

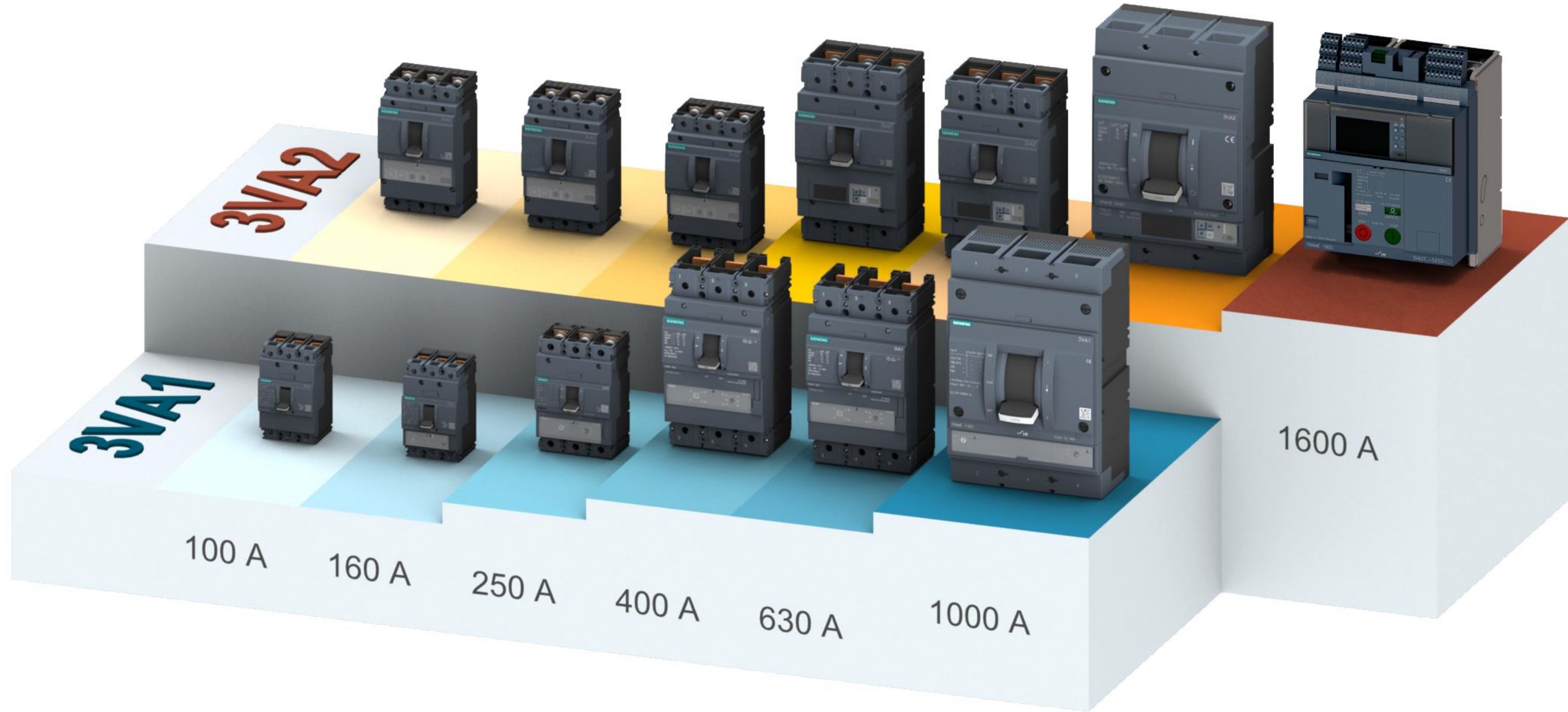


## 3VA moulded case circuit breakers

# 3VA moulded case circuit breakers



# Overview



## Comparison Modeion x 3VA

	Modeion	3VA
Wide range of connecting sets	✓	✓
Sets for replacement of previously manufactured circuit breakers	✓	✓
Use in DC applications	up to 160 A	up to 1 000 A
Possibility of installation of 2 auxiliary releases		✓
Number of poles	3-pole up to 1 600 A 4-pole only up to 630 A	1-pole, 2-pole up to 160 A 3-pole, 4-pole up to 630 A
Ability of data communication		✓
Integrated measuring function		✓
Short-circuit ultimate breaking capacity $I_{cu}$	up to 65 kA	up to 150 kA
$I_{cu} = I_{cs}$		✓

## Comparison 3VA1 x 3VA2

	3VA1	3VA2
Short-circuit ultimate breaking capacity $I_{cu}$	Max. 110 kA	Max. 150 kA
$I_{cu} = I_{cs}$	✓	✓
Frequency	up to 400 Hz	50/60 Hz
Ability of data communication		✓
Integrated measuring function		✓
Universal internal accessories up to 1 000 A	✓	✓
DC protection	✓	

## 3VA1 moulded case circuit breakers

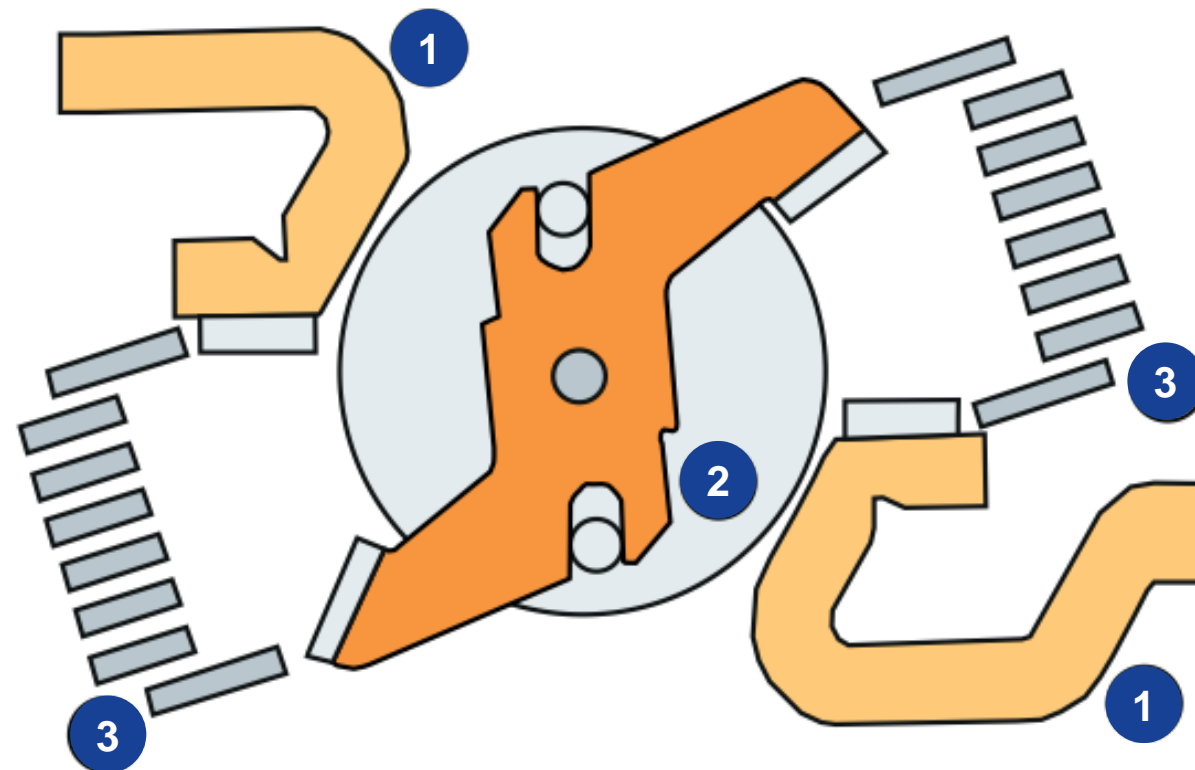
- Rated current 16 ÷ 1 000 A
- Rated short-circuit ultimate breaking capacity 16 ÷ 110 kA @ AC 415 V
- $I_{cu} = I_{cs}$
- Thermomagnetic trip unit
- 1P, 2P, 3P, 4P design
- Rotary mechanism
- Possibility of disconnector
- Use for DC applications
- Possibility of use up to 400 Hz



# Rotary contact system for circuit breakers up to 630 A

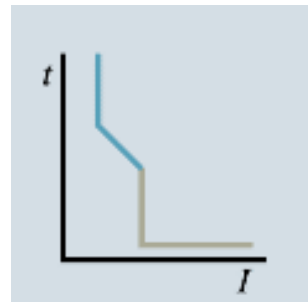
3VA circuit breakers are equipped with a double rotary contact system of arc interruption

- Advantages of the rotary system:
  - High breaking capacity
  - Short break time (at switching off by short-circuit current)
  - The cut off speed guarantees a reduction of the magnitude of the permissible short-circuit current and the permissible energy  $I^2t$ .



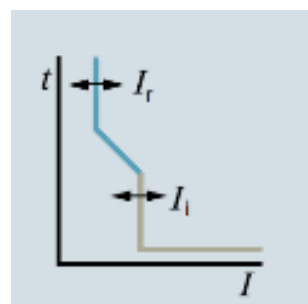
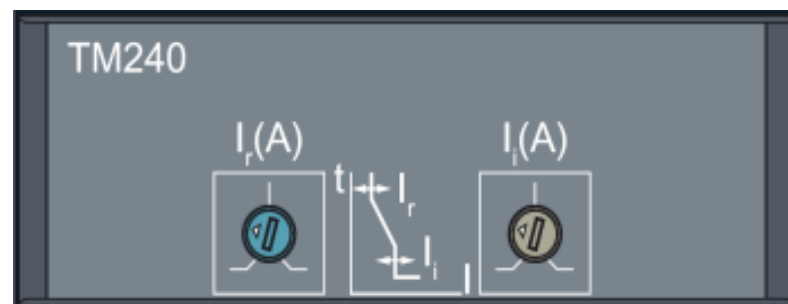
- ① Main contacts
- ② Rotary contact system
- ③ Plates in arc chutes

# Overview of trip units TMTU



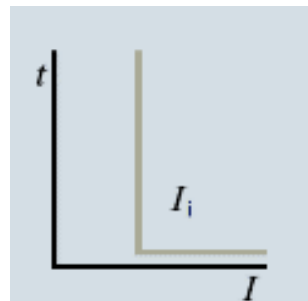
## Trip units TM210 (FTFM)

- Fixed thermal release
- Fixed short-circuit release ( $10 \times I_n$ )
- Replacement of BC160 – char. L



## Trip units TM240 (ATAM)

- Possibility of setting of thermal release
- Possibility of setting of short-circuit release
- Replacement of BC160 – char. D



## Trip units TM110, TM120 (AM)

- Motor protection - only short-circuit release
- Replacement of BC160 – char. N

# Internal accessories of 3VA1

Universal releases UNI

$U_e = DC 12 \div 48 V$

Shunt trip STL

$U_e = AC 24 \div 600 V$   
 $DC 12 \div 250 V$

Undervoltage releases UVR

$U_e = AC 24 \div 480 V$   
 $DC 12 \div 250 V$

Leading switches LCS

(they switch off about 20 ms in advance

before opening the main contacts of the circuit breaker)

