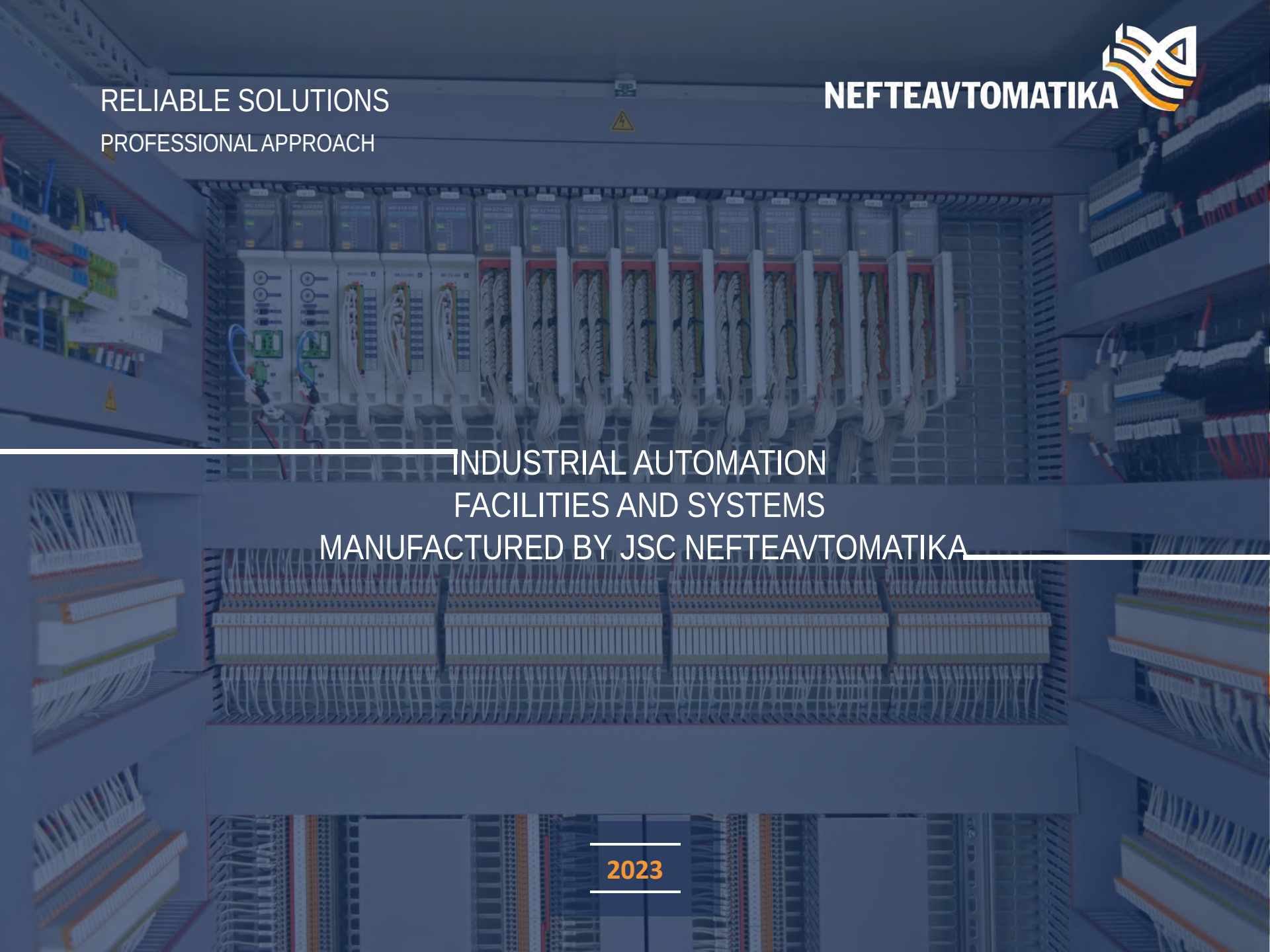
RELIABLE SOLUTIONS

PROFESSIONAL APPROACH

NEFTEAVTOMATIKA



INDUSTRIAL AUTOMATION FACILITIES AND SYSTEMS MANUFACTURED BY JSC NEFTEAVTOMATIKA

2023

ABOUT THE COMPANY

JSC Nefteavtomatika is an engineering and production company specializing in the development and introduction of automated process and production control, measurement and IT systems, manufacture of packaged process equipment, automation and measurement facilities.

SOLUTIONS AND PRODUCTS

- AUTOMATED CONTROL SYSTEMS OF MES-LEVEL FOR ENTERPRISES
- COMPREHENSIVE AUTOMATION OF PROCESSES AND PRODUCTION
- PROGRAMMABLE LOGIC CONTROLLERS AND OTHER AUTOMATION FACILITIES AND SYSTEMS
- LOW-VOLTAGE PACKAGES
- QUANTITY AND QUALITY MEASUREMENT SYSTEMS FOR OIL, GAS, WATER AND OIL PRODUCTS
- PACKAGED PUMP STATIONS
- OIL TREATMENT UNITS AND MOBILE WELL DEVELOPMENT AND SURVEY PACKAGES
- METROLOGICAL SUPPORT
- SERVICE MAINTENANCE



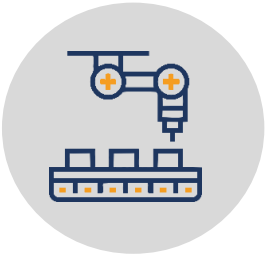

The company was founded in 1969, it is a legal successor of VPO Soyuznefteavtomatika, a head company in the petroleum industry for automation and metrology. Today JCS Nefteavtomatika holds a confident position in the market among producers of measurement and automation systems for oil and gas enterprises.

