ЭЛЕМЕР
SCIENCE AND PRODUCTION COMPANY

POWER SUPPLY SOURCES OF DIRECT CURRENT SERIES БП 906

БП 906/24-1(2)
БП 906/36-1(2)

Certificate

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1. PURPOSE

Power supply sources of direct current series БП 906 (hereinafter – power supply source) are designed for conversion of mains voltage of 220 V into stabilized voltage of 24 V and 36 V.

Power supply source intended for work in the continuous mode and feed of primary and second measurings transformers.

In accordance with State Standards 12997-84 the power supply sources perform auxiliary function.

Power supply sources have embodiment without:

- БП 906/24(36)-1,
  БП 906/24(36)-2 – power backup;
- БП 906/24(36)-1P,
  БП 906/24(36)-2P – with power backup
  (the input of power backup is galvanically uncoupled from the mains) (order index РП).

Power supply sources БП 906/24(36)-1 have one channel.

Power supply sources БП 906/24(36)-2 have two galvanically uncouples channels.

The power supply sources have galvanic uncoupling between:

- circuits of mains and power backup, output circuits and grounding clamps;
- circuits of mains and power backup;
- output circuits;
- power supply circuits and output circuits.

Power supply sources are mounted on the metal DIN-batten (DIN N 43760)

According to stability to climatic impact during operation power supply sources correspond to:

- version group C3 by State Standards 12997-84 at the temperature of ambient air from minus 10 to plus 60 °C (order index t1060);
- version group C2 by State Standards 12997-84 at the temperature of ambient air from minus 40 to plus 50 °C (order index t4050);
- type of climatic version T3 by State Standards 15150-69 at the temperature of ambient air from minus 25 to plus 60 °C (order index t2560).

According to protectability from environment impact in accordance with State Standards 14254-96 the degree of protection from water and dust getting into a power supply source it belongs to IP20.

According to stability to electromagnetic interference power supply sources in accordance with State Standards P 50746-2000 belong to:

- version group III, criteria of quality of functioning – A;
- version group IV (besides microsecond pulse interferences of high energy in the power backup circuit during power supply from alternate current by the transmission circuit «wire-ground»), criteria of quality of functioning – A (table 2.2).

2. TECHNICAL DATA AND SPECIFICATIONS

2.1. Nominal output voltage:
- БП 906/24 24 V;
- БП 906/36 36 V.

2.1.1. Tolerable deviation of voltage from nominal one ±2 %.

2.1.2. Additional tolerable deviation of voltage during temperature variation for every 10 °C within the limits of operational temperatures ±0,2 %.

2.2. Maximum load current per channel at temperatures up to 50 °C:
- БП 906/24 150 mA;
- БП 906/36 120 mA.

2.2.1. Maximum load current in the temperature range from 50 to 60 °C decreases linearly from 100 to 70%.

2.2.2. Allowable load capacity of each channel:
- with any current operation of electronic security (see p. 2.3) 100 microfarad;
- an upper threshold electronic protection (see p. 2.3) 1000 microfarad.

2.3. The current operation of electronic security of each channel is reconfigured with the variable resistor from the lower to upper threshold:
- lower threshold (36±7) mA;
- upper threshold БП 906А/24 (220±30) mA;
- upper threshold БП 906А/36 (150±20) mA.

Factory setting the current operation of electronic security: the upper threshold.

2.4. Effective value of pulse of output voltage not more than 50 mV.

2.5. Instability of output voltage

- during variation of mains voltage from 130 to 249 V not more than ±0,2 %;
- when changing the load current continuously from zero to a maximum not more than ±0,2 %;

2.6. Power supply is performed from the circuit of alternate current with frequency of (50±1) Hz and nominal voltage of 220 V with a tolerable deviation from 130 to 249 V.

The power backup is performed from the alternate current circuit of voltage from 130 to 249 V or from the circuit of direct current of voltage from 150 to 300 V (of any polarity).

Switching of power supply from mains to backup power and back do not result in collapse of output voltage.

Power supply source steady to breaking of feed. Duration of breaking is resulted in a table 2.1.

Table 2.1 – Duration of breaking of feed, during which output tension of sources of feed corresponds p. 2.1.

