

SIEMENS



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3VT Kompaktleistungsschalter bis 630A

SENTRON Schutz-, Schalt- und Messtechnik

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3VT1 Molded Case Circuit Breakers up to 160 A



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3VT1 Molded Case Circuit Breakers up to 160 A

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Accessories and Components

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3VT1 Molded Case Circuit Breakers up to 160 A

Circuit breakers · Switch disconnectors

Technical information

3VT1 Molded Case Circuit Breakers up to 160 A

Catalog

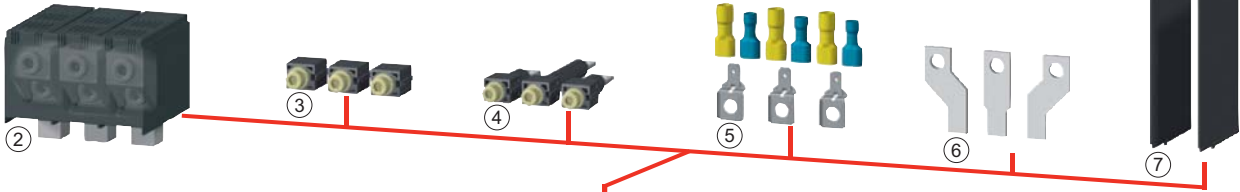
General data

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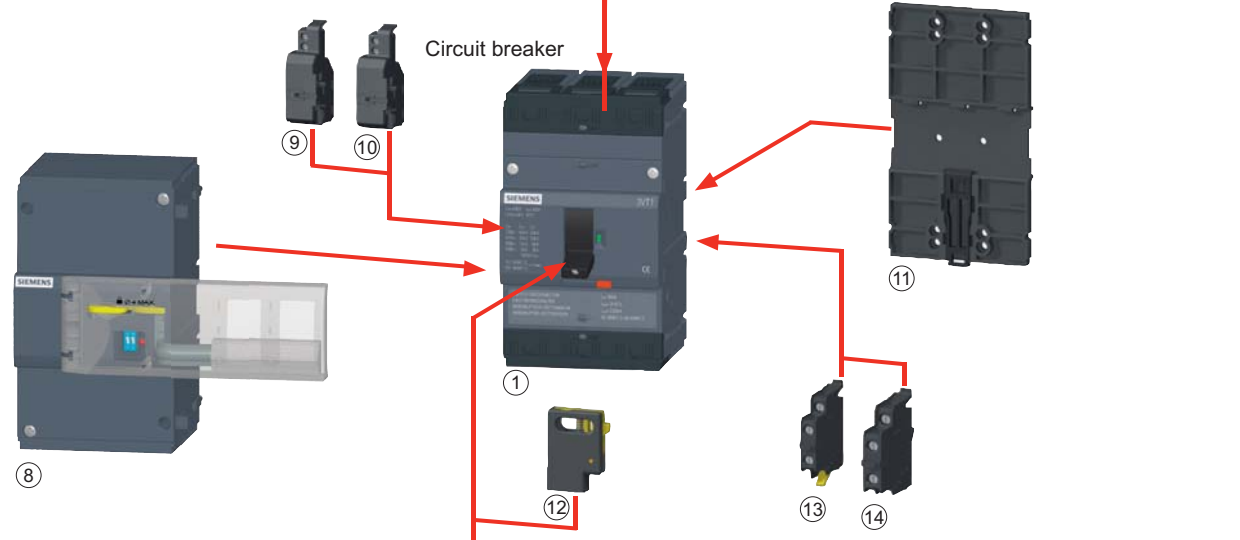
Overview

Versions and accessories

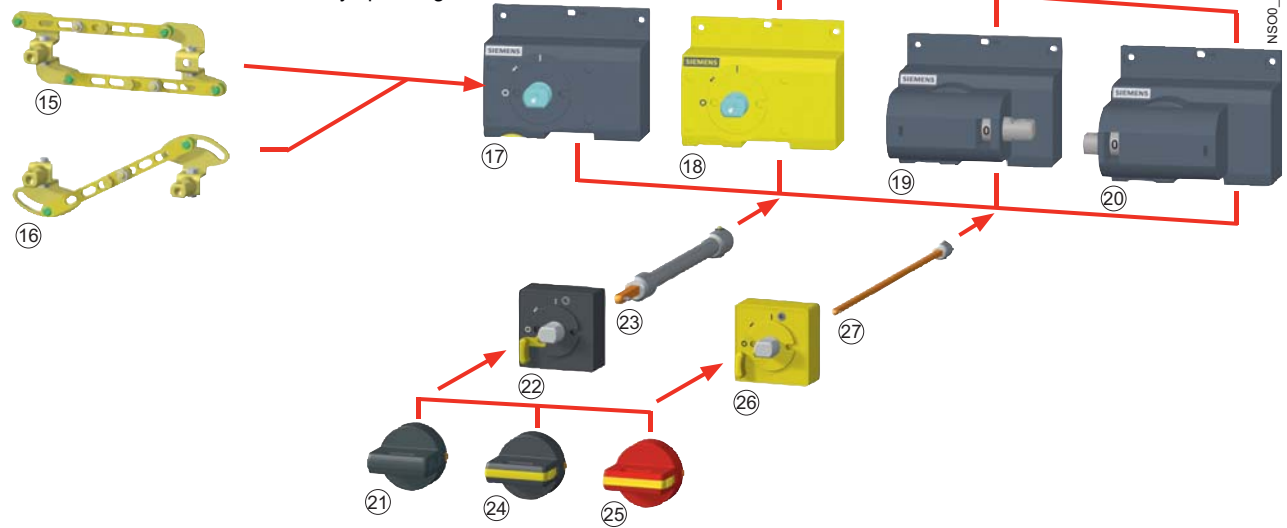
Connecting sets



Circuit breaker



Rotary operating mechanism



- ① 3VT circuit breaker
- ② Circular conductor terminal
- ③ Front connection
- ④ Rear connection
- ⑤ Auxiliary conductor terminal
- ⑥ Front connecting bus with increased pole spacing
- ⑦ Insulating barriers
- ⑧ Lateral rotary operating mechanism
- ⑨ Shunt trip unit
- ⑩ Undervoltage trip unit
- ⑪ Adapter to install on 35 mm DIN rail
- ⑫ Lockingtype lever
- ⑬ Signal switch
- ⑭ Auxiliary switch
- ⑮ Mechanical parallel switching
- ⑯ Mechanical interlocking
- ⑰ Front manual operating mechanism
- ⑱ Front manual operating mechanism
- ⑲ Lateral manual operating mechanism (right)
- ⑳ Lateral manual operating mechanism (left)
- ㉑ Non lockable knob
- ㉒ Coupling driver
- ㉓ Telescopic extension shaft
- ㉔ Lockable knob
- ㉕ Lockable knob
- ㉖ Coupling driver
- ㉗ Extension shaft

NS00_00256a

Rated current I_n A	Current setting of the inverse-time delayed overload trip unit, $L \cdot I_r$ A	DT	Order No.	PS*	Weight per PU approx. kg
Circuit breakers with tripping characteristic D ¹⁾					
<i>TM, LI function 3-pole</i>					
• with adjustable thermal overload trip unit, adjustable short-circuit trip unit					
40	32 - 40	200 - 400	B 3VT1 704-2DC36-0AA0	1 unit	1.043
50	40 - 50	250 - 500	B 3VT1 705-2DC36-0AA0	1 unit	1.043
63	50 - 63	315 - 630	B 3VT1 706-2DC36-0AA0	1 unit	1.062
80	63 - 80	400 - 800	B 3VT1 708-2DC36-0AA0	1 unit	1.062
100	80 - 100	500 - 1000	B 3VT1 710-2DC36-0AA0	1 unit	1.047
125	100 - 125	625 - 1250	B 3VT1 712-2DC36-0AA0	1 unit	1.047
160	125 - 160	800 - 1600	B 3VT1 716-2DC36-0AA0	1 unit	1.074
<i>TM, LI function 3-pole +N, for unprotected N-conductor</i>					
• with adjustable thermal overload trip unit, adjustable short-circuit trip unit					
40	32 - 40	200 - 400	B 3VT1 704-2EC46-0AA0	1 unit	1.336
50	40 - 50	250 - 500	B 3VT1 705-2EC46-0AA0	1 unit	1.336
63	50 - 63	315 - 630	B 3VT1 706-2EC46-0AA0	1 unit	1.336
80	63 - 80	400 - 800	B 3VT1 708-2EC46-0AA0	1 unit	1.336
100	80 - 100	500 - 1000	B 3VT1 710-2EC46-0AA0	1 unit	1.336
125	100 - 125	625 - 1250	B 3VT1 712-2EC46-0AA0	1 unit	1.336
160	125 - 160	800 - 1600	B 3VT1 716-2EC46-0AA0	1 unit	1.336

¹⁾ See pages 1/16 (3-pole) and 1/21 (4-pole)

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General data

Rated current I_n	Current setting of the short-circuit trip unit $I^* I_t$	DT	Order No.	PS*	Weight per PU approx. kg
A	A				

Switch disconnectors

Switch disconnector, without overload protection, without short circuit protection



160	3-pole	B	3VT1 716-2DE36-0AA0	1 unit	1.043
-----	--------	---	----------------------------	--------	-------



160	4-pole	B	3VT1 716-2EE46-0AA0	1 unit	1.336
-----	--------	---	----------------------------	--------	-------

¹⁾ See page 1/16 (3-pole)

²⁾ See pages 1/16 and 1/20

3VT1 Molded Case Circuit Breakers up to 160 A

Catalog - Accessories and Components

Auxiliary switches - Auxiliary trip units

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Overview





Circuit breakers can be equipped with

- auxiliary switches,
- alarm switches,
- shunt trip units,
- undervoltage trip units.

Shunt trip units can trip the circuit breaker from a remote location. A control supply voltage is required.

An undervoltage trip unit trips the circuit breaker automatically when the circuit voltage drops below 70 % U_e . The undervoltage trip unit protects motors and other equipment in case of undervoltage. A control supply voltage is required.

Selection and ordering data

	Rated control supply voltage U_s	DT	Order No.	PS*	Weight per PU approx. kg
	AC 50/60 Hz or DC				
Auxiliary switches and alarm switches					
	Auxiliary switches for signalling the state of the main contacts				
	<ul style="list-style-type: none"> • AC/DC 60 ... 250 V • AC/DC 5 ... 60 V 	B	3VT9 100-2AB10	1 unit	0.010
		B	3VT9 100-2AB20	1 unit	0.010
	Alarm switches for signalling the tripping of the circuit breaker by an trip unit				
	<ul style="list-style-type: none"> • AC/DC 60 ... 250 V • AC/DC 5 ... 60 V 	B	3VT9 100-2AH10	1 unit	0.010
		B	3VT9 100-2AH20	1 unit	0.010
Shunt trip units					
	Shunt trip units can trip the circuit breaker from a remote location.				
	• AC/DC 24, 48 V	B	3VT9 100-1SC00	1 unit	0.050
	• AC 110, 230 V/DC 110, 220 V	B	3VT9 100-1SD00	1 unit	0.050
	• AC 230, 400 V/DC 220 V	B	3VT9 100-1SE00	1 unit	0.050
Undervoltage trip units					
	Undervoltage trip units trip the circuit breaker automatically when the circuit voltage drops below 70 % U_e				
	• AC 24, 48 V	B	3VT9 100-1UC00	1 unit	0.050
	• AC 110, 230 V	B	3VT9 100-1UD00	1 unit	0.050
	• AC 230, 400 V	B	3VT9 100-1UE00	1 unit	0.050
	• DC 24, 48 V	B	3VT9 100-1UU00	1 unit	0.050
	• DC 110, 220 V	B	3VT9 100-1UV00	1 unit	0.050

* You can order this quantity or a multiple thereof.