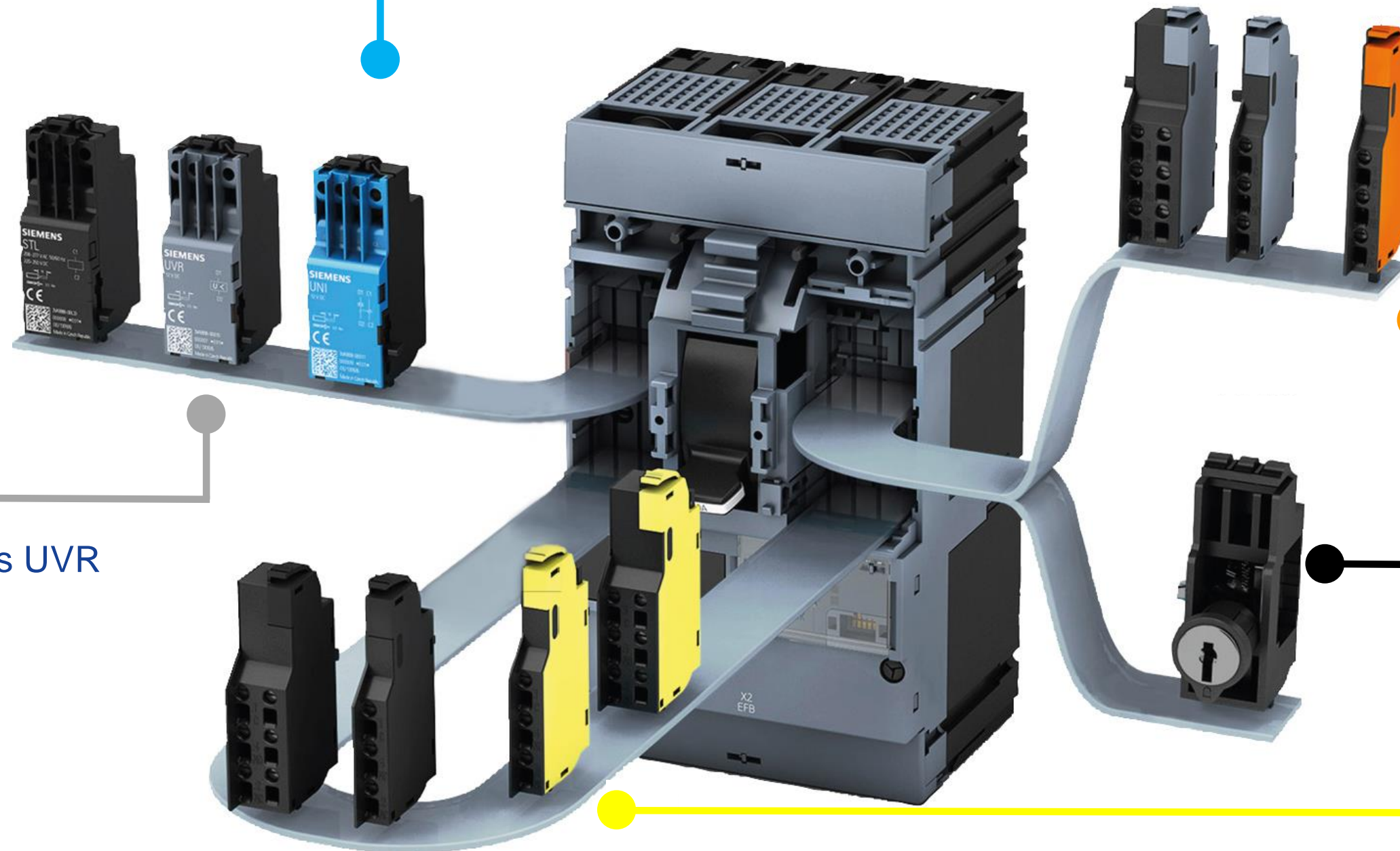
Signal switch SAS

- switching off by short-circuit

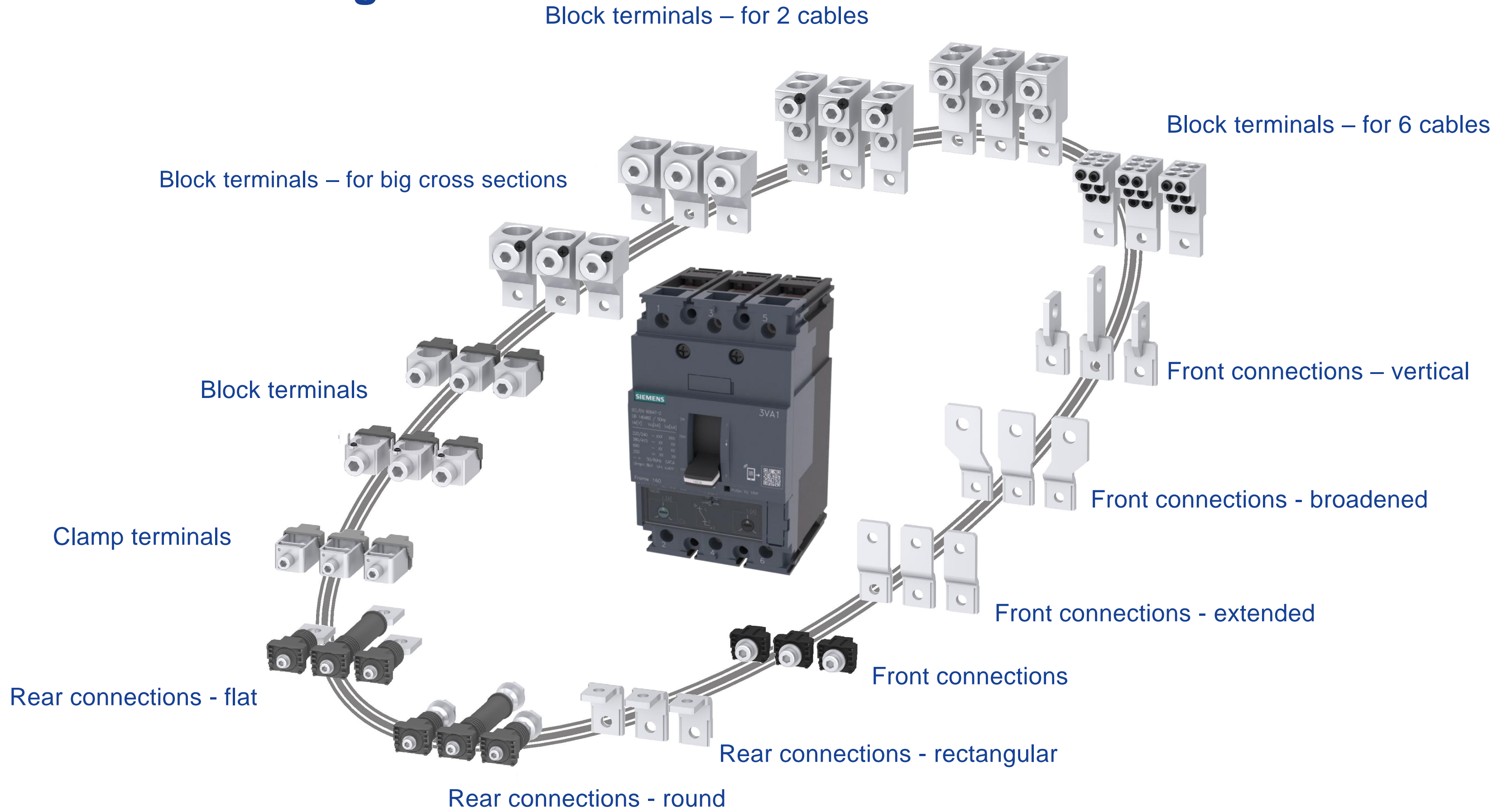
Cylindrical lock adapter

Relative switches TAS

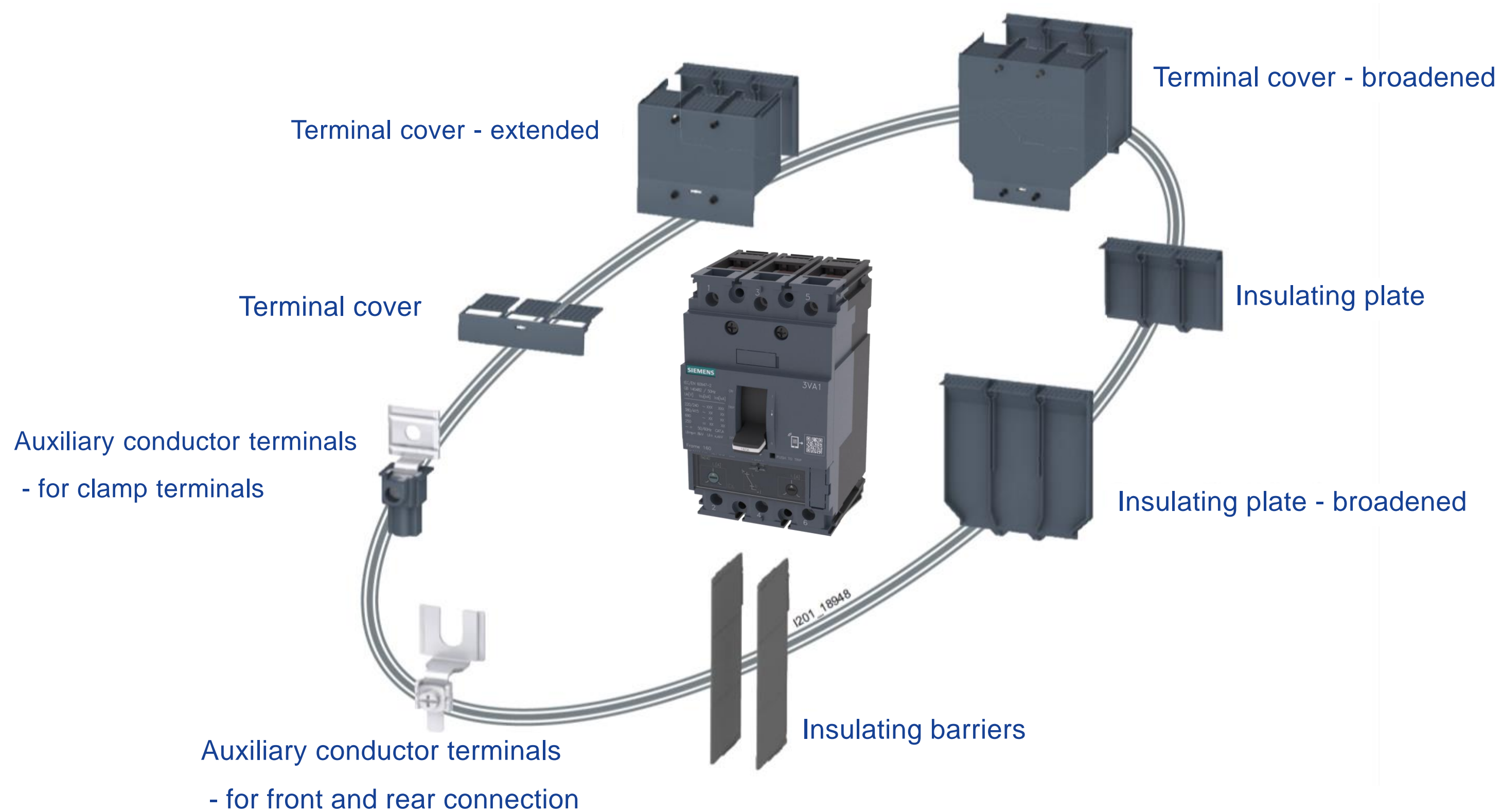
Auxiliary switches AUX



# 3VA1 connecting sets



# Terminal covers, insulation covers and potential terminals up to 1 000 A



## 3VA1 motor operators

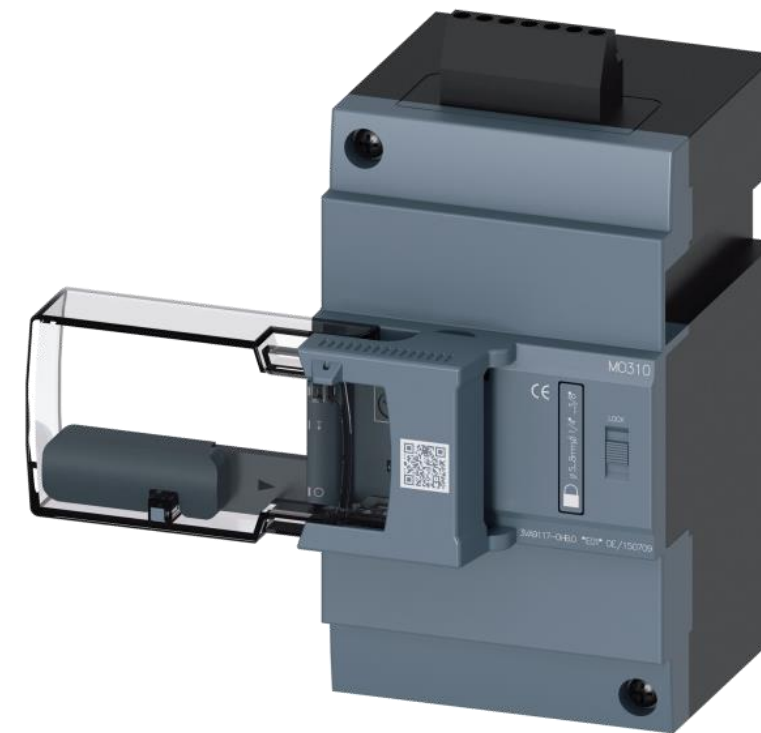
- Front motor operators MO320 (up to 630 A).
- Side mounted motor operators MO310 (up to 160 A).
- They serve for remote switching the circuit breakers on and off.



