



# Switchgear

Product catalogue 2019

# ARS 00/60 mm pro

new dimension  
of security

**NEW**



- solution for industrial low voltage distribution boards, reactive power compensation
- for installation on to 60 mm busbar system
- innovative hooked clamps able fast reversibility - top/bottom cable terminal connection
- adapted to existing assembly systems
- thermoplastics of VO flammability class
- wide range of accessories



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# smartARS pro

## vertical fuse switch disconnectors

- thermoplastics of VO flammability class
- double clearance between open contacts
- arc chambers with deionization plates over every contact
- fast installation using PPN technology
- remote monitoring
- built-in current transformers
- adapted to existing assembly systems
- reversibility - top/bottom cable terminal connection
- wide range of accessories



## GENERAL INFORMATION

**smartARS pro** vertical fuse switch disconnectors are designed for distribution of electricity and protection against short circuits and overloads in three phase alternative current circuits. They are intended for direct installation on horizontal or vertical busbar systems.

**smartARS pro** fuse switch disconnectors meet technical requirements of polish and european electricity boards and are conformed with EN 60947-1, EN 60947-3, IEC 60947-1, IEC 60947-3 standards. **smartARS pro** fuse switch disconnectors

are dedicated for applications which require reliability and safety like low voltage distribution boards installed in transformer substations, industrial low voltage assemblies and cable cabinets. Design of **smartARS pro** fuse switch disconnectors provides clearly visible, safe gap in the current circuit after the fuse link removal.

**smartARS pro** fuse switch disconnectors are designed to perform the following functions:

- protection,
- energy distribution,
- earthing,
- switching,
- touch protection.

## CONSTRUCTION

**smartARS pro** fuse switch disconnectors are manufactured in two versions:

- one pole switching (separately each pole),
- three pole switching (three poles at the same time).

They have manually operated handle therefore making and breaking operations should be done with determined movement.

**smartARS pro** fuse switch disconnectors are available in following sizes (according to rated current): 00 (160 A); 2 (400 A); 3 (630 A).

**smartARS pro** fuse switch disconnectors are designed for installation on to 185 mm busbar system.

All plastic parts of fuse switch disconnector **smartARS pro** are made of halogen free, fibre glass strengthened, self extinguishing materials. Thanks to the application of flame retardants the highest flammability class – V0 was achieved. Fuse switch disconnectors made from such thermoplastics self-extinguish in specified time after ignition source is removed. Also dripping of flaming parts of plastic does not occur.

Silver plated contacts provide low power loss. Depending on clamp type, **smartARS pro** fuse switch disconnectors enable user to connect circular or sector-shaped conductors with bare ends or conductors with lug terminals. Arc chambers equipped with steel deionization plates are installed over each contact. **smartARS pro** fuse switch disconnector are designed for using current transformers and ammeters. Protection degree of IP30 from the front is provided. In opened position **smartARS pro** provide protection degree IP20. Additionally offered accesories enable to install **smartARS pro** fuse switch disconnectors of different sizes on common busbar systems and facilitate operation. All sizes of **smart ARS pro** fuse switch disconnectors are provided complete with clamps (i. e. screws, V-terminals, 2Vterminals) and shrouds for cable terminals.

Table 1. Main technical data of smartARS pro

| Parameter                                          |  | smartARS 00 pro  |  | smartARS 2 pro |  | smartARS 3 pro |  |        |  |     |  |
|----------------------------------------------------|--|------------------|--|----------------|--|----------------|--|--------|--|-----|--|
| Rated thermal current $I_{th}=I_n$ with fuse links |  | A                |  | 160            |  | 400            |  | 630    |  |     |  |
| Rated voltage $U_n$                                |  | V                |  | 690            |  | 690            |  | 690    |  |     |  |
| Utilization category                               |  | 690 V            |  | AC-22B         |  | AC-22B         |  | AC-21B |  |     |  |
|                                                    |  | 500 V            |  |                |  |                |  |        |  |     |  |
|                                                    |  | 400 V            |  | AC-23B         |  | AC-23B         |  | AC-23B |  |     |  |
| Rated switching current $I_e$                      |  | A                |  | 160            |  | 400            |  | 630    |  |     |  |
| Rated short-circuit making current                 |  | 690 V            |  | kA             |  | 80             |  | 100    |  | 80  |  |
|                                                    |  | 500 V            |  |                |  | 100            |  | 120    |  | 120 |  |
|                                                    |  | 400 V            |  |                |  |                |  |        |  |     |  |
| Rated short-circuit withstand current              |  | 690 V            |  | kA             |  | 80             |  | 100    |  | 80  |  |
|                                                    |  | 500 V            |  |                |  | 100            |  | 120    |  | 120 |  |
|                                                    |  | 400 V            |  |                |  |                |  |        |  |     |  |
| Rated insulation voltage $U_i$                     |  | V                |  | 1000           |  | 1000           |  | 1000   |  |     |  |
| Rated impulse withstand voltage $U_{imp.}$         |  | kV               |  | 12             |  | 12             |  | 12     |  |     |  |
| Rated frequency                                    |  | Hz               |  | 50-60          |  | 50-60          |  | 50-60  |  |     |  |
| Mechanical durability                              |  | Number of cycles |  | 1600           |  | 1000           |  | 1000   |  |     |  |
| Electrical durability                              |  |                  |  | 200            |  | 200            |  | 200    |  |     |  |
| IP degree of protection                            |  | -                |  | 30             |  | 30             |  | 30     |  |     |  |
| Fuse links size                                    |  | -                |  | 00             |  | 1,2            |  | 3      |  |     |  |

## 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,
- relative humidity of the air should not be higher than 50% at temperature of +40°.

## FUNCTIONALITY

- making and breaking operations should be done with determined movement,
- parallelly moving, double contact system,
- designed for installation on 185 mm busbar system,
- two versions: single pole switching (separately each pole) or triple pole switching (three poles at the same time),
- fuse switch disconnectors width: 50 mm (smartARS00 pro), 100 mm (smartARS 2,3 pro),
- suitable for top cable terminal connection,
- possible connection of conductors with lug terminals (screw terminals) or circular/sector-shaped conductors with bare ends (V-terminals, 2V-terminals) using V-clamps,
- voltage test is performed through test holes,
- possible installation of earthing device,
- fast installation using PPN technology,
- remote monitoring,
- built-in current transformers,
- adapted to existing assembly systems.

## FUSE SWITCH DISCONNECTOR smartARS 00 pro (160 A, 690 V)

For installation on to 185 mm busbar system

Fuse switch disconnectors width 50 mm

Switching: three poles simultaneously - operation with two hands or single pole switching

Table 2. Technical data

| Parameter                                           |                  | smartARS 00 pro |        |
|-----------------------------------------------------|------------------|-----------------|--------|
| Rated thermal current $I_{th}=I_n$                  | A                | 160             |        |
| Rated thermal current $I_{th}=I_n$ with solid links | A                | 210             |        |
| Rated voltage $U_n$                                 | V                | 690             |        |
| Utilization category                                | -                | AC-22B          | AC-23B |
|                                                     |                  | 690             | 400    |
| Rated switching voltage $U_e$                       | V                | 690             |        |
| Rated switching current $I_e$                       | A                | 160             |        |
| Rated short circuit making current                  | 690 V            | kA              | 80     |
|                                                     | 500 V            |                 | 100    |
| Rated short circuit withstand current               | 690 V            | kA              | 80     |
|                                                     | 500 V            |                 | 100    |
| Rated insulation voltage $U_i$                      | V                | 1000            |        |
| Rated impulse withstand voltage $U_{imp.}$          | kV               | 12              |        |
| Rated frequency                                     | Hz               | 50-60           |        |
| Mechanical durability                               | Number of cycles | 1600            |        |
| Electrical durability                               |                  | 200             |        |
| IP degree of protection                             | -                | 30              |        |
| Fuse links size                                     | -                | 00              |        |

Accessories on page 52, 53



smartARS 00-1 pro

smartARS 00-3 pro

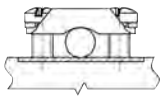
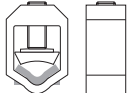
Table 3. Versions

| Version                                                                                                         |                                                                                | Weight | Article No.   |
|-----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------|---------------|
| <b>for installation on 185 mm busbar system, ONE POLE SWITCHING - each phase independently</b>                  |                                                                                |        |               |
| smartARS 00-1-V pro                                                                                             | cable terminals: V-terminals: V-clamps 25-150SW                                | 2,5 kg | 63-001414-001 |
| smartARS 00-1 pro                                                                                               | cable terminals: bridge terminals (S) 4-70mm <sup>2</sup> , M8 screw terminals | 2,4 kg | 63-001414-002 |
| <b>for installation on 185 mm busbar system, THREE POLE SWITCHING - all phases simultaneously</b>               |                                                                                |        |               |
| smartARS 00-3-V pro                                                                                             | cable terminals: V-terminals: V-clamps 25-150SW                                | 2,6 kg | 63-001415-001 |
| smartARS 00-3 pro                                                                                               | cable terminals: bridge terminals (S) 4-70mm <sup>2</sup> , M8 screw terminals | 2,5 kg | 63-001415-002 |
| <b>smartARS 00 pro version with adjusted to front line and terminal cover of ARS 2,3 without using adapters</b> |                                                                                |        |               |
| <b>for installation on 185 mm busbar system, ONE POLE SWITCHING - each phase independently</b>                  |                                                                                |        |               |
| smartARS 00-1-V pro                                                                                             | cable terminals: V-terminals: V-clamps 25-150SW                                | 2,6 kg | 63-002070-001 |
| smartARS 00-1 pro                                                                                               | cable terminals: bridge terminals (S) 4-70mm <sup>2</sup> , M8 screw terminals | 2,5 kg | 63-002070-002 |
| <b>for installation on 185 mm busbar system, THREE POLE SWITCHING - all phases simultaneously</b>               |                                                                                |        |               |
| smartARS 00-3-V pro                                                                                             | cable terminals: V-terminals: V-clamps 25-150SW                                | 2,7 kg | 63-002071-001 |
| smartARS 00-3 pro                                                                                               | cable terminals: bridge terminals (S) 4-70mm <sup>2</sup> , M8 screw terminals | 2,6 kg | 63-002071-002 |
| <b>smartARS 00 pro version with fast installation modules using PPN technology</b>                              |                                                                                |        |               |
| <b>for installation on 185 mm busbar system, ONE POLE SWITCHING - each phase independently</b>                  |                                                                                |        |               |
| smartARS 00-1-V SM pro                                                                                          | cable terminals: V-terminals: V-clamps 25-150SW                                | 2,7 kg | 63-001899-001 |
| smartARS 00-1 SM pro                                                                                            | cable terminals: bridge terminals (S) 4-70mm <sup>2</sup> , M8 screw terminals | 2,6 kg | 63-001899-002 |



| Version                                                                                           |                                                                                | Weight | Article No.   |
|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------|---------------|
| <b>for installation on 185 mm busbar system, THREE POLE SWITCHING - all phases simultaneously</b> |                                                                                |        |               |
| smartARS 00-3-V SM pro                                                                            | cable terminals: V-terminals: V-clamps 25-150SW                                | 2,9 kg | 63-001904-001 |
| smartARS 00-3 SM pro                                                                              | cable terminals: bridge terminals (S) 4-70mm <sup>2</sup> , M8 screw terminals | 2,8 kg | 63-001904-002 |

Table 4. smartARS 00 pro terminal clamps

| Description                  | smartARS 00 pro                                                                   |                                                                                   |                                                                                    |                                                                                     |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Clamp                        | S-bridge clamp<br>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>                                                            | Lug terminal<br>max 185 mm <sup>2</sup>                                           | re ● 16 mm <sup>2</sup> - 95 mm <sup>2</sup>                                       | re ● 10 mm <sup>2</sup> - 70 mm <sup>2</sup>                                        |
|                              |                                                                                   |                                                                                   | se ◆ 25 mm <sup>2</sup> - 150 mm <sup>2</sup>                                      | se ◆ 25 mm <sup>2</sup> - 120 mm <sup>2</sup>                                       |
|                              |                                                                                   |                                                                                   | rm ⊗ 16 mm <sup>2</sup> - 95 mm <sup>2</sup>                                       | rm ⊗ 10 mm <sup>2</sup> - 70 mm <sup>2</sup>                                        |
|                              |                                                                                   |                                                                                   | sm ⊕ 25 mm <sup>2</sup> - 150 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

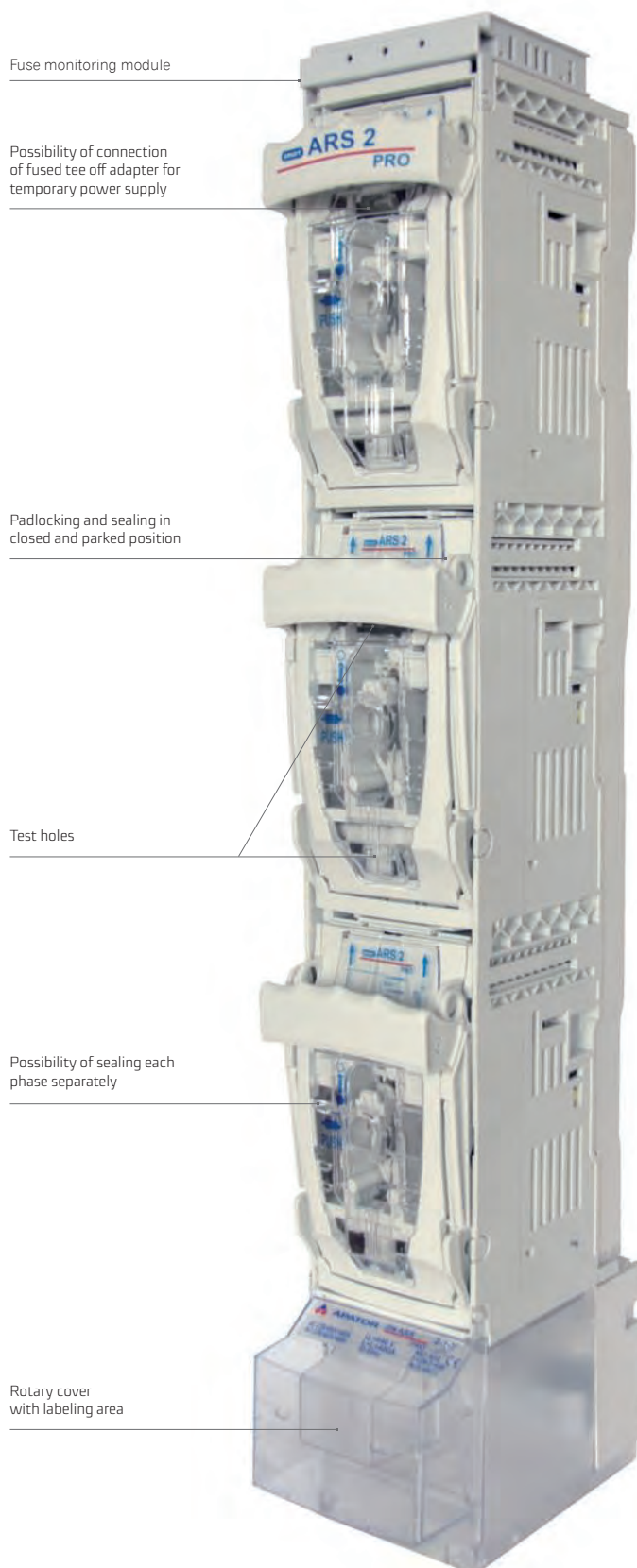
Apator takes responsibility for technical quality of V-terminals manufactured only by the company. Minimum tightening torque (M8 screw) for screws fixing fuse switch disconnector to busbar system – 12 Nm, recommended tightening torque for screws and nuts with property class 8.8 – 21 Nm.

## FUSE SWITCH DISCONNECTOR smartARS 2 pro (400 A, 690 V) smartARS 3 pro (630 A, 690 V)

For installation on to 185 mm busbar system

Fuse switch disconnecter's width 100 mm

3- pole switching - 3 phases simultaneously or 1-pole switching - each phase separately



## smartARS 2 pro (400 A, 690 V)

Fuse switch disconnecter designed for operation with NH1 and NH2 fuse links



smartARS 2-1-M pro

smartARS 2-6-M pro

Table 5. Technical data

| Parameter                                       |                  | smartARS 2 pro     |        |
|-------------------------------------------------|------------------|--------------------|--------|
| Rated thermal current $I_{th}$ with fuse links  | A                | 250(NH1), 400(NH2) |        |
| Rated thermal current $I_{th}$ with solid links | A                | 600                |        |
| Rated voltage $U_n$                             | V                | 690                |        |
| Utilization category                            | -                | AC-22B             | AC-23B |
| Rated switching voltage $U_e$                   | V                | 690                | 400    |
| Rated switching current $I_e$                   | A                | 250(NH1), 400(NH2) |        |
| Rated short circuit making current              | $U_e=690$ V      | kA                 | 100    |
|                                                 | $U_e=500$ V      | kA                 | 120    |
| Rated short circuit withstand current           | $U_e=690$ V      | kA                 | 100    |
|                                                 | $U_e=500$ V      | kA                 | 120    |
| Rated insulation voltage $U_i$                  | V                | 1000               |        |
| Rated impulse withstand voltage $U_{imp.}$      | kV               | 12                 |        |
| Rated frequency                                 | Hz               | 50-60              |        |
| Mechanical durability                           | Number of cycles | 1000               |        |
| Electrical durability                           |                  | 200                |        |
| IP degree of protection                         | -                | 30                 |        |
| Fuse links size                                 | -                | 1,2                |        |

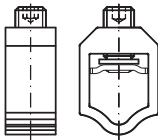
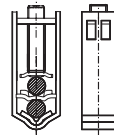
Accessories on page 54, 55

Table 6. Versions

| Version                                                                                                                                           |                                                                    | Weight | Article No.   |
|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|--------|---------------|
| <b>for installation on 185 mm busbar system, ONE POLE SWITCHING - each phase independently</b>                                                    |                                                                    |        |               |
| smartARS 2-1-V pro                                                                                                                                | cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>         | 5,8 kg | 63-001340-001 |
| smartARS 2-1-M pro                                                                                                                                | cable terminals: screw terminals: pressed nuts M12                 | 5,7 kg | 63-001340-003 |
| smartARS 2-1-2V pro                                                                                                                               | cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup> | 6,4 kg | 63-001340-005 |
| <b>for installation on 185 mm busbar system, THREE POLE SWITCHING - all phases simultaneously</b>                                                 |                                                                    |        |               |
| smartARS 2-6-V pro                                                                                                                                | cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>         | 5,8 kg | 63-001341-001 |
| smartARS 2-6-M pro                                                                                                                                | cable terminals: screw terminals: pressed nuts M12                 | 5,7 kg | 63-001341-003 |
| smartARS 2-6-2V pro                                                                                                                               | cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup> | 6,4 kg | 63-001341-005 |
| <b>smartARS 2 pro version equipped with modules for fast installation using PPN technology</b>                                                    |                                                                    |        |               |
| <b>for installation on 185 mm busbar system, fast installation modules equipped with screws, ONE POLE SWITCHING - each phase independently</b>    |                                                                    |        |               |
| smartARS 2-1-V SM pro                                                                                                                             | cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>         | 6,2 kg | 63-001340-201 |
| smartARS 2-1-M SM pro                                                                                                                             | cable terminals: screw terminals: pressed nuts M12                 | 6,1 kg | 63-001340-203 |
| smartARS 2-1-2V SM pro                                                                                                                            | cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup> | 6,8 kg | 63-001340-205 |
| <b>for installation on 185 mm busbar system, fast installation modules equipped with screws, THREE POLE SWITCHING - all phases simultaneously</b> |                                                                    |        |               |
| smartARS 2-6-V SM pro                                                                                                                             | cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>         | 6,2 kg | 63-001341-201 |
| smartARS 2-6-M SM pro                                                                                                                             | cable terminals: screw terminals: pressed nuts M12                 | 6,1 kg | 63-001341-203 |
| smartARS 2-6-2V SM pro                                                                                                                            | cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup> | 6,8 kg | 63-001341-205 |

| Version                                                                                                                                                  | Weight | Article No.   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------|
| <b>for installation on 185 mm busbar system, fast installation modules equipped with hooked clamps, ONE POLE SWITCHING - each phase independently</b>    |        |               |
| smartARS 2-1-V SMH pro    cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>                                                                     | 6,4 kg | 63-001340-401 |
| smartARS 2-1-M SMH pro    cable terminals: screw terminals: pressed nuts M12                                                                             | 6,3 kg | 63-001340-403 |
| smartARS 2-1-2V SMH pro    cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup>                                                            | 7,0 kg | 63-001340-405 |
| <b>for installation on 185 mm busbar system, fast installation modules equipped with hooked clamps, THREE POLE SWITCHING - all phases simultaneously</b> |        |               |
| smartARS 2-6-V SMH pro    cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>                                                                     | 6,4 kg | 63-001341-401 |
| smartARS 2-6-M SMH pro    cable terminals: screw terminals: pressed nuts M12                                                                             | 6,3 kg | 63-001341-403 |
| smartARS 2-6-2V SMH pro    cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup>                                                            | 7,0 kg | 63-001341-405 |

Table 7. smartARS 2 pro terminal clamps

| Description                   | smartARS 2-x-V pro                                                                               |                                                                                                  | smartARS 2-x-2V pro                                                                              |                                                                                                  | smartARS 2-x-2V pro                                                                                |                                                                                                    | smartARS 2-x-M pro                                                                  |
|-------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Clamp                         | V-clamp 35-300SW-B                                                                               |                                                                                                  | V-clamp 2/50-300SW-B                                                                             |                                                                                                  | V-clamp HS 2/50-240-C*                                                                             |                                                                                                    | M-screw M12**                                                                       |
| Picture of clamp              |                 |                                                                                                  |                 |                                                                                                  |                 |                                                                                                    |  |
| Cross – section of conductors | V-clamp for direct fixing of conductor with bare end with crosssection of                        |                                                                                                  |                                                                                                  |                                                                                                  |                                                                                                    |                                                                                                    | Lug terminal                                                                        |
|                               | 35 - 185 mm²  | 35 - 240 mm²  | 50 - 185 mm²  | 50 - 240 mm²  | 50 - 185 mm²  | 50 - 240 mm²  |                                                                                     |
|                               | 35 - 240 mm²  | 35 - 300 mm²  | 50 - 240 mm²  | 50 - 300 mm²  | 50 - 240 mm²  | 50 - 300 mm²  |                                                                                     |
| 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  
 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 – 32 Nm, recommended tightening torque for screws and nuts with property class 8.8 – 56 Nm.



## smartARS 3 pro (630 A, 690 V)



smartARS 3-1-M pro    smartARS 3-6-M pro

Table 8. Technical data

| Parameter                                       |                  | smartARS 3 pro |        |        |
|-------------------------------------------------|------------------|----------------|--------|--------|
| Rated thermal current $I_{th}$ with fuse links  | A                | 630            |        |        |
| Rated thermal current $I_{th}$ with solid links | A                | 750            |        |        |
| Rated voltage $U_n$                             | V                | 690            |        |        |
| Utilization category                            | -                | AC-23B         | AC-22B | AC-21B |
| Rated switching voltage $U_e$                   | V                | 400            | 500    | 690    |
| Rated switching current $I_e$                   | A                | 630            |        |        |
| Rated short circuit making current              | 690 V            | 80             |        |        |
|                                                 | 500 V            | 120            |        |        |
| Rated short circuit withstand current           | kA               | 100            |        |        |
| Rated insulation voltage $U_i$                  | V                | 1000           |        |        |
| Rated impulse withstand voltage $U_{imp}$       | kV               | 12             |        |        |
| Rated frequency                                 | Hz               | 50-60          |        |        |
| Mechanical durability                           | Number of cycles | 1000           |        |        |
| Electrical durability                           |                  | 200            |        |        |
| IP degree of protection                         | -                | 30             |        |        |
| Fuse links size                                 | -                | 3              |        |        |

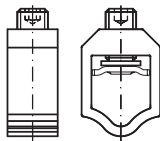
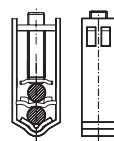
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Table 9. Versions

| Version                                                                                                                                               |                                                                    | Weight | Article No.   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|--------|---------------|
| <b>for installation on 185 mm busbar system, ONE POLE SWITCHING - each phase independently</b>                                                        |                                                                    |        |               |
| smartARS 3-1-V pro                                                                                                                                    | cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>         | 6,6 kg | 63-001340-002 |
| smartARS 3-1-M pro                                                                                                                                    | cable terminals: screw terminals: pressed nuts M12                 | 6,5 kg | 63-001340-004 |
| smartARS 3-1-2V pro                                                                                                                                   | cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup> | 7,2 kg | 63-001340-006 |
| <b>for installation on 185 mm busbar system, THREE POLE SWITCHING - all phases simultaneously</b>                                                     |                                                                    |        |               |
| smartARS 3-6-V pro                                                                                                                                    | cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>         | 6,6 kg | 63-001341-002 |
| smartARS 3-6-M pro                                                                                                                                    | cable terminals: screw terminals: pressed nuts M12                 | 6,5 kg | 63-001341-004 |
| smartARS 3-6-2V pro                                                                                                                                   | cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup> | 7,2 kg | 63-001341-006 |
| <b>smartARS 2 pro version equipped with modules for fast installation using PPN technology</b>                                                        |                                                                    |        |               |
| <b>for installation on 185 mm busbar system, fast installation modules equipped with screws, ONE POLE SWITCHING - each phase independently</b>        |                                                                    |        |               |
| smartARS 3-1-V SM pro                                                                                                                                 | cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>         | 7,0 kg | 63-001340-202 |
| smartARS 3-1-M SM pro                                                                                                                                 | cable terminals: screw terminals: pressed nuts M12                 | 6,9 kg | 63-001340-204 |
| smartARS 3-1-2V SM pro                                                                                                                                | cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup> | 7,6 kg | 63-001340-206 |
| <b>for installation on 185 mm busbar system, fast installation modules equipped with screws, THREE POLE SWITCHING - all phases simultaneously</b>     |                                                                    |        |               |
| smartARS 3-6-V SM pro                                                                                                                                 | cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>         | 7,0 kg | 63-001341-202 |
| smartARS 3-6-M SM pro                                                                                                                                 | cable terminals: screw terminals: pressed nuts M12                 | 6,9 kg | 63-001341-204 |
| smartARS 3-6-2V SM pro                                                                                                                                | cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup> | 7,6 kg | 63-001341-206 |
| <b>for installation on 185 mm busbar system, fast installation modules equipped with hooked clamps, ONE POLE SWITCHING - each phase independently</b> |                                                                    |        |               |
| smartARS 3-1-V SMH pro                                                                                                                                | cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>         | 7,2 kg | 63-001340-402 |
| smartARS 3-1-M SMH pro                                                                                                                                | cable terminals: screw terminals: pressed nuts M12                 | 7,1 kg | 63-001340-404 |
| smartARS 3-1-2V SMH pro                                                                                                                               | cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup> | 7,8 kg | 63-001340-406 |

| Version                                                                                                                                                  | Weight | Article No.   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------|
| <b>for installation on 185 mm busbar system, fast installation modules equipped with hooked clamps, THREE POLE SWITCHING - all phases simultaneously</b> |        |               |
| smartARS 3-6-V SMH pro cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>                                                                        | 7,2 kg | 63-001341-402 |
| smartARS 3-6-M SMH pro cable terminals: screw terminals: pressed nuts M12                                                                                | 7,1 kg | 63-001341-404 |
| smartARS 3-6-2V SMH pro cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup>                                                               | 7,8 kg | 63-001341-406 |

Table 10. smartARS 3 pro terminal clamps

| Description                   | smartARS 3-x-V pro                                                                             |                                                                                                | smartARS 3-x-2V pro                                                                            |                                                                                                | smartARS 3-x-2V pro                                                                              |                                                                                                  | smartARS 3-x-M pro                                                                  |
|-------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Clamp                         | V-clamp 35-300SW-B                                                                             |                                                                                                | V-clamp 2/50-300SW-B                                                                           |                                                                                                | V-clamp HS 2/50-240-C*                                                                           |                                                                                                  | M-screw M12**                                                                       |
| Picture of clamp              |               |                                                                                                |               |                                                                                                |               |                                                                                                  |  |
| Cross – section of conductors | V-clamp for direct fixing of conductor with bare end with crosssection of                      |                                                                                                |                                                                                                |                                                                                                |                                                                                                  |                                                                                                  | Lug terminal                                                                        |
|                               | 35 - 185 mm²  | 35 - 240 mm²  | 50 - 185 mm²  | 50 - 240 mm²  | 50 - 185 mm²  | 50 - 240 mm²  |                                                                                     |
|                               | 35 - 240 mm²  | 35 - 300 mm²  | 50 - 240 mm²  | 50 - 300 mm²  | 50 - 240 mm²  | 50 - 300 mm²  |                                                                                     |
| Tightening torque             | 30 Nm                                                                                          |                                                                                                | 30 Nm                                                                                          |                                                                                                | 40 Nm                                                                                            |                                                                                                  | 56 Nm                                                                               |

For stranded conductors using cable ferrules is recommended

\*)if the fuse switch disconnecter 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

Apator takes responsibility for technical quality of V-terminals manufactured only by the company. Minimum tightening torque (M8 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.

## FUSE SWITCH DISCONNECTOR smartARS pro with lateral busbar terminals

(separation, coupling of busbar systems)



smartARS 2-1-NR pro

Table 11. Technical data

| Parameter                                             |       |    | smartARS 2 pro   | smartARS 3 pro |       |
|-------------------------------------------------------|-------|----|------------------|----------------|-------|
| Rated thermal current I <sub>th</sub> with fuse links |       |    | A                | 400            | 630   |
| Rated voltage U <sub>n</sub>                          |       |    | V                | 690            | 690   |
| Utilization category                                  | 690 V | -  | AC-22B           | AC-21B         |       |
|                                                       | 500 V |    |                  | AC-22B         |       |
|                                                       | 400 V |    | AC-23B           | -              |       |
| Rated switching current I <sub>e</sub>                |       |    | A                | 400            | 630   |
| Rated short circuit making current                    | 600 V | kA | 100              | 80             |       |
|                                                       | 500 V |    | 120              | 120            |       |
|                                                       | 400 V |    |                  |                |       |
| Rated short circuit withstand current                 | 600 V | kA | 100              | 80             |       |
|                                                       | 500 V |    | 120              | 120            |       |
|                                                       | 400 V |    |                  |                |       |
| Rated insulation voltage U <sub>i</sub>               |       |    | V                | 1000           | 1000  |
| Rated impulse withstand voltage U <sub>imp</sub>      |       |    | kV               | 12             | 12    |
| Rated frequency                                       |       |    | Hz               | 50-60          | 50-60 |
| Mechanical durability                                 |       |    | Number of cycles | 1000           | 1000  |
| Electrical durability                                 |       |    |                  | 200            | 200   |
| IP degree of protection                               |       |    | -                | 30             | 30    |
| Fuse links size                                       |       |    | -                | 1,2            | 3     |

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Table 12. Versions with lateral busbar terminals

| Version                                                                                           |                                                                                             | Weight | Article No.   |
|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------|---------------|
| <b>Fuse switch disconnectors smartARS 2 pro - 400A</b>                                            |                                                                                             |        |               |
| <b>for installation on 185 mm busbar system, ONE POLE SWITCHING - each phase independently</b>    |                                                                                             |        |               |
| smartARS 2-1 NL pro                                                                               | cable terminals : screw terminals : pressed nuts M12; lateral busbar terminals - left side  | 5,1 kg | 63-002045-001 |
| smartARS 2-1 NR pro                                                                               | cable terminals : screw terminals : pressed nuts M12; lateral busbar terminals - right side | 5,1 kg | 63-002045-003 |
| <b>for installation on 185 mm busbar system, THREE POLE SWITCHING - all phases simultaneously</b> |                                                                                             |        |               |
| smartARS 2-6 NL pro                                                                               | cable terminals : screw terminals : pressed nuts M12; lateral busbar terminals - left side  | 5,1 kg | 63-002046-001 |
| smartARS 2-6 NR pro                                                                               | cable terminals : screw terminals : pressed nuts M12; lateral busbar terminals - right side | 5,1 kg | 63-002046-003 |
| <b>Fuse switch disconnectors smartARS 3 pro - 630 A</b>                                           |                                                                                             |        |               |
| <b>for installation on 185 mm busbar system, ONE POLE SWITCHING - each phase independently</b>    |                                                                                             |        |               |
| smartARS 3-1 NL pro                                                                               | cable terminals : screw terminals : pressed nuts M12; lateral busbar terminals - left side  | 5,9 kg | 63-002045-002 |
| smartARS 3-1 NR pro                                                                               | cable terminals : screw terminals : pressed nuts M12; lateral busbar terminals - right side | 5,9 kg | 63-002045-004 |
| <b>for installation on 185 mm busbar system, THREE POLE SWITCHING - all phases simultaneously</b> |                                                                                             |        |               |
| smartARS 3-6 NL pro                                                                               | cable terminals : screw terminals : pressed nuts M12; lateral busbar terminals - left side  | 5,9 kg | 63-002046-002 |
| smartARS 3-6 NR pro                                                                               | cable terminals : screw terminals : pressed nuts M12; lateral busbar terminals - right side | 5,9 kg | 63-002046-004 |

Table 13. smartARS 2,3 pro with lateral busbar terminals - terminal clamps

| Description              | smartARS 2-x-NL pro                                                                 | smartARS 2-x-NR pro | smartARS 3-x-NL pro | smartARS 3-x-NR pro |
|--------------------------|-------------------------------------------------------------------------------------|---------------------|---------------------|---------------------|
| Clamp                    | screw M12                                                                           | screw M12           | screw M12           | screw M12           |
| Picture of clamp         |  |                     |                     |                     |
| Lateral busbar terminals | Left side                                                                           | Right side          | Left side           | Right side          |
| Tightening torque        | 56 Nm                                                                               | 56 Nm               | 56 Nm               | 56 Nm               |

## Fuse monitoring module

The fuse switch disconnecter can be equipped with device that allows indication of the current state of the fuse links. Information about fuse link burnout, correct operation or power failure are indicated by diode light signal or can be transferred to any automation protection system, through the relay contacts.

### Description of operation of the fuse monitoring module

- diode is green - correct operation, fuse link works correctly
- diode is red - failure, fuse link operated
- diode is red; blinking - phase shift (another phase voltage was detected at the fuse link outgoing contact)
- diodes off - module switched off / no power supply

### Nominal parameters

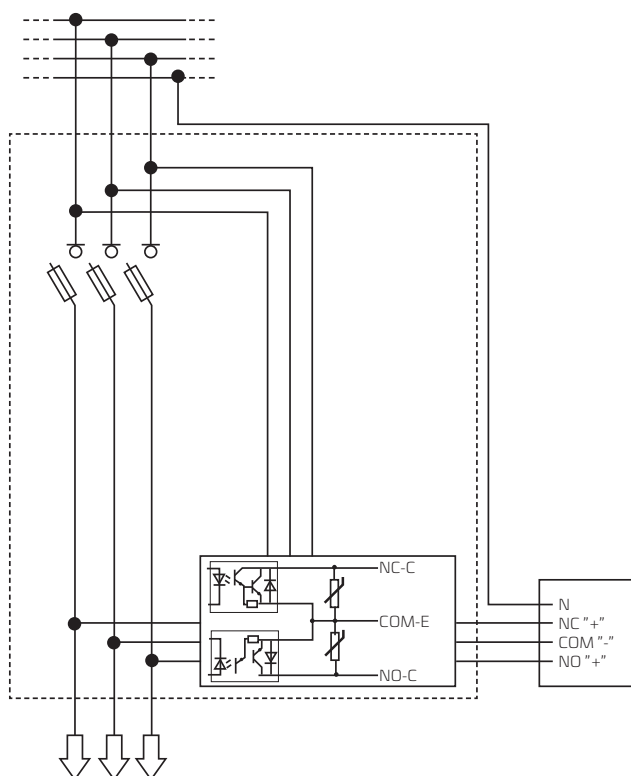
- |                                                               |             |
|---------------------------------------------------------------|-------------|
| • Voltage value for cable test                                | 2,5 kV DC   |
| • Minimum operating voltage                                   | 200 V       |
| • Maximum operating voltage                                   | 690 V       |
| • $U_{imp}$ impulse withstand voltage with operated fuse link | 4 kV        |
| • $U_{imp}$ between phases                                    | 4 kV        |
| • $U_{imp}$ between main circuit / relay contacts             | 3,5 kV      |
| • Temperature range                                           | -40...+85°C |
| • Rated insulation voltage $U_i$                              | 1000 V      |



smartARS 2-1-M-X pro    smartARS 00-1-V-X-E pro

### Module outputs:

- |                             |         |
|-----------------------------|---------|
| • Rated current             | 100 mA  |
| • Maximum switching voltage | 50 V DC |



| Fuse links state (resultant) | output NO | output NC | diode colour |
|------------------------------|-----------|-----------|--------------|
| correct operation            | „0“ (0V)  | „1“ (24V) | green        |
| failure                      | „1“ (24V) | „0“ (0V)  | red          |

The transport outputs can be supplied with a DC voltage of up to 50 V with current limitation to max. 100mA

Minus should be connected directly to the common terminal, outputs should be connected through the load to the plus.

Table 14. Versions with electronic fuse monitoring module

| Version                                                                                                                                                  | Weight | Article No.   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------|
| <b>Fuse switch disconnectors smartARS 00 pro - 160A</b>                                                                                                  |        |               |
| <b>for installation on 185 mm busbar system, ONE POLE SWITCHING - each phase independently</b>                                                           |        |               |
| smartARS 00-1-V-X-E pro cable terminals: V-terminals: V-clamps 25-150SW + hooked clamps                                                                  | 3,1 kg | 63-001606-201 |
| <b>Fuse switch disconnectors smartARS 2 pro - 400A</b>                                                                                                   |        |               |
| <b>for installation on 185 mm busbar system, ONE POLE SWITCHING - each phase independently</b>                                                           |        |               |
| smartARS 2-1-V-X pro cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>                                                                          | 5,9 kg | 63-001340-601 |
| smartARS 2-1-M-X pro cable terminals: screw terminals: pressed nuts M12                                                                                  | 5,8 kg | 63-001340-603 |
| smartARS 2-1-2V-X pro cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup>                                                                 | 6,5 kg | 63-001340-605 |
| smartARS 2-1-V-X-E pro cable terminals: V-terminals + M12 screws for fixing to busbar system                                                             | 6,0 kg | 63-811830-201 |
| <b>for installation on 185 mm busbar system, THREE POLE SWITCHING - all phases simultaneously</b>                                                        |        |               |
| smartARS 2-6-V-X pro cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>                                                                          | 5,9 kg | 63-001341-601 |
| smartARS 2-6-M-X pro cable terminals: screw terminals: pressed nuts M12                                                                                  | 5,8 kg | 63-001341-603 |
| smartARS 2-6-2V-X pro cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup>                                                                 | 6,5 kg | 63-001341-605 |
| <b>smartARS 2 pro version equipped with modules for fast installation using PPN technology</b>                                                           |        |               |
| <b>for installation on 185 mm busbar system, fast installation modules equipped with screws, ONE POLE SWITCHING - each phase independently</b>           |        |               |
| smartARS 2-1-V SM-X pro cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>                                                                       | 6,3 kg | 63-001340-701 |
| smartARS 2-1-M SM-X pro cable terminals: screw terminals: pressed nuts M12                                                                               | 6,2 kg | 63-001340-703 |
| smartARS 2-1-2V SM-X pro cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup>                                                              | 6,9 kg | 63-001340-705 |
| <b>for installation on 185 mm busbar system, fast installation modules equipped with screws, THREE POLE SWITCHING - all phases simultaneously</b>        |        |               |
| smartARS 2-6-V SM-X pro cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>                                                                       | 6,5 kg | 63-001341-701 |
| smartARS 2-6-M SM-X pro cable terminals: screw terminals: pressed nuts M12                                                                               | 6,4 kg | 63-001341-703 |
| smartARS 2-6-2V SM-X pro cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup>                                                              | 6,9 kg | 63-001341-705 |
| <b>for installation on 185 mm busbar system, fast installation modules equipped with hooked clamps, ONE POLE SWITCHING - each phase independently</b>    |        |               |
| smartARS 2-1-V SMH-X pro cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>                                                                      | 6,5 kg | 63-001340-801 |
| smartARS 2-1-M SMH-X pro cable terminals: screw terminals: pressed nuts M12                                                                              | 6,4 kg | 63-001340-803 |
| smartARS 2-1-2V SMH-X pro cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup>                                                             | 6,9 kg | 63-001340-805 |
| <b>for installation on 185 mm busbar system, fast installation modules equipped with hooked clamps, THREE POLE SWITCHING - all phases simultaneously</b> |        |               |
| smartARS 2-6-V SMH-X pro cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>                                                                      | 6,5 kg | 63-001341-801 |
| smartARS 2-6-M SMH-X pro cable terminals: screw terminals: pressed nuts M12                                                                              | 6,4 kg | 63-001341-803 |
| smartARS 2-6-2V SMH-X pro cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup>                                                             | 6,9 kg | 63-001341-805 |



| Fuse switch disconnectors smartARS 3 pro - 630A                                                                                                   |                                                                    |        |               |
|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|--------|---------------|
| for installation on 185 mm busbar system, ONE POLE SWITCHING - each phase independently                                                           |                                                                    |        |               |
| smartARS 3-1-V-X pro                                                                                                                              | cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>         | 6,7 kg | 63-001340-602 |
| smartARS 3-1-M-X pro                                                                                                                              | cable terminals: screw terminals: pressed nuts M12                 | 6,6 kg | 63-001340-604 |
| smartARS 3-1-2V-X pro                                                                                                                             | cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup> | 7,3 kg | 63-001340-606 |
| for installation on 185 mm busbar system, THREE POLE SWITCHING - all phases simultaneously                                                        |                                                                    |        |               |
| smartARS 3-6-V-X pro                                                                                                                              | cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>         | 6,7 kg | 63-001341-602 |
| smartARS 3-6-M-X pro                                                                                                                              | cable terminals: screw terminals: pressed nuts M12                 | 6,6 kg | 63-001341-604 |
| smartARS 3-6-2V-X pro                                                                                                                             | cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup> | 7,3 kg | 63-001341-606 |
| smartARS 3 pro version equipped with modules for fast installation using PPN technology                                                           |                                                                    |        |               |
| for installation on 185 mm busbar system, fast installation modules equipped with screws, ONE POLE SWITCHING - each phase independently           |                                                                    |        |               |
| smartARS 3-1-V SM-X pro                                                                                                                           | cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>         | 7,1 kg | 63-001340-702 |
| smartARS 3-1-M SM-X pro                                                                                                                           | cable terminals: screw terminals: pressed nuts M12                 | 7,0 kg | 63-001340-704 |
| smartARS 3-1-2V SM-X pro                                                                                                                          | cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup> | 7,7 kg | 63-001340-706 |
| for installation on 185 mm busbar system, fast installation modules equipped with screws, THREE POLE SWITCHING - all phases simultaneously        |                                                                    |        |               |
| smartARS 3-6-V SM-X pro                                                                                                                           | cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>         | 7,1 kg | 63-001341-702 |
| smartARS 3-6-M SM-X pro                                                                                                                           | cable terminals: screw terminals: pressed nuts M12                 | 7,0 kg | 63-001341-704 |
| smartARS 3-6-2V SM-X pro                                                                                                                          | cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup> | 7,7 kg | 63-001341-706 |
| for installation on 185 mm busbar system, fast installation modules equipped with hooked clamps, ONE POLE SWITCHING - each phase independently    |                                                                    |        |               |
| smartARS 3-1-V SMH-X pro                                                                                                                          | cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>         | 7,3 kg | 63-001340-802 |
| smartARS 3-1-M SMH-X pro                                                                                                                          | cable terminals: screw terminals: pressed nuts M12                 | 7,2 kg | 63-001340-804 |
| smartARS 3-1-2V SMH-X pro                                                                                                                         | cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup> | 7,9 kg | 63-001340-806 |
| for installation on 185 mm busbar system, fast installation modules equipped with hooked clamps, THREE POLE SWITCHING - all phases simultaneously |                                                                    |        |               |
| smartARS 3-6-V SMH-X pro                                                                                                                          | cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>         | 7,3 kg | 63-001341-802 |
| smartARS 3-6-M SMH-X pro                                                                                                                          | cable terminals: screw terminals: pressed nuts M12                 | 7,2 kg | 63-001341-804 |
| smartARS 3-6-2V SMH-X pro                                                                                                                         | cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup> | 7,9 kg | 63-001341-806 |



# ARS pro

## vertical fuse switch disconnectors

- fibre glass extra strenghtened, self extinguishing
- thermoplastics of VO flammability class
- double clearance between open contacts
- arc chambers with deionization plates over every contact
- reversibility - top/bottom cable terminal connection
- wide range of accesories

## GENERAL INFORMATION

**ARS pro** vertical fuse switch disconnectors are designed for distribution of electricity and protection against short circuits and overloads in three phase alternative current circuits. They are intended for direct installation on horizontal or vertical busbar systems.

**ARS pro** fuse switch disconnectors meet technical requirements of electricity boards and are conforming to EN 60947-1, EN 60947-3, IEC 60947-1, IEC 60947-3 standards. **ARS pro** fuse switch disconnectors are dedicated for applications which require reliability and safety like low voltage distribution boards installed in transformer substations, industrial low voltage distribution boards and cable cabinets.

Removal of the fuse links provides clearly noticeable, large isolating distances in the circuit.

**ARS pro** fuse switch disconnectors are designed to perform the following functions:

- protection,
- energy distribution,
- earthing,
- switching,
- touch protection.

## CONSTRUCTION

**ARS pro** fuse switch disconnectors are manufactured in two versions:

- one pole switching (separately each pole),
- three pole switching (three poles at the same time).

**ARS pro** fuse switch disconnectors have manually operated handle therefore making and breaking operations should be done with determined movement.

**ARS pro** fuse switch disconnectors are available in following sizes (according to rated current): 00 (160 A); 2 (400 A); also available are versions 910A and 1250A.

**ARS pro** fuse switch disconnectors (size 2-400A; 910A ; 1250A) are designed for installation on 185 mm busbar system. ARS 00/100 mm pro fuse switch disconnector (size 00) is designed for installation on 100 mm busbar system.

By using the adapter, it is possible to mount the ARS 00 / 100mm pro switch disconnector on busbar system with a spacing of 185 mm.

All plastic parts of fuse switch disconnector **ARS pro** are made of halogen free, fibre glass strengthened, self extinguishing materials. Thanks to the application of flame retardants the highest flammability class – V0 was achieved. Fuse switch disconnectors made from such thermoplastics self-extinguish in specified time after ignition source is removed. Also dripping of flaming parts of plastic does not occur.

Silver plated contacts provide low power loss. Depending on clamp type, **ARS pro** fuse switch disconnectors enable user to connect circular or sector-shaped conductors with bare ends or conductors with lug terminals. Arc chambers equipped with steel deionization plates are installed over each contact. **ARS pro** fuse switch disconnectors are designed for using current transformers and ammeters. Protection degree of IP30 from the front is provided. In opened position **ARS pro** provide protection degree IP20. Additionally offered accessories enable to install **ARS pro** fuse switch disconnectors of different sizes on common busbar systems and facilitate operation. All sizes of **ARS pro** fuse switch disconnectors are provided complete with clamps (i. e. screws, V-terminals, 2V-terminals) and shrouds for cable terminals.

Table 15. Technical data ARS pro

| Parameter                                             |                     | ARS<br>00/60<br>mm pro | ARS<br>00/100<br>mm pro | ARS<br>400<br>pro | ARS<br>630<br>pro | ARS<br>630 kVA<br>pro        | RWS<br>600<br>pro  | RWS<br>750<br>pro  | RWS<br>1250<br>pro            | ARS<br>1250<br>pro |
|-------------------------------------------------------|---------------------|------------------------|-------------------------|-------------------|-------------------|------------------------------|--------------------|--------------------|-------------------------------|--------------------|
| Rated thermal current $I_{th}=I_n$<br>with fuse links | A                   | 160                    | 160                     | 400               | 630               | 910                          | -                  | -                  | -                             | 1250               |
| Rated thermal current $I_{th}$<br>with solid links    | A                   | -                      | -                       | -                 | -                 | -                            | 600                | 750                | 1250                          | -                  |
| Rated voltage $U_n$                                   | V                   | 690                    | 690                     | 690               | 690               | 400                          | 690                | 500                | 400                           | 400                |
| Utilization category                                  | 690 V               | AC-22B                 | AC-22B                  | AC-22B            | AC-22B            | -                            | AC-22B             | -                  | -                             | -                  |
|                                                       | 500 V               | -                      | -                       | -                 | -                 | -                            |                    | -                  | -                             | -                  |
|                                                       | 400 V               | AC-23B                 | AC-23B                  | -                 | -                 | AC-22B                       |                    | AC-22B             | AC-22B                        | AC-21B             |
| Rated switching current $I_e$                         | A                   | 160                    | 160                     | 400               | 630               | 910                          | 600                | 750                | 1250                          | 1250               |
| Rated short-circuit<br>making current                 | 690 V               | kA                     | 80                      | 25                | 100               | 100                          | -                  | -                  | -                             | -                  |
|                                                       | 500 V               |                        | 120                     |                   | 120               | 120                          | -                  | -                  | -                             | -                  |
|                                                       | 400 V               |                        | -                       |                   | -                 | 50                           | -                  | -                  | -                             | 100                |
| Rated short-circuit<br>withstand current              | 690 V               | kA                     | 80                      | 100               | 100               | 100                          | -                  | -                  | -                             | -                  |
|                                                       | 500 V               |                        | 120                     |                   | 120               | 120                          | -                  | -                  | -                             | -                  |
|                                                       | 400 V               |                        | -                       |                   | -                 | 50                           | -                  | -                  | -                             | 100                |
| Rated insulation voltage $U_i$                        | V                   | 1000                   | 1000                    | 1000              | 1000              | 1000                         | 1000               | 1000               | 1000                          | 1000               |
| Rated impulse withstand voltage $U_{imp}$             | kV                  | 8                      | 8                       | 12                | 12                | 12                           | 12                 | 12                 | 12                            | 12                 |
| Rated short time withstand current $I_{cw}$           | kA                  | -                      | -                       | -                 | -                 | -                            | 15 <sup>3)</sup>   | 15 <sup>3)</sup>   | 15/20 <sup>2)</sup>           | -                  |
| Rated frequency                                       | Hz                  | 50-60                  | 50-60                   | 50-60             | 50-60             | 50-60                        | 50-60              | 50-60              | 50-60                         | 50-60              |
| Mechanical durability                                 | Number<br>of cycles | 1600                   | 1600                    | 1000              | 1000              | 600                          | 1000               | 1000               | 600                           | 600                |
| Electrical durability                                 |                     | 200                    | 200                     | 200               | 200               | 100                          | 200                | 200                | 100                           | 100                |
| IP degree of protection                               | IP                  | 30                     | 30                      | 30                | 30                | 30                           | 30                 | 30                 | 30                            | 30                 |
| Fuse links size                                       | -                   | 00                     | 00                      | 1,2               | 3                 | gTr<br>630 kVA <sup>1)</sup> | solid-links<br>ZN2 | solid-links<br>ZN3 | solid-links<br>ZN3<br>-1250 A | 3                  |

<sup>1)</sup> fuse link gTr 630 kVA, DIN 43620, VDE 0636/2011, size NH3

<sup>2)</sup> with mechanical lock

<sup>3)</sup> use of mechanical lock recommended

## 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,
- relative humidity of the air should not be higher than 50% at temperature of +40°.

## FUNCTIONALITY

- making and breaking operations should be done with determined movement,
- parallelly moving, double contact system,
- designed for installation on to 60 mm, 100 mm or 185 mm busbar system,
- two versions: single pole switching (separately each pole) or triple pole switching (three poles at the same time),
- width 50 mm (ARS 00/60 mm pro, ARS 00/100 mm pro); width 100 mm (ARS 400 pro, ARS 630 pro, RWS 600 pro, RWS 750 pro, RWS 1250 pro) or 200 mm (ARS 1250 pro),
- suitable for top cable terminal connection,
- possible connection of conductors with lug terminals (screw terminals) or circular/sector-shaped conductors with bare ends (V-terminals, 2V-terminals) using V-clamps,
- voltage test is performed through test holes leading to blade contacts,
- possible installation of various types of earthing devices.

## FUSE SWITCH DISCONNECTOR ARS 00/60 mm pro (160 A, 690 V)

Table 16. Technical data

| Parameter                                 |       | ARS 00/60 mm pro |        |        |
|-------------------------------------------|-------|------------------|--------|--------|
| Rated thermal current $I_{th}=I_n$        |       | A                | 160    |        |
| Rated voltage $U_n$                       |       | V                | 690    |        |
| Utilization category                      |       | -                | AC-22B | AC-23B |
| Rated switching voltage $U_e$             |       | V                | 690    | 400    |
| Rated switching current $I_e$             |       | A                | 160    |        |
| Rated short circuit making current        | 690 V | kA               | 80     |        |
|                                           | 500 V |                  | 120    |        |
| Rated short circuit withstand current     | 690 V | kA               | 80     |        |
|                                           | 500 V |                  | 120    |        |
| Rated insulation voltage $U_i$            |       | V                | 1000   |        |
| Rated impulse withstand voltage $U_{imp}$ |       | kV               | 8      |        |
| Rated frequency                           |       | Hz               | 50-60  |        |
| Mechanical durability                     |       | Number of cycles | 1600   |        |
| Electrical durability                     |       |                  | 200    |        |
| IP degree of protection                   |       | IP               | 30     |        |
| Fuse links size                           |       | -                | 00     |        |

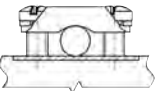
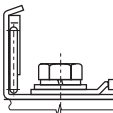


ARS 00/60 mm pro

Table 17. Versions

| APASYS 60 | Version of ARS 00/60 mm pro                                                                          |                                                                                                                 | Article No.   |
|-----------|------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|---------------|
|           | <b>three pole switching - all phases simultaneously (for installation on to 60 mm busbar system)</b> |                                                                                                                 |               |
|           | ARS 00/60 mm pro                                                                                     | cable terminals: bridge terminals with bridge clamps (S) 4-70 mm <sup>2</sup><br>screw terminals with M8 screws | 63-002354-001 |
|           | ARS 00/60 mm-T pro                                                                                   | cable terminals: frame clamps 2,5-70 mm <sup>2</sup>                                                            | 63-002354-002 |

Table 18. ARS 00/60 mm pro terminal clamps

| Description                 | ARS 00/60 mm pro                                                                    |                                                                                     |                                                                                              |
|-----------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Clamp                       | S-bridge clamp 2 x M5 x 20                                                          | screw M8*                                                                           | frame clamps                                                                                 |
| Picture of clamp            |  |  |         |
| Drawing of clamp            |  |  |         |
| Cross-section of conductors | 4 - 70 mm <sup>2</sup>                                                              | Conductor with lug terminal max 95 mm <sup>2</sup>                                  | 2,5 - 70 mm <sup>2</sup>                                                                     |
| Tightening torque           | 3 Nm**                                                                              | 10 Nm**                                                                             |  6 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 DISCONNECTOR ARS 00/100 mm pro (160 A, 690 V)

For installation on to 100 mm busbar system

Fuse switch disconnectors width 50 mm

Three pole switching - all phases simultaneously

ARS 00/100 mm pro





## ARS 00/100 mm pro (160 A, 690 V)

Table 19. Technical data

| Parameter                                 | ARS 00/100 mm pro |               |
|-------------------------------------------|-------------------|---------------|
| Rated thermal current $I_{th}=I_n$        | A                 | 160           |
| Rated voltage $U_n$                       | V                 | 690           |
| Utilization category                      | -                 | AC-22B AC-23B |
| Rated switching voltage $U_e$             | V                 | 690 400       |
| Rated switching current $I_e$             | A                 | 160           |
| Rated short circuit making current        | kA                | 25            |
| Rated short circuit withstand current     | kA                | 100           |
| Rated insulation voltage $U_i$            | V                 | 1000          |
| Rated impulse withstand voltage $U_{imp}$ | kV                | 8             |
| Rated frequency                           | Hz                | 50-60         |
| Mechanical durability                     | Number of cycles  | 1600          |
| Electrical durability                     |                   | 200           |
| IP degree of protection                   | -                 | 30            |
| Fuse links size                           | -                 | 00            |

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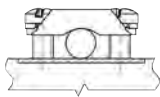
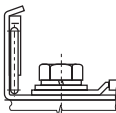
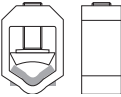


ARS 00/100 mm pro

Table 20. Versions

| Version                                                                                               | Weight                                                                                                         | Article No.          |
|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------|
| <b>three pole switching - all phases simultaneously (for installation on to 100 mm busbar system)</b> |                                                                                                                |                      |
| ARS 00/100 mm pro                                                                                     | cable terminals: bridge terminals with bridge clamps (S) 4-70 mm <sup>2</sup> , screw terminals with M8 screws | 1,3 kg 63-811628-041 |
| ARS 00/100 mm-V pro                                                                                   | cable terminals: V-terminals with V-clamps 25-150 SW                                                           | 1,5 kg 63-811628-061 |

Table 21. ARS 00/100 mm pro terminal clamps

| Description                 | ARS 00/100 mm pro                                                                   |                                                                                     |                                                                                                                                                                                                |                                                                                                                                                                                               |
|-----------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Clamp                       | S-bridge clamp<br>2 x M5 x 20                                                       | screw M8*                                                                           | 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<br>max 185 mm <sup>2</sup>                              | re ● 16 mm <sup>2</sup> - 95 mm <sup>2</sup><br>se ◆ 25 mm <sup>2</sup> - 150 mm <sup>2</sup><br>rm ⊗ 16 mm <sup>2</sup> - 95 mm <sup>2</sup><br>sm ⊞ 25 mm <sup>2</sup> - 150 mm <sup>2</sup> | re ● 10 mm <sup>2</sup> - 70 mm <sup>2</sup><br>se ◆ 20 mm <sup>2</sup> - 120 mm <sup>2</sup><br>rm ⊗ 10 mm <sup>2</sup> - 70 mm <sup>2</sup><br>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.

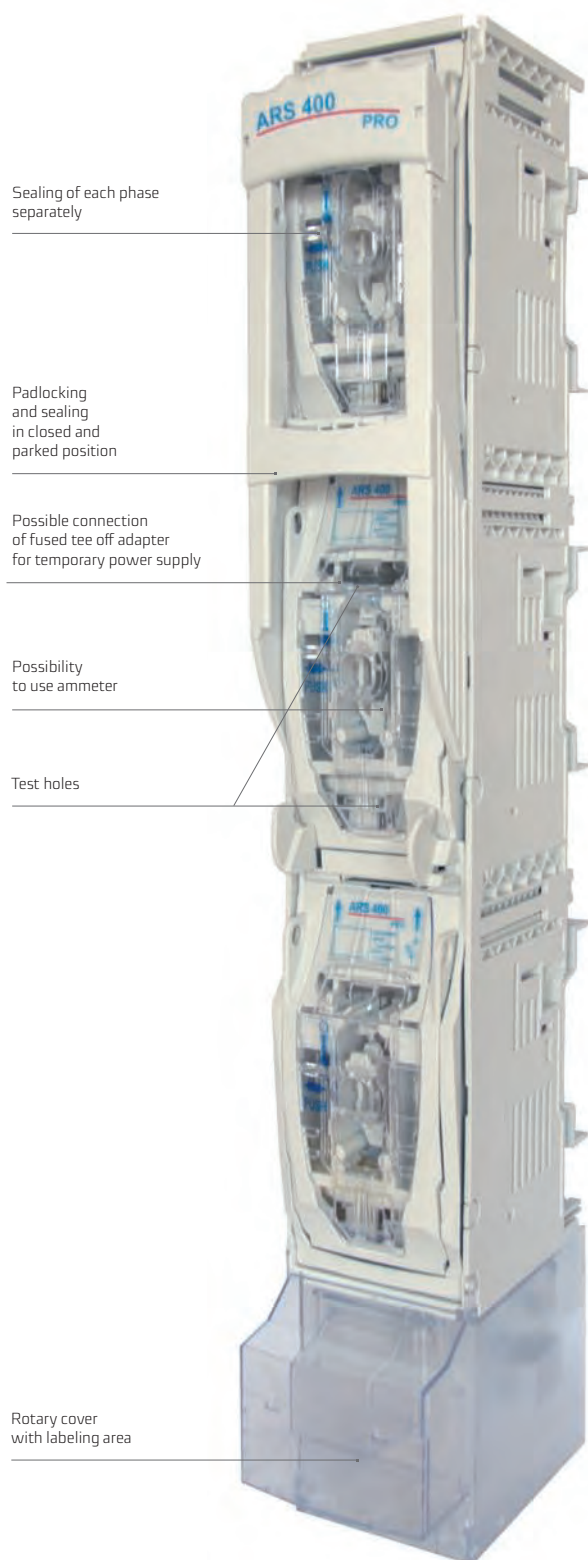
## FUSE SWITCH DISCONNECTOR    ARS 400 pro (400 A, 690 V) ARS 630 pro (630 A, 690 V)

For installation on to 185 mm busbar system

Fuse switch disconnectors' width 100 mm

Three pole switching - all phases simultaneously or one pole switching - each phase independently

ARS 400 pro, ARS 630 pro



## FUSE SWITCH DISCONNECTOR ARS 400 pro (400 A, 690 V)

Designed for operation with NH1 and NH2 fuse links

Table 22. Technical data

| Parameter                                 |                  | ARS 400 pro        |
|-------------------------------------------|------------------|--------------------|
| Rated thermal current $I_{th}=I_n$        | A                | 250(NH1), 400(NH2) |
| Rated voltage $U_n$                       | V                | 690                |
| Utilization category                      | -                | AC-22B             |
| Rated switching voltage $U_e$             | V                | 690                |
| Rated switching current $I_e$             | A                | 250(NH1), 400(NH2) |
| Rated short circuit making current        | 690 V            | 100                |
|                                           | 500 V            | 120                |
| Rated short circuit withstand current     | 690 V            | 100                |
|                                           | 500 V            | 120                |
| Rated insulation voltage $U_i$            | V                | 1000               |
| Rated impulse withstand voltage $U_{imp}$ | kV               | 12                 |
| Rated frequency                           | Hz               | 50-60              |
| Mechanical durability                     | Number of cycles | 1000               |
| Electrical durability                     |                  | 200                |
| IP degree of protection                   | -                | 30                 |
| Fuse links size                           | -                | 1, 2               |

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ARS 400-1-M pro

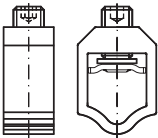
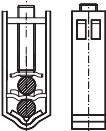
ARS 400-6-M pro

ARS 400 pro

Table 23. Versions

| Version                                                                                           |                                                                    | Weight | Article No.   |
|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|--------|---------------|
| <b>for installation on 185 mm busbar system, ONE POLE SWITCHING - each phase independently</b>    |                                                                    |        |               |
| ARS 400-1-V pro                                                                                   | cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>         | 5,2 kg | 63-001968-011 |
| ARS 400-1-M pro                                                                                   | cable terminals: screw terminals: pressed nuts M10                 | 4,9 kg | 63-001968-021 |
| ARS 400-1-2V pro                                                                                  | cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup> | 5,8 kg | 63-001968-031 |
| <b>for installation on 185 mm busbar system, THREE POLE SWITCHING - all phases simultaneously</b> |                                                                    |        |               |
| ARS 400-6-V pro                                                                                   | cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>         | 5,2 kg | 63-001971-011 |
| ARS 400-6-M pro                                                                                   | cable terminals: screw terminals: pressed nuts M10                 | 4,9 kg | 63-001971-021 |
| ARS 400-6-2V pro                                                                                  | cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup> | 5,8 kg | 63-001971-031 |

Table 24. ARS 400 pro terminal clamps

| Description                   | ARS 400-x-V pro                                                                                              |                                                                                                              | ARS 400-x-2V pro                                                                                             |                                                                                                              | ARS 400 2-x-2V pro                                                                                             |                                                                                                                | ARS 400-x-M pro                                                                       |
|-------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Clamp                         | V-clamp 35-300SW-B                                                                                           |                                                                                                              | V-clamp 2/50-300SW-B                                                                                         |                                                                                                              | V-clamp HS 2/50-240-C*                                                                                         |                                                                                                                | M-screw M10**                                                                         |
| Drawing of clamp              |                           |                                                                                                              |                           |                                                                                                              |                           |                                                                                                                |  |
| Cross – section of conductors | V-clamp for direct fixing of conductor with bare end with crosssection of:                                   |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                | Lug terminal                                                                          |
|                               | 35 - 185 mm <sup>2</sup>  | 35 - 240 mm <sup>2</sup>  | 50 - 185 mm <sup>2</sup>  | 50 - 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>  | 50 - 240 mm <sup>2</sup>  | 50 - 300 mm <sup>2</sup>  |                                                                                       |
| Tightening torque             | 30 Nm                                                                                                        |                                                                                                              | 30 Nm                                                                                                        |                                                                                                              | 40 Nm                                                                                                          |                                                                                                                | 32 Nm                                                                                 |

For stranded conductors using cable ferrules is recommended

\*) if the fuse switch disconnecter 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  
Apator takes responsibility for technical quality of V-terminals manufactured only by the company. Minimum tightening torque (M10 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.

## FUSE SWITCH DISCONNECTOR ARS 630 pro (630 A, 690 V)

Designed for operation with NH3 fuse links



ARS 630-1-M pro

ARS 630-6-M pro

Table 25. Technical data

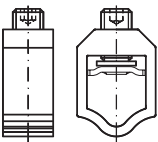
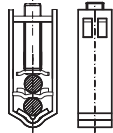
| Parameter                                 |                  | ARS 630 pro |     |
|-------------------------------------------|------------------|-------------|-----|
| Rated thermal current $I_{th}=I_n$        | A                | 630         |     |
| Rated voltage $U_n$                       | V                | 690         |     |
| Utilization category                      | -                | AC-22B      |     |
| Rated switching voltage $U_e$             | V                | 690         |     |
| Rated switching current $I_e$             | A                | 630         |     |
| Rated short circuit making current        | 690 V            | kA          | 100 |
|                                           | 500 V            | kA          | 120 |
| Rated short circuit withstand current     | 690 V            | kA          | 100 |
|                                           | 500 V            | kA          | 120 |
| Rated insulation voltage $U_i$            | V                | 1000        |     |
| Rated impulse withstand voltage $U_{imp}$ | kV               | 12          |     |
| Rated frequency                           | Hz               | 50-60       |     |
| Mechanical durability                     | Number of cycles | 1000        |     |
| Electrical durability                     | Number of cycles | 200         |     |
| IP degree of protection                   | -                | 30          |     |
| Fuse links size                           | -                | 3           |     |

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Table 26. Versions

| Versions                                                                                          |                                                                    | Weight | Article No.   |
|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|--------|---------------|
| <b>for installation on 185 mm busbar system, one pole switching - each phase independently</b>    |                                                                    |        |               |
| ARS 630-1-V pro                                                                                   | cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>         | 5,8 kg | 63-011801-011 |
| ARS 630-1-M pro                                                                                   | cable terminals: screw terminals: pressed nuts M12                 | 5,5 kg | 63-011801-021 |
| ARS 630-1-2V pro                                                                                  | cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup> | 6,4 kg | 63-011801-031 |
| <b>for installation on 185 mm busbar system, THREE POLE SWITCHING - all phases simultaneously</b> |                                                                    |        |               |
| ARS 630-6-V pro                                                                                   | cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>         | 5,8 kg | 63-011802-011 |
| ARS 630-6-M pro                                                                                   | cable terminals: screw terminals: pressed nuts M12                 | 5,5 kg | 63-011802-021 |
| ARS 630-6-2V pro                                                                                  | cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup> | 6,4 kg | 63-011802-031 |

Table 27. ARS 630 pro terminal clamps

| Description                   | ARS 630-x-V pro                                                                                  | ARS 630-x-2V pro                                                                                 | ARS 630-x-2V pro                                                                                 | ARS 630-x-M pro                                                                                  |                                                                                                    |                                                                                                    |              |
|-------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|--------------|
| 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:                      |                                                                                                  |                                                                                                  |                                                                                                  |                                                                                                    |                                                                                                    | Lug terminal |
|                               | 35 - 185 mm²  | 35 - 240 mm²  | 50 - 185 mm²  | 50 - 240 mm²  | 50 - 185 mm²  | 50 - 240 mm²  |              |
|                               | 35 - 240 mm²  | 35 - 300 mm²  | 50 - 240 mm²  | 50 - 300 mm²  | 50 - 240 mm²  | 50 - 300 mm²  |              |
| Tightening torque             | 30 Nm                                                                                            |                                                                                                  | 30 Nm                                                                                            |                                                                                                  | 40 Nm                                                                                              |                                                                                                    | 56 Nm        |

For stranded conductors using cable ferrules is recommended

\*) if the fuse switch disconnecter 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  
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.

## FUSE SWITCH DISCONNECTOR ARS 630 kVA pro

Fuse switch disconnecter ARS 630 kVA pro is dedicated for protection of transformers up to 630 kVA  
Fuse switch disconnecter is designed for operation with NH fuse links of size 3, with gTr characteristic

Table 28. Technical data

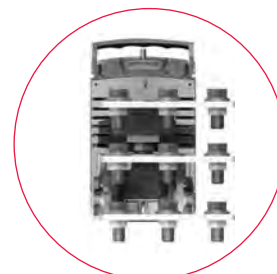
| Parameter                                 | ARS 630 kVA pro  |                           |
|-------------------------------------------|------------------|---------------------------|
| Rated thermal current $I_{th}=I_n$        | A                | 910                       |
| Rated voltage $U_n$                       | V                | 400                       |
| Utilization category                      | -                | AC-22B                    |
| Rated switching voltage $U_e$             | V                | 400                       |
| Rated switching current $I_e$             | A                | 910                       |
| Rated short circuit making current        | kA               | 50                        |
| Rated short circuit withstand current     | kA               | 50                        |
| Rated insulation voltage $U_i$            | V                | 1000                      |
| Rated impulse withstand voltage $U_{imp}$ | kV               | 12                        |
| Rated frequency                           | Hz               | 50-60                     |
| Mechanical durability                     | Number of cycles | 600                       |
| Electrical durability                     |                  | 100                       |
| IP degree of protection                   | -                | 30                        |
| Weight                                    | kg               | 8,7                       |
| Fuse links size                           | -                | gTr 630 kVA <sup>1)</sup> |

Accessories on page 54, 55

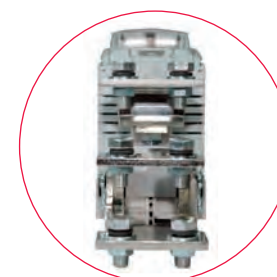
<sup>1)</sup> Fuse link gTr 630 kVA, DIN 43620, VDE 0636/2011, size NH3



ARS 630 kVA pro



Cable terminal:  
three pressed nuts M12



Cable terminal:  
two pressed nuts M12

Table 29. Versions

| Versions                                                |                                                                                 | Article No.   |
|---------------------------------------------------------|---------------------------------------------------------------------------------|---------------|
| <b>for installation on 185 mm busbar system</b>         |                                                                                 |               |
| <b>one pole switching - each phase independently</b>    |                                                                                 |               |
| ARS 630 kVA-1-2M pro                                    | cable terminals: screw terminals with two pressed nuts M12/pole, width 100 mm   | 63-811860-001 |
| ARS 630 kVA-1-3M pro                                    | cable terminals: screw terminals with three pressed nuts M12/pole, width 200 mm | 63-811860-002 |
| <b>three pole switching - all phases simultaneously</b> |                                                                                 |               |
| ARS 630 kVA-6-2M pro                                    | cable terminals: screw terminals with two pressed nuts M12/pole, width 100 mm   | 63-811722-011 |
| ARS 630 kVA-6-3M pro                                    | cable terminals: screw terminals with three pressed nuts M12/pole, width 200 mm | 63-811722-021 |

Recommended tightening torque (M12 screw) for screws fixing fuse switch disconnecter to busbar system – 56Nm, screws and nuts property class 8.8.

Table 30. ARS 630 kVA pro terminal clamps

| Description                   | ARS 630 kVA pro                                                                     |
|-------------------------------|-------------------------------------------------------------------------------------|
| Clamp                         | pressed nuts M12                                                                    |
| Drawing of clamp              |  |
| Cross – section of conductors | Cable lugs, max 300 mm <sup>2</sup>                                                 |
| Tightening torque             | 56 Nm                                                                               |

## SWITCH DISCONNECTOR RWS 600 pro (600 A, 690 V)

Switch disconnecter designed for operation with solid links of size 2



RWS 600-6-V pro

Table 31. Technical data

| Parameter                                   | RWS 600 pro      |                  |
|---------------------------------------------|------------------|------------------|
| Rated thermal current $I_{th}=I_n$          | A                | 600              |
| Rated voltage $U_n$                         | V                | 690              |
| Utilization category                        | -                | AC-22B           |
| Rated switching voltage $U_e$               | V                | 690              |
| Rated switching current $I_e$               | A                | 600              |
| Rated insulation voltage $U_i$              | V                | 1000             |
| Rated impulse withstand voltage $U_{imp.}$  | kV               | 12               |
| Rated short time withstand current $I_{cw}$ | kA               | 15 <sup>1)</sup> |
| Rated frequency                             | Hz               | 50-60            |
| Mechanical durability                       | Number of cycles | 1000             |
| Electrical durability                       |                  | 200              |
| IP degree of protection                     | -                | 30               |
| Solid links size                            | -                | 2                |

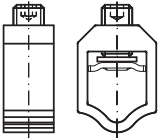
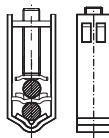
Accessories on page 54, 55

<sup>1)</sup> use of mechanical lock recommended

Table 32. Versions

| Version                                                                                           |                                                                    | Weight | Article No    |
|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|--------|---------------|
| <b>for installation on 185 mm busbar system, THREE POLE SWITCHING - all phases simultaneously</b> |                                                                    |        |               |
| RWS 600-6-V pro                                                                                   | cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>         | 5,8 kg | 63-002228-001 |
| RWS 600-6-M pro                                                                                   | cable terminals: screw terminals: pressed nuts M12                 | 5,7 kg | 63-002228-002 |
| RWS 600-6-2V pro                                                                                  | cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup> | 6,4 kg | 63-002228-003 |

Table 33. RWS 600 pro terminal clamps

| Description                   | RWS 600-6-V pro                                                                                  |                                                                                                  | RWS 600-6-2V pro                                                                                 |                                                                                                  | RWS 600-6-2V pro                                                                                   |                                                                                                    | RWS 600-6-M pro                                                                       |
|-------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 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:                      |                                                                                                  |                                                                                                  |                                                                                                  |                                                                                                    |                                                                                                    | Lug terminal                                                                          |
|                               | 35 - 185 mm²  | 35 - 240 mm²  | 50 - 185 mm²  | 50 - 240 mm²  | 50 - 185 mm²  | 50 - 240 mm²  |                                                                                       |
|                               | 35 - 240 mm²  | 35 - 300 mm²  | 50 - 240 mm²  | 50 - 300 mm²  | 50 - 240 mm²  | 50 - 300 mm²  |                                                                                       |
| Tightening torque             | 30 Nm                                                                                            |                                                                                                  | 30 Nm                                                                                            |                                                                                                  | 40 Nm                                                                                              |                                                                                                    | 56 Nm                                                                                 |

For stranded conductors using cable ferrules is recommended

\*) if the fuse switch disconnecter 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  
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.



## SWITCH DISCONNECTOR RWS 750 pro (750 A, 500 V)

Switch disconnector designed for operation with solid links of size 3

Table 34. Technical data

| Parameter                                   |                  | RWS 750 pro      |
|---------------------------------------------|------------------|------------------|
| Rated thermal current $I_{th}=I_n$          | A                | 750              |
| Rated voltage $U_n$                         | V                | 500              |
| Utilization category                        | -                | AC-22B           |
| Rated switching voltage $U_e$               | V                | 500              |
| Rated switching current $I_e$               | A                | 750              |
| Rated insulation voltage $U_i$              | V                | 1000             |
| Rated impulse withstand voltage $U_{imp}$   | kV               | 12               |
| Rated short time withstand current $I_{cw}$ | kA               | 15 <sup>1)</sup> |
| Rated frequency                             | Hz               | 50-60            |
| Mechanical durability                       | Number of cycles | 1000             |
| Electrical durability                       |                  | 200              |
| IP degree of protection                     | -                | 30               |
| Solid links size                            | -                | 3                |

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<sup>1)</sup> use of mechanical lock recommended

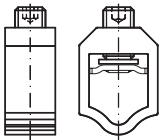
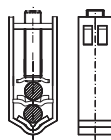


RWS 750-6-V pro

Table 35. Versions

| Version                                                                                           |                                                                    | Weight | Article No    |
|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|--------|---------------|
| <b>for installation on 185 mm busbar system, THREE POLE SWITCHING - all phases simultaneously</b> |                                                                    |        |               |
| RWS 750-6-V pro                                                                                   | cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>         | 6,6 kg | 63-002229-001 |
| RWS 750-6-M pro                                                                                   | cable terminals: screw terminals: pressed nuts M12                 | 6,5 kg | 63-002229-002 |
| RWS 750-6-2V pro                                                                                  | cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup> | 7,2 kg | 63-002229-003 |

Table 36. RWS 750 pro terminal clamps

| Description                   | RWS 750-6-V pro                                                                                              |                                                                                                              | RWS 750-6-2V pro                                                                                             |                                                                                                              | RWS 750-6-2V pro                                                                                               |                                                                                                                | RWS 750-6-M pro                                                                       |
|-------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 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:                                  |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                | Lug terminal                                                                          |
|                               | 35 - 185 mm <sup>2</sup>  | 35 - 240 mm <sup>2</sup>  | 50 - 185 mm <sup>2</sup>  | 50 - 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>  | 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

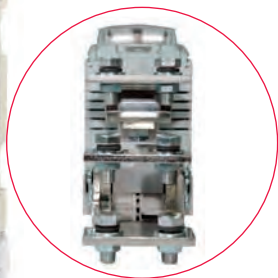
\*\*) bars of maximum width of 40 mm and maximum thickness of 8 mm can be fixed to M type screw terminals when protective barrier between phases is installed  
Apator takes responsibility for technical quality of V-terminals manufactured only by the company. Minimum tightening torque (M12 screw) for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

## SWITCH DISCONNECTOR RWS 1250 pro

Main switch-disconnector 1250 A, equipped with ZN3 1250A solid-links

Switch-disconnector's width 100 mm

For installation on 185 mm busbar system



Cable terminal:  
two pressed  
nuts M12

RWS 1250-6-2M pro

Table 37. Technical data

| Parameter                                   |                  | RWS 1250 pro        |
|---------------------------------------------|------------------|---------------------|
| Rated thermal current $I_{th}=I_n$          | A                | 1250                |
| Rated voltage $U_n$                         | V                | 400                 |
| Utilization category                        | -                | AC-22B              |
| Rated switching voltage $U_e$               | V                | 400                 |
| Rated switching current $I_e$               | A                | 1250                |
| Rated insulation voltage $U_i$              | V                | 1000                |
| Rated impulse withstand voltage $U_{imp.}$  | kV               | 12                  |
| Rated short time withstand current $I_{cw}$ | kA               | 15/20 <sup>1)</sup> |
| Rated frequency                             | Hz               | 50-60               |
| Mechanical durability                       | Number of cycles | 600                 |
| Electrical durability                       |                  | 100                 |
| IP degree of protection                     | -                | 30                  |
| Weight                                      | kg               | 8,7                 |
| Solid links size                            | -                | ZN3 -1250 A         |

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<sup>1)</sup> with mechanical lock

Table 38. Versions

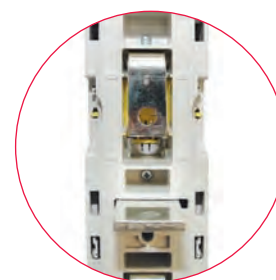
| Version                                                                                           |                                                                                                                                                             | Article No.   |
|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>for installation on 185 mm busbar system, THREE POLE SWITCHING - all phases simultaneously</b> |                                                                                                                                                             |               |
| RWS 1250 - 6 - 2M pro                                                                             | cable terminals: screw terminals with two pressed nuts M12/pole, width 100 mm                                                                               | 63-811828-011 |
| RWS 1250 - 6 - 3M pro                                                                             | cable terminals: screw terminals with three pressed nuts M12/pole, width 200 mm                                                                             | 63-811828-021 |
| RWS 1250 - 6 - T pro                                                                              | power supply connection at the back of the switch disconnector,<br>feeding rail's length = 120 mm, feeding rails designed for fixing with M12 screws        | 63-811861-001 |
| RWS 1250 - 6 - T pro                                                                              | power supply connection at the back of the switch disconnector,<br>feeding rail's length = 170 mm, feeding rails designed for fixing with M12 screws        | 63-811861-002 |
| RWS 1250 NL pro                                                                                   | coupling switch-disconnector with lateral busbar terminals;<br>cable terminals: screw terminals with pressed nuts M12, lateral busbar terminal - left side  | 63-811862-005 |
| RWS 1250 NR pro                                                                                   | coupling switch-disconnector with lateral busbar terminals;<br>cable terminals: screw terminals with pressed nuts M12, lateral busbar terminal - right side | 63-811862-001 |

Table 39. RWS 1250 pro terminal clamps

| Description                 | RWS 1250 pro                                                                        |
|-----------------------------|-------------------------------------------------------------------------------------|
| Clamp                       | pressed nuts M12                                                                    |
| Drawing of clamp            |  |
| Cross-section of conductors | Cable lugs, max 300 mm <sup>2</sup>                                                 |
| Tightening torque           | 56 Nm                                                                               |



cable terminals:  
screw terminals with three  
pressed nuts M12/pole



RWS 1250 pro  
with outgoing terminals  
at the back of the switch

## SWITCH DISCONNECTOR ARS 1250 pro

Fuse switch disconnectors width 200 mm

Table 40. Technical data

| Parameter                                 |                  | ARS 1250 pro |
|-------------------------------------------|------------------|--------------|
| Rated thermal current $I_{th}=I_n$        | A                | 1250         |
| Rated voltage $U_n$                       | V                | 400          |
| Utilization category                      | -                | AC-21B       |
| Rated switching voltage $U_e$             | V                | 400          |
| Rated switching current $I_e$             | A                | 1250         |
| Rated short circuit making current        | kA               | 100          |
| Rated short circuit withstand current     | kA               | 100          |
| Rated insulation voltage $U_i$            | V                | 1000         |
| Rated impulse withstand voltage $U_{imp}$ | kV               | 12           |
| Rated frequency                           | Hz               | 50-60        |
| Mechanical durability                     | Number of cycles | 600          |
| Electrical durability                     |                  | 100          |
| IP degree of protection                   | -                | 30           |
| Fuse links size                           | -                | 3            |

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ARS 1250-1-3M pro

ARS 1250-6-3M pro

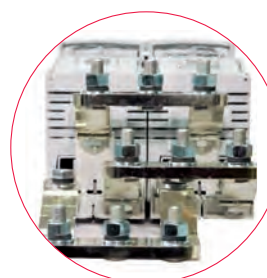
Table 41. Versions

| Version                                                                               |                                                                                                                                                   | Weight  | Article No.   |
|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------------|
| <b>for installation on to 185 mm busbar system, fuse disconnectors width – 200 mm</b> |                                                                                                                                                   |         |               |
| <b>one pole switching - each phase independently</b>                                  |                                                                                                                                                   |         |               |
| ARS 1250-1-3M pro                                                                     | mechanically and electrically coupled two ARS 3 pro fuse switch disconnectors, cable terminals: screw terminals with three pressed screw M12/pole | 16,3 kg | 63-811757-011 |
| ARS 1250-1-4M pro                                                                     | mechanically and electrically coupled two ARS 3 pro fuse switch disconnectors, cable terminals: screw terminals with four pressed screw M12/pole  | 17 kg   | 63-811757-021 |
| <b>three pole switching - all phases simultaneously</b>                               |                                                                                                                                                   |         |               |
| ARS 1250-6-3M pro                                                                     | mechanically and electrically coupled two ARS 3 pro fuse switch disconnectors, cable terminals: screw terminals with three pressed screw M12/pole | 16,3 kg | 63-811756-011 |
| ARS 1250-6-4M pro                                                                     | mechanically and electrically coupled two ARS 3 pro fuse switch disconnectors, cable terminals: screw terminals with four pressed screw M12/pole  | 17 kg   | 63-811756-021 |

Recommended tightening torque (M12 screw) for screws fixing fuse switch disconnectors to busbar system – 56Nm, screws and nuts property class 8.8

Table 42. ARS 1250-x-M pro terminal clamps

| Description                 | ARS 1250-x-3M pro                   | ARS 1250-x-4M pro                   |
|-----------------------------|-------------------------------------|-------------------------------------|
| Clamp                       | three pressed nuts M12              | four pressed nuts M12               |
| Drawing of clamp            |                                     |                                     |
| Cross-section of conductors | Cable lugs, max 300 mm <sup>2</sup> | Cable lugs, max 300 mm <sup>2</sup> |
| Tightening torque           | 56 Nm                               | 56 Nm                               |



M3 type cable terminals: screw terminals with three pressed screw M12/pole



M3 type cable terminals: screw terminals with four pressed screw M12/pole

## FUSE SWITCH DISCONNECTOR with lateral busbar terminal

(separation, coupling of busbar systems)



ARS 400-6-NR pro

Table 43. Technical data

| Parameter                                 |                  | ARS 400 pro |
|-------------------------------------------|------------------|-------------|
| Rated thermal current $I_{th}=I_n$        | A                | 400         |
| Rated voltage $U_n$                       | V                | 690         |
| Utilization category                      | -                | AC-22B      |
| Rated switching voltage $U_e$             | V                | 690         |
| Rated switching current $I_e$             | A                | 400         |
| Rated short circuit making current        | 690 V            | 100         |
|                                           | 500 V            | 120         |
| Rated short circuit withstand current     | 690 V            | 100         |
|                                           | 500 V            | 120         |
| Rated insulation voltage $U_i$            | V                | 1000        |
| Rated impulse withstand voltage $U_{imp}$ | kV               | 12          |
| Rated frequency                           | Hz               | 50-60       |
| Mechanical durability                     | Number of cycles | 1000        |
| Electrical durability                     |                  | 200         |
| IP degree of protection                   | -                | 30          |
| Fuse links size                           | -                | 1, 2        |

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Table 44. Versions with lateral busbar terminal

| Version                                                                                           |                                                                                            | Weight | Article No    |
|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------|---------------|
| <b>for installation on 185 mm busbar system, ONE POLE SWITCHING - each phase independently</b>    |                                                                                            |        |               |
| ARS 400-1-NL pro                                                                                  | cable terminals: screw terminals : pressed nuts M12; lateral busbar terminals - left side  | 5,1 kg | 63-811837-011 |
| ARS 400-1-NR pro                                                                                  | cable terminals: screw terminals : pressed nuts M12; lateral busbar terminals - right side | 5,1 kg | 63-811837-031 |
| <b>for installation on 185 mm busbar system, THREE POLE SWITCHING - all phases simultaneously</b> |                                                                                            |        |               |
| ARS 400-6-NL pro                                                                                  | cable terminals: screw terminals : pressed nuts M12; lateral busbar terminals - left side  | 5,1 kg | 63-811838-011 |
| ARS 400-6-NR pro                                                                                  | cable terminals: screw terminals : pressed nuts M12; lateral busbar terminals - right side | 5,1 kg | 63-811838-031 |

Table 45. ARS 400 pro with lateral busbar terminals terminal clamps

| Description            | ARS 400-x-NL                                                                        | ARS 400-x-NR |
|------------------------|-------------------------------------------------------------------------------------|--------------|
| Clamp                  | M12 screw                                                                           | M12 screw    |
| Drawing of clamp       |  |              |
| Lateral busbar termina | Left side                                                                           | Right side   |
| Tightening torque      | 56 Nm                                                                               | 56 Nm        |



# ARS

## vertical fuse switch disconnectors

- fibre glass extra strenghtened, self extinguishing thermoplastics
- double clearance between open contacts
- arc chambers with deionization plates over every contact
- reversibility - top/bottom cable terminal connection
- wide range of accesories



## CONSTRUCTION

**ARS** fuse switch disconnectors are manufactured in two versions:

- one pole switching (separately each pole),
- three pole switching (three poles at the same time).

They have manually operated handle therefore making and breaking operations should be done with determined movement.

**ARS** fuse switch disconnectors are available in following sizes (according to rated current): 00 (**ARS** 00 and **ARS** 00/100 mm -160 A) and 2 (**ARS** 400 A).

**ARS** fuse switch disconnectors are designed for installation on to 185 mm busbar system.

**ARS** of size 00 are manufactured in two versions depending on busbar system:

- **ARS** 00 fuse switch disconnector (160 A) for installation on to 185 mm busbar system,
- **ARS** 00/100 mm fuse switch disconnector (160 A) for installation on to 100 mm busbar system.

Installation on to 185 mm busbar system is possible by using adapter.

Fuse switch disconnectors **ARS** are made of fibre glass strengthened, thermoplastic polyamides with halogen free flame retardant added. Added flame retardant provides V2 flammability class. Silver plated contacts provide low power loss. Depending on clamp type, **ARS** fuse switch disconnectors enable user to connect circular or sectorshaped conductors with bare ends or conductors with lug terminals. Arc chambers with deionization plates is installed over each contact. Such design provides efficiency of arc extinction and controlled exhaust of arc plasma. **ARS** fuse switch disconnectors are adapted for using current transformers and ammeters. Protection degree of IP30 from the front is provided. Additionally offered accesories enable to install **ARS** fuse switch disconnectors of different sizes on common busbar systems. All sizes of **ARS** fuse switch disconnectors are provided complete with clamps (i. e. screws, V-terminals, 2V-terminals) and shrouds for cable terminals.

