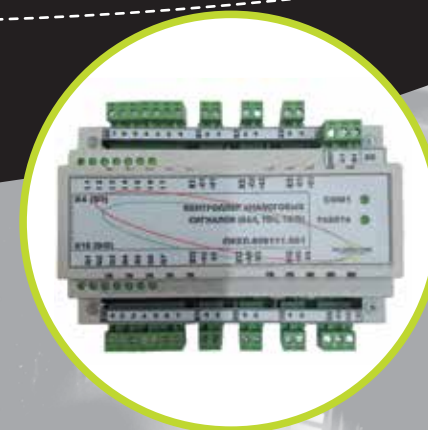




COMPLEX SULTIONS
IN THE FIELD OF
ENERGY DISTRIBUTION



MANUFACTURING AND
INSTALLATION OF
POWER-SUPPLY AND
AUTOMATION SYSTEMS



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● ABOUT US

The Scientific Industrial Enterprise PK ELECTRIC was founded in 2014. Since that time we have proven to be responsible and diligent company. We solve cross-cutting tasks in the field of designing, manufacturing, installing and commissioning of electric equipment in such industrial branches as energy industry (including the nuclear one), metallurgy, mineral and other branches.

Our company is located in Kharkiv, one of the biggest cities of Ukraine.

Among our partners there are such well-known international manufacturers as Schneider Electric, General Electric, IEK and others. We've got customers not only from Ukraine but also from other countries. We guarantee the required functionality as well as maximum service life of our equipment.

● WORKS AND SERVICES

1. Site survey in order to carry out assessment and work out proposals for equipment updates.
2. Development of technical and commercial offers.
3. Design and development works. Development of schemes and design solutions, executive and operational documentation for products being manufactured.
4. Manufacturing of complete products according to both our own designs and Customer's documentation.
5. Installation, supervision and commissioning of the delivered equipment by qualified technicians at the Customer's site.
6. Warranty, post-warranty, service maintenance and repair of all manufactured and delivered equipment.

SHORT LIST OF OUR PRODUCTS:

1. Direct-current boards
1.1 Devices for application in direct-current boards
2. Local distribution boards
3. Operative current cabinets
4. Rectifier chargers
5. Uninterruptible power supply cabinets
6. Complete relay protection and automation devices
7. Complete devices for power distribution and control of manufacturing equipment
8. Low-voltage distribution boards for transformer substations with voltage of 6/10-0.4 kV and power of 630-2500 kW
9. Cabinets for complete local transformer substations
10. Crane panels
11. Controlling equipment for main and auxiliary electric drives of mechanisms used in coal-mining, mineral and other industrial branches.
12. Complete alternating-current low-voltage devices of SchO PK series
13. Instrument and automation cabinets
14. Power distribution hubs
15. Custom design devices

1. DIRECT-CURRENT CABINETS

Direct-current boards are used in uninterruptible power supply systems. They are based on own-produced rectifier chargers.

Direct-current boards are intended for:

- providing uninterruptible power supply to operative direct current circuits, relay protection command circuits, different kinds of automation means, alarm systems, temporary magnets that control power switches, emergency lightning, devices of automated technological control systems;
- maintenance of all kinds of acid batteries.



The boards ensure

- normal operation under the supply voltage deviation from the nominal from minus 20% to plus 15%, and under the supply frequency deviation from the nominal value of up to 1 GHz;
- output direct current voltage regulation using the converter, which receives alternating current from the supply network at its input;
- supply of direct current output circuits under continuous operation from two sections of the local distribution board, or from a storage battery, when voltage at both alternating current inputs is absent;
- Direct current supply from two rectifier chargers, and from one or two storage batteries
- Direct-current power distribution between consumers;
- ability to work with both integral and standalone direct-current bus bars;
- maintenance of battery support modes with provision of their maximum service life;
- building of a heavy-duty local power supply system with the use of additional storage batteries and rectifier chargers 220V/24V;
- protection of outgoing lines and inputs from short-circuit currents and overloading with required selectivity, with application of appropriate protective means;
- Building of a “flickering light” auxiliary circuit;
- control of electric circuit parameters and alarming of occurrence of deviations from nominal values;
- measurement of storage battery charging current using board-mounted measuring instruments, storage battery charging/discharging current, ES buses load current, rectifier charger load current, primary bus voltage;
- indication of position of main switching devices using mnemonic-scheme warning lights.