The company undertakes projects for the manufacture and supply of equipment, comprehensive turnkey projects, possesses a geographically distributed state-of-the-art production base with a total area of more than 70 thousand m^2 and has an effective organizational structure.

FACTS ABOUT US

50 years of operation in the market of automation and metrology

Over 2,500 employees

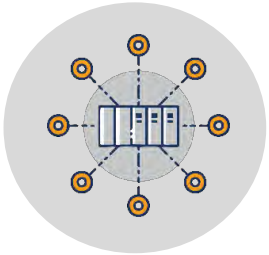


Powerful production capabilities, over 70 th. m^2 of production facilities

Possible automation for all levels of oil and gas enterprises and enterprises of other sectors

Extensive business geography – 18 adjustment and stand-alone subdivisions in all oil-producing regions of Russia

Large-scale comprehensive turn-key projects by our own resources



Development and manufacture of our own automation facilities, PLCs, intrinsic safety barriers, etc.

Quality management system as per ISO 9001-2015 and STO Gazprom 9001-2018

ENGINEERING AND PRODUCTION CENTER OF JSC NEFTEAFTOMATIKA

JSC Nefteavtomatika has an Engineering and Production Center, a subdivision for the development and production of tools and systems for industrial automation.

DEVELOPMENT

The Engineering and Production Center employs a team of qualified specialists: programmers, designers, managers. We are constantly working on improving serial products, expanding the existing ranges of equipment. The specialists of the center create and develop new software and hardware products.

IMPLEMENTATION

Engineering and Production Center is responsible for the high-quality equipment supplies to Clients.

PRODUCTION

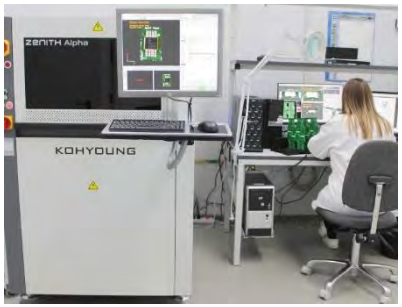
The Engineering and Production Center includes a WORKSHOP FOR THE INSTALLATION OF RADIO ELECTRONIC EQUIPMENT. The area of the workshop is 1,300 m².

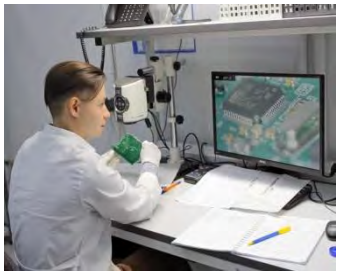
State-of-the-art and hi-tech equipment used in production allows the company to provide a full production cycle for the issued products and deliver the products on a timely basis.

PRODUCTION INCLUDES THE FOLLOWING PROCESS UNITS AND AREAS:

- Surface-mount line by Juki. The line includes:
  - Automated screen printer GKG GL that is designed to apply solder paste to printed circuit boards through a stencil by passing a double squeegee;
  - Automated component placer JUKI KE-3020VAL designed to place surface mount components on printed circuit boards with high speed and accuracy. The capacity is 21,000 components per hour;
  - Conveyor-type reflow oven JUKI RS-600 designed to melt solder paste on printed circuit boards using forced convection of hot air;
  - Automatic mounter/dismounter of printed circuit boards;
  - EVO CAM quality Full-HD vision system designed for visual quality control of solder joints.
  - 3D SYSTEM OF AUTOMATED OPTICAL INSPECTION, KOH YOUNG ZENITH ALPHA HS+.

  Automated optical inspection systems are used for defects detection and elimination, as well as for data collection and statistical analysis.
  - Manual assembly area.
  - Automatic jet cleaning unit for printed circuit boards miniSWASH – 3 designed to remove flux and solder residues after soldering by jet cleaning in a solution with heating.
  - Selective moisture protection unit PVA Delta 6 designed for selective application of a moisture-proof coating on printed circuit assemblies.





ENGINEERING AND PRODUCTION CENTER OF JSC NEFTEAFTOMATIKA

- Exhaust hood LK-900 ShV-MET and industrial drying cabinet 35/350-250-P designed to dry printed circuit assemblies in various modes after washing and varnishing.
- High voltage electrical safety tester GW Instek GPT – 79804 designed to test various products for breakdown by AC and DC voltage.
- Verification and calibration area. Benches for automated check, adjustment and calibration of the issued products.
- Heat and cold cabinet used to test products for compliance with climatic indicators from +50 to -40 degrees.
- X-ray control unit YXLON Cougar used for input and output control of printed circuit boards and products using X-rays.
- Etching equipment.
- Semi-automatic repair center BGA ProfPlacer designed for high-precision mounting/dismounting of all modern BGA, QFP components and other SMD microcircuits, equipped with a prism video system used to combine bonded areas and component output leads.
- Warehouse with a system of addressed storage and barcoding of products. There are dry storage cabinets.

