



SWITCHGEAR

PBS

vertical fuse rails

- self extinguishing thermoplastics with flame retardant
- touch protection IP 20 with fuse link shrouds







GENERAL INFORMATION

PBS fuse rails thanks to its high technical standards are among top such products. They are approved and recognized by Polish and foreign electricity boards and distribution boards manufacturers.

APPLICATIONS

PBS fuse bases are designed for the distribution of electricity and protection against short circuits and overloads in three phase alternative current circuits with maximum operating voltage of 690 V. They are intended for direct installation on horizontal or vertical bus bar system. Due to their modern and compact design installing is easy and gives much saving of space in substations and distribution boards.

All technical parameters required by standards and requirements of the market were taken into account during design (conformity with EN 60269-1, EN 60269-2, IEC 60269). Several advices and remarks from business partners were also taken into account.

CONSTRUCTION:

- plastic parts of PBS fuse rails are made of fibre glass strengthened, thermoplastic polyamides,
- silver plated contacts provide low power loss,
- all energized metal parts are fully protected against accidental touch.

FUNCTIONALITY:

- PBS FUSE RAILS are available in following sizes : 00 -160 A; 2 -400 A; 3-630 A,
- designed for installation on to 185 mm busbar system, size 00, 1, 2, 3,
- PBS 00/100 mm fuse rails are designed for installation on to 100 mm busbar system installation on to 185 mm busbar system is possible by using adapter,
- fuse rails width: size 2, 3 - 100 mm, size 00 – 50 mm,
- removal of the fuse link provides clearly noticeable, large isolating gap in the circuit,
- possible installation of various earthing devices,
- possible connection of circular or sector-shaped conductors with bare ends (V-terminals, 2V-terminals or conductors with lug terminals (screw terminals),
- touch protection IP 20 with fuse link shrouds for fuse rails of size 2, 3.

Table 56. PBS FUSE RAILS TECHNICAL DATA

Parameters		PBS 00/100 mm	PBS 00-SM	PBS 2	PBS 3
Size		00	00	2	3
Rated thermal current $I_{th}=I_n$	A	160	160	400	630
Rated voltage U_n	V	690	690	690	690
Rated insulation voltage U_i	V	1000	1000	1000	1000
Rated frequency	Hz	50-60	50-60	50-60	50-60
Rated power dissipation	W	12	12	45	60
Rated short-circuit withstand current	kA	100	100	100	100
Mechanical durability	Number of cycles	100	100	100	100
Weight	kg	0,75	2,00	4,50	5,00
IP degree of protection	IP	00	20 ^{1) 2)}	20 ^{1) 2)}	20 ^{1) 2)}
Size of fuse links		00	00	1, 2	3

* without fuse links installed

* with fuse link shrouds

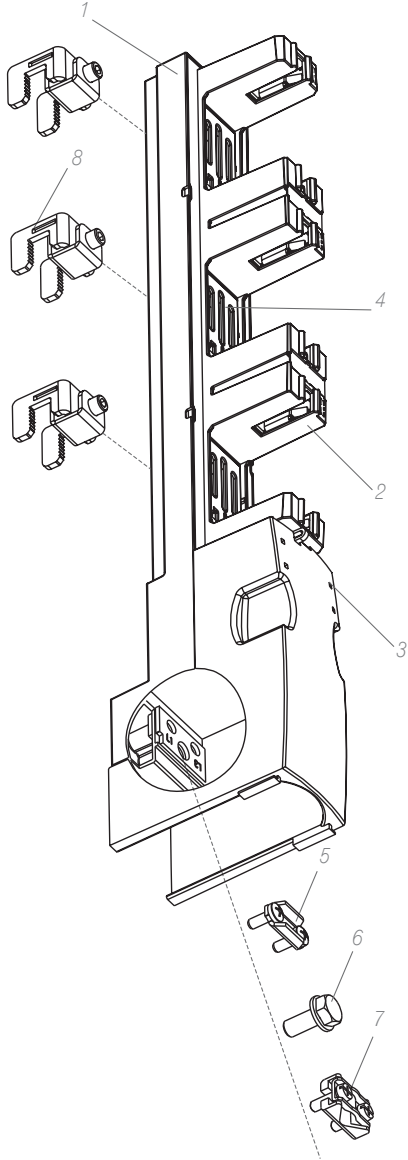
OPERATING CONDITIONS

- to be installed in the room free of any dust, aggressive or explosive gases,
- altitude up to 2000 meters above sea level,
- outdoor – in cabinets with protection degree > IP 34,
- ambient temperature from -25 °C to +55 °C – but in case of use of disconnectors in temperature from +41 °C to +45 °C current value I_{th} should be reduced by 5 % and within temperature range of +46 °C to +55 °C current value I_{th} should be reduced by 10 %,
- relative humidity of the air should not be higher than 50 % at temperature of +40 °C.