1.1 DEVICES FOR APPLICATION IN DIRECT-CURRENT BOARDS

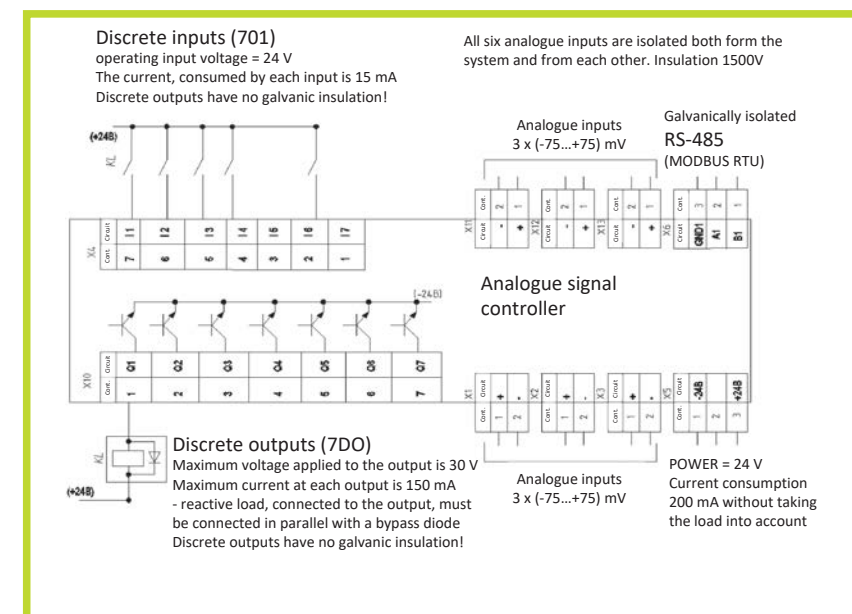
Analogue signals controller (6AI, 7DI, 7DO) PKEL.656111.001

It is intended for measurement of analogue, and fixation of discrete signals for further transmission of the results to the top-level hardware by means of the RS-485 MODBUS interface. Using the interface it is also possible to switch on discrete outputs.

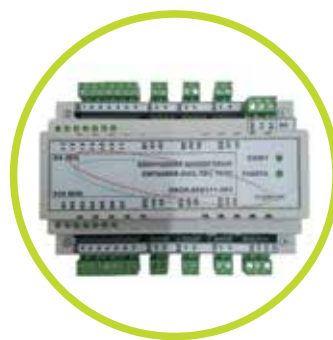
Structurally the analogue signals controller represents a functionally complete unit, assembled in a plastic case, intended for installation onto the DIN rail.

Technical Data:

1. Power mains:	
- input voltage, V	= 24
2. Input current, A	0,3
3. Input channels quantity	3. Input channels quantity
- analogue, ± 100 mV	6
- discrete, = 24 V	7
4. Output channels quantity, discrete	7
- Maximum operating output voltage, V	24
- Maximum output current, A	0,2
5. Availability of the RS-485 communications interface	2
6. Mode of operation	continuous
7. Ingress protection	IP20
8. Climate version	NF4
9. Overall dimensions (HxWxD), mm	63 x 139 x 89
10. Wight, kg, not more than	1
11. The unit is equipped with operating mode indication system.	



In ORDER TO measure high voltages (up to ± 400 V) you can connect the VD-unit to the controller.

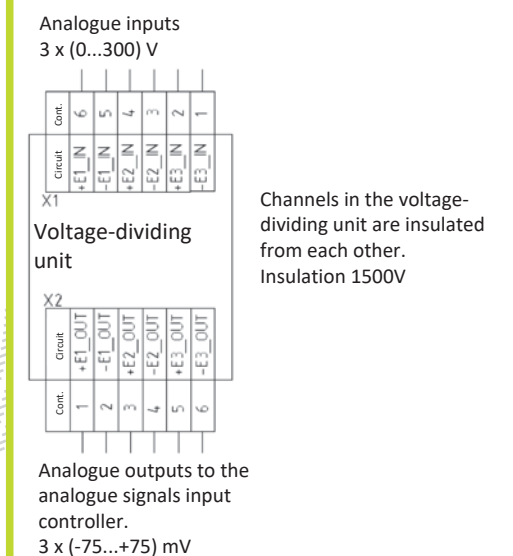
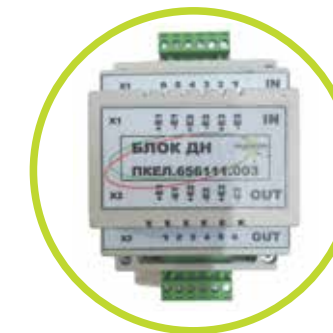


Voltage dividing unit PKEL.656111.003

The unit is intended for bringing high voltage (up to ± 400 V) to normalized voltage ± 100 mV.

