102 x 7 mm (inner dimensions)
Scale pan, large: 129 x 107 x 20 mm (inner dimensions)
Housing dimensions: 128 x 106 x 18 mm

DM125-4AP Digital balance 500 / 0,01 g, with PSU

Best price – performance ratio; also chargeable:

easy to use with 4 buttons

fast operation thanks to quick self-calibration after switching on

tare and zeroing function

switch between gram, ounce, grain and carat

unit counter function
automatic turn-off

easily readable display with backlight, size of digits: 10 mm
supplied with PSU 3 V DC, battery operation possible (2 x AAA batteries - not included)



incl. two transparent scale pans (also serve as protective lids)

Dimensions:
Weighing plate: 100 x 100 mm
Scale pan, small: 102 x 102 x 7 mm (inner dimensions)
Scale pan, large: 127 x 106 x 20 mm (inner dimensions)
Housing dimensions: 127 x 106 x 17 mm

DM128-3C Stress and strain-balance 2000/0,1g

Only available with us:



Balance with external weighing beam, for measurement in any direction;

digital scales with rapid calibration thanks to the tare function;

easily readable with backlit display;

battery-powered, with automatic shut-down;

weighing sensor with hook and pressure sleeve, protected by a robust metal housing;

can be mounted on support rods up to a diameter of 10 mm;

measuring range: +/- 2000 g;
resolution: 0.1 g;
height of digits: 10 mm;
battery-powered (2 x AAA batteries included);
dimensions of the balance housing: 125 x 105 x 17 mm

P1410-1U Overflow beaker 250 ml

Very important for the Archimedes' principle:

For determining the volume of solid bodies by liquid displacement and for demonstrating Archimedes' principle;

Glass vessel with sloping outlet pipe

Drain tube: L=50 mm
Filling volume: approx. 250 ml
Dimensions of the glass vessel: D=61 mm, H=125 mm
Mass: approx. 105 g

Additionally recommended:
C1580-1B Measuring cylinder 100 ml, glass



DM140-1A Specific gravity-cubes, 6 pcs, each 1 cm^3

Great price-performance ratio:

Gravity cubes, for determining the density of different materials by weighing;

Material: Al / Cu / Fe / Pb / Zn /

Wood, set of 6 pieces

Dimensions: 10x10x10 mm each



DM480-2E Cartesian diver, simple

Great price-performance ratio:

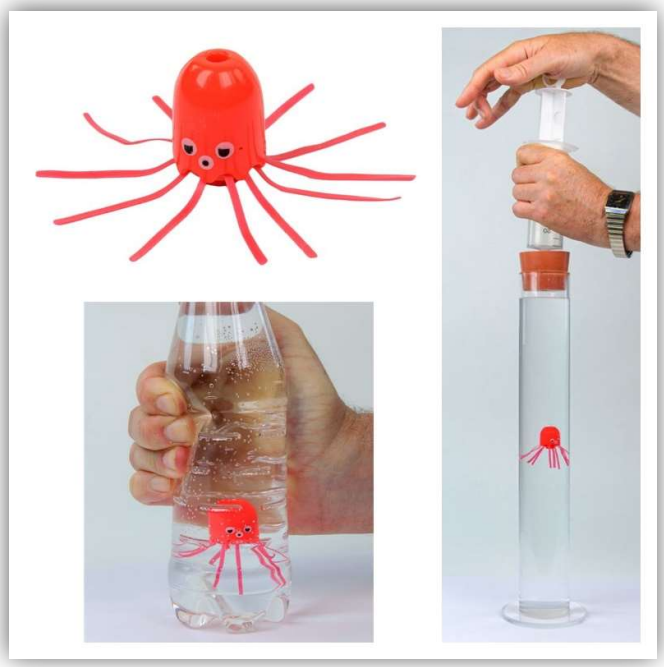
For demonstrating the swimming, floating, sinking and rising of a body in a liquid;

Diver as a hollow figure in the shape of an octopus (squid) made of plastic, signal colour

Body size: D=18 mm, H=26 mm

Tentacle length: approx. 30 mm

Body weight: approx. 4.5 g



DM875-1K Capillary tubes in holder

This design is only available from us:

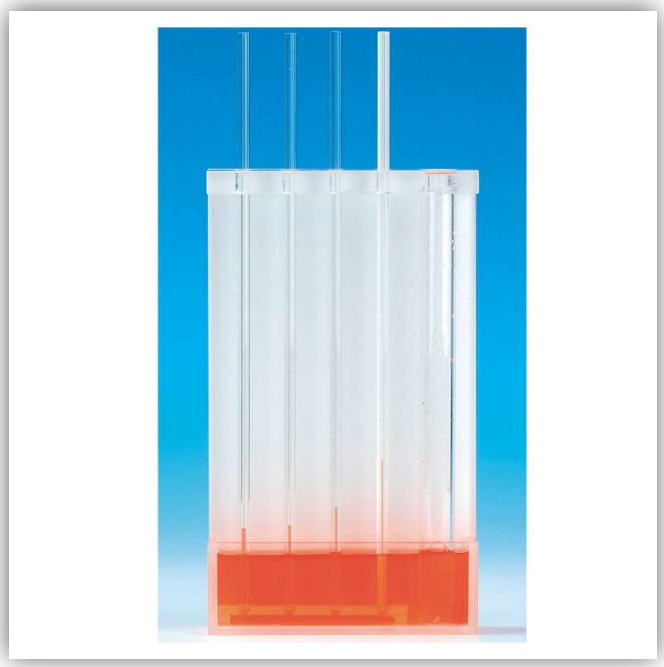
For demonstrating capillary action;

4 glass tubes of different inner diameters in acrylic glass vessel with white back wall,
filling tube and liquid container

Tube lengths: 250 mm

Inner diameter of the capillaries:
0.40 / 0.60 / 0.80 / 1.00 mm

Dimensions: 120x30x260 mm



DM401-1D Pressure distribution unit, 02

Unique item – only available with us:

For illustrating the even distribution of pressure in fluids;

Glass bulb, 1000 ml, NS29, with 3 hose connections at different heights on the outer wall;

3 manometer hoses mounted on metal board;

with silicon stopper and 120 ml plastic syringe to generate pressure;

dimensions: 200 x 140 x 500 mm



DM405-2P Hydraulic press, working model

Only available with us:



Acrylic model for demonstrating how hydraulic force is transferred, this model can be used not only to show the movement of the pressure and press pistons and the valve clearance, even practical examples of use in real life can be demonstrated. The ratio of the surface areas of the two pistons is 1:12, while the sturdy manner in which the press is built allows it to exert **up to 500 N of press force!**
Piston D=16 mm and 56 mm

Free working height: 60 mm
Dimensions: 200x70x285 mm

Accessories included:
DM405-1B Metal bracket with notches
Dimensions: 40x40x20 mm
DE300-1F Iron nails, L=80 mm, set of 20
DM366-1K Styrofoam ball, D=30 mm

Required accessories:
DM340-2W Vat with drain connector
Acrylic, D=200 mm, H=65 mm

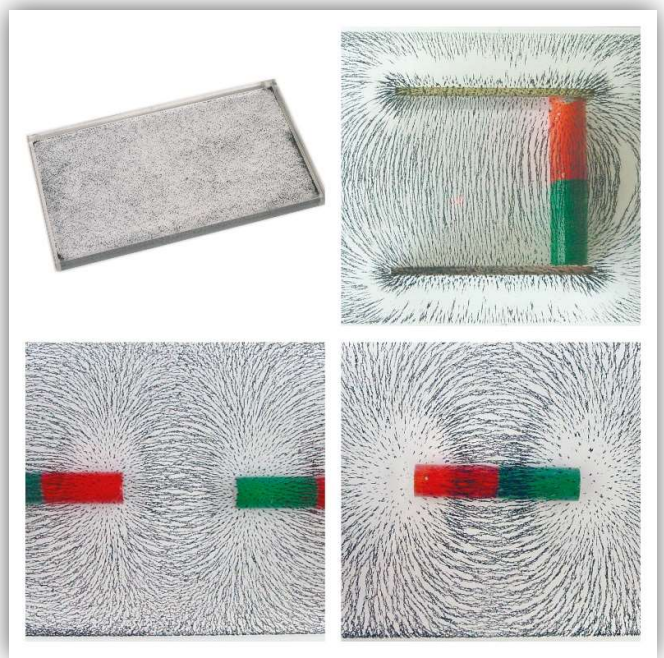
P3413-1P Magnetic field plate compact

Liquid - easy to spread and therefore easy to reuse; best price – performance ratio:

For showing the shape of magnetic field lines around a permanent magnet.