FUSE RAIL PBS 00/100 mm (160 A, 690 V)

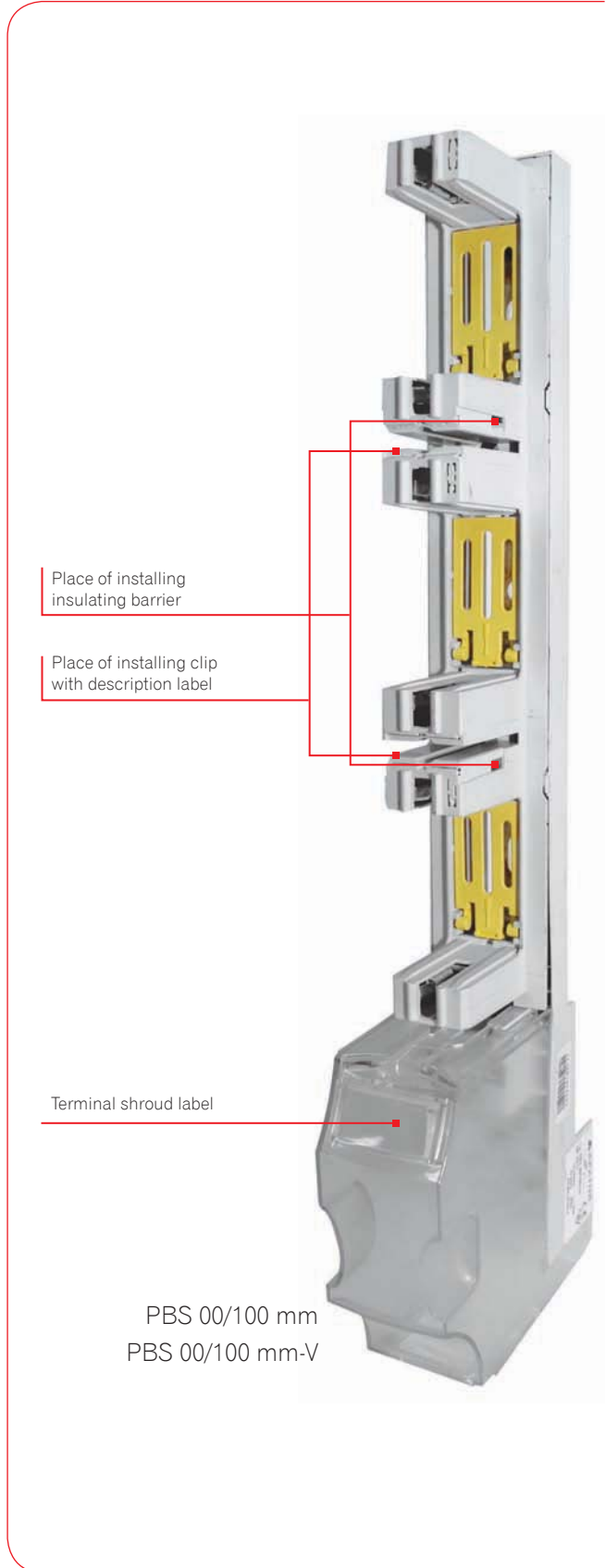
For 100 mm busbar system

PBS 00/100 mm



DESCRIPTION

1. Main base
2. Protective contact cover
3. Terminal shroud
4. Busbar terminals acces covers
5. S-bridge clamp
6. M8 screw
7. V-shape clamp for sector-shaped conductor
8. Hooked clamp



PBS 00/100 mm (160 A, 690 V)

Table 57. TECHNICAL DATA

Parameters		PBS 00/100 mm
Size		00
Rated thermal current $I_{th}=I_n$	A	160
Rated voltage U_n	V	690
Rated insulation voltage U_i	V	1000
Rated frequency	Hz	50-60
Rated power dissipation	W	12
Rated short-circuit withstand current	kA	100
Mechanical durability	Number of cycles	100
IP degree of protection	IP	00
Size of fuse links		00

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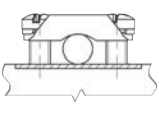
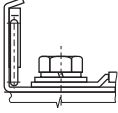
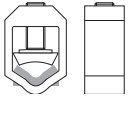

PBS 00/100 mm
PBS 00/100 mm-V

PBS 00/100 mm

Table 58. VERSIONS

Version		Weight	Article No.
PBS 00/100 mm	cable terminals: bridge terminals with bridgeclamps (S) 4-70 mm ² , screw terminals with M8 screws	1,0 kg	63-811627-011
PBS 00/100 mm-V	cable terminals: V-terminals with V-clamps 25-120SW	1,1 kg	63-811627-021
PBS 00/100 mm-V	cable terminals: V-terminals, without V-clamps	1,0 kg	63-811627-041

Table 59. PBS 00/100 mm TERMINAL CLAMPS

Description	PBS 00/100 mm			
	S-bridge clamp 2 x M5 x 25	M8 screw*	V- clamp 25-120 SW	HM 10-120
Picture of clamp				
Drawing of clamp				
Cross-section of conductors	4 - 70 mm ²	Conductor with lug terminal max 185 mm ²	re ● 16 mm ² - 95 mm ² se ◆ 25 mm ² - 120 mm ² rm ⊗ 16 mm ² - 95 mm ² sm ⊕ 25 mm ² - 120 mm ²	re ● 10 mm ² - 70 mm ² se ◆ 25 mm ² - 120 mm ² rm ⊗ 10 mm ² - 70 mm ² sm ⊕ 25 mm ² - 95 mm ²
Tightening torque	3 Nm**	12 Nm**	20 Nm**	15 Nm**

For stranded conductors using cable ferrules is recommended

*) Bars of maximum width of 20 mm and maximum thickness of 5 mm can be fixed to M type screw terminals.

