ECHO Instruments

Product Catalogue 2018

ECHO Instruments
www.echoinstruments.eu

Company

Company ECHO Ltd, was established in 1992 and since its establishment is present worldwide with production of high quality innovative instruments in pharmacy, biotechnology, biology, medicine, industry and ecology.

Our Values

We have an uncompromising dedication to integrity, moral principles, the intrinsic worth of individuals, and the value of relationships. We will strive to treat our coworkers, customers, distributors and vendors as we would want ourselves to be treated; that is, with the utmost honesty, fairness, and courtesy.

Our moto

„Quality is, what makes Us the Best“

Our Products

RESPIROMETER
DRI RESPIROMETER
HAND O_2
FOOD O_2
BLIST O_2
SOIL FLUX CO_2
GAS MIXER
GAS ANALYZER
CUSTOM DESIGN INSTRUMENTS

Company information

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RESPIROMETER

Respirometer is a device that measures respiration of living organisms. Respirometer determines aerobic or anaerobic biodegradability of solid or liquid samples in various applications.

Principles

Respirometer measures O_2 and CO_2 concentration in flow through the sample under controlled conditions. Additional gases can also be measured.

Applications:

- **ISO 14855-1, ASTM D 5338** - Biodegradability of plastics in solid medium;
- **ISO 14852** - Biodegradability of plastics in aqueous medium;
- **ASTM D6691; OECD 301B,** and others;
- Organic waste (solid or liquid samples);
- Food production;
- Compost biological activity;
- Wastewaters;
- R&D in biotechnology, biology, ecology and pharmacy.

ECHO Respirometer

Advantages

- Modular design (upgradable)
- Plug & Play design (easy to install, use and maintain);
- Laboratory or industrial use;
- Suitable for solid and liquid samples;
- Aerobic and anaerobic measurements;
- 6, 12, 24, 48 or more channels;
- MFC (mass flow controller) for each channel;
- Different flow configuration (0-200ml/min, 0-1l/min, or more);
- Flow is set for each channel separately;
- Optional additional sensors: CH_4, H_2S, H_2, VOC, etc;
- Temperature range: 5°C - 70°C;
- Automatic humidification and condensate removal system;
- Temperature, flow, pressure, humidity measurements;
- Flow leakage alarm;
- Various sizes of vessels;
- User friendly software with excel export files;
- Remote desktop control;
- Laboratory air pump;
- Can be connected on internal air supply system;
- No special connections required;
- Only 2 multitube cable connection for 12 channel system;
- Suitable for various applications in different fields.

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Technical specifications

- Dimensions - Control unit: 60 x 60 x 60 cm, Weight: 50kg;
- Dimensions - Thermostatic chamber: 60 x 60 x 105 cm, Weight: 70kg;
- O_2 and CO_2 sensors (additional sensors on request);
- MFC +/- 1,5% FS: 0-200ml/min or 0-1l/min;
- 2 connecting multube cables;
- Vessels for solid medium measurements - 2,8l;
- Vessels for liquid medium measurements - 125ml - 1000ml;
- AIO computer with process control software.

36 channel ECHO Respirometer

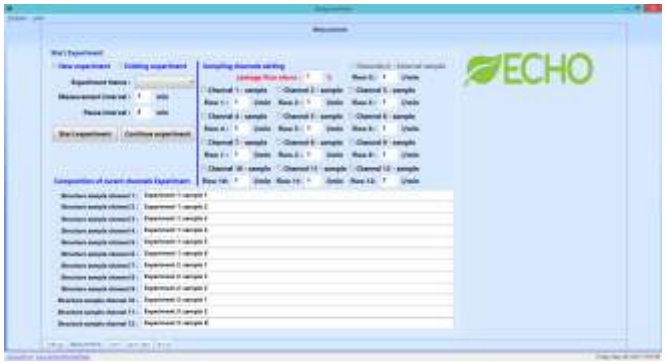
Gas sensors ranges

- Sensor **O_2**: Range 0-25%, Accuracy: 2%;
- Sensor **CO_2**: Range 0-2000ppm, Accuracy: 2%;
  Range 0-5000ppm, Accuracy: 2%;
  Range 0-1%, Accuracy: 2%;
  Range 0-5%, 0-10%, 0-30%, 0-100%, Accuracy: 2%;
- Sensor **CH_4:** Range 0-5%, Accuracy: 2%;
  Range: 0-10%, 0-30%, 0-100%, 100%, Accuracy: 2%;
- Sensor **H_2S**: Range: 0-100 ppm to 0-1000ppm, Accuracy 5%.