MO320

DC 24 ÷ 60 V

AC 110 ÷ 230 V / DC 110 ÷ 250 V



MO310

AC 42 ÷ 60 V / DC 24 ÷ 60 V

AC 110 ÷ 230 V / DC 110 ÷ 250 V

# 3VA1 rotary operators

## Front mounted rotary operators

- Standard design, design with backlight, design with door blocking, design as a main switch

## Door mounted rotary operators

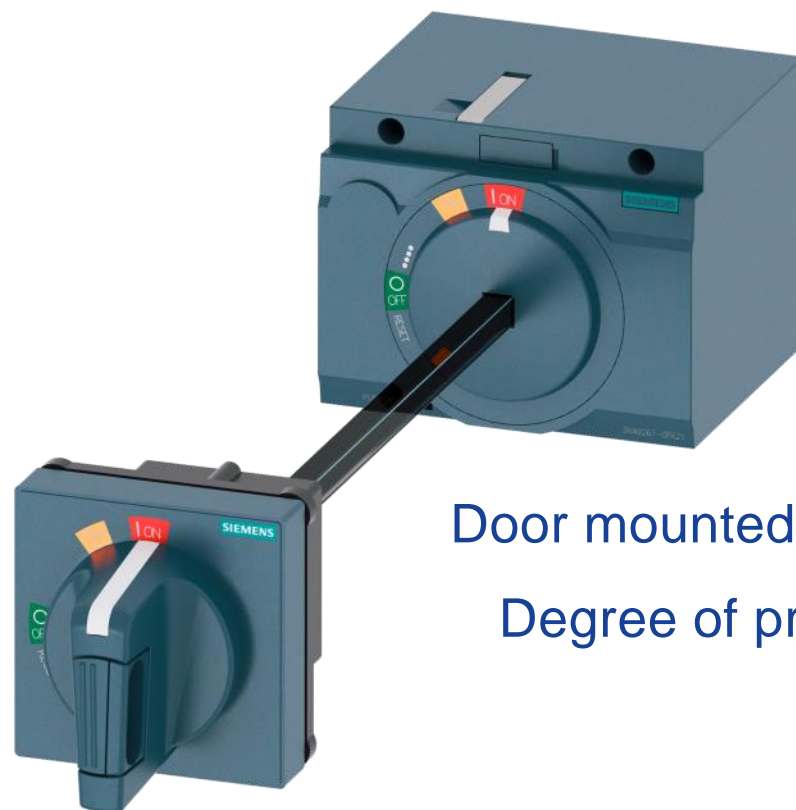
- Standard design, design with backlight, design as a main switch

## Side wall mounted rotary operators

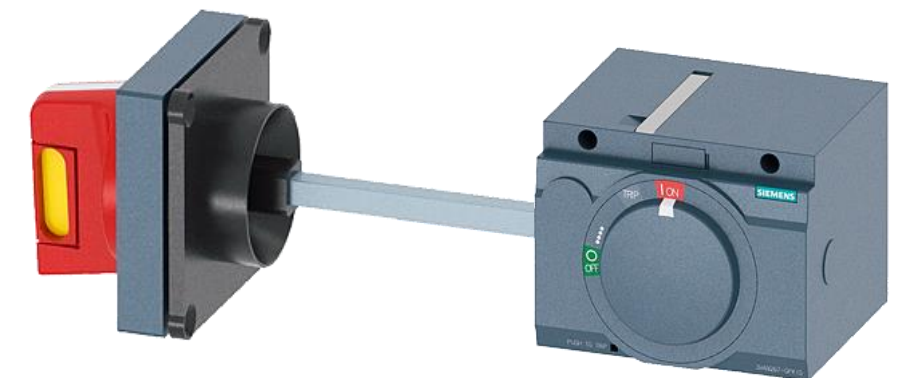
- Standard design, design with backlight, design as a main switch



Front mounted rotary operator  
Degree of protection IP30



Door mounted rotary operator  
Degree of protection IP65



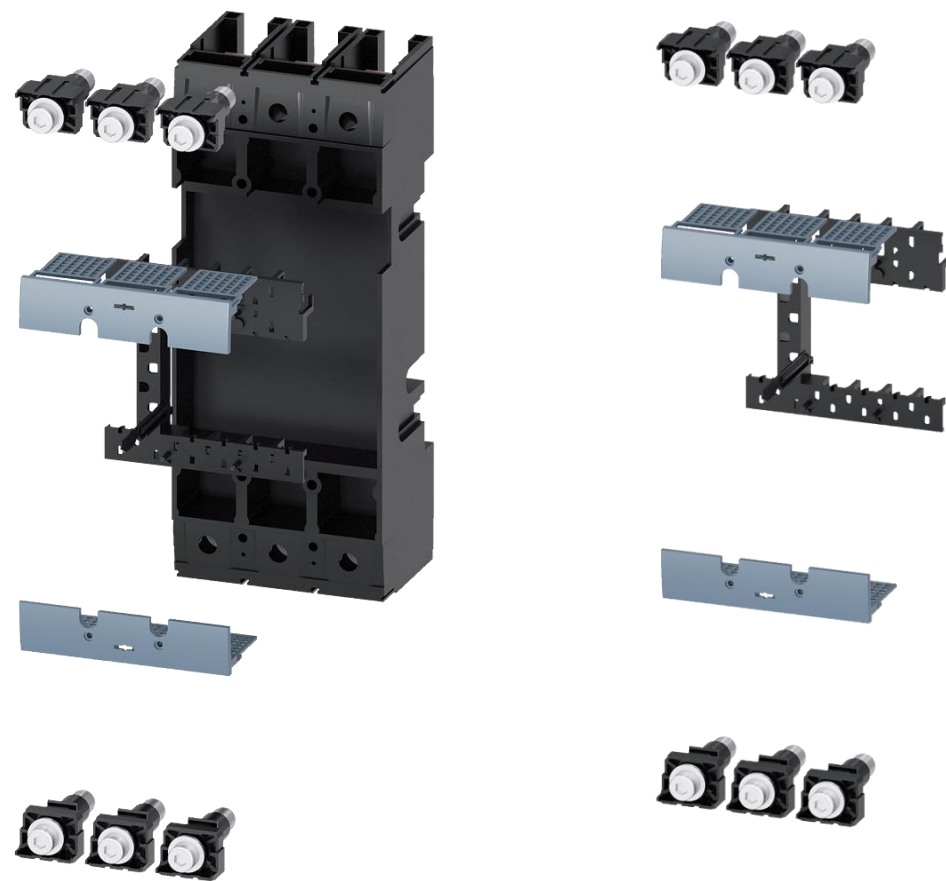
Side wall mounted rotary operator  
Degree of protection IP65

## 3VA1 plug-in and withdrawable devices

Plug-in and withdrawable designs of circuit breakers allow quick and safe installation/replacement

### Complete set of plug-in device

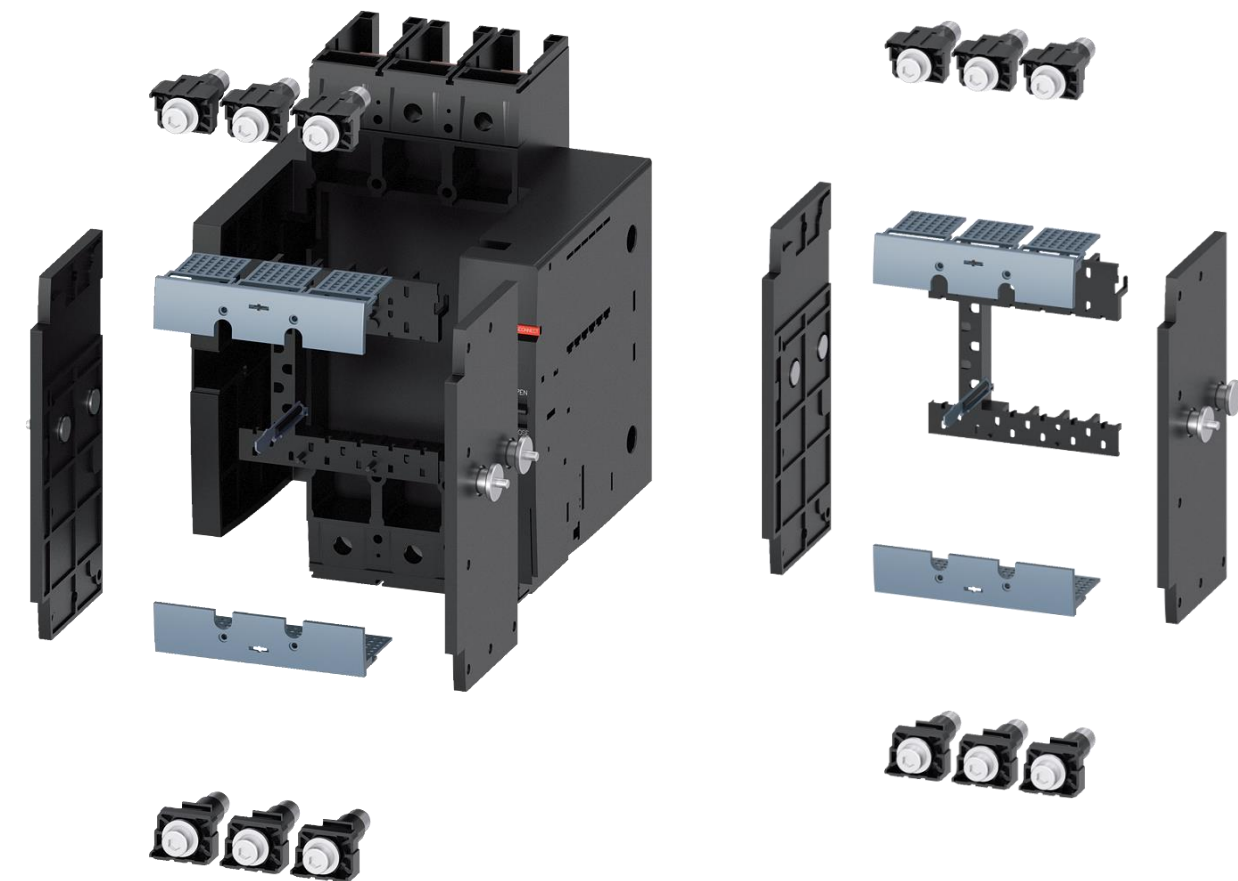
(it is also possible to order a conversion kit)



### Complete set of withdrawable device

(it is also possible to order a conversion kit)

**It is necessary to order a control handle separately**



## Residual current devices up to 250 A

Side residual current devices RCD310, RCD510

- Type A, possibility of setting  $I_{\Delta n}$  and  $\Delta t$  (depending on design)

Bottom residual current devices RCD320, RCD520, RCD520B

- Type A or B/B+ (depending on design), possibility of setting  $I_{\Delta n}$  and  $\Delta t$  (depending on design)



