

Fixed Type SL Medium Voltage Contactors



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Eaton delivers the power inside hundreds of products that are answering the demands of today's fast changing world.

We help our customers worldwide manage the power they need for buildings, aircraft, trucks, cars, machinery and entire businesses. And we do it in a way that consumes fewer resources.

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Eaton is driving the development of new technologies – from hybrid drivetrains and emission control systems to advanced engine components – that reduce fuel consumption and emissions in trucks and cars.

Higher expectations

We continue to expand our aerospace solutions and services to meet the needs of new aviation platforms, including the high-flying light jet and very light jet markets.

Building on our strengths

Our hydraulics business combines localized service and support with an innovative portfolio of fluid power solutions to answer the needs of global infrastructure projects, including locks, canals and dams.

Powering Greener Buildings and Businesses

Eaton's Electrical Group is a leading provider of power quality, distribution and control solutions that increase energy efficiency and improve power quality, safety and reliability. Our solutions offer a growing portfolio of "green" products and services, such as energy audits and real-time energy consumption monitoring. Eaton's Uninterruptible Power Supplies (UPS), variable-speed drives and lighting controls help conserve energy and increase efficiency.



MV Switchgear Technology is in our DNA

Eaton Corporation is a worldwide leader in the design, manufacture, and sale of safe, reliable and high-performance medium voltage power distribution equipment in accordance with IEC, GB and ANSI standards.

Complete Global Medium Voltage Switchgear Solutions

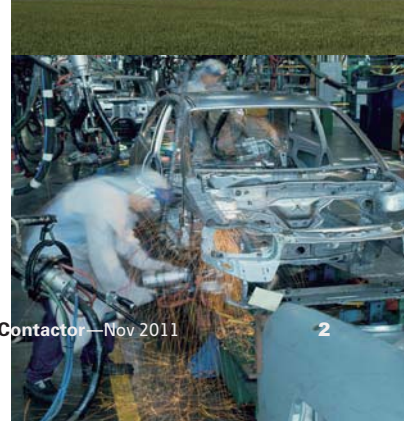
Eaton, a premier leader in designing and manufacturing power distribution and protection equipment in the electrical industry, offers a comprehensive range of medium voltage (MV) solutions to meet the needs of virtually every application. From products that feature cutting-edge design that allow for easy access, maintenance and space savings, to arc-resistant products that enhance safety, Eaton's medium voltage solutions provide a variety of products for every need. Additionally, Eaton's global service network provides maximum customer support in all regions of the world.

As one of the few completely vertically integrated and diversified industrial manufacturers in the world, Eaton designs not only MV assemblies, but also the key components that comprise the MV solutions – from steel housing and circuit breaker compartments to vacuum interrupters, circuit breakers, bus systems and fuses.

Eaton's MV heritage, strengthened by acquisitions such as Westinghouse DCBU, Cutler Hammer, MEM and Holec, has resulted in breakthrough MV technologies and numerous international patents over the years.

Integral to Eaton's complete electrical PowerChain Solutions – which help businesses increase reliability, efficiency and safety – Eaton's medium voltage equipment meets all applicable standards and certifications such as IEC, NEMA / ANSI, GB, UL, IEEE, KEMA and CSA.

When it comes to medium voltage solutions, you can trust the one name with a long history of proven performance: Eaton.

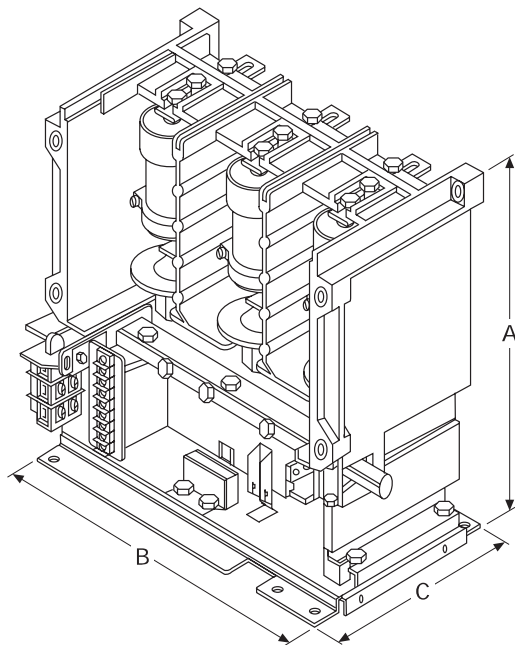


Fixed Type SL Medium Voltage Contactor

Medium Voltage Overview

Description

Eaton Corporation's "SL" family of Cutler-Hammer medium voltage vacuum contactors are designed and engineered specifically for the OEM. "SL" Contactors are perfect for OEMs because they combine the highest ratings available in a cost-saving, reduced size package that's lighter and easier to install. "SL" Contactors are ideal for full and reduced voltage starting of squirrel-cage induction, wound-rotor, and synchronous motors. Other applications include power and capacitor switching. They're especially recommended for heavy duty applications and harsh environments found in many industries including mining, pulp and paper, HVAC, petrochemical, and automotive.



Features

New SL contactor ratings

- Voltage: 2200 to 7200 V
- Current: 160 to 800 A
- Breaking rating up to 8500 A^①

Control voltage (field-adjustable)^①

- 110,220 50Hz VAC
- 120,240 60Hz VAC
- 125VDC

Trip time (field-adjustable)^①

- 30ms
- 50ms
- 130ms
- 250ms
- 330ms

Global Acceptability

- IEC
- NEMA
- ANSI

Third-party Certification

- KEMA
- CSA
- UL

Optional accessories with easy installation (field installable items)^①

- 6 sets of auxiliary contacts
- Mechanical latch – coil voltage reversible

Service life

- 300,000 electrical operations
- 2,500,000 mechanical operations

History

Eaton Electrical invented the first vacuum contactor in 1982. It was simply to replace commonly-used air lock contactors. SL medium voltage vacuum contactors were designed to mount inside Ampgard products. Then, they quickly revolutionized worldwide medium voltage control equipment pattern completely. Since then, vacuum contactors have gradually become standard products in the field. And Eaton Electrical becomes the leader in the market as well.



Technology: SL contactor range integrates world-class Eaton's vacuum contactors.

Ampgard is already a famous brand in the field of integrated medium voltage starters. Now, SL contactors in separate units provide quality and life as superior as always.

Vacuum Interrupter:

- Increased safety, reliability and productivity.
- Improved product performance, especially applicable for dusty and erosion environments.
- Reduced maintenance, shortened downtime and decreased equipment weight.
- Quiet and smooth operation.
- Little power consumption.
- High quality and low service life.

Application

Eaton's SL medium voltage contactors are used for starting applications, including:

- Squirrel-cage induction motors
- Synchronous motors
- Wound rotors

Fully applicable to:

- Full voltage starting
- Reduced voltage starting

The perfect choice for harsh duty applications :

- Mining
- Pulp and paper
- HVAC system
- Petrochemical
- Automotive
- Other applications

Design and Test Standards

IEC #60470
CSA T.I.L D-21, File
#LR28548ANSI/NEMA ICS3,
Part 2

^① The above ratings can be different, for 800A equipment. Please refer to Page 7 for more detailed information.

Fixed Type SL Medium Voltage Contactor

SL range: 160–400A

Features^①

- One range of contactor products used for medium voltage control, with voltage range from 2200 to 7200V.
- Rated current is 160-400A, when induction motors power ranges from 600-4500 horsepower.
- 3 Catalogues equipment used in different altitudes.

Contactors

- Leading vacuum technology
- Fully meet global standards
- Pass third-party certification such as KEMA, CSA and UL
- Long service life: over 300,000 electrical operations, and over 2,500,000 mechanical operations
- Flexible installation: standard control panel or pedestal mounting. Contactors can be mounted horizontally or vertically.
- Field-adjustable options include coil voltage, AC/DC and coil trip time
- Auxiliary contact and mechanical latch are provided. Accessories are universal for any size of equipment.
- For special orders, configuration can be made, based on customers' detailed requirement, with factory pre-assembling and all mounting accessories included.
- Best quality: all contactors are manufactured and assembled in ISO certified factories with leading technology development level.



“SL” Contactor

Table 1—Control voltage setup

Voltage	Switch No.		
	SW1	SW2	SW3
100-110Vac/dc	OFF	OFF	OFF
115-120 Vac/dc	ON	OFF	OFF
125 Vac/dc	OFF	OFF	ON
200-220 Vac/dc	OFF	ON	OFF
230-250 Vac/dc	ON	ON	OFF

Note: factory default value is 120/60VAC

Table 2—Trip time^①

Voltage	Switch No.		
	SW4	SW4	SW4
30ms	OFF	OFF	OFF
50ms	ON	OFF	OFF
130ms	OFF	ON	OFF
250ms	ON	ON	OFF
330ms	OFF	OFF	ON

Note: Only one button switch can be opened each time.

Table 3—Altitude^①

Altitude	Low	Standard	High
Meter	-3500 to -1000	-1000 to +2000	+2000 to +4000
Foot	-11,489 to -3281	-3281 to +6562	+6562至 to 13,123

^① The above ratings can be different, for 800A equipment. Please refer to Page 7 for more detailed information.

Fixed Type SL Medium Voltage Contactor

Medium Voltage Contactor Ordering Information

Catalogue number selection table

Contactor size	Voltage	Rating		Capacitor switching (A) ①	Catalogue No.		
		Motor Catalogue	KW		Equipment operation altitude ②		
					Standard	Low	High
160A	220-2500	Induction	450	120	SLC011S5A-220	SLC011L5A-220	SLCO11H5A-220
		Synchronous(0.8PF)	450				
		Synchronous(1.0PF)	600				
	3000-3600	Induction	675				
		Synchronous(0.8PF)	675				
		Synchronous(1.0PF)	750				
	3800-4800	Induction	900				
		Synchronous(0.8PF)	900				
		Synchronous(1.0PF)	1050				
6000-6900	Induction	1350					
	Synchronous(0.8PF)	1350					
	Synchronous(1.0PF)	1650					
200A	2200-2500	Induction	600	150	SLC012S5A-220	SLC012L5A-220	SLCO12H5A-220
		Synchronous(0.8PF)	600				
		Synchronous(1.0PF)	750				
	3000-3600	Induction	825				
		Synchronous(0.8PF)	825				
		Synchronous(1.0PF)	950				
	3800-4800	Induction	1100				
		Synchronous(0.8PF)	1100				
		Synchronous(1.0PF)	1300				
6000-6900	Induction	1675					
	Synchronous(0.8PF)	1675					
	Synchronous(1.0PF)	2050					
360A	2200-2500	Induction	1100	270	SLC013S5A-220	SLC013L5A-220	SLCO13H5A-220
		Synchronous(0.8PF)	1100				
		Synchronous(1.0PF)	1300				
	3000-3600	Induction	1500				
		Synchronous(0.8PF)	1500				
		Synchronous(1.0PF)	1850				
	3800-4800	Induction	1850				
		Synchronous(0.8PF)	1850				
		Synchronous(1.0PF)	2250				
6000-6900	Induction	3000					
	Synchronous(0.8PF)	3000					
	Synchronous(1.0PF)	3750					

Note: For normal 160-400A units, coil voltage is 120VAC and tripping time is 30ms with 2 NO and 2 NC auxiliary contacts installed. Coil voltage and tripping time are filed adjustable. Auxiliary contacts and mechanical latch is available in accessory list. Specified setup and accessories can be ordered. For more details, please see Page 8 and 9.

