



# 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; 1-250 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 00/100 , 00-SM - 50 mm, size 1, 2, 3 -100 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 IP20 with fuse link shrouds for fuse rails of size 00, 1, 2 and 3.

Table 52. PBS fuse rails technical data

Parameter		PBS 00/100 mm	PBS 00	PBS 1	PBS 2	PBS 3
Size		00	00	1	2	3
Rated thermal current $I_{th}$	A	160	160	250	400	630
Rated voltage $U_n$	V	690	690	690	690	690
Rated insulation voltage $U_i$	V	1000	1000	1000	1000	1000
Rated frequency	Hz	50-60	50-60	50-60	50-60	50-60
Rated power dissipation	W	12	12	max. 32	45	60
Rated short-circuit withstand current	kA	100	100	100	100	100
Mechanical durability	Number of cycles	100	100	100	100	100
Weight	kg	0,75	2	20	4,50	5
IP degree of protection	-	00	20 <sup>1)</sup>	20 <sup>1)</sup>	20 <sup>1)</sup>	20 <sup>1)</sup>
Size of fuse links		00	00	1	1,2	3

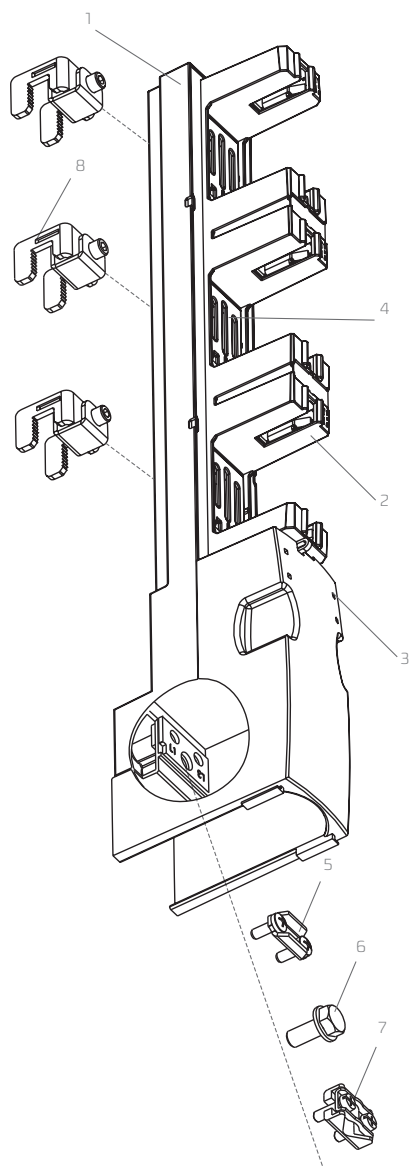
<sup>1)</sup> with fuse link shrouds

## OPERATING CONDITIONS

- to be installed in the room free of any dust, aggressive or explosive gases,
- 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 %,
- altitude up to 2000 meters above sea level,
- relative humidity of the air should not be higher than 50 % at temperature of +40 °C,
- outdoor – in cabinets with protection degree > IP 34.

