GAS CHROMATOGRAPH "CRYSTALLUX-4000M"

Chromatographic complex "Crystallux-4000M" is an effective solution for routine tasks and also for carrying out serious chromatographic research works. Our purpose was to create a device with high reliability, optimal working characteristics and flexibility with minimal complexity of integration and maintenance. Our GC differs by high profits with minimal investments and low cost of ownership.

Some applications of gas chromatograph

Chromatograph «Crystallux–4000M» is a base for creation of the laboratory analytical systems, designed for the researching and production routine tasks:

-Composition and quality analysis of natural gas, associated gas, liquefied gas and gas condensate with evaluation of heating ability, relative and total density, pressure of saturated steam;

-Detailed and group analysis of motor fuel, including gasoline with evaluation of octane number, density, fraction composition, saturated steam pressure, etc.;

-Analysis of motor fuel on the content of aromatic and oxygen-containing compounds, MMA, etc.;

-Motor fuel, oil and gas analysis on content of and hydrogen sulphide, mercaptans, sulphides, thiophenes and other sulphides;

-Analysis of chemical and petrochemical products;

-Analysis of transformer oil for content of dissolved gases, water, total gas content, antioxidant admixtures, furan derivatives, polychlorinated biphenyl, insulating gas analysis;

-Analysis of toxic admixtures in alcohol drinks, perfumery production, drugs;

-Analysis of the authenticity of alcoholic beverages, including cognacs;

-Analysis of wine and wine materials for content of ethanol, organic acids and other admixtures;

-Analysis of water for the content of volatile halogen-containing and aroma compounds, acetone, methanol, saturated hydrocarbons, mineral oils, etc.;

-Analysis on content of pesticides, herbicides and other toxicants in water, soil, crop products and food;

-Analysis of atmosphere air on content of halogenated and aromatic hydrocarbons, carbon oxides, etc.;

-Analysis of production exhausts and of working area air on containing of saturated, unsaturated and aroma hydrocarbons, carbon oxides, etc.;

-Analysis of toxicity of food products packages, building materials and other domestic materials including toys;

-Analysis of mine air on content of constant gases, carbon oxides and hydrocarbons;

-Analysis of quality of vegetable and animal oils, dairy produce margarines, spreads, milk products, detection of falsification;

-Analysis of biological liquids and tissues of human body for contents of alcohol, drugs, medicaments and poisonous substances;

-Analysis of gas environment of nuclear power stations;

-Analysis of products of blast furnace production, quality of gases, used in metallurgy;

-Analysis of impurities in helium, oxygen, nitrogen, argon by cryogenic concentration method;

-Analysis of oil and chemical reagents for its production on content of volatile organochlorine compounds;

-Analysis of products of color industry;

-Analysis of quality of tobacco products;

-Analysis of propellents, aerosols, coolagents;

-Analysis of adsorbed gases in soil for geologist researches of oils and gas.

Design

Chromatograph is fully automated, starting from injection of a sample and ending with processing of chromatographic information, included: functions of automatic temperature control, electronic flow and pressure control of carrier and auxiliary gases, detector automatic lighting, flame burning control, measuring the signals from detectors with ADC

One computer can work in real time with several analytical modules (up to 8). Information transfer between computer, analytical station, and chromatographs is performed by standard interfaces of RS-232, Ethernet, USB types. Optionally : installation of remote control panel with sensor screen. Control of chromatograph is possible from the distance up to 3000 m, and also remote control and diagnostics of the chromatograph via the Internet.

Replaceable modules

Replaceable analytical module, installed on the column thermostat, determines the chromatograph model and includes detectors (multidetector), injectors and additional devices. The module configuration can be chosen by the customer for the certain analysis conditions.

The modules include two (three) injectors, which can be transformed from capillary into packed type by installing special adapters. On the customer request we can supply module with any detector set and sample input devices.

Technical characteristics

Parameter	Value
FID detection limit	2×10^{-12} gC/sec for n-hydrocarbons or propane $1,1\times10^{-12}$ gC/sec (special order)
TCD detection limit	8×10^{-10} g/ml for n-hydrocarbons $3,5\times10^{-10}$ g/ml for propane (special order)
ECD detection limit	$1,7\times10^{-14}$g/sec for lindane $3,9\times10^{-15}$ g/sec for lindane (special order)
FPD detection limit	$1,0\times10^{-13}$ gP/sec for methyl parathion $8,0\times10^{-13}$ gS/sec for sulphur compounds
TID detection limit	$1,5\times10^{-14}$ gP/sec for methyl parathion 3×10^{-13} rN/c gN/sec for azobenzene
TChD detection limit	2×10^{-10} g/ml for hydrogen
PID detection limit HID detection limit MSD – relation to signal/noise	5×10^{-13} g/sec for benzene 3×10^{-13} g/sec for carbon in methane >(1500:1) for injecting 1×10^{-11} g OFN in hexane
Linear dynamic range FID Linear dynamic range TCD	1×10^{7} 1×10^{6}
Oven volume	14 (19) L
Column temperature	from ambient temperature +3 till +450 °C (by special order from -15 °C with the usage of refrigeration unit) (by special order from -100 °C with the usage of liquid N2)
Temperature setting scale	0,1 °C
Temperature stability	0,01 °C
Temperature programming speed	from 0,1 till 125 °C/min.
Maximum number of isotherms	not less than 30
Column oven cooling speed from 400 till 50 °C	3 min.
Maximum temperature of detector and injector	450 °C
Carrier-gas flow	from 0 till 100 ml/min (by special order from 0 till 500 ml/min)
Carrier-gas pressure (for capillary column)	from 0 till 0,40 MPa (by special order from 0 till 1 MPa)
Maximum gas inlet pressure by special order	0,5 MPa 1,25 MPa
Hydrogen flow	0-500
Air flow	0-1000
Dimensions (width × depth × height)	550×500×500 mm
Weight	39 kg
Electric power supply	from AC voltage (230-240 V), frequency 60 Hz
Maximum power consumption (in the steady)	900 VA

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