3VT1 Molded Case Circuit Breakers up to 160 A

Catalog - Accessories and Components

Manual/motorized operating mechanisms

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Overview

Rotary operating mechanisms

The rotary operating mechanism must be combined from the following parts:









- For rotary operation of the circuit breaker:
 - 3VT9 100-3HE../HF.. knob
- For operation through the switchgear cabinet door:
 - 3VT9 100-3HE../HF.. knob
 - 3VT9 100-3HG../HH.. coupling driver
 - 3VT9 100-3HJ.. extension shaft,

- For operating through side panel of switchgear cabinet (lateral operation):
 - 3VT9 100-3HE../HF.. knob
 - 3VT9 100-3HG../HH.. coupling driver
 - 3VT9 100-3HJ.. extension shaft

Mechanical interlocking and parallel switching

- The mechanical interlock must be combined from the following parts:
 - 2 x 3VT9 200-3HA/HB.. rotary operating mechanisms (cannot be used with lateral operation)
 - 2 x 3VT9 200-3HE/HF.. knobs (standard) or 1 x 3VT9 200-3HE/HF.. knob (parallel switching)

Selection and ordering data

Version	Color	DT	Order No.	PS*	Weight per PU approx. kg
Rotary operating mechanisms					
Rotary operating mechanism					
	• not lockable	gray	B	3VT9 100-3HA10	1 unit 0.079
	• lockable with padlock	gray	B	3VT9 100-3HA20	1 unit 0.079
	• lockable with padlock	yellow	B	3VT9 100-3HB20	1 unit 0.079
	• for lateral operation, mounted on the left side, not lockable	gray	B	3VT9 100-3HC10	1 unit 0.137
	• for lateral operation, mounted on the right side, not lockable	gray	B	3VT9 100-3HD10	1 unit 0.137
	Knob				
	• not lockable	black	B	3VT9 100-3HE10	1 unit 0.019
	• lockable with padlock	black	B	3VT9 100-3HE20	1 unit 0.019
	• lockable with padlock	red	B	3VT9 100-3HF20	1 unit 0.019
Coupling driver for door-coupling operating mechanism					
	Additionally requires 3VT9 100-3HE10 or 3VT9 100-3HE20 black knob	black	B	3VT9 100-3HG10	1 unit 0.042
	• degree of protection IP40 • degree of protection IP66	black	B	3VT9 100-3HG20	1 unit 0.042
	Additionally requires 3VT9 100-3HF20 red knob	yellow	B	3VT9 100-3HH10	1 unit 0.042
	• degree of protection IP40 • degree of protection IP66	yellow	B	3VT9 100-3HH20	1 unit 0.042
Extension shaft					
	• length 350 mm, can be shortened		B	3VT9 100-3HJ10	1 unit 0.113
	• length 199 ... 352 mm, telescopic		B	3VT9 100-3HJ20	1 unit 0.092

* You can order this quantity or a multiple thereof.

3VT1 Molded Case Circuit Breakers up to 160 A




Catalog - Accessories and Components

Residual current devices

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Selection and ordering data

Circuit breakers for system protection, only for TM¹⁾, starters, disconnectors

	Rated current I _N	Residual currents I _r , adjustable	Delay time t _d , adjustable	Rated operational voltage U _e	DT	Order No.	PS*	Weight per PU approx. kg
	A	A	s	V				
RCD modules								
	4-pole							
	160	0.030	instantaneous	80 ... 440	C	3VT9 116-5GA40	1 unit	1.300
		0.100	0.1					
		0.300	0.2					
		0.500	0.3					
		1.000	0.5					
	3.000	1						
	4-pole							
	160	0.300	instantaneous	80 ... 440	C	3VT9 116-5GB40	1 unit	1.300
Accessories for RCD modules								
	Connection set, short							
	3-pole					3VT9 115-5GY31	1 unit	
	4-pole					3VT9 115-5GY41	1 unit	






3VT1 Molded Case Circuit Breakers up to 160 A

Catalog - Accessories and Components

Connecting accessories

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Selection and ordering data

Version	Conductor cross-sections S mm ²	Type of connection	DT	Order No.	PS*	Weight per PU approx kg
Terminals for fixed-mounted circuit breakers						
Connecting set for 3-pole version						
 Terminals for front connection 1 set = 3 units	--	Cu/Al busbars, cable lugs	B	3VT9 100-4TA30	1 unit	0.045
 Terminals for circular conductors Set includes a terminal cover, degree of protection IP20	2 x 25 ... 120	Cu/Al cable	B	3VT9 100-4TF30	1 unit	0.180
 Terminals for rear connection 1 set = 3 units		Cu/Al busbars, cable lugs	B	3VT9 100-4RC30	1 unit	0.320
 Auxiliary conductor terminals	1.5 ... 2.5; 4 ... 6	Cu flexible conductors	B	3VT9 100-4TN30	1 unit	0.010
 Front connection bars	1.5 ... 2.5; 4 ... 6	Cu/Al busbars, cable lugs	B	3VT9 100-4ED30	1 unit	0.103
Terminals for 4-pole version						
 Terminal for front connection 1 set = 1 unit For 4th pole (to be used with 3VT9 100-4TA30 connecting set)	--	Cu/Al busbars, cable lugs	B	3VT9 100-4TA00	1 unit	0.015
 Terminals for circular conductors Set includes a terminal cover, degree of protection IP20	2 x 25 ... 120	Cu/Al cable	B	3VT9 100-4TF40	1 unit	0.250
 Terminal for rear connection 1 set = 1 unit For 4th pole (to be used with 3VT9 100-4RC30 connecting set)		Cu/Al-busbars, cable lugs	B	3VT9 100-4RC00	1 unit	0.080
 Auxiliary conductor terminals For 4th pole (to be used with 3VT9 100-4TN30 connecting set)	1.5 ... 2.5; 4 ... 6	Cu flexible conductor	B	3VT9 100-4TN00	1 unit	0.010

* You can order this quantity or a multiple thereof.








3VT1 Molded Case Circuit Breakers up to 160 A

Catalog - Accessories and Components

Mounting accessories

1

Selection and ordering data

Version	Conductor cross-sections <i>S</i> mm ²	Connection	DT	Order No.	PS*	Weight per PU approx. kg
Accessories						
3-pole version						
	Insulating barriers for circuit breakers		B	3VT9 100-8CE30	1 unit	0.030
Included in the scope of supply of the circuit breaker or switch disconnecter In case of feed-in from below (power supply connected to terminals 2, 4, 6), it is necessary to install these barriers on the bottom side For more information, see page 1/36.						
	Terminal protection cover, degree of protection IP20		B	3VT9 100-8CA30	1 unit	0.050
Increases degree of protection of the connection point to degree of protection IP20, e.g. when used with cable lugs.						
	Locking devices for toggle levers		B	3 VT9 100-3HL00	1 unit	0.005
<ul style="list-style-type: none"> Enables locking of circuit breaker or switch disconnecter in „switched off manually“ position Locking is possible using a padlock with a shank diameter of up to 4 mm. 						
4-pole version						
	Insulating barrier for circuit breakers		B	3VT9 100-8CE00	1 unit	0.020
<ul style="list-style-type: none"> Included in the scope of supply of circuit breaker or switch disconnecter In case of feed-in from below, (power supply connected to terminals 2, 4, 6, N), it is necessary to install these barriers on the bottom side For more information, see page 1/37.						
	Terminal cover, degree of protection IP20		B	3VT9 100-8CA40	1 unit	0.080
Increases the degree of protection of the connecting point to degree of protection IP20, e.g. when used with cable lugs						
	Extension cable for motorized operating mechanism		B	3VT9 100-3MF00	1 unit	0.100
3-pole version						
	For mounting on a 35 mm standard DIN mounting rail		B	3VT9 100-4PP30	1 unit	0.050
For dimensions, see page 1/45.						

Design

Installation and connection

Main circuit

- The main circuit is connected with Cu or Al busbars, cables, and possibly cables with cable lugs.
- For further connecting options, connecting sets can be used (see page 1/9).
- Generally, conductors from the power supply are connected to input terminals 1, 3, 5, (N) and conductors from the load to terminals 2, 4, 6, (N). It is possible to reverse the current flow inside the unit (i. e. infeed from below) without reducing the rated short-circuit ultimate breaking capacity I_{CU} .
- In case of infeed from below, the units must additionally be fitted with 3VT9 100-8CE30 insulating barriers on the side of terminals 2, 4, 6 (see pages 1/36 and 1/37).
- We recommend painting the connection busbars.
- Input and output connectors/busbars must be mechanically reinforced to avoid transferring electrodynamic forces to the circuit breaker during short-circuiting.
- The power circuit must be connected in such a way that the deionizing space of the circuit breaker/switch disconnector is not obstructed (see pages 1/36 and 1/37).

Recommended cross-section of cables, busbars and flexibars

Rated current I_n	Conductor cross-section S		Busbars W x H	
	Cu mm ²	Al mm ²	Cu mm	Al mm
16	2,5	--	--	--
20	2,5	--	--	--
25	4	--	--	--
32	6	--	--	--
40	10	--	--	--
50	10	16	--	--
63	16	25	--	--
80	25	35	--	--
100	35	50	16 x 2; 12 x 3	16 x 4; 12 x 4
125	50	95	16 x 4; 12 x 4	16 x 5; 12 x 6
160	70	120	16 x 5; 12 x 6	--

Auxiliary circuits

Switches, shunt trip units or undervoltage trip units are connected to the terminals of the circuit breaker/switch disconnector using flexible Cu conductors with cross-section 0.5 ... 1 mm².

