



POWER SUPPLY DEVICES FOR RAILROAD AUTOMATION AND TELEMECHANICS SYSTEMS



RADIOAVIONICA
CORPORATION



RAILROAD AUTOMATION
AND TELEMCHANICS
SYSTEMS



POWER SUPPLY DEVICES FOR
RAILROAD AUTOMATION AND
TELEMCHANICS SYSTEMS



NON-DESTRUCTIVE
TESTING
EQUIPMENT



C4ISR COMPLEX
«STRELETS»



CONTENTS

INTRODUCTION	2
COMMON FEATURES OF CPSP «RADIOAVIONICA» JSC	3
MAIN FUNCTIONAL ELEMENTS OF CPSP	4
IFU	6
IBU	9
BABP	11
CPSP MI 30	12
CPSP MI 30 + ABTC	14
CPSP MI 70	16
CPSP MI 200	18
CPSP MI 200 + ABTC	20
CPSP EI 40	22
CPSP EI 40 + ABTC	24
CPSP EI 70	27
CPSP 200R	30
CPSP 200R + ABTC	32
CPSP + ABTC	34
CPSP-M	37
CPSP EI 40B.	39





ADVANCED POWER SUPPLY DEVICES OF MICROPROCESSOR AND RELAY SYSTEMS OF RAIROAD AUTOMATION

JSC "Radioavionica" has been designing and implementing advanced power supply devices of Railroad Automation and Telemechanics systems since 2002 year. Nowadays JSC "Radioavionica" is one of the leaders on this market – more than 350 Combined Power Supply Plants (CPSP) operate on Russian railways. Our systems are installed on high-speed lines Saint-Petersburg-Moscow and Saint-Petersburg-Buslovskaya, where are moving Sapsan and Allegro.

Carrying out new developments and orienting on customer's requirements our company is adhered to the principles taken as the basis during its foundation. Quality and safety are the main our values.

Our components suppliers for these systems are: ABB, GE DE, HakeI, Michael Riedel, Omron,

Powernet, Elster and others. The service life of CPSP is about 25 years thanks to using modern technical solutions and good-quality components.

We are ready to offer you the wide range versions of CPSP based on uninterruptible supply units. The versions of CPSP are designed for modern microprocessor-based and relay-based interlocking systems and also combined systems.

Additional to current catalogue for designing CPSP you should use the technical solutions: «Power supply of Automatic block signal system with tonal track circuits and central arrangement of equipment, microprocessor (ABTC/ABTC-EM) based on uninterruptible supply units for line Saint-Petersburg – Moscow and technical references for designing of Giprotranssignalsvyaz and VNIIAS.

№	Versions CUPSP	Railroad Automation and Telemechanics systems						
		ABTC	Relay			Microprocessor		
		30 signalling devices	40 switches	70 switches	200 switches	30 switches	70 switches	200 switches
1	CPSP ABTC, ABTC-EM	■						
2	CPSP ABTC-M	■						
3	CPSP EI 40		■					
4	CPSP EI 40B		■					
5	CPSP EI 40 + ABTC	■	■					
6	CPSP EI 40 + ABTC-M	■	■					
7	CPSP EI 70			■				
8	CPSP 200R				■			
9	CPSP 200R + ABTC/ABTC-EM	■			■			
10	CPSP MI 30					■		
11	CPSP -M 30 COCD					■		
12	CPSP MI 30 + ABTC-M	■				■		
13	CPSP MI 30 + ABTC/ABTC-EM	■				■		
14	CPSP MI 70						■	
15	CPSP - M 70 COCD						■	
16	CPSP 200							■
17	CPSP 200 + ABTC/ABTC-EM	■						■

COMMON FEATURES OF COMBINED POWER SUPPLY PLANT JSC «RADIOAVIONICA»

ALL VERSIONS OF COMBINED POWER SUPPLY PLANT HAVE FUNCTIONAL FEATURES:

Connect of three independent feeders

Connection of three independent feeders of the external power supply and automatic load switching on correct feeder according to the parameters of it input voltage to the accepted standards. Diesel-generator set (DGS) could be used as the third feeder. It is possible to connect four feeder lines.

Two operation modes of ABP

The automatic backup power switching scheme could operate as in the mode prevalence of one feeder so in the mode of the equal feeders, which increases the effectiveness operation depending on conditions of the external power supply.

Guaranteed power loads

Providing for power supply guaranteed lighting, conditioning systems and heating systems, modules DGS and communication devices auxiliary from commuted feeder (ABP exit).

Uninterrupted power loads

Providing power supply loads from Uninterruptible Supply Unit (USU) during autonomy time when feeder's voltage is disappeared and mismatched.

Galvanic isolation of signaling loads

Galvanic isolation of signaling loads is provided from external power supply using input isolating transformer. Isolation of separate power poles of Signaling system from each other is provided

with switch cabinets and impulse power suppliers. Herewith the DC power backup is based on the principle n+1.

Connection with existing systems of technical diagnostic-and-monitoring (STDM)

Continuous monitoring of CPSP operation in real time and connection with existing STDM on railways are provided. For CPSP-M is implemented inline diagnostic system.

Surge protection

Surge protection of input and output power circuits is realized. For these aims is designed multi stage protective system using surge protection device (SPD).

Personnel protection using Residual current device

Protection of personnel from the lesions of electric via residual-current devices (RCD) in the lighting circuits and the household loads.

High reliability and easy maintenance

due to a minimization of components and simplification of power switching circuits, control and monitoring.

Fire resistant structure





MAIN FUNCTIONAL ELEMENTS OF CPSP

Combined power supply plants consist of the input and distribution boards, isolating transformers and uninterruptible supply units with battery cabinets. The main functional elements of combined uninterruptible power supply plant are presented on figures below. Quantity and specification of component parts depend on version CPSP and calculated project power.

Automatic backup power switchboard

Automatic backup power switchboard (BABP) is used only amounting to CPSP 200 (R). Also it is possible to install BABP as separate power cabinet of guaranteed loads. BABP consists of the powerful circuits on three independent inputs, the mode of automatic load transfer, manual switching of powerful circuits and surge protection elements. The light indication and measurement devices are fixed on the right side for information of feeder's condition and automatic load transfers.



Distribution board

Distribution board (DB) consists of the powerful circuits on three independent inputs, the mode of automatic load transfer, the output circuits of guaranteed (ABP exist) and parts of uninterrupted (USU exist) loads, electro warming of track switches and comb busbar. The light indication and measurement devices are fixed on the right side for convenient maintenance.



Transformer board

Transformer board (TB) consists of transformers isolated power poles of Railroad Automation and Telemechanics systems, DC power supplier's backup, different switching and protective elements including surge protection for terminal equipment.



Isolating transformer

Isolating transformer (IT) is intended for galvanic isolation of Railroad Automation and Telemechanics systems from external power suppliers, equalizing of phase voltages values on an output. IT could be installed separately in protective hood or inside of TB (for CPSP ABTC).



Uninterruptible Supply Unit

Industrial Uninterruptible Supply Unit (USU) GE DE is designed for supply loads of Railroad Automation and Telemechanics, not allowing breaks into power supply. USU provides reliable and uninterruptible power supply of connected load in mode "on-line".



USU GE DE

Battery cabinet

Battery cabinet (BC) is intended for placing USU storage batteries with different time of autonomy. Battery supplies electricity to USU inverter in case when voltage network is in unallowable bounders.



BC GE DE



USU RA



BC RA





INPUT FEEDER UNIT (IFU)

- COMPATIBILITY WITH DIFFERENT TYPES OF CPSP RA
- COMPATIBILITY TO ANY EARTH SYSTEMS
- CONTINUOUS MONITORING OF INPUT NETWORK PARAMETERS
- CONNECTION WITH CONTROL SYSTEM (CS) AND AUTOMATED SYSTEM OF COMMERCIAL POWER METERING (ASCPM) BY DIGITAL INTERFACES
- REMOTE DISCONNECTION OF INPUT NETWORK

Function

IFU are designed for replacement existing Remote Control Power-off Switchboard (CPS) and could operate as separately so combined with CPSP RA and can be used inside the EI buildings or transportable modules.

Several feeders are combined in one construction to make it compact. Herewith is provided the division power circuits using double fire resistant barriers.

Three-phase feeder from Power Center or DGS could be connected as the external supplier. Cable section of the external feeder could be up to 180 mm².



Features

For reliable and safe commutation of input network is used disconnecting switch with visual control of contact configuration.

Two-stage protection with control actuations of SPD is realized for protecting from atmospheric and switching overvoltage by IFU input.

Could be controlled the insulation resistance of three-phase power circuit IFU with transfer of control signal in diagnostic system.

Definitive benefit of IFU is three phase multi functional electricity power meter ABB. Also this supply meter could measure a lot of parameters of input network (up to 42) in real-time and transfer this data to STDM by digital channel. These possibilities allow to provide the continuous control of input network parameters and delimit the areas of distances responsibility of Signal and Power Engineering departments.