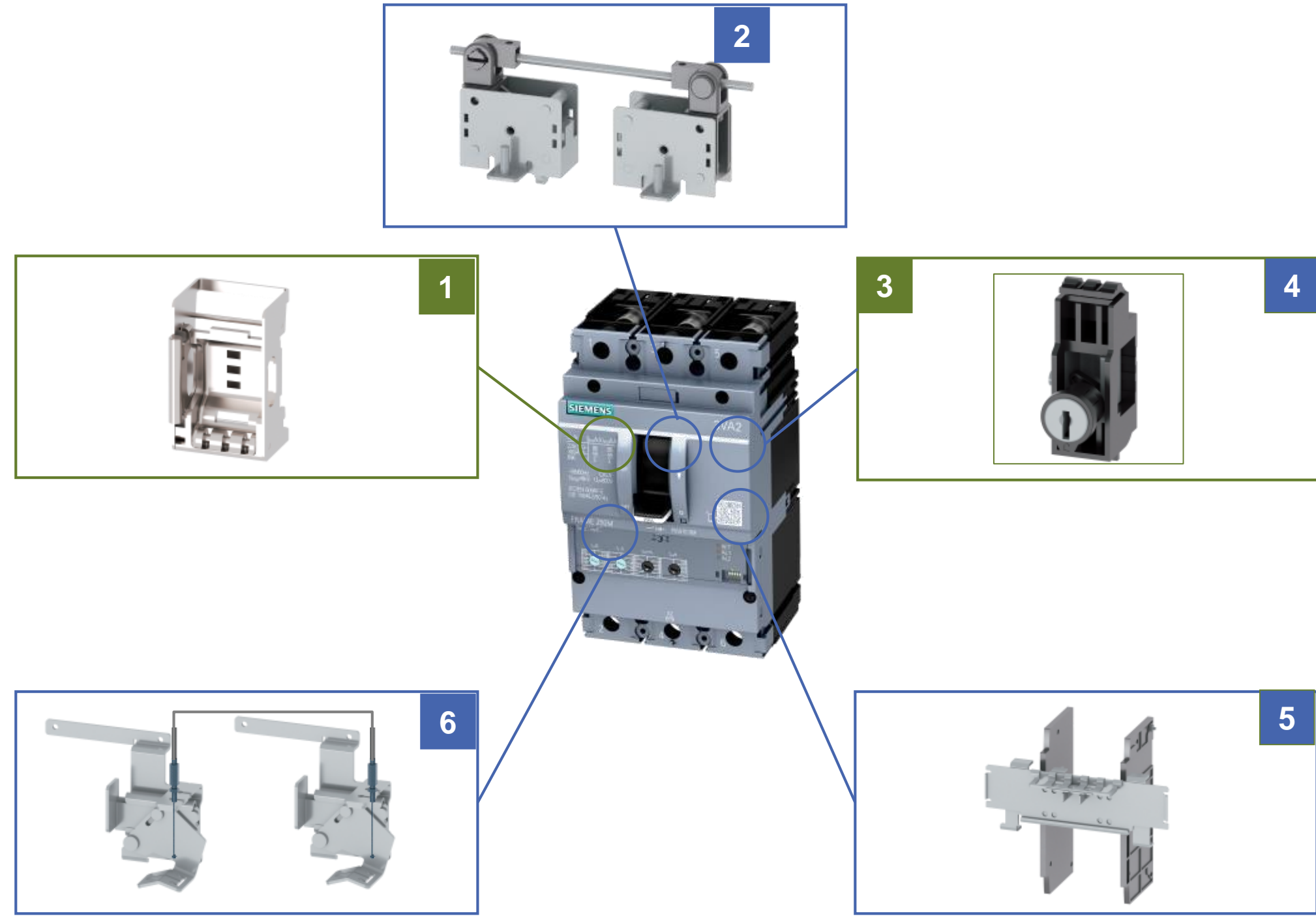
RCD510



RCD520

# Other accessories up to 1 000 A

- 1 Locking by means of padlocks
- 2 Rear mechanical interlocking
- 3 Locking by means of cylinder lock
- 4 Blocking by means of cylinder lock
- 5 Front mechanical interlocking by means of padlocks
- 6 Front mechanical interlocking by means of Bowden cable



## 3VA2 moulded case circuit breakers up to 1 000 A

- Rated current 100 ÷ 1 000 A
- Rated short-circuit ultimate breaking capacity 55 ÷ 150 kA @ AC 415 V
- $I_{cu} = I_{cs}$
- Electronic trip unit
- 3P, 4P design
- Rotary mechanism
- Possibility of data communication
- Possibility of measuring function



# Overview of trip units ETU



## Trip unit of ETU3xx series

- Setting by means of rotary switches
- Line protection: ETU320 LI (replacement of DTV3)  
ETU330 LIG  
ETU350 LSI (replacement of MTV8, MTV9)
- Motor protection: ETU350M LSI (replacement of MTV8)



## Trip unit of ETU5xx series

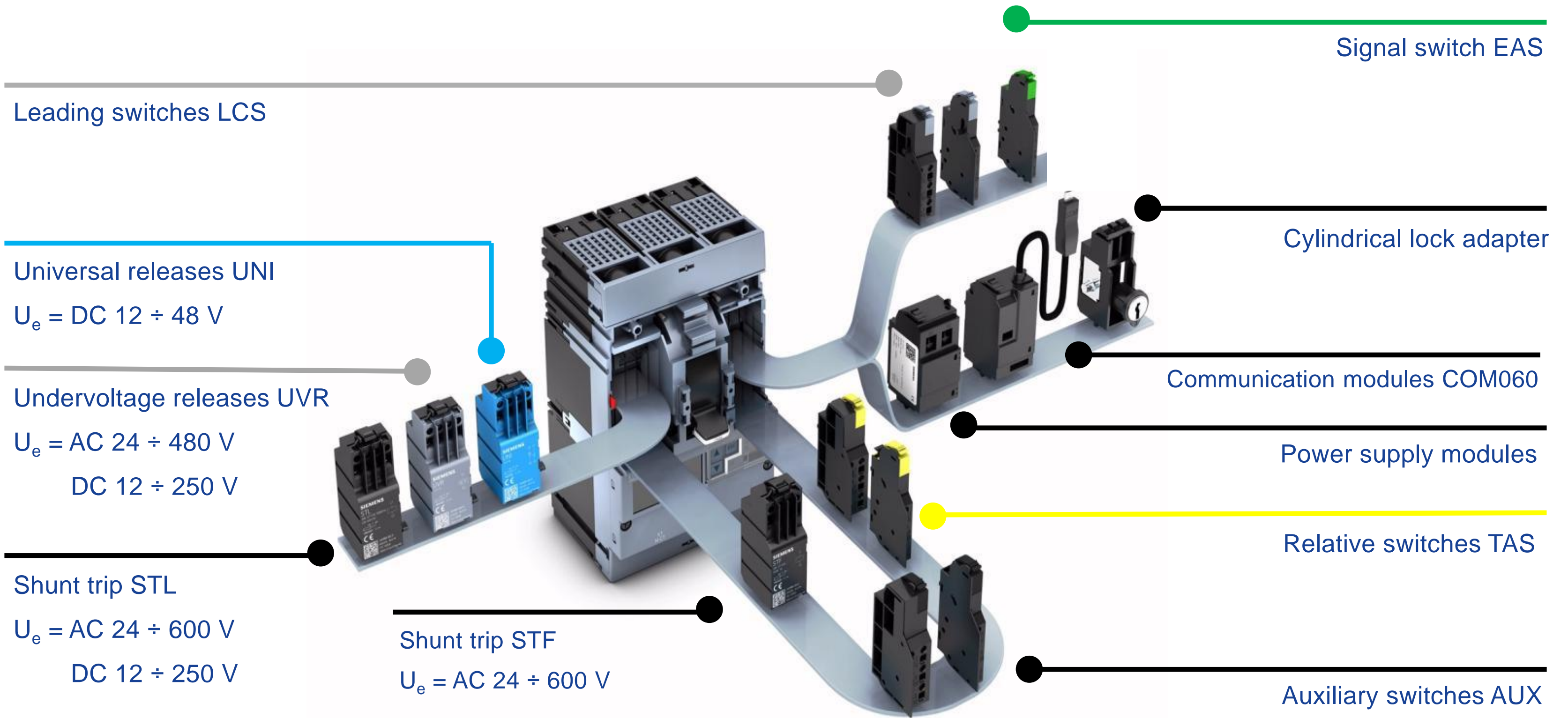
- Setting by means of push-buttons and display, possibility of data communication
- Line and generator protection: ETU550 LSI  
ETU560 LSI
- Motor protection: ETU550M LSI



## Trip unit of ETU8xx series

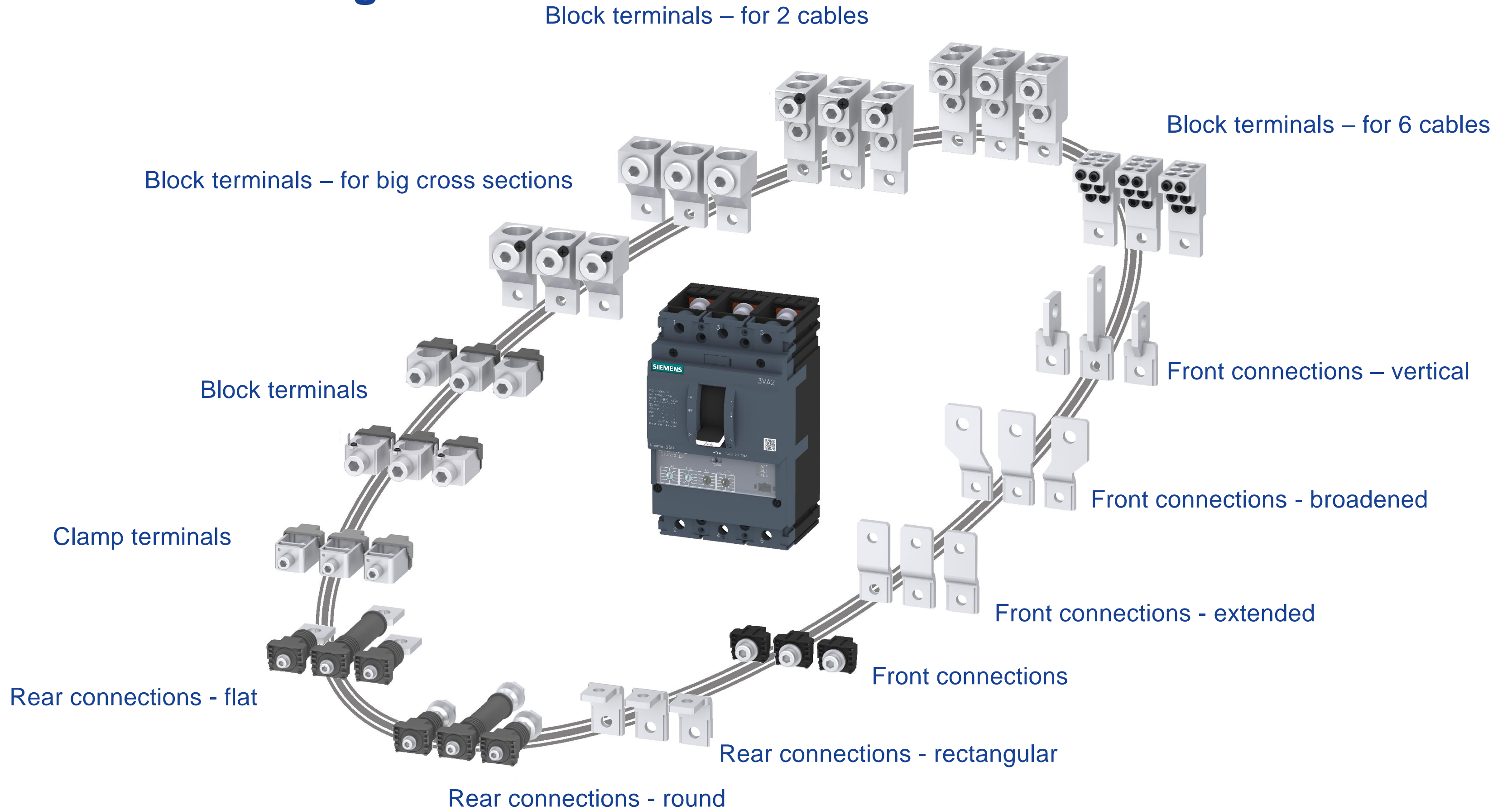
- Setting by means of push-buttons and display, possibility of data communication and measuring function.
- Line and generator protection: ETU850 LSI  
ETU860 LSI
- Motor protection: ETU86M LSI