Code	Current of a load, mA	Duration of breaking of feed is no more, sec
БП 906/24-1	25	1,0
	150	0,35
БП 906/36-1	25	1,0
	120	0,3
БП 906/24-2	25	1,0
	150	0,35
БП 906/36-2	25	1,0
	120	0,3

2.7. Consumed power supply is not more than:

- 8 V·A for БП 906/24(36)-1;
- 12 V·A for БП 906/24(36)-2.

2.8. The time setting of operation mode is not more than 15 sec.

2.9. Making current of power supply (starter current) - 5 A (during 2 ms).

2.10. Overall dimension, mm, not over - 45x101x125.

2.11. The mass, kg, not over 0,3.

2.12. Power supply sources are durable to ambient air temperature impact:

- from minus 10 to plus 60 °C (order index t1060) for climatic version C3 by State Standards 12997-84;
- from minus 40 to plus 50 °C (order index t4050) for climatic version C2 by State Standards 12997-84;
- from minus 25 to plus 60 °C (order index t2560) for climatic version T3 by State Standards 15150-69.

2.13. Insulation of electrical circuits of mains and power backup relative to grounding clamps and between themselves depending on conditions of testing withstands during 1 minute an impact of testing voltage of practically sinusoidal form with a frequency from 45 to 65 Hz:

- 1500 V at the temperature of ambient air (20±5) °C and of the relative humidity from 30 to 80 %;
- 900 V at the relative humidity of (90±3) % and the temperature of ambient air (25±3) °C.

2.13.1. Insulation of electrical circuits of the mains and power backup relative to output circuits, joined together, depending on conditions of testing withstands during 1 minute an impact of testing voltage of practically sinusoidal form with a frequency from 45 to 65 Hz:

- 1500 V at the temperature of the ambient air of (20±5) °C and of the relative humidity from 30 to 80 %;
- 900 V at the relative humidity of (90±3) % and the temperature of ambient air of (25±3) °C.

2.13.2. Insulation of electrical circuits between themselves and output circuits, joined together, relative to the grounding clamp depending on conditions of testing withstands during 1 minute an impact of testing voltage of practically sinusoidal form with a frequency from 45 to 65 Hz.

- 500 V at the temperature of the ambient air (20±5) °C and the relative humidity from 30 to 80 %;
- 300 V at the relative humidity (90±3) % and the temperature of the ambient air (25±3) °C.

2.14. Electrical resistance of insulation between output circuits and power supply circuits as well as output circuits between themselves is not less than:

- 20 MOhm at the temperature of the ambient air of (20±5) °C and relative humidity from 30 to 80 %;
- 5 MOhm at the temperature of ambient air of (50±3) °C [or plus 60 °C] and relative humidity from 30 to 80 %;
- 1 MOhm at relative humidity of (90±3) % and the temperature of ambient air of (25±3) °C.

2.15. Provision of electromagnetic compatibility and noise immunity

2.15.1. According to stability to electromagnetic interferences power supply sources in compliance with State Standards P 50746-2000 correspond to:

- Version group III, criteria of quality functioning – A;
- Version group IV (except for microsecond pulse interferences of high energy in the circuit of the power backup in case of alternate current power supply by transfer circuit «wire - ground»), criteria of quality functioning – A (table 2.2).

2.15.2. Power supply sources function normally and do not produce any interferences in conditions of joint operation with equipment of systems and elements for which it is designed as well as with equipment designed for other purposes, that may be used together with the present power supply source in a typical interference situation.

2.16. Information concerning the content of precious metals

2.16.1. Power supply source contains no precious metals.

3. COMPLETE SET

3.1. Composition of complete set of delivery:

- Power supply sources БП 906 . . . . . - 1 piece.

The complete set of the instruments and of accessories:

- Socket 5ESDV-02P

  БП 906 24(36)-1 . . . . . - 1 piece.

  БП 906 24 (36)-1P . . . . . - 2 piece.
  (one for every channel and for connection of reserve power supply)

  БП 906 24(36)-2 . . . . . - 2 piece.
  (one for every channel)

  БП 906 24(36)-2P . . . . . - 3 piece.
  (one for every channel and for connection of reserve power supply)

- Розетка 2ESDV-03P . . . . . - 1 piece.
  (for connection of circuit power supply)

- Power supply sources
  of direct current БП 906.
  Certificate . . . . . - 1 pc.
  Coupon for guarantee repair and
  after guarantee servicing - 1 pc.

