CUSTOM

Combining technologies
into high-efficiency
solutions

K15® MODULAR PROGRAMMABLE LOGIC CONTROLLERS

GENERAL INFORMATION

8 YEARS
ON THE MARKET
OF AUTOMATION AND
METROLOGY

CUSTOM Group of Companies is an alliance of Russian engineering and production companies specializing in designing and manufacturing programmable logic controllers, local control systems for metering and automation of production processes, automatic loading and unloading systems, corrosion monitoring systems, electric control units of isolation valves.

Within the alliance there is A&T Technologies. This company is an expert in developing programmable logic controllers released under K15® label. **K15® equipment conforms to the industry standards and is listed in Gazprom Neft PJSC KT-610 BRD Register.**

Training Center

Engineering Center

R&D

+ 10 000 installations
Footprint

ГОСТ 51840-2001
K15® products comply with the standards

PROCESS CONTROL. YOUR BENEFITS

PROCESS CONTROL IS FAST AND PRECISE, NO ADDITIONAL LOAD ON A SCADA SYSTEM

- CPU: 6-core ARM64, 1.8 GHz, 4 GB RAM
- Edge computing (coming soon)

INTEGRATED IT LANDSCAPE, CONNECTED DEVICES AND SYSTEMS

- Protocols: OPC UA, MQTT, CANopen, Modbus RTU, EtherNet/IP, Profibus, ProfiNET, BACNet
- Interfaces: 3xRS-485, 1xRS-232, 2xUSB, 2xEthernet, 1xHDMI
- Ethernet-APL (coming soon)

CONTROL AND MONITOR OF AS MANY DEVICES AS NEEDED

- I/O modules: 127 (CANopen) + 128 (Modbus)
- Pre-installed Linux Ubuntu and Codesys 3.5

OUR SOLUTION

PRODUCTS

K15.CPU.LX1

High Efficiency Freely Programmable Logic Controller

CPU PARAMETERS

Processor	Rockchip
Processor architecture	ARM 64 bit
Number of cores	6
Processor core frequency	1,8 GHz
Processor OS	Linux
PLC internal bus protocol (CPU - I/O modules data exchange, CPU - extension rack / unit data exchange)	CAN Open 2.0
DDR3 RAM	4 Gb
System flash drive	32 Gb
Retain memory	512 Kb and more (extendible by programming)
Extended temperature range	-20...+60 °C

SOLUTION FOR RELIABILITY

- Hot module replacement
- Channel redundancy
- I/O line status check
- Module communication check
- Interrogated unit communication check
- Integrity control of the system software

PRODUCTS

K15.CPU.LX1
High Efficiency Freely Programmable Logic Controller

COMMUNICATION CAPABILITIES

- Compatible with open protocols EtherCAT, EtherNet/IP, CANopen, Modbus (TCP client /server, RTU client /server), OPC UA, MQTT, Profibus, ProfiNET, BACnet
- Built-in OPC UA server
- 3x RS-485 with galvanic separation, 1x RS-232 with galvanic separation RTS/CTS
- Data transfer rate: 1,200...115,200 bps
- 2x USB 2.0 ports
- HDMI output for external monitors
- Basic module rack within 1 network segment - up to 32 pcs
- Module rack extendible with CAN bus - up to 127 I/O modules.
- Web-interface
- Hot software update

PRODUCTS

K15.CPU.LX1
High Efficiency Freely Programmable Logic Controller

DEVELOPMENT ENVIRONMENT

- The development environment interacts with runtime under Linux OS control
- Codesys 3.5 development environment (IEC 61131-3 programming languages)
- Online monitoring of application performance and obtaining the variables
- The watchdog timer will prevent the program cycle from exceeding the control time
- Compatible with user event logs
- The application receives diagnostic results on PLC modules status
- Different access rights for users to different sections of design data (Role assignment)
- Visualized date base configuration for Modbus TCP and Modbus RTU
- Available software redundancy through Codesys 3.5 (Coming soon)