Technical Data:

1. Input channels quantity	3
2. Maximum voltage on inputs, V	± 400
3. Mode of operation	continuous
4. Ingress protection	IP20
5. Climate version	NF4
6. Overall dimensions (HxWxD), mm	63 x 63 x 89
7. Wight, kg, not more than	0,2



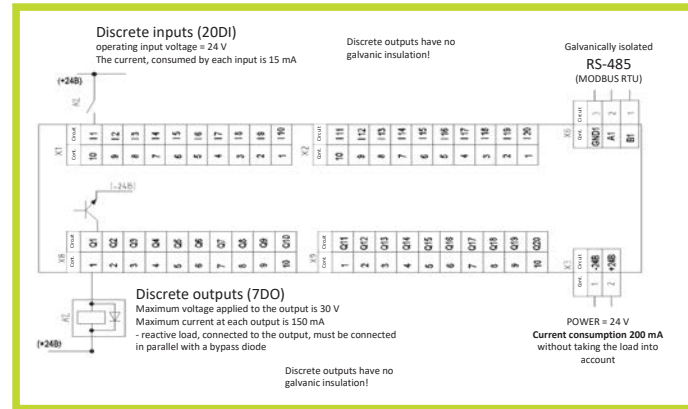
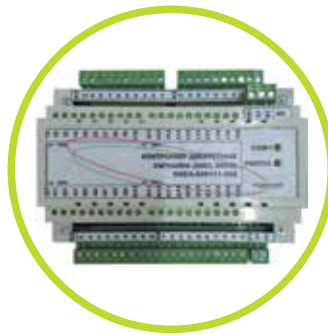
Discrete signals controller (20DI, 20DO) PKEL.656111.002

The controller is intended for fixation of discrete signals and further transmission of the results to the top-level hardware by means of the RS-485 MODBUS interface. Using the interface, it is also possible to switch on discrete outputs.

Structurally the discrete signals controller represents a functionally complete unit, assembled in a plastic case, intended for installation onto the DIN rail.

Technical Data:

1. Power mains:	
- input voltage, V	= 24
2. Input channels quantity	
- discrete, = 24 V	20
3. Output channels quantity, discrete	20
- Maximum operating output voltage, V	24
- Maximum output current, A	0,2
4. Availability of the RS-485 communications interface	2
5. Mode of operation	continuous
6. Ingress protection	IP20
7. Climate version	NF4
8. Overall dimensions (HxWxD), mm	63 x 139 x 89
9. Wight, kg, not more than	1
10. The unit is equipped with operating mode indication system.	

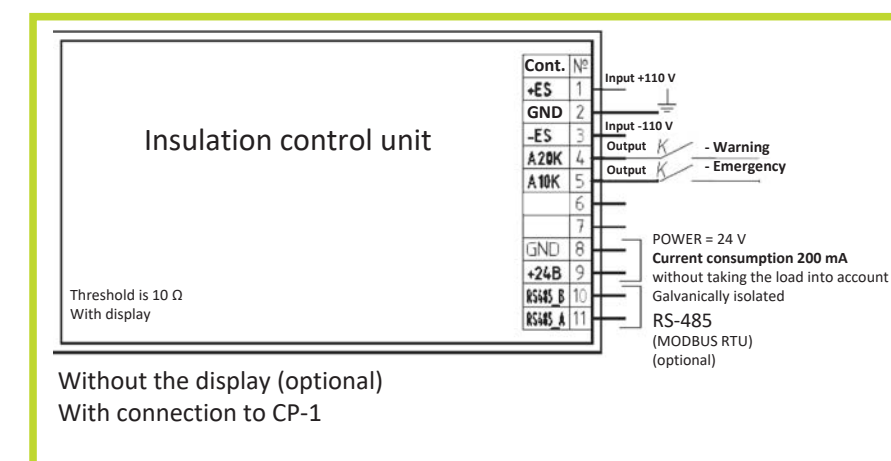


Insulation control UNIT V2.1

The insulation control unit (ICU V2.1) is intended for continuous control of direct-current supply circuits' insulation resistance in relation to the ground. Structurally the ICU represents a functionally complete unit, assembled in a metallic case, intended for installation onto the flat surface. The ICU is equipped with graphical display, intended for visual control of insulation resistance, as well as with keypad, intended for operations modes configuration.