SPD HAKEL1



SPD HAKEL2

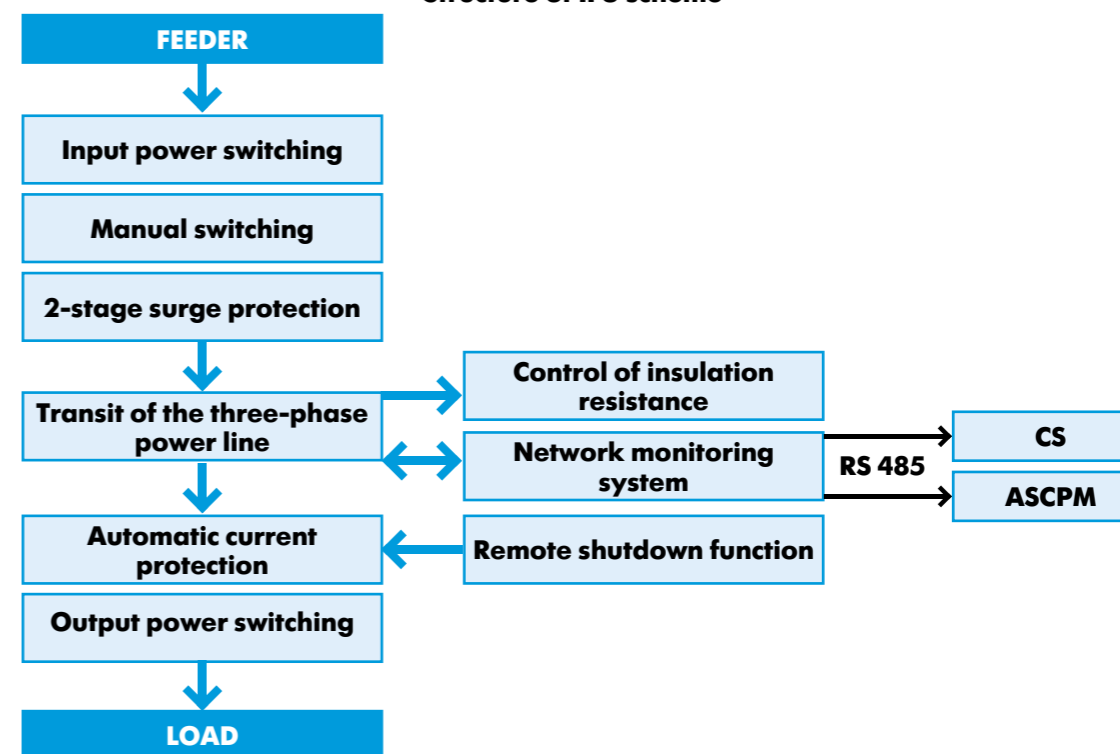


Power meter ABB

Main technical parameters

Type input network	Three-phase 3x380V, one-phase 220V
Cable section input/output	Up to 180/150mm ²
Nominal current, with switches up to 70	100A
Nominal current, for large-scale stations	200A
Nominal current, special version	400A (630A)
Protection	IP54
Accuracy rating of energy accounting	0,5S
Fire resistance	Correspond to GOST 12.1.004-91
Earth system	TN-C, TT, IT-N, TN-S, TN-C-S
Data interfaces to STDM	RS-485 (digital)
Mean time between failures	20000 hours
Warranty	3 years
Life time expectancy	25 years
Operating mode	continuously
Overall sizes (H, W, D):	
ЖРГА.469114.003-01, ЖРГА.469114.003-02	2020x363x425
ЖРГА.469114.003-03	2312x363x425
ЖРГА.469114.003-04, ЖРГА.469114.003-05	2312x600x600
Weight	130kg

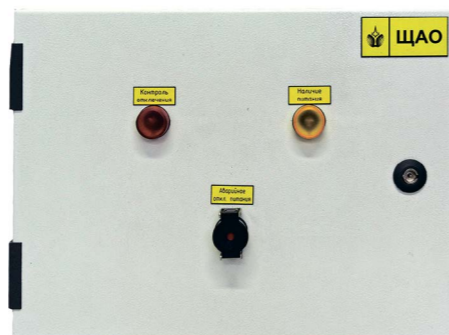
Structure of IFU scheme





Emergency power-off board

For remote disconnection external power source from IFU load is applied the emergency power-off board (EPB). The board allows disconnect from two to four IFU. The serviceability indicator of IFU and emergency shutdown circuits to IFU are designed in the cabinet. The EPB has protective emergency stop button, small sizes and could wall installed.



Order data IFU

№	Name	Nom. current	Max. section		Order number
			input cable	load cable	
1	IFU for small-scale and average-scale stations	100A	up to 150 mm ²	2x150 mm ²	ЖРГА.469114.003-01
2	IFU for large-scale stations	200A	up to 180 mm ²	2x150 mm ²	ЖРГА.469114.003-02
3	IFU for huge-scale stations (high)*	200A	up to 180 mm ²	2x150 mm ²	ЖРГА.469114.003-03
4	IFU	400A	up to 240 mm ²	2x240 mm ²	ЖРГА.469114.003-04
5	IFU	630A	up to 240 mm ²	2x240 mm ²	ЖРГА.469114.003-05

*similar to version ЖРГА.469114.003-02 with increased space for connecting power cables

Order data EPB

№	Name	Order number
1	EPB to 2 IFU	ЖРГА.656333.003
2	EPB to 3 IFU	ЖРГА.656333.003-01
3	EPB to 4 IFU	ЖРГА.656333.003-02

INPUT BATTERY UNIT (IBU)

- SWITCHING VOLTAGE 24V OF STATIONARY BATTERY
- USING WITH IFU
- REMOTE DISCONNECTION OF INPUT NETWORK

Function

IBU is intended for voltage switching 24V coming in from stationary battery and can used inside the EI buildings or transportable modules. IBU and IFU are applied together with the existing power supply devices of relay electrical interlocking (EI), ABTC in cases when inexpediently the full replacement of power supply devices, but required increasing of the surge protection, remote monitoring function of supply network and reliability of functioning. Therefore IFU and IBU are installed when input devices absent at all or for replacement of existing PS and CPS.

Features

The structure of input device is designed by customer requirements. The complete structure is: IFU1, IFU2, IFU3, IBU, IBU could use together with USU if necessary.

IBU has one version, but IFU-IFU3 could be differ by presence or absent of electricity meter (PWh) and current transformer (TA4) which is designed for control current leakage during development of earth systems TT and IT. Herewith it is possible to resupply of input devices by indicated elements in future.

The internal scheme of EPB is realized that the first step - emergency disconnection from load IFU1-IFU3, the second – disconnection the IBU.

Main technical parameters

Type input network	24VDC
Wire section	up to 185/150mm ²
Nominal current	200A
Protection	IP54
Fire resistance	correspond to GOST 12.1.004-91
Mean time between failures	20000 hours
Warranty	3 years
Life time expectancy	25 years
Operating mode	continuously
Overall sizes (H, W, D) IBU, IFU1-IFU3	2312x363x425
Weight	130kg





AUTOMATIC BACKUP POWER SWITCHBOARD (BABP)

Order data IFU1-IFU3 and IBU

Version IFU1-IFU3*	Cabinet number		
	IFU1, IFU3	IFU2	IBU
TA4 yes, PWh yes	ЖРГА.469114.003-06	ЖРГА.469114.003-010	ЖРГА.469114.003-024
TA4 yes, PWh no	ЖРГА.469114.003-07	ЖРГА.469114.003-011	ЖРГА.469114.003-024
TA4 yes, PWh yes	ЖРГА.469114.003-08	ЖРГА.469114.003-012	ЖРГА.469114.003-024
TA4 no, PWh no	ЖРГА.469114.003-09	ЖРГА.469114.003-013	ЖРГА.469114.003-024

* for the first installation of devices, IFU1 - IFU3 are selected by current maximum loaded phase taken with assurance coefficient 1,2 the next highest rating of a series 63, 80, 100, 125, 160A. In the case of replacing an existing PS, CPS is installed automatic breakers 250A. The rating of breaker is required with ordering of IFU1-IFU3.

Order data EPB

Input devices set	Number of EPB for order
IFU1 + IFU2 + IFU3+ IBU	ЖРГА.656333.003-03
IFU1 + IFU2 + IBU	ЖРГА.656333.003-04
IFU2 + IBU	ЖРГА.656333.003-05

- DESIGNED FOR POWER SUPPLY GUARANTEED LOADS
- UNIVERSAL SYSTEM WITH SWITCHING UP TO THREE INDEPENDENT FEEDERS
- COMPATIBLE WITH ANY EARTH SYSTEMS USING IFU

Function

BABP is intended for power of guaranteed loads on railway stations and could used inside EI buildings or transportable modules.

Features

BABP is applied together with IFU RA with saving function of disconnecting external power source from BABP load.

