

POWER SUPPLY UNIT

PS-203

Operating manual

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INTRODUCTION

This operating manual (hereinafter – OM) describes composition, structure, operation and technical service of power supply units PS-203-12.5, PS-203-6.5 and PS-203-3.3 types (hereinafter – the Product).

In addition to the instructions given in this document, the safety regulations and rules applicable in the field shall be observed.

Only those who have read and understood this document and those who have had special training shall be permitted to operate the Product according to the applicable regulations.

TERMS AND ABBREVIATIONS:

CL – check list;

OM – operating manual;

PS-203-3.3 – power supply unit PS-203-3.3;

PS-203-6.5 – power supply unit PS-203-6.5;

PS-203-12.5 – power supply unit PS-203-12.5;

SB – storage battery;

SC – short circuit;

TS – technical service.

1 DESCRIPTION AND OPERATION OF THE PRODUCT

1.1 DESCRIPTION

The Product is designed to power different shipborne and industrial equipment with regulated voltage *12 V*, *24 V* or *48 V* DC (depending on the Product type).

1.2 TECHNICAL SPECIFICATIONS

1.2.1 The Product converts alternating current with unregulated voltage into direct current with regulated voltage *12 V*, *24 V* or *48 V* (depending on the Product type).

Input circuit fuse protects the Product against SC.

1.2.2 Table 1 below describes technical specifications of the Product types.

Table 1 – Technical specifications

Parameter	Type		
	PS-203-12.5	PS-203-6.5	PS-203-3.3
Input supply voltage, VAC	110 (90 to 132)* 220 (180 to 264)*		
Output voltage, VDC	12	24	48
Nominal load current, A	12.5	6.5	3.3
Power consumption, W	175		
Output power, W	150	156	158.4
Efficiency, %	83	86	86
Fuse rating, A	2		
Protection	Power supply galvanically isolated from power mains		
	Overvoltage protection		
Max. weight, kg	1.96		
Protection degree	IP22		
Operating temperature, °C	–20 to +55		
Limiting temperature, °C	–60 to +70		
Note – «*» means that supply voltage range is given in parenthesis.			

1.3 STRUCTURE AND OPERATION OF THE PRODUCT

1.3.1 The Product is manufactured in metal casing, where a piano type power switch on (off) and fuse holder are located, see Figure 1.

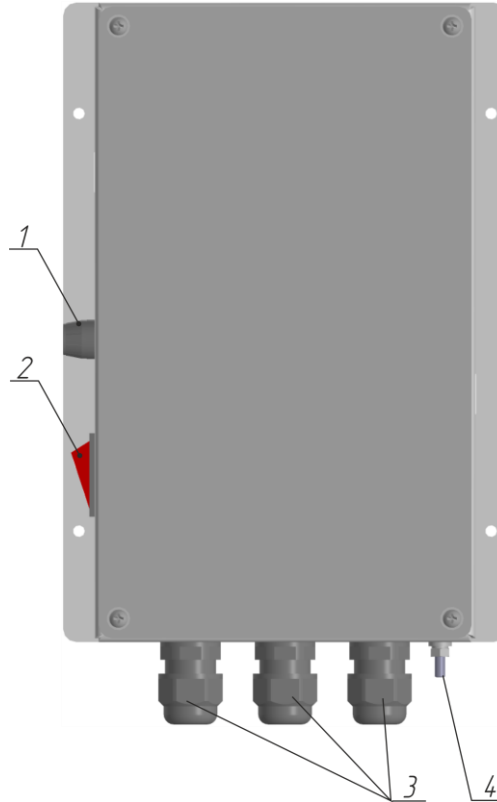


Figure 1 – the Product

Table 2 below describes functional elements and controls of the Product.

Table 2 – Functional elements, controls and LED light indicators of the Product

№	Element	Type, size, identifier	Description
1	Fuse holder	–	To install a fuse (against SC)
2	Piano type switch	“ON”, “OFF”	To switch the Product on (off)
3	Cable gland	MG-16	To connect power supply and loads
4	Grounding stud	M4x16	Main grounding element
Note – See positions (№) in Figure 1.			