INFORMATION SECURITY

Different access rights of users for different operations

Foreign licensed software

PRODUCTS

K15.CPU.LX1
High Efficiency Freely Programmable Logic Controller

OPEN PROGRAMMABLE CONTROLLER PRINCIPLES

- Interoperability and functions equivalent to PLCs of other manufacturers
- Programming in C, C++, Python or other languages for Linux OS
- Open PLC architecture. Interface allows to interact with third-party I/O module racks via CAN and RS-485
- Cross-platform allows to work with different Linux OSs
- Pre-installed graphic Linux OS
- Possible to use real-time OS (Linux RT)
- Web-visualization
- Local DBMSs installed directly in the controller
- Possible to deliver the image to any display besides standard HMI panels

PRODUCTS

K15® I/O MODULES

- Analog I/O modules
- Discrete I/O modules
- I/O modules with NAMUR signals
- Interface module
- Pulse counting modules

- Hot module replacement
- Internal data exchange via CAN or RS-485 interfaces
- Exchange protocols: CANopen, Modbus RTU/ASCII
- High-accuracy analog modules (16-bit ADC)
- Extendible with T-BUS
- Individual / group galvanic channel isolation
- Channels protected from overload, overcurrent, power input reverse polarity
- LED indicators
- Possible to use modules with third-party Modbus RTU master devices
- Extended temperature range (-40…+60°C)

BASIC PARAMETERS OF I/O MODULES

DI, DO, AI, AO channel galvanic separation	Yes
DI channel short circuit diagnostic	DI4.NAMUR
DI channel open circuit diagnostic	DI4.NAMUR
Diagnostic of exceeded measurement range	Yes
Countable pulses in DI channels	Yes
Measurable frequency in DI channels	Yes
PWM signal can be formed in DO channel	Yes
DO channel short circuit diagnostic	Yes
DO channel open circuit diagnostic	Yes
AI channel ADC, bit	16
Measuring current signals between 0 and 20 mA, 4 and 20 mA, -20 and 20 mA	Yes
Basic percentage error in measuring current signals between 0 and 20 mA, 4 and 20 mA, -20 and 20 mA	± 0,1
Measuring voltage signals between 0 and 10 V, -10 and 10 V	Yes
Basic percentage error in measuring voltage signals between 0 and 10 V, -10 and 10 V	± 0,05