Main technical parameters

Type input network	Three phases 3x380V
Cable section:	
ЖРГА.436515.001-601-604	up to 150mm ²
ЖРГА.436515.001-605,606	up to 240mm ²
Nominal current	up to 500A
Protection	IP54
Earth system	TN-C, TT, IT-N, TN-S, TN-C-S
Fire resistance	correspond to GOST 12.1.004-91
EMC	corresponded to GOST R 50656-2001
Mean time between failures	20000 hours
Warranty	3 years
Life time expectancy	25 years
Operation mode	continuously
Overall sizes (H, W, D):	
ЖРГА.436515.001-601,602	2020x865x425
ЖРГА.436515.001-603,604	2020x1100x625
ЖРГА.436515.001-701, ЖРГА.436515.001-601	2020x2200x625 (two cabinets)

Order data BABP

Nº	Name	Input automatic breaker	Calculated capacity of guaranteed loads	Order number
1	BABP 80 on 2 inputs	80A*	Up to 43kVA	ЖРГА.436515.001-601
2	BABP 80 on 3 inputs	80A*	Up to 43kVA	ЖРГА.436515.001-602
3	BABP 250 on 2 inputs	250A*	Up to 132kVA	ЖРГА.436515.001-603
4	BABP 250 on 3 inputs	250A*	Up to 132kVA	ЖРГА.436515.001-604
5	BABP 400	400A*	Up to 200kVA	ЖРГА.436515.001-605
6	BABP 630	630A*	Up to 330kVA	ЖРГА.436515.001-606

* Nominal current of input automatic breakers could change according to project.





COMBINED POWER SUPPLY PLANT FOR MICROPROCESSOR INTERLOCKING CPSP MI 30

- DESIGNED FOR POWER SUPPLY OF MICROPROCESSOR INTERLOCKING (MI) ON SMALL-SCALE STATIONS
- AUTONOMIC POWER SUPPLY OF MI MINIMUM 2 HOURS
- COMPATIBLE WITH ANY TYPES OF INPUT DEVICES
- COMPATIBLE WITH ANY EARTH SYSTEMS USING IFU



Function

CPSP MI 30 is intended for high performance uninterruptible power supply of MI with track switches up to 30 and can be used inside the EI buildings or transportable modules.

Features

The uninterruptible power system (UPS) is used for providing uninterruptible power supply of MI devices amounting to CPSP. The system consists of two industrial parallel uninterruptible supply units (USU) GE DE. All critical elements and functions are reversed and the single refusal point is absent. The switching time from storage batteries during disappearing external network is zero. The system has 100% of power storage therefore when one USU refuses the second does not overload. This solution also allows the maintenance work of any USU without power supply interruption. USU has Russian interface and possibility of remote diagnostic by systems STDМ.

Structure of CPSP MI 30

Nº	Name	Symbol	H x W x D	Weight, kg	Quantity
1	Distribution board	DB	2020x1100x425	230	1
2	Transformer board	TB	2020x853x425	320	1
3	Transformer board 2	TB2	2020x853x425	220	1
4	Uninterruptible supply unit	USU	1450x680x800	260-310	2
5	Battery cabinet	BC	1450x750(1100)x800	878(1130)	2
6	Isolating transformer	IT	600x450x450	150(190)	1

Main technical parameters

Type of the input network	Three phases 3x380V, single phase 220V
The cable section	up to 95mm ²
Nominal current	up to 63A
Protection	IP54
Earth system	TN-C, TT, IT-N, TN-S, TN-C-S
Fire resistance	correspond to GOST 12.1.004-91
EMC	correspond to GOST R 50656-2001
Work time of loads Railroad Automation and Telemechanics from battery reserve	from 2 hours
Nominal current 24V	30A
Power supply of signals 220V	2,0kVA
Power supply of switch motors 3x220V	4,4kVA
Power supply of voice track circuits 220V	2,5kVA
Data interface to STDМ	RS-485, Ethernet
Mean time between failures	20000 hours
Warranty	3 years
Life time expectancy	25 years
Operation mode	continuously

Order data CPSP MI 30

Nº	Name	Input automatic breaker	Calculated capacity of MI	Capacity of USU	IT	Number order
1	CPSP MI 30	80A*	up to 8kVA	2x10kVA	16kVA	ЖРПА.436515.001-101
2	CPSP MI 30	80A*	up to 12kVA	2x15kVA	25kVA	ЖРПА.436515.001-102

* Nominal current of input automatic breaker could change according to project.





COMBINED POWER SUPPLY PLANT FOR MICROPROCESSOR INTERLOCKING CPSP MI 30 + ABTC

- DESIGNED FOR POWER SUPPLY OF MICROPROCESSOR INTERLOCKING ON SMALL-SCALE STATIONS AND AUTOMATIC BLOCK SIGNALLING ABTC/ABTC-M/ABTC-EM
- AUTONOMIC POWER SUPPLY OF MICROPROCESSOR INTERLOCKING AND AUTOMATIC BLOCK SIGNALLING ABTC 2 HOURS
- COMPATIBLE WITH ANY TYPES OF INPUT DEVICES
- COMPATIBLE WITH ANY EARTH SYSTEMS USING IFU



Function

CPSP MI 30 + ABTC is intended for high performance uninterruptible power supply of MI together with automatic block signalling ABTC, ABTC-M, ABTC-EM. Plant can be used inside the EI buildings or transportable modules.

Features

The plant has combined construction with common input distribution board and two transformer boards: TB1 for power supply loads of MI and TB2 for power supply loads of automatic block signalling ABTC.

The UPS is used for providing uninterruptible power supply of Railroad Automation and Telemechanics devices amounting to CPSP. The system consists of two industrial parallel units USU GE DE. All critical elements and functions are reserved and the single refusal point is absent. The switching time from storage batteries during disappearing external network is zero. The system has 100% of power storage therefore when one USU refuses the second does not overload. This solution also allows the maintenance work of any USU without power supply interruption. USU has Russian interface and possibility of remote diagnostic by systems STDM.

Structure of CPSP 30 + ABTC

Nº	Name	Symbol	H x W x D	Weight, kg	Quantity
1	Distribution board	DB	2020x1100x425	230	1
2	Transformer board	TB1, TB2	2020x853x425	290	2
3	Uninterruptible supply unit	USU	1450x680x800	260-310	2
4	Battery cabinet	BC	1450x750(1100)x800	878 (1130)	2
5	Isolating transformer	IT	600x450x450(700 600 600)	150-280	1

Main technical parameters

Type input network	Three phases 3x380V, single phase 220V
Cable section	up to 95mm ²
Nominal current	up to 63A
Protection	IP54
Earth system	TN-C, TT, IT-N, TN-S, TN-C-S
Fire resistance	correspond to GOST 12.1.004-91
Work time of loads Railroad Automation and Telemechanics from battery reserve	from 2 hours
Nominal current 24V	80A
Power supply of station signals	2,0kVA
Power supply of intermediate signals	2,0kVA
Power supply of station voice track circuits	2,0kVA
Power supply of intermediate voice track circuits	2,0kVA
Power supply 24V ABTC-M	120A
Power supply 220V ABTC-M	2x4,2kVA
Power supply of switch motors 3x220V	4,4kVA
EMC	correspond to GOST R 50656-2001
Data interface to STDM	RS-485, Ethernet
Mean time between failures	20000 hours
Warranty	3 years
Life time expectancy	25 years
Operation mode	continuously

Order data CPSP MI 30 + ABTC, ABTC-EM

Nº	Name	Input automatic breaker	Calculated capacity of MI + ABTC	Capacity of USU	IT	Order number
1	CPSP MI 30 + ABTC	80A*	up to 8kVA	2x10kVA	16kVA	ЖРПА.436515.001-106
2	CPSP MI 30 + ABTC	80A*	up to 12kVA	2x15kVA	25kVA	ЖРПА.436515.001-107
3	CPSP MI 30 + ABTC	80A*	up to 16kVA	2x20kVA	30kVA	ЖРПА.436515.001-108
4	CPSP MI 30 + ABTC	80A*	up to 24kVA	2x30kVA	40kVA	ЖРПА.436515.001-109

Order data CPSP MI 30 + ABTC-M

Nº	Name	Input automatic breaker	Calculated capacity MI + ABTC	Capacity USU	IT	Order number
1	CPSP MI 30 + ABTC-M	80A*	up to 12kVA	2x15kVA	25kVA	ЖРПА.436515.001-110
2	CPSP MI 30 + ABTC-M	80A*	up to 16kVA	2x20kVA	30kVA	ЖРПА.436515.001-111
3	CPSP MI 30 + ABTC-M	80A*	up to 24kVA	2x30kVA	40kVA	ЖРПА.436515.001-112

* Nominal current of input automatic breakers could change according to project.





COMBINED POWER SUPPLY PLANT FOR MICROPROCESSOR INTERLOCKING CPSP MI 70

- DESIGNED FOR POWER SUPPLY OF MICROPROCESSOR INTERLOCKING ON AVERAGE-SCALE STATIONS
- AUTONOMIC POWER SUPPLY OF MICROPROCESSOR INTERLOCKING DEVICES MINIMUM 2 HOURS
- COMPATIBLE WITH ANY TYPES OF INPUT DEVICES
- COMPATIBLE WITH ANY EARTH SYSTEMS USING IFU



Function

CPSP MI 70 is intended for high performance uninterruptible power supply of MI with track switches up to 70 and can be used inside EI buildings or transportable modules.