TECHNICAL SUPPORT

The company's professionals can consult on all issues of applying the equipment, as well as can help in the setup and connection of PLCs and IS barriers. You can get technical support:
By phone: +7 (347) 279-88-99;
By email: TechsupportIPTS@nefteavtomatika.ru

TRAINING

Training on setup and operation of equipment is provided for service personnel and technical specialists of the Clients in the format of consulting seminars and practical classes. The classes are taught by lead engineers of the Engineering and Production Center with extensive experience of work in real projects.
Classrooms equipped with benches with operating equipment that simulate the operation of devices in real conditions are prepared for training. It is possible to arrange traveling seminars.
After completing the courses, certificates are issued to confirm the ability to independently work with the equipment and software of the company and carry out its maintenance.

FACILITIES OF INDUSTRIAL AUTOMATION

PLC ***MKLogic-500®***

Creation of large-scale general-purpose information and control complexes, distributed control systems (DCS) and emergency shutdown systems (ESD)

PLC ***MKLogic200®***

Creation of telemetry systems, as well as APCS of medium and low complexity for enterprises of various industries

IS barriers ***MIB®***

Ensuring intrinsic safety in electrical circuits of devices located in an explosive zone, as well as in alarm and emergency shutdown systems

Media converter ***T100E***

Conversion of data transfer medium using SFP modules for different media and interconnection of geographically dispersed network segments with an optic fiber communication channel

Terminal modules ***MT-500***

Simplification of control systems creation based on ***MKLogic-500*** series programmable logic controllers

Direct current instrument converters ***PTN-E2N-01***

Linear conversion of direct current into a unified output signal of DC voltage

We have all the necessary licenses and certificates for use in the territory of the Customs Union: certificates of type approval for measuring instruments; certificates of conformity to the requirements of CU TR 020/2011 Electromagnetic compatibility of technical means; certificates of conformity CU TR 012/2011 On equipment safety for operation in explosive media.

MODULAR PROGRAMMABLE LOGIC CONTROLLER OF **MKLogic-500®** SERIES

PURPOSE

PLC of MKLogic-500 series is used to build cross-functional information and control complexes, including distributed control systems (DCS).

ADVANTAGES:

- Modular structure;
- Module redundancy and hot swapping;
- Dual-redundant system bus and power circuit;
- Possibility to connect several extension bases;
- Guaranteed time of unsolicited report delivery from any module;
- Change of a process program without stopping the process.

PLC MKLogic-500 AREA OF APPLICATION:

- PLC MKLogic-500 is used in APCS of high and medium complexity in companies belonging to various industries (energy, chemical, oil and gas production and processing, machine-building, agricultural, food industries). It is also used in the construction of emergency shutdown systems (ESD) in the specified spheres and distributed control systems (DCS).
- PLC MKLogic-500 can be used to control oil treatment units, gas treatment units, oil delivery and acceptance points, oil pump stations, petroleum gas compressor stations, booster compressor stations and other process facilities.

LICENSES AND CERTIFICATES:

- Pattern approval certificate;
- Certificate of conformity to the requirements of CU TR 020/2011 Electromagnetic compatibility of technical means;
- Certificates GOST R IEC 61508-1-2021 Functional safety;
- Certificate GOST IEC 60695-11-2013 Fire hazard testing.

MODULAR PROGRAMMABLE LOGIC CONTROLLER OF **MKLogic-500®** SERIES

BRIEF DESCRIPTION

PLC MKLogic-500 ensures analog and digital data input and output, which makes it possible to control and monitor mechanisms and processes in industrial areas together with peripheral devices.

Information is exchanged with interconnected systems via the following interfaces:

- RS-485;
- Ethernet 100/1000 Base-T, Ethernet 100Base-FX.

Using the following data communication protocols:

- Modbus TCP (Client/Server);
- Modbus RTU (Master/Slave);
- IEC 60870-5-104 (Server);
- OPC UA (Server).

Process software development environment – ISaGRAF 6, all five languages of IEC 61131-3 standard are supported:

- IL Instruction list;
- ST Structured text;
- LD Ladder diagram;
- FBD Function block diagram;
- SFC Sequential function chart.

CENTRAL PROCESSING MODULES

Central processor modules are used for centralized collection of data from I/O modules, processing and implementation of monitoring and control algorithms for mechanisms and process equipment, as well as informational exchange with related systems.

MODULE	DESCRIPTION
MK-501-022	Central processing module. 2 Ethernet 100/1000 Base-T ports, 2 RS-485 ports 115200 bit/s
MK-502-142	Central processing module. 1 redundancy port (FO), 4 Ethernet 100/1000 Base-T ports, 2 RS-485 ports 115200 bit/s
MK-502-142 DCS	Central processing module used to build DCS. 1 redundancy port (FO), 4 ports Ethernet 100/1000 Base-T, 2 ports RS-485 115200 bps
MK-503-120	Central processing module. 1 redundancy port (SFP), 2 Ethernet 100/1000 Base-T ports

ANALOG INPUT MODULES

The analog input modules are used to measure an analog signal from current transducers and instruments with a current output in a range of 4…20 (0…20) mA.

MODULE	DESCRIPTION
MK-513-016 A	Analog input module. 16 channels; 0-20 mA, 4-20 mA, PUSH-IN connector, 40 contacts. Recalibration interval is 1 year.
MK-516-008 A	Analog input module. 8 sealed channels; 0-20 mA, 4-20 mA, PUSH-IN connector, 40 contacts. Recalibration interval is 1 year.
MK-576-008 A	Analog input module supporting HART devices. 8 sealed channels; 0-20 mA, 4-20 mA, PUSH-IN connector, 40 contacts. Recalibration interval is 1 year.