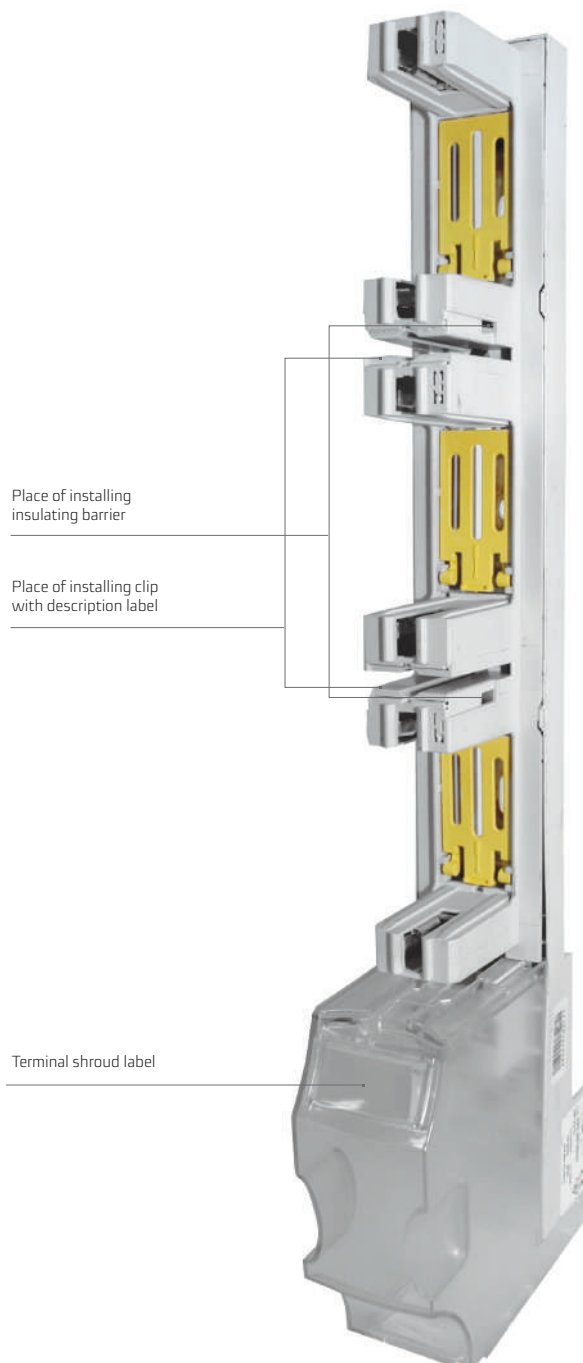
## FUSE RAIL PBS 00/100 mm (160 A, 690 V)

For 100 mm busbar system



### 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)



PBS 00/100 mm

Table 53. Technical data

Parameter		PBS 00/100 mm
Size		00
Rated thermal current $I_{th}$	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	-	00
Size of fuse links		00

[Accessories on page 73](#)

Table 54. Versions

Version		Weight	Article No.
PBS 00/100 mm	cable terminals: bridge terminals with bridgeclamps (S) 4-70 mm <sup>2</sup> , screw terminals with M8 screws	1,0 kg	63-811627-011
PBS 00/100 mm-V	cable terminals: V-terminals with V-clamps 25-150SW	1,1 kg	63-811627-021

Table 55. PBS 00/100 mm terminal clamps

Description	PBS 00/100 mm			
Clamp	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 <sup>2</sup>	Conductor with lug termina max 185 mm <sup>2</sup>	re ● 16 mm <sup>2</sup> -95 mm <sup>2</sup> se ◆ 25 mm <sup>2</sup> -150 mm <sup>2</sup> rm ⊗ 16 mm <sup>2</sup> -95 mm <sup>2</sup> sm ⊕ 25 mm <sup>2</sup> -150 mm <sup>2</sup>	re ● 10 mm <sup>2</sup> -70 mm <sup>2</sup> se ◆ 25 mm <sup>2</sup> -120 mm <sup>2</sup> rm ⊗ 10 mm <sup>2</sup> -70 mm <sup>2</sup> sm ⊕ 25 mm <sup>2</sup> -95 mm <sup>2</sup>
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 (160 A, 690 V)

For 185 mm busbar system

Table 56. Technical data

Parameter		PBS 00
Size		00
Rated thermal current $I_{th}$	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	-	00
IP degree of protection with fuse links and fuse links shrouds installed *	-	20
Size of fuse links		00