①Ratings are not applicable for back to back switching. Please consult factory for how to use back to back switching.

②Please refer to the table on Page 3. For 800A equipment, the above ratings can be different. Please refer to Page 7 for more information.

Fixed Type SL Medium Voltage Contactor

Catalogue reference selection table (续表)

Contactor size	Voltage	Rating		Capacitor switching (A) ①	Catalogue No.		
		Motor Catalogue	KW		Equipment operation altitude②		
					Standard	Low	High
400A	220-2500	Induction	1300	295	SLC014S5A-220	SLC014L5A-220	SLCO14H5A-220
		Synchronous(0.8PF)	1300				
		Synchronous(1.0PF)	1500				
	3000-3600	Induction	1675				
		Synchronous(0.8PF)	1675				
		Synchronous(1.0PF)	1850				
	3800-4800	Induction	2250				
		Synchronous(0.8PF)	2250				
		Synchronous(1.0PF)	2600				
	6000-6900	Induction	3350				
		Synchronous(0.8PF)	3350				
		Synchronous(1.0PF)	4100				
800A	2200-2500	Induction	2250	550	SLN018S1A-220	N/A	SLNO18H1A-220
		Synchronous(0.8PF)	2250				
		Synchronous(1.0PF)	2600				
	3000-3600	Induction	3000				
		Synchronous(0.8PF)	3000				
		Synchronous(1.0PF)	3750				
	3800-4800	Induction	3750				
		Synchronous(0.8PF)	3750				
		Synchronous(1.0PF)	4500				
	6000-6900	Induction	6000				
		Synchronous(0.8PF)	6000				
		Synchronous(1.0PF)	7500				

Note: For normal 160-400A units, coil voltage is 120VAC and tripping time is 30ms with 2 NO and 2 NC auxiliary contacts installed. Coil voltage and tripping time are field adjustable. Auxiliary contacts and mechanical latch is available in accessory list. Specified setup and accessories can be ordered. For more details, please see Page 8 and 9.

①Ratings are not applicable for back to back switching. Please consult factory for how to use back to back switching.

②Please refer to the table on Page 3.For 800A equipment; the above ratings can be different. Please refer to Page 7 for more information.

Fixed Type SL Medium Voltage Contactor

Accessories for SL range 160-400 A equipment

Mechanical latch accessory- SL vacuum contactor size from 160-400A. Field mounting to SL vacuum contactor sized from 160-400A; a wide selection of coil voltage from AC and DC voltage; easy to install.



Mechanical latch accessory

Ordering Information Mechanical latch – 160–400 A

Coil voltage	Catalogue No.
24VDC	SLA-ML24
32VDC	SLA-ML32
48VDC	SLA-ML48
110/50,120/60,	SLA-ML120
125DC(optional)	
220/50,240/60(optional)	SLA-ML240

Auxiliary contact- SL vacuum contactor size from 160-400A. Auxiliary contact is used for onsite mounting to SL vacuum contactor sized from 160-400A. This contactor accessory can be used in many NO-NC configurations.



Auxiliary contact accessory

Ordering Information Auxiliary contact accessory – 160–400 A

Coil voltage	Catalogue No.
3NO-3NC accessory	SLA-AS33
6NO accessory	SLA-AS60
6NC accessory	SLA-AS06
5NO-1NC accessory	SLA-AS51
4NO-2NC accessory	SLA-AS42
2NO-4NC accessory	SLA-AS24
1NO-5NC accessory	SLA-AS15

Mechanical interlock accessory- SL vacuum contactor size from 160-400A. Mechanical interlock accessory is used for onsite mounting to SL vacuum contactor sized from 160-400A.

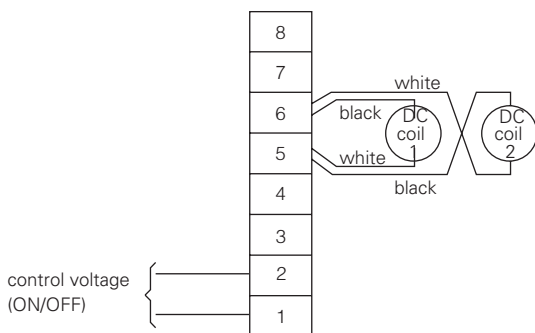


Mechanical interlock accessory

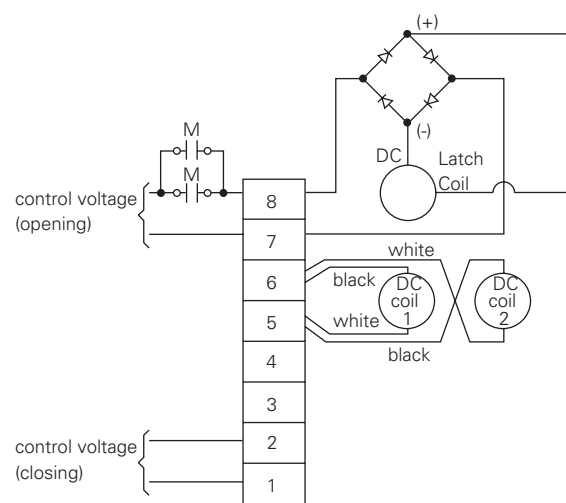
Ordering Information Mechanical interlock accessory – 160–400 A

Coil voltage	Catalogue No.
Vertical mounting	SLA-MIV
Horizontal mounting	SLA-MIV

Electrical connection diagram



Electrical connection diagram of magnetic sticking



Electrical connection diagram of mechanical latch

Note: ①For opening circuit, 2 sets of auxiliary contact must be connected.
②For closing circuit, intermediate relay connection point control must be applied.

Fixed Type SL Medium Voltage Contactor

Optional accessories for SL range 800A equipment

Mechanical latch optional accessory - SL vacuum contactor size 800A. They are mounted in factory to 800A SL vacuum contactor with a wide selection of coil voltage from AC and DC voltage. Double spiral tube latch accessories can be used as well.

Mechanical latch coil voltage

Coil voltage

24VDC	Double spiral tube latch accessories can be used as well. Please consult with factories for more detailed information
48VDC	
96-125VDC	
110/50,120/60	
220/50,240/60	

Features—SL vacuum contactor size at 800 A

Table 1— Altitude

Altitude	Low	Standard	High
Meter	N/A	-1000 to +3600	+3600 to 4900
Foot	N/A	-3281 to +11,811	+11,811 to +16,076

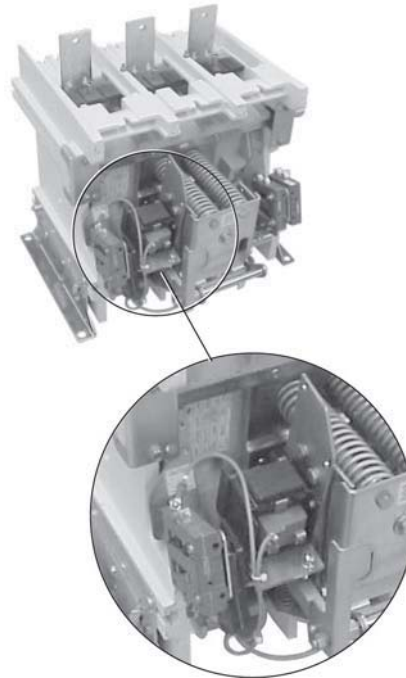
Table 2—Ratings for contacting use

Rated current	Maximum open current	Short-time current (1s)	Lightning surge
Mounted 800A inside cabin 720A	13,200A	10,800A	60kV

Table 3—coil setup/Tripping time

Factory setup

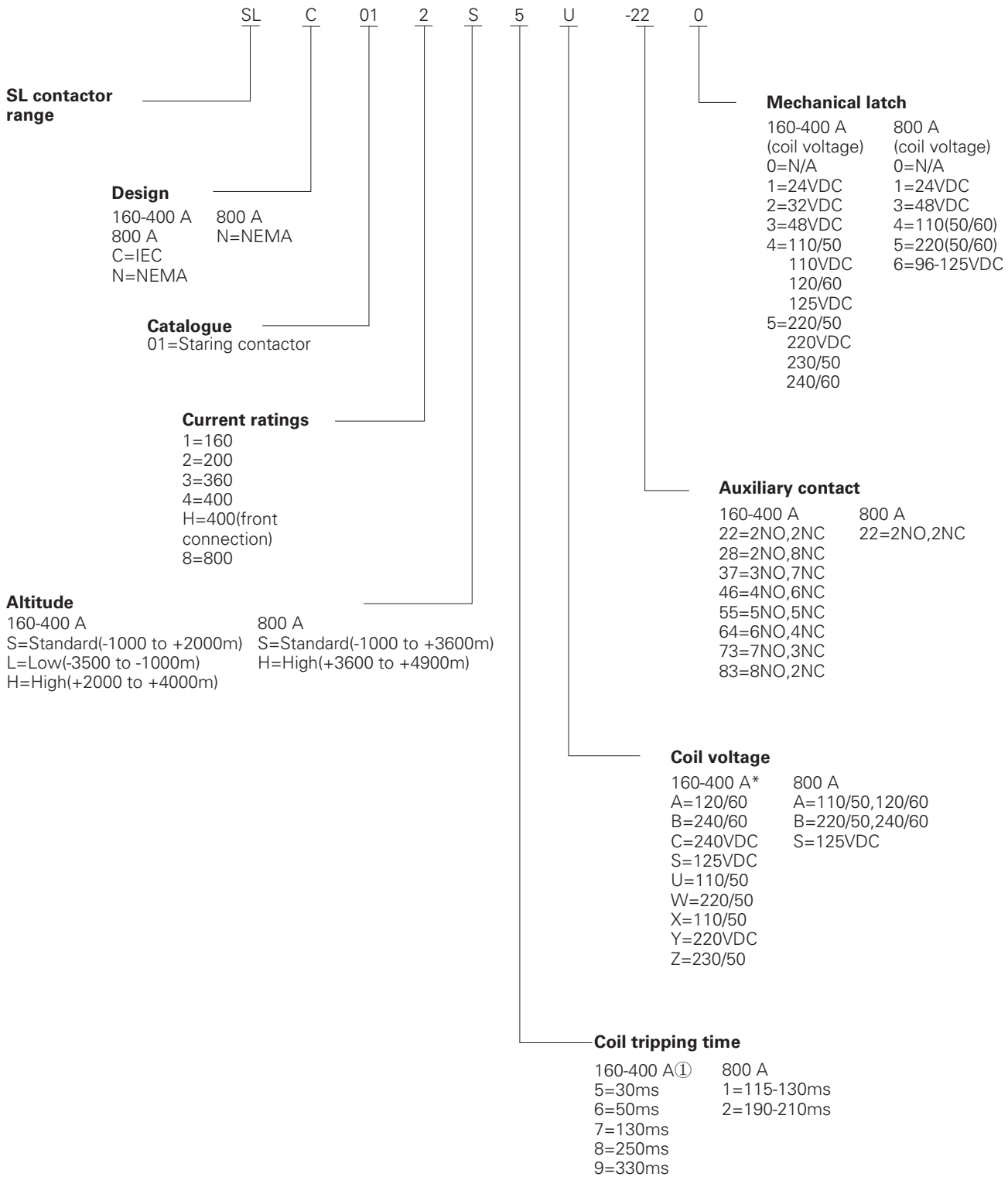
coil voltage	Tripping time
110/50, 220/50, 120/60 240/60	125VDC 115-130mS 190-210ms