## FUNCTIONALITY

- making and breaking operations should be done with determined movement,
- parallelly moving, double contact system,
- designed for installation on to 100 mm or 185 mm busbar system,
- two versions: single pole switching (separately each pole) or triple pole switching (three poles at the same time),
- fuse switch disconnectors width: 50 mm, 100 mm, 200 mm,
- suitable for top cable terminal connection,
- possible connection of circular or sector-shaped conductors with bare ends (V-terminals, 2V-terminals or conductors with lug terminals (screw terminals).



Table 46. ARS technical data

| Parameter                                  |                  | ARS 00/100 mm | ARS 00 | ARS 400 | ARS 630 |
|--------------------------------------------|------------------|---------------|--------|---------|---------|
| Rated thermal current $I_{th}=I_n$         | A                | 160           | 160    | 400     | 630     |
| Rated voltage $U_n$                        | V                | 690           | 690    | 690     | 690     |
| Utilization category                       | 690 V            | AC-22B        | AC-22B | AC-22B  | AC-22B  |
| Rated switching voltage $U_e$              | V                | 690           | 690    | 690     | 690     |
| Rated switching current $I_e$              | A                | 160           | 160    | 400     | 630     |
| Rated short-circuit making current         | 690 V            | kA            | 25     | 100     | 100     |
|                                            | 500 V            |               |        | 120     | 120     |
| Rated short-circuit withstand current      | 690 V            | kA            | 100    | 100     | 100     |
|                                            | 500 V            |               |        | 120     | 120     |
| Rated insulation voltage $U_i$             | V                | 1000          | 1000   | 1000    | 1000    |
| Rated impulse withstand voltage $U_{imp.}$ | kV               | 8             | 12     | 12      | 12      |
| Rated frequency                            | Hz               | 50-60         | 50-60  | 50-60   | 50-60   |
| Mechanical durability                      | Number of cycles | 1600          | 1600   | 1000    | 1000    |
| Electrical durability                      |                  | 200           | 200    | 200     | 200     |
| IP degree of protection                    | -                | 30            | 30     | 30      | 30      |
| Fuse links size                            | -                | 00            | 00     | 1,2     | 3       |

## 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,
- relative humidity of the air should not be higher than 50% at temperature of +40°,
- in case of single phase disconnecter, device is dedicated to energy distribution systems; connection of primary circuits of three phase devices shouldn't be performed if switching or isolation of specific phases is required.

## FUSE SWITCH DISCONNECTOR ARS 00/100 mm (160 A, 690 V)

For installation on to 100 mm busbar system

Fuse switch disconnectors width 50 mm

Three pole switching - all phases simultaneously



ARS 00/100 mm

Table 47. Technical data

| Parameter                                  | ARS 00/100 mm |        |
|--------------------------------------------|---------------|--------|
| Rated thermal current $I_{th}=I_n$         | A             | 160    |
| Rated voltage $U_n$                        | V             | 690    |
| Utilization category                       | -             | AC-22B |
| Rated switching voltage $U_e$              | V             | 690    |
| Rated switching current $I_e$              | A             | 160    |
| Rated short circuit making current         | kA            | 25     |
| Rated short circuit withstand current      | kA            | 100    |
| Rated insulation voltage $U_i$             | V             | 1000   |
| Rated impulse withstand voltage $U_{imp.}$ | kV            | 8      |
| Rated frequency                            | Hz            | 50-60  |
| Mechanical durability                      |               | 1600   |
| Electrical durability                      |               | 200    |
| IP degree of protection                    | -             | 30     |
| Fuse links size                            | -             | 00     |

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Table 48. Versions

| Version                                                                                              |                                                                                                                 | Weight | Article No.   |
|------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|--------|---------------|
| <b>for installation on to 100 mm busbar system, three pole switching - all phases simultaneously</b> |                                                                                                                 |        |               |
| ARS 00/100 mm                                                                                        | cable terminals: bridge terminals with bridge clamps (S) 4-70 mm <sup>2</sup><br>screw terminals with M8 screws | 1,3 kg | 63-811628-011 |
| ARS 00/100 mm-V                                                                                      | cable terminals: V-terminals with V-clamps 25-150SW                                                             | 1,5 kg | 63-811628-021 |

Table 49. ARS 00/100 mm terminal clamps

| Description                 | ARS 00/100 mm                 |                                                         |                                                                                                                                                                                            |                                                                                                                                                                                           |
|-----------------------------|-------------------------------|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Clamp                       | S-bridge clamp<br>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<br>max. 185 mm <sup>2</sup> | re ● 16 mm <sup>2</sup> -95 mm <sup>2</sup><br>se ◆ 25 mm <sup>2</sup> -150 mm <sup>2</sup><br>rm ⊗ 16 mm <sup>2</sup> -95 mm <sup>2</sup><br>sm ⊕ 25 mm <sup>2</sup> -150 mm <sup>2</sup> | re ● 10 mm <sup>2</sup> -70 mm <sup>2</sup><br>se ◆ 25 mm <sup>2</sup> -120 mm <sup>2</sup><br>rm ⊗ 10 mm <sup>2</sup> -70 mm <sup>2</sup><br>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

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

## FUSE SWITCH DISCONNECTOR ARS 00 (160 A, 690 V)

For installation on to 185 mm busbar system

Three pole switching - all phases simultaneously - two-hand operation or one pole switching - each phase independently

Fuse switch disconnectors width 50 mm

Table 50. Technical data

| Parameter                                 |                  | ARS 00 |
|-------------------------------------------|------------------|--------|
| Rated thermal current $I_{th}=I_n$        | A                | 160    |
| Rated voltage $U_n$                       | V                | 690    |
| Utilization category                      | -                | AC-22B |
| Rated switching voltage $U_e$             | V                | 690    |
| Rated switching current $I_e$             | A                | 160    |
| Rated short circuit making current        | kA               | 25     |
| Rated short circuit withstand current     | kA               | 100    |
| Rated insulation voltage $U_i$            | V                | 1000   |
| Rated impulse withstand voltage $U_{imp}$ | kV               | 12     |
| Rated frequency                           | Hz               | 50-60  |
| Mechanical durability                     | Number of cycles | 1600   |
| Electrical durability                     | Number of cycles | 200    |
| IP degree of protection                   | -                | 30     |
| Fuse links size                           | -                | 00     |

Accessories on page. 52, 53



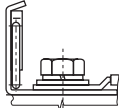
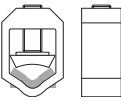
ARS 00-1

ARS 00-3

Table 51. Versions

| Version                                                                                              |                                                                                                                | Weight | Article No.   |
|------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|--------|---------------|
| <b>for installation on to 185 mm busbar system, one pole switching - each phase independently</b>    |                                                                                                                |        |               |
| ARS 00-1                                                                                             | cable terminals: bridge terminals with bridge clamps (S) 4-70 mm <sup>2</sup> , screw terminals with M8 screws | 2,6 kg | 63-811410-011 |
| ARS 00-1-V                                                                                           | cable terminals: V-terminals with V-clamps 25-150SW                                                            | 2,7 kg | 63-811410-021 |
| <b>for installation on to 185 mm busbar system, three pole switching - all phases simultaneously</b> |                                                                                                                |        |               |
| ARS 00-3                                                                                             | cable terminals: bridge terminals with bridge clamps (S) 4-70 mm <sup>2</sup> , screw terminals with M8 screws | 2,7 kg | 63-811806-011 |
| ARS 00-3-V                                                                                           | cable terminals: V-terminals with V-clamps 25-150SW                                                            | 2,8 kg | 63-811806-021 |

Table 52. ARS 00 terminal clamps

| Description                  | ARS 00                                                                            |                                                                                   |                                                                                    |                                                                                     |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Clamp                        | S-bridge clamp<br>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<br>max. 185 mm <sup>2</sup>                           | re ● 16 mm <sup>2</sup> - 95 mm <sup>2</sup>                                       | re ● 10 mm <sup>2</sup> - 70 mm <sup>2</sup>                                        |
|                              |                                                                                   |                                                                                   | se ◆ 25 mm <sup>2</sup> - 150 mm <sup>2</sup>                                      | se ◆ 25 mm <sup>2</sup> - 120 mm <sup>2</sup>                                       |
|                              |                                                                                   |                                                                                   | rm ⊗ 16 mm <sup>2</sup> - 95 mm <sup>2</sup>                                       | rm ⊗ 10 mm <sup>2</sup> - 70 mm <sup>2</sup>                                        |
|                              |                                                                                   |                                                                                   | sm ⊗ 25 mm <sup>2</sup> - 150 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.

## FUSE SWITCH DISCONNECTOR ARS 400 (400 A, 690 V)

For installation on to 185 mm busbar system

Three pole switching - all phases simultaneously or one pole switching - each phase independently

Fuse switch disconnectors width 100 mm

Designed for operation with NH1 and NH2 fuse links

Table 53. Technical data

| Parameter                                 |                  | ARS 400              |
|-------------------------------------------|------------------|----------------------|
| Rated thermal current $I_{th}=I_n$        | A                | 250 (NH1), 400 (NH2) |
| Rated voltage $U_n$                       | V                | 690                  |
| Utilization category                      | -                | AC-22B               |
| Rated switching voltage $U_e$             | V                | 690                  |
| Rated switching current $I_e$             | A                | 400                  |
| Rated short circuit making current        | 690 V<br>500 V   | kA<br>100<br>120     |
| Rated short circuit withstand current     | 690 V<br>500 V   | kA<br>100<br>120     |
| Rated insulation voltage $U_i$            | V                | 1000                 |
| Rated impulse withstand voltage $U_{imp}$ | kV               | 12                   |
| Rated frequency                           | Hz               | 50-60                |
| Mechanical durability                     | Number of cycles | 1000                 |
| Electrical durability                     |                  | 200                  |
| IP degree of protection                   | -                | 30                   |
| Fuse links size                           | -                | 1,2                  |

Accessories on page 54, 55



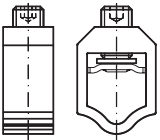
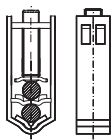
ARS 400-1-V

ARS 400-6-V

Table 54. Versions

| Version                                                                                              |                                                                        | Weight | Article No.   |
|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|--------|---------------|
| <b>for installation on to 185 mm busbar system, one pole switching - each phase independently</b>    |                                                                        |        |               |
| ARS 400-1-V                                                                                          | cable terminals: V-terminals with V-clamps 240 mm <sup>2</sup>         | 5,0 kg | 63-811825-011 |
| ARS 400-1-M                                                                                          | cable terminals: screw terminals with pressed nuts M10                 | 4,8 kg | 63-811825-031 |
| ARS 400-1-2V                                                                                         | cable terminals: 2V-terminals with double V-clamps 240 mm <sup>2</sup> | 5,7 kg | 63-811825-051 |
| <b>for installation on to 185 mm busbar system, three pole switching - all phases simultaneously</b> |                                                                        |        |               |
| ARS 400-6-V                                                                                          | cable terminals: V-terminals with V-clamps 240 mm <sup>2</sup>         | 5,0 kg | 63-811826-011 |
| ARS 400-6-M                                                                                          | cable terminals: screw terminals with pressed nuts M10                 | 4,8 kg | 63-811826-031 |
| ARS 400-6-2V                                                                                         | cable terminals: 2V-terminals with double V-clamps 240 mm <sup>2</sup> | 5,7 kg | 63-811826-051 |

Table 55. ARS 400 terminal clamps

| Description                   | ARS 400-x-V                                                                                                  |                                                                                                              | ARS 400-x-2V                                                                                                 |                                                                                                              | ARS 400 2-x-2V                                                                                                 |                                                                                                                | ARS 400-x-M                                                                           |
|-------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Clamp                         | V-clamp 35-300SW-B                                                                                           |                                                                                                              | V-clamp 2/50-300SW-B                                                                                         |                                                                                                              | V-clamp HS 2/50-240-C*                                                                                         |                                                                                                                | M-screw M10**                                                                         |
| Drawing of clamp              |                           |                                                                                                              |                           |                                                                                                              |                           |                                                                                                                |  |
| Cross – section of conductors | V-clamp for direct fixing of conductor with bare end with cross-section of:                                  |                                                                                                              |                                                                                                              |                                                                                                              |                                                                                                                |                                                                                                                | Lug terminal                                                                          |
|                               | 35 - 185 mm <sup>2</sup>  | 35 - 240 mm <sup>2</sup>  | 50 - 185 mm <sup>2</sup>  | 50 - 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>  | 50 - 240 mm <sup>2</sup>  | 50 - 300 mm <sup>2</sup>  |                                                                                       |
| Tightening torque             | 30 Nm                                                                                                        |                                                                                                              | 30 Nm                                                                                                        |                                                                                                              | 40 Nm                                                                                                          |                                                                                                                | 32 Nm                                                                                 |

For stranded conductors using cable ferrules is recommended

\*) if the fuse switch disconnectors 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 Apator takes responsibility for technical quality of V-terminals manufactured only by the company. Minimum tightening torque (M12 screw) for screws fixing fuse switch disconnectors to busbar system – 32 Nm, recommended tightening torque for screws and nuts with property class 8.8 – 56 Nm.

## FUSE SWITCH DISCONNECTOR ARS 630 (630 A, 690 V)

Designed for operation with NH3 fuse links



ARS 630-1-M

ARS 630-6-M

Table 58. Technical data

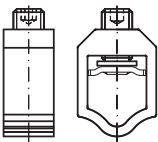
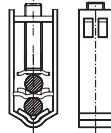
| Parameter                                 |                  |    | ARS 630 |
|-------------------------------------------|------------------|----|---------|
| Rated thermal current $I_{th}=I_n$        | A                |    | 630     |
| Rated voltage $U_n$                       | V                |    | 690     |
| Utilization category                      | -                |    | AC-22B  |
| Rated switching voltage $U_e$             | V                |    | 690     |
| Rated switching current $I_e$             | A                |    | 630     |
| Rated short circuit making current        | 690 V            | kA | 100     |
|                                           | 500 V            |    | 120     |
| Rated short circuit withstand current     | 690 V            | kA | 100     |
|                                           | 500 V            |    | 120     |
| Rated insulation voltage $U_i$            | V                |    | 1000    |
| Rated impulse withstand voltage $U_{imp}$ | kV               |    | 12      |
| Rated frequency                           | Hz               |    | 50-60   |
| Mechanical durability                     | Number of cycles |    | 1000    |
| Electrical durability                     |                  |    | 200     |
| IP degree of protection                   | -                |    | 30      |
| Fuse links size                           | -                |    | 3       |

Accessories on page 54, 55

Table 56. Versions

| Versions                                                                                          |                                                                    | Weight | Article No.   |
|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|--------|---------------|
| <b>for installation on 185 mm busbar system, one pole switching - each phase independently</b>    |                                                                    |        |               |
| ARS 630-1-V                                                                                       | cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>         | 5,8 kg | 63-039002-011 |
| ARS 630-1-M                                                                                       | cable terminals: screw terminals: pressed nuts M12                 | 5,5 kg | 63-039002-021 |
| ARS 630-1-2V                                                                                      | cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup> | 6,4 kg | 63-039002-031 |
| <b>for installation on 185 mm busbar system, THREE POLE SWITCHING - all phases simultaneously</b> |                                                                    |        |               |
| ARS 630-6-V                                                                                       | cable terminals: V-terminals: V-clamps 240 mm <sup>2</sup>         | 5,8 kg | 63-039062-011 |
| ARS 630-6-M                                                                                       | cable terminals: screw terminals: pressed nuts M12                 | 5,5 kg | 63-039062-021 |
| ARS 630-6-2V                                                                                      | cable terminals: 2V-terminals: double V-clamps 240 mm <sup>2</sup> | 6,4 kg | 63-039062-031 |

Table 57. ARS 630 terminal clamps

| Description                   | ARS 630-x-V                                                                                      |                                                                                                  | ARS 630-x-2V                                                                                     |                                                                                                  | ARS 630-x-2V                                                                                       |                                                                                                    | ARS 630-x-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:                      |                                                                                                  |                                                                                                  |                                                                                                  |                                                                                                    |                                                                                                    | Lug terminal                                                                          |
|                               | 35 - 185 mm²  | 35 - 240 mm²  | 50 - 185 mm²  | 50 - 240 mm²  | 50 - 185 mm²  | 50 - 240 mm²  |                                                                                       |
|                               | 35 - 240 mm²  | 35 - 300 mm²  | 50 - 240 mm²  | 50 - 300 mm²  | 50 - 240 mm²  | 50 - 300 mm²  |                                                                                       |
| Tightening torque             | 30 Nm                                                                                            |                                                                                                  | 30 Nm                                                                                            |                                                                                                  | 40 Nm                                                                                              |                                                                                                    | 56 Nm                                                                                 |

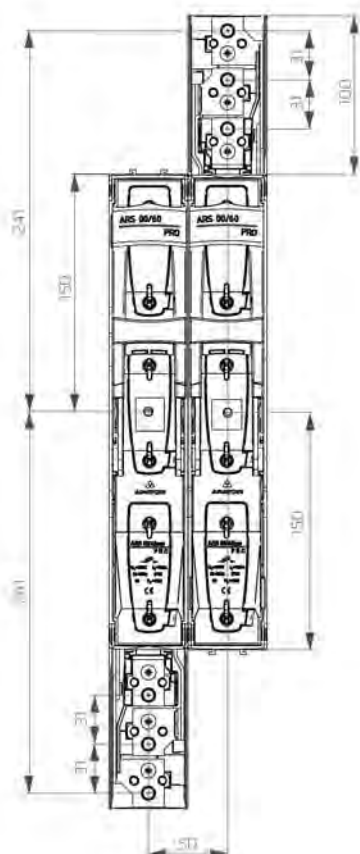
For stranded conductors using cable ferrules is recommended

\*) if the fuse switch disconnecter 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

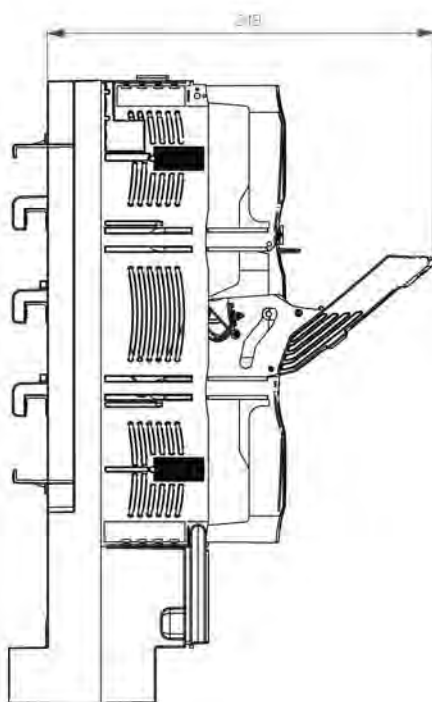
\*\*) bars of maximum width of 40 mm and maximum thickness of 8 mm can be fixed to M type screw terminals when protective barrier between phases is installed Apator takes responsibility for technical quality of V-terminals manufactured only by the company. Minimum tightening torque (M12 screw) for screws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



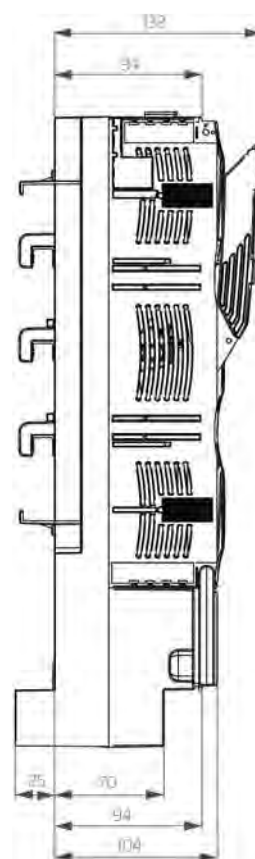
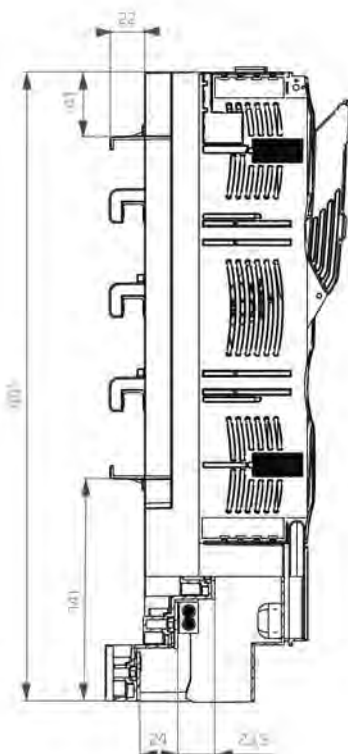
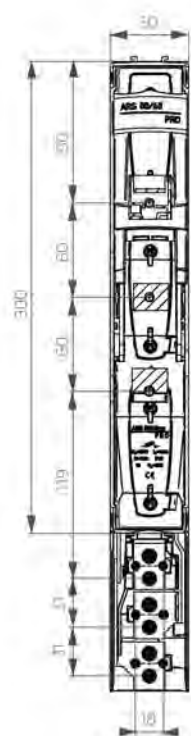
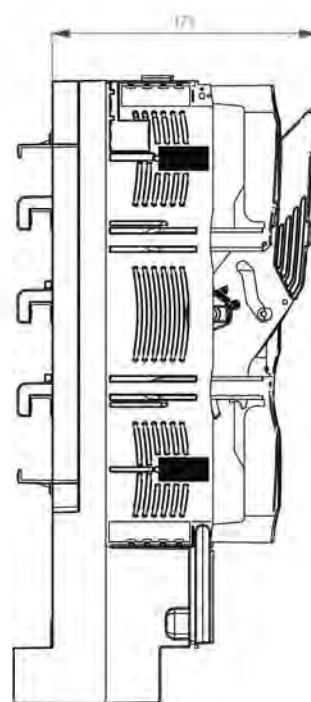
ARS 00/60 mm pro



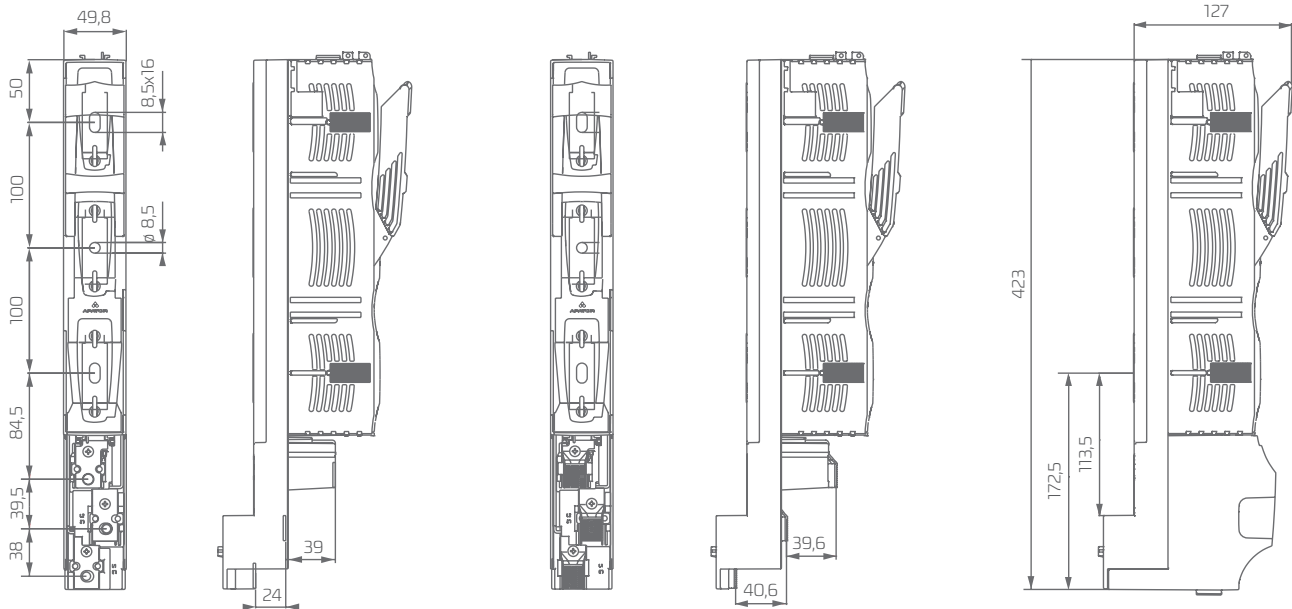
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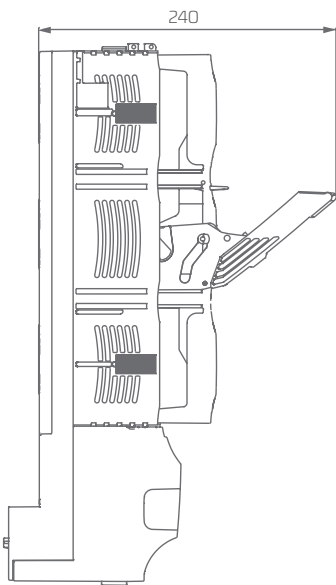
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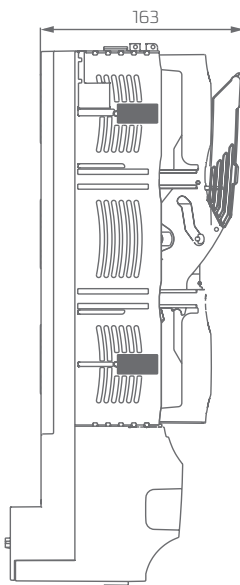
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OPENED



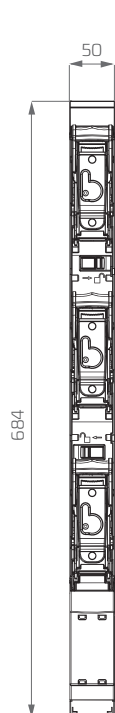
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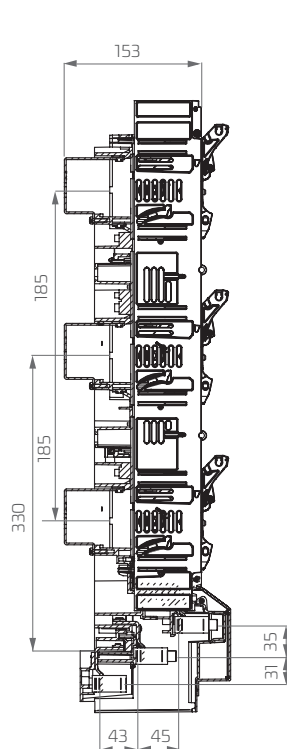
ARS 00, smartARS 00 pro

1-phase

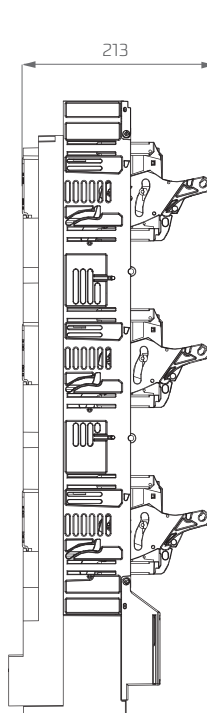
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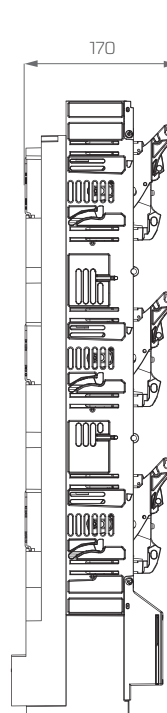
HEIGHTENED



OPENED

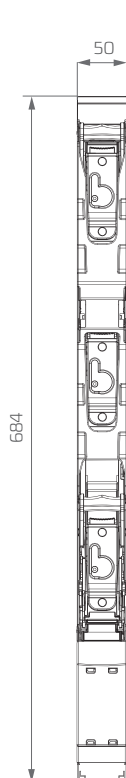


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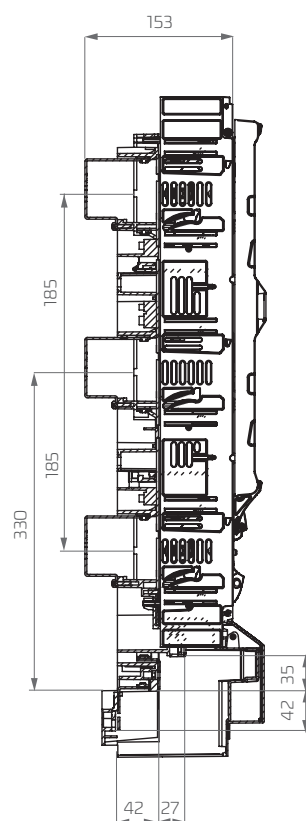


3-phase

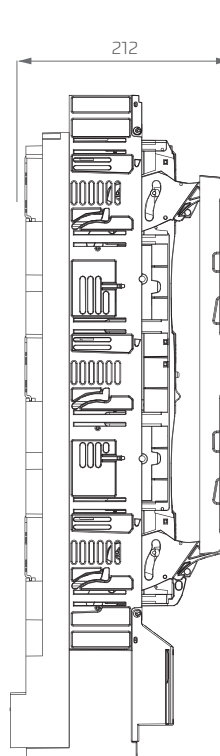
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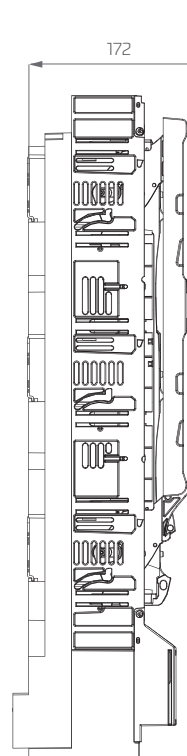
HEIGHTENED



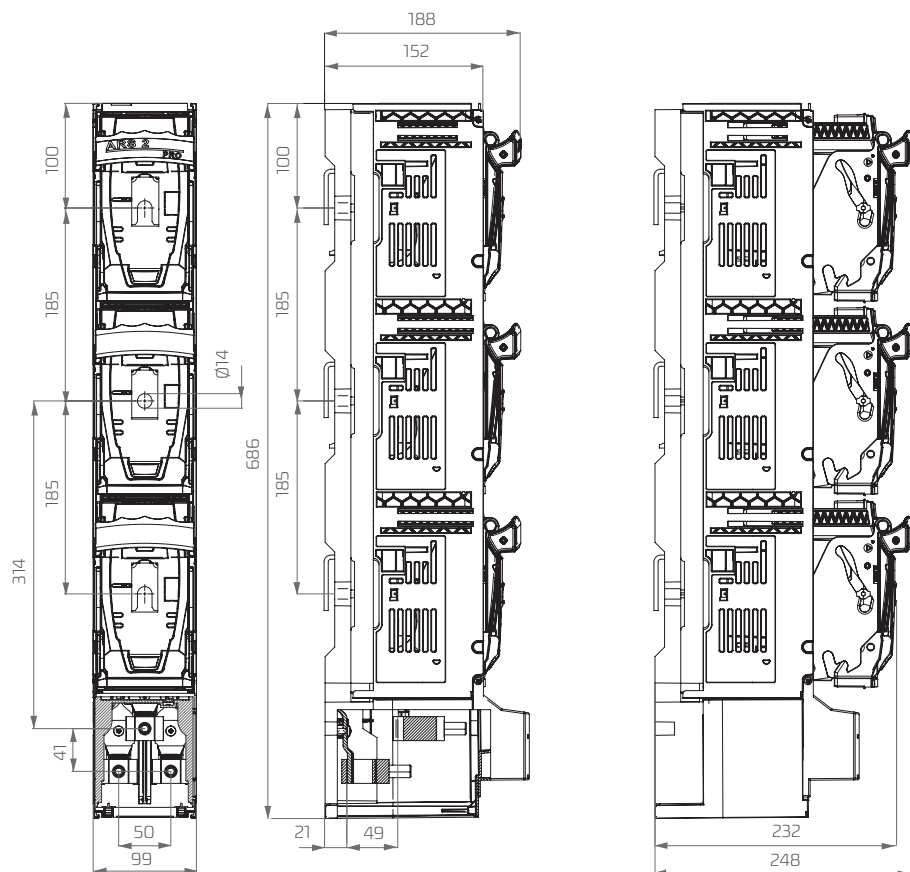
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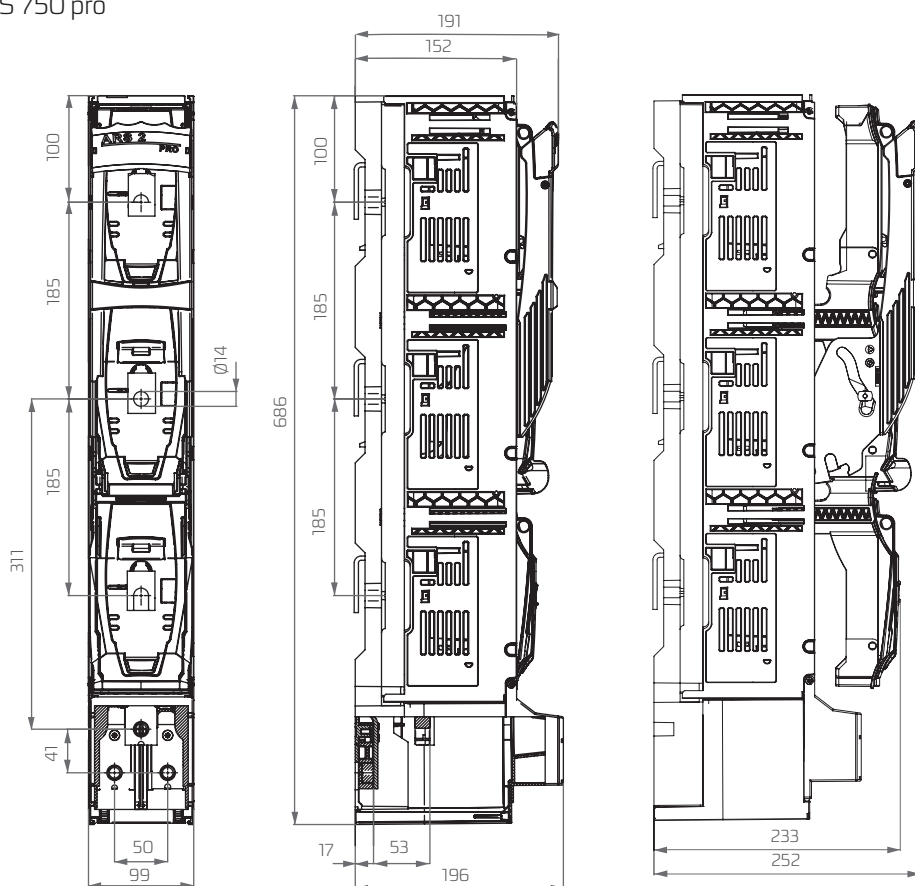
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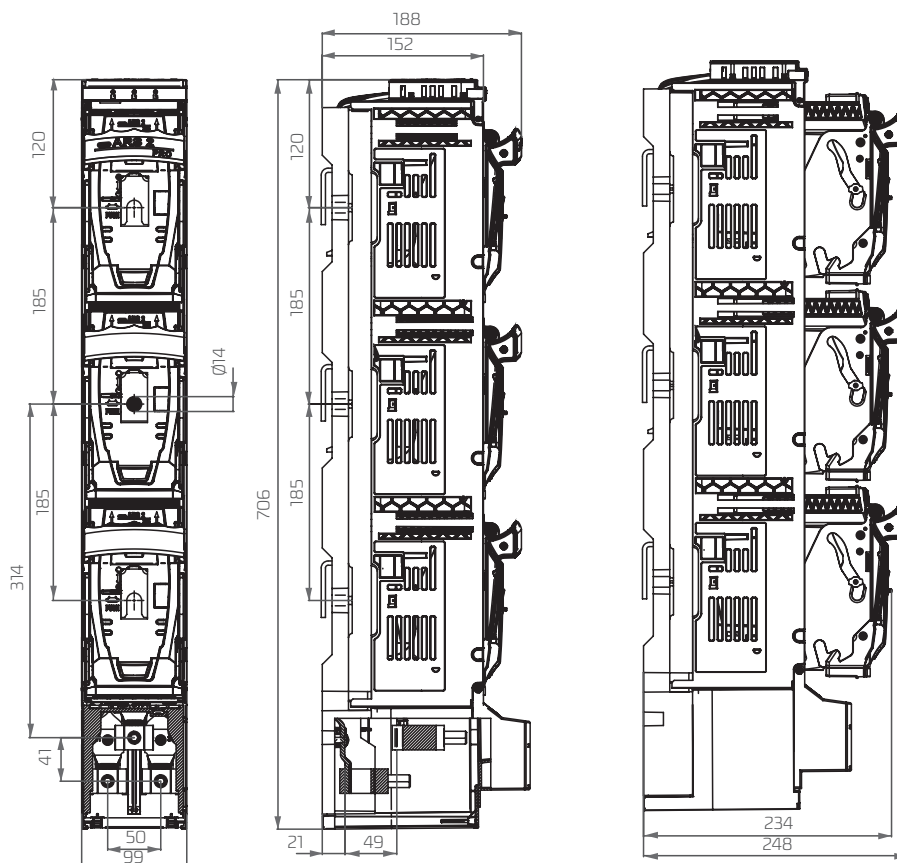
smartARS 2 pro, smartARS 3 pro (without fuse monitoring module)  
1-phase



smartARS 2 pro, smartARS 3 pro (without fuse monitoring module)  
RWS 600 pro, RWS 750 pro  
3-phase



smartARS 2 pro, smartARS 3 pro with fuse monitoring module

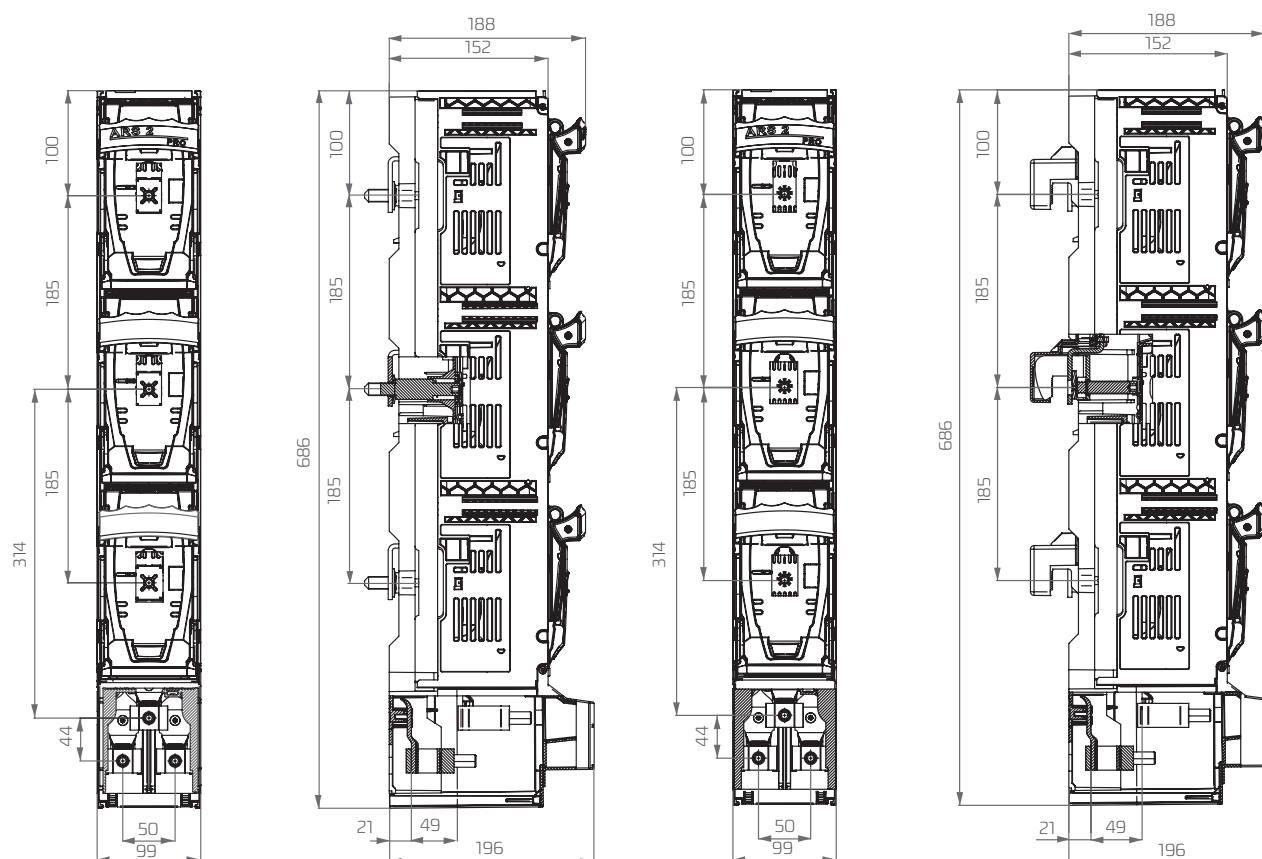


ARS OVERALL DIMENSIONS

smartARS 2 pro, smartARS 3 pro equipped with modules for fast and safe installation using PPN technology

FAST INSTALLATION MODULES EQUIPPED WITH SCREWS

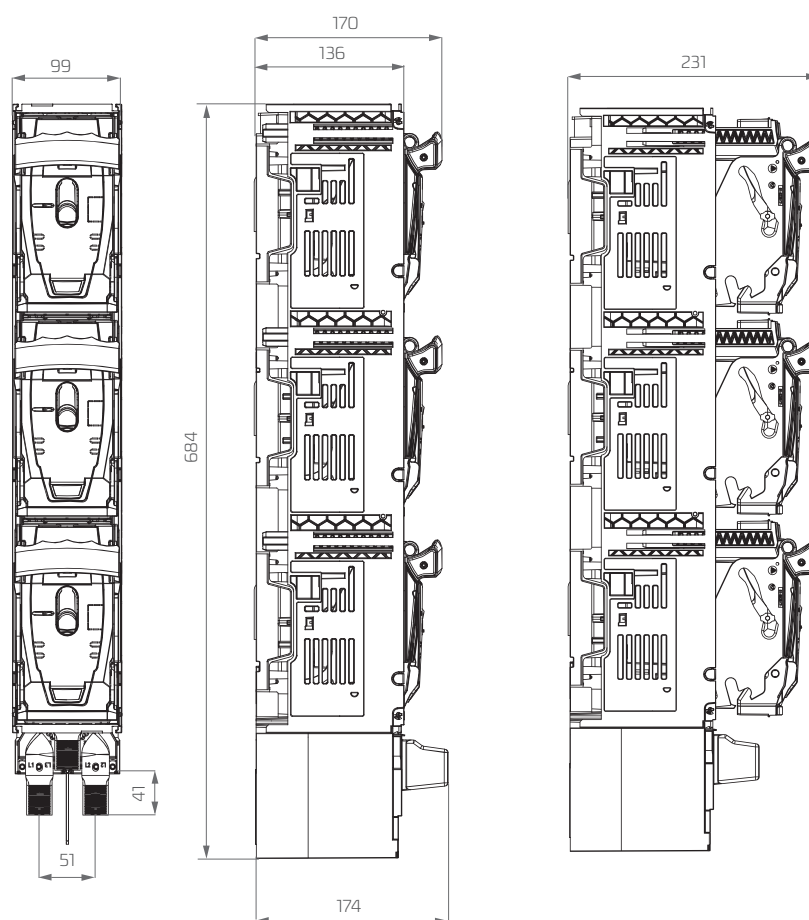
FAST INSTALLATION MODULES EQUIPPED WITH HOOKED CLAMPS



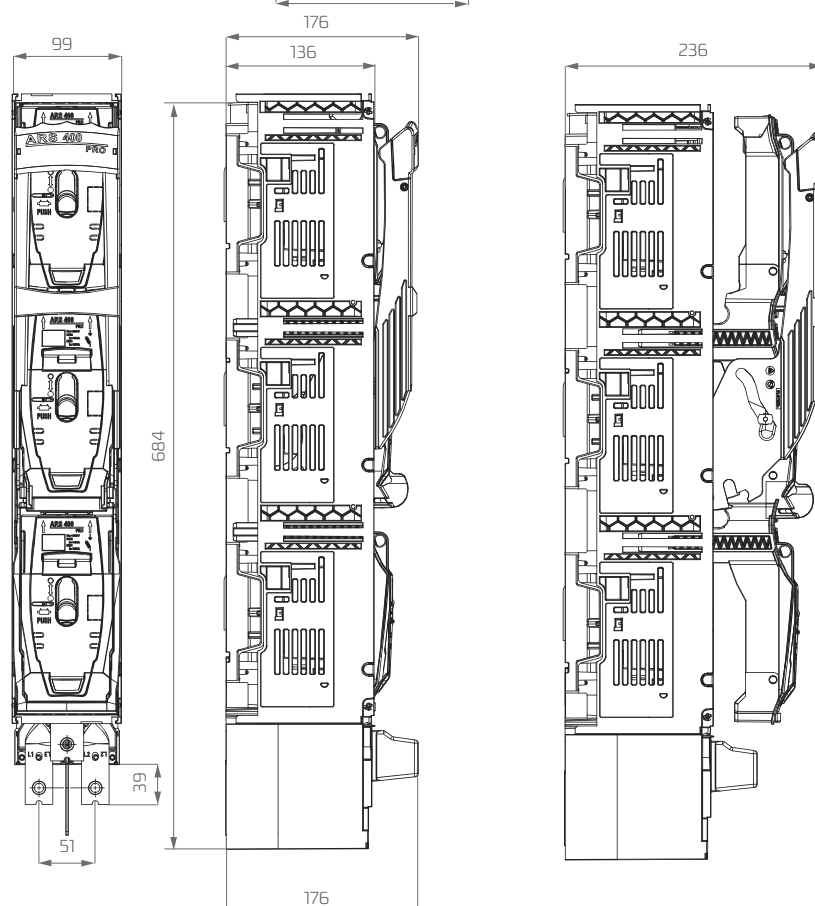




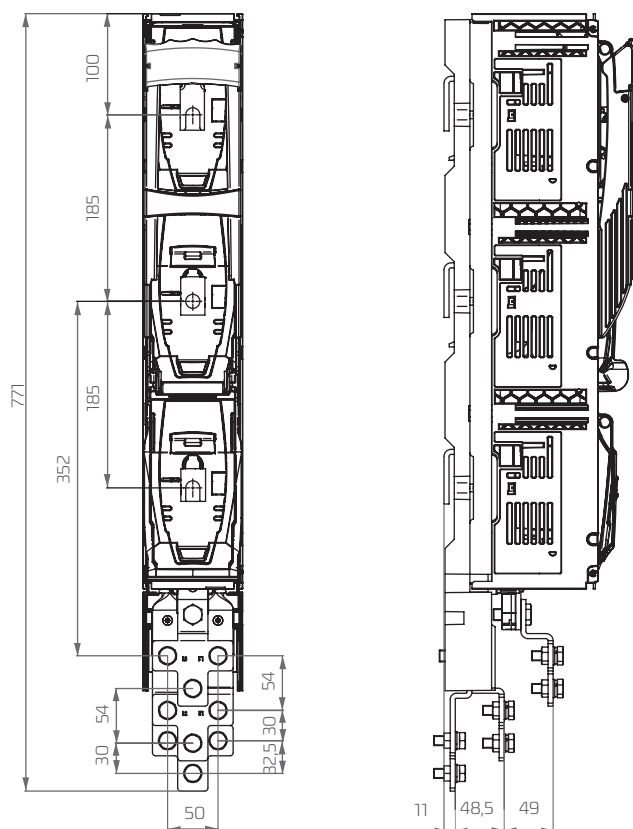
ARS 400 pro, ARS 630 pro, ARS 400, ARS 630  
1-phase



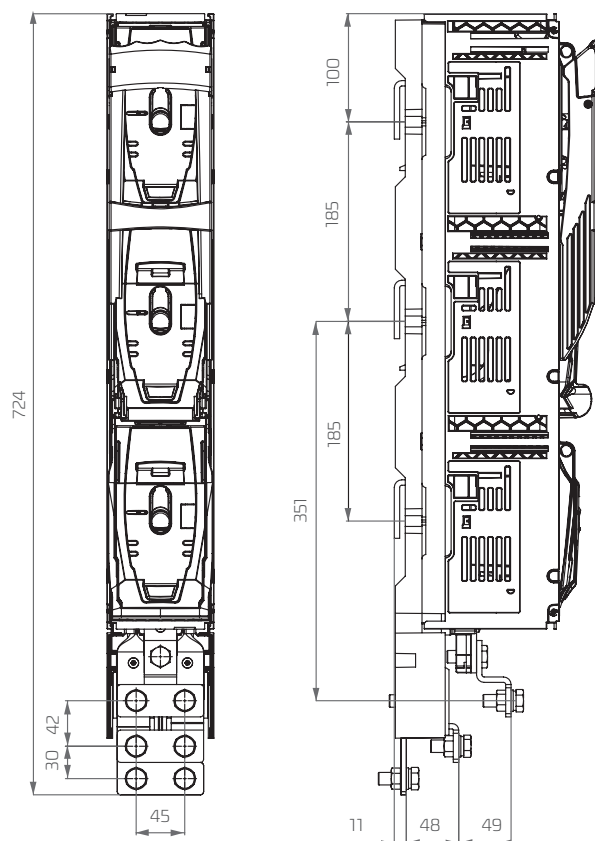
3-phase



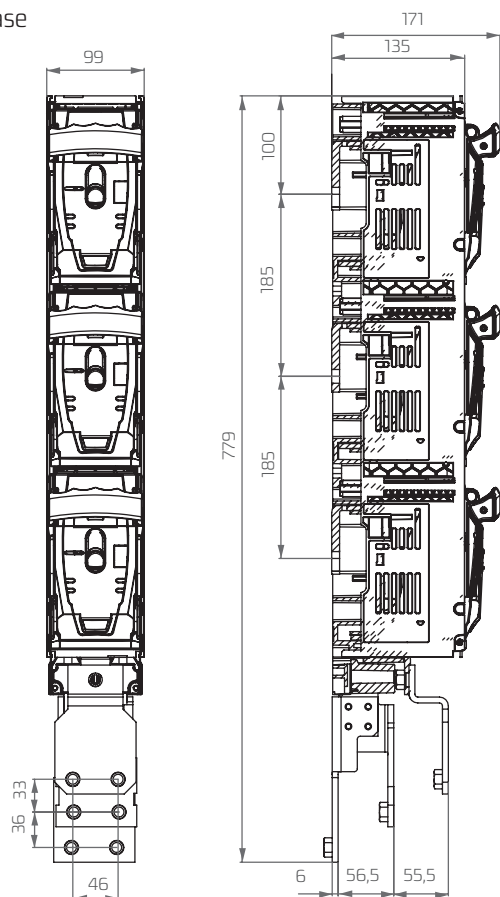
Terminals 3x120 mm<sup>2</sup>



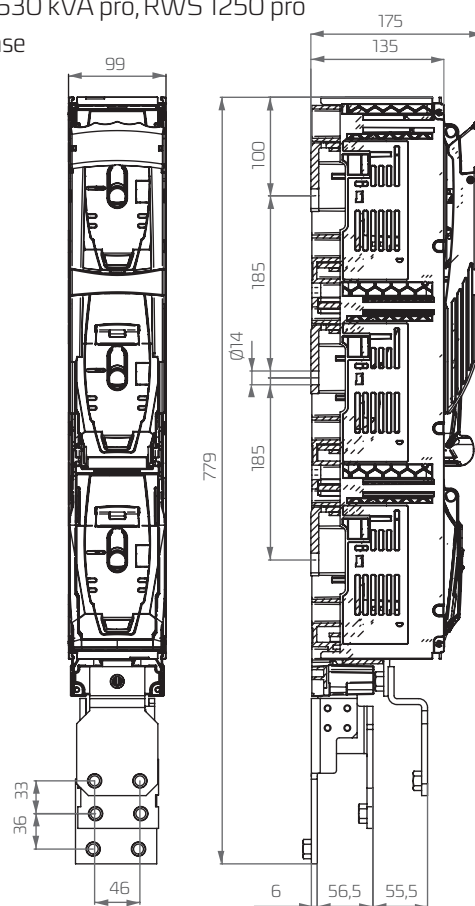
Terminals 2x240 mm<sup>2</sup>



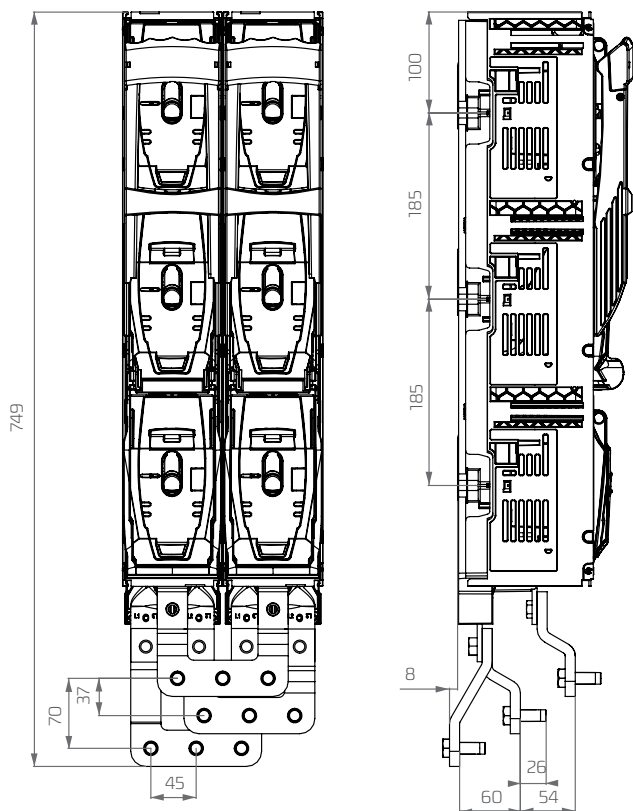
ARS 630 kVA pro  
1-phase



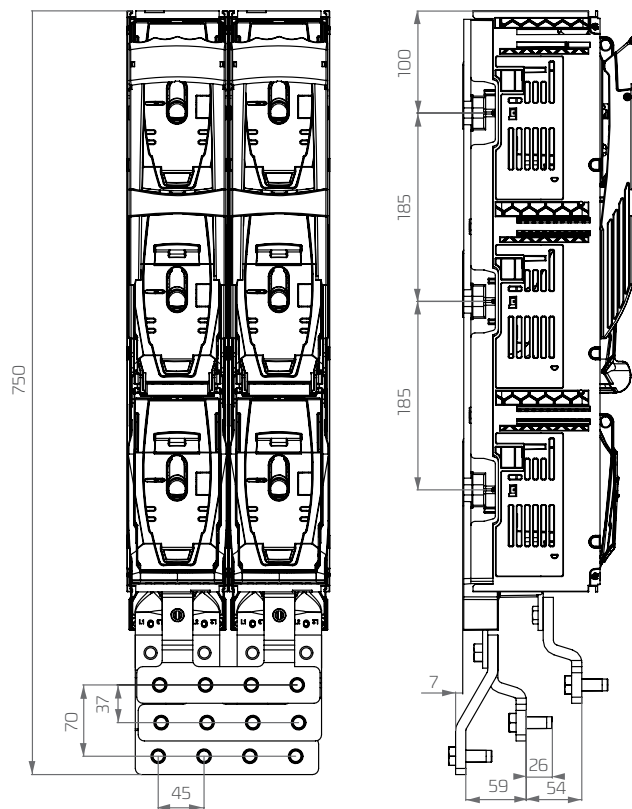
ARS 630 kVA pro, RWS 1250 pro  
3-phase



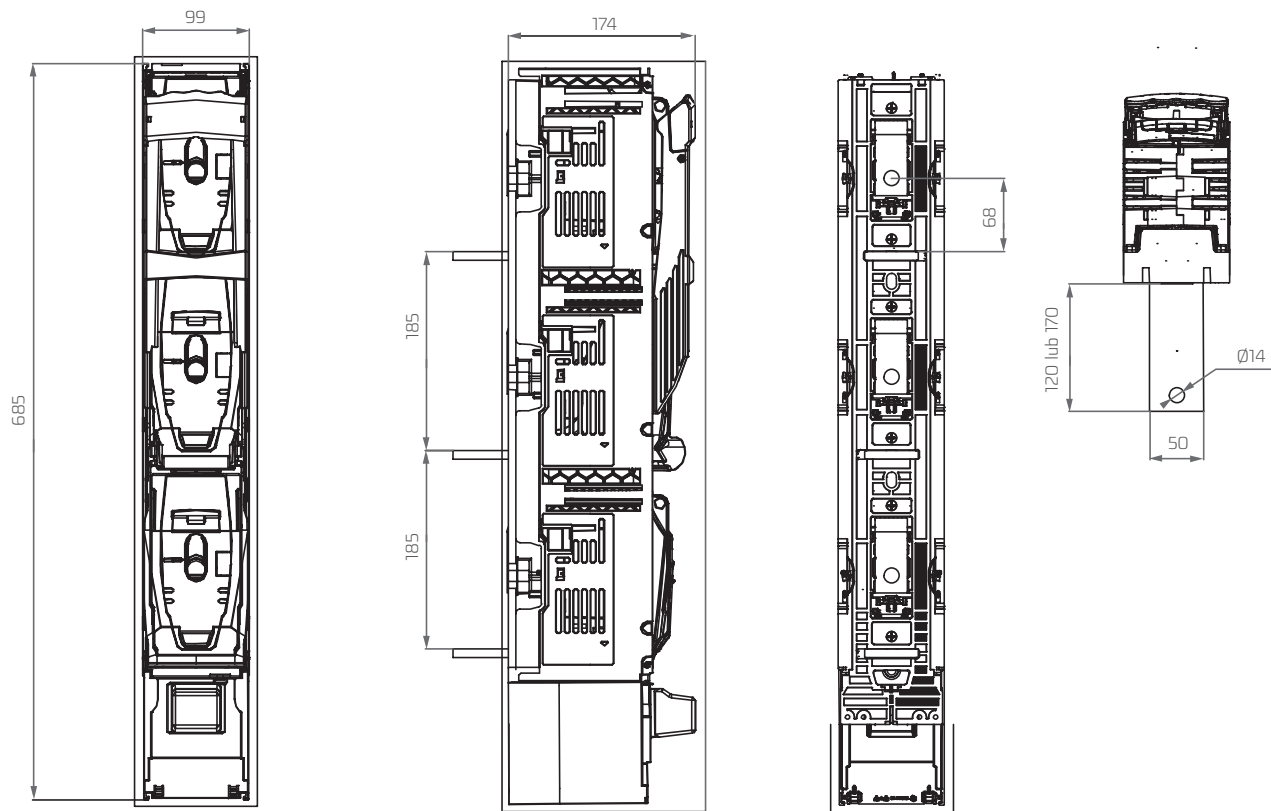
ARS 1250-6-3M pro



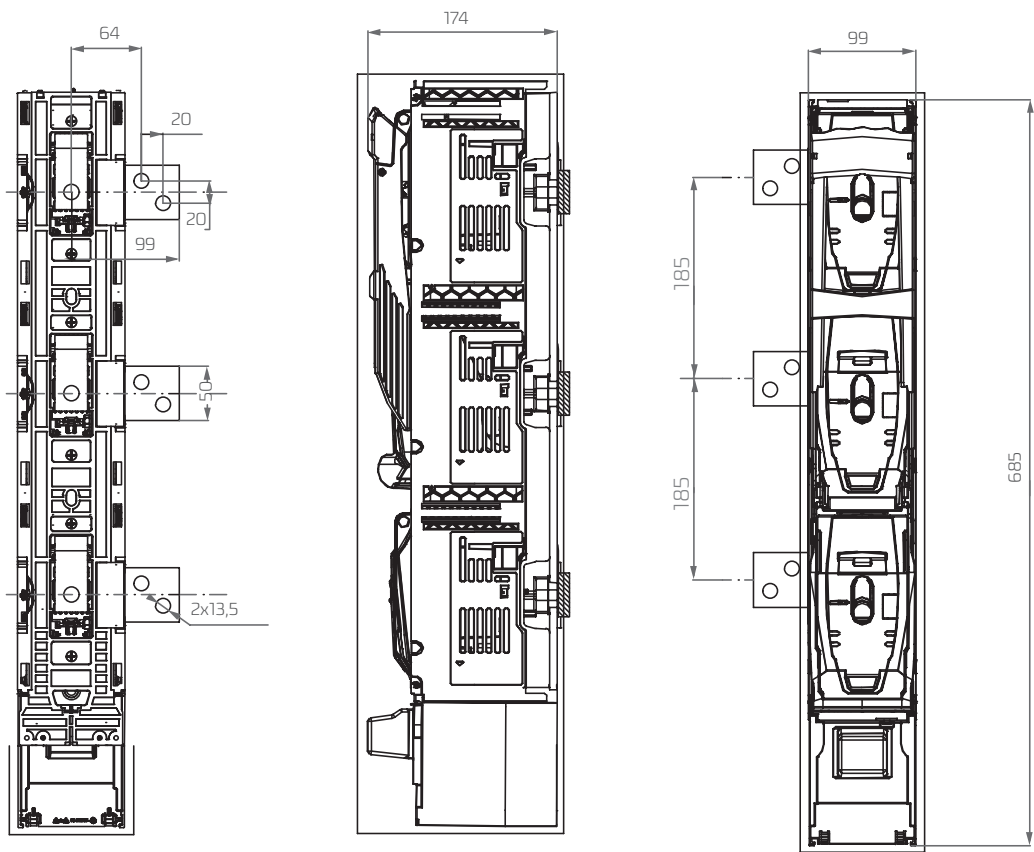
ARS 1250-6-4M pro



RWS 1250-NT pro



RWS 1250-NL pro





## ARS 00, ARS 00/100 mm, smartARS 00 pro, ARS 00/100mm pro - 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   |   |
| 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 ARS 00, 1, 2, 3                                                                                                                                                                             | 1115281041T   |   |
| V- clamp 25-120 SW. For connection of conductor with cross-section:                                                                                                                                                       | 1119510008T   |  |
| 16 - 95 mm <sup>2</sup>  16 - 95 mm <sup>2</sup>    |               |                                                                                     |
| 25 - 120 mm <sup>2</sup>  25 - 120 mm <sup>2</sup>  |               |                                                                                     |
| 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>   |               |                                                                                     |
| Hooked clamps for installation of ARS on to busbar system without drilled holes. (set - 3 pcs.)                                                                                                                           | 53-945361-011 |  |



ARS 00-1



ARS 00/100 mm



smartARS 00-1 pro



ARS 00/100 mm pro

## ARS 00/100 mm, ARS 00/100mm pro - accessories

| Description                                                                | Article No. | Picture                                                                              |
|----------------------------------------------------------------------------|-------------|--------------------------------------------------------------------------------------|
| Micro switch for fuse link cover position monitoring (0-1) of ARS 00/100mm | 1115296049  |  |
| Support angle for installation of busbar shroud                            | 1115281081T |   |



ARS 00/100 mm



ARS 00/100 mm pro



| Description                                                                                                                                                                                 | Article No.    | Picture                                                                              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------------------------------------------------------------------------------------|
| Labelling area                                                                                                                                                                              | 53-945333-011  |     |
| Terminal shroud/adjusting shroud                                                                                                                                                            | 53-945924-011  |     |
| Flat terminal shroud                                                                                                                                                                        | 51-011242-001  |     |
| Flat terminal shroud in RAL 7035 (grey)                                                                                                                                                     | 51-0011242-002 |     |
| Extended terminal shroud. Together with two flat terminal shrouds 51-011242-001 it adjusts the length of smartARS 2,3 pro, ARS 400, ARS 400 pro, ARS 630 and ARS 630 pro                    | 51-823245-001  |    |
| Extended terminal shroud in RAL 7035 (grey). Together with two flat terminal shrouds 51-011242-002 it adjusts the length of smartARS 2,3 pro, ARS 400, ARS 400 pro, ARS 630 and ARS 630 pro | 51-823245-002  |    |
| Single adapter 100/185 enabling to install ARS 00/100 mm on busbar system 185 mm                                                                                                            | 1115281021T    |    |
| Double adapter 100/185 enabling to install two ARS 00/100 mm units on busbar system 185 mm at perforation holes in busbar system every 100 mm                                               | 1115281022T    |  |

## ARS 00, smartARS 00 pro - accessories

| Description                                                                                                                                                                                | Article No.                      | Picture                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|--------------------------------------------------------------------------------------|
| Double adapter adjusts the height of smartARS 00 pro to the height smartARS 2,3 pro                                                                                                        | 1115281023T                      |  |
| Double adapter adjusts the height of smartARS 00 pro to the height ARS 400, 630                                                                                                            | 1115281024T                      |  |
| Single distance adapter 185/185 for ARS 00 or smartARS 00 pro adjusts the front line to ARS 400 or ARS 400 pro (set – 3 pcs.)                                                              | 51-005241-001 (no. regard 1 pc.) |   |
| Single distance adapter 185/185 for ARS 00 or smartARS 00 pro adjusts the front line to smartARS 2,3 pro (set – 3 pcs.)                                                                    | 51-005242-001 (no. regard 1 pc.) |   |
| Double distance adapter 185/185 for two units ARS 00 or smartARS 00 pro adjusts the front line to ARS 400 or ARS 400 pro at perforation holes in busbar system every 100 mm (set – 3 pcs.) | 52-005262-001 (no. regard 1 pc.) |  |
| Double distance adapter 185/185 for two units ARS 00 or smartARS 00 pro adjusts the front line to smartARS 2,3 pro at perforation holes in busbar system every 100 mm (set – 3 pcs.)       | 52-005263-001 (no. regard 1 pc.) |  |
| Hooked clamps (set - 3 pcs.) for smartARS 00 pro with heighthened rails adjusted to front line of smart ARS 2,3 pro                                                                        | 53-945361-041                    |   |



ARS 00-1



smartARS 00-1 pro

ARS 400, ARS 400 pro, ARS 630, ARS 630 pro, smartARS 2 pro, smartARS 3 pro, ARS 630 kVA pro, ARS 1250 pro - accessories

| Description                                                                                                                                                                                                                                                                                             | Article No.   | Picture                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|
| M10 terminal screw, for connection of conductors with lug terminal (set - 3 pcs.)                                                                                                                                                                                                                       | 53-082961-002 |    |
| M12 terminal screw, for connection of conductors with lug terminal (set - 3 pcs.)                                                                                                                                                                                                                       | 53-082961-003 |    |
| V-clamp with tightening torque 30 Nm 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 with tightening torque 40 Nm for connection of conductor with cross-section:                                                                                                                                                                                                                    |               |                                                                                     |
| 35 - 185 mm <sup>2</sup>  35 - 240 mm <sup>2</sup>                                                                                    | 1119510084T   |    |
| 35 - 240 mm <sup>2</sup>  35 - 300 mm <sup>2</sup>                                                                                    |               |                                                                                     |
| Double V-clamp with tightening torque 30 Nm for connection of two conductors with cross-section:                                                                                                                                                                                                        |               |                                                                                     |
| 50 - 185 mm <sup>2</sup>  50 - 240 mm <sup>2</sup>                                                                                | 1119510082T   |  |
| 50 - 240 mm <sup>2</sup>  50 - 300 mm <sup>2</sup>                                                                                |               |                                                                                     |
| Double V-clamp with tightening torque 30 Nm for connection of two conductors with cross-section:                                                                                                                                                                                                        |               |                                                                                     |
| 50-185 mm <sup>2</sup>  50-240 mm <sup>2</sup>                                                                                    | 1119510085T   |  |
| 50-240 mm <sup>2</sup>  50-300 mm <sup>2</sup>                                                                                    |               |                                                                                     |
| Cable terminal 2x240 mm <sup>2</sup><br>Cable terminal for connection of two cables with lug terminals and cross-section of 240 mm <sup>2</sup> to each phase<br>Set contains two M12 screws per terminal and cable terminal shroud.<br>For use with ARS 2 pro, ARS 3 pro, ARS 400 with M terminals     | 53-931200-001 |  |
| Cable terminal 3x120 mm <sup>2</sup><br>Cable terminal for connection of three cables with lug terminals and cross-section of 120 mm <sup>2</sup> to each phase<br>Set contains three M12 screws per terminal and cable terminal shroud.<br>For use with ARS 2 pro, ARS 3 pro, ARS 400 with M terminals | 53-931201-001 |  |
| Hooked clamps for installation of ARS 1, 2, 3 on to busbar system without drilled holes (set - 3 pcs.)                                                                                                                                                                                                  | 1115281037T   |  |



ARS 400-1-V



ARS 400-1-M pro



ARS 630-1-M pro



smartARS 2-1-M pro



smartARS 3-1-M pro



ARS 630 kVA pro



ARS 1250-1-3M pro

| Description                                                                                                                | Article No.   | Picture                                                                             |
|----------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|
| Busbar shroud (polycarbonate)<br>for busbar system 185 mm,<br>Width 100 mm, length 707 mm,<br>thickness 2 mm               | 1361400007T   |    |
| Isolating pin for fixing<br>the 100 mm busbar shroud, M12<br>(set – 2 pcs.)                                                | 1361400002T   |    |
| Terminal protective cover                                                                                                  | 51-930272-011 |    |
| Distance sleeve for current transformer<br>APA-W12<br>Length 36 mm,<br>outer diameter =22,5 mm,<br>inner diameter =12,5 mm | 1115718010T   |    |
| Universal earthing device<br>for: 00, 1, 2, 3                                                                              | 1115281041T   |   |
| Fuse link cover for ARS 2<br>with fuse link state indication<br>and monitoring                                             | 53-002331-001 |  |
| Fuse link cover for ARS 3<br>with fuse link state indication<br>and monitoring                                             | 53-002331-002 |  |
| Rotary cover 2V                                                                                                            | 51-000487-001 |  |



# 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-SM, 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 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, 2 and 3.

Table 59. PBS fuse rails technical data

| Parameter                             |                  | PBS 00/100 mm | PBS 00-SM        | PBS 2            | PBS 3            |
|---------------------------------------|------------------|---------------|------------------|------------------|------------------|
| Size                                  |                  | 00            | 00               | 2                | 3                |
| Rated thermal current $I_{th}$        | 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               | -                | 00            | 20 <sup>1)</sup> | 20 <sup>1)</sup> | 20 <sup>1)</sup> |
| Size of fuse links                    |                  | 00            | 00               | 1,2              | 3                |

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

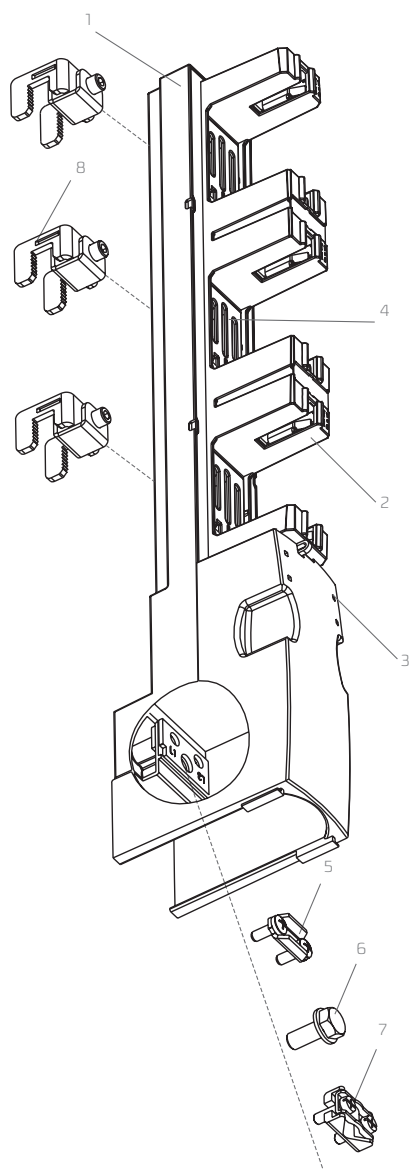
## OPERATING CONDITIONS

- 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

Place of installing  
insulating barrier

Place of installing clip  
with description label

Terminal shroud label



PBS 00/100 mm

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



PBS 00/100 mm

Table 60. 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 69

Table 61. 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 62. PBS 00/100 mm terminal clamps

| Description                 | PBS 00/100 mm                 |                                                     |                                              |                                              |
|-----------------------------|-------------------------------|-----------------------------------------------------|----------------------------------------------|----------------------------------------------|
| Clamp                       | S-bridge clamp<br>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>  | re ● 10 mm <sup>2</sup> -70 mm <sup>2</sup>  |
|                             |                               |                                                     | se ◆ 25 mm <sup>2</sup> -150 mm <sup>2</sup> | se ◆ 25 mm <sup>2</sup> -120 mm <sup>2</sup> |
| Tightening torque           | 3 Nm**                        | 12 Nm**                                             | rm ☼ 16 mm <sup>2</sup> -95 mm <sup>2</sup>  | rm ☼ 10 mm <sup>2</sup> -70 mm <sup>2</sup>  |
|                             |                               |                                                     | sm ☼ 25 mm <sup>2</sup> -150 mm <sup>2</sup> | sm ☼ 25 mm <sup>2</sup> -95 mm <sup>2</sup>  |
|                             |                               |                                                     | 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

Aptor 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 63. 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                       | -                | 20     |
| IP degree of protection with fuse links and fuse links shrouds installed * | -                | 20     |
| Size of fuse links                                                         |                  | 00     |

Accessories on page 69, 70

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



PBS 00-V

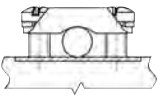
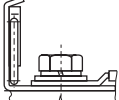
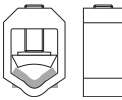
PBS 00-V-O

PBS 00-SM

Table 64. 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 65. PBS 00 terminal clamps

| Description                 | PBS 00                                                                              |                                                                                     |                                                                                      |                                                                                           |
|-----------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Clamp                       | S-bridge clamp<br>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>                                         | re ● 10 mm <sup>2</sup> - 70 mm <sup>2</sup>                                              |
|                             |                                                                                     |                                                                                     | se ◆ 25 mm <sup>2</sup> - 150 mm <sup>2</sup>                                        | se ◆ 25 mm <sup>2</sup> - 120 mm <sup>2</sup>                                             |
| Tightening torque           | 3 Nm**                                                                              | 12 Nm**                                                                             | rm ● 16 mm <sup>2</sup> - 95 mm <sup>2</sup>                                         | rm ● 10 mm <sup>2</sup> - 70 mm <sup>2</sup>                                              |
|                             |                                                                                     |                                                                                     | sm ◆ 25 mm <sup>2</sup> - 150 mm <sup>2</sup>                                        | sm ◆ 25 mm <sup>2</sup> - 95 mm <sup>2</sup>                                              |
|                             |                                                                                     |                                                                                     | 20 Nm**                                                                              | 15 Nm**                                                                                   |

For stranded conductors using cable ferrules is recommended

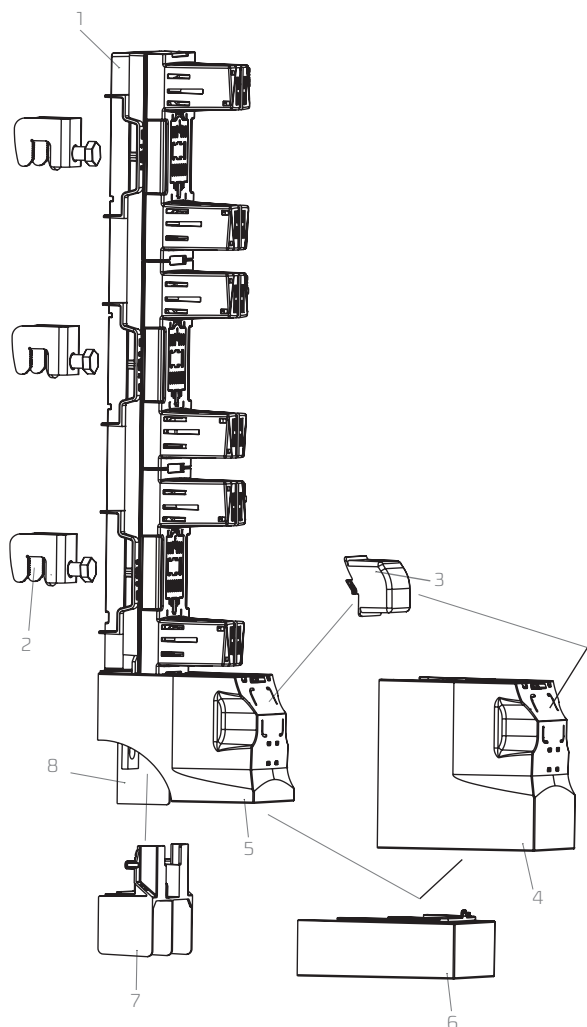
\*) bars of maximum width of 20 mm and maximum thickness of 5 mm can be fixed to M type screw terminals

\*\*) 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.

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



Option of fuse link  
state indication  
by neon indicator tube

Labels on busbar  
terminals acces covers

Clip with label

Terminal shroud label



### DESCRIPTION

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 mm<sup>2</sup>) 51-945480-011
4. Terminal shroud (long) 51-945480-011
5. Terminal shroud (short) 51-930271-011
6. Bottom adjusting shroud 51-930313-011
7. Cable terminal protective cover 51-930272-011
8. Protective barrier

## PBS 2 (400 A, 690 V)

Fuse rail designed for operation with NH1 and NH2 fuse links

Table 66. Technical data

| Parameter                                                                |                  | PBS 2              |
|--------------------------------------------------------------------------|------------------|--------------------|
| Size                                                                     |                  | 2                  |
| Rated thermal current $I_{th}$                                           | 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                     | -                | 20                 |
| IP degree of protection with fuse links and fuse links shrouds installed | -                | 20                 |
| Size of fuse links                                                       |                  | 1,2                |

Accessories on page 70, 71



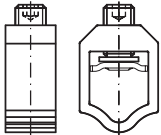
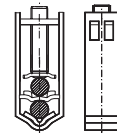
PBS 2-V

PBS 2-V  
with fuse link shrouds

Table 67. Versions

| Version  |                                                                                  | Weight | Article No.   |
|----------|----------------------------------------------------------------------------------|--------|---------------|
| PBS 2-V  | cable terminals: V-terminals with V-clamps (35-300 mm <sup>2</sup> )             | 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 <sup>2</sup> ) | 3,8 kg | 63-811639-051 |

Table 68. PBS 2 terminal clamps

| Description                 | PBS 2-V                                                                                                      | PBS 2-2V                                                                                                     |                                                                                                              | PBS 2-2V                                                                                                     |                                                                                                                | PBS 2-M                                                                                                        |              |
|-----------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|--------------|
| Clamp                       | V-clamp 35-300SW-B                                                                                           | V-clamp 2/50-300SW-B                                                                                         |                                                                                                              | V-clamp HS 2/50-240-C*                                                                                       |                                                                                                                | M-screw M10**                                                                                                  |              |
| 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>  | 50 - 185 mm <sup>2</sup>  | 50 - 240 mm <sup>2</sup>  | Lug terminal |
|                             | 35 - 240 mm <sup>2</sup>  | 35 - 300 mm <sup>2</sup>  | 50 - 240 mm <sup>2</sup>  | 50 - 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                                                                                                          |                                                                                                                | 32 Nm        |

For stranded conductors using cable ferrules is recommended

\*) if the fuse switch disconnecter 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. Apator takes responsibility for technical quality of V-terminals manufactured only by the company. Minimum tightening torque (M10 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)



PBS 3-V



PBS 3-V  
with fuse link shrouds

Table 69. Technical data

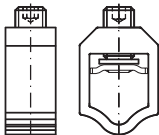
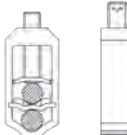
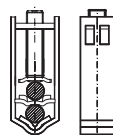
| Parameter                                                               |                  | PBS 3 |
|-------------------------------------------------------------------------|------------------|-------|
| Size                                                                    |                  |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

Accessories on page 70, 71

Table 70. Versions

| Version  |                                                                                   | Weight | Article No.   |
|----------|-----------------------------------------------------------------------------------|--------|---------------|
| PBS 3-V  | cable terminals: V-terminals with V-clamps (35-300 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 <sup>2</sup> ) | 4,8 kg | 63-811639-061 |

Table 71. PBS 3 terminal clamps

| Description                 | PBS 3-V                                                                                          |                                                                                                  | PBS 3-2V                                                                                         |                                                                                                  | PBS 3-2V                                                                                           |                                                                                                    | PBS 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:                      |                                                                                                  |                                                                                                  |                                                                                                  |                                                                                                    |                                                                                                    | Lug terminal                                                                          |
|                             | 35 - 185 mm²  | 35 - 240 mm²  | 50 - 185 mm²  | 50 - 240 mm²  | 50 - 185 mm²  | 50 - 240 mm²  |                                                                                       |
|                             | 35 - 240 mm²  | 35 - 300 mm²  | 50 - 240 mm²  | 50 - 300 mm²  | 50 - 240 mm²  | 50 - 300 mm²  |                                                                                       |
| 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

Apartor 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

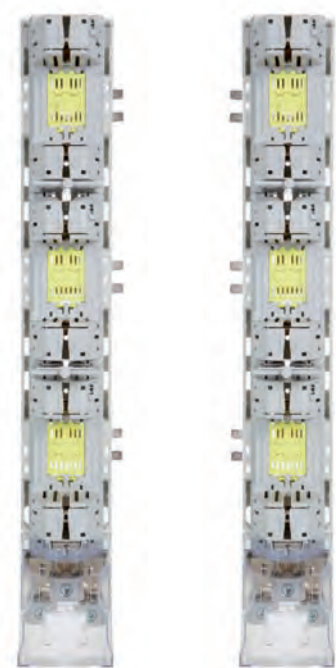
(separation, coupling of busbar systems)

Table 72. 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 70, 71

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



PBS 2-NR

PBS 3-NL

PBS fuse rail with lateral  
busbar terminal

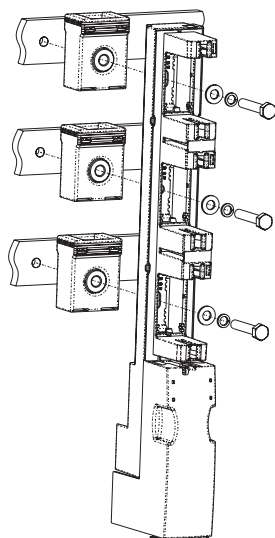
Table 73. Versions

| 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 |

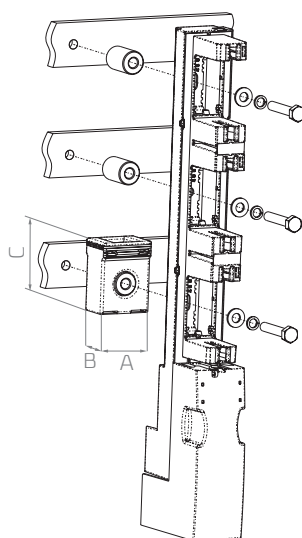
Table 74. PBS with lateral busbar terminal clamps

| 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 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  
 $\varnothing$  internal = 12,5 mm  
 $\varnothing$  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  
 $\varnothing$  internal = 12,5 mm,  
 $\varnothing$  external = 22,5 mm

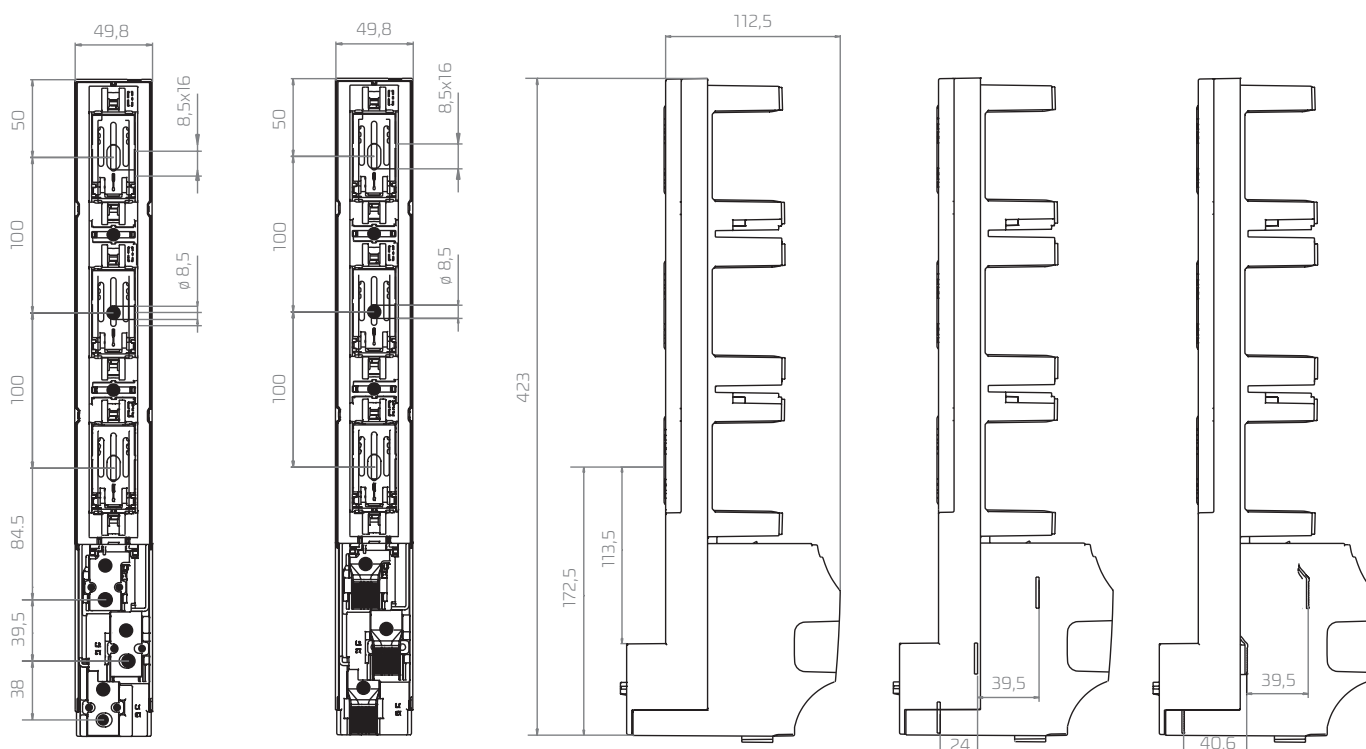


Distance sleeve

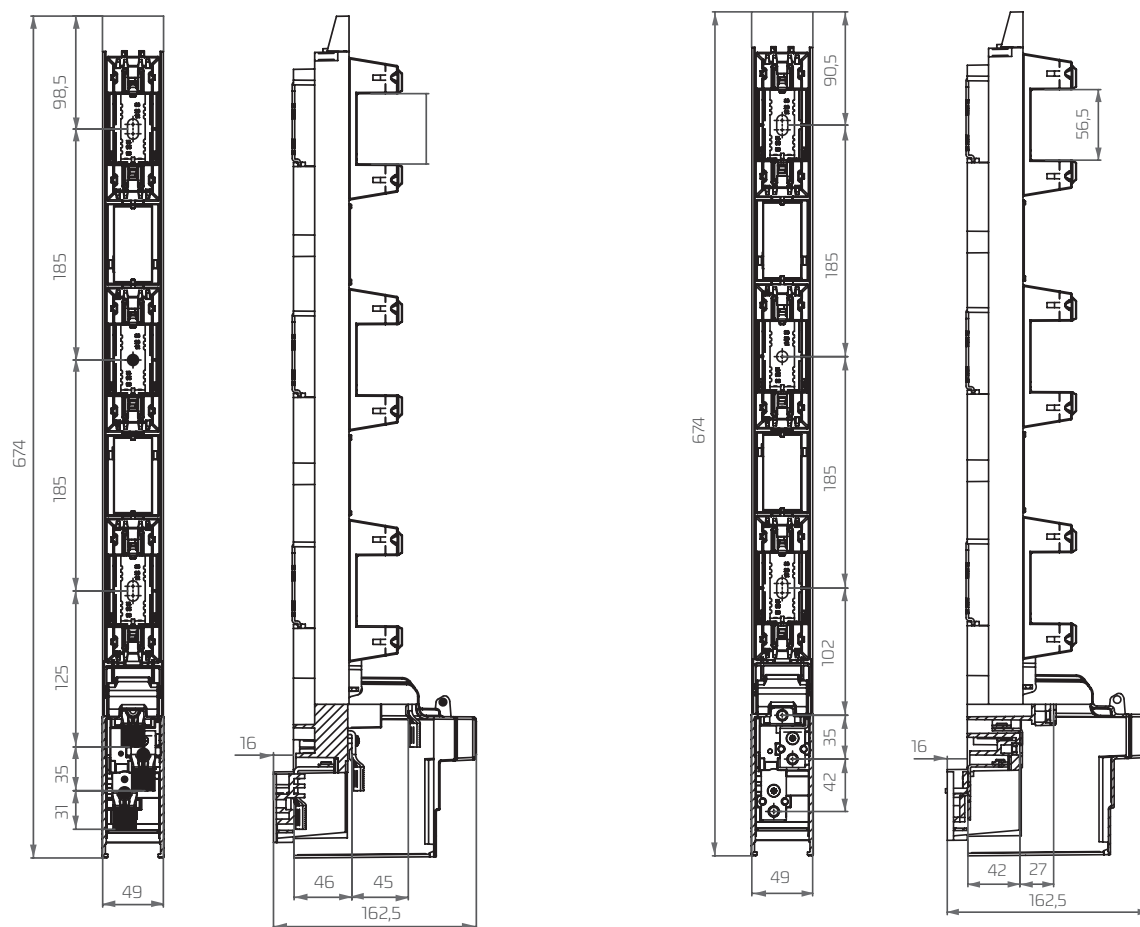


Current transformer

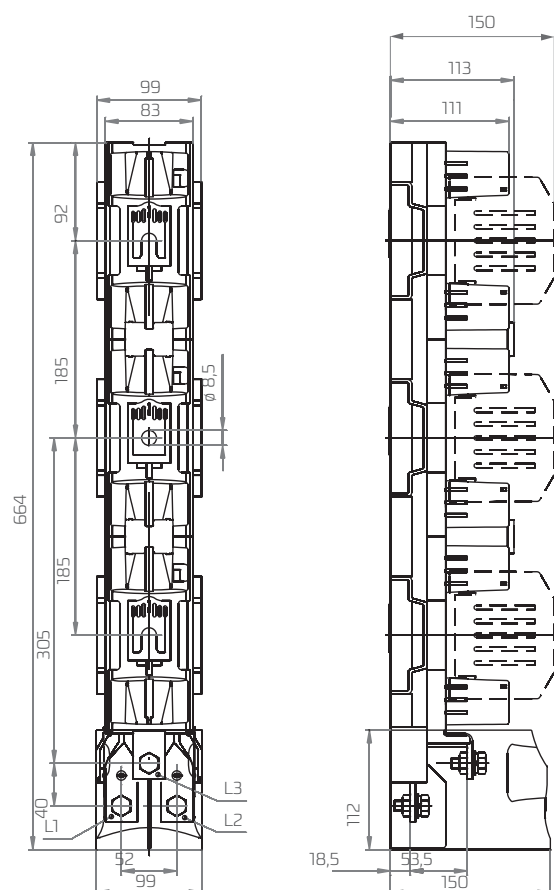
### PBS 00/100 mm



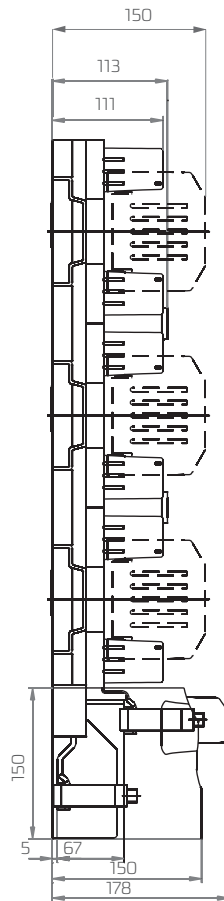
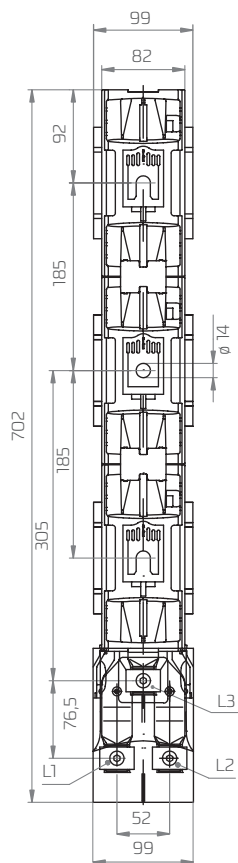
PBS 00-SM



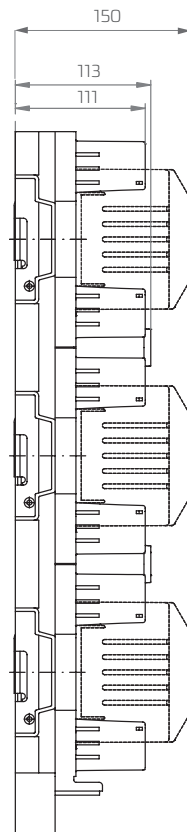
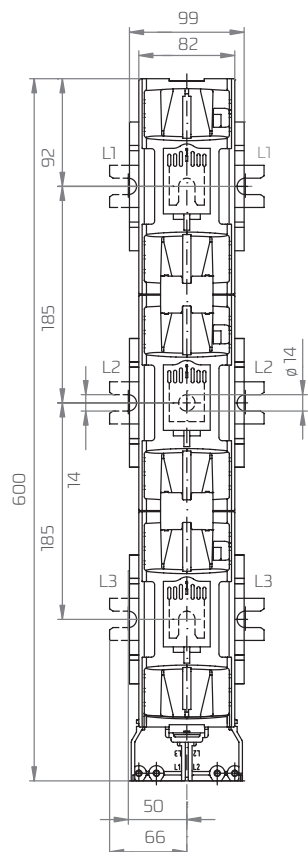
PBS 2 | PBS 3



PBS 2 | PBS 3 with terminal 2V (2 x 240 mm<sup>2</sup>)



PBS 2 | PBS 3 with lateral busbar terminal



## 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

## 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<br>(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<br>(no. regard 1 pc.) |  |
| Fuse link shroud                                                                                                                                                 | 51-001312-001                       |  |



PBS 00-V-O

## 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<br>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<br>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<br>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



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



# RBK pro

## Vertical fuse switch disconnectors

- designed for distribution of electricity and protection of electrical equipment against short-circuits and overloads with industrial fuse links.