Accessories on page 73, 74

\*for more information about fuse links shrouds please see accessories



PBS 00-V

PBS 00-V-O

PBS 00-SM

Table 57. Versions

Version		Weight	Article No.
PBS 00-V	cable terminals: V-terminals with V-clamps 25-150SW	2 kg	63-001417-001
PBS 00-SM	cable terminals: bridge terminals with bridgeclamps (S) 4-70 mm <sup>2</sup> , screw terminals with M8 screws	1,9 kg	63-001417-002
PBS 00-V-O	cable terminals: V-terminals with V-clamps 25-150SW with fuse link shrouds	2,1 kg	63-001417-003
PBS 00-SM-O	cable terminals: bridge terminals with bridgeclamps (S) 4-70 mm <sup>2</sup> , screw terminals with M8 screws with fuse link shrouds	2 kg	63-001417-004

Table 58. PBS 00 terminal clamps

Description	PBS 00			
Clamp	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 <sup>2</sup>	Conductor with lug terminal max 185 mm <sup>2</sup>	re ● 16 mm <sup>2</sup> - 95 mm <sup>2</sup> se ◆ 25 mm <sup>2</sup> - 150 mm <sup>2</sup> rm ⊗ 16 mm <sup>2</sup> - 95 mm <sup>2</sup> sm ⊕ 25 mm <sup>2</sup> - 150 mm <sup>2</sup>	re ● 10 mm <sup>2</sup> - 70 mm <sup>2</sup> se ◆ 25 mm <sup>2</sup> - 120 mm <sup>2</sup> rm ⊗ 10 mm <sup>2</sup> - 70 mm <sup>2</sup> sm ⊕ 25 mm <sup>2</sup> - 95 mm <sup>2</sup>
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

Apator 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.

## PBS 1, PBS 2, PBS 3

### Vertical fuse rails



Table 59. Technical data

Parameter		PBS 1	PBS 2	PBS 3
Rated thermal current $I_{th}=I_n$	A	250	400	630
Rated voltage $U_n$	V	690	690	690
Rated frequency	Hz	50 - 60	50 - 60	50 - 60
Peak current	kA	50	50	50
Rated power dissipation	W	max. 32	max. 45	max. 60
IP degree of protection	-	00	00	00
IP degree of protection with fuse links shrouds	-	20	20	20
Fuse link size	-	NH 1	NH 2	NH 3

Table 60. Versions

Version		Article No.
<b>PBS 1 – 250 A</b>		
PBS 1-M	Cable terminals: screw terminals with pressed nuts M12	63-500600-601
PBS 1-V	Cable terminals: V-terminals with V-clamps (35-300 mm <sup>2</sup> )	63-500600-602
PBS 1-2V	Cable terminals: 2V-terminals with double V-clamps (2x50-240 mm <sup>2</sup> )	63-500600-603
<b>PBS 2 – 400 A</b>		
PBS 2-M	Cable terminals: screw terminals with pressed nuts M12	63-500600-611
PBS 2-V	Cable terminals: V-terminals with V-clamps (35-300 mm <sup>2</sup> )	63-500600-612
PBS 2-2V	Cable terminals: 2V-terminals with double V-clamps (2x50 - 240 mm <sup>2</sup> )	63-500600-613
<b>PBS 3 – 630 A</b>		
PBS 3-M	Cable terminals: screw terminals with pressed nuts M12	63-500600-621
PBS 3-V	Cable terminals: V-terminals with V-clamps (35-300 mm <sup>2</sup> )	63-500600-622
PBS 3-2V	Cable terminals: 2V-terminals with double V-clamps (2x50 - 240 mm <sup>2</sup> )	63-500600-623

Table 61. PBS 1, PBS 2 terminal clamps

Description	PBS 1,2,3-V	PBS 1,2,3-2V	PBS 1,2,3-2V	PBS 1,2,3-M
Clamp	V-clamp 35-300SW-B	V-clamp 2/50-300SW-B	V-clamp HS 2/50-240-C*	M-screw M12**
Drawing of clamp				
Cross-section of conductors	V-clamp for direct fixing of conductor with bare end with cross-section of:			
	35 - 185 mm <sup>2</sup>	35 - 240 mm <sup>2</sup>	50 - 185 mm <sup>2</sup>	50 - 240 mm <sup>2</sup>
	35 - 240 mm <sup>2</sup>	35 - 300 mm <sup>2</sup>	50 - 240 mm <sup>2</sup>	50 - 300 mm <sup>2</sup>
Tightening torque	30 Nm	30 Nm	40 Nm	56 Nm

For stranded conductors using cable ferrules is recommended

\*) if the fuse switch disconnector with a 2V-type clamp is to be equipped with a steel V-clamp HS 2/50-240-C, it should be included in the order

\*\*\*) 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.