- suitable for overhead projector
- iron filings in a viscous medium

- airtight in a sealed acrylic cuvette
- dimensions: 155 x 90 x 10 mm



DE442-1E Eddy current (Waltenhof) pendulum, complete

Best price-performance ratio:

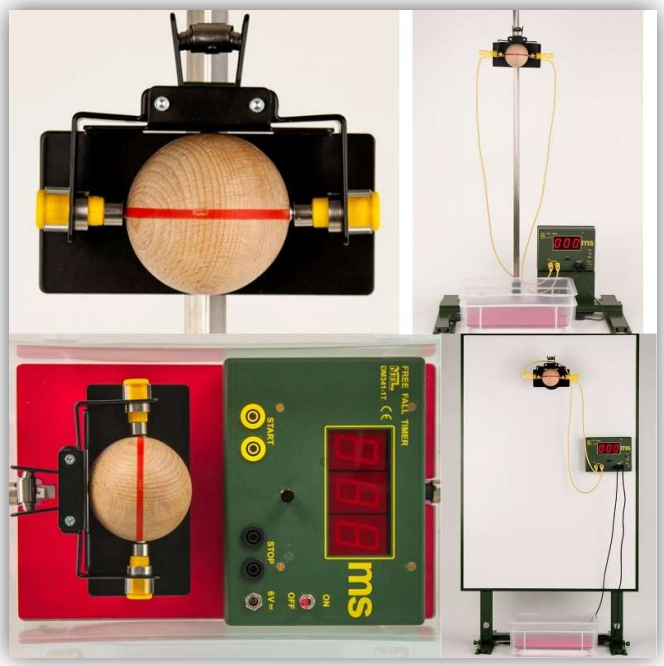
For demonstrating eddy currents and Lenz's rule, simple, fast and safe;
the slotted pendulum plate swings unbraked by the magnetic field, whereas the full pendulum plate is strongly decelerated;
Boom made of robust steel, powder-coated, axle bearing for the pendulum plates at the top, strong magnetic field at the bottom due to two neodymium magnets.

3 pendulum plates made of aluminium, 1 x solid, 1 x perforated, 1 x slotted
Pendulum plates: 290 x 80 x 3 mm
Boom: 120 x 100 x 310 mm
Total weight: approx. 1683 g



DM347-1F Free-fall apparatus “Jumbo”

Best device on the market – only available with us:



- For measuring the fall time of a 60 mm wooden ball.
  The course of the experiment can be seen from a distance due to the size of the ball

  and the large collecting vessel, making it extremely effective yet still very easy to carry out.
- Robust metallic holder; two simultaneously adjustable trigger clamps
  enable optimal time triggering (without residual friction or residual magnetism)
- 60 mm wooden ball with metal axle and position marking
- Large collecting vessel made of impact-resistant PP; upper opening 270 x 165 mm; inlaid foam rubber-damped impact plate
  Dimensions of collecting vessel: 300 x 200 x 130 mm
  The container plus lid acts as a storage option for the holder and timer.

  A timer is also required, e.g.:
  DM341-1T timer for free-fall apparatus

  Set-up possibilities:
  1) on normal stand
  2) magnetically on mobile board
  3) magnetically on blackboard
  4) magnetically on door frames (metallic)

DM341-1T Timer for falling body apparatus

Best device on the market – only available with us:

Easy-to-use timer, displaying the difference between start and stop in milliseconds;
26 mm LED display;

2 pairs of safety jacks;
on-off switch,
reset switch for simple zero readjustment;
powered by batteries (4 x 1.5 mignon)
or mains transformer 6 V / 500 mA P3120-6N (not included)

dimensions: approx. 160 x 120 x 45 mm; weight: approx. 385 g



P1325-9s Counter with two light gates, set

Very popular product; great price – performance ratio:

Counter, digital, SE
Solid, handy counter with LC display

Digit height 12,5 mm,
Accuracy 10 ms

Battery powered, modes: stop watch / Start – Stop / Gate

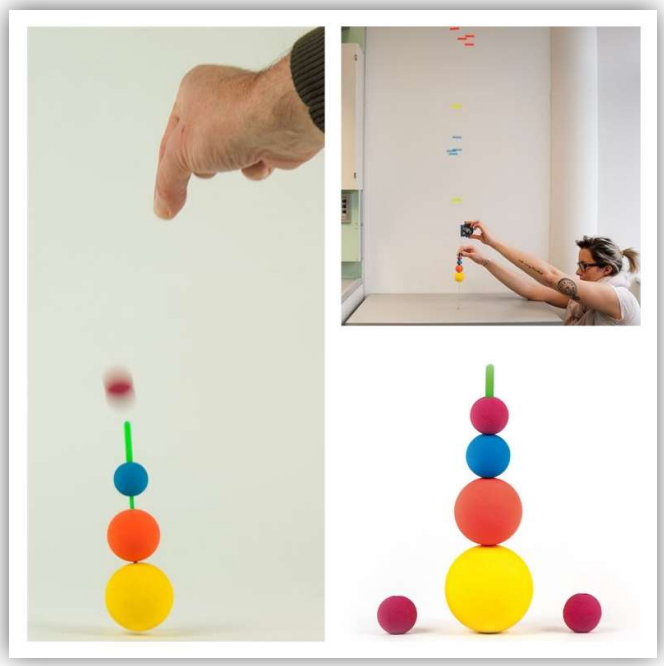
2 light gates
Bracket width: 78 mm

2 connection cables
l = approx. 135 cm each



DM343-1S Momentum cannon 02

Best price – performance ratio:



For demonstrating conservation of energy and momentum;

4 rubber balls stacked one upon another on a central plastic rod;

the bottommost ball is fixed on the plastic axis, the next two balls are movable but they cannot fall down;
just the uppermost, smallest ball is totally movable on the axis;
diameter of balls: 48/37/24/21 mm
(Delivered with two small spare balls)

If you drop the momentum cannon from a certain height,
the uppermost, smallest ball will fly upwards with a multiple of the speed of fall v0
and can reach an enormous height.
If you highlight the maximum height on the wall,
you can work out a relation with respect to the different initial heights.

DT803-1B Barometer, demo unit

Only available with us:

For a simple and fast explanation of air pressure and the movement of the pointer on a barometer.

The barometer is placed in an air-tight, transparent plastic container.

The air pressure changes by compressing and expanding the container and the pointer indicates these changes.

Barometer 980 - 1040 hPa and plastic container with lid and suction pad.