## APPLICATIONS

**RBK pro** fuse switch disconnectors are designed for distribution of electricity and protection of electrical equipment against short-circuits and overloads with industrial fuse links. They are conforming to EN 60947-1, EN 60947-3, IEC 60947-1, IEC 60947-3 standards. They are intended for installation in low voltage distribution boards, cable and metering cabinets.

## CONSTRUCTION

- thermoplastic parts of **RBK pro** fuse switch disconnectors are made of fibre glass strengthened polyamide with halogen free flame retardant added and have highest possible flammability class – VO,
- **RBK pro** fuse switch disconnectors consist of following parts:
  - three pole main base with spring-loaded contacts designed for connection of circular or sector-shaped conductors, conductors with lug terminals or bars,
  - removable cover with fuse links,
- arc chambers with steel deionization plates over top contacts,
- silver plated contacts providing low power loss.

## MOUNTING

- on mounting plate
  - RBK 000 pro, RBK 00 pro, RBK 1 pro, RBK 2 pro, RBK 3,
- DIN rail
  - single: RBK 000 pro,
  - double: RBK 00 pro,
- on to busbar systems:
  - 60 mm RBK 000 pro-S, RBK 00 pro-S, RBK 1 pro-S, RBK 2 pro-S, installation on to busbar system with hooked clamps, placed inside fuse,
  - 60 mm RBK 3-S installation on busbar system using adapter with three M10 screws,
  - 100 mm (RBK 2-S, RBK 1 pro-S) installation on to busbar system with hooked clamps placed inside fuse.

## 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,
- relative humidity of the air should not be higher than 50% at temperature of +40°.

## FUNCTIONALITY

- making and breaking operations should be done with determined movement,
- possible connection of circular or sector-shaped conductors with bare ends (V-terminals, 2V-terminals) or conductors with lug terminals (screw terminals),
- voltage test performed through test holes in fuse link cover,
- fuse links state monitoring.

## CONFORMITY WITH STANDARDS

EN 60947-1, EN 60947-3, IEC 60947-1, IEC 60947-3

Table 75. RBK pro fuse switch disconnectors technical data

| Parameter                                 |       | RBK 000 pro<br>RBK 000 pro-S |            |        |        |        | RBP 000 pro |        |        | RBP 000 pro-S |        |        | RBK 00 pro |        |        | RBK 00 pro-S |        |        |         |
|-------------------------------------------|-------|------------------------------|------------|--------|--------|--------|-------------|--------|--------|---------------|--------|--------|------------|--------|--------|--------------|--------|--------|---------|
| Rated thermal current $I_{th}^{1)}$       |       | A                            | 160        |        |        |        |             | 125    |        |               | 125    |        |            | 160    |        |              | 160    |        |         |
| Rated voltage $U_n$                       |       | V                            | 690        |        |        |        |             | 690    |        |               | 690    |        |            | 690    |        |              | 690    |        |         |
| Utilization category                      |       | -                            | AC-23B     | AC-22B | AC-22B | AC-21B | DC-21B      | AC-23B | AC-21B | DC-22B        | AC-23B | AC-22B | DC-22B     | AC-23B | DC-22B | DC-21B       | AC-23B | AC-22B | DC-22B  |
| Rated switching current $I_e$             |       | A                            | 100        | 100    | 160    | 160    | 160         | 125    | 125    | 100           | 125    | 125    | 100        | 160    | 160    | 160          | 160    | 160    | 160     |
| Rated switching voltage $U_e$             |       | V                            | 400        | 690    | 400    | 690    | 250         | 400    | 690    | 250           | 400    | 690    | 250        | 690    | 250    | 440          | 400    | 690    | 250     |
| Rated short circuit withstand current     | 690 V | kA                           | 25         |        |        |        | 25/250V     | 50     |        | 25/250V       | 35     |        | 25/250V    | 80     |        | 25/250V      | 100    |        | 25/250V |
|                                           | 500 V |                              | 80         |        |        |        |             | -      |        |               | -      |        |            | -      |        |              | -      |        |         |
|                                           | 400 V |                              | -          |        |        |        |             | 80     |        |               | 80     |        |            | 100    |        |              | 100    |        |         |
| Rated short circuit making current        | 690 V | kA                           | 25         |        |        |        | 25/250V     | 50     |        | 25/250V       | 35     |        | 25/250V    | 80     |        | 25/250V      | 100    |        | 25/250V |
|                                           | 500 V |                              | 80         |        |        |        |             | -      |        |               | -      |        |            | -      |        |              | -      |        |         |
|                                           | 400 V |                              | -          |        |        |        |             | 80     |        |               | 80     |        |            | 100    |        |              | 100    |        |         |
| Rated insulation voltage $U_i$            |       | V                            | 1000       |        |        |        |             | 1000   |        |               | 1000   |        |            | 1000   |        |              | 1000   |        |         |
| Rated impulse withstand voltage $U_{imp}$ |       | kV                           | 8          |        |        |        |             | 6      |        |               | 6      |        |            | 8      |        |              | 8      |        |         |
| Rated frequency                           |       | Hz                           | 50-60      |        |        |        | -           | 50-60  |        | -             | 50-60  |        | -          | 50-60  | -      | 50-60        | -      | 50-60  | -       |
| Mechanical durability                     |       | Number of cycles             | 2000       |        | 1600   |        | 1600        |        |        | 1600          |        |        | 1600       |        |        | 1600         |        |        |         |
| Electrical durability                     |       |                              | 300        |        | 200    |        | 200         |        |        | 200           |        |        | 200        |        |        | 200          |        |        |         |
| IP degree of protection                   |       | IP                           | 20         |        |        |        |             | 20*    |        |               | 20*    |        |            | 20     |        |              | 20     |        |         |
| Weight                                    |       | kg                           | ~0,6, ~0,9 |        |        |        |             | ~0,5   |        |               | ~0,7   |        |            | ~0,7   |        |              | ~0,9   |        |         |
| Size of fuse links                        |       | -                            | 000        |        |        |        |             | 000    |        |               | 000    |        |            | 00     |        |              | 00     |        |         |

\*from the front IP30

<sup>1)</sup>  $I_{th}$  - thermal current of fuse switch disconnector without external enclosure, installed outdoors  
(In case of the installation of fuse switch disconnectors in enclosures then load factor should be considered)

<sup>2)</sup> for 60 mm busbar system

- RBK 2 switch disconnector with solid links 400 A
- rated short-time withstand current  $I_s I_{cw} = 13$  kA
- rated short-circuit making capacity  $I_{cm} = 8$  kA
- RBK 1000 - (RBK 3 switch disconnector with solid links 1000 A)
- rated short-time withstand current  $I_s I_{cw} = 12,6$  kA
- rated short-circuit making capacity  $I_{cm} = 25,2$  kA
- rated thermal current  $I_{th} = 1000$  A when connected on to busbars 50x10 mm
- utilization category AC-21

| Parameter                                           |       |                  | RBK 00 pro-V 120 |        |             | RBK 1 pro |             | RBK 1 pro-S |        |                      | RBK 2 pro<br>RBK 2 pro-S |                     |        | RBK 3 pro |        |             | RBK 3 pro-S |        |        |
|-----------------------------------------------------|-------|------------------|------------------|--------|-------------|-----------|-------------|-------------|--------|----------------------|--------------------------|---------------------|--------|-----------|--------|-------------|-------------|--------|--------|
| Rated thermal current I <sub>th</sub> <sup>1)</sup> |       | A                | 160              |        |             | 250       |             | 250         |        |                      | 400                      |                     |        | 630       |        |             | 630         |        |        |
| Rated voltage U <sub>n</sub>                        |       | V                | 690              |        |             | 690       |             | 690         |        |                      | 690                      |                     |        | 690       |        |             | 690         |        |        |
| Utilization category                                |       | -                | AC-23B           | AC-22B | DC-22B      | AC-23B    | DC-22B      | AC-23B      | AC-22B | DC-22B <sup>2)</sup> | AC-23B                   | DC-22B              | DC-21B | AC-23B    | AC-22B | DC-21B      | AC-23B      | AC-22B | DC-21B |
| Rated switching current I <sub>e</sub>              |       | A                | 160              | 160    | 160         | 250       | 250         | 250         | 250    | 250                  | 400                      | 400                 | 400    | 630       | 630    | 630         | 630         | 630    | 630    |
| Rated switching voltage U <sub>e</sub>              |       | V                | 400              | 690    | 250         | 690       | 250         | 400         | 690    | 250                  | 690                      | 220                 | 440    | 400       | 690    | 440         | 400         | 500    | 690    |
| Rated short circuit withstand current               | 690 V | kA               | 100              |        | 25/<br>250V | 80        | 25/<br>250V | 80          |        | 25/<br>250V          | 80                       | 20/250V,<br>15/440V |        | 80        |        | 35/<br>440V | 80          |        |        |
|                                                     | -     |                  |                  |        |             | -         |             | -           | -      |                      |                          |                     |        |           |        |             |             |        |        |
|                                                     | 100   |                  |                  |        |             | 100       |             | 100         | -      |                      |                          |                     |        |           |        |             |             |        |        |
| Rated short circuit making current                  | 690 V | kA               | 100              |        | 25/<br>250V | 80        | 25/<br>250V | 80          |        | 25/<br>250V          | 80                       | 20/250V,<br>15/440V |        | 80        |        | 35/<br>440V | 80          |        |        |
|                                                     | -     |                  |                  |        |             | -         |             | -           | -      |                      |                          |                     |        |           |        |             |             |        |        |
|                                                     | 100   |                  |                  |        |             | 100-      |             | 100         | -      |                      |                          |                     |        |           |        |             |             |        |        |
| Rated insulation voltage U <sub>i</sub>             |       | V                | 1000             |        |             | 1000      |             | 1000        |        |                      | 1000                     |                     |        | 1000      |        |             | 1000        |        |        |
| Rated impulse withstand voltage U <sub>imp</sub>    |       | kV               | 8                |        |             | 8         |             | 8           |        |                      | 12                       |                     |        | 12        |        |             | 12          |        |        |
| Rated frequency                                     |       | Hz               | 50-60            |        | -           | 50-60     | -           | 50-60       |        | -                    | 50-60                    | -                   |        | 50-60     |        | -           | 50-60       |        |        |
| Mechanical durability                               |       | Number of cycles | 1600             |        |             | 1600      |             | 1600        |        |                      | 1000                     |                     |        | 1000      |        |             | 1000        |        |        |
| Electrical durability                               |       |                  | 200              |        |             | 200       |             | 200         |        |                      | 200                      |                     |        | 200       |        |             | 200         |        |        |
| IP degree of protection                             |       | IP               | 20               |        |             | 20        |             | 20          |        |                      | 20                       |                     |        | 20*       |        |             | 20*         |        |        |
| Weight                                              |       | kg               | ~0,9             |        |             | ~2        |             | ~2,5        |        |                      | ~3, ~4,5                 |                     |        | ~4,3      |        |             | ~4,9        |        |        |
| Size of fuse links                                  |       | -                | 00               |        |             | 1         |             | 1           |        |                      | 2                        |                     |        | 3         |        |             | 3           |        |        |

\*from the front IP30

<sup>1)</sup>  $I_{th}$  - thermal current of fuse switch disconnecter without external enclosure, installed outdoors  
(In case of the installation of fuse switch disconnectors in enclosures then load factor should be considered)

<sup>2)</sup> for 60 mm busbar system

## RBK 000 pro (160 A, 690 V)



RBK 000 pro  
for installation on mounting plate

Table 76. Technical data

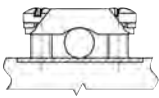
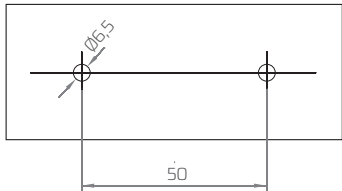
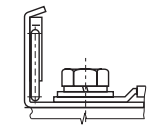
| Parameter                                           |       |                  | RBK 000 pro / RBK 000 pro-S |        |        |        |             |
|-----------------------------------------------------|-------|------------------|-----------------------------|--------|--------|--------|-------------|
| Rated thermal current I <sub>th</sub> <sup>1)</sup> |       | A                | 160                         |        |        |        |             |
| Rated voltage U <sub>n</sub>                        |       | V                | 690                         |        |        |        |             |
| Utilization category                                |       | -                | AC-23B                      | AC-22B | AC-22B | AC-21B | DC-21B      |
| Rated switching current I <sub>e</sub>              |       | A                | 100                         | 100    | 160    | 160    | 160         |
| Rated switching voltage U <sub>e</sub>              |       | V                | 400                         | 690    | 400    | 690    | 250         |
| Rated short circuit making current                  | 690 V | kA               | 25                          |        |        |        | 25/<br>250V |
|                                                     | 500 V |                  | 80                          |        |        |        |             |
|                                                     | 400 V |                  | -                           |        |        |        |             |
| Rated short circuit withstand current               | 690 V | kA               | 25                          |        |        |        | 25/<br>250V |
|                                                     | 500 V |                  | 80                          |        |        |        |             |
|                                                     | 400 V |                  | -                           |        |        |        |             |
| Rated insulation voltage U <sub>i</sub>             |       | V                | 1000                        |        |        |        |             |
| Rated impulse withstand voltage U <sub>imp</sub>    |       | kV               | 8                           |        |        |        |             |
| Rated frequency                                     |       | Hz               | 50-60                       |        |        |        | -           |
| Mechanical durability                               |       | Number of cycles | 2000                        |        | 1600   |        |             |
| Electrical durability                               |       |                  | 300                         |        | 200    |        |             |
| IP degree of protection                             |       | IP               | 20                          |        |        |        |             |
| Weight                                              |       | kg               | ~0,6, ~0,9                  |        |        |        |             |
| Size of fuse links                                  |       | -                | 000                         |        |        |        |             |

<sup>1)</sup>  $I_{th}$  - thermal current of fuse switch disconnector without external enclosure, installed outdoors  
(In case of the installation of fuse switch disconnectors in enclosures then load factor should be considered)

Table 77. Versions

| RBK 000 pro/160 A                         |                                                                                          |                                                                          | Cable terminal  | Article No.   |
|-------------------------------------------|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------|---------------|
| <b>For installation on mounting plate</b> |                                                                                          |                                                                          |                 |               |
| RBK 000 pro                               | for connection of round conductors                                                       |                                                                          | S-bridge clamps | 63-823191-011 |
| RBK 000 pro-E                             | for connection of round conductors, possible installation on DIN rail                    |                                                                          | S-bridge clamps | 63-823191-051 |
| RBK 000 pro-M                             | for connection of round conductors with lug terminals                                    |                                                                          | M8 screws       | 63-823191-021 |
| RBK 000 pro-M-E                           | for connection of round conductors with lug terminals, possible installation on DIN rail |                                                                          | M8 screws       | 63-823191-061 |
| RBK 000 pro-W                             | for connection of round conductors, lengthened terminal shrouds                          |                                                                          | S-bridge clamps | 63-823191-071 |
| RBK 000 pro-W-M                           | for connection of round conductors with lug terminals, lengthened terminal shrouds       |                                                                          | M8 screws       | 63-823191-081 |
| <b>APASYS 60</b>                          | <b>For installation on to 60 mm busbar system</b>                                        |                                                                          |                 |               |
|                                           | RBK 000 pro-SD                                                                           | Cable terminal – bottom, for connection of round conductors              | S-bridge clamps | 63-823234-031 |
|                                           | RBK 000 pro-SG                                                                           | Cable terminal – top, for connection of round conductors                 | S-bridge clamps | 63-823234-011 |
|                                           | RBK 000 pro-SD-M                                                                         | Cable terminal – bottom, for connection of conductors with lug terminals | M8 screws       | 63-823234-041 |
|                                           | RBK 000 pro-SG-M                                                                         | Cable terminal – top, for connection of conductors with lug terminals    | M8 screws       | 63-823234-021 |

Table 78. RBK 000 pro terminal clamps

| Description | Clamp                         | Drawing of clamp                                                                  | Cross-section of conductors                          | Cu bar                     | Tightening torque | Dimensions and spacing of holes for installation of RBK 000 on mounting plate       |
|-------------|-------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------|----------------------------|-------------------|-------------------------------------------------------------------------------------|
| RBK 000 pro | S-bridge clamp<br>2 x M5 x 16 |  | Cu/Al conductor<br>1,5 ÷ 35 mm <sup>2</sup>          | maximum bar width<br>15 mm | 3 Nm*             |  |
|             | M8 x 16 screw                 |  | conductor with lug terminal up to 70 mm <sup>2</sup> |                            | 10 Nm*            |                                                                                     |

For stranded conductors using cable ferrules is recommended

\*using of tension wrench is recommended



**RBK 000 pro-E**  
for mounting on DIN rail



**RBK 000 pro**  
for installation on mounting plate  
with additional terminal shrouds



**RBK 000 pro-W**  
for installation on mounting plate  
with extended terminal shrouds



**RBK 000 pro-SG** (top cable terminals)  
**RBK 000 pro-SD** (bottom cable terminals)  
for installation on to 60 mm busbar system



## RBP 000 pro (125 A, 690 V) for mounting

- on plate
- on double DIN rail

## RBP 000 pro-S (125 A, 690 V) for installation onto 60 mm busbar system

- system of protective covers provides touch protection
- possible installation of distribution board's protective panel at depth of 32 mm or 70 mm
- built-in hooked clamps provide fast installation onto busbar system
- top/bottom cable terminal



RBP 000 pro-S

Table 79. Technical data

| Parameter                                 |                  | RBP 000 pro |        |        | RBP 000 pro-S |        |        |
|-------------------------------------------|------------------|-------------|--------|--------|---------------|--------|--------|
| Rated thermal current $I_{th}^{1)}$       | A                | 125         |        |        | 125           |        |        |
| Rated voltage $U_n$                       | V                | 690         |        |        | 690           |        |        |
| Utilization category                      | -                | AC-23B      | AC-21B | DC-22B | AC-23B        | AC-22B | DC-22B |
| Rated switching current $I_e$             | A                | 125         | 125    | 100    | 125           | 125    | 100    |
| Rated switching voltage $U_o$             | V                | 400         | 690    | 250    | 400           | 690    | 250    |
| Rated short circuit making current        | 690 V            | 50          |        |        | 35            |        |        |
|                                           | 500 V            | -           |        |        | -             |        |        |
|                                           | 400 V            | 80          |        |        | 80            |        |        |
| Rated short circuit withstand current     | 690 V            | 50          |        |        | 35            |        |        |
|                                           | 500 V            | -           |        |        | -             |        |        |
|                                           | 400 V            | 80          |        |        | 80            |        |        |
| Rated insulation voltage $U_i$            | V                | 1000        |        |        | 1000          |        |        |
| Rated impulse withstand voltage $U_{imp}$ | kV               | 6           |        |        | 6             |        |        |
| Rated frequency                           | Hz               | 50-60       |        | -      | 50-60         |        | -      |
| Mechanical durability                     | Number of cycles | 1600        |        |        | 1600          |        |        |
| Electrical durability                     | Number of cycles | 200         |        |        | 200           |        |        |
| IP degree of protection                   | IP               | 20*         |        |        | 20*           |        |        |
| Weight                                    | kg               | ~0,5        |        |        | ~0,7          |        |        |
| Size of fuse links                        | -                | 000         |        |        | 000           |        |        |

<sup>1)</sup>  $I_{th}$  - thermal current of fuse switch disconnector without external enclosure, installed outdoors  
(In case of the installation of fuse switch disconnectors in enclosures then load factor should be considered)

Table 80. Versions

| RBP 000 pro                            |                                                   | Cable terminal                                                     | Article No.   |
|----------------------------------------|---------------------------------------------------|--------------------------------------------------------------------|---------------|
| <b>For mounting on plate</b>           |                                                   |                                                                    |               |
| RBP 000 pro                            | for connection of round conductors                | frame clamps                                                       | 63-823267-001 |
| <b>for mounting on double DIN rail</b> |                                                   |                                                                    |               |
| RBP 000 pro-E-125 mm                   | double DIN rail with spacing of 125 mm            | frame clamps                                                       | 63-823267-002 |
| RBP 000 pro-E-150 mm                   | double DIN rail with spacing of 150 mm            | frame clamps                                                       | 63-823267-003 |
| APASYS 60                              | <b>RBP 000 pro-S</b>                              |                                                                    |               |
|                                        | <b>For installation on to 60 mm busbar system</b> |                                                                    |               |
|                                        | RBP 000 pro-SG                                    | cable terminal-top, for connection of conductors with bare ends    | 63-823427-001 |
|                                        | RBP 000 pro-SD                                    | cable terminal-bottom, for connection of conductors with bare ends | 63-823427-002 |

Table 81. RBP 000 pro, RBP 000 pro-S terminal clamps

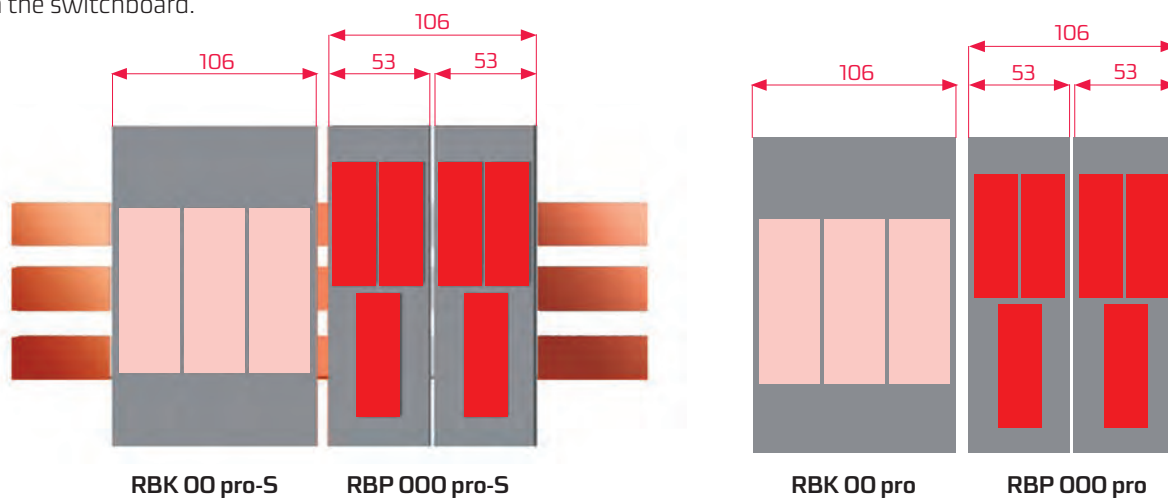
| Description                  | Cable terminal | Drawing of clamp                                                                    | Cross-section of conductors | Tightening torque                                                                           |
|------------------------------|----------------|-------------------------------------------------------------------------------------|-----------------------------|---------------------------------------------------------------------------------------------|
| RBP 000 pro<br>RBP 000 pro-S | frame clamps   |  | 2,5 - 50 mm <sup>2</sup>    |  6 Nm* |

For stranded conductors using cable ferrules is recommended

\*using of tension wrench is recommended

## Saves space in the switchboard

**RBP 000 pro-S** (**RBP 000-pro**) width dimensions is equal to half the width of **RBK 00 pro-S** (**RBK 00 pro**), so we can install more disconnectors (keeping a certain width of the switchboard) to protect individual circuits in the switchboard.

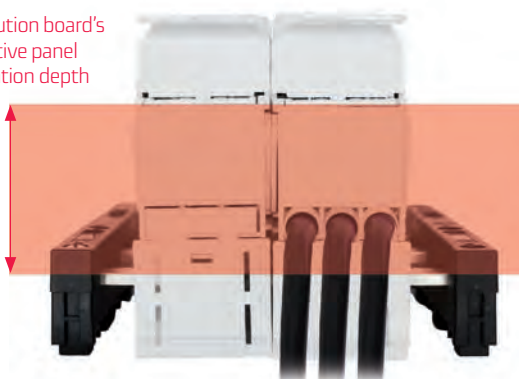


Fuse switch disconnectors **RBP 000 pro-S** are designed for installation of distribution board's protective panels at two depths:

- covering system at 70 mm depth
- covering system at 32 mm depth

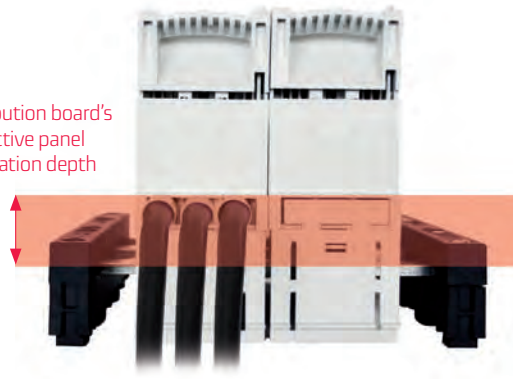
distribution board's  
protective panel  
installation depth

70 mm



distribution board's  
protective panel  
installation depth

32 mm



Fuse switch disconnectors **RBP 000 pro-S** are manufactured in two versions depending on type of cable terminal

- **RBP 000 pro-SD**-with bottom cable terminal
- **RBP 000 pro-SG**-with top cable terminal

with cables connected  
to the bottom cable terminal  
**RBP 000 pro- SD**



with cables  
connected  
to the top  
cable terminal  
**RBP 000 pro -SG**

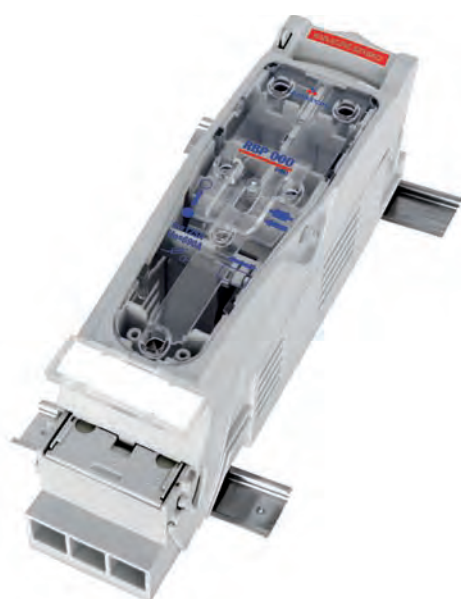
Fuse switch disconnector **RBP 000 pro-S** has special cavity in it's main base encasing busbar system's support.



It is possible to install **microswitch indicating** position open/close fuse switch disconnectors.



hole for leading of wires connected to microswitch



Fuse switch disconnecter **RBP 000 pro - E 125 mm**  
for mounting on double DIN rail



**RBP 000 pro**  
mounting on plate

## RBK 00 pro (160 A, 690 V)

Table 82. Technical data

| Parameter                                           |       |                  | RBK 00 pro |         |        |
|-----------------------------------------------------|-------|------------------|------------|---------|--------|
| Rated thermal current I <sub>th</sub> <sup>1)</sup> |       | A                | 160        |         |        |
| Rated voltage U <sub>n</sub>                        |       | V                | 690        |         |        |
| Utilization category                                |       | -                | AC-23B     | DC-22B  | DC-21B |
| Rated switching current I <sub>e</sub>              |       | A                | 160        | 160     | 160    |
| Rated switching voltage U <sub>e</sub>              |       | V                | 690        | 250     | 440    |
| Rated short circuit making current                  | 690 V | kA               | 80         | 25/250V |        |
|                                                     | 500 V |                  | -          |         |        |
|                                                     | 400 V |                  | 100        |         |        |
| Rated short circuit withstand current               | 690 V | kA               | 80         | 25/250V |        |
|                                                     | 500 V |                  | -          |         |        |
|                                                     | 400 V |                  | 100        |         |        |
| Rated insulation voltage U <sub>i</sub>             |       | V                | 1000       |         |        |
| Rated impulse withstand voltage U <sub>imp</sub>    |       | kV               | 8          |         |        |
| Rated frequency                                     |       | Hz               | 50-60      | -       |        |
| Mechanical durability                               |       | Number of cycles | 1600       |         |        |
| Electrical durability                               |       |                  | 200        |         |        |
| IP degree of protection                             |       | IP               | 20         |         |        |
| Weight                                              |       | kg               | ~0,7       |         |        |
| Size of fuse links                                  |       | -                | 00         |         |        |

<sup>1)</sup>  $I_{th}$  - thermal current of fuse switch disconnecter without external enclosure, installed outdoors  
(In case of the installation of fuse switch disconnectors in enclosures then load factor should be considered)



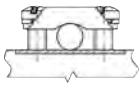
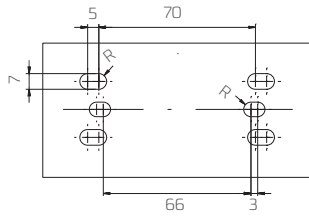
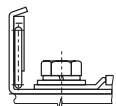
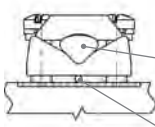
RBK 00 pro

RBK 000 pro, RBK 000 pro-S

Table 83. Versions

| RBK 00 pro/160 A                          |                                                                                 | Cable terminal                                   | Article No.   |
|-------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------|---------------|
| <b>For installation on mounting plate</b> |                                                                                 |                                                  |               |
| RBK 00 pro                                | for connection of round conductors                                              | S-bridge clamps                                  | 63-823256-111 |
| RBK 00 pro-M                              | for connection of conductors with lug terminals                                 | M8 screws                                        | 63-823256-121 |
| RBK 00 pro-V                              | for connection of sector-shaped conductors                                      | V-shape clamps                                   | 63-823256-131 |
| RBK 00 pro-W                              | for connection of round conductors<br>lengthened terminal shrouds               | S-bridge clamps                                  | 63-823256-141 |
| RBK 00 pro-M-W                            | for connection of conductors with lug terminals,<br>lengthened terminal shrouds | M8 screws                                        | 63-823256-151 |
| RBK 00 pro-V-W                            | for connection of sector-shaped conductors,<br>lengthened terminal shrouds      | V-shape clamps                                   | 63-823256-161 |
| <b>for mounting on double DIN rail</b>    |                                                                                 |                                                  |               |
| RBK 00 pro-E-125mm                        | double DIN rail with spacing of 125 mm                                          | S-bridge clamps/<br>M8 screws/ V-shape<br>clamps | On request*   |
| RBK 00 pro-E-150mm                        | double DIN rail with spacing of 150 mm                                          | S-bridge clamps/<br>M8 screws/ V-shape<br>clamps | On request*   |

Table 84. RBK 00 pro terminal clamps

| Description | Clamp                         | Drawing of clamp                                                                                                                                                                                                                                                                                                                                                                                                          | Cross-section of conductors              | Cu bar                     | Tightening torque | Dimensions and spacing of holes for installation of RBK 00 pro on mounting plate    |
|-------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|----------------------------|-------------------|-------------------------------------------------------------------------------------|
| RBK 00 pro  | S-bridge clamp<br>2 x M5 x 16 |                                                                                                                                                                                                                                                                                                                                          | Cu/Al conductor<br>4÷50 mm²              | maximum bar width<br>20 mm | 3 Nm*             |  |
|             | M8 x 16 screw                 |                                                                                                                                                                                                                                                                                                                                          | conductor with lug terminal up to 70 mm² |                            | 10 Nm*            |                                                                                     |
|             | V-shape clamp<br>2 x M5 x 20  |  <div><p>2)  4 mm² - 70 mm²<br/> 4 mm² - 95 mm²</p><p>1)  1,5 mm² - 2,5 mm²</p></div> | 3 Nm*                                    |                            |                   |                                                                                     |

For stranded conductors using cable ferrules is recommended

\*using of tension wrench is recommended



RBK 00 pro-W


Fuse switch disconnecter **RBK 00 pro-W**  
with additional terminal shrouds

Fuse switch disconnecter **RBK 00 pro-E**  
for mounting on double DIN rail

## FUSE SWITCH DISCONNECTORS FOR INSTALLATION ONTO 60 mm BUSBAR SYSTEM RBK 00 pro-S

- system of protective covers provides touch protection
- possible installation of distribution board's protective panel at depth of 32 mm or 70 mm
- built-in hooked clamps provide fast installation onto busbar system
- top/bottom cable terminal

Table 85. Technical data

| Parameter                                           |       | RBK 00 pro-S     |                        |                  |
|-----------------------------------------------------|-------|------------------|------------------------|------------------|
| Rated thermal current I <sub>th</sub> <sup>1)</sup> |       | A                | 160                    |                  |
| Rated voltage U <sub>n</sub>                        |       | V                | 690                    |                  |
| Utilization category                                |       | -                | AC-23B                 | AC-22B<br>DC-22B |
| Rated switching current I <sub>e</sub>              |       | A                | 160                    | 160<br>160       |
| Rated switching voltage U <sub>e</sub>              |       | V                | 400                    | 690<br>250       |
| Rated short circuit making current                  | 690 V | kA               | 100<br><br>25/<br>250V |                  |
|                                                     | 500 V |                  |                        |                  |
|                                                     | 400 V |                  |                        |                  |
| Rated short circuit withstand current               | 690 V | kA               | 100<br><br>25/<br>250V |                  |
|                                                     | 500 V |                  |                        |                  |
|                                                     | 400 V |                  |                        |                  |
| Rated insulation voltage U <sub>i</sub>             |       | V                | 1000                   |                  |
| Rated impulse withstand voltage U <sub>imp</sub>    |       | kV               | 8                      |                  |
| Rated frequency                                     |       | Hz               | 50-60                  | -                |
| Mechanical durability                               |       | Number of cycles | 1600                   |                  |
| Electrical durability                               |       |                  | 200                    |                  |
| IP degree of protection                             |       | IP               | 20                     |                  |
| Weight                                              |       | kg               | ~0,9                   |                  |
| Size of fuse links                                  |       | -                | 00                     |                  |

<sup>1)</sup>  $I_{th}$  - thermal current of fuse switch disconnecter without external enclosure, installed outdoors  
(In case of the installation of fuse switch disconnectors in enclosures then load factor should be considered)



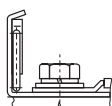
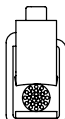
RBK 00 pro-S

RBK 00 pro-S

Table 86. Versions

| APASY5 60 | RBK 00 pro-S                               |                                                                          | Cable terminal | Article No.   |
|-----------|--------------------------------------------|--------------------------------------------------------------------------|----------------|---------------|
|           | For installation on to 60 mm busbar system |                                                                          |                |               |
|           | RBK 00 pro-SG-M                            | cable terminal – top, for connection of conductors with lug terminals    | M8 screws      | 63-823259-121 |
|           | RBK 00 pro-SD-M                            | cable terminal – bottom, for connection of conductors with lug terminals | M8 screws      | 63-823259-141 |
|           | RBK 00 pro-SG-R                            | cable terminal-top, for connection of conductors with bare ends          | frame clamps   | 63-823259-151 |
|           | RBK 00 pro-SD-R                            | cable terminal-bottom, for connection of conductors with bare ends       | frame clamps   | 63-823259-161 |

Table 87. RBK 00 pro-S terminal clamps

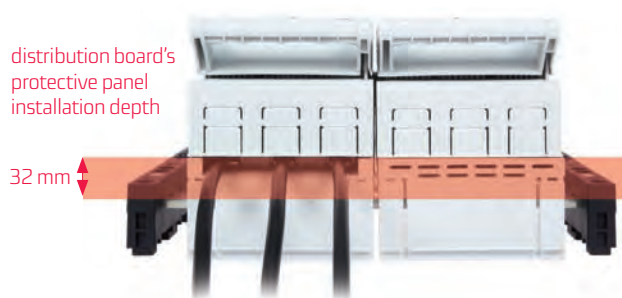
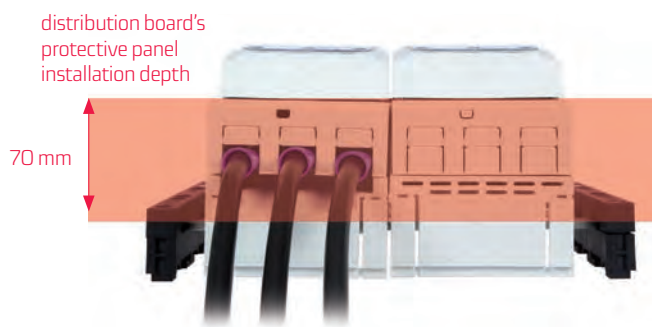
| Description                      | Clamp         | Drawing of clamp                                                                    | Cross-section of conductors                          | Cu bar                  | Tightening torque |
|----------------------------------|---------------|-------------------------------------------------------------------------------------|------------------------------------------------------|-------------------------|-------------------|
| RBK 00 pro-SGM<br>RBK 00 pro-SDM | M8 x 16 screw |  | conductor with lug terminal up to 70 mm <sup>2</sup> | maximum bar width 20 mm | 10 Nm*            |
| RBK 00 pro-SGR<br>RBK 00 pro-SDR | frame clamps  |  | 4 ÷ 95 mm <sup>2</sup>                               | -                       | 6 Nm*<br>3 Nm*    |

For stranded conductors using cable ferrules is recommended  
\*using of tension wrench is recommended



Fuse switch disconnectors **RBK 00pro-S** are designed for installation of distribution board's protective panels at two depths:

- covering system at 70 mm depth
- covering system at 32 mm depth



Fuse switch disconnectors **RBK 00 pro-S** are manufactured in two versions depending on type of cable terminal

- **RBK 00 pro-SD**-with bottom cable terminal
- **RBK 00 pro-SG**-with top cable terminal



Fuse switch disconnecter **RBK 00 pro-S** has special cavity in it's main base encasing busbar system's support.



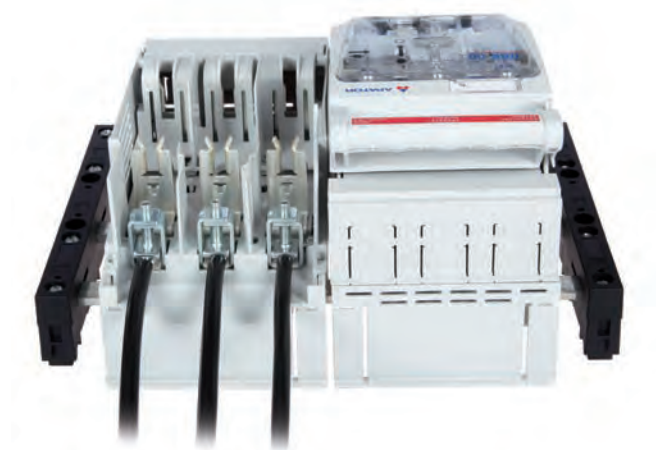


Cable terminals:

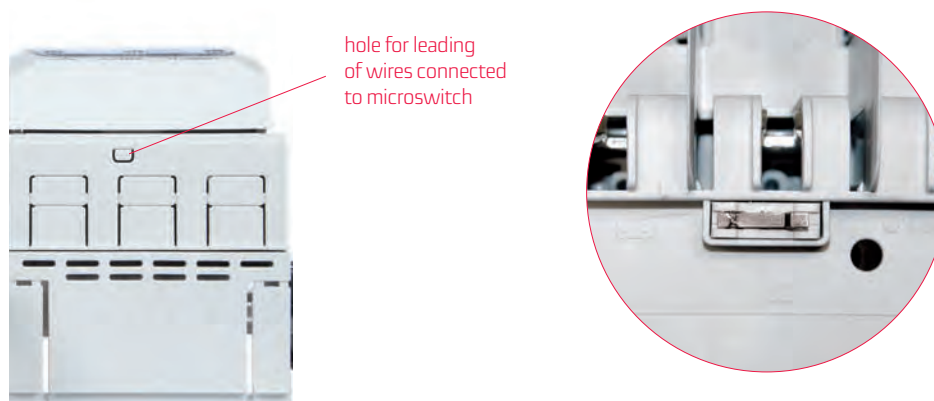
M8 screw terminal (**RBK 00 pro-SDM, RBK 00 pro-SGM**)



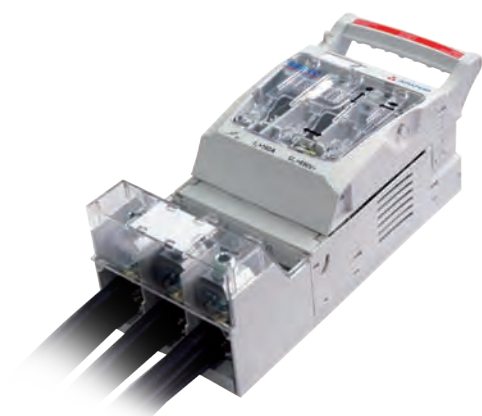
Frame clamp (**RBK 00 pro-SDR, RBK 00 pro-SGR**)



It is possible to install **microswitch indicating** position in fuse switch disconnectors **RBK 00 pro-S**.



## RBK 00 pro V 120 (160 A, 690 V)



RBK 00 pro V 120

Table 88. Technical data

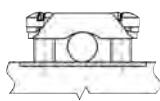
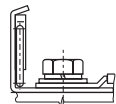
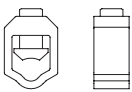
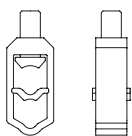
| Parameter                                           |       | RBK 00 pro-V 120 |            |                  |
|-----------------------------------------------------|-------|------------------|------------|------------------|
| Rated thermal current I <sub>th</sub> <sup>1)</sup> |       | A                | 160        |                  |
| Rated voltage U <sub>n</sub>                        |       | V                | 690        |                  |
| Utilization category                                |       | -                | AC-23B     | AC-22B<br>DC-22B |
| Rated switching current I <sub>e</sub>              |       | A                | 160        | 160<br>160       |
| Rated switching voltage U <sub>e</sub>              |       | V                | 400        | 690<br>250       |
| Rated short circuit making current                  | 690 V | kA               | 100        | 25/<br>250V      |
|                                                     | 500 V |                  |            |                  |
|                                                     | 400 V |                  |            |                  |
| Rated short circuit withstand current               | 690 V | kA               | 100        | 25/<br>250V      |
|                                                     | 500 V |                  |            |                  |
|                                                     | 400 V |                  |            |                  |
| Rated insulation voltage U <sub>i</sub>             |       | V                | 1000       |                  |
| Rated impulse withstand voltage U <sub>imp</sub>    |       | kV               | 8          |                  |
| Rated frequency                                     |       | Hz               | 50-60<br>- |                  |
| Mechanical durability                               |       | Number of cycles | 1600       |                  |
| Electrical durability                               |       |                  | 200        |                  |
| IP degree of protection                             |       | IP               | IP20       |                  |
| Weight                                              |       | kg               | ~0,9       |                  |
| Size of fuse links                                  |       | -                | 00         |                  |

<sup>1)</sup>  $I_{th}$  - thermal current of fuse switch disconnecter without external enclosure, installed outdoors  
(In case of the installation of fuse switch disconnectors in enclosures then load factor should be considered)

Table 89. Versions

| RBK 00 pro V 120                          |                                                                                                                     | Article No.   |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------|---------------|
| <b>For installation on mounting plate</b> |                                                                                                                     |               |
| RBK 00 pro - V120                         | for connection of conductors with bare ends<br>(top terminals- S-bridge clamps, bottom terminals – V-clamps)        | 63-823341-011 |
| RBK 00 pro - V120 - M                     | for connection of conductors with bare ends<br>(top terminals- M8 screws, bottom terminals – V-clamps)              | 63-823341-021 |
| RBK 00 pro - P                            | for connection of conductors with bare ends<br>(top terminals- S-bridge clamps, bottom terminals – Prism clamps)    | 63-823341-031 |
| RBK 00 pro - P - M                        | for connection of conductors with bare ends<br>(top terminals- M8 screws, bottom terminals – Prism clamps)          | 63-823341-041 |
| RBK 00 pro 2 x V120                       | for connection of conductors with bare ends<br>(top terminals- S-bridge clamps, bottom terminals – double V-clamps) | 63-823341-051 |
| RBK 00 pro 2 x V120 - M                   | for connection of conductors with bare ends<br>(top terminals- M8 screws, bottom terminals – double V-clamps)       | 63-823341-061 |

Table 90. RBK 00 pro-V120 terminal clamps

|                                | Clamp                         | Picture of a clamp                                                                  | Drawing of clamp                                                                    | Cross-section of conductors                                                                                                                                                                                                    | Cu bar                        | Tightening torque |
|--------------------------------|-------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-------------------|
| terminals on the consumer side | S-bridge clamp<br>2 x M5 x 16 |    |    | Cu/Al conductor<br>4 ÷ 50 mm <sup>2</sup>                                                                                                                                                                                      | maximum<br>bar<br>width 20 mm | 3 Nm*             |
|                                | M8 x 16<br>screw              |    |    | conductor with lug terminal<br>up to 70 mm <sup>2</sup>                                                                                                                                                                        |                               | 10 Nm*            |
| cable terminals                | V-clamp                       |    |    |  ** 25 ÷ 150 mm <sup>2</sup>                                                                                                                  | -                             | 20 Nm*            |
|                                |                               |                                                                                     |                                                                                     |  ** 16 ÷ 95 mm <sup>2</sup>                                                                                                                   |                               |                   |
|                                | HM 10-120                     |    |    |  ** 10 - 70 mm <sup>2</sup>                                                                                                                   |                               | 15 Nm*            |
|                                |                               |                                                                                     |                                                                                     |  ** 25 - 120 mm <sup>2</sup><br> ** 25 - 95 mm <sup>2</sup> |                               |                   |
|                                | double V-clamp                |  |  |  2 x (25 ÷ 120 mm <sup>2</sup> )                                                                                                            |                               | 20 Nm*            |
|                                |                               |                                                                                     |                                                                                     |  2 x (16 ÷ 95 mm <sup>2</sup> )                                                                                                             |                               |                   |

\*using of tension wrench is recommended

\*\*for stranded conductors using cable ferrules is recommended

## New features of cable terminals

- connection of one or two sector-shaped conductors with cross-section up to 120 mm<sup>2</sup>
- connection of two round conductors with bare ends and cross-section up to 70 mm<sup>2</sup>

## Space saving

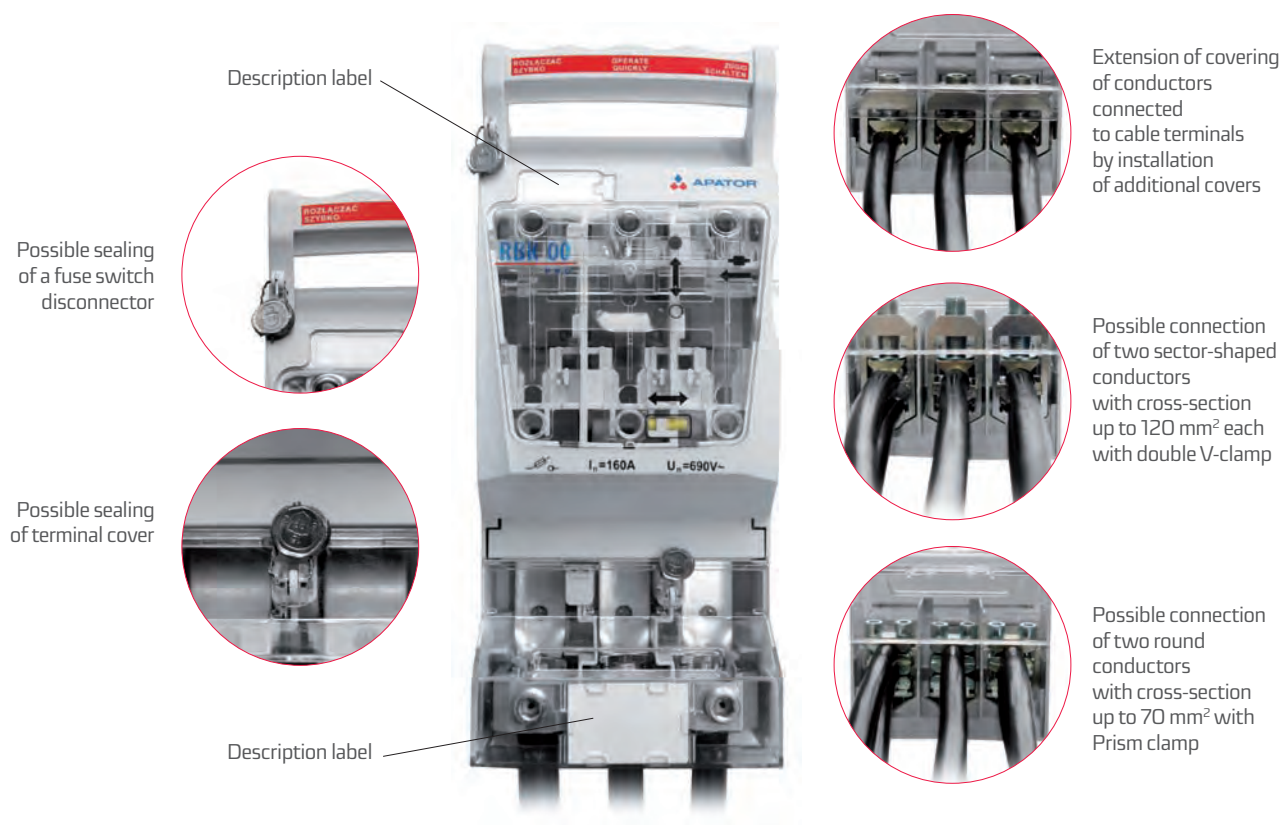
- possible reduction of external width of cable distribution cabinet to width of a fuse switch disconnecter

## Efficient current circuit

- no screw or riveted connection between contact and cable terminal (uniform design of current circuit ensures lower power loss and operating temperature)

## Safety

- fuse cover and cable terminal cover sealing
- extension of covering of conductors connected to cable terminals by installation of additional covers

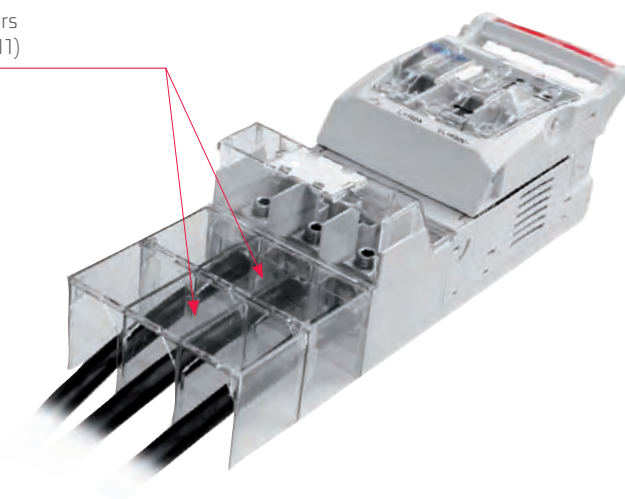


## Extended covering of conductors connected to cable terminal

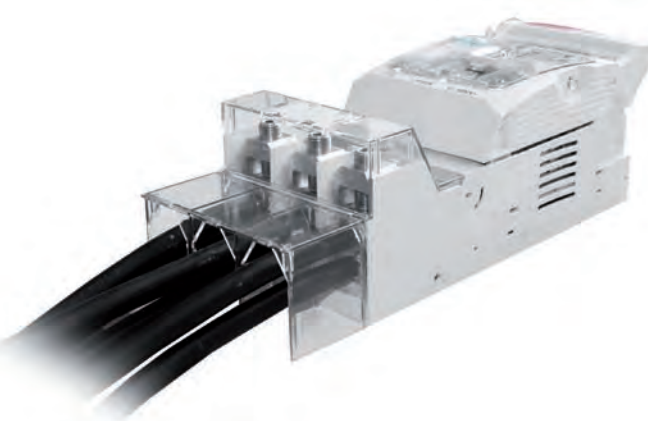
For extension of covering of conductors connected to cable terminals, for example: to fully cover cables in cable distribution cabinet, any required number of additional covers could be installed (article number of additional extending cover: 51-930849-011) . Cover length - 50 mm.



Additional covers  
(51-930849-011)



**RBK 00 pro-V120** with V-clamp for connection of sector-shaped conductors with cross-section up to 120 mm<sup>2</sup>



**RBK 00 pro 2 x V120** with double V-clamp for connection of two sector-shaped conductors with cross-section up to 120 mm<sup>2</sup> each

## RBK 1 pro (250 A, 690 V)



RBK 1 pro  
for installation  
on mounting plate

Table 91. Technical data

| Parameter                                           |       |                  | RBK 1 pro |             | RBK 1 pro-S |        |                      |
|-----------------------------------------------------|-------|------------------|-----------|-------------|-------------|--------|----------------------|
| Rated thermal current I <sub>th</sub> <sup>1)</sup> |       | A                | 250       |             | 250         |        |                      |
| Rated voltage U <sub>n</sub>                        |       | V                | 690       |             | 690         |        |                      |
| Utilization category                                |       | -                | AC-23B    | DC-22B      | AC-23B      | AC-22B | DC-22B <sup>2)</sup> |
| Rated switching current I <sub>e</sub>              |       | A                | 250       | 250         | 250         | 250    | 250                  |
| Rated switching voltage U <sub>e</sub>              |       | V                | 690       | 250         | 400         | 690    | 250                  |
| Rated short circuit making current                  | 690 V | kA               | 80        | 25/<br>250V | 80          |        | 25/<br>250V          |
|                                                     | 500 V |                  | -         |             |             |        |                      |
|                                                     | 400 V |                  | 100       |             |             |        |                      |
| Rated short circuit withstand current               | 690 V | kA               | 80        | 25/<br>250V | 80          |        | 25/<br>250V          |
|                                                     | 500 V |                  | -         |             |             |        |                      |
|                                                     | 400 V |                  | 100       |             |             |        |                      |
| Rated insulation voltage U <sub>i</sub>             |       | V                | 1000      |             | 1000        |        |                      |
| Rated impulse withstand voltage U <sub>imp</sub>    |       | kV               | 8         |             | 8           |        |                      |
| Rated frequency                                     |       | Hz               | 50-60     | -           | 50-60       |        | -                    |
| Mechanical durability                               |       | Number of cycles | 1600      |             | 1600        |        |                      |
| Electrical durability                               |       |                  | 200       |             | 200         |        |                      |
| IP degree of protection                             |       | IP               | IP20      |             | IP20        |        |                      |
| Weight                                              |       | kg               | ~2        |             | ~2,5        |        |                      |
| Size of fuse links                                  |       | -                | 1         |             | 1           |        |                      |

<sup>1)</sup>  $I_{th}$  - thermal current of fuse switch disconnector without external enclosure, installed outdoors  
(In case of the installation of fuse switch disconnectors in enclosures then load factor should be considered)

Table 92. Versions

| RBK 1 pro/250 A                    |                                                                                                        |                             |               |
|------------------------------------|--------------------------------------------------------------------------------------------------------|-----------------------------|---------------|
| For installation on mounting plate |                                                                                                        | Cable terminals             | Article No.   |
| RBK 1 pro                          | For connection of round conductors                                                                     | S-bridge clamps             | 63-811748-011 |
| RBK 1 pro-M                        | For connection of conductors with lug terminals                                                        | Screws                      | 63-811748-021 |
| RBK 1 pro-V                        | For connection of sector-shaped conductors                                                             | V-clamps                    | 63-811748-031 |
| RBK 1 pro VG                       | For connection of round conductors, top terminals - V-terminals, bottom terminals - S-bridge terminals | V- clamps / S-bridge clamps | 63-811784-011 |
| RBK 1 pro VG-M                     | For connection of round conductors, top terminals - V-terminals, bottom terminals - screw terminals    | V- clamps /screws           | 63-811784-021 |
| RBK 1 pro VD                       | For connection of round conductors, top terminals - S-bridge terminals, bottom terminals - V-terminals | S-bridge clamps / V- clamps | 63-811784-031 |
| RBK 1 pro VD-M                     | For connection of round conductors, top terminals - screw terminals, bottom terminals - V-terminals    | Screws / V-clamps           | 63-811784-041 |

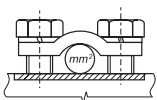
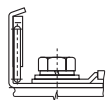
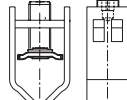
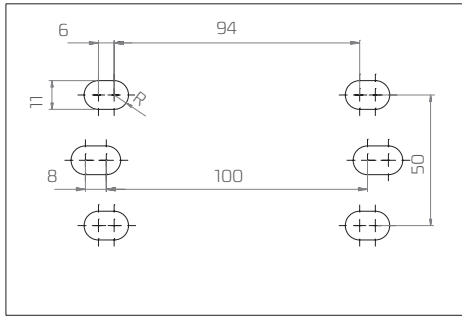
| APASYS 60         | RBK 1 pro-S                                                        |                                                                        |                 |               |
|-------------------|--------------------------------------------------------------------|------------------------------------------------------------------------|-----------------|---------------|
|                   | For installation on to busbar system                               |                                                                        | Cable terminals | Article No.   |
|                   | 60 mm busbar system                                                |                                                                        |                 |               |
|                   | RBK 1 pro-SG 60                                                    | Top cable terminals, for connection of round conductors                | S-bridge clamps | 63-811750-011 |
|                   | RBK 1 pro-SD 60                                                    | Bottom cable terminals, for connection of round conductors             | S-bridge clamps | 63-811750-021 |
|                   | RBK 1 pro-SG-M 60                                                  | Top cable terminals, for connection of sector-shaped conductors        | Screws          | 63-811750-051 |
|                   | RBK 1 pro-SD-M 60                                                  | Bottom cable terminals, for connection of conductors withlug terminals | Screws          | 63-811750-061 |
|                   | RBK 1 pro-SG-V 60                                                  | Top cable terminals, for connection of sector-shaped conductors        | V-clamps        | 63-811750-091 |
| RBK 1 pro-SD-V 60 | Bottom cable terminals, for connection of sector-shaped conductors | V-clamps                                                               | 63-811750-101   |               |



Table 93. Versions

| RBK 1 pro-S                          |                                                                         |                 |               |
|--------------------------------------|-------------------------------------------------------------------------|-----------------|---------------|
| For installation on to busbar system |                                                                         | Cable terminals | Article No.   |
| 100 mm busbar system                 |                                                                         |                 |               |
| RBK 1 pro-SG 100                     | Top cable terminals, for connection of round conductors                 | S-bridge clamps | 63-811750-031 |
| RBK 1 pro-SD 100                     | Bottom cable terminals, for connection of round conductors              | S-bridge clamps | 63-811750-041 |
| RBK 1 pro-SG-M 100                   | Top cable terminals, for connection of conductors with lug terminals    | Screws          | 63-811750-071 |
| RBK 1 pro-SD-M 100                   | Bottom cable terminals, for connection of conductors with lug terminals | Screws          | 63-811750-081 |
| RBK 1 pro-SG-V 100                   | Top cable terminals, for connection of sector-shaped conductors         | V-clamps        | 63-811750-111 |
| RBK 1 pro-SD-V 100                   | Bottom cable terminals, for connection of sector-shaped conductors      | V-clamps        | 63-811750-121 |

Table 94. RBK 1 pro terminal clamps

| Description                                                                     | RBK 1 pro                                                                            | RBK 1 pro-M                                                                        | RBK 1 pro-V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Clamp                                                                           | S-bridge clamp 2 x M8 x 30                                                           | M10x25 screw                                                                       | V-clamp HS 35-300-C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Picture of a clamp                                                              |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Drawing of a clamp                                                              |    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Cross-section of conductors                                                     | Cu/Al conductor<br>35 ÷ 120 mm <sup>2</sup>                                          | conductor with lug terminal<br>up to 120 mm <sup>2</sup>                           | V-clamp for direct fixing of conductor with bare end with cross-section of:<br>35 - 150 mm <sup>2</sup>  35 - 185 mm <sup>2</sup> <br>50 - 240 mm <sup>2</sup>  ** 50 - 300 mm <sup>2</sup>  |
| Cu bar                                                                          | maximum bar width 35 mm                                                              |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Tightening torque                                                               | 10 Nm*                                                                               | 20 Nm*                                                                             | 30 Nm*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Dimensions and spacing of holes for installation of RBK 1 pro on mounting plate |  |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

\*using of tension wrench is recommended

\*\*for stranded conductors using cable ferrules is recommended



**RBK 1 pro**  
for installation on mounting plate



**RBK 1 pro-SG**  
**RBK 1 pro-SD**  
for installation on to busbar system



**RBK 1 pro**  
for installation on mounting plate,  
with additional terminal shrouds



**RBK 1 pro VD-M**  
for installation on mounting plate,  
picture of fuse switch disconnecter  
without fuse links cover and terminal shrouds,  
top cable terminal - M screws,  
bottom cable terminal - V-clamps,  
(RBK 1 pro VG-M - bottom cable terminal - M screws,  
top cable terminal - V-clamps)

## RBK 2 pro (400 A, 690 V)

Table 95. Technical data

| Parameter                                        |       | RBK 2 pro / RBK 2 pro-S |         |                  |
|--------------------------------------------------|-------|-------------------------|---------|------------------|
| Rated thermal current I <sub>th</sub>            |       | A                       | 400     |                  |
| Napięcie znamionowe U <sub>n</sub>               |       | V                       | 690     |                  |
| Utilization category                             |       | -                       | AC-23B  | DC-22B<br>DC-21B |
| Rated switching current I <sub>e</sub>           |       | A                       | 400     | 400<br>400       |
| Rated switching voltage U <sub>e</sub>           |       | V                       | 690     | 220<br>440       |
| Rated short circuit making current               | 690 V | kA                      | 80      | 20/250V,15/440V  |
|                                                  | 500 V |                         |         |                  |
|                                                  | 400 V |                         | 100     |                  |
| Rated short circuit withstand current            | 690 V | kA                      | 80      | 20/250V,15/440V  |
|                                                  | 500 V |                         | -       |                  |
|                                                  | 400 V |                         | 100     |                  |
| Rated insulation voltage U <sub>i</sub>          |       | V                       | 1000    |                  |
| Rated impulse withstand voltage U <sub>imp</sub> |       | kV                      | 12      |                  |
| Rated frequency                                  |       | Hz                      | 50-60   | -                |
| Mechanical durability                            |       | Number of cycles        | 1000    |                  |
| Electrical durability                            |       |                         | 200     |                  |
| IP degree of protection                          |       | IP                      | 20      |                  |
| Weight                                           |       | kg                      | ~3,~4,5 |                  |
| Size of fuse links                               |       | -                       | 2       |                  |



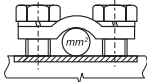
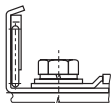
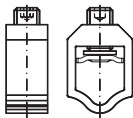
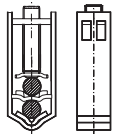
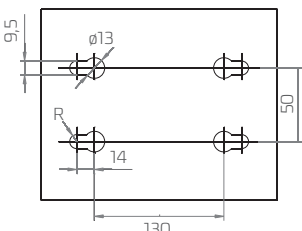
RBK 2-V pro  
for installation on mounting plate

RBK 2 pro

Table 96. Versions

| RBK 2 pro/400 A                                    |                                                                                                                                            | Cable terminal                                                          | Article No.                   |
|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|-------------------------------|
| <b>For installation on mounting plate</b>          |                                                                                                                                            |                                                                         |                               |
| RBK 2 pro                                          | for connection of round conductors                                                                                                         | S-bridge clamps                                                         | 63-811685-011                 |
| RBK 2 pro-V                                        | for connection of sector-shaped conductors                                                                                                 | V-clamps                                                                | 63-811685-071                 |
| RBK 2 pro-2V                                       | for connection of sector-shaped conductors                                                                                                 | double V-clamps                                                         | 63-811685-081                 |
| RBK 2 pro-M                                        | or connection of conductors with lug terminals                                                                                             | M10 screws                                                              | 63-811685-061                 |
| RBK 2 pro-VG                                       | for connection of sector-shaped / round conductors<br>top terminals - V-clamps, bottom terminals - S-bridge clamps                         | V-clamps /<br>S-bridge clamps                                           | 63-811685-201                 |
| RBK 2 pro-VG-M                                     | for connection of sector-shaped conductors / conductors with lug terminals<br>top terminals - V-clamps, bottom terminals - screw terminals | V-clamps /<br>S-bridge clamps                                           | 63-811685-202                 |
| RBK 2 pro-VD                                       | for connection of round / sector-shaped conductors<br>top terminals - S-bridge clamps, bottom terminals - V-clamps                         | V-clamps /<br>S-bridge clamps                                           | 63-811685-203                 |
| RBK 2 pro-VD-M                                     | for connection of conductors with lug terminals / sector-shaped conductors<br>top terminals - screw terminals, bottom terminals - V-clamps | screws / V-clamps                                                       | 63-811685-204                 |
| <b>APASYS 60</b>                                   | <b>For installation on to 60 mm busbar system</b>                                                                                          |                                                                         |                               |
|                                                    | RBK 2 pro-SD-M 60                                                                                                                          | Bottom cable terminals, for connection of conductors with lug terminals | M10 screws 63-811686-061      |
|                                                    | RBK 2 pro-SG-M 60                                                                                                                          | Top cable terminals, for connection of conductors with lug terminals    | M10 screws 63-811686-051      |
|                                                    | RBK 2 pro-SD-V 60                                                                                                                          | Bottom cable terminals, for connection of sector-shaped conductors      | V-clamps 63-811686-101        |
|                                                    | RBK 2 pro-SG-V 60                                                                                                                          | Top cable terminals, for connection of sector-shaped conductors         | V-clamps 63-811686-091        |
|                                                    | RBK 2 pro-SD-2V 60                                                                                                                         | Bottom cable terminals, for connection of sector-shaped conductors      | double V-clamps 63-811686-141 |
|                                                    | RBK 2 pro-SG-2V 60                                                                                                                         | Top cable terminals, for connection of sector-shaped conductors         | double V-clamps 63-811686-131 |
| <b>For installation on to 100 mm busbar system</b> |                                                                                                                                            |                                                                         |                               |
| RBK 2 pro-SD-M 100                                 | Bottom cable terminals, for connection of conductors with lug terminals                                                                    | M10 screws                                                              | 63-811686-081                 |
| RBK 2 pro-SG-M 100                                 | Top cable terminals, for connection of conductors with lug terminals                                                                       | M10 screws                                                              | 63-811686-071                 |
| RBK 2 pro-SD-V 100                                 | Bottom cable terminals, for connection of sector-shaped conductors                                                                         | V-clamps                                                                | 63-811686-121                 |
| RBK 2 pro-SG-V 100                                 | Top cable terminals, for connection of sector-shaped conductors                                                                            | V-clamps                                                                | 63-811686-111                 |
| RBK 2 pro-SD-2V 100                                | Bottom cable terminals, for connection of sector-shaped conductors                                                                         | double V-clamps                                                         | 63-811686-161                 |
| RBK 2 pro-SG-2V 100                                | Top cable terminals, for connection of sector-shaped conductors                                                                            | double V-clamps                                                         | 63-811686-151                 |

Table 94. RBK 2 pro terminal clamps

| Description                                                                 | RBK 2 pro                                                                           |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Clamp                                                                       | S-bridge clamp<br>2 x M8 x 30                                                       | M10 x 30<br>screw                                                                 | V- clamp<br>35-300SW-B                                                                                                                                                                                                                                                                                                                                                                                                                             | double V- clamp<br>HS2/35-240-C                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Drawing of clamp                                                            |    |  |                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                     |
| Cross-section of conductors                                                 | Cu/Al conductor<br>50 ÷ 185 mm <sup>2</sup>                                         | conductor with lug<br>terminal<br>up to 240 mm <sup>2</sup>                       | V-clamp for direct fixing of conductor with bare end<br>with cross-section:                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                                             |                                                                                     |                                                                                   | 35 - 185 mm <sup>2</sup>  35 - 240 mm <sup>2</sup> <br>35 - 240 mm <sup>2</sup>  35 - 300 mm <sup>2</sup>  | 35 - 185 mm <sup>2</sup>  35 - 240 mm <sup>2</sup> <br>35 - 240 mm <sup>2</sup>  35 - 300 mm <sup>2</sup>  |
| Cu bar                                                                      | maximum bar width 35 mm                                                             |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Tightening torque                                                           | 10 Nm*                                                                              | 20 Nm*                                                                            | 30 Nm*                                                                                                                                                                                                                                                                                                                                                                                                                                             | 40 Nm*                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Dimensions and spacing of holes for installation of RBK 2 on mounting plate |  |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

For stranded conductors using cable ferrules is recommended

\*using of tension wrench is recommended



**RBK 2 pro-V**  
for installation  
on mounting plate,  
cable terminals: V-clamps



**RBK 2 pro-2V**  
for installation  
on mounting plate,  
cable terminals: double V-clamps



**RBK 2 pro-SG** (top cable terminal: M10 screws)  
**RBK 2 pro-SD** (bottom cable terminal: M10 screws)  
for installation on to busbar systems



**RBK 2 pro-SG-V** (top cable terminal: double V-clamp)  
**RBK 2 pro-SD-V** (bottom cable terminal: double V-clamp)  
for installation on to busbar systems  
cable terminals: V-clamps



**RBK 2 pro-SG-2V** (top cable terminal: V-clamp)  
**RBK 2 pro-SD-2V** (bottom cable terminal: V-clamp)  
for installation on to busbar systems  
cable terminal: double V-clamps

## RBK 3 pro (630 A, 690 V)

Table 95. Technical data

| Parameter                                           |       |                  | RBK 3 pro |         |        | RBK 3 pro-S |        |        |
|-----------------------------------------------------|-------|------------------|-----------|---------|--------|-------------|--------|--------|
| Rated thermal current I <sub>th</sub> <sup>1)</sup> |       | A                | 630       |         |        | 630         |        |        |
| Rated voltage U <sub>n</sub>                        |       | V                | 690       |         |        | 690         |        |        |
| Utilization category                                |       | -                | AC-23B    | AC-22B  | DC-21B | AC-23B      | AC-22B | DC-21B |
| Rated switching current I <sub>e</sub>              |       | A                | 630       | 630     | 630    | 630         | 630    | 630    |
| Rated switching voltage U <sub>e</sub>              |       | V                | 400       | 690     | 440    | 400         | 500    | 690    |
| Rated short circuit making current                  | 690 V | kA               | 80        | 35/440V | 80     |             |        |        |
|                                                     | 500 V |                  | -         |         | -      |             |        |        |
|                                                     | 400 V |                  | -         |         | -      |             |        |        |
| Rated short circuit withstand current               | 690 V | kA               | 80        | 35/440V | 80     |             |        |        |
|                                                     | 500 V |                  | -         |         | -      |             |        |        |
|                                                     | 400 V |                  | -         |         | -      |             |        |        |
| Rated insulation voltage U <sub>i</sub>             |       | V                | 1000      |         |        | 1000        |        |        |
| Rated impulse withstand voltage U <sub>imp</sub>    |       | kV               | 12        |         |        | 12          |        |        |
| Rated frequency                                     |       | Hz               | 50-60     |         | -      | 50-60       |        |        |
| Mechanical durability                               |       | Number of cycles | 1000      |         |        | 1000        |        |        |
| Electrical durability                               |       |                  | 200       |         |        | 200         |        |        |
| IP degree of protection                             |       | IP               | 20        |         |        | 20          |        |        |
| Weight                                              |       | kg               | ~4,3      |         |        | ~4,9        |        |        |
| Size of fuse links                                  |       | -                | 3         |         |        | 3           |        |        |

<sup>1)</sup>  $I_{th}$  - thermal current of fuse switch disconnecter without external enclosure, installed outdoors  
(In case of the installation of fuse switch disconnectors in enclosures then load factor should be considered)



RBK 3 pro  
main version  
for installation  
on mounting plate

RBK 3 pro

Table 96. Versions

| RBK 3 pro                                 |                                                                                                                                                  | Cable terminal                                                          | Article No.                   |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|-------------------------------|
| <b>For installation on mounting plate</b> |                                                                                                                                                  |                                                                         |                               |
| RBK 3 pro                                 | for connection of round conductors                                                                                                               | S-bridge clamps                                                         | 63-811761-011                 |
| RBK 3 pro-M                               | for connection of conductors with lug terminals                                                                                                  | M12 screws                                                              | 63-811761-021                 |
| RBK 3 pro-M-2xVD                          | cable terminals: for connection of conductors with lug terminals - top M screws,<br>for connection of sector-shaped conductors - bottom V-clamps | M12 screws/V-shape terminals                                            | 63-811761-031                 |
| <b>APASYS 60</b>                          | <b>RBK 3 pro, RBK 3 pro-S for installation on 60 mm busbar system</b>                                                                            |                                                                         |                               |
|                                           | RBK 3 pro-SD                                                                                                                                     | bottom cable terminals, for connection of round conductors              | S-bridge clamps 63-028802-001 |
|                                           | RBK 3 pro-SG                                                                                                                                     | top cable terminals, for connection of round conductors                 | S-bridge clamps 63-028802-002 |
|                                           | RBK 3 pro-SD-M                                                                                                                                   | bottom cable terminals, for connection of conductors with lug terminals | M12 screws 63-028802-003      |
|                                           | RBK 3 pro-SG-M                                                                                                                                   | top cable terminals, for connection of conductors with lug terminals    | M12 screws 63-028802-004      |

Table 97. RBK 3 pro terminal clamps

| Description                 | RBK 3 pro                                   |                                                             |                                                                                         | Dimensions and spacing of holes<br>for installation of RBK 3 pro<br>on mounting plate |
|-----------------------------|---------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Version                     | S-bridge clamp<br>2 x M8 x 35               | M12 x 30<br>screw                                           | V-clamp<br>35-300SW-B                                                                   |                                                                                       |
| Drawing of clamp            |                                             |                                                             |                                                                                         |                                                                                       |
| Cross-section of conductors | Cu/Al conductor<br>50 ÷ 185 mm <sup>2</sup> | conductor with<br>lug terminal up to<br>240 mm <sup>2</sup> | V-clamp for direct fixing of two<br>conductors with bare ends with<br>cross-section of: |                                                                                       |
| Cu bar                      | maximum bar width<br>35 mm                  |                                                             | 35 - 185 mm <sup>2</sup><br>35 - 240 mm <sup>2</sup><br>35 - 300 mm <sup>2</sup>        |                                                                                       |
| Tightening torque           | 10 Nm*                                      | 20 Nm*                                                      | 30 Nm*                                                                                  |                                                                                       |

For stranded conductors using cable ferrules is recommended  
\*using of tension wrench is recommended

## RBK 4a (1250 A, 500 V; 1600 A, 400 V)



RBK 4a  
for installation on mounting plate

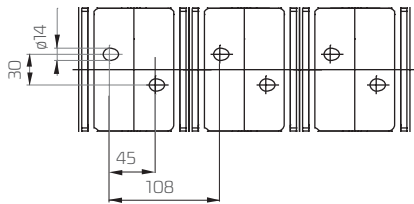
Table 98. Technical data

| Parameter                                 |    | RBK 4a |        |
|-------------------------------------------|----|--------|--------|
| Rated thermal current $I_{th}$            | A  | 1250   | 1600   |
| Utilization category                      | -  | AC-22B | AC-21B |
| Rated switching voltage $U_e$             | V  | 500    | 400    |
| Rated switching current $I_e$             | A  | 1250   | 1600   |
| Rated short circuit withstand current     | kA | 50     |        |
| Rated insulation voltage $U_i$            | V  | 800    |        |
| Rated impulse withstand voltage $U_{imp}$ | kV | 8      |        |
| Rated frequency                           | Hz | 50-60  |        |
| Mechanical durability                     |    | 600    |        |
| Electrical durability                     |    | 100    |        |
| IP degree of protection                   |    | IP20   |        |
| Size of fuse links                        |    | 4a     |        |

Table 99. Versions

| RBK 4a        |                                                                                                   | Weight  | Cable terminal | Article No.   |
|---------------|---------------------------------------------------------------------------------------------------|---------|----------------|---------------|
| RBK 4a/1250/1 | ONE POLE SWITCHING - each phase independently, for connection of conductors with lug terminals    | 4,2 kg  | screws         | 63-946868-001 |
| RBK 4a/1250/3 | THREE POLE SWITCHING - all phases simultaneously, for connection of conductors with lug terminals | 13,0 kg | screws         | 63-946868-002 |
| RBK 4a/1600/1 | ONE POLE SWITCHING - each phase independently, for connection of conductors with lug terminals    | 5,0 kg  | screws         | 63-946869-001 |
| RBK 4a/1600/3 | THREE POLE SWITCHING - all phases simultaneously, for connection of conductors with lug terminals | 14,0 kg | screws         | 63-946869-002 |

Table 100. RBK 4a terminal clamps

| Description                                                                  | RBK 4a 1250                                                                         | RBK 4a 1600        |
|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------|
| Clamp                                                                        | M16 x 50 screw                                                                      | 2 x M12 x 60 screw |
| Drawing of clamp                                                             |  |                    |
| Cross-section of conductors                                                  | conductor with lug terminal up to 800 mm <sup>2</sup>                               |                    |
| Cu bar                                                                       | 2 x 80 x 10                                                                         |                    |
| Tightening torque                                                            | 56 Nm*                                                                              |                    |
| Dimensions and spacing of holes for installation of RBK 4a on mounting plate |  |                    |

\*using of tension wrench is recommended



## Electronic fuse monitoring module - description

- L1, L2, L3 diodes are flashing - all three phases are supplied, all fuse links are operational. Relay contacts: [21..22] - closed; [13..14] - opened
- L1, L2, L3 diodes are blinking - all three phases are supplied, fuse links operated Relay contacts: [21..22] - opened; [13..14] - closed
- L1, L2, L3 diodes are off - two or more phases are not supplied or fuse links are removed. Relay contacts: [21..22] - opened; [13..14] - closed



RBK 00-X  
with electronic fuse monitoring module

## Parameters

- operating voltage AC - 400 ÷ 690 V, 40 ÷ 60 Hz;
- relay parameters 5A, 250 V~

CAUTION!

For use only with fuse-links with non-isolated gripping lugs!

## Electronic fuse monitoring module versions according to power supply connection

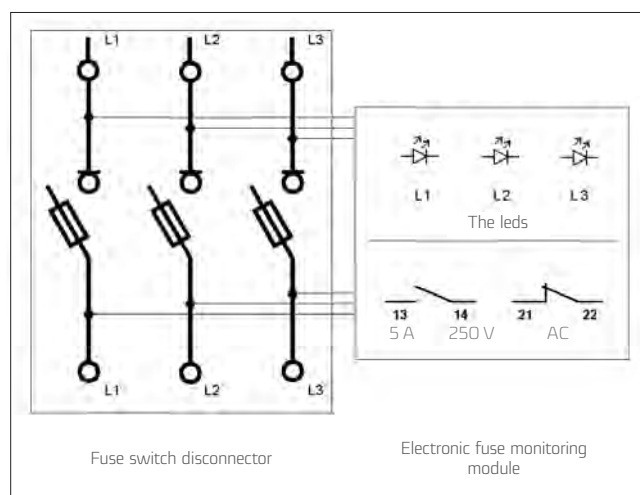
RBK 00-XT - for RBK 00 installed on mounting plate,

with power supply connected to top cable terminals

RBK 00-X - for RBK 00 installed on mounting plate,

with power supply connected to bottom cable terminals

RBK 00S-X - for RBK 00 installed on to 60 mm busbar system



disconnecter contact position during normal operation

Table 101. Versions

| Versions with electronic fuse monitoring module, cable terminals - S-bridge clamps |                                                                                          |               |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|---------------|
| RBK 00 pro-XT                                                                      | For installation on mounting plate, power supply connected to top cable terminals        | 63-823304-011 |
| RBK 00 pro-X                                                                       | For installation on mounting plate, power supply connected to top bottom terminals       | 63-823304-021 |
| RBK 00 pro-SG-X                                                                    | For installation on to 60 mm busbar system, top cable terminals, busbar power supply     | 63-823345-011 |
| RBK 00 pro-SD-XT                                                                   | For installation on to 60 mm busbar system, bottom cable terminals, busbar power supply  | 63-823345-021 |
| RBK 1 pro-XT                                                                       | For installation on mounting plate, power supply connected to top cable terminals        | 63-811785-011 |
| RBK 1 pro-X                                                                        | For installation on mounting plate, power supply connected to top bottom terminals       | 63-811785-021 |
| RBK 1 pro-SG 60-X                                                                  | For installation on to 60 mm busbar system, top cable terminals, busbar power supply     | 63-811787-011 |
| RBK 1 pro-SD 60-XT                                                                 | For installation on to 60 mm busbar system, bottom cable terminals, busbar power supply  | 63-811787-021 |
| RBK 1 pro-SG 100-X                                                                 | For installation on to 100 mm busbar system, top cable terminals, busbar power supply    | 63-811787-031 |
| RBK 1 pro-SD 100-XT                                                                | For installation on to 100 mm busbar system, bottom cable terminals, busbar power supply | 63-811787-041 |
| RBK 2 pro-XT                                                                       | For installation on mounting plate, power supply connected to top cable terminals        | 63-811786-011 |
| RBK 2 pro-X                                                                        | For installation on mounting plate, power supply connected to top bottom terminals       | 63-811786-021 |
| RBK 2 pro-SG 60-X                                                                  | For installation on to 60 mm busbar system, top cable terminals, busbar power supply     | 63-811788-011 |
| RBK 2 pro-SD 60-XT                                                                 | For installation on to 60 mm busbar system, bottom cable terminals, busbar power supply  | 63-811788-021 |
| RBK 2 pro-SG 100-X                                                                 | For installation on to 100 mm busbar system, top cable terminals, busbar power supply    | 63-811788-031 |
| RBK 2 pro-SD 100-XT                                                                | For installation on to 100 mm busbar system, bottom cable terminals, busbar power supply | 63-811788-041 |



# RBK

## Fuse switch disconnectors

- intended for distribution of electricity and protection
- of electrical equipment against short-circuits and overloads,
- with industrial fuse links

## APPLICATIONS

**RBK** fuse switch disconnectors are designed for distribution of electricity and protection of electrical equipment against short-circuits and overloads with industrial fuse links. They are conforming to EN 60947-1, EN 60947-3, IEC 60947-1, IEC 60947-3 standards. They are intended for installation in low voltage distribution boards, cable and metering cabinets.

## CONSTRUCTION

- thermoplastic parts of **RBK** fuse switch disconnectors are made of fibre glass strengthened polyamide with halogen free flame retardant added and flammability class V2,
- **RBK** fuse switch disconnectors consist of following parts:
  - three pole main base with spring-loaded contacts designed for connection of circular or sector-shaped conductors, conductors with lug terminals or bars,
  - removable cover with fuse links,
- arc chambers with steel deionization plates over top contacts,
- silver plated contacts providing low power loss.

## MOUNTING

- on mounting plate
  - RBK 00, RBK 1,
- on to 60 mm busbar system installation on to busbar system, with hooked clamps.

## 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,
- relative humidity of the air should not be higher than 50% at temperature of +40°.

## FUNCTIONALITY

- making and breaking operations should be done with determined movement,
- possible connection of circular or sector-shaped conductors with bare ends (V-terminals, 2V-terminals) or conductors with lug terminals (screw terminals),
- voltage test is performed through test holes in fuse link cover.