4. DESIGN AND FUNCTIONING OF THE DEVICES

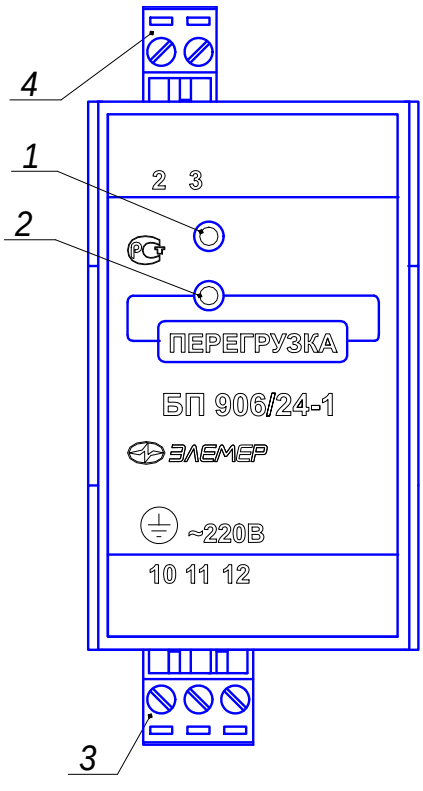
4.1. The power supply source consists of a pulse converter of mains voltage with galvanically decoupled outputs, module of line stabilizers with fault protection and overload protection, indication module, connection module and the module of reserve commutation for the power supply source with power backup.

4.2. On front panels of power supply sources (see pictures 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8) are located:

– single indicators (one per channel) of green colour indicating presence of output voltage (1);
- single indicators (one per channel) of red color overload protection ore fault protection in channels (2);
- single indicators (one per channel) of red color indicating power backup actuation (5) (for power supply sources with the power backup);
- clamp blocks of connection of mains (3), of power backup (for the power supply source with the power backup) and output circuits (4).

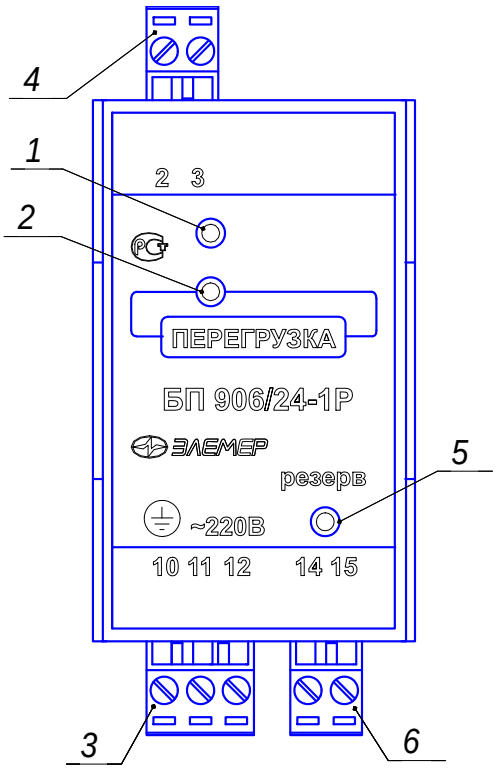
4.3. On the upper panel of the housings (see the picture 4.9, 4.10, 4.11, 4.12) there are special opening located (1) to access the adjustment resistors current operation of electronic protection against short circuits and overloads.

The front panel БП 906/24-1
(without a reserve feed)



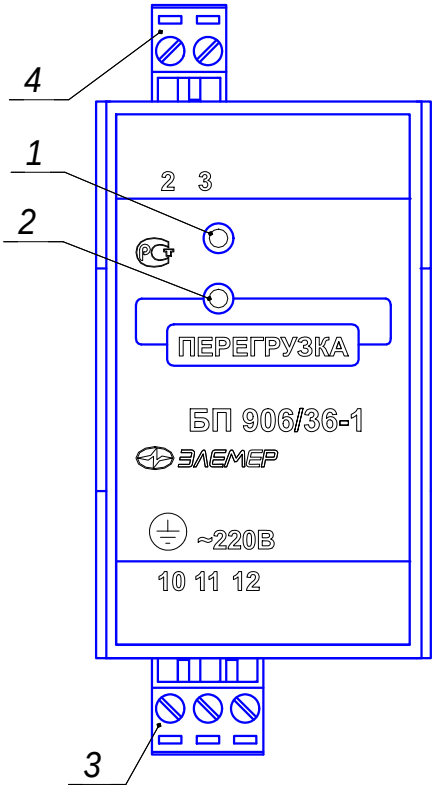
Picture 4.1

The front panel БП 906/24-1Р
(with a reserve feed)