Vessel for solid samples

Vessel for liquid samples

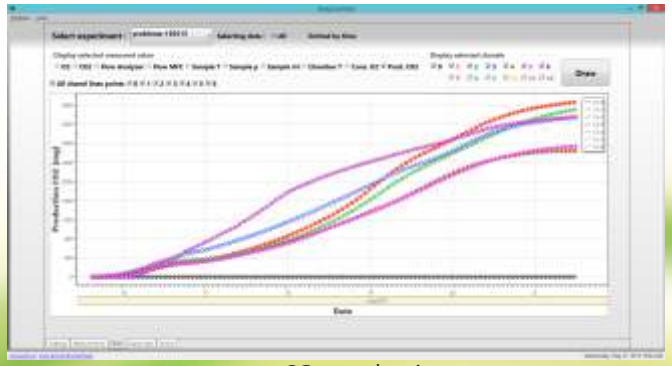
ECHO Respirometer Software ERS 12



Start screen

Measuring screen

CO_2 concentration



CO_2 production

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DRI RESPIROMETER

Technology of DRI Respirometer determines the current rate of aerobic microbial activity of solid recovered fuels using the real dynamic respiration index (DRI). The current rate of aerobic microbial activity measures the biological stability under the actual chemical and physical properties of solid recovered fuels.

Principles

DRI Respirometer measures O_2 to determine the activity of microorganisms in degradable organic matter under defined continuous airflow and adiabatic conditions. The samples are measured in hermetically sealed vessels (adiabatic), which create controlled conditions determined by EU and other norms.

Applications:

- **UNI 11184** - Determination of biological stability by DRI;
- **EN 15590** - Determination of the current rate of aerobic microbial activity using DRI;
- Other applications for waste degradation.

DRI Respirometer

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Advantages

- Multi - channel system: 3, 6 or 12;
- Plug & Play design (easy to install, use and maintain);
- Temperature sensor in each vessel;
- Automatic condensate removal system;
- Temperature, flow, pressure, humidity measurements;
- Sensor O_2: Range 0-25%, Accuracy: 2%;
- Various sizes of vessels: 2l, 10l, 20l, 30l;
- User friendly software with excel export files;
- Remote desktop control;
- Air pump;
- No special connections required;
- Suitable for various applications in different fields;
- Rack (stand) for vessels, control unit and PC.

Adiabatic vessel 10l

Adiabatic vessel 2l

Technical specifications

- Dimensions - Control unit: 48 x 40 x 28 cm; Weight: 17kg;
- Dimensions - Rack for vessels: 140 x 60 x 150 cm; Weight: 50kg;
- Dimensions - 10l vessel: 42 x 42 x 45 cm; Weight: 9kg;
- Dimensions - 2l vessel: 33 x 33 x 28 cm; Weight: 5,5 kg.

ECHO Respirometer DRI software

Start screen

Data set up in each vessel

Measured parameters charts

Raw data ready for Excel export

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HAND O_2 & FOOD O_2

Hand O2 & Food O2 devices are used for determination of oxygen concentration in headspace in various MAP packaging (MAP - modified atmosphere packaging). Micro - invasive measurements are enabled by optical sensor tips smaller than 140µm.

Principles

Optical sensors with optical transmitter combined with intelligent software instantly measure the O_2 concentration in very small headspaces.

Applications:

- Pharmacy: O_2 concentration in blisters, vials, tubes, patches, sealed bags, etc;
- Food & Beverage: O_2 concentration in coffee, meat, dairy products, all of MAP packaging;
- Science: Biotechnology, Micro - respirometry, marine research, R & D.

Advantages

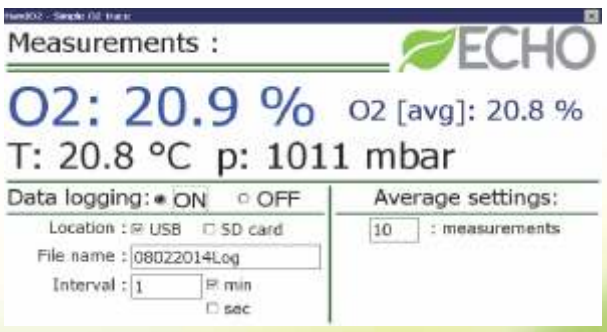
- Measurements in gas or liquid phase;
- No sample extraction;
- High accuracy and precision;
- No O_2 consumption during measurement;
- Salinity factor input for different salinity samples in vials;
- IQ & OQ Documentation;
- Sterilizable;
- Calibration is fast and can be performed by user;
- Battery or regular power supply.