## Conformity with standards

EN 60947-1 EN 60947-3 HD 60269-2

Table 102. RBK fuse switch disconnectors technical data

| Parameter                             |                  |    | RBK 00 | RBK 1  |
|---------------------------------------|------------------|----|--------|--------|
| Rated thermal current $I_{th}^{1)}$   | A                |    | 160    | 250    |
| Rated voltage $U_n$                   | V                |    | 690    | 690    |
| Utilization category                  | -                |    | AC-22B | AC-22B |
| Rated switching current $I_e$         | A                |    | 160    | 250    |
| Rated switching voltage $U_e$         | V                |    | 690    | 690    |
| Rated short circuit making current    | 690 V            | kA | 80     | 80     |
|                                       | 500 V            |    | -      | -      |
|                                       | 400 V            |    | 100    | 100    |
| Rated short circuit withstand current | 690 V            | kA | 80     | 80     |
|                                       | 500 V            |    | -      | -      |
|                                       | 400 V            |    | 100    | 100    |
| Rated insulation voltage $U_i$        | V                |    | 1000   | 1000   |
| Rated power dissipation $U_{imp}$     | kV               |    | 8      | 8      |
| Rated frequency                       | Hz               |    | 50-60  | 50-60  |
| Mechanical durability                 | Number of cycles |    | 1600   | 1600   |
| Electrical durability                 |                  |    | 200    | 200    |
| IP degree of protection               | IP               |    | 20*    | 20*    |
| Weight                                | kg               |    | ~0,65  | ~2     |
| Size of fuse links PN/IEC             | -                |    | 00     | 1      |

\*from the front IP30

<sup>1)</sup>  $I_{th}$  - thermal current of fuse switch disconnector without external enclosure, installed outdoors (In case of the installation of fuse switch disconnectors in enclosures then load factor should be considered)

## RBK 00 (160 A, 690 V)

Table 103. Technical data

| Parameter                                 |       | RBK 00           |        |
|-------------------------------------------|-------|------------------|--------|
| Rated thermal current $I_{th}^{1)}$       |       | A                | 160    |
| Rated voltage $U_n$                       |       | V                | 690    |
| Utilization category                      |       | -                | AC-22B |
| Rated switching current $I_e$             |       | A                | 160    |
| Rated switching voltage $U_e$             |       | V                | 690    |
| Rated short circuit making current        | 690 V | kA               | 80     |
|                                           | 500 V |                  | -      |
|                                           | 400 V |                  | 100    |
| Rated short circuit withstand current     | 690 V | kA               | 80     |
|                                           | 500 V |                  | -      |
|                                           | 400 V |                  | 100    |
| Rated insulation voltage $U_i$            |       | V                | 1000   |
| Rated impulse withstand voltage $U_{imp}$ |       | kV               | 8      |
| Rated frequency                           |       | Hz               | 50-60  |
| Mechanical durability                     |       | Number of cycles | 1600   |
| Electrical durability                     |       | Number of cycles | 200    |
| IP degree of protection                   |       | IP               | IP20   |
| Weight                                    |       | kg               | ~0,65  |
| Size of fuse links                        |       | -                | 00     |

<sup>1)</sup>  $I_{th}$  - thermal current of fuse switch disconnector without external enclosure, installed outdoors  
(In case of the installation of fuse switch disconnectors in enclosures then load factor should be considered)



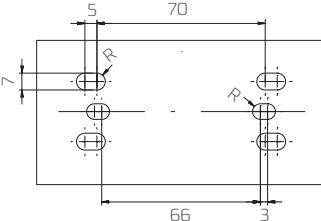
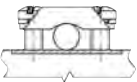
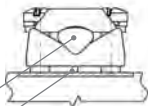
RBK 00  
for installation on mounting plate

RBK 00

Table 104. Versions

| RBK 00/160 A |                                                                              | Cable termina   | Article No.   |
|--------------|------------------------------------------------------------------------------|-----------------|---------------|
| RBK 00       | for connection of round conductors                                           | S-bridge clamps | 63-823333-111 |
| RBK 00-M     | for connection of conductors with lug terminals                              | M8 screws       | 63-823333-121 |
| RBK 00-V     | for connection of sectorshaped conductors                                    | V-shape clamps  | 63-823333-131 |
| RBK 00-W     | for connection of round conductors, lenghtened terminal shrouds              | S-bridge clamps | 63-823333-141 |
| RBK 00-M-W   | for connection of conductors with lug terminals, lenghtened terminal shrouds | M8 screws       | 63-823333-151 |
| RBK 00-V-W   | for connection of sectorshaped conductors, lenghtened terminal shrouds       | V-shape clamps  | 63-823333-161 |

Table 105. RBK 00 terminal clamps

| Description                    | RBK 00                                                                              |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <div>Dimensions and spacing of holes<br/>for installation of RBK 00<br/>on mounting plate</div>  |
|--------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Clamp                          | S-bridge clamp<br>2 x M5 x 16                                                       | M8 x 16<br>screw                                                                    | V-shape clamp<br>2 x M5 x 20                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                       |
| Drawing of clamp               |  |  |                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                       |
| Cross-section<br>of conductors | Cu/Al conductor<br>4 ÷ 50 mm <sup>2</sup>                                           | conductor with<br>lug terminal<br>up to 70 mm <sup>2</sup>                          | <div><div>①</div><div> 1,5 mm<sup>2</sup> - 2,5 mm<sup>2</sup></div></div> <div><div>②</div><div> 4 mm<sup>2</sup> - 70 mm<sup>2</sup></div></div> <div><div></div><div> 4 mm<sup>2</sup> - 95 mm<sup>2</sup></div></div> |                                                                                                                                                                                       |
| Cu bar                         | maximum bar width 20 mm                                                             |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                       |
| Tightening torque              | 3 Nm*                                                                               | 10 Nm*                                                                              | 3 Nm*                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                       |

For stranded conductors using cable ferrules is recommended  
\*using of tension wrench is recommended

## RBK 1 (250 A, 690 V)



RBK 1  
for installation on mounting plate

Table 106. Technical data

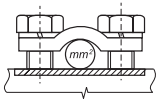
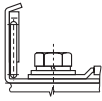
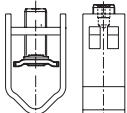
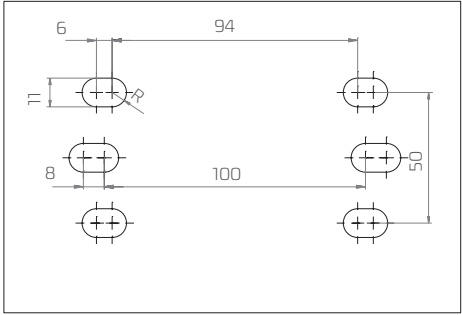
| Parameter                                 |                  | RBK 1  |
|-------------------------------------------|------------------|--------|
| Rated thermal current $I_{th}^{(1)}$      | A                | 250    |
| Rated voltage $U_n$                       | V                | 690    |
| Utilization category                      | -                | AC-22B |
| Rated switching current $I_e$             | A                | 250    |
| Rated switching voltage $U_e$             | V                | 690    |
| Rated short circuit making current        | 690 V            | 80     |
|                                           | 500 V            | -      |
|                                           | 400 V            | 100    |
| Rated short circuit withstand current     | 690 V            | 80     |
|                                           | 500 V            | -      |
|                                           | 400 V            | 100    |
| Rated insulation voltage $U_i$            | V                | 1000   |
| Rated impulse withstand voltage $U_{imp}$ | kV               | 8      |
| Rated frequency                           | Hz               | 50-60  |
| Mechanical durability                     | Number of cycles | 1600   |
| Electrical durability                     | Number of cycles | 200    |
| IP degree of protection                   | IP               | IP20   |
| Weight                                    | kg               | ~2     |
| Size of fuse links                        | -                | 1      |

Table 107. Versions

| RBK 1/250 A |                                                                                                       | Cable terminals            | Article No.   |
|-------------|-------------------------------------------------------------------------------------------------------|----------------------------|---------------|
| RBK 1       | For connection of round conductors                                                                    | S-bridge clamps            | 63-811779-011 |
| RBK 1-M     | For connection of conductors with lug terminals                                                       | Screws                     | 63-811779-021 |
| RBK 1-V     | For connection of sector-shaped conductors                                                            | V-clamps                   | 63-811779-031 |
| RBK 1 VG    | For connection of round conductors, top terminals -V-terminals, bottom terminals - S-bridge terminals | V-clamps / S-bridge clamps | 63-811784-051 |
| RBK 1 VG-M  | For connection of round conductors, top terminals -V-terminals, bottom terminals - screw terminals    | V-clamps / screws          | 63-811784-061 |
| RBK 1 VD    | For connection of round conductors, top terminals -S-bridge terminals, bottom terminals - V-terminals | S-bridge clamps / V-clamps | 63-811784-071 |
| RBK 1 VD-M  | For connection of round conductors, top terminals-screw terminals, bottom terminals - V-terminals     | screw terminals / V-clamps | 63-811784-081 |



Table 108. RBK 1 terminal clamps

| Description                                                                 | RBK 1                                                                               | RBK 1-M                                                                           | RBK 1-V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Clamp                                                                       | S-bridge clamp 2 x M8 x 30                                                          | M10x25 screw                                                                      | V-clamp V HS 35-300-C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Picture of a clamp                                                          |    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Drawing of a clamp                                                          |    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Cross-section of conductors                                                 | Cu/Al conductor<br>35 ÷ 120 mm <sup>2</sup>                                         | conductor with lug terminal<br>up to 120 mm <sup>2</sup>                          | V-clamp for direct fixing<br>of conductor with bare<br>end with cross-section of:<br>35 - 185 mm <sup>2</sup>  35 - 240 mm <sup>2</sup> <br>35 - 240 mm <sup>2</sup>  35 - 300 mm <sup>2</sup>  |
| Cu bar                                                                      | maximum bar width 35 mm                                                             |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Tightening torque                                                           | 10 Nm*                                                                              | 20 Nm*                                                                            | 30 Nm*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Dimensions and spacing of holes for installation of RBK 1 on mounting plate |  |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

\*using of tension wrench is recommended

\*\*for stranded conductors using cable ferrules is recommended



**RBK 1**  
for installation on mounting  
plate

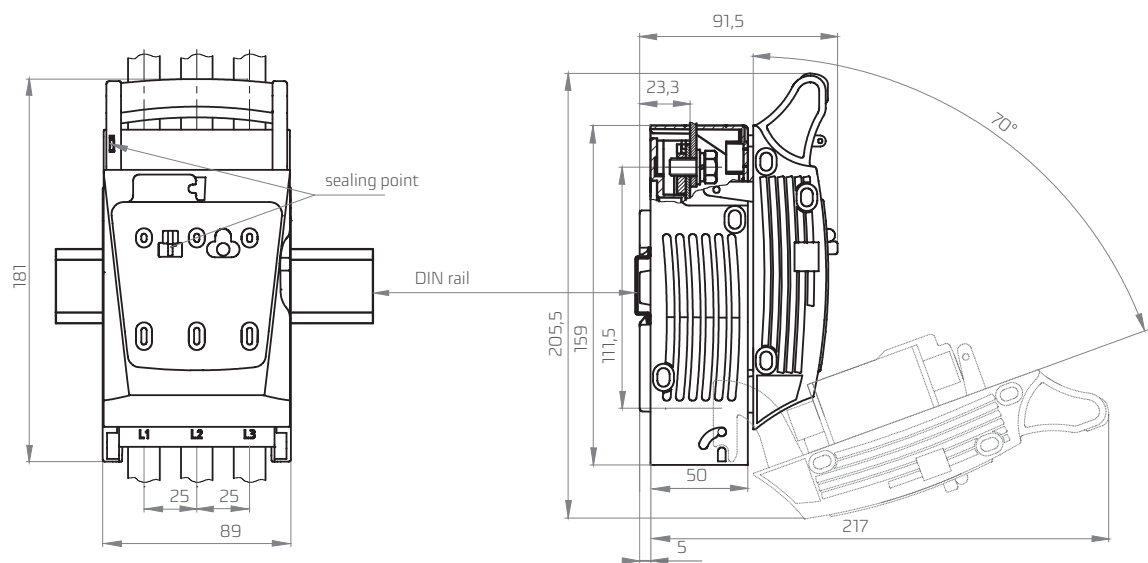


**RBK 1**  
for installation on mounting plate,  
with additional terminal shrouds

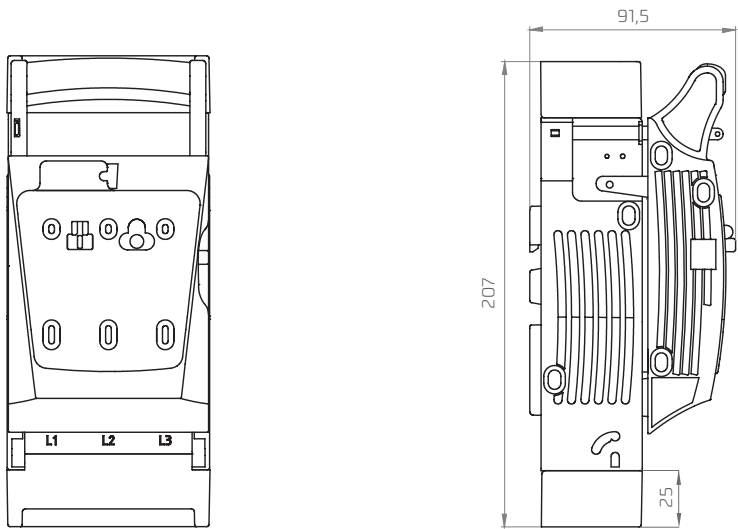


**RBK 1VD-M**  
for installation on mounting plate,  
picture of fuse switch disconnecter  
without fuse links cover and terminal  
shrouds, top cable terminal - M screws,  
bottom cable terminal - V-clamps,  
(RBK 1 VG-M - bottom cable terminal -  
M screws, top cable terminal - V-clamps)

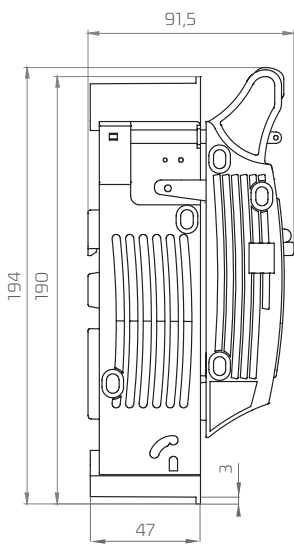
RBK 000 pro  
RBK 000 pro-E



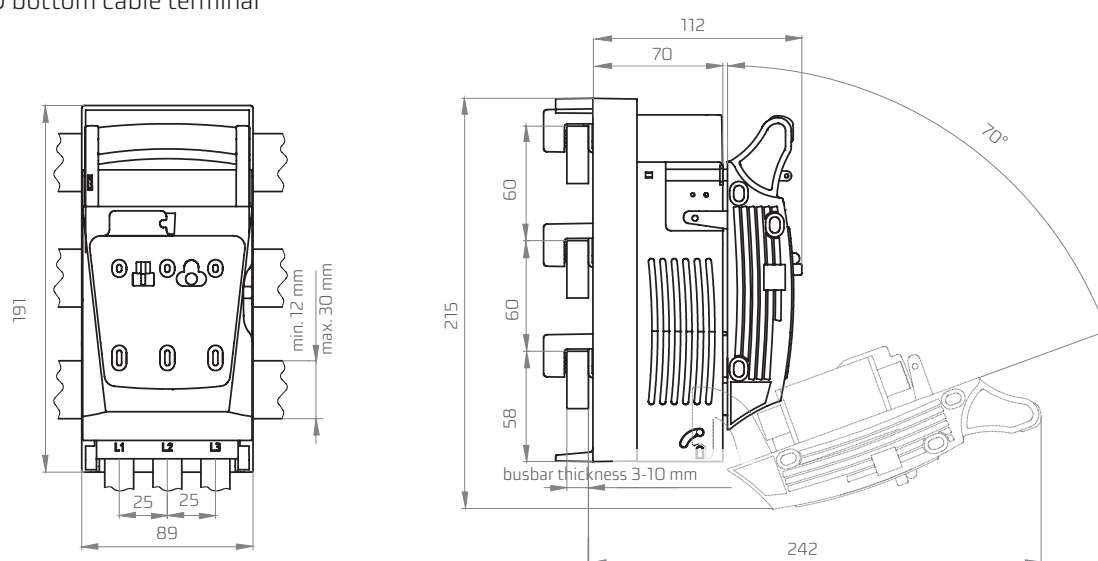
RBK 000 pro-O



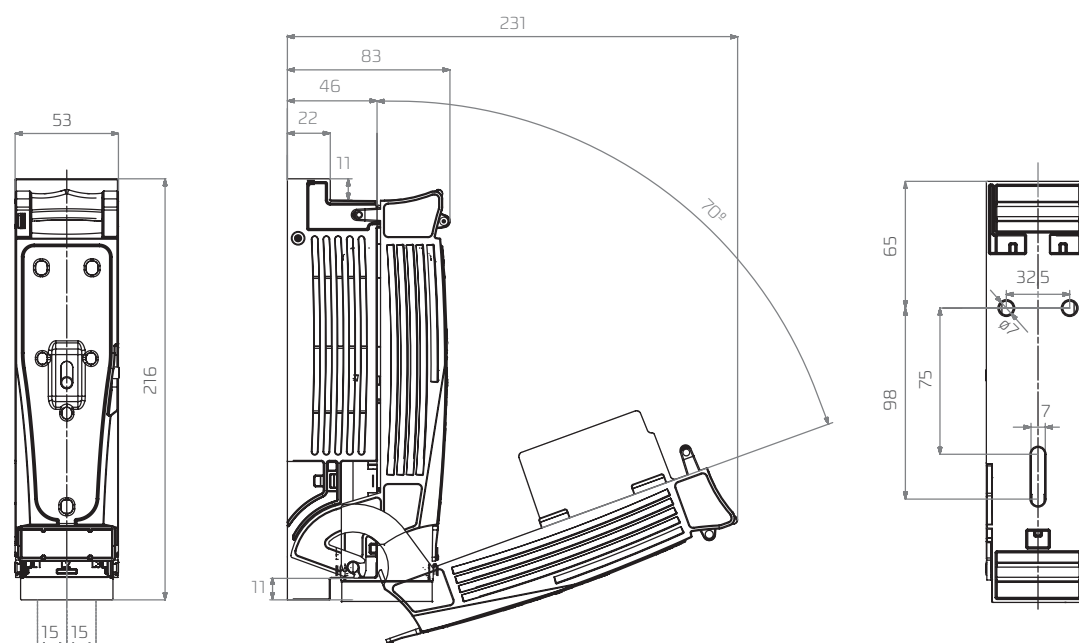
RBK 000 pro-W



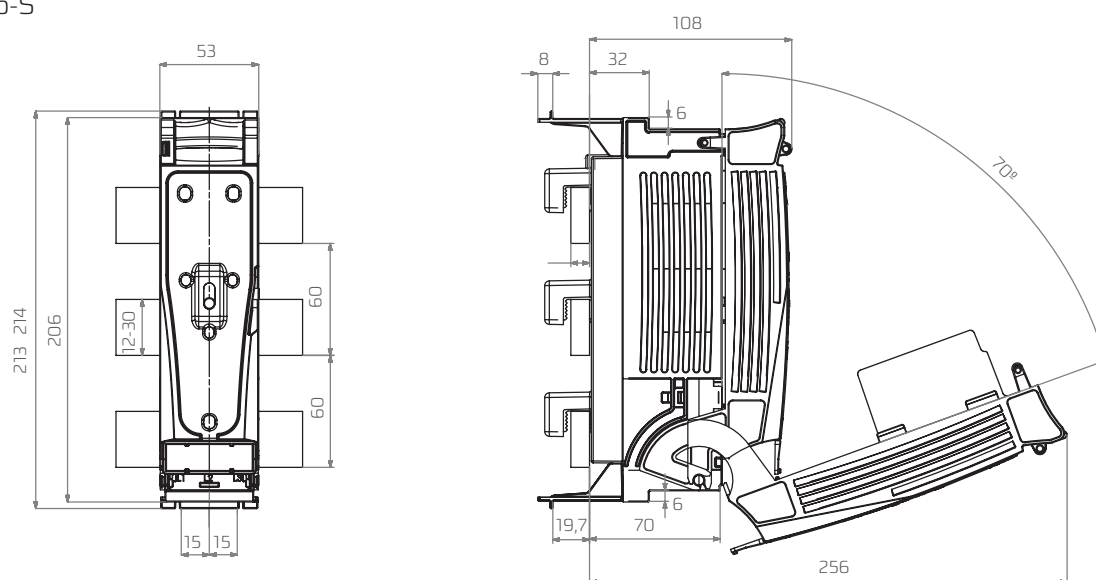
RBK 000 pro-SG top cable terminal  
RBK 000 pro-SD bottom cable terminal



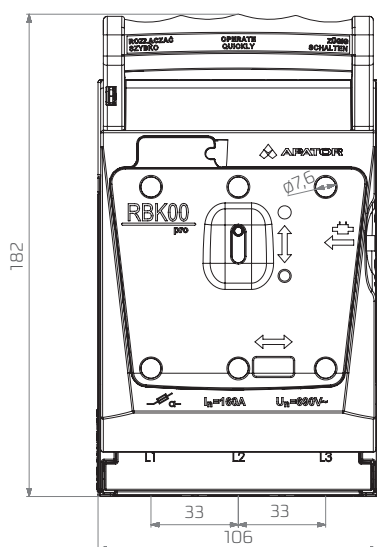
RBP 000 pro



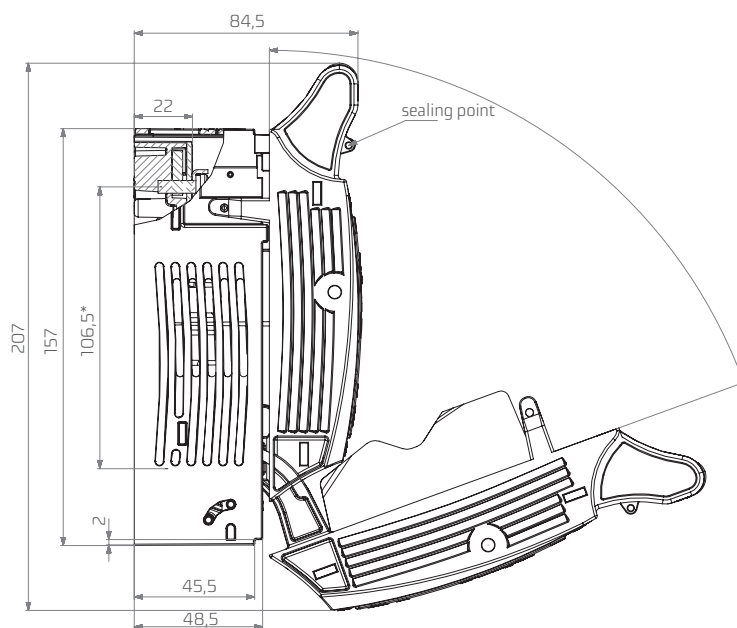
RBP 000 pro-S



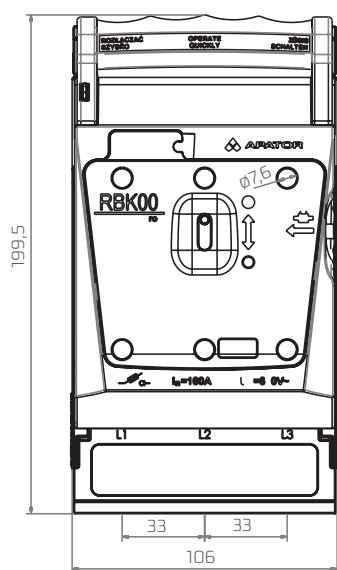
## RBK 00 / RBK 00 pro



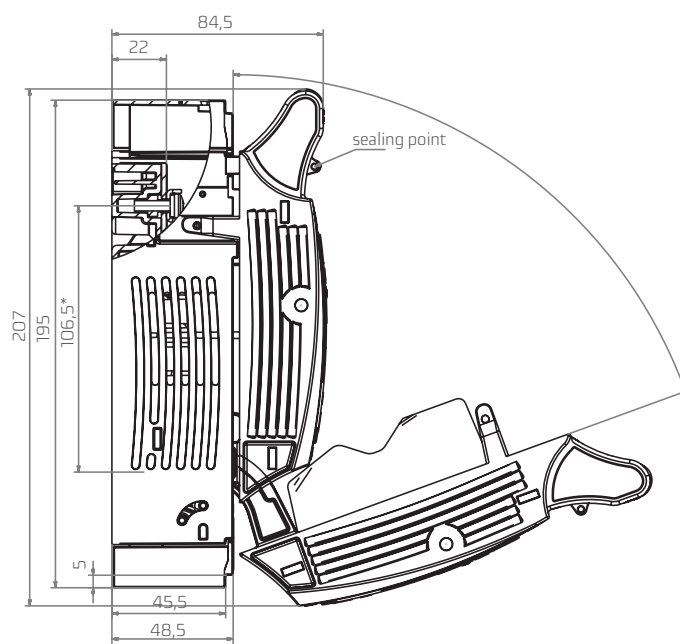
\*122.5 mm for M screw terminal (for busbar and lug terminal)



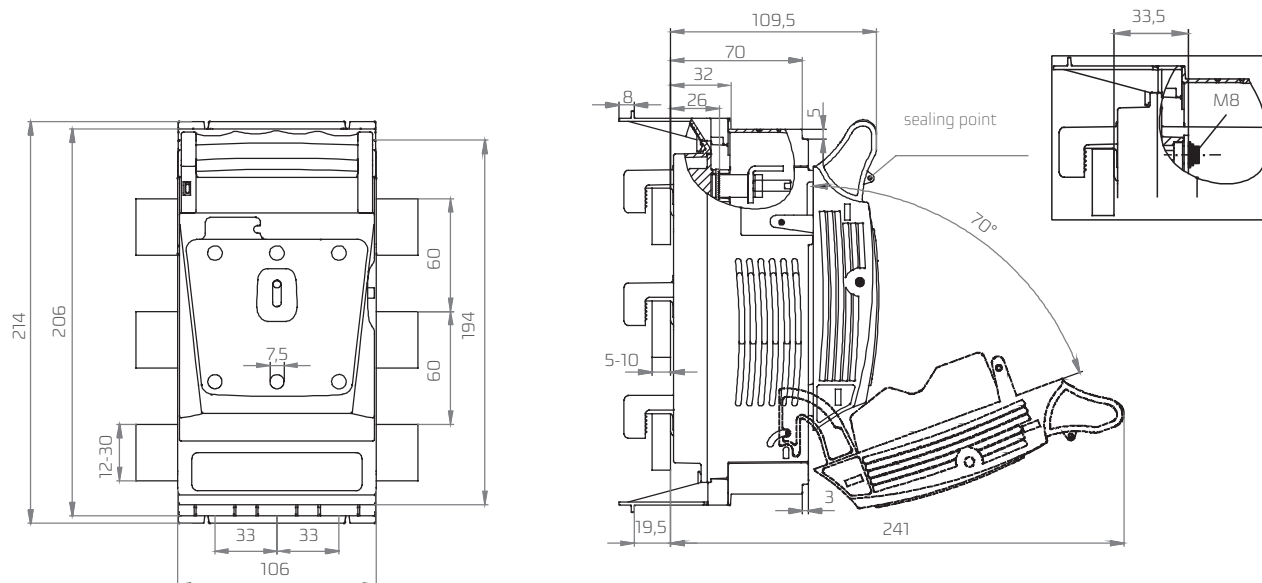
## RBK 00-W / RBK 00 pro-W,



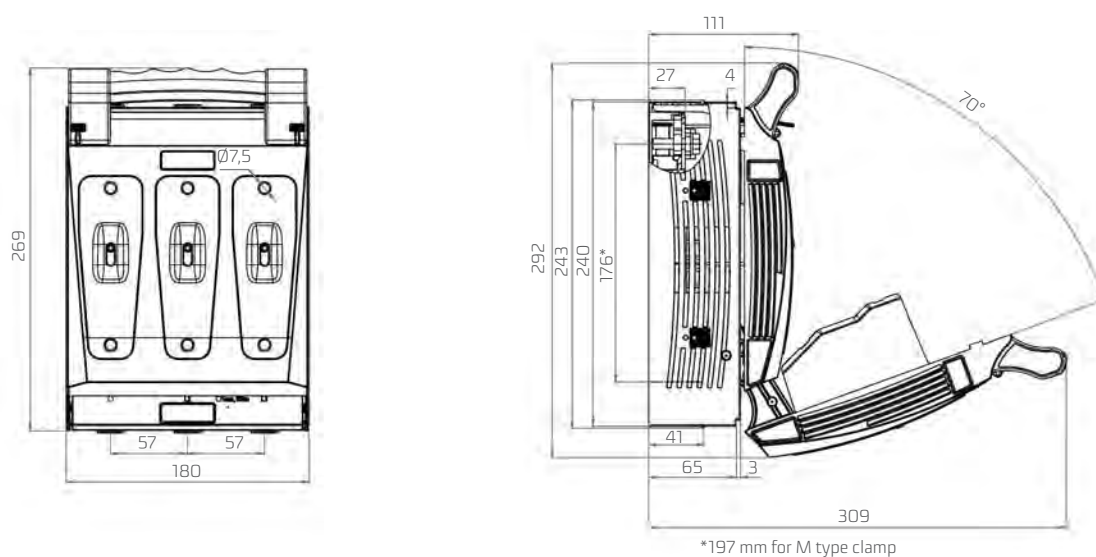
\*122.5 mm for M screw terminal (for busbar and lug terminal)



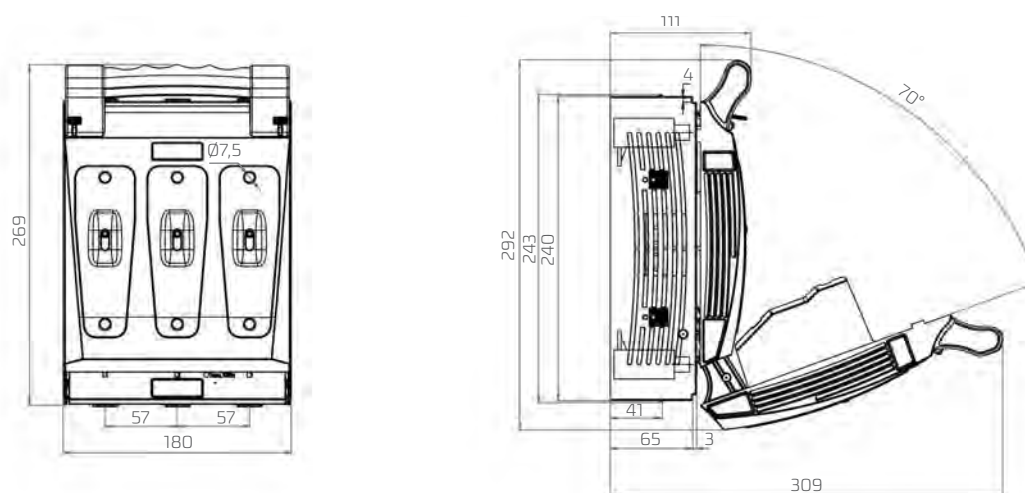
RBK 00 pro-S



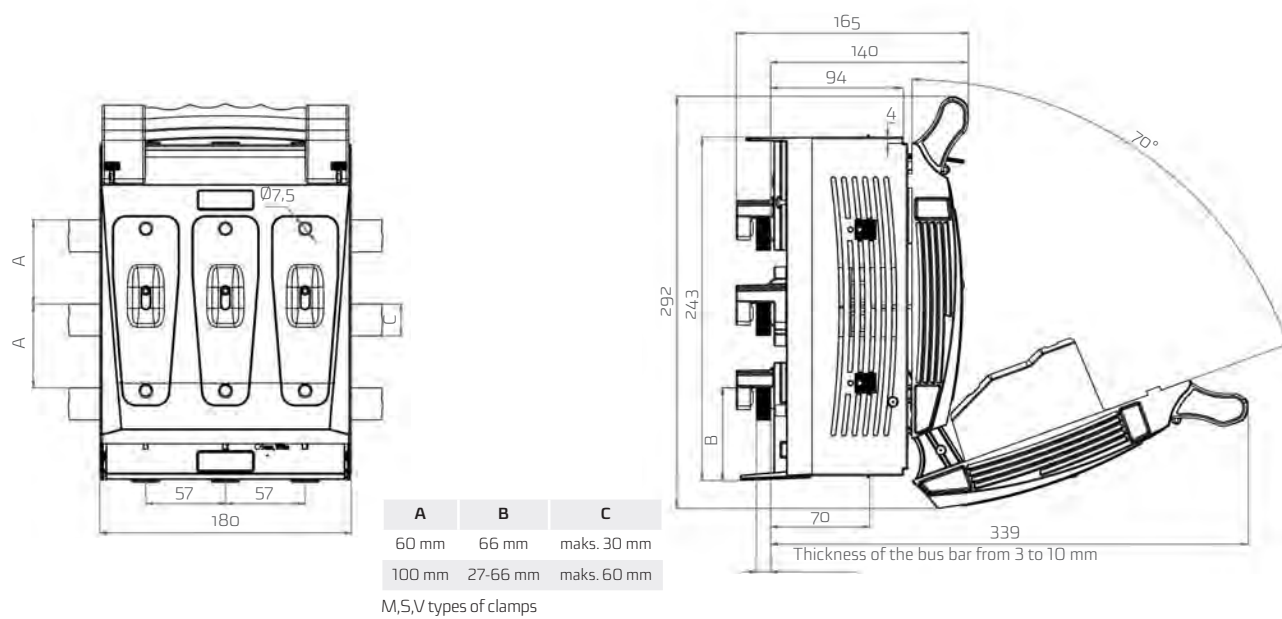
RBK 1, RBK 1 pro



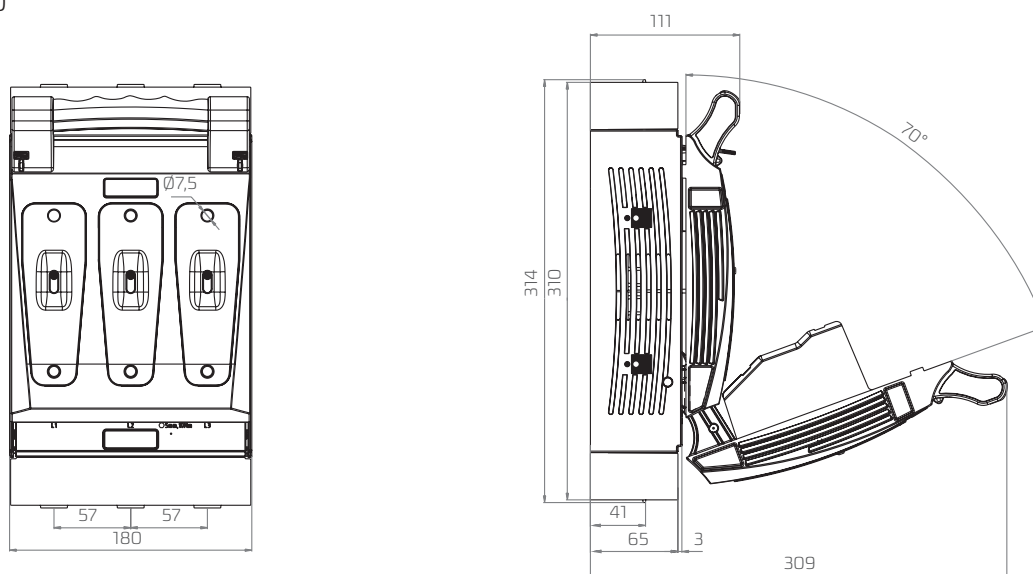
RBK 1 pro-V



## RBK 1 pro-SD, RBK 1 pro-SG

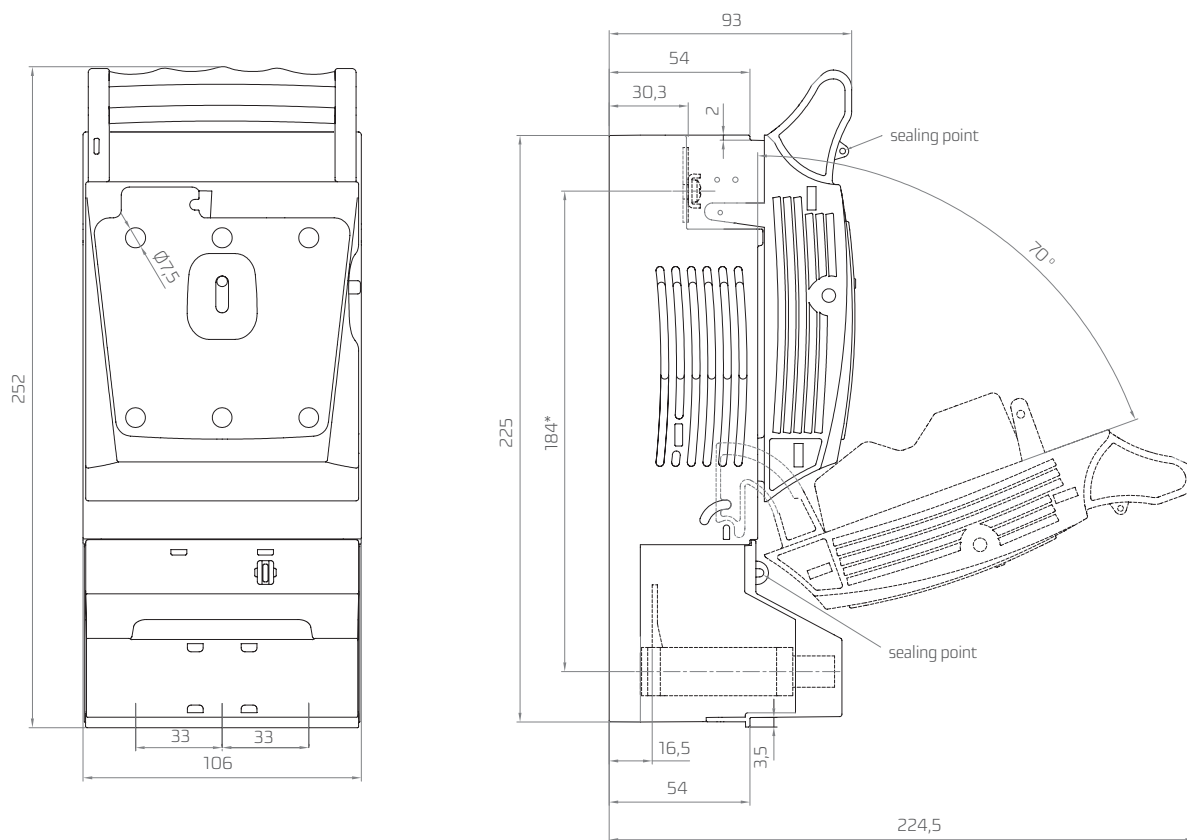


## RBK 1 pro-O

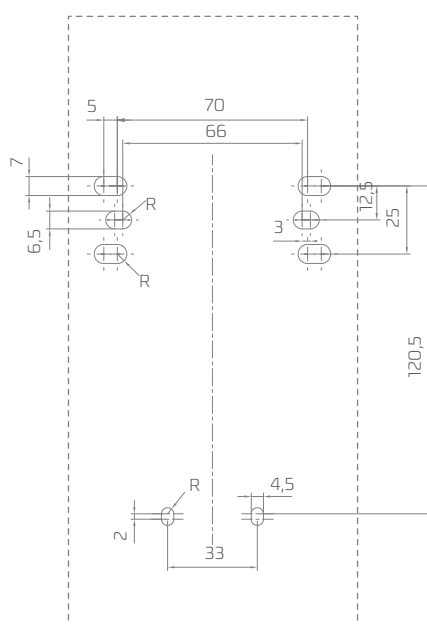




# RBK 00 pro-V 120

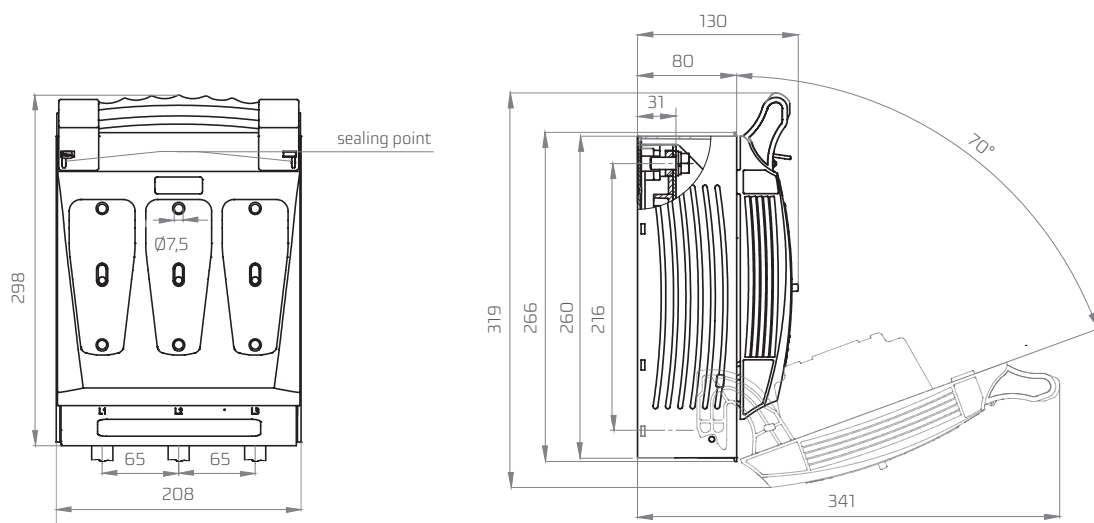


\*197 mm for M screw terminal  
(for busbar and lug terminal)

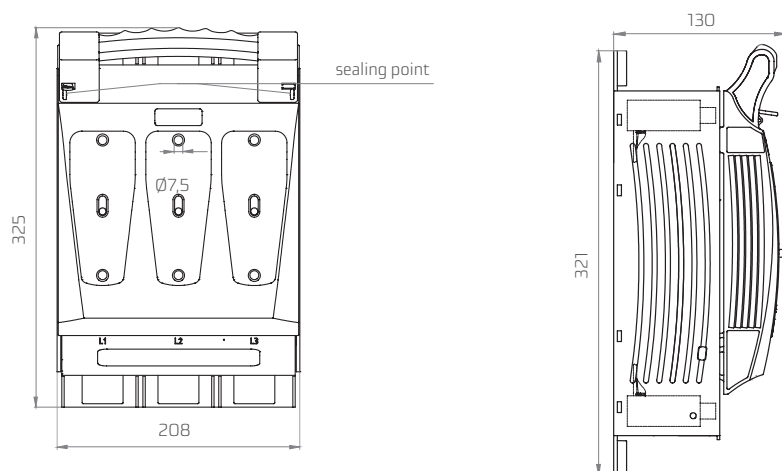


spacing of holes for installation  
of RBK 00 pro-V120 on mounting plate

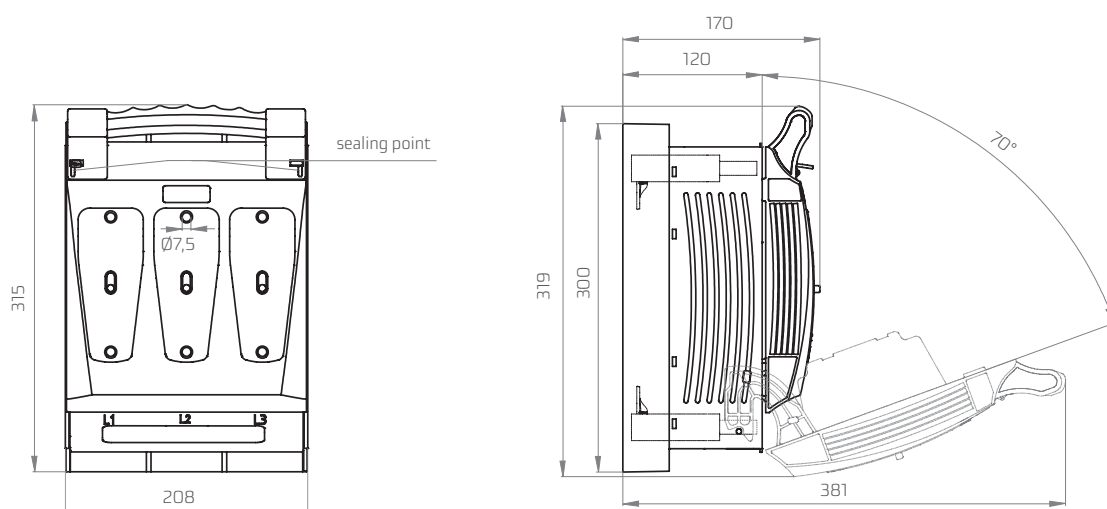
## RBK 2 pro



## RBK 2 pro-V



## RBK 2 pro-2V



Technical drawing of the busbar assembly showing dimensions and components. The drawing includes the following dimensions and labels:

- Overall width: 154
- Overall height: 319
- Height of the main busbar section: 266
- Height of the terminal block section: 260
- Distance between terminal blocks: A
- Distance between terminal blocks: B
- Distance from the main busbar to the terminal block: 109
- Overall length of the assembly: 366
- Angle of the terminal block: 70°
- Label: busbar thickness 5-10 mm

Technical drawing of the cable management system showing side and front views with dimensions.

**Side View Dimensions:**

- Overall height: 319
- Height to top of cable tray: 321
- Height to top of cable tray (excluding cable tray): 266
- Height to top of cable tray (excluding cable tray and cable tray): 260
- Height of cable tray: A
- Height of cable tray (excluding cable tray): A
- Height of cable tray (excluding cable tray and cable tray): B
- Overall width: 154

**Front View Dimensions:**

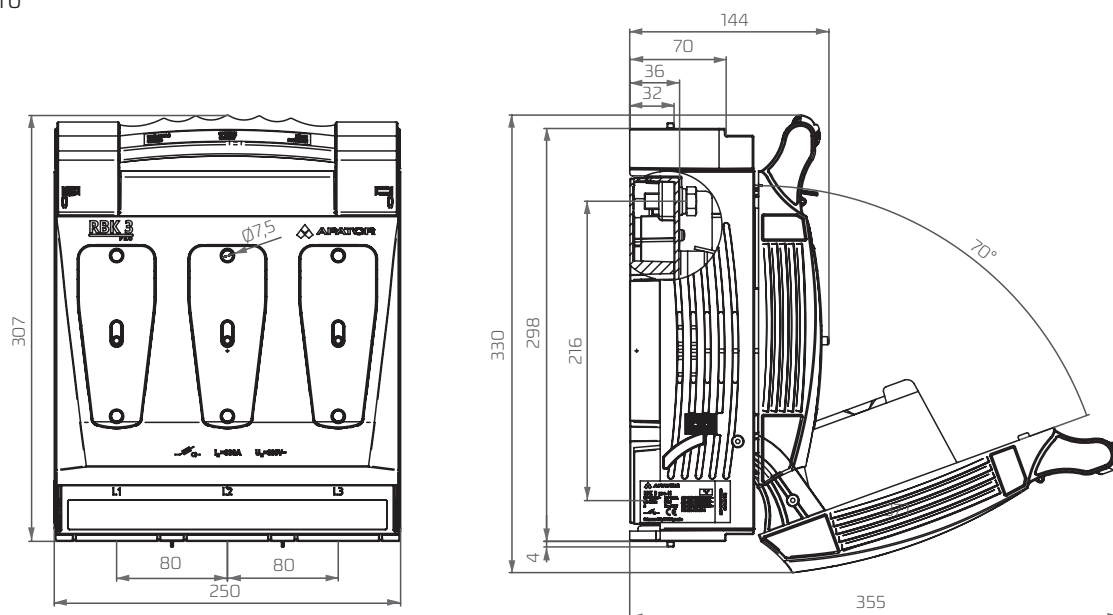
- Overall width: 366
- Width of cable tray: 109
- Busbar thickness: 5-10 mm
- Bottom cable terminal

**Labels:**

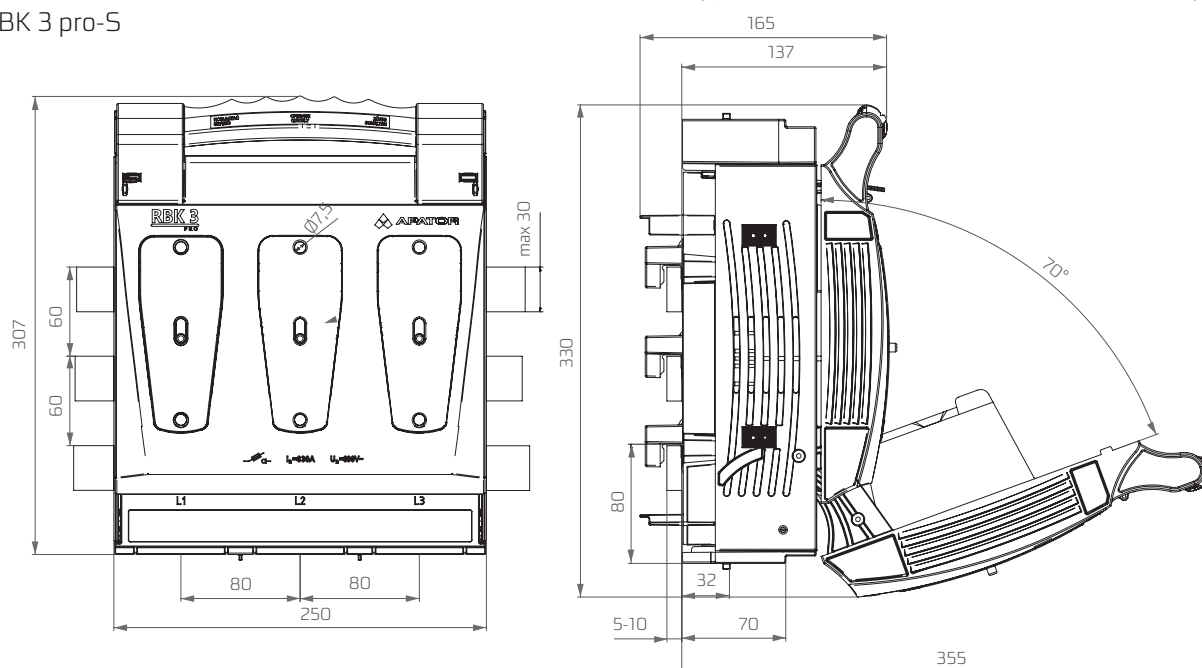
- odejście kablem z góry
- bottom cable terminal

111

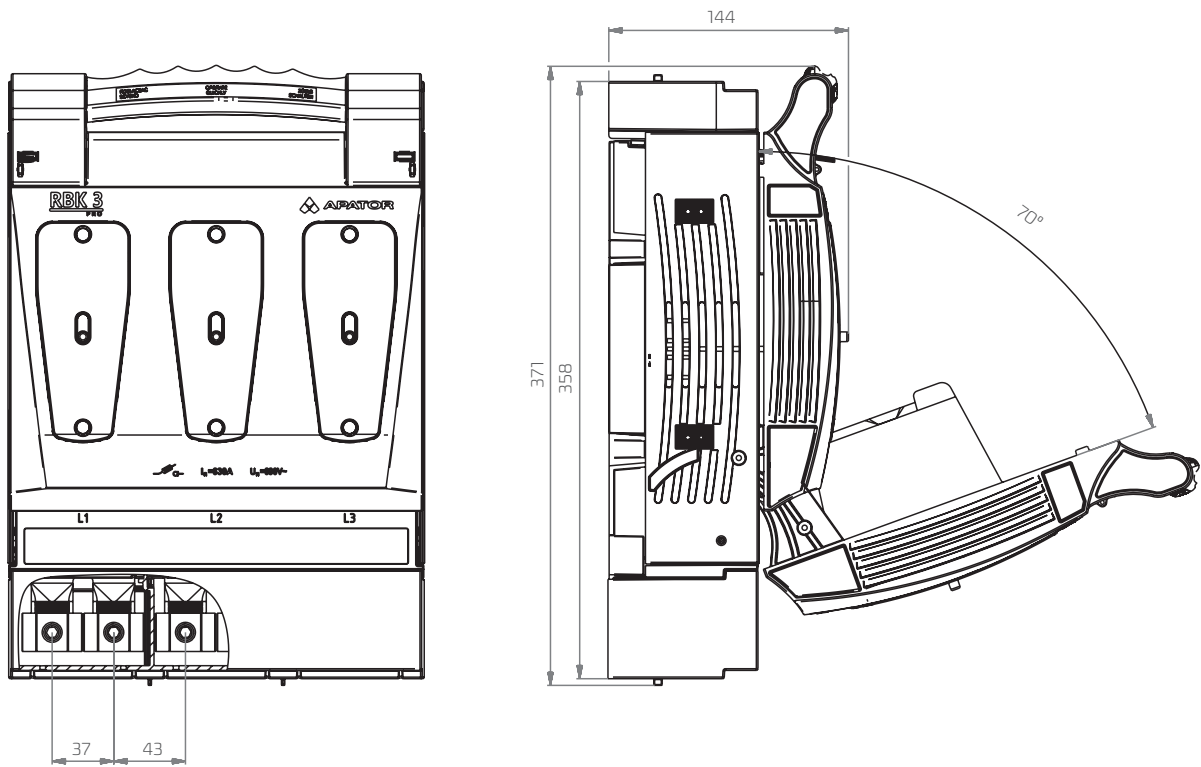
## RBK 3 pro



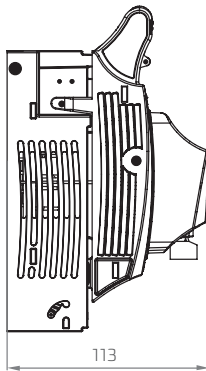
## RBK 3 pro-S



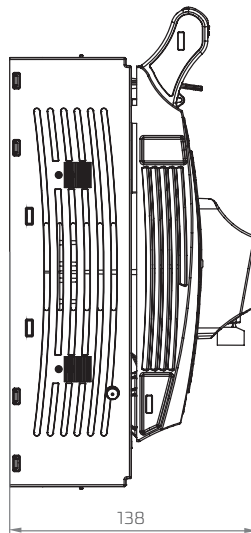
## RBK 3 pro M-2xVD



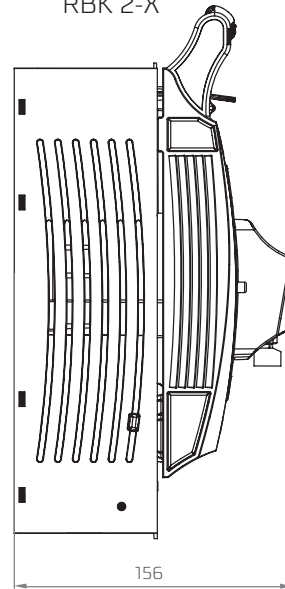
RBK 00-X



RBK 1-X

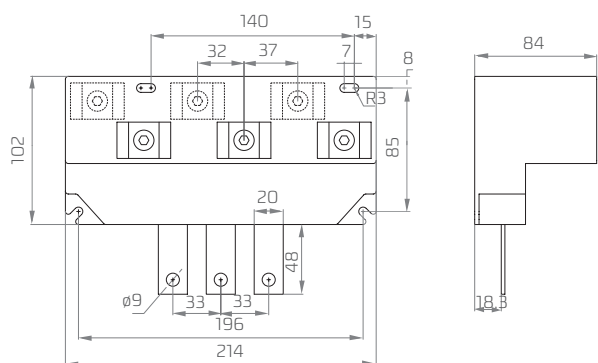


RBK 2-X

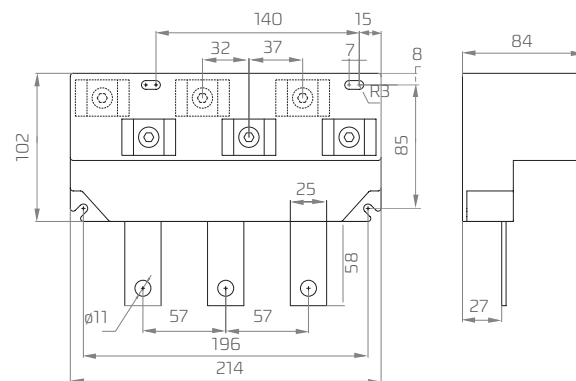


Terminal adapters:

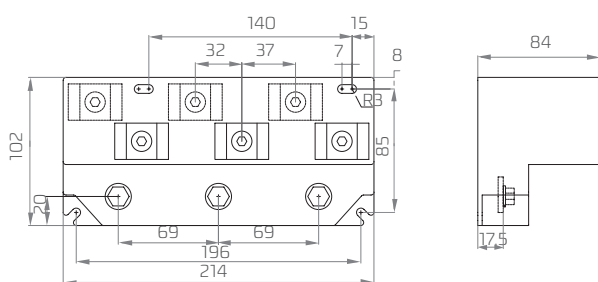
RBK 00



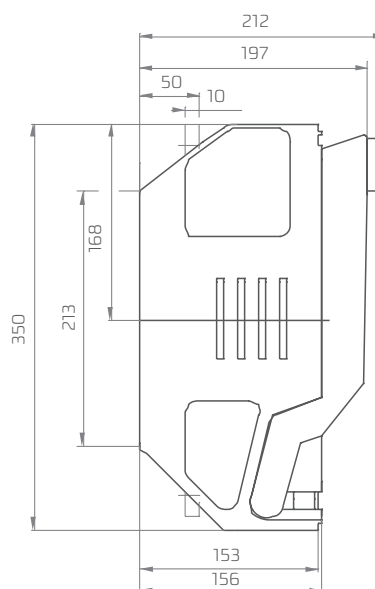
RBK 1



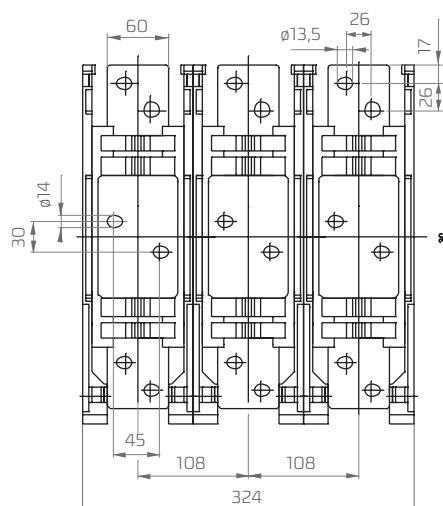
RBK 2



RBK 4a



RBK 4a 1600



RBK 4a 1250

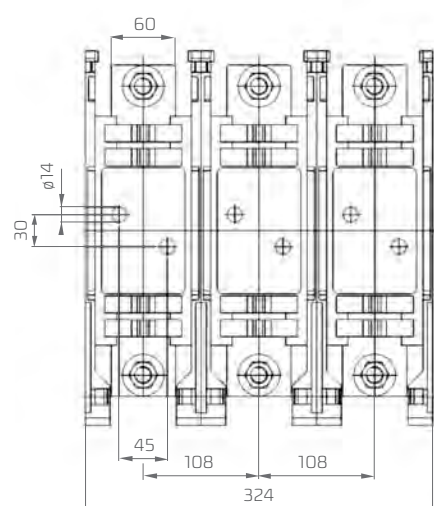




Table 109. RBP 000 pro - accessories

| Description                                                                                             | Size | Article No.   | Picture                                                                           |
|---------------------------------------------------------------------------------------------------------|------|---------------|-----------------------------------------------------------------------------------|
| Auxiliary contacts<br>(microswitch)<br>AC-15 $U_e$ 230 V~ $I_e$ 2,5 A<br>DC-13 $U_e$ 230 V~ $I_e$ 0,3 A | 000  | 1115296311T   |  |
| Microswitch shroud<br>1115296311T                                                                       | 000  | 51-946806-001 |  |



RBK 000

Table 110. RBK 000 pro - accessories

| Description                                                                                                                                                                                                                                                                                                                                   | Size | Article No.   | Picture                                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------------|--------------------------------------------------------------------------------------|
| Feeding bridge<br>2 x RBK 000, 35 mm <sup>2</sup>                                                                                                                                                                                                                                                                                             | 000  | 1119510055T   |     |
| Feeding bridge<br>3 x RBK 000, 35 mm <sup>2</sup>                                                                                                                                                                                                                                                                                             | 000  | 1119510056T   |     |
| Feeding bridge<br>4 x RBK 000, 35 mm <sup>2</sup>                                                                                                                                                                                                                                                                                             | 000  | 1119510057T   |    |
| Feeding bridge<br>5 x RBK 000, 35 mm <sup>2</sup>                                                                                                                                                                                                                                                                                             | 000  | 1119510058T   |   |
| Feeding bridge<br>2 x RBK 000, 50 mm <sup>2</sup>                                                                                                                                                                                                                                                                                             | 000  | 1119510059T   |   |
| Feeding bridge<br>3 x RBK 000, 50 mm <sup>2</sup>                                                                                                                                                                                                                                                                                             | 000  | 1119510060T   |   |
| Feeding bridge<br>4 x RBK 000, 50 mm <sup>2</sup>                                                                                                                                                                                                                                                                                             | 000  | 1119510061T   |  |
| Feeding bridge<br>5 x RBK 000, 50 mm <sup>2</sup>                                                                                                                                                                                                                                                                                             | 000  | 1119510062T   |  |
| Feeding bridge<br>RBK 000 25-95 mm <sup>2</sup><br>(1 set - 3 pcs.)<br>for connection of conductor<br>of cross-section<br>25-70 mm <sup>2</sup>  25-95 mm <sup>2</sup>  | 000  | 1119510071T   |  |
| Auxiliary contacts<br>(microswitch)<br>AC-15 $U_e$ 230 V~ $I_e$ 2,5 A<br>DC-13 $U_e$ 230 V~ $I_e$ 0,3 A                                                                                                                                                                                                                                       | 000  | 1115296311T   |   |
| Microswitch shroud<br>1115296311T                                                                                                                                                                                                                                                                                                             | 000  | 51-000148-001 |   |
| Additional terminal shroud<br>„O” extends shroud length<br>of 25 mm                                                                                                                                                                                                                                                                           | 000  | 51-930160-011 |  |

Table 111. RBK 00, RBK 00 pro - accessories

| Description                                                                                                                                                                                                         | Size | Article No. | Picture                                                                              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------|--------------------------------------------------------------------------------------|
| Feeding bridge<br>2 x RBK 00, 35 mm <sup>2</sup>                                                                                                                                                                    | 00   | 1119510063T |     |
| Feeding bridge<br>3 x RBK 00, 35 mm <sup>2</sup>                                                                                                                                                                    | 00   | 1119510064T |     |
| Feeding bridge<br>4 x RBK 00, 35 mm <sup>2</sup>                                                                                                                                                                    | 00   | 1119510065T |    |
| Feeding bridge<br>5 x RBK 00, 35 mm <sup>2</sup>                                                                                                                                                                    | 00   | 1119510066T |    |
| Feeding bridge<br>2 x RBK 00, 50 mm <sup>2</sup>                                                                                                                                                                    | 00   | 1119510067T |   |
| Feeding bridge<br>3 x RBK 00, 50 mm <sup>2</sup>                                                                                                                                                                    | 00   | 1119510068T |   |
| Feeding bridge<br>4 x RBK 00, 50 mm <sup>2</sup>                                                                                                                                                                    | 00   | 1119510069T |  |
| Feeding bridge<br>5 x RBK 00, 50 mm <sup>2</sup>                                                                                                                                                                    | 00   | 1119510070T |  |
| Feeding bridge clampRBK<br>00 25-95 mm <sup>2</sup><br>(1 set - 3 pcs.)<br>for connection of conductor<br>of cross-section                                                                                          | 00   | 1119510072T |   |
| 25-70 mm <sup>2</sup>  25-95 mm <sup>2</sup>  |      |             |                                                                                      |
| Clamp for RBK 00<br>2x25 mm <sup>2</sup> 1x16 mm <sup>2</sup>                                                                                                                                                       | 00   | 1119510073T |   |
| Clamp for RBK 00<br>4x10 mm <sup>2</sup>                                                                                                                                                                            | 00   | 1119510074T |   |



RBK 00

| Description                                                                                             | Size     | Article No.   | Picture                                                                             |
|---------------------------------------------------------------------------------------------------------|----------|---------------|-------------------------------------------------------------------------------------|
| Auxiliary contacts<br>(microswitch)<br>AC-15 $U_e$ 230 V~ $I_e$ 2,5 A<br>DC-13 $U_e$ 230 V~ $I_e$ 0,3 A | 00       | 1115296311T   |  |
| Microswitch shroud<br>1115296311T                                                                       | 00       | 51-000148-001 |  |
| Additional terminal shroud<br>extends shroud length of 25 mm                                            | 00       | 51-930499-011 |  |
| Terminal adapter<br>+ 3 x V-clamp + terminal shroud                                                     | RBK 00   | 1119510048T   |   |
|                                                                                                         | RBK 00 W | 1119510043T   |                                                                                     |

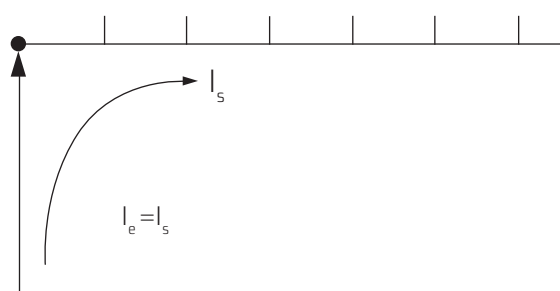
Table 112. RBK 1, RBK 1 pro, RBK 2 pro, RBK 3 pro - accessories

| Description                                                                                                 | Size                                 | Article No.   | Picture                                                                               |
|-------------------------------------------------------------------------------------------------------------|--------------------------------------|---------------|---------------------------------------------------------------------------------------|
| Auxiliary contacts<br>(microswitch)<br>AC-15 $U_e$ 230 V~ $I_e$ = 2,5 A<br>DC-13 $U_e$ 230 V~ $I_e$ = 0,3 A | RBK 1<br>RBK 1 pro<br>RBK 2<br>RBK 3 | 1115296316    |  |
| Additional terminal shroud<br>extends shroud length of 35 mm                                                | RBK 1 pro-O                          | 51-823278-011 |  |
| Additional terminal shroud „O“<br>extends shroud length of 60 mm                                            | RBK 2-O                              | 51-822405-011 |  |
| Additional terminal shroud<br>extends shroud length of 60 mm                                                | RBK 3-O                              | 51-823329-011 |  |
| Terminal adapter RBK 1<br>+ 3 x V-clamp + terminal shroud                                                   | RBK 1                                | 1119510038T   |   |
| Terminal adapter RBK 2<br>+ 3 x V-clamp + terminal shroud                                                   | RBK 2                                | 1119510047T   |   |

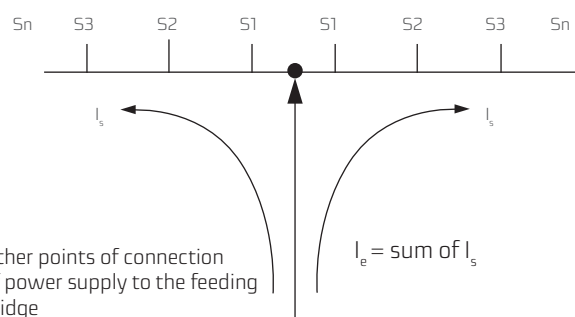
Table 113. RBK 000, RBK 00 feeding bridges technical data

|                                                                                |                                                                                                                                            |
|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Materials</b>                                                               | Cu busbar<br>Insulating parts, pressed PC/ABS RAL7035<br>Cover, injection molded PC/ABS RAL7035<br>Shroud, injection molded PC/ABS RAL7035 |
| <b>Temperature range</b>                                                       | >80 °C UL94V0                                                                                                                              |
| <b>Glow wire flammability index</b>                                            | pressed PC/ABS<br>960 °C / 3.2 mm<br>850 °C / 1 mm<br>injection molded PC/ABS 960 °C / 1 mm                                                |
| <b>Insulation properties</b>                                                   | Overvoltage category III/Pollution degree rating II                                                                                        |
| <b>CTI</b>                                                                     | pressed PC/ABS 600 V<br>injection molded PC/ABS 250 V                                                                                      |
| <b>Short-circuit strength</b>                                                  | 25 kA/0.1 s                                                                                                                                |
| <b>Dielectric strength</b>                                                     | >32 kV / mm                                                                                                                                |
| <b>Rated impulse withstand voltage 35 mm<sup>2</sup>/ 50 mm<sup>2</sup></b>    | >6.5 kV / >8.5 kV                                                                                                                          |
| <b>Minimal insulating distance in air 35 mm<sup>2</sup>/ 50 mm<sup>2</sup></b> | >6 mm / >8 mm                                                                                                                              |
| <b>Minimal creepage distance 35 mm<sup>2</sup>/ 50 mm<sup>2</sup></b>          | >8.5 mm / >9 mm                                                                                                                            |
| <b>Rated switching voltage</b>                                                 | 690 V                                                                                                                                      |

| Feeding bridge length                                                          | max. 1000 mm       | max. 300 mm        | max. 1000 mm       | max. 300 mm        |
|--------------------------------------------------------------------------------|--------------------|--------------------|--------------------|--------------------|
| Cross-section                                                                  | 35 mm <sup>2</sup> | 35 mm <sup>2</sup> | 50 mm <sup>2</sup> | 50 mm <sup>2</sup> |
| Power supply connection point at the end or at the beginning of feeding bridge |                    |                    |                    |                    |
| Maximum $I_s$ current / phase                                                  | 125 A              | 200 A              | 160 A              | 250 A              |
| Feeding conductors cross-section                                               | 35 mm <sup>2</sup> | 70 mm <sup>2</sup> | 50 mm <sup>2</sup> | 95 mm <sup>2</sup> |
| Other points of connection of power supply to the feeding bridge               |                    |                    |                    |                    |
| Maximum feeding current $I_e$                                                  | 160 A              | 250 A              | 160 A              | 250 A              |
| Feeding conductors cross-section                                               | 70 mm <sup>2</sup> | 95 mm <sup>2</sup> | 70 mm <sup>2</sup> | 95 mm <sup>2</sup> |



Power supply connection point  
at the end or at the beginning of bridge



Other points of connection  
of power supply to the feeding  
bridge

In case of connection of power  
supply in the middle of feeding  
bridge sum of output currents  
 $S_1, \dots, S_n$   
cannot be greater than corresponding  
maximum current  $I_s$ .

## APPLICATION EXAMPLES

Fuse switch disconnectors **RBK 00** connected with feeding bridge, power supply cables connected to feeding bridge clamps







Article No.  
1119510048T

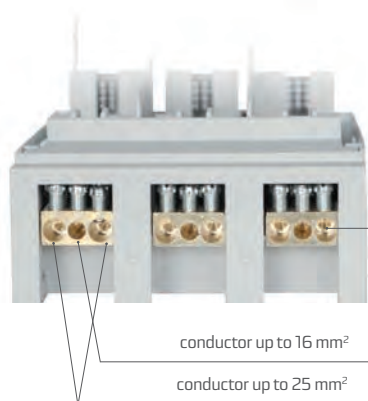
**RBK 00-W** with terminal adapter for connection of sector-shaped conductors with cross-section up to 240 mm<sup>2</sup>

|                          |  |                          |  |
|--------------------------|--|--------------------------|--|
| 35 - 95 mm <sup>2</sup>  |  | 35 - 120 mm <sup>2</sup> |  |
| 50 - 185 mm <sup>2</sup> |  | 50 - 240 mm <sup>2</sup> |  |



Article No.  
1119510073T

**RBK 00-W** with terminal clamp 1x16 mm<sup>2</sup>, 2x25 mm<sup>2</sup>  
(view of fuse switch disconnecter without fuse-link cover and terminal shrouds)



Article No.  
1119510073T

conductor up to 16 mm<sup>2</sup>

conductor up to 25 mm<sup>2</sup>

**RBK 00-W** with terminal clamp 1x16 mm<sup>2</sup>, 2x25 mm<sup>2</sup>  
(view of fuse switch disconnecter without fuse-link cover)



Article No.  
51-930499-011

Article No.  
51-930499-011

**RBK 00** for installation on mounting plate,  
version with additional terminal shrouds



Article No.  
51-930160-011

Article No.  
51-930160-011

**RBK 000** for installation on mounting plate,  
version with additional terminal shrouds



Article No.  
51-823278-011

Article No.  
51-823278-011

**RBK 1** for installation on mounting plate,  
version with additional terminal shrouds

## Terminal adapter for RBK 00 i RBK 1



## Covering of RBK fuse switch disconnectors (rear installation)

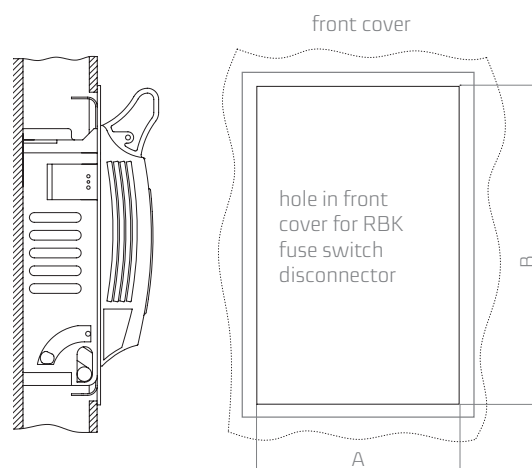
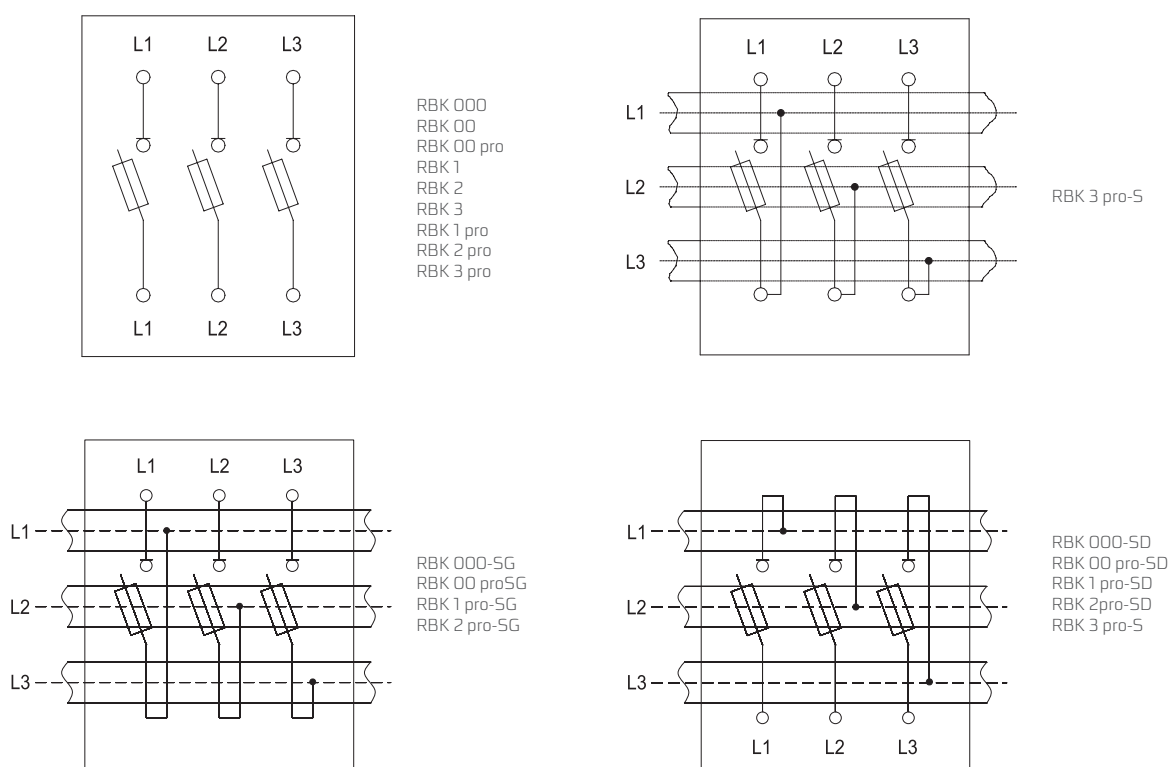


Table 114. Front cover dimensions

| Type                             | A   | B   |
|----------------------------------|-----|-----|
| RBK 000                          | 91  | 156 |
| RBK 000-S, RBK 000-W             | 91  | 195 |
| RBK 00, RBK 00 pro, RBK 00 pro-S | 108 | 154 |
| RBK 00-W                         | 108 | 184 |
| RBK 1, RBK 1-S, RBK 1 pro        | 184 | 232 |
| RBK 2, RBK 2-S                   | 210 | 255 |
| RBK 2-V, RBK 2-2V                | 210 | 255 |
| RBK 3, RBK 3-S                   | 258 | 316 |

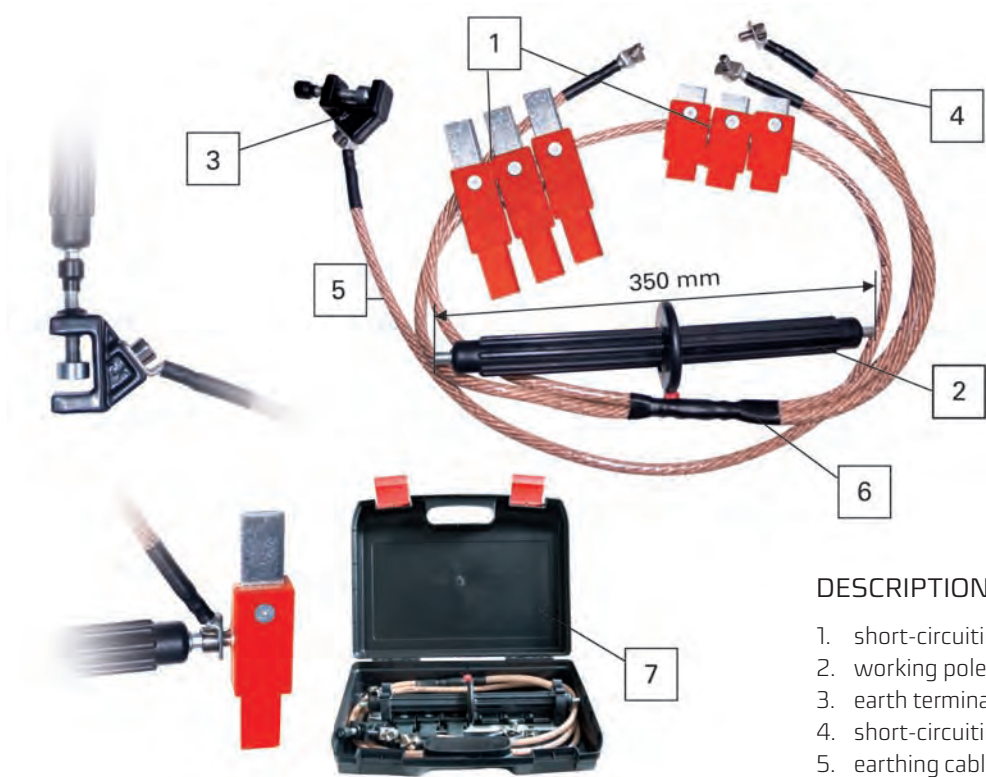
## Electrical diagrams (RBK 1-S, RBK 3-S - possible bottom cable terminal connection)





# Universal earthing device for RBK 000, 00, 1, 2, 3

Article No 1119510032T



## DESCRIPTION

- 1. short-circuiting links
- 2. working pole
- 3. earth terminal
- 4. short-circuiting cable
- 5. earthing cable
- 6. cable connection point
- 7. case

## Example of the order of RBK 2-SD-V-100

|                          |               |                             |                  |
|--------------------------|---------------|-----------------------------|------------------|
| Fuse switch disconnector | 160 A         | RBK 000, RBK 00, RBK 00 pro |                  |
|                          | 250 A         | RBK 1, RBK 1 pro            |                  |
|                          | <b>400 A</b>  | <b>RBK 2 pro</b>            | <b>RBK 2 pro</b> |
|                          | 630 A         | RBK 3 pro                   |                  |
| Terminal clamps          | <b>S</b>      |                             | <b>S</b>         |
|                          | <b>D</b>      | <b>bottom</b>               | <b>D</b>         |
|                          | G             | top                         |                  |
|                          | <b>V</b>      | <b>V-clamp</b>              | <b>V</b>         |
| Cable terminal           | 2V            | double V-clamp              |                  |
|                          | M             | screw terminal              |                  |
|                          | S             | S-bridge clamps             |                  |
| Busbar system            | 60 mm         | 60                          |                  |
|                          | <b>100 mm</b> | <b>100</b>                  | <b>100</b>       |



# PBD

fuse bases

- designed for distribution of electricity and protection of electrical equipment against short-circuits and overloads with industrial fuse links

## CONSTRUCTION & APPLICATIONS

**PBD** fuse base consist of flame retardant thermoplastic base with spring-loaded contacts designed to be engaged with the blade contacts of NH fuse link. Contacts of sizes 00, 1, 2 are tin plated, contacts of size 3 are silver plated. On request contacts of sizes 00, 1, 2 are plated with silver.

**PBD** fuse-bases are designed for installation indoors, in environment free of dust, aggressive or explosive gases:

- junction boxes,
- supply points,
- distribution boards,
- capacitor bank protection.

## OPERATING CONDITIONS

- altitude up to 2000 meters above sea level,
- ambient temperature from -25°C to +55°C,
- for outdoors installation PBD fuse basess should be mounted in cabinets with protection degree IP34 or higher.

## CONFORMITY WITH STANDARDS

IEC 60269-1, PN-HD 60269-2:2008, PN-EN 60269-1:2010

## VERSIONS

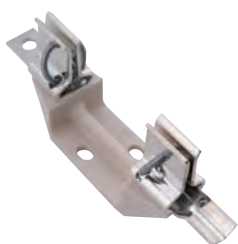
PBD fuse bases are designed for fuse links size 00-3. There are following versions:

- size 00 - 160 A
  - with double side screw terminals for lug terminal or busbar - fuse base 1-pole PBD 00, fuse base 3-poles PBD 003 HH,
  - with V-terminal from one side and screw terminal from opposite side - fuse base 1-pole PBD 00-1V, fuse base 3-poles PBD 00 3-1V,
  - with both sides V-terminals - fuse base 1-pole PBD 00-2V, fuse base 3-poles PBD 00 3-VV,
  - the possibility of using fuse links size 00 and 000.
- size 1 – 250 A
  - with double side screw terminals for lug terminal or busbar - fuse base 1-pole PBD 1, fuse base 3-poles PBD 13,
  - with V-terminal from one side and screw terminal from opposite side - fuse base 1-pole PBD 1-1V, fuse base 3-poles PBD 13-1V,
  - with both sides V-terminals - fuse base 1-pole PBD 1-2V, fuse base 3-poles PBD 13-2V.
- size 2 – 400 A
  - with double side screw terminals for lug terminal - fuse base PBD 2,
  - with V-terminal from one side and screw terminal from opposite side - fuse base PBD 2-1V,
  - with both sides V-terminals - fuse base PBD 2-2V.
- size 3 – 630 A
  - with double side screw terminals for lug terminal - fuse base PBD 3.

V-terminals with V-clamps enable connection of circular or sector-shaped conductors.



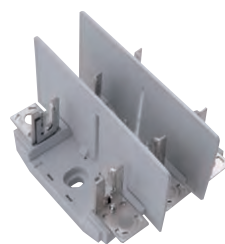
PBD 1-2V



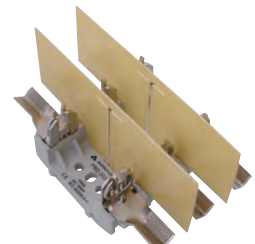
PBD 2-1V



PBD 3

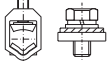
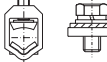


PBD 003 HH



PBD 003 VV

Table 115. PBD fuse bases for WTNH fuse links

| Article          | Size | Rated current | Rated shortcircuit withstand current | Cable terminal                                                                                                 | Rated power dissipation | Max crossection of cable conductors       | Weight [g] | Article No.   |
|------------------|------|---------------|--------------------------------------|----------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------------------------|------------|---------------|
| PBD 00           | 00   | 160 A         | 25 kA                                | screw terminals               | 12 W                    | 70 mm <sup>2</sup>                        | 90         | 1115281070T   |
| PBD00VV          | 00   | 160 A         | 25 kA                                | V-terminals                   | 12 W                    | 120 mm <sup>2</sup>                       | 90         | 1115281071T   |
| PBD 00-1V        | 00   | 160 A         | 25 kA                                | Screw terminal, V-terminal    | 12 W                    | 70 mm <sup>2</sup><br>120 mm <sup>2</sup> | 90         | 1115281073T   |
| PBD 003 HH       | 00   | 160 A         | 25 kA                                | screw terminals               | 3 x 12 W                | 50 mm <sup>2</sup>                        | 500        | 1115 2810 42T |
| PBD 003 + shroud | 00   | 160 A         | 25 kA                                | screw terminals               | 3 x 12 W                | 50 mm <sup>2</sup>                        | 500        | 1115 2810 72T |
| PBD 003 1-V      | 00   | 160 A         | 25 kA                                | Screw terminal, V-terminal    | 3 x 12 W                | 50 mm <sup>2</sup>                        | 500        | 1115 2810 80T |
| PBD 003 VV       | 00   | 160 A         | 25 kA                                | V-terminals                   | 3 x 12 W                | 120 mm <sup>2</sup>                       | 400        | 1115 2810 43T |
| PBD 1            | 1    | 250 A         | 40 kA                                | screw terminals               | 32 W                    | 120 mm <sup>2</sup>                       | 370        | 63-820991-011 |
| PBD 1-1V         | 1    | 250 A         | 40 kA                                | Screw terminal, V-terminal   | 32 W                    | 120 mm <sup>2</sup>                       | 370        | 63-820991-021 |
| PBD 1-2V         | 1    | 250 A         | 40 kA                                | V-terminals                 | 32 W                    | 120 mm <sup>2</sup>                       | 370        | 63-820991-031 |
| PBD 13           | 1    | 250 A         | 40 kA                                | screw terminals             | 3 x 32 W                | 120 mm <sup>2</sup>                       | 1140       | 63-820995-011 |
| PBD 13-1V        | 1    | 250 A         | 40 kA                                | Screw terminal, V-terminal  | 3 x 32 W                | 120 mm <sup>2</sup>                       | 1120       | 63-820995-021 |
| PBD 13-2V        | 1    | 250 A         | 40 kA                                | V-terminals                 | 3 x 32 W                | 120 mm <sup>2</sup>                       | 1140       | 63-820995-031 |
| PBD 2            | 2    | 400 A         | 50 kA                                | screw terminals             | 45 W                    | 240 mm <sup>2</sup>                       | 520        | 63-820992-011 |
| PBD 2-1V         | 2    | 400 A         | 50 kA                                | Screw terminal, V-terminal  | 45 W                    | 240 mm <sup>2</sup>                       | 520        | 63-820992-021 |
| PBD 2-2V         | 2    | 400 A         | 50 kA                                | V-terminals                 | 45 W                    | 240 mm <sup>2</sup>                       | 520        | 63-820992-031 |
| PBD 3            | 3    | 630 A         | 65 kA                                | screw terminals             | 60 W                    | 240 mm <sup>2</sup>                       | 810        | 63-820998-011 |

PBD fuse bases are made of self extinguishing, fibre glass strenghtened polyester. Mechanical durability: 250 cycles.