DT730-2P Pelton turbine demo, with generator

Demo-model for energy conversion; Very good price-performance ratio:

To demonstrate the conversion of mechanical energy into electrical energy;

Low friction blade wheel in acrylic glass housing,
Axle with large drive wheel and drive belt to a fixed housing with generator and two 4 mm safety jacks,
Side inlet opening for a water hose,
Base plate with outlet opening,

Can be mounted on the tank using a DM340-2W drain connector



Blade wheel diameter = approx. 145 mm; dimensions: approx. 200 x 80 x 235 mm

DW401-2W Ripple tank for overhead projector

In this form – only available with us:



Optical, electromagnetic, sound and other wave phenomena are comparable with the way that waves propagate on the surface of water.
This ripple tank can be used to display such phenomena on a very large scale even in daylight with the help of an overhead projector. Depending on the type of wave source used, one-point, two-point or plane waves can be generated.

By placing various objects in the water tank, experiments on reflection, refraction and diffraction can be demonstrated.

Supplied materials:
Wave generator
Motor with magnet ripple generator, continuously variable speed;
battery-powered (9 V battery) or hollow jack for 12 V DC power supply;
double-sided, easy-to-use fine height setting on both sides allows quick, optimum adjustment to water level;
steel base

Water tank
Made of acrylic glass;
outer perimeter with two rows of rubber bumpers to avoid reflection;
4 height-adjustable plastic feet
Viewing area: 217 x 217 mm;
dimensions: 257 x 257 mm

Accessories included:
• 2 Rippler generators for concentric waves
• 1 Ripple generator for plane waves
• 1 Reflection plate, 170 mm
• 2 Diffraction plates, 85 mm
• 1 Diffraction plate, 25 mm
• 1 Semi-circular reflection plate, 150 mm
• 1 Object for refraction, 90 x 70 mm
• 1 Spirit level
• 1 Box with lid and storage space shaped for the apparatus



Ripple tank experiments:
• Propagation of various wave types (Huygens' principle)
• Diffraction at an edge
• Diffraction at a single slit
• Diffraction at a double slit
• Interference of two circular waves
• Reflection from a planar mirror
• Reflection from a concave mirror
• Refraction of plane waves
• Doppler effect

P2621-1A1 Heat absorbing tube, white

Great price – performance ratio:

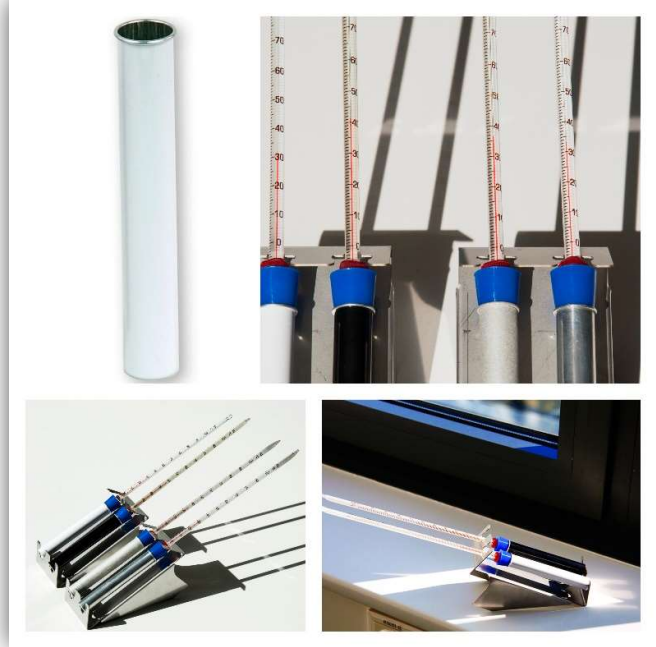
To prove the absorption of heat radiation depending on the surface colour;

After only 5 minutes a clear difference in temperature is visible!

Aluminium tube with flat bottom and rim, white coated dimensions:

D= 15 mm, L= 100 mm

Weight: 3 g



Additionally required:
1 x C7320-1D Stopper silicone, 12/18/27 mm, 1 hole
1 x P2220-1A Thermometer with graduated scale, -10 … +110 °C
1 x P2621-1B Mounting bracket for heat absorbing tubes

P2621-1A2 Heat absorbing tube, black

Great price – performance ratio:

To prove the absorption of heat radiation depending on the surface colour;

After only 5 minutes a clear difference in temperature is visible!

Aluminium tube with flat bottom and rim, black coated
dimensions:

D= 15 mm, L= 100 mm
Weight: 3 g



Additionally required:
1 x C7320-1D Stopper silicone, 12/18/27 mm, 1 hole
1 x P2220-1A Thermometer with graduated scale, -10 … +110 °C
1 x P2621-1B Mounting bracket for heat absorbing tubes

P2621-1A2 Heat absorbing tube, rough

Great price – performance ratio:

To prove the absorption of heat radiation depending on the surface finish;

After only 5 minutes a clear difference in temperature is visible!

Aluminium tube with flat bottom and rim, bright rough
dimensions:

D= 15 mm, L= 100 mm
Weight: 3 g



Additionally required:
1 x C7320-1D Stopper silicone, 12/18/27 mm, 1 hole
1 x P2220-1A Thermometer with graduated scale, -10 … +110 °C
1 x P2621-1B Mounting bracket for heat absorbing tubes

P2621-1A4 Heat absorbing tube, polished

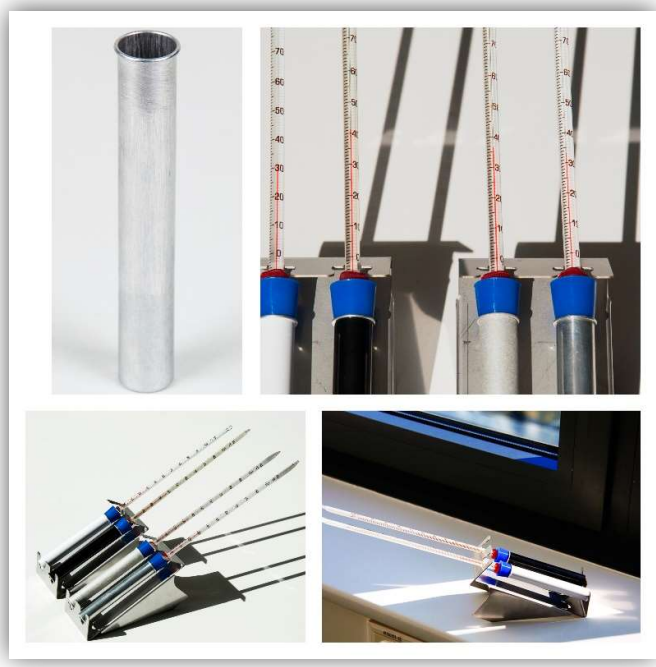
Great price – performance ratio:

To prove the absorption of heat radiation depending on the surface finish;

After only 5 minutes a clear difference in temperature is visible!

