

# Fuse links

## PPNI fuse links

PPNI Gg type links are designed for protecting industrial electric units and cable lines from overloads and short circuit. They are manufactured per rated current from 2 to 630 A.

PPNI fuse links are used for single and three-phase networks having voltage limited to 660 V (50 Hz).

Application area: lead-in and distribution devices; distribution panels and boards; transformer substation equipment; low-voltage boards; control boxes and boards.

Correspond to the requirements EN 60269-1.



Awarded silver medal of the 15th International Exhibition "Electro-2006" in nomination "Best electrical equipment" for high exploitation characteristics and engineering solution ensuring power loss enhancement.

### Advantages

- Power losses lowered by 30% as compared to PN-2 fuses due to the updated modern construction, manufacturing technology and quality of applied materials.
- High resistivity of receptacle (insulator) base to mechanical stress owing to the use of reinforced thermosetting plastic.
- Lowered by 10-20% overall dimensions as compared to PN-2 fuses.

- Wide range of PPNI fuse links including fusible elements with rated current from 2 to 630 A. 82 units in total in 6 sizes.
- Overload protection due to the current-limiting function providing for lowering prospective current short circuit current by several times.
- Wide range of operating temperatures: from -45 to +60 °C. It allows applying PPNI in various climate zones.
- High breaking capacity: at 660 V – 50 kA, at 500 V – 120 kA.

## Low power losses

Using quality contemporary materials and new construction decisions contributes to lowering power losses in PPNI fuse links as compared to PN-2 fuses.

Data indicated in the table reflect the cost effectiveness of PPNI as compared to PN-2.

### Power losses of PPNI and PN-2 fuse links at 380/400 V

Rated current $I_n$ , A	Power losses P, not less than, W		Power savings when using PPNI $\Delta P$	
	PPNI	PN-2	W	%
100	9	16	7	44
160	16	28	12	43
250	23	34	11	32
400	34	56	22	39
630	45	85	40	47

## Energy saving

Efficiency of this new development becomes more visible if we consider not a separate fuse link but an assembled distribution panel. From knowledge that the average cost of electric energy in Russia for people and industries is equal to 3 RUR/kWh, we can calculate the cost-effectiveness not only in kWh but also in RUR.

If an electrical distribution panel with the outgoing lines per 250 A is assembled basing on new PPNI fuse links, the cost-effectiveness will make up 2602 kWh or 7806 RUR annually.

### Annual energy saving when using PPNI instead of PN-2 through the example of SHRS boards and VRU distribution panels

Rated current of outgoing lines, A	Energy saving			
	SHRS* (8 outgoing lines)		VRU** (9 outgoing lines)	
	kWh	RUR	kWh	RUR
100	1472	4416	1656	4968
250	2313	6939	2602	7806

\* E.g. SHRS-1-24UZ.

\*\* E.g. VRU-1-45-02.

## Selection Guide

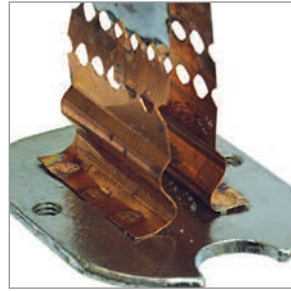


Fuse size	Size 00C	Size 00	Size 0	Size 1	Size 2	Size 3
2	•	•	•			
4	•	•	•			
6	•	•	•			
8	•	•	•			
10	•	•	•			
12	•	•	•			
16	•	•	•			
20	•	•	•			
25	•	•	•			
32	•	•	•			
40	•	•	•	•	•	
50	•	•	•	•	•	
63	•	•	•	•	•	
80	•	•	•	•	•	
100	•	•	•	•	•	•
125	•	•	•	•	•	•
160	•	•	•	•	•	•
200				•	•	•
250				•	•	•
315					•	•
355					•	•
400					•	•
500						•
630						•
Fuse element type	PPNI-33, size 00C	PPNI-33, size 00	PPNI-33, size 0	PPNI-35, size 1	PPNI-37, size 2	PPNI-39, size 3
Fuse receptacle type	DP-33, size 00	DP-33, size 00	DP-33, size 0	DP-35, size 1	DP-37, size 1	DP-39, size 1
Fuse element removal handle			RS-1			

## Design Features



Fuse link contacts are made of galvanized (tin-bismuth alloy) electrical copper preventing their oxidation in the process of exploitation.