ANALOG OUTPUT MODULES

The analog output modules are used to reproduce an analog signal in a range of 4…20 (0…20) mA.

MODULE	DESCRIPTION
MK-514-008 A	Analog output module 8 analog outputs, 0...20 (4-20) mA, design with a quick-release connector, 40 contacts with spring terminals of PUSH-IN type. Recalibration interval is 1 year.
MK-574-008 A	Analog output module supporting HART devices 8 analog outputs, 0...20 (4-20) mA, PUSH-IN connector, 40 contacts. Recalibration interval is 1 year.

DISCRETE INPUT MODULE

The discrete input module MK-521-032 A is designed to input a discrete DC signal.

MODULE	DESCRIPTION
MK-521-032 A	Discrete input module. 32 channels, 24VDC

DISCRETE OUTPUT MODULE

The discrete output module MK-531-032 A is designed to output a discrete DC signal.

MODULE	DESCRIPTION
MK-531-032 A	Discrete output module. 32 channels, 24VDC

COMMUNICATION MODULES

Communication modules are used to extend the possibilities of the central processor and collect data from I/O modules, receive and transmit data

MODULE	DESCRIPTION
MK-541-002	Communication module. 2 RS-485 ports 115200 bit. Designed to receive and transmit data via RS-485 interface.
MK-544-040	Communication module. 4 Ethernet 100/1000 Base-T ports. Designed to expand the number of Ethernet ports for a processor module installed on the MK-5-BUSe bus.
MK-546-010	MN Communication module. 2 Powerlink 100 Base-T ports. Designed to expand the capabilities of the central processor and acts as a master device (MN) in the Powerlink network.
MK-545-010	CN Communication module. 2 Powerlink 100 Base-T ports. Designed to collect data from I / O modules and acts as a slave device (CN) in the Powerlink network.

POWER SUPPLY MODULE

The power supply module is designed to convert the input DC voltage of 24 V to stabilized output voltage of 5 V and ensure electronic protection from short circuit in the load circuit. Besides, the power supply module makes it possible to connect several remote I/O stations using CAN bus. Weight is no more than 400 g. Input voltage: nominal value is 24 V; allowable range is 18...30 V. Consumed current is no more than 2.75 A. Efficiency at nominal output voltage and current is 84%. Dissipated power at nominal output voltage and current is 5.6 W.

MODULE	DESCRIPTION
MK-550-024	Power supply module, 24 V

TERMINAL MODULES **MT-500**

PURPOSE

Terminal modules MT-500 are fully prefabricated typed connectors, designed to simplify the creation of control systems. MT-500 modules are used in the creation of systems based on PLC MKLogic-500.

The modules ensure easier, quicker and safer connection of discrete and analog circuits from actuating mechanisms and instruments.

The line of terminal modules includes modules for the connection of discrete and analog signals, including those connected to devices in explosive zones.

MODULE	CHARACTERISTICS
MT-521-016-I-FU-RE24 MT-521-016-I-FU-RE220	16 isolated discrete inputs (DI), replaceable 24 V or 220 V relays, protection with individual replaceable fuses, status indication. Cascading.
MT-521-016-D-Ex	16 intrinsically safe DI channels with channel-by-channel diagnostics (NAMUR). Status indication.
MT-521-016-Ex	16 intrinsically safe discrete inputs (DI). Status indication and replaceable relays. Cascading.
MT-531-016-I-FU-RE24 MT-531-016-I-FU-RE220	16 isolated discrete outputs (DO), replaceable 24 V or 220 V relays, protection with individual replaceable fuses. Status indication. Cascading.
MT-531-016-Ex	16 intrinsically safe discrete outputs (DO). Status indication. Cascading.
MT-513-016-Ex	16 intrinsically safe analog inputs (AI). Status indication.
MT-516-016-Ex	16 intrinsically safe analog inputs (AI). Status indication.
MT-514-016-Ex	16 intrinsically safe analog outputs (AO). Status indication.

MODULAR PROGRAMMABLE LOGIC CONTROLLER OF **MKLogic200®** SERIES

PURPOSE

PLC of MKLogic200 series is designed to build multipurpose information and control complexes, to arrange analog and digital data input/output and to execute functions in compliance with the user's process program.

AREAS OF PLC MKLogic200 APPLICATION:

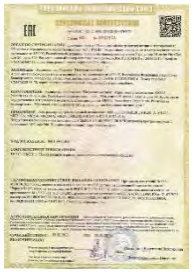
APCS of medium and low complexity in companies belonging to various industries (energy, chemical, oil and gas production and processing, machine-building, agricultural, food industries, etc.);
Telemetry device complexes.

ADVANTAGES:

- Simple, inexpensive, but functional device;
- Modular structure makes it possible to select configuration for facility parameters with maximum accuracy;
- Optimal quantity of communication ports;
- Support of the most wide-spread data communication protocols;
- Optimal quantity of inputs/outputs in the controller modules;
- Inexpensive industrial controller MK201;
- Fully independent device;
- More simple and cheaper I/O modules make it possible to extend the MK201 configuration;
- Preserves its operability at an ambient temperature from minus 40 °C to plus 85 °C.