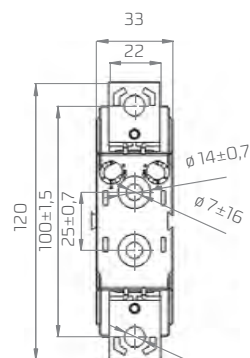
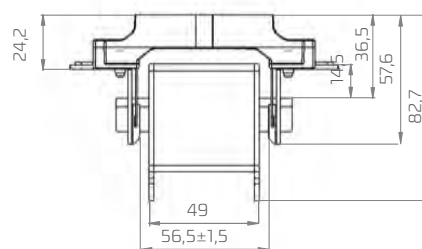
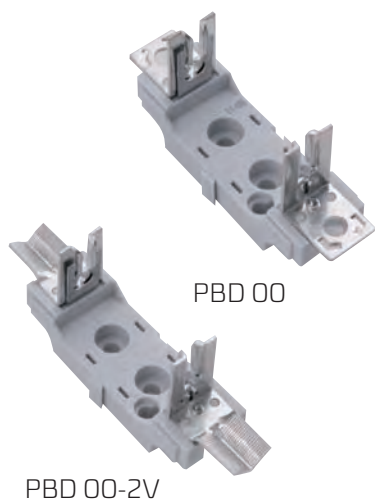
Delivered with set of:

- screws for screw terminals insulation barriers
- for 3 - pole fuse bases e.g. PBD 003, PBD13

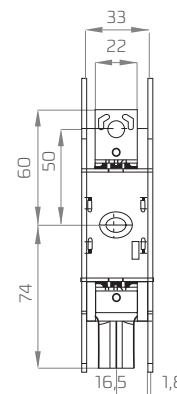
| PBD fuse base size | Tightening torque (Nm)                                                                |                                                                                       |
|--------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                    |  |  |
| 00 \ 003           | 10                                                                                    | 20                                                                                    |
| 1                  | 32                                                                                    | 30                                                                                    |
| 2                  | 32                                                                                    | 30                                                                                    |
| 3                  | 56                                                                                    | 30                                                                                    |

## DIMENSIONS OF PBD FUSE BASES

### PBD fuse bases of size 00 - 1 - pole

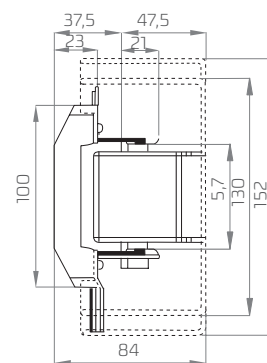
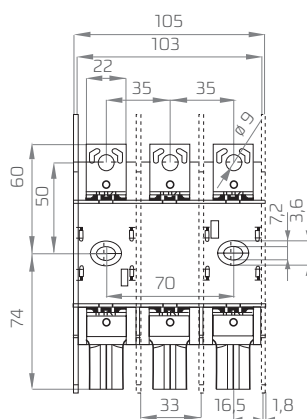
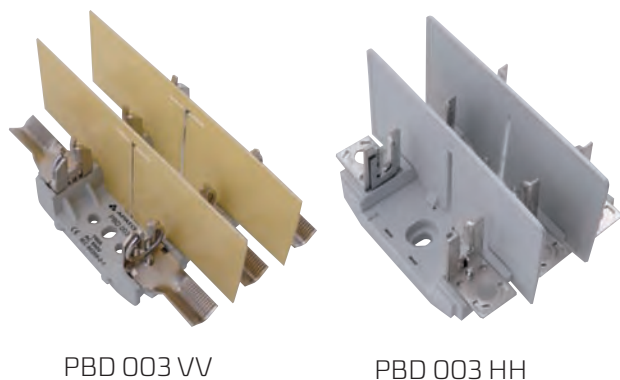


PBD 00



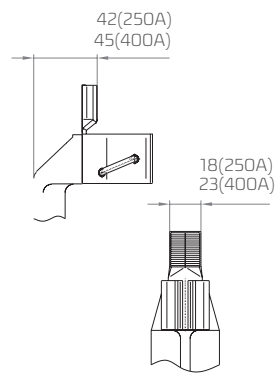
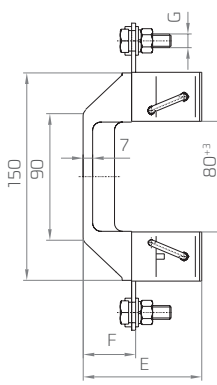
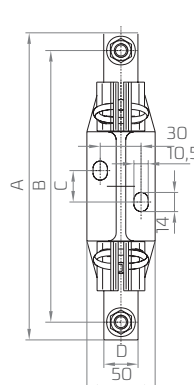
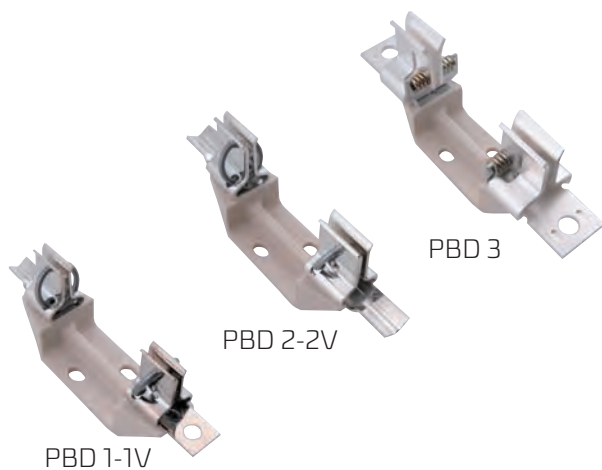
PBD 00-1V

### PBD fuse bases of size 00 - 3 - pole



PBD 003-1V

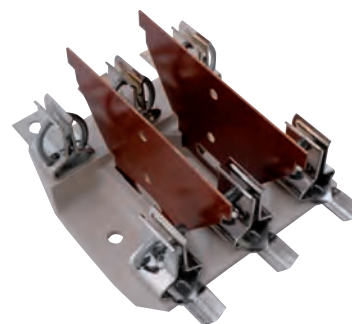
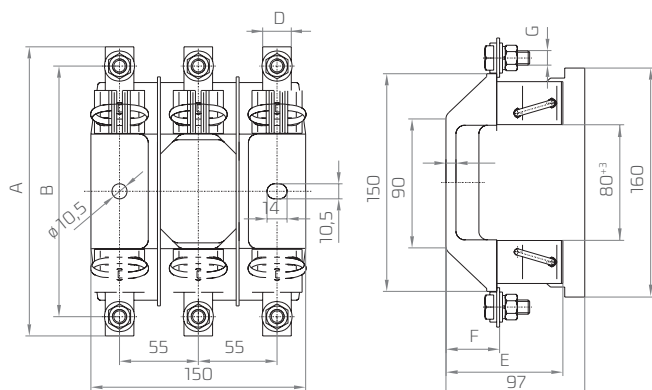
### PBD fuse bases of size 1, 2, 3 - 1- pole





| Article  | Dimension [mm] |     |    |    |    |    |     |
|----------|----------------|-----|----|----|----|----|-----|
|          | A              | B   | C  | D  | E  | F  | G   |
| PBD 1    | 200            | 175 | 23 | 25 | 82 | 37 | M10 |
| PBD 1-1V | 200            | –   | 23 | 25 | 82 | 37 | M10 |
| PBD 1-2V | 200            | –   | 23 | –  | 82 | –  | –   |
| PBD 2    | 225            | 200 | 23 | 25 | 88 | 38 | M10 |
| PBD 2-1V | 225            | –   | 23 | 25 | 88 | 38 | M10 |
| PBD 2-2V | 225            | –   | 23 | –  | 88 | –  | –   |
| PBD 3    | 240            | 210 | 23 | 40 | 95 | 39 | M12 |

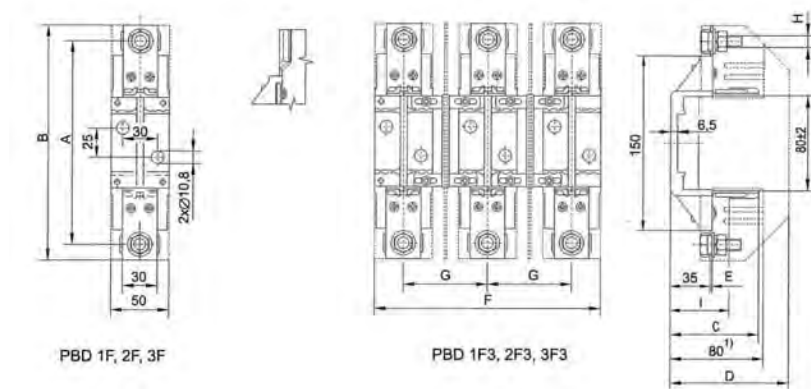
## PBD fuse bases of size 1, 2, 3 - 3 - poles



PBD 13-1V

| Article   | Dimension [mm] |     |   |   |    |    |     |
|-----------|----------------|-----|---|---|----|----|-----|
|           | A              | B   | C | D | E  | F  | G   |
| PBD 13    | 200            | 175 | – | – | 82 | 37 | M10 |
| PBD 13-1V | –              | –   | – | – | 82 | 37 | M10 |
| PBD 13-2V | –              | –   | – | – | 82 | –  | –   |

## PBD F fuse bases of size 1, 2, 3 - 1 pole and 3 poles



| Article No.   | Article | Dimension [mm] |     |    |     |     |     |      |     |      |
|---------------|---------|----------------|-----|----|-----|-----|-----|------|-----|------|
|               |         | A              | B   | C  | D   | E   | F   | G    | H   | I    |
| 63-822369-011 | PBD 1F  | 175            | 202 | 76 | -   | 2   | -   | -    | M10 | 48   |
| 63-822369-021 | PBD 1F3 |                |     |    | 102 |     | 165 | 57,5 |     |      |
| 63-822266-011 | PBD 2F  | 200            | 230 | 84 | -   | 2,5 | -   | -    |     |      |
| 63-822266-021 | PBD 2F3 |                |     |    | 110 |     | 180 | 65   |     |      |
| 63-822268-011 | PBD 3F  | 210            | 238 | 93 | -   | 5   | -   | -    | M12 | 50,5 |
| 63-822268-021 | PBD 3F3 |                |     |    | 126 |     | 210 | 80   |     |      |

## ACCESORIES FOR PBD FUSE BASES

V-clamps, HS V-clamps (steel)

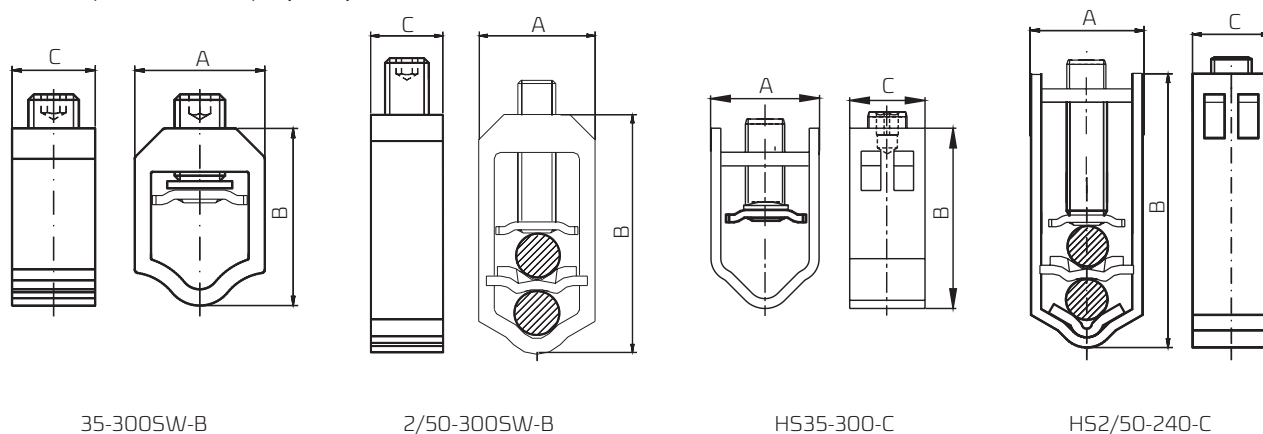


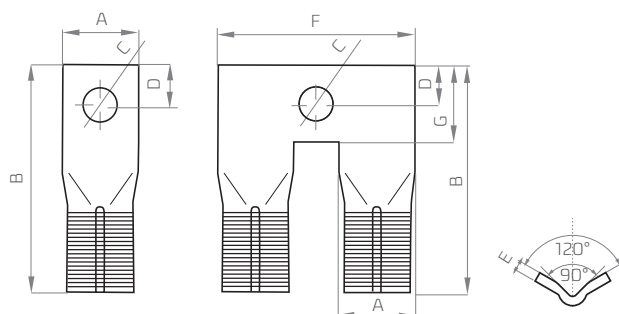
Table 116. V-clamps

|                                                                                     | Article       | Cross-section of cable conductor [mm <sup>2</sup> ]                                     |                                                                                         |                                                                                         |                                                                                         | Dimension [mm] |               |              | Tightening torque | Material | Weight [g] | Article No. |
|-------------------------------------------------------------------------------------|---------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|----------------|---------------|--------------|-------------------|----------|------------|-------------|
|                                                                                     |               | re<br> | se<br> | rm<br> | sm<br> | width<br>[A]   | height<br>[B] | depth<br>[C] |                   |          |            |             |
|   | 25-150 SW     | 16÷95                                                                                   | 25÷150                                                                                  | 16÷95                                                                                   | 25÷150                                                                                  | 28             | 38            | 18,5         | 20 Nm             | alu.     | 48         | 1119510091T |
|  | HM 10-120     | 10÷70                                                                                   | 25÷120                                                                                  | 10÷70                                                                                   | 25÷95                                                                                   | 28             | 38            | 18,5         | 15 Nm             | steel    | 48         | 1119510077T |
|  | 2/25-120SW    | 16÷95                                                                                   | 25÷120                                                                                  | 16÷95                                                                                   | 25÷120                                                                                  | 27,5           | 58            | 18,5         | 30 Nm             | alu.     | 87         | 1119510006T |
|  | 35-300SW-B    | 35÷240                                                                                  | 35÷300                                                                                  | 35÷185                                                                                  | 35÷240                                                                                  | 36             | 49            | 23           | 30 Nm             | alu.     | 90         | 1119510081T |
|  | 2/50-300 SW-B | 50÷240                                                                                  | 50÷300                                                                                  | 50÷185                                                                                  | 50÷240                                                                                  | 37             | 76            | 23           | 30 Nm             | alu.     | 177        | 1119510082T |
|  | HS 35-300-C   | 35÷240                                                                                  | 35÷300                                                                                  | 35÷185                                                                                  | 35÷240                                                                                  | 35             | 55            | 22           | 40 Nm             | steel    |            | 1119510084T |
|  | HS2/50-240-C  | 50÷240                                                                                  | 50÷300                                                                                  | 50÷185                                                                                  | 50÷240                                                                                  | 35             | 81            | 22           | 40 Nm             | steel    | 228        | 1119510085T |

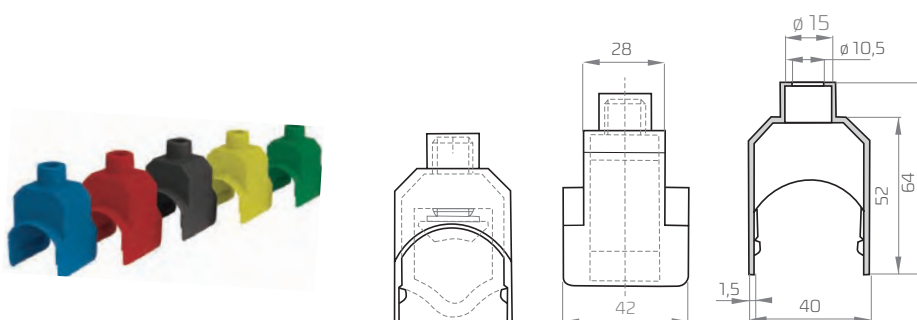


Table 117. V-terminal lugs

|                                                                                   | Article                 | Dimension [mm] |    |      |      |   |    |    | Material | Weight [g] | Article No. |
|-----------------------------------------------------------------------------------|-------------------------|----------------|----|------|------|---|----|----|----------|------------|-------------|
|                                                                                   |                         | A              | B  | C    | D    | E | F  | G  |          |            |             |
|  | V-terminal lug VL120    | 20             | 65 | 10,5 | 10   | 3 | —  | —  | Cu       | 32         | 1119510005T |
|  | V-terminal lug VL240    | 25             | 75 | 13   | 11,5 | 5 | —  | —  | Cu       | 75         | 1119510002T |
|  | Double V-terminal lug C | 25             | 75 | 10,7 | 12,5 | 3 | 65 | 25 | Cu       | 107        | 1119510028T |



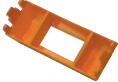
## Shrouds for V-clamps



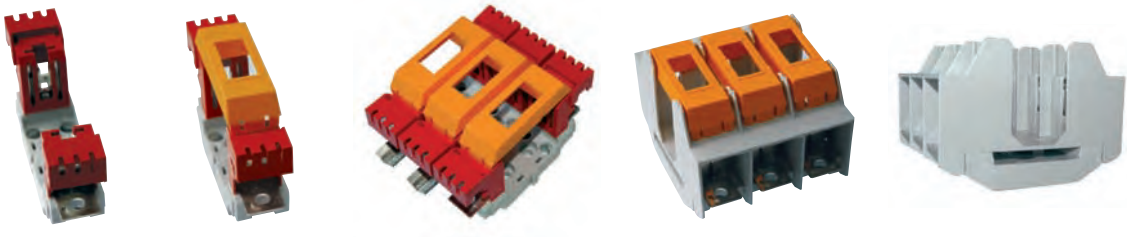
Shrouds for V-clamps 50-240SW i 70-300SW are available in colours: blue, red, black, yellow and green.

1119510018T-blue, 1119510019T-red, 1119510026T-black,  
1119510044T-yellow, 1119510045T-green.

Table 118. PBD 00 accessories

| Picture of Article                                                                | Description                                                   | Article No. |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------|-------------|
|  | Fuse-link shroud,                                             | 1115281078T |
|  | Short shroud for contact and screw terminal                   | 1115281076T |
|  | Long shroud for contact and Vterminal clamp                   | 1115281077T |
|  | Shroud for 3-pole, size 00 fuse base with screw terminals     | 1115281079T |
|  | Long insulation barrier for 3-pole fuse base with V-terminals | 1115281074T |

Examples of application



## Universal earthing device UU00-3

Universal earthing device **UU00-3** is a portable device for temporary short-circuiting and earthing three phase AC low voltage circuit. Universal earthing device **UU00-3** is designed for earthing of solidly earthed neutral three phase systems or indirectly earthed neutral three phase systems. It is designed for mounting in place of fuse-links or for fixing to termination points with M10 thread.

Universal earthing device is designed for use with PBD fuse bases of all sizes (00 - 3).

Article No. : 1115281041T.



## Pressed nuts

Available in sizes: M8, M10, M12

Article No. :

- M8 (for hole with diameter 10 H11) 0653518082T
- M10 (for hole with diameter 12,5 H11) 0653518084T
- M12 (for hole with diameter 14,5 H11) 0653518083T



### Universal replacement handle for WTNH fuse links

Sizes 00, 1, 2, 3 according to DIN 43.620 part 1

Replacement handle is designed for replacement and handling of NH fuse-links.

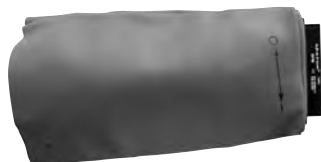
Fireproof insulating sleeve attached to replacement handle allows safe fuse link replacement and handling under live or load conditions.

| Article                                            | Article No. | Pcs. |
|----------------------------------------------------|-------------|------|
| Replacement handle for WTNH 00, 1, 2, 3 fuse links | 1115282186T | 10   |
| Replacement handle with sleeve                     | 1115282187T | 10   |

### Solid links

Dimensions according to PN/EN 60269/DIN 43 620. Standard version - silver plated copper.

| Article                      | Article No. | Pcs. |
|------------------------------|-------------|------|
| Solid link size ZN 00 - 160A | 1115282188T | 3    |
| Solid link size ZN 1 - 250A  | 1115282189T | 3    |
| Solid link size ZN 2 - 400A  | 1115282190T | 3    |
| Solid link size ZN 3 - 630A  | 1115282191T | 3    |



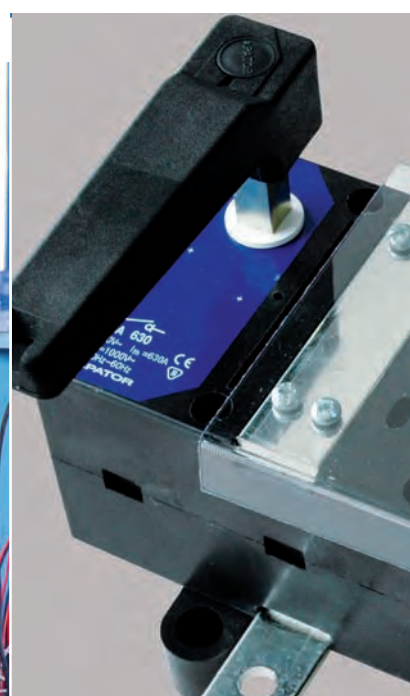
Replacement handle with sleeve for WTNH fuse links



Replacement handle



Solid link



RA  
switch disconnectors

RAB  
switch disconnectors fuses

- RA switch disconnectors and RAB switch disconnectors fuses are designed for distribution of electricity, making and breaking currents and protection of electrical equipment against shortcircuits and overloads with industrial fuse links.



RA100P3/OHB  
+cable terminal shrouds



RA100P3/R  
+cable terminal shrouds



RAB1P3/OHY  
+fuse link shroud



RAB2P3/OHY  
+fuse link shroud

**R** type series is divided into two groups:

- RA switch disconnectors
  - 3-pole with optional neutral (N) 4th pole
  - RA100 - 4th pole switchable
- RAB switch disconnectors fuses
  - 3-pole with optional neutral (N) 4th pole
  - RAB000 - 4th pole switchable

## GENERAL INFORMATION

- safety of service and easy installation,
- self-extinguishing thermoplastics (VO flammability class),
- silver plated parts of current circuits,
- self-tightening and self-cleaning contacts,
- high electrical and mechanical endurance,
- high short-circuit making and breaking capacity,
- double, safe clearance between open contacts,
- complete isolation of fuse links in „off” position,
- manually operated drive (spring powered),
- wide range of accessories.

## APPLICATIONS

Switch disconnectors series **R** are designed for distribution of electricity and protection against short circuits and overloads in three phase alternative current circuits. They can be used as:

- main switch disconnector in distribution boards,
- switch disconnector,
- switch disconnector for motor control and protection.

## OPERATING CONDITIONS

- to be installed in the room free of any dust, aggressive or explosive gases,
- for moderate, marine and tropical climate,
- ambient temperature from -25°C to +55°C,
- altitude up to 2000 meters above sea level,
- outdoor – in cabinets with protection degree > IP 34.



## CONSTRUCTION AND OPERATION

**RA** switch disconnectors and **RAB** switch disconnectors fuses consists of following parts:

- bottom part of the body with fitted current circuits (stationary contacts, cable terminals)
- top part of the body with fitted contacts (**RA**) or spring loaded contacts for fuse link blades (**RAB**)
- traverse with moving contacts
- manually operated drive (spring powered)

Current circuit of each phase has four clearances between contacts in switched off position (double clearance for each pair of contacts, two pairs of contacts for each phase) ensuring required isolating distance and safe replacement of fuse links in **RAB** switch disconnectors fuses. Manually triggered, spring powered drive delivers rapid switching. **RA** switch disconnectors and **RAB** switch disconnectors fuses can be equipped with two types of handles:

- R type - installed on disconnector's shaft
- OHB, OHY type - for installation on distribution board's door

Handle position indicates disconnector's state - switched on or switched off. OHB and OHY handles are designed for locking by up to three padlocks in OFF („O”) position. Handles are available in colours black and yellow-red. Wide range of accessories is available for **RA** switch disconnectors and **RAB** switch disconnectors fuses like additional shafts, shaft joints, auxiliary switches, cable terminal shrouds, fuse link shrouds, etc.

## INSTALLATION

**RA** switch disconnectors and **RAB** switch disconnectors fuses are designed for operation in horizontal or vertical position with permissible deviation of 30° in any direction. **RA** switch disconnectors and **RAB** switch disconnectors fuses should be mounted to support structure with screws with spring washers.

Table 119. Screw terminals tightening torque

| Screw             | M6   | M8    | M10   | M12   |
|-------------------|------|-------|-------|-------|
| Tightening torque | 7 Nm | 14 Nm | 24 Nm | 38 Nm |

Table 120. RA technical data

| Article                                               | Unit                       | RA 100          | RA 160 | RA 250 | RA 400     | RA 630     | RA 1250 |
|-------------------------------------------------------|----------------------------|-----------------|--------|--------|------------|------------|---------|
| Parameter                                             |                            | Value           |        |        |            |            |         |
| Rated thermal current                                 | $I_{th}$ A                 | 100             | 160    | 250    | 400        | 630        | 1250    |
| Rated insulation voltage                              | $U_i$ V                    | 1000            |        |        |            |            |         |
| Rated impulse withstand voltage                       | $U_{imp}$ kV               | 8               |        |        |            |            |         |
| Rated frequency                                       | Hz                         | 50 ÷ 60         |        |        |            |            |         |
| Rated switching current for AC 22A $U_e = 690$ V      | $I_e$ A                    | 100             | 125    | 125    | 250        | 400        | -       |
| Rated switching current for AC 22B $U_e = 690$ V      | $I_e$ A                    | -               | -      | -      | 400        | 630        | -       |
| Rated switching current for AC 22A $U_e = 500$ V      | $I_e$ A                    | -               | -      | -      | -          | -          | 1250    |
| Rated switching current for AC 22B $U_e = 415$ V      | $I_e$ A                    | -               | -      | 250    | -          | -          | -       |
| Rated switching current for AC 23A $U_e = 500$ V      | $I_e$ A                    | 160             |        |        |            |            |         |
| Rated switching current for AC 23A $U_e = 690$ V      | $I_e$ A                    | 40              | -      | -      | -          | -          | -       |
| Rated short-circuit making capacity                   | $I_{cm}$ kA <sub>max</sub> | 7               | 9      | 20     | 25         | 35         | 100     |
| Rated short-time withstand current 1 s                | $I_{cw}$ kA                | 2,5             | 8      | 8      | 15         | 15         | 50      |
| Mechanical durability                                 | number of cycles           | 10000           | 8000   | 8000   | 5000       | 5000       | 3000    |
| Electrical durability at utilization category AC 22 A | number of cycles           | 1500            | 1000   | 1000   | 1000       | 1000       | 500     |
| Duty                                                  | -                          | Continuous duty |        |        |            |            |         |
| Protection degree IP                                  | -                          | IP 00           |        |        |            |            |         |
| Weight                                                | kg                         | 0,95            | 1,7    | 1,85   | 3,3        | 4,3        | 12,5    |
| Busbar cross-section                                  | mm <sup>2</sup>            | 15 x 2          | 20 x 4 | 25 x 4 | 2 x 25 x 4 | 2 x 30 x 5 | 60 x 10 |
| Cable conductor cross-section                         | mm <sup>2</sup>            | 35              | 95     | 120    | 240        | 2 x 185    | -       |





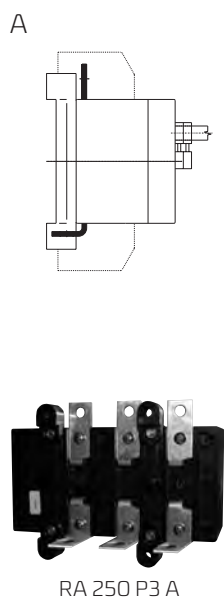
Table 121. RA switch disconnectors with standard cable terminals

| Type    | I <sub>n</sub> | Number of poles | Accessories* | Article        | Article No.   |
|---------|----------------|-----------------|--------------|----------------|---------------|
| RA 100  | 100 A          | 3               | -            | RA 100 P3      | on request    |
|         |                | 3 + N           | -            | RA 100 P3 N    | 63-823064-091 |
|         |                | 4               | -            | RA 100 P4      | on request    |
|         |                | 3               | R1           | RA 100 P3/R    | on request    |
|         |                | 3 + N           | R1           | RA 100 P3 N/R  | 63-823064-211 |
| RA 160  | 160 A          | 4               | R1           | RA 100 P4/R    | on request    |
|         |                | 3               | -            | RA 160 P3      | 63-822982-011 |
|         |                | 3 + N           | -            | RA 160 P3 N    | on request    |
|         |                | 3               | R1           | RA 160 P3/R    | 63-822982-051 |
| RA 250  | 250 A          | 3 + N           | R1           | RA 160 P3 N/R  | on request    |
|         |                | 3               | -            | RA 250 P3      | 63-822982-021 |
|         |                | 3 + N           | -            | RA 250 P3 N    | on request    |
|         |                | 3               | R1           | RA 250 P3/R    | 63-822982-061 |
| RA 400  | 400 A          | 3 + N           | R1           | RA 250 P3 N/R  | on request    |
|         |                | 3               | -            | RA 400 P3      | 63-811593-011 |
|         |                | 3 + N           | -            | RA 400 P3 N    | on request    |
|         |                | 3               | R1           | RA 400 P3/R    | 63-811593-051 |
| RA 630  | 630 A          | 3 + N           | R1           | RA 400 P3 N/R  | on request    |
|         |                | 3               | -            | RA 630 P3      | 63-811593-021 |
|         |                | 3 + N           | -            | RA 630 P3 N    | on request    |
|         |                | 3               | R1           | RA 630 P3/R    | 63-811593-061 |
| RA 1250 | 1250 A         | 3 + N           | R1           | RA 630 P3 N/R  | on request    |
|         |                | 3               | -            | RA 1250 P3     | 63-811601-011 |
|         |                | 3 + N           | -            | RA 1250 P3 N   | 63-811601-021 |
|         |                | 3               | R1           | RA 1250 P3/R   | 63-811601-031 |
|         |                | 3 + N           | R1           | RA 1250 P3 N/R | 63-811601-041 |

\* R1 - handle mounted on shaft

CAUTION! N - 4th pole unswitchable, switchable 4th pole available only for RA100 type switch disconnectors

Table 122. RA switch disconnectors with „A” type cable terminals



| Type   | I <sub>n</sub> | Number of poles | Accessories* | Article        | Article No.   |
|--------|----------------|-----------------|--------------|----------------|---------------|
| RA 100 | 100 A          | 3               | -            | RA 100 P3 A    | 63-823064-021 |
|        |                | 3 + N           | -            | RA 100 P3 NA   | 63-823064-101 |
|        |                | 4               | -            | RA 100 P4 A    | 63-823064-061 |
|        |                | 3               | R1           | RA 100 P3 A/R  | 63-823064-141 |
|        |                | 3 + N           | R1           | RA 100 P3 NA/R | 63-823064-221 |
| RA 160 | 160 A          | 4               | R1           | RA 100 P4 A/R  | 63-823064-181 |
|        |                | 3               | -            | RA 160 P3 A    | 63-823165-011 |
|        |                | 3 + N           | -            | RA 160 P3 NA   | 63-823165-021 |
|        |                | 3               | R1           | RA 160 P3 A/R  | 63-823165-131 |
| RA 250 | 250 A          | 3 + N           | R1           | RA 160 P3 NA/R | 63-823165-141 |
|        |                | 3               | -            | RA 250 P3 A    | 63-823165-031 |
|        |                | 3 + N           | -            | RA 250 P3 NA   | 63-823165-041 |
|        |                | 3               | R1           | RA 250 P3 A/R  | 63-823165-151 |
| RA 400 | 400 A          | 3 + N           | R1           | RA 250 P3 NA/R | 63-823165-161 |
|        |                | 3               | -            | RA 400 P3 A    | 63-811618-011 |
|        |                | 3 + N           | -            | RA 400 P3 NA   | 63-811618-031 |
|        |                | 3               | R1           | RA 400 P3 A/R  | 63-811618-131 |
| RA 630 | 630 A          | 3 + N           | R1           | RA 400 P3 NA/R | 63-811618-151 |
|        |                | 3               | -            | RA 630 P3 A    | 63-811618-021 |
|        |                | 3 + N           | -            | RA 630 P3 NA   | 63-811618-041 |
|        |                | 3               | R1           | RA 630 P3 A/R  | 63-811618-141 |
|        |                | 3 + N           | R1           | RA 630 P3 NA/R | 63-811618-161 |

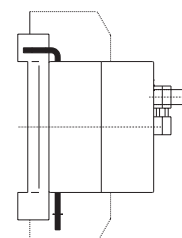
\* R1 - handle mounted on shaft

Table 123. RA switch disconnectors with „B” type cable terminals

| Type   | I <sub>n</sub> | Number of poles | Accessories* | Article        | Article No.   |
|--------|----------------|-----------------|--------------|----------------|---------------|
| RA 100 | 100 A          | 3               | -            | RA 100 P3 B    | 63-823064-031 |
|        |                | 3 + N           | -            | RA 100 P3 NB   | 63-823064-111 |
|        |                | 4               | -            | RA 100 P4 B    | 63-826064-071 |
|        |                | 3               | R1           | RA 100 P3 B/R  | 63-823064-151 |
|        |                | 3 + N           | R1           | RA 100 P3 NB/R | 63-823064-231 |
|        |                | 4               | R1           | RA 100 P4 B/R  | 63-823064-191 |
| RA 160 | 160 A          | 3               | -            | RA 160 P3 B    | 63-823165-051 |
|        |                | 3 + N           | -            | RA 160 P3 NB   | 63-823165-061 |
|        |                | 3               | R1           | RA 160 P3 B/R  | 63-823165-171 |
|        |                | 3 + N           | R1           | RA 160 P3 NB/R | 63-823165-181 |
| RA 250 | 250 A          | 3               | -            | RA 250 P3 B    | 63-823165-071 |
|        |                | 3 + N           | -            | RA 250 P3 NB   | 63-823165-081 |
|        |                | 3               | R1           | RA 250 P3 B/R  | 63-823165-191 |
|        |                | 3 + N           | R1           | RA 250 P3 NB/R | 63-823165-201 |
| RA 400 | 400 A          | 3               | -            | RA 400 P3 B    | 63-811618-051 |
|        |                | 3 + N           | -            | RA 400 P3 NB   | 63-811618-071 |
|        |                | 3               | R1           | RA 400 P3 B/R  | 63-811618-171 |
|        |                | 3 + N           | R1           | RA 400 P3 NB/R | 63-811618-191 |
| RA 630 | 630 A          | 3               | -            | RA 630 P3 B    | 63-811618-061 |
|        |                | 3 + N           | -            | RA 630 P3 NB   | 63-811618-081 |
|        |                | 3               | R1           | RA 630 P3 B/R  | 63-811618-181 |
|        |                | 3 + N           | R1           | RA 630 P3 NB/R | 63-811618-201 |

\* R1 - handle mounted on shaft

B



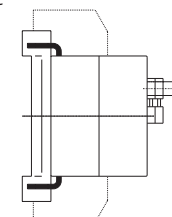
RA 250 P3 B

Table 124. RA switch disconnectors with „C” type cable terminals

| Type   | I <sub>n</sub> | Number of poles | Accessories* | Article        | Article No.   |
|--------|----------------|-----------------|--------------|----------------|---------------|
| RA 100 | 100 A          | 3               | -            | RA 100 P3 C    | 63-823064-041 |
|        |                | 3 + N           | -            | RA 100 P3 NC   | 63-823064-121 |
|        |                | 4               | -            | RA 100 P4 C    | 63-823064-081 |
|        |                | 3               | R1           | RA 100 P3 C/R  | 63-823064-161 |
|        |                | 3 + N           | R1           | RA 100 P3 NC/R | 63-823064-241 |
|        |                | 4               | R1           | RA 100 P4 C/R  | 63-823064-201 |
| RA 160 | 160 A          | 3               | -            | RA 160 P3 C    | 63-823165-091 |
|        |                | 3 + N           | -            | RA 160 P3 NC   | 63-823165-101 |
|        |                | 3               | R1           | RA 160 P3 C/R  | 63-823165-211 |
|        |                | 3 + N           | R1           | RA 160 P3 NC/R | 63-823165-221 |
| RA 250 | 250 A          | 3               | -            | RA 250 P3 C    | 63-823165-111 |
|        |                | 3 + N           | -            | RA 250 P3 NC   | 63-823165-121 |
|        |                | 3               | R1           | RA 250 P3 C/R  | 63-823165-231 |
|        |                | 3 + N           | R1           | RA 250 P3 NC/R | 63-823165-241 |
| RA 400 | 400 A          | 3               | -            | RA 400 P3 C    | 63-811618-091 |
|        |                | 3 + N           | -            | RA 400 P3 NC   | 63-811618-111 |
|        |                | 3               | R1           | RA 400 P3 C/R  | 63-811618-211 |
|        |                | 3 + N           | R1           | RA 400 P3 NC/R | 63-811618-231 |
| RA 630 | 630 A          | 3               | -            | RA 630 P3 C    | 63-811618-101 |
|        |                | 3 + N           | -            | RA 630 P3 NC   | 63-811618-121 |
|        |                | 3               | R1           | RA 630 P3 C/R  | 63-811618-221 |
|        |                | 3 + N           | R1           | RA 630 P3 NC/R | 63-811618-241 |

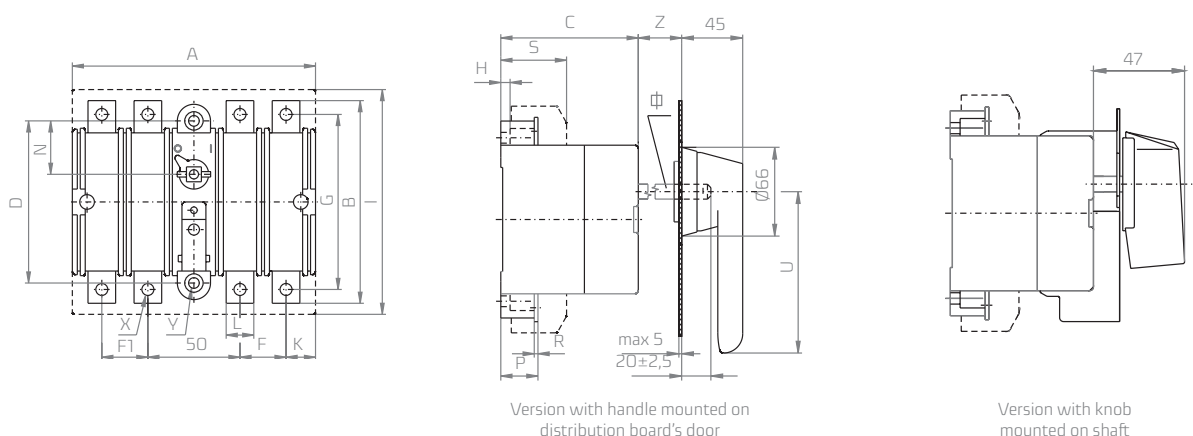
\* R1 - handle mounted on shaft

C



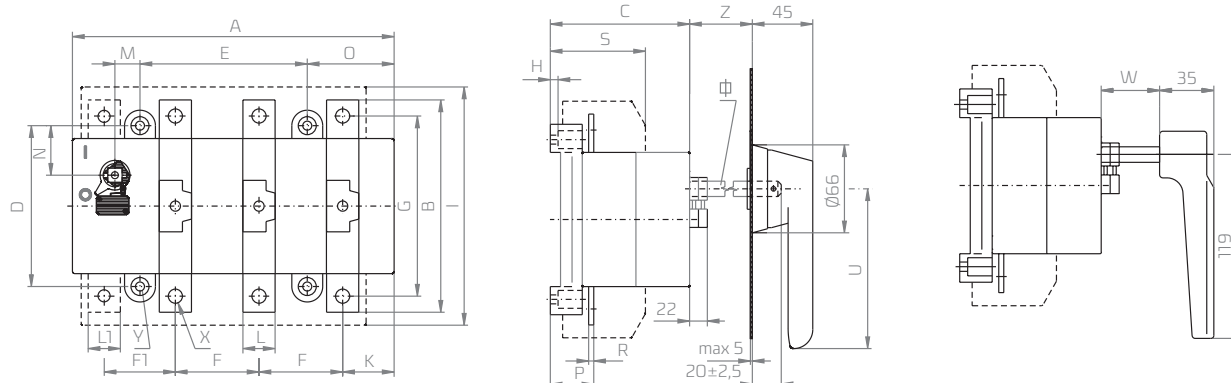
RA 250 P3 C

## Dimensions of RA100



| Dimension [mm] | A   | B   | C  | D  | E | F  | F1 | G  | H | I   | K  | L  | L1 | M | N  | O | P  | R | S  | U  | X   | Y   | Z  | Φ | W |
|----------------|-----|-----|----|----|---|----|----|----|---|-----|----|----|----|---|----|---|----|---|----|----|-----|-----|----|---|---|
| RA 100         | 132 | 110 | 74 | 88 | — | 25 | 25 | 95 | 5 | 150 | 16 | 15 | —  | — | 29 | — | 20 | 2 | 50 | 65 | 6,5 | 5,8 | 20 | 8 | — |

## Dimensions of RA 160, RA 250, RA 400, RA 630



| Dimension [mm] | A   | B   | C   | D   | E   | F  | F1 | G   | H | I   | K  | L  | L1 | M  | N    | O    | P  | R   | S  | U   | X   | Y   | Z  | Φ  | W  |
|----------------|-----|-----|-----|-----|-----|----|----|-----|---|-----|----|----|----|----|------|------|----|-----|----|-----|-----|-----|----|----|----|
| RA 160         | 176 | 132 | 88  | 110 | 84  | 42 | 42 | 115 | 5 | 170 | 30 | 20 | 20 | 16 | 36   | 51   | 26 | 3   | 61 | 95  | 8,8 | 5,8 | 43 | 10 | 32 |
| RA 250         |     |     |     |     |     |    |    |     |   |     |    |    |    |    |      |      |    | 3,5 |    |     |     |     |    |    |    |
| RA 400         | 250 | 174 | 109 | 125 | 130 | 65 | 55 | 149 | 8 | 225 | 40 | 25 | 25 | 20 | 38,5 | 67,5 | 34 | 4   | 86 | 125 | 11  | 7   | 47 | 12 | 32 |
| RA 630         |     |     |     |     |     |    |    |     |   |     |    |    |    |    |      |      | 30 | 5   |    |     |     |     |    |    |    |



RA 100 P3/R  
with additional terminal shroud

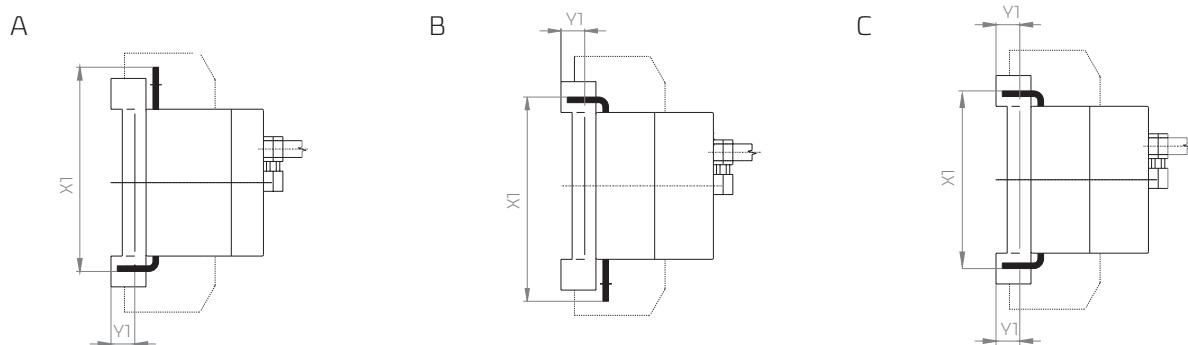


RA 160 P3/R  
with additional terminal shroud



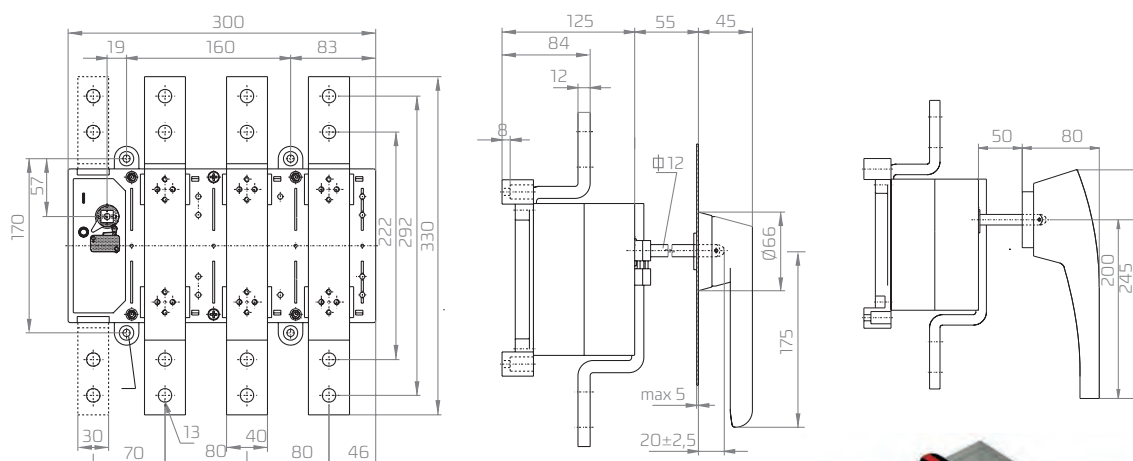
RA 160 P3/OHB  
with additional terminal shroud

## CABLE TERMINALS OF TYPE A, B, C



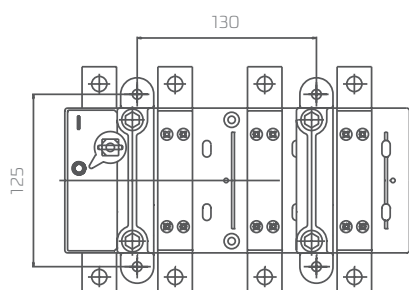
| Dimensions of cable terminals [mm] | RA 160 |     |     | RA 250 |     |     | RA 400 |       |     | RA 630 |     |     |
|------------------------------------|--------|-----|-----|--------|-----|-----|--------|-------|-----|--------|-----|-----|
|                                    | A      | B   | C   | A      | B   | C   | A      | B     | C   | A      | B   | C   |
| X1                                 | 111    | 111 | 90  | 111    | 111 | 90  | 140,5  | 140,5 | 116 | 146    | 146 | 127 |
| Y1                                 | 8,5    | 8,5 | 8,5 | 8,5    | 8,5 | 8,5 | 13     | 13    | 13  | 13     | 13  | 13  |

## Dimensions of RA1250

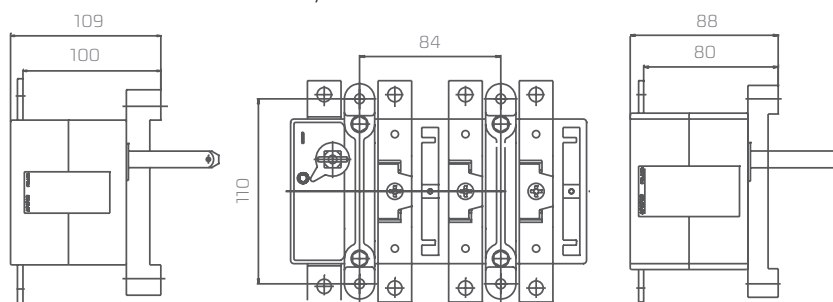


RA 1250 P3/OHB

For installation behind assembly panel  
RA 160/250



RA 400/630



**CAUTION!**  
lengthening of shaft is possible by adding second shaft,  
connected by shaft link (see Accessories)

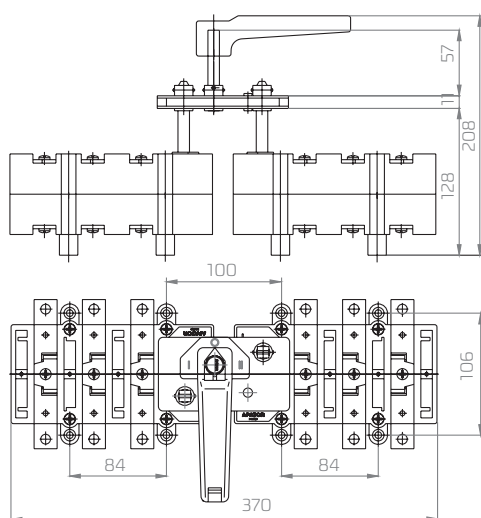
## CHANGE-OVER SWITCHES I-O-II



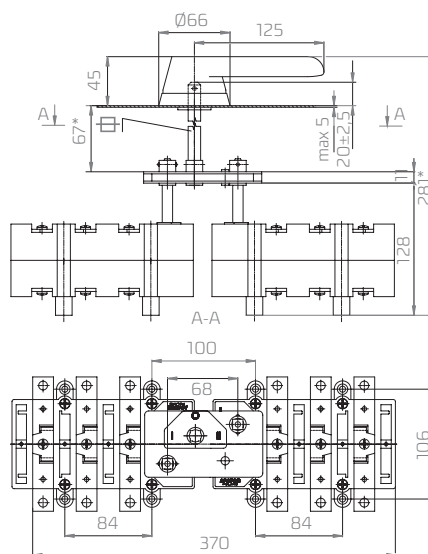
2 x RA 160 P3

| I - O - II | Poles | I <sub>n</sub> | Article No. of RA switch       | Article No. of coupling mechanism |                                                 |
|------------|-------|----------------|--------------------------------|-----------------------------------|-------------------------------------------------|
|            |       |                |                                | handle mounted on shaft           | handle OHB mounted on distribution board's door |
| 160        | 3     | 160 A          | 2 x RA 160 P3 (63-822982-011)  | +63-839949-011                    | +63-839949-021                                  |
| 250        | 3     | 250 A          | 2 x RA 250 P3 (63-822982-021)  | +63-839949-011                    | +63-839949-021                                  |
| 400        | 3     | 400 A          | 2 x RA 400 P3 (63-811593-011)  | +63-839972-011                    | +63-839972-021                                  |
| 630        | 3     | 630 A          | 2 x RA 630 P3 (63-811593-021)  | +63-839972-011                    | +63-839972-021                                  |
| 1250       | 3     | 1250 A         | 2 x RA 1250 P3 (63-811601-011) | +63-930893-011                    | +63-930893-021                                  |

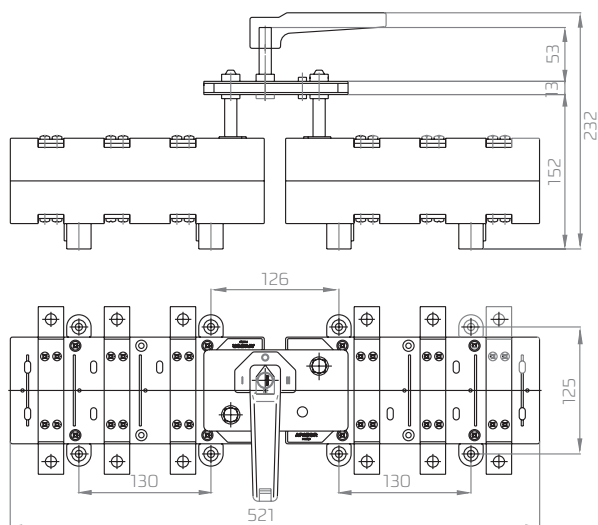
### Dimensions of change-over switch I-O-II



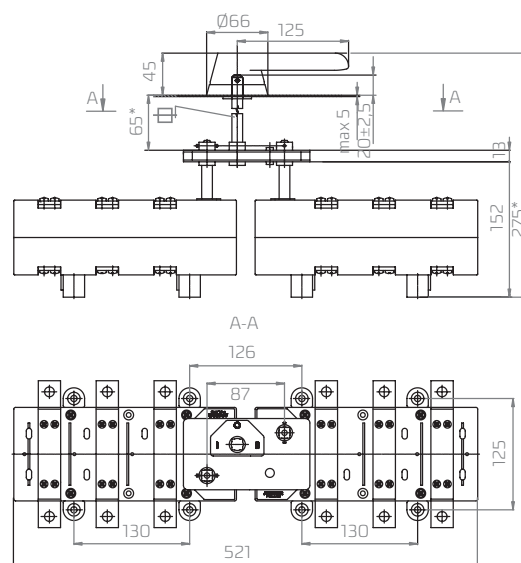
160 A - 250 A



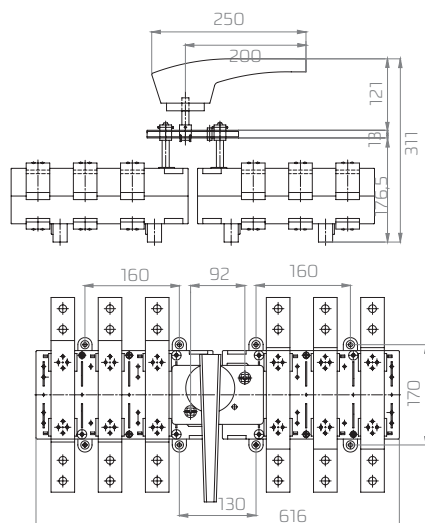
160 A - 250 A



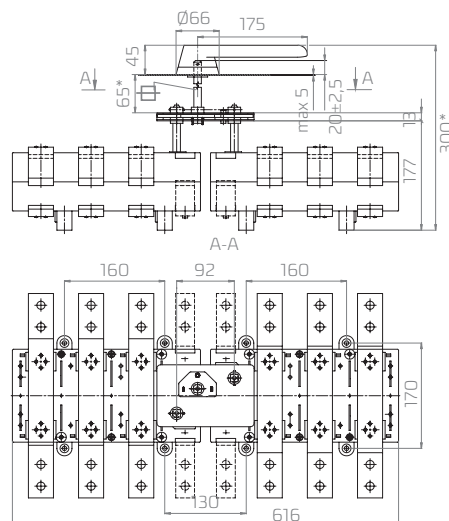
400 A - 630 A



400 A - 630 A



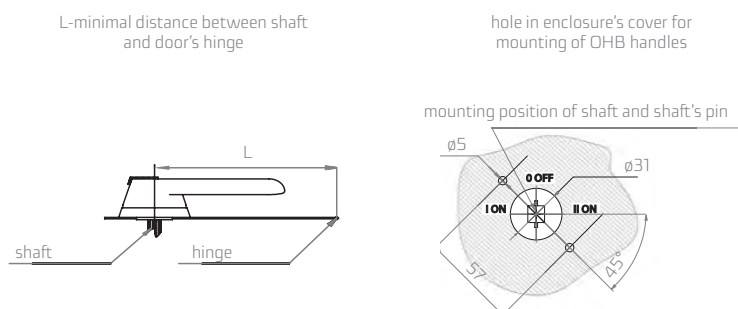
1250 A  
handle mounted on shaft



1250 A  
handle mounted on distribution board's door

| Enclosures for RA type switch disconnectors | Order No.     |          |
|---------------------------------------------|---------------|----------|
|                                             | ENSTO         | HENSEL   |
| <b>For RA 100..., RAB 000...</b>            |               |          |
| Enclosure with gray cover                   | OABP 203013 G | Mi 80101 |
| Enclosure with transparent cover            | OABP 203013 T | Mi 80100 |
| Mounting plate                              | OMP 2030      |          |
| Distance parts                              | OELA 1.04     |          |
| Mounting plate                              | OMP 2030      |          |
| Distance parts                              | OELA 1.04     |          |
| <b>For RA 160..., 250...</b>                |               |          |
| Enclosure with gray cover                   | OABP 303018 G | Mi 80201 |
| Enclosure with transparent cover            | OABP 303018 T | Mi 80200 |
| Mounting plate                              | OMP 3030      |          |
| Distance parts                              | OELA 1.04     |          |
| <b>For RA 400..., 630...</b>                |               |          |
| Enclosure with gray cover                   | OABP 304018 G | Mi 80211 |
| Enclosure with transparent cover            | OABP 304018 T | Mi 80210 |
| Mounting plate                              | OMP 3040      |          |
| Distance parts                              | OELA 1.04     |          |

\* R1 handle mounted on shaft



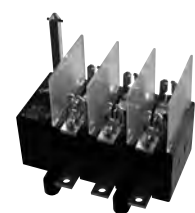
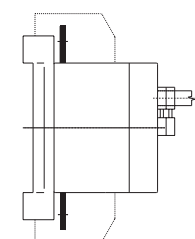
| Switch disconnector | Length [mm] | Handle       |
|---------------------|-------------|--------------|
| RA 100              | 80          | OH...65 J8   |
| RAB 000             |             |              |
| RA 160/250          | 120         | OH...95 J10  |
| RAB 00              |             |              |
| RA 400/630          | 150         | OH...125 J12 |
| RAB 1/2             |             |              |
| RAB 3               | 200         | OH...145 J12 |
| RA 1250             |             |              |

## RAB switch disconnectors fuses

Table 125. RAB technical data

| Article                                                      |                  | Unit            | RAB 000      | RAB 00 | RAB 1      | RAB 2      | RAB 3       |
|--------------------------------------------------------------|------------------|-----------------|--------------|--------|------------|------------|-------------|
| Parameter                                                    |                  |                 | Value        |        |            |            |             |
| Rated thermal current                                        | I <sub>th</sub>  | A               | 100          | 160    | 250        | 400        | 630         |
| Rated insulation voltage                                     | U <sub>i</sub>   | V               | 1000         |        |            |            |             |
| Rated impulse withstand voltage                              | U <sub>imp</sub> | kV              | 8            |        |            |            |             |
| Rated frequency                                              |                  | Hz              | 50 ÷ 60      |        |            |            |             |
| Rated switching current for AC 22A U <sub>e</sub> = 690 V    | I <sub>e</sub>   | A               | 100          | 125    | 250        | 400        | -           |
| Rated switching current for AC 22B U <sub>e</sub> = 690 V    | I <sub>e</sub>   | A               | -            | -      | -          | -          | 630         |
| Rated switching current for AC 23A U <sub>e</sub> = 690 V    | I <sub>e</sub>   | A               | 40           | -      | -          | -          | -           |
| Rated switching current for AC 23A U <sub>e</sub> = 500 V    | I <sub>e</sub>   | A               | -            | 160    | -          | -          | -           |
| Rated switching current for AC 23A U <sub>e</sub> = 415 V    | I <sub>e</sub>   | A               | -            | -      |            | -          | 630         |
| Rated power dissipation                                      |                  | W               | 7,5          | 12     | 32         | 45         | 60          |
| Fused short-circuit current I <sub>n</sub> = I <sub>th</sub> |                  | kA              | 100          |        |            |            |             |
| Mechanical durability                                        | number of cycles |                 | 10000        | 8000   | 8000       | 5000       | 5000        |
| Electrical durability at utilization category AC 22 A        |                  |                 | 1500         | 1000   | 1000       | 1000       | 1000        |
| Duty                                                         | -                |                 | Praca ciągła |        |            |            |             |
| Protection degree IP                                         | -                |                 | IP 00        |        |            |            |             |
| Weight                                                       |                  | kg              | 1,05         | 2,0    | 3,65       | 4,2        | 7,5         |
| Busbar cross-section                                         |                  | mm <sup>2</sup> | 15 x 2       | 25 x 4 | 2 x 25 x 4 | 2 x 30 x 5 | 2 x 40 x 60 |
| Cable conductor cross-section                                |                  | mm <sup>2</sup> | 35           | 120    | 240        | 2 x 185    | -           |

Table 126. RAB switch disconnectors fuses with standard cable terminals



RAB 00 P3



RAB 00 P3/OHB

| Type    | $I_n$ | Number of poles | Accessories* | Article        | Article No.   |
|---------|-------|-----------------|--------------|----------------|---------------|
| RAB 000 | 100 A | 3               | -            | RAB 000 P3     | on request    |
|         |       | 3 + N           | -            | RAB 000 P3 N   | on request    |
|         |       | 4               | -            | RAB 000 P4     | 63-823063-051 |
|         |       | 3               | R1           | RAB 000 P3/R   | on request    |
|         |       | 3 + N           | R1           | RAB 000 P3 N/R | on request    |
|         |       | 4               | R1           | RAB 000 P4/R   | on request    |
| RAB 00  | 160 A | 3               | -            | RAB 00 P3      | on request    |
|         |       | 3 + N           | -            | RAB 00 P3 N    | on request    |
|         |       | 3               | R1           | RAB 00 P3/R    | on request    |
|         |       | 3 + N           | R1           | RAB 00 P3 N/R  | on request    |
| RAB 1   | 250 A | 3               | -            | RAB 1 P3       | on request    |
|         |       | 3 + N           | -            | RAB 1 P3 N     | on request    |
|         |       | 3               | R1           | RAB 1 P3/R     | on request    |
|         |       | 3 + N           | R1           | RAB 1 P3 N/R   | on request    |
| RAB 2   | 400 A | 3               | -            | RAB 2 P3       | on request    |
|         |       | 3 + N           | -            | RAB 2 P3 N     | on request    |
|         |       | 3               | R1           | RAB 2 P3/R     | 63-811529-061 |
|         |       | 3 + N           | R1           | RAB 2 P3 N/R   | on request    |
| RAB 3   | 630 A | 3               | -            | RAB 3 P3       | on request    |
|         |       | 3 + N           | -            | RAB 3 P3 N     | on request    |
|         |       | 3               | R1           | RAB 3 P3/R     | 63-811564-031 |
|         |       | 3 + N           | R1           | RAB 3 P3 N/R   | on request    |

\*R1 - handle mounted on shaft

CAUTION!

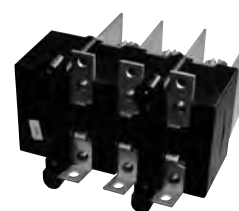
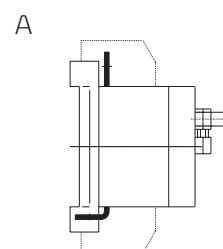
N - 4th pole unswitchable, switchable 4th pole available only for RA100 type switch disconnectors!



Table 127. RAB switch disconnectors fuses with „A” type cable terminals

| Type    | I <sub>n</sub> | Number of poles | Accessories* | Article         | Article No.   |
|---------|----------------|-----------------|--------------|-----------------|---------------|
| RAB 000 | 100 A          | 3               | -            | RAB 000 P3 A    | kofigurator   |
|         |                | 3 + N           | -            | RAB 000 P3 NA   | 63-823063-101 |
|         |                | 4               | -            | RAB 000 P4 A    | 63-823063-061 |
|         |                | 3               | R1           | RAB 000 P3 A/R  | on request    |
|         |                | 3 + N           | R1           | RAB 000 P3 NA/R | on request    |
|         |                | 4               | R1           | RAB 000 P4 A/R  | on request    |
| RAB 00  | 160 A          | 3               | -            | RAB 00 P3 A     | on request    |
|         |                | 3 + N           | -            | RAB 00 P3 NA    | on request    |
|         |                | 3               | R1           | RAB 00 P3 A/R   | on request    |
|         |                | 3 + N           | R1           | RAB 00 P3 NA/R  | on request    |
| RAB 1   | 250 A          | 3               | -            | RAB 1 P3 A      | on request    |
|         |                | 3 + N           | -            | RAB 1 P3 NA     | on request    |
|         |                | 3               | R1           | RAB 1 P3 A/R    | on request    |
|         |                | 3 + N           | R1           | RAB 1 P3 NA/R   | on request    |
| RAB 2   | 400 A          | 3               | -            | RAB 2 P3 A      | on request    |
|         |                | 3 + N           | -            | RAB 2 P3 NA     | on request    |
|         |                | 3               | R1           | RAB 2 P3 A/R    | on request    |
|         |                | 3 + N           | R1           | RAB 2 P3 NA/R   | on request    |
| RAB 3   | 630 A          | 3               | -            | RAB 3 P3 A      | on request    |
|         |                | 3 + N           | -            | RAB 3 P3 NA     | on request    |
|         |                | 3               | R1           | RAB 3 P3 A/R    | on request    |
|         |                | 3 + N           | R1           | RAB 3 P3 NA/R   | on request    |

\*R1 - handle mounted on shaft

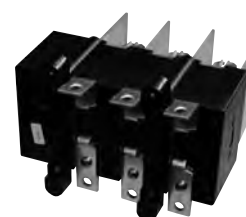
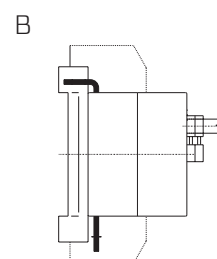


RAB 00 P3 A

Table 128. RAB switch disconnectors fuses with „B” type cable terminals

| Type    | I <sub>n</sub> | Number of poles | Accessories* | Article         | Article No.   |
|---------|----------------|-----------------|--------------|-----------------|---------------|
| RAB 000 | 100 A          | 3               | -            | RAB 000 P3 B    | on request    |
|         |                | 3 + N           | -            | RAB 000 P3 NB   | 63-823063-111 |
|         |                | 3 + N           | -            | RAB 000 P4 B    | 63-823063-071 |
|         |                | 3               | R1           | RAB 000 P3 B/R  | on request    |
|         |                | 3 + N           | R1           | RAB 000 P3 NB/R | on request    |
|         |                | 4               | R1           | RAB 000 P4 B/R  | on request    |
| RAB 00  | 160 A          | 3               | -            | RAB 00 P3 B     | on request    |
|         |                | 3 + N           | -            | RAB 00 P3 NB    | on request    |
|         |                | 3               | R1           | RAB 00 P3 B/R   | on request    |
|         |                | 3 + N           | R1           | RAB 00 P3 NB/R  | on request    |
| RAB 1   | 250 A          | 3               | -            | RAB 1 P3 B      | on request    |
|         |                | 3 + N           | -            | RAB 1 P3 NB     | on request    |
|         |                | 3               | R1           | RAB 1 P3 B/R    | on request    |
|         |                | 3 + N           | R1           | RAB 1 P3 NB/R   | on request    |
| RAB 2   | 400 A          | 3               | -            | RAB 2 P3 B      | on request    |
|         |                | 3 + N           | -            | RAB 2 P3 NB     | on request    |
|         |                | 3               | R1           | RAB 2 P3 B/R    | on request    |
|         |                | 3 + N           | R1           | RAB 2 P3 NB/R   | on request    |
| RAB 3   | 630 A          | 3               | -            | RAB 3 P3 B      | on request    |
|         |                | 3 + N           | -            | RAB 3 P3 NB     | on request    |
|         |                | 3               | R1           | RAB 3 P3 B/R    | on request    |
|         |                | 3 + N           | R1           | RAB 3 P3 NB/R   | on request    |

\*R1 - handle mounted on shaft

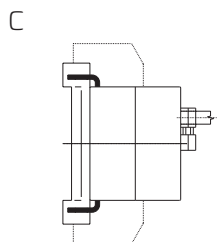


RAB 00 P3 B

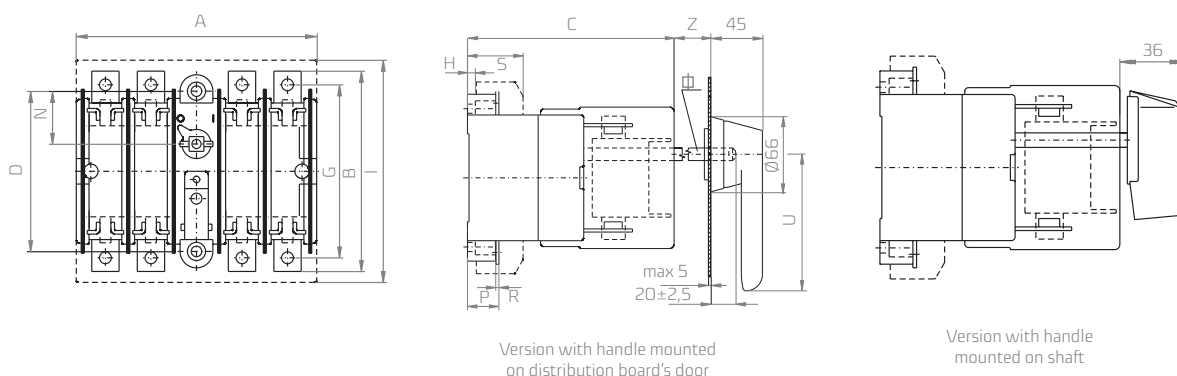
Table 129. RAB switch disconnectors fuses with „C” type cable terminals

| Type    | I <sub>n</sub> | Number of poles | Accessories* | Article         | Article No.   |
|---------|----------------|-----------------|--------------|-----------------|---------------|
| RAB 000 | 100 A          | 3               | -            | RAB 000 P3 C    | 63-823063-041 |
|         |                | 3 + N           | -            | RAB 000 P3 NC   | 63-823063-121 |
|         |                | 4               | -            | RAB 000 P4 C    | 63-823063-081 |
|         |                | 3               | R1           | RAB 000 P3 C/R  | on request    |
|         |                | 3 + N           | R1           | RAB 000 P3 NC/R | on request    |
|         |                | 4               | R1           | RAB 000 P4 C/R  | on request    |
| RAB 00  | 160 A          | 3               | -            | RAB 00 P3 C     | on request    |
|         |                | 3 + N           | -            | RAB 00 P3 NC    | on request    |
|         |                | 3               | R1           | RAB 00 P3 C/R   | on request    |
|         |                | 3 + N           | R1           | RAB 00 P3 NC/R  | on request    |
| RAB 1   | 250 A          | 3               | -            | RAB 1 P3 C      | on request    |
|         |                | 3 + N           | -            | RAB 1 P3 NC     | on request    |
|         |                | 3               | R1           | RAB 1 P3 C/R    | on request    |
|         |                | 3 + N           | R1           | RAB 1 P3 NC/R   | on request    |
| RAB 2   | 400 A          | 3               | -            | RAB 2 P3 C      | on request    |
|         |                | 3 + N           | -            | RAB 2 P3 NC     | on request    |
|         |                | 3               | R1           | RAB 2 P3 C/R    | on request    |
|         |                | 3 + N           | R1           | RAB 2 P3 NC/R   | on request    |
| RAB 3   | 630 A          | 3               | -            | RAB 3 P3 C      | on request    |
|         |                | 3 + N           | -            | RAB 3 P3 NC     | on request    |
|         |                | 3               | R1           | RAB 3 P3 C/R    | on request    |
|         |                | 3 + N           | R1           | RAB 3 P3 NC/R   | on request    |

\*R1 - handle mounted on shaft

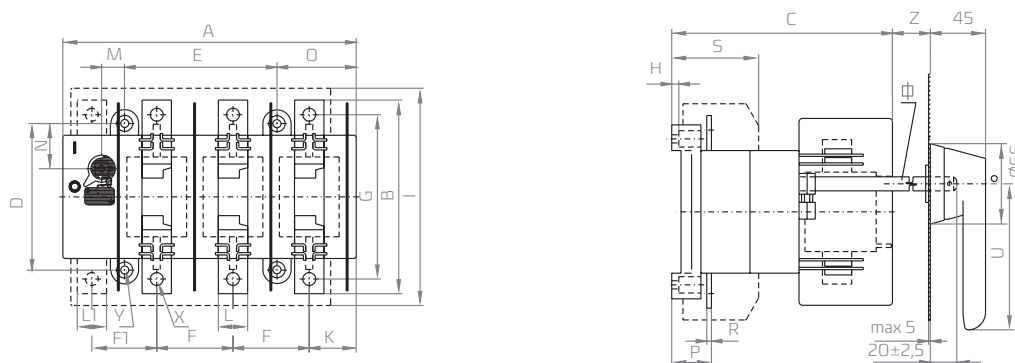


## Dimensions of RAB 000 (100 A)



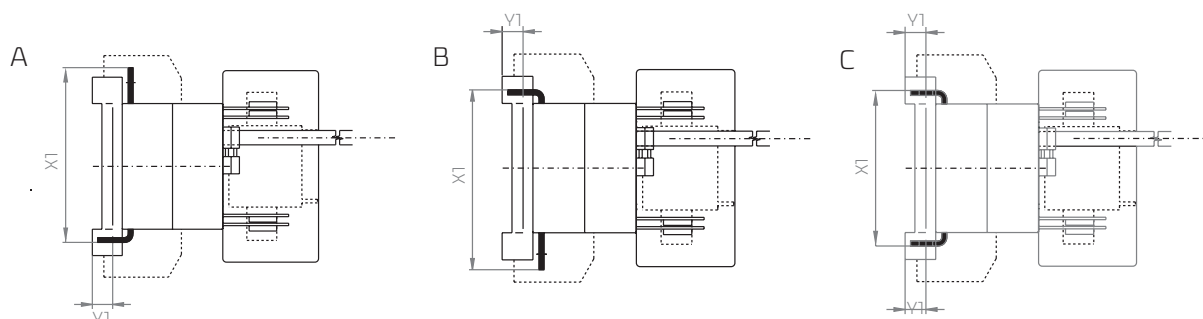
| Dimension [mm] | A   | B   | C   | D  | E | G  | H | I   | L1 | M | N  | O | P  | R | S  | U  | Z  | Ø | W |
|----------------|-----|-----|-----|----|---|----|---|-----|----|---|----|---|----|---|----|----|----|---|---|
| RAB 000        | 132 | 110 | 132 | 88 | — | 95 | 5 | 150 | —  | — | 29 | — | 20 | 2 | 50 | 65 | 20 | 8 | — |

## Dimensions of RAB 00, RAB 1, RAB 2, RAB 3



| Dimension [mm] | A   | B   | C   | D   | E   | F  | F1 | G   | H | I   | K    | L  | L1 | M  | N    | O    | P        | R      | S  | U   | X   | Y   | Z  | Ø  | W  |
|----------------|-----|-----|-----|-----|-----|----|----|-----|---|-----|------|----|----|----|------|------|----------|--------|----|-----|-----|-----|----|----|----|
| RAB 00         | 176 | 132 | 150 | 110 | 84  | 42 | 42 | 115 | 5 | 170 | 30   | 20 | 20 | 16 | 36   | 51   | 26       | 3,5    | 61 | 95  | 8,5 | 5,8 | 15 | 10 | 20 |
| RAB 1          | 250 | 174 | 189 | 125 | 130 | 65 | 55 | 149 | 8 | 225 | 40   | 25 | 25 | 20 | 38,5 | 67,5 | 34<br>30 | 4<br>5 | 86 | 125 | 11  | 7   | 15 | 12 | 25 |
| RAB 2          | 300 | 240 | 215 | 170 | 160 | 80 | 70 | 200 | 8 | 270 | 45,5 | 40 | 30 | 19 | 56,5 | 83   | 40       | 6      | 97 | 145 | 13  | 7   | 20 | 12 | —  |

## Cable terminals of type A, B, C

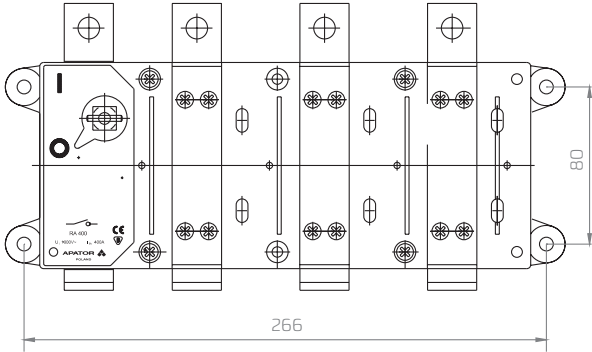
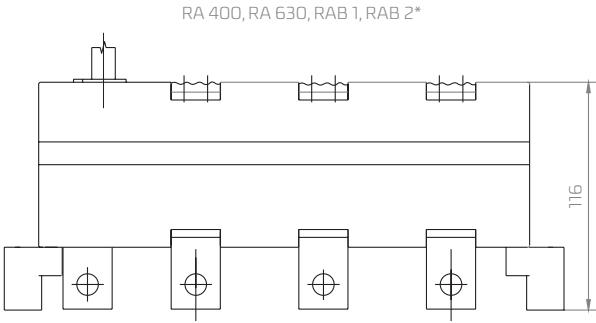
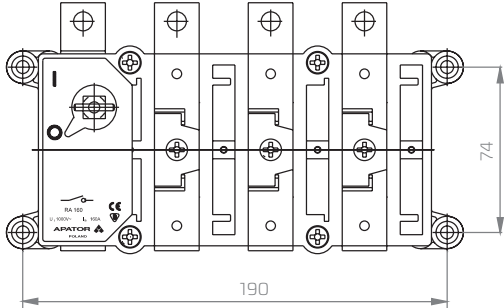
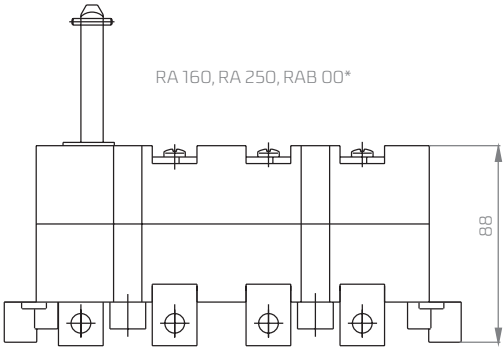


| Dimensions of cable terminals [mm] | RAB 00 |     |     | RAB 1 |       |     | RAB 2 |     |     |
|------------------------------------|--------|-----|-----|-------|-------|-----|-------|-----|-----|
|                                    | A      | B   | C   | A     | B     | C   | A     | B   | C   |
| X1                                 | 111    | 111 | 90  | 140,5 | 140,5 | 116 | 146   | 146 | 127 |
| Y1                                 | 8,5    | 8,5 | 8,5 | 8,5   | 8,5   | 8,5 | 13    | 13  | 13  |

### CAUTION!

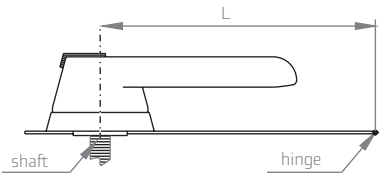
lengthening of shaft is possible by adding second shaft, connected by shaft link (see Accessories)

Dimensions of RA switch disconnectors, RAB switch disconnectors fuses (with cable terminals of type A, B, C) with side support element for mounting

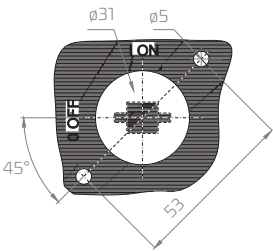


\* ordered with switch

L-minimal distance between shaft and door's hinge



hole in enclosure's cover or door for mounting of OHB handles



| Switch disconnector | Length [mm] | Handle       |
|---------------------|-------------|--------------|
| RA 100              | 80          | OH...65 J8   |
| RAB 000             |             |              |
| RA 160/250          | 120         | OH...95 J10  |
| RAB 00              |             |              |
| RA 400/630          | 150         | OH...125 J12 |
| RAB 1/2             |             |              |
| RAB 3               | 200         | OH...145 J12 |
| RA 1250             |             |              |
|                     | 200         | OH...175 J12 |

## RIN SWITCH DISCONNECTORS

| Type | I <sub>n</sub> | Description | Article | Article No. |
|------|----------------|-------------|---------|-------------|
|------|----------------|-------------|---------|-------------|

|            |       |                            |                |               |
|------------|-------|----------------------------|----------------|---------------|
| RIN 250/RA | 250 A | replacement for RIN 250-11 | RA 250 P3N/RIN | 63-823151-071 |
|------------|-------|----------------------------|----------------|---------------|



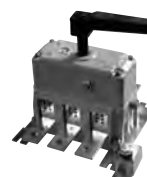
RA 250 P3N/RIN

|         |       |                               |            |               |
|---------|-------|-------------------------------|------------|---------------|
| RIN 400 | 400 A | RIN - switch disconnector     | RIN 400-11 | 63-811200-011 |
|         |       | change-over switch I - O - II | RIN 400 P  | 63-811293-011 |



RIN 400-11

|            |       |                              |           |               |
|------------|-------|------------------------------|-----------|---------------|
| ŁR 400/RIN | 400 A | RIN - replacement for ŁR 400 | RIN 400 S | 63-811226-011 |
|------------|-------|------------------------------|-----------|---------------|



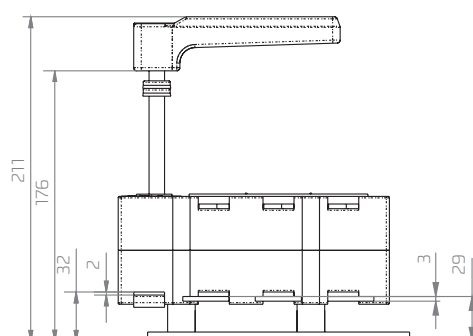
RIN 400 S

|            |       |                            |               |               |
|------------|-------|----------------------------|---------------|---------------|
| RIN 630/RA | 630 A | replacement for RIN 630-11 | RA 630 P3/RIN | 63-811687-011 |
|------------|-------|----------------------------|---------------|---------------|

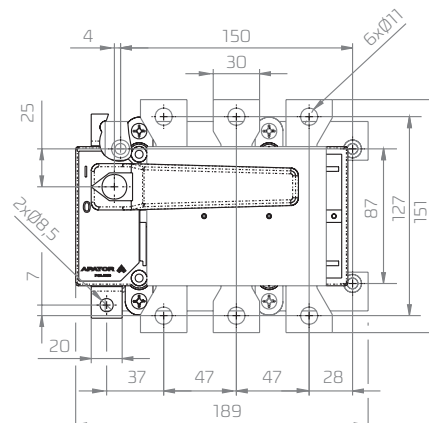


RA 630 P3/RIN

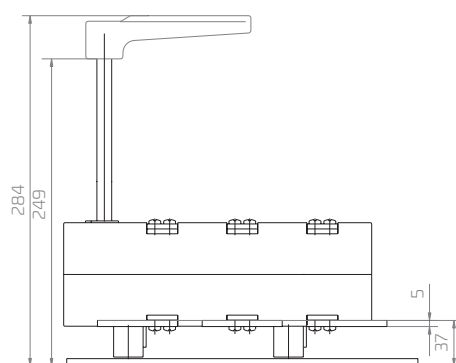
Replacement for RIN  
Dimensions of switch disconnectors RA 250 P3N/RIN



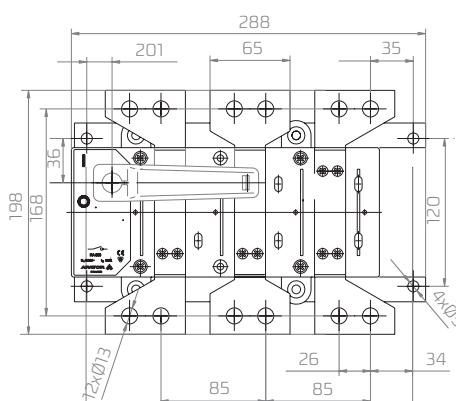
RIN 250/RA



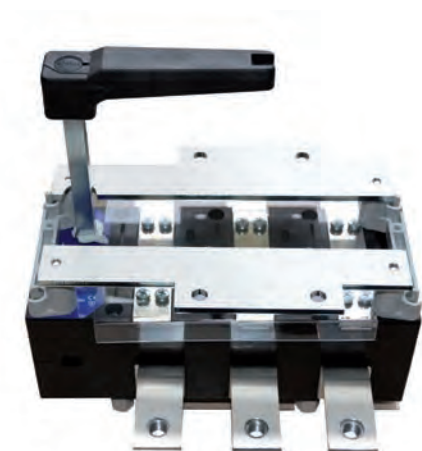
Replacement for RIN  
Dimensions of switch disconnectors RA 630 P3/RIN



RIN 630/RA



## REPLACEMENT FOR 400 A SWITCH DISCONNECTOR - RA 400/O



RA 400/O  
Article number: 63-811866-001

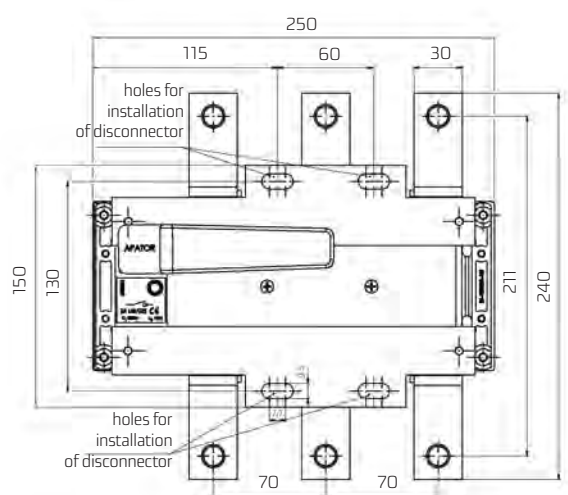
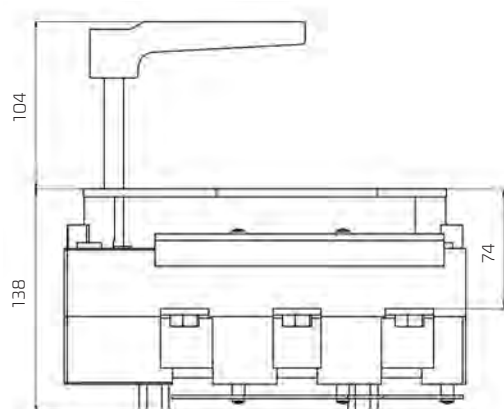
Table 130. Technical data

| Article                                             | Jedn.     |                   | RA 400/O        |
|-----------------------------------------------------|-----------|-------------------|-----------------|
| Parameter                                           |           |                   |                 |
| Rated thermal current                               | $I_{th}$  | A                 | 400             |
| Rated insulation voltage                            | $U_i$     | V                 | 1000            |
| Rated impulse withstand voltage                     | $U_{imp}$ | kV                | 8               |
| Rated frequency                                     |           | Hz                | 50-60 Hz        |
| Rated switching current for AC 22A $U_e = 690$ V    | $I_e$     | A                 | 250             |
| Rated switching current for AC 22B $U_e = 690$ V    | $I_e$     | A                 | 400             |
| Rated short-circuit making capacity                 | $I_{cm}$  | kA <sub>max</sub> | 25              |
| Rated short-time withstand current 1s               | $I_{cw}$  | kA                | 15              |
| Mechanical durability                               |           | number of cycles  | 5000            |
| Electrical durability at utilization category AC22A |           |                   | 1000            |
| Duty                                                |           |                   | continuous work |
| IP degree of protection                             |           |                   | IP 00           |
| Weight                                              |           | kg                | 3,3             |
| Busbar cross-section                                |           | mm <sup>2</sup>   | 2 x 25 x 4      |
| Conductor cross-section                             |           | mm <sup>2</sup>   | 240             |

### ADVANTAGES

- switching on/switchng off of circuits under load
- AC 22B utilization category
- greater mechanical durability

### Dimensions



### Fuse link shrouds

| Article No.   | For use with switch of type | Number of shrouds mounted on switch | Number of shrouds in package | Additional informations |
|---------------|-----------------------------|-------------------------------------|------------------------------|-------------------------|
| 53-944921-011 | RAB 000                     | 1                                   | 1                            | 3 – poles               |
| 53-944921-021 |                             |                                     |                              | 4 – poles               |
| 53-944921-031 | RAB 00                      | 1                                   | 1                            |                         |
| 53-944921-041 | RAB 1; RAB 2                | 1                                   | 1                            |                         |
| 53-944921-051 | RAB 3                       | 1                                   | 1                            |                         |



### Handles

Handle for mounting on doors with IP65, ON/OFF position marking, designed for locking by up to three padlocks in OFF („O”) position, door interlock with release mechanism for opening in position I/ON, RA../R, RAB../R - handle mounted on shaft

| Article                  | Colour              | Handle length [mm] | For shaft with side length of [mm] | For use with switch of type | Set (pcs.) |
|--------------------------|---------------------|--------------------|------------------------------------|-----------------------------|------------|
| OHB 65J8<br>OHY 65J8     | black<br>yellow-red | 65                 | 8                                  | RA 100<br>RAB 000           | 1          |
| OHB 95J10<br>OHY 95J10   | black<br>yellow-red | 95                 | 10                                 | RA 160/250<br>RAB 00        | 1          |
| OHB 125J12<br>OHY 125J12 | black<br>yellow-red | 125                | 12                                 | RA 400/630<br>RAB 1/2       | 1          |
| OHB 145J12<br>OHY 145J12 | black<br>yellow-red | 145                | 12                                 | RAB 3                       | 1          |
| OHB 175J12<br>OHY 175J12 | black<br>yellow-red | 175                | 12                                 | RA 1250                     | 1          |



### Shafts

Shafts of various length for switch disconnectors mounted in distribution boards.

| Article No.   | Shaft size [mm] | Length [mm] | For use with switch of type  | Set (pcs.) |
|---------------|-----------------|-------------|------------------------------|------------|
| 51-943952-011 | Ø8              | 100         | RA 100<br>RAB 000            | 1          |
| 51-943952-021 |                 | 200         |                              |            |
| 51-943952-031 |                 | 400         |                              |            |
| 51-943952-041 |                 | 600         |                              |            |
| 51-944280-011 | Ø10             | 100         | RA 160/250<br>RAB 00         | 1          |
| 51-944280-021 |                 | 200         |                              |            |
| 51-944280-031 |                 | 400         |                              |            |
| 51-944280-041 |                 | 600         |                              |            |
| 51-943953-011 | Ø12             | 100         | RA 400/630/1250<br>RAB 1/2/3 | 1          |
| 51-943953-021 |                 | 200         |                              |            |
| 51-943953-041 |                 | 400         |                              |            |
| 51-943953-031 |                 | 600         |                              |            |



Extension shafts for use with coupling mechanism for change-over switch disconnectors:  
 - handle mounted on shaft - shaft with side length of 10 mm with shaft link  
 - handle mounted on distribution board's door - shaft with side length of 12 mm with shaft link

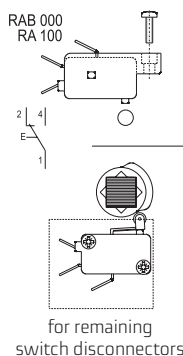
### Shaft links

For fixing extension shaft to switch disconnector's shaft

| Article No.   | Shaft size [mm] | For use with switch of type | Set (pcs.) |
|---------------|-----------------|-----------------------------|------------|
| 53-944917-011 | Ø8              | RA 100, RAB 000             | 1          |
| 53-944917-021 | Ø10             | RA 160/250, RAB 00          | 1          |
| 53-944917-031 | Ø12             | RA 400/630/1250, RAB 1/2/3  | 1          |







### Extension shafts with shaft links

| Article No.   | Shaft size [mm] | Length | For use with switch of type     | Set (pcs.) |
|---------------|-----------------|--------|---------------------------------|------------|
| 63-946239-011 | 8               | 100    | RA 100<br>RAB 000               | 1          |
| 63-946239-021 |                 | 200    |                                 | 1          |
| 63-946239-031 |                 | 400    |                                 | 1          |
| 63-946239-041 |                 | 600    |                                 | 1          |
| 63-946240-011 | 10              | 100    | RA 160/250<br>RAB 00            | 1          |
| 63-946240-021 |                 | 200    |                                 | 1          |
| 63-946240-031 |                 | 400    |                                 | 1          |
| 63-946240-041 |                 | 600    |                                 | 1          |
| 63-946241-011 | 12              | 100    | RA<br>400/630/1250<br>RAB 1/2/3 | 1          |
| 63-946241-021 |                 | 200    |                                 | 1          |
| 63-946241-041 |                 | 400    |                                 | 1          |
| 63-946241-031 |                 | 600    |                                 | 1          |

### Terminal shrouds

| Article No.   | For use with switch of type | Number of shrouds mounted on switch | Number of shrouds in package |
|---------------|-----------------------------|-------------------------------------|------------------------------|
| 51-839842-011 | RA 100, RAB 000             | 2                                   | 1                            |
| 51-838546-011 | RA 160/250, RAB 00          | 2                                   | 1                            |
| 51-839843-011 | RA 400/630, RAB 1/2/3       | 6 (8)*                              | 1                            |

\*for 3-pole switch disconnectors - 6 pcs., for 3-pole switch disconnectors with N-bar - 8 pcs.

### Support element for mounting on support structure

| Article No. | For use with switch of type  | Number of pcs. in package (set) |
|-------------|------------------------------|---------------------------------|
| On request  | RAB 00, RA 160, RA 250       | 1                               |
| On request  | RA 400, RA 630, RAB 1, RAB 2 | 1                               |

### Coupling mechanism for change-over switch disconnectors

#### Three positions: I-O-II. Mounted on shafts of switch disconnectors

| Article No.   | Handle mounted on shaft     |                                 |
|---------------|-----------------------------|---------------------------------|
|               | For use with switch of type | Number of pcs. in package (set) |
| 63-839949-011 | RA 160/250                  | 1                               |
| 63-839972-011 | RA 400/630                  | 1                               |
| 63-930893-011 | RA 1250                     | 1                               |

| Article No.   | Handle OHB mounted in distribution board |                                 |
|---------------|------------------------------------------|---------------------------------|
|               | For use with switch of type              | Number of pcs. in package (set) |
| 63-839949-021 | RA 160/250                               | 1                               |
| 63-839972-021 | RA 400/630                               | 1                               |
| 63-930893-021 | RA 1250                                  | 1                               |

### Auxiliary contacts

For signalling of position of switch disconnectors contacts (ON/OFF).

| Article No.   | Auxiliary switch parameters                                                                             | For use with switch of type | Number of pcs. in package | Additional information |
|---------------|---------------------------------------------------------------------------------------------------------|-----------------------------|---------------------------|------------------------|
| 53-944915-011 | AC – 11 U <sub>e</sub> 220 V~ I <sub>e</sub> 1 A<br>DC – 13 U <sub>e</sub> 220 V~ I <sub>e</sub> 0,25 A | RA 100<br>RAB 000           | 1                         | one switch             |
| 53-944916-011 | AC – 11 U <sub>e</sub> 220 V~ I <sub>e</sub> 1 A<br>DC – 13 U <sub>e</sub> 220 V~ I <sub>e</sub> 0,25 A | RA 160/250<br>RAB 00        | 1                         | one switch             |
| 53-944916-031 |                                                                                                         | RA 400/630<br>RAB 1/2/3     |                           |                        |
| 53-944916-021 | AC – 11 U <sub>e</sub> 220 V~ I <sub>e</sub> 1 A<br>DC – 13 U <sub>e</sub> 220 V~ I <sub>e</sub> 0,25 A | RA 160/250<br>RAB 00        | 1                         | two switches           |
| 53-944916-041 |                                                                                                         | RA 400/630<br>RAB 1/2/3     |                           |                        |



# 4G

Cam switches

## GENERAL INFORMATION

**4G**-series cam switches are low voltage switches, designed according to the latest knowledge about switchgear and using the achievements of modern engineering. Only high quality insulation and contact materials have been used in these products. Basic components and units are standardized and massproduced, making it possible to make switches performing any switching programs, and short delivery terms.

Switches can be produced in many versions and have various applications. They conform all requirements for low voltage switches in industry, mining, shipbuilding, etc. They can be used as handoperated switches in transformer stations, control switchboxes and boards, switchgears made of cast iron or other metals, welding machines and similar devices.

**4G**-series switches are characterized by small external dimensions, powerful switching capabilities, long contact life and high mechanical stability, and resistance to short-lasting overloads. When additionally protected with fuses, they are also resistant to dynamic effects of short-circuit currents.