Features

The UPS is used for providing uninterruptible power supply of MI devices amounting to CPSP. The system consists of two industrial parallel units USU GE DE. All critical elements and functions are reserved and the single refusal point is absent. The switching time from storage batteries during disappearing external network is zero. The system has 100% of power storage therefore when one USU refuses the second does not overload. This solution also allows the maintenance work of any USU without power supply interruption. USU has Russian interface and possibility of remote diagnostic by systems STDМ.

Structure of CPSP MI 70

Nº	Name	Symbol	H x W x D	Weight, kg	Quantity
1	Distribution board	DB	2020x1100x425	230	1
2	Transformer board	TB1, TB2	2020x853x425	320	2
3	Uninterruptible supply unit	USU	1400x680x800	260-310	2
4	Battery cabinet	BC	1400x750(1100)x800	878 (1130)	2
5	Isolating transformer	IT	600x450x450(700 600 600)	190-280	1

Main technical parameters

Type input network	Three phases 3x380V, single phase 220V
Cable section	up to 95mm ²
Nominal current	up to 63A
Protection	IP54
Earth system	TN-C, TT, IT-N, TN-S, TN-C-S
Fire resistance	correspond to GOST 12.1.004-91
EMC	correspond to GOST R 50656-2001
The work time of loads Railroad Automation and Telemechanics from battery reserve	from 2 hours
Nominal current 24V	30A
Power supply of signals 220V	2,0kVA
Power supply of switch motors 3x220VAC	4,4kVA
Power supply of voice track circuits 220V	2x2,5kVA
Data interface to STDМ	RS-485, Ethernet
Mean time between failures	20000 hours
Warranty	3 years
Life time expectancy	25 years
Operation mode	continuously

Order data CPSP MI 70

Nº	Name	Input automatic breaker	Calculated capacity of MI	Capacity of USU	IT	Number order
1	CPSP MI 70	80A*	up to 12kVA	2x15kVA	25kVA	ЖРПА.436515.001-103
2	CPSP MI 70	80A*	up to 16kVA	2x20kVA	30kVA	ЖРПА.436515.001-104
3	CPSP MI 70	80A*	up to 24kVA	2x30kVA	40kVA	ЖРПА.436515.001-105

* Nominal current of input automatic breaker could change according to project.





COMBINED POWER SUPPLY PLANT CPSP 200

- DESIGNED FOR POWER SUPPLY OF MICROPROCESSOR INTERLOCKING ON LARGE-SCALE STATIONS
- AUTONOMIC POWER SUPPLY OF MICROPROCESSOR INTERLOCKING DEVICES MINIMUM 2 HOURS
- COMPATIBLE WITH ANY EARTH SYSTEMS USING IFU

Function

CPSP 200 is intended for high performance uninterruptible power supply of MI with track switches up to 200 and can be used inside the EI buildings.



Features

CPSP 200 has subsystem of own diagnostic and also provides the connection with existing STDМ.

The UPS is used for providing uninterruptible power supply of MI amounting to CPSP. The system consists of three industrial parallel units USU GE DE. The switching time from storage batteries during disappearing external network is zero. All critical elements and functions are reserved and the single refusal point is absent. The system is based on the power backup n+1 principle in which failure of one USU doesn't lead to overload other. This solution also allows the maintenance work of any USU without power supply interruption. USU has Russian interface and possibility of remote diagnostic by systems STDМ.

Structure of CPSP 200

Nº	Name	Symbol	H x W x D	Weight, kg	Quantity
1	Automatic load transfer board	BALT	2020x1100x625	270	1
2	Distribution board	DB	2020x1100x625	200	1
3	Transformer board	TB1, TB2	2020x1100x625	230	2
4	Uninterruptible supply unit	USU	1450x680x800	260-310	3
5	Battery cabinet	BC	1450x750(1100)x800	878 (1130)	3
6	Isolating transformer of Microprocessor interlocking	IT MI	720 855 720	230-350	1
7	Isolating transformer of Relay Interlocking	IT RI	600x450x450	150	1

Main technical parameters

Type input network	Three phases 3x380V
Cable section	up to 150mm ²
Nominal current	up to 170A
Protection	IP54
Earth system	TN-C, TT, IT-N, TN-S, TN-C-S
Fire resistance	correspond to GOST 12.1.004-91
EMC	correspond to GOST R 50656-2001
The work time of loads Railroad Automation and Telemechanics from battery reserve	from 2 hours
Nominal current 24V	2x80A
Nominal current 24V, power supply of Control Computer System (CCS)	120A
Power supply of signals 220V	4x2,0kVA
Coding 220V	2x2,5kVA
Power supply of the switch motors 3x220V	2x4,4kVA
Power supply of voice track circuits 220V	3x5kVA
Data interface to STDМ	RS-485, Ethernet
Mean time between failures	20000 hours
Warranty	3 years
Life time expectancy	25 years
Operation mode	Continuously

Order data CPSP 200

Nº	Name	Input automatic breaker	Calculated capacity of MI	Capacity of USU	IT MI	Number order
1	CPSP 200	200A*	up to 20kVA	3x10kVA	40kVA	ЖРПА.436515.001-401
2	CPSP 200	200A*	up to 30kVA	3x15kVA	50kVA	ЖРПА.436515.001-402
3	CPSP 200	200A*	up to 40kVA	3x20kVA	63kVA	ЖРПА.436515.001-403
4	CPSP 200	200A*	up to 60kVA	3x30kVA	80kVA	ЖРПА.436515.001-404
5	CPSP 200	200A	up to 8 kVA	3x40kVA	100kVA	ЖРПА.436515.001-405

* Nominal current of input automatic breakers could change according to project.





COMBINED POWER SUPPLY PLANT CPSP 200 + ABTC

- DESIGNED FOR POWER SUPPLY OF MICROPROCESSOR INTERLOCKING ON LARGE-SCALE STATIONS AND AUTOMATIC BLOCK SIGNALLING ABTC/ABTC-EM
- AUTONOMIC POWER SUPPLY OF MICROPROCESSOR INTERLOCKING AND ABSVC MINIMUM 2 HOURS
- COMPATIBLE WITH ANY EARTH SYSTEMS USING IFU

Function

CPSP 200 + ABTC (EM) is intended for high performance uninterruptible power supply of MI with track switches up to 200 together with automatic block signalling ABTC and ABTC-EM. Plant can be used inside the EI buildings or transportable modules.

Features

The plant has combined construction with

common output BABP, distribution board and three transformer boards: TB1 and TB2 for power supply loads of MI, TB3 – for power supply loads of automatic block signalling ABTC. CPSP 200 + ABTC (EM) has subsystem of own diagnostic and also provides the connection with existing STDМ.

The UPS is used for providing uninterruptible power supply of MI and ABTC devices amounting to CPSP. The system consists of three industrial parallel units USU GE DE. All critical elements and functions are reserved and the single refusal point is absent. The switching time from storage batteries during disappearing external network is zero. The system is based on the power backup n+1 principle in which failure of one USU doesn't lead to overload other. This solution also allows the maintenance work of any USU without power supply interruption. USU has Russian interface and possibility of remote diagnostic by systems STDМ.



Structure of CPSP 200 + ABTC

Nº	Name	Symbol	H x W x D	Weight, kg	Quantity
1	Automatic load transfer board	BALT	2020x1100x625	270	1
2	Distribution board	DB	2020x1100x625	200	1
3	Transformer board	TB1, TB2	2020x1100x625	230	3
4	Uninterruptible supply units	USU	1450x680x800	260-310	3
5	Battery cabinet	BC	1450x750(1100)x800	878 (1130)	3
6	Isolating transformer of Microprocessor interlocking	IT MI	720 855 720	230-350	1
7	Isolating transformer of Track circuits	IT RI	600x450x450	150	1

Main technical parameters

Type input network	Three phases 3x380V
The cable section	up to 150mm ²
Nominal current	up to 170A
Protection	IP54
Earth system	TN-C, TT, IT-N, TN-S, TN-C-S
Fire resistance	correspond to GOST 12.1.004-91
EMC	correspond to GOST R 50656-2001
The work time of loads Railroad Automation and Telemechanics from battery reserve	from 2 hours
Nominal current 24V	2x80A
Nominal current 24V, power supply of Control Computer System (CCS)	120A
Power supply of station signals 220V	4x2,0kVA
Power supply of intermediate signals 220V	2,5kVA
Power supply of intermediate track circuits	4,2kVA
Nominal current 24V, auto block	40A
Station coding 220V	2x2,5kVA
Power supply of switch motors 3x220V	2x4,4kVA
Intermediate coding 220V	4,2kVA
Power supply of station track circuits 220V	3x5kVA
Data interface to STDМ	RS-485, Ethernet
Mean time between failures	20000 hours
Warranty	3 years
Life time expectancy	25 years
Operation mode	continuously

Order data CPSP 200 + ABTC

Nº	Name	Input automatic breakers	Calculated capacity of MI	Capacity of USU	IT	Number order
1	CPSP 200 + ABTC	200A*	up to 20kVA	3x10kVA	40kVA	ЖРТА.436515.001-406
2	CPSP 200 + ABTC	200A*	up to 30kVA	3x15kVA	50kVA	ЖРТА.436515.001-407
3	CPSP 200 + ABTC	200A*	up to 40kVA	3x20kVA	63kVA	ЖРТА.436515.001-408
4	CPSP 200 + ABTC	200A*	up to 60kVA	3x30kVA	80kVA	ЖРТА.436515.001-409
5	CPSP 200 + ABTC	200A	up to 80kVA	3x40kVA	100kVA	ЖРТА.436515.001-410

* Nominal current of input automatic breakers could change according to project.