LICENSES AND CERTIFICATES:

- Pattern approval statement of measuring instruments;
- Pattern approval certificate of measuring instruments for MKLogic-200 A;
- Certificate of conformity to TR CU 020/2011 Electromagnetic compatibility of technical means;
- Certificate GOST IEC 60695-11-2013 Fire hazard testing




MODULAR PROGRAMMABLE LOGIC CONTROLLER OF **MKLogic200®** SERIES

BRIEF DESCRIPTION

PLC MKLogic200 consists of an industrial controller MK201 and I/O modules of various purpose which serve to extend functional capabilities of MK201.

The microcontroller is made on the basis of core Cortex-M4, operating frequency is 168 MHz, RAM 30 Mb, ROM is up to 17 Mb.

Interfaces:
- 3 x RS-485;
- 1 x Ethernet 100Base-T;
- 1 x CAN.

Data communication protocols:
- Modbus TCP (Client/Server);
- Modbus RTU (Master/Slave);
- CANOpen.

Free development environment Beremiz.
- IL Instruction list
- ST Structured text
- LD Ladder diagram
- FBD Function block diagram
- SFC Sequential function chart

Possibility to write User's functions on the C language.

INDUSTRIAL CONTROLLER **MK201**

Industrial controller **MK201 is designed for**:

- Centralized collection of data from I/O modules;
- Processing and execution of monitoring and control algorithms for mechanisms and process equipment, information exchange with interfacing systems;
- Measurements and reproduction of signals from current sensors and instruments with current output;
- Input and output of direct current discrete signal;
- Calculation of direct current discrete impulses.

PARAMETERS	**MK201**
Dimensions HxWxD	155x240x57 mm
Weight	Not more than 1,100 g
Configuration	monoblock Quantity of connected add-on modules: 32
Quantity of channels and their type	16 DI, 16 DO, 8 AI, 2 AO, 4 CI
Power supply voltage	18-30 V
Consumed power at 24 V	10 W

ADD-ON MODULES FOR PLC **MKLogic200®**

MODULE	DESCRIPTION	Quantity of channels and their type
МК211	Designed to measure an electric analog signal from current sensors and instruments with a current output, as well as to input a discrete DC signal.	8 AI, 24 DI
МК234	Designed to reproduce an electric analog signal and measure an electric analog signal from current sensors and instruments with a current output.	8 AI, 2 AO
МК241	Designed for input of direct current discrete signal.	32 DI
МК242	Designed for output of direct current discrete signal.	32 DO
МК243	Designed to reproduce an electric analog signal and measure an electric analog signal from current sensors and instruments with a current output.	16 DI, 8 DO
МК245	Designed for calculation of direct current discrete impulses.	8 CI

Add-on modules can work both as part of the MK-201 controller and autonomously in automated process control systems. Information exchange with add-on modules of the MKLogic200 series can be carried out via the Modbus RTU protocol.

MIB-200 Ex® IS BARRIER

ADVANTAGES:

- Space-saving enclosure (the thickness of a two channel IS barrier is 17.5 mm);
- Galvanic isolation;
- Do not require grounding;
- High resistance to interference;
- Low value of reduced error;
- Support of 4..20 and 0...20 mA ranges;
- Operating ambient temperature is -40...+85 °C.

BRIEF DESCRIPTION

The MIB-200 Ex barrier has seven design versions. The design version of the product is defined by the channel type, as well as by the direction of signal communication. All design versions of the MIB-200 Ex barrier are of two-channel type.

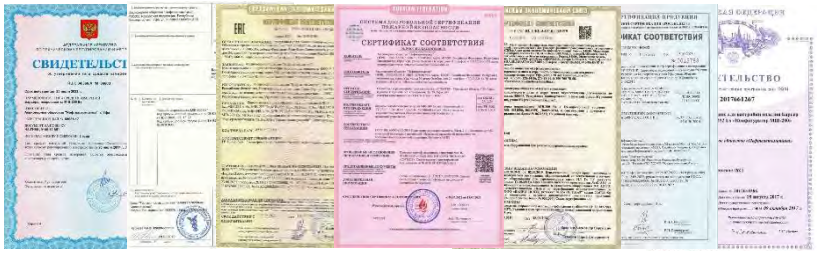
Marking of explosion-proof equipment – [Ex ia]IIC, [Ex ia]IIB.

PURPOSE

The IS barrier MIB-200 Ex is designed to ensure intrinsic safety in electrical circuits of devices located in an explosive zone, in alarm and emergency protection systems at enterprises of petroleum, coal, petrochemical, gas and other industries related to processing, production, application or storage of explosive mixtures, gases or vapors with air.

CERTIFICATES:

- Pattern approval statement and certificate for measuring instruments;
- Certificate of conformity to TR CU 020/2011 Electromagnetic compatibility of technical means;
- Certificate of conformity to TR CU 012/2011 On safety of equipment for operation in fire hazardous media;
- Certificate of goods orifin, form CT-1
- Certificate GOST IEC 60695-11-2013 Fire hazard testing;
- Certificate of state registration for application software for MIB-200 Ex;
- Certificate GOST R IEC 61508-2012.



