CMA 98 1250 to 5500 A

DC Poles CMA 98 1250, CMA 98 1600, CMA 98 2000, CMA 98 2560 CMA 98 3000 CMA 98 5000 CMA 98 5500.

AC Poles, consult us



Purpose

Ensuring the division into sections of a track portion by opening a bi-stable motorised energy-storing contactor on DC distribution circuits, line tracks for trolley buses, tramways, protection coupons for metros, and so on,... Lifting and handling: insulation of a travelling crane supplied with DC current,...

CMA front cover

- Mechanical signalling light gives the position of the contactor (opened/closed).
- Mechanical light signals the status of the spring.
- Lever for stretching the spring for manual control.
- Mechanical push-buttons (closing and opening).

Options

- Motorization of the stretching of the spring.
- Mechanical locking in opened position by a RONIS, TRAYVOU, PROFALUX, etc., type lock
 Equipment locked in opened position:
 - Key is free,
 - No electrical control allowed.
- Padlocking system (padlock not provided).
- Locking of the Local/Remote control by a RONIS, TRAYVOU, PROFALUX, etc. type lock and shutter preventing the access to the local push button.
- Manual control locked: key is free.
- Manual control freed: Key is trapped, No electrical control allowed.
- Opening of the contactor by a "lacking voltage" coil. This one provokes the opening of the contactor when the supplied voltage is reduced to 35% to 70% of its nominal value.
- Instant action, or delayed on request.
- Draw-out energy-storing control.
- Possible combination of poles of different ratings on the same contactor.
- Possible placement in panels:
 - metallic,
 - in polyester .
- * number of keys provided: 2



Shunt contactor and protection coupon





Energy-storing control with abrupt closing, independent from the operating speed of the operator



Description of the operating mode

Energy-storing control with abrupt closing, independent from the operating speed of the operator

Manual version only

These contactors have a control lever to stretch the energy-storing spring and an anti-pumping device. When the energy is stored by the spring, there are two possibilities for closing the contactor.

Closing by push-button

Once the energy is accumulated by the spring, a local action on the push-button is sufficient to close the contactor.

This one closes and remains mechanically latched. Should you wish so, the spring can be re-stretched after that closing which allows successively and without bringing any energy:

- to open,
- to close.
- and to open again the contactor.

Opening

Since the contactor is closed, only a local action on the opening push-button is sufficient to open the contactor. This one opens under the pressure of the contacts and return springs .

Automatic closing

Once the energy is accumulated by the spring, the contactor closes. In this specific case, the system won't provide any local push-button. Moreover, there won't be any possibility to stretch again the spring in order to make, as in the previous case:

- to open,
- to close,
- an opening

As for the opening, this one remains unchanged (by a local push-button).

Manual and electrical version

Adapting an electrical control device on a manual control equipment is easy since the needed space is already integrated into the CMA dimensions. (However, this adaptation has to be done in our workshops.)

The energy-storage of the spring is achieved by the adjunction of a universal motor and of a reducer device with gearing with mechanical anti-pumping system, in case of maintained order.

Once the energy is stored by the spring there are 2 possibilities to close the contactor.

Closing by PB and Closing Electromagnet EE

Remote closing with a closing electromagnet with current emission.

Local closing with the closing push button located on the panel board.

The spring is again automatically stretched after the closing of the CMA which allows successively and without bringing any energy:

- to open,
- to close,
- to open again the contactor.

Opening by PB and EA

Remote opening by a voltage-triggered releaser EA. Local opening with the opening push-button located on the board panel.

Automatic closing

As soon as the energy is stored by the spring, the contactor closes. In this specific case, the system will provide neither a local closing push-button nor a closing electromagnet EE (the supply of the motor is switched-off by a limit switch) and there is no possibility to stretch again the spring in order to make, as in the previous case:

- an opening,
- a closing,
- an opening.

As for the opening, this one remains unchanged (by a local push-button or by the opening electromagnet).

Optical signalling of the board panel

Status of the spring:

- Yellow: not stretched,
- Blue: stretched (energy is stored).

Position indicator of the CMA:

- Red: closed,
- Green: opened.



Description of the operating mode

Energy-storing control with abrupt closing, independent from the operating speed of the operator

Options

Motorization of the stretching of the energystoring spring

Padlocking of the CMA in opened position

- by a RONIS, PROFALUX,...type lock and with the adder of auxiliary contacts (1NO + 1NC).
- by a padlock (not supplied).

Condemnation of the PB of the board panel

- by a shutter that can be padlocked (padlock not supplied).
- by a RONIS, PROFALUX,... type lock with auxiliary contacts (1 NO + 1 NC) in order to inhibit the remote orders and shutter preventing the access to the PB.

Stopped closing FE

Only for "manual control" or "electrical without automatic closing" versions of CMA.

Operating voltage from 0.35 to 0.85 Un.

