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Sensors Catalogue

A Leading Chinese Manufacturer & One-stop Provider of Educational Solutions

LABWE

FOR EDUCATION FOR THE FUTURE

Company Profile

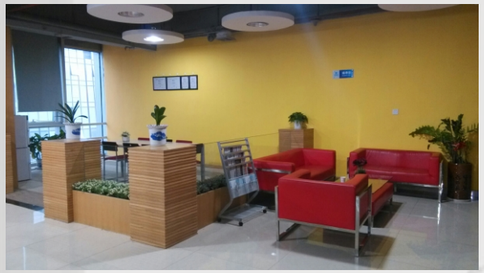
FOR EDUCATION
FOR THE FUTURE

Overview

Registered in Shenzhen, China in 2008, labotrix Group Limited is a member of worlddidac. The company has implemented a quality management system that meets the requirements of ISO 9001:2015, allowing the production of products that meet the needs of different markets. In addition, labotrix is committed to developing and implementing high-quality training tools with technological innovation.

Today, we expand according to customers' requirements and provide comprehensive solutions in the field of education, including equipment for various subjects, school furniture, digital learning systems, language laboratories and sensors.

Labotrix Group Limited has an innovative and progressive R & D department dedicated to the development and development of hardware and software. In addition to the company's engineers, we also cooperate with Chinese universities to jointly research and develop new products.



Our Mission

To serve for education and for the future with the provision of high standard quality products and services.

Our Vision

To contribute to the great cause of the promotion of scientific education, practical education and free education to enhance the balanced global development.

Our Core Values

- Gratefulness
- Innovation
- Unity
- Practicality

FOR EDUCATION FOR THE FUTURE

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Data-logger (With screen)(LPU-200)

Teachers and pupils are able to use the autonomous device for display, registration and storage of experimental results, with or without a computer during experiments. This autonomous device is able to display, record and store experimental results in the memory of the device. Operating in autonomous mode, a data recorder allows to change settings and select options via its own settings menu. The device has 4 MB of memory to store at least 150,000 data units. Operating in the data recording mode, the device allows to set the total amount of data to be recorded and recording intervals. The device has the following recording interval options: 1.25 ms, 2.5 ms, 5 ms, 10 ms, 20 ms, 50 ms, 100 ms, 200 ms, 500 ms, 1 sec, 2 sec, 5 sec, 10 sec 20 sec, 1 min., 2 min., 5 min., 10 min., 20 min. and 1 hour. The amount of recorded data is 1- 59999.

Device is controlled with the help of TFT buttons which is vandal-proofed and can protect the device from water and dust.

The device has:

- 3-inch LCD display with a resolution of 128 x 64 pixels;

- integrated lithium-ion battery. Battery ensures at least 150 hours of work in standby mode. Battery is charged with a USB cable or a universal mains charger with a USB output;

- integrated ambient temperature sensor;

- USB 2.0 ports for connecting to a computer. (1 port), Bluetooth (1);

- port for connecting digital sensors (4 ports);

- port for connecting an external device (1 port) (printer, keyboard, etc.).

The autonomous device for display, recording and storage of experimental results comes with a USB cable for connecting the device to a computer (a cable), cables for connecting sensors - (based on the number of sensors), universal charger for outlets with a USB-port -1.

The cables for connecting sensors are at least 0.3 meter long, have UTP connectors and are suitable for connecting sensors to the autonomous device for display, recording and storage of experimental results.

Data-logger (Without screen)(LPU-100)

A portable experimental results recorder used for recording data by connecting the recorder to a computer with special software installed. The recorder has the following qualitative and functional characteristics:

- has 1 USB 2.0 port for connecting to external equipment;
- has 4 UTP inputs for connecting sensors and 1 UTP output;
- has data collection rate of 20 μs (50 kHz);
- be able to automatically scan and detect sensor type;
- be able to automatically calibrate sensors.

The device comes with connecting cables:

- 1-meter long UTP cable – 1 cable;
- 30-centimeter long UTP cable – based on the number of sensors.
- 1-meter long A-B USB cable – 1 cable.

Turbidity sensor(LST-820)

The sensor is designed to measure the turbidity of water in various biological and chemical experiments. Turbidity sensor is used in typical experiments: comparing the turbidity of water samples; study on the reaction rate of sodium thiosulfate and acid. The sensors correspond to the following specifications:

1. Measurement range: 0 ~ 400 NTU (turbidity non-turbidity unit)
2. Resolution: 0.1 NTU
3. Accuracy: ± 0.2 NTU.
4. Wave length: 890 nm.