Fuse element is made of phosphorous bronze (orichalcum with addition of phosphor) and securely fixed by means of spot welding with fuse terminals.



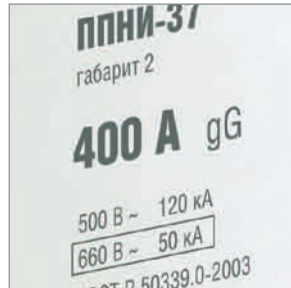
Receptacle base (insulator) is made of reinforced thermosetting plastic resistant to corrosion, mechanical impact, differential temperature and impact blows arising at short circuits up to 120 kA.



There is a special indicator introduced into the fuse element construction executed in the form of a retractable rod providing for visual determining the tripped fuses.



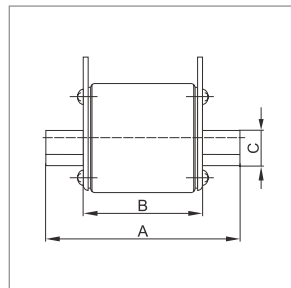
Fuse element contacts are executed in the form of a knife (sharpened) that provides for facilitating their installation in the receptacles.



PPNI fuse links have their breaking capacity lying within the whole gG range allowing ensuring protection of electric installations from short circuits and overloads.



All dimensions of PPNI fuse elements are easy to install or dismount using a universal RS-1 removal handle. The handle's insulation sustains voltage up to 1000 V.



Construction, technical features, overall and installation dimensions of PPNI fuse elements and receptacles correspond to contemporary GOST and IEC standards allowing superseding comparable devices both of local and foreign manufacture.



In order to ensure easy and efficient arc extinguishing, the body of a fuse element is filled with highly chemically purified quartz sand.



Name	Rated current, A	Package amount, pcs		Product ID
		individual	multiple	
PPNI-39, size 3, 100 A	100	1	24	DPP50-100
PPNI-39, size 3, 125 A	125	1	24	DPP50-125
PPNI-39, size 3, 160 A	160	1	24	DPP50-160
PPNI-39, size 3, 200 A	200	1	24	DPP50-200
PPNI-39, size 3, 250 A	250	1	24	DPP50-250
PPNI-39, size 3, 315 A	315	1	24	DPP50-315
PPNI-39, size 3, 355 A	355	1	24	DPP50-355
PPNI-39, size 3, 400 A	400	1	24	DPP50-400
PPNI-39, size 3, 500 A	500	1	24	DPP50-500
PPNI-39, size 3, 630 A	630	1	24	DPP50-630

## Fuse-holders

### Range



Name	Rated current, A	Package amount, pcs		Product ID
		individual	multiple	
DP-33, size 00	160	3	72	DPP10D-DP-160
DP-33, size 0	160	3	54	DPP20D-DP-160
DP-35, size 1	250	1	28	DPP30D-DP-250
DP-37, size 2	400	1	18	DPP40D-DP-400
DP-39, size 3	630	1	14	DPP50D-DP-630

## Replacement Handles

RS-1 removal handle are universal tools intended for fixing onto the receptacles and dismounting PPNI type fuse links. Besides, RS-1 handles can be used for fuse links of other brands designed in accordance with GOST R 50339, IEC 60269.