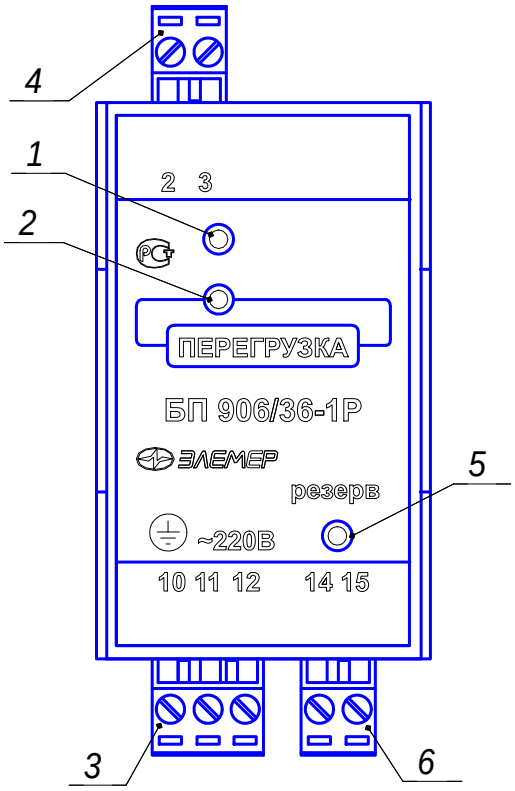
Picture 4.2

The front panel БП 906/36-1
(without a reserve feed)



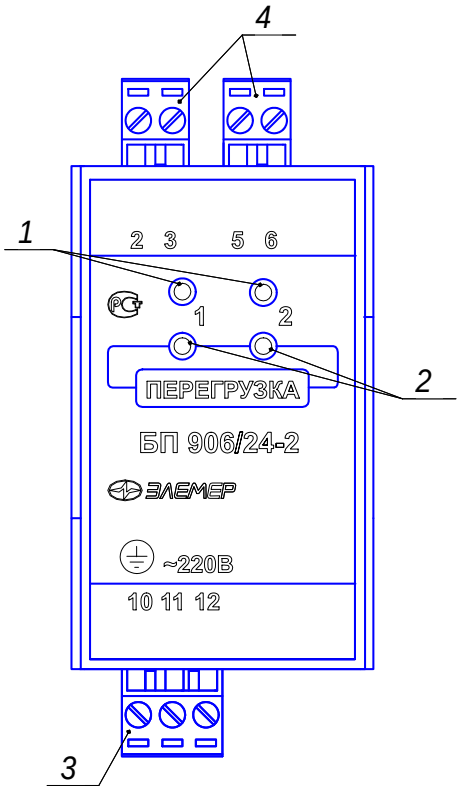
Picture 4.3

The front panel БП 906/36-1Р
(with a reserve feed)



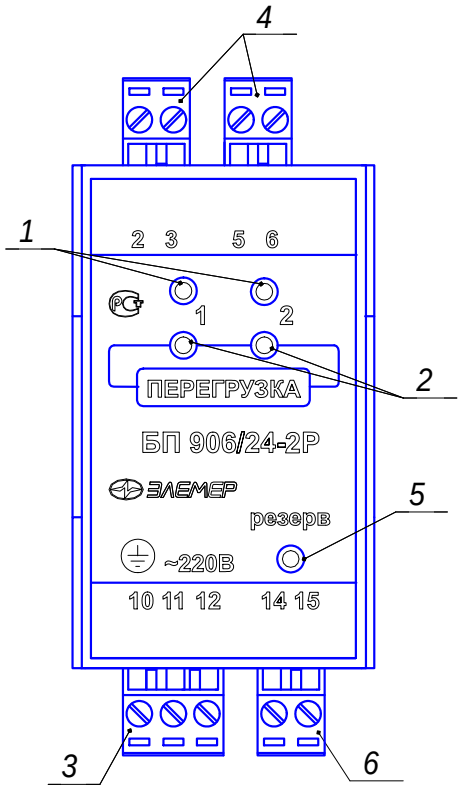
Picture 4.4

The front panel БП 906/24-2
(without a reserve feed)