Conductor cross-sections of main terminals

Order No.	Maximum permitted current I_{max}	Maximum permissible conductor cross-sections S				Max. width of busbars and cable lugs	Dimensional drawings
		Cable type					
A	mm ²	Sector-shaped conductor, stranded	Sector-shaped conductor, solid	Round conductor, stranded	Round conductor, solid	mm	See page
3-pole							
3VT9 100-4TF30	160	2 x 25 ... 120	2 x 25 ... 120	2 x 25 ... 120	2 x 25 ... 120		1/38
3VT9 100-4TA30	160					16	
3VT9 100-4RC30	160					16	1/39
3VT9 100-4TN30	10/16	1,5 ... 2,5/4 ... 6				--	--
3VT9 100-4ED30	160					30	1/39
4-pole							
3VT9 100-4TF40	160	2 x 25 ... 120	2 x 25 ... 120	2 x 25 ... 120	2 x 25 ... 120		1/43
3VT9 100-4TA00	160					16	
3VT9 100-4RC00	160					16	1/43
3VT9 100-4TN00	10/16	1,5 ... 2,5/4 ... 6					

3VT1 Molded Case Circuit Breakers up to 160 A

Technical Information

Circuit breakers - Switch disconnectors

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Technical specifications

Order No.		3VT1 7...2...36-0AA0	3VT1 716-2DE36-0AA0	3VT1 7...2...46-0AA0	3VT1 716-2EE46-0AA0
Description		Circuit breakers	Switch disconnectors	Circuit breakers ³⁾	Switch disconnectors
Number of poles		3		4	
Standards		EN 60 947-2, IEC 947-2	EN 60 947-3, IEC 947-3	EN 60 947-2, IEC 947-2	EN 60 947-3, IEC 947-3
Approval marks		CE			
Rated current I_n	A	16 ... 160 ²⁾	--	16 ... 160 ²⁾	--
Rated uninterrupted current I_U	A	16 ... 160 ²⁾	160	16 ... 160 ²⁾	160
Rated operational current I_e	A	--	160	--	160
Rated operational voltage U_e	V	max. AC 690 max. DC 250		max. AC 690 max. DC 440	
Rated frequency f_n	Hz	50/60			
Rated impulse withstand voltage U_{imp}	kV	8			
Rated insulation voltage U_i	V	690			
Utilization category					
• selectivity AC 690 V		A	--	A	--
• switching mode		AC-3 (16 ... 100 A) AC-2 (100 ... 160 A)	AC-23 A	AC-3 (16 ... 100 A) AC-2 (100 ... 160 A)	DC-22 A AC-23 A
Rated short-time withstand current I_{cw}/t		--	2 kA/ 1 s	--	2 kA/1 s
Rated ultimate short-circuit breaking capacity (rms value) ¹⁾ I_{cu}/U_e		6 kA/AC 690 V 12 kA/AC 500 V 25 kA/AC 415 V 40 kA/AC 230 V	--	13 kA/DC 440V ($\tau = \text{max. } 5 \text{ ms}$) 6 kA/AC 690 V 12 kA/AC 500 V 25 kA/AC 415 V 40 kA/AC 230 V	
Off-time at I_{cu}	ms	7	--	7	--
Rated service short-circuit breaking capacity (rms value) I_{cs}/U_e		3 kA/AC 690 V 6 kA/AC 500 V 13 kA/AC 415 V 20 kA/AC 230 V	--	13 kA/DC 440V ($\tau = \text{max. } 5 \text{ ms}$) 3 kA/AC 690 V 6 kA/AC 500 V 13 kA/AC 415 V 20 kA/AC 230 V	
Rated short-circuit making capacity (peak value) I_{cm}/U_e		52 kA/AC 415 V	2.8 kA/AC 415 V	52 kA/AC 415 V	2.8 kA/AC 415 V
Losses per pole at $I_n = 160 \text{ A}$	W	see table page 1/14		15	
Mechanical endurance	cycles	20 000			
Electrical endurance ($U_e = \text{AC } 415 \text{ V}$)	cycles	6 000			
Frequency of switching	cycles/hr	120			
Operating force	N	55		65	
Front-side device protection		IP40			
Terminal protection		IP20			
Operating conditions					
Reference ambient temperature	°C	40			
Ambient temperature range	°C	-40 ... +55			
Working environment		dry and tropical climate			
Degree of pollution		3			
Max. elevation	m	2000			
Seismic resistance	m/s ²	3 g at 8 ... 50 Hz			
Design modifications					
Front/rear connection		✓/✓			
Plug-in version		--			
Withdrawable version		--			
Accessories					
Switches - auxiliary/relative/signal/leading		✓/✓/✓/✓			
Shunt trip unit/with alarm switch		✓/✓			
Undervoltage trip unit/with leading switch/with alarm switch		✓/✓/✓			
Front hand drive/lateral drive right/left		✓/✓/✓			
Mechanical interlocking to the manual drive by Bowden wire		-/-		-/-	
Motor. oper. mechanism/with oper. counter		+/+		+/+	
Locking-type lever		✓			

✓ available,
-- unavailable,
+ in preparation

¹⁾ When reversing the circuit breaker connection (power supply connected to terminals 2, 4, 6, (N) output to terminals 1, 3, 5, (N)), I_{cu} does not change.

²⁾ Ranges of rated currents vary according to characteristics, see page 1/17.

³⁾ Permissible load of N pole is 100%.

3VT2 Molded Case Circuit Breakers up to 250 A

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3VT2 Molded Case Circuit Breakers up to 250 A

General data

Circuit breakers ·

Switch disconnectors

Accessories and Components

Auxiliary switches · Auxiliary trip units

Manual/motorized operating mechanism

Mounting accessories

Connecting accessories

Further accessories

Technical Information

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3VT2 Molded Case Circuit Breakers up to 250 A

Circuit breakers · Switch disconnectors

Technical information

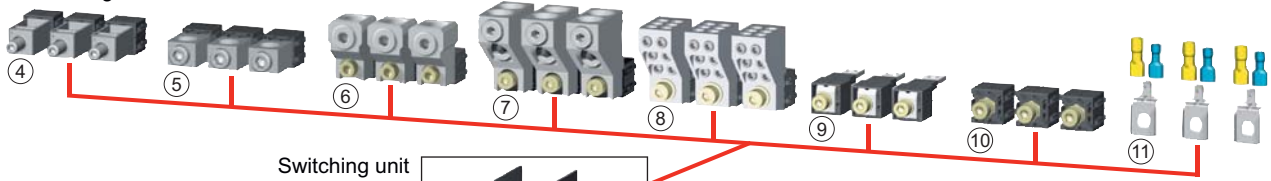
3VT2 Molded Case Circuit Breakers up to 250 A

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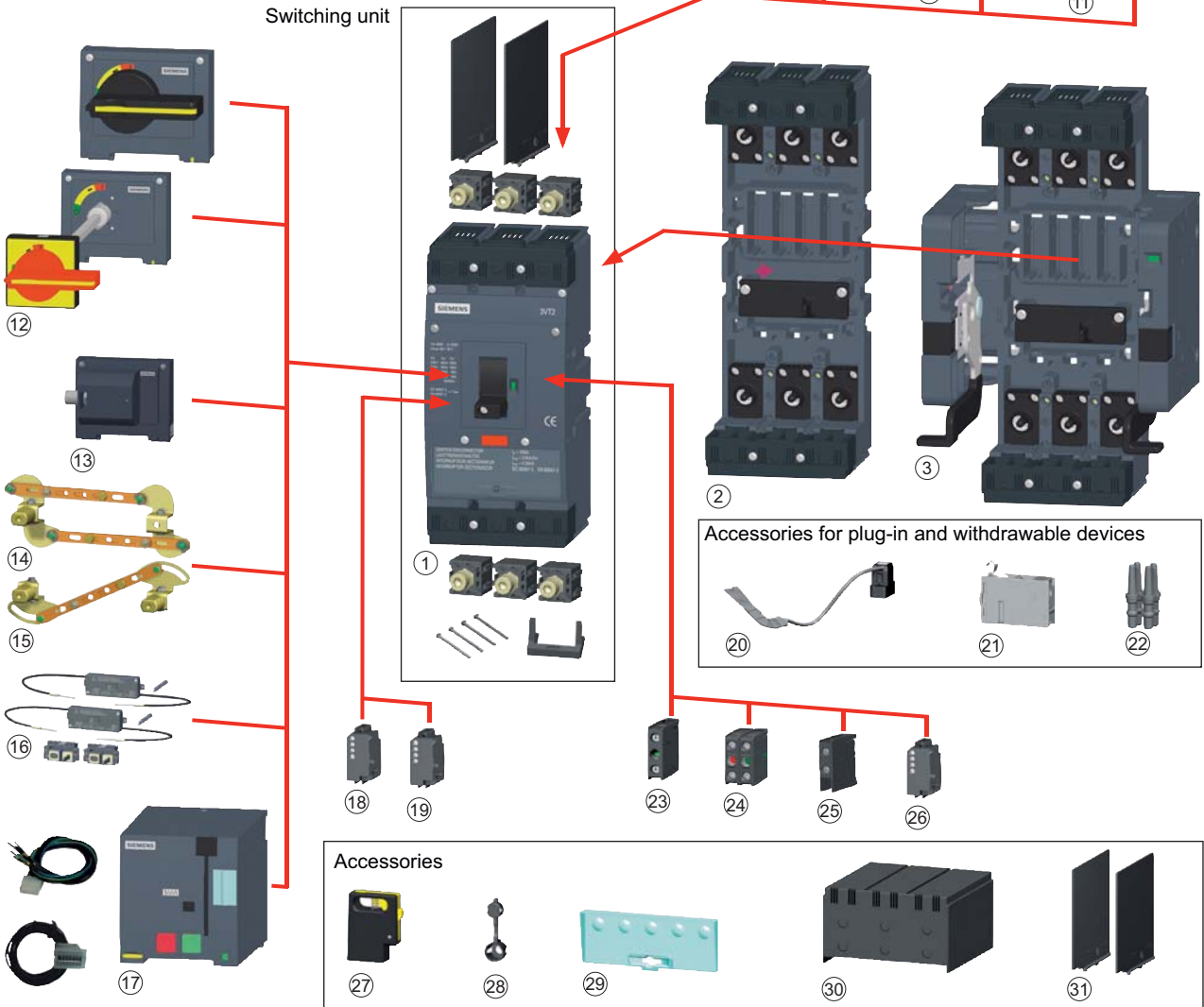
General data

Overview

Connecting sets



Switching unit



- ① Molded case circuit breaker
- ② Plug-in device
- ③ Withdrawable device
- ④ Box terminals
- ⑤ Circular conductor terminal
- ⑥ Circular conductor terminal
- ⑦ Multiple feed-in terminal
- ⑧ Multiple feed-in terminal
- ⑨ Rear connection
- ⑩ Front connection

- ⑪ Auxiliary conductor terminal
- ⑫ Rotary operating mechanism
- ⑬ Lateral rotary operating mechanism
- ⑭ Mechanical parallel switching
- ⑮ Mechanical interlocking
- ⑯ Mechanical interlocking by Bowden wire
- ⑰ Motor operating mechanism
- ⑱ Shunt trip unit
- ⑲ Undervoltage trip unit
- ⑳ Connecting cable
- ㉑ Position signalling

- ㉒ Keying pins
- ㉓ Auxiliary switch NC/NO
- ㉔ Auxiliary switch NC/NO
- ㉕ Auxiliary switch, change-over contact
- ㉖ Auxiliary switch, early
- ㉗ Lockingtype lever
- ㉘ Sealing inset
- ㉙ Additional cover for overcurrent releases
- ㉚ Terminal cover
- ㉛ Insulating barriers