Aluminium tube with flat bottom and rim, bright polished dimensions:

D= 15 mm, L= 100 mm
Weight: 3 g



Additionally required:
1 x C7320-1D Stopper silicone, 12/18/27 mm, 1 hole
1 x P2220-1A Thermometer with graduated scale, -10 … +110 °C
1 x P2621-1B Mounting bracket for heat absorbing tubes

P2621-1B Mounting bracket for heat absorbing tubes

Great price – performance ratio:

For inclined positioning of the two absorbing tubes with thermometers at an angle of 25 or 70°;

Material: stainless steel

Dimensions:

Approx. 80 x 60 x 135 mm



P2220-1A Graduated laboratory thermometer

Great price – performance ratio:

For standard temperature measurements in the laboratory, even in aggressive media;

Liquid thermometer filled with alcohol, with movable silicone triangle (the triangle prevents the thermometer from rolling off the table and also serves as a marking point)

Measuring range: -10 ... +110 °C

Graduation: 1 °C

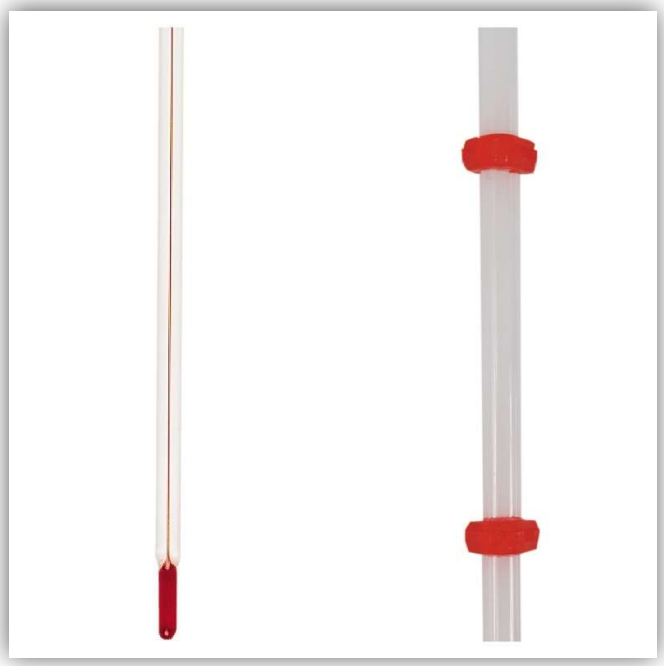
Accuracy: approx. +/- 2 °C

Dimensions:
D= approx. 6 mm, L= approx. 280 - 300 mm
Mass: approx. 20 g



P2220-9A Laboratory thermometer-10 ... +110 °C, ungraduated

Great price – performance ratio:



Thermometer without graduation, for calibrating a thermometer scale;

Liquid thermometer filled with alcohol, with movable silicone triangle (the triangle prevents the thermometer from rolling off the table and also serves as a marking point)

Measuring range: -10 ... +110 °C

Graduation: none

Dimensions: D= approx. 6 mm, L= approx. 280 - 300 mm

Mass: approx. 20 g

MB241-2T Thermopile „compact“

Absolutely unique device; very important for thermodynamics:

Thermopile with amplifier to convert the optical power to a voltage value.

Serves as a radiation pyrometer with a measuring device 0 - 10 V or 10 mA;

ON / OFF switch;
zero-point adjustment;

Outputs are protected against short circuit;
LED indicator for operating state;



Output voltage: max ±14 V;
battery-driven (battery included)
or external power supply 6 - 12 V DC, e.g.: P3120-6N;
dimensions: 84 x 84 x 39 mm

DT720-2D Fire piston, demo

Very robust design; Only available with us:



To illustrate the ignition of the gas-air mixture in a diesel engine, a small amount of cotton wool is ignited by a brief, very strong compression

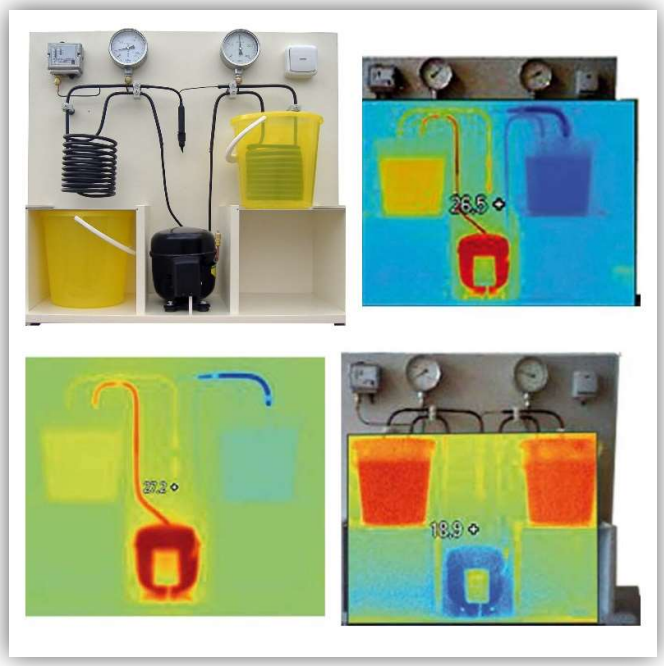
Robust acrylic glass cylinder, on an anti-slip joint base; piston rod with pressure plate, including cotton wool and replacement seals;

Joint base diameter: 80 mm;

Height of stroke: approx. 90 mm

DT400-1P Heat Pump, Demo

Great NTL product; Very important for upper secondary education:



A heat pump is a thermal engine. Whet it is used as a heat pump, its function is to heat up a hot reservoir, e.g. a living room. The cold reservoir can consist of cold water (ground water, river water, etc.), soil or ambient air.

However, if it is used as a fridge, its function is too cool down the cold reservoir, e.g. the freezer compartment. The hot reservoir is the air that surrounds the cooling device.

On/Off switch with background light, compressor, 2 manometers (D = 100 mm), overpressure protection switch, expansion valve, 2 water vessels (5 liters each); all parts are clearly visible and fixed on the wooden rack; 2 handles on the side, 4 rubber-coated legs;

Technical data:

Compressor output 120 W
Vaporizing temperature: -10°C
Safety refrigerant: R134a, free of CFCs

Operation voltage: 230 V / 50 Hz
Dimensions (approx.): 82 x 37 x 74 cm

C7414-2C Hotplate small, 500 W

Great price-performance ratio:

Electric heating plate,

D=99 mm, with infinitely variable heat regulation,
pilot light and overheating protection

Supply voltage 230 V/50...60 Hz

Dimensions: D=approx. 140 mm, H=approx. 80 mm
Weight: approx. 718 g



P3212-20 Multimeter analogue 12

Automatic overload protection; made in Europe:

Multimeter for measuring voltage and current, DC and AC, can also be used as a galvanometer. As an ideal student multimeter, it has two double scales.



Outstanding features:

- electronic overload protection in all measuring ranges, with control LED display (no more fuses!)
- Large, robust design with holster good readability due to inclined position
- Transparent base with recessed grip for holding with one hand
- 1 mV full scale range for measuring thermal and induction voltages without preamplifier
- all measuring ranges (including low currents!) are available in AC
- Outstanding good frequency response: typ. -1.5 db at 20 kHz, therefore measurements on all types of resonant circuits are also directly possible
- large, easy-to-read mirror scale with clear imprint
- Extremely accurate, typically 1.5 %
  Large, robust selector switch
  10 A range with separate input socket
  Zero-point center selectable by switch position

Technical data:

Voltage ranges AC and DC:
1, 100, 300 mV, 1, 3, 10, 30 V
Current ranges AC and DC:
100 µA, 10, 30, 100, 300 mA, 1, 10 A
Internal resistance: 100 kOhm/V
Selector switch: DC, AC, battery check, pointer center position

Scale arc length: approx. 90 mm
Power supply: 4 x 1.5 V Mignon batteries (included)
Dimensions: approx. 200 x 140 x 110 mm
Mass: approx. 637 g

DE712-02 Universal multimeter „inno“

Best price – performance ratio:

Durable servo-controlled measuring instrument to measure current
and voltage with high precision; can be used in any position, for example vertically or horizontally for projection.



The large scale with an arc length of approx. 200 mm,
the wide signal-coloured pointer and the 26 mm high digits guarantee a hassle-free reading of the measured values even from greater distances.
The LED display indicates the unit of measurement and current type and is also clearly visible from the distance.

An internal electronic overload protection eliminates the annoying and time-consuming change of fuses. The meter can also be used as a sensitive galvanometer (measuring range 1 mV-) thanks to the built-in amplifier.

Pointer setting: Zero at left or at midpoint
Four insertable double scales: 1/3 - 10/30 - 100/300 - -5 to +5/-15 to +15 (included)
Measuring ranges:
DC voltage: 1 mV, 1 to 30 V
AC voltage: 1 to 30 V
DC and AC amperage: 100 µA to 10 A

Rear panel with neodymium magnets for a stable magnetic mounting;
Battery compartment for easy replacement of batteries.