Mechanical latch accessory 800 A

Fixed Type SL Medium Voltage Contactor

Catalogue number selection instruction



Factory improvement for SL range products

After the order is confirmed

Please refer to Catalogue reference selection instruction. Select required optional accessory code.

Design and test standard

- IEC #60470(only for 160-400A)
- CSA T.I.L. D-21, File #LR28548
- ANSI/NEMA ICS 3, Part 2
- UL347, File #E63257
- GB/T 14808—2001
- GB/T 11022—1999

Ordering Information Factory improvement

Catalogue description

Optional accessory code

Basic

160 A SL contactors	1
200 A SL contactors	2
360 A SL contactors	3
400 A SL contactors	4
800 A SL contactors	8

Housing

NO	01
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Coil voltage

110/50,120/60 AC	A,U
220/50,240/60 AC	B,W
125VDC	S

Coil tripping time^①

30—50 ms (only for 160—400 A)	5
50—70 ms (only for 160—400 A)	6
30—170 ms (only for 160—400 A)	7
210—250 ms (only for 160—400 A)	8
115—130 ms (only for 800 A)	1
190—210 ms (only for 800 A)	2

Auxiliary contact

2NO—2NC	22
2NO—8NC (only for 160—400 A)	28
3NO—7NC (only for 160—400 A)	37
4NO—6NC (only for 160—400 A)	46
5NO—5NC (only for 160—400 A)	55
6NO—4NC (only for 160—400 A)	64
7NO—3NC (only for 160—400 A)	73
8NO—2NC (only for 160—400 A)	82

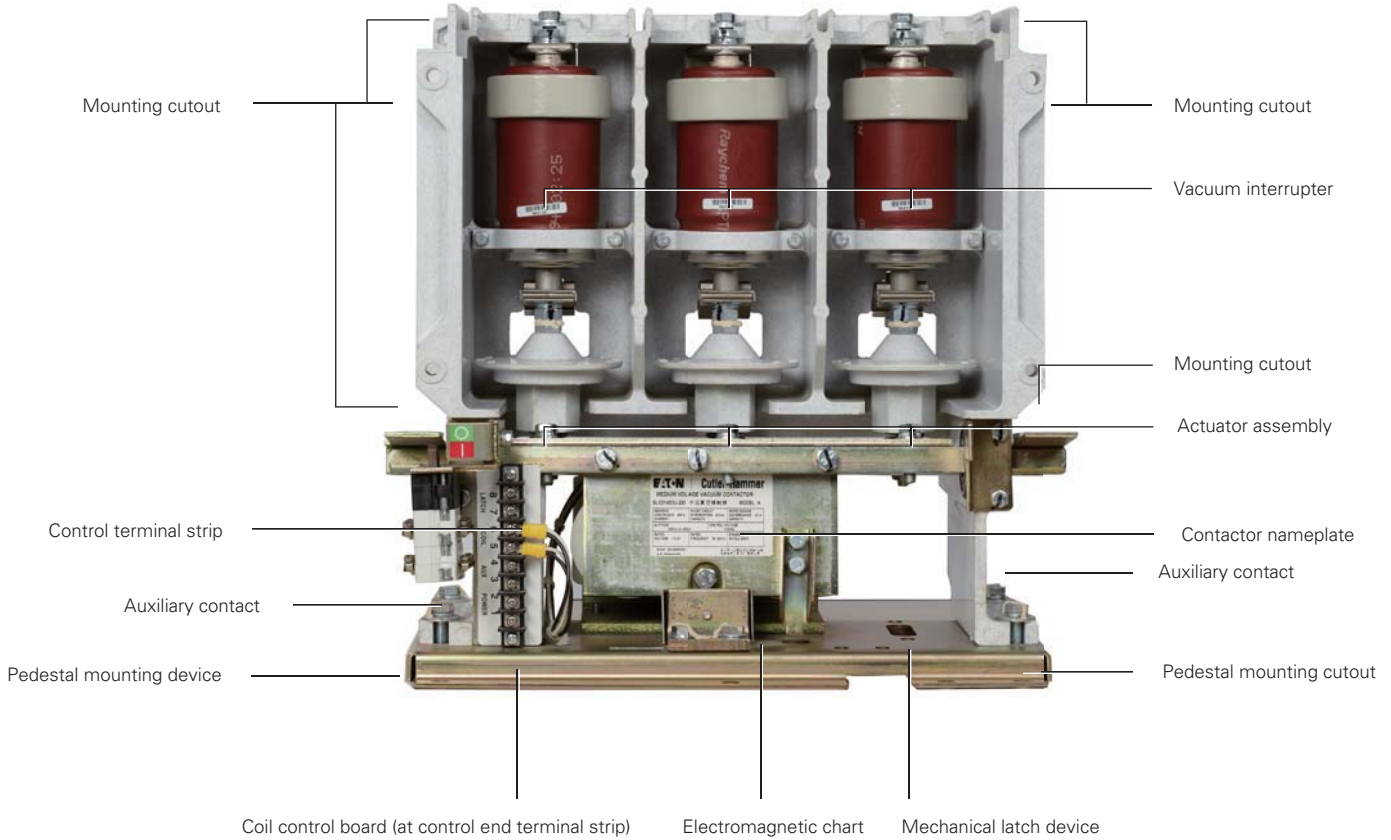
Mechanical latch ^①

N/A	0
24 VDC coil	1
32 VDC coil (only for 160—400 A)	2
48 VDC coil	3
96—125 VDC coil (only for 800 A)	6
110/50,120/60 VDC coil	4
125 VDC coil (only for 160—400 A)	4
220/50,240/60 coil	5

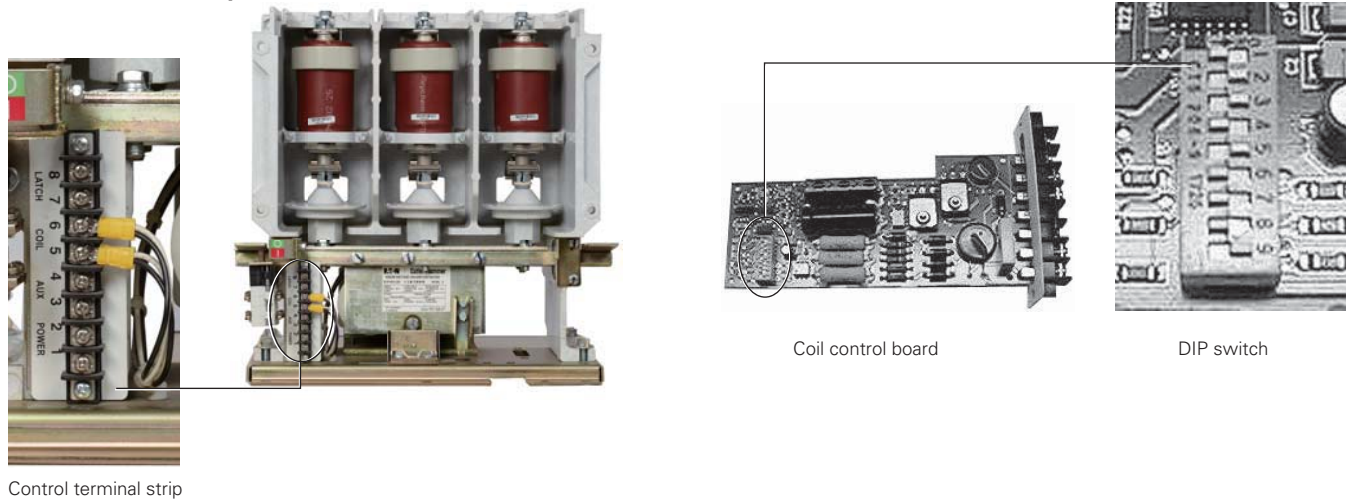
Fixed Type SL Medium Voltage Contactor

Medium voltage contactor component identification

SL range 160-400 A



Control terminal strip



Fixed Type SL Medium Voltage Contactor

Technical data of medium voltage contactors

SL range product ratings

160 A SL vacuum contactor ratings

Rated voltage	Breaking ratings			Application fields			Capacitor (A)①	Maximum Insulation voltage
	Without fuse	With fuse	Induction motor (kW)	Synchronous motor (kW) (0.8PF)	Synchronous motor (kW) (1.0PF)	Transformer		
2200 to 2500	4.5 kA	50 kA	450	450	600	600 kVA	120	7200
3000 to 3600	4.5 kA	50 kA	675	675	750	800 kVA		
3800 to 4800	4.5 kA	50 kA	900	900	1050	1000 kVA		
6000 to 6900	4.5 kA	50 kA	1350	1350	1650	1600 kVA		