## APPLICATION

Cam switches can be used in main and auxiliary circuits, especially:

- as switches for electric motors for switching and controlling the drives with single- and three-phase motors, as stardelta switches, reversing switches and switches for changing the rotational speed, etc.,
- in auxiliary, controlling, signalling and measuring circuits, manufactured according to the required switching program,
- as breaker switches, change-over switches and tap switches, for example for transformers and electric welding machines,
- as switchgroups, for example to connect resistors and heating elements,
- as change-over switches working as push-buttons with automatic returning to an off position,
- as switch disconnectors.

## CONFORMITY WITH STANDARDS

**4G**-series cam switches fully comply with the requirements of the following standards: 93/E-06150/10, 93/E-06150/30, IEC 947-1, IEC 947-3.

These switches have Recognition Certificate of the Polish Register of Shipping, and CE Declaration of conformity of the European directive 73/23/EEC.

## DIVISION

Basic division of switches and their marking is based on the rated current. Further division, based on external dimensions of the switches, enables to distinguish three groups characterized by overall dimensions. Each group has the same knobs, front plates and spacing for mounting holes.

Table 131. Division into groups

| Group                            | A0   |  | A1   |      | A2   |      | A3   |       |
|----------------------------------|------|--|------|------|------|------|------|-------|
| Switch type                      | 4G10 |  | 4G16 | 4G25 | 4G40 | 4G63 | 4G80 | 4G100 |
| Rated current I <sub>n</sub> [A] | 10   |  | 16   | 25   | 40   | 63   | 80   | 100   |

## DESIGN

Depending on the switching program, every cam switch consists of a certain number of switching elements, which can be easily assembled together. Switching elements' bodies are made of plastics based on melamine, especially resistant to the effects related to creep currents and electric arcs.

A switching element has one or two current circuits arranged at the angle of 180° and equipped with contact with a double contact gap. Each of them consists of two stationary contacts and one movable contact bridge. The contact bridge is switched on (pressed) by contact springs, and opened by a cam inside the switching element. The cams in individual switching elements are firmly coupled together, ensuring practically simultaneous switching (on and off) of all contacts. Thanks to the double gap contact assembly and contact tips made of special alloy containing silver and very resistant to effects of an electric arc, high switching capabilities and contact life have been obtained. Good clicking mechanism of a motion work ensures unfailing switching of moving contacts in respective fixed positions. The power springs of the clicking mechanism are different, depending on the number of the switching elements. According to individual requirements, cam switches can be made with the switching angles given in table 132.

Table 132. Connection angles

| Group            |     | A0 | A1 | A2 | A3 | Maximum number of handle positions |
|------------------|-----|----|----|----|----|------------------------------------|
| Connection angle | 30° | .  | .  | .  | .  | 12                                 |
|                  | 45° | .  | .  | .  | .  | 8                                  |
|                  | 60° | .  | .  | .  | .  | 6                                  |
|                  | 90° | .  | .  | .  | .  | 4                                  |

Special stops are used to fix proper positions. Switching elements, driving mechanism and a rear plate (mounting plate) are connected into one unit with insulating bolts.

Special versions of cam switches can have more than 12 switching elements.

## SUB-ASSEMBLIES

Front plate

Complete front plate consists of:

- a front plate with a place with black frame for a text; - an indicating plate cover (transparent),
- indicating plate (under the cover, standard version is white with black signs).

According to requirements, this plate can be black, yellow or silver.

## HANDLE

The handle is used to control the switch. Black is a standard colour. According special to requirements, the handles can be supplied in red colour.

Table 133. Handle types

| Group                                                                               | A0                                | A1                                | A2                                | A3                                |
|-------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
|  | R012 red<br>R014 black (standard) | R112 red<br>R114 black (standard) | R212 red<br>R214 black (standard) | R312 red<br>R314 black (standard) |
|  |                                   | R122 red<br>R124 black            | R222 red<br>R224 black            | R322 red<br>R324 black            |

Table 134. Technical data

| Parameter                                                                                                                    |                     |                 | Switch type       |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|                                                                                                                              |                     |                 | 4G10              | 4G16              | 4G25              | 4G40              | 4G63              | 4G80              | 4G100             | 4G200             | 4G400             | 4G630             | 4G800             | 4G1200            |
| Rated insulation voltage U <sub>i</sub>                                                                                      |                     | V               | 690               | 690               | 690               | 690               | 690               | 690               | 690               | 690               | 690               | 690               | 690               | 690               |
| Rated impulse withstand voltage U <sub>imp</sub>                                                                             |                     | kV              | 4                 | 4                 | 4                 | 6                 | 6                 | 6                 | 6                 | 8                 | 8                 | 8                 | 8                 | 8                 |
| Rated thermal current I <sub>th</sub>                                                                                        |                     | A               | 16                | 20                | 25                | 50                | 63                | 80                | 125               | 200               | 400               | 630               | 800               | 1200              |
| Short-circuit protection<br>Rated breaking capacity of fuse links with high breaking capacity                                | 10 kA <sub>sk</sub> | A               | –                 | 25                | 25                | 50                | 63                | 80                | 125               | 200               | 400               | 630               | 2x400             | 2x630             |
|                                                                                                                              | 25 kA <sub>sk</sub> | A               | –                 | 25                | 25                | 50                | 63                | 80                | 125               | 160               | 315               | 500               | 2x400             | 2x630             |
|                                                                                                                              | 40 kA <sub>sk</sub> | A               | –                 | 25                | 25                | 50                | 63                | 80                | 125               | 160               | 315               | 400               | 500               | 2x400             |
|                                                                                                                              | 63 kA <sub>sk</sub> | A               | –                 | 25                | 25                | 36                | 50                | 63                | 100               | 160               | 250               | 355               | 400               | 630               |
|                                                                                                                              | 75 kA <sub>sk</sub> | A               | –                 | 25                | 25                | 36                | 50                | 63                | 100               |                   |                   |                   |                   |                   |
| Mechanical durability (number of cycles)                                                                                     |                     |                 | 3x10 <sup>6</sup> | 3x10 <sup>6</sup> | 3x10 <sup>6</sup> | 3x10 <sup>6</sup> | 3x10 <sup>5</sup> | 3x10 <sup>6</sup> | 3x10 <sup>6</sup> | 2x10 <sup>5</sup> | 2x10 <sup>5</sup> | 2x10 <sup>5</sup> | 2x10 <sup>5</sup> | 2x10 <sup>5</sup> |
| Terminal bolts Maximum cross-section of connecting conductors                                                                |                     | mm <sup>2</sup> | M3<br>2 x 2,5     | M4<br>2 x 4       | M4<br>2 x 6       | M5<br>2 x 10      | M5<br>2 x 10      | M6<br>25          | 2 x M6<br>50      | M6<br>–           | M10<br>–          | M12<br>–          | M16<br>–          | M16<br>–          |
| Short duration load capacity                                                                                                 | 1 s                 | A               | 220               | 430               | 690               | 920               | 1600              | 1600              | 2600              | 3300              | 6500              | 9500              | 12000             | 18000             |
|                                                                                                                              | 10 s                | A               | 70                | 145               | 240               | 290               | 600               | 650               | 850               | 1100              | 2000              | 3000              | 4000              | 6100              |
|                                                                                                                              | 30 s                | A               | 40                | 90                | 160               | 200               | 375               | 400               | 500               | 640               | 1200              | 1800              | 2400              | 3500              |
|                                                                                                                              | 60 s                | A               | 30                | 75                | 125               | 155               | 285               | 300               | 360               | 460               | 850               | 1250              | 1600              | 2450              |
| Breaking capacity                                                                                                            | 660 V - cosφ = 0,65 | A               | –                 | 190               | –                 | –                 | –                 | –                 | –                 | 640               | –                 | –                 | –                 | –                 |
|                                                                                                                              | 660 V - cosφ = 0,35 | A               | –                 | –                 | 250               | 490               | 500               | 500               | 650               | –                 | –                 | –                 | –                 | –                 |
|                                                                                                                              | 600 V - cosφ = 0,35 | A               | –                 | 200               | 260               | 500               | 610               | 610               | –                 | –                 | –                 | –                 | –                 | –                 |
|                                                                                                                              | 500 V - cosφ = 0,35 | A               | 100 <sup>1)</sup> | –                 | –                 | –                 | –                 | –                 | 900               | 900               | –                 | –                 | –                 | –                 |
|                                                                                                                              | 500 V - cosφ = 0,75 | A               | –                 | –                 | –                 | –                 | –                 | –                 | –                 | –                 | 1100              | 1100              | 1200              | 1800              |
| Switch disconnectors                                                                                                         | 3 x 220 V~          | kW              | 5,2               | 7                 | 9                 | 14                | 23                | 29                | 37                | 72                | 150               | 150               | 150               | 150               |
| Utilization category AC2                                                                                                     | 3 x 380 V~          | kW              | 9                 | 12,5              | 15,5              | 24                | 39                | 50                | 63                | 125               | 260               | 260               | 260               | 260               |
| Rated power of three-phase loads                                                                                             | 3 x 500 V~          | kW              | 11,8              | 17                | 20                | 33                | 52                | 66                | 84                | 165               | 340               | 340               | 340               | 340               |
|                                                                                                                              | 3 x 660 V~          | kW              | 15,5              | 22                | 27                | 43                | 69                | 86                | 110               | 210               | 400               | 400               | 400               | 400               |
| Switch disconnectors for motors                                                                                              | 3 x 220 V~          | kW              | 3                 | 4,5               | 7,5               | 12,5              | 18,5              | 21                | –                 | 27,5              | 27,5              | 27,5              | 27,5              | 27,5              |
| Utilization category AC3, AC23                                                                                               | 3 x 380 V~          | kW              | 5                 | 8                 | 13                | 21                | 32                | 37                | –                 | 47                | 47                | 47                | 47                | 47                |
| Rated power of three-phase motors                                                                                            | 3 x 500 V~          | kW              | 6                 | 11                | 17                | 27                | 42                | 48                | –                 | 62                | 62                | 62                | 62                | 62                |
|                                                                                                                              | 3 x 660 V~          | kW              | 6                 | 11                | 17                | 27                | 55                | 60                | –                 | 80                | 80                | 80                | 80                | 80                |
| Switch disconnectors for motors                                                                                              | 3 x 220 V~          | kW              | –                 | –                 | –                 | –                 | –                 | –                 | 27,5              | 27,5              | 27,5              | 27,5              | 27,5              | 27,5              |
| Utilization category AC23                                                                                                    | 3 x 380 V~          | kW              | –                 | –                 | –                 | –                 | –                 | –                 | 47                | 47                | 47                | 47                | 47                | 47                |
| Rated power of three-phase motors                                                                                            | 3 x 500 V~          | kW              | –                 | –                 | –                 | –                 | –                 | –                 | 62                | 62                | 62                | 62                | 62                | 62                |
|                                                                                                                              | 3 x 660 V~          | kW              | –                 | –                 | –                 | –                 | –                 | –                 | 80                | 80                | 80                | 80                | 80                | 80                |
| Switch disconnector for motors, category of utility AC3, AC23 (30 connections/h). Rated power of one-phase (dipolar) motors. | 110 V~              | kW              | 0,8               | 1,3               | 2,1               | 3,6               | 5,3               | 6                 | –                 | –                 | –                 | –                 | –                 | –                 |
|                                                                                                                              | 220 V~              | kW              | 1,7               | 2,6               | 4,3               | 7,2               | 10,6              | 12,1              | –                 | –                 | –                 | –                 | –                 | –                 |
|                                                                                                                              | 380 V~              | kW              | 2,8               | 4,6               | 7,5               | 12                | 18,5              | 21,1              | –                 | –                 | –                 | –                 | –                 | –                 |
| Auxiliary switch disconnectors                                                                                               | 110 V~              | A               | 11                | 20                | 25                | 50                | 63                | 72                | –                 | –                 | –                 | –                 | –                 | –                 |
| Utilization category AC14                                                                                                    | 220 V~              | A               | 8                 | 20                | 25                | 40                | 50                | 50                | –                 | –                 | –                 | –                 | –                 | –                 |
| Rated switching current I <sub>e</sub> (1 pole)                                                                              | 380 V~              | A               | 3,5               | 16                | 20                | 40                | 45                | 45                | –                 | –                 | –                 | –                 | –                 | –                 |
|                                                                                                                              | 660 V~              | A               | 2,5               | 8                 | 8,5               | 10                | 10                | 10                | –                 | –                 | –                 | –                 | –                 | –                 |
| Type of operation                                                                                                            |                     | –               | Continuous duty   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |

1) -  $\cos\varphi = 0,65$

## BREAKING CAPACITY FOR DIRECT CURRENT

Breaking capacity for direct current operation depends on current intensity, voltage and inductance.

Time constant  $T = L/R$  represents inductance values in a current circuit.

$T = 1 \text{ ms}$  – active power or lightly inductive power predominates, for example resistance furnaces.

$T = 15 \text{ ms}$  – inductive power predominates, for example relay coils. For direct current and voltage above 60 V, switch contacts must be connected in parallel to obtain higher breaking capacity.

Table 135. Rated breaking capacity of one contact

| Switch type | Rated breaking capacity of one contact |           |          |           |          |           |          |           |          |           |          |           |
|-------------|----------------------------------------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|             | 24 V                                   |           | 60 V     |           | 110 V    |           | 220 V    |           | 440 V    |           | 600 V    |           |
|             | T = 1 ms                               | T = 15 ms | T = 1 ms | T = 15 ms | T = 1 ms | T = 15 ms | T = 1 ms | T = 15 ms | T = 1 ms | T = 15 ms | T = 1 ms | T = 15 ms |
| 4G10        | 40                                     | 40        | 40       | 20        | 17       | 3         | 1,1      | 0,5       | 0,5      | 0,2       | 0,5      | 0,1       |
| 4G16        | 100                                    | 100       | 38       | 18        | 5,5      | 3         | 0,95     | 0,4       | 0,5      | 0,25      | 0,3      | 0,2       |
| 4G25        | 100                                    | 100       | 38       | 18        | 5,5      | 3         | 0,95     | 0,4       | 0,5      | 0,25      | 0,3      | 0,2       |
| 4G40        | 252                                    | 252       | 95       | 40        | 15       | 3,5       | 1,2      | 0,4       | 0,6      | 0,25      | 0,45     | 0,2       |
| 4G63        | 252                                    | 252       | 95       | 40        | 15       | 3,5       | 1,2      | 0,4       | 0,6      | 0,25      | 0,45     | 0,2       |
| 4G100       | 800                                    | 800       | 400      | 400       | 35       | 7,5       | 2,5      | 0,75      | 0,9      | 0,3       | 0,5      | 0,25      |

Table 136 shows a number of contacts which can be connected in series for rated making currents at specific constant voltages for category of utility DC 1.

Table 136. Number of contacts connected in series

| Switch type | Number of contacts connected in series |       |       |       |
|-------------|----------------------------------------|-------|-------|-------|
|             | 110 V                                  | 220 V | 440 V | 600 V |
| 4G10        | 1                                      | 3     | 6     | 8     |
| 4G16        | 2                                      | 4     | 6     | 9     |
| 4G25        | 2                                      | 4     | 6     | 9     |
| 4G40        | 2                                      | 3     | 6     | 9     |
| 4G63        | 2                                      | 4     | 6     | 9     |
| 4G100       | 2                                      | 3     | 6     | –     |

DC1 - main noninductive or low voltage load

$T = 1 \text{ ms}$  breaking capacity  $I = 1,5 I_g$

Note: Breaking capacity for a 4G25 switch with two contacts connected in series is 2A at 220V;  $T = 15 \text{ ms}$ . In table 137 the rated making current values ( $I_e$ ) for category of utility DC 11 (according to EC 337-1, 337-1A) have been shown.

Table 137. Rated switching current

| Switch type | Rated switching current $I_e$ [A] |      |       |       |       |       |
|-------------|-----------------------------------|------|-------|-------|-------|-------|
|             | 24 V                              | 60 V | 110 V | 220 V | 440 V | 600 V |
| 4G10        | 10                                | 2    | 1     | 0,27  | 0,16  | 0,14  |
| 4G16        | 20                                | 2,2  | 1     | 0,3   | 0,22  | 0,16  |
| 4G25        | 25                                | 2,2  | 1     | 0,3   | 0,22  | 0,16  |
| 4G40        | 50                                | 5    | 2     | 0,4   | 0,23  | 0,2   |
| 4G63        | 63                                | 5    | 2     | 0,4   | 0,23  | 0,2   |

## SWITCHING PROGRAMS

| Switching program                                               |            | Diagram number | Page |
|-----------------------------------------------------------------|------------|----------------|------|
| Switch disconnectors with “0” (0-1) position                    |            |                |      |
| 1-pole                                                          |            | 90             | 163  |
| 2-pole                                                          |            | 91             |      |
| 3-pole                                                          |            | 10             |      |
| multi-pole                                                      |            | 92             |      |
|                                                                 |            | 100            |      |
|                                                                 |            | 528            |      |
|                                                                 |            | 659            |      |
| Switch disconnectors with quick-connecting contacts (0-1)       |            |                |      |
| with 30° contact lead                                           | 1-pole     | 270            | 163  |
|                                                                 | 2-pole     | 271            |      |
|                                                                 | 3-pole     | 63             |      |
| with 30° contact lead on three contacts and 60° on one contact  | 4-pole     | 272            |      |
| with 30° contact lead on three contacts and 60° on two contacts | 5-pole     | 273            |      |
| with 30° contact lead                                           | 6-pole     | 274            |      |
| Switches with “0”(1-0-2) position                               |            |                |      |
| 1-pole                                                          |            | 51             | 164  |
| 2-pole                                                          |            | 52             |      |
| 3-pole                                                          |            | 53             |      |
| multi-pole                                                      |            | 75             |      |
|                                                                 |            | 76             |      |
|                                                                 |            | 77             |      |
|                                                                 |            | 78             |      |
|                                                                 |            | 79             |      |
|                                                                 |            | 80             |      |
|                                                                 |            | 81             |      |
| Switches for current transformers (1-2)                         |            |                |      |
|                                                                 |            | 57             | 164  |
| Switches without “0” (1-2) position                             |            |                |      |
| 1-pole                                                          |            | 54             | 165  |
| 2-pole                                                          |            | 55             |      |
| 3-pole                                                          |            | 56             |      |
| multi-pole                                                      |            | 69             |      |
|                                                                 |            | 70             |      |
|                                                                 |            | 71             |      |
|                                                                 |            | 72             |      |
|                                                                 |            | 73             |      |
|                                                                 |            | 74             |      |
|                                                                 |            | 62             |      |
| Multiposition switches with “0” (0-1-2...) position             |            |                |      |
| 1-pole                                                          | 3-position | 107            | 166  |
|                                                                 | 4-position | 108            |      |
|                                                                 | 5-position | 109            |      |
|                                                                 | 6-position | 110            |      |

| Switching program                                   |             | Diagram number | Page |
|-----------------------------------------------------|-------------|----------------|------|
| Multiposition switches with “O” (O-1-2...) position |             |                |      |
| 1-pole                                              | 7-position  | 111            | 166  |
|                                                     | 8-position  | 112            |      |
|                                                     | 9-position  | 113            |      |
|                                                     | 10-position | 114            |      |
|                                                     | 11-position | 115            |      |
|                                                     | 12-position | 116            |      |
| 2-pole                                              | 3-position  | 123            | 167  |
|                                                     | 4-position  | 124            |      |
|                                                     | 5-position  | 125            |      |
|                                                     | 6-position  | 126            |      |
|                                                     | 7-position  | 127            |      |
|                                                     | 8-position  | 128            |      |
|                                                     | 9-position  | 129            |      |
|                                                     | 10-position | 130            |      |
|                                                     | 11-position | 131            |      |
|                                                     | 12-position | 132            |      |
| 3-pole                                              | 3-position  | 135            | 168  |
|                                                     | 4-position  | 136            |      |
|                                                     | 5-position  | 137            |      |
|                                                     | 6-position  | 138            |      |
|                                                     | 7-position  | 139            |      |
|                                                     | 8-position  | 140            |      |
| multi-pole                                          | 3-position  | 145            | 168  |
|                                                     | 4-position  | 146            |      |
|                                                     | 5-position  | 147            |      |
|                                                     | 6-position  | 148            |      |
|                                                     | 3-position  | 151            | 169  |
|                                                     | 4-position  | 152            |      |
|                                                     | 5-position  | 153            |      |
|                                                     | 3-position  | 156            |      |
|                                                     | 4-position  | 157            |      |
|                                                     | 5-position  | 158            |      |
|                                                     | 3-position  | 160            |      |
|                                                     | 4-position  | 161            |      |
|                                                     | 3-position  | 163            |      |
|                                                     | 4-position  | 164            |      |
| 1-pole                                              | 3-position  | 82             | 170  |
|                                                     | 4-position  | 83             |      |
|                                                     | 5-position  | 84             |      |
|                                                     | 6-position  | 85             |      |
|                                                     | 7-position  | 101            |      |
|                                                     | 8-position  | 102            |      |
|                                                     | 9-position  | 103            |      |
|                                                     | 10-position | 104            |      |
|                                                     | 11-position | 105            |      |
|                                                     | 12-position | 106            |      |



| Switching program                                   | Diagram number | Page |
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| <b>Multiposition switches without "O" position</b>  |                |      |
| 2-pole                                              | 3-position     | 86   |
|                                                     | 4-position     | 87   |
|                                                     | 5-position     | 88   |
|                                                     | 6-position     | 89   |
|                                                     | 7-position     | 117  |
|                                                     | 8-position     | 118  |
|                                                     | 9-position     | 119  |
|                                                     | 10-position    | 120  |
|                                                     | 11-position    | 121  |
|                                                     | 12-position    | 122  |
| 3-pole                                              | 3-position     | 93   |
|                                                     | 4-position     | 94   |
|                                                     | 5-position     | 95   |
|                                                     | 6-position     | 96   |
|                                                     | 7-position     | 133  |
|                                                     | 8-position     | 134  |
|                                                     | 3-position     | 141  |
|                                                     | 4-position     | 142  |
| multi-pole                                          | 5-position     | 143  |
|                                                     | 6-position     | 144  |
|                                                     | 3-position     | 149  |
|                                                     | 4-position     | 150  |
|                                                     | 3-position     | 154  |
|                                                     | 4-position     | 155  |
|                                                     | 3-position     | 159  |
|                                                     | 3-position     | 162  |
| <b>Switchgroups with "O" position</b>               |                |      |
| 1-pole                                              | 2-group.       | 251  |
|                                                     | 3-group.       | 254  |
| 2-pole                                              | 2-group.       | 252  |
|                                                     | 3-group.       | 255  |
| 3-pole                                              | 2-group.       | 253  |
|                                                     | 3-group.       | 256  |
| <b>Serial switches</b>                              |                |      |
| 1-pole                                              |                | 257  |
| 2-pole                                              |                | 258  |
| 3-pole                                              |                | 259  |
| <b>Serial-parallel switches</b>                     |                |      |
| 2-pole                                              |                | 260  |
| <b>Measurement switches for voltage and current</b> |                |      |
| <b>Ammeter switches</b>                             |                |      |
| phase measurement                                   | L1-L2-L3       | 58   |
| phase measurement                                   | O-1-2-3        | 97   |
| phase measurement with grounding                    | O-1-2-3        | 98   |
| <b>Serial-parallel switches</b>                     |                |      |
| 3 phase-to-phase voltages + phase voltage           |                | 60   |

| Switching program                                                                                                       | Diagram number | Page |
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| Voltmeter switches without “O” position                                                                                 |                |      |
| 3 phase voltages                                                                                                        | 68             | 176  |
| 3 phase-to-phase voltages                                                                                               | 67             |      |
| 3 phase-to-phase voltages + 3 phase voltages                                                                            | 66             |      |
| Switches with an automatic return to initial position                                                                   |                |      |
| switch with a function of left - right pushbuttons<br>switch with “O” position (1-0-2)<br>return to “O” from both sides | 210            | 176  |
| 1-pole                                                                                                                  | 201            |      |
| 2-pole                                                                                                                  | 202            |      |
| 3-pole                                                                                                                  | 203            |      |
| Switches without “O” position                                                                                           |                |      |
| 1 normally closed contact + 1 normally open contact                                                                     | 204            | 177  |
| 2 normally closed contacts + 2 normally open contacts                                                                   | 205            |      |
| 3 normally closed contacts + 3 normally open contacts                                                                   | 206            |      |
| to control a contactor – 1 normally open contact<br>(turn right) and 1 normally closed contact (turn left)              | 207            |      |
| 1 normally open contact and 1 normally closed<br>contact, when turning left and right                                   | 208            |      |
| 2 normally open contacts and 2 normally closed<br>contacts, when turning left and right                                 | 209            |      |
| Switch disconnectors for motor controlling,<br>Star-delta switch disconnectors                                          |                |      |
| basic version                                                                                                           | 12             | 177  |
| Y/Δ back from Y to O                                                                                                    | 28             |      |
| with counter-current braking back from Y to O                                                                           | 29             | 178  |
| as a voltage switch                                                                                                     | 30             |      |
| for operation with contactor                                                                                            | 31             |      |
| bidirectional (left-right)                                                                                              | 21             |      |
| Switch disconnectors in a Dahlander’s system                                                                            |                |      |
| dipolar Δ-O-YY                                                                                                          | 13             | 178  |
| dipolar O-Δ-YY                                                                                                          | 19             |      |
| dipolar bidirectional YY-Δ-O-Δ-YY                                                                                       | 20             |      |
| dipolar and contactor controlling                                                                                       | 32             |      |
| Switch disconnectors for two-winding motors                                                                             |                |      |
| O-1-2                                                                                                                   | 22             | 179  |
| bidirectional                                                                                                           | 23             |      |
| to control the contactors                                                                                               | 33             |      |
| Switch disconnectors for three-speed motors                                                                             |                |      |
| 2 windings O-Δ-YY-Y<br>(with 3 speeds in a Dahlander’s system)                                                          | 34             | 179  |
| 2 windings O-Δ-YY-Y<br>(1 and 2 speeds in a Dahlander’s system)                                                         | 35             | 180  |
| 2 windings O-Δ-YY-Y<br>(2 and 3 speeds in a Dahlander’s system)                                                         | 36             |      |
| Reversing switches                                                                                                      |                |      |
| 2-pole                                                                                                                  | 24             | 180  |
| 2-pole, return to “O” position                                                                                          | 25             |      |
| 3-pole                                                                                                                  | 11             |      |
| 3-pole, return to “O” position                                                                                          | 26             |      |
| to control a contactor                                                                                                  | 27             |      |
| starting switches for 1-phase motors                                                                                    | 15             |      |

## AN ORDER EXAMPLE

# 4G25 - 10 - U S5 R112

switch type determined according to the rated current, selection in accordance with table 1

diagram number specified in the switching program

version:  
U- switch to be built-in  
OU- switch to be mounted in a housing  
PK- switch in a plastic case

special version, its symbol can be added to the description of type

knob and handle version and colour according to table 3

### NOTES:

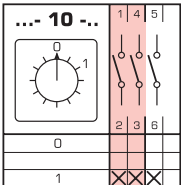
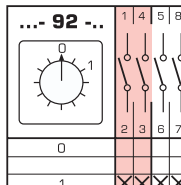
- every order on devices for rated current 100A requires arrangements with the manufacturer related to the technical details and delivery date.
- devices in PK housings can be made only for those switching programs which require not more than four segments (protection class IP 55/IP 65).

EXPRES SERVICE 24 h or 48 h - There is the ability to perform cam switches in 24 or 48 h (additional fee)

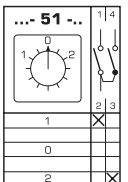
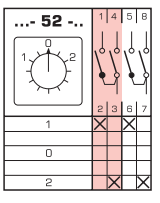
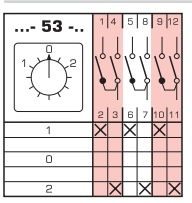
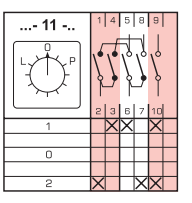
## STANDARD CONNECTION DIAGRAMS

| Diagram number                                     | Number of poles | Rated switching current | Rated voltage | Number of packs | Symbol Article No.               | Handle | Protection degree IP from the front | Maximum conductor cross-section [mm <sup>2</sup> ] | Installation                   |
|----------------------------------------------------|-----------------|-------------------------|---------------|-----------------|----------------------------------|--------|-------------------------------------|----------------------------------------------------|--------------------------------|
| <b>Switch disconnector with "0" (O-1) position</b> |                 |                         |               |                 |                                  |        |                                     |                                                    |                                |
|                                                    | 1               | 10                      | 690           | 1               | 4G10-90-U<br>63-840390-011       | R014   | IP40                                | 2 x 2,5                                            | to be mounted behind the panel |
|                                                    | 1               | 16                      | 690           | 1               | 4G16-90-U<br>63-840390-021       | R114   | IP40                                | 2 x 4                                              | to be mounted behind the panel |
|                                                    | 1               | 25                      | 690           | 1               | 4G25-90-U<br>63-840390-031       | R114   | IP40                                | 2 x 6                                              | to be mounted behind the panel |
|                                                    | 1               | 10                      | 690           | 1               | 4G10-90-PK<br>63-840392-011      | R014   | IP55                                | 2 x 2,5                                            | in a housing                   |
|                                                    | 1               | 25                      | 690           | 1               | 4G10-90-PK IP65<br>63-840392-111 | R114   | IP65                                | 2 x 6                                              | in a housing                   |
|                                                    | 1               | 16                      | 690           | 1               | 4G16-90-PK<br>63-840392-021      | R114   | IP55                                | 2 x 4                                              | in a housing                   |
|                                                    | 1               | 25                      | 690           | 1               | 4G25-90-PK<br>63-840392-031      | R114   | IP55                                | 2 x 6                                              | in a housing                   |
|                                                    | 2               | 10                      | 690           | 1               | 4G10-91-U<br>63-840393-011       | R014   | IP40                                | 2 x 2,5                                            | to be mounted behind the panel |
|                                                    | 2               | 16                      | 690           | 1               | 4G16-91-U<br>63-840393-021       | R114   | IP40                                | 2 x 4                                              | to be mounted behind the panel |
|                                                    | 2               | 10                      | 690           | 1               | 4G10-91-PK<br>63-840395-011      | R014   | IP55                                | 2 x 2,5                                            | in a housing                   |
|                                                    | 2               | 25                      | 690           | 1               | 4G10-91-PK IP65<br>63-840395-111 | R114   | IP65                                | 2 x 6                                              | in a housing                   |
|                                                    | 2               | 16                      | 690           | 1               | 4G16-91-PK<br>63-840395-021      | R114   | IP55                                | 2 x 4                                              | in a housing                   |
|                                                    | 2               | 25                      | 690           | 1               | 4G25-91-PK<br>63-840395-031      | R114   | IP55                                | 2 x 6                                              | in a housing                   |

\* See dimensions on pages 181-184

| Diagram number                                                                      | Number of poles | Rated switching current | Rated voltage | Number of packs | Symbol Article No.               | Handle | Protection degree IP from the front | Maximum conductor cross-section [mm²] | Installation                   |
|-------------------------------------------------------------------------------------|-----------------|-------------------------|---------------|-----------------|----------------------------------|--------|-------------------------------------|---------------------------------------|--------------------------------|
| <b>Switch disconnector with "0" (0-1) position</b>                                  |                 |                         |               |                 |                                  |        |                                     |                                       |                                |
|    | 3               | 10                      | 690           | 2               | 4G10-10-U<br>63-840304-011       | R014   | IP40                                | 2 x 2,5                               | to be mounted behind the panel |
|                                                                                     | 3               | 16                      | 690           | 2               | 4G16-10-U<br>63-840304-021       | R114   | IP40                                | 2 x 4                                 | to be mounted behind the panel |
|                                                                                     | 3               | 25                      | 690           | 2               | 4G25-10-U<br>63-840304-031       | R114   | IP40                                | 2 x 6                                 | to be mounted behind the panel |
|                                                                                     | 3               | 40                      | 690           | 2               | 4G40-10-U<br>63-840304-041       | R214   | IP40                                | 2 x 10                                | to be mounted behind the panel |
|                                                                                     | 3               | 63                      | 690           | 2               | 4G63-10-U<br>63-840304-051       | R214   | IP40                                | 2 x 10                                | to be mounted behind the panel |
|                                                                                     | 3               | 80                      | 690           | 2               | 4G80-10-U<br>63-840304-061       | R214   | IP40                                | 25                                    | to be mounted behind the panel |
|                                                                                     | 3               | 10                      | 690           | 2               | 4G10-10-PK<br>63-840306-011      | R014   | IP55                                | 2 x 2,5                               | in a housing                   |
|                                                                                     | 3               | 10                      | 690           | 2               | 4G10-10-PK IP65<br>63-840306-111 | R014   | IP65                                | 2 x 2,5                               | in a housing                   |
|                                                                                     | 3               | 16                      | 690           | 2               | 4G16-10-PK<br>63-840306-021      | R114   | IP55                                | 2 x 4                                 | in a housing                   |
|                                                                                     | 3               | 25                      | 690           | 2               | 4G25-10-PK<br>63-840306-031      | R114   | IP55                                | 2 x 6                                 | in a housing                   |
|                                                                                     | 3               | 40                      | 690           | 2               | 4G40-10-PK<br>63-840306-041      | R214   | IP55                                | 2 x 10                                | in a housing                   |
|                                                                                     | 3               | 63                      | 690           | 2               | 4G63-10-PK<br>63-840306-051      | R214   | IP55                                | 2 x 10                                | in a housing                   |
|                                                                                     | 3               | 80                      | 690           | 2               | 4G80-10-PK<br>63-840306-061      | R214   | IP55                                | 25                                    | in a housing                   |
|  | 4               | 10                      | 690           | 2               | 4G10-92-U<br>63-840396-011       | R014   | IP40                                | 2 x 2,5                               | to be mounted behind the panel |
|                                                                                     | 4               | 16                      | 690           | 2               | 4G16-92-U<br>63-840396-021       | R114   | IP40                                | 2 x 4                                 | to be mounted behind the panel |
|                                                                                     | 4               | 25                      | 690           | 2               | 4G25-92-U<br>63-840396-031       | R114   | IP40                                | 2 x 6                                 | to be mounted behind the panel |
|                                                                                     | 4               | 40                      | 690           | 2               | 4G40-92-U<br>63-840396-041       | R214   | IP40                                | 2 x 10                                | to be mounted behind the panel |
|                                                                                     | 4               | 63                      | 690           | 2               | 4G63-92-U<br>63-840396-051       | R214   | IP40                                | 2 x 10                                | to be mounted behind the panel |
|                                                                                     | 4               | 80                      | 690           | 2               | 4G80-92-U<br>63-840396-061       | R214   | IP40                                | 25                                    | to be mounted behind the panel |
|                                                                                     | 4               | 10                      | 690           | 2               | 4G10-92-PK<br>63-840398-011      | R014   | IP55                                | 2 x 2,5                               | in a housing                   |
|                                                                                     | 4               | 10                      | 690           | 2               | 4G10-92-PK IP65<br>63-840398-111 | R014   | IP65                                | 2 x 2,5                               | in a housing                   |
|                                                                                     | 4               | 16                      | 690           | 2               | 4G16-92-PK<br>63-840398-021      | R114   | IP55                                | 2 x 4                                 | in a housing                   |
|                                                                                     | 4               | 25                      | 690           | 2               | 4G25-92-PK<br>63-840398-031      | R114   | IP55                                | 2 x 6                                 | in a housing                   |
|                                                                                     | 4               | 40                      | 690           | 2               | 4G40-92-PK<br>63-840398-041      | R214   | IP55                                | 2 x 10                                | in a housing                   |
|                                                                                     | 4               | 63                      | 690           | 2               | 4G63-92-PK<br>63-840398-051      | R214   | IP55                                | 2 x 10                                | in a housing                   |
|                                                                                     | 4               | 80                      | 690           | 2               | 4G80-92-PK<br>63-840398-061      | R214   | IP55                                | 25                                    | in a housing                   |

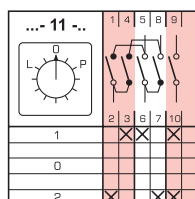
\* See dimensions on pages 181-184

| Diagram number                                                                      | Number of poles | Rated switching current | Rated voltage | Number of packs | Symbol Article No.               | Handle | Protection degree IP from the front | Maximum conductor cross-section [mm²] | Installation                   |
|-------------------------------------------------------------------------------------|-----------------|-------------------------|---------------|-----------------|----------------------------------|--------|-------------------------------------|---------------------------------------|--------------------------------|
| <b>„Mains-unit” switch (1-0-2)</b>                                                  |                 |                         |               |                 |                                  |        |                                     |                                       |                                |
|    | 1               | 10                      | 690           | 1               | 4G10-51-U<br>63-840338-011       | R014   | IP40                                | 2 x 2,5                               | to be mounted behind the panel |
|                                                                                     | 1               | 10                      | 690           | 1               | 4G10-51-PK<br>63-840340-011      | R014   | IP55                                | 2 x 2,5                               | in a housing                   |
|                                                                                     | 1               | 10                      | 690           | 1               | 4G10-51-PK IP65<br>63-840340-111 | R014   | IP65                                | 2 x 2,5                               | in a housing                   |
|    | 2               | 10                      | 690           | 2               | 4G10-52-U<br>63-840341-011       | R014   | IP40                                | 2 x 2,5                               | to be mounted behind the panel |
|    | 3               | 10                      | 690           | 3               | 4G10-53-U<br>63-840343-011       | R014   | IP40                                | 2 x 2,5                               | to be mounted behind the panel |
|                                                                                     | 3               | 16                      | 690           | 3               | 4G16-53-U<br>63-840343-021       | R114   | IP40                                | 2 x 4                                 | to be mounted behind the panel |
|                                                                                     | 3               | 25                      | 690           | 3               | 4G25-53-U<br>63-840343-031       | R114   | IP40                                | 2 x 6                                 | to be mounted behind the panel |
|                                                                                     | 3               | 40                      | 690           | 3               | 4G40-53-U<br>63-840343-041       | R214   | IP40                                | 2 x 10                                | to be mounted behind the panel |
|                                                                                     | 3               | 63                      | 690           | 3               | 4G63-53-U<br>63-840343-051       | R214   | IP40                                | 2 x 10                                | to be mounted behind the panel |
|                                                                                     | 3               | 80                      | 690           | 3               | 4G80-53-U<br>63-840343-061       | R214   | IP40                                | 25                                    | to be mounted behind the panel |
|                                                                                     | 3               | 10                      | 690           | 3               | 4G10-53-PK<br>63-840345-011      | R014   | IP55                                | 2 x 2,5                               | in a housing                   |
|                                                                                     | 3               | 10                      | 690           | 3               | 4G10-53-PK IP65<br>63-840345-111 | R014   | IP65                                | 2 x 2,5                               | in a housing                   |
|                                                                                     | 3               | 16                      | 690           | 3               | 4G16-53-PK<br>63-840345-021      | R114   | IP55                                | 2 x 4                                 | in a housing                   |
|                                                                                     | 3               | 25                      | 690           | 3               | 4G25-53-PK<br>63-840345-031      | R114   | IP55                                | 2 x 6                                 | in a housing                   |
|                                                                                     | 3               | 40                      | 690           | 3               | 4G40-53-PK<br>63-840345-041      | R214   | IP55                                | 2 x 10                                | in a housing                   |
|                                                                                     | 3               | 63                      | 690           | 3               | 4G63-53-PK<br>63-840345-051      | R214   | IP55                                | 2 x 10                                | in a housing                   |
|                                                                                     | 3               | 80                      | 690           | 3               | 4G80-53-PK<br>63-840345-061      | R214   | IP55                                | 25                                    | in a housing                   |
| <b>„Rotation direction change” switch (L-O-P)</b>                                   |                 |                         |               |                 |                                  |        |                                     |                                       |                                |
|  | 3               | 10                      | 690           | 3               | 4G10-11-U<br>63-840307-011       | R014   | IP40                                | 2 x 2,5                               | to be mounted behind the panel |
|                                                                                     | 3               | 16                      | 690           | 3               | 4G16-11-U<br>63-840307-021       | R114   | IP40                                | 2 x 4                                 | to be mounted behind the panel |
|                                                                                     | 3               | 25                      | 690           | 3               | 4G25-11-U<br>63-840307-031       | R114   | IP40                                | 2 x 6                                 | to be mounted behind the panel |
|                                                                                     | 3               | 40                      | 690           | 3               | 4G40-11-U<br>63-840307-041       | R214   | IP40                                | 2 x 10                                | to be mounted behind the panel |
|                                                                                     | 3               | 63                      | 690           | 3               | 4G63-11-U<br>63-840307-051       | R214   | IP40                                | 2 x 10                                | to be mounted behind the panel |
|                                                                                     | 3               | 80                      | 690           | 3               | 4G80-11-U<br>63-840307-061       | R214   | IP40                                | 25                                    | to be mounted behind the panel |

\* See dimensions on pages 181-184

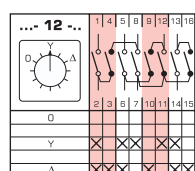
| Diagram number | Number of poles | Rated switching current | Rated voltage | Number of packs | Symbol Article No. | Handle | Protection degree IP from the front | Maximum conductor cross-section [mm²] | Installation |
|----------------|-----------------|-------------------------|---------------|-----------------|--------------------|--------|-------------------------------------|---------------------------------------|--------------|
|----------------|-----------------|-------------------------|---------------|-----------------|--------------------|--------|-------------------------------------|---------------------------------------|--------------|

#### „Rotation direction change” switch (L-O-P)



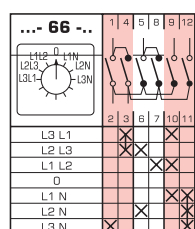
|   |    |     |   |                                  |      |      |         |              |
|---|----|-----|---|----------------------------------|------|------|---------|--------------|
| 3 | 10 | 690 | 3 | 4G10-11-PK<br>63-840309-011      | R014 | IP55 | 2 x 2,5 | in a housing |
| 3 | 10 | 690 | 3 | 4G10-11-PK IP65<br>63-840309-111 | R014 | IP65 | 2 x 2,5 | in a housing |
| 3 | 16 | 690 | 3 | 4G16-11-PK<br>63-840309-021      | R114 | IP55 | 2 x 4   | in a housing |
| 3 | 25 | 690 | 3 | 4G25-11-PK<br>63-840309-031      | R114 | IP55 | 2 x 6   | in a housing |
| 3 | 40 | 690 | 3 | 4G40-11-PK<br>63-840309-041      | R214 | IP55 | 2 x 10  | in a housing |
| 3 | 63 | 690 | 3 | 4G63-11-PK<br>63-840309-051      | R214 | IP55 | 2 x 10  | in a housing |
| 3 | 80 | 690 | 3 | 4G80-11-PK<br>63-840309-06       | R214 | IP55 | 25      | in a housing |

#### „Star-delta” (Y-O-Δ) motor control switch



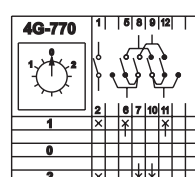
|   |    |     |   |                                  |      |      |         |                                |
|---|----|-----|---|----------------------------------|------|------|---------|--------------------------------|
| 3 | 10 | 690 | 4 | 4G10-12-U<br>63-840310-011       | R014 | IP40 | 2 x 2,5 | to be mounted behind the panel |
| 3 | 16 | 690 | 4 | 4G16-12-U<br>63-840310-021       | R114 | IP40 | 2 x 4   | to be mounted behind the panel |
| 3 | 25 | 690 | 4 | 4G25-12-U<br>63-840310-031       | R114 | IP40 | 2 x 6   | to be mounted behind the panel |
| 3 | 40 | 690 | 4 | 4G40-12-U<br>63-840310-041       | R214 | IP40 | 2 x 10  | to be mounted behind the panel |
| 3 | 63 | 690 | 4 | 4G63-12-U<br>63-840310-051       | R214 | IP40 | 2 x 10  | to be mounted behind the panel |
| 3 | 80 | 690 | 4 | 4G80-12-U<br>63-840310-061       | R214 | IP40 | 25      | to be mounted behind the panel |
| 3 | 10 | 690 | 4 | 4G10-12-PK<br>63-840591-011      | R014 | IP55 | 2 x 2,5 | in a housing                   |
| 3 | 10 | 690 | 4 | 4G10-12-PK IP65<br>63-840591-111 | R014 | IP65 | 2 x 2,5 | in a housing                   |
| 3 | 16 | 690 | 4 | 4G16-12-PK<br>63-840591-021      | R114 | IP55 | 2 x 4   | in a housing                   |
| 3 | 25 | 690 | 4 | 4G25-12-PK<br>63-840591-031      | R114 | IP55 | 2 x 6   | in a housing                   |
| 3 | 40 | 690 | 4 | 4G40-12-PK<br>63-840591-041      | R214 | IP55 | 2 x 10  | in a housing                   |
| 3 | 63 | 690 | 4 | 4G63-12-PK<br>63-840591-051      | R214 | IP55 | 2 x 10  | in a housing                   |
| 3 | 80 | 690 | 4 | 4G80-12-PK<br>63-840591-061      | R214 | IP55 | 25      | in a housing                   |

#### Voltmeter switch (L3L1, L2L3, L1L2 - 0 - L1N, L2N, L3N)



|   |    |     |   |                            |      |      |         |                                |
|---|----|-----|---|----------------------------|------|------|---------|--------------------------------|
| 4 | 10 | 690 | 3 | 4G10-66-U<br>63-840360-011 | R014 | IP40 | 2 x 2,5 | to be mounted behind the panel |
|---|----|-----|---|----------------------------|------|------|---------|--------------------------------|

#### Switch for forklift trucks(1-O-2)



|   |    |     |   |                             |      |      |    |                                |
|---|----|-----|---|-----------------------------|------|------|----|--------------------------------|
| 5 | 80 | 690 | 6 | 4G80-770-U<br>63-841838-061 | R214 | IP40 | 25 | to be mounted behind the panel |
|---|----|-----|---|-----------------------------|------|------|----|--------------------------------|

the contact (terminal 1-2) should be switched on in the control circuit coil of the contactor relay

\* See dimensions on pages 181-184

| Diagram number                            | Number of poles | Rated switching current | Rated voltage | Number of packs | Symbol Article No.                 | Handle | Protection degree IP from the front | Maximum conductor cross-section [mm <sup>2</sup> ] | Installation                   |
|-------------------------------------------|-----------------|-------------------------|---------------|-----------------|------------------------------------|--------|-------------------------------------|----------------------------------------------------|--------------------------------|
| <b>Main (emergency) switch connectors</b> |                 |                         |               |                 |                                    |        |                                     |                                                    |                                |
|                                           | 3               | 16                      | 690           | 2               | 4G16-10-PK S6<br>63-241669-021     | R114   | IP55                                | 2 x 4                                              | in a housing                   |
|                                           | 3               | 16                      | 690           | 2               | 4G16-10-OU S8 S25<br>63-241670-021 | R114   | IP40                                | 2 x 4                                              | mounting plate                 |
|                                           | 3               | 16                      | 690           | 2               | 4G16-10-U S25<br>63-241671-021     | R114   | IP40                                | 2 x 4                                              | to be mounted behind the panel |
|                                           | 3               | 25                      | 690           | 2               | 4G25-10-OU S8 S25<br>63-241672-031 | R114   | IP40                                | 2 x 6                                              | mounting plate                 |
|                                           | 3               | 25                      | 690           | 2               | 4G25-10-PK S6<br>63-241673-031     | R114   | IP55                                | 2 x 6                                              | in a housing                   |
|                                           | 3               | 25                      | 690           | 2               | 4G25-10-U S25<br>63-241674-031     | R114   | IP40                                | 2 x 6                                              | to be mounted behind the panel |
|                                           | 3               | 40                      | 690           | 2               | 4G40-10-OU S8 S25<br>63-241675-041 | R214   | IP40                                | 2 x 10                                             | mounting plate                 |
|                                           | 3               | 40                      | 690           | 2               | 4G40-10-PK S6<br>63-241676-041     | R214   | IP55                                | 2 x 10                                             | in a housing                   |
|                                           | 3               | 40                      | 690           | 2               | 4G40-10-U S25<br>63-241677-041     | R214   | IP40                                | 2 x 10                                             | to be mounted behind the panel |
|                                           | 3               | 63                      | 690           | 2               | 4G63-10-U S25<br>63-241678-051     | R214   | IP40                                | 2 x 10                                             | to be mounted behind the panel |
|                                           | 3               | 80                      | 690           | 2               | 4G80-10-U S6<br>63-241858-061      | R214   | IP40                                | 25                                                 | to be mounted behind the panel |
| <b>Switches (1-2)</b>                     |                 |                         |               |                 |                                    |        |                                     |                                                    |                                |
|                                           | 1               | 10                      | 690           | 1               | 4G10-54-U<br>63-840346-011         | R014   | IP40                                | 2 x 2,5                                            | to be mounted behind the panel |
|                                           | 1               | 10                      | 690           | 1               | 4G10-54-PK<br>63-840347-011        | R014   | IP55                                | 2 x 2,5                                            | in a housing                   |
|                                           | 1               | 10                      | 690           | 1               | 4G10-54-PK IP65<br>63-840347-111   | R014   | IP65                                | 2 x 2,5                                            | in a housing                   |
|                                           | 2               | 10                      | 690           | 2               | 4G10-55-U<br>63-840348-011         | R014   | IP40                                | 2 x 2,5                                            | to be mounted behind the panel |
|                                           | 2               | 10                      | 690           | 2               | 4G10-55-PK<br>63-840350-011        | R014   | IP55                                | 2 x 2,5                                            | in a housing                   |
|                                           | 2               | 10                      | 690           | 2               | 4G10-55-PK IP65<br>63-840350-111   | R014   | IP65                                | 2 x 2,5                                            | in a housing                   |
|                                           | 3               | 10                      | 690           | 3               | 4G10-56-PK konfigurator            | R014   | IP40                                | 2 x 2,5                                            | in a housing                   |
|                                           | 4               | 10                      | 690           | 4               | 4G10-69-U<br>63-840367-011         | R014   | IP40                                | 2 x 2,5                                            | to be mounted behind the panel |

\* Special versions S6 i S8 see on pages 186, S25 see on page 191

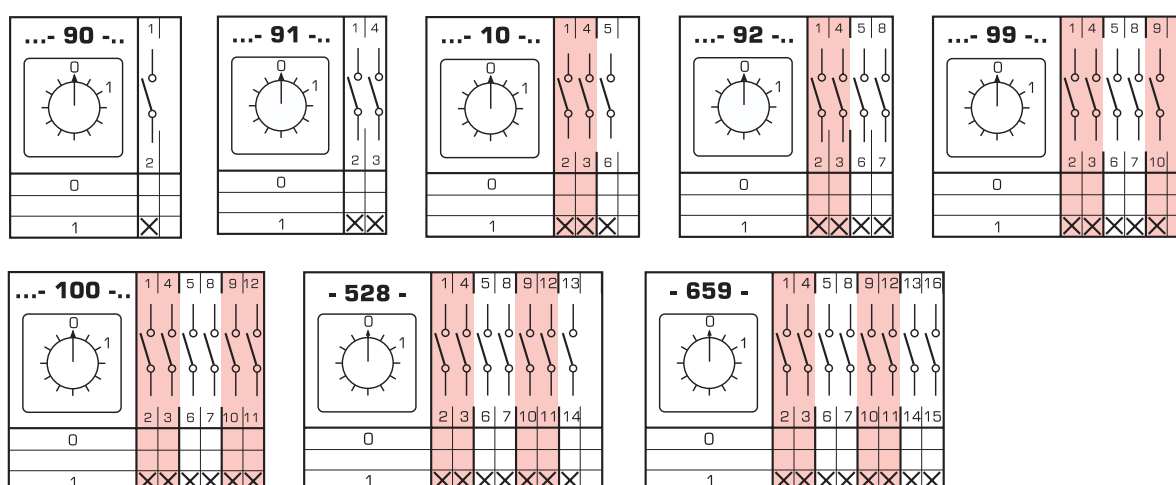
\* See dimensions on pages 181-184

## SWITCHING PROGRAMS

### Switch disconnecter with "0" (0-1) position

Table 138.

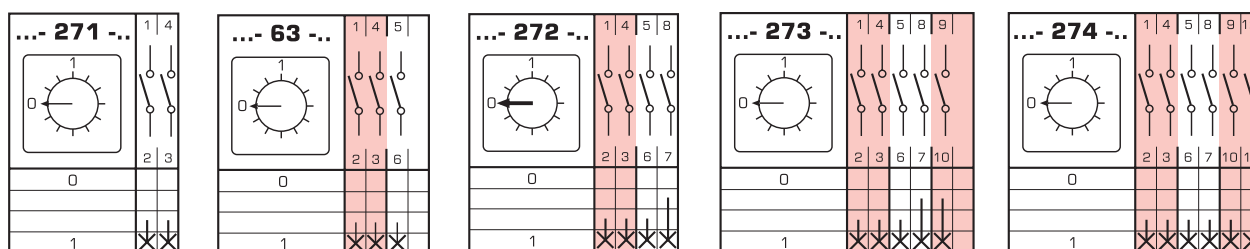
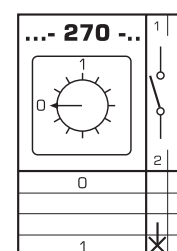
| Switching program | Diagram number |
|-------------------|----------------|
| 1-pole            | 90             |
| 2-pole            | 91             |
| 3-pole            | 10             |
| multi-pole        | 92             |
|                   | 99             |
|                   | 100            |
|                   | 528            |
|                   | 659            |



### Switch disconnectors with quick-connecting contacts (0-1)

Table 139.

| Switching program                                               | Diagram number |
|-----------------------------------------------------------------|----------------|
| with 30° contact lead 30°                                       | 1-pole 270     |
| with 30° contact lead 30°                                       | 2-pole 271     |
| with 30° contact lead 30°                                       | 3-pole 63      |
| with 30° contact lead on three contacts and 60° on one contact  | 4-pole 272     |
| with 30° contact lead on three contacts and 60° on two contacts | 5-bpole 273    |
| with 30° contact lead 30°                                       | 6-pole 274     |



\* See dimensions on pages 181-184

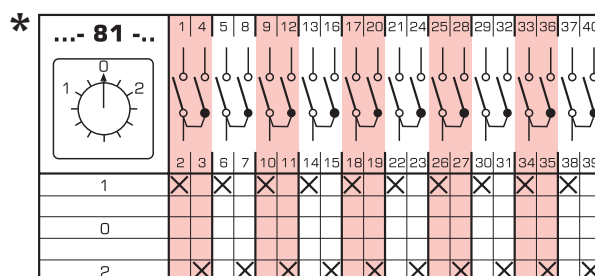
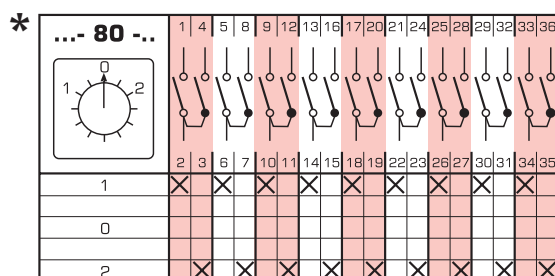
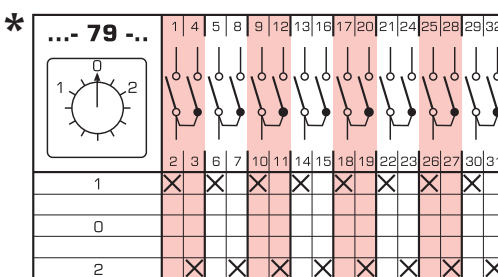
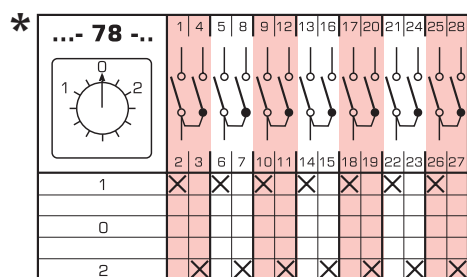
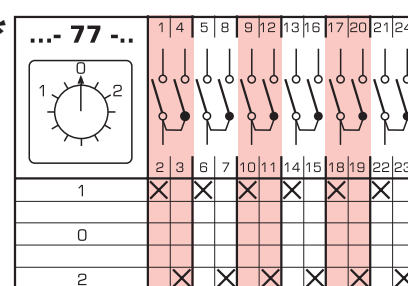
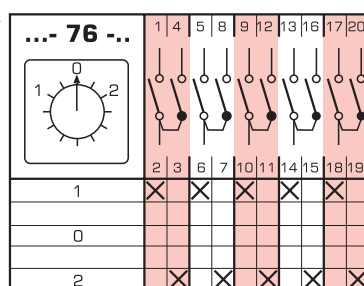
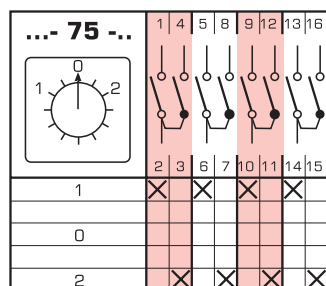
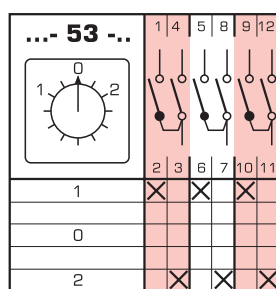
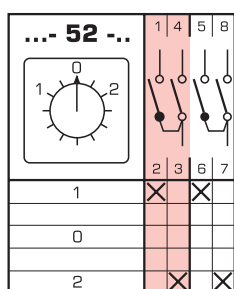
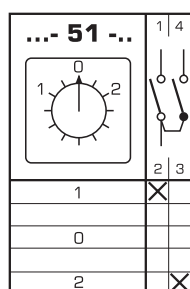
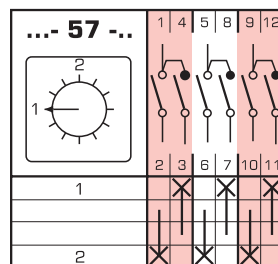


## Switches with "0"(1-0-2) position

## Switches for current transformers (1-2)

Table 140.

| Switching program | Diagram number |
|-------------------|----------------|
| 1-pole            | 51             |
| 2-pole            | 52             |
| 3-pole            | 53             |
| multi-pole        | 75             |
|                   | 76             |
|                   | 77             |
|                   | 78             |
|                   | 79             |
|                   | 80             |
|                   | 81             |



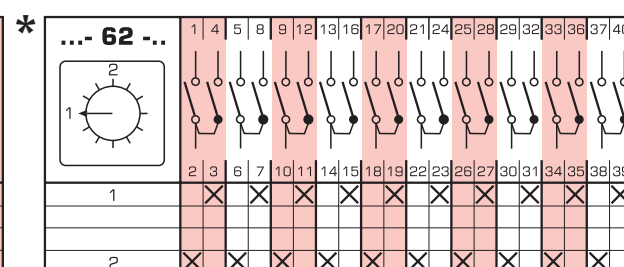
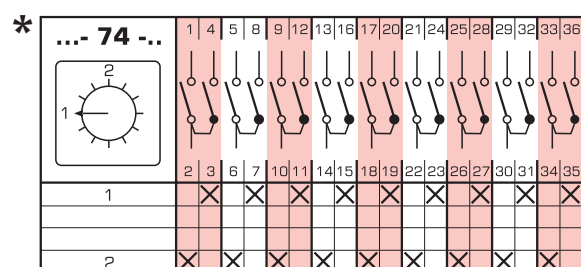
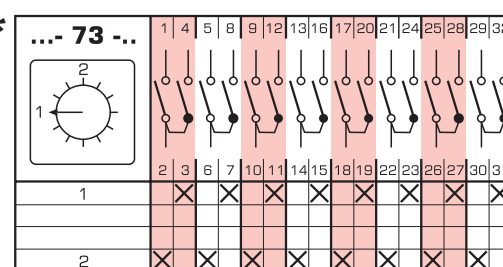
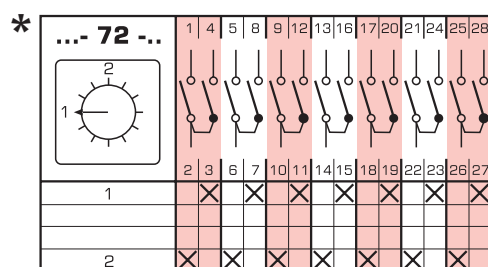
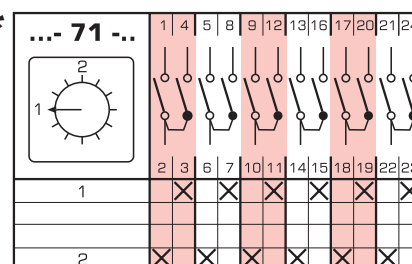
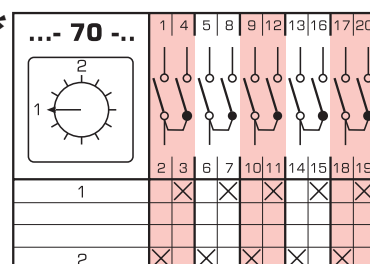
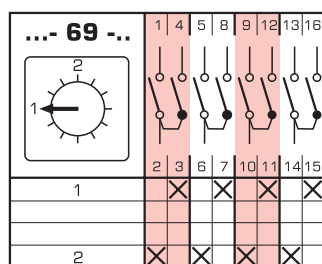
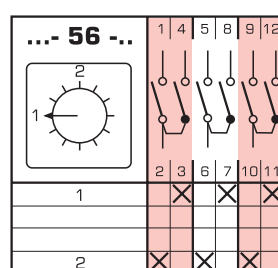
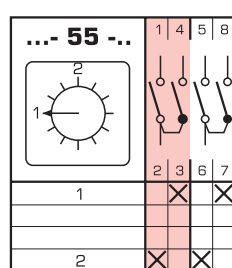
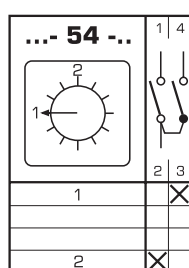
\* Only in versions U, OU

\* See dimensions on pages 181-184

## SWITCHES WITHOUT "0"(1-2) POSITION

Table 141.

| Switching program | Diagram number |
|-------------------|----------------|
| 1-pole            | 54             |
| 2-pole            | 55             |
| 3-pole            | 56             |
| multi-pole        | 69             |
|                   | 70             |
|                   | 71             |
|                   | 72             |
|                   | 73             |
|                   | 74             |
|                   | 62             |



\* Only in versions U, OU

\* See dimensions on pages 181-184

## Multiposition switches with "0" (0-1-2...) position

Table 142.

| Switching program |             | Diagram number |
|-------------------|-------------|----------------|
| 1-pole            | 3-position  | 107            |
|                   | 4-position  | 108            |
|                   | 5-position  | 109            |
|                   | 6-position  | 110            |
|                   | 7-position  | 111            |
|                   | 8-position  | 112            |
|                   | 9-position  | 113            |
|                   | 10-position | 114            |
|                   | 11-position | 115            |
|                   | 12-position | 116            |
| 2-pole            | 3-position  | 123            |
|                   | 4-position  | 124            |
|                   | 5-position  | 125            |
|                   | 6-position  | 126            |
|                   | 7-position  | 127            |
|                   | 8-position  | 128            |
|                   | 9-position  | 129            |
|                   | 10-position | 130            |
|                   | 11-position | 131            |
|                   | 12-position | 132            |
| 3-pole            | 3-position  | 135            |
|                   | 4-position  | 136            |
|                   | 5-position  | 137            |
|                   | 6-position  | 138            |
|                   | 7-position  | 139            |
|                   | 8-position  | 140            |
| multi-pole        | 3-position  | 145            |
|                   | 4-position  | 146            |
|                   | 5-position  | 147            |
|                   | 6-position  | 148            |
|                   | 3-position  | 151            |
|                   | 4-position  | 152            |
|                   | 5-position  | 153            |
|                   | 3-position  | 156            |
|                   | 4-position  | 157            |
|                   | 5-position  | 158            |
|                   | 3-position  | 160            |
|                   | 4-position  | 161            |
|                   | 3-position  | 163            |
|                   | 4-position  | 164            |
|                   |             |                |
|                   |             |                |

...- 107 -

|   |   |   |
|---|---|---|
| 0 |   |   |
| 1 | X |   |
| 2 |   | X |

...- 108 -

|   |   |   |
|---|---|---|
| 0 |   |   |
| 1 | X |   |
| 2 |   | X |
| 3 |   | X |

...- 109 -

|   |   |   |
|---|---|---|
| 0 |   |   |
| 1 | X |   |
| 2 |   | X |
| 3 |   | X |
| 4 |   | X |

...- 110 -

|   |   |   |   |  |  |
|---|---|---|---|--|--|
| 0 |   |   |   |  |  |
| 1 | X |   |   |  |  |
| 2 |   | X |   |  |  |
| 3 |   |   | X |  |  |
| 4 |   | X |   |  |  |
| 5 |   |   | X |  |  |

...- 111 -

|   |   |   |   |   |  |  |
|---|---|---|---|---|--|--|
| 0 |   |   |   |   |  |  |
| 1 | X |   |   |   |  |  |
| 2 |   | X |   |   |  |  |
| 3 |   |   | X |   |  |  |
| 4 |   | X |   |   |  |  |
| 5 |   |   | X |   |  |  |
| 6 |   |   |   | X |  |  |

...- 112 -

|   |   |   |   |  |  |  |  |
|---|---|---|---|--|--|--|--|
| 0 |   |   |   |  |  |  |  |
| 1 | X |   |   |  |  |  |  |
| 2 |   | X |   |  |  |  |  |
| 3 |   |   | X |  |  |  |  |
| 4 |   | X |   |  |  |  |  |
| 5 |   |   | X |  |  |  |  |
| 6 |   | X |   |  |  |  |  |
| 7 |   |   | X |  |  |  |  |

\* ...- 113 -

|   |   |   |   |   |  |  |  |  |
|---|---|---|---|---|--|--|--|--|
| 0 |   |   |   |   |  |  |  |  |
| 1 | X |   |   |   |  |  |  |  |
| 2 |   | X |   |   |  |  |  |  |
| 3 |   |   | X |   |  |  |  |  |
| 4 |   | X |   |   |  |  |  |  |
| 5 |   |   | X |   |  |  |  |  |
| 6 |   | X |   |   |  |  |  |  |
| 7 |   |   | X |   |  |  |  |  |
| 8 |   |   |   | X |  |  |  |  |

\* ...- 114 -

|   |   |   |   |  |  |  |  |  |  |
|---|---|---|---|--|--|--|--|--|--|
| 0 |   |   |   |  |  |  |  |  |  |
| 1 | X |   |   |  |  |  |  |  |  |
| 2 |   | X |   |  |  |  |  |  |  |
| 3 |   |   | X |  |  |  |  |  |  |
| 4 |   | X |   |  |  |  |  |  |  |
| 5 |   |   | X |  |  |  |  |  |  |
| 6 |   | X |   |  |  |  |  |  |  |
| 7 |   |   | X |  |  |  |  |  |  |
| 8 |   | X |   |  |  |  |  |  |  |
| 9 |   |   | X |  |  |  |  |  |  |

\* ...- 115 -

|    |   |   |   |   |  |  |  |  |  |  |
|----|---|---|---|---|--|--|--|--|--|--|
| 0  |   |   |   |   |  |  |  |  |  |  |
| 1  | X |   |   |   |  |  |  |  |  |  |
| 2  |   | X |   |   |  |  |  |  |  |  |
| 3  |   |   | X |   |  |  |  |  |  |  |
| 4  |   | X |   |   |  |  |  |  |  |  |
| 5  |   |   | X |   |  |  |  |  |  |  |
| 6  |   | X |   |   |  |  |  |  |  |  |
| 7  |   |   | X |   |  |  |  |  |  |  |
| 8  |   | X |   |   |  |  |  |  |  |  |
| 9  |   |   | X |   |  |  |  |  |  |  |
| 10 |   |   |   | X |  |  |  |  |  |  |

\* ...- 116 -

|    |   |   |   |  |  |  |  |  |  |  |  |
|----|---|---|---|--|--|--|--|--|--|--|--|
| 0  |   |   |   |  |  |  |  |  |  |  |  |
| 1  | X |   |   |  |  |  |  |  |  |  |  |
| 2  |   | X |   |  |  |  |  |  |  |  |  |
| 3  |   |   | X |  |  |  |  |  |  |  |  |
| 4  |   | X |   |  |  |  |  |  |  |  |  |
| 5  |   |   | X |  |  |  |  |  |  |  |  |
| 6  |   | X |   |  |  |  |  |  |  |  |  |
| 7  |   |   | X |  |  |  |  |  |  |  |  |
| 8  |   | X |   |  |  |  |  |  |  |  |  |
| 9  |   |   | X |  |  |  |  |  |  |  |  |
| 10 |   | X |   |  |  |  |  |  |  |  |  |
| 11 |   |   | X |  |  |  |  |  |  |  |  |

\* Only in versions U, OU

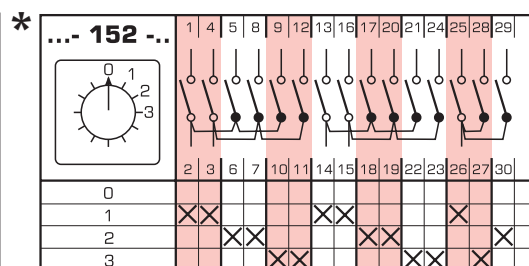
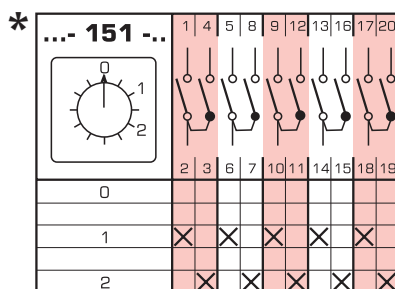
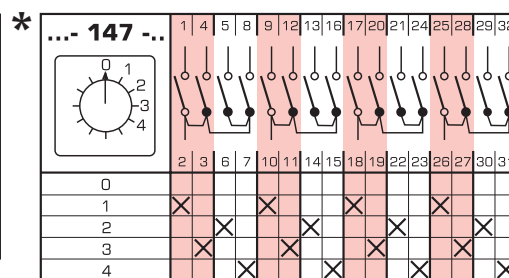
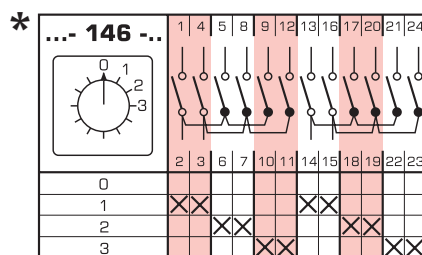
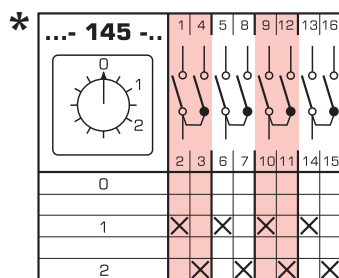
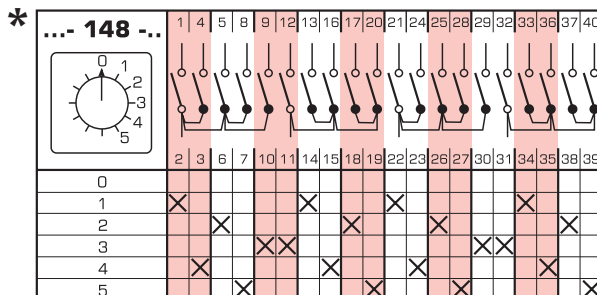
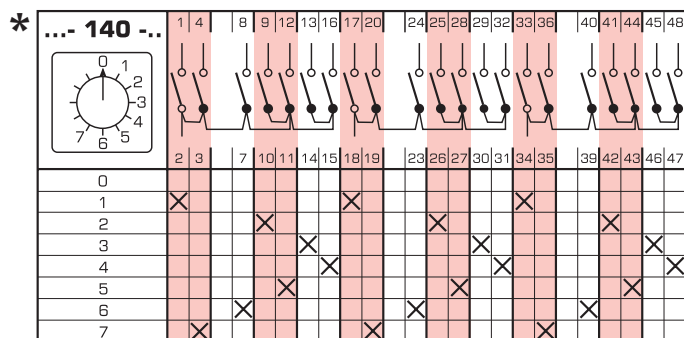
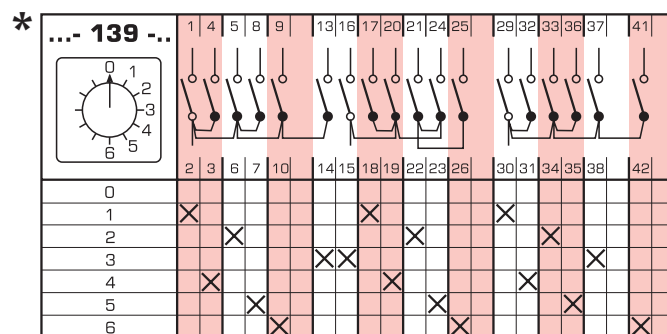
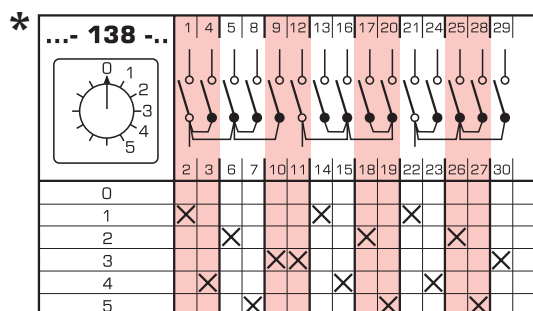
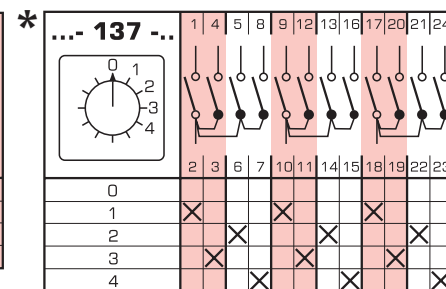
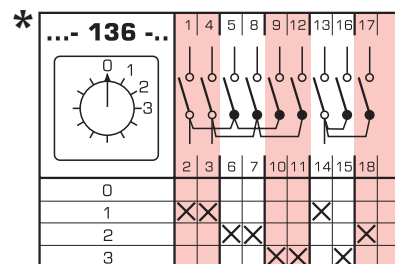
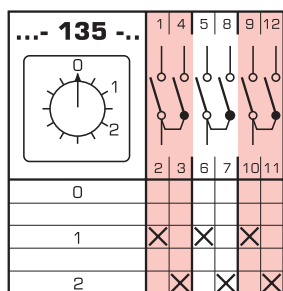
\* See dimensions on pages 181-184

Figure 10 displays 12 examples of the 128-bit  $2^2$ -ary LFSR, arranged in a 3x4 grid. Each example is labeled with a number (123 to 132) and a multiplier (\*). Each example includes a diagram of the LFSR structure, a table of the LFSR's state transitions, and a table of the LFSR's output sequence. The LFSR structure diagrams show the feedback connections and the output tap. The state transition tables show the next state for each current state. The output sequence tables show the output for each state. The output sequences are labeled with the LFSR's output sequence number (e.g., 123, 124, 125, 126, 127, 128, 129, 131, 130, 132).

Figure 11 displays 12 examples of the 128-bit  $2^2$ -ary LFSR, arranged in a 3x4 grid. Each example is labeled with a number (133 to 144) and a multiplier (\*). Each example includes a diagram of the LFSR structure, a table of the LFSR's state transitions, and a table of the LFSR's output sequence. The LFSR structure diagrams show the feedback connections and the output tap. The state transition tables show the next state for each current state. The output sequence tables show the output for each state. The output sequences are labeled with the LFSR's output sequence number (e.g., 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144).

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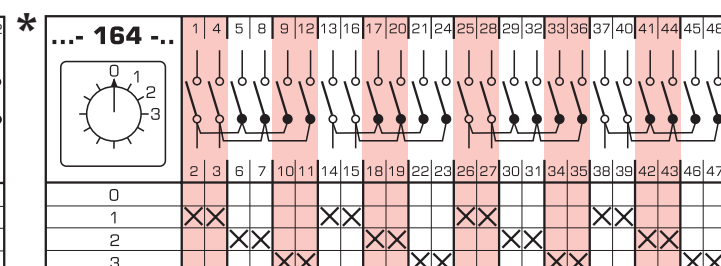
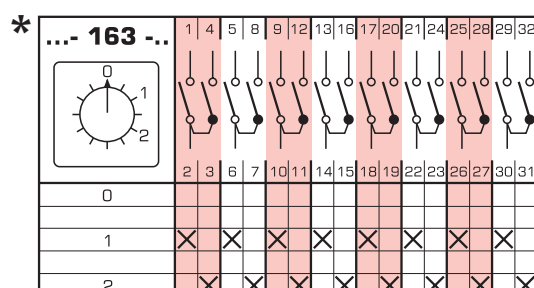
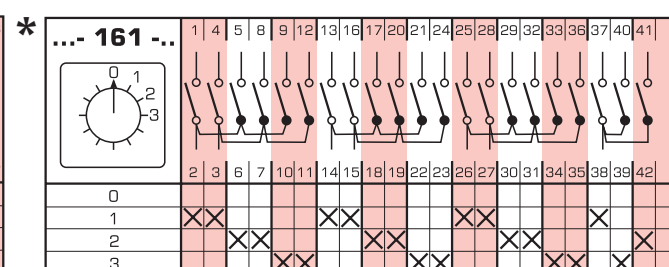
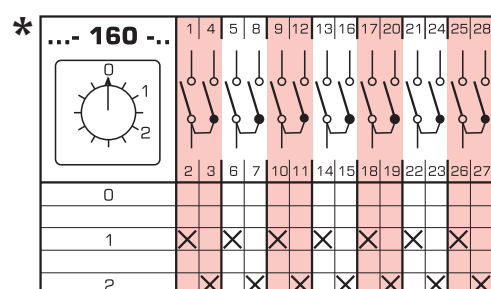
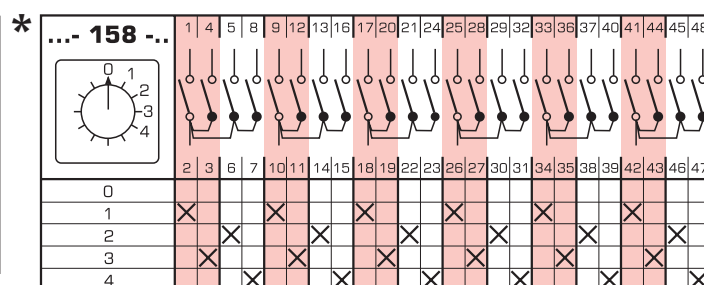
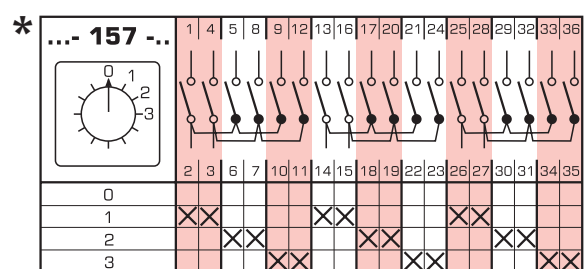
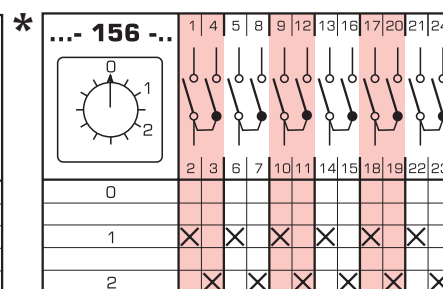
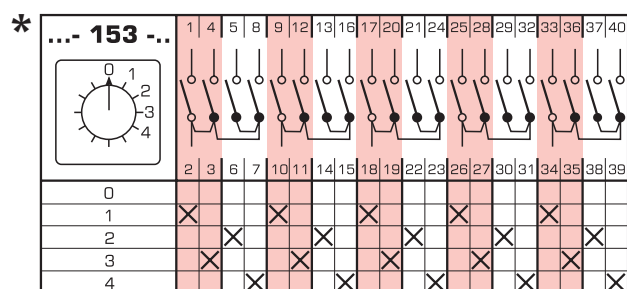
## Multiposition switches with "0" (0-1-2...) position



\* Only in versions U, OU

\* See dimensions on pages 181-184

## Multiposition switches with "0" (0-1-2...) position



\* Only in versions U, OU

\* See dimensions on pages 181-184

## Multiposition switches without "O" position

Table 143.

| Switching program | Diagram number |     |
|-------------------|----------------|-----|
| 1-pole            | 3-position     | 82  |
|                   | 4-position     | 83  |
|                   | 5-position     | 84  |
|                   | 6-position     | 85  |
|                   | 7-position     | 101 |
|                   | 8-position     | 102 |
|                   | 9-position     | 103 |
|                   | 10-position    | 104 |
|                   | 11-position    | 105 |
|                   | 12-position    | 106 |
| 2-pole            | 3-position     | 86  |
|                   | 4-position     | 87  |
|                   | 5-position     | 88  |
|                   | 6-position     | 89  |
|                   | 7-position     | 117 |
|                   | 8-position     | 118 |
|                   | 9-position     | 119 |
|                   | 10-position    | 120 |
| 3-pole            | 3-position     | 93  |
|                   | 4-position     | 94  |
|                   | 5-position     | 95  |
|                   | 6-position     | 96  |
|                   | 7-position     | 133 |
|                   | 8-position     | 134 |
| multi-pole        | 3-position     | 141 |
|                   | 4-position     | 142 |
|                   | 5-position     | 143 |
|                   | 6-position     | 144 |
|                   | 3-position     | 149 |
|                   | 4-position     | 150 |
|                   | 3-position     | 154 |
|                   | 4-position     | 155 |
|                   | 3-position     | 159 |
|                   | 3-position     | 162 |

...- 82 -..

...- 83 -..

...- 84 -..

...- 85 -..

...- 101 -..

...- 102 -..

\* ...- 103 -..

\* ...- 104 -..

\* ...- 105 -..

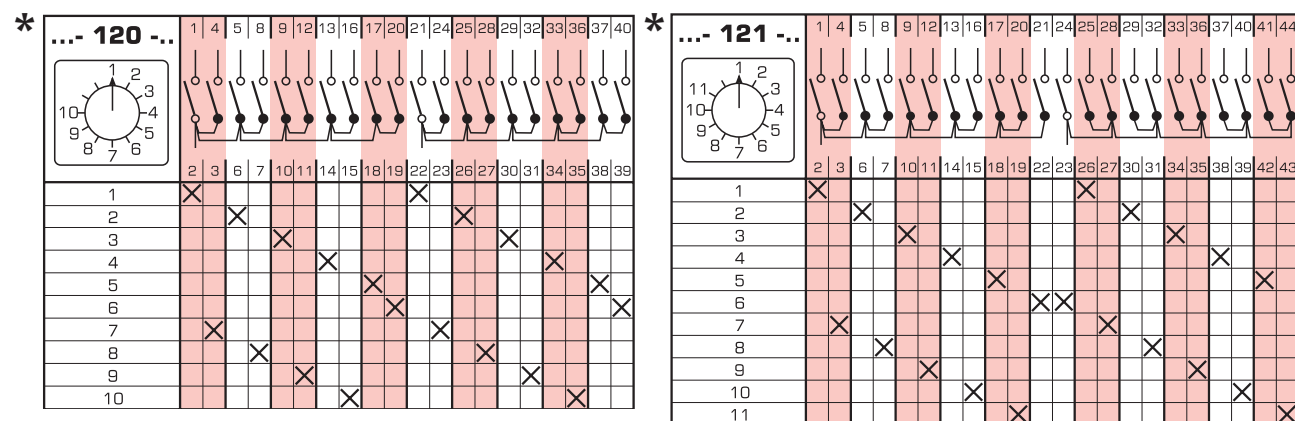
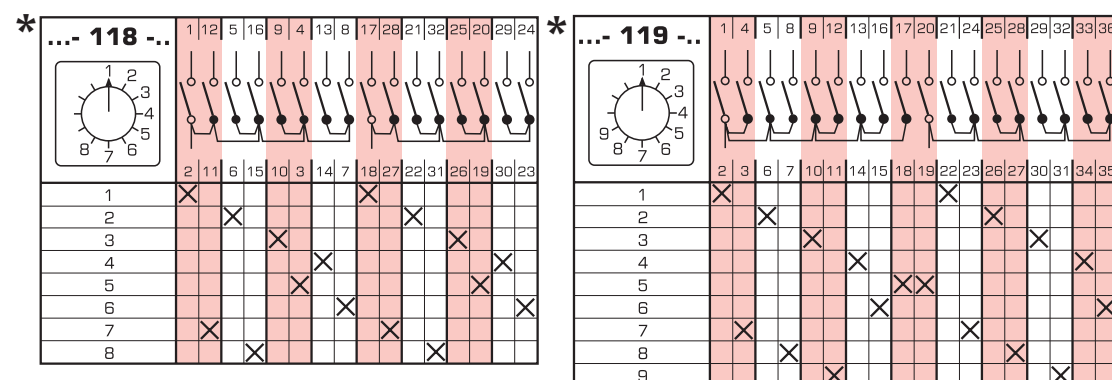
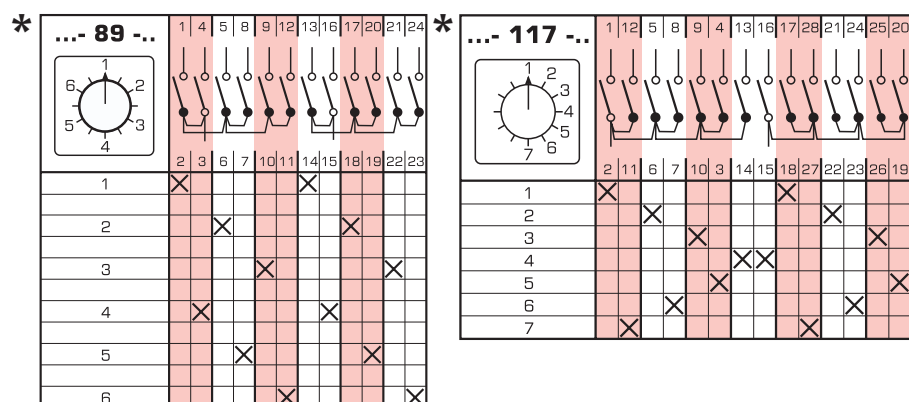
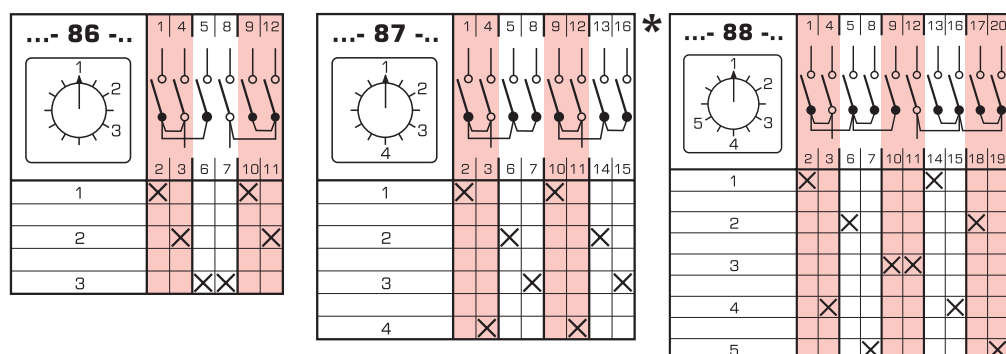
\* ...- 106 -..