LIST OF MAJOR COMPLETED PROJECTS

Dec 2024

Project name	Customer name	Project Description	YEAR	TOTAL ORDER VALUE (US$)	ROLE IN SUPPLY
Manufacture and supply of software and hardware complexes for electricity metering	RN-VANKOR, LLC	Automated system of dispatching and technical control of power supply and technical metering of electricity, based on PLC of the K15 series, for the development of the Vankor oil field.	2024	768 700	Sub-supplier
Supply of programmable logic controllers of the K15 series for automation of technological processes in automated group measuring units (AGMU)	OZNA Measuring Systems, LLC	Measurement and data processing units based on PLCs of the K15 series for local automation of modular equipment for measuring the flow rate of oil wells. End users: Rosneft (RN-Yuganskneftegaz, RN-Vankor, Samotlorneftegaz, Udmurtneft, Sibintek, RN-Komsomolsky refinery), Lukoil (Lukoil-Western Siberia), Gazpromneft.	2024	370 450	Sub-supplier
Supply of programmable logic controllers of the K15 series for automation of technological processes in automated group measuring units (AGMU)	Parkuz Group, LLC	Control cabinets based on PLCs of the K15 series for local automation of modular equipment for measuring the flow rate of oil wells. End users: Rosneft (RN-Yuganskneftegaz, RN-Vankor, Samotlorneftegaz, Udmurtneft, Sibintek, RN-Komsomolsky refinery), Lukoil (Lukoil-Western Siberia), Gazpromneft.	2024	237 750	Sub-supplier
Production and serial delivery of floater position indicators K15.0001. INCL.1Ex db IIC T6 Gb	SOZAiT, LLC	Supply of floater position indicators for automated group metering units (AGMU). End users: Rosneft (RN-Yuganskneftegaz, RN-Vankor, Samotlorneftegaz, Udmurtneft, Sibintek, RN-Komsomolsky refinery), Lukoil (Lukoil-Western Siberia), Gazpromneft.	2024	32 300	Sub-supplier
Production and serial delivery of float position indicators 15.0001. INCL.1 Ex db IIC T6 Gb	HMS Neftemash, JSC	Supply of float position indicators for automated group metering units (AGMU). End users: Rosneft (RN-Yuganskneftegaz, RN-Vankor, Samotlorneftegaz, Udmurtneft, Sibintek, RN-Komsomolsky HP3), Lukoil (Lukoil-Western Siberia), Gazpromneft.	2024	29 600	Sub-supplier
Supply of programmable logic controllers of the K15 series for automation of technological processes in automated group measuring units (AGMU)	TIUS, LLC	Control cabinets based on PLCs of the K15 series for local automation of modular equipment for measuring the flow rate of oil wells. End users: Rosneft (RN-Yuganskneftegaz, RN-Vankor, Samotlorneftegaz, Udmurtneft, Sibintek, RN-Komsomolsky refinery), Lukoil (Lukoil-Western Siberia), Gazpromneft.	2023	158 700	Sub-supplier
Supply of programmable logic controllers of the K15 series for automation of technological processes in automated group measuring units (AGMU)	OZNA Measuring Systems, LLC	Measurement and data processing units based on PLCs of the K15 series for local automation of modular equipment for measuring the flow rate of oil wells. End users: Rosneft (RN-Yuganskneftegaz, RN-Vankor, Samotlorneftegaz, Udmurtneft, Sibintek, RN-Komsomolsky refinery), Lukoil (Lukoil-Western Siberia), Gazpromneft.	2023	962 000	Sub-supplier

FUTURE DEVELOPMENT

- New CPU-Lite series
- HART-compatible modules
- Modules for measuring RTD signals
- Modules for measuring thermocouple signals
- I/O module with wireless communications interfaces (BT, WiFi, GSM, GPRS, LoRa, ZigBee, GPS/GNSS)
- Mixed modules (combined DI, DO / AI, AO)
- DCPU (data collection and processing unit)
- PLC with full hardware and software redundancy
- Adaptation of several versions of development environments for respective languages IEC 61131-3 (Master PLC)
- Hypervisor (physical and virtual PLC in one CPU)
- SIL2 Certificate of Conformity

COOPERATION CONDITIONS

We offer mutually beneficial partnership and a customized approach

- **The production lead time is 45 days** as of the date of signing a contract and a delivery specification.
- **The warranty period is 24 months** as of the delivery date.
- **Payment schedule:** 50% upon the product readiness for shipment, 50% within 30 calendar days after shipment.
- **A volume discount is discussible.**
- **Available JIC stock.**

ENGINEERING CENTER

Development of the circuit technique and software

Electronics assembly & repair shop

Electrotechnical test lab

PRODUCTION CYCLE

- **Engineering and process design**
- **Automated acceptance and income inspection of electronic components**
- **Assembly of modules and controllers**
- **Configuration and calibration of modules and controllers, upgrade of firmware**
- **Tests:**
  - performance tests for up to 72 hours, as per Test Plans
  - heat chamber test
  - reporting on all results
- **Factory acceptance tests, including stress runs**
- **100% output inspection**

JOINT
BUSINESS DEVELOPMENT

CUSTOM Group of Companies sees its business opportunity in the localization of the microelectronics development and PLC production in MENA region.

We offer you to consider a possibility of joint business development.