N500_00164a

Selection and ordering data

Rated current I_n	Breaking capacity I_{CU}	DT	Order No.	PS*	Weight per PU approx. kg
A	kA				
Switching units					
3-pole version					
250	36	B	3VT2 725-2AA36-0AA0	1 unit	2.840
4-pole version, unprotected N					
250	36	B	3VT2 725-2AA46-0AA0	1 unit	2.840



Selection and ordering data for accessories

Rated current I_n	Current setting of the inverse-time delayed overcurrent trip units „L“ I_r	DT	Order No.	PS*	Weight per PU approx. kg
A	A				
Electronic trip units (ETU)					
Distribution protection, ETU DP, LI function¹⁾					
with adjustable thermal overload trip unit, adjustable short-circuit trip unit					
100	40 ... 100	160 - 800	B	3VT9 210-6AC00	1 unit 0.283
160	63 ... 160	250 - 1250	B	3VT9 216-6AC00	1 unit 0.284
250	100 ... 250	4000 - 2000	B	3VT9 225-6AC00	1 unit 0.283
Motor/generator protection, ETU MPS, LSI function $t=0, 100, 200, 300ms$¹⁾					
with adjustable thermal overload trip unit, adjustable short-circuit trip unit					
100	40 ... 100	160 - 800	B	3VT9 210-6AS00	1 unit 0.230
160	63 ... 160	250 - 1250	B	3VT9 216-6AS00	1 unit 0.230
250	100 ... 250	4000 - 2000	B	3VT9 225-6AS00	1 unit 0.230
Switch disconnecter unit					
250	Switch disconnecter unit ¹⁾		B	3VT9 225-6DT00	1 unit 0.219



¹⁾ Only for switching units 3VT2725-. AA36-0AA0 or 3VT2725-. AA46-0AA0

3VT2 Molded Case Circuit Breakers up to 250 A

Catalog

Auxiliary switches - Auxiliary trip units

Overview

The circuit breakers can be equipped with

- auxiliary switches,
- shunt trip units,
- undervoltage trip units.

Shunt trip units can trip the circuit breaker from a remote location. A control supply voltage is required.

An undervoltage trip unit trips the circuit breaker automatically when the circuit voltage drops below 70 % U_e . The undervoltage trip unit protects motors and other equipment in case of undervoltage. A control supply voltage is required.

Selection and ordering data

	Rated control supply voltage U_s	DT	Order No.	PS*	Weight per PU approx. kg
	AC 50/60 Hz/DC				
Auxiliary switches					
	with single NO contacts				
	AC/DC 60 ... 500 V	B	3VT9 300-2AC10	1 unit	0.020
	AC/DC 5 ... 60 V	B	3VT9 300-2AC20	1 unit	0.120
	with single NC contacts				
	AC/DC 60 ... 500 V	B	3VT9 300-2AD10	1 unit	0.130
	AC/DC 5 ... 60 V	B	3VT9 300-2AD20	1 unit	0.130
	with double contacts (2 x NO)				
	AC/DC 60 ... 500 V	B	3VT9 300-2AE10	1 unit	0.260
	AC/DC 5 ... 60 V	B	3VT9 300-2AE20	1 unit	0.260
	with double contacts (NO and NC)				
AC/DC 60 ... 500 V	B	3VT9 300-2AF10	1 unit	0.250	
AC/DC 5 ... 60 V	B	3VT9 300-2AF20	1 unit	0.250	
	with double contacts (2 x NC)				
AC/DC 60 ... 500 V	B	3VT9 300-2AG10	1 unit	0.240	
AC/DC 5 ... 60 V	B	3VT9 300-2AG20	1 unit	0.240	
	with change-over contacts				
	AC/DC 60 ... 250 V	B	3VT9 300-2AH10	1 unit	0.013
	AC/DC 5 ... 60 V	B	3VT9 300-2AH20	1 unit	0.013
	with leading contacts				
	AC/DC 60 ... 500 V	B	3VT9 300-2AJ00	1 unit	0.040
Shunt trip units					
	AC/DC 24, 40, 48 V	B	3VT9 300-1SC00	1 unit	0.140
	AC/DC 110 V	B	3VT9 300-1SD00	1 unit	0.140
	AC 230, 400, 500 V/DC 220 V	B	3VT9 300-1SE00	1 unit	0.140
Undervoltage trip units					
	AC/DC 24, 40, 48 V	B	3VT9 300-1UC00	1 unit	0.110
	AC/DC 110 V	B	3VT9 300-1UD00	1 unit	0.110
	AC 230, 400, 500 V/DC 220 V	B	3VT9 300-1UE00	1 unit	0.110
	with leading contact ¹⁾				
	AC/DC 24, 40, 48 V	B	3VT9 300-1UC10	1 unit	0.120
	AC/DC 110 V	B	3VT9 300-1UD10	1 unit	0.120
AC 230, 400, 500 V/DC 220 V	B	3VT9 300-1UE10	1 unit	0.120	

¹⁾ Not to be used with 3VT9 200-3M..0 motorized operating mechanism.

Overview

Rotary operating mechanisms

The rotary operating mechanism must be combined from the following components:











- For rotary operation of the circuit breaker:
 - 3VT9 200-3HA.0 or 3VT9 200-3HB.0 for frontside operation
 - 3VT9 300-3HE10 or 3VT9 300-3HE20 black knob or
 - 3VT9 300-3HF20 red knob
- For operation through the switchgear cabinet door:
 - 3VT9 200-3HA.0 or 3VT9 200-3HB.0 for frontside operation
 - 3VT9 300-3HJ..extension shaft
 - 3VT9 300-3HG/HH.. coupling driver for door-coupling operating mechanism
 - 3VT9 300-3HE/HF.. knob
- For operation through side wall of cabinet:

- 3VT9 200-3HC10 for right side operation OR
- 3VT9 200-3HD10 for left side operation
- 3VT9 300-3HJ..extension shaft
- 3VT9 300-3HG/HH.. coupling driver for door-coupling operating mechanism
- 3VT9 300-3HE/HF.. knob

Mechanical interlocking and parallel switching

- Mechanical interlocks for fixed-mounted version must be combined from the following parts:
 - 2 x 3VT9 200-3HA/HB.. rotary operating mechanism
 - 2 x 3VT9 200-3HE/HF.. knob or
 - 1 x 3VT9 200-3HE/HF.. knob for parallel switching
- Mechanical interlocking by Bowden wire is intended for fixed-mounted, plug-in and withdrawable versions

Selection and ordering data

Version	Color	DT	Order No.	PS*	Weight kg
Rotary operating mechanisms					
	• not lockable	gray	B	3VT9 200-3HA10	1 unit 0.223
	• lockable with padlock	gray	B	3VT9 200-3HA20	1 unit 0.223
	• lockable with padlock	yellow label	B	3VT9 200-3HB20	1 unit 0.223
	• for lateral operation,	gray	B	3VT9 200-3HC10	1 unit 0.300
	• mounted on the left side, • not lockable				
	• for lateral operation,	gray	B	3VT9 200-3HD10	1 unit 0.300
	• mounted on the right side, • not lockable				
Knobs for rotary operating mechanism					
	• not lockable	black	B	3VT9 300-3HE10	1 unit 0.075
	• lockable with padlock	black	B	3VT9 300-3HE20	1 unit 0.075
	• lockable with padlock	red	B	3VT9 300-3HF20	1 unit 0.075
Coupling driver for door-coupling operating mechanism					
	To be used with the 3VT9 300-3HE10 or 3VT9 300-3HE20 black knob	black	B	3VT9 300-3HG10	1 unit 0.140
	• degree of protection IP40	black	B	3VT9 300-3HG20	1 unit 0.140
	Additionally requires 3VT9 300-3HF20 red knob	yellow	B	3VT9 300-3HH10	1 unit 0.140
	• degree of protection IP40	yellow	B	3VT9 300-3HH20	1 unit 0.140
	• degree of protection IP66				
	Extension shaft, length 365 mm, may be shortened		B	3VT9 300-3HJ10	1 unit 0.205
	Extension shaft, telescopic, length 245 ... 410 mm		B	3VT9 300-3HJ20	1 unit 0.255







* You can order this quantity or a multiple thereof.

3VT2 Molded Case Circuit Breakers up to 250 A

Catalog

Manual/motorized operating mechanisms

2

Version	DT	Order No.	PS*	Weight per PU approx. kg
Mechanical interlocks				
 <p>The mechanical interlock additionally requires the following parts:</p> <ul style="list-style-type: none"> • 2 x 3VT9 300-3HA../HB.. rotary operating mechanisms, • 1 or 2 x 3VT9 300-3HE../HF.. knobs <p>Mechanical interlock for fixed-mounted version only</p>	B	3VT9 300-8LA00	1 unit	0.136
 <p>Mechanical interlock for parallel switching for fixed-mounted version only</p>	B	3VT9 300-8LB00	1 unit	0.162
 <p>Mechanical interlocking by Bowden wires</p> <ul style="list-style-type: none"> • for two 3VT2 circuit breakers 	B	3VT9 200-8LC10	1 unit	0.393
<ul style="list-style-type: none"> • for one 3VT2 and one 3VT3 circuit breaker 	B	3VT9 300-8LC20	1 unit	0.393
Motorized operating mechanism with storage spring				
 <p>Degree of protection IP00, with locking device for 3 padlocks</p> <p>AC/DC 24 V</p>	B	3VT9 200-3MJ00	1 unit	1.529
AC/DC 48 V	B	3VT9 200-3ML00	1 unit	1.529
AC/DC 110 V	B	3VT9 200-3MN00	1 unit	1.529
AC 230 V/DC 220 V	B	3VT9 200-3MQ00	1 unit	1.564
<p>Motorized operating mechanism with operations counter</p> <p>AC/DC 24 V</p>	B	3VT9 200-3MJ10	1 unit	1.529
AC/DC 48 V	B	3VT9 200-3ML10	1 unit	1.564
AC/DC 110 V	B	3VT9 200-3MN10	1 unit	1.546
AC 230 V/DC 220 V	B	3VT9 200-3MQ10	1 unit	1.546
Accessories for motorized operating mechanism				
 <p>Operations counter with cable, length 110 cm</p>	B	3VT9 300-3MF10	1 unit	0.003
 <p>Extension cable for motorized operating mechanism, 12 wires, length 60 cm</p>	B	3VT9 300-3MF00	1 unit	0.060

Overview

Plug-in version base

- The plug-in base includes:
 - Complete accessories for assembling circuit breakers/switch disconnectors in plug-in version.
 - A set of four installation bolts (M4 x 40) for fixing the switching unit to the plug-in base.

3VT9 200-4TA30 connecting sets are intended for connecting the plug-in base with busbars or cable lugs. These connecting sets are included in the scope of supply of the 3-pole 3VT2 725-.AA36-0AA0 or 4-pole 3VT2 725-.AA46-0AA0 switching units.



Other connecting sets are also available.

Withdrawable version base

In the withdrawable version base the circuit breaker is fixed by side racks, therefore screws are not necessary. Changing of circuit breaker is faster as compared to plug-in version.