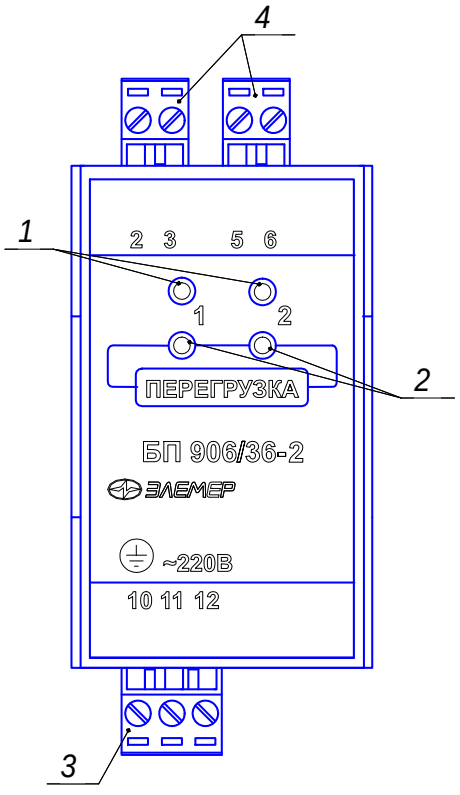
Picture 4.5

The front panel БП 906/24-2Р
(with a reserve feed)



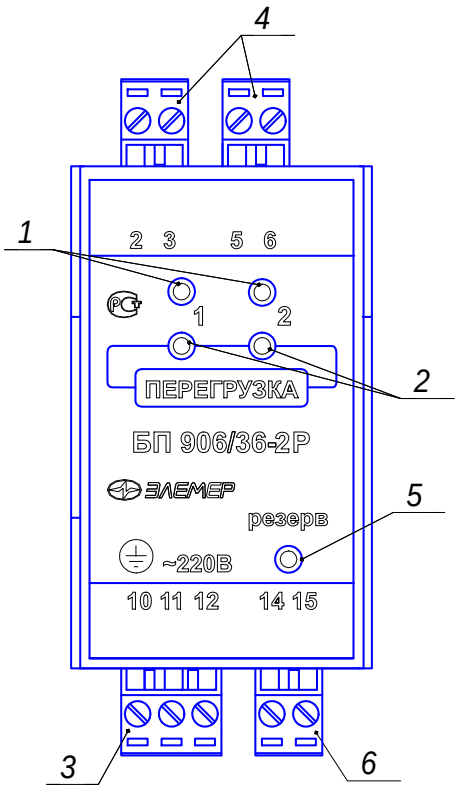
Picture 4.6

The front panel БП 906/36-2
(without a reserve feed)



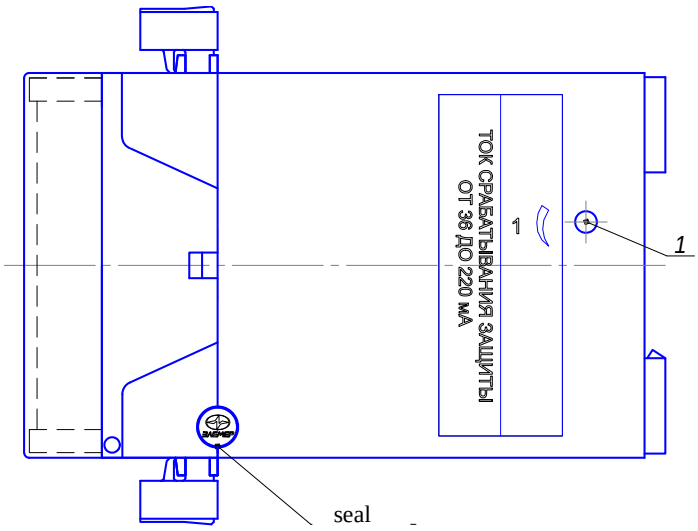
Picture 4.7

The front panel БП 906/36-2Р
(with a reserve feed)