\* Only in versions U, OU

\* See dimensions on pages 181-184



## Multiposition switches without "O" position



\* Only in versions U, OU  
 \* See dimensions on pages 181-184

## Multiposition switches without "0" position

**\* ...- 122 -..**

|    | 1 | 4 | 5 | 8 | 9 | 12 | 13 | 16 | 17 | 20 | 21 | 24 | 25 | 28 | 29 | 32 | 33 | 36 | 37 | 40 | 41 | 44 | 45 | 48 |
|----|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1  | X |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 2  |   | X |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 3  |   |   |   | X |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 4  |   |   |   |   | X |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 5  |   |   |   |   |   | X  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 6  |   |   |   |   |   |    | X  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 7  |   | X |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 8  |   |   | X |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 9  |   |   |   | X |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 10 |   |   |   |   | X |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 11 |   |   |   |   |   | X  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 12 |   |   |   |   |   |    | X  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

**\* ...- 96 -..**

|   | 1 | 4 | 5 | 8 | 9 | 12 | 13 | 16 | 17 | 20 | 21 | 24 | 25 | 28 | 29 | 32 | 33 | 36 |
|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | X |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 2 |   | X |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 3 |   |   | X |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 4 |   |   |   | X |   |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 5 |   |   |   |   | X |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 6 |   |   |   |   |   | X  |    |    |    |    |    |    |    |    |    |    |    |    |

**\* ...- 93 -..**

|   | 1 | 4 | 5 | 8 | 9 | 12 | 13 | 16 | 17 |
|---|---|---|---|---|---|----|----|----|----|
| 1 | X |   |   |   |   |    |    |    |    |
| 2 |   | X |   |   |   |    |    |    |    |
| 3 |   |   | X |   |   |    |    |    |    |

**\* ...- 94 -..**

|   | 1 | 4 | 5 | 8 | 9 | 12 | 13 | 16 | 17 | 20 | 21 | 24 |
|---|---|---|---|---|---|----|----|----|----|----|----|----|
| 1 | X |   |   |   |   |    |    |    |    |    |    |    |
| 2 |   | X |   |   |   |    |    |    |    |    |    |    |
| 3 |   |   | X |   |   |    |    |    |    |    |    |    |
| 4 |   |   |   | X |   |    |    |    |    |    |    |    |

**\* ...- 95 -..**

|   | 1 | 4 | 5 | 8 | 9 | 12 | 13 | 16 | 17 | 20 | 21 | 24 | 25 | 28 | 29 |
|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|
| 1 | X |   |   |   |   |    |    |    |    |    |    |    |    |    |    |
| 2 |   | X |   |   |   |    |    |    |    |    |    |    |    |    |    |
| 3 |   |   | X |   |   |    |    |    |    |    |    |    |    |    |    |
| 4 |   |   |   | X |   |    |    |    |    |    |    |    |    |    |    |
| 5 |   |   |   |   | X |    |    |    |    |    |    |    |    |    |    |

**\* ...- 133 -..**

|   | 1 | 12 | 5 | 8 | 9 | 4 | 13 | 16 | 17 | 28 | 21 | 24 | 25 | 20 | 29 | 40 | 33 | 36 | 37 | 32 | 41 |
|---|---|----|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | X |    |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 2 |   | X  |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 3 |   |    | X |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 4 |   |    |   | X |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 5 |   |    |   |   | X |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 6 |   |    |   |   |   | X |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 7 |   |    |   |   |   |   | X  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

**\* ...- 134 -..**

|   | 1 | 12 | 5 | 16 | 9 | 4 | 13 | 8 | 17 | 28 | 21 | 32 | 25 | 20 | 29 | 24 | 33 | 44 | 37 | 48 | 41 | 36 | 45 | 40 |
|---|---|----|---|----|---|---|----|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | X |    |   |    |   |   |    |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 2 |   | X  |   |    |   |   |    |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 3 |   |    | X |    |   |   |    |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 4 |   |    |   | X  |   |   |    |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 5 |   |    |   |    | X |   |    |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 6 |   |    |   |    |   | X |    |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 7 |   |    |   |    |   |   | X  |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 8 |   |    |   |    |   |   |    | X |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

**\* ...- 141 -..**

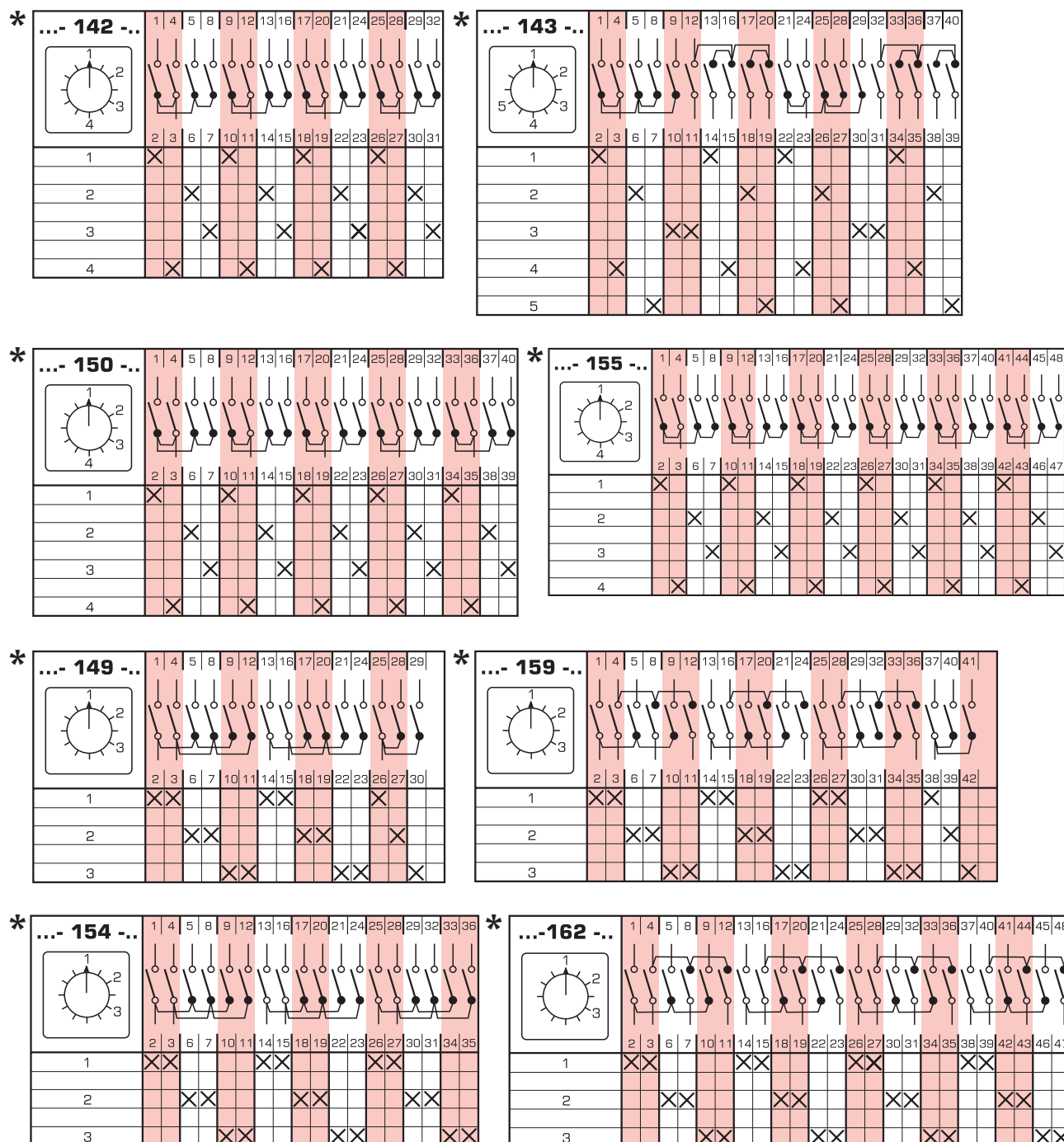
|   | 1 | 4 | 5 | 8 | 9 | 12 | 13 | 16 | 17 | 20 | 21 | 24 |
|---|---|---|---|---|---|----|----|----|----|----|----|----|
| 1 | X |   |   |   |   |    |    |    |    |    |    |    |
| 2 |   | X |   |   |   |    |    |    |    |    |    |    |
| 3 |   |   | X |   |   |    |    |    |    |    |    |    |

**\* ...- 144 -..**

|   | 1 | 4 | 5 | 8 | 9 | 12 | 13 | 16 | 17 | 20 | 21 | 24 | 25 | 28 | 29 | 32 | 33 | 36 | 37 | 40 | 41 | 44 | 45 | 48 |
|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | X |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 2 |   | X |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 3 |   |   | X |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 4 |   |   |   | X |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 5 |   |   |   |   | X |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 6 |   |   |   |   |   | X  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

\* Only in versions U, OU  
\* See dimensions on pages 181-184

## Multiposition switches without "O" position

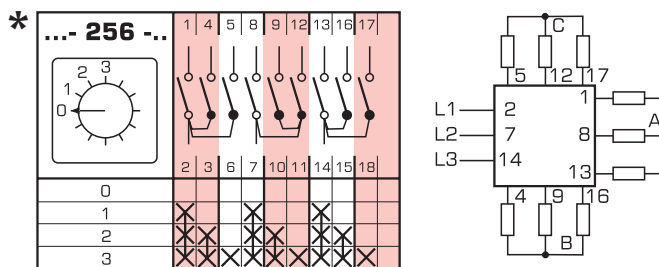
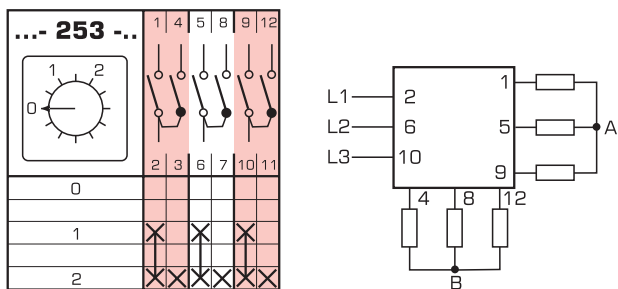
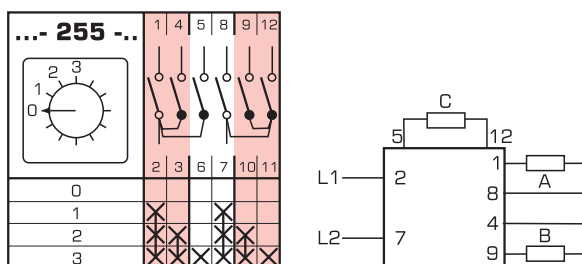
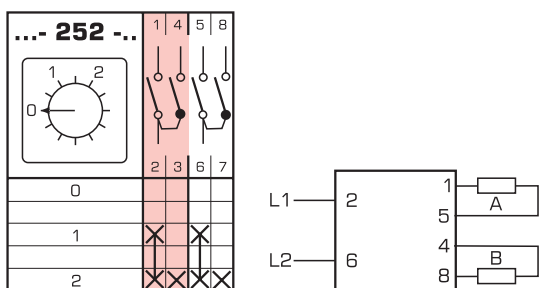
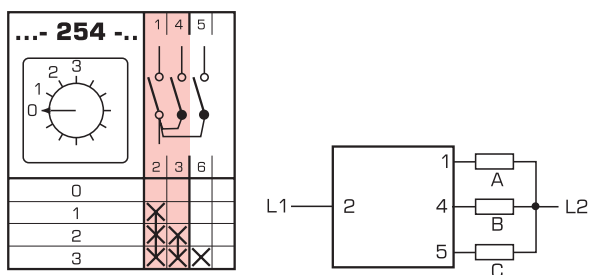
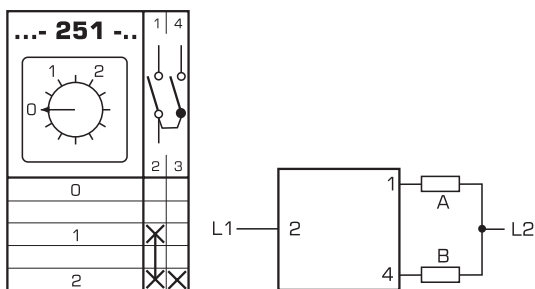


\* Only in versions U, OU  
\* See dimensions on pages 181-184

## Switchgroups with "O" position

Table 144.

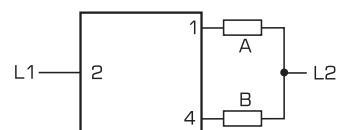
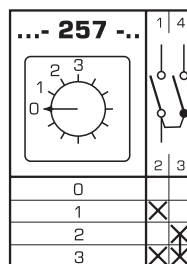
| Switching program |         | Diagram number |
|-------------------|---------|----------------|
| 1-pole            | 2-group | 251            |
|                   | 3-group | 254            |
| 2-pole            | 2-group | 252            |
|                   | 3-group | 255            |
| 3-pole            | 2-group | 253            |
|                   | 3-group | 256            |



## Serial switches

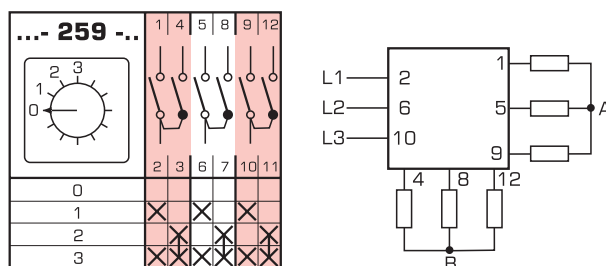
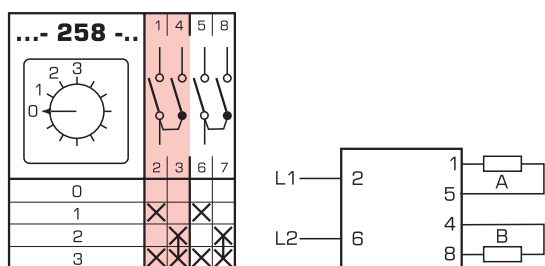
Table 145.

| Switching program | Diagram number |
|-------------------|----------------|
| 1-pole            | 257            |
| 2-pole            | 258            |
| 3-pole            | 259            |



\* Only in versions U, OU  
\* See dimensions on pages 181-184

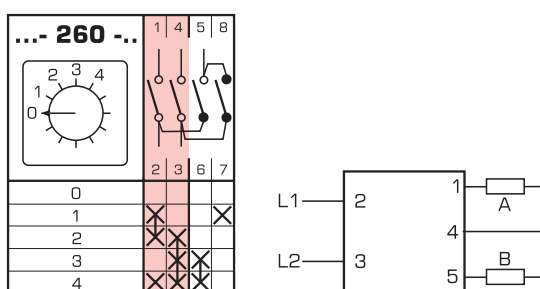
## Serial switches



## Serial-parallel switches

Table 146.

| Switching program | Diagram number |
|-------------------|----------------|
| 2-pole            | 260            |

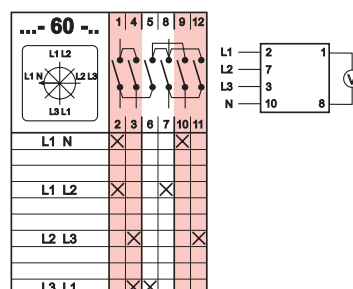
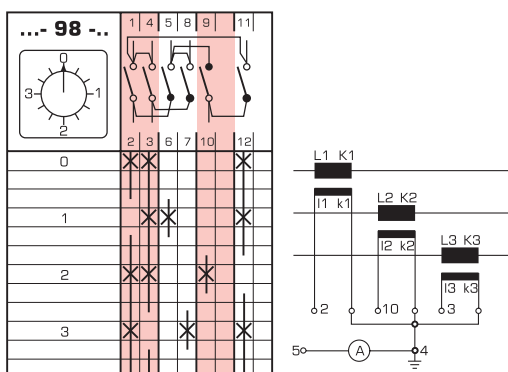
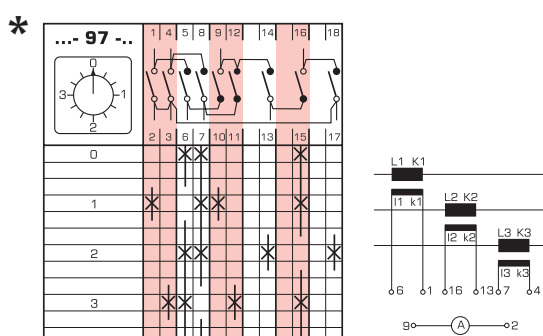
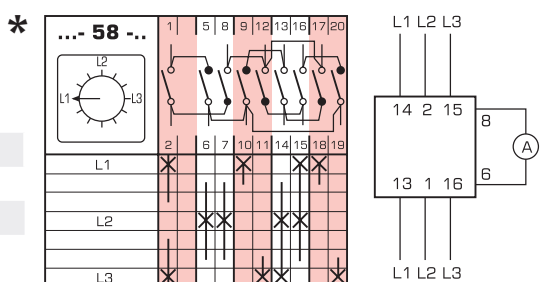


## MEASUREMENT SWITCHES FOR VOLTAGE AND CURRENT

### Ammeter switches

Table 147.

| Switching program                | Diagram number |
|----------------------------------|----------------|
| phase measurement                | L1-L2-L3 58    |
| phase measurement                | 0-1-2-3 97     |
| phase measurement with grounding | 0-1-2-3 98     |



\* Only in versions U, OU  
\* See dimensions on pages 181-184

## MEASUREMENT SWITCHES FOR VOLTAGE AND CURRENT

### Measurement switches for voltage and current, voltmeter switches without "0" position

Table 148.

| Switching program                        | Diagram number |
|------------------------------------------|----------------|
| 3 phase voltages                         | 68             |
| 3 phase-to-phase voltages                | 67             |
| 3 phase-to-phase voltages+ phase voltage | 66             |

**...- 66 -..**

|       |  |  |  |  |  |
|-------|--|--|--|--|--|
| L3 L1 |  |  |  |  |  |
| L2 L3 |  |  |  |  |  |
| L1 L2 |  |  |  |  |  |
| 0     |  |  |  |  |  |
| L1 N  |  |  |  |  |  |
| L2 N  |  |  |  |  |  |
| L3 N  |  |  |  |  |  |

L1 — 9    2  
L2 — 5  
L3 — 1  
N — 12    3

**...- 67 -..**

|       |  |  |  |  |  |
|-------|--|--|--|--|--|
| 0     |  |  |  |  |  |
| L1 L2 |  |  |  |  |  |
| L2 L3 |  |  |  |  |  |
| L3 L1 |  |  |  |  |  |

L1 — 3    4  
L2 — 7  
L3 — 6    1

**...- 68 -..**

|      |  |  |  |  |  |
|------|--|--|--|--|--|
| 0    |  |  |  |  |  |
| L1 N |  |  |  |  |  |
| L2 N |  |  |  |  |  |
| L3 N |  |  |  |  |  |

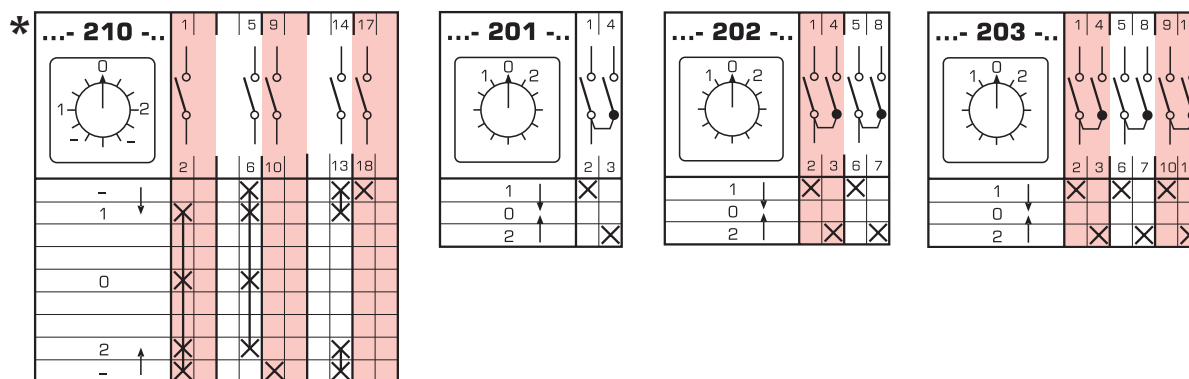
L1 — 3    4  
L2 — 2  
L3 — 6    8  
N — 7

## SWITCHES WITH SELF-RELING BACK TO THE OUTPUT POSITION

### Switch with "0" position (1-0-2), return to "0" from both sides

Table 149.

| Switching program                                                                                    | Diagram number |
|------------------------------------------------------------------------------------------------------|----------------|
| switches with automatic return to initial position, switch with function of left - right pushbuttons | 210            |
| switch with "0" position (1-0-2) return to "0" from both sides                                       |                |
| 1-pole                                                                                               | 201            |
| 2-pole                                                                                               | 202            |
| 3-pole                                                                                               | 203            |



\* Only in versions U, OU

\* See dimensions on pages 181-184

## SWITCHES WITH AUTOMATIC RETURN TO INITIAL POSITION

### Switches without "0" (0-2) position

Table 150.

| Switching program                                                                                       | Diagram number |
|---------------------------------------------------------------------------------------------------------|----------------|
| 1 normally closed contact + 1 normally open contact                                                     | 204            |
| 2 normally closed contacts + 2 normally open contacts                                                   | 205            |
| 3 normally closed contacts + 3 normally open contacts                                                   | 206            |
| to control a contactor – 1 normally open contact (turn right) and 1 normally closed contact (turn left) | 207            |
| 1 normally open contact and 1 normally closed contact, when turning left and right                      | 208            |
| 2 normally open contacts and 2 normally closed contacts, when turning left and right                    | 209            |

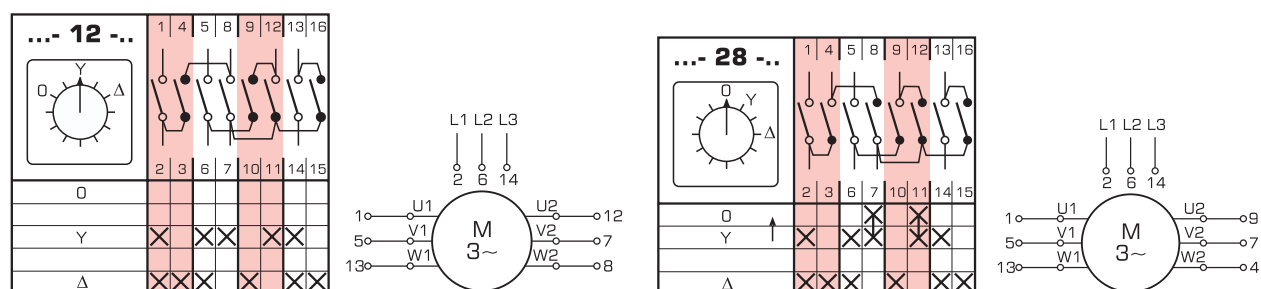
  

## SWITCH DISCONNECTORS FOR MOTOR CONTROLLING

### Star-delta switch disconnectors

Table 151.

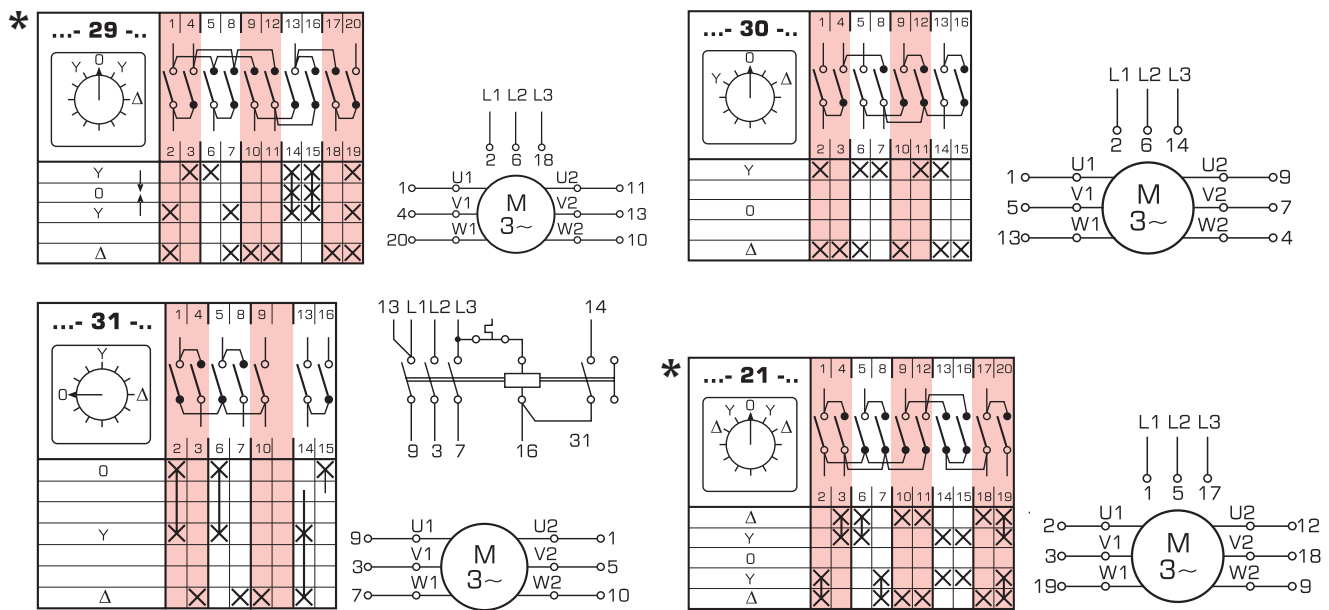
| Switching program                             | Diagram number |
|-----------------------------------------------|----------------|
| basic version                                 | 12             |
| Y/ $\Delta$ back from Y to 0                  | 28             |
| with counter-current braking back from Y to 0 | 29             |
| as a voltage switch                           | 30             |
| for operation with contactor                  | 31             |
| bidirectional (left-right)                    | 21             |



\* See dimensions on pages 181-184



## Star-delta switch disconnectors

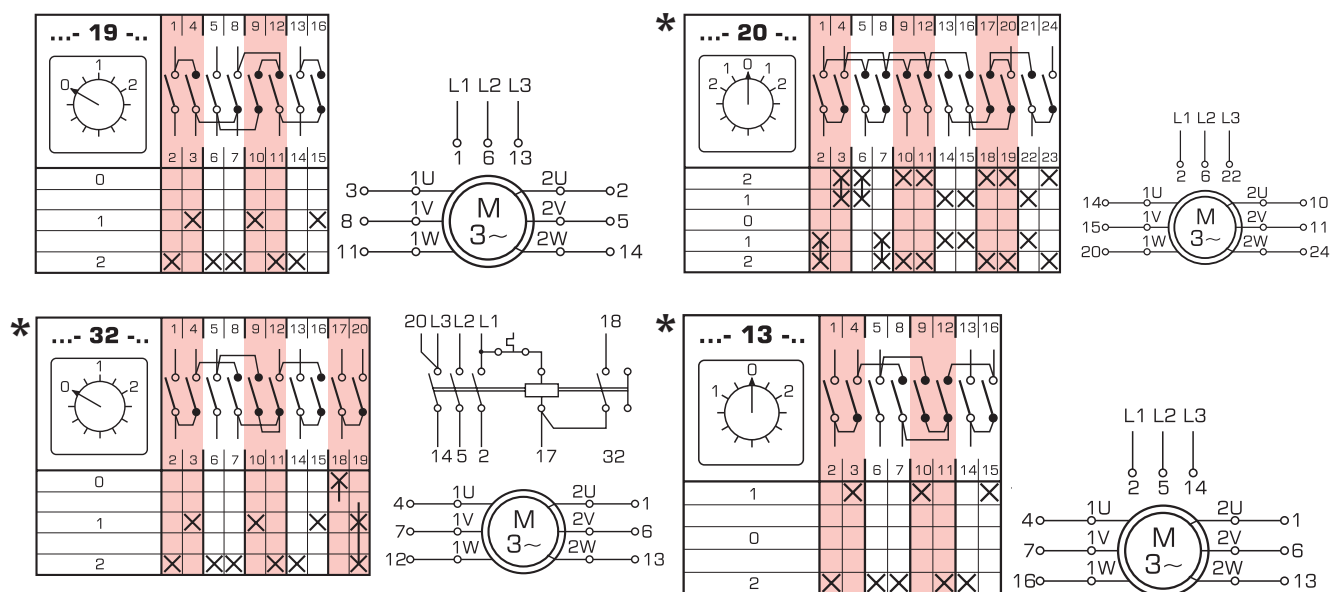


\* Only in versions U, OU

## Switch disconnectors in a Dahlander's system

Table 152.

| Switching program                                                                                             | Diagram number |
|---------------------------------------------------------------------------------------------------------------|----------------|
| Switch disconnectors for motor controlling,<br>switch disconnectors in a Dahlander's<br>system dipolar Δ-0-YY | 13             |
| Dipolar 0-Δ-YY                                                                                                | 19             |
| Dipolar bidirectional YY-Δ-0-Δ-YY                                                                             | 20             |
| Dipolar and contactor controlling                                                                             | 32             |



\* Only in versions U, OU

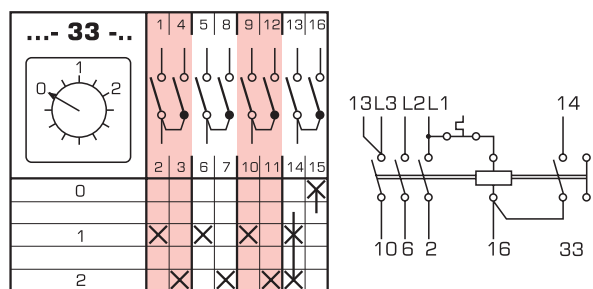
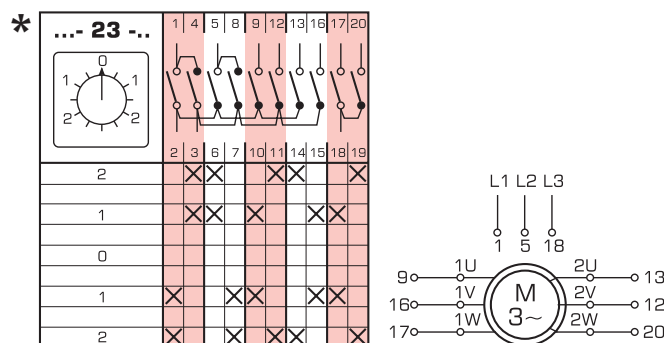
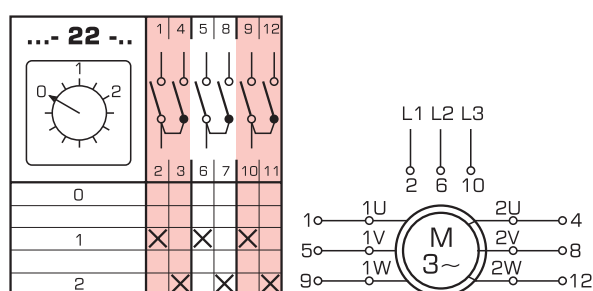
\* See dimensions on pages 181-184

## SWITCH DISCONNECTORS FOR MOTOR CONTROLLING

### Switch disconnectors for two-winding motors

Table 153.

| Switching program         | Diagram number |
|---------------------------|----------------|
| 0-1-2                     | 22             |
| bidirectional             | 23             |
| to control the contactors | 33             |

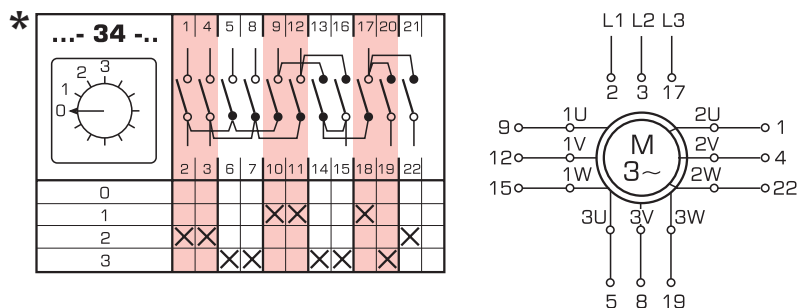


\* Only in versions U, OU  
\* See dimensions on pages 181-184

### Switch disconnectors for three-speed motors

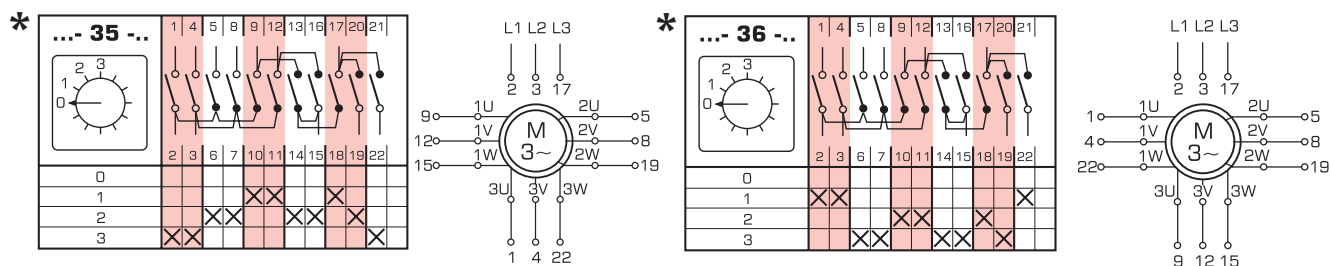
Table 154.

| Switching program                                            | Diagram number |
|--------------------------------------------------------------|----------------|
| 2 windings 0-Δ-Y-YY (with 3 speeds in a Dahlander's system)  | 34             |
| 2 windings 0-Δ-YY-Y (1 and 2 speeds in a Dahlander's system) | 35             |
| 2 windings 0-Y-Δ-YY (2 and 3 speeds in a Dahlander's system) | 36             |



\* Only in versions U, OU  
\* See dimensions on pages 181-184

## Switch disconnectors for three-speed motors



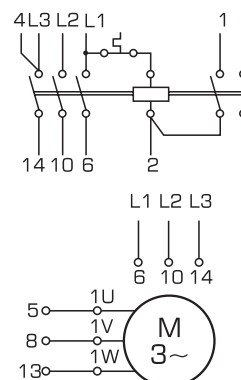
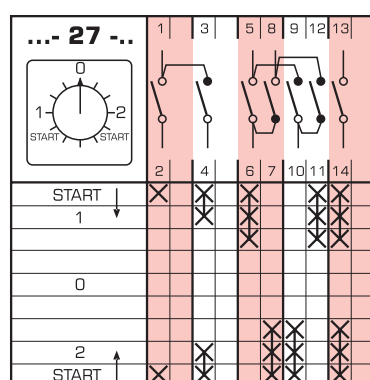
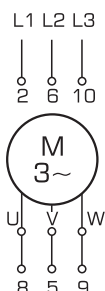
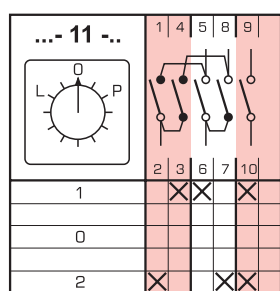
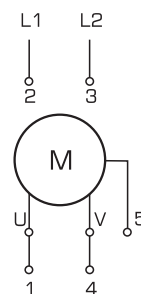
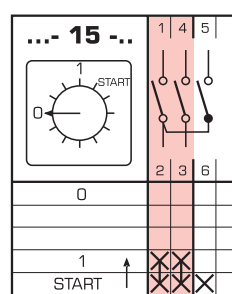
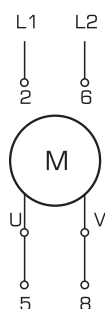
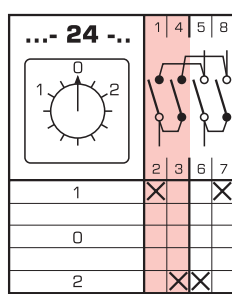
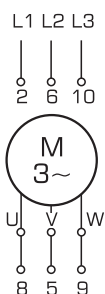
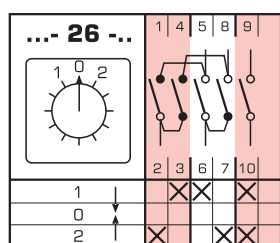
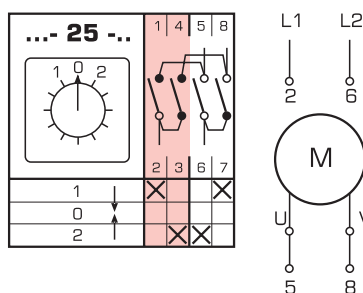
\* Only in versions U, OU

## SWITCH DISCONNECTORS FOR MOTOR CONTROLLING

### Reversing switches

Table 155.

| Switching program                    | Diagram number |
|--------------------------------------|----------------|
| 2-pole                               | 24             |
| 2-pole, return to "0" position       | 25             |
| 3-pole                               | 11             |
| 3-pole, return to "0" position       | 26             |
| to control a contactor               | 27             |
| starting switches for 1-phase motors | 15             |



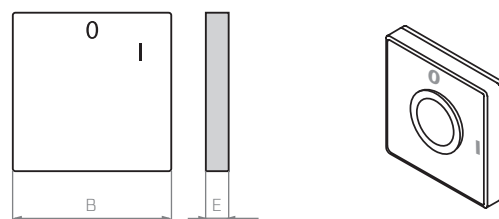
\* Only in versions U, OU

\* See dimensions on pages 181-184

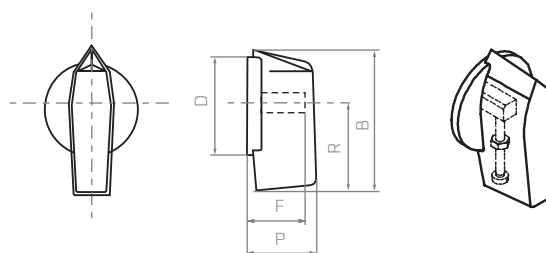
## OVERALL DIMENSIONS

### Standard version front plate

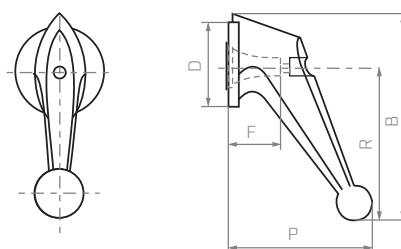
| Group | B<br>ø | E   |
|-------|--------|-----|
| A0    | 48     | 7,5 |
| A1    | 65     | 9,5 |
| A2    | 90     | 9,5 |
| A3    | 132    | 10  |



| Group | D<br>ø | P    | R    | B    | F  |
|-------|--------|------|------|------|----|
| A0    | 27,5   | 19   | 23,5 | 39,5 | 16 |
| A1    | 35     | 25   | 32   | 53   | 20 |
| A2    | 48     | 32   | 43,5 | 70,5 | 26 |
| A3    | 75     | 46,5 | 63,5 | 104  | 39 |

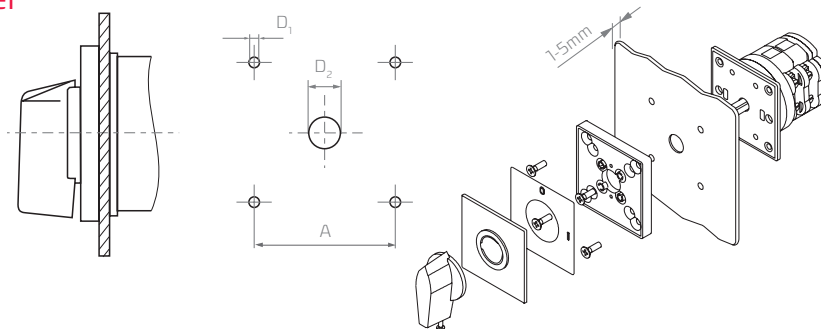


| Group | D<br>ø | P  | R    | B     | F  |
|-------|--------|----|------|-------|----|
| A1    | 35     | 51 | 61,5 | 81,5  | 15 |
| A2    | 48     | 64 | 79,5 | 105,5 | 19 |
| A3    | 75     | 88 | 115  | 155,5 | 28 |



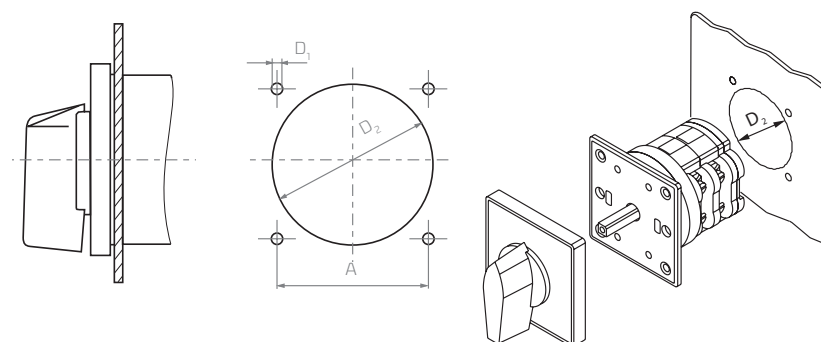
### Switches installed under the panel

| Group | D1<br>ø | D2<br>ø | A<br>ø |
|-------|---------|---------|--------|
| A0    | 5       | 14      | 36     |
| A1    | 5       | 14      | 48     |
| A2    | 6       | 16      | 72     |
| A3    | 6       | 18      | 104    |



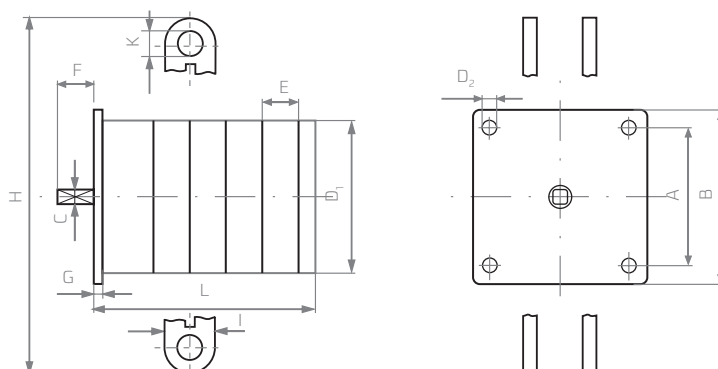
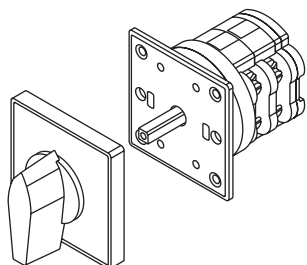
### Switches installed on the panel

| Group | D1<br>ø | D2<br>ø | A<br>ø |
|-------|---------|---------|--------|
| A0    | 5       | 42,5    | 36     |
| A1    | 5       | 59      | 48     |
| A2    | 6       | 82      | 72     |



## OVERALL DIMENSIONS

### U switches to be built-in



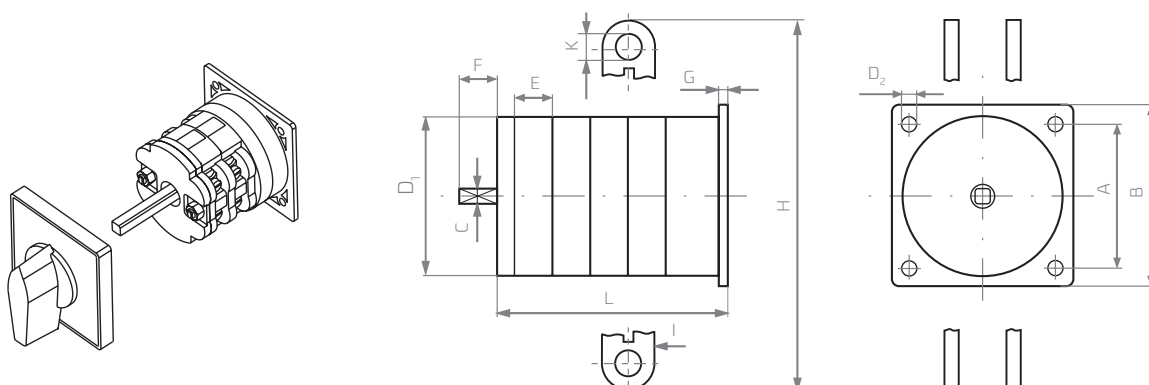
| Group | Switch type | D <sub>1</sub> | D <sub>2</sub> | A   | B   | C  | E    | F    | G | H   | I  | K    |
|-------|-------------|----------------|----------------|-----|-----|----|------|------|---|-----|----|------|
|       |             | ø              | ø              | φ   | φ   | φ  |      |      |   |     |    |      |
| A0    | 4G 10       | 38             | 4,3            | 36  | 48  | 6  | 9,6  | 22   | 4 | –   | –  | –    |
| A1    | 4G 16       | 57             | 4,3            | 48  | 65  | 6  | 13,5 | 26   | 3 | –   | –  | –    |
|       | 4G 25       | 57             | 4,3            | 48  | 65  | 6  | 13,5 | 26   | 3 | –   | –  | –    |
| A2    | 4G 40       | 80             | 5,3            | 72  | 90  | 8  | 18   | 31   | 5 | –   | –  | –    |
|       | 4G 63, 80   | 80             | 5,3            | 72  | 90  | 8  | 18   | 31   | 5 | –   | –  | –    |
| A3    | 4G 100      | 120            | 5,3            | 104 | 132 | 10 | 29   | 37,5 | 6 | –   | –  | –    |
|       | 4G 200      | 120            | 5,3            | 104 | 132 | 10 | 29   | 37,5 | 6 | 145 | 20 | 10,5 |
|       | 4G 400      | 120            | 5,3            | 104 | 132 | 10 | 29   | 37,5 | 6 | 170 | 45 | 13   |
|       | 4G 630      | 120            | 5,3            | 104 | 132 | 10 | 29   | 37,5 | 6 | 190 | 74 | 17,5 |
|       | 4G 800      | 120            | 5,3            | 104 | 132 | 10 | 29   | 37,5 | 6 | 260 | 50 | 17,5 |
|       | 4G 1200     | 120            | 5,3            | 104 | 132 | 10 | 29   | 37,5 | 6 | 260 | 80 | 17,5 |

| Group | Switch type | L (depending on the number of switching elements) |      |      |       |       |       |       |       |       |       |       |       |
|-------|-------------|---------------------------------------------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|       |             | 1                                                 | 2    | 3    | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    |
| A0    | 4G 10       | 33                                                | 42,5 | 52   | 61,5  | 71    | 81    | 90,5  | 100   | 109,5 | 119   | 129   | 138,5 |
| A1    | 4G 16       | 46,5                                              | 60   | 73,5 | 87,5  | 101   | 114,5 | 128,5 | 143   | 156   | 169,5 | 183   | 196,5 |
|       | 4G 25       | 46,5                                              | 60   | 73,5 | 87,5  | 101   | 114,5 | 128,5 | 143   | 156   | 169,5 | 183   | 196,5 |
| A2    | 4G 40       | 56,5                                              | 74,5 | 92,5 | 110,5 | 128,5 | 146,5 | 164,5 | 182,5 | 200,5 | 218,5 | 236,5 | 254,5 |
|       | 4G 63, 80   | 56,5                                              | 74,5 | 92,5 | 110,5 | 128,5 | 146,5 | 164,5 | 182,5 | 200,5 | 218,5 | 236,5 | 254,5 |
| A3    | 4G 100      | 77                                                | 107  | 136  | 166   | 196   | 226   | 284   | 314   | 343   | 373   | 402   | 432   |
|       | 4G 200      | 77                                                | 107  | 136  | 166   | 196   | 226   | 284   | 314   | 343   | 373   | 402   | 432   |
|       | 4G 400      | –                                                 | 107  | –    | 166   | –     | 226   | –     | 314   | –     | 373   | –     | 432   |
|       | 4G 630      | –                                                 | –    | 136  | –     | –     | 226   | –     | –     | 343   | –     | –     | 432   |
|       | 4G 800      | –                                                 | 107  | –    | 166   | –     | 226   | –     | 314   | –     | 373   | –     | 432   |
|       | 4G 1200     | –                                                 | –    | 136  | –     | –     | 226   | –     | –     | 343   | –     | –     | 432   |

protection degree IP40 (from the front plate side), IP55 in a special version – S1

## OVERALL DIMENSIONS

### OU switches to be built in a housing



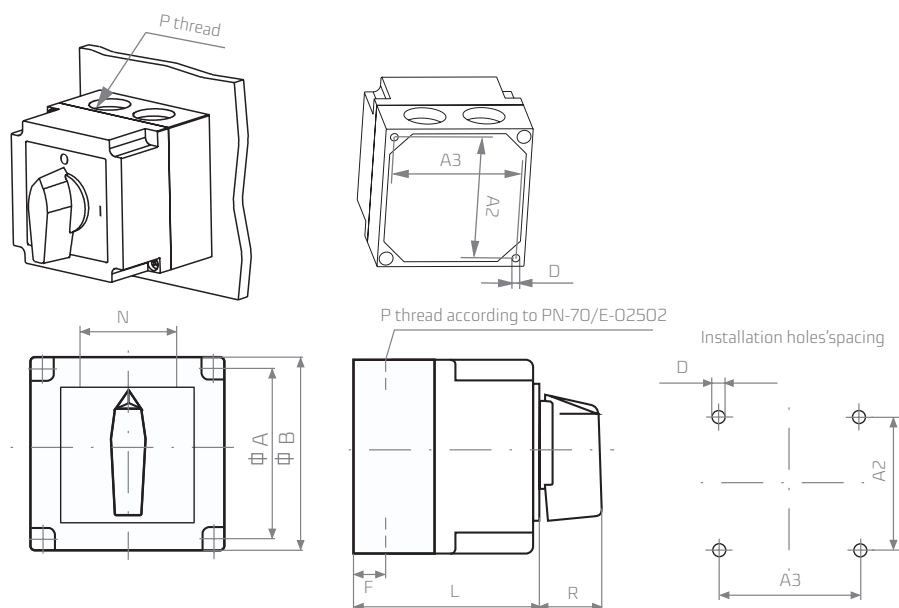
| Group | Switch type | D <sub>1</sub> | D <sub>2</sub> | A   | B   | C  | E    | F  | G | H   | I  | K    |
|-------|-------------|----------------|----------------|-----|-----|----|------|----|---|-----|----|------|
|       |             | ∅              | ∅              | ∅   | ∅   | ∅  |      |    |   |     |    |      |
| A0    | 4G 10       | 38             | 4,3            | 36  | 48  | 6  | 9,6  | 32 | 4 | –   | –  | –    |
| A1    | 4G 16       | 57             | 4,3            | 48  | 65  | 6  | 13,5 | 35 | 3 | –   | –  | –    |
|       | 4G 25       | 57             | 4,3            | 48  | 65  | 6  | 13,5 | 35 | 3 | –   | –  | –    |
| A2    | 4G 40       | 80             | 5,3            | 72  | 90  | 8  | 18   | 40 | 5 | –   | –  | –    |
|       | 4G 63,80    | 80             | 5,3            | 72  | 90  | 8  | 18   | 40 | 5 | –   | –  | –    |
| A3    | 4G 100      | 120            | 5,3            | 104 | 132 | 10 | 29   | 50 | 6 | –   | –  | –    |
|       | 4G 200      | 120            | 5,3            | 104 | 132 | 10 | 29   | 50 | 6 | 145 | 20 | 10,5 |
|       | 4G 400      | 120            | 5,3            | 104 | 132 | 10 | 29   | 50 | 6 | 170 | 45 | 13   |
|       | 4G 630      | 120            | 5,3            | 104 | 132 | 10 | 29   | 50 | 6 | 190 | 74 | 17,5 |
|       | 4G 800      | 120            | 5,3            | 104 | 132 | 10 | 29   | 50 | 6 | 260 | 50 | 17,5 |
|       | 4G 1200     | 120            | 5,3            | 104 | 132 | 10 | 29   | 50 | 6 | 260 | 80 | 17,5 |

| Group | Switch type | L (depending on the number of switching elements) |      |      |       |       |       |       |       |       |       |       |       |
|-------|-------------|---------------------------------------------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|       |             | 1                                                 | 2    | 3    | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    |
| A0    | 4G 10       | 33                                                | 46,5 | 56   | 65,5  | 75    | 85    | 94,5  | 104   | 113,5 | 123   | 133   | 142,5 |
| A1    | 4G 16       | 46,5                                              | 60   | 73,5 | 87,5  | 101   | 114,5 | 128,5 | 143   | 156   | 169,5 | 183   | 196,5 |
|       | 4G 25       | 46,5                                              | 60   | 73,5 | 87,5  | 101   | 114,5 | 128,5 | 143   | 156   | 169,5 | 183   | 196,5 |
| A2    | 4G 40       | 56,5                                              | 74,5 | 92,5 | 110,5 | 128,5 | 146,5 | 164,5 | 182,5 | 200,5 | 218,5 | 236,5 | 254,5 |
|       | 4G 63,80    | 56,5                                              | 74,5 | 92,5 | 110,5 | 128,5 | 146,5 | 164,5 | 182,5 | 200,5 | 218,5 | 236,5 | 254,5 |
| A3    | 4G 100      | 77                                                | 107  | 136  | 166   | 196   | 226   | 284   | 314   | 343   | 373   | 402   | 432   |
|       | 4G 200      | 77                                                | 107  | 136  | 166   | 196   | 226   | 284   | 314   | 343   | 373   | 402   | 432   |
|       | 4G 400      | –                                                 | 107  | –    | 166   | –     | 226   | –     | 314   | –     | 373   | –     | 432   |
|       | 4G 630      | –                                                 | –    | 136  | –     | –     | 226   | –     | –     | 343   | –     | –     | 432   |
|       | 4G 800      | –                                                 | 107  | –    | 166   | –     | 226   | –     | 314   | –     | 373   | –     | 432   |
|       | 4G 1200     | –                                                 | –    | 136  | –     | –     | 226   | –     | –     | 343   | –     | –     | 432   |

protection degree IP40 (from the front plate side), IP55 in a special version – S1

## INSTALLATION DIMENSIONS

### PK switches in a plastic housing - protection degree IP 55

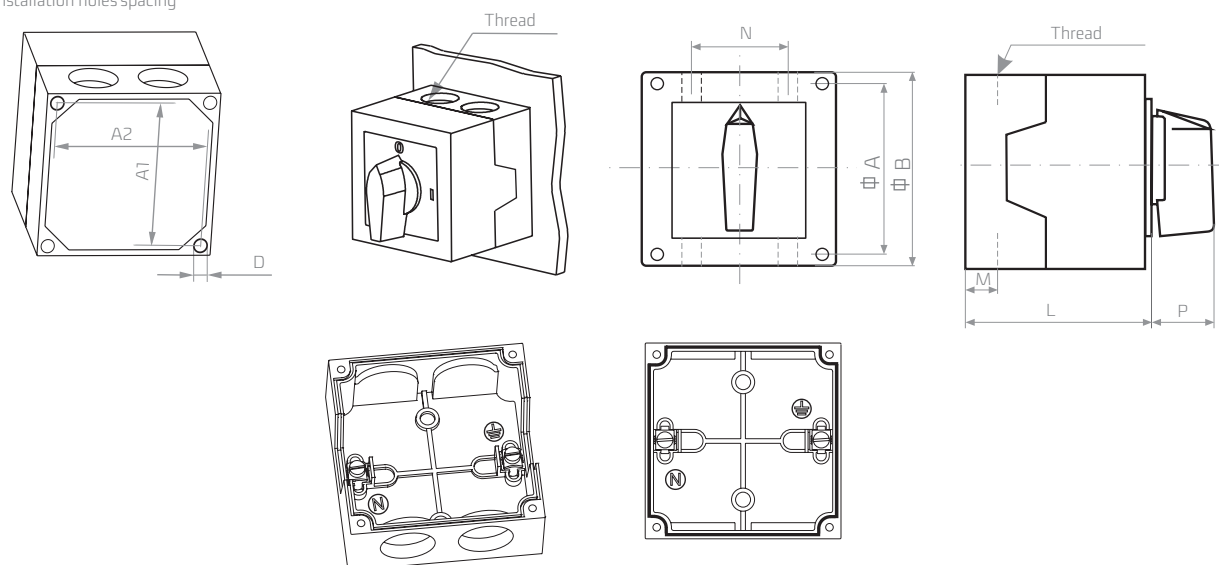


| Group | Switch type  | D   | A   | A2 | A3  | B   | F  | N  | R  | Thread |    | L (depending on the number of the switching elements) |      |     |     |
|-------|--------------|-----|-----|----|-----|-----|----|----|----|--------|----|-------------------------------------------------------|------|-----|-----|
|       |              | ø   | φ   |    |     | φ   |    |    |    | P      | M  | 1                                                     | 2    | 3   | 4   |
| A0    | 4G 10        | 4,3 | 55  | 38 | 54  | 64  | 13 | 25 | 19 | 11     | -  | 55,5                                                  | 55,5 | 75  | 75  |
| A1    | 4G 16        | 4,3 | 75  | 75 | 75  | 85  | 19 | 34 | 25 | 16     | 20 | 77                                                    | 77   | 104 | 104 |
|       | 4G 25        | 4,3 | 75  | 75 | 75  | 85  | 19 | 34 | 25 | 16*    | 20 | 77                                                    | 77   | 104 | 104 |
| A2    | 4G 40        | 5,3 | 109 | 91 | 107 | 120 | 29 | 45 | 32 | 21*    | -  | 95                                                    | 95   | 132 | 132 |
|       | 4G 63, 4G 80 | 5,3 | 109 | 91 | 107 | 120 | 29 | 45 | 32 | 21     | -  | 95                                                    | 95   | 132 | 132 |

\* to order

### PK cam switches in thermoplastic enclosures with IP 65 degree of protection

Installation holes' spacing



| Group | Switch type | D   | A  | B  | A1 | A2 | M  | N  | P  | Thread | L (depending on the number of the switching elements) |        |
|-------|-------------|-----|----|----|----|----|----|----|----|--------|-------------------------------------------------------|--------|
|       |             | ø   | φ  | φ  |    |    |    |    |    |        | 1 or 2                                                | 3 or 4 |
| A0    | 4G 10       | 4,5 | 64 | 75 | 50 | 64 | 14 | 28 | 19 | M20    | 60                                                    | 81,5   |

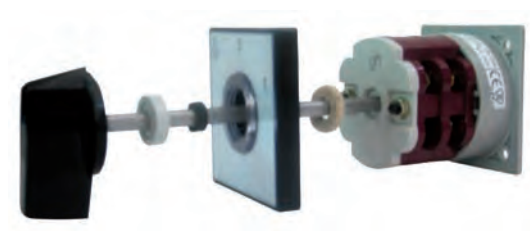


## SPECIAL VERSIONS

### S1 switch with a sealed shaft /protection class IP 55/

Group A0, A1, A2 version U, OU

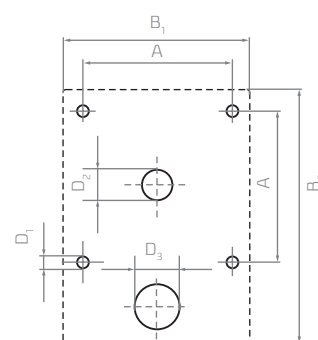
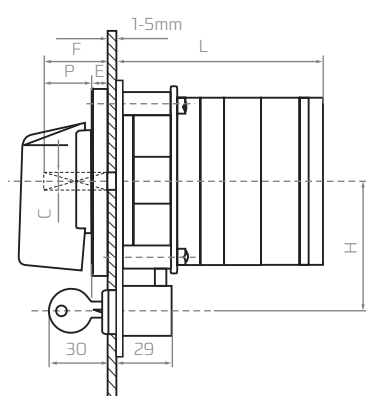
The difference between standard and special versions is the use of a sealing ring on the driving shaft, which guarantees achieving an IP 55 housing tightness.



### S5 switch with a cylindrical lock

Group A1, A2 version U

Blocking when ordered.

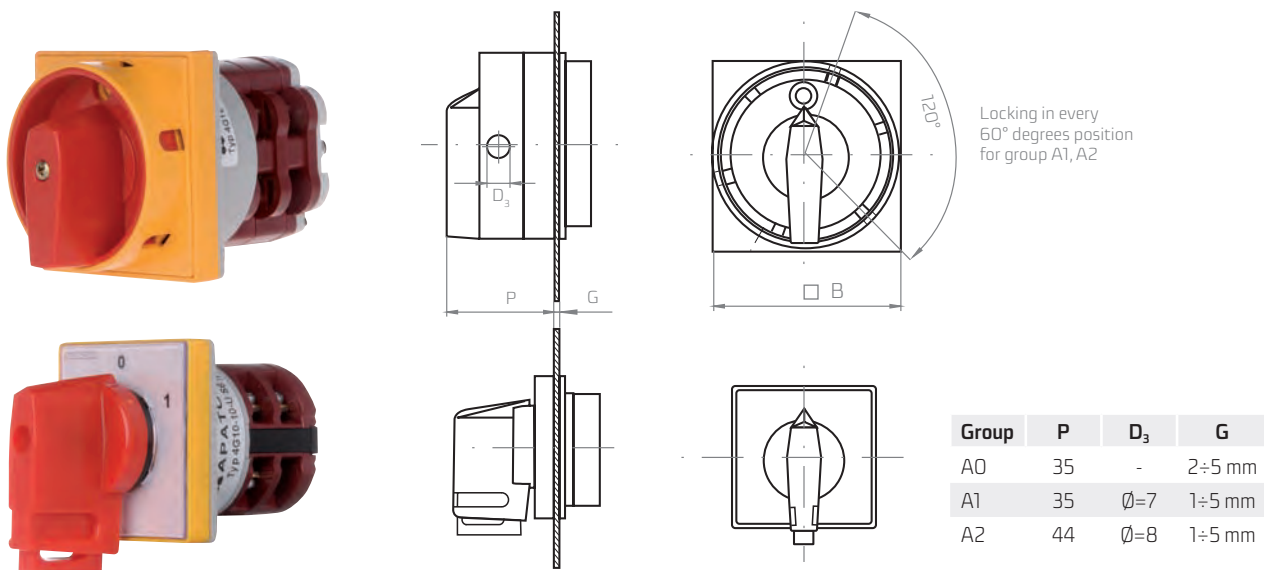


| Group | D <sub>1</sub> | D <sub>2</sub> | D <sub>3</sub> | A  | B <sub>1</sub> | B <sub>2</sub> | C | E   | F  | H  | P  |
|-------|----------------|----------------|----------------|----|----------------|----------------|---|-----|----|----|----|
|       |                |                |                |    |                |                | Φ |     |    |    |    |
| A1    | 5              | 14             | 21,5           | 48 | 65             | 98             | 6 | 9,5 | 26 | 48 | 25 |
| A2    | 6              | 16             | 21,5           | 72 | 90             | 122            | 8 | 9,5 | 31 | 60 | 32 |

| Group | L (depending on the number of the switching elements) |       |       |       |       |       |       |       |       |       |       |       |
|-------|-------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|       | 1                                                     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    |
| A1    | 72,5                                                  | 86    | 99,5  | 113,5 | 127   | 140,5 | 154,5 | 169   | 182   | 195,5 | 209   | 222,5 |
| A2    | 82,5                                                  | 100,5 | 118,5 | 136,5 | 154,5 | 172,5 | 190,5 | 208,5 | 226,5 | 244,5 | 262,5 | 280,5 |

## S6 Switch with padlock blocking

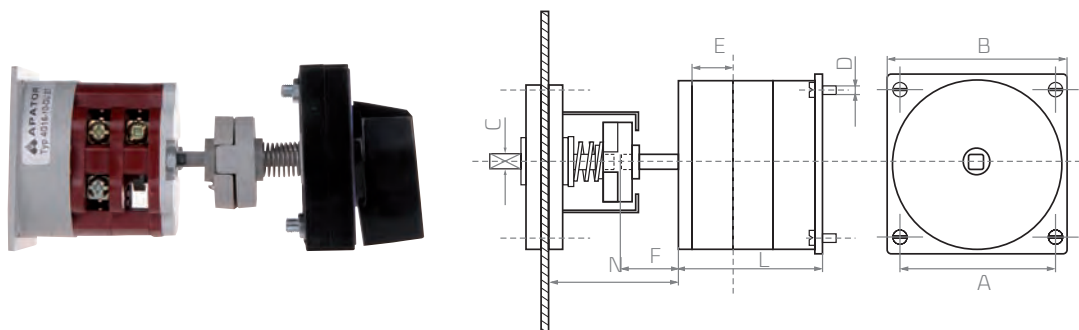
Group A0, A1, A2 version U, OU, PK  
Blocking only in O position



## S7 Switch with a door coupling

Group A1, A2 version OU

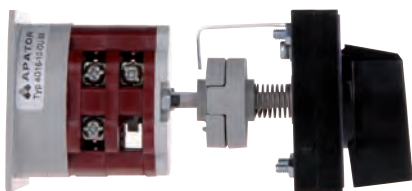
The switch for installation on the back wall of the housing /cubicle/. The knob with a front plate is placed on the cover or on the door.  
The shaft may be lengthened and sealed.



## S8 Switch with a door coupling and a door blocking

Group A1, A2 version OU

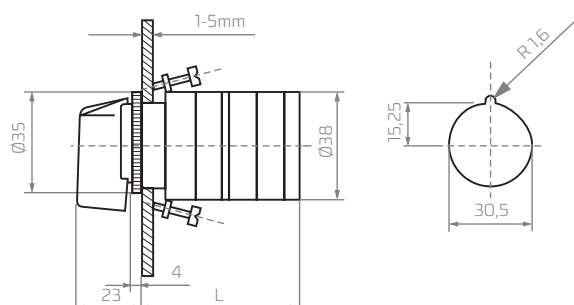
The features are like for S7, but the door can be opened in a O position, for example.



| Group | D | A  | B  | C | E    | F    | N  | L (depending on the number of the switching elements) |      |      |       |       |       |       |       |       |       |       |       |
|-------|---|----|----|---|------|------|----|-------------------------------------------------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|       | φ | φ  | φ  | φ |      |      |    | 1                                                     | 2    | 3    | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    |
| A1    | 4 | 48 | 65 | 6 | 13,5 | 16,5 | 54 | 46,5                                                  | 60   | 73,5 | 87,5  | 101   | 114,5 | 128,5 | 143   | 156   | 169,5 | 183   | 196,5 |
| A2    | 5 | 72 | 90 | 8 | 18   | 17   | 60 | 56,5                                                  | 74,5 | 95,5 | 110,5 | 128,5 | 146,5 | 164,5 | 182,5 | 200,5 | 218,5 | 236,5 | 254,5 |

## S9 Switch for installation in $\varnothing 30,5$ (in control boards with standard holes)

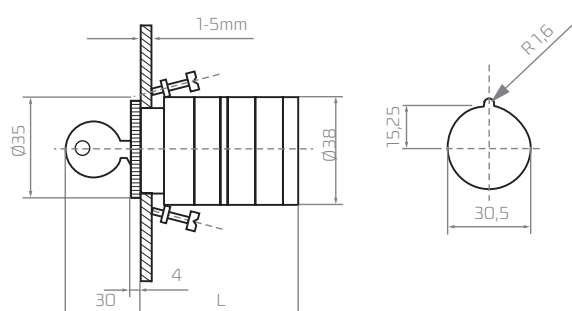
Group AO version U



## S10 Switch for installation in a $\varnothing 30,5$ hole

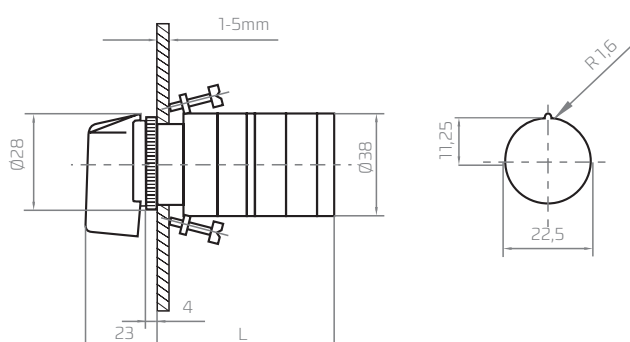
Group AO version U

(Like for S9), the key operates as a knob. Closing in positions 3, 6, 9, 12 /like on a clock/. The key can be removed in the same positions.



## S11 Switch for installation in a $\varnothing 22,5$ hole (control boards)

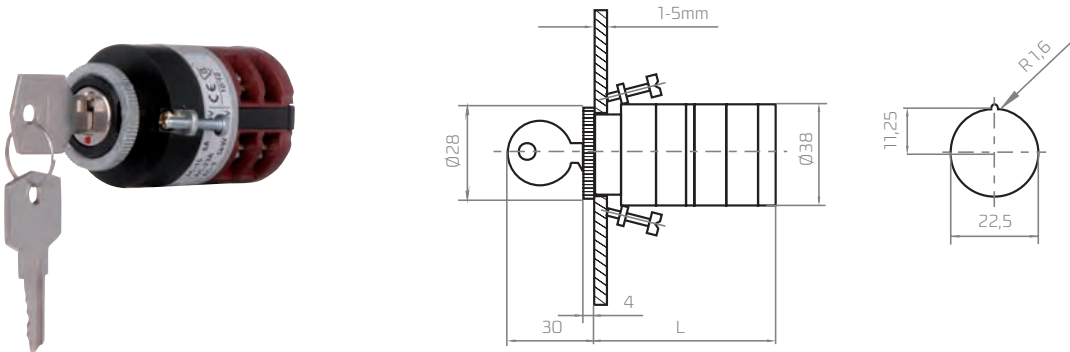
Group AO version U



## S12 switch for installation in a $\varnothing 22,5$ hole (like for s11)

Group A0 version U

The key operates as a knob. Closing and removing the key in positions like for S10.



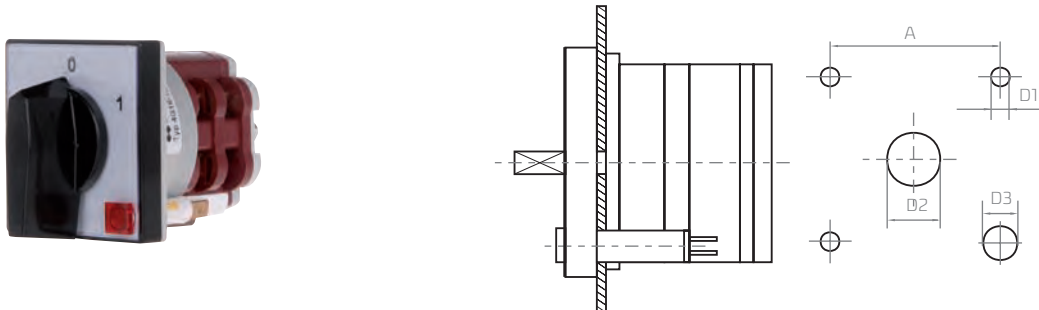
| Version:<br>S9, S10, S11, S12 | L (dependent on the number of switching elements) |      |    |      |    |    |       |     |       |     |     |       |
|-------------------------------|---------------------------------------------------|------|----|------|----|----|-------|-----|-------|-----|-----|-------|
|                               | 1                                                 | 2    | 3  | 4    | 5  | 6  | 7     | 8   | 9     | 10  | 11  | 12    |
|                               | 47                                                | 56,5 | 66 | 75,5 | 85 | 95 | 104,5 | 114 | 123,5 | 133 | 143 | 152,5 |

## S15 Switch with a signal lamp

Group A0, A1, A2 version U, OU, PK\*)

\*protection degree IP52

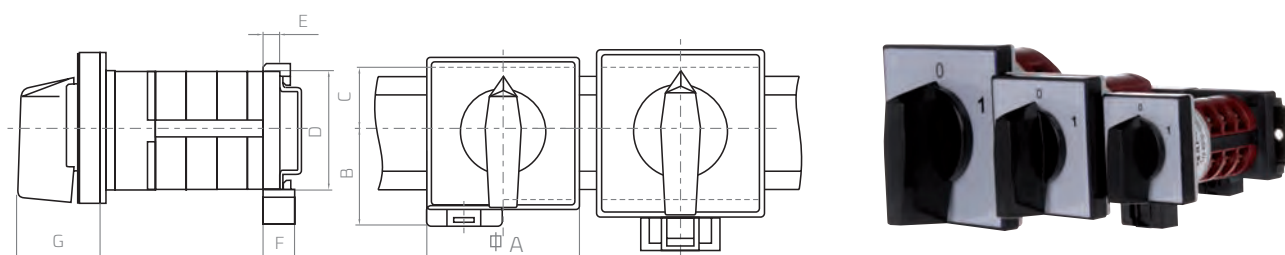
(Standard colour – red; 220 V).



| Group | A  | D <sub>1</sub> | D <sub>2</sub> | D <sub>3</sub> |
|-------|----|----------------|----------------|----------------|
|       | Φ  | Ø              | Ø              | Ø              |
| A0    | 35 | 5              | 14             | 9              |
| A1    | 48 | 5              | 14             | 9              |
| A2    | 72 | 6              | 16             | 9              |

## S18 Switch for installation on din rail (according to 35 DIN EN 50022)

Group A0, A1, A2 version U

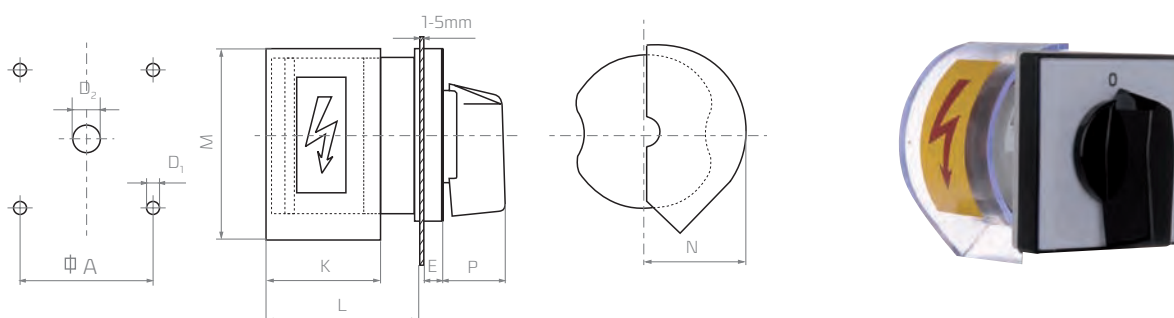


| Group | A      | B    | C  | D  | E | F    | G    |
|-------|--------|------|----|----|---|------|------|
|       | $\Phi$ |      |    |    |   |      |      |
| A0    | 48     | 30   | 21 | 35 | 5 | 10,5 | 26,5 |
| A1    | 65     | 48,5 | 21 | 35 | 9 | 15   | 34,5 |
| A2    | 90     | 48,5 | 21 | 35 | 9 | 15   | 41,5 |

## S19 Switch with a protective housing (up to two packs)

Group A1, A2 version U, OU

Protection to prevent from touching the terminals.



| Group | D <sub>1</sub> | D <sub>2</sub> | A      | E   | P  | K  | M  | N  | L  |
|-------|----------------|----------------|--------|-----|----|----|----|----|----|
|       | $\emptyset$    | $\emptyset$    | $\Phi$ |     |    |    |    |    |    |
| A1    | 5              | 14             | 48     | 9,5 | 25 | 51 | 78 | 36 | 69 |
| A2    | 6              | 16             | 72     | 9,5 | 32 | 58 | 99 | 53 | 78 |

## S21 Main switch disconnecter according to IEC 204 and VDE 0113

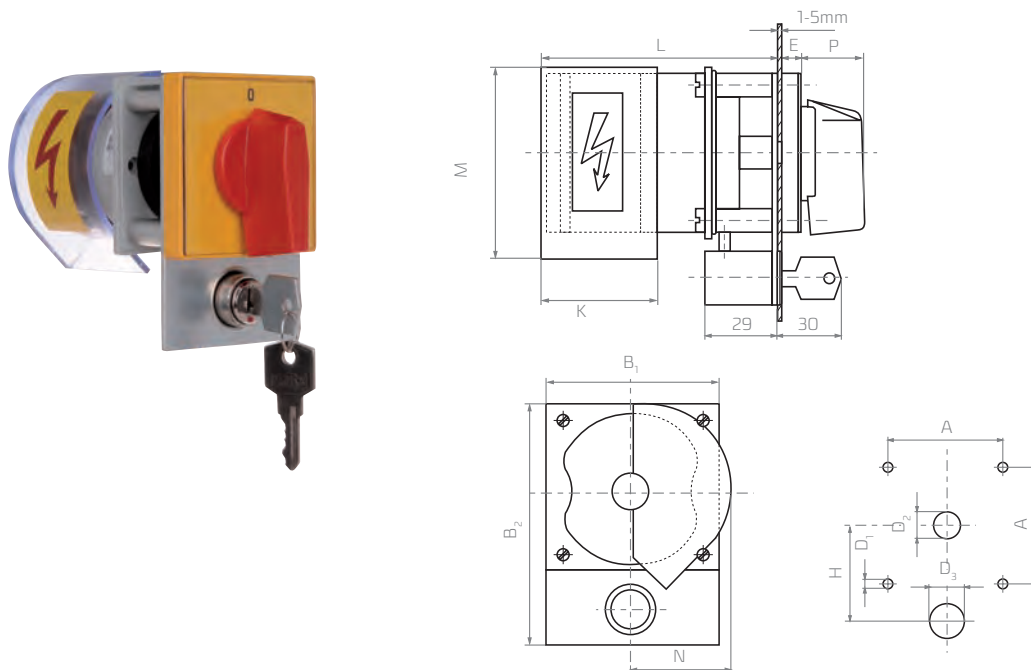
Group A1, A2, A3 version U

Black knob, front plate and indicating plate, white markings. Protecting housing like in S19. Blocking lock. Blocking according to order.

## S22 Emergency and main switch disconnecter (for two packs)

Group A1, A2, A3 version U

Red knob, yellow background of an indicating plate, black markings. Protecting housing like in S19. Blocking lock. Blocking according to order.



| Group | D <sub>1</sub> | D <sub>2</sub> | D <sub>3</sub> | A   | B <sub>1</sub> | B <sub>2</sub> | P    | K  | M   | N  | L   | E   | H  |
|-------|----------------|----------------|----------------|-----|----------------|----------------|------|----|-----|----|-----|-----|----|
|       | ø              | ø              | ø              |     |                |                |      |    |     |    |     |     |    |
| A1    | 5              | 14             | 21,5           | 48  | 65             | 98             | 25   | 51 | 78  | 36 | 95  | 9,5 | 48 |
| A2    | 6              | 16             | 21,5           | 72  | 90             | 122            | 32   | 58 | 99  | 53 | 104 | 9,5 | 60 |
| A3    | 6              | 18             | 21,5           | 104 | 132            | 168            | 46,5 | 88 | 132 | 78 | 137 | 10  | 85 |

## S24 Emergency switch disconnecter according to IEC 204 and VDE 0113

Group A0, A1, A2 version U, OU, PK

Red knob, yellow background of an indicating plate, black markings.

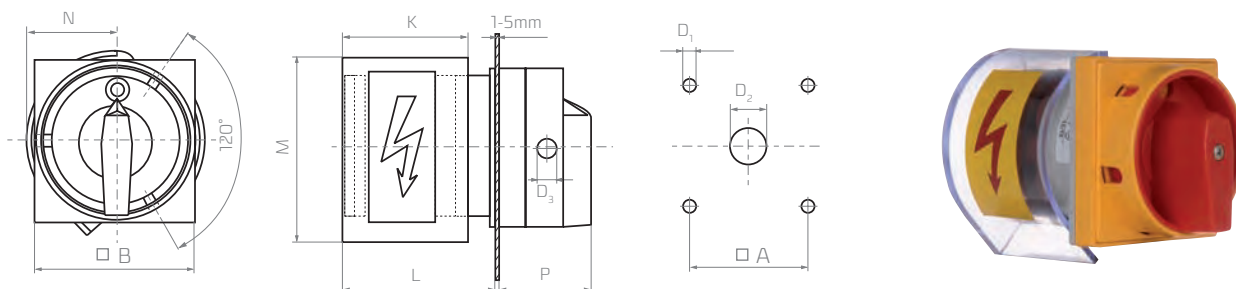
The difference between standard and special versions is in different colours of a knob and a plate (red knob, yellow plate, black signs).



## S25 Main and emergency switch disconnecter (for two packs)

Group A1, A2 version U, OU

The blocking position should be specified (red knob, yellow front plate) in the order. Blocking only in O position.



| Group | D <sub>1</sub> | D <sub>2</sub> | D <sub>3</sub> | A  | B  | P  | K  | M  | N  | L  |
|-------|----------------|----------------|----------------|----|----|----|----|----|----|----|
|       | ∅              | ∅              | ∅              | Φ  | Φ  |    |    |    |    |    |
| A1    | 5              | 14             | 7              | 48 | 65 | 35 | 51 | 78 | 36 | 69 |
| A2    | 6              | 16             | 8              | 72 | 90 | 44 | 58 | 99 | 53 | 78 |

## S29 Switch for installation in a ∅22,5 hole /in control boards/

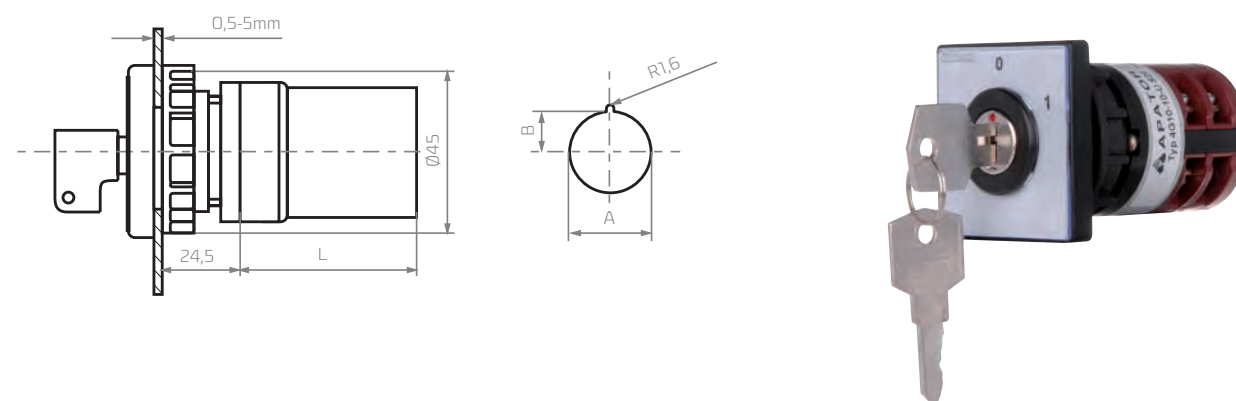
Group A0 version U

The key operates as a knob. Closing in positions 3, 6, 9, 12 /like on a clock/. The key can be removed in the same positions. It is possible to remove the key in the same positions.

## S30 Switch for installation in a ∅30,5 hole with a front plate /in control boards/

Group A0 version U

The key operates as a knob. Closing in positions 3, 6, 9, 12 /like on a clock/. The key can be removed in the same positions. It is also possible to remove the key in any position.



| Group | S29   | S30   |
|-------|-------|-------|
| A     | 22,5  | 30,5  |
| B     | 11,25 | 15,25 |

| The number of the switching elements | 1  | 2    | 3  | 4    | 5  | 6  | 7    | 8  | 8     | 10  | 11  | 12  |
|--------------------------------------|----|------|----|------|----|----|------|----|-------|-----|-----|-----|
| L                                    | 29 | 38,5 | 48 | 57,5 | 67 | 77 | 86,5 | 96 | 105,5 | 115 | 125 | 134 |



## THE CHOICE OF THE MOTOR SWITCHES

Contact life depends on loading conditions. In AC-1 utilization category, where making currents and breaking currents are the same and equal the rated current, the contact life of the switches up to 4G 63 size reaches one million of switching operations.

In more difficult operating conditions the contact life becomes lower. The diagram presented below can be used to make an approximate choice of motor switches, depending on voltage, motor power, number of switching operations per hour and usage class.

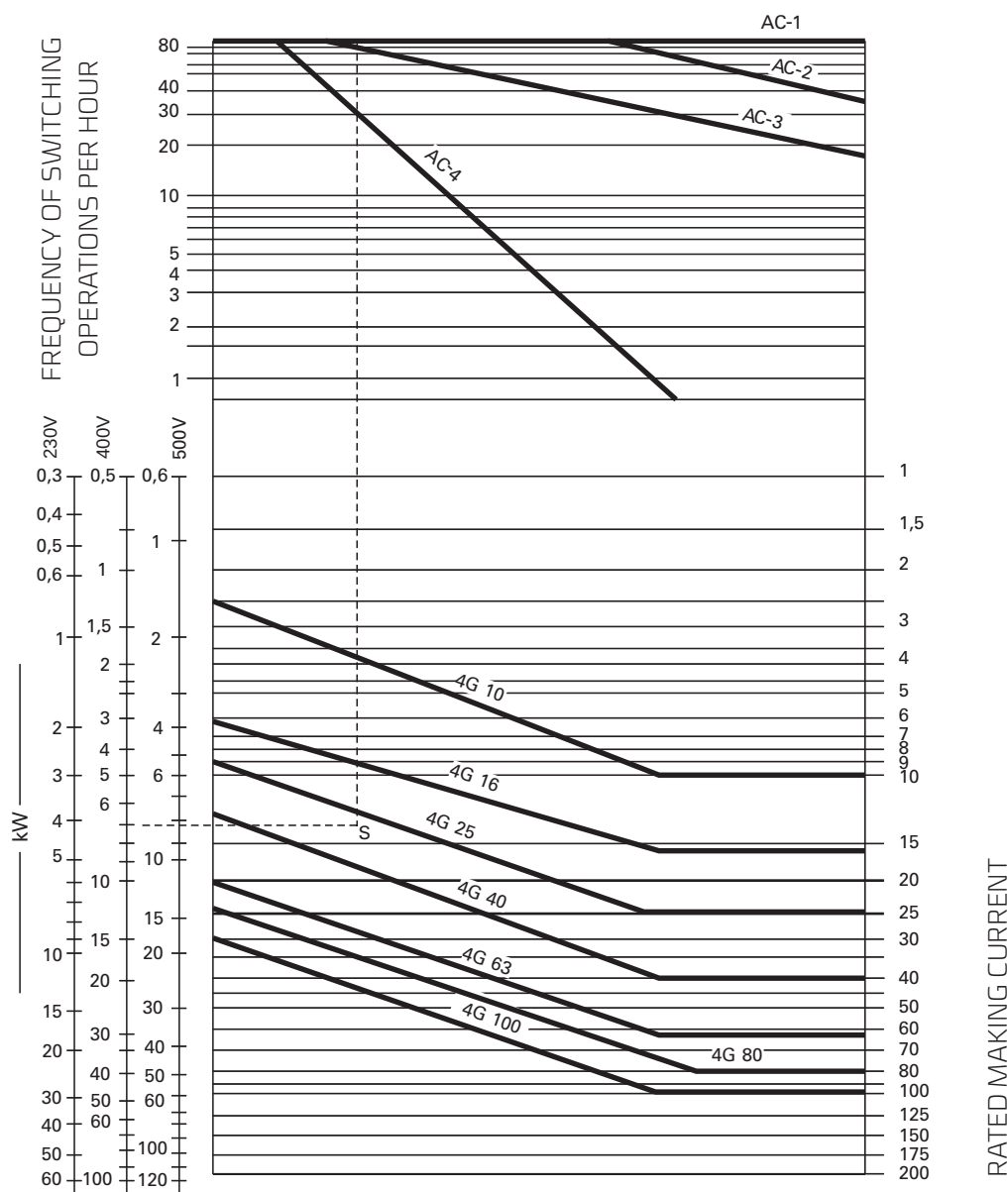


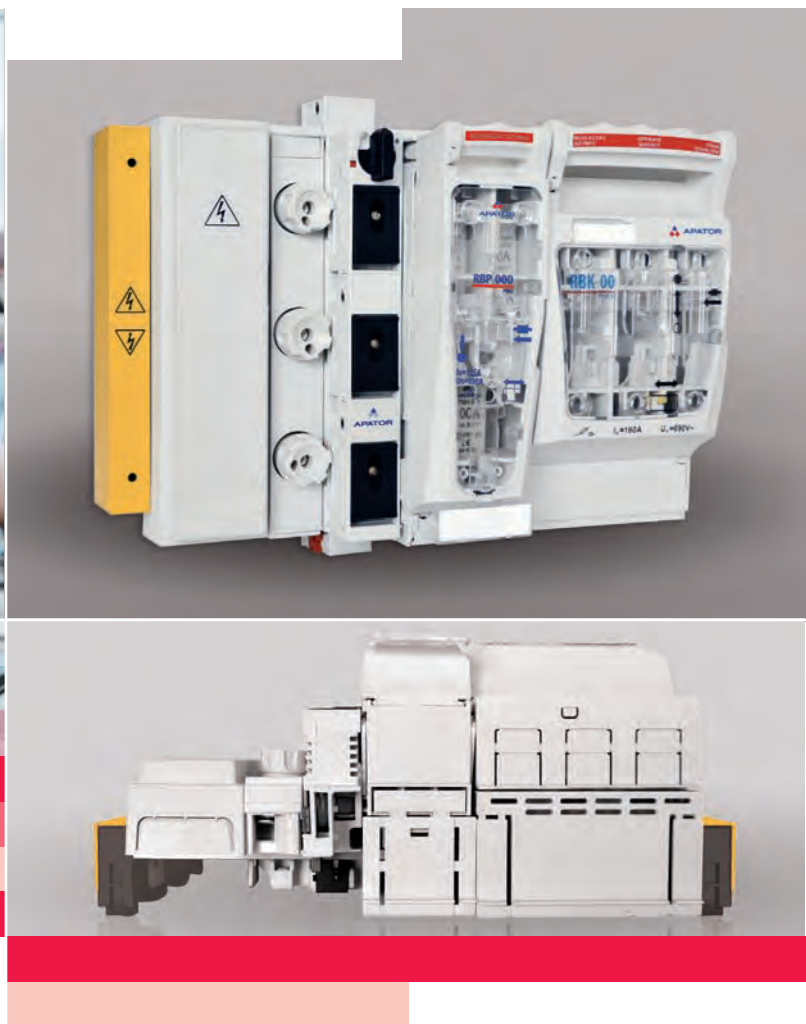
Diagram application example:

The task is to select a cam switch for direct switching and counter-current braking of a squirrel-cage motor characterized by the rated power 7 kW, 380 V and 30 switching operations per hour:

1. Utilization category: AC-4.
2. Find the number of switching operations in the diagram: 30 per hour /in the top part of the diagram/.
3. Draw a horizontal line from the point you have found from the point of intersection with relevant utilization category (AC-4).
4. In the bottom part of the diagram, find the motor power (7 kW, 380 V) on the scale of proper voltage and draw a horizontal line to the right.
5. Draw a perpendicular line down from the point of intersection of the top horizontal line with the utilization category line (AC-4).
6. The point of intersection with the bottom horizontal line "S" lies in the area related to the switch type you are looking for (4G 40).