Technical Data:

1. Power mains:	
- input voltage, V	= 24
2. Controlled network:	
- Operating voltage range, B	= 80 ... = 360
- insulation resistance measurement range, kOhm	0 ... 200
3. Availability of the RS-485 communications interface	1
4. R tripping level for lines = 110 V, kOhm	20 / 10
5. R tripping level for lines = 220 V, kOhm	40 / 20
6. Alarm relay outputs (emergency and warning)	2
- contact type	Normally open
- Allowed current, A	2
- Allowed voltage, V	=30 / ~ 250
7. Mode of operation	continuous
8. Ingress protection	IP20
9. Climate version	NF4
10. Overall dimensions (HxWxD), mm	138 x 179 x 62
11. Wight, kg, not more than	1,5



Feeder-to-feeder insulation control unit V 3.0 PKEL.656111.007

The feeder-to-feeder insulation control unit (ICU V 3.0) is intended for continuous control of direct-current supply circuits' insulation resistance in relation to the ground, with ability to detect a specific faulty feeder (up to 32 feeders).

The unit is equipped with the RS-485 (MODBUS) communications interface, used for communications with top-level hardware. For example, in order to transmit the measurement results to the CP-1 Control panel, equipped with an LCD display used for displaying parameters, or to any other device that supports the corresponding protocol. The tripping settings of the unit on extreme insulation resistance (emergency alarm) are configured using the RS-485 (MODBUS) communications interface.

Technical Data:

1. Power mains:	
- input voltage, V	= 75...=260
2. Controlled network:	
- Operating voltage range, B	=110 ... = 220,
- insulation resistance measurement range, kOhm	0...100
3. Relay output	
- contact type	Normally open
- Allowed current, A	2
- Allowed voltage, V	=30 / ~ 250
4. Availability of RS-485 MODBUS communication interface	1
5. Protection tripping level, kOhm	5...60
6. Number of processed feeders, max, pcs.	32
7. Mode of operation	continuous
8. Ingress protection	IP20
9. Climate version	NF4
10. Overall dimensions (HxWxD), mm	64 x 202 x 118
11. Weight, kg, not more than	2



Storage battery circuit integrity control unit

The unit detects faults in the storage battery circuit and generates emergency signal, thus improving operational reliability of direct voltage plant, equipped with storage batteries. Structurally, the SBCICU consists of two functionally complete units:

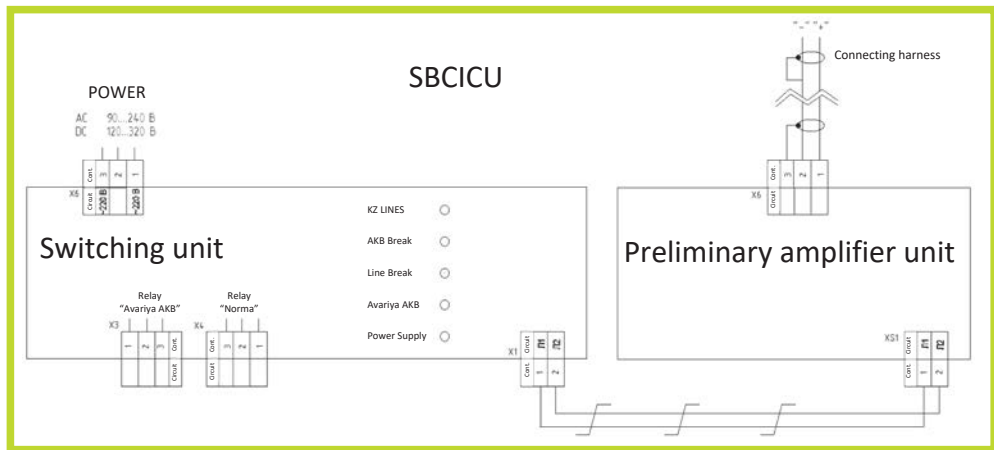
- switching unit (A2), assembled in a plastic case, intended for installation onto the DIN-rail;
- preliminary amplifier (A1), assembled in a plastic case with wiring harness used for connection of the unit to the instrument shunt, and intended for installation onto the DIN-rail.

Technical Data:

1. Alternating current power mains:	
- input voltage, V	95...245
2. Direct current power mains:	
- input voltage, V	95...350
3. Threshold voltage, μ V, not more than	± 10
4. Overall dimensions, (HxWxD) mm	
- the A1 unit	63 x 53 x 89
- the A2 unit	63 x 139 x 89
5. Mode of operation	continuous
6. Alarm relay outputs	2
- contact type	make-and-break
- Allowed current, A	2
- Allowed voltage, V	=30 / ~ 250
7. Ingress protection	IP20
8. Climate version	NF4
10. Weight, kg, not more than	1

The device is equipped with LED indication system that displays current operation modes and malfunctions during operations:

“Line Short circuit” - short circuit on the line between the preliminary amplifier and the switching unit;
“CB breakdown” - concurrent detection of the CB circuit current decrease below the threshold value;
“LINE BREAKDOWN” - breakdown of the line between the preliminary amplifier and the switching unit;
“SB FAILURE” - a long-time absence of current in the CB circuit;
“POWER” - power indicator.