- The withdrawable version base includes complete accessories for assembling circuit breakers/switch disconnectors in withdrawable version.
- The circuit breaker located inside the withdrawable version base can be moved between an operating position (ON-OFF) and a checking position (withdrawn).

Selection and ordering data

Version	DT	Order No.	PS*	Weight per PU approx. kg
Plug-in base				
	3-pole version	B 3VT9 200-4PA30	1 unit	1.766
	4-pole version	B 3VT9 200-4PA40	1 unit	2.100
Withdrawable version base				
	same as plug-in base, but with additional side panels and racks			
	3-pole version	B 3VT9 200-4WA30	1 unit	3.497
	4-pole version	B 3VT9 200-4WA40	1 unit	3.200

* You can order this quantity or a multiple thereof.

3VT2 Molded Case Circuit Breakers up to 250 A

Catalog


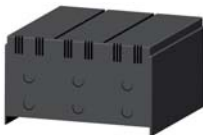







Connecting accessories

Selection and ordering data

Version	Conductor cross-section S mm ²	Type of connection	DT	Order No.	PS*	Weight per PU approx. kg
Terminals for fixed-mounted circuit breakers						
<i>Connecting sets for 3-pole version</i>						
	Box terminals 1 set = 3 units	16 ... 150	Cu cables, flexibars	B	3VT9 200-4TC30	1 unit 0.240
	Terminals for circular conductors	25 ... 150	Cu/Al cables	B	3VT9 215-4TD30	1 unit 0.200
		150 ... 240	Cu/Al cables	B	3VT9 224-4TD30	1 unit 0.339
	Terminals for circular conductors for enhancing termination point protection to IP20 use the 3VT9 200-8CB30 terminal cover	2 x 25 ... 150	Cu/Al cables	B	3VT9 215-4TF30	1 unit 0.520
		2 x 150 ... 240	Cu/Al cables	B	3VT9 224-4TF30	1 unit 0.630
	Terminals for circular conductors, for 6 cables	6 x 6 ... 35	Cu/Al cables	B	3VT9 203-4TF30	1 unit 0.300
	Terminals for rear connection 1 set = 3 units		Cu/Al busbars cable lugs	B	3VT9 200-4RC30	1 unit 0.237
	Terminals for front connection 1 set = 3 units Included in every supply of switching units		Cu/Al busbars, cable lugs, flexibars	B	3VT9 200-4TA30	1 unit 0.120
	Auxiliary conductor terminals	1,5 ... 2,5; 4 ... 6	Cu flexible conductors	B	3VT9 200-4TN30	1 unit 0.017
	Front connection bars for increased pole spacing	--	Cu/Al busbars cable lugs, flexibars	B	3VT9 200-4ED30	1 unit 0.300
	for increased pole spacing	--	Cu/Al busbars cable lugs, flexibars	B	3VT9 200-4EE30	1 unit 0.447
<i>Single terminals for 3- or 4-pole versions</i>						
	Box terminal 1 set = 1 unit	16 ... 150	Cu cables, flexibars	B	3VT9 200-4TC00	1 unit 0.320
	Terminal for circular conductors 1 set = 1 unit	25 ... 150	Cu/Al cables	B	3VT9 215-4TD00	1 unit 0.280
	1 set = 1 unit	150 ... 240	Cu/Al cables	B	3VT9 224-4TD00	1 unit 0.280
	1 set = 1 unit	2 x 25 ... 150	Cu/Al cables	B	3VT9 215-4TF00	1 unit 0.680
	1 set = 1 unit	2 x 150 ... 240	Cu/Al cables	B	3VT9 224-4TF00	1 unit 0.680
	Terminals for circular conductors, for 6 cables	6 x 6 ... 35	Cu/Al cables	B	3VT9 203-4TF00	1 unit 0.100
	Terminal for rear connection 1 set = 1 unit		Cu/Al busbars cable lugs	B	3VT9 200-4RC00	1 unit 0.320

2

Selection and ordering data

Version	DT	Order No.	PS*	Weight per PU approx. kg	
Insulating barriers					
	Included in the scope of supply of the switching unit; in case the circuit breaker/switch disconnecter is fed-in from below (power supply connected to terminals 2, 4, 6), it is necessary in most cases to install these barriers also on the bottom side				
	• set of two pieces, for 3-pole version	B	3VT9 300-8CE30	1 unit	0.077
	• one piece, additionally needed for 4-pole version	B	3VT9 300-8CE00	1 unit	0.050
Terminal cover, degree of protection IP20					
	Increases degree of protection of the connection point to IP20 when using 3VT9 224-4TD30, 3VT9 215-4TF30, 3VT9 224-4TF30 or 3VT9 203-4TF30 block type terminals, intended for fixed-mounted, plug-in and withdrawable versions.				
	• 3-pole version	B	3VT9 200-8CB30	1 unit	0.098
	• 4-pole version	B	3VT9 200-8CB40	1 unit	0.100
Locking device for knob					
	Enables locking the circuit breaker in „switched off manually“ position. For locking the device, you can use up to three padlocks with a shank diameter of max. 6 mm				
		B	3VT9 200-3HL00	1 unit	0.013
Bolt sealing inset					
	Provides sealing for:				
	• trip unit • accessory compartment cover • terminal cover • rotary operating mechanism • motorized operating mechanism	B	3VT9 200-8BN00	1 unit	0.001
Additional cover for trip units					
	Provides protection for trip units				
		B	3VT9 200-8BL00	1 unit	0.080
Connecting cable					
	For connecting the circuit breaker/switch disconnecter accessories in withdrawable version (can also be used for plug-in and fixed-mounted version)				
		B	3VT9 300-4PL00	1 unit	0.020
Position signalling switch					
	For indicating the position of the circuit breaker located in the plug-in base or withdrawable version base				
		B	3VT9 300-4WL00	1 unit	0.020
Coding set					
	Prevents insertion of wrong switching unit into the plug-in base or withdrawable version base				
		B	3VT9 200-4WN00	1 unit	0.002
Pushbutton cover					
	For motorized operating mechanism				
		B	3VT9 300-3MF20	1 unit	0.054

* You can order this quantity or a multiple thereof.

3VT2 Molded Case Circuit Breakers up to 250 A

Technical Information

Circuit breakers · Switch disconnectors

Design

Installation and connection

Main circuit

- The main circuit is connected with Cu or Al busbars, or with cables and cable lugs.
- Connecting sets are available for additional connecting options (see page 2/8).
- Generally, conductors from the power supply are connected to input terminals 1, 3, 5 and conductors from the load to terminals 2, 4, 6. But it is possible to exchange this connection (exchanging input and output terminals without limiting rated short-circuit ultimate breaking capacity I_{cu}).
- In case of feed-in from below, the circuit breakers/switch disconnectors must be fitted with 3VT9 300-8CE30 insulating barriers also next to and between terminals 2, 4, 6.
- We recommend painting the connecting busbars with different colors.
- Input and output connectors/busbars must be mechanically reinforced in order to avoid transferring electrodynamic forces to the circuit breaker during short circuiting.
- The power circuit must be connected in such a way that the deionizing space of the circuit breaker/switch disconnector is not obstructed (see page 2/43).

Auxiliary circuits

- Switches, shunt trip units or undervoltage trip units are connected using flexible 0.5 ... 1 mm² Cu conductors.
- Motorized operating mechanism and auxiliary circuits of the plug-in base or withdrawable version base are connected with a connector.

Recommended cross-sections of cables, busbars and flexibars for fixed-mounted, plug-in and withdrawable versions





Rated current I_n	Permissible cross-section		Busbars W x H	
	Cu mm ²	Al mm ²	Cu mm	Al mm
40	10	16		
50	10	16		
63	16	25		
80	25	35		
100	35	50	20 x 2	25 x 2
125	50	70	25 x 2	25 x 3
160	70	95	25 x 3	25 x 4
200	95	120	25 x 4	25 x 5
250	120	150	25 x 5	25 x 6

Maximum circuit breaker/switch disconnector loads in accordance with the ambient temperature

3VT2 circuit breaker/switch disconnector connection to pole by 1 x 120 mm² Cu cable

50 °C	55 °C	60 °C	65 °C	70 °C
250 A	250 A	250 A	250 A	250 A

Conductor cross-sections of main terminals

Order No.	Maximum permitted current I_{max}	Maximum permissible conductor cross-section				Busbars and cable lugs W x H mm	Technical information See page
		Cable type Sector-shaped conductor, stranded  mm ²	Sector-shaped conductor, solid  mm ²	Round conductor, stranded  mm ²	Round conductor, solid  mm ²		
3VT9 200-4TA30	250					25 x ...	
3VT9 200-4RC30	250					25 x ...	2/47, 2/58
3VT9 200-4TF00							
3VT9 200-4TC30	250	16 ... 150 Cu	10 ... 150 Cu	16 ... 150	10 ... 150 Cu		
3VT9 200-4TC00							
3VT9 215-4TD30	250	25 ... 150 Cu/Al	16 ... 150 Cu/Al	25 ... 150 Cu/Al	16 ... 150 Cu/Al		
3VT9 215-4TD00							
3VT9 224-4TD30	250	150 ... 240 Cu/Al	120 ... 240 Cu/Al	150 ... 240 Cu/Al	120 ... 240 Cu/Al		2/45, 2/58
3VT9 224-4TD00							
3VT9 215-4TF30	250	2 x (25 ... 150) Cu/Al	2 x (16 ... 150) Cu/Al	2 x (25 ... 150) Cu/Al	2 x (16 ... 150) Cu/Al		2/46, 2/58
3VT9 215-4TF00							
3VT9 224-4TF30	250	2 x (150 ... 240) Cu/Al	2 x (120 ... 240) Cu/Al	2 x (150 ... 240) Cu/Al	2 x (120 ... 240) Cu/Al		2/45, 2/59
3VT9 224-4TF00							
3VT9 203-4TF30	250	6 x (6 ... 35) Cu/Al	6 x (6 ... 35) Cu/Al	6 x (6 ... 35) Cu/Al	6 x (6 ... 35) Cu/Al		2/46, 2/59
3VT9 203-4TF00							
3VT9 200-4ED30	250						2/47
3VT9 200-4EE30	250						2/48
3VT9 200-4TN30	10/16	1,5 ... 2,54 ... 6 Cu flexible conductor					