# ORDER FORM

|                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   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| 87-100 Toruń, ul. Gdańska nr 4a lok. C4<br>SWITCHING EQUIPMENT SALES OFFICE<br>Phones: 48 (56) 61 91 627, 48 (56) 61 91 316<br>e-mail: trade@apator.com<br>www.apator.com                                            |                                                                                                                                                                                                                                                                                                                      | Contracting party:<br>Address:<br>Phone:<br>Fax:<br>e-mail:                                                                                                                                                                                                                                                                                                                                                                                                                                                                     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| <b>Technical data</b><br><br>Ue.....V~<br>Ue.....V=<br>Ie.....A<br><br><div style="border: 1px solid black; padding: 5px; width: 100px; height: 100px; margin: 10px auto;">           Number of pices         </div> | <b>Type of assembly</b><br><br><div style="display: flex; align-items: center;"> <input type="checkbox"/> OU         </div> <div style="display: flex; align-items: center;"> <input type="checkbox"/> U         </div> <div style="display: flex; align-items: center;"> <input type="checkbox"/> PK         </div> | <b>Type and colour of a knob or a handle</b><br><br><div style="display: flex; align-items: center;"> <input type="checkbox"/> Black         </div> <div style="display: flex; align-items: center;"> <input type="checkbox"/> Red         </div> <div style="display: flex; align-items: center;"> <input type="checkbox"/> Black         </div> <div style="display: flex; align-items: center;"> <input type="checkbox"/> Red         </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>Knob rotation angle</b><br><br><div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <input type="checkbox"/> 30°<br/>             AO/A1/A2/A3<br/> </div> <div style="text-align: center;"> <input type="checkbox"/> 45°<br/>             AO/A1/A2<br/> </div> </div> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <input type="checkbox"/> 60°<br/>             AO/A1/A2/A3<br/> </div> <div style="text-align: center;"> <input type="checkbox"/> 60°<br/>             AO/A1/A2/A3<br/> </div> </div> <div style="text-align: center;"> <input type="checkbox"/> 90°<br/>             AO/A1/A2/A3<br/> </div> | <b>Special version</b><br><br><table border="1" style="width:100%; border-collapse: collapse;"> <tr><td>S1</td><td>S17</td></tr> <tr><td>S5</td><td>S18</td></tr> <tr><td>S6</td><td>S19</td></tr> <tr><td>S7</td><td>S21</td></tr> <tr><td>S8</td><td>S22</td></tr> <tr><td>S9</td><td>S24</td></tr> <tr><td>S10</td><td>S25</td></tr> <tr><td>S11</td><td>S29</td></tr> <tr><td>S12</td><td>S30</td></tr> <tr><td>S15</td><td></td></tr> </table> | S1 | S17 | S5 | S18 | S6 | S19 | S7 | S21 | S8 | S22 | S9 | S24 | S10 | S25 | S11 | S29 | S12 | S30 | S15 |    |    |    |    |    |  |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| S1                                                                                                                                                                                                                   | S17                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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| S5                                                                                                                                                                                                                   | S18                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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| S6                                                                                                                                                                                                                   | S19                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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| S7                                                                                                                                                                                                                   | S21                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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| S8                                                                                                                                                                                                                   | S22                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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| S9                                                                                                                                                                                                                   | S24                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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| S10                                                                                                                                                                                                                  | S25                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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| S11                                                                                                                                                                                                                  | S29                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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| S12                                                                                                                                                                                                                  | S30                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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| S15                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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| <b>Indicating plate description example</b><br>                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                      | <b>Notes:</b><br><br><b>Switching diagram:</b><br><table style="width:100%; text-align: center;"> <tr> <td>1</td><td>4</td><td>5</td><td>8</td><td>9</td><td>12</td><td>13</td><td>16</td><td>17</td><td>20</td><td>21</td><td>24</td><td>25</td><td>28</td><td>29</td><td>32</td><td>33</td><td>36</td><td>37</td><td>40</td><td>41</td><td>44</td><td>45</td><td>48</td> </tr> <tr> <td colspan="24"> </td> </tr> <tr> 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| <b>Position descriptions on the indicating plate, according to the angle of rotation.</b>                                                                                                                            |                                                                                                                                                                                                                                                                                                                      | <table border="1" style="width:100%; border-collapse: collapse;"> <tr><td>1</td><td>A</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> 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| 8                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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| 11                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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| 12                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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| <b>Description of the indicating plate according to customer's requirements. (to be entered in the adjacent fields)</b>                                                                                              |                                                                                                                                                                                                                                                                                                                      | <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>automatic return (only after turning by 30° from the stable position)</p> </div> <div style="text-align: center;"> <p>impulse instantaneous contact</p> </div> <div style="text-align: center;"> <p>closed contact</p> </div> <div style="text-align: center;"> <p>closed contact without breaking</p> </div> <div style="text-align: center;"> <p>"overlap ping" contacts</p> </div> </div> <div style="text-align: center; margin-top: 10px;"> <p>Example of connecting the contacts with bridges</p> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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# APASYS 60

## 60 mm busbar system

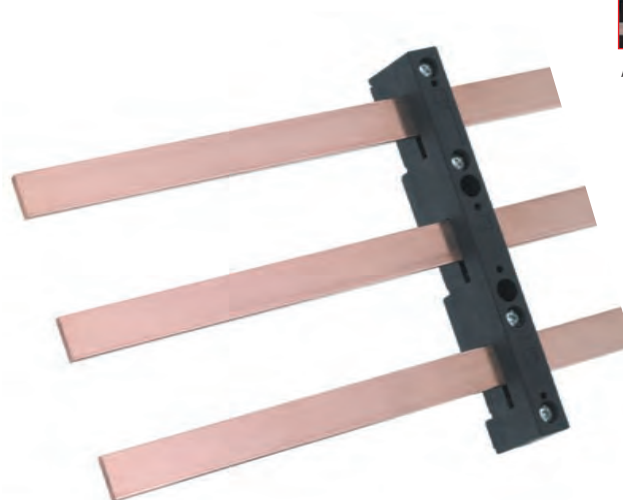
- APASYS 60 is a modular energy distribution system for currents up to 630 A
- the snap-on clip of all components provides great flexibility for the installation and expansion of solutions based on it

## BUSBAR SUPPORTS for the 60 mm system

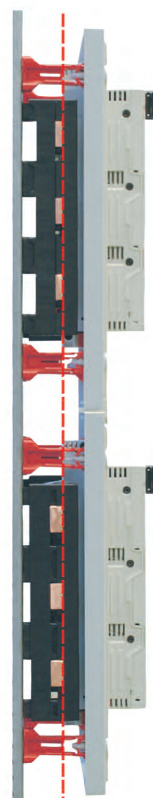
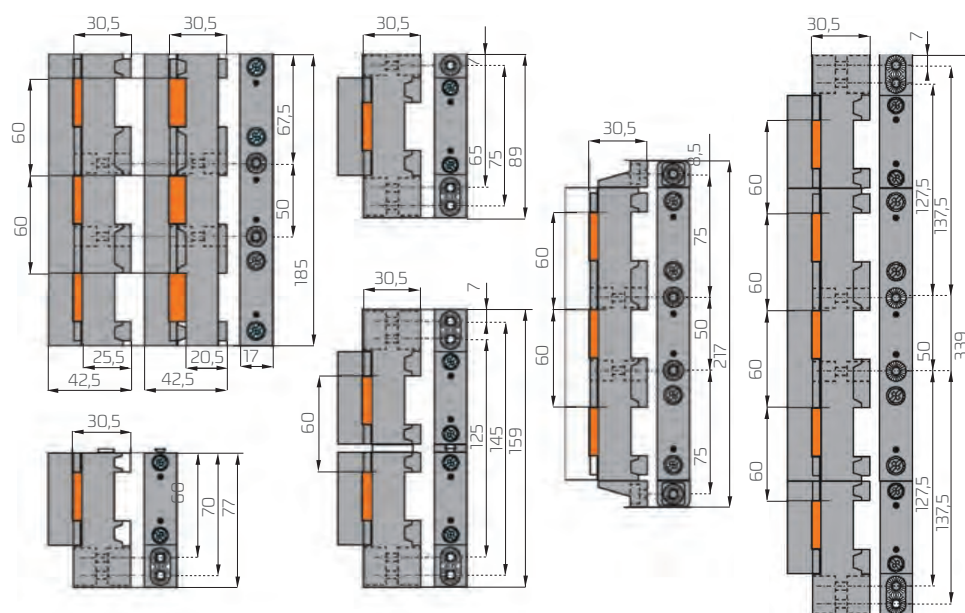
For busbars 12, 15, 20, 25 and 30 mm wide and 5 or 10 mm thick. Extremely versatile: the minimum number of components makes it possible to achieve a very large number of supporting set combinations.



APASYS 60



## Dimensions

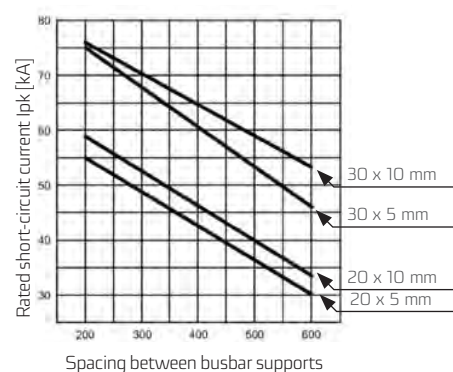
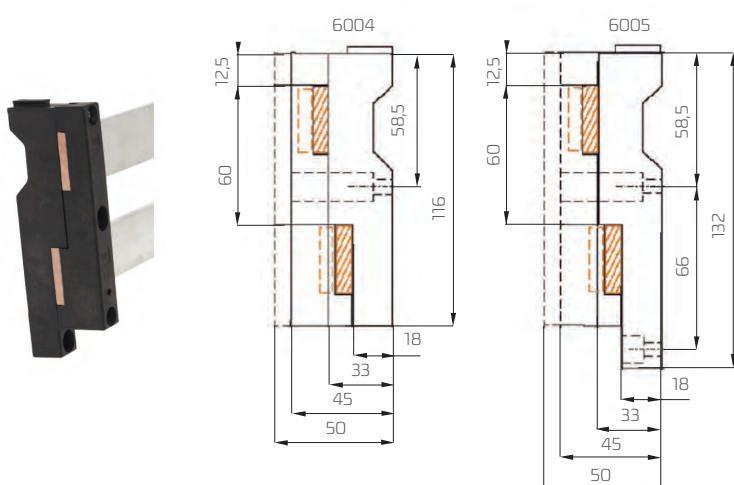




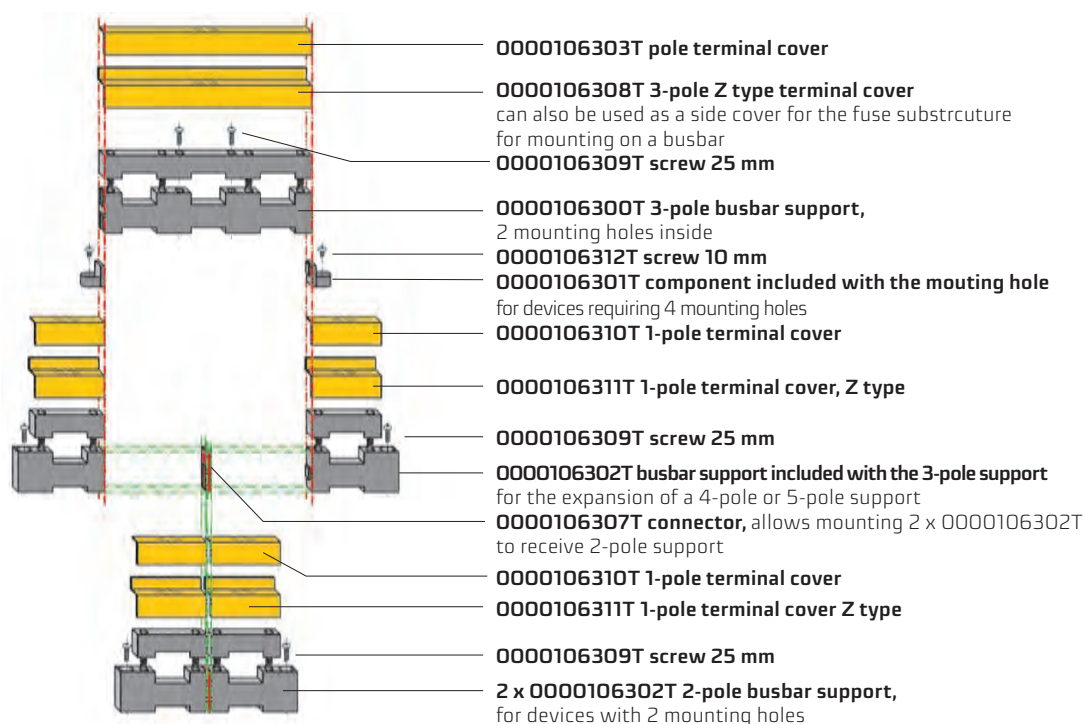
## APASYS 60 ACCESSORIES

Table 156. Versions

| Position                                                                                                          | Index no.   | Weight [kg] | Package [pcs.] |
|-------------------------------------------------------------------------------------------------------------------|-------------|-------------|----------------|
| 3-pole, 2 mounting holes inside, washers and screws included                                                      | 0000106300T | 0,121       | 20             |
| Component included with 0000106300T, with a mounting hole for devices requiring 4 mounting holes, screws included | 0000106301T | 0,006       | 10             |
| 1-pole, included with 0000106300T or to build a 2-pole support, washers and screws included                       | 0000106302T | 0,048       | 10             |
| 1-pole for a single device, washers and screws included                                                           | 0000106304T | 0,056       | 10             |
| Connector, allows mounting 2 x 0000106302T to receive 2-pole support                                              | 0000106307T | 0,004       | 10             |
| 3-pole terminal cover, yellow with a warning triangle                                                             | 0000106303T | 0,019       | 10             |
| 3-pole terminal cover, Z type, yellow with a warning triangle                                                     | 0000106308T | 0,024       | 10             |
| 1-pole terminal cover                                                                                             | 0000106310T | 0,006       | 10             |
| 1-pole terminal cover, Z type                                                                                     | 0000106311T | 0,007       | 20             |
| Screw 25 mm                                                                                                       | 0000106309T | 0,004       | 20             |
| Screw 10 mm                                                                                                       | 0000106312T | 0,002       | 10             |
| 2-pole Busbar support; 1 mounting hole                                                                            | 0000106004T | 0,08        | 10             |
| 2-pole Busbar support; 2 mounting holes                                                                           | 0000106005T | 0,09        | 10             |



Short-circuit resistance diagram according to DIN EN 60439  
60 mm busbar system  
Rated operating voltage: 690 V, Rated frequency: 50 Hz



## For the 100 mm and 185 mm system

- Busbar mouting without openings
- Busbar width 30 – 120 mm (185 mm system)
- Busbar width 30 – 60 mm (100 mm system)
- Busbar thickness: 10 mm



Table 157. Technical data

| Classification           |           |
|--------------------------|-----------|
| Rated operating voltage  | 1000 V AC |
| Rated insulation voltage | 2000 V AC |
| Frequency                | 50 Hz     |
| Flammability             | UL 94 V40 |
| Track resistance         | CTI 600   |
| Continuous operation     | 150°      |
| Glowing wire attempt     | 960°      |

## Dimensions

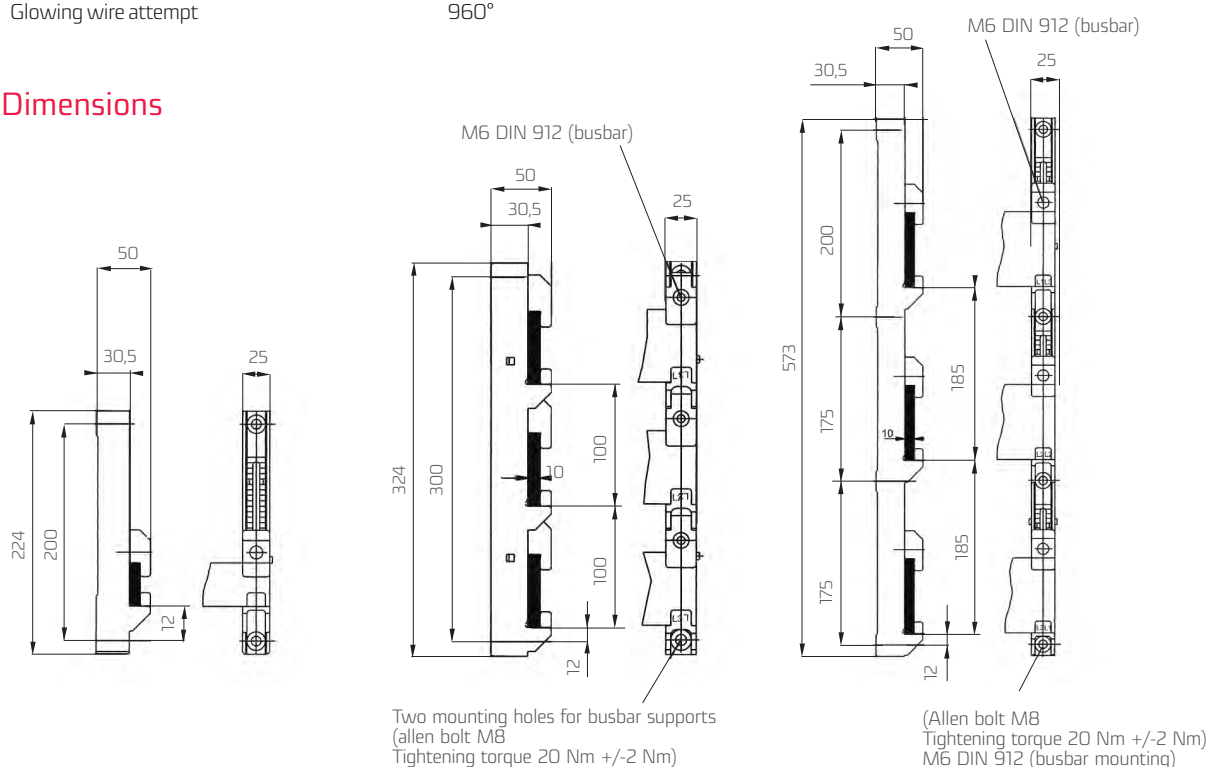


Table 158. Versions

| Position                              | Index no.   | Weight [kg] | Package [pcs.] |
|---------------------------------------|-------------|-------------|----------------|
| 3-pole busbar support, spacing 100 mm | 0000188100T | 0,36        | 1              |
| 3-pole busbar support, spacing 185 mm | 0000188101T | 0,54        | 1              |
| 1-pole busbar support                 | 0000188102T | 0,20        | 1              |
| 3-pole terminal cover, spacing 100 mm | 0000188103T | 0,07        | 1              |
| 3-pole terminal cover, spacing 185 mm | 0000188104T | 0,12        | 1              |

## For the 60 mm, 100 mm and 185 mm system



APASYS 60

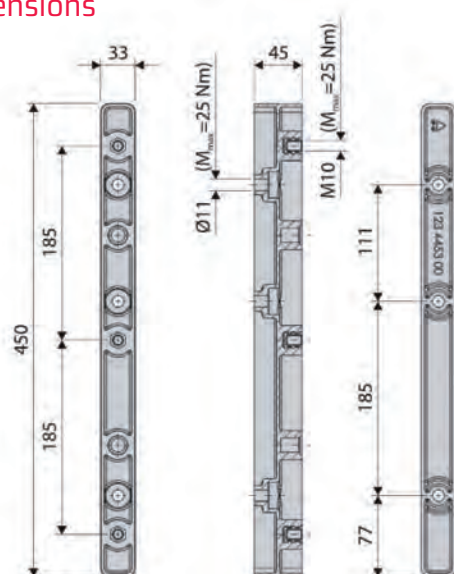
- The supports are characterised by a robust construction and insulating properties, thanks to which they are used in electrical switchboards as support elements for current busbars.
- The supports allow you to mount a busbar with spacing of 60, 100, 185 mm.
- The body is made of insulating material (polyester reinforced with glass fibre), in which M10 threads are embedded (maximum tightening torque: 25 Nm).



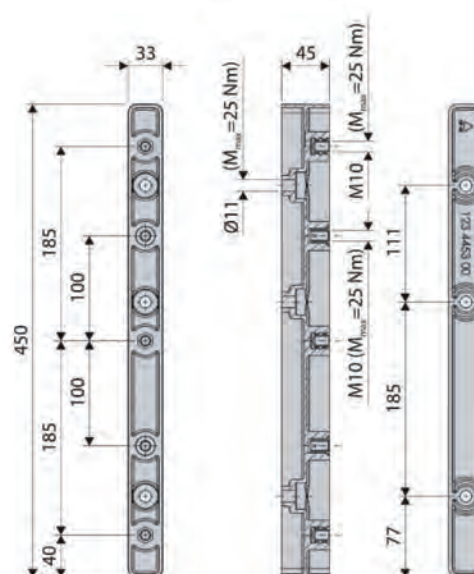
Table 159. Technical data

| Classification     |         |
|--------------------|---------|
| Flammability class | VO      |
| Track resistance   | CTI 600 |
| Heat resistance    | 960°C   |

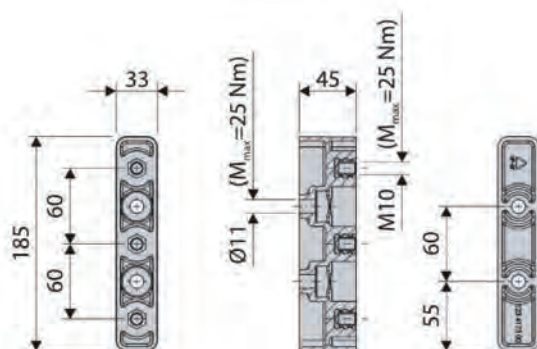
## Dimensions



M10 185  
0000188105T



M10 185/100  
0000188106T



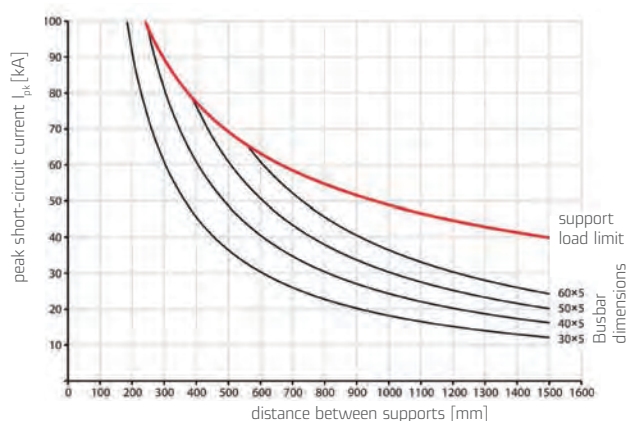
M10 60  
0000188107T



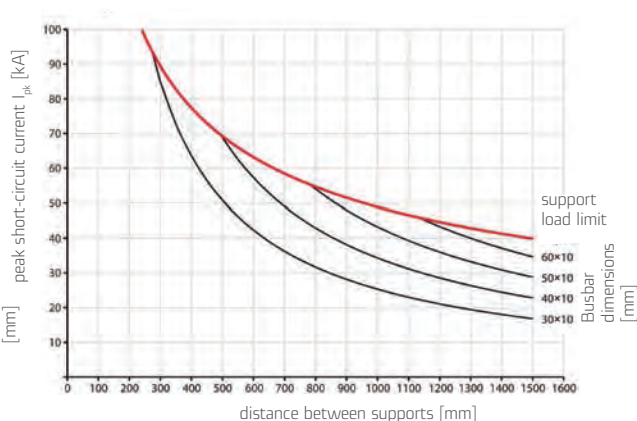
Table 160. Versions

| Position                                                                            | Index no.   | Weight [kg] | Package [pcs.] |
|-------------------------------------------------------------------------------------|-------------|-------------|----------------|
| Busbar spacing 60 mm, 3-pole busbar support, with seated M10 nuts (M10 60)          | 0000188107T | 0,23        | 1              |
| Busbar spacing 100 mm, 3-pole busbar support, with seated M10 nuts (M10 185/100 mm) | 0000188106T | 0,48        | 1              |
| Busbar spacing 185 mm, 3-pole busbar support, with seated M10 nuts (M10 185 mm)     | 0000188105T | 0,46        | 1              |

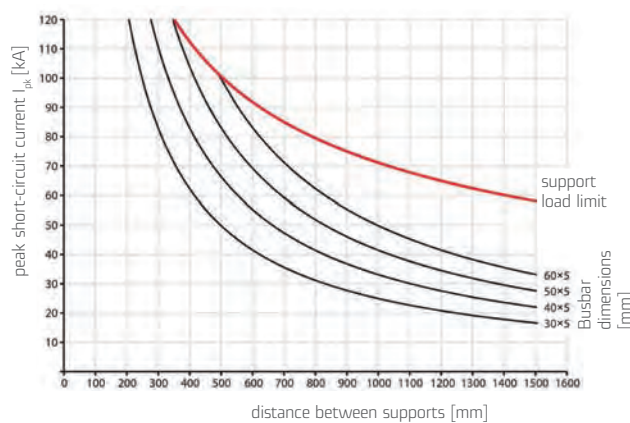
Short-circuit resistance of 5 mm thick busbar depending on the distance between supports (busbar spacing 100 mm)



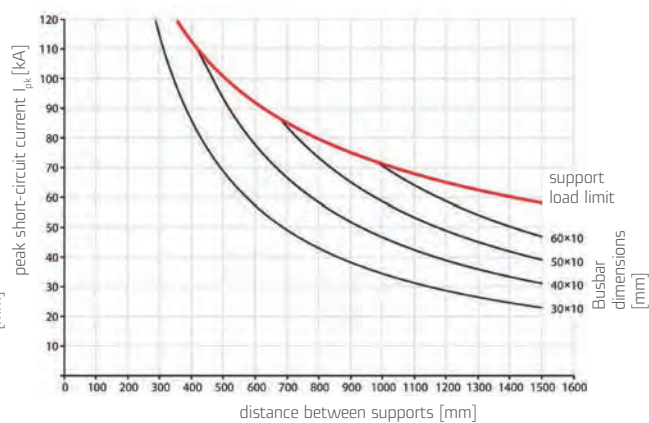
Short-circuit resistance of 10 mm thick busbar depending on the distance between supports (busbar spacing 100 mm)



Short-circuit resistance of 5 mm thick busbar depending on the distance between supports (busbar spacing 185 mm)



Short-circuit resistance of 10 mm thick busbar depending on the distance between supports (busbar spacing 185 mm)

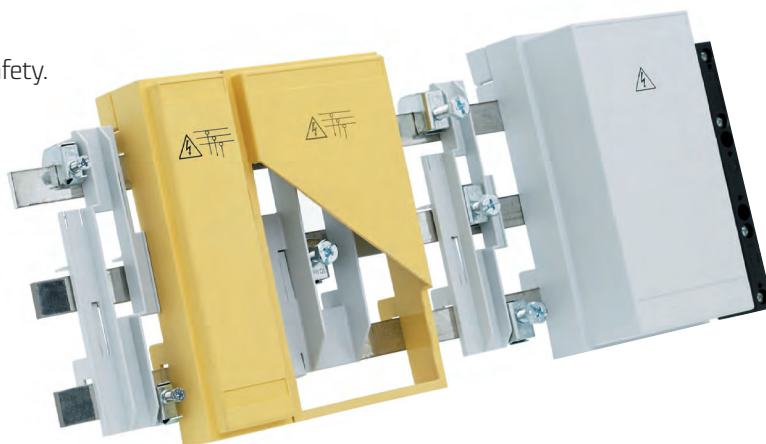


# POWER ADAPTER

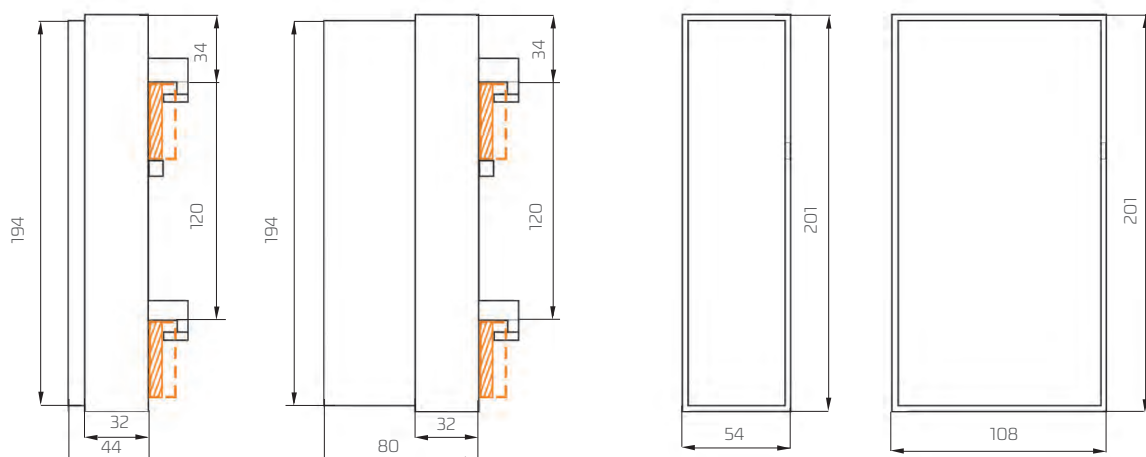


APASYS 60

The APASYS 60 power supply connections are implemented using a universal hook terminal that adapts to the busbar section. Protective covers provide the required level of safety.



## Dimensions



## APASYS 60 ACCESSORIES

Table 161. Power adapters (without hook terminals) with warning triangle for busbar and cable protection

| Versions (yellow colour)                                                   | Index no.   | Weight [kg] | Package [pcs.] |
|----------------------------------------------------------------------------|-------------|-------------|----------------|
| Width 54 mm, internal height 42 mm, for terminals 16..50 mm <sup>2</sup>   | 0000106090T | 0,11        | 2              |
| Width 108 mm, internal height 42 mm, for terminals 16..70 mm <sup>2</sup>  | 0000106091T | 0,17        | 1              |
| Width 108 mm, internal height 78 mm, for terminals 16..185 mm <sup>2</sup> | 0000106092T | 0,22        | 1              |
| Versions (gray colour)                                                     | Index no.   | Weight [kg] | Package [pcs.] |
| Width 54 mm, internal height 42 mm, for terminals 16..50 mm <sup>2</sup>   | 0000106096T | 0,11        | 2              |
| Width 108 mm, internal height 42 mm, for terminals 16..70 mm <sup>2</sup>  | 0000106097T | 0,17        | 1              |
| Width 108 mm, internal height 78 mm, for terminals 16..185 mm <sup>2</sup> | 0000106098T | 0,22        | 1              |

Table 162. Busbar bridge cover, grey colour

| Versions                            | Index no.   | Weight [kg] | Package [pcs.] |
|-------------------------------------|-------------|-------------|----------------|
| Width 54 mm, internal height 42 mm  | 0000106033T | 0,09        | 2              |
| Width 108 mm, internal height 42 mm | 0000106034T | 0,12        | 1              |
| Width 108 mm, internal height 78 mm | 0000106035T | 0,12        | 1              |

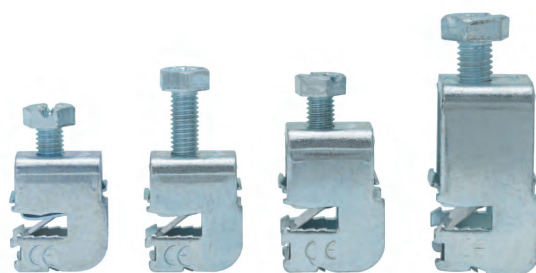


Table 163. Hook terminals

| Versions for 5 mm thick busbars  | Index no.   | Weight [kg] | Package [pcs.] |
|----------------------------------|-------------|-------------|----------------|
| 1,5...16 mm <sup>2</sup>         | 0000116051T | 0,03        | 100            |
| 1,5...35 mm <sup>2</sup>         | 0000116052T | 0,04        | 50             |
| 1,5...50 mm <sup>2</sup>         | 0000116053T | 0,05        | 50             |
| 16...70 mm <sup>2</sup>          | 0000116054T | 0,06        | 10             |
| 16...120 mm <sup>2</sup>         | 0000116055T | 0,09        | 10             |
| 16...185 mm <sup>2</sup>         | 0000116056T | 0,10        | 10             |
| Versions for 10 mm thick busbars |             |             |                |
| 1,5...16 mm <sup>2</sup>         | 0000116061T | 0,03        | 100            |
| 1,5...35 mm <sup>2</sup>         | 0000116062T | 0,04        | 50             |
| 1,5...50 mm <sup>2</sup>         | 0000116063T | 0,05        | 50             |
| 16...70 mm <sup>2</sup>          | 0000116064T | 0,06        | 10             |
| 16...120 mm <sup>2</sup>         | 0000116065T | 0,09        | 10             |
| 16...185 mm <sup>2</sup>         | 0000116066T | 0,10        | 10             |

# E18 FUSE BASE

## for mounting on a busbar



APASYS 60

- Ability to add a description of each phase.
- Stainless steel connection terminals with low power loss.
- Side insulation covers to protect against accidental contact.
- Snap-on rear insulation cover.

Table 164. Technical data

| 3-POLE ; DIN 49524   |                                                       |
|----------------------|-------------------------------------------------------|
| For DO fuse links    | 2...63A DIN 49522                                     |
| Adapter - holder     | D02 DIN 49523 400 V<br>AC/250 DC 50 kA <sub>eff</sub> |
| Steel frame terminal | 1,5...25 mm², 3-4 Nm                                  |
| Track resistance     | CTI 600                                               |
| Flammability class   | UL 94-V0                                              |
| Heat resistance      | 200 °C                                                |
| Glowing wire attempt | 960 °C                                                |

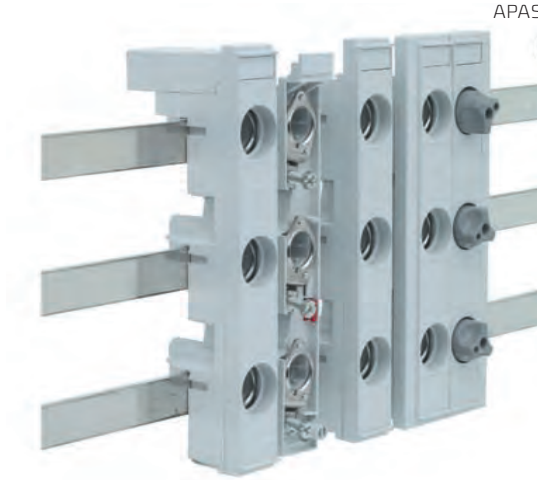
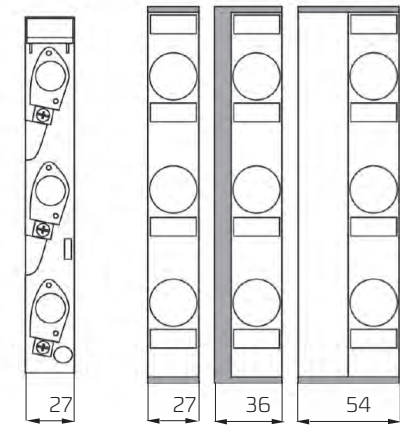
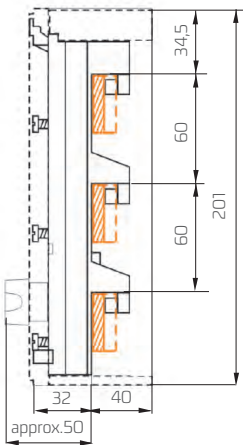


Table 165. Versions

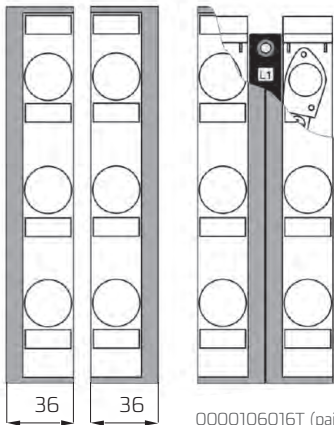
| Position                                                                      | Index no.   | Weight [kg] | Package [pcs.] |
|-------------------------------------------------------------------------------|-------------|-------------|----------------|
| Fuse substructure for mounting on a busbar 27 mm, without cover               | 0000106022T | 0,15        | 10             |
| Fuse substructure for mounting on a busbar 27 mm, with cover                  | 0000106023T | 0,17        | 10             |
| Fuse substructure for mounting on a busbar 36 mm, with cover and side widener | 0000106028T | 0,19        | 10             |
| Fuse substructure for mounting on a busbar 54 mm, with coverandside widener   | 0000106029T | 0,21        | 10             |
| Cover 27 mm                                                                   | 0000106011T | 0,02        | 10             |
| Cover 36 mm, includes side widener                                            | 0000106012T | 0,03        | 10             |
| Cover 54 mm, includes side widener                                            | 0000106013T | 0,05        | 10             |
| Pair of covers                                                                | 0000106016T | 0,05        | 10             |
| Single cover left                                                             | 0000106017T | 0,02        | 10             |
| Single cover right                                                            | 0000106018T | 0,02        | 10             |
| Snap-on cover providing protection against contact                            | 0000106026T | 0,01        | 10             |

Fuse substructure should be equipped with fuse carriers (see Table 44. Accessories)

## Dimensions



0000106022T 0000106011T 0000106012T 0000106013T



0000106017T 0000106018T  
0000106016T (pair)

frame cover for  
the switchboard

0000106016T (pair) for masking  
the centre of the busbar bridge supports  
or as a frame cover for the supports  
at the end or the beginning of the busbar

## ADAPTER FOR COMPONENT ASSEMBLY

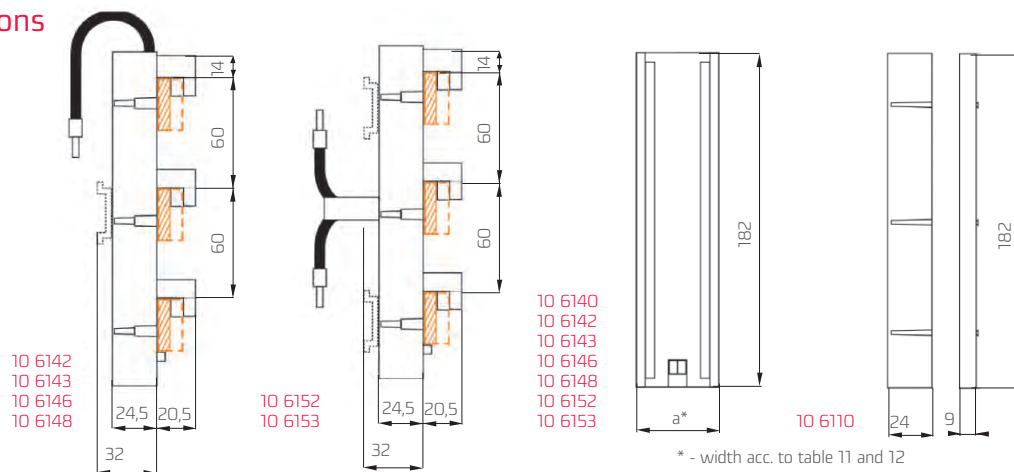
APASYS 60 component adapter with infinitely adjustable mounting support and double terminals with low power loss



Table 166. Versions

| Position                                                                               | Index no.   | Weight [kg] | Package [pcs.] |
|----------------------------------------------------------------------------------------|-------------|-------------|----------------|
| <b><math>I_g=25</math> A section of the connection cable AWG 12 / 4 mm<sup>2</sup></b> |             |             |                |
| 1 universal mounting rail, width 45 mm                                                 | 0106142451T | 0,21        | 2              |
| 2 universal mounting rails, width 45 mm                                                | 0106142452T | 0,23        | 2              |
| 1 universal mounting rail, width 54 mm                                                 | 0106142541T | 0,22        | 2              |
| 2 universal mounting rails, width 54 mm                                                | 0106142542T | 0,24        | 2              |
| <b><math>I_g=35</math> A section of the connection cable AWG 10 / 6 mm<sup>2</sup></b> |             |             |                |
| 1 universal mounting rail, width 45 mm                                                 | 0106143451T | 0,22        | 2              |
| 2 universal mounting rails, width 45 mm                                                | 0106143452T | 0,24        | 2              |
| 1 universal mounting rail, width 54 mm                                                 | 0106143541T | 0,23        | 2              |
| 2 universal mounting rails, width 54 mm                                                | 0106143542T | 0,25        | 2              |
| 1 universal mounting rail, width 63 mm                                                 | 0106143631T | 0,27        | 2              |
| 1 universal mounting rail, width 72 mm                                                 | 0106143721T | 0,29        | 2              |
| 2 universal mounting rails, width 81 mm                                                | 0106143812T | 0,31        | 2              |
| <b><math>I_g=63</math> A section of the connection cable AWG 8 / 10 mm<sup>2</sup></b> |             |             |                |
| 1 universal mounting rail, width 54 mm                                                 | 0106146541T | 0,26        | 2              |
| 2 universal mounting rails, width 54 mm                                                | 0106146542T | 0,28        | 2              |
| 1 universal mounting rail, width 63 mm                                                 | 0106146631T | 0,30        | 2              |
| 1 universal mounting rail, width 72 mm                                                 | 0106146721T | 0,32        | 2              |
| 2 universal mounting rails, width 81 mm                                                | 0106146812T | 0,34        | 2              |
| <b><math>I_g=63</math> A section of the connection cable AWG 6 / 16 mm<sup>2</sup></b> |             |             |                |
| 1 universal mounting rail, width 54 mm                                                 | 0106148541T | 0,29        | 2              |
| 2 universal mounting rails, width 54 mm                                                | 0106148542T | 0,31        | 2              |
| 1 universal mounting rail, width 63 mm                                                 | 0106148631T | 0,33        | 2              |
| 1 universal mounting rail, width 72 mm                                                 | 0106148721T | 0,35        | 2              |
| 2 universal mounting rails, width 81 mm                                                | 0106148812T | 0,37        | 2              |

### Dimensions



# COMPONENTS MOUNTING ADAPTER



Table 167. Versions

| Position                                                                            | Index no.   | Weight [kg] | Package [pcs.] |
|-------------------------------------------------------------------------------------|-------------|-------------|----------------|
| $I_e = 25$ A; 4 mm <sup>2</sup> section of the connection cable, AWG 12 width 45 mm | 0000106142T | 0,19        | 4              |
| $I_e = 35$ A; 6 mm <sup>2</sup> section of the connection cable, AWG 10 width 45 mm | 0000106143T | 0,20        | 4              |
| $I_e = 63$ A; 10 mm <sup>2</sup> section of the connection cable, AWG 8 width 45 mm | 0000106146T | 0,23        | 4              |
| $I_e = 80$ A; 16 mm <sup>2</sup> section of the connection cable, AWG 6 width 45 mm | 0000106148T | 0,26        | 4              |
| $I_e = 25$ A; double central terminal 4 mm <sup>2</sup> , AWG 12 width 45 mm        | 0000106152T | 0,20        | 4              |
| $I_e = 35$ A; double central terminal 6 mm <sup>2</sup> , AWG 10 width 45 mm        | 0000106153T | 0,25        | 4              |
| Without terminals, contains connector X for side extension or single mounting       | 0000106140T | 0,15        | 4              |

## ACCESSORIES

Table 168. Versions

| Position                                                  | Index no.   | Weight [kg] | Package [pcs.] |
|-----------------------------------------------------------|-------------|-------------|----------------|
| Side element for adapter expansion, width 9 mm            | 0000106110T | 0,02        | 10             |
| Universal mounting rail, width 45 mm, stepless adjustment | 0000106104T | 0,02        | 10             |
| Universal mounting rail, width 54 mm, stepless adjustment | 0000106105T | 0,02        | 10             |
| Universal mounting rail, width 63 mm, stepless adjustment | 0000106106T | 0,02        | 10             |
| Universal mounting rail, width 72 mm, stepless adjustment | 0000106107T | 0,02        | 10             |
| Universal mounting rail, width 81 mm, stepless adjustment | 0000106108T | 0,02        | 10             |

The mounting rails are steplessly adjustable.



Adapter base



Side element, width 9 mm  
allows to expand adapter base  
by 9 mm



Mounting rail installed  
on the base by means of  
a double wedge element



Set up the mounting rail  
in the correct position  
and tighten the screws



1. Place the APASYS 60 component on the top  
mounting rail and connect the power supply  
2. Place the second component on the bottom mounting  
rail. Adjust the mounting rail to match the position  
of the component and connect it

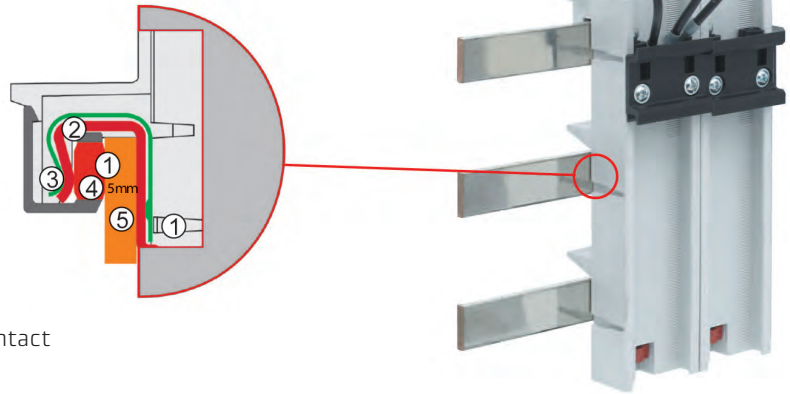


Tighten the bottom  
mounting rail



## Double contact area

1. Double contact area
2. Terminal
3. Steel spring loaded terminal block
4. 5 mm connection terminal with CuAg contact
5. Busbar



Double contact area design provides low power loss.  
The pressure is applied only by the metal parts and not the plastic.



# RBDO/60

## Fuse switch disconnecter for DO fuse links for busbar mounting



APASYS 60

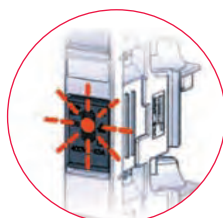


### RBDO/60

Disconnecter with DO2 fuse switches for installation on a busbar with fuse switches holders with an optoelectrical light indicator

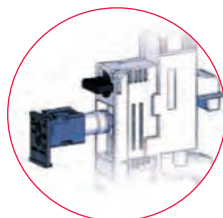
### RBDO/60 primary security

with relay for monitoring fuse link condition and temperature



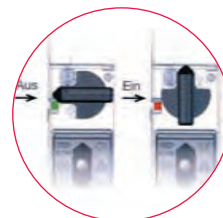
#### Light indicator

Damage to the fuse link is reliably detected and indicated by an optoelectrical indicator



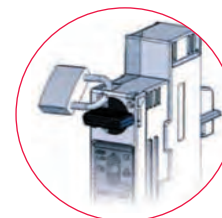
#### Quick and easy replacement of the fuse link

Fuse switch holder allows for quick and easy replacement of the DO fuse link



#### Operating status indicator

The colour of the operating status indicator enables an immediate evaluation of the operating status of the connector



#### Padlock

The padlock prevents unauthorized change of the disconnecter switch-on status

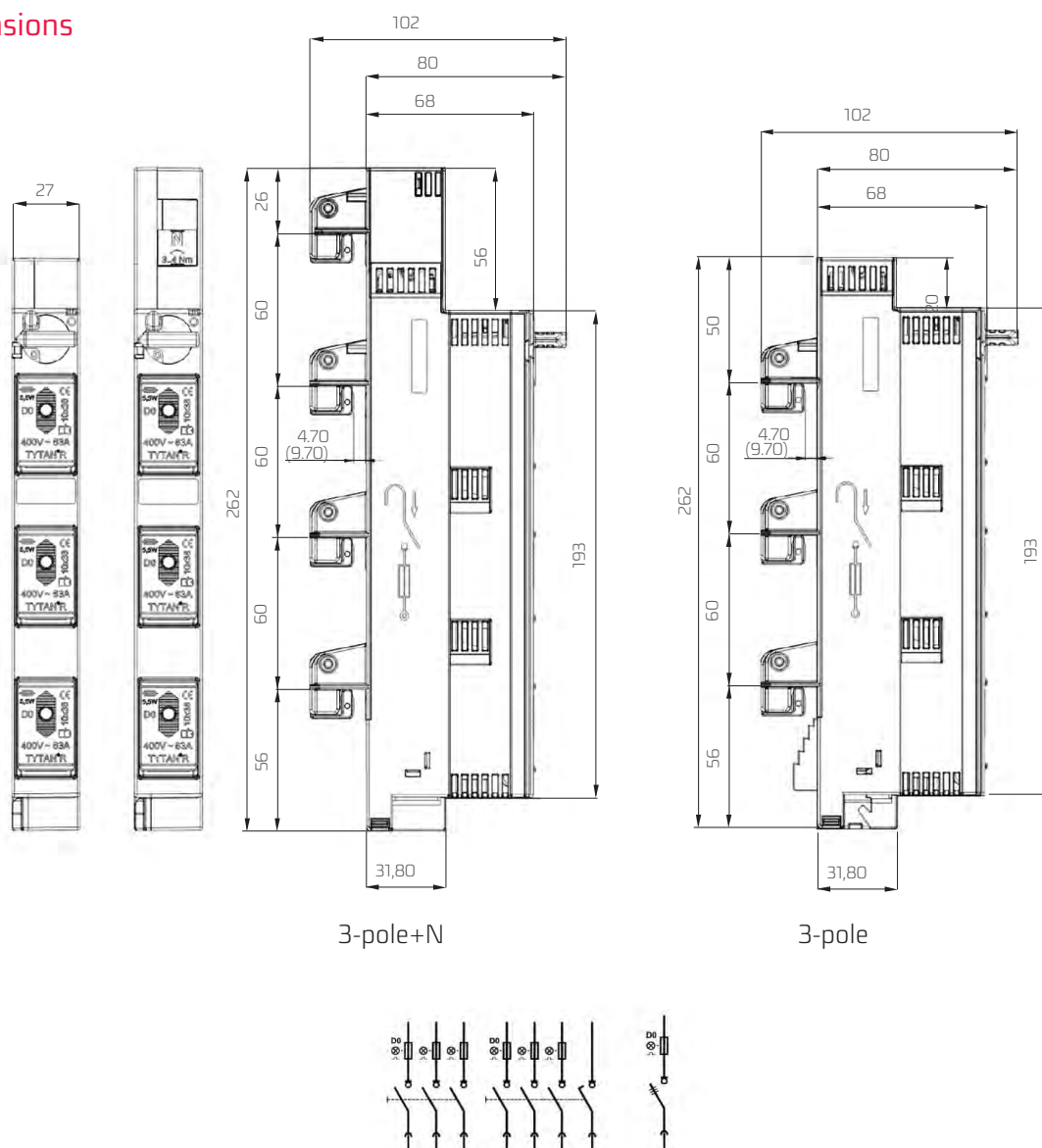
Table 169. Technical data

| Classification                                    | Fuse switch disconnecter                                                                |
|---------------------------------------------------|-----------------------------------------------------------------------------------------|
| Standard                                          | IEC 947-3                                                                               |
| Adapted to DO fuse links DIN 49522                | DO1: 2, 4, 6, 10, 16 AgL, gG, aM<br>DO2: 20, 25, 32, 35, 40, 50, 63 AgL, gG, aM         |
| Adapted to cylindrical fuse links IEC 60269-1     | 10 x 38 mm: 2, 4, 6, 8, 10, 12, 16, 20, 25, 32A                                         |
| Flammability class/track resistance               | UL94 / V0, glowing wire attempt 960 °C / CTI 600                                        |
| Degree of protection/touch protection             | IP 20 / protection against finger and palm touch                                        |
| Rated switching voltage $U_e$                     |                                                                                         |
| -DO                                               | 400 V AC                                                                                |
| -10 x 38                                          | 500 V AC                                                                                |
| Rated switching current $I_e$                     | DO: 63A; 10 x 38: 32 A                                                                  |
| Overvoltage category/pollution degree             | IV/3 (DIN VDE 0110)                                                                     |
| Rated impulse withstand voltage $U_{imp}$         | 6000 V                                                                                  |
| Terminal type                                     | stainless steel frame terminal 1,5...25 mm <sup>2</sup> ;<br>$M_D$ 3,5 Nm, cross recess |
| Rated short-circuit switch-on capability $I_{cm}$ | 50 kA <sub>eff</sub>                                                                    |
| Utilization category                              | AC 22B                                                                                  |
| Busbar dimensions                                 | width: 12 mm-30 mm; thickness: 5 mm and 10 mm                                           |

Table 170. RBDO - Versions

| Position                                                                 | Index no.   | Weight [kg] | Package [pcs.] |
|--------------------------------------------------------------------------|-------------|-------------|----------------|
| <b>400 V~, DO:2...63 A; 10x38: 2...32 A 400 V~, 3-pole</b>               |             |             |                |
| 3-pole                                                                   | 0000106601T | 0,40        | 3              |
| 3-pole + neutral pole N                                                  | 0000106602T | 0,40        | 3              |
| 3-pole with microswitch for switching status signalling                  | 0000106603T | 0,40        | 3              |
| 3-pole + neutral pole N with microswitch for switching status signalling | 0000106604T | 0,40        | 3              |
| <b>500 V~, 10x38: 2...25 A</b>                                           |             |             |                |
| 3-pole                                                                   | 0000106631T | 0,40        | 3              |
| 3-pole + neutral pole N                                                  | 0000106632T | 0,40        | 3              |
| 3-pole with microswitch for switching status signalling                  | 0000106633T | 0,40        | 3              |
| 3-pole + neutral pole N with microswitch for switching status signalling | 0000106634T | 0,40        | 3              |
| Rear contact guard, top and bottom                                       | 0000106626T | 0,01        | 10             |
| Adapter reducing spring for the DO1 and DO2 fuse link                    | 0000101774T | 0,01        | 12             |
| Padlock in busbar snap-on container                                      | 0000104664T | 0,05        | 1              |
| Pin used as a solid link                                                 | 0000101780T | 0,01        | 3              |

## Dimensions



# RBDO/60

## Primary security



APASYS 60

**RBDO** - main protection switch indicates fuse breaks and has the capability of transmitting a floating signal via an RJ-connection cable on the external relay. A dangerous overheating of the fuse switch can be reliably identified and reported. The serial interface on each relay has a floating signal via a relay contact. For collective disturbance monitoring it is possible to put 12 fuse switches together.



Table 171. RBDO/60 - main protection with control of the fuse link status and temperature

| Versions                                                                                                                  | Index no.   | Weight [kg] | Package [pcs.] |
|---------------------------------------------------------------------------------------------------------------------------|-------------|-------------|----------------|
| <b>400 V~, D0:2...63A; 10x38: 2...32A</b>                                                                                 |             |             |                |
| RBDO/60 H1 3-pole                                                                                                         | 0000106701T | 0,40        | 3              |
| RBDO/60 H1 3-pole + neutral pole N                                                                                        | 0000106702T | 0,40        | 3              |
| <b>500 V~, 10x38: 2...25A</b>                                                                                             |             |             |                |
| RBDO/60 H1 3-pole                                                                                                         | 0000106731T | 0,40        | 3              |
| RBDO/60 H1 3-pole + neutral pole N                                                                                        | 0000106732T | 0,40        | 3              |
| Relay module of the primary security HR11; 3 -terminals<br>(indicates fuse link burnout, overtemperature, turning on/off) | 0000103711T | 0,12        | 1              |
| Relay module of the primary security HR12; 2 -terminals<br>(indicates fuse link burnout, overtemperature)                 | 0000103712T | 0,12        | 1              |
| Relay module of the primary security HR13; 1 -terminal<br>(indicates fuse link burnout, overtemperature)                  | 0000103713T | 0,12        | 1              |
| RJ cable, length 200 mm                                                                                                   | 0000103730T | 0,01        | 1              |
| RJ cable, length 500 mm                                                                                                   | 0000103731T | 0,01        | 1              |
| RJ cable, length 1000 mm                                                                                                  | 0000103732T | 0,01        | 1              |
| Network adapter 100-240 V AC/24 V DC 10 W                                                                                 | 0000103700T | 0,10        | 1              |
| Network adapter 100-240 V AC/24 V DC 30 W                                                                                 | 0000103701T | 0,25        | 1              |

**RBDO/60** main protection signalises the fuse activation and transmits information by means of an RJ cable to externally placed safety automatics devices. At the same time, unsafe overheating of the device is shown and reported.

**Interface** - a voltage-free connection terminal is available in the relay section.

There is a possibility of collective signalling of any irregularities through serial connection of devices. The collective signal can handle up to 12 devices.

Power supply for the relay part: 24 V DC

Outputs of the relay part:

- 1 terminal for the fuse link burnout
- 1 terminal for overtemperature
- 1 terminal for the on/off position

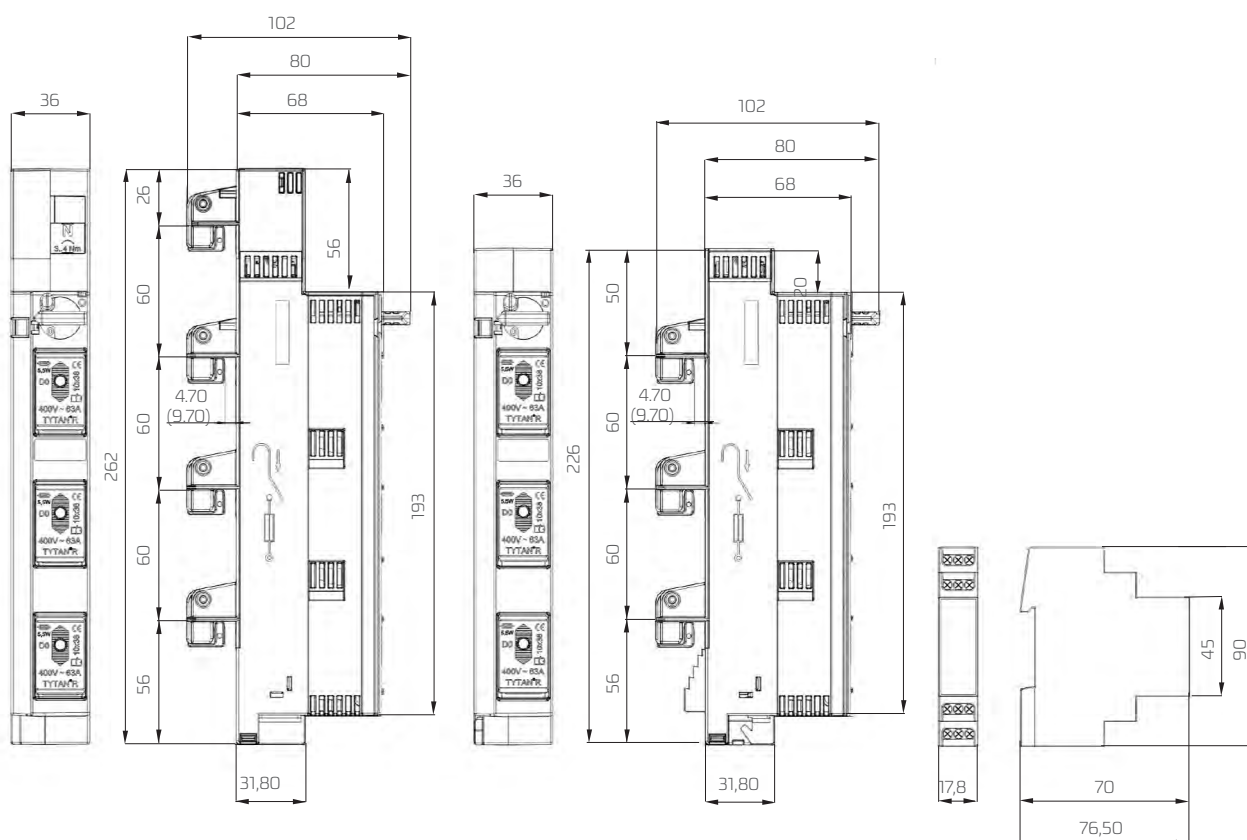


Correct operating status

Fuse link burnout

Overtemperature in the device

## Dimensions



# PARTITIONS AND SHROUDS



APASYS 60

The partition and shroud system offers comprehensive contact protection for the APASYS 60

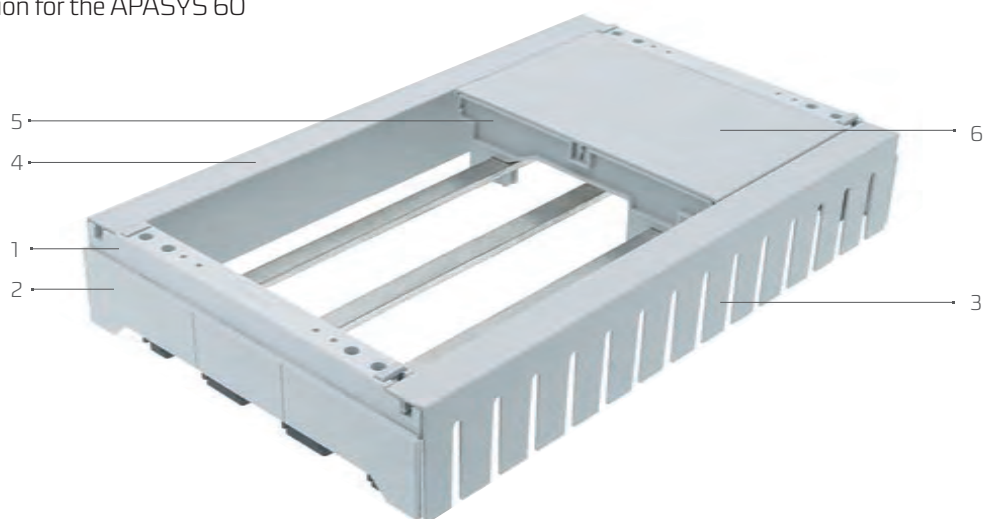


Table 172. Cover system

| Versions                                           |                | Index no.   | Weight [kg] | Package [pcs.] |
|----------------------------------------------------|----------------|-------------|-------------|----------------|
| 1. Cover shroud for the busbar support 0000106300T |                | 0000126070T | 0,06        | 10             |
| 2. Side cover for the busbar support 0000106300T   |                | 0000126071T | 0,03        | 10             |
| 3. Slitted shroud                                  | length 2000 mm | 0000126072T | 0,47        | 5              |
|                                                    | length 1000 mm | 0000126076T | 0,24        |                |
| 4. Closed shroud                                   | length 2000 mm | 0000126073T | 0,53        | 5              |
|                                                    | length 1000 mm | 0000126077T | 0,26        |                |
| 5. Panel mount, support edge 32 mm                 |                | 0000126074T | 0,04        | 10             |
| 6. Panel cover, length 1000 mm                     |                | 0000126075T | 0,64        | 2              |



Table 173. Busbar covers length 1000 mm, for copper rails up to 30 mm wide

| Versions                                    | Index no.   | Weight [kg] | Package [pcs.] |
|---------------------------------------------|-------------|-------------|----------------|
| Covers for busbar 5 mm thick, 1000 mm long  | 0000156076T | 0,07        | 10             |
| Covers for busbar 10 mm thick, 1000 mm long | 0000156077T | 0,09        | 10             |





# Modular equipment

## Mounted on DIN 35 mm rail

# DO - TYTAN® II FUSE SWITCH DISCONNECTOR



35 mm DIN rail

- flashing response indicator (in the fuse sleeve)
- full coding for all current values of the fuse link
- possibility of sealing
- possibility of blocking



Table 174. Technical data

| Classification                            | Fuse switch disconnector                                                               |
|-------------------------------------------|----------------------------------------------------------------------------------------|
| Standard                                  | IEC/EN 60947-3                                                                         |
| Adapted to fuse switch disconnectors      | D01: 1, 2, 4, 6, 10, 13, 16 A<br>D02: 20, 25, 32, 35, 40, 50, 63 A<br>gL, gG, aM class |
| flammability class/track resistance       | V0, glowing wire testing 960°C / CTI 600                                               |
| Degree of protection/touch protection     | IP 20 / protection against finger and palm touch                                       |
| Rated operating voltage $U_e$             |                                                                                        |
| -AC                                       | 400 V                                                                                  |
| -DC                                       | 1-pole 110 V, 2-pole 220 V                                                             |
| Rated switching current $I_e$             | 63 A                                                                                   |
| Rated impulse withstand voltage $U_{imp}$ | 6 kA                                                                                   |
| Rated short-circuit current $I_{cm}$      | 50 kA <sub>eff</sub>                                                                   |
| Utilization category                      | AC 22B, DC 21 B                                                                        |
| Overvoltage category/pollution degree     | IV/3 (DIN VDE 0110)                                                                    |
| Terminal type                             | stainless steel cage terminals 1.5...35 mm <sup>2</sup> ; MD 4 Nm                      |

TYTAN II fuse switch disconnecter should be equipped with a fuse sleeve (see Table 30)

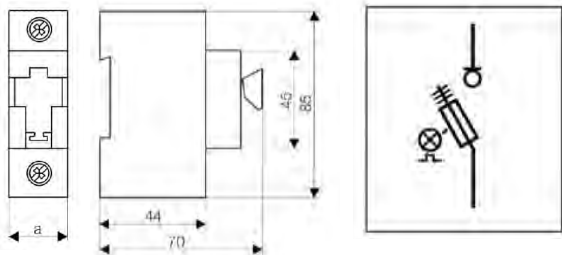


Table 175. Construction width

| Article no. | Construction width a [mm] |
|-------------|---------------------------|
| 0000102651T | 27                        |
| 0000102652T | 54                        |
| 0000102653T | 81                        |
| 0000102641T | 54                        |
| 0000102643T | 108                       |





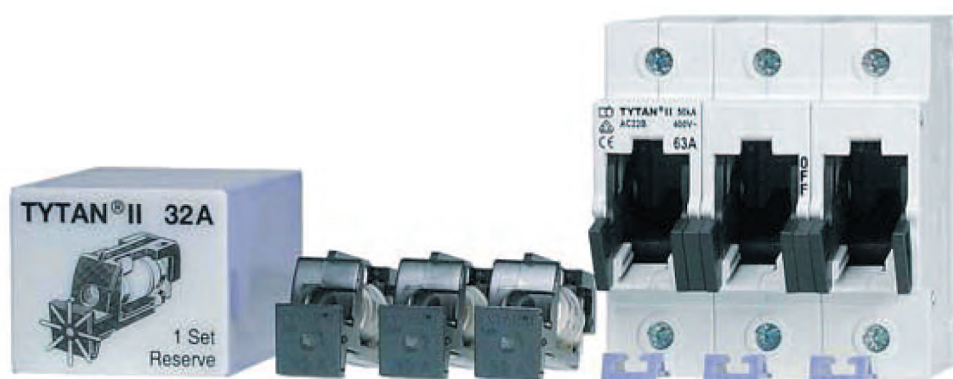


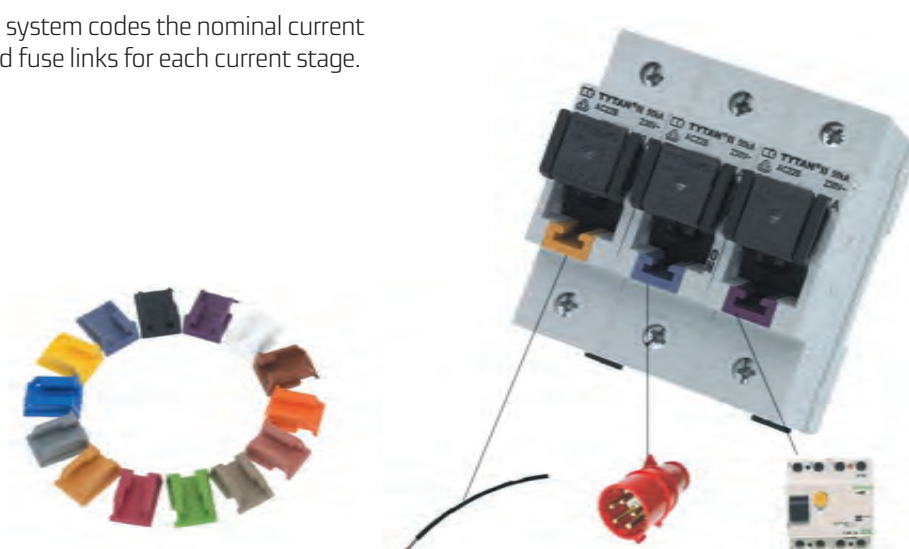
Table 176. TYTAN II Fuse switch disconnectors

| Versions   | Index no.   | Weight [kg] | Package [pcs.] |
|------------|-------------|-------------|----------------|
| 1-pole     | 0000102651T | 0,12        | 12             |
| 2-pole     | 0000102652T | 0,23        | 6              |
| 3-pole     | 0000102653T | 0,35        | 4              |
| 1-pole + N | 0000102641T | 0,25        | 6              |
| 3-pole + N | 0000102643T | 0,48        | 3              |

TYTAN II fuse switch disconnectors should be equipped with a fuse sleeve (see Table 30)

## Flawless differentiation of rated current due to full coding

The TYTAN® system codes the nominal current with coloured fuse links for each current stage.



e.g.: 13 A diameter 1,5 mm<sup>2</sup>

e.g.: 32 A CEE connector

e.g.: 40A for the ground-fault circuit

# TYTAN® II FUSE LINKS



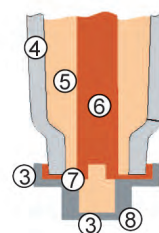
35 mm DIN rail

**D0** - Fuse link with an integrated flashing response indicator for use with the **TYTAN® II** fuse sleeve disconnectors



## Low loss due to the fuse sleeve

1. Independent constant terminal pressure
2. Spring loaded terminal
3. Double contact saves 0.8 W per pole
4. Ceramic tube
5. Quartz sand
6. Fuse wire
7. Base contact
8. Cover for closing sand



The set for TYTAN II fuse switch disconnector consists of:

- 3 x D0 fuse link
- 3 x fuse sleeve
- box for reserve fuse links



Table 177. TYTAN II fuse sleeves

| Versions | colour | Index no.    | Weight [kg] | Package [pcs.] |
|----------|--------|--------------|-------------|----------------|
| 1A set   | orange | 0000102601T  | 0,13        | 1/12           |
| 2A set   | pink   | 0000102602T  | 0,13        | 1/12           |
| 4A set   | brown  | 0000102604T  | 0,13        | 1/12           |
| 6A set   | green  | 0000102606T  | 0,13        | 1/12           |
| 10A set  | red    | 0000102610T  | 0,13        | 1/12           |
| 13A set  | ochre  | 0000102613T  | 0,13        | 1/12           |
| 16A set  | grey   | 0000102616T  | 0,13        | 1/12           |
| 20A set  | blue   | 0000102620T  | 0,13        | 1/12           |
| 25A set  | yellow | 0000102625T  | 0,13        | 1/12           |
| 32A set  | lilac  | 0000102632T  | 0,13        | 1/12           |
| 35A set  | black  | 0000102635T  | 0,13        | 1/12           |
| 40A set  | purple | 0000102640T  | 0,13        | 1/12           |
| 50A set  | white  | 0000102650T  | 0,13        | 1/12           |
| 63A set  | copper | 000010 2663T | 0,13        | 1/12           |

## TYTAN II ACCESSORIES

Set of three jumpers in sleeves in a box for mounting on a mounting rail



Table 178. TYTAN II fuse sleeves with jumpers

| Versions   | Index no.   | Weight [kg] | Package [pcs.] |
|------------|-------------|-------------|----------------|
| Jumper set | 0002102300T | 0,2         | 1/12           |

After installation in the device, the set transforms it into a switch disconnecter

Lock against restarting in the mounting rail box



Table 179. TYTAN II fuse sleeves with jumpers

| Versions             | colour | Index no.   | Weight [kg] | Package [pcs.] |
|----------------------|--------|-------------|-------------|----------------|
| 5A5 cylindrical lock | black  | 0001020071T | 0,09        | 1/12           |
| 5A4 cylindrical lock | blue   | 0001020072T | 0,09        | 1/12           |
| 5A3 cylindrical lock | green  | 0001020073T | 0,09        | 1/12           |
| 5A1 cylindrical lock | yellow | 0001020074T | 0,09        | 1/12           |
| 5A2 cylindrical lock | red    | 0001020075T | 0,09        | 1/12           |
| Plastic lock         | black  | 0001020081T | 0,06        | 1/12           |
| Plastic lock         | blue   | 0001020082T | 0,06        | 1/12           |
| Plastic lock         | green  | 0001020083T | 0,06        | 1/12           |
| Plastic lock         | yellow | 0001020084T | 0,06        | 1/12           |
| Plastic lock         | red    | 0001020085T | 0,06        | 1/12           |

# D01 - TYTAN® I FUSE SWITCH DISCONNECTOR



35 mm DIN rail

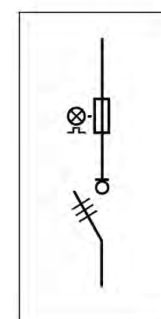
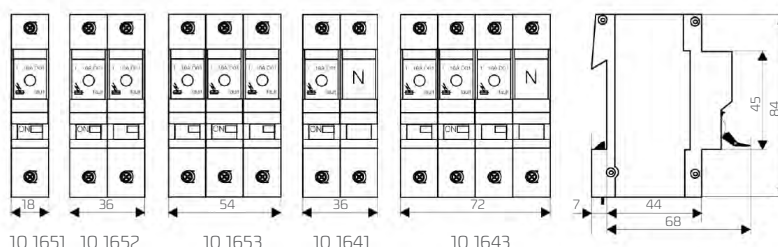
- flashing response indicator
- automatic coding for current values of the fuse link
- possibility of sealing



Table 180. Technical data

| Classification                            | Fuse switch disconnecter                                            |
|-------------------------------------------|---------------------------------------------------------------------|
| Standard                                  | IEC/EN 60947-3                                                      |
| Adapted to fuse switch disconnectors      | D01: 1, 2, 4, 6, 10, 13, 16; gL, gG, aM classes                     |
| flammability class/track resistance       | VO, glowing wire testing 960 °C / CTI 600                           |
| Degree of protection/touch protection     | IP 20 / protection against finger and palm touch                    |
| Rated operating voltage $U_e$             | 400 V                                                               |
| -AC                                       | 1-pole 110 V, 2-pole 220 V                                          |
| -DC                                       |                                                                     |
| Rated switching current $I_e$             | 16A                                                                 |
| Rated impulse withstand voltage $U_{imp}$ | 6kA                                                                 |
| Rated short-circuit current $I_{cm}$      | 50 kA <sub>eff</sub>                                                |
| Utilization category AC                   | 22B                                                                 |
| Overvoltage category/pollution degree     | IV/3 (DIN VDE 0110)                                                 |
| Terminal type                             | stainless steel cage terminals 1.5...25 mm <sup>2</sup> ; MD 2.5 Nm |

## Dimensions



#### Fuse sleeve

- it has a built-in optoelectrical flashing signalling device of the fuse response
- flashing error light replaces the unreliable mechanical indicators. As a result, a control opening is not usually required, the protective insulation remains intact
- protects the operator. When heated up to 100°C, the fuse is not directly touched by fingers during replacement



Table 181. TYTAN I Fuse switch disconnecter

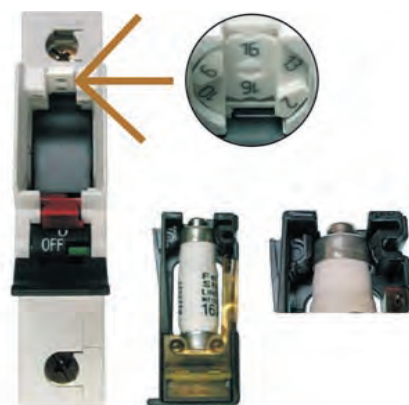
| Versions   | Index no.   | Weight [kg] | Package [pcs.] |
|------------|-------------|-------------|----------------|
| 1-pole     | 0000101651T | 0,09        | 12             |
| 2-pole     | 0000101652T | 0,18        | 6              |
| 3-pole     | 0000101653T | 0,27        | 4              |
| 1-pole + N | 0000101641T | 0,17        | 6              |
| 3-pole + N | 0000101643T | 0,35        | 3              |

#### Automatic coding

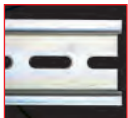
TYTAN® I structurally codes the power of the rated fuse current. The system is operated with one fuse sleeve for all current powers.

The coding of the maximum applicable rated fuse current in the fuse disconnecter is done by setting the appropriate value on the belt pulley.

By inserting the fuse in the fuse sleeve, the coding spring is ejected depending on its rated current value.



# DO - TYTAN® T FUSE SWITCH DISCONNECTOR



35 mm DIN rail

- flashing response indicator
- for DO and cylindrical 10x38 mm fuse switches
- universal fuse sleeve
- only 4TE width
- possibility of sealing

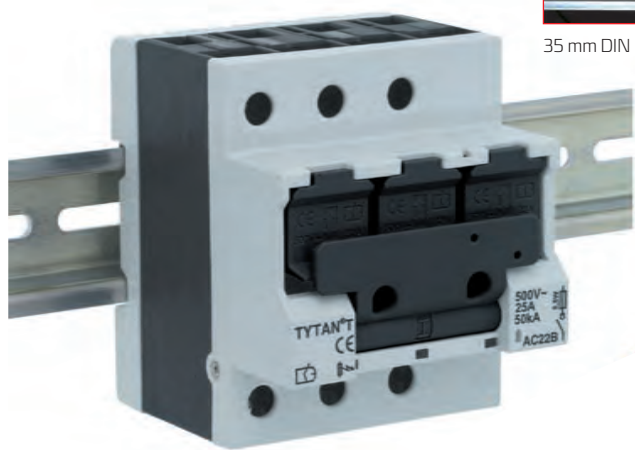


Table 182. Technical data

| Classification                            | Fuse switch disconnector                                                               |
|-------------------------------------------|----------------------------------------------------------------------------------------|
| Standard                                  | IEC/EN 60947-3                                                                         |
| Adapted to fuse switch disconnectors      | DO1: 1, 2, 4, 6, 10, 13, 16 A<br>DO2: 20, 25, 32, 35, 40, 50, 63 A<br>gL, gG, aM class |
| Adapted to fuse switch disconnectors      | Cylindrical 10x38 mm 2, 4, 6, 8, 10, 12, 16, 20, 25, 32A                               |
| flammability class/track resistance       | VO, glowing wire testing 960°C / CTI 600                                               |
| Degree of protection/touch protection     | IP 20 / protection against finger and palm touch                                       |
| Rated operating voltage $U_e$             | 400 V AC                                                                               |
| Rated switching current $I_e$             | DO: 63A; 10x38: 32A                                                                    |
| Rated impulse withstand voltage $U_{imp}$ | 6 kA                                                                                   |
| Rated short-circuit current $I_{cm}$      | 50 kA <sub>eff</sub>                                                                   |
| Utilization category AC                   | 22B                                                                                    |
| Overvoltage category/pollution degree     | IV/3 (DIN VDE 0110)                                                                    |
| Terminal type                             | stainless steel cage terminals 1.5...25 mm <sup>2</sup> ; MD 3.5 Nm                    |

## Dimensions

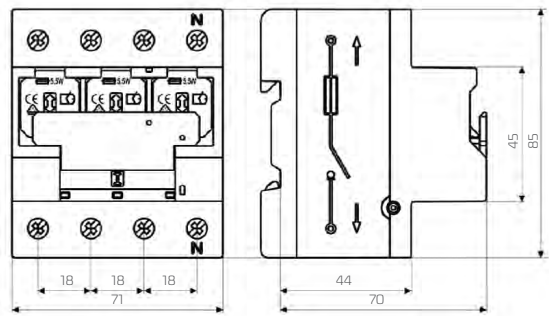


Table 183. TYTAN T Fuse switch disconnector

| Versions                                                       | Index no.   | Weight [kg] | Package [pcs.] |
|----------------------------------------------------------------|-------------|-------------|----------------|
| 3-pole                                                         | 0000104213T | 0,40        | 3              |
| 3-pole + N                                                     | 0000104215T | 0,40        | 3              |
| Reducing spring of the DO2 fuse sleeve to DO1 and for 10x38 mm | 0000101774T | 0,01        | 12             |



# DO - CORON<sup>®</sup> 2 FUSE SWITCH DISCONNECTOR



35 mm DIN rail

- flashing response indicator
- universal fuse sleeve
- possibility of sealing
- possibility of padlocking (padlock handle up to Ø 5mm)



Table 184. Technical data

| Classification                            | Fuse switch disconnectors                                                              |
|-------------------------------------------|----------------------------------------------------------------------------------------|
| Standard                                  | IEC/EN 60947-3                                                                         |
| Adapted to fuse switch disconnectors      | D01: 1, 2, 4, 6, 10, 13, 16 A<br>D02: 20, 25, 32, 35, 40, 50, 63 A<br>gL, gG, aM class |
| flammability class/track resistance       | VD, glowing wire testing 960 °C / CTI 600                                              |
| Degree of protection/touch protection     | IP 20 / protection against finger and palm touch                                       |
| Rated operating voltage $U_e$             | 400 V                                                                                  |
| -AC                                       | 1-pole 110 V, 2-pole 220 V                                                             |
| -DC                                       |                                                                                        |
| Rated switching current $I_e$             | 63 A                                                                                   |
| Rated impulse withstand voltage $U_{imp}$ | 6 kA                                                                                   |
| Rated short-circuit current $I_{cm}$      | 50 kA <sub>eff</sub>                                                                   |
| Utilization category                      | AC 22B                                                                                 |
| Overvoltage category/pollution degree     | IV/3 (DIN VDE 0110)                                                                    |
| Terminal type                             | stainless steel cage terminals 1.5...35 mm <sup>2</sup> ; MD 4 Nm                      |

## Dimensions

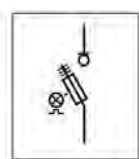
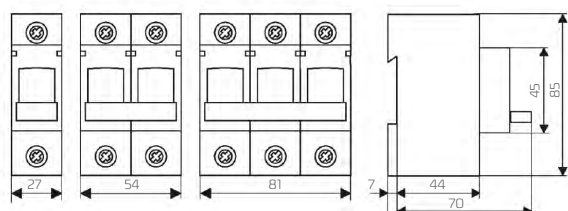


Table 185. CORON 2 Fuse switch disconnectors

| Versions                                      | Index no.   | Weight [kg] | Package [pcs.] |
|-----------------------------------------------|-------------|-------------|----------------|
| 1-pole                                        | 0000104651T | 0,13        | 12             |
| 2-pole                                        | 0000104652T | 0,26        | 6              |
| 3-pole                                        | 0000104653T | 0,40        | 4              |
| 1-pole + N                                    | 0000104641T | 0,26        | 6              |
| 3-pole + N                                    | 0000104643T | 0,53        | 3              |
| Reducing spring of the D02 fuse sleeve to D01 | 0000104601T | 0,01        | 12             |





# DO-E18 FUSE SUBSTRUCTURE



35 mm DIN rail

## Technical data

- 1 - 3 pole; DIN 49524
- for DO2 fuses 63 A
- 400 V AC/250 V/DC
- mounting: DIN busbar - snap-on or board with screws
- connection terminals: stainless steel frame terminal 1.5-35 mm<sup>2</sup>



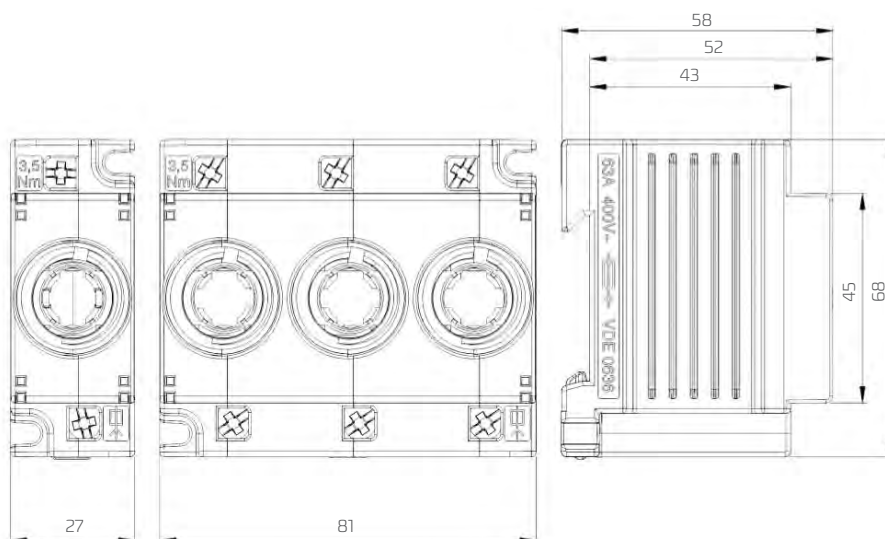
Table 186. Versions

| Versions | Index no.   | Package |
|----------|-------------|---------|
| 1-pole   | 0000104011T | 20      |
| 3-pole   | 0000104013T | 6       |

Fuse head: Table 44. Accessories

For DO1-size fuse, the reduction insert no. 0000121401T must be used

## Dimensions



# DO FUSE LINKS

400 V~/250 V-; DIN 49522 DIN VDE 0636 IEC 60269

A snap-on spare parts container installed in the switchboard allows for immediate replacement of inserts and re-connection of the circuit.



Table 187. Fuse links in the snap-on container for the TH busbar

| Versions                                                                                                       | Index no.   | Weight [kg] | Package [pcs.] |
|----------------------------------------------------------------------------------------------------------------|-------------|-------------|----------------|
| 12X 2A D01 in the 1.5TE container                                                                              | 0000101202T | 0,10        | 1/24           |
| 12X 4A D01 in the 1.5TE container                                                                              | 0000101204T | 0,10        | 1/24           |
| 12X 6A D01 in the 1.5TE container                                                                              | 0000101206T | 0,10        | 1/24           |
| 12X 10A D01 in the 1.5TE container                                                                             | 0000101210T | 0,11        | 1/24           |
| 12X 13A D01 in the 1.5TE container                                                                             | 0000101213T | 0,11        | 1/24           |
| 12X 16A D01 in the 1.5TE container                                                                             | 0000101216T | 0,11        | 1/24           |
| 12X 20A D02 in the 3TE container                                                                               | 0000101220T | 0,18        | 1/12           |
| 12X 25A D02 in the 3TE container                                                                               | 0000101225T | 0,18        | 1/12           |
| 12X 32A D02 in the 3TE container                                                                               | 0000101232T | 0,19        | 1/12           |
| 12X 35A D02 in the 3TE container                                                                               | 0000101235T | 0,21        | 1/12           |
| 12X 40A D02 in the 3TE container                                                                               | 0000101240T | 0,21        | 1/12           |
| 12X 50A D02 in the 3TE container                                                                               | 0000101250T | 0,22        | 1/12           |
| 12X 63A D02 in the 3TE container                                                                               | 0000101263T | 0,22        | 1/12           |
| 13x set of 12 fuse switch disconnectors<br>The set contains all fuse switch disconnectors from the range 2..63 | 0000101200T | 2,10        | 1              |



Table 188. Fuse links

| Versions | Index no.   | Weight [kg] | Package [pcs.] |
|----------|-------------|-------------|----------------|
| D01 2A   | 0000100202T | 0,10        | 50             |
| D01 4A   | 0000100204T | 0,10        | 50             |
| D01 6A   | 0000100206T | 0,10        | 50             |
| D01 10A  | 0000100210T | 0,11        | 50             |
| D01 13A  | 0000100213T | 0,11        | 50             |
| D01 16A  | 0000100216T | 0,11        | 50             |
| D02 20A  | 0000100220T | 0,18        | 50             |
| D02 25A  | 0000100225T | 0,18        | 50             |
| D02 32A  | 0000100232T | 0,19        | 50             |
| D02 35A  | 0000100235T | 0,21        | 50             |
| D02 40A  | 0000100240T | 0,21        | 50             |
| D02 50A  | 0000100250T | 0,22        | 50             |
| D02 63A  | 0000100263T | 0,22        | 50             |



# CALIBRE INSERT

DIN 49523 DIN VDE 0636 IEC 60269



Table 189. Calibre insert in the snap-on container for the TH rail

| Versions                                                | Index no.   | Weight [kg] | Package [pcs.] |
|---------------------------------------------------------|-------------|-------------|----------------|
| 12X 2A D01 in the 1.5TE container                       | 0000101302T | 0,03        | 1/24           |
| 12X 4A D01 in the 1.5TE container                       | 0000101304T | 0,03        | 1/24           |
| 12X 6A D01 in the 1.5TE container                       | 0000101306T | 0,03        | 1/24           |
| 12X 10A D01 in the 1.5TE container                      | 0000101310T | 0,03        | 1/24           |
| 12X 2A D02 in the 3TE container                         | 0000101402T | 0,03        | 1/24           |
| 12X 4A D02 in the 3TE container                         | 0000101404T | 0,03        | 1/24           |
| 12X 6A D02 in the 3TE container                         | 0000101406T | 0,03        | 1/24           |
| 12X 10A D02 in the 3TE container                        | 0000101410T | 0,03        | 1/24           |
| 12X 16A D02 in the 3TE container                        | 0000101416T | 0,03        | 1/24           |
| 12X 20A D02 in the 3TE container                        | 0000101420T | 0,03        | 1/24           |
| 12X 25A D02 in the 3TE container                        | 0000101425T | 0,03        | 1/24           |
| 12X 35A D02 in the 3TE container                        | 0000101435T | 0,03        | 1/24           |
| 12X 50A D02 in the 3TE container                        | 0000101450T | 0,03        | 1/24           |
| Full set of 13x12 calibre inserts from the range 2-50 A | 0000101300T | 0,39        | 1              |

Table 190. Calibre insert

| Versions    | Index no.   | Weight [kg] | Package [pcs.] |
|-------------|-------------|-------------|----------------|
| D01 E14 2A  | 0000100302T | 0,001       | 50             |
| D01 E14 4A  | 0000100304T | 0,001       | 50             |
| D01 E14 6A  | 0000100306T | 0,001       | 50             |
| D01 E14 10A | 0000100310T | 0,001       | 50             |
| D02 E18 2A  | 0000100402T | 0,001       | 50             |
| D02 E18 4A  | 0000100404T | 0,001       | 50             |
| D01 E18 6A  | 0000100406T | 0,001       | 50             |
| D01 E18 10A | 0000100410T | 0,001       | 50             |
| D01 E18 16A | 0000100416T | 0,001       | 50             |
| D01 E18 20A | 0000100420T | 0,001       | 50             |
| D01 E18 25A | 0000100425T | 0,001       | 50             |
| D01 E18 35A | 0000100435T | 0,001       | 50             |
| D01 E18 50A | 0000100450T | 0,001       | 50             |



Table 191. Accessories

| Versions                                           | Index no.   | Weight [kg] | Package [pcs.] |
|----------------------------------------------------|-------------|-------------|----------------|
| Key for mounting the calibre insert                | 0000101400T | 0,02        | 1/12           |
| Plastic D02 fuse head with a measuring hole        | 0000126024T | 0,01        | 20             |
| Reduction insert for fuse switch disconnectors D01 | 0000121401T | 0,01        | 20             |
| Porcelain D02 fuse head with a measuring hole      | 0000127024T | 0,01        | 20             |
| Porcelain D01 fuse head with a measuring hole      | 0000127025T | 0,01        | 20             |



0000121401T





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