DESIGN VERSIONS OF IS BARIERS MIB-200 Ex ®

DESIGN	DESCRIPTION
MIB - 212 (A) Ex **MIB - 211 (A) Ex**	Reception of analog current signals (4-20) mA from devices in an explosive zone and their transfer to an explosion-proof zone. They support data transmission via the HART protocol. MIB-212(A) Ex has 2 input channels to connect active and passive devices and 2 output channels to connect to receiving devices. MIB-211(A) Ex has 1 input channel to connect active and passive devices and 1 output channel to connect to receiving devices.
MIB - 232 (A) Ex **MIB - 231 (A) Ex**	Reception of analog current signals (4-20) mA from devices in an explosive zone and their transfer to an explosion-proof zone. MIB-232(A) Ex has 2 input channels to connect active and passive devices and 2 output channels to connect to receiving devices. MIB-231(A) Ex has 1 input channel to connect active and passive devices and 1 output channel to connect to receiving devices.
MIB - 221 (A) Ex **MIB - 222 (A) Ex**	Transmission of analog current signals (4-20) mA from devices in an explosion-proof zone to devices in an explosive zone. It supports data transmission via the HART protocol. MIB-222 (A) Ex has 2 input channels to connect control devices and 2 output channels to connect to actuators. MIB-221 (A) Ex has 1 input channel to connect control devices and 1 output channel to connect to actuators.
MIB - 241 (A) Ex **MIB - 242 (A) Ex**	Transmission of analog current signals within (4-20) mA from devices in an explosion-proof zone to devices in an explosive zone. MIB-242 (A) Ex has 2 input channels to connect control devices and 2 output channels to connect to actuators. MIB-241 (A) Ex has 1 input channel to connect control devices and 1 output channel to connect to actuators.
MIB - 261 Ex **MIB - 262 Ex**	Receiving discrete signals from devices in an explosive zone and transmitting them to an explosion-proof zone. Support of NAMUR standard signals. Diagnostics of the line condition. MIB-262 Ex has 2 channels to receive discrete signals from devices. MIB-261 Ex has 1 channel to receive discrete signals from devices.
MIB - 271 Ex **MIB - 272 Ex**	Transmission of discrete signals from devices in an explosion-proof zone to devices in an explosive zone. Active output. MIB-272 Ex has 2 input channels to receive discrete signals from control devices and 2 output channels to transmit these signals to alarm devices. MIB-271 Ex has 1 input channel to receive discrete signals from control devices and 1 output channel to transmit these signals to alarm devices.
MIB - 251 (A) Ex **MIB - 252 (A)Ex**	Receiving analog signals from thermocouples and resistance temperature detectors. It converts signals and transmits them as analog signals in a range of 4...20 mA (0...20mA). It receives signals from devices with a DC voltage input signal in a range of -10...100 mV and from devices with an electrical resistance output signal in a range of 0...3000 ohms, converts them and transmits them as analog signals of 4...20 mA (0...20 mA). It is configurable. MIB-252 (A) Ex has 2 intrinsically safe input channels for receiving analog signals from thermocouples and resistance temperature detectors and 2 output channels. MIB-251 (A) Ex has 1 intrinsically safe input channel for receiving analog signals from thermocouples and resistance temperature detectors and 1 output channel.

MEDIA CONVERTER T100E

PURPOSE

The media converter T100E is used to convert data transmission medium by using SFP modules for various media environments and combining geographically dispersed network segments with a fiber optic communication channel.

AREAS OF APPLICATION:

Media converters are widely used in automated monitoring and control systems for process facilities and processes. Thanks to its compact body, the T100E media converter can be installed in small communication cabinets and electrical boxes.

GENERAL CHARACTERISTICS:

- No intermediate buffering of Ethernet packets;
- Maximum delay of a packet passing from port to port does not exceed: 0.5 μs;
- Equipped with indication;
- Galvanic isolation of error contacts;
- Connection stability;
- Weight – not more than 120 g;
- Power supply voltage: 12…48 V (main); 12…48 V (spare);
- Power consumption (with an optical transceiver installed for a distance of 10 km and a supply voltage of 24 V): 4 W (tolerance is minus 20%).

FUNCTIONAL CAPACITIES:

- Half-duplex and full-duplex transmission modes;
- Auto negotiation in accordance with IEEE 802.3u;
- Automatic selection of MDI/MDI-X mode for 100BASE-TX port;
- "Hot" replacement of the SFP module;
- Device and port status indicators.

CERTIFICATION

- Certificate of conformity to the requirements of CU TR 020/2011 Electromagnetic compatibility of technical means.

EXPERIENCE IN IMPLEMENTING PROJECTS USING AUTOMATION TOOLS MANUFACTURED BY JSC NEFTEAVTOMATIKA

FACILITIES OF INDUSTRIAL AUTOMATION:

- PLC MKLogic-500®;
- PLC MKLogic200®;
- IS barriers MIB ®;
- Media converter T100E;
- Terminal modules MT-500;
- Direct current instrument converters PTN-E2N-01

EXAMPLES OF IMPLEMENTATING PROJECTS USING PLC MKLogic-500; MKLogic200 and MIB-200 Ex

Gazpronmeft– Khantos, LLC
Facility under control: Free water knock-out unit;
Location: Zapadno-Zimniy linear section of oil field named after A. Zhagrin;
Project scale: 1,300 signals.
Products: MKLogic-500; MIB-200 Ex

OJSC Udmurtneft
Facility under control: Automated group metering station 120M-10 pcs
Location: Oil field of OJSC Udmurtneft
Project scale: 630 signals.
Products: MKLogic200; MIB-200 Ex