***) using tension wrench is recommended

****) fuse switch disconnectors with V-terminals are equipped with steel V-clamp HM 10-120 on request

Aparator takes responsibility for technical quality of V-terminals manufactured only by the company. Minimum tightening torque (M8 screw) for screws fixing fuse switch disconnector to busbar system –12 Nm, recommended tightening torque for screws and nuts with property class 8.8 – 21 Nm

FUSE RAIL PBS 00-SM, PBS 00-V (160 A, 690 V)

For 185 mm busbar system

Table 60. TECHNICAL DATA

Parameters		PBS 00-SM, PBS 00-V
Size		00
Rated thermal current $I_{th}=I_n$	A	160
Rated voltage U_n	V	690
Rated insulation voltage U_i	V	1000
Rated frequency	Hz	50-60
Rated power dissipation	W	12
Rated short-circuit withstand current	kA	100
Mechanical durability	Number of cycles	100
IP degree of protection without fuse links installed	IP	20
IP degree of protection with fuse links and fuse links shrouds installed *	IP	20
Size of fuse links		00

*for more information about fuse links shrouds please see accessories



PBS 00



PBS 00
with fuse link shrouds

Table 61. VERSIONS

Version		Weight	Article No.
PBS 00-SM	cable terminals: bridge terminals with bridge clamps (S) 4-70 mm ² , screw terminals with M8 screws	1,9 kg	63-001417-002
PBS 00-V	cable terminals: V-terminals with V-clamps 25-120SW	2 kg	63-001417-001

Table 62. PBS 00 TERMINAL CLAMPS

Description	PBS 00			
	S-bridge clamp 2 x M5 x 25	M8 screw*	V-clamp 25-150 SW	HM 10-120
Picture of clamp				***
Drawing of clamp				
Cross – section of conductors	4 - 70 mm ²	Conductor with lug terminal max 185 mm ²	re ● 16 mm ² - 95 mm ² se ◆ 25 mm ² - 150 mm ² rm ⊗ 16 mm ² - 95 mm ² sm ⊕ 25 mm ² - 150 mm ²	re ● 10 mm ² - 70 mm ² se ◆ 25 mm ² - 120 mm ² rm ⊗ 10 mm ² - 70 mm ² sm ⊕ 25 mm ² - 95 mm ²
Tightening torque	3 Nm**	12 Nm**	20 Nm**	15 Nm**

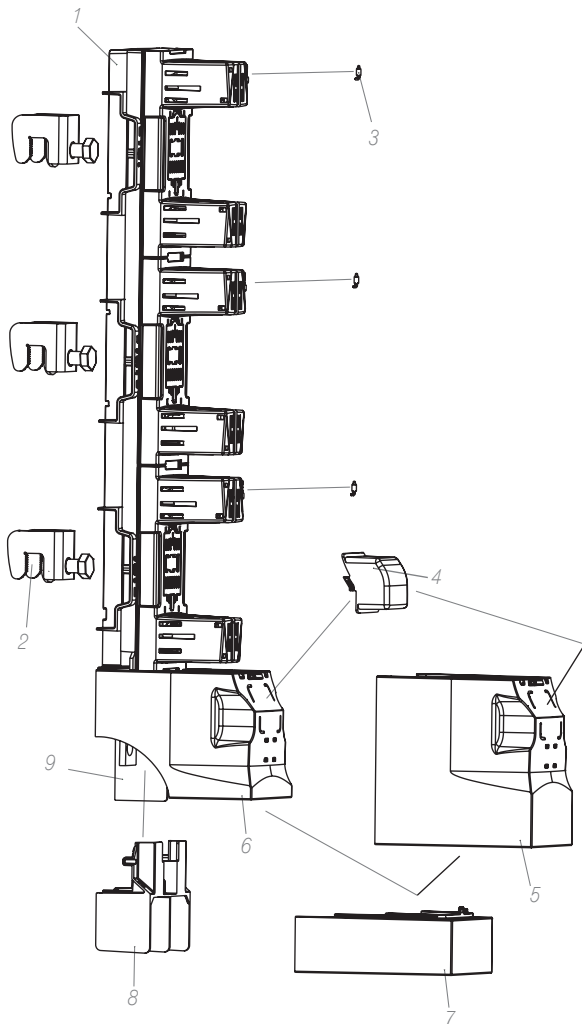
For stranded conductors using cable ferrules is recommended

*) Bars of maximum width of 20 mm and maximum thickness of 5 mm can be fixed to M type screw terminals.

***) using tension wrench is recommended

***) fuse switch disconnectors with V-terminals are equipped with steel V-clamp HM 10-120 on request

Aparator takes responsibility for technical quality of V-terminals manufactured only by the company. Minimum tightening torque (M8 screw) for screws fixing fuse switch disconnector to busbar system –12 Nm, recommended tightening torque for screws and nuts with property class 8.8 – 21 Nm