Technical data:

Type of instrument: Moving-coil instrument
Internal resistance: R = 100 kOhm / V
Accuracy: Class 2 – 3
Working position: vertically or horizontally
Measuring inputs: 4 mm safety socket
Fuses: internal electronic overload protection
Power supply: four 1.5 V batteries (included) or 2.5 mm hollow DC jack for 6 V external power supply
Housing: ABS plastics
Dimensions: 268 x 92 x 226 mm
Mass (with scales): 1857 g

DE072-1M Combi- Demonstration measuring device

Large display for presenting measurement results:

Consisting of:
P3250-1M Multimeter digital “BT”, True RMS

P4970-1C Tablet 10"", E101GC
P4974-1B Display holder for P4970-1C Tablet

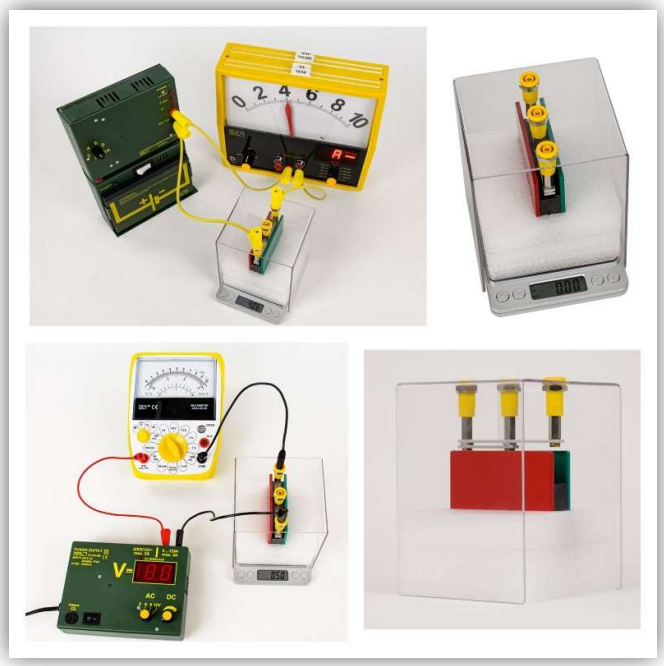
A digital multimeter transfers the measuring result via Bluetooth to the tablet (using the display holder). W

The measurements can be displayed as a diagram in tabular form (analogue) or digitally (height of digits: 65 mm).



DE445-1S Current Balance

Best price-performance ratio:



For secondary school level 2:

Very clear, robust and compact model of a current balance for determining the force of a current-carrying straight conductor in a homogeneous magnetic field (Lorentz force), as a function of the conductor length and the current intensity;

Electrical conductors with single and double cross-section, mounted on three safety sockets, fixed in a transparent retaining bracket.

Conductor cross-section: 8x2 mm,
Conductor length: 35 mm each
Strong block magnet (80x40x15 mm) with two pairs of pole plates to generate different homogeneous magnetic fields, embedded in a hard foam plate.

Dimensions: 110x100x135 mm
Mass: approx. 620 g

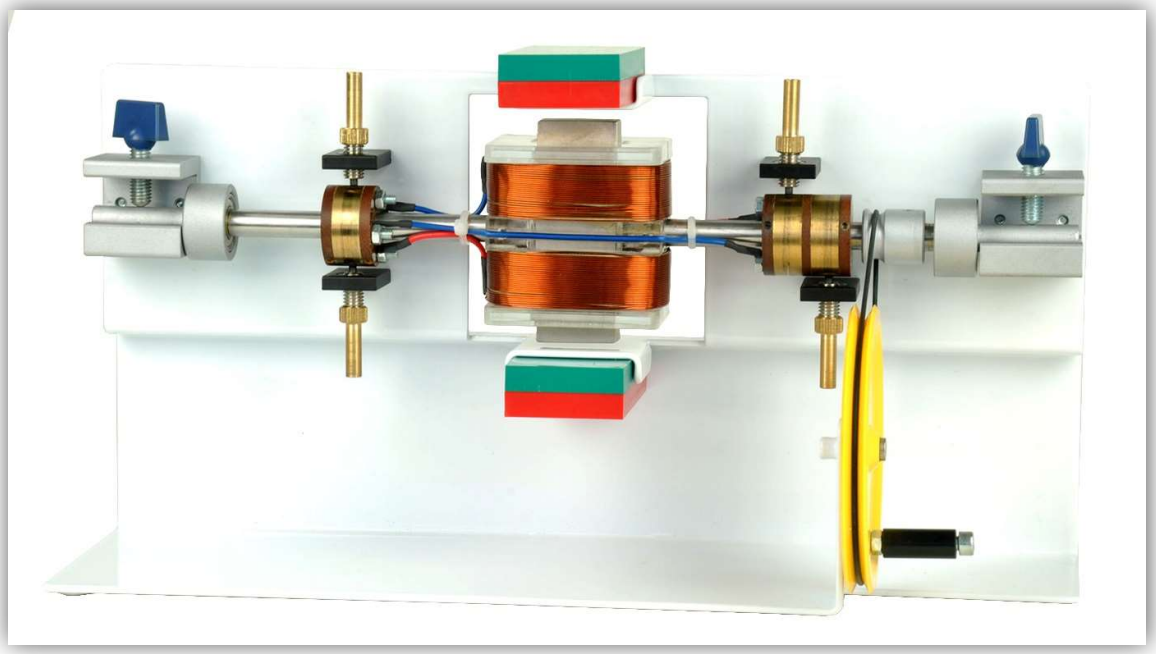
DE740-2M Motor- Generator unit, „demo“

Big motor generator – model with best price-performance ratio:

Large, ready-to-use working model of a motor / generator.

Thanks to the open front design, students can clearly see
how the parts of the model work even from a large distance.
Power is supplied by elastic carbon brushes on the commutator or slip rings.
The removable rotor (length: 356 mm) runs on two ball bearings.
On the bottom there is a large drive pulley with a crank and belt.

Comes with two plastic-coated plate magnets, 82 x 42 x 18 mm.
Dimensions: 360 x 110 x 180 mm



DE453-1B Coil with 75 turns

Must-have basic equipment at a great price-performance ratio:



Laboratory coils
Coils encased in transparent high-impact plastic, capable of sustaining heavy loads, connection by way of 4-mm safety jacks, embedded in coloured lids, which prevent bodily contact,
individual specifications such as number of turns, direction of the winding, effective resistance, inductivity and the maximum continuous current are given on the coil,
a full-length opening (31x31) allows mounting on u-shaped cores or insertion of iron cores

Transparent plastic case, green lid
Max. current: 15 A

Effective resistance: 0.75 ohms,
inductivity: 0,13 mH

Additionally required:

DE452-2B U-shaped core, laminated
DE452-3B Iron core, laminated, short
2 x DE452-4B Vice grip

DE453-1C Coil with 300 turns

Must-have basic equipment at a great price-performance ratio:



Laboratory coils
Coils encased in transparent high-impact plastic, capable of sustaining heavy loads, connection by way of 4-mm safety jacks, embedded in coloured lids, which prevent bodily contact, individual specifications such as number of turns, direction of the winding, effective resistance, inductivity and the maximum continuous current are given on the coil,

A full-length opening (31x31) allows mounting on u-shaped cores or insertion of iron cores

Transparent plastic case, yellow lid
Max. current: 5 A
Effective resistance: 1,3 ohms,
inductivity: 3 mH

Additionally required:

DE452-2B U-shaped core, laminated
DE452-3B Iron core, laminated, short
2 x DE452-4B Vice grip