The sensor is compatible with data logger and is connected through RJ45 interface

Conductivity sensor (LST-218)

The conductivity sensor is designed to determine the concentration of the ionic content of an aqueous solution, has two measurement ranges. In chemical experiments, it could be used to study the differences between ionic and molecular compounds in aqueous solutions. The electrical conductivity sensor can be used in typical experiments: comparison of the electrical conductivity of different water samples; reaction of phenol and saturated bromine water; and study of the purity of drinking water; relationship between element size and solute displacement. The sensor meets the following parameters:

1. Range: 0 to 20,000 μS/cm (0 to 10,000 mg/L); 3. Resolution: 0.1 ~ 0.2 μS/cm
2. Accuracy: ± 10% of full-scale reading for each range.

The sensor is compatible with data loggers, connection via RJ45 interface.

Humidity sensor(LST-802)

The humidity sensor is designed to monitor the relative humidity of the air. The humidity sensor is designed on the basis of a humidity-sensitive parameter, the capacitance of the polymer. Humidity sensor can be used in typical experiments: measurement of changes in ambient humidity; experiment on the hygroscopicity of concentrated sulfuric acid; design and manufacture of an ecological cylinder to observe its stability. The sensor complies with the following parameters:

1. Measuring range: 0~99%
2. Resolution: 0.1%
3. Accuracy: ± 2%
4. Operating temperature range: -40 to 85 ° C
5. Response time: 6 sec.

The sensor is compatible with data loggers, connection via RJ45 interface.

Gas pressure sensor(LST-205)

The gas pressure sensor is used to measure the absolute air pressure. Typical experiments using an absolute pressure sensor: Boyle-Mariotte law; the laws of Charles and Gay-Liu ssak; study of the internal pressure of the liquid; study of the relationship between the boiling point of a liquid and pressure. The sensor meets the following parameters:

1. Measuring range: 0~700kPa
2. Resolution: 0.1 kPa
3. Accuracy: ±2%
4. Working temperature range: -20 to 105℃
5. Measuring frequency not less than 100 Hz

The sensor is compatible with data loggers, connection via RJ45 interface.

Atmospheric pressure sensor (LST-205A)

The sensor is designed to measure atmospheric pressure and meets the following requirements:

1. Measuring range: 600 ~ 820 mmHg
2. Resolution: 0.8 mmHg.

The sensor has a mounting hole for mounting it in the experiments.

The sensor has a function auto-detection does not require calibration.

The sensor is compatible with data loggers, connection via RJ45 interface.

Spirometer(LST-220)

The breathing sensor is used in standard experiments to measure the rate of breathing of people and measure the vital capacity of the lungs. One end with network port interfaces, the other with respiratory mouthpiece.The sensor meets the following parameters:

1. Measuring range: ±6 l/s.
2. Resolution: 6 l/min.
3. Response time: 60 microseconds.
4. Accuracy: 0.1 l/s.

The sensor is compatible with data loggers, connection via RJ45 interface.

Liquid volume sensor(LST-221)

The sensor is designed to register the number of fluid drops from a titration unit or a group of rising fluid bubbles in a vessel using an infrared emitter and receiver. The drop counter is used when performing titration experiments. The sensor meets the following parameters:

1. Measuring range: 40 drop/S, 0~∞count/0~∞ml
2. Resolution: 1 count/ 0.01 ml.
3. Accuracy: ±1 count/±0.1 ml.

The sensor is compatible with data loggers, connection via RJ45 interface.

Carbon dioxide content sensor(LST-214)

The carbon dioxide sensor is designed to measure the content of CO_2 in biological and chemical experiments. The carbon dioxide sensor is used to carry out typical experiments: plant photosynthesis; study of the respiration of yeast fungi; air quality assessment; the rate of formation of gaseous CO_2 in chemical reactions. The sensor meets the following parameters

1. Measuring range: 0-100000ppm.
2. Resolution: 2ppm.
3. Accuracy: (0~5000ppm) < 3%, (5000~50000ppm) < 4%, (50000~100000ppm) < 6%.
4. Operating temperature range: -10~50°C.
5. Operating humidity range: 0~95%.
6. Response time: 4 seconds. 7. Warm up time: 40 seconds.

The sensor is compatible with data loggers, connection via RJ45 interface.