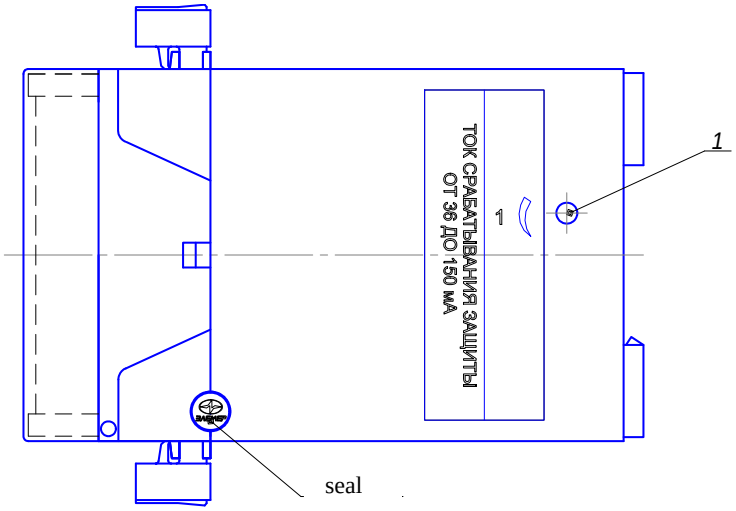
Picture 4.8

The lateral wall frame БП 906/24-1



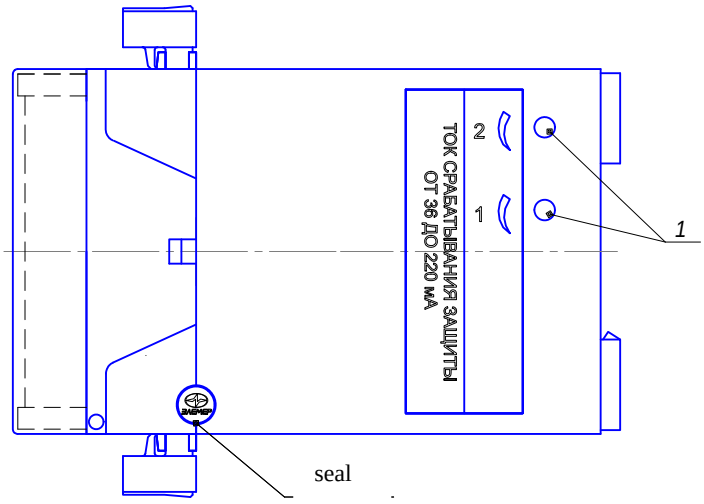
Picture 4.9

The lateral wall frame БП 906/36-1



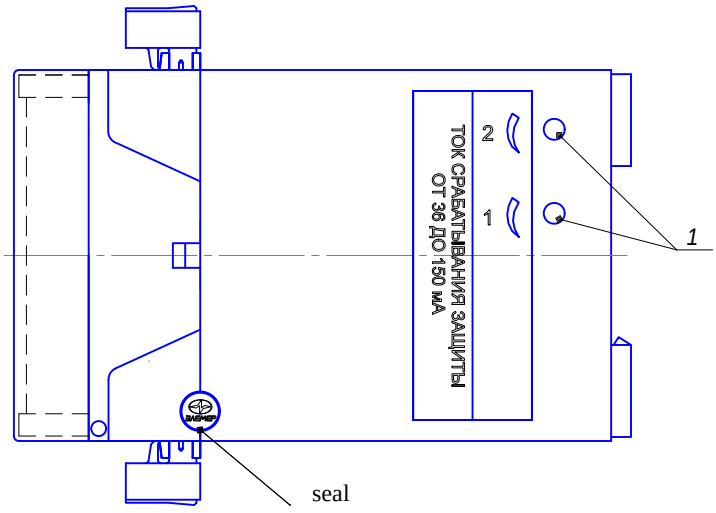
Picture 4.10

The lateral wall frame БП 906/24-2



Picture 4.11

The lateral wall frame БП 906/36-2



Picture 4.12

5. SAFETY MEASURES REGULATIONS

5.1. Connection of primary and secondary converters to power supply source should be performed when power supply source is switched off.