DE453-1D Coil with 600 turns

Must-have basic equipment at a great price-performance ratio:



Laboratory coils
Coils encased in transparent high-impact plastic, capable of sustaining heavy loads, connection by way of 4-mm safety jacks, embedded in coloured lids, which prevent bodily contact, individual specifications such as number of turns, direction of the winding, effective resistance, inductivity and the maximum continuous current are given on the coil,

a full-length opening (31x31) allows mounting on u-shaped cores or insertion of iron cores

Transparent plastic case, light-blue lid
Max. current: 2 A
Effective resistance: 4 ohms, inductivity: 10 mH

Additionally required:

DE452-2B U-shaped core, laminated
DE452-3B Iron core, laminated, short
2 x DE452-4B Vice grip

DE453-1E Coil with 1200 turns

Must-have basic equipment at a great price-performance ratio:



Laboratory coils
Coils encased in transparent high-impact plastic, capable of sustaining heavy loads, connection by way of 4-mm safety jacks, embedded in coloured lids, which prevent bodily contact, individual specifications such as number of turns, direction of the winding, effective resistance, inductivity and the maximum continuous current are given on the coil, a full-length opening (31x31) allows mounting on u-shaped cores or insertion of iron cores

Transparent plastic case, black lid
Max. current: 1 A
Effective resistance: 17 ohms, inductivity: 38 mH

Additionally required:

DE452-2B U-shaped core, laminated
DE452-3B Iron core, laminated, short
2 x DE452-4B Vice grip

DE453-1F Coil with 12000 turns

Must-have basic equipment at a great price-performance ratio:



Laboratory coils
Coils encased in transparent high-impact plastic, capable of sustaining heavy loads,
connection by way of 4-mm safety jacks, embedded in coloured lids, which prevent bodily contact, individual specifications such as number of turns, direction of the winding, effective resistance, inductivity and the maximum continuous current are given on the coil,

A full-length opening (31x31) allows mounting on u-shaped cores or insertion of iron cores

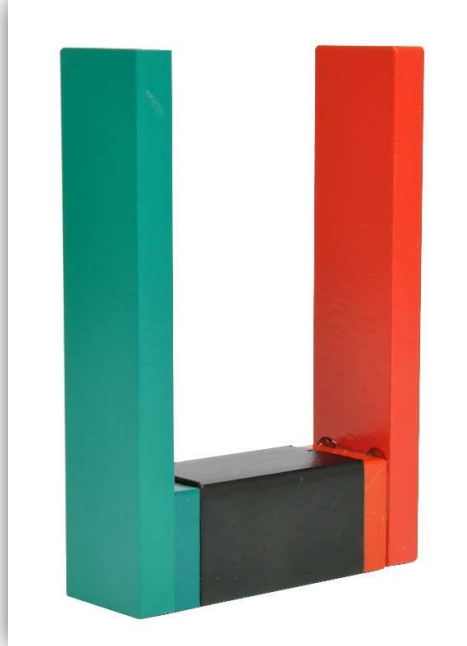
Transparent plastic case prevents contact with the coil winding;
max. current: 100 mA; effective resistance: 1 kOhm;
inductivity: 4 H
Effective resistance: 2 kOhms, inductivity: 4 H

Additionally required:

DE452-2B U-shaped core, laminated
DE452-3B Iron core, laminated, short
2 x DE452-4B Vice grip

DE409-2U U-Magnet, large, Neodymium, 130x90x30 mm, with keeper

Our strongest Magnet:



Material: neodymium;
poles are labelled red and green,

with iron yoke, inside distance between poles:
68 mm,

arm cross-section: 30 x 10 mm;
free length of arms: 101 mm;
total length = 130 mm;
total width = 88 mm

DE501-1E Electroscope, demo, with carbon pointer

NTL - development with carbon fibre pointer:



For experiments on electrostatics, for displaying and measuring electrical charges and voltages, and for demonstrating influence;

large and robust pointer made of carbon fibre, exceptionally well visible, very low-friction tip bearing, mounting bracket of robust sheet steel, with 4-mm special socket for laboratory or safety cable,
large scale with 30 graduations (2° each) for quantitative reading of pointer deflection, large plastic base.

Pointer: D=5 mm, L=200 mm
Scale: 120x110 mm
Dimensions: 160x120x285 mm

Mass: approx. 271 g

DE525-3B Van de Graaff generator II

Best price-performance ratio:

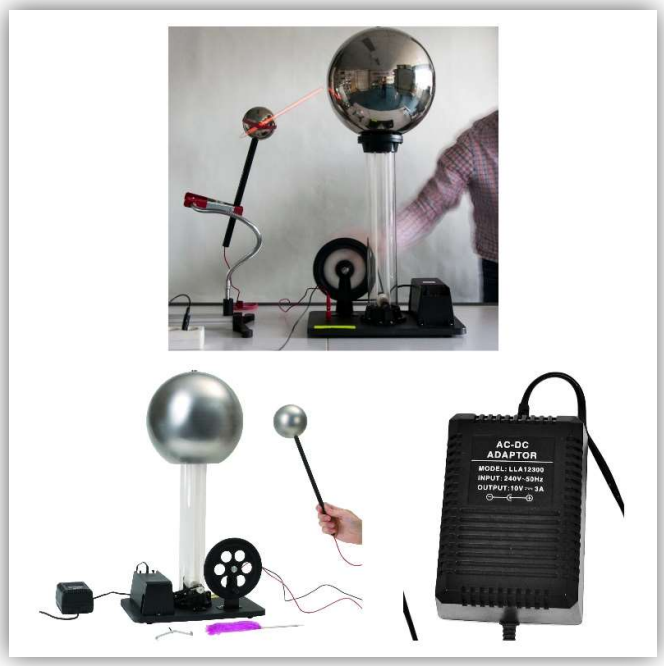
Used for generating very high DC voltages in electrostatics experiments;

Diameter of removable conducting sphere: 280 mm;

Supplied with conductor sphere on support (D = approx. 100 mm, support L= approx. 300 mm),

Paper bush, pointed wheel and fixed-voltage transformer;

Input voltage: 230 V AC/50 - 60 Hz; dimensions: 380 x 230 x 700 mm; mass: approx. 4.5 kg



DE550-1A House with lighting conductor

Sensible addition for our Vaan de Graaff generator or Wimshurst machine:

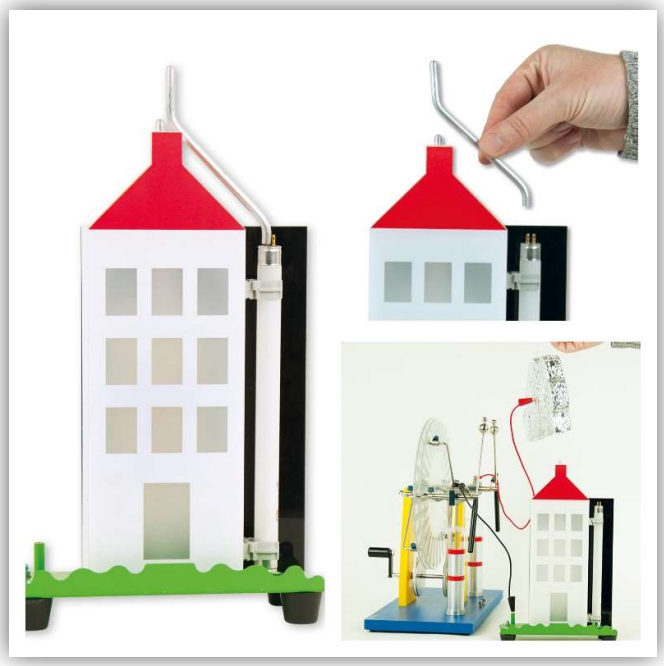
To describe experimentally the effect and function of a lightning conductor on a house;

Model of a house with translucent front;

Fluorescent tube on the inside to indicate the derivation of the charge;

Fluorescent tube on the outside with conductor-adapter for demonstrating the conduction of a lightning bolt;

Placed upright on isolated “meadow” with grounding plug socket; dimensions: 200 x 90 x 310 mm



DE550-1W Thundercloud

NTL – Specialty - very descriptive:

Very illustrative experiment that provides a good reference to reality;

For demonstrating the discharge of a thundercloud on a house (with lightning conductors);
large cloud-model; with 4-mm jack and carrying strap;
dimensions: approx. 320 x 150 mm



DE522-1H High voltage experiments, set

Great addition for electrostatics:

Equipment set for carrying out 15 experiments on the topic High voltage experiments. This module enables unusually impressive experiments on electrostatics to be carried out in combination with a Wimshurst machine or a Van de Graaff generator.