Specification

Maximum breaking current

(3 operations) _____ 4500 A

Rated current _____ 160 A closed circuit

IE Closing and switching capacity - AC4

Closing _____ 1600 A

Switching _____ 1280 A

Short-time current

30s _____ 2400 A

1s _____ 6000 A

8.7ms (0.5 cycles) _____ 63kA peak value

Normal operation altitude _____ **-1000M to +2000M**

Mechanical life _____ **2,500,000operations**

Electrical life

Ac3 _____ 300,000 operations

Ac4 _____ 300,000 operations

Lightning surge _____ **60kV (1.2x50ms)**

Dielectric strength _____ **32kV RMS (1M)**

Closing time _____ **80ms**

(connected to contact pickup)

Switching time optional② _____ **30 - 300ms**

Arc time _____ **12ms (0.75 cycle) or less**

Starting voltage _____ **80% of rated coil voltage**

Tripping voltage _____ **60% of rated coil voltage**

Control voltage

AC/Hz _____ 110/50,120/60,220/50,240/60

DC _____ 125

Control circuit load

Closing 100 - 125V _____ 1kVA

200 - 240V _____ 1.8kVA

Keeping 100 - 125V _____ 40VA

200 - 240V _____ 50VA

Auxiliary contact ratings

Voltage max. _____ 600V

Current _____ 10 A

closing capacity (AC) _____ 7200VA

(DC) _____ 125VA

Switching capacity (AC) _____ 720VA

(DC) _____ 125VA

Latch (optional)

Mechanical life _____ 250,000 operations

Tripping voltage (DC) _____ 24V

(DC) _____ 125V

(AC) _____ 110/120V

Tripping voltage min. _____ 80 % of rated coil voltage

Tripping load _____ 400VA

Tripping time _____ 30ms

Weight _____ **21.4kg**

①Ratings are not applicable for back to back switching. Please consult with factories for how to use back to back switching.

②Approximate value. Please refer to Table 2 on Page 3 for detailed range.

Fixed Type SL Medium Voltage Contactor

200 A SL vacuum contactor ratings

Rated voltage	Breaking ratings			Application fields			Capacitor (A)①	Maximum Insulation voltage
	Without fuse	With fuse	Induction motor (kW)	Synchronous motor (kW)		Transformer		
				(0.8PF)	(1.0PF)			
2200 to 2500	4.5 kA	50 kA	600	600	750	750 kVA	150	7200
3000 to 3600	4.5 kA	50 kA	825	825	950	1000 kVA		
3800 to 4800	4.5 kA	50 kA	1100	1100	1300	1250 kVA		
6000 to 6900	4.5 kA	50 kA	1675	1675	2020	2000 kVA		

Specification

Maximum breaking current

(3 operations) _____ 4500 A

Rated current _____ 200 A closed circuit

IE Closing and switching capacity - AC4

Closing _____ 2000 A

Switching _____ 1600 A

Short-time current

30s _____ 2400 A

1s _____ 6000 A

8.7ms (0.5 cycles) _____ 63kA peak value

Normal operation altitude _____ **-1000M to +2000M**

Mechanical life _____ **2,500,000operations**

Electrical life

Ac3 _____ 300,000 operations

Ac4 _____ 300,000 operations

Lightning surge _____ **60kV (1.2x50ms)**

Dielectric strength _____ **32kV RMS (1M)**

Closing time _____ **80ms**

(connected to contact pickup)

Switching time optional② _____ **30 - 300ms**

Arc time _____ **12ms (0.75 cycle) or less**

Starting voltage _____ **80% of rated coil voltage**

Tripping voltage _____ **60% of rated coil voltage**

Control voltage

AC/Hz _____ 110/50,120/60,220/50,240/60

DC _____ 125

Control circuit load

Closing 100 - 125V _____ 1kVA

200 - 240V _____ 1.8kVA

Keeping 100 - 125V _____ 40VA

200 - 240V _____ 50VA

Auxiliary contact ratings

Voltage max. _____ 600V

Current _____ 10 A

closing capacity (AC) _____ 7200VA

(DC) _____ 125VA

Switching capacity (AC) _____ 720VA

(DC) _____ 125VA

Latch (optional)

Mechanical life _____ 250,000 operations

Tripping voltage (DC) _____ 24V

(DC) _____ 125V

(AC) _____ 110/120V

Tripping voltage min. _____ 80 % of rated coil voltage

Tripping load _____ 400VA

Tripping time _____ 30ms

Weight _____ **21.4kg**

①Ratings are not applicable for back to back switching. Please consult with factories for how to use back to back switching.

②Approximate value. Please refer to Table 2 on Page 3 for detailed range.

Fixed Type SL Medium Voltage Contactor

360 A SL vacuum contactor ratings

Rated voltage	Breaking ratings			Application fields			Capacitor (A)①	Maximum Insulation voltage
	Without fuse	With fuse	Induction motor (kW)	Synchronous motor (kW)		Transformer		
				(0.8PF)	(1.0PF)			
2200 to 2500	4.5 kA	50 kA	1100	1100	1300	1200 kVA	270	7200
3000 to 3600	4.5 kA	50 kA	1500	1500	1850	1600 kVA		
3800 to 4800	4.5 kA	50 kA	1850	1850	2250	2000 kVA		
6000 to 6900	4.5 kA	50 kA	3000	3000	3750	3200 kVA		

Specification

Maximum breaking current

(3 operations) _____ 4500 A

Rated current _____ 360 A closed circuit

IE Closing and switching capacity - AC4

Closing _____ 3600 A

Switching _____ 2880 A

Short-time current

30s _____ 2400 A

1s _____ 6000 A

8.7ms (0.5 cycles) _____ 63kA peak value

Normal operation altitude _____ **-1000M to +2000M**

Mechanical life _____ **2,500,000operations**

Electrical life

Ac3 _____ 300,000 operations

Ac4 _____ 300,000 operations

Lightning surge _____ **60kV (1.2x50ms)**

Dielectric strength _____ **32kV RMS (1M)**

Closing time _____ **80ms**

(connected to contact pickup)

Switching time optional② _____ **30 - 300ms**

Arc time _____ **12ms (0.75 cycle) or less**

Starting voltage _____ **80% of rated coil voltage**

Tripping voltage _____ **60% of rated coil voltage**

Control voltage

AC/Hz _____ 110/50,120/60,220/50,240/60

DC _____ 125

Control circuit load

Closing 100 - 125V _____ 1kVA

200 - 240V _____ 1.8kVA

Keeping 100 - 125V _____ 40VA

200 - 240V _____ 50VA

Auxiliary contact ratings

Voltage max. _____ 600V

Current _____ 10 A

closing capacity (AC) _____ 7200VA

(DC) _____ 125VA

Switching capacity (AC) _____ 720VA

(DC) _____ 125VA

Latch (optional)

Mechanical life _____ 250,000 operations

Tripping voltage (DC) _____ 24V

(DC) _____ 125V

(AC) _____ 110/120V

Tripping voltage min. _____ 80% of rated coil voltage

Tripping load _____ 400VA

Tripping time _____ 30ms

Weight _____ **21.4kg**

①Ratings are not applicable for back to back switching. Please consult with factories for how to use back to back switching.

②Approximate value. Please refer to Table 2 on Page 3 for detailed range.

Fixed Type SL Medium Voltage Contactor

400 A SL vacuum contactor ratings

Rated voltage	Breaking ratings			Application fields			Capacitor (A)①	Maximum Insulation voltage
	Without fuse	With fuse	Induction motor (kW)	Synchronous motor (kW)		Transformer		
				(0.8PF)	(1.0PF)			
2200 to 2500	4.5 kA	50 kA	1300	1300	1500	1500 kVA	295	7200
3000 to 3600	4.5 kA	50 kA	1675	1675	1850	2000 kVA		
3800 to 4800	4.5 kA	50 kA	2250	2250	2600	2500 kVA		
6000 to 6900	4.5 kA	50 kA	3350	3350	4100	4000 kVA		

Specification

Maximum breaking current

(3 operations) _____ 8500 A

Rated current _____ 400 A closed circuit

IE Closing and switching capacity - AC4

Closing _____ 4000 A

Switching _____ 3200 A

Short-time current

30s _____ 2400 A

1s _____ 6000 A

8.7ms (0.5 cycles) _____ 63kA peak value

Normal operation altitude _____ **-1000M to +2000M**

Mechanical life _____ **2,500,000operations**

Electrical life

Ac3 _____ 300,000 operations

Ac4 _____ 300,000 operations

Lightning surge _____ **60kV (1.2x50ms)**

Dielectric strength _____ **32kV RMS (1M)**

Closing time _____ **80ms**

(connected to contact pickup)

Switching time optional② _____ **30 - 300ms**

Arc time _____ **12ms (0.75 cycle) or less**

Starting voltage _____ **80% of rated coil voltage**

Tripping voltage _____ **60% of rated coil voltage**

Control voltage

AC/Hz _____ 110/50,120/60,220/50,240/60

DC _____ 125

Control circuit load

Closing 100 - 125V _____ 1kVA

200 - 240V _____ 1.8kVA

Keeping 100 - 125V _____ 40VA

200 - 240V _____ 50VA

Auxiliary contact ratings

Voltage max. _____ 600V

Current _____ 10 A

closing capacity (AC) _____ 7200VA

(DC) _____ 125VA

Switching capacity (AC) _____ 720VA

(DC) _____ 125VA

Latch (optional)

Mechanical life _____ 250,000 operations

Tripping voltage (DC) _____ 24V

(DC) _____ 125V

(AC) _____ 110/120V

Tripping voltage min. _____ 80 % of rated coil voltage

Tripping load _____ 400VA

Tripping time _____ 30ms

Weight _____ **22.2kg**

①Ratings are not applicable for back to back switching. Please consult with factories for how to use back to back switching.

②Approximate value. Please refer to Table 2 on Page 3 for detailed range.