FUSE BASE**PBS 2 (400 A, 690 V)****PBS 3 (630 A, 690 V)****DESCRIPTON**

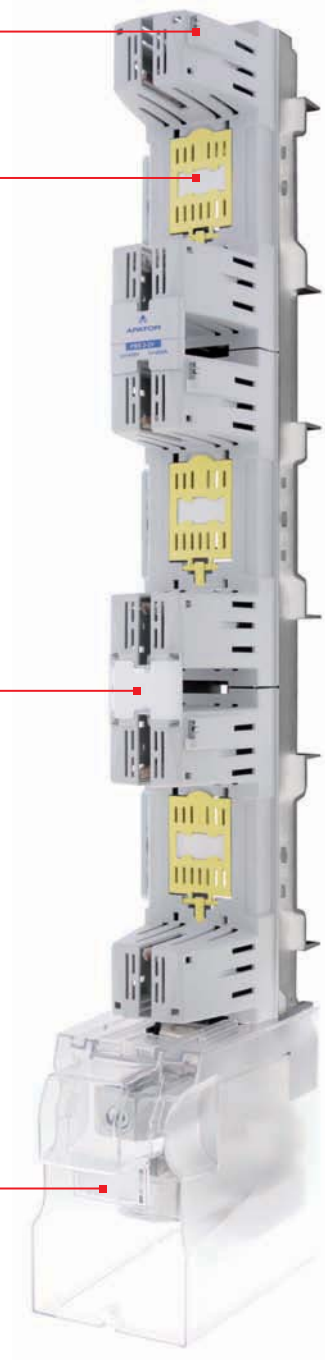
1. Main base
2. Hooked clamp – for installation on to busbar system 1115281037T
3. Terminal shroud for fuse switch disconnecter with double V-clamps (2 x 240 mm²)
4. Terminal shroud (long) 51-930271-021
5. Terminal shroud (short)
6. Bottom adjusting shroud 51-930313-011
7. Cable terminal protective cover 51-930272-011
8. Protective barrier

Option of fuse link
state indication
by neon indicator tube

Labels on bus bar
terminals acces covers

Clip with label

Terminal shroud label



PBS 2

PBS 3

PBS 2 (400 A, 690 V)

Fuse rail designed for operation with NH1 and NH2 fuse links

Table 63. TECHNICAL DATA

Parameters		PBS 2
Size		2
Rated thermal current $I_{th}=I_n$	A	250(NH1), 400(NH2)
Rated voltage U_n	V	690
Rated insulation voltage U_i	V	1000
Rated frequency	Hz	50-60
Rated power dissipation	W	45
Rated short-circuit withstand current	kA	100
Mechanical durability	Number of cycles	100
IP degree of protection without fuse links installed	IP	20
IP degree of protection with fuse links and fuse link shrouds installed*	IP	20
Size of fuse links		1,2

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*for more information about fuse links shrouds please see accessories



PBS 2-2V

PBS 2-V
with fuse link shrouds

Table 64. VERSIONS

Version		Weight	Article No.
PBS 2-V	cable terminals: V-terminals with V-clamps (35-240 mm ²)	3,2 kg	63-811639-011
PBS 2-M	cable terminals: screw terminals with pressed nuts M10 (M10 screw)	3,1 kg	63-811639-031
PBS 2-2V	cable terminals: 2V-terminals with double Vclamps (2 x 50- 240 mm ²)	3,8 kg	63-811639-051

Table 65. PBS 2 TERMINAL CLAMPS

Description	PBS 2-V (400 A)		PBS 2-2V (400 A)		PBS 2-M (400 A)			
Clamp	V-clamp 35-300SW-B		V-clamp HS 2/35-240-C		M10 screw (pressed nut)*			
Drawing of clamp	Cross-section of conductors		Cross-section of conductors			Cross-section of conductors Lug terminal		
		V-clamp for direct fixing of conductor with bare end with crosssection of:						
		35 - 185 mm ²		35 - 240 mm ²			35 - 185 mm ²	35 - 240 mm ²
	35 - 240 mm ²	35 - 300 mm ²	35 - 240 mm ²	35 - 300 mm ²				
Tightening torque	30 Nm		40 Nm		32 Nm			

*For stranded conductors using cable ferrules is recommended

Bars of maximum width of 40 mm and maximum thickness of 8 mm can be fixed to M type screw terminals when protective barrier between phases is installed. Apator takes responsibility for technical quality of V-terminals manufactured only by the company. Minimum tightening torque (M12 screw) for screws fixing fuse switch disconnecter to busbar system – 32 Nm, recommended tightening torque for screws and nuts with property class 8.8 – 56 Nm

PBS 3 (630 A, 690 V)

Table 66. TECHNICAL DATA

Parameters		PBS 3
Size		3
Rated thermal current $I_{th}=I_n$	A	630
Rated voltage U_n	V	690
Rated insulation voltage U_i	V	1000
Rated frequency	Hz	50-60
Rated power dissipation	W	60
Rated short-circuit withstand current	kA	100
Mechanical durability	Number of cycles	100
IP degree of protection without fuse links installed	IP	20
IP degree of protection with fuse links and fuse links shrouds installed*	IP	20
Size of fuse links		3

Accessories on page 76

*for more information about fuse links shrouds please see accessories



PBS 3-2V



PBS 3-M
with fuse link shrouds

Table 67. VERSIONS

Version		Weight	Article No.
PBS 3-V	cable terminals: V-terminals with V-clamps (70-300 SW)	4,0 kg	63-811639-021
PBS 3-M	cable terminals: screw terminals with pressed nuts M12 (M12 screw)	4,1 kg	63-811639-041
PBS 3-2V	cable terminals: 2V-terminals with double V-clamps (2 x 50- 240 mm ²)	4,8 kg	63-811639-061