# Internal accessories of 3VA2

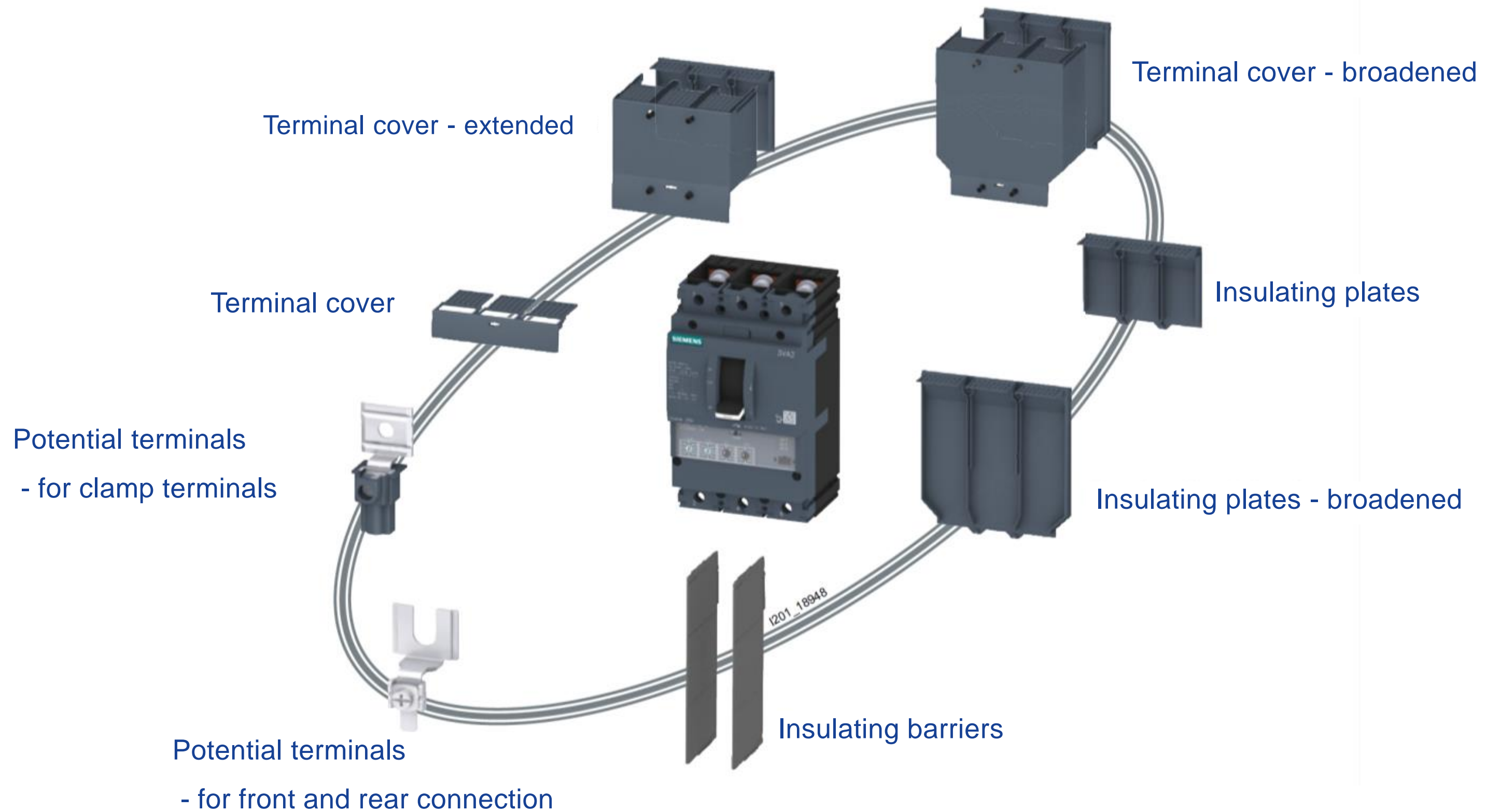


$U_e$  of auxiliary releases depending on design see the catalogue

# 3VA2 connecting sets



# Terminal covers, insulation covers and potential terminals up to 1 000 A



## 3VA2 motor operators

- Front motor operators MO320 (up to 630 A)
- Front motor operators SO520 (up to 250 A) – contains an energy storage device, possibility of data communication
- They serve for remote switching the circuit breakers on and off



MO320

DC 24 ÷ 60 V

AC 110 ÷ 230 V / DC 110 ÷ 250 V



SEO520

DC 24 V

AC/DC 42 ÷ 60 V

AC 110 ÷ 230 V / DC 110 ÷ 250 V

# 3VA2 rotary operators

## Front mounted rotary operators

- Standard design, design with backlight, design with door blocking, design as a main switch

## Door mounted rotary operators

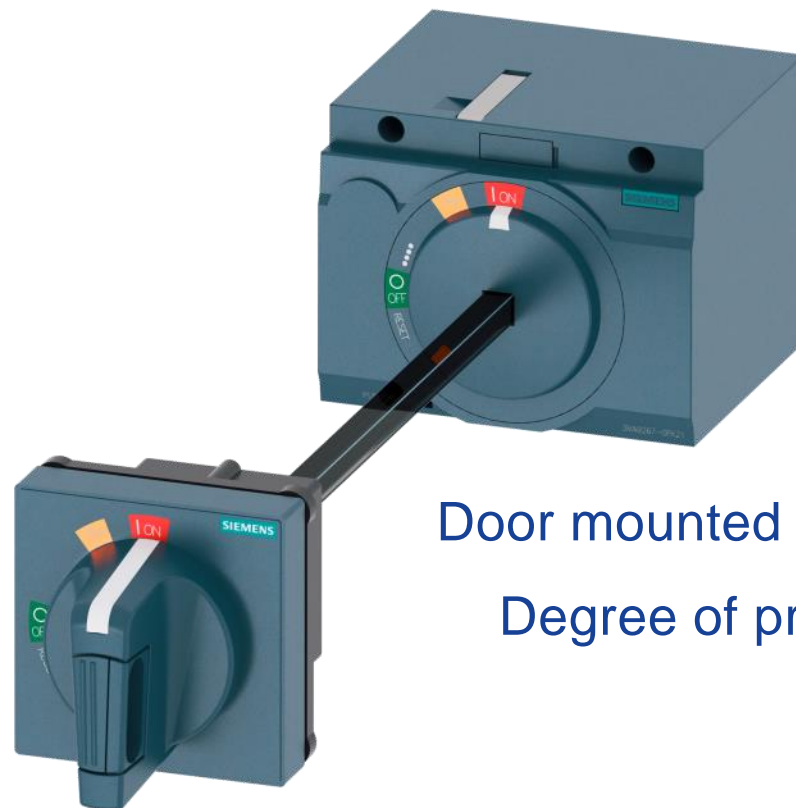
- Standard design, design with backlight, design as a main switch

## Side mounted rotary operators

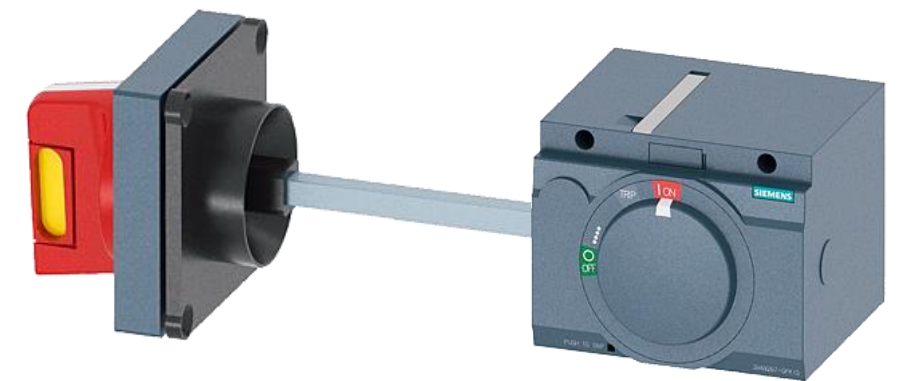
- Standard design, design with backlight, design as a main switch



Front mounted rotary operators  
Degree of protection IP30



Door mounted rotary operators  
Degree of protection IP65



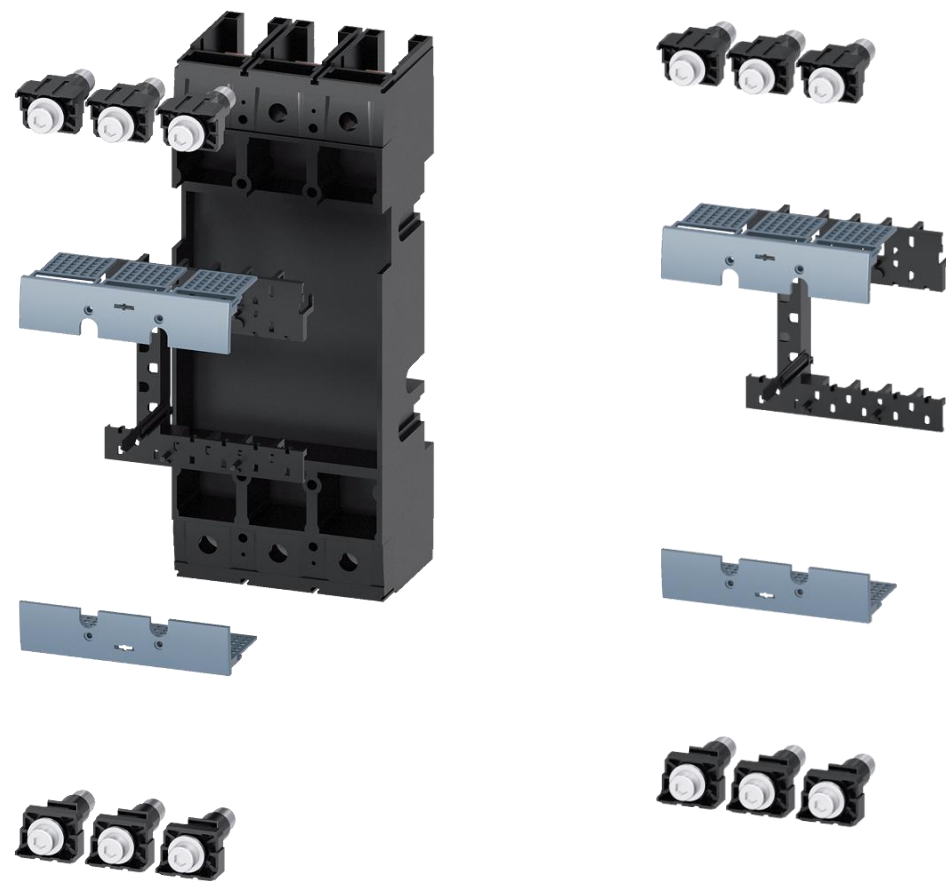
Side mounted rotary operators  
Degree of protection IP65

## 3VA2 plug-in and withdrawable devices

Plug-in and withdrawable designs of circuit breakers allow quick and safe installation/replacement

### Complete set of plug-in device

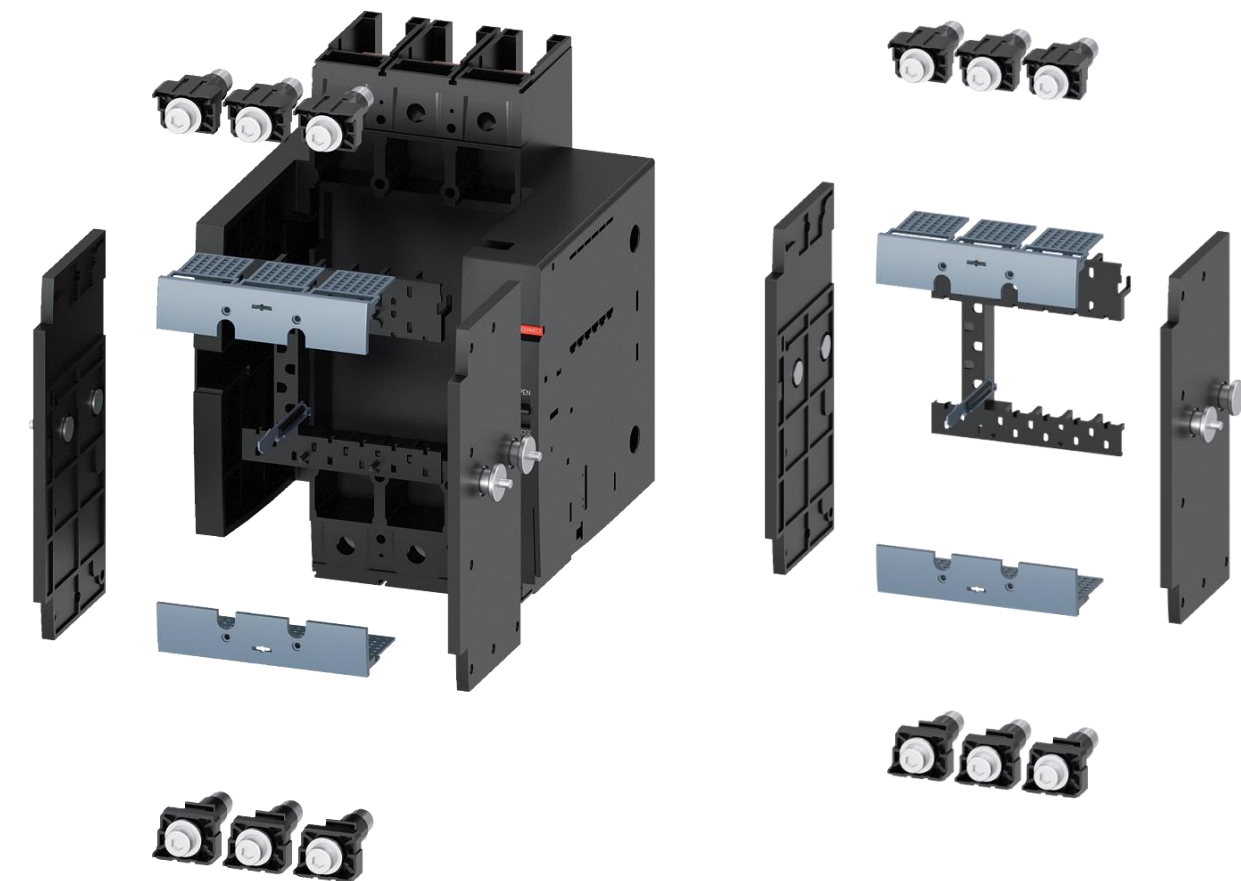
(it is also possible to order a conversion kit)



### Complete set of withdrawable device

(it is also possible to order a conversion kit)