Hand O_2

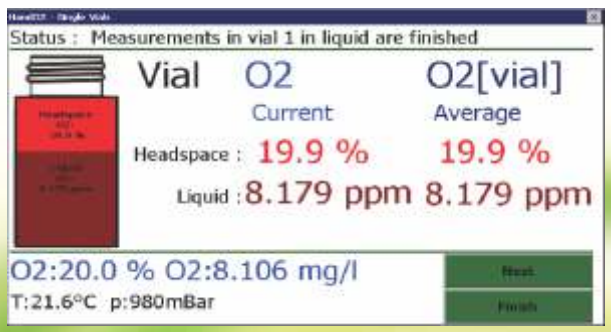
Technical specifications

- Measuring range: 0-50% or 0-100% O_2;
- Accuracy: +/- 0,4 % at 20,9 % O_2 or +/- 0,05 % at 0,2 % O_2;
- Temperature measurement range: 0-50 °C
- Pressure measurement range: 150 mb to 1150 mb;
- Response time (t90)< 15 sec;
- Cleanable with: 3 % H_2O_2, Ethanol, Soap solution;
- Calibration: 2 - point calibration, using Nitrogen and Synthetic air;
- Dimensions: 180 x 90 x 270 mm, Weight: 1 kg;
- Needles with 0,4 mm, 0,8mm, 1,2 mm diameter with various lengths (on demand);
- Interface: USB, RS485, Ethernet.

Food O_2



O_2 measuring screen



Vials measuring screen

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BLIST O_2

Blist O_2 is automatic device for measuring O2 concentration in blister packs. The device provides reliable, accurate and reproducible analysis that eliminates possibility of human errors. The measuring procedure is simple, fast and efficient. The user interface is designed for easy operation. The operator selects the required type of analysis, i.e. single point analysis of one blister pack or series analysis. A statistical analysis report is automatically generated by the software. The special designed blister cartridge enables fast and precise measurements of different types of blister packs. The intelligent, patented measuring head enables automatic calibration and self-controlled sensor status. The system prolongs sensor's life span because the special sensor head prevents sensor damages.

Principles

Optical sensors with optical transmitter installed combined with intelligent software instantly measure the O_2 concentration in very small headspaces in blister packs.

Applications:

- Pharmacy: O_2 concentration in blisters and vials (custom design);
- Food & Beverage: Coffee capsules (custom design).

Advantages

- No sample extraction;
- High accuracy and precision;
- No O_2 consumption during measurement;
- IQ & OQ Documentation;
- Automatic calibration.

Technical specifications

- Measuring range: 0-50% O_2;
- Accuracy: +/- 0,1 % O_2;
- Limit of detection: 0,1% O_2;
- Operating temperature range: 5-40 °C;
- High precision positioning: < 0,02 mm;
- Dimensions: 600 x 315 x 385 mm, Weight: 50 kg;
- Interface: USB, RS485, Ethernet.

Blist O_2

Blister measuring screen

Cartridge for blister packs

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SOIL FLUX CO_2

Portable Soil flux device is ideal for simultaneous measurements of Flux CO_2, O_2, CH_4, Rn, H_2, H_2S, SO_2, Hydrocarbons, VOC, etc over a wide dynamic range. It is suitable for measurements in the fields, forests, landfills and other areas. The device is connected to tablet via Bluetooth.

Principles

Various gas sensors measure the gas concentration inside the measuring head. Software calculates the flux directly on site. Accurate GPS module determines the exact location of the measurement.

Applications:

- Flux CO_2 from soil;
- Gas presence on school / kindergarten playgrounds;
- Carbon fingerprint and greenhouse gases;
- After fire activity of ground;
- Agronomy;
- Search for uranium mines, construction material testing.

Soil Flux CO_2 Measuring head

Advantages

- Portable, compact and lightweight;
- Map location (inbuilt GPS module);
- Up of 5 different gas sensors with different ranges;
- Operation via tablet, mobile phone or PC.