Aparator takes responsibility for technical quality of V-terminals manufactured only by the company. Minimum tightening torque (M10 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 62. Technical data

Parameter		PBS 2	PBS 3
Size		2	3
Rated thermal current $I_{th}$	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	-		20
IP degree of protection with fuse links and fuse links shrouds installed*	-		20
Size of fuse links		2	3

Accessories on page 74, 75

\*for more information about fuse links shrouds please see accessories



PBS 2-NR

PBS 3-NL

PBS fuse rail with lateral busbar terminal

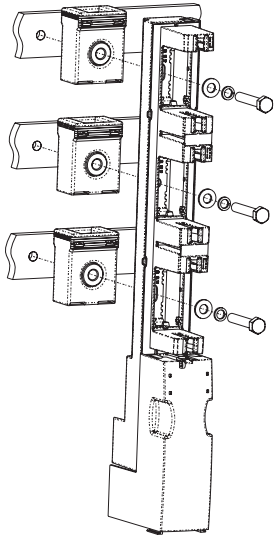
Table 63. Versions

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

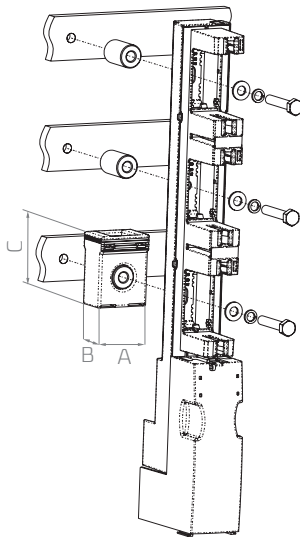
Table 64. PBS with lateral busbar terminal clamps

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 RAIL PBS**



**PBS 00/160 A fuse rails  
CURRENT TRANSFORMER**

A - max. 48mm  
B - max. 35 mm  
C - ~ 65 mm

**DISTANCE SLEEVE**

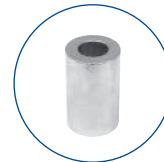
length 36 mm  
Ø internal = 12,5 mm  
Ø external = 22,5 mm