1.3.2 To connect input power supply, use terminals “L” and “N”, loads – “-V” and “+V”, see Figure 2.

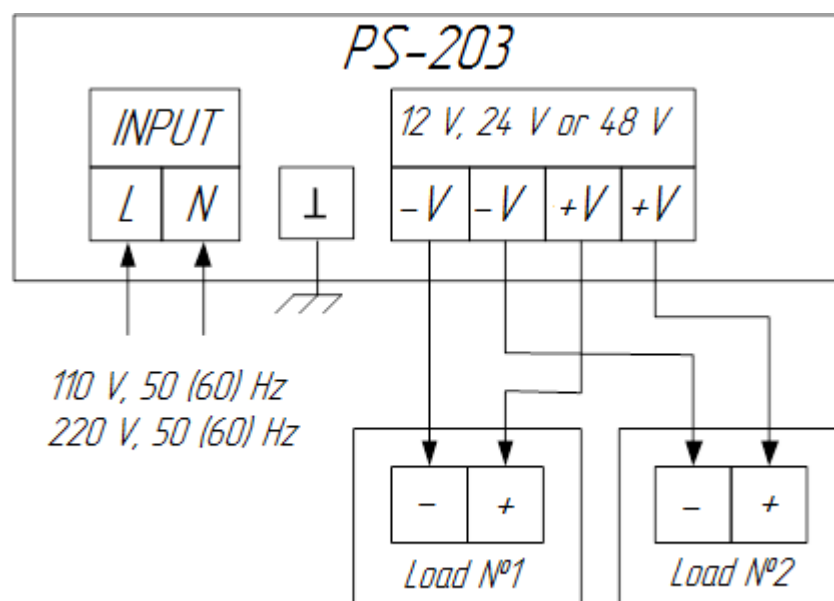


Figure 2 – Connection diagram of the Product

1.4 MEASUREMENT INSTRUMENTS, TOOLS AND APPLIANCES

Table 3 below describes consumables required for the TS.

Table 3 – Consumables required for the TS

Name and identifier of consumables	Amount of consumables	Note
Cleaning cloth	0.10 kg	1 To clean the Product surfaces – use clean cloth. 2 To remove severe contamination – use cloth soaked in alcohol
Rectified hydrolytic technical ethyl alcohol	0.05 l	To soak cloth when removing contamination from a screen
Varnish	0.05 kg	To cover surfaces of the Product in case of paint coating damage
Abrasive cloth	0.06 x 0.06 m	To polish surfaces of the Product in case of paint coating damage

1.5 MARKING AND SEALING

The Product has a nameplate indicating name, serial number, date of manufacturing, weight, protection degree, input and output voltage, power.

The sealing of the Product is not provided.

1.6 PACKAGING

When delivered, the Product is packed in a corrugated board box and inner packaging (air bubble film) ensuring its transportation and storage at the warehouse.

Transport packaging is also used as a returnable packaging for transportation of the Product to the repair location and back.

The sealing of packaging is not provided.

2 INTENDED USE OF THE PRODUCT

2.1 OPERATIONAL LIMITATIONS

Select an installation place in compliance with operational limitations (operating temperature and protection degree).

Caution! Distance between the installation site and magnetic compass shall not be less than *1 m*!

2.2 USAGE PREPARATIONS

2.2.1 Safety features

While preparing the Product for operation, check it visually and make sure there is no mechanical damage. Connect the Product to power mains only in compliance with input power requirements. Before connection the Product shall be grounded.

While using the Product the staff shall follow “The technical rules for operation of electric installation” and “Safety rules for operation of electric installation” while testing electrical circuits and insulation resistance.

2.2.2 Visual check procedure

Before switching the SC on, the installer shall:

- a) observe visually the cable integrity and initial position of the controls;
- b) clean the SC from dust and dirt by clean soft cloth, if necessary, see Table 3;
- c) check fail-safe cable connections to the SC and their proper grounding.

2.2.3 Instructions on powering the Product

While connecting the Product for operation, follow the steps below:

- a) transfer circuit breakers of main power switchboard to “OFF” position;
- b) connect de-energized power cable to input terminals;
- c) transfer circuit breakers of main power switchboard to “ON” position;
- d) transfer a piano type switch “ON” (“OFF”) on the casing to “ON” position.

2.2.4 To switch the Product off:

- a) transfer the piano type switch “ON” (“OFF”) on the casing to “OFF” position;
- b) transfer circuit breakers of main power switchboard to “OFF” position;
- c) disconnect de-energized power cable from the Product.

3 TECHNICAL SERVICE OF THE PRODUCT

3.1 GENERAL DESCRIPTION

Before performing the TS the staff shall familiarize with the Product structure and operation features.

In order to provide safe and reliable operation for the Product, the staff shall maintain semi-annual TS.

TS is carried out on the equipment in operation.

3.2 SAFETY FEATURES

While providing TS the staff shall follow instructions, see 4.2.

3.3 MAINTENANCE ROUTINE

The list of works for all types of the TS is given in Table 4. Maintenance routine procedure is described in the CL, represented in Tables 5, 6.