Table 68. PBS 3 TERMINAL CLAMPS

Description	PBS 3-V		PBS 3-2V	
Clamp	V-clamp 35-300SW-B		V-clamp HS 2/35-240-C	
Drawing of clamp	Cross-section of conductors		Cross-section of conductors	
	V-clamp for direct fixing of conductor with bare end with cross-section of:			
	35 - 185 mm ²	35 - 240 mm ²	35 - 185 mm ²	35 - 240 mm ²
	35 - 240 mm ²	35 - 300 mm ²	35 - 240 mm ²	35 - 300 mm ²
Tightening torque	30 Nm		40 Nm	

Description	PBS 3-2V		PBS 3-M	
Clamp	V-clamp 2/35-300SW-B		M – screw M12*	
Drawing of clamp	Cross-section of conductors			Cross-section of conductors Lug terminal
	V-clamp for direct fixing of conductor with bare end with cross-section of:			
	35 - 185 mm ²	35 - 240 mm ²		
	35 - 240 mm ²	35 - 300 mm ²		
Tightening torque	30 Nm		56 Nm	

*For stranded conductors using cable ferrules is recommended

Bars of maximum width of 40 mm and maximum thickness of 8 mm can be fixed to M type screw terminals when protective barrier between phases is installed. Apator takes responsibility for technical quality of V-terminals manufactured only by the company. Minimum tightening torque (M12 screw) for screws fixing fuse switch disconnector to busbar system – 32 Nm, recommended tightening torque for screws and nuts with property class 8.8 – 56 Nm

PBS FUSE RAIL WITH LATERAL BUSBAR TERMINAL

(separation, coupling of busbar systems)

Table 69. TECHNICAL DATA

Parameters		PBS 2	PBS 3
Size		2	3
Rated thermal current $I_{th}=I_n$	A	400	630
Rated voltage U_n	V	690	690
Rated insulation voltage U_i	V	1000	1000
Rated frequency	Hz	50-60	50-60
Rated power dissipation	W	45	60
Rated short-circuit withstand current	kA	100	100
Mechanical durability	Number of cycles	100	100
IP degree of protection without fuse links installed	IP	20	
IP degree of protection with fuse links and fuse links shrouds installed*	IP	20	
Size of fuse links		2	3

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*for more information about fuse links shrouds please see accessories



PBS 2-NR



PBS 3-NL

Table 70. VERSIONS

Version		Weight	Article No.
PBS 2-NL	lateral busbar terminal - left side	2,2 kg	63-811673-011
PBS 2-NR	lateral busbar terminal - right side	2,2 kg	63-811673-031
PBS 3-NL	lateral busbar terminal - left side	3,0 kg	63-811673-021
PBS 3-NR	lateral busbar terminal - right side	3,0 kg	63-811673-041

Table 71. PBS (WITH LATERAL BUSBAR TERMINAL) TERMINAL CLAMPS

Description	Drawing of clamp	PBS 2-NL (400 A)	PBS 2-NR (400 A)	PBS 3-NL (630 A)	PBS 3-NR (630 A)
Clamp		M12 screw	M12 screw	M12 screw	M12 screw
Cable terminal		Left side	Right side	Left side	Right side
Tightening torque		56 Nm	56 Nm	56 Nm	56 Nm

**THREE PHASE
CURRENT MEASUREMENT
WITH FUSE RAIL PBS**

**ONE PHASE
CURRENT MEASUREMENT
WITH FUSE FUSE RAIL PBS**

PBS 00/100 A fuse rails

CURRENT TRANSFORMER APA-W10
Technical parameters in the catalogue:
"Low voltage current transformers".

ratios:
125 A/5 A 150 A/5 A
dimensions:
a = 43,5 mm, b = 30 mm, c = 65 mm
Accuracy class* = 1; 0,5
*-depending on the version

DISTANCE SLEEVE

Length 36 mm
Ø Inner diameter = 12,5 mm
Ø outer diameter = 22,5 mm

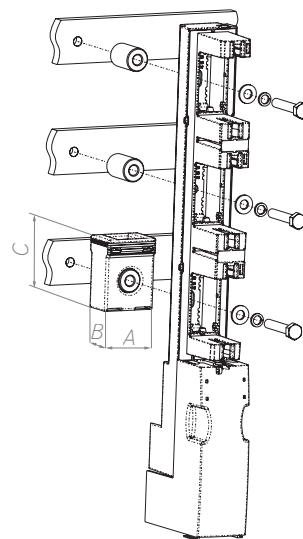
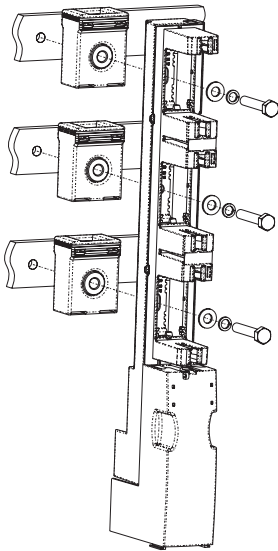
PBS 2, PBS 3 fuse rails

CURRENT TRANSFORMER APA-W12
Technical parameters in the catalogue:
"Low voltage current transformers".

ratios:
125 A/5 A 150 A/5 A 200 A/5 A
300 A/5 A 400 A/5 A
dimensions:
a = 60 mm, b = 30 mm, c = 81 mm
Accuracy class* = 1; 0,5; 0,5s; 0,2; 0,2s
*-depending on the version