Electrical charge sensor(LST-228)

The electrical charge sensors can be used to measure the amount of charge in a charged body. In many electrostatic experiments, it can replace the traditional gold foil electroscope and electrometer to measure the quantity of electric charge. The charge sensor comes with a shielded alligator clip lead with a red and a black (ground) alligator clip on each end. The sensor meets the following parameters:

1. Voltage range: ± 10 V
2. Resolution: 1mV
3. Electrical load range: ± 0.1 μC with a resolution of not more than 1 pC.

The sensor is compatible with data loggers, connection via RJ45 interface.

ECG sensor (electrocardiogram)(LST-212)

The sensor is designed to study the bioelectrical activity of the heart. The ECG sensor is used to monitor the electrical energy produced by the heartbeat and, using two wires, measure the change in electrical energy and converts it into a basic signal. This change in energy should be displayed in graphical form, an electrocardiogram. The sensors correspond to the following parameters:

1. Measuring range: 0 ~ 5mV
2. Resolution: 5 μV.

The sensor is compatible with data loggers, connection via RJ45 interface.

Dissolved oxygen sensor(LST-231)

The dissolved oxygen sensor is designed to measure the dissolved oxygen content in a solution. The dissolved oxygen sensor is used to carry out typical experiments: the respiration mode of yeast; on the dissolved oxygen content of different water quality; plant Photosynthesis affecting factors; the pollution of dissolved oxygen by acid rain and sulfite. The sensor meets the following parameters:

1. Working temperature: up to 60°C;
2. Range: 0 ~ 20 mg/L and minimum saturation range 0 ~ 200%;
3. Accuracy: ± 2%;
4. Response time: no later than 90% in 40 s.

The sensor is compatible with data loggers, connection via RJ45 interface.

Blood pressure recording sensor(LST-233)

Blood pressure recording sensor is designed to measure and record the arterial and venous blood pressure in human. The sensor meets the following parameters:

1. Measuring range: 0 ~ 250 mm Hg (enhanced range up to 350 mm Hg)
2. Resolution: 0.1 mmHg
3. Accuracy: ± 3 mmHg.

The sensor is compatible with data loggers, connection via RJ45 interface.

Digital Colorimeter(LST-219)

The digital colorimeter is designed to measure the light transmittance of solutions, as well as the reaction rate of those chemical reactions that have a color or transparency change during the reaction. The digital colorimeter is used to carry out typical experiments: fading reaction of potassium permanganate solution and oxalic acid solution; determination of substance concentration in solution (Beer's Law); reaction of sodium thiosulfate with concentrated sulfuric acid. The sensor meets the following parameters:

1. Spectral range: 4 wave lengths located in the 400 nm ~ 650 nm range, i.e.: the wave length of red light is 635nm, orange light 605nm, green light 545nm and blue light 470nm.
2. Colorimetric absorbance: 0 ~ 3 u.a.
3. Transmission: 20 ~90% (enhanced range up to 0 ~ 100%).

The sensor is compatible with data loggers, connection via RJ45 interface.

Light (intensity) sensor(LST-204)

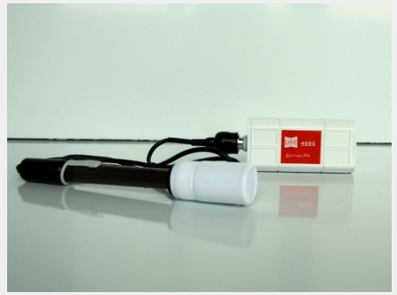
The sensor is designed to measure the illumination generated by various sources. The sensor is used to carry out typical experiments: study of the relationship between light intensity and distance; study of diffraction, interference and polarization of light; study of the dependence of plant photosynthesis on light intensity. The sensor complies with the following parameters:

1. Range: 0-120000 lux;
2. Resolution: 1.0 lux for measurements up to 9000 lux, 40 lux up to 120000 lux;
3. Spectral range 350 ~ 1000 nm.

The sensor is compatible with data loggers, connection via RJ45 interface.

pH sensor(LST-208)

The sensor is designed to measure the pH level of various objects. The pH sensor is used to carry out typical experiments: titration for acid-base neutralization; the pH value of various salt solutions; the body's mechanism for maintaining pH stability; study of the influence of the pH value on the activity of pectinase. The sensor meets the following parameters:



1. pH measurement range: 0 ~ 14 units
2. Operating temperature range: 0~90°C.
3. Resolution: 0.005 units pH.
4. Accuracy: ± 0.1 units pH. 5. Response time: 2 seconds.