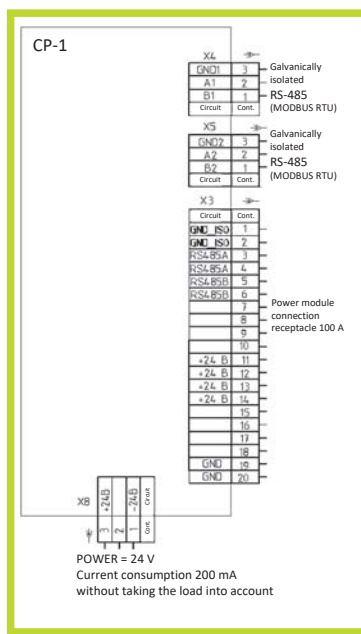


Control panel PKEL.656121.001

The control panel (herein further CP-1) is intended for collection and processing of information from devices, by means of RS-485 (MODBUS) and RS-232 buses; for output of received information on the LCD display; for transmission of output data to the top-level hardware (automated technological control systems). You can change setting of devices, connected via the RS-485 MODBUS interface using the keypad. The CP-1 is equipped with energy-independent real time clock subsystem. Structurally, the CP-1 represents a complete device equipped with LCD display. It is assembled in a metallic case and intended for installation onto flat surface.

Technical Data:

1. Power mains:	
- input voltage, V	= 24
2. Communications interfaces available	
- RS-485 MODBUS	1
- RS-485 MODBUS/RS-232	1
3. Controls available	Keypad
4 Display:	
- type	LCD
	black-white
- viewable area, WxH, mm	108 x 58
- display solution	
a) horizontal, pixels	240
b) vertical, pixels	128
- operating temperature range, °C	- 20 ... +40
5. Mode of operation	continuous
6. Ingress protection	IP20
7. Climate version	NF4
8. Overall dimensions (HxWxD), mm	206 x 186 x 63
9. Weight, kg, not more than	2



Rectifier charger 380/220-20

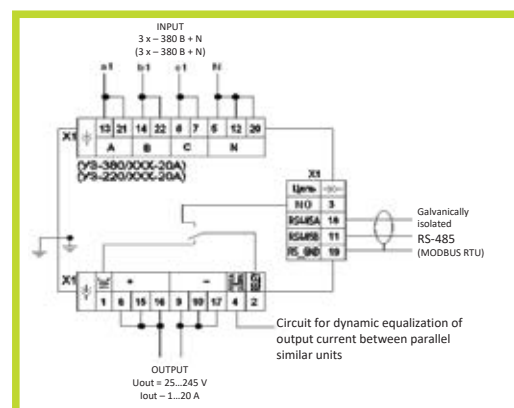
Technical Data:

1. Power mains:	
- input voltage, V	~3x380
- frequency, Hz	50 ± 1
- tolerance, %	- 15 .. +10
2. Direct current output	
- nominal output voltage, V	220
- voltage adjustment range, V	20...260
- maximum output current, A	20 1...20
- current limit adjustment threshold, A	5,2
3. Maximum output power, kWm, not more than	continuous
4. Mode of operation	
5. Display:	
- type	LCD
- symbol colour	grey
- background colour	yellow
- viewable area, WxH, mm	66 x 16
6. Cooling	forced air
7. Availability of the RS-485 communications interface (MODBUS)	1
8. Ingress protection	IP20
9. Climate version	NF4
10. Alarm relay output	1
- contact type	make-and-break
- allowed current, A	2
- allowed voltage, V	=30 / ~ 250
11. Overall dimensions (HxWxD), mm	321 x 200 x 345
12. Weight, kg	12

Testing voltage between direct current output terminals and any other terminal is 2500 V

Using the control panel keypad, located at the front side of the panel unit, you can:

- adjust values of input current and voltage,
- control: values of output parameters (current and voltage), temperature, occurrence of emergency situations,
- Manually switch the unit on and off (if necessary).



2. LOCAL DISTRIBUTION BOARDS

Alternating-current local distribution boards (LDB) are intended for input and distribution of electric power 0.4 kV, and also for power supply, protection, direct or indirect backup of local alternating current consumers.