Remote release mechanism

Two types of release mechanisms allow the remote opening of the CMA.

- A release mechanism in case of current emission EA provokes the instant opening of the CMA.
- A release mechanism at minimum voltage MV or MVR provokes the opening of the CMA when its supplied voltage decreases to a value between 35 and 70% of its nominal value.

MV : instant action.

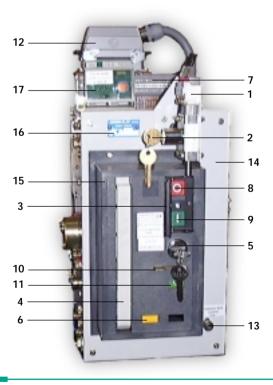
MVR: delayed action of 250 ms or 0.6 s (AC supply).

Other delaying devices on request.

Draw-out control

(Manual or electrical) draw-out energy-storing control.

Board panel functions



- 1 Auxiliary contacts (1NO + 1NC) associated to the local/distance lock.
- 2 Local/distance lock (condamnation of the local controls: key is free).
- 3 Shutter preventing the access to the PB. (padlockable if no local/distance lock).
- 4 Control lever for stretching the accumulation spring.
- 5 Lock for padlocking the equipment in opened position (key is free: equipment is locked).
- 6 Spring position indicator:
 -yellow = spring not stretched
 -blue = spring stretched
- 7 Connecting box (position contact information).
- 8 Local opening PB.
- Local opening PB.
- 10 Padlocking in opened position.
- 11 Equipment status signalling: -green= equipment opened -red = equipment closed
- **12** Pin for sectionning the accumulation control block.
- 13 Pull for inhibition of the lacking voltage coil (MV or MVR) in manual mode.
- 14 Front mask.
- 15 Board panel.
- **16** ID label (reference to mention in any correspondence).
- 17 Electronic system for delayed action of the lacking voltage coil.

Power circuit

Particularities for currents greater than 2000 A, the power circuit is made of 2 separated parts assembled on the same axis and linked to a same mechanism.

- A "thermal" part: Composed of blow-out poles mounted in parallel on a single section where the nominal current passes.
- A "break" part: Composed of magnetic blow-out poles and blow-out cages with metallic plates.

At the time of the opening, the thermal poles open before the blow-out poles and the break is ensured by these magnetic blow-out poles.

All the contacts are in copper with special silver pad for currents from 1250 to 6000 A.

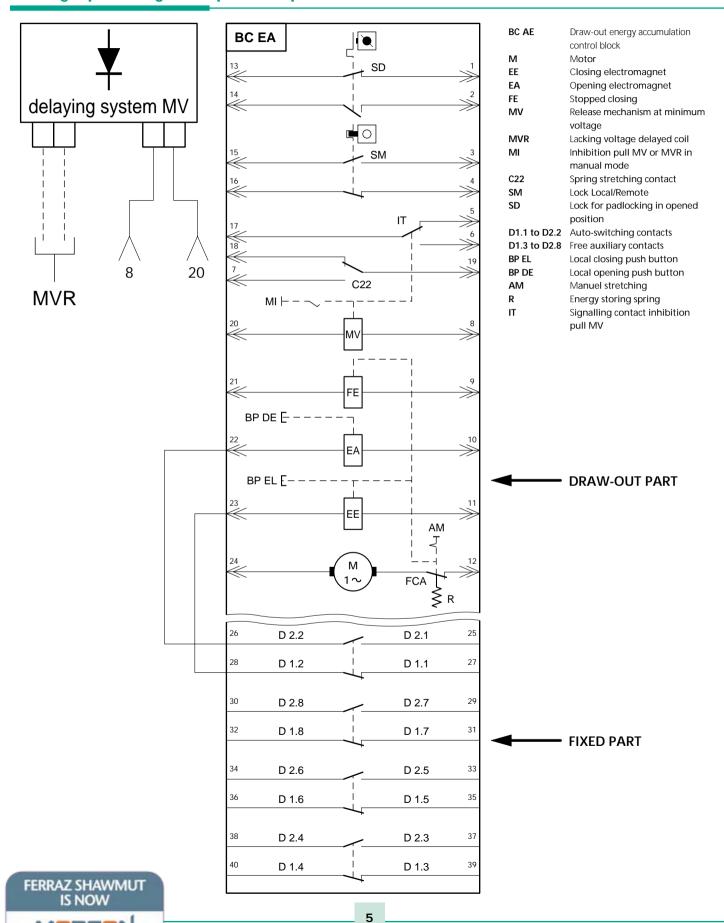
■ Possibility to have opening poles without overlapping.