DISTANCE SLEEVE

Length 36 mm
Ø Inner diameter = 12,5 mm,
Ø outer diameter = 22,5 mm

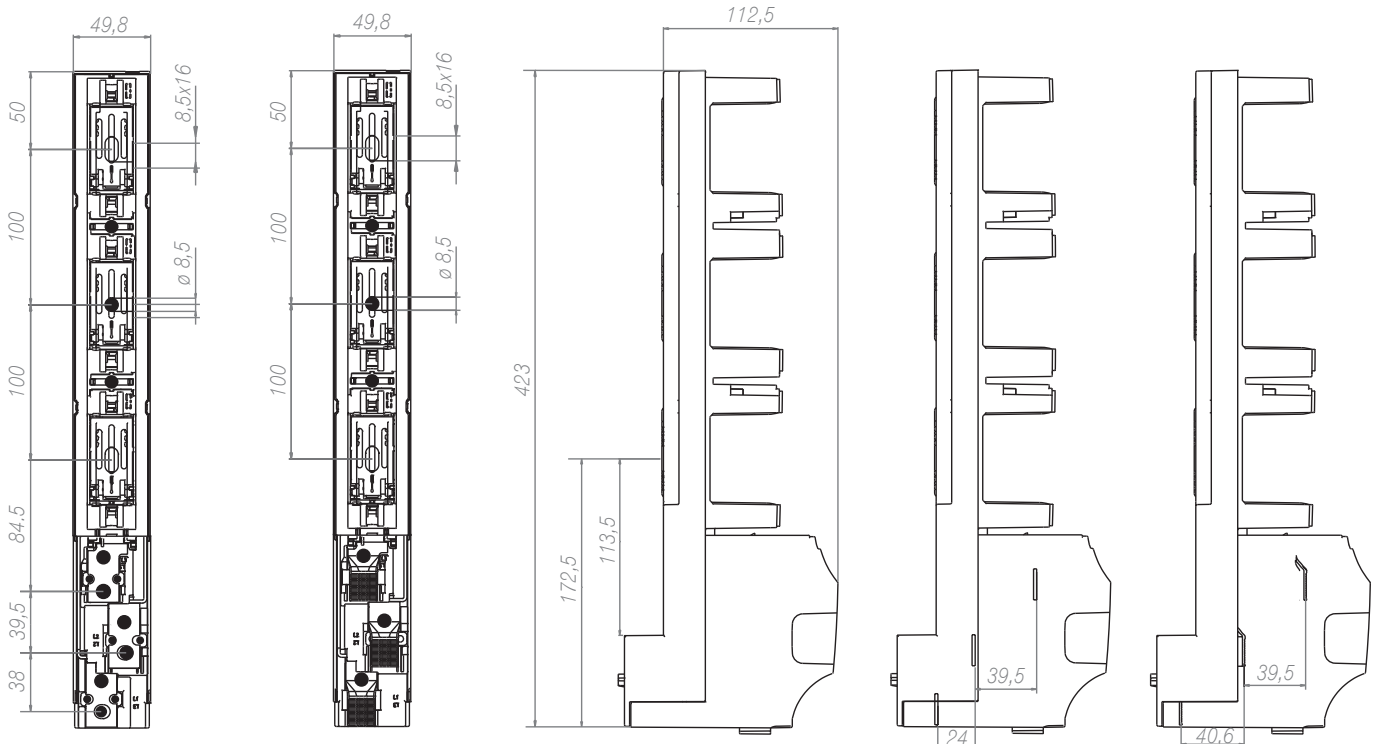


Distance sleeve



Current transformer

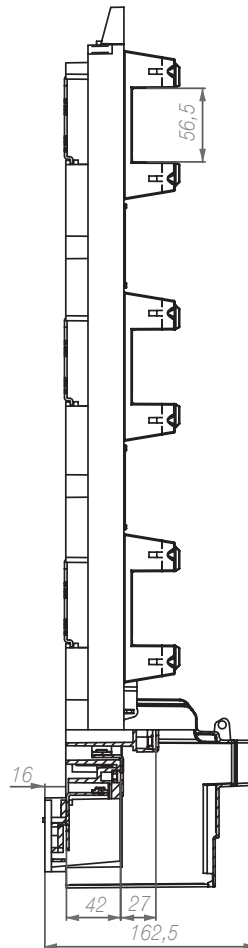
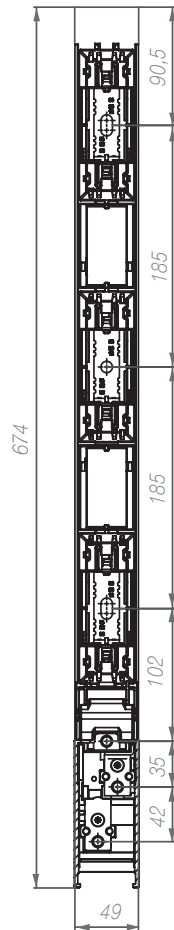
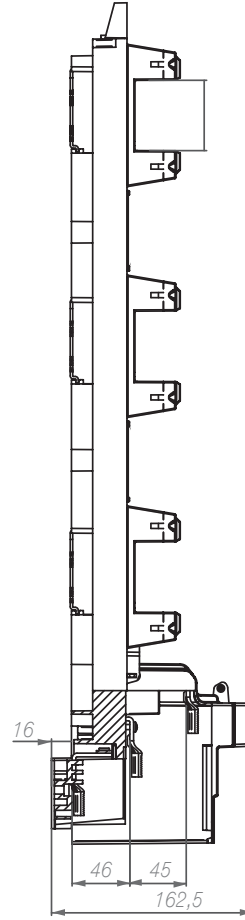
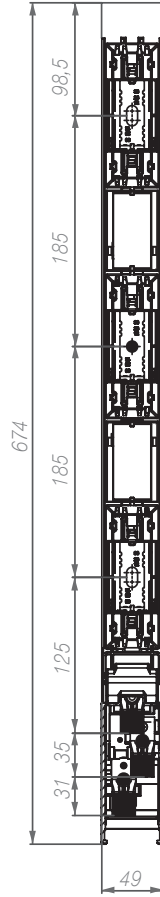
PBS 00/100 mm