3VT2 Molded Case Circuit Breakers up to 250 A

Technical Information

Circuit breakers - Switch disconnectors

2

Technical specifications

Description Order numbers	Circuit breakers 3VT2 725-2AA36/46-0AA0		Switch disconnector 3VT9 225-6DT00
	Standards	EN 60947-2, IEC 60947-2	
Approval marks	CE		
Number of poles	3, 4		
Rated current I_n	A	100, 160, 200, 250	
Rated uninterrupted current I_u	A	250	
Rated operational current I_e	A	--	250
Rated operational voltage U_e	V	AC max. 690	AC max. 690 DC max. 440
Rated frequency f_n	Hz	50/60	
Rated impulse withstand voltage U_{imp}	kV	8	
Rated insulation voltage U_i	V	690	
Utilization category (selectivity) AC 690 V	A	--	
Utilization category (switching mode)			
• AC 609 V	--	AC-23 B	
• DC 440 V	--	DC-23 B	
Rated short-time withstand current $U_e = AC 690 V I_{cw}/t$		2,5 kA/1 s	3 kA/5 s
Series U_e	3VT2	U_e	--
Rated ultimate short-circuit breaking capacity (rms value) I_{cu}		60 kA AC 230 V 36 kA AC 415 V 16 kA AC 500 V 10 kA AC 690 V	--
Rated short-circuit service breaking capacity (rms value) I_{cs}/U_e		30 kA AC 230 V 18 kA AC 415 V 8 kA AC 500 V 5 kA AC 690 V	--
Rated short-circuit making capacity (peak value) I_{cm}/U_e		75 kA AC 415 V	4 kA/AC 15 V, 4 kA/AC 440 V
Off-time at I_{cu}	ms	10	
Losses per pole at $I_n = 250 A$	W	18	
Mechanical endurance	cycles	30 000	
Electrical endurance ($U_e = AC 415 V$)	cycles	3 000	
Switching frequency	cycles /hr	120	
Operating force	N	80	
Front-side device protection		IP40	
Terminal protection		IP20	
Operating conditions			
Reference ambient temperature	°C	40	
Ambient temperature range	°C	-40 ... +55	
Working environment		dry and tropical climate	
Pollution degree		3	
Max. elevation	m	2000	
Seismic resistance	m/s ²	3 g at 8 ... 50 Hz	
Design modifications			
Front/rear connection		✓/✓	
Plug-in design		✓/+	
Withdrawable design		✓/+	
Accessories			
Switches – auxiliary/relative/signal/leading		✓/✓/✓/✓	
Shunt trip unit/with alarm switch		✓	
Undervoltage trip unit/with leading switch/with alarm switch		✓/✓	
Front rotary operating mechanism/lateral operating mechanism at the right/left hand side		✓/✓	
Mechanical interlocking of rotary operating mechanisms, by Bowden wire		✓/✓	
Motorized operating mechanism/with operations counter		✓/✓	
Locking-type knob		✓	
Bolt sealing inset/additional cover for trip unit		✓/✓	

✓ available

-- unavailable

+ in preparation

3VT3 Molded Case Circuit Breakers up to 630 A

3



Catalog

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General data

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Circuit breakers · Switch disconnectors

Accessories and Components

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Auxiliary switches · Auxiliary trip units

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Manual/motorized operating mechanism

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Mounting accessories

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Connecting accessories

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Further accessories

Technical Information

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Circuit breakers · Switch disconnectors

3/11

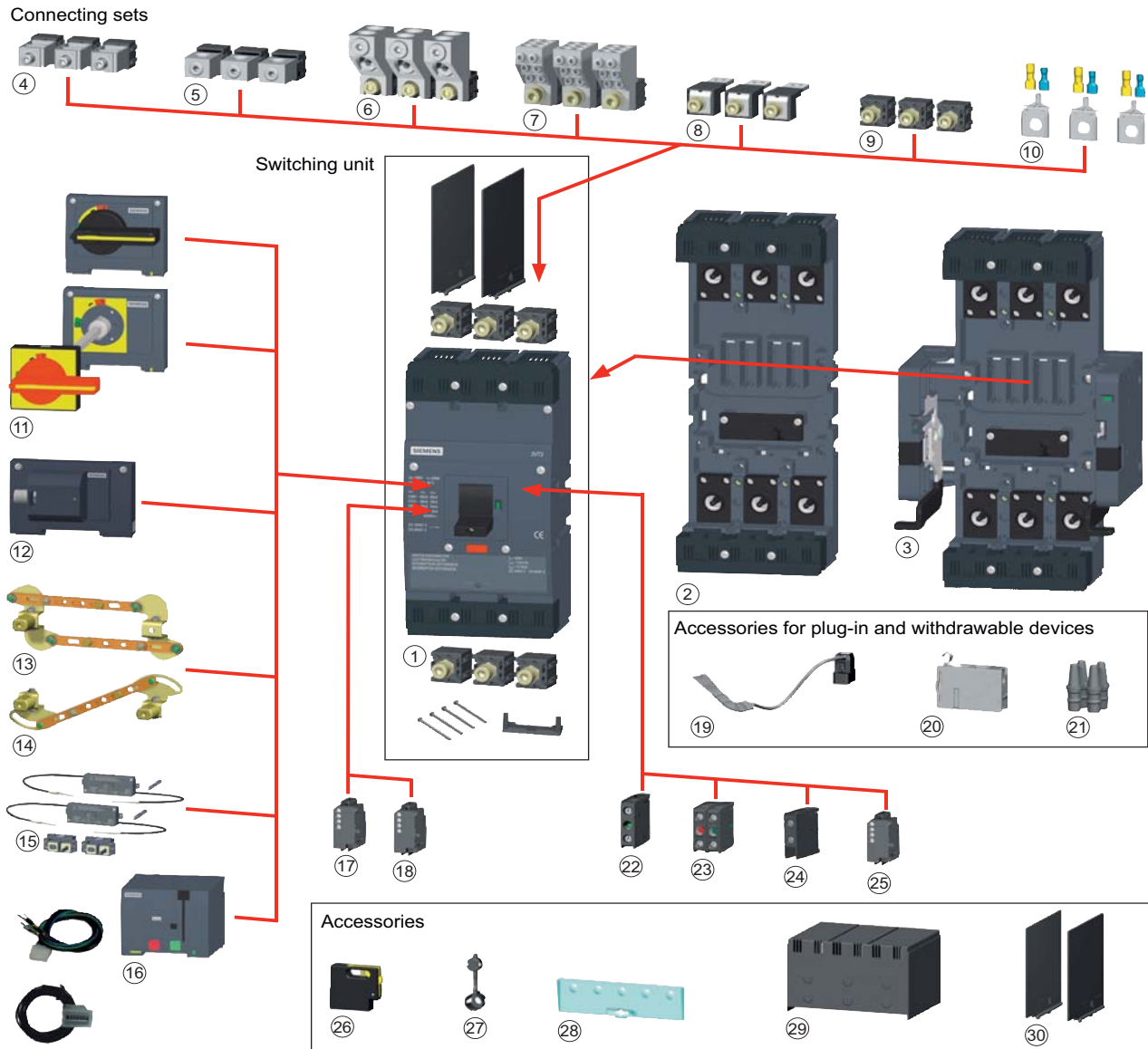
Technical information

3VT3 Molded Case Circuit Breakers up to 630 A

Catalog

General data

Overview



- ① Molded case circuit breaker
- ② Plug-in device
- ③ Withdrawable device
- ④ Box terminals
- ⑤ Circular conductor terminal
- ⑥ Multiple feed-in terminal
- ⑦ Multiple feed-in terminal
- ⑧ Rear connection
- ⑨ Front connection
- ⑩ Auxiliary conductor terminal

- ⑪ Rotary operating mechanism
- ⑫ Lateral rotary operating mechanism
- ⑬ Mechanical parallel switching
- ⑭ Mechanical interlocking
- ⑮ Mechanical interlocking by Bowden wire
- ⑯ Motor operating mechanism
- ⑰ Shunt trip unit
- ⑱ Undervoltage trip unit
- ⑲ Connecting cable
- ⑳ Position signalling
- ㉑ Keying pins

- ㉒ Auxiliary switch NC/NO
- ㉓ Auxiliary switch NC/NO
- ㉔ Auxiliary switch, change-over contact
- ㉕ Auxiliary switch, early
- ㉖ Lockingtype lever
- ㉗ Sealing inset
- ㉘ Additional cover for overcurrent releases
- ㉙ Terminal cover
- ㉚ Insulating barriers

NS00_00211a

Overview

Switching unit

The switching unit includes:

- Two 3VT9 300-4TA30 connecting sets – for connecting busbars or cable lugs
- 3VT9 300-8CE30 insulating barriers
- A set of 4 installation bolts (M5 x 25)

The switching unit must be fitted with a trip unit (circuit breaker) or a 3VT9 363-6DT00 switch disconnector unit (switch disconnector)

For maximum circuit breaker/switch disconnector loads in accordance with the ambient temperature, see page 3/10.

For recommended cross-sections of cables, busbars and flexi-bars for fixed-mounted, plug-in and withdrawable versions, see page 3/10.

Circuit breaker

The circuit breakers consist of a 3- or 4-pole switching unit and a trip unit which is available with a choice of different characteristics.

Switch disconnector

The switch disconnector consists of a switching unit and a switch disconnector unit.

Selection and ordering data

Rated current I_n	Breaking capacity I_{cu}	DT	Order No.	PS*	Weight per PU approx. kg
A	kA				
Switching units					
3-pole version					
630	36	B	3VT3 763-2AA36-0AA0	1 unit	7.400
4-pole version, unprotected N					
630	36	B	3VT3 763-2AA46-0AA0	1 unit	7.400



Selection and ordering data for accessories

Rated current I_n	Current setting of the inverse-time delayed overload trip units „L“ I_r	DT	Order No.	PS*	Weight per PU approx. kg
kW	A				
ETU trip units					
Distribution protection, ETU DP, LI function ¹⁾					
• for protecting lines and transformers					
250	100 ... 250	400 - 3100	B	3VT9 325-6AC00	1 unit 0.261
400	160 ... 400	640 - 5000	B	3VT9 340-6AC00	1 unit 0.318
630	250 ... 630	1000 - 7850	B	3VT9 363-6AC00	1 unit 0.320
Motor/generator protection, ETU MPS, LSI function ¹⁾					
• for direct protection of motors and generators.					
• suitable also for protecting lines and transformers					
• enables setting time delay of time-independent trip unit to 0, 100, 200 or 300 ms					
250	100 ... 250	300 - 2250	B	3VT9 325-6AS00	1 unit 0.260
400	160 ... 400	480 - 3600	B	3VT9 340-6AS00	1 unit 0.260
630	250 ... 630	750 - 5670	B	3VT9 363-6AS00	1 unit 0.323
Switch disconnector unit					
630	Switch disconnector unit¹⁾		B	3VT9 363-6DT00	1 unit 0.252



* You can order this quantity or a multiple thereof.

3VT3 Molded Case Circuit Breakers up to 630 A

Catalog

Auxiliary switches - Auxiliary trip units

Overview

The circuit breakers can be equipped with

- auxiliary switches,
- alarm switches,
- shunt trip units,
- undervoltage trip units.

Shunt trip units can trip the circuit breaker from a remote location. A control supply voltage is required.

An undervoltage trip unit trips the circuit breaker automatically when the circuit voltage drops below 70 % U_e . The undervoltage trip unit protects motors and other equipment in case of undervoltage. A control supply voltage is required.