**PBS 2 i 3 fuse rails  
CURRENT TRANSFORMER**

A - max. 90 mm  
B - max. 35 mm  
C - ~ 80 mm

**DISTANCE SLEEVE**

length 36 mm  
Ø internal = 12,5 mm,  
Ø external = 22,5 mm

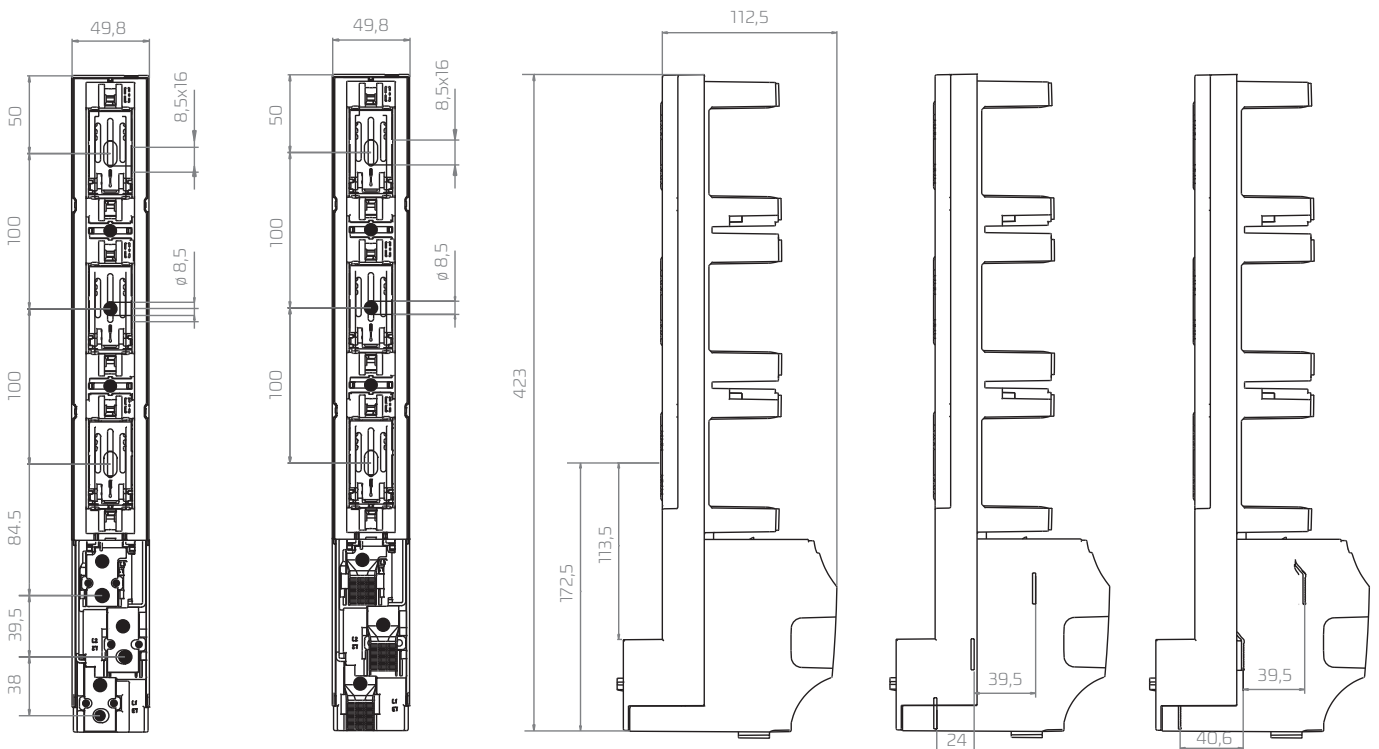


Distance sleeve

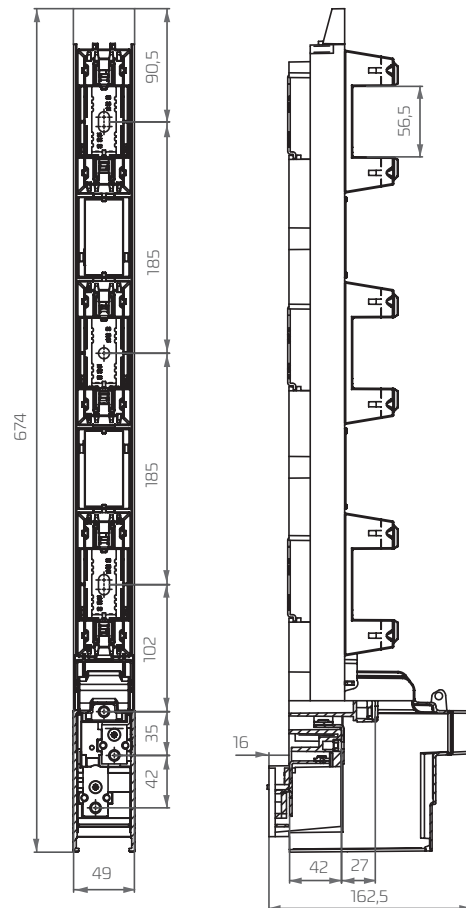
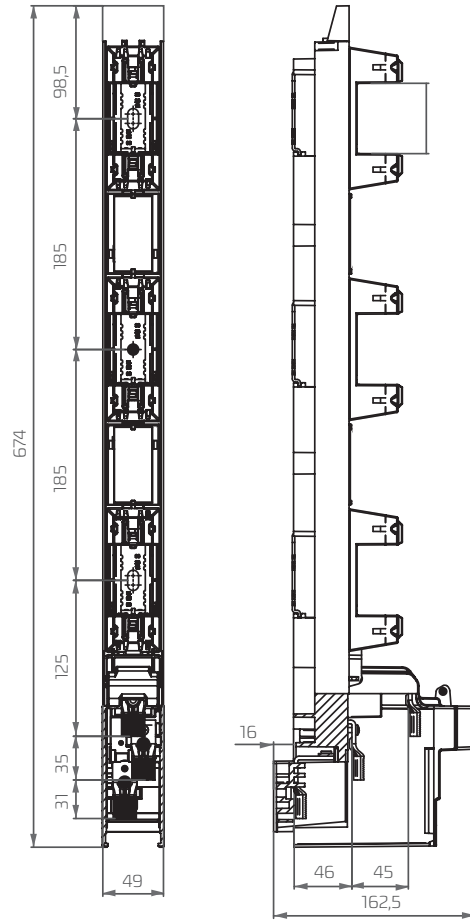