COMBINED POWER SUPPLY PLANT FOR ELECTRICAL INTERLOCKING CPSP EI 40

- DESIGNED FOR POWER SUPPLY OF RELAY ELECTRICAL INTERLOCKING 40 ON SMALL-SCALE STATIONS
- AUTONOMIC POWER SUPPLY OF ELECTRICAL INTERLOCKING DEVICES MINIMUM 2 HOURS
- COMPATIBLE WITH ANY TYPES OF INPUT DEVICES
- COMPATIBLE WITH ANY EARTH SYSTEMS USING IFU



Function

CPSP EI 40 is intended for high performance uninterruptible power supply of relay interlocking with track switches up to 40 and can be used inside the EI buildings or transportable modules.

Features

Isolated power poles from 7 to 25 V high capacity are intended for light indication on the different displays where flashing poles are implemented on contactless solid contactors and relays basis. The industrial unit USU GE DE is used for providing uninterruptible power supply of EI devices amounting to CPSP EI 40. The switching time from storage batteries during disappearing external network is zero. For possible USU maintenance work is provided its automatic bypass by reverse switch with motor drive. Unit has Russian interface and possibility of remote diagnostic by systems STDМ.

The control function of USU output voltage is implemented in CPSP EI 40. If the output voltage is not equal to accepted standards will made the automatic switching of power voice track circuits (VTC) and coding automatic train control (ATC) to the external network.

Structure of CPSP EI 40

Nº	Name	Symbol	H x W x D	Weight, kg	Quantity
1	Distribution board	DB	2020x1100x425	230	1
2	Transformer board	TB	2020x853x425	320	1
3	Uninterruptible supply unit	USU	1450x680x800	260	1
4	Battery cabinet	BC	1450x750(1100)x800	878 (1130)	1
5	Isolating transformer	IT	600x450x450	150-190	1

Main technical parameters

Type input network	Three phases 3x380V, single 220V
The cable section	up to 95mm ²
Nominal current	up to 63A
Protection	IP54
Earth system	TN-C, TT, IT-N, TN-S, TN-C-S
Fire resistance	correspond to GOST 12.1.004-91
EMC	correspond to GOST R 50656-2001
The work time of loads Railroad Automation and Telemechanics from battery reserve	from 2 hours
Nominal current 24V	30A
Power supply of signals 220V	1,5kVA
Remote-control-display ~24V	20A
Remote-control-display 5V	20A
Power supply of switch motors 3x220V	4,4kVA
Power supply of voice track circuits 220V	2,5kVA
Data interface to STDМ	RS-485, Ethernet
Mean time between failures	20000 hours
Warranty	3 years
Life time expectancy	25 years
Operation mode	continuously

Order data CPSP EI 40 (connected through remote control power-off switchboard)

Nº	Name	Input automatic breaker	Calculated capacity of EI	Capacity of USU	IT EI	Number order
1	CPSP EI 40	80A*	up to 8kVA	10kVA	16kVA	ЖРТА.436515.001-201
2	CPSP EI 40	80A*	up to 12kVA	15kVA	20kVA	ЖРТА.436515.001-202
3	CPSP EI 40	80A*	up to 16kVA	20kVA	25kVA	ЖРТА.436515.001-203

Order data CPSP IE 40 (connected through input feeder unit)

Nº	Name	Input automatic breaker	Calculated capacity of IE	Capacity of USU	IT EI	Number order
1	CPSP EI 40	80A*	up to 8kVA	10kVA	16kVA	ЖРТА.436515.001-204
2	CPSP EI 40	80A*	up to 12kVA	15kVA	20kVA	ЖРТА.436515.001-205
3	CPSP EI 40	80A*	up to 16kVA	20kVA	25kVA	ЖРТА.436515.001-206

* Nominal current of input automatic breakers could change according to project.





COMBINED POWER SUPPLY PLANT FOR ELECTRICAL INTERLOCKING CPSP EI 40 + ABTC

- DESIGNED FOR POWER SUPPLY OF RELAY ELECTRICAL INTERLOCKING ON SMALL-SCALE STATIONS AND AUTOMATIC BLOCK SIGNALLING ABTC/ABTC-M
- AUTONOMIC POWER SUPPLY OF RAILROAD AUTOMATION AND TELEMECHANICS SYSTEMS MINIMUM 2 HOURS
- COMPATIBLE WITH ANY TYPES OF INPUT DEVICES
- COMPATIBLE WITH ANY EARTH SYSTEMS USING IFU
- POWER SUPPLY OF DC TRACK SWITCHES



Function

CPSP EI 40 is intended for high performance uninterruptible power of relay interlocking with track switches up to 40 together with automatic block signalling ABTC and can be used inside the EI buildings or transportable modules.

Features

Isolated power poles from 7 to 25 V high capacity are intended for light indication on the different displays where flashing poles are implemented on contactless solid contactors and relays basis. The plant has the combined construction with common input distribution board and two transformer boards: TB1 – for load power EI and TB-2 – for load power ABTC.

The industrial unit USU GE DE is used for providing uninterruptible power supply of EI and ABTC devices amounting to CPSP EI 40 + ABTC. The switching time from storage batteries during disappearing external network is zero. For possible USU maintenance work is provided its automatic bypass by reverse switch with motor drive Unit has Russian interface and possibility of remote diagnostic by systems STDM. The control function of USU input voltage is implemented in CPSP EI 40. If the input voltage is not equal to accepted standards will made the automatic switching of power VTC and coding ATC to the external network.

Special versions of CPSP EI 40 + ABTC are designed for power supply of DC switch motors.

Structure of CPSP EI 40 + ABTC

Nº	Name	Symbol	H x W x D	Weight, kg	Quantity
1	Distribution board	DB	2020x1100x425	230	1
2	Transformer board	TB1, TB2	2020x853x425	320	2
3	Uninterruptible supply unit	USU	1450x680x800	260-310	1
4	Battery cabinet	BC	1450x750(1100)x800	878 (1130)	1
5	Isolating transformer	IT	600x450x450 (700x600x600)	190(280)	1

Main technical parameters

Type input network	three phases 3x380V, single 220V
Cable section	up to 95mm ²
Nominal current	up to 63A
Protection	IP54
Earth system	TN-C, TT, IT-N, TN-S, TN-C-S
Fire resistance	correspond to GOST 12.1.004-91
The work time of loads Railroad Automation and Telemechanics from battery reserve	from 2 hours
Nominal current 24V	60A
Power supply of station signals 220V	2,0kVA
Power supply of intermediate signals 220V	2,0kVA
Remote-control-display 24V	20A
Power supply of switch motors 3x220VAC	4,4kVA
Power supply of switch motors 3x220VDC	4,5kVA
Power supply of station voice track circuits 220V	2,5kVA
Power supply of intermediate track circuits 220V	2,5kVA
EMC	correspond to GOST R 50656-2001
Data interface to STDM	RS-485, Ethernet
Mean time between failures	20000 hours
Warranty	3 years
Life time expectancy	25 years
Operation mode	continuously

Order data CPSP EI 40 + ABTC (connected through CPS, AC track switches)

Nº	Name	Input automatic breakers	Calculated capacity of EI + ABTC	Capacity of USU	IT	Number order
1	CPSP EI 40 + ABTC	80A*	up to 12kVA	15kVA	20kVA	ЖРПА.436515.001-207
2	CPSP EI 40 + ABTC	80A*	up to 16kVA	20 kVA	25kVA	ЖРПА.436515.001-208
3	CPSP EI 40 + ABTC	80A*	up to 24kVA	30kVA	40kVA	ЖРПА.436515.001-209

Order data CPSP EI 40 + ABTC (connected through IFU, AC track switches)

Nº	Name	Input automatic breakers	Calculated capacity of EI + ABTC	Capacity of USU	IT	Number order
1	CPSP EI 40 + ABTC	80A*	up to 12kVA	15kVA	20kVA	ЖРПА.436515.001-210
2	CPSP EI 40 + ABTC	80A*	up to 16kVA	20kVA	25kVA	ЖРПА.436515.001-211
3	CPSP EI 40 + ABTC	80A*	up to 24kVA	30kVA	40kVA	ЖРПА.436515.001-212





COMBINED POWER SUPPLY PLANT FOR ELECTRICAL INTERLOCKING CPSP EI 70

Order data CPSP EI 40 + ABTC (connected through CPS, DC track switches)