Description of the operating mode

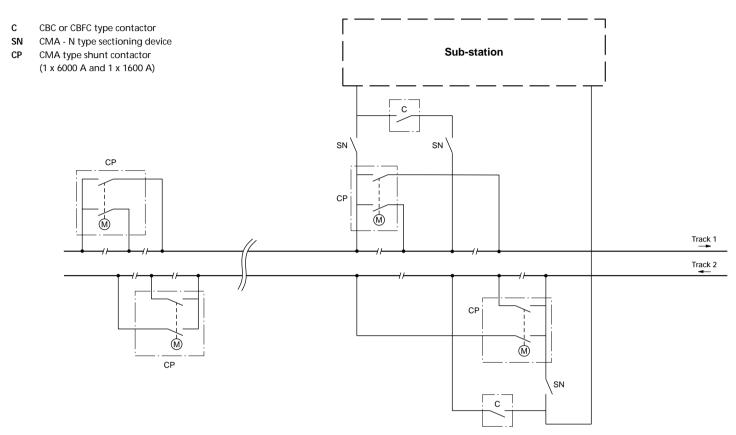
Control circuit of the energy-storing motorised contactor

Drawing representing all the possible options for non-draw-out versions in AC current



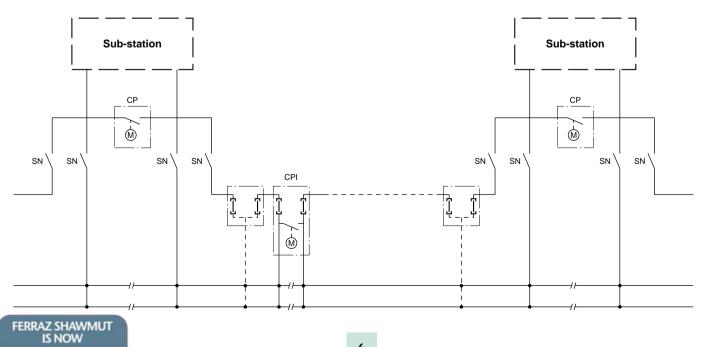
Examples of simplified applications

"HEAVY" Metro



Tramway

- CP CMA type shunt contactor
- CPI CMA type shunt contactor
- SN CMA N type manual sectioning device



CMA 98 1250 to 5500 A

Characteristics of CMA 98 1250 to 2000 A

Energy-storing motorised contactor Ue: 750 and upto 1200 V ===

Power Circuit			СМА Т	ype 98											
			1250				1600				2000 2000				
Thermal nominal current (1)	DC_1		1250				1600								
Nominal voltage of use			1000				1000				1000				
Duty voltage		Vcc	750				750				750				
Short-time current t ≤ 40°C															
	5 s	kA					15				30				
	10 s	kA					11				21				
	15 s	kA					8				17				
	30 s	kA					6				12				
	1 min	kΑ					4				8				
	3 min	kA					3				5				
	10 min	kA					2,2				3				
Unipolar current	voltage		900				900				900				
switch-off rating	5 ms	kA					10		_		10				
Bipolar current	voltage		500	700	1000	1500	500	700	1000	1500	500	700	1000	1500	
switch-off rating ⁽⁵⁾	L/R=15 ms	kA	30	23	18	6.6	30	23	18	6.6	30	23	18	6.6	
	L/R=20 ms	kA			18				18				18		
Tetrapolar current	voltage		1000	2000	3000		1000	2000	3000		1000	2000	3000		
switch-off rating ⁽⁶⁾	L/R=15 ms		30	19	5		30	19	5		30	19	5		
Current switch-on rating	L/R = 5 ms	kΑ					40				40				
Dielectric voltage			8 kV - 50) Hz - 1 m	n		8 kV - 5	0 Hz - 1 m	nn		8 kV - !	50 Hz - 1 r	nn		
Control circuit															
Nominal voltages AC 50 - 6	0 Hz				0 - 380 ⁽³⁾										
DC		V	24 - 48 -	- 110 - 22	0 (3)										
Power absorbed by the mo	tor														
AC			175				175				175				
DC		W	150				150				150				
Closing electromagnet							1								
AC	inrush	VA	320				320				320				
	duty	VA					50				50				
DC	inrush		300				300				300				
	duty	W	50				50				50				
Opening electromagnet															
AC 50-60 Hz	inrush		100				100				100				
DC	inrush ≤ 220 V	W					30				30				
	500 V	W	275				275				275				
Electrical insulation/earth			2.5 kV -	50 Hz - 1	mn		2.5 kV -	50 Hz - 1	mn		2.5 kV	- 50 Hz - 1	mn		
Stopped closing FE															
Operating voltage		V	from 0.3	35 to 0.85	Un		(0)								
Assigned voltages AC 50 Hz		V	24 - 48 -	127 - 22	0 - 380 - 4	415 - 500	(3)								
AC 60 Hz	<u>'</u>				0 - 380 - 4										
DC		V	24 - 48 -	- 110 - 12	0 - 220 - 4	140 - 500	(3)								
Consumption							100				100				
AC	inrush	VA					23				23				
	duty	VA	10				10				10				
DC	± 220 V	W					6				6				
	440 - 550 V	W					21				21				
	500 V	W	21				21				21				
Dologoo waashanisaa ahaari	arma raliana														
Release mechanism at minin	num voitage														
Assigned voltages Un	•	17	24 40	110/107	220 20	20 415	E00(3)								
AC 50 Hz AC 60 Hz					- 220 - 38 - 220 - 38		200(3)								
	<u>′-</u>						(3)								
Operating voltage		V		35 to 0.7 l	0 - 220 - 4	+40 - 500	(0)								
Operating voltage			HUIHU.3	วว เบ ป./ โ	JI I\ ^{∠)}										
Absorbed power	ingush	١/٨	22				22				22				
AC	inrush	VA VA					23				23				
DC	duty inrush ≤ 220 V	W					10				10				
DC .							6				6				
	440 - 500 V	W	<u> </u>				21				21				
Avorago timo of energtice															
Average time of operation Closing time of the contactor	or (4) at Up	mc	50				50				50				
Opening time of the contact	ui voat Un	ms ms					50 50				50 50				
Opening time of the contac	ioi ai UII	ms	JU				JOU				υU				
Auxiliary contacts 3 NO + 3 I	NC														
Thermal current ith	WC .	Λ	20				20				20				
		А	20				20				20				
Current switch-off rating		٨	4				4				4				
AC $\cos \varphi = 0.3 / 500 \text{ V}$	110 V	A					6 2.5				6 2.5				
			2.5												
L/R ≤ 0.01 s	250 V	А	0.8	50 Hz - 1			0.8	50 Hz - 1			0.8	- 50 Hz - 1			
Electrical insulation/earth															