5.2. During exploitation of power supply source the requirements of accident prevention must be executed, resulted in a document on primary transformers, facilities of measuring and equipment, in a complete set which it works with.

5.3. Before the beginning of work power supply source it is necessary to earth.

6. PREPARATION FOR OPERATION

6.1. Unpack the power supply source. Make external examination, during this examination correspondence to the following requirements should de established:

1) the power supply source should be completed in accordance with the section 3 of this certificate;
2) factory number on the power supply source should correspond to the one provided in the certificate;
3) the power supply source should not have any mechanical damages, which may prevent its operation.

6.2. Make sure that the power supply mains is capable of withstanding the starting current of power supply sources, that operates during 2 ms and reaches 5 A.

6.3. The power supply source is connected to the power supply mains and loads in accordance with the connection chart, provided in the picture A.1, A.2, A.3, A.4 of Appendix A.

7. OPERATION PROCEDURE

7.1. Switch on the power supply source to the mains. After actuation an indicator of nominal value of voltage is lighted.

7.2. When overloading the rated voltage LED turns off and starts blinking LED overload. After eliminating the overload in the channel of rated voltage at its output is automatically restored.

7.3. If necessary, you can reduce (increase) the current response to the limits specified in section 2.3. To do this:

- set the maximum current activation email protection resistor adjustment current operation of electronic security;
- connected to the output channels are connected in a variable resistor and milliammeter;
- set with the variable resistor current in the 1.2 greater than the maximum on the identified;
- slowly turning the adjustment resistor current electronic security alarm counterclockwise to reach the point of operation protection (control of manufacture of overload indicator);
- reduce the load current to the desired and ensure restoration of the nominal output voltage power supply.

7.4. The power supply allows for connection of capacitive loads up to 100 microfarad at any current operation of electronic security, specified in section 2.3.

7.5. The power supply allows an increase in maximum load capacitance to 1000 microfarad when installing the upper threshold electronic protection specified in section 2.3.

8. RULES OF TRANSPORTATION AND STORAGE

8.1. The power supply source may be transported by any transportation means in sheltered vehicles. Fixation of tare in transportation vehicles should be performed according to the regulations for corresponding types of transport.

8.2. Conditions of transportation should correspond to conditions 5 of State Standards 15150-69 at the temperature of ambient air from minus 50 to plus 50 °C [or plus 60 °C] complying with measures of protection from shocks and vibration.

8.3. Conditions of storage of a power supply source in transport tare in a store of the manufacturer and a consumer should correspond to conditions 1 of State Standards 15150-69. There should be no aggressive ingredients in the air.

9. ACCEPTANCE CERTIFICATE

9.1. Power supply sources of direct current БП 906/ _____ - _____ factory number № _____ was manufactured and accepted in accordance with mandatory requirement of State Standards, of actual technical documentation and recognized suitable for operation.

Code climate version	❑ t1060	❑ t4050	❑ t2560
Version group by ЭМС	❑III	❑IV	

Head of the quality control department

Seal

_____ _____

(personal signature) (signature deciphering)

_____

(year, month, day)

10. PACKAGING CERTIFICATE

10.1. Power supply sources of direct current БП 906/ _____ - _____ factory number № _____, packed by science and production company «ELEMER» according to the requirements provided by designers documents.

_____ _____
(post) (signature)

_____ _____
(signature decoding) (year, month, date)

11. RESOURCES, SERVICE LIFE AND SHELF LIFE MANUFACTURER'S GUARANTIES (SUPPLIER'S GUARANTIES)

11.1. The resource of the power supply sources makes up 50000 hours within the 10 years service life including the storage time of 6 month from the moment of manufacturing in packaging of the producer in a store.

The above mentioned resource, service life and shelf life are valid only if a consumer follows the requirements of the operating in-line documentation.