**It is necessary to order a control handle separately**



## Residual current devices up to 630 A

Bottom residual current devices RCD820

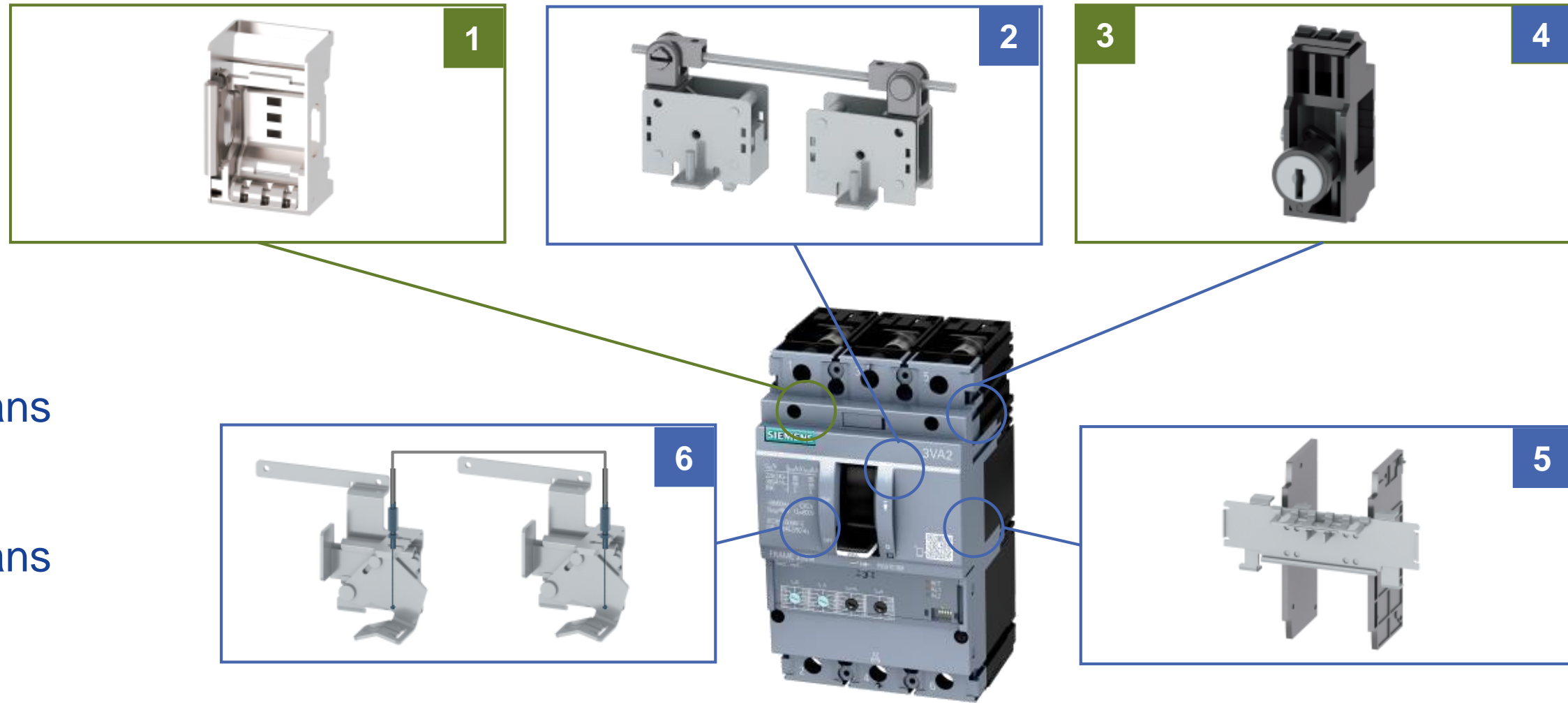
- Type A, possibility of setting  $I_{\Delta n}$  and  $\Delta t$ , for 3VA2



RCD820

# Other accessories up to 1 000 A

- 1 Locking by means of padlocks
- 2 Rear mechanical interlocking
- 3 Locking by means of cylinder lock
- 4 Blocking by means of cylinder lock
- 5 Front mechanical interlocking by means of padlocks
- 6 Front mechanical interlocking by means of Bowden cable



## Test devices

TD300 (basic test) or TD500 (testing individual parameters of trip units L, S, I, N, G)



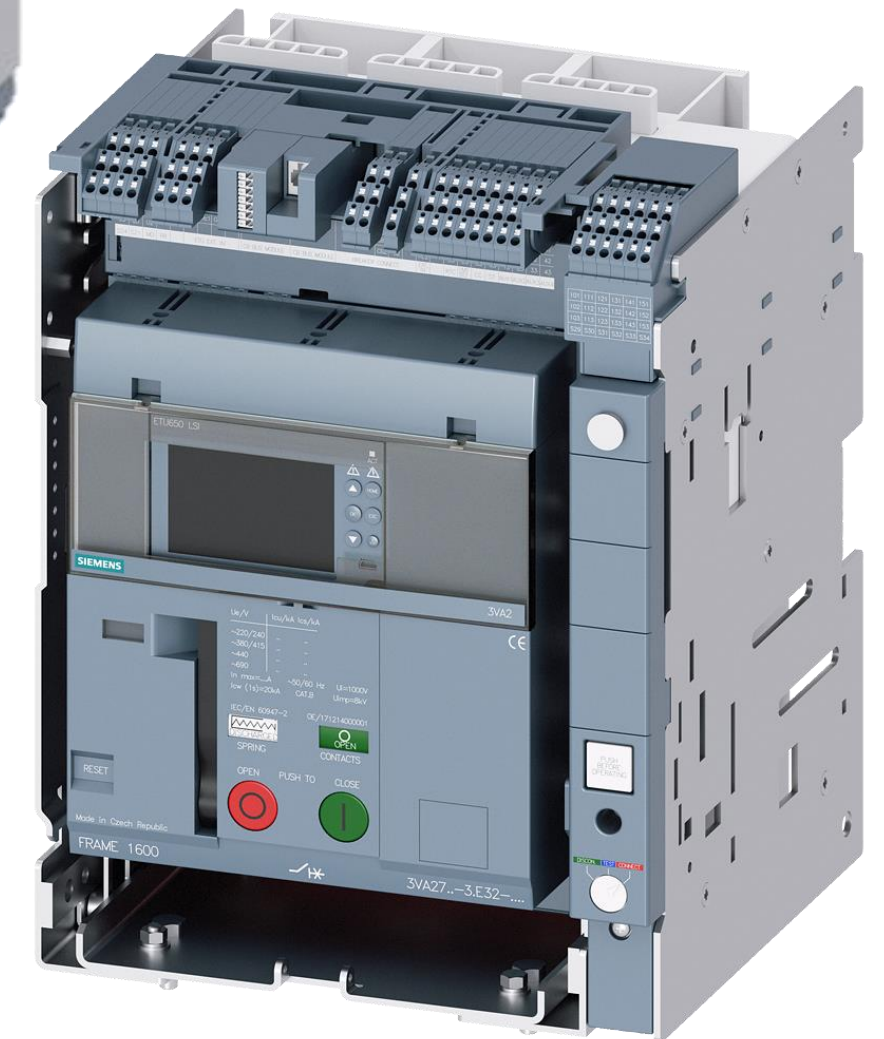
## Extension module of functions

EFB300 (digital inputs and outputs, ZSI module etc.)



## 3VA27 moulded case circuit breakers up to 1 600 A

- Rated current 800 ÷ 1 600 A
- Rated short-circuit ultimate breaking capacity 55 ÷ 110 kA @ AC 415 V
- $I_{cu} = I_{cs}$
- Electronic trip unit
- 3P, 4P design
- Storage drive
- Possibility of data communication
- Possibility of measuring function



## Overview of trip units ETU



### Trip unit of ETU3xx series

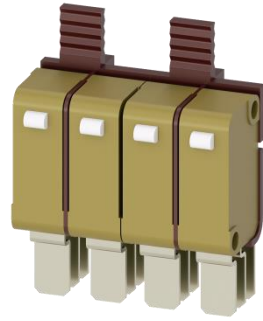
- Setting by means of rotary switches
- Possibility of replacement of electronic trip unit
- Line protection: ETU320 LI (replacement of DTV3)  
ETU350 LSI (replacement of MTV8)  
ETU360 LSIG



### Trip unit of ETU6xx series

- Setting by means of push-buttons and display
- Possibility of replacement of electronic trip unit
- Possibility of addition of data communication module and measurement function
- Line and motor protection: ETU650 LSI  
ETU660 LSIG

## Internal accessories of 3VA27



### Auxiliary switch AUX

- The circuit breakers already contains 4 auxiliary contacts



### Signal switch S24

- Part of the circuit breaker



### Signal switch ready-to-close RTC

- Part of the circuit breaker



### Signal switch of storage device state S21

- Part of the circuit breaker with motor operator or of the motor operator package



### Position signal switch in the withdrawable device PSS

- Part of the circuit breaker of withdrawable design

## Internal accessories of 3VA27



### Closing coil CC

- AC/DC 24 ÷ 440 V

### Shunt trip ST

- AC/DC 24 ÷ 440 V

### Undervoltage release UVR

- AC/DC 24 ÷ 250 V, AC 380 ÷ 440 V
- 



### Motor operator

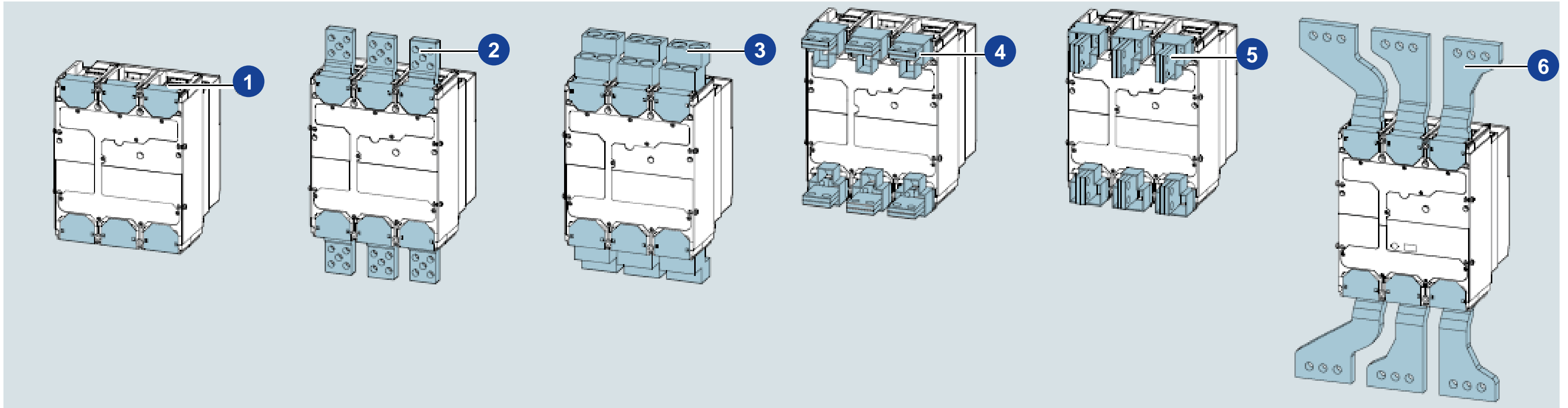
- It serves for automatic loading of the storage device
  - AC/DC 24 ÷ 30 V
  - AC/DC 48 ÷ 60 V
  - AC/DC 100 ÷ 130 V
  - AC/DC 220 ÷ 250 V
- 



### Counter of cycles

- It displays the number of mechanical switching operations directly on the front side of the circuit breaker