Current transformer

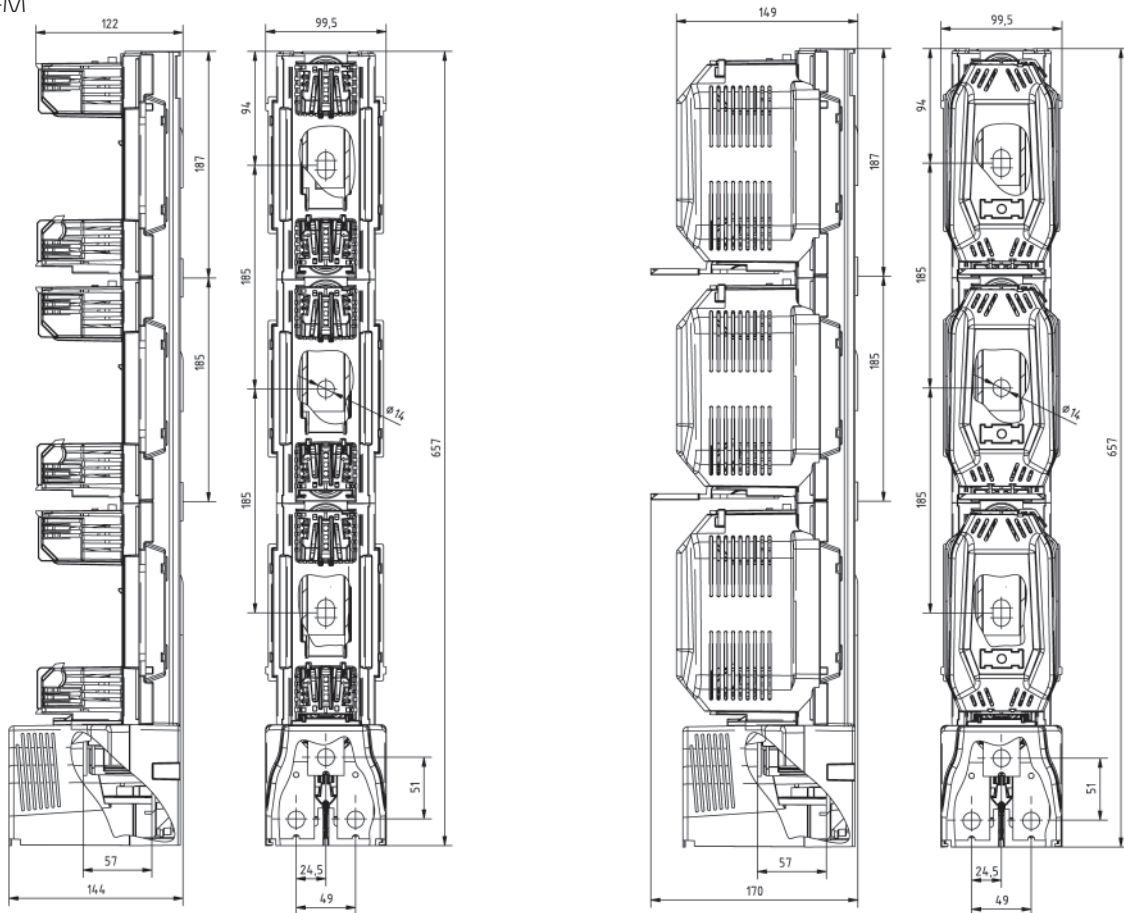
**PBS 00/100 mm**



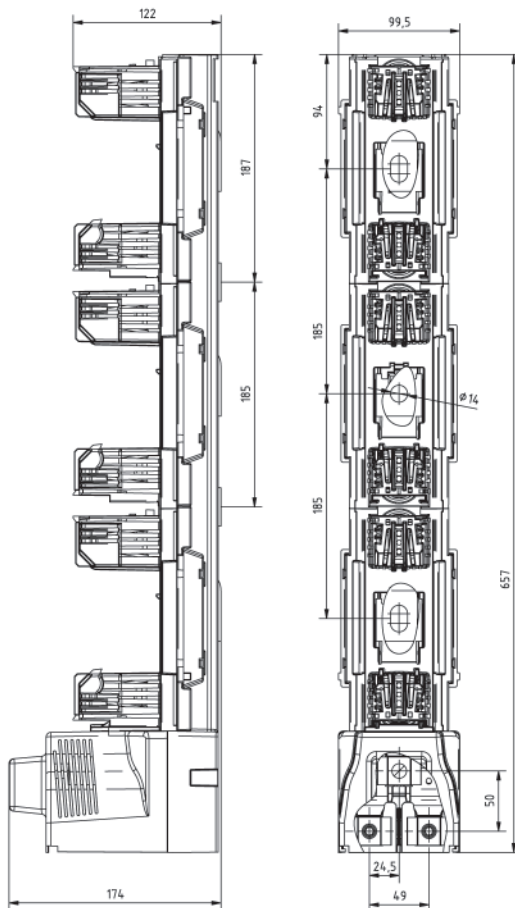
PBS 00



PBS 1,2,3 -M



PBS 1,2,3-V, PBS 1,2,3-2V



PBS 00, PBS 00/100 mm - accessories

Description	Article No.	Picture
M8 terminal screw, for connection of conductors with lug terminal (set - 3 pcs.)	53-082961-001	
Busbar shroud (polycarbonate) for busbar system 185 mm, Width 50 mm, length 562 mm, thickness 3 mm	1361400006T	
Hooked clamps for installation on to busbar system without drilled holes. (set - 3 pcs.)	53-945361-011	
Isolating pin for fixing the 50 mm busbar shroud, M8 (set - 2 pcs.)	1361400001T	
Distance sleeve for current transformer APA-W10 (Length 36 mm, outer diameter =22,5 mm, inner diameter =12,5 mm)	1115718010T	
S-Bridge clamp – fixed with 2 x M5 screw - for connection of conductors with cross-section 4 mm <sup>2</sup> up to 70 mm <sup>2</sup> (set – 3 pcs.)	53-002143-001	
V-shape clamp – S-bridge clamp + V-shape saddle - for connection of sector-shaped conductors with cross-section 1,5 up to 70 mm <sup>2</sup> (stranded) or 95 mm <sup>2</sup> (solid) (set - 3 pcs.)	53-001462-001	
Universal earthing device for PBS 00, 1, 2, 3	1115281041T	
V- clamp HM-10-120. For connection of conductor with cross-section:	1119510077T	
10 - 70 mm <sup>2</sup> 10 - 70 mm <sup>2</sup>		
25 - 120 mm <sup>2</sup> 25 - 95 mm <sup>2</sup>		