11.2. Guaranty term of operation is determined to be 7 years from the date of sale of power supply sources.

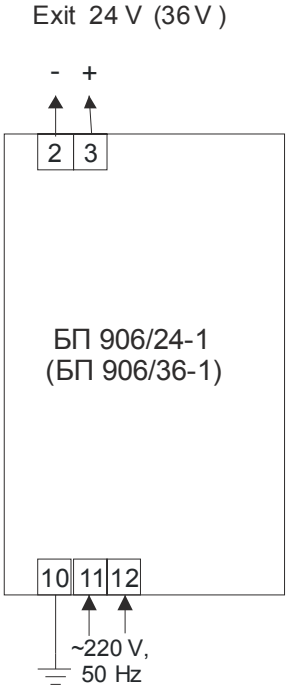
11.3. In case of loss of effectiveness of power supply sources, the device is repaired at the manufacturing factory at the address:

124460 Russia, Moscow
Zelenograd, 1145, entrance 1,
SPE "Elemer"
Phone: (495) 925-5147
Fax: (499) 710-0001
E-mail: elemer@elemer.ru

11.3.1. Without a guarantee coupon with a filled in repair card power supply sources will not be repaired.

APPENDIX A

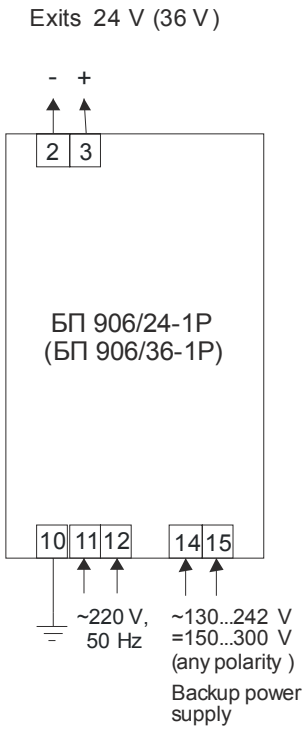
CONNECTION CHART БП 906/24(36)-1



Picture A.1

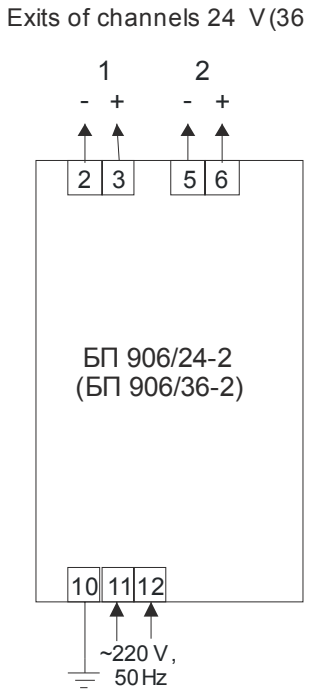
Continuation of the appendix A

CONNECTION CHART БП 906/24(36)-1P



Picture A.2

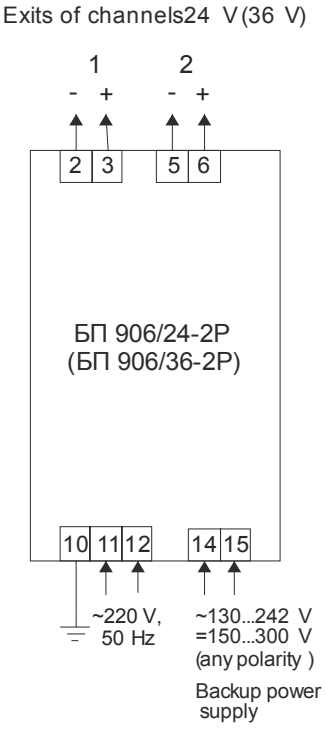
Continuation of the appendix A
CONNECTION CHART БП 906/24(36)-2



Picture A.3

Continuation of the appendix A

CONNECTION CHART БП 906/24(36)-2P



Picture A.4

APPENDIX Б

Example of the record of designation when ordering

БП 906 – 24 – 1 – 150 – РП – t1060 – III – 360П –
1 2 3 4 5 6 7 8

ТУ 4229-070-13282997-07
9

1. Type of the instrument
2. The output voltage: 24 V ore 36 V
3. The number of channels
4. Maximal current of a load on channel:
   150 mA – for БП 906/24
   120 mA – for БП 906/36
5. The power backup (order index РП)
6. Climate version (in accordance with item. 2.12)
7. Version group by ЭМС: III ore IV (in accordance with item 2.15.1 and table 2.2)
8. Additional technological run-in.
9. Designation of specifications (ТУ)