Bashneft-Polyus, LLC
Facility under control: Automated group metering station 120M-6 pcs
Location: Oil field of Bashneft– Polyus, LLC
Project scale: 378 signals.
Products: MKLogic200; MIB-200 Ex

Gazpronmeft-Zapolarye, LLC
Facility under control: Oil treatment package;
Location: Chayandinskoye oil, gas and condensate field;
Project scale: 1,500 signals.
Products: MKLogic-500; MIB-200 Ex

Lukoil-West Siberia, LLC
Facility under control: Marketable gas treatment unit;
Location: Khalmerpayutinskoye gas condensate field;
Project scale: 1,306 signals.
Products: MKLogic-500; MIB-200 Ex

Gazpromneft– Development, LLC
Facility under control: Oil treatment package;
Location: Tazovskoye oil, gas and condensate field;
Project scale: 1,500 signals.
Products: MKLogic-500; MIB-200 Ex

RN-Procurement-Nefteyugansk, LLC
Facility under control: Packaged cluster pump station with 3 central pump stations 240-1900;
Location: Ombinskoe oil field;
Project scale: 550 signals.
Products: MKLogic200; MIB-200 Ex

MIP-Stroy No. 1, LLC
Facility under control: Automated dispatch management system for the electromechanical service;
Location: Kozhukhovskaya line, Moscow subway;
Project scale: 8,200 signals.
Products: MKLogic-500

We have all the necessary licenses and certificates for use in the territory of the Customs Union: certificates of type approval for measuring instruments; certificates of conformity to the requirements of CU TR 020/2011 Electromagnetic compatibility of technical means; certificates of conformity CU TR 012/2011 On equipment safety for operation in explosive media.

NaftaProcess®

A distributed control system (DCS) NaftaProcess is a software and hardware complex used to control processes at enterprises of chemical, petroleum and oil refining industries.

NaftaVision®

NaftaVision SCADA system is a software package designed for the development of information gathering, processing, displaying and archiving systems for a monitored or controlled facility and ensuring their operation in real time.

NaftaSystem®

NaftaSystem is a software and process complex used to perform the functions of measurement, monitoring and calculation of process parameters, control of the main and auxiliary processes and equipment, including at hazardous production facilities.

The principle of the NaftaSystem software and hardware complex operation is based on analog-to-digital conversion of the measured value, followed by processing by the built-in microprocessor and data transmission through the respective interfaces, as well as digital-to-analog conversion.

DISTRIBUTED CONTROL SYSTEM **NaftaProcess®**

DCS **NaftaProcess** is a software and hardware complex used to control processes at enterprises of chemical, petroleum and oil processing industries.

DCS NaftaProcess is designed with the understanding that the enterprise may need to solve the following tasks:

- Process a large quantity of process parameters (over 1000);
- It is undesirable or prohibited to stop the process;
- The process shall be displayed in a lot of operator workstations;
- Data shall be protected at all levels of system devices.

STRUCTURE:

- Controller (executes a process program and has a standby CPU module to protect the system from faults);
- Engineer workstation (sets up and stores the system configuration);
- Operator workstation (provides for visualization and monitoring of the process);
- Integration workstation (provides access of the upper-level automated systems of the enterprise to **NaftaProcess**);
- **NaftaProcess** transport network (carries out communication within the system).

CAPABILITIES:

- Automated control;
- Visualization of the current status;
- Remote control;
- Registration of changes and events;
- Historic information represented as diagrams and tables;
- Automatic submission of data to the upper-level software complexes using OPC UA data communication protocol;
- Configuring and extension of functionality without stopping the process.

ENGINEERING

JSC Nefteavtomatika has been implementing APCS projects for over 50 years.

This experience was taken into account when creating the DCS **NaftaProcess**

- The whole project can be set up inside a unified development environment. It is enough to launch the environment in order to set up visualization, history parameters, controllers and obtain access to the function block library.
- You can change configuration and extend the system without stopping the process.
- The integrated solution for HMI simplifies creation of visualization. This means that to create a mnemonic diagram, it is enough to enter the name of a function block.
- The function block library makes it possible to use ready solutions on mnemonic diagrams multiple times.
- **NaftaProcess** is supported both by Windows and by Linux.

HARDWARE BASE

We use the controller **MKLogic-500** with original software, it complies with the requirements of GOST IEC 61131-2, it has a modular structure.

INFORMATION SECURITY

The DCS **NaftaProcess** offers the following capabilities:

- Data are coded starting from the level of controller to the level of integration into the upper-level systems;
- Authorization and limitation of access to data protect all system levels from unauthorized actions.

NaftaVision® SCADA SYSTEM

NaftaVision SCADA system is a software package designed for the development of information gathering, processing, displaying and archiving systems for a monitored or controlled facility and ensuring their operation in real time.

CAPABILITIES:

- Obtaining operational data on process parameters and status of process equipment from controllers;
- Visualization of parameters and status of technical equipment, as well as light and sound alarm for events;
- Remote process control;
- Support for complex animation and decision support;
- Generation, display and archiving of process parameters, emergencies, failures, operator's actions, information on non-execution of control commands, with registration of event time;
- Protection of archive data from direct editing;
- Generation, display and archiving of trends of technical parameters changes;
- Support of redundancy for connection with a controller, with bumpless switching from the main channel to a spare one;
- Automatic provision of data for upper-level software systems;
- Collection and display of diagnostic data from devices;
- Flexible system;
- Remote control;
- Registration of changes and events;
- Historic information represented as diagrams and tables;
- Configuring and extension of functionality without stopping the process.