Fixed Type SL Medium Voltage Contactor

800 A SL vacuum contactor ratings

Rated voltage	Breaking ratings		Induction motor (kW)	Application fields			Capacitor (A)①	Maximum Insulation voltage
	Without fuse	With fuse		Synchronous motor (kW)		Transformer		
				(0.8PF)	(1.0PF)			
2200 to 2500	13.2kA(50MVA)	50kA(2300V,200MVA)	2250	2250	2600	2500 kVA	550	7200
3000 to 3600	13.2kA(50MVA)	50kA(2300V,200MVA)	3000	3000	3750	3500 kVA		
3800 to 4800	13.2kA(50MVA)	50kA(2300V,200MVA)	3750	3750	4500	4500 kVA		
6000 to 6900	13.2kA(50MVA)	50kA(2300V,200MVA)	6000	6000	6000	6000 kVA		

Specification

Maximum breaking current

(3 operations) _____ 13200 A

Rated current _____ 800 A closed circuit

IE Closing and switching capacity - AC4

Closing _____ 8000 A

Switching _____ 6400 A

Short-time current

30s _____ 4320 A

1s _____ 10800 A

8.7ms (0.5 cycles) _____ 86kA peak value

Normal operation altitude _____ **-1000M to +2000M**

Mechanical life _____ **2,500,000operations**

Electrical life

Ac3 _____ 300,000 operations

Ac4 _____ 300,000 operations

Lightning surge _____ **60kV (1.2x50ms)**

Dielectric strength _____ **20kV RMS (1M)**

Closing time _____ **80ms**

(connected to contact pickup)

Switching time optional② _____ **30 - 300ms**

Arc time _____ **12ms (0.75 cycle) or less**

Starting voltage _____ **80% of rated coil voltage**

Tripping voltage _____ **60% of rated coil voltage**

Control voltage

AC/Hz _____ 110/50,120/60,220/50,240/60

DC _____ 125,250

Control circuit load

Closing 100-120VAC _____ 2600 VA

125VDC _____ 3000 VA

220-240VAC _____ 2800 VA

250VDC _____ 3200 VA

Keeping 100-125V _____ 50 VA

200-240V _____ 56 VA

220-240VAC _____ 52 VA

250VDC _____ 58 VA

Auxiliary contact ratings

Voltage max. _____ 600V

Current _____ 10 A

closing capacity (AC) _____ 7200VA

(DC) _____ 125VA

Switching capacity (AC) _____ 720VA

(DC) _____ 125VA

Latch optional

Mechanical life _____ 250,000 operations

Tripping voltage (DC) _____ 24V

(DC) _____ 125V

(AC) _____ 110/120V

Minimum tripping voltage _____ 80 % of rated coil voltage

Tripping load _____ 400VA

Tripping time _____ 30ms

Weight _____ 43.2kg

①Ratings are not applicable for back to back switching. Please consult with factories for how to use back to back switching.

②Approximate value. Please refer to Table 2 on Page 3 for detailed range.

Fixed Type SL Medium Voltage Contactor

Size and weight of medium voltage contactors

SL range: 160 - 400 A

160 - 400A equipments: front view and back view

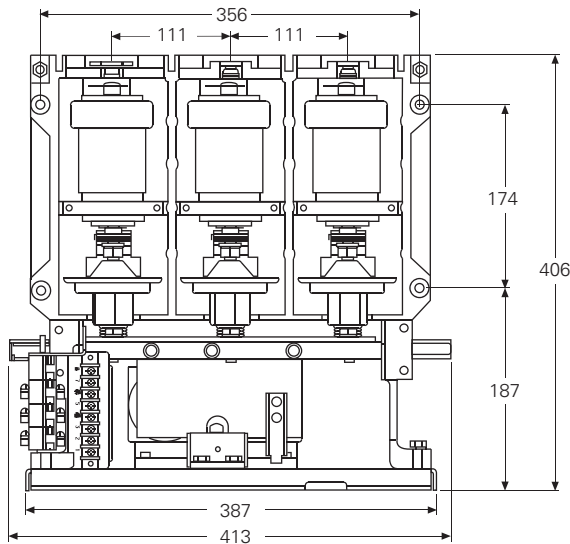


160 - 400 A equipment: front view

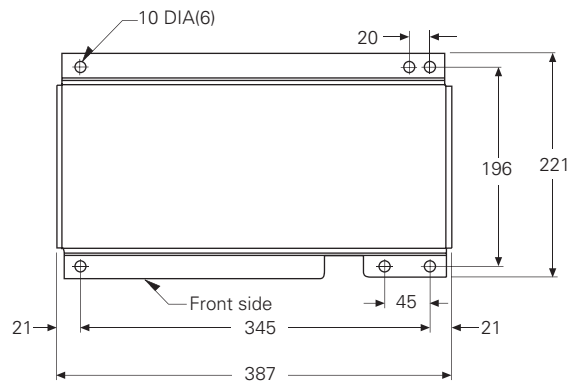


160 - 400 A equipment: back view

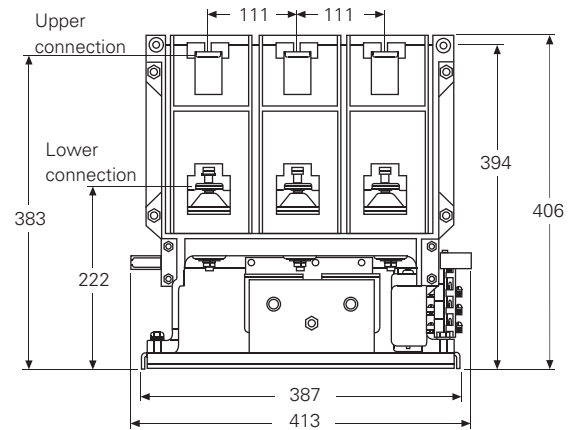
160 - 400 A equipment dimension diagram (mm)



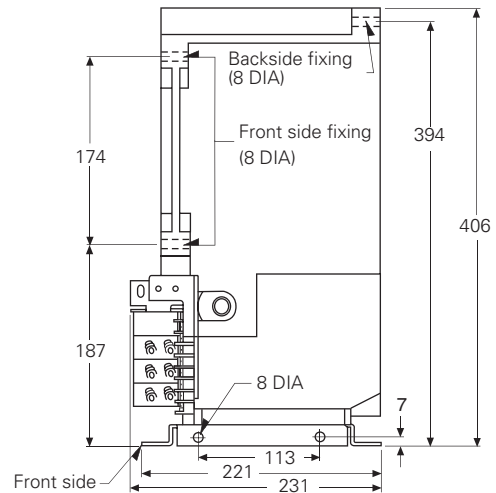
160 - 400 A equipment: front view dimensions



160 - 400 A equipment: pedestal size



160 - 400 A equipment: back view dimensions

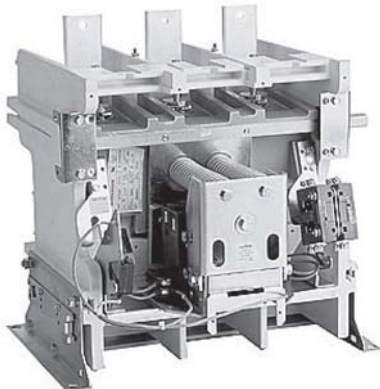


160 - 400 A equipment: side view dimensions

Fixed Type SL Medium Voltage Contactor

SL range: 800A

800A equipments: front view and back view

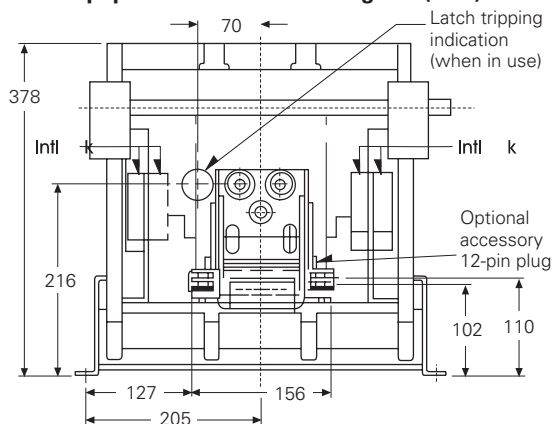


800 A equipment: front view

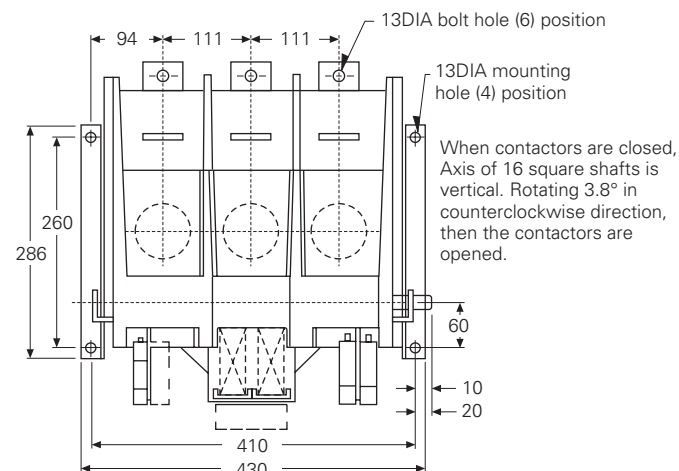


800 A equipment: back view

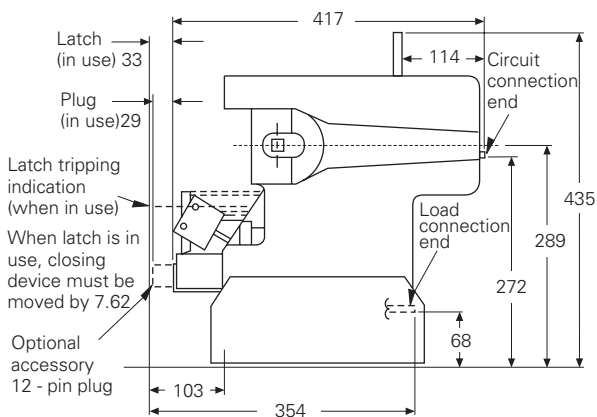
800 A equipment dimensional diagram (mm)



800 A equipment: front view dimensions



800 A equipment: top view dimensions

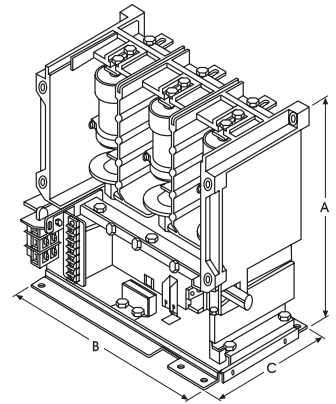


800 A equipment: side view dimensions

Fixed Type SL Medium Voltage Contactor

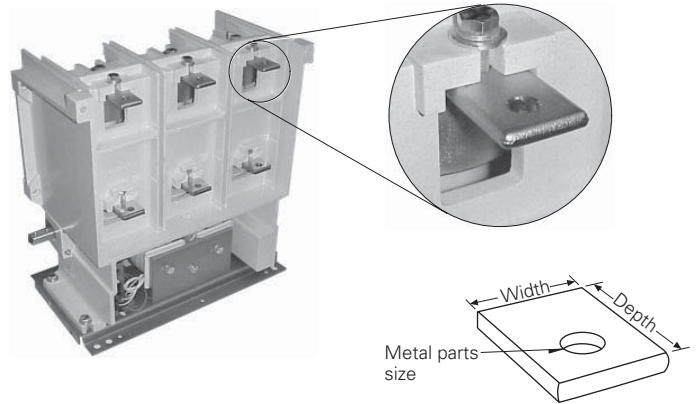
SL range products dimensions and weight

Current size	Mounting Catalogue	Length (A)		Width (B)		Height (C)		Weight	
		mm	foot	mm	foot	mm	foot	kg	pound
160	Control panel or pedestal	406	16.00	387	15.25	221	8.70	21.4	47
200	Control panel or pedestal	406	16.00	387	15.25	221	8.70	21.4	47
360	Control panel or pedestal	406	16.00	387	15.25	221	8.70	21.4	47
400	Control panel or pedestal	406	16.00	387	15.25	221	8.70	22.2	49
800	Control panel or pedestal	378	14.89	430	16.93	466	18.34	43.2	95