CMA 98 1250 to 5500 A

Characteristics of CMA 98 2560 to 5500 A

Energy-storing motorised contactor Ue: 750 and upto 1200 V ---

Power circuit		A= / - /	*1			3200(k\			Ecoc'	7\ /*\			
Thorne of money and assume at (1)	20.1		2560(*)				")			5000(7) (*)				
Thermal nominal current (1) I Nominal voltage of use	JU_1	Vcc 1000	A 2560							5000 1000				
Duty voltage		Vcc 1000 Vcc 750				1000 750				750				
Short-time current t ≤ 40°C		VCC /30				1/ 30				750				
Short-time current t < 40 C	5 s	kA 24				48				68				
	10s	kA 18				34				47				
	15 s	kA 15				27				38				
	30 s	kA 10				19				27				
	1 min	kA 8				14				19				
	3 min	kA 5				8				12				
	10 min	kA 4				5				7				
Bipolar current switch-off	voltage	V 500	700	1000	1500	500	700	1000	1500	500	700	1000	1500	
rating ⁽⁵⁾	L/R=15 ms	kA 30	23	18	6.6	30	23	18	6.6	30	23	18	6.6	
	L/R=20 ms	kA		18	•			18	•			18	•	
Tetrapolar current	voltage	V 1000	2000	3000		1000	2000	3000		1000	2000	3000		
switch-off rating ⁽⁶⁾	L/R=15 ms	kA 30	19	5		30	19	5		30	19	5		
Current switch-on rating	L/R = 5 ms	kA 60				60				100				
Dielectric voltage		8 kV - 5	60 Hz - 1 mi	n		8 kV - 5	i0 Hz - 1 r	nn		8 kV - 5	50 Hz - 1 n	nn		
Control circuit														
Nominal voltages AC 50 - 6	0 Hz		7 - 220/230											
DC		V 24 - 48	- 110 - 220) (3)										
Power absorbed by the mot	or	\/^ 475				475				475				
AC DC		VA 175				175				175				
		W 150				150				150				
Closing electromagnet	to a sale	\/A 220				220				220				
AC	inrush	VA 320 VA 50				320 50				320 50				
DC	duty	W 300				300				300				
DC	inrush duty	W 50				50				50				
Opening electromagnet	duty	W 50				30				30				
AC 50-60 Hz	inrush	VA 100				100				100				
	inrush ≤ 220 V	W 30				30				30				
DC .						30								
DC						275				275				
	500 V	W 275	- 50 Hz - 1 r	mn		275	.50 Hz - 1	mn		275 2.5 kV	- 50 Hz - 1	mn		
		W 275	- 50 Hz - 1 r	mn			- 50 Hz - 1	mn			- 50 Hz - 1	mn		
Electrical insulation/earth		W 275	- 50 Hz - 1 r	mn			- 50 Hz - 1	mn			- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE		W 275 2.5 kV	- 50 Hz - 1 r 35 to 0.85				- 50 Hz - 1	mn			- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz	500 V	W 275 2.5 kV V from 0. V 24 - 48	35 to 0.85 - 127 - 220	Un) - 380 - 4		2.5 kV -	- 50 Hz - 1	mn			- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage	500 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48	35 to 0.85 - 127 - 220 - 127 - 220	Un 0 - 380 - 4 0 - 380 - 4	415 - 500 ⁽³	2.5 kV -	- 50 Hz - 1	mn			- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz DC	500 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48	35 to 0.85 - 127 - 220	Un 0 - 380 - 4 0 - 380 - 4	415 - 500 ⁽³	2.5 kV -	- 50 Hz - 1	mn			- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz DC	500 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48	35 to 0.85 - 127 - 220 - 127 - 220	Un 0 - 380 - 4 0 - 380 - 4	415 - 500 ⁽³	2.5 kV -	- 50 Hz - 1	mn		2.5 kV	- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz AC 60 Hz DC	500 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48 V 24 - 48	35 to 0.85 - 127 - 220 - 127 - 220	Un 0 - 380 - 4 0 - 380 - 4	415 - 500 ⁽³	2.5 kV -	- 50 Hz - 1	mn		2.5 kV	- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz AC 60 Hz DC Consumption AC	500 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48 V 24 - 48 VA 23 VA 10	35 to 0.85 - 127 - 220 - 127 - 220	Un 0 - 380 - 4 0 - 380 - 4	415 - 500 ⁽³	2.5 kV - 33) 33) 23 10	- 50 Hz - 1	mn		2.5 kV	- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz AC 60 Hz DC Consumption	inrush duty ± 220 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48 V 24 - 48 VA 23 VA 10 W 6	35 to 0.85 - 127 - 220 - 127 - 220	Un 0 - 380 - 4 0 - 380 - 4	415 - 500 ⁽³	2.5 kV - 33) 33) 33) 23 10 6	- 50 Hz - 1	mn		2.5 kV 2.5 kV 23 10 6	- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz AC 60 Hz DC Consumption AC	inrush duty ± 220 V 440 - 550 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48 V 24 - 48 VA 23 VA 10 W 6 W 21	35 to 0.85 - 127 - 220 - 127 - 220	Un 0 - 380 - 4 0 - 380 - 4	415 - 500 ⁽³	2.5 kV - 33 33 33 10 6 21	50 Hz - 1	mn		2.5 kV 2.5 kV 23 10 6 21	- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz AC 60 Hz DC Consumption AC	inrush duty ± 220 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48 V 24 - 48 VA 23 VA 10 W 6	35 to 0.85 - 127 - 220 - 127 - 220	Un 0 - 380 - 4 0 - 380 - 4	415 - 500 ⁽³	2.5 kV - 33) 33) 33) 23 10 6	50 Hz - 1	mn		2.5 kV 2.5 kV 23 10 6	- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz AC 60 Hz DC Consumption AC DC	inrush duty ± 220 V 440 - 550 V 500 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48 V 24 - 48 VA 23 VA 10 W 6 W 21	35 to 0.85 - 127 - 220 - 127 - 220	Un 0 - 380 - 4 0 - 380 - 4	415 - 500 ⁽³	2.5 kV - 33 33 33 10 6 21	50 Hz - 1	mn		2.5 kV 2.5 kV 23 10 6 21	- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz AC 60 Hz DC Consumption AC DC Release mechanism at minim	inrush duty ± 220 V 440 - 550 V 500 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48 V 24 - 48 VA 23 VA 10 W 6 W 21	35 to 0.85 - 127 - 220 - 127 - 220	Un 0 - 380 - 4 0 - 380 - 4	415 - 500 ⁽³	2.5 kV - 33 33 33 10 6 21	50 Hz - 1	mn		2.5 kV 2.5 kV 23 10 6 21	- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz AC 60 Hz DC Consumption AC DC Release mechanism at minim Assigned voltages Un	inrush duty ± 220 V 440 - 550 V 500 V	V 275 2.5 kV V from 0. V 24 - 48 V 24 - 48 V 24 - 48 VA 23 VA 10 W 6 W 21 W 21	35 to 0.85 - 127 - 220 - 127 - 220 - 110 - 120	Un 0 - 380 - 4 0 - 380 - 4 0 - 220 - 4	415 - 500G 440 - 500G	2.5 kV - 33) 33) 23 10 6 21 21	50 Hz - 1	mn		2.5 kV 2.5 kV 23 10 6 21	- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz AC 60 Hz DC Consumption AC DC Release mechanism at minim Assigned voltages Un AC 50 Hz	inrush duty ± 220 V 440 - 550 V 500 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48 V 24 - 48 VA 23 VA 10 W 6 W 21 W 21	35 to 0.85 - 127 - 220 - 127 - 220 - 110 - 120	Un) - 380 - 4) - 380 - 6) - 220 - 6 - 220 - 38	415 - 500G 440 - 500G 80 - 415 - 1	2.5 kV - 33) 33) 23 10 6 21 21	50 Hz - 1	mn		2.5 kV 2.5 kV 23 10 6 21	- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz AC 60 Hz DC Consumption AC DC Release mechanism at minim Assigned voltages Un AC 50 Hz AC 60 Hz	inrush duty ± 220 V 440 - 550 V 500 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48 V 24 - 48 VA 23 VA 10 W 6 W 21 W 21 V 24 - 48	35 to 0.85 - 127 - 220 - 127 - 220 - 110 - 120 - 110/127 - 110/127	Un) - 380 - 4) - 380 - 4) - 220 - 4 - 220 - 38 - 220 - 38	415 - 500 ⁽³ 440 - 500 ⁽³ 80 - 415 - !	