The sensor is compatible with data loggers, connection via RJ45 interface.

Oxygen sensor(LST-215)

The sensor is designed to measure the content of gaseous oxygen in biological and chemical experiments. Typical experiments using an oxygen gas sensor: plant photosynthesis; change in the oxygen content in the exhaled air; comparison of catalase degradation under different conditions. The sensor meets the following parameters:

1.Measuring range: 0~100% (0-1000000 ppm) O_2

2. Resolution: 0.03 %O_2, 3. Humidity: 0 ~ 100% without condensation.
4. Accuracy (at standard pressure of 760 mm Hg): ± 1% O_2 volume

The sensor is compatible with data loggers, connection via RJ45 interface.

Temperature sensor(LST-201)

The sensor is designed to measure the temperature of air and water solutions during experiments in chemistry, biology and physics in high school. The temperature sensor is used during standard experiments: natural cooling of water; cooling by evaporation of liquids; function shift; study of the relationship between the boiling point of a liquid and pressure; research of thermoelectric phenomena; comparison of thermal conductivity characteristics of different materials; study of the rule of temperature change during the melting of a solid body. The sensor meets the following parameters:

1. Measuring range: -50~150℃ 2. Resolution: 0.01°C

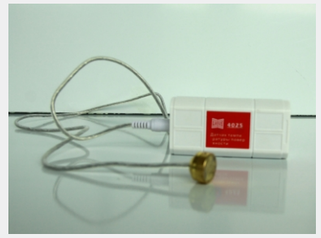
3. Accuracy: 0.2°C - 0.5°C

4. Response time: no more than 12 seconds in water with stirring; no more than 4 minutes in still air, no more than 2 minutes in moving air.

The sensitive element of the sensor is made in the form of a stainless steel tube with a heat-resistant pressed handle at the end, the total length of the sensitive element is 20 cm (without wire) and a connecting wire with a length of 100 cm with a 3.5 mm jack type tip.

The sensor is compatible with data loggers, connection via Rj45 interface.

Surface temperature sensor(LST-227)



The sensor is designed for contact measurement of the surface temperature of various objects. Typical experiments:

study of the phenomena of heat transfer, convection, friction; comparison of the thermal conductivity characteristics of different materials; the study of the temperature of the human skin surface on different parts of the body. The IR sensor complies with the following parameters:

1.Measuring range: -30 to +150° 2. Resolution: 0.1°C

3. Accuracy: ±0.5°C

4. Response time: 3 minutes (in still air), 2 minutes (in moving air).

5. Type of thermistor: 10 kΩ NTC.

The sensor is compatible with data loggers, connection via RJ45 interface.

High temperature sensor(LST-222)

The high temperature sensor is designed to measure the high temperature in physical and chemical experiments in high school. It is possible to directly measure the flame temperature of various sources (spirit lamps, candles, matches, gas lighters, etc.) in a few seconds, including in its various parts. The ability to measure the melting point of salts, metals, and other substances.

Typical experiments: study of the melting temperature of crystals; flame temperature measurement; liquid evaporation cooling; study of the dependence of the boiling point of a liquid on pressure. The sensor meets the following parameters:

1.Measuring range: -200~1200°C 2. Resolution: 0.4°C

3. Accuracy: ±2°C (0 to 900°C), ±5°C (-200~0°C), ±15°C (900~1200°C).

The sensor is compatible with data loggers, connection via RJ45 interface.

Pulse and Heart rate sensor (for physiological activities)(LST-223)

The sensor is designed to evaluate a person's heart rate. The hand-held heart rate monitor is used to measure the heart rate before, during and after exercise, as well as to study the heart rate of a person at rest. The sensor complies with the following parameters:

1. Steady reception distance: 100cm 2. Measuring range: 0~200 ± 1bpm

3. Resolution: 1

4. Operating temperature range: 0–60℃

NO_3 Sensor(LST-230)

The NO_3 sensor is designed to measure nitrate ion content in aqueous solution. It is typically used in the experiment in determining the nitrate content in chemical fertilizers. The sensor meets the following parameters:

1. Measuring range (concentration): minimum 1 to 14000 mg;

2. Interfering ions: CLO^-_3, CLO^-_2, I^-, F^-

3. PH range: minimum 2.5-11.

The sensor is compatible with data loggers, connection via RJ45 interface.