PBS 00-V-0

PBS 00/100 mm

ACCESSORIES PBS





PBS 00/100 mm - accessories

Description	Article No.	Picture
Terminal shroud/adjusting shroud	53-945924-011	
Single adapter 100/185 enabling to install PBS 00/100 mm on busbar system 185 mm	1115281021	
Double adapter 100/185 enabling to install two PBS 00/100 mm units on busbar system 185 mm at perforation holes on busbar system every 100 mm	1115281022T	



PBS 00/100 mm



















PBS 00 - accessories

Description	Article No.	Picture
Double adapter adjusts the height of PBS 00 to the height PBS 2,3	1115281024T	
Single distance adapter 185/185 for PBS 00/185 adjusts the front line to PBS 1, 2, 3 (set - 3 pcs.)	51-945160-011 (no. regard 1 pc.)	
Double distance adapter 185/185 for two units PBS 00/185 adjusts the front line to PBS 1, 2, 3 at perforation holes in busbar system every 100 mm (set - 3 pcs.)	52-945158-011 (no. regard 1 pc.)	
Fuse link shroud	51-001312-001	



PBS 00-V-0

PBS 2, PBS 3 - accessories

Description	Article No.	Picture
M10 terminal screw to PBS 2 for connection of conductors with lug terminal (set - 3 pcs.)	53-082961-002	
M12 terminal screw to PBS 3 for connection of conductors with lug terminal (set - 3 pcs.)	53-082961-003	
V-clamp For connection of conductor with cross-section	1119510081T	
35 - 120 mm <sup>2</sup>  35 - 150 mm <sup>2</sup> 		
35 - 240 mm <sup>2</sup>  35 - 300 mm <sup>2</sup> 		
V-clamp For connection of conductor with cross-section	1119510084T	
50 - 185 mm <sup>2</sup>  50 - 240 mm <sup>2</sup> 		
50 - 240 mm <sup>2</sup>  50 - 300 mm <sup>2</sup> 		
V-clamp For connection of two conductors with cross-section	1119510082T	
50 - 185 mm <sup>2</sup>  50 - 240 mm <sup>2</sup> 		
50 - 240 mm <sup>2</sup>  50 - 300 mm <sup>2</sup> 		
V-terminal lug for V-clamp for connection of conductors with cross-section 35 mm <sup>2</sup> up to 240 mm <sup>2</sup>	1119510002T	



PBS 2-V



PBS 3-V  
With fuse links shrouds

Description	Article No.	Picture
V-clamp HS (steel) for connection of two conductors with cross-section 35-185 mm <sup>2</sup>  35-240 mm <sup>2</sup>  35-240 mm <sup>2</sup>  35-300 mm <sup>2</sup> 	1119510085T	
Hooked clamps for installation of PBS 1, 2, 3 on to busbar system without drilled holes (set - 3 pcs.)	1115281037T	
Busbar shroud (polycarbonate) for busbar system 185 mm, Width 100 mm, length 707 mm, thickness 2 mm	1361400007T	
Isolating pin for fixing the 100mm busbar shroud, M12 (set – 2 pcs.)	1361400002T	
Extended terminal shroud. For use with terminal shroud	51-930313-01	
Terminal protective cover	51-930272-011	
Distance sleeve for current transformer APA-W12 length 36 mm, outer diameter =22,5 mm, inner diameter =12,5 mm	115718010T	
Long terminal shroud	51-930271-021	
Fuse link shroud	51-836288-011	
Universal earthing device for ARS 00, 1, 2, 3	1115281041T	
Terminal shroud for PBS 2-V and PBS 2-2V	51-500600-106	
Terminal shroud for PBS 2-M	51-500600-101	
Link shroud	51-500600-108	