2.5 kV -	50 Hz - 1	mn		2.5 kV 2.5 kV 23 10 6 21	- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz AC 60 Hz DC Consumption AC DC Release mechanism at minim Assigned voltages Un AC 50 Hz AC 60 Hz DC	inrush duty ± 220 V 440 - 550 V 500 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48 V 24 - 48 VA 23 VA 10 W 6 W 21 W 21 V 24 - 48 V 24 - 48	35 to 0.85 - 127 - 220 - 127 - 220 - 110 - 120 - 110/127 - 110/127 - 110 - 120	Un) - 380 - 4) - 220 - 4 - 220 - 3 - 220 - 3) - 220 - 3	415 - 500 ⁽³ 440 - 500 ⁽³ 80 - 415 - !	2.5 kV -	50 Hz - 1	mn		2.5 kV 2.5 kV 23 10 6 21	- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz AC 60 Hz DC Consumption AC DC Release mechanism at minim Assigned voltages Un AC 50 Hz AC 60 Hz DC Operating voltage	inrush duty ± 220 V 440 - 550 V 500 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48 V 24 - 48 VA 23 VA 10 W 6 W 21 W 21 V 24 - 48 V 24 - 48	35 to 0.85 - 127 - 220 - 127 - 220 - 110 - 120 - 110/127 - 110/127	Un) - 380 - 4) - 220 - 4 - 220 - 3 - 220 - 3) - 220 - 3	415 - 500 ⁽³ 440 - 500 ⁽³ 80 - 415 - !	2.5 kV -	50 Hz - 1	mn		2.5 kV 2.5 kV 23 10 6 21	- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz AC 60 Hz DC Consumption AC DC Release mechanism at minim Assigned voltages Un AC 50 Hz AC 60 Hz DC Operating voltage Absorbed power	inrush duty ± 220 V 440 - 550 V 500 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48 VA 23 VA 10 W 6 W 21 W 21 V 24 - 48 V 24 - 48	35 to 0.85 - 127 - 220 - 127 - 220 - 110 - 120 - 110/127 - 110/127 - 110 - 120	Un) - 380 - 4) - 220 - 4 - 220 - 3 - 220 - 3) - 220 - 3	415 - 500 ⁽³ 440 - 500 ⁽³ 80 - 415 - !	2.5 kV -	50 Hz - 1	mn		2.5 kV 23 10 6 21 21	- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz AC 60 Hz DC Consumption AC DC Release mechanism at minim Assigned voltages Un AC 50 Hz AC 60 Hz DC Operating voltage	inrush duty ± 220 V 440 - 550 V 500 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48 VA 23 VA 10 W 6 W 21 W 21 V 24 - 48	35 to 0.85 - 127 - 220 - 127 - 220 - 110 - 120 - 110/127 - 110/127 - 110 - 120	Un) - 380 - 4) - 220 - 4 - 220 - 3 - 220 - 3) - 220 - 3	415 - 500 ⁽³ 440 - 500 ⁽³ 80 - 415 - !	2.5 kV -	50 Hz - 1	mn		2.5 kV 23 10 6 21 21	- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz AC 60 Hz DC Consumption AC DC Release mechanism at minim Assigned voltages Un AC 50 Hz AC 60 Hz DC Operating voltage Absorbed power AC	inrush duty ± 220 V 440 - 550 V 500 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48 VA 23 VA 10 W 6 W 21 W 21 V 24 - 48	35 to 0.85 - 127 - 220 - 127 - 220 - 110 - 120 - 110/127 - 110/127 - 110 - 120	Un) - 380 - 4) - 220 - 4 - 220 - 3 - 220 - 3) - 220 - 3	415 - 500 ⁽³ 440 - 500 ⁽³ 80 - 415 - !	2.5 kV - 3) 33 10 6 21 21 500(3) 33 23 10	50 Hz - 1	mn		2.5 kV 23 10 6 21 21 21	- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz AC 60 Hz DC Consumption AC DC Release mechanism at minim Assigned voltages Un AC 50 Hz AC 60 Hz DC Operating voltage Absorbed power	inrush duty ± 220 V 440 - 550 V 500 V num voltage inrush duty inrush ≤ 220 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48 VA 23 VA 10 W 6 W 21 W 21 V 24 - 48 V 2	35 to 0.85 - 127 - 220 - 127 - 220 - 110 - 120 - 110/127 - 110/127 - 110 - 120	Un) - 380 - 4) - 220 - 4 - 220 - 3 - 220 - 3) - 220 - 3	415 - 500 ⁽³ 440 - 500 ⁽³ 80 - 415 - !	