INFORMATION SECURITY:

- Data are coded starting from the level of controller to the level of integration into the upper-level systems;
- Authorization and limitation of access to data will protect all system levels from unauthorized actions.

ENGINEERING

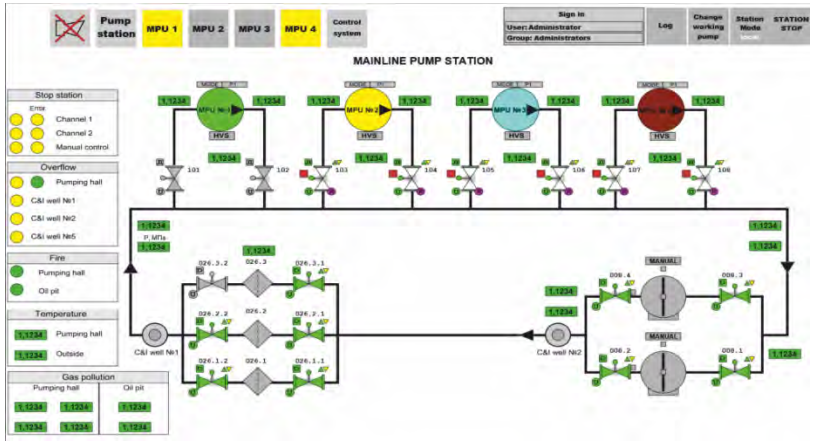
SCADA NaftaVision is created taking into account 50-year experience of our company in the sphere of industrial automation:

- Focus on clients and flexibility are the core values of SCADA NaftaVision;
- Development of unified APCS projects;
- Development environment universality;
- Flexibility in implementing the functionality of APCS projects to meet the needs of the Client;
- Support of Windows and Linux.

STRUCTURE

SCADA NaftaVision includes the following set of constituent nodes:

- Engineer's workstation for the setup and storage of system configuration;
- Operator's workstation providing for visualization and monitoring of a process;
- Integration workstation providing access for the upper-level systems of the enterprise to NaftaVision;
- Web station providing access for web clients to process visualization and monitoring.



DISTRIBUTED CONTROL SYSTEM NaftaSystem®

NaftaSystem is a software and process complex used to perform the functions of measurement, monitoring and calculation of process parameters, control of the main and auxiliary processes and equipment, including at hazardous production facilities.

The principle of the software and hardware complex operation is based on analog-to-digital conversion of the measured value, followed by processing by the built-in microprocessor and data transmission through the respective interfaces, as well as digital-to-analog conversion.

CAPABILITIES:

- measurement of input electrical signals, as well as reproduction of DC rate;
- conversion of input electrical signals into a digital format suitable for computer processing;
- collection and special processing of information about the progress and parameters of the process in real time, display of all the necessary process parameters on the workstation of operators and dispatchers;
- remote and programmable logic control of actuators;
- automatic control of process parameters;
- automatic emergency shutdown of process equipment, control of protections and interlocks tripping.

METROLOGICAL CHARACTERISTICS

PARAMETERS	VALUE
Range of current measurement for analog channels	4 to 20 mA
Range of current reproduction for analog channels	4 to 20 mA
Measuring range of the number of pulses (with a repetition rate of 1 to 10,000 Hz)	1 to 16×106 pulses*
Limits of permissible reduced error for current change	± 0.25 %
Absolute error in measuring the number of pulses	± 1 pulse*

*for the software and hardware complex that includes MKLogic200 PLC with MK201 or MK245 modules

MAIN TECHNICAL CHARACTERISTICS

PARAMETERS	VALUE
Operating conditions - ambient air temperature - relative humidity at 30 C - atmospheric pressure	 5 to 40℃ not more than 75 % 84 to 106.7 kPa
Electrical power supply parameters - AC voltage - AC frequency	 220±22 V 50±0.4 Hz
Average service life	10 years
Mean time to failure	25,000 hours

EXPERIENCE IN IMPLEMENTING PROJECTS USING INDUSTRIAL AUTOMATION SYSTEMS MANUFACTURED BY JSC NEFTEAVTOMATIKA

INDUSTRIAL AUTOMATION SYSTEMS:

- Distributed control system (DCS) NaftaProcess®;
- NaftaVision SCADA® system;
- Software and process complex NaftaSystem ®.

SCOPES OF WORK UNDER CONTRACTS USING THE INDUSTRIAL AUTOMATION SYSTEM DCS NaftaProcess:

Gazpronmeft-MNPZ, JSC – Moscow Refinery
APCS for Cooling water unit No. 3
Over 550 signals.

Gazpronmeft-ONPZ, JSC
APCS for gas fractionation unit.
Over 1,100 signals.

Afipsky Refinery, LLC
APCS for straight-run gasoline stabilization unit with the receipt of feed for hydrogen production.
Over 1,800 signals.

Afipsky Refinery, LLC
APCS for Offsite facilities

Cooling water unit.
Over 900 signals.

Production and heating boiler house with a liquid fuel tank farm.
Over 4000 signals.

Flare discharge recovery unit
Over 780 signals.

Additives injection unit.
Over 300 signals.

Intermediate LPG tank farm (t. 81000) and Industrial tank farm (t. 80600).
Over 2700 signals.

Local treatment facilities.
Over 1400 signals.

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