Local distribution boards provide:

- receipt of alternating current from local transformers, electric stations and substations;
- protection of consumers and outgoing lines from short-circuit currents and overload by means of automatic switches;
- protection from short-to-ground by means of integrated protection means or automatic switches;
- automatic switch over (ASO), when voltage at one of the inputs significantly drops, or disappears completely;
- automatic return to normal supply mode (NSM), when the input voltage is restored.
- switch status signalling;
- remote signalling of emergency modes and switch status;
- transmission of information on current electric parameters of the three-phase power supply network and on the automatic switches status in digital format via the RS-485 communications interface to a remote computer, or to the top-level automated technological control systems (if necessary);
- energy accounting;
- control of load current on inputs and voltage on bus sections.



3. OPERATIVE CURRENT CABINETS

Operative current cabinets are intended for receipt of alternating current for own needs from two independent power sources (sections of a local distribution board), its conversion into direct current and distribution among all the local direct-current circuits; powering of direct-current circuits both via rectifier chargers, and from an integrated storage battery (if there is no voltage on both sections of an alternating-current local distribution board).

They provide:

- normal operation under the supply voltage deviation from the nominal from minus 15% to plus 15%, and under the supply frequency deviation from the nominal value of up to 1 GHz;
- powering of operative direct current circuits with total load of not more than 11.1 A;
- certain storage battery operating modes;
- discharge duty in the operative direct current circuit;
- an option of manual activation and deactivation of outgoing circuits, as well as protection of those circuits from short-circuit currents and overload by means of automatic switches, selective protection with switches in the storage battery connection, and converters circuits;
- measurement of voltage, current and insulation resistance in the storage battery circuit;
- fault warnings by means of indicating relays;
- voltage indication by means of warning lights;
- release of information about main faults of product's components, and about emergency shut-off of the feeder switch using dry contacts;
- building of a "flickering light" auxiliary circuit (+) by means of a "flickering light" device.



4. RECTIFIER CHARGERS

Rectifier chargers are intended for conversion of alternating current into stabilized direct current for feeding loads with operative direct current, as well as for provision of all modes, necessary for proper operation of the storage battery.

The devices are equipped with digital control system that allows to:

- display information about current operating modes of the product on the control panel screen in a convenient format;
- promptly change output voltage and current limit values;
- promptly control status of systems and units of the product and warn about occurrence of dangerous operating modes;
- configure the alarm system in a flexible manner and to setup operating parameter values;
- establish communications with automated technological control systems.

Structurally, the rectifier charger represents a functionally complete product. It is equipped with terminal blocks used for external connections.

On customer's request it is possible to manufacture products with another output parameters and independent units that provide additional functions for a power source (insulation resistance control, ripple voltage control, control of dynamic loads onto the power source output). Technical solutions, applied in the product, allow easy and safe deployment of power sources in all kinds of facilities.



5. UNINTERRUPTIBLE POWER SUPPLY CABINETS

Uninterruptible power supply cabinets are intended for ensuring uninterrupted power supply to operative power consumers (switch drives, relay protection and automation devices, accounting and measurement instruments, etc.), substations and distribution hubs, charging/boost charging of storage batteries.

Application of uninterruptible power source cabinets provides significant technical and economic efficiency in comparison with modern variants of similar solutions.

One of the main features of the cabinet is that it provides power to consumers with alternating current of correct sinusoidal shape ("pure" sinewave), which allows:

- to ensure uninterrupted power supply of existing consumers from storage batteries without the need of their replacement, in case of reconstruction of existing facilities with alternating operative current;
- thanks to high-performance anti-jam protection, to improve reliability of operation of devices, sensitive to interferences in power mains;
- to realize mutual change-over of operative current mains and alternating-current local distribution mains for powering local consumers of high importance;
- to take down any component of the cabinet for repairs/maintenance without interruption in supplying power to consumers;
- to ensure stabilized alternating current on the cabinet's output during its fluctuations in power mains.



6. COMPLETE RELAY PROTECTION AND AUTOMATION DEVICES

These devices are intended to carry out functions of relay protection, automatic control and emergency automatics in electric equipment of power generating facilities with voltage from 35 kV to 750 kV. The devices can be equipped both with micro-processor and electromechanical relay protection from all kinds of short-circuits on power supply lines (35-750 kV), protection of transformers, auto-transformers, automatic control of switches (35-750 kV), emergency automatics, transmission of relay protection and emergency automatics commands, logging of events and abnormal modes. These devices are intended for operation on nominal voltage of operative power with both direct and alternating current of 110, and 220 V.