Name	Rated current, A	Package amount, pcs		Product ID
		individual	multiple	
RS-1	100	1	56	DPP00D-RS1

## Technical Features

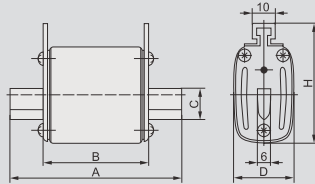
Rated current, A	2 ÷ 630
Sizes	00C, 00, 0, 1, 2, 3
Rated voltage, V <sub>≈</sub>	400, 500, 660
Rated frequency, Hz	50
Classification group	gG*
Rated short-circuit breaking capacity	50 kA at 660 V, 120 kA at 500 V
Operating temperature, °C	-45 ÷ +60
Protection degree	IP00
Operating position	vertical or horizontal
Operation indicator (indicator)	retractable rod (firing pin)
Contact material	Copper with tin-bismuth plating

\* "g" - protection with overload and short-circuit breaking capacity in the whole range.  
 "G" - general purpose fuse links.

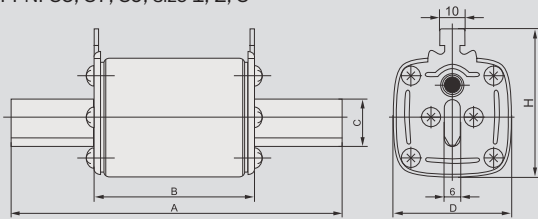
## Overall and Installation Dimensions

### Fuse Elements

PPNI-33, size 00C, 00, 0

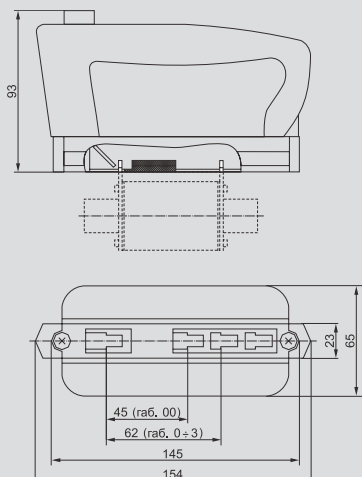


PPNI-35, 37, 39, size 1, 2, 3



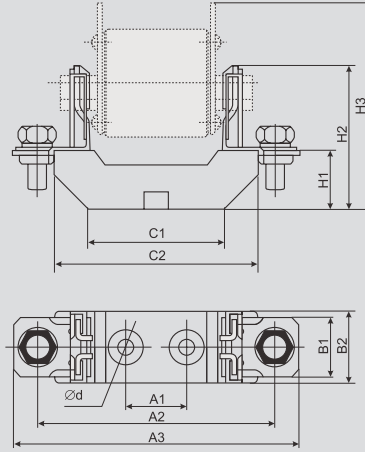
Dimension	PPNI size, mm					Weight, g
	A	B	C	D	H	
00C	78	49	15	21	48	123
00	78	49	15	29	56	175
0	125	68	15	29	56	252
1	135	68	20	48	60	455
2	150	68	25	58	70	650
3	150	68	32	67	80	880

### Removal Handle

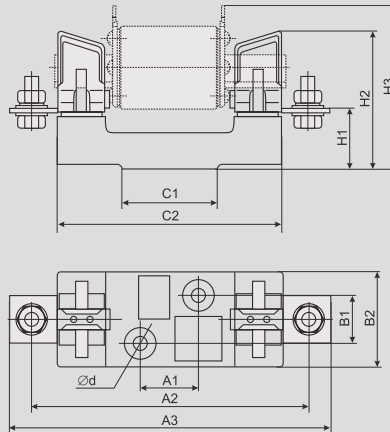


### Fuse Receptacles

DP-33, size 00, 0



DP-35, 37, 39, size 1, 2, 3



Dimension	DP dimension, mm											Weight, g
	H1	H2	H3	A1	A2	A3	B1	B2	C1	C2	Ød	
00	25	60	85	25	100	120	-	30	58	87	7.5	193
0	37	72	91	25	150	170	-	30	68	130	7.5	295
1	38	84	100	25	175	200	30	58	60	142	10.5	550
2	38	100	105	25	200	225	30	60	60	160	10.5	770
3	40	105	118	25	210	250	30	60	60	160	10.5	965