CUSTOM

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Custom Group of Companies

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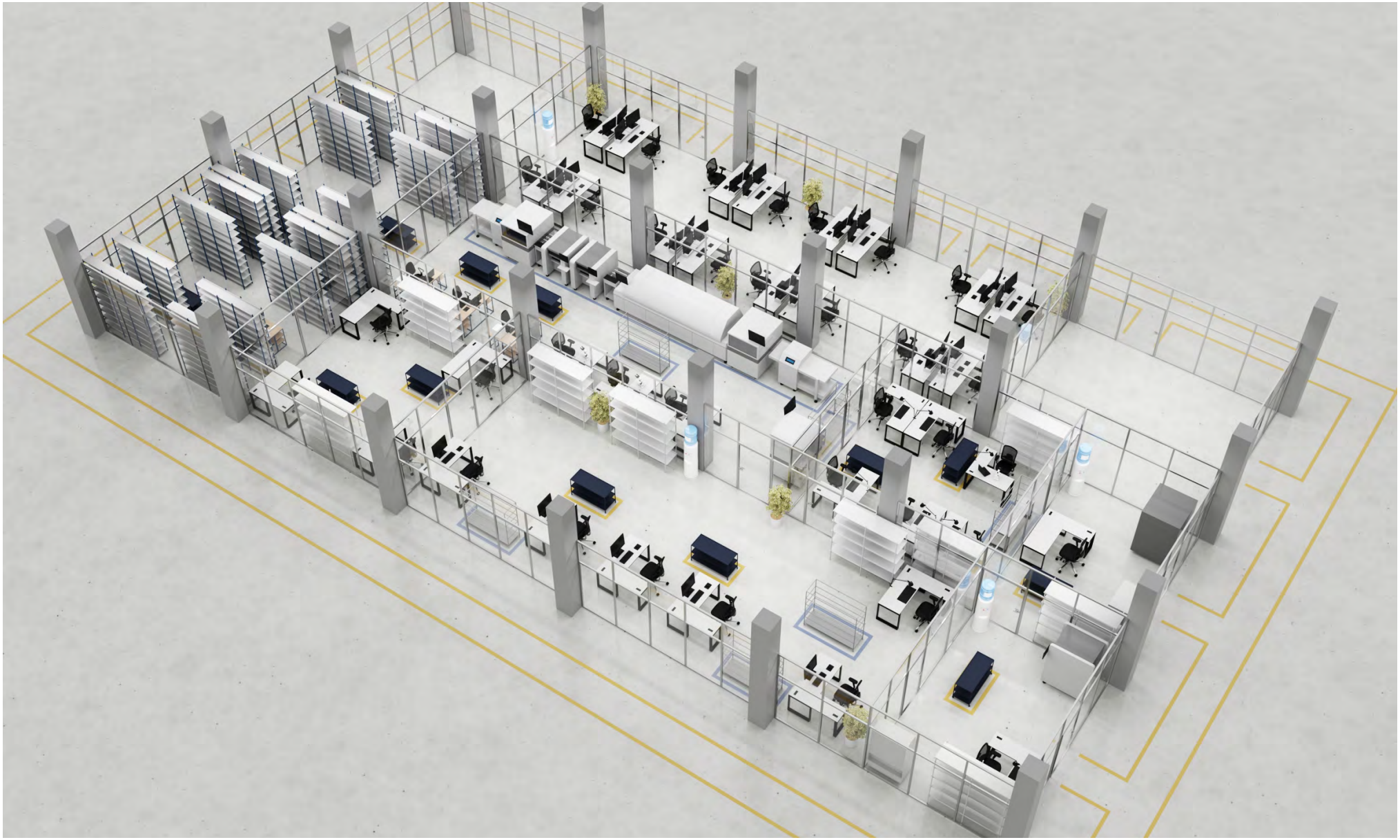
EXAMPLE OF THE LAYOUT OF A MICROELECTRONICS CENTER



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