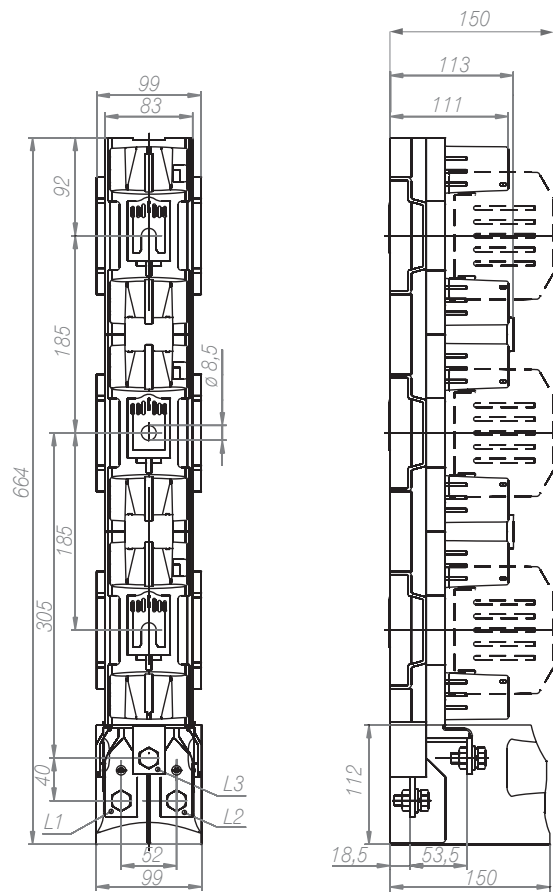




PBS 00-SM

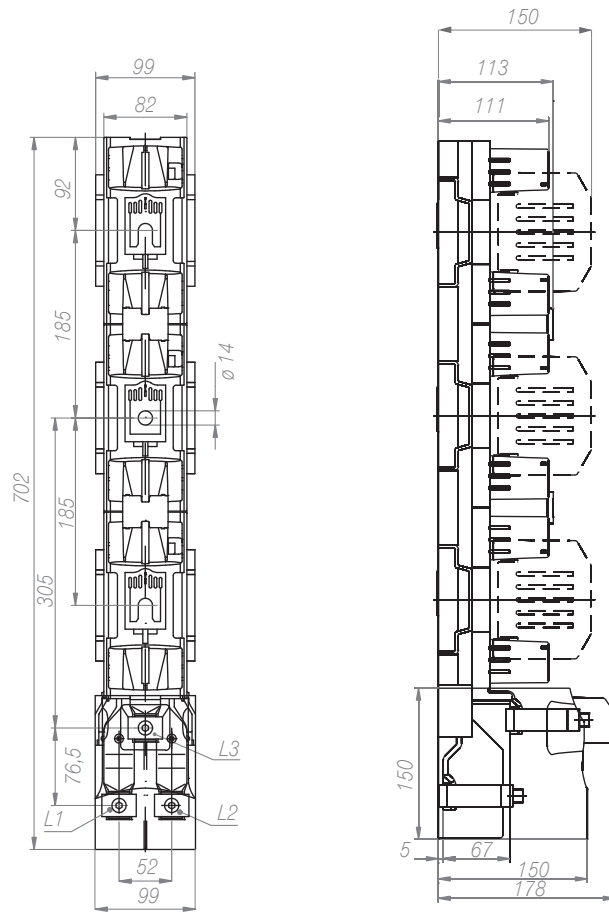
PBS DIMENSIONS





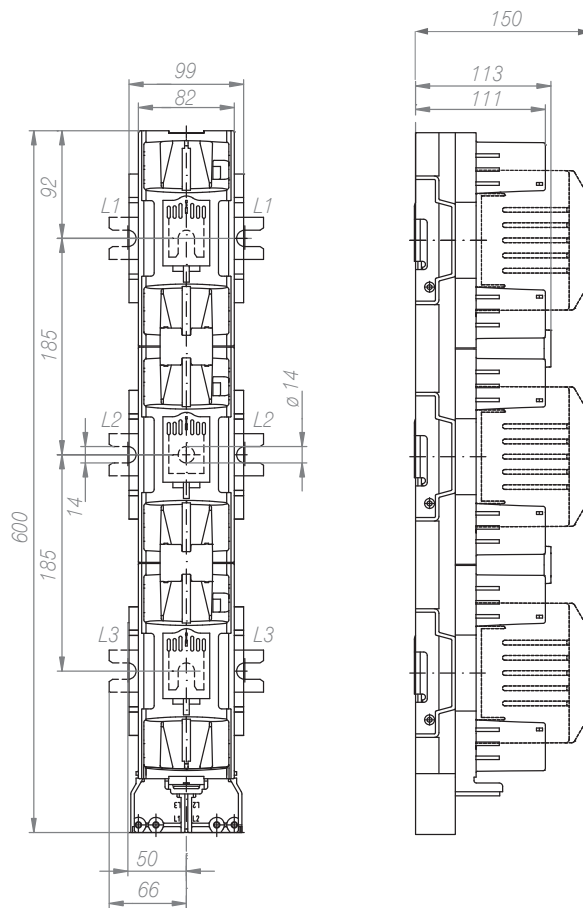


PBS 2 | PBS 3 with terminals 2V (2 x 240 mm²)



