Nº	Name	Input automatic breakers	Calculated capacity of EI+ABTC	Capacity of USU	IT	Number order
1	CPSP EI 40 + ABTC	80A*	up to 12kVA	15kVA	20kVA	ЖРГА.436515.001-213
2	CPSP EI 40 + ABTC	80A*	up to 16kVA	20 kVA	25kVA	ЖРГА.436515.001-214
3	CPSP EI 40 + ABTC	80A*	up to 24kVA	30 kVA	40kVA	ЖРГА.436515.001-215

Order data CPSP EI 40 + ABTC (connected through IFU, DC track switches)

Nº	Name	Input automatic breakers	Calculated capacity of EI + ABTC	Capacity of USU	IT	Number order
1	CPSP EI 40 + ABTC	80A*	up to 12kVA	15kVA	20kVA	ЖРГА.436515.001-216
2	CPSP EI 40 + ABTC	80A*	up to 16kVA	20kVA	25kVA	ЖРГА.436515.001-217
3	CPSP EI 40 + ABTC	80A*	up to 24kVA	30kVA	40kVA	ЖРГА.436515.001-218

Order data CPSP EI 40 + ABTC-M (connected through CPS, AC track switches)

Nº	Name	Input automatic breakers	Calculated capacity of EI + ABTC	Capacity of USU	IT	Number order
1	CPSP EI 40 + ABTC-M	80A*	up to 12kVA	15kVA	20kVA	ЖРГА.436515.001-219
2	CPSP EI 40 + ABTC-M	80A*	up to 16kVA	20kVA	25kVA	ЖРГА.436515.001-220
3	CPSP EI 40 + ABTC-M	80A*	up to 24kVA	30kVA	40kVA	ЖРГА.436515.001-221

Order data CPSP EI 40 + ABTC-M (connected through IFU, AC track switches)

Nº	Name	Input automatic breakers	Calculated capacity of EI + ABTC	Capacity of USU	IT	Number order
1	CPSP EI 40 + ABTC-M	80A*	up to 12kVA	15kVA	20kVA	ЖРГА.436515.001-222
2	CPSP EI 40 + ABTC-M	80A*	up to 16kVA	20kVA	25kVA	ЖРГА.436515.001-223
3	CPSP EI 40 + ABTC-M	80A*	up to 24kVA	30kVA	40kVA	ЖРГА.436515.001-224

* Nominal current of input automatic breakers could change according to project.

- DESIGNED FOR POWER SUPPLY OF RELAY ELECTRICAL INTERLOCKING ON AVERAGE-SCALE STATIONS
- AUTONOMIC POWER SUPPLY OF ELECTRICAL INTERLOCKING DEVICES MINIMUM 2 HOURS
- COMPATIBLE WITH ANY TYPES OF INPUT DEVICES
- COMPATIBLE WITH ANY EARTH SYSTEMS USING IFU
- POWER SUPPLY OF DC TRACK SWITCHES

Function

CPSP EI 70 is intended for high performance uninterruptible power supply of relay interlocking with track switches up to 70 and can be used inside the EI building or transportable modules.

Features

The industrial unit USU GE DE is used for providing uninterruptible power supply of EI devices amounting to CPSP EI 70. The switching time from storage batteries during disappearing external network is zero. For possible USU maintenance work is provided its automatic bypass by reverse switch with motor drive. Unit has Russian interface and possibility of remote diagnostic by systems STDМ.

The control function of USU output voltage is implemented in CPSP EI 70. If the output voltage is not equal to accepted standards will made the automatic switching of power VTC and coding ATC to the external network.

Special versions of CPSP EI 70 are designed for power supply of DC switch motors.



Structure of CPSP EI 70

Nº	Name	Symbol	H x W x D	Weight, kg	Quantity
1	Distribution board	DB	2020x1100x425	230	1
2	Transformer board	TB	2020x853x425	320	2
3	Uninterruptible supply unit	USU	1450x680x800	260-310	1
4	Battery cabinet	BC	1450x750(1100)x800	878 (1130)	1
5	Isolating transformer	IT	600x450x450 (700x600x600)	190(280)	1





Main technical parameters

Type input network	Three phases 3x380V, single phase 220V
Cable section	up to 95mm ²
Nominal current	up to 63A
Protection	IP54
Earth system	TN-C, TT, IT-N, TN-S, TN-C-S
Fire resistance	correspond to GOST 12.1.004-91
EMC	correspond to GOST R 50656-2001
The work time of loads Railroad Automation and Telemechanics from battery reserve	from 2 hours
Nominal current 24V	80A
Power supply of signals 220V	2x2,0kVA
Remote-control-display ~24V	63A
Remote-control-display 5V	16A
Power supply of switch motors 3x220VAC	2x4,4kVA
Power supply of switch motors 3x220VDC	4,5kVA
Power supply of voice track circuits 220V	3x1,5kVA
Data interface to STDМ	RS-485, Ethernet
Mean time between failures	20000 hours
Warranty	3 years
Life time expectancy	25 years
Operation mode	continuously

Order data CPSP EI 70, (connected through CPS, AC track switches)

Nº	Name	Input automatic breaker	Calculated capacity of EI	Capacity of USU	IT EI	Number order
1	CPSP EI 70	80A*	Up to 12kVA	15kVA	20kVA	ЖРГА.436515.001-301
2	CPSP EI 70	80A*	Up to 12kVA	20kVA	25kVA	ЖРГА.436515.001-302
3	CPSP EI 70	80A*	Up to 12kVA	30kVA	40kVA	ЖРГА.436515.001-303

Order data CPSP EI 70 (connected through IFU, AC track switches)

Nº	Name	Input automatic breaker	Calculated capacity of EI	Capacity of USU	IT EI	Number order
1	CPSP EI 70	80A*	Up to 12kVA	15kVA	20kVA	ЖРГА.436515.001-304
2	CPSP EI 70	80A*	Up to 16kVA	20kVA	25kVA	ЖРГА.436515.001-305
3	CPSP EI 70	80A*	Up to 24kVA	30kVA	40kVA	ЖРГА.436515.001-306

Order data CPSP EI 70, (connected through CPS, DC track switches)

Nº	Name	Input automatic breaker	Calculated capacity of EI	Capacity of USU	IT EI	Number order
1	CPSP EI 70	80A*	Up to 12kVA	15kVA	20kVA	ЖРГА.436515.001-307
2	CPSP EI 70	80A*	Up to 16kVA	20kVA	25kVA	ЖРГА.436515.001-308
3	CPSP EI 70	80A*	Up to 24kVA	30kVA	40kVA	ЖРГА.436515.001-309

Order data CPSP EI70 (connected through IFU, DC track switches)

Nº	Name	Input automatic breaker	Calculated capacity of EI	Capacity of USU	IT EI	Number order
1	CPSP EI 70	80A*	Up to 12kVA	15kVA	20kVA	ЖРГА.436515.001-310
2	CPSP EI 70	80A*	Up to 16kVA	20kVA	25kVA	ЖРГА.436515.001-311
3	CPSP EI 70	80A*	Up to 24kVA	30kVA	40kVA	ЖРГА.436515.001-312

* Nominal current of input automatic breakers could change according to project.





COMBINED POWER SUPPLY PLANT CPSP 200R

- DESIGNED FOR POWER SUPPLY OF RELAY ELECTRICAL INTERLOCKING ON LARGE-SCALE STATIONS
- AUTONOMIC POWER SUPPLY OF RAILROAD AUTOMATION AND TELEMECHANICS SYSTEMS MINIMUM 2 HOURS
- COMPATIBLE WITH ANY EARTH SYSTEMS USING IFU
- POWER SUPPLY OF DC TRACK SWITCHES

Function

CPSP 200R is intended for high performance uninterruptible power supply of relay interlocking with track switches up to 200 and can be used inside the EI buildings..

Features

CPSP 200R has an own diagnostic system. Isolated power poles from 7 to 25 V high

capacity are intended for light indication on the different displays where flashing poles are implemented on contactless solid contactors and relays basis.

The UPS is used for providing uninterruptible supply of RAT devices amounting to CPSP The system consists of three industrial parallel units GE DE. The switching time from storage batteries during disappearing external network is zero. All critical elements and functions are reserved and the single refusal point is absent. The system is based on the power backup n+1 principle in which failure of one USU doesn't lead to overload other. This solution also allows the maintenance work of any USU without power supply interruption. Unit has Russian interface and possibility of remote diagnostic by systems STDМ.

CPSP 200R could provide the power supply of DC and AC switch motors.