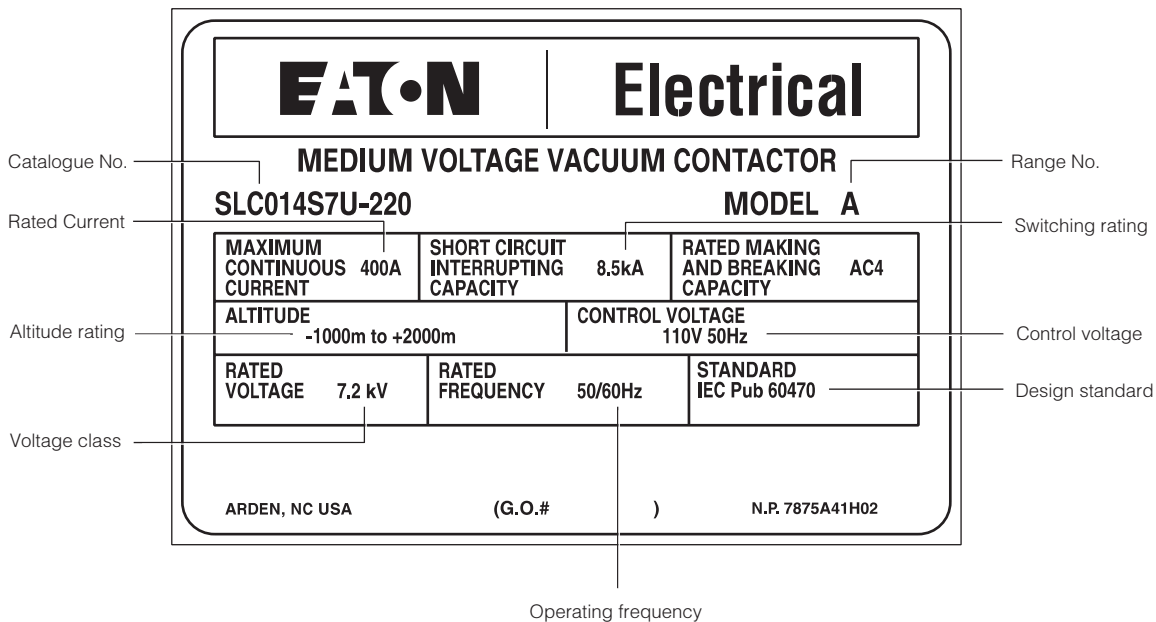


Primary connection terminal dimension

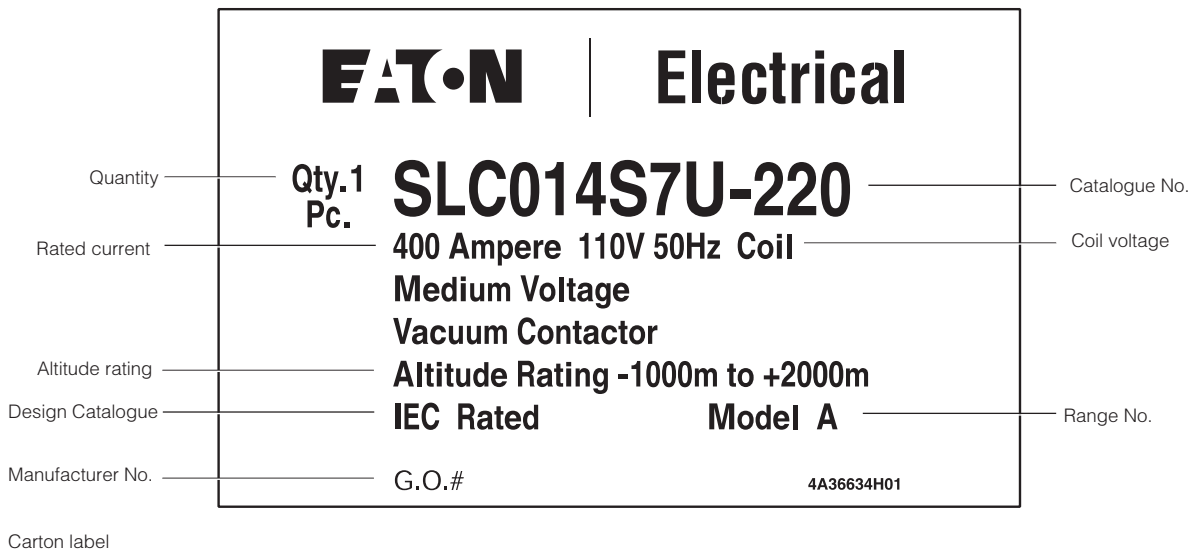
Contactor rated current	Width (mm)	Depth (mm)	Metal parts (bolt size,mm)
Upper connection terminal			
160	19.1	33.3	10
200	25.4	33.3	10
360	25.4	33.3	10
400	25.4	33.3	10
800	44.5	50.8	10
Lower connection terminal			
160	31.8	27.9	10
200	31.8	27.9	10
360	31.8	27.9	10
400	31.8	27.9	10
800	38.1	38.1	10



Label identification



Contactor label



Carton label

Fixed Type SL Medium Voltage Contactor

Fuse data

SL range fuse

Fuse list for SL contactor use

Motor FLA	Voltage	Recommended Eaton's fuse ^①	Rating	Minimum breaking time
SL-160				
11.0-18	2400-4800	449D597G01	30-1R	30
18-31		449D597G02	70-2R	30
31-46		449D597G03	100-3R	30
46-62		449D597G04	130-4R	30
62-74		449D597G05	150-5R	30
74-93		449D597G06	170-6R	30
93-137		151D933G01	200-9R	130
137-160		151D933G02	230-12R	130
11.0-34	5500-6900	151D963G01	70-2R	30
34-46		151D963G02	100-3R	30
46-56		151D963G03	130-4R	30
56-68		151D963G04	150-5R	30
68-85		151D963G05	170-6R	30
85-137		151D963G06	200-9R	60
137-160		151D963G07	230-12R	250
SL-200				
11.0-18	2400-4800	449D597G01	30-1R	30
18-31		449D597G02	70-2R	30
31-46		449D597G03	100-3R	30
46-62		449D597G04	130-4R	30
62-74		449D597G05	150-5R	30
74-93		449D597G06	170-6R	30
93-137		151D933G01	200-9R	130
137-200 ^②		151D933G02	230-12R	130
11.0-34	5500-6900	151D963G01	70-2R	30
34-46		151D963G02	100-3R	30
46-56		151D963G03	130-4R	30
56-68		151D963G04	150-5R	30
68-85		151D963G05	170-6R	30
85-137		151D963G06	200-9R	60
137-200		151D963G07	230-12R	250
SL-360				
11.0-18	2400-4800	449D597G01	30-1R	30
18-31		449D597G02	70-2R	30
31-46		449D597G03	100-3R	30
46-62		449D597G04	130-4R	30
62-74		449D597G05	150-5R	30
74-93		449D597G06	170-6R	30
93-137		151D933G01	200-9R	130
137-187		151D933G02	230-12R	130
187-200 ^②		151D933G02	230-12R	130
211-360		N/A		
11.0-34	5500-6900	151D963G01	70-2R	30
34-46		151D963G02	100-3R	30
46-56		151D963G03	130-4R	30
56-68		151D963G04	150-5R	30
68-85		151D963G05	170-6R	30
85-137		151D963G06	200-9R	30
137-200		151D963G07	230-12R	250
201-360		N/A		

Motor FLA	Voltage	Recommended Eaton's fuse ^①	Rating	Minimum breaking time
SL-400				
11.0-18	2400-4800	449D597G01	30-1R	30
18-31		449D597G02	70-2R	30
31-46		449D597G03	100-3R	30
46-62		449D597G04	130-4R	30
62-74		449D597G05	150-5R	30
74-93		449D597G06	170-6R	30
93-137		151D933G01	200-9R	30
137-187		151D933G02	230-12R	30
187-244		151D933G03	390-18R	60
244-360		151D933G04	450-24R	130
360-400 ^③		151D933G04	450-24R	130
11.0-34	5500-6900	151D963G01	70-2R	30
34-46		151D963G02	100-3R	30
46-56		151D963G03	130-4R	30
56-68		151D963G04	150-5R	30
68-85		151D963G05	170-6R	30
85-137		151D963G06	200-9R	30
137-187		151D963G07	230-12R	30
187-273		151D963G10	230-12R	60
273-400		151D963G11	230-12R	250
SL-800^④				
225-360	2400-4800	Consulting firms	450-24R	-
360-449		Consulting firms	650-36R	-
450-720		Consulting firms	800-44R	-
225-400	5500-6900	Consulting firms	450-24R	-
400-449		Consulting firms	650-36R	-
450-720		Consulting firms	800-44R	-

Note: The selection of fuse is based on below equation: $LRC = FLA \times 6$. Unless otherwise stated, acceleration time is set as 10 S.

① ANSI/NEMA fuses. Special installation configuration. Please consult with factories for more information.

② For fuse with FLA > 180, the maximum acceleration speed is 4.5 S

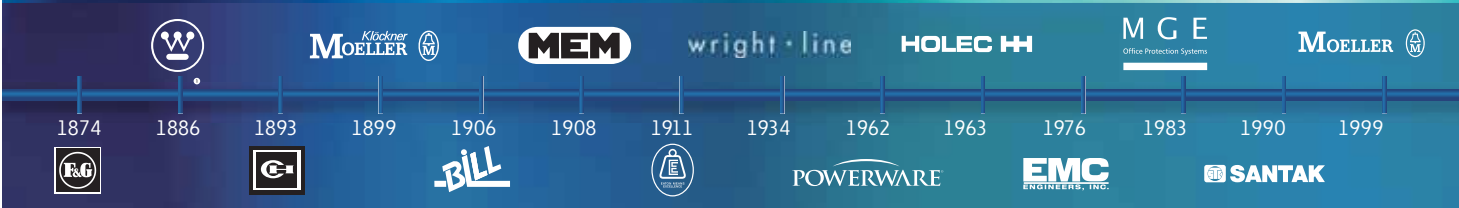
③ For fuse with FLA > 360, the maximum acceleration speed is 6 S

④ Based on Ampgard fuse chuck design. Please consult with production factories when installing on site.