2.5 kV -	50 Hz - 1	mn		2.5 kV 23 10 6 21 21 23 10 6	- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz AC 60 Hz DC Consumption AC DC Release mechanism at minim Assigned voltages Un AC 50 Hz AC 60 Hz DC Operating voltage Absorbed power AC	inrush duty ± 220 V 440 - 550 V 500 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48 VA 23 VA 10 W 6 W 21 W 21 V 24 - 48	35 to 0.85 - 127 - 220 - 127 - 220 - 110 - 120 - 110/127 - 110/127 - 110 - 120	Un) - 380 - 4) - 220 - 4 - 220 - 3 - 220 - 3) - 220 - 3	415 - 500 ⁽³ 440 - 500 ⁽³ 80 - 415 - !	2.5 kV - 3) 33 10 6 21 21 500(3) 33 23 10	50 Hz - 1	mn		2.5 kV 23 10 6 21 21 21	- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz AC 60 Hz DC Consumption AC DC Release mechanism at minim Assigned voltages Un AC 50 Hz AC 60 Hz DC Operating voltage Absorbed power AC DC	inrush duty ± 220 V 440 - 550 V 500 V num voltage inrush duty inrush ≤ 220 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48 VA 23 VA 10 W 6 W 21 W 21 V 24 - 48 V 2	35 to 0.85 - 127 - 220 - 127 - 220 - 110 - 120 - 110/127 - 110/127 - 110 - 120	Un) - 380 - 4) - 220 - 4 - 220 - 3 - 220 - 3) - 220 - 3	415 - 500 ⁽³ 440 - 500 ⁽³ 80 - 415 - !	2.5 kV -	50 Hz - 1	mn		2.5 kV 23 10 6 21 21 23 10 6	- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz AC 60 Hz DC Consumption AC DC Release mechanism at minim Assigned voltages Un AC 50 Hz AC 60 Hz DC Operating voltage Absorbed power AC DC Average time of operation	inrush duty ± 220 V 440 - 550 V 500	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48 V 27 - 48 V 24 - 48 V	35 to 0.85 - 127 - 220 - 127 - 220 - 110 - 120 - 110/127 - 110/127 - 110 - 120	Un) - 380 - 4) - 220 - 4 - 220 - 3 - 220 - 3) - 220 - 3	415 - 500 ⁽³ 440 - 500 ⁽³ 80 - 415 - !	2.5 kV - 2.7 kV - 2.8 kV - 2.8 kV - 2.9 kV	50 Hz - 1	mn		23 10 6 21 21 23 10 6 21 21	- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz AC 60 Hz DC Consumption AC DC Release mechanism at minim Assigned voltages Un AC 50 Hz AC 60 Hz DC Operating voltage Absorbed power AC DC Average time of operation Closing time of the contactor	inrush duty ± 220 V 440 - 550 V 500 V num voltage inrush duty inrush ≤ 220 V 440 - 500 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48 VA 23 VA 10 W 6 W 21 W 21 V 24 - 48 V 24 - 48 V 24 - 48 V 24 - 48 V 21 W 21 W 21 M 21	35 to 0.85 - 127 - 220 - 127 - 220 - 110 - 120 - 110/127 - 110/127 - 110 - 120	Un) - 380 - 4) - 220 - 4 - 220 - 3 - 220 - 3) - 220 - 3	415 - 500 ⁽³ 440 - 500 ⁽³ 80 - 415 - !	2.5 kV - 2.5 kV	50 Hz - 1	mn		2.5 kV 23 10 6 21 21 21 23 10 6 21 21	- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz AC 60 Hz DC Consumption AC DC Release mechanism at minim Assigned voltages Un AC 50 Hz AC 60 Hz DC Operating voltage Absorbed power AC DC Average time of operation Closing time of the contactor	inrush duty ± 220 V 440 - 550 V 500 V num voltage inrush duty inrush ≤ 220 V 440 - 500 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48 V 27 - 48 V 24 - 48 V	35 to 0.85 - 127 - 220 - 127 - 220 - 110 - 120 - 110/127 - 110/127 - 110 - 120	Un) - 380 - 4) - 220 - 4 - 220 - 3 - 220 - 3) - 220 - 3	415 - 500 ⁽³ 440 - 500 ⁽³ 80 - 415 - !	2.5 kV - 2.7 kV - 2.8 kV - 2.8 kV - 2.9 kV	50 Hz - 1	mn		23 10 6 21 21 23 10 6 21 21	- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages Assigned voltages AC 50 Hz AC 60 Hz DC Consumption AC DC Release mechanism at minim Assigned voltages Un AC 50 Hz AC 60 Hz DC Operating voltage Absorbed power AC DC Average time of operation Closing time of the contactor Opening time of the contactor	inrush duty ± 220 V 440 - 550 V 500 V num voltage inrush duty inrush ≤ 220 V 440 - 500 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48 VA 23 VA 10 W 6 W 21 W 21 V 24 - 48 V 24 - 48 V 24 - 48 V 24 - 48 V 21 W 21 W 21 M 21	35 to 0.85 - 127 - 220 - 127 - 220 - 110 - 120 - 110/127 - 110/127 - 110 - 120	Un) - 380 - 4) - 220 - 4 - 220 - 3 - 220 - 3) - 220 - 3	415 - 500 ⁽³ 440 - 500 ⁽³ 80 - 415 - !	2.5 kV - 2.5 kV	50 Hz - 1	mn		2.5 kV 23 10 6 21 21 21 23 10 6 21 21	- 50 Hz - 1	mn		