Selection and ordering data

	Rated control supply voltage U_s	DT	Order No.	PS*	Weight per PU approx. kg
	AC 50/60 Hz, DC				
Auxiliary switches and alarm switches					
	Single NO contacts				
	AC/DC 60 ... 500 V	B	3VT9 300-2AC10	1 unit	0.020
	AC/DC 5 ... 60 V	B	3VT9 300-2AC20	1 unit	0.120
	Single NC contacts				
	AC/DC 60 ... 500 V	B	3VT9 300-2AD10	1 unit	0.130
	AC/DC 5 ... 60 V	B	3VT9 300-2AD20	1 unit	0.130
	Double contacts (2 x NO)				
	AC/DC 60 ... 500 V	B	3VT9 300-2AE10	1 unit	0.260
	AC/DC 5 ... 60 V	B	3VT9 300-2AE20	1 unit	0.260
	Double contacts (NO and NC)				
	AC/DC 60 ... 500 V	B	3VT9 300-2AF10	1 unit	0.250
	AC/DC 5 ... 60 V	B	3VT9 300-2AF20	1 unit	0.250
	Double contacts (2 x NC)				
	AC/DC 60 ... 500 V	B	3VT9 300-2AG10	1 unit	0.240
	AC/DC 5 ... 60 V	B	3VT9 300-2AG20	1 unit	0.240
	Changeover contacts				
	AC/DC 60 ... 250 V	B	3VT9 300-2AH10	1 unit	0.013
	AC/DC 5 ... 60 V	B	3VT9 300-2AH20	1 unit	0.013
	Leading contacts				
	AC/DC 60 ... 250 V	B	3VT9 300-2AJ00	1 unit	0.040
Shunt trip units					
	AC/DC 24, 40, 48 V	B	3VT9 300-1SC00	1 unit	0.140
	AC/DC 110 V	B	3VT9 300-1SD00	1 unit	0.140
	AC 230, 400, 500 V/DC 220 V	B	3VT9 300-1SE00	1 unit	0.140
Undervoltage trip units					
	AC/DC 24, 40, 48 V	B	3VT9 300-1UC00	1 unit	0.110
	AC/DC 110 V	B	3VT9 300-1UD00	1 unit	0.110
	AC 230, 400, 500 V/DC 220 V	B	3VT9 300-1UE00	1 unit	0.110
	with leading contact ¹⁾				
	AC/DC 24, 40, 48 V	B	3VT9 300-1UC10	1 unit	0.120
	AC/DC 110 V	B	3VT9 300-1UD10	1 unit	0.120
AC 230, 400, 500 V/DC 220 V	B	3VT9 300-1UE10	1 unit	0.120	

¹⁾ Not to be used with 3VT9 300-3M..0 motorized operating mechanism.

Overview

Rotary operating mechanisms

The rotary operating mechanism must be combined from:










- For rotary operation of the circuit breaker:
 - 3VT9 300-3HA.0 or 3VT9 300-3HB.0 for frontside operation
 - 3VT9 300-3HE10 or 3VT9 300-3HE20 black knob or
 - 3VT9 300-3HF20 red knob
- For operation through the switchgear cabinet door:
 - 3VT9 300-3HA.0 or 3VT9 300-3HB.0 for frontside operation
 - 3VT9 300-3HJ.. extension shaft
 - 3VT9 300-3HG/HH.. coupling driver
 - 3VT9 300-3HE/HF.. knob.
- For operation through side wall of cabinet:
 - 3VT9 300-3HC10 for right side operation OR
 - 3VT9 300-3HD10 for left side operation
 - 3VT9 300-3HJ..extension shaft

- 3VT9 300-3HG/HH.. coupling driver for door-coupling operating mechanism
- 3VT9 300-3HE/HF.. knob

Mechanical interlocks and interlock for parallel switching

- Mechanical interlocks for fixed-mounted version must be combined from the following parts:
 - 2 x 3VT9 300-3HA/HB.. rotary operating mechanism
 - 2 x 3VT9 300-3HE/HF.. knob
- Mechanical interlocking by Bowden wire is intended for fixed-mounted, plug-in and withdrawable versions
- Mechanical interlocks must be combined from the following parts:
 - 2 x 3VT9 300-3HA/HB.. rotary operating mechanism
 - 1 x 3VT9 300-3HE/HF.. knob

Selection and ordering data







Version	Color	DT	Order No.	PS*	Weight kg
Rotary operating mechanisms					
	• not lockable	gray	B	3VT9 300-3HA10	1 unit 0.243
	• lockable with padlock	gray	B	3VT9 300-3HA20	1 unit 0.243
	• lockable with padlock	yellow label	B	3VT9 300-3HB20	1 unit 0.243
	• for lateral operation, • mounted on the left side, • not lockable	grey	B	3VT9 300-3HC10	1 unit 0.300
	• for lateral operation, • mounted on the right side, • not lockable	grey	B	3VT9 300-3HD10	1 unit 0.300
Knobs for rotary operating mechanism					
	• not lockable	black	B	3VT9 300-3HE10	1 unit 0.075
	• lockable with padlock	black	B	3VT9 300-3HE20	1 unit 0.075
	• lockable with padlock	red	B	3VT9 300-3HF20	1 unit 0.075
Coupling driver for door-coupling operating mechanism					
	To be used with the 3VT9 300-3HE10 or 3VT9 300-3HE20 black knob	black	B	3VT9 300-3HG10	1 unit 0.140
	• degree of protection IP40	black	B	3VT9 300-3HG20	1 unit 0.140
	Is used in combination with the 3VT9 300-3HF20 red knob	yellow	B	3VT9 300-3HH10	1 unit 0.140
	• degree of protection IP40	yellow	B	3VT9 300-3HH20	1 unit 0.140
	Extension shaft length 365 mm, may be shortened		B	3VT9 300-3HJ10	1 unit 0.205
	Extension shaft, telescopic, length 245 ... 410 mm		B	3VT9 300-3HJ20	1 unit 0.255

* You can order this quantity or a multiple thereof.

3VT3 Molded Case Circuit Breakers up to 630 A

Catalog

Manual/motorized operating mechanisms

Version	DT	Order No.	PS*	Weight per PU approx. kg
Mechanical interlocks				
The mechanical interlocks additionally require the following parts:				
<ul style="list-style-type: none"> • 2 x 3VT9 300-3HA../HB.. rotary operating mechanisms, • 2 x 3VT9 300-3HE../HF.. knobs 				
	B	3VT9 300-8LA00	1 unit	0.136
Mechanical interlocks for fixed-mounted version only				
	B	3VT9 300-8LB00	1 unit	0.162
Mechanical interlock for parallel switching for fixed-mounted version only				
	B	3VT9 300-8LC10	1 unit	0.393
Mechanical interlocking by Bowden wirer				
<ul style="list-style-type: none"> • for two 3VT3 circuit breakers • for one 3VT2 and one 3VT3 circuit breaker 	B	3VT9 300-8LC20	1 unit	0.393
Motorized operating mechanisms with storage spring				
Rated control supply voltage U_s				
	B	3VT9 300-3MJ00	1 unit	1.691
Motorized operating mechanism AC/DC 24 V				
AC/DC 48 V	B	3VT9 300-3ML00	1 unit	1.750
AC/DC 110 V	B	3VT9 300-3MN00	1 unit	1.752
AC 230 V/DC 220 V	B	3VT9 300-3MQ00	1 unit	1.746
Motorized operating mechanism with operations counter AC/DC 24 V	B	3VT9 300-3MJ10	1 unit	1.750
AC/DC 48 V	B	3VT9 300-3ML10	1 unit	1.750
AC/DC 110 V	B	3VT9 300-3MN10	1 unit	1.708
AC 230 V/DC 220 V	B	3VT9 300-3MQ10	1 unit	1.754
Accessories for motorized operating mechanisms				
	B	3VT9 300-3MF10	1 unit	0.003
Operations counter with cable, length 110 cm				
	B	3VT9 300-3MF00	1 unit	0.060
Extension cable for motorized operating mechanism, 12 wires, length 60 cm				

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Overview

Plug-in version


- The plug-in base includes:
 - complete accessories for assembling circuit breakers/ switch disconnectors in plug-in design
 - a set of four installation bolts (M5 x 30) for fixing the switching unit to the plug-in base
- The plug-in base must be outfitted with:
 - 3-pole version: 3VT3 763-.AA36-0AA0 switching unit
 - 4-pole version: 3VT3 763-.AA46-0AA0 or 3VT3 763-.AA56-0AA0 switching unit

For mounting the plug-in version on busbars or cable lugs, 3VT9 300-4TA30 connecting sets are available. These are included in the scope of supply of the 3VT3 763-.AA36-0AA0 3-pole version ; 3VT3 763-.AA46/56-0AA0... 4-pole version switching unit. For other types of connection, other connecting sets are available.

Withdrawable version

- The withdrawable version base includes complete accessories for assembling circuit breakers/switch disconnectors in withdrawable version.
- The circuit breaker inside the withdrawable version base can be moved between an operating position and a checking position (withdrawn).
- The withdrawable version base must be fitted with:
 - 3-pole version: 3VT3 763-.AA36-0AA0 switching unit or
 - 4-pole version: 3VT3 763-.AA46-0AA0 or 3VT3 763-.AA56-0AA0 switching unit

Selection and ordering data

Version	Max. permissible cross-section S mm ²	DT	Order No.	PS*	Weight per PU approx. kg
Plug-in bases					
 3-pole version		B	3VT9 300-4PA30	1 unit	2,610
 4-pole version		B	3VT9 300-4PA40	1 unit	3,400
Withdrawable version bases					
 3-pole version		B	3VT9 300-4WA30	1 unit	5,040
 4-pole version		B	3VT9 300-4WA40	1 unit	4,500















* You can order this quantity or a multiple thereof.