EAT•N

The power of fusion.

Brand inception dates:



EAT•N

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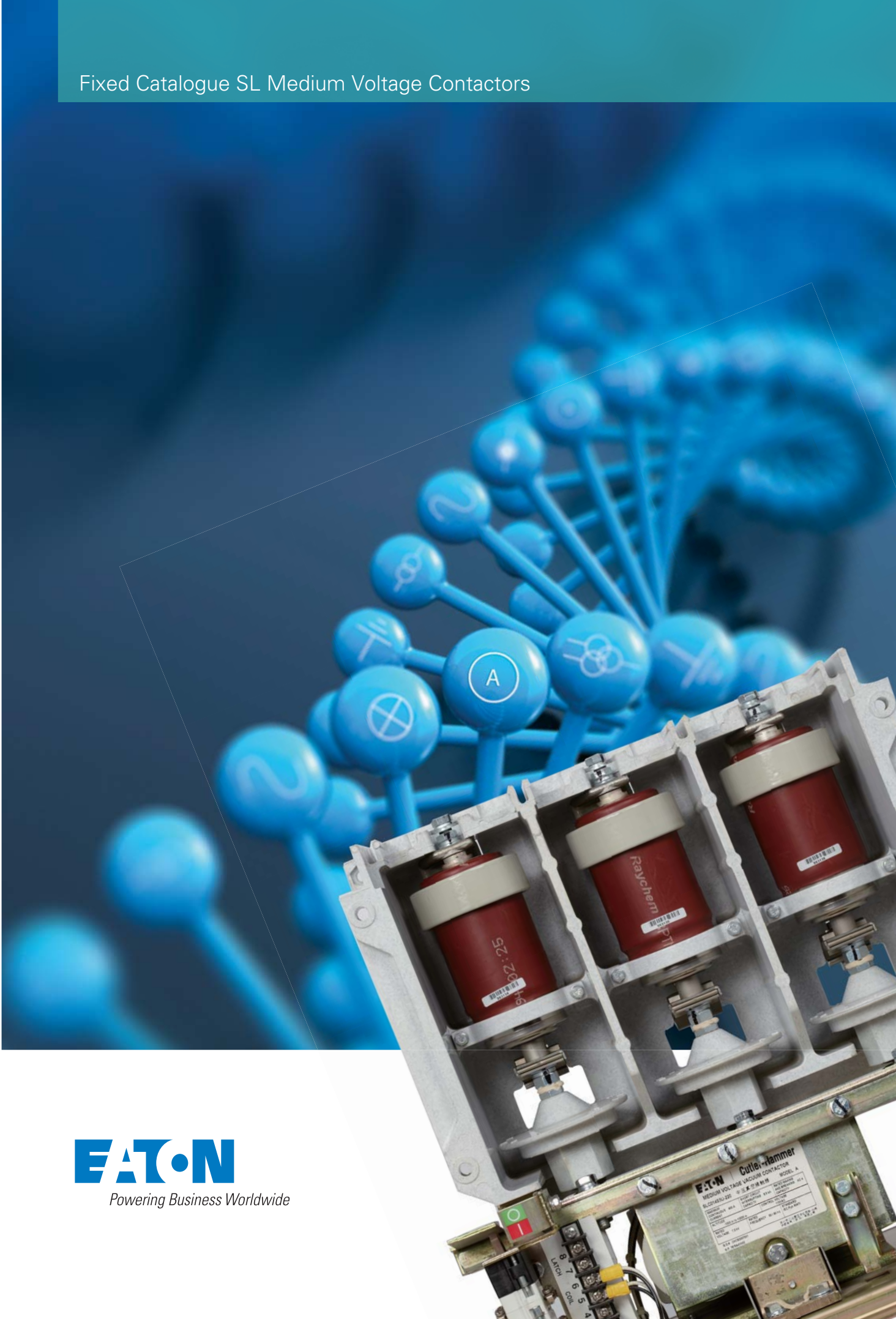
Eaton Electrical Sector

Moeller Electric (SH) Co. Ltd
Building 3, 280 Nong, Linhong Road, Changning district, Shanghai
Tel: 0086-21-52000099
Fax: 0086-21-52000101/52000102
Postcode:200335
Internet: www.eaton.com
Fixed Catalogue SL-EN (11-2011)



Customer service center
Contact: 800-988-1203
Working hour: 09:00-17:00 (Monday till Friday)
Email: CustomerServicePDCNA@eaton.com

Fixed Catalogue SL Medium Voltage Contactors



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EATON Cutler-Hammer
MEDIUM VOLTAGE VACUUM CONTACTOR
MODEL A
Eaton's medium voltage vacuum contactors are designed for applications requiring high performance, reliability and long life. They are available in a wide range of ratings and configurations to meet your specific needs. For more information, visit www.eaton.com.

LATCH
8
7
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A



Automotive



Aerospace



Truck



Hydraulics



Electrical

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Eaton delivers the power inside hundreds of products that are answering the demands of today's fast changing world.

We help our customers worldwide manage the power they need for buildings, aircraft, trucks, cars, machinery and entire businesses. And we do it in a way that consumes fewer resources.

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Eaton is driving the development of new technologies – from hybrid drivetrains and emission control systems to advanced engine components – that reduce fuel consumption and emissions in trucks and cars.

Higher expectations

We continue to expand our aerospace solutions and services to meet the needs of new aviation platforms, including the high-flying light jet and very light jet markets.

Building on our strengths

Our hydraulics business combines localized service and support with an innovative portfolio of fluid power solutions to answer the needs of global infrastructure projects, including locks, canals and dams.

Powering Greener Buildings and Businesses

Eaton's Electrical Group is a leading provider of power quality, distribution and control solutions that increase energy efficiency and improve power quality, safety and reliability. Our solutions offer a growing portfolio of "green" products and services, such as energy audits and real-time energy consumption monitoring. Eaton's Uninterruptible Power Supplies (UPS), variable-speed drives and lighting controls help conserve energy and increase efficiency.



MV Switchgear Technology is in our DNA

Eaton Corporation is a worldwide leader in the design, manufacture, and sale of safe, reliable and high-performance medium voltage power distribution equipment in accordance with IEC, GB and ANSI standards.

Complete Global Medium Voltage Switchgear Solutions

Eaton, a premier leader in designing and manufacturing power distribution and protection equipment in the electrical industry, offers a comprehensive range of medium voltage (MV) solutions to meet the needs of virtually every application. From products that feature cutting-edge design that allow for easy access, maintenance and space savings, to arc-resistant products that enhance safety, Eaton's medium voltage solutions provide a variety of products for every need. Additionally, Eaton's global service network provides maximum customer support in all regions of the world.

As one of the few completely vertically integrated and diversified industrial manufacturers in the world, Eaton designs not only MV assemblies, but also the key components that comprise the MV solutions – from steel housing and circuit breaker compartments to vacuum interrupters, circuit breakers, bus systems and fuses.

Eaton's MV heritage, strengthened by acquisitions such as Westinghouse DCBU, Cutler Hammer, MEM and Holec, has resulted in breakthrough MV technologies and numerous international patents over the years.

Integral to Eaton's complete electrical PowerChain Solutions – which help businesses increase reliability, efficiency and safety – Eaton's medium voltage equipment meets all applicable standards and certifications such as IEC, NEMA / ANSI, GB, UL, IEEE, KEMA and CSA.

When it comes to medium voltage solutions, you can trust the one name with a long history of proven performance: Eaton.

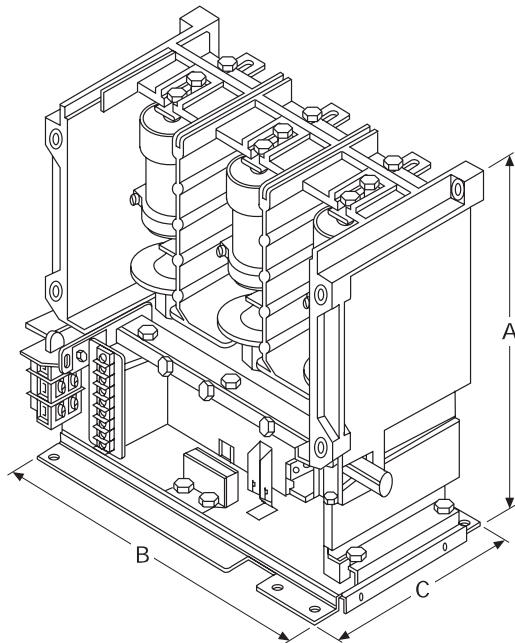


Fixed Type SL Medium Voltage Contactor

Medium Voltage Overview

Description

Eaton Corporation's "SL" family of Cutler-Hammer medium voltage vacuum contactors are designed and engineered specifically for the OEM. "SL" Contactors are perfect for OEMs because they combine the highest ratings available in a cost-saving, reduced size package that's lighter and easier to install. "SL" Contactors are ideal for full and reduced voltage starting of squirrel-cage induction, wound-rotor, and synchronous motors. Other applications include power and capacitor switching. They're especially recommended for heavy duty applications and harsh environments found in many industries including mining, pulp and paper, HVAC, petrochemical, and automotive.



Features

New SL contactor ratings

- Voltage: 2200 to 7200 V
- Current: 160 to 800 A
- Breaking rating up to 8500 A^①

Control voltage (field-adjustable)^①

- 110,220 50Hz VAC
- 120,240 60Hz VAC
- 125VDC

Trip time (field-adjustable)^①

- 30ms
- 50ms
- 130ms
- 250ms
- 330ms

Global Acceptability

- IEC
- NEMA
- ANSI

Third-party Certification

- KEMA
- CSA
- UL

Optional accessories with easy installation (field installable items)^①

- 6 sets of auxiliary contacts
- Mechanical latch – coil voltage reversible

Service life

- 300,000 electrical operations
- 2,500,000 mechanical operations

History

Eaton Electrical invented the first vacuum contactor in 1982. It was simply to replace commonly-used air lock contactors. SL medium voltage vacuum contactors were designed to mount inside Ampgard products. Then, they quickly revolutionized worldwide medium voltage control equipment pattern completely. Since then, vacuum contactors have gradually become standard products in the field. And Eaton Electrical becomes the leader in the market as well.