7. COMPLETE DEVICES FOR POWER DISTRIBUTION AND CONTROL OF MANUFACTURING EQUIPMENT

Complete, lowvoltage devices are intended for:

- power distribution and control of technological equipment of CHP and NPP;
- powering from mains with grounded neutral and voltage of 380 V of three-phase, alternating current with frequency of 50 Hz.

It ensures:

- protection and switching of circuits and control fixtures with power of up to 28 kW, as well as electric drives of essential mechanisms.

Cabinets and units are intended for operation in various industries and public utilities.

Main technical specifications:

- primary circuit voltage, V: 380/220
- frequency, Hz: 50
- casing ingress protection according to GOST 14154-96: IP20, IP41, IP54 (depending on your order)



8. LOW-VOLTAGE DISTRIBUTION BOARDS FOR TRANSFORMER SUBSTATIONS WITH VOLTAGE OF 6/10-0.4 KV AND POWER OF 630-2500 KW

Complete transformer substations with power from 630 to 3150 kVA and voltage of 6(10)/0.4 kV are used in all industrial branches. Including metallurgy, chemical and construction industry.

CTS provide:

protection:

- from intolerable drop of voltage in power mains 0.4 kV (ASO)
- from short-circuit currents and overload in outgoing circuits;
- from single-phase short-circuit in the 0.4 kV power mains.

measurement:

- of bus voltage;
- of current on inputs and outgoing circuits;
- of active and reactive energy.



9. CABINETS FOR COMPLETE LOCAL TRANSFORMER SUBSTATIONS 0.4 KV

Complete local transformer substations (CCLTS) with power of up to 1000 kVA and voltage 6 (10)/0.4/0.23 kV are used in power supply systems for auxiliary consumers on heat-generating, and hydroelectric power stations. They provide protection and normal operation of power transformers, as well as protection of auxiliary consumers.

They provide:

protection:

- Both primary and backup, from three-phase short-circuits in the 0.4 kV power mains;
- from intolerable drop of voltage in power mains 0.4 kV;
- from short-circuit currents and overload in outgoing circuits;
- from single-phase short-circuit in the 0.4 kV power mains.

measurements:

- of bus voltage and current on inputs;



10. CRANE PANELS

Crane control panel allows you to control electric drives of hoisting mechanisms. The crane panel is an integral unit used for transportation of gantry overhead travelling cranes. Crane panels provide start reverse, breaking, adjustment of motor rotation speed, as well as maximum, zero and terminal protection of the electric drive. Manufacturing of crane control panels is of open-type. Crane control panels consist of special units and panels for hardware, as well as of a frame where communication equipment is located. Due to upfront connection of wires, the passage at the back side of the crane panel is not needed. Main circuit wiring is located exteriorly and connected directly to outputs of required equipment. Protective panels are manufactured in a sealed package (a crate) both for internal and external installation.

11 CONTROLLING EQUIPMENT FOR MAIN AND AUXILIARY ELECTRIC DRIVES OF MECHANISMS USED IN COAL-MINING, MINERAL AND OTHER INDUSTRIAL BRANCHES.

Field of application of these devices:

- Control of three-phase winders of various types and of general purpose industrial version, intended for operation in non-explosive environments.
- Control of main mine ventilation blowers various types.

Low-voltage complete devices are intended for start and control of a three-phase winder, carry out technological protection and blocking, powering of current collectors, located in the winder building. The set of these devices provides operation of the drive in motoring and breaking modes.

The device represents a set of cabinets and control panels, depending on the type of blower and electric drive.

The devices intended for receipt and distribution of three-phase alternating current, as well as for control of electric equipment and its protection from consequences of short-circuits and overloads.

These devices are classified by the following of features;

- structural design features: open type (units, panels, boards) and protected type (cabinets, crates);
- location (stationary, external and internal devices);
- functional use (input and measurement, distribution, transformer, terminal and receptacle);
- ingress protection.

12. SCHO-PK SERIES

The SCHO-PK series cabinets and boards that consist of them, are applied in sets of electric equipment with voltage of 220, 380 and 660 V and frequency of 50 Hz, used in various facilities of industrial purpose, public, sports, culture and entertainment facilities, as well as a part of distribution devices (DD 0.4 kV) of power facilities.

There is a wide range of low-voltage complete devices of various types. They are widely used in power-generating and mineral-mining facilities, machine-building industry, in construction of administration buildings, airports, railroad stations, etc.

Input cabinets ensure:

- receipt of power from power supply sources;
- protection of supply line from short-circuit currents and overloads;
- protection from single-phase short-circuits using remote neutral-wire protection;
- measurement of voltage values;
- measurement of current per phase;
- energy accounting option;
- automatic activation (deactivation) of input switch using commands from the automatic circuit breaker (if one is available in the section cabinet), or switching over to a backup input.