3VT3 Molded Case Circuit Breakers up to 630 A

Catalog










Connecting accessories

Selection and ordering data

Version	Max. permissible cross-section S mm ²	Type of connection	DT	Order No.	PS*	Weight per PU approx. kg
Connecting Sets						
<i>Connecting sets for 3-pole version</i>						
	Box terminals	35 ... 240	Cu Cables, flexibars	B	3VT9 300-4TC30	1 unit 0.433
	Terminals for circular conductors	25 ... 150	Cu/Al cables	B	3VT9 315-4TD30	1 unit 0.302
	For enhancing termination point protection to degree of protection IP20, use the 3VT9 300-8CB30 terminal cover	150 ... 240	Cu/Al cables	B	3VT9 324-4TD30	1 unit 0.279
		2 x 25 ... 150	Cu/Al cables	B	3VT9 315-4TF30	1 unit 0.800
		2 x 150 ... 240	Cu/Al cables	B	3VT9 324-4TF30	1 unit 0.721
		6 x 6 ... 35	Cu/Al cables	B	3VT9 303-4TF30	1 unit 0.300
	Terminals for rear connection 1 set = 3 units		Cu/Al busbars, cable lugs	B	3VT9 300-4RC30	1 unit 0.567
	Terminals for front connection 1 set = 3 units		Cu/Al busbars, cable lugs, flexibars	B	3VT9 300-4TA30	1 unit 0.186
	Potential terminals	1.5 ... 2.5; 4 ... 6	Cu flexible conductors	B	3VT9 300-4TN30	1 unit 0.021
	Front connection bars	for increased pole spacing	Cu/Al busbars, cable lugs, flexibars	B	3VT9 300-4ED30	1 unit 0.490
		for increased pole spacing	Cu/Al busbars, cable lugs, flexibars	B	3VT9 300-4EE30	1 unit 0.628
<i>Single terminals for 3- or 4-pole version</i>						
	Box terminal 1 set = 1 unit	35 ... 240	Cu Cables, flexibars	B	3VT9 300-4TC00	1 unit 0.580
	Terminals for circular conductors 1 set = 1 unit	25 ... 150	Cu/Al cables	B	3VT9 315-4TD00	1 unit 0.400
		150 ... 240	Cu/Al cables	B	3VT9 324-4TD00	1 unit 0.370
		2 x 25 ... 150	Cu/Al cables	B	3VT9 315-4TF00	1 unit 0.500
		2 x 150 ... 240	Cu/Al cables	B	3VT9 324-4TF00	1 unit 0.960
		6 x 6 ... 35	Cu/Al cables	B	3VT9 303-4TF00	1 unit 0.500
	Terminal for rear connection 1 set = 1 unit		Cu/Al busbars, cable lugs	B	3VT9 300-4RC00	1 unit 0.500

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Selection and ordering data

Version	DT	Order No.	PS*	Weight per PU approx. kg
	Insulating barriers Included in the scope of supply of the switching unit; in case the circuit breaker/switch disconnecter is fed-in from below (power supply connected to terminals 2, 4, 6), it is necessary in most cases to install these barriers also on the bottom side			
	B	3VT9 300-8CE30	1 unit	0.077
	B	3VT9 300-8CE00	1 unit	0.050
	Terminal cover, degree of protection IP20 Increases degree of protection of the connection point to IP20 when using 3VT9 224-4TD30, 3VT9 215-4TF30, 3VT9 224-4TF30 or 3VT9 203-4TF30 block type terminals, intended for fixed-mounted, plug-in and withdrawable versions.			
	B	3VT9 300-8CB30	1 unit	0.144
	B	3VT9 300-8CB40	1 unit	0.209
	Locking device for knob Enables locking the circuit breaker in „switched off manually“ position. For locking the device, you can use up to three padlocks with a shank diameter of max. 6 mm			
	B	3VT9 300-3HL00	1 unit	0.013
	Bolt sealing insert Provides sealing for:			
	B	3VT9 200-8BN00	1 unit	0.001
	Additional cover for trip unit Provides protection for trip units			
	B	3VT9 200-8BL00	1 unit	0.080
	Connecting cable For connecting the circuit breaker/switch disconnecter accessories in withdrawable version (can also be used for plug-in and fixed-mounted versions)			
	B	3VT9 300-4PL00	1 unit	0.020
	Position signalling switch For indicating the position of the circuit breaker in the plug-in base or withdrawable version base			
	B	3VT9 300-4WL00	1 unit	0.020
	Coding set Prevents insertion of the wrong switching unit into the plug-in base or withdrawable version base			
	B	3VT9 300-4WN00	1 unit	0.002
	Pushbutton cover For motorized operating mechanism			
	B	3VT9 300-3MF20	1 unit	0.054

* You can order this quantity or a multiple thereof.

3VT3 Molded Case Circuit Breakers up to 630 A

Technical Information

Circuit breakers · Switch disconnectors

Design

Installation and connection

Main circuit

- Is connected using Cu or Al busbars or cables, and possibly cables with cable lugs
- For further connecting options, connecting sets are available (see page 3/8)
- Generally, conductors from the power supply are connected to input terminals 1, 3, 5, (N) and conductors from the load to terminals 2, 4, 6, (N). However, it is possible to reverse this connection (exchanging input and output terminals) without limiting the rated short-circuit ultimate breaking capacity I_{cu}
- In case of feed-in from below, the circuit breakers/switch disconnectors must be fitted with 3VT9 300-8CE30 insulating barriers on the bottom side of the circuit breaker/switch disconnector
- We recommend painting the connecting busbars in different colors
- Input and output conductors/busbars must be mechanically reinforced to avoid transmitting electrodynamic force to the circuit breaker/switch disconnector during short-circuiting
- The power circuit must be connected in such a way that the deionizing space of the circuit breaker/switch disconnector is not obstructed (see page 3/44).

Auxiliary circuits

- Auxiliary switches, shunt trip units or undervoltage trip units are connected to terminals using flexible 0.5 ... 1 mm² Cu conductors.
- The motorized operating mechanism and auxiliary circuits of the plug-in base or withdrawable version base are connected with a connector.

Recommended cross-sections of cables, busbars and flexibars for fixed-mounted, plug-in and withdrawable versions

Rated current I_n	Permissible cross-section S		Dimensions of busbars W x H	
	Cu mm ²	Al mm ²	Cu mm	Al mm
A				
100	35	50	20 x 2	25 x 2
125	50	70	25 x 2	25 x 3
160	70	95	25 x 3	32 x 3
200	95	120	25 x 4	25 x 5
250	120	150	25 x 5	32 x 5
315	150	185	32 x 5	32 x 6
400	185	240	32 x 6	32 x 8
500	2 x 120	2 x 185	32 x 8	32 x 12
630	2 x 185	2 x 240	32 x 12	32 x 16

Maximum circuit breaker/switch disconnector loads in accordance with the ambient temperature

3VT3 circuit breaker/switch disconnector connection to pole by 1 x 185 mm² Cu cable

50 °C	55 °C	60 °C	65 °C	70 °C
630 A	630 A	600 A	570 A	540 A

Conductor cross-sections of main terminals

Order No.	Maximum permitted current I_{max}	Maximum permissible conductor cross-section S				Busbars and cable lugs W x H	Technical information See page
		Cable type		Round conductor, stranded	Round conductor, solid		
A	mm ²	Sector-shaped conductor, stranded	Sector-shaped conductor, solid	mm ²	mm ²	mm	
3VT9 300-4TA30 3VT9 300-4TD00	630					32 x ...	
3VT9 300-4RC30 3VT9 300-4RC00	630					32 x ...	3/47, 3/58, 3/58, 3/58
3VT9 300-4TC30 3VT9 300-4TC00	400	35 ... 240 Cu	35 ... 240 Cu	35 ... 240 Cu	35 ... 240 Cu	--	
3VT9 324-4TD30 3VT9 324-4TD00	400	150 ... 240 Cu/Al	120 ... 240 Cu/Al	150 ... 240 Cu/Al	120 ... 240 Cu/Al		
3VT9 315-4TD30 3VT9 315-4TD00	315	25 ... 150 Cu/Al	16 ... 150 Cu/Al	25 ... 150 Cu/Al	16 ... 150 Cu/Al		
3VT9 324-4TF30 3VT9 324-4TF00	630	2 x (150 ... 240) Cu/Al	2 x (120 ... 240) Cu/Al	2 x (25 ... 150) Cu/Al	2 x (120 ... 240) Cu/Al		3/46, 3/57
3VT9 315-4TF30 3VT9 315-4TF00	500	2 x (25 ... 150) Cu/Al	2 x (16 ... 150) Cu/Al	2 x (25 ... 150) Cu/Al	2 x (16 ... 150) Cu/Al		3/47, 3/58
3VT9 303-4TF30 3VT9 303-4TF00	250	6 x (6 ... 35) Cu/Al	6 x (6 ... 35) Cu/Al	6 x (6 ... 35) Cu/Al	6 x (6 ... 35) Cu/Al		3/47, 3/58
3VT9 300-4ED30	400						3/48
3VT9 300-4EE30	630						3/48
3VT9 300-4TN30	10/16	1.5 ... 2.54 ... 6 flexible conductor					

3VT3 Molded Case Circuit Breakers up to 630 A

Technical Information

Circuit breakers · Switch disconnectors

Technical specifications

Description	Circuit breakers		Switch disconnector unit
Order number	3VT3 763-2AA36/46-0AA0		3VT9 363-6DT00
Standards	EN 60 947-2, IEC 947-2		EN 60 947-3, IEC 947-3
Approval marks	CE		
Number of poles	3, 4		
Rated current I_n	A	250, 315, 400, 500, 630	--
Rated uninterrupted current I_u	A	630	--
Rated operational current I_e	A	--	630
Rated operational voltage U_e	V	AC max. 690	AC max. 690 DC max. 440
Rated frequency f_n	Hz	50/60	--
Rated impulse withstand voltage U_{imp}	kV	8	--
Rated insulation voltage U_i	V	690	--
Utilization category	A		
Selectivity AC 690 V	A		--
Switching mode	AC 690 V DC 440 V	-- --	AC-23 B DC-23 B
Rated short-time withstand current $U_e = AC 690 V I_{cw}/t$	8 kA/50 ms, 7 kA/300 ms, 6.5 kA/1 s		7,5 kA/5 s
Series U_e	3VT3	U_e	--
Rated ultimate short-circuit breaking capacity (rms value) ¹⁾ I_{cu}	60 kA 36 kA 20 kA 15 kA	AC 230 V AC 415 V AC 500 V AC 690 V	--
Rated short-circuit breaking capacity (rms value) I_{cs}/U_e	40 kA 18 kA 10 kA 8 kA	AC 230 V AC 415 V AC 500 V AC 690 V	--
Rated short-ckt making capacity (peak value) I_{cm}/U_e	75 kA	AC 415 V	14 kA/AC 415 V, 14 kA/AC 440 V
Off-time at I_{cu}	ms	10	--
Losses per pole at $I_n = 630 A$	W	75	--
Mechanical endurance	cycles	20000	--
Electrical endurance ($U_e = AC 415 V$)	cycles	5000	--
Switching frequency	cycles/ hr	120	--
Operating force	N	110	--
Front-side device protection		IP40	--
Terminal protection		IP20	--
Operating conditions			
Reference ambient temperature	°C	40	--
Ambient temperature range	°C	-40 ... +55	--
Working environment		dry and tropical climate	--
Degree of pollution		3	--
Max. elevation	m	2000	--
Seismic resistance	m/s ²	3 g at 8 ... 50 Hz	--
Design modifications			
Front/rear connection		✓/✓	--
Plug-in design		✓/+	--
Withdrawable design		✓/+	--
Accessories			
Switches-auxiliary/relative/signal/leading		✓/✓/✓/✓	--
Shunt trip unit		✓	--
Undervoltage trip unit/with leading switch, with alarm switch		✓/✓	--
Front rotary oper. mechanism/lateral oper. mech. right/left		✓/✓	--
Mechanical interlocking to the rotary oper. mechanism, by Bowden wire		✓	--
Motorized oper. mechanism with operations counter		✓	--
Locking-type lever		✓	--
Bolt sealing insert/additional cover for trip unit		✓/✓	--

✓ available,
-- unavailable
+ in preparation

¹⁾ If the circuit breaker connection is reversed (input terminals 2, 4, 6, output terminals 1, 3, 5), I_{cu} does not change.

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