Structure of CUPSP 200R

Nº	Name	Symbol	H x W x D	Weight, kg	Quantity
1	Automatic load transfer board	BALT	2020x1100x625	270	1
2	Distribution board	DB	2020x1100x625	220	1
3	Transformer board	TB1, TB2	2020x1100x625	230	2
4	Uninterruptible supply unit	USU	1450x680x800	260-310	3
5	Battery cabinet	BC	1450x750(1100)x800	878 (1130)	3
6	Isolating transformer microprocessor interlocking	IT MI	700x600x600 (720x855x720)	230-350	1
7	Isolating transformer relay interlocking	IT RI	600x450x450	150	1

Main technical parameters

Type input network	three phases 3x380V
The cable section	up to 150mm ²
Nominal current	up to 170A
Protection	IP54
Earth system	TN-C, TT, IT-N,TN-S, TN-C-S
Fire resistance	correspond to GOST 12.1.004-91
EMC	correspond to GOST R 50656-2001
The work time of loads Railroad Automation and Telemechanics from battery reserve	from 2 hours
Nominal current 24V	120A
Remote-control-display 24V	63A
Remote-control-display 5V	6x10A
Power supply of station signals 220V	4x2,0kVA
Coding 220V	2x2,5kVA
Power supply of switch motors 3x220VAC	2x4,4kVA
Power supply of switch motors 3x220VDC	2x4,5kVA
Power supply of voice track circuits 220V	3x5 kVA
Data interface to STDМ	RS-485, Ethernet
Mean time between failures	20000 hours
Warranty	3 years
Life time expectancy	25 years
Operation mode	continuously

Order data CPSP 200R

Nº	Name	Input automatic breaker	Calculated capacity of EI	Capacity of USU	IT EI	Number order
1	CPSP 200R	200A*	Up to 20kVA	3x10kVA	40kVA	ЖРТА.436515.001-501
2	CPSP 200R	200A*	Up to 30kVA	3x15kVA	50kVA	ЖРТА.436515.001-502
3	CPSP 200R	200A*	Up to 40kVA	3x20kVA	63kVA	ЖРТА.436515.001-503
4	CPSP 200R	200A*	Up to 60kVA	3x30kVA	80kVA	ЖРТА.436515.001-504
5	CPSP 200R	200A	Up to 80kVA	3x40kVA	100kVA	ЖРТА.436515.001-505

* Nominal current of input automatic breakers could change according to project.





COMBINED POWER SUPPLY PLANT CPSP 200R + ABTC

- DESIGNED FOR POWER SUPPLY OF RELAY ELECTRICAL INTERLOCKING ON LARGE-SCALE STATIONS AND AUTOMATIC BLOCK SIGNALLING ABTC/ABTC-EM
- AUTONOMIC POWER SUPPLY OF RAILROAD AUTOMATION AND TELEMECHANICS SYSTEMS MINIMUM 2 HOURS
- COMPATIBLE WITH ANY EARTH SYSTEMS USING IFU
- POWER SUPPLY OF DC TRACK SWITCHES

Function

CPSP 200R + ABTC is intended for high performance uninterruptable power supply of relay interlocking with track switches up to 200 together with automatic block signalling ABTC and ABTC-EM. Plant can be used inside the EI buildings.

Features

The plant has the combined construction with

common input BABP, distribution board and three transformer boards: TB1 and TB2 – for load power MI and TB-3 – for load power ABSVC. Isolated power poles from 7 to 25 V high capacity are intended for light indication on the different displays where flashing poles are implemented on contactless solid contactors and relays basis. The UPS is used for providing uninterruptible power supply of Railroad Automation and Telemechanics devices amounting to CPSP. The system consists of three industrial parallel supply units GE DE. The switching time from storage batteries during disappearing external network is zero. All critical elements and functions are reserved and the single refusal point is absent. The system is based on the power backup n+1 principle in which failure of one USU doesn't lead to overload other. This solution also allows the maintenance work of any USU without power supply interruption. Unit has Russian interface and possibility of remote diagnostic by systems STDМ. CPSP 200R could power supply of DC and AC switch motors.



Structure of CPSP 200R + ABTC

Nº	Name	Symbol	H x W x D	Weight, kg	Quantity
1	Automatic backup power switchboard	BABP	2020x1100x625	270	1
2	Distribution board	DB	2020x1100x625	220	1
3	Transformer board	TB1, TB2, TB3	2020x1100x625	230	3
4	Uninterruptible supply unit	USU	1450x680x800	260-310	3
5	Battery cabinet	BC	1450x750(1100)x800	878 (1130)	3
6	Isolating transformer Electrical interlocking	IT EI	700x600x600 (720x855x720)	230-350	1
7	Isolating transformer Track circuits	IT TR	700x600x600 (720x855x720)	230-350	1

Main technical parameters

Type of the input network	Three phases 3x380V
The cable section	up to 150mm ²
Nominal current	up to 170A
Protection	IP54
Earth system	TN-C, TT, IT-N, TN-S, TN-C-S
Fire resistance	correspond to GOST 12.1.004-91
EMC	correspond to GOST R 50656-2001
The work time of loads Railroad Automation and Telemechanics from battery reserve	from 2 hours
Nominal current 24V	120A
Remote-control-display 24V	63A
Remote-control-display 5V	6x10A
Power supply of station signals 220B	4x2,0kVA
Coding 220V	2x2,5kVA
Power supply of switch motors 3x220VAC	2x4,4kVA
Power supply of switch motors 3x220VDC	2x4,5kVA
Power supply of voice track circuits 220V	3x5kVA
Power supply of intermediate signals 220V	2,5kVA
Power supply of intermediate track circuits	4,2kVA
Nominal current 24V, auto block	40A
Intermediate coding 220V	4,2kVA
Data interface to STDМ	RS-485, Ethernet
Mean time between failures	20000 hours
Warranty	3 years
Life time expectancy	25 years
Operation mode	continuously

Order data CPSP 200R + ABTC

Nº	Name	Input automatic breaker	Calculated capacity of EI + ABTC	Capacity of USU	IT	Number order
1	CPSP 200R + ABTC	200A*	Up to 20kVA	3x10kVA	40kVA	ЖРГА.436515.001-511
2	CPSP 200R + ABTC	200A*	Up to 30kVA	3x15kVA	50kVA	ЖРГА.436515.001-512
3	CPSP 200R + ABTC	200A*	Up to 40kVA	3x20kVA	63kVA	ЖРГА.436515.001-513
4	CPSP 200R + ABTC	200A*	Up to 60kVA	3x30kVA	80kVA	ЖРГА.436515.001-514
5	CPSP 200R + ABTC	200A	Up to 80kVA	3x40kVA	100kVA	ЖРГА.436515.001-515

* Nominal current of input automatic breakers could change according to project.





COMBINED POWER SUPPLY PLANT CPSP ABTC

- DESIGNED FOR POWER SUPPLY OF AUTOMATIC BLOCK SIGNALLING ABTC, ABTC-M, ABTC-EM
- AUTONOMIC POWER SUPPLY OF ABTC DEVICES MINIMUM 2 HOURS (BATTERY RESERVE)
- COMPATIBLE WITH ANY TYPES OF INPUT DEVICES
- COMPATIBLE WITH ANY EARTH SYSTEMS USING IFU



Function

CPSP ABTC is intended for high performance uninterruptible power supply of Automatic block signalling ABTC, ABTC-M, ABTC-EM and can be used inside the EI buildings or transportable modules.

Features

The industrial USU GE DE is used for providing uninterruptible power supply of ABTC devices amounting to CPSP ABTC. The switching time from storage batteries during disappearing external network is zero. For possible USU maintenance work is provided its automatic bypass by reverse switch with motor drive. Unit has Russian interface and possibility of remote diagnostic by systems STDМ.

The control function of USU output voltage is implemented in CPSP ABTC. If the output voltage is not equal to accepted standards will made the automatic switching of power VTC and coding ATC on the external network.

Structure of CPSP ABTC (M, EM)

Nº	Name	Symbol	H x W x D	Weight, kg	Quantity
1	Distribution board	DB	2020x1100x425	230	1
2	Transformer board	TB	2020x853x425	290	1
3	Uninterruptible supply unit ABTC (ABTC-EM/ABTC-M)	USU	1450x680x800	260	1(2)
4	Battery cabinet ABTC (ABTC-EM/ABTC-M)	BC	1450x750(1100)x800	878 (1130)	1(2)
5	Isolating transformer ABTC (ordered separately when power 20kVA)	IT	600x450x450	190	1
6	Isolating transformer ABTC-EM/ABTC-M	IT	600x450x450	190	1

Main technical parameters

Type input network	Three phases 3x380V, single 220V
Cable section	up to 95mm ²
Nominal current	up to 63A
Protection	IP54
Earth system	TN-C, TT, IT-N, TN-S, TN-C-S
Fire resistance	correspond to GOST 12.1.004-91
EMC	correspond to GOST R 50656-2001
The work time of loads Railway Automation and Telemechanics from battery reserve	from 2 hours
Nominal current 24V ABSVC/ABSVC-EM (ABSVC-M)	30(80)A
Power supply of signals	1,5-2,5kVA
Power supply of track circuits ABSVC/ABSVC-EM (ABSVC-M)	1,5-2,5 (2x4,2)kVA
Data interface to STDМ	RS-485, Ethernet
Mean time between failures	20000 hours
Warranty	3 years
Life time expectancy	25 years
Operation mode	continuously

Order data CPSP ABTC (connected through CPS)