Technology: SL contactor range integrates world-class Eaton's vacuum contactors.

Ampgard is already a famous brand in the field of integrated medium voltage starters. Now, SL contactors in separate units provide quality and life as superior as always.

Vacuum Interrupter:

- Increased safety, reliability and productivity.
- Improved product performance, especially applicable for dusty and erosion environments.
- Reduced maintenance, shortened downtime and decreased equipment weight.
- Quiet and smooth operation.
- Little power consumption.
- High quality and low service life.

Application

Eaton's SL medium voltage contactors are used for starting applications, including:

- Squirrel-cage induction motors
- Synchronous motors
- Wound rotors

Fully applicable to:

- Full voltage starting
- Reduced voltage starting

The perfect choice for harsh duty applications :

- Mining
- Pulp and paper
- HVAC system
- Petrochemical
- Automotive
- Other applications

Design and Test Standards

IEC #60470
CSA T.I.L D-21, File
#LR28548ANSI/NEMA ICS3,
Part 2

^① The above ratings can be different, for 800A equipment. Please refer to Page 7 for more detailed information.

Fixed Type SL Medium Voltage Contactor

SL range: 160–400A

Features^①

- One range of contactor products used for medium voltage control, with voltage range from 2200 to 7200V.
- Rated current is 160-400A, when induction motors power ranges from 600-4500 horsepower.
- 3 Catalogues equipment used in different altitudes.

Contactors

- Leading vacuum technology
- Fully meet global standards
- Pass third-party certification such as KEMA, CSA and UL
- Long service life: over 300,000 electrical operations, and over 2,500,000 mechanical operations
- Flexible installation: standard control panel or pedestal mounting. Contactors can be mounted horizontally or vertically.
- Field-adjustable options include coil voltage, AC/DC and coil trip time
- Auxiliary contact and mechanical latch are provided. Accessories are universal for any size of equipment.
- For special orders, configuration can be made, based on customers' detailed requirement, with factory pre-assembling and all mounting accessories included.
- Best quality: all contactors are manufactured and assembled in ISO certified factories with leading technology development level.



Table 2—Trip time^①

Voltage	Switch No.		
	SW4	SW4	SW4
30ms	OFF	OFF	OFF
50ms	ON	OFF	OFF
130ms	OFF	ON	OFF
250ms	ON	ON	OFF
330ms	OFF	OFF	ON

Note: Only one button switch can be opened each time.

Table 3—Altitude^①

Altitude	Low	Standard	High
Meter	-3500 to -1000	-1000 to +2000	+2000 to +4000
Foot	-11,489 to -3281	-3281 to +6562	+6562 to 13,123

Table 1—Control voltage setup

Voltage	Switch No.		
	SW1	SW2	SW3
100-110Vac/dc	OFF	OFF	OFF
115-120 Vac/dc	ON	OFF	OFF
125 Vac/dc	OFF	OFF	ON
200-220 Vac/dc	OFF	ON	OFF
230-250 Vac/dc	ON	ON	OFF

Note: factory default value is 120/60VAC

^① The above ratings can be different, for 800A equipment. Please refer to Page 7 for more detailed information.

Fixed Type SL Medium Voltage Contactor

Medium Voltage Contactor Ordering Information

Catalogue number selection table

Contactor size	Voltage	Rating		Capacitor switching (A) ①	Catalogue No.		
		Motor Catalogue	KW		Equipment operation altitude ②		
					Standard	Low	High
160A	220-2500	Induction	450	120	SLC011S5A-220	SLC011L5A-220	SLCO11H5A-220
		Synchronous(0.8PF)	450				
		Synchronous(1.0PF)	600				
	3000-3600	Induction	675				
		Synchronous(0.8PF)	675				
		Synchronous(1.0PF)	750				
	3800-4800	Induction	900				
		Synchronous(0.8PF)	900				
		Synchronous(1.0PF)	1050				
6000-6900	Induction	1350					
	Synchronous(0.8PF)	1350					
	Synchronous(1.0PF)	1650					
200A	2200-2500	Induction	600	150	SLC012S5A-220	SLC012L5A-220	SLCO12H5A-220
		Synchronous(0.8PF)	600				
		Synchronous(1.0PF)	750				
	3000-3600	Induction	825				
		Synchronous(0.8PF)	825				
		Synchronous(1.0PF)	950				
	3800-4800	Induction	1100				
		Synchronous(0.8PF)	1100				
		Synchronous(1.0PF)	1300				
6000-6900	Induction	1675					
	Synchronous(0.8PF)	1675					
	Synchronous(1.0PF)	2050					
360A	2200-2500	Induction	1100	270	SLC013S5A-220	SLC013L5A-220	SLCO13H5A-220
		Synchronous(0.8PF)	1100				
		Synchronous(1.0PF)	1300				
	3000-3600	Induction	1500				
		Synchronous(0.8PF)	1500				
		Synchronous(1.0PF)	1850				
	3800-4800	Induction	1850				
		Synchronous(0.8PF)	1850				
		Synchronous(1.0PF)	2250				
6000-6900	Induction	3000					
	Synchronous(0.8PF)	3000					
	Synchronous(1.0PF)	3750					

Note: For normal 160-400A units, coil voltage is 120VAC and tripping time is 30ms with 2 NO and 2 NC auxiliary contacts installed. Coil voltage and tripping time are filed adjustable. Auxiliary contacts and mechanical latch is available in accessory list. Specified setup and accessories can be ordered. For more details, please see Page 8 and 9.

①Ratings are not applicable for back to back switching. Please consult factory for how to use back to back switching.

②Please refer to the table on Page 3. For 800A equipment, the above ratings can be different. Please refer to Page 7 for more information.

Fixed Type SL Medium Voltage Contactor

Catalogue reference selection table (续表)

Contactor size	Voltage	Rating		Capacitor switching (A) ①	Catalogue No.		
		Motor Catalogue	KW		Equipment operation altitude②		
					Standard	Low	High
400A	220-2500	Induction	1300	295	SLC014S5A-220	SLC014L5A-220	SLCO14H5A-220
		Synchronous(0.8PF)	1300				
		Synchronous(1.0PF)	1500				
	3000-3600	Induction	1675				
		Synchronous(0.8PF)	1675				
		Synchronous(1.0PF)	1850				
	3800-4800	Induction	2250				
		Synchronous(0.8PF)	2250				
		Synchronous(1.0PF)	2600				
	6000-6900	Induction	3350				
		Synchronous(0.8PF)	3350				
		Synchronous(1.0PF)	4100				
800A	2200-2500	Induction	2250	550	SLN018S1A-220	N/A	SLNO18H1A-220
		Synchronous(0.8PF)	2250				
		Synchronous(1.0PF)	2600				
	3000-3600	Induction	3000				
		Synchronous(0.8PF)	3000				
		Synchronous(1.0PF)	3750				
	3800-4800	Induction	3750				
		Synchronous(0.8PF)	3750				
		Synchronous(1.0PF)	4500				
	6000-6900	Induction	6000				
		Synchronous(0.8PF)	6000				
		Synchronous(1.0PF)	7500				

Note: For normal 160-400A units, coil voltage is 120VAC and tripping time is 30ms with 2 NO and 2 NC auxiliary contacts installed. Coil voltage and tripping time are field adjustable. Auxiliary contacts and mechanical latch is available in accessory list. Specified setup and accessories can be ordered. For more details, please see Page 8 and 9.

①Ratings are not applicable for back to back switching. Please consult factory for how to use back to back switching.

②Please refer to the table on Page 3.For 800A equipment; the above ratings can be different. Please refer to Page 7 for more information.

Fixed Type SL Medium Voltage Contactor

Accessories for SL range 160-400 A equipment

Mechanical latch accessory- SL vacuum contactor size from 160-400A. Field mounting to SL vacuum contactor sized from 160-400A; a wide selection of coil voltage from AC and DC voltage; easy to install.



Mechanical latch accessory

Ordering Information Mechanical latch – 160–400 A

Coil voltage	Catalogue No.
24VDC	SLA-ML24
32VDC	SLA-ML32
48VDC	SLA-ML48
110/50,120/60,	SLA-ML120
125DC(optional)	
220/50,240/60(optional)	SLA-ML240

Auxiliary contact- SL vacuum contactor size from 160-400A. Auxiliary contact is used for onsite mounting to SL vacuum contactor sized from 160-400A. This contactor accessory can be used in many NO-NC configurations.



Auxiliary contact accessory

Ordering Information Auxiliary contact accessory – 160–400 A

Coil voltage	Catalogue No.
3NO-3NC accessory	SLA-AS33
6NO accessory	SLA-AS60
6NC accessory	SLA-AS06
5NO-1NC accessory	SLA-AS51
4NO-2NC accessory	SLA-AS42
2NO-4NC accessory	SLA-AS24
1NO-5NC accessory	SLA-AS15

Mechanical interlock accessory- SL vacuum contactor size from 160-400A. Mechanical interlock accessory is used for onsite mounting to SL vacuum contactor sized from 160-400A.

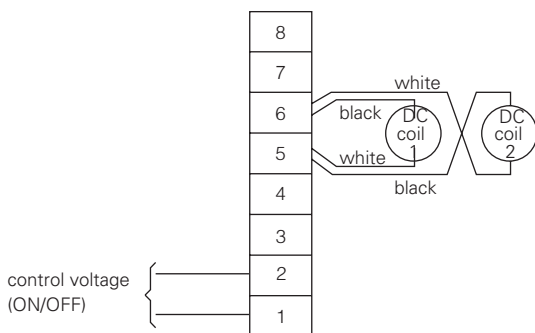


Mechanical interlock accessory

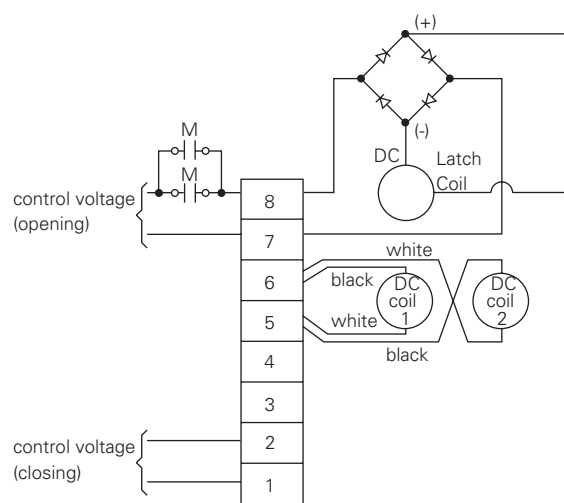
Ordering