Table 3 describes consumables required for the TS.

Table 4 – TS works

CL №	Name of work	TS
1	Visual check of the Product	+
2	Test of output voltage	+
Note – “+” means that work is obligatory.		

Table 5 – CL № 1. Visual check

To be done	Routine	Man-hours per 1 Product
Visually examine the Product	1 Check completeness and appearance of the Product; any damage or defects must be absent; marking plates shall be present; legends shall be read easily. 2 Clean up the Product surfaces with clean cloth. 3 Remove severe contamination, parts of corrosion, oil spots from the metal surfaces – using ethyl alcohol, avoiding its penetration inside the Product; all surfaces clean dry by clean cloth and dry up. 4 If varnish paint coating is damaged, polish it with sand paper, then clean with alcohol-soaked cloth, cover with varnish and dry up	1 person 5 mins
Check reliability of cable and bus connection to the Product	1 Check that connectors and attaching screws are tightened; provide further tightening if necessary. 2 Check the cable intactness (no mechanical damage) within visibility	1 person 5 mins

Table 6 – CL №2. Test of output voltage

To be done	Routine	Man-hours per 1 Product
Test of output voltage	1 Switch on the Product power supply. 2 Connect a voltmeter to output terminals of the Product. 3 Supply power to the Product. 4 Measure voltage on the output terminals	1 person 15 mins

3.4 PRESERVATION

The Product and set of operational documents are stored in preserved condition in Manufacturer's packaging boxes.

Time of represervation – 2 years since the date of packaging at the Manufacturer's plant.

The preservation is done in full terms, for 2 years, applying protection and packaging.

The represervation is done in heated rooms in the same order as the preservation.

The Product after represervation and documents are placed in packaging.

4 CURRENT REPAIR OF THE PRODUCT

4.1 GENERAL DESCRIPTION

To provide diagnostics of the problems, see Table 7.

If a problem cannot be diagnosed or trouble shooting cannot be provided, contact the Manufacturer's service center.

4.2 SAFETY FEATURES

Only qualified personnel, examined in occupational safety may perform repair works.

The Product must be grounded before repair works. Check the grounding of the Product.

It is PROHIBITED to put a poster "DO NOT switch on! Under Operation!", when power supply switch is in "OFF" position.

Replacing defected parts, cards and modules when power of device under repair is ON is STRICTLY PROHIBITED.

Installation, commissioning and repair works are PROHIBITED in the room, where less than 2 people present.

4.3 CURRENT REPAIR

The service personnel can provide repair works as given in Table 7.

Table 7 – Possible problems/defects and troubleshooting

Problem / defect	Possible reasons	To do
The Product does not switch on	No power mains	Provide power network
	Piano type power switch located on the casing is in "OFF" position	Transfer piano type switch to "ON" position
	Fuse malfunction	Replace the fuse

5 STORAGE

The Product must be stored in packaging inside areas complying with the required storage conditions ($+5^{\circ}\text{C}$ to $+40^{\circ}\text{C}$) with the concentration of dust, oil, moisture and aggressive impurities in the air within the required limits for the working areas of production facilities.

After storage or transportation of the Product below $+10^{\circ}\text{C}$, it must be unpacked only in heated premises and left in normal climate conditions for *12 hours* beforehand.

6 TRANSPORTATION

The Product must be transported in the Manufacturer's transportation package in closed means of transport.

Types of shipment:

- motor vehicle and railroad transportation in closed means of transport (covered cars, multipurpose containers);
- air transportation (in sealed and heated compartments);
- sea transportation (in dry service spaces).

The Product must be transported in compliance with transportation rules applicable for each means of transport.

During loading (unloading) operations and transportation, the requirements indicated on warning labels on the boxes (packaging) must be observed, and no impacts are permitted since they can affect the safety and performance of the Product.

Inside the means of transport, the packed device must be firmly secured (fastened).

7 DISPOSAL

New equipment, the parts of the Product damaged during operation, and any outage equipment must not be disposed as standard household wastes, since they contain the materials suitable for re-use.

Decommissioned and non-used components of the Product must be delivered to a special waste disposal center licensed by local authorities. You can also send an overage equipment (unit) to the manufacturer for its further disposal.

Proper disposal of Product components allows avoiding possible negative environmental and health impacts, and it also allows for proper restoration of components with substantial energy and resources saving.

During operation and upon completion of its service life, the equipment is not hazardous for health and environment

This unit must be disposed according to the rules applied to electronic devices



Any products marked with a crossed trash bin must be disposed separately from standard household wastes

8 WARRANTY

The Manufacturer is under warranty obligations in case of correct System exploitation according to the OM. The Manufacturer will not consider damage claims in case of violation of operating conditions.