PBS 2 | PBS 3 with lateral busbar terminal
























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PBS DIMENSIONS



PBS 00 PBS 00/100 mm			PBS 00/100 mm		
00-M	M8 terminal screw, for connection of conductors with lug terminal (set - 3 pcs.)		53-945924-011	Terminal shroud/adjusting shroud	
1361400006T	Busbar shroud (polycarbonate) for busbar system 185 mm, Width 50 mm, length 562 mm, thickness 3 mm		1115281021	Single adapter 100/185 enabling to install PBS 00/100 mm on busbar system 185 mm	
53-9459361-011	Hooked clamps for installation of ARS on to busbar system without drilled holes. (set - 3 pcs.)		1115281022T	Double adapter 100/185 enabling to install two PBS 00/100mm units on busbar system 185 mm	
1361400001T	Isolating pin for fixing the 50 mm busbar shroud, M8 (set - 2 pcs.)		PBS 00		
	Current transformer APA-W10 Accuracy class 1; 0,5 Ratios: 125/5 A, 150/5 A Technical parameters in the catalogue: "Low voltage current transformers".		51-945160-011 (Nr dot. 1 szt.)	Double distance adapter 185/185. Designed for two PBS 00 units. It adjusts front line of PBS 00 to that of PBS 1, 2, 3 (set - 3 pcs.)	
1115718010T	Distance sleeve for current transformer APA-W10 (Length 36 mm, outer diameter = 22,5 mm, inner diameter = 12,5 mm)		52-945158-011 (Nr dot. 1 szt.)	Single distance adapter 185/185. It adjusts front line of ARS 00 to that of ARS 1, 2, 3 (set - 3 pcs.)	
00-S	S-Bridge clamp - fixed with 2 x M5 screw - for connection of conductors with cross-section 4 mm ² up to 70 mm ² (set - 3 pcs.)		51-001312-001	Fuse link shroud	
1115281034T	V-shape clamp - S-bridge clamp + V-shape saddle - for connection of sector-shaped conductors with cross-section 1,5 up to 70 mm ² (stranded) or 95 mm ² (solid) (set - 3 pcs.)				
1115281041T	Universal earthing device for PBS 00, 1, 2, 3				
1119510077T	V- clamp HM-10-120. For connection of conductor with cross-section:				
	10 - 70 mm ² ● 10 - 70 mm ² ☒				
	25 - 120 mm ² ◐ 25 - 95 mm ² ☒				

PBS 2 PBS 3		
M	M10 terminal screw: for PBS 1 and PBS 2 M12 terminal screw: for PBS 3; for connection of conductors with lug terminal (set- 3pcs)	
35-300 SW-B 1119510081T	V-clamp. For connection of conductor with cross-section:	
	35 - 120 mm ²  35 - 150 mm ² 	
	35 - 240 mm ²  35 - 300 mm ² 	
HS 35-300-C 1119510084T	V-clamp. For connection of conductor with cross-section:	
	35 - 185 mm ²  35 - 240mm ² 	
	35 - 240 mm ²  35 - 300 mm ² 	
2/35-300SW-B 1119510082T	Double V-clamp. For connection of two conductors with cross-section:	
	35 - 185 mm ²  35 - 240 mm ² 	
	35 - 240 mm ²  35 - 300 mm ² 	
VL240/ 1119510002T	V-terminal lug for V-clamp for connection of conductors with cross-section 35 mm ² up to 240 mm ²	
HS 2/35-240-C 1119510085T	V-clamp HS (steel) for connection of two conductors with cross-section	
	35 - 135 mm ²  35 - 240 mm ² 	
	35 - 240 mm ²  35 - 300 mm ² 	
1115281037T	Hooked clamps for installation of PBS 1, 2, 3 on to busbar system without drilled holes (set - 3 pcs.)	

PBS 2 PBS 3		
1361400007T	Busbar shroud (polycarbonate) for busbar system 185 mm, Width 100 mm, length 707 mm, thickness 2 mm	
1361400002T	Isolating pin for fixing the 100mm busbar shroud, M12 (set - 2 pcs.)	
51-930313-01	Extended terminal shroud. For use with terminal shroud 51-930271-021	
51-930272-011	Terminal protective cover	
	Current transformer APA-W12 ratios: 125/5 A 150/5 A 200/5 A 300/5 A 400/5 A dimensions: a = 60 mm, b = 30 mm, c = 81 mm Accuracy class* = 1; 0,5; 0,5s; 0,2; 0,2s *-depending on the version Technical parameters in the catalogue: "Low voltage current transformers".	
115718010T	Distance sleeve for current transformer APA-W12 length 36 mm, outer diameter = 22,5 mm, inner diameter = 12,5 mm	
51-930271-021	Terminal shroud	
51-836288-011	Fuse link shroud	
1115281041T	Universal earthing device for ARS 00, 1, 2, 3	