Nº	Name	Input automatic breaker	Calculated capacity of ABSVC	Capacity of USU	Number order
1	CPSP ABTC	80A*	Up to 8kVA (up to 14 signal devices)	10kVA	ЖРГА.436515.001-01
2	CPSP ABTC	80A*	Up to 12kVA (up to 21 signal devices)	15kVA	ЖРГА.436515.001-02
3	CPSP ABTC	80A*	Up to 16kVA (up to 28 signal devices)	20kVA	ЖРГА.436515.001-03





MODULAR COMBINED POWER SUPPLY PLANT CPSP-M 70 CONTACTLESS OBJECT CONTROLER DEVICE

Order data CPSP ABTC (connected through IFU)

Nº	Name	Input automatic breaker	Calculated capacity of ABTC	Capacity of USU	Number order
1	CPSP ABTC	80A*	Up to 8kVA (up to 14 signal devices)	10kVA	ЖРПА.436515.001-04
2	CPSP ABTC	80A*	Up to 12kVA (up to 21 signal devices)	15kVA	ЖРПА.436515.001-05
3	CPSP ABTC	80A*	Up to 16kVA (up to 28 signal devices)	20kVA	ЖРПА.436515.001-06

Order data CPSP ABTC-EM

Nº	Name	Input automatic breaker	Calculated capacity of ABTC	Capacity of USU	Number order
1	CPSP ABTC-EM	80A*	Up to 8kVA (up to 14 signal devices)	10kVA	ЖРПА.436515.001-07
2	CPSP ABTC-EM	80A*	Up to 12kVA (up to 21 signal devices)	15kVA	ЖРПА.436515.001-08
3	CPSP ABTC-EM	80A*	Up to 16kVA (up to 28 signal devices)	20kVA	ЖРПА.436515.001-09

Order data CPSP ABTC-M

Nº	Name	Input automatic breaker	Calculated capacity of ABTC	Capacity of USU	Number order
1	CPSP ABTC-M	80A*	Up to 8kVA (up to 14 signal devices)	10kVA	ЖРПА.436515.001-10
2	CPSP ABTC-M	80A*	Up to 12kVA (up to 21 signal devices)	15kVA	ЖРПА.436515.001-11
3	CPSP ABTC-M	80A*	Up to 16kVA (up to 28 signal devices)	20kVA	ЖРПА.436515.001-12

*Nominal current of input automatic breakers could change according to project.

- DESIGNED FOR POWER SUPPLY OF MICROPROCESSOR INTERLOCKING EC-EM BASED ON CONTROL COMPUTER SYSTEM WITH CONTACTLESS OBJECT CONTROLLER DEVICE
- UNINTERRUPTIBLE SUPPLY UNIT BASED ON DC BUSBAR
- REAL-TIME MONITORING OF CONDITION CPSP-M WITH BUILDINGS DIAGNOSTIC SYSTEM INCLUDING TRANSFER TO STDM
- AUTONOMIC POWER SUPPLY OF MICROPROCESSOR INTERLOCKING EC-EM MINIMUM 2 HOURS
- COMPATIBLE WITH ANY EARTH SYSTEMS USING IFU

Function

CPSP-M 70 is intended for high performance uninterruptible power supply of microprocessor interlocking EC-EM based on Control Computer System (CCS) and Contactless Object Controller Device (COCD) with track switches up to 70. Plant can be used inside the EI buildings or transportable modules.

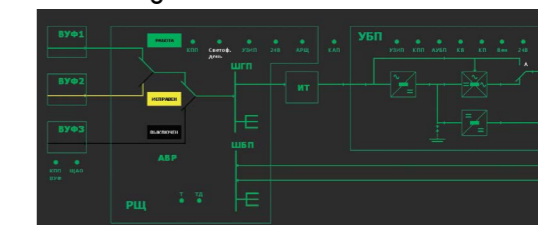
Features

The USU based on DC busbar (BDC) is used for providing uninterruptible power supply of microprocessor interlocking EC-EM amounting to CPSP-M. The switching time from storage batteries during disappearing external network is zero. The power backup is based on the principle n+1 and possibility of "hot" replacement.

For the power supply of COCD we use supply units of contactless track switch and signal equipment, switching and protective elements, which are integrated into CPSP-M.

CPSP-M power supplies as voice-frequency track circuits so track circuits using Digital Module of Track Circuits Control (DM TCC).

CPSP-M has complete diagnostic system of discrete and analog elements and makes the transfer all diagnostic information into integrated diagnostic system microprocessor-based interlocking and STDm.



Structure of CPSP-M 70

Nº	Name	Symbol	H x W x D	Weight,kg	Quantity
1	Distribution board	BD	2039x1120x625	450	1
2	Uninterruptible supply unit	USU	2039x625x625	275	1
3	Battery cabinet	BC	*	*	*
4	Isolating transformer	IT	600x450x450	150(190)	1
5	Supply board of control computer system	SB CCS	*	*	*
6	Input Feeder Device	IFU	2039x365x425	130	3
7	Emergency power-off board	EPB	300x400x150	10	1

*dimensions, weight and quantity could be different according to project.





Main technical parameters

Type input network	Three phases 3x380V
Cable section	up to 95mm ²
Nominal current	up to 80A
Protection	IP54
Earth system	TN-C, TT, IT-N, TN-S, TN-C-S
Fire resistance	correspond to GOST 12.1.004-91
EMC	correspond to GOST R 50656-2001
The work time of loads Railroad Automation and Telemechanics from battery reserve	from 2 hours
Power supply of uninterruptable load 3x380V	up to 30kVA
Quantity of CODC	up to 7
Nominal current 24V	70A
Power supply of track circuits 220V	до 2x2,5kVA
Power CODC signals ±110V	up to 7x1000VA
Power CODC track switches ±150V	up to 7x2700VA
Data interface to STDМ	Ethernet
Mean time between failures	20000 hours
Warranty	3 years
Life time expectancy	25 years
Operation mode	continuously

Order data CPSP-M 70 CODC

№	Name	Input automatic breaker	Calculated capacity of MI	Order Number
1	CPSP-M 70	80A*	Up to 9kVA	ЖРПА.436515.001-121
2	CPSP-M 70	80A*	Up to 13kVA	ЖРПА.436515.001-122
3	CPSP-M 70	80A*	Up to 17kVA	ЖРПА.436515.001-123
4	CPSP-M 70	80A*	Up to 20kVA	ЖРПА.436515.001-124
5	CPSP-M 70	80A*	Up to 21kVA	ЖРПА.436515.001-125
6	CPSP-M 70	80A*	Up to 22,5kVA	ЖРПА.436515.001-126
7	CPSP-M 70	80A*	Up to 24kVA	ЖРПА.436515.001-127

* Nominal current of input automatic breakers could change according to project.

COMBINED POWER SUPPLY PLANT CODC EI 40B

Function

CPSP EI 40B is intended for power supply of relay interlocking with track switches up to 40 without uninterruptible supply unit and can be used inside the EI buildings or transportable modules.

Features

Installation is implemented on CPSP EI 40 basis without USU.

Power supply of loads +24V, input signals,

station operator remote-control and linear circuits after voltage failure on both feeders and fuel use DGA is operating during not less 8 hours from storage battery fixed in the bottom part of transformer board 2.

CPSP EI 40B provides the power supply of the track switches with AC and DC motors, voice-frequency or phase-sensitive 50/25Hz track circuits, led and lamps station operator remote-control.

CPSP EI 40 is installed with minimum changes to exist plant (remote-control, racks) on the current stations.

Structure of CPCP EI 40B

№	Name	Symbol	H x W x D	Weight, kg	Quantity
1	Distribution board	DB	2020x1100x425	230	1
2	Transformer board	TC	2020x853x425	320	2
3	Isolating transformer	IT	600x450x450	150-190	1

Main technical parameters

Type input network	3 three phases 3x380V
Cable section	up to 95mm ²
Nominal current	up to 63A
Protection	IP54
Earth system	TN-C, TT, IT-N, TN-S, TN-C-S
Fire resistance	correspond to GOST 12.1.004-91
EMC	correspond to GOST R 50656-2001
The work time of loads Railroad Automation and Telemechanics from battery reserve	from 6 hours
Nominal current 24V	40A
Power supply of signals 220V	1,5kVA
Remote-control-display 24V	20A
Remote-control-display 5V	20A
Power supply of switch motors 3x220VAC	4,4kVA
Power supply of switch motors 3x220VDC	3,2kVA
Power supply of voice track circuits 220V	2,5kVA
Power supply of track circuit filter	PCH50/25- 2 pcs.
Data interface to STDМ	RS-485, Ethernet
Mean time between failures	20000 hours
Warranty	3 years
Life time expectancy	25 years
Operation mode	continuously





Order data CPSP EI 40B

Nº	Name	Input automatic breaker	Calculated capacity of EI	IT	Number order
1	CPSP EI 40B	80A*	Up to 8kVA	10kVA	ЖРГА.436515.001-235
2	CPSP EI 40B	80A*	Up to 12kVA	16kVA	ЖРГА.436515.001-240
3	CPSP EI 40B	80A*	Up to 16kVA	25kVA	ЖРГА.436515.001-245

* Nominal current of input automatic breakers could change according to project.





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