ELANIK ®

ELEMENTAL LASER ANALYZER

MULTI-ELEMENT QUANTITATIVE ANALYSIS OF METALS AND ALLOYS

CARBON DETECTION IN STEELS AND CAST IRON! WITHOUT ARGON PURGE!

ELANIK ®
handheld LIBS analyzer

Features:

- Low limits of detection (LODs) for light elements including C, Be, Mg and others;
- No X-ray - free from the ionizing radiation hazard;
- Argon-free operation - no inert gas or other consumables required;
- Automated determination of alloy matrix;
- Own well-developed analytics for LIBS - built-in extensive empirical calibration on CRM;
- Easy-to-use: no complicated preparation or knowledge of spectroscopy required;
- The availability of chemical analysis in a small spot and for the smallest components (spot of analysis is less than 200 μm).

Applications:

- Carbon analysis in carbon steels, stainless steels, low-alloyed and the majority of medium- and high-alloyed steels and alloys including white cast iron and chilled cast iron;
- Express analysis of alloys chemical composition in the field (pipelines, building constructions, workshops etc.);
- Calculation of carbon equivalent during welding, surfacing and heat treatment;
- Incoming inspection of alloys based on Fe, Al, Cu, Ti, Ni (bases Zn, Sn, Pb, etc. are optional on request), confirmation of alloy grades;
- Metals and alloys sorting during scrap processing (including aluminum and titanium).

Laser-compact group
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LASER-EXPORT presents a revolutionary development - the first handheld elemental analyzer ***ELANIK*** ®, which measures carbon concentration in steels without inert gas along with other elements. The device solves the most varied and complex tasks for express analysis outside the laboratory.

The operation principle of the device is based on laser-induced breakdown spectrometry (LIBS) which theoretically allows analysis of all the elements without preparation of the sample, on any material.

Being a portable handheld device, the ***ELANIK*** combines high sensitivity and ability to measure superlight elements (C, Be and others) of optical emission spectrometers and ease of use of X-ray fluorescence analyzers. Hereby the device is free from disadvantages of both types - it doesn`t require use of an inert gas, consumables and high qualification of specialists, and also doesn`t have limitations related to X-ray. The ***ELANIK*** has the best price / quality ratio among the portable laser analyzers on the market.

Carbon analysis in steels and cast irons

One of the important applications of the ***ELANIK*** is the analysis of carbon concentration in steel and cast iron. Steel is the most common alloy, and carbon concentration has a significant impact on its properties (ductility, strength and hardness, weldability, etc.).

The determination of carbon concentration is very important when using steel in industry. This is one of the most relevant and complex tasks of elemental express analysis for portable devices.

One of the important tasks is to measure carbon in unalloyed steels, since more than 80% of metal products in the world are produced from them. Due to the absence of alloying elements, it is impossible to determine the grade indirectly, by the content of other elements, which are sometimes used by XRF in the analysis of alloyed steels. Since the LIBS metal analyzer ***ELANIK*** measures carbon, it makes it possible to distinguish between steel grades that differ only by carbon content.

As the ***ELANIK*** performs multi-element quantitative analysis (including C, Mn, Cr, Si, Mo, V, Cu,Ni and others), for the suitability of the customers using it for welding and heat treatment, the device calculates carbon equivalent (CE) which is shown on the display together with the chemical composition of the sample. Carbon equivalent allows estimating the influence of carbon and other elements on the weldability of steel.


Elements to measure (for standard version):

Alloy matrix	Measured elements
Fe	C, Al, Si, Ti, V, Cr, Mn, Co, Ni, Cu, Zr, Nb, Mo, W (Mg, Sn - in cast iron)
Al	Be, Mg, Si, Ti, Cr, Mn, Fe, Ni, Cu, Zn, Zr, Sn, Pb
Cu	Be, Mg, Al, Si, P, Ti, Cr, Mn, Fe, Ni, Zn, Sn, Pb
Ti	Al, Si, V, Cr, Mn, Fe, Zr, Mo, Sn
Ni	Mg, Al, Si, Ti, V, Cr, Mn, Fe, Co, Cu, Nb, Mo, W
Sn	Ni, Cu, Ag, Cd, Sb, Pb, Bi
Zn	Mg, Al, Cu, Cd, Pb

Specifications

Detection limits	From 1 ppm (depending on element and base)
Typical accuracy	1-15%
Duration of measurement	4 - 40 sec, depending on the desirable accuracy
Display type, size	resistive, 5”
Data storage	Built-in flash memory, 64 GB
Data transfer	USB
Power supply	rechargeable Li-ion battery (type 26650) AC/DC switching adapter, 85-264 VAC
Temperature range	+5° - +40° C (standart version), from -20° C optionally
Dimensions (L x W x H)	298x106x316 mm
Weight	2,5 kg
Excitation source	pulsed YAG laser, class 3B
Dust & moisture protection class	IP54

Ease of use

- Analysis in the air: no inert gas required.
- Built-in video camera: convenient to choose the place of analysis on the sample.
- Ease of use: the elemental composition on display as the result of the analysis. No training and knowledge of the spectroscopy required.
- Built-in alloy library: automatic determination of the alloy grade according to the analysis results.
- Possibility to analyze small samples: analysis area is less than 0.3 mm.
- High reliability: device doesn`t contain elements requiring periodical replacement or maintenance.
- Laser surface cleaning: automatic sample preparation in many cases eliminates the need for a grinding tool.
- Auto-averaging of several measurements allows increasing the accuracy of the results, avoiding the influence of uneven distribution of elements.
- Saving measurement data in the device`s internal memory.

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About company

Laser-export Co. is a part of the LASER-COMPACT Group, known in Russia and abroad by compact lasers of its own design: since 1992 almost 50 thousand lasers have been produced and delivered in 42 countries worldwide, the main share in the USA, Germany, France, and Japan.

The lasers are successfully used as main parts in analytical instruments and industrial equipment produced by the world-leading companies.

Many years of successful experience in the development and production of lasers for OEM projects, as well as experience in spectroscopy of the founder and permanent leader of the Laser-compact group, Dr. Ivan I. Kuratev, led to the idea of creating a hand-held LIBS analyzer.

The combination of knowledge and experience of the company`s employees in optics, electronics, spectroscopy and project management for the development and production of high-tech products made it possible to create a device that has no analogues in the world in terms of its functionality.

Ordering Information

When ordering, please indicate:

- alloy types for the analysis of which calibrations is required (for example, steel and cast iron - Fe alloys; bronze and brass - Cu alloys; Al-based alloys, ets.);
- required operating temperature range: +5° - +40° C - standard version,
  or from - 20° C - low-temperature option.

We are always ready to discuss the use of the ELANIK for your application.
Please contact us with any questions.

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