Magnetic field sensor(LST-210)

The sensor is designed to measure the magnetic field induction. The magnetic field sensor is used to carry out typical experiments: study of the magnetic field of a permanent magnet; measurement of the axial magnetic field of the energized solenoid; measurement of the magnetic field of a live wire; measurement of the magnetic field of the Helmholtz coil. The sensor meets the following parameters:

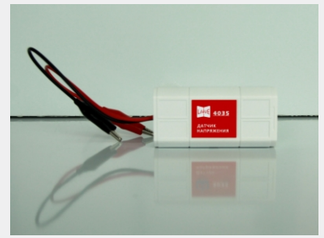
1. Measurement range: -0.12T~+0.12T.

2. Resolution: 0.01mT.

3. Measuring frequency not less than 100 Hz

The sensor is compatible with data loggers, connection via RJ45 interface.

Electrical voltage sensor(LST-209)



The voltage sensor is designed for laboratory studies of the basic laws of electricity in low voltage circuits. The sensor can be used to measure the electrical potential difference at the ends of an electrical component in DC circuits and AC circuits. Possibility of application in carrying out standard experiments: measurement of potential and internal resistance of the power source; measurement of the current-voltage characteristics of a light bulb, diode, conductor; Ohm's law; series-parallel connection of resistances; phenomena of electromagnetic induction and induced current; series-parallel connection and charge-discharge of capacitors. The sensor complies with the following parameters:

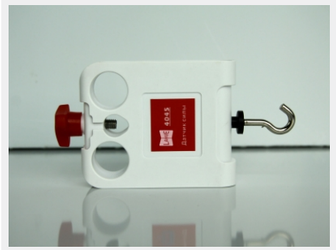
1.Measuring range: -25V~+25V, measuring frequency not less than 1000 Hz, over voltage protection

2.Resolution: 8mV 3. Accuracy: ±8mV 4. Internal resistance: 1.5MΩ

Electrical intensity and voltage sensors can be combined

The sensor is compatible with data loggers, connection via RJ45 interface.

Force sensor(LST-211)



The sensor is designed to measure force. The force sensor uses a strain gauge to convert force into voltage. The force sensor is used to carry out typical experiments: Hooke's law; Newton's third law; momentum theorem; study of the restoring force of a simple harmonic motion; overload and weightlessness; law of Archimedes. The sensor complies with the following parameters:

1.Measuring range: -50 ~ +50N 2. Resolution: ≤0.03 N

3. Measuring frequency: 100 Hz 4. Accuracy: 0,1N

The sensor is compatible with data loggers, connection via RJ45 interface.

Electrical intensity sensor(LST-207)

The electrical intensity sensor is designed to measure current in DC and AC circuits. This sensor is used in carrying out typical experiments: measurement of the electrodynamic potential and internal resistance of the power source; measurement of the current-voltage characteristics of a light bulb, diode, conductor; Ohm's law ; series-parallel connection of resistances. The sensor meets the following parameters:

1.Measuring range: -3A~3A 2. Resolution: 0.3 mA.

3. Accuracy: ±10 mA. 4. Internal resistance: 0.050 ohm

5. Input impedance (to ground): 20 MΩ

6. Measuring frequency 1000 Hz

Electrical intensity and voltage sensors can be combined.

The sensor is compatible with data loggers, connection via RJ45 interface.

Photoelectric sensor(LST-816B)

The kit consists of two photocell sensors (type A and type B). The sensors are photocells with an infrared emitter and an infrared receiver at both ends. Sensors are used to measure the time spent on an event and on a series of events. Sensor-photocell type A is used alone or in pair with a photocell sensor type B. Sensor-photocell type B is used only in conjunction with a sensor type A. The set of sensors can be used in standard experiments: studying free fall; momentum theorem; study of the laws of kinetic energy; study of Newton's second law. The set of sensors corresponds to the following parameters:

1. Measurement range: from 1 μs to 99 s;

2. Resolution: ≥1 μs; 3. Accuracy: ≤±2%.

The sensor is equipped with a socket to interface with the data recorder. It has a mounting hole for its fixation during experiments.