- Robustly designed equipment
- Stored in a device-shaped box
- Impact-resistant plastic casing, with lid
- Delivery includes experiment manual

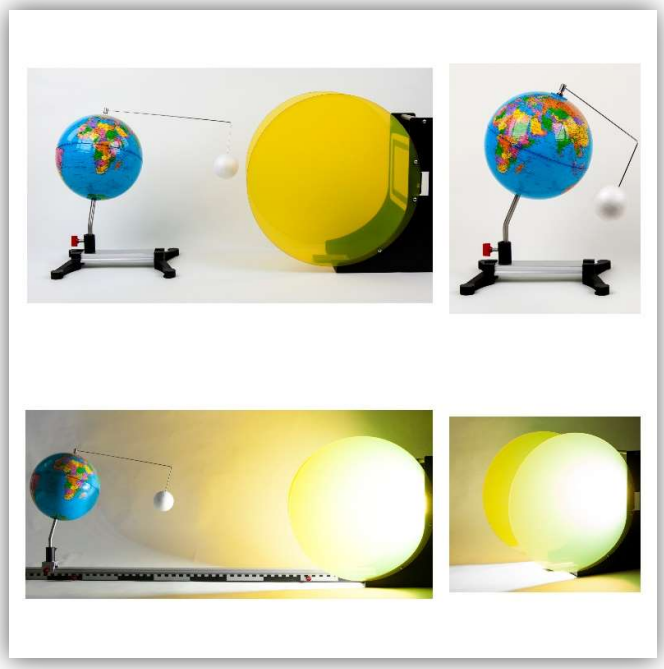


The following experiments can be carried out with this set:

ESH 01 Spark discharge
ESH 02 Point discharge
ESH 03 Paper bush
ESH 04 Flash-board
ESH 05 Set of chimes
ESH 06 Bouncing ball
ESH 07 Principle of a copier
ESH 08 Electrostatic filter
ESH 09 Tip wind

DL520-1T Sun- Earth- Moon model, demo

NTL – development:



A demonstration device to illustrate the movements of the Earth and Moon around the Sun.
The particularly intense light source and the large dimension of the Earth as well as the Moon make this device unique.
In the model of the sun, two yellow plastic discs are illuminated by a powerful light source.
The discs and light source are mounted on a metal bracket with a carrying handle and are placed directly on a table.
The earth consists of a large globe. By means of a metal axle, this can be rotated in its own axis as well as mounted in any base or moved by hand.

The axis is also inclined, allowing the effects of the obliquity of the ecliptic to be shown.
The moon can be attached to the axis of the earth by a metal bracket and thus rotated around it.
The Sun and the Moon can be coupled by the tripod rail with scale, L=1000 mm DS101-3B, thus obtaining a "compact tellurium".
The claw base "Sepp", 260 x 220 mm (DS090-3K) for holding "the earth" is not included in the scope of delivery.

The following phenomena can be explained experimentally:
Times of day (day and night)
Seasons (different times of day and night)
Moon phases
Solar and lunar eclipses
Lunar motion and tides

Technical data:

Sun - diameter: 370 mm
Earth - diameter: 200 mm
Moon - diameter: 60 mm
Light source: LED floodlight 50 W, 3500 lumen, 4000 K
Light source protection class: IP44 (suitable for outdoor use)
Power supply: 230 V
Mass (of both parts): approx. 3370 g

DL510-4D Transparencies for four-colour printing

NTL development – only available with us:

Set of four overhead projector transparencies in the colours yellow, cyan, magenta and black, the principle of four-colour printing (i.e. printing presses and colour copying machines) may be demonstrated by overlapping transparencies, includes a durable, acrylic base plate with metal tongues for holding the four transparencies

Transparency dimensions: 30x20 cm, base plate: 30x28 cm



DL202-1A Subtractive mixture of colour, filter set

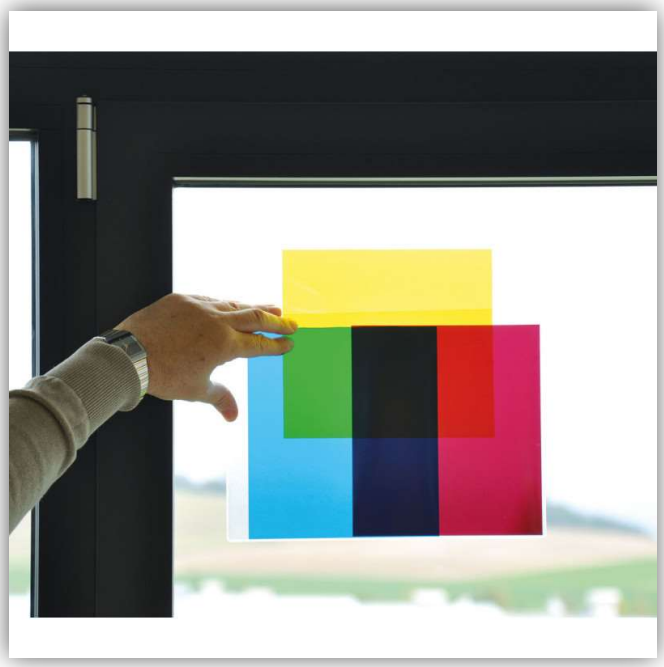
Best price – performance ratio:

For a quick and simple demonstration of subtractive colour mixing "at the window";

high-quality colour filters in cyan, magenta and yellow;

can be freely arranged in an extra-thick clear film;

dimensions of the filters:
each 20 x 17 cm



DL215-1A Additive mixture of colour, “compact”

Best price – performance ratio:



For simple and fast demonstration of additive colour mixing;

Three super-bright diodes with condenser lens as well as movable lens tube with an integrated projection lens ensure the correct settings for a sharp image at a distance of 15 to 90 cm;

Diodes in compact mounting - movable in any direction via to ball joints;

each diode can be turned on/off and is dimmable;

white screen and power supply included;

free projection area (screen): 16 x 10.5 cm;
dimensions: 17 x 15 x 22 cm

DL320-1C Camera model, with lens

Important for optics:

Compact model of a lens camera; robust plastic housing, black, with imaging screen on the back, lens adjustable, with converging lens.

Dimensions: 127 x 90 x 80 mm (W x L x H).

Mass: approx. 156 g



DL320-1A Pinhole camera, camera obscura

Important for optics:

Compact model of a pinhole camera;

robust plastic housing, black, with removable imaging screen, lens adjustable, with precise pinhole.

Dimensions: 127 x 90 x 80 mm (W x L x H).