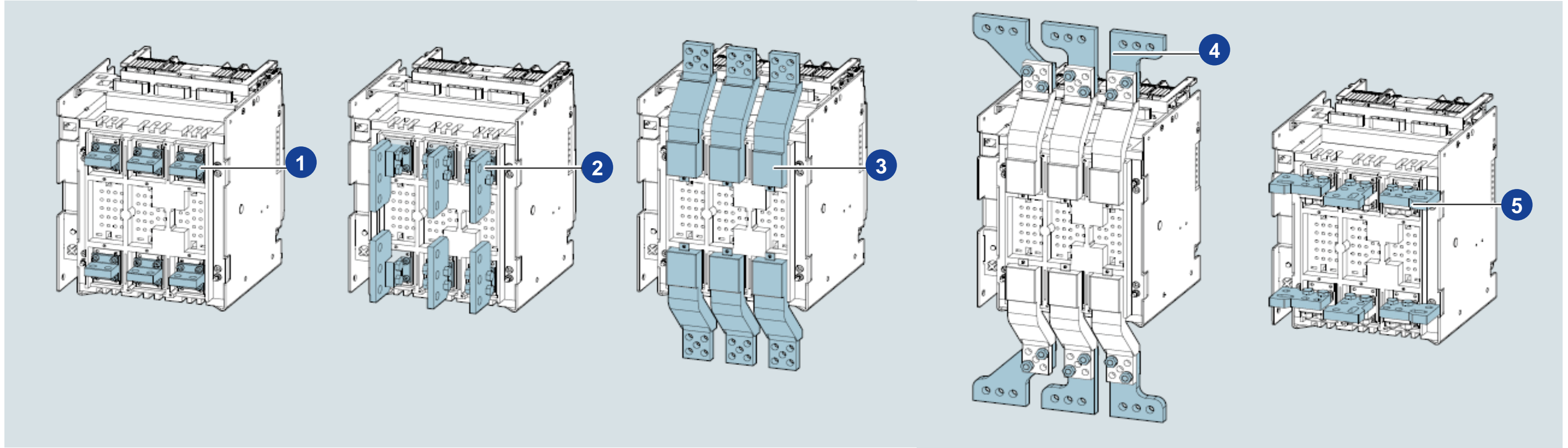
## 3VA27 connecting sets – fixed design



- ① Front connection
- ② Front connection – extended
- ③ Block terminals

- ④ Rear connections - horizontal
- ⑤ Rear connections - vertical
- ⑥ Front connections - broadened

# 3VA27 connecting sets – withdrawable design



❶ Rear connections – horizontal/vertical

❷ Rear connections – vertical

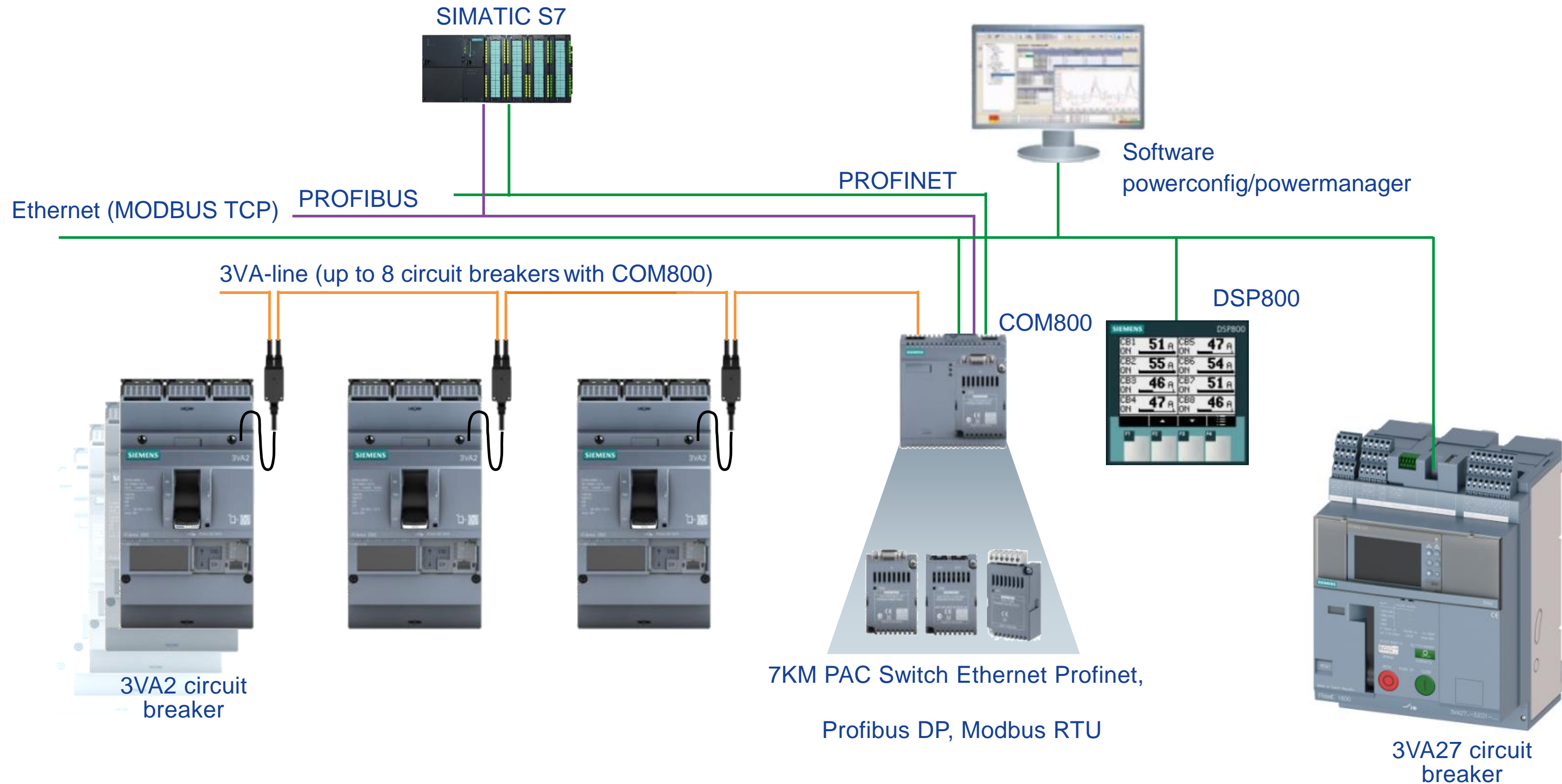
(for cable lugs)

❸ Front connections - extended

❹ Front connections - broadened

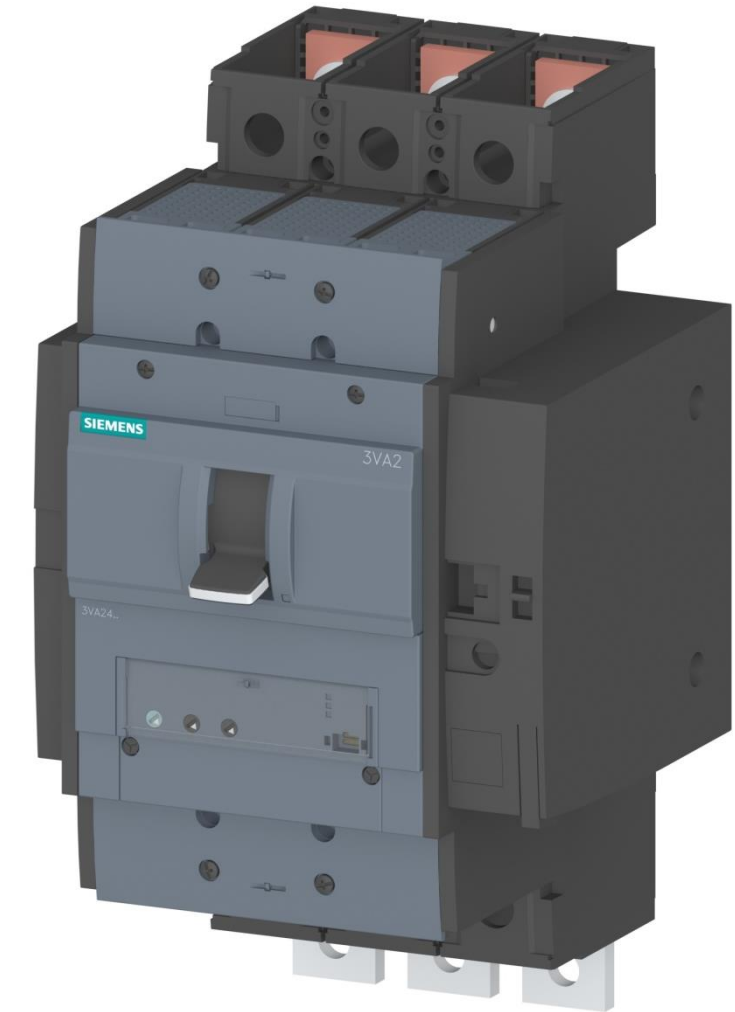
❺ Rear connections – horizontal extended

# Data communication of 3VA2



## Sets for replacement of circuit breakers

- Sets for replacement of Modeion circuit breakers
- Sets for replacement of previously manufactured circuit breakers



## Support

- Catalogue
- Program Sichr
- OEZ Configurator
- 3VA website

The image displays three screenshots of OEZ software. The top-left screenshot shows a product configurator window with a sidebar listing product lines: Minia, Modeion, 3VA online, Modi, Arion, Varius, and Distri. The main area features the OEZ logo and a 3D rendering of a circuit breaker. The top-right screenshot shows a technical data table for the ETU350 LSI 250 A model, with columns for In/A, I<sub>th</sub>, I<sub>sd</sub>max, and I<sub>sd</sub>t/s. The bottom screenshot shows a detailed configuration interface with sections for 'Produkční řada' (Production series), 'Aplicace' (Applications), 'Volba' (Selection), and 'Elektrické parametry' (Electrical parameters).

In/A	I <sub>th</sub>	I <sub>sd</sub> max	I <sub>sd</sub> t/s
100	100	100	100
125	125	125	125
160	160	160	160
200	200	200	200
250	250	250	250

# Support

## 3VA Catalogue

- Introduction – presentation of moulded case circuit breakers
- Moulded case circuit breakers up to 1 000 A
  - Structure of type designation
  - Basic selection of circuit breakers
  - Technical specifications of circuit breakers
- Accessories of 3VA up to 1 000 A
  - Individual accessories + technical specifications
- 3VA27 circuit breakers up to 1 600 A
  - Structure of type designation
  - Basic selection of circuit breakers
  - Technical specifications of circuit breakers
  - Individual accessories including technical specifications
- Replacements and conversion tables
  - Replacement of previously manufactured devices
  - Connecting sets
  - Tables of conversion of Modeion to 3VA circuit breakers

**OEZ Modeion** Kompaktní jističe 3VA do 1 000 A | Struktura objednávacího kódu

### STRUKTURA OBJEDNÁVACÍHO KÓDU

Základní přehled struktury objednávacího kódu přístrojů 3VA. Pro úplnou a ověřenou konfiguraci jističe použijte konfigurátor OEZ.

**3VA** 4 5 6 7 8 9 10 11 12 - 0AA0

Provedení přístroje: Jistič s termomagnetickou nadproudovou spouští nebo odřipač  
Jistič s elektronickou nadproudovou spouští

Velikost: 100 A, 160 A, 250 A, 400 A, 630 A, 1 000 A

**B**

**OEZ Modeion** Kompaktní jističe 3VA do 1 000 A | Jistění vedení jednoduché aplikace

**3VA11 do 160 A**  
Termomagnetické nadproudové spouště TM240 (ATAM)  
■ Nastavitelná hodnota proudu I<sub>t</sub> tepelné spouště.  
■ Nastavitelná hodnota proudu I<sub>Δn</sub> okamžité zkratové spouště.  
■ Náhrada jističů BC160 s charakteristikou D (viz strana Dxx).