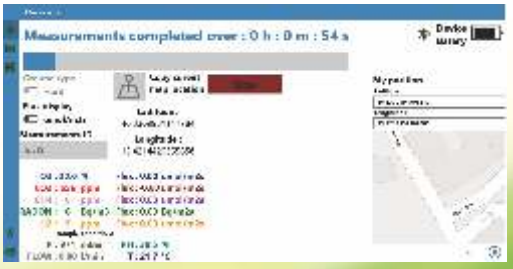
Technical specifications

- Dimensions - Device: 500 x 350 x 200 mm, Weight: 7,5 kg;
- Dimensions - Measuring head: 390 x 200 x 200 mm, Weight: 3 kg;
- Operating conditions: 5-40 °C < 90% RH, non - condensing;
- Storage conditions: -20-40 °C < 90% RH, non - condensing;
- Power supply: Li-ion battery 90-264 VAC, 47-69 Hz;
- Tablet: Bluetooth, GPS, Windows platform.

Soil Flux measurements

Gas sensors ranges

- Sensor **O_2**: Range 0-25%, Accuracy: 2%;
- Sensor **CO_2**: Range 0-5000ppm, Accuracy: 2%;
- Sensor **CH_4**: Range 0-5%, Accuracy: 2%;
- Sensor **H_2**: Range: 0-1000 ppm / 0-10000ppm, Accuracy 5%;
- Sensor **Rn**: Range: 0-10 MBq / m^3 (EEC);
- **Other sensors on request**.



Measuring screen

Measurement chart

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GAS MIXING DEVICE

Gas mixing devices are used for high precision control of gas mixtures in calibration procedures and preparing gas mixtures for industrial or laboratory use. Precise dilution of various gases enables the user to obtain most accurate gas mixture for used application. User simply sets the target output concentration for desired gas. Actual concentrations based on flow measurements are displayed in real time during mixing.

Principles

Various gas sensors combined with high accurate mass flow controllers and sophisticated software mixes the gas mixture from 100% down to 1 ppm.

Applications:

- Gas mixtures for sensors calibration;
- Calibration of personal gas monitors;
- Calibration of Emission, Imission monitors;
- Gas mixtures for industrial, laboratory use;
- Applicable also in Biotechnology, Pharmacy, Chemical and biological experiments.

Portable gas mixer

Advantages

- Mixing non-corrosive and corrosive gases such as: SO2, NO, NO2, CL2, H2S, etc;
- 1 - 4 channels;
- High accuracy and repeatability;
- Stationary or portable;
- Mixtures from 100% to ppm.

Technical specifications

- Accuracy: +/- 1% of Full Scale including linearity over 15 to 25°C and 0.7 to 4 bar;
  +/- 2% of Full Scale including linearity over 0 to 50 °C and 0.3 to 10 bar;
  +/- 1 % of Full Scale accuracy at a specific temperature and pressure is available with special calibration;
- Reproducibility: ± 0,25 % f.s. (± 0,15 % f.s. on demand);
- Response time: 300 ms;
- Flow range: 0 to 10 sccm to 0 to 50 slpm; flow ranges specified are for an equivalent flow of Nitrogen at 760 mm Hg and 21°C.
- Response time: 300 ms, 2 s average;
- Gas pressure: 2 bar optimal, 34 bar max;
- **Higher accuracy, repeatability, ranges, response time on demand**.

Custom design gas mixer 1:1MIO

- **ECHO d.o.o. - Accredited laboratory for gas flow measurements SIST EN ISO / IEC 17025.**

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CUSTOM DESIGN INSTRUMENTS

At ECHO Instruments we, are aware of constantly changing requirements and needs of our customers. On this base, we are producing custom design instruments accordingly to our customers wishes. As a flexible and reliable company, we produce all of our instruments with highest quality standards and quality control.

ECHO Instruments custom design devices:

- **Gas Analyzers:**
  Laboratory and industrial use with sensors from 100% to ppm;
  Sensors: SO_2, O_2, CO_2, CO, CH4, H_2S, NH_3, SO_2, VOC, etc;
  1-8 sensors in 19¨ enclosure;
  Auto calibration option.

- **Mini Respirometer:**
  12 channels in 19¨ enclosure, with O_2 and CO_2 sensors;
  Flow is regulated with capillary tubes and pressure regulator;
  Suitable for users with their own vessels and chambers.

- **Flow meter:**
  Flow range: 0 - 400 ml;
  Accuracy; 0,5% f.s.;
  Battery power supply;
  Pressure and temperature sensors.

- **VOC detector:**
  Detection of VOC in cooling water;
  On-line measurements;
  IP 63 protection;
  Optional additional sensors .

- **AMMSE:**
  Detection of early liver & kidney failure;
  Non-invasive On-line measurements;
  IP 50 protection;
  Stationary or portable version.

- **ECHO Software:**
  Custom design software for various instruments;
  Graphical interface;
  Complex equations for compensation calculations;
  Operating on Windows OS.

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