Mass: approx. 133 g



DL602-1A Images on the plane mirror, set

Set with semi-transparent mirrors - only available with us:

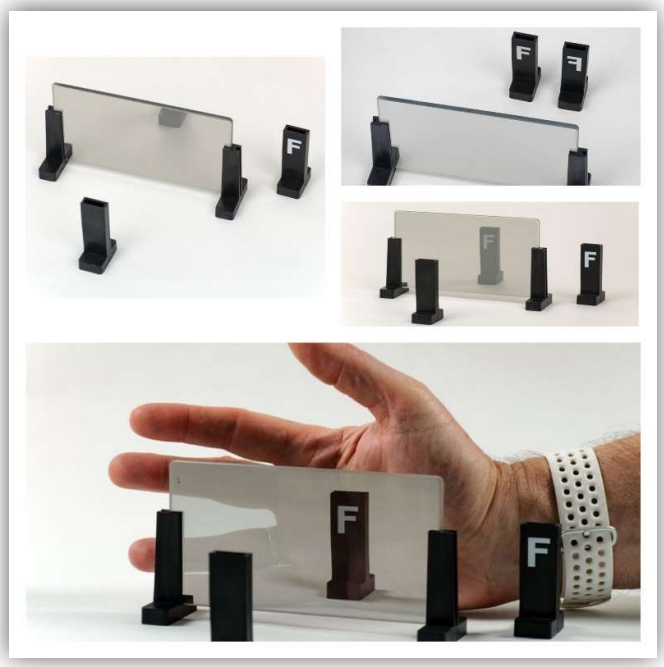
To explain real and virtual images at the mirror;

On a semi-transparent mirror, the virtual image of the "F" is clearly visible.

If you move the laterally reversed "F" to this position, you clearly prove that the object and the image are symmetrical to each other.

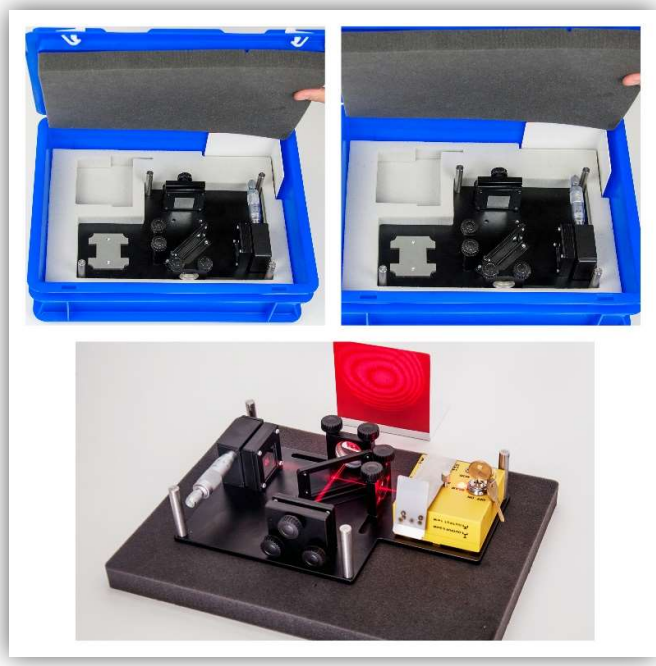
Semi-transparent mirror,135 x 70 mm, in 2 holding brackets,
two objects with "F", one of them mirror-inverted.

Mass: approx. 114 g



DL408-4A Interferometer NTL 02

NTL – development; Best price-performance ratio:



Very compact precision device for measuring e.g. wavelengths of light, refractive indexes of glass or gases;

Base:

- solid metal plate
- surface mirror with three adjusting screws
- surface mirror adjustable by means of a worm gear (1:50 ratio) and micrometer screw (division 1/100 mm)
- semi-transparent mirror
- lens +20 mm in side-sliding holder
- lens - 30 mm in sideways relocatable holder
- adjustment plate for NTL laser
- thread and bore for mounting the swivel unit and the vacuum cell,

4 sturdy metal bolts at the corners serve as impact protection, Dimensions: 28.5 x 17 cm

Working area:
made of foam for absorbing vibrations or other shocks
Dimensions: 36.5 x 26.5 x 2.5 cm

Screen, red:
Metal bracket with red foil for colourful reproduction of the interference pattern
Dimensions: 11 x 8 x 11 cm

Box insert for interferometer, device-shaped
Storage box II small, 40 x 30 x 12 cm, with lockable lid and recessed grips

DL110-2L Laser single 02, magnetic

NTL – development; Best price-performance ratio:

Class 2 teaching laser for use as a high intensity light source

especially for experiments in interference, diffraction and holography as well as interferometry;

laser diode in magnetic module "compact";

wavelength: 635 nm; optical output power: ≤ 1 mW;
for tripod mounting the holder for MBCs "compact"DS617-1H is required;



operating voltage: 3 V (plug-in power supply unit included in delivery)

housing dimensions: 84 x 84 x 39 mm

C7225-1P Protective plate and tray, stainless steel, 517x330 mm

Recommended addition for your chemistry equipment:

Underlay plate, to protect the table surface from glowing or hot parts,

To catch broken parts as well as spilled liquids or chemicals;

Robust stainless-steel plate with raised edges and non-slip feet

Collecting volume: approx. 1.5 liters

Dimensions: approx. 525x337x10 mm
weight: approx. 1140 g



C7227-1P Protective pane Panorama, 75+37+37/67 cm, PETG

Recommended addition for your chemistry equipment:

High-quality, mobile protective screen as splash and splinter protection, made of very robust PETG;

simple, quick and stable set-up due to two-fold-outside walls;

PETG is impact resistant, shatterproof, very transparent (translucent), has a very good chemical resistance,
meets the fire protection standard DIN4102 B1 (flame retardant),
food conformity according to FDA and EU 10/2011



Dimensions: 75 + 37 + 37 cm, H= 67 cm
sheet thickness: 5 mm
Mass: approx. 6410 g

DR420-1P Planck's constant compact apparatus

Great for upper secondary education:



With this device, Plancks´s constant h can easily be determined with a deviation of less than 10 %.
It is not required to darken the room!
Electron affinity can be calculated as well.

The phenomenon is termed the outer photo effect. Electromagnetic radiation results in the release of electrons from a metal surface.

The device has a built-in photodiode, and LEDs of various wavelengths are used as monochromatic light sources. The emitted light passes through the opening of the ring-shaped anode and contacts the surface of the cathode.
In the photo effect, a photon transfers its entire energy (E = h * f) to an electron upon impact.
Part of the energy is required to force the electron out of the metal surface (electron affinity).
The remaining energy is then at the electron's disposal as kinetic energy.

Ekin = h * f –?
The critical voltage for the five available wavelengths is measured within this experiment.
All further calculations are based on this.

All required peripheral devices (voltmeter, nano-amperemeter) are integrated into the device.
The five light sources (LEDs with various precisely defined wavelengths) are supplied with power from the device.
Power supply through included fixed-voltage transformer.
Supplied with experiment manual as well as evaluation spreadsheet (Excel).

TECHNICAL SPECIFICATIONS

Photocell Material Caesium (Cs)
Voltmeter Display 3 1/2 digit, LCD
Precision 0,5 % (typical)
Amperemeter Display 3 1/2 digit, LCD
Precision 1 % (typical)
Dimensions WxHxD = 280 x 120 x 160 mm
Weight approx. 1000 g

C7612-2G Earmuffs

Best price-performance ratio:

For experiments on noise protection of the hearing;
High-quality, lightweight and comfortable to wear earmuffs, adjustable capsule position.
SNR: 27.6 dB (attenuates a noise exposure of 100 dB down to about 72 dB)



Mark of conformity: ANSI / CE / UKCA EN352-1
Materials: Temple: POM, Capsule: ABS, ear pads: PVC
Dimensions (ear pads): 95x70 mm

Dimensions (total): approx. 19x19x8 cm
Mass: approx. 166 g