Jmenovitá mezní zkratová vypínací schopnost I<sub>sc</sub> při AC 380 – 415 V

**OEZ Modeion** Příslušenství 3VA do 1 000 V | Přehled a popis příslušenství

### PŘEHLED A POPIS PŘÍSLUŠENSTVÍ

Přehled

1 Testery (viz strana C171)  
2 Program povolení (viz strana C157)  
3 Příslušenství pro datovou komunikaci (viz strana C4)  
4 Vnější příslušenství (viz strana C175)  
5 Příslušenství pro uzamykání a blokování (viz strana C31)  
6 Motorové pohony (viz strana C201)  
7 Různí pohony (viz strana C116)  
8 Chráničové moduly (viz strana C180)  
9 Výměnná zařízení (viz strana C190)  
10 Odřimávací zařízení (viz strana C190)  
11 Připojovací sady (viz strana C54)

**C**

Kompaktní jističe 3VA | MO1-20

**C2** Kompaktní jističe 3VA | MO1-2020-CZ

# Support

## Program Sichr

- Added 3VA assortment

The screenshot displays the 'Sichr' software interface for configuring a 3VA22-ETU350 circuit breaker. The main window shows the 'Jistič 3VA22 (In=160-250A)' configuration panel with the following settings:

- Typ:** 3VA22-ETU350 (selected)
- Jmenovitý proud:** 250 A (selected)
- Značení:** 1Q4
- Jmenovitá mezní zkratová vypínací schopnost:** M (Icu = 55 kA) (selected)

Below the configuration panel is a technical data table for the ETU350 LSI 250 A breaker:

I <sub>r</sub> /A	t <sub>r</sub> /s	I <sub>sd</sub> ⇒x <sub>r</sub>	t <sub>sd</sub> /s
200	210	3	5
175	220	2	8
150	230	1	10
125	240	0.75	14
100	250	0.5	15

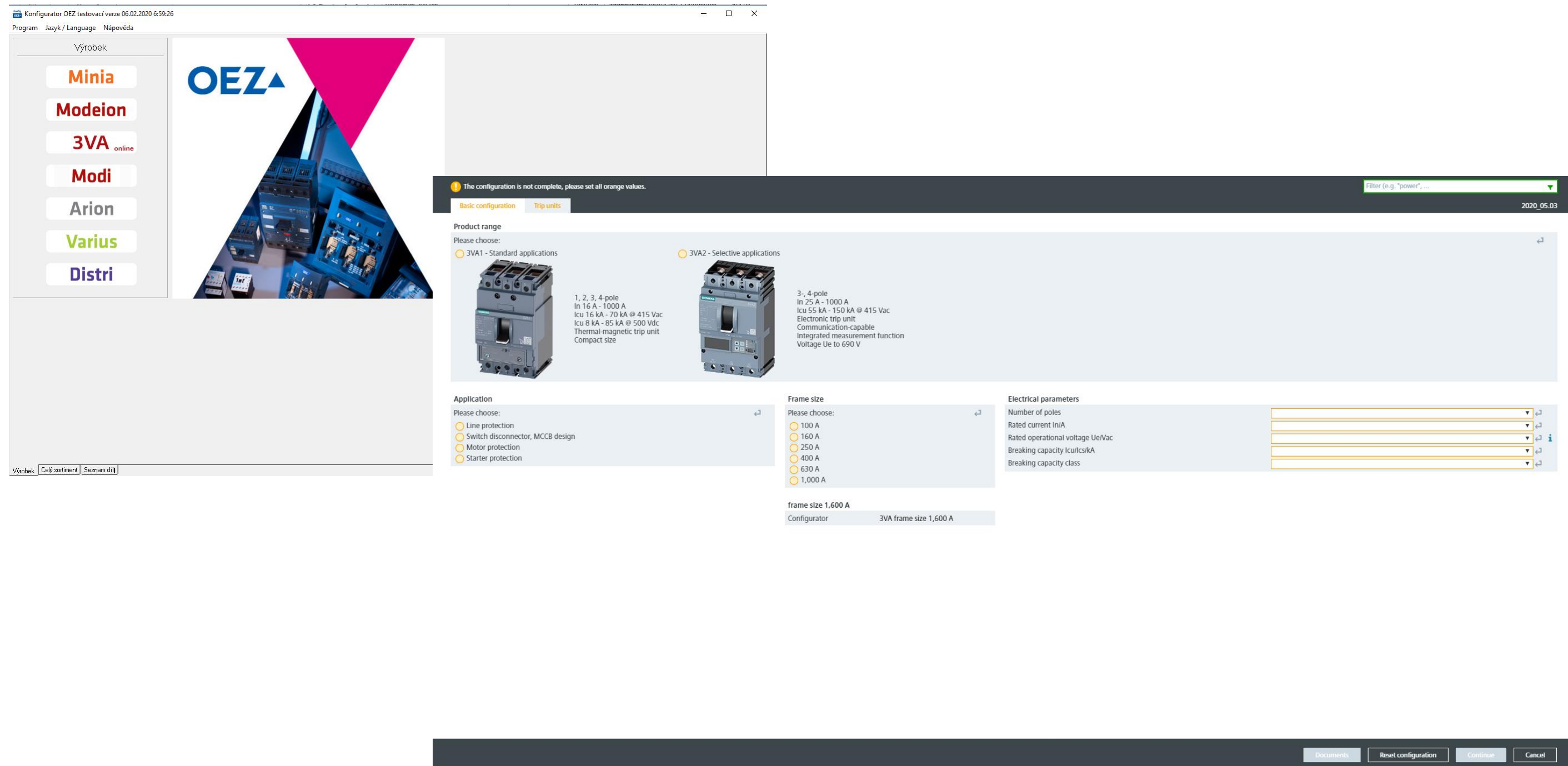
Two log-log plots are shown:

- Vypínací charakteristiky - selektivita jiltíni - paprsek 1:** A plot of tripping time  $t_v$  [s] versus current  $I_n$  [A]. The y-axis ranges from  $10^{-3}$  to  $10^4$  s, and the x-axis ranges from 0.1 A to 100 A. The plot shows a series of horizontal lines representing different tripping curves.
- Charakteristiky:** A plot of tripping time  $t_v$  [s] versus peak current  $I_p$  [kA]. The y-axis ranges from  $10^{-3}$  to  $10^4$  s, and the x-axis ranges from 0.1 A to 100 kA. A blue curve shows the tripping time decreasing from approximately 100 s at 100 A to about 0.1 s at 10 kA.

# Support

## OEZ Configurator

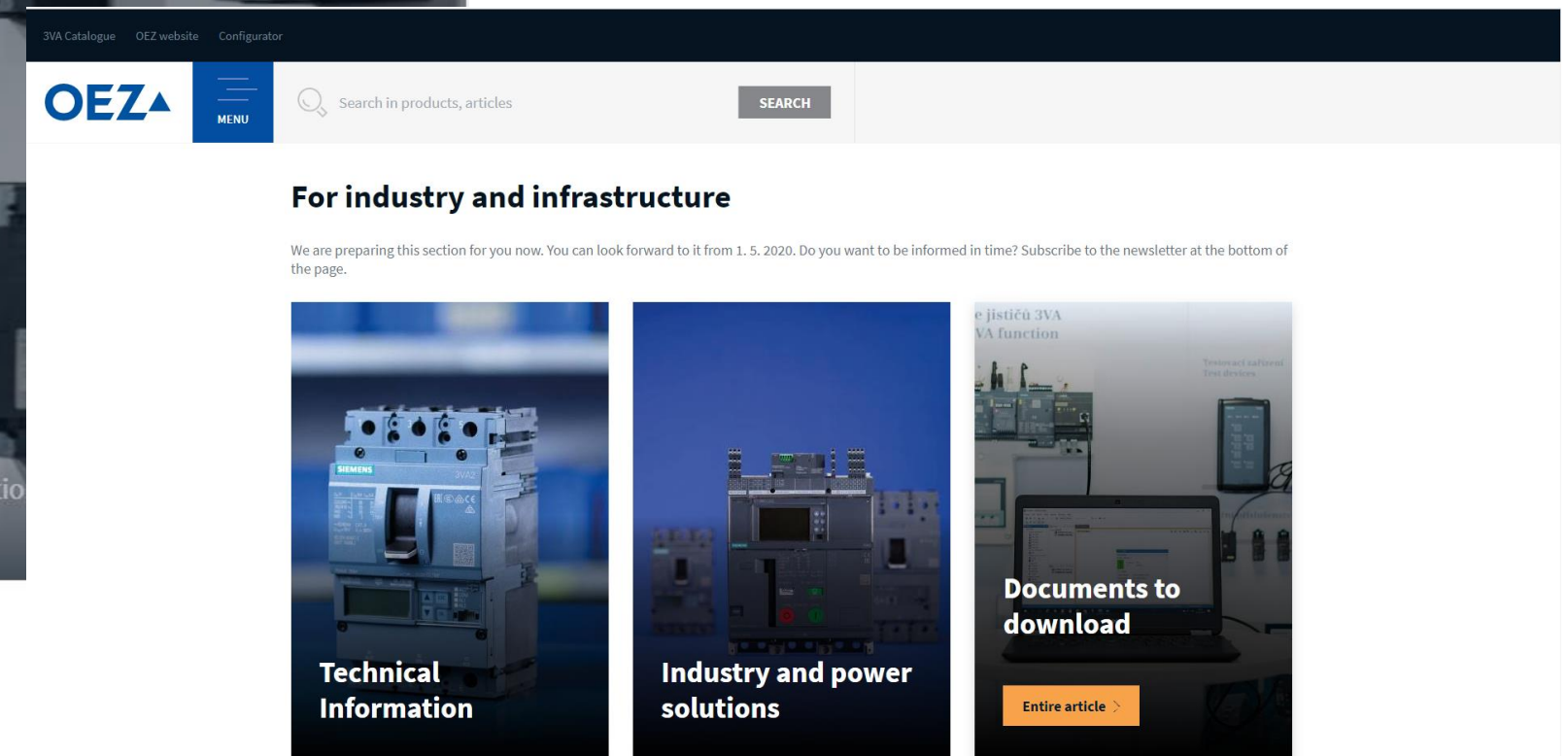
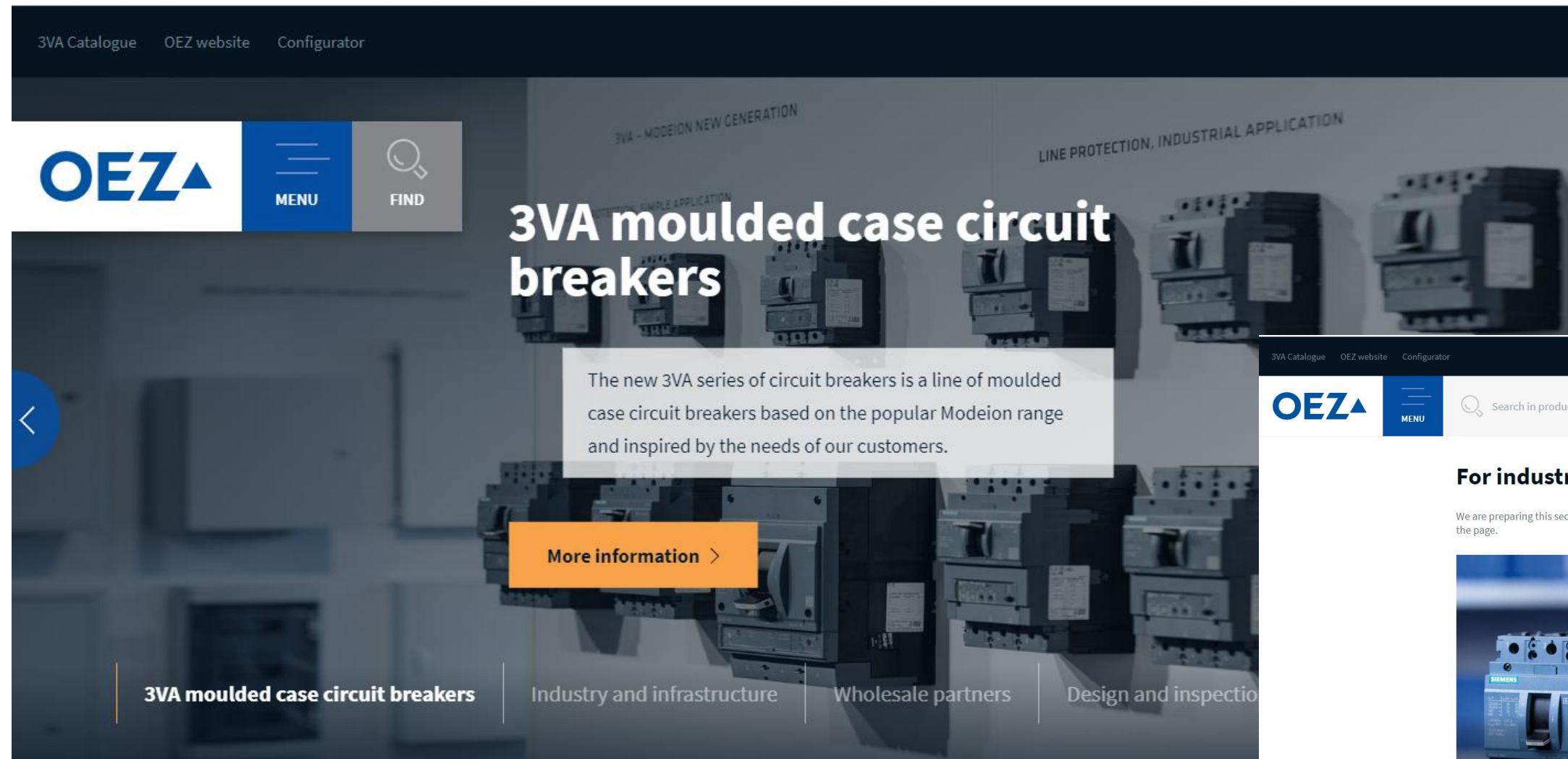
- Addition of 3VA to the OEZ Configurator with a link to online configurator



# Support

3VA website

[www.modeionnewgeneration.com](http://www.modeionnewgeneration.com)



<https://www.modeionnewgeneration.com/clanek/224/documents-to-download>



**Thank you for your attention**