Section cabinets ensure:

- autonomous operation of every input on its bus section;
- operation of each input (with one deactivated) on individual bus sections;
- automatic switching of power supply from a backup input using commands from the ASO unit (if it is available);
- manual activation (deactivation) of bush-tie master switch;
- manual activation (deactivation).

Distribution cabinets ensure:

- distribution of power among consumers;
- protection of outgoing lines from short-circuit currents and overloads;
- Measurement of a consumer's current in one of three phases;
- energy accounting option.

Accounting cabinets (hook-on crates, mounted on a vertical bearing structure) ensure energy accounting. Bus-wiring cabinets (bus bridges) provide electric connection of cabinet buses in a two row board arrangement (the range between the cabinet front sides is not less than 1500 mm, or 2000 mm), or in a single-row board arrangement with gaps.

13. CONTROL AND MEASURING DEVICES CABINETS

Control and measuring devices cabinets are cabinets, where controllers and control and measuring devices are installed. Each cabinet is developed individually for a specific project.

The cabinet can have the following functions:



- automatic control of set parameters in accordance with established schedule of works;
- equipment activation/deactivation upon reaching the defined values;
- automation system control and management;
- Switching of operating modes and analysis of system operation.

The CMD cabinets are applied with the following purposes:

- replacement of old automation equipment;
- widening the automation system functionality;
- decreasing power consumption and provision of accounting of resources.

The cabinet can provide accounting of gas, water, steam, heating, condensation and almost any other substance. The most important thing is to correctly select a control and measuring device.

14. POWER DISTRIBUTION HUBS

Power distribution hubs of PR series are intended for receipt and distribution of power, protection of electric plant with voltage of up to 380 V and frequency of 50 Hz from short-circuits and overloads, as well as for temporary (not more than 6 per hour) cut-ins/cut-off of electric circuits and starts of asynchronous electric drives and provision of protection from electric shock.

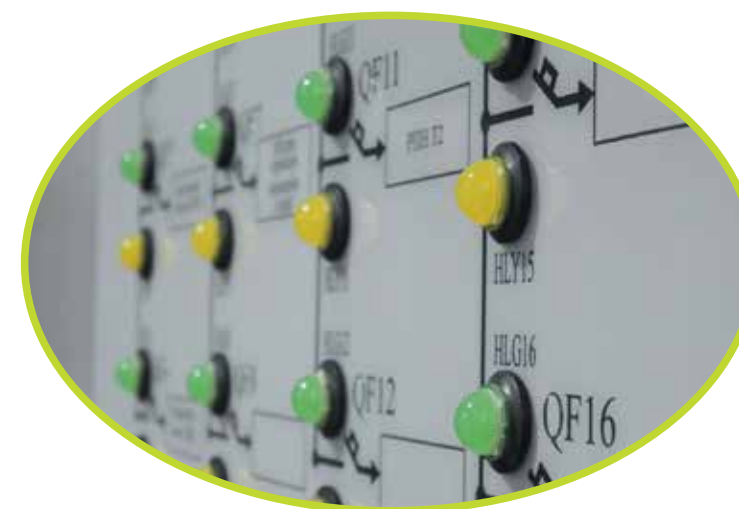
The cabinets are intended for installation in industrial, residential, household and public facilities with unilateral maintenance. On customer's request it is possible to install protection tripping devices onto feeders.



15. CUSTOM-DESIGN DEVICES

Our company also develops individual projects for special needs. As an example we can suggest such electric products a capacitor panels, fire safety valve control panels, local control boards, contactor panels, power boxes and other momentous for power industry.

When working with us you can rely on high-skill and operative performance of designing of systems for power supply, automation and control of technological processes.



• TECHNICAL SOLUTIONS FROM OUR SPECIALISTS ARE APPLIED AT:

Nuclear power industry



- South-Ukraine Nuclear Power Plant
- Zaporizhzhia Nuclear Power Plant
- Rivne Nuclear Power Plant

Public utility companies



- PUC Kharkiv Metro System
- SC DTEK Dnipro Electric Networks

Metallurgical industry



- PSC Ilyich Iron and Steel Works
- METINVEST HOLDING LLC
- PSC AZOVSTAL IRON AND STEEL WORKS
- PSC Zaporizhstal
- PSC Avdiivka Coke Plant
- SC Nikopol Ferroalloy Plant

Mineral industry



- PSC Northern MPP
- PSC Poltavsky MPP
- Erystovsky MPP LLC
- PSC Central MPP

• OPERATING PROCESSES OF THE ENTERPRISE