Sound sensor(LST-203A)

The sensor is designed to measure the sound intensity (dB) in two ranges, and is also used to directly measure the shape (mV) of the sound wave. Typical experiments using an acoustic sensor: measurement of sound intensity; measurement of the noise level of the environment; measuring the speed of sound in air; sound wave synthesis; sound wave resonance. The sensor meets the following parameters:

1. Measurement range: 30~120dB. 2. Resolution: 0.1 dB.
3. Sound wave measurement range: 0~2000mV
4. Resolution: 1 mV.
5. Frequency range: 100Hz - 10000Hz
6. Accuracy: ±3 dB

The sensor is compatible with data loggers, connection via RJ45 interface.

Salinity Sensor(LST-229)

The salinity sensor determines the total amount of salt dissolved in an aqueous solution. It is mainly composed of a platinum black conductivity electrode and a corresponding conditioning circuit, and the salinity concentration is converted by measuring the conductivity concentration of the ionic solution. The sensor meets the following parameters:

1. Range: 1 to 50000 ppm
2. Precision with custom calibration: ± 1% of full-scale reading
3. Temperature compensation: automatically from 5 to 45 ° C
4. Temperature range: 0 to 50 ° C.

The sensor is compatible with data loggers, connection via RJ45 interface.

Motion sensor(LST-213)

The motion sensor is a sonar equipment emitting ultrasonic pulse,it receives signal through the reflection of object, and then measure the time when the high frequency sound wave goes around between the object and sensor. One end with network port interfaces,the other with Ultrasonic wave transmitting and receiving probes.

1. Measuring range: 20cm~600cm
2. Resolution: ≤1mm
3. Accuracy:≤ ±2%
4. Speed measurement +/- 10m/s
5. Acceleration measurement +/- 30 m/s2
6. Measuring frequency not up to 100 Hz
7. Minimum rotation of the transducer+/- 180°.

Rotary motion sensor(LST-225)

The sensor is designed to study the rotational movement and linear movement of bodies. Allows you to determine: angular velocity and acceleration, torque and moment of inertia. Sample experiments: swinging a physical pendulum, the relationship between torque and angular acceleration, studying translational motion with constant acceleration, and studying Malus' law. Operating principle: quadrature optical encoder. The sensor complies with the following parameters:

1. Measuring range： ≤30rpm
2. Resolution: 0.25°
3. Resolution: 360 measurements/revolution.

The kit includes the following accessories: 3-stage pulley with fasteners, sealing ring, hollow rod, 2 aluminum discs of different weights with fasteners.

The sensor housing is equipped with a micro USB output. The sensor has the ability to connect directly to a computer via a USB port, as well as the ability to connect wirelessly via Bluetooth.

Radioactivity Sensor(LST-228)

The radioactivity sensor has the ability to count active particles passing through the probe. The sensor is used to measure the intensity of gamma and beta radiation, as well as for experiments on measuring x-rays. The radioactivity sensor is used in carrying out standard experiments: measurement of the radiation intensity of a conventional source of radioactive radiation; measurement of background radiation intensity; radiation screen; study of the dependence of radioactive radiation on distance; measurement of radioactivity of building materials. The sensor meets the following parameters:

1. Measuring range: 0~40000 cycles/min.

The sensor is compatible with data loggers, connection via RJ45 interface.

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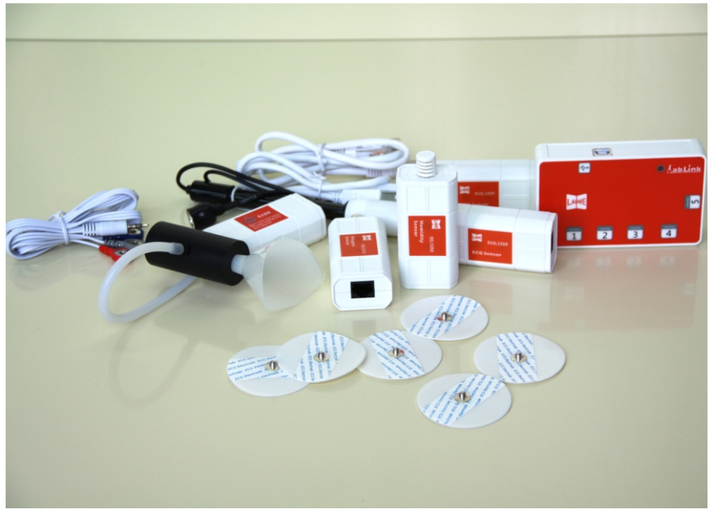

**All specifications and overall view of the products are the latest and accurate, but subject to change without notice*