More information about warranty terms you can find on the official site of “NPK MSA” LLC, section Support.

Address and contacts of the Manufacturer's service centre:

“NPK MSA”, LLC

26E, Kibalchicha str., 192174, St Petersburg, Russia

Tel.: + 7 (812) 602-02-64, 8-800-100-67-19

fax: +7 (812) 362-76-36

e-mail: service@unicont.com

APPENDIX A (MANDATORY) OUTLINE AND INSTALLATION DIMENSIONS OF THE PRODUCT

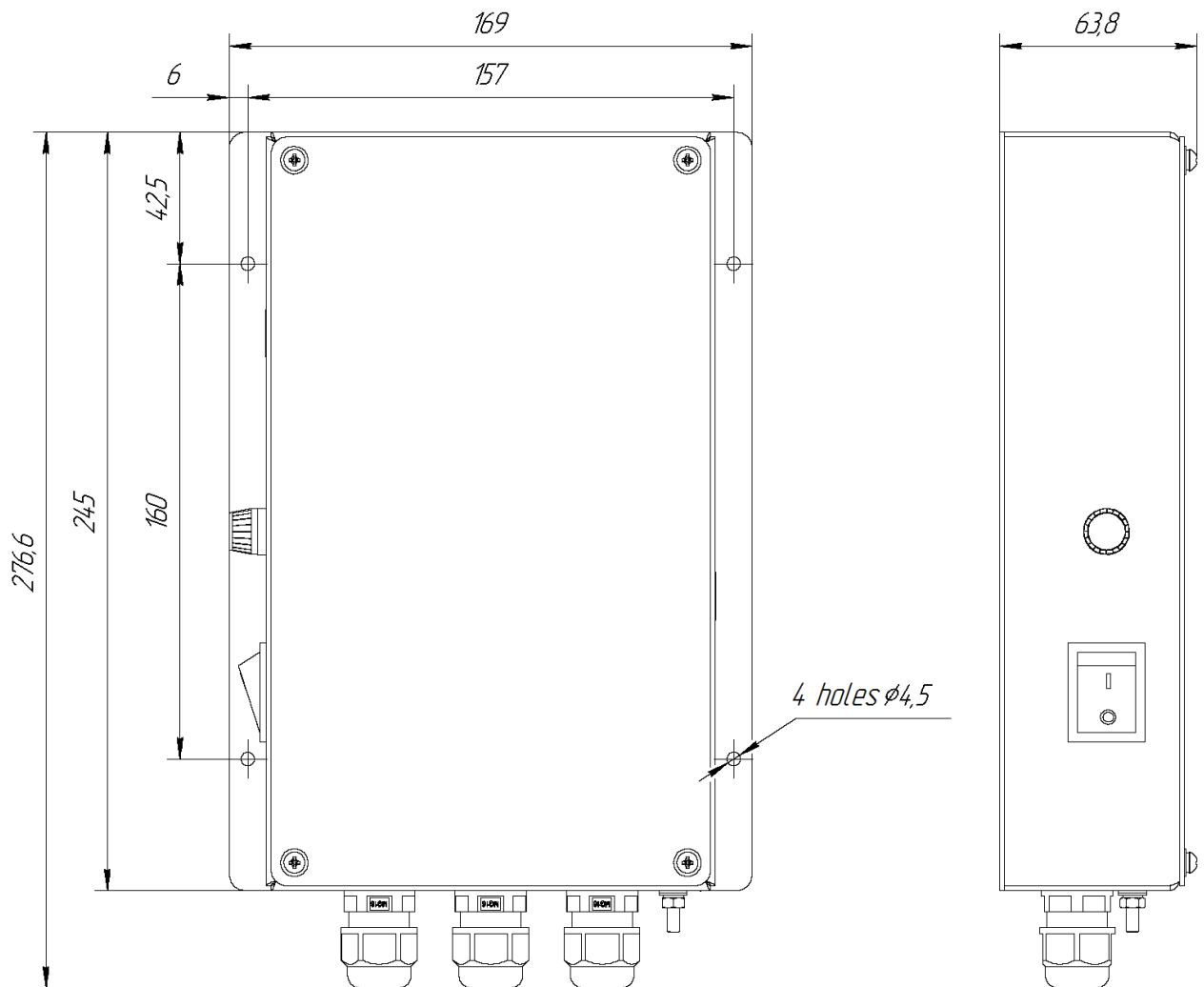


Figure A.1 – Outline and installation dimensions of the Product



FOR NOTES

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