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Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz AC 60 Hz DC Consumption AC DC Release mechanism at minim Assigned voltages Un AC 50 Hz AC 60 Hz DC Operating voltages Absorbed power AC DC Average time of operation Closing time of the contactor Opening time of the contactor	inrush duty ± 220 V 440 - 550 V 500 V num voltage inrush duty inrush ≤ 220 V 440 - 500 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48 VA 23 VA 10 W 6 W 21 W 21 V 24 - 48 V 24 - 48 V 24 - 48 V 24 - 48 V 21 W 21 W 21 M 21	35 to 0.85 - 127 - 220 - 127 - 220 - 110 - 120 - 110/127 - 110/127 - 110 - 120	Un) - 380 - 4) - 220 - 4 - 220 - 3 - 220 - 3) - 220 - 3	415 - 500 ⁽³ 440 - 500 ⁽³ 80 - 415 - !	2.5 kV - 2.5 kV	50 Hz - 1	mn		2.5 kV 23 10 6 21 21 21 23 10 6 21 21	- 50 Hz - 1	mn		
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Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz AC 60 Hz DC Consumption AC DC Release mechanism at minim Assigned voltages Un AC 50 Hz AC 60 Hz DC Operating voltages Absorbed power AC DC Average time of operation Closing time of the contact Opening time of the contact Opening time of the contact Copening time of the contact Opening time of the contact Copening time of the contact Opening time of t	inrush duty ± 220 V 440 - 550 V 500 V inrush duty inrush ≤ 220 V 440 - 500 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48 V 24 - 48 V 21 W 21 V 21 V 24 - 48 V 24 - 48 V 21 W 21 A 23 VA 10 V 24 - 48 From 0. VA 23 VA 10 W 6 W 21 A 20 A 6 A 2.5	35 to 0.85 - 127 - 220 - 127 - 220 - 110 - 120 - 110/127 - 110/127 - 110 - 120	Un) - 380 - 4) - 220 - 4 - 220 - 3 - 220 - 3) - 220 - 3	415 - 500 ⁽³ 440 - 500 ⁽³ 80 - 415 - !	2.5 kV - 2.5 kV	50 Hz - 1	mn		23 10 6 21 21 50 50 50 20 6 2.5	- 50 Hz - 1	mn		
Electrical insulation/earth Stopped closing FE Operating voltage Assigned voltages AC 50 Hz AC 60 Hz DC Consumption AC DC Release mechanism at minim Assigned voltages Un AC 50 Hz AC 60 Hz DC Operating voltages Absorbed power AC DC Average time of operation Closing time of the contact Opening time of the contact Opening time of the contact Copening time of	inrush duty ± 220 V 440 - 550 V 500 V inrush duty inrush ≤ 220 V 440 - 500 V	W 275 2.5 kV V from 0. V 24 - 48 V 24 - 48 V 24 - 48 V 21 W 21 W 21 V 24 - 48 V 24 - 48 V 21 W 21 A 6 A 20 A 6 A 2.5 A 0.8	35 to 0.85 - 127 - 220 - 127 - 220 - 110 - 120 - 110/127 - 110/127 - 110 - 120	Un) - 380 - 4) - 220 - 4 - 220 - 3 - 220 - 3) - 220 - 4 Jn(2)	415 - 500 ⁽³ 440 - 500 ⁽³ 80 - 415 - !	2.5 kV - 2.5 kV	50 Hz - 1			2.5 kV 23 10 6 21 21 23 10 6 21 21 20 6 2.5 0.8	- 50 Hz - 1			



⁽³⁾ for other voltages, consult us.
(4) opening time is measured from the supply of the closing coil until the separation of the main contacts.
(5) 2 blow-out poles.

^{*} Association of thermal poles and magnetic blow-out poles.

^{1.04} 1.08 1.12 1.19 $40 < t < 45^{\circ}C$ $45 < t \le 50^{\circ}C$ $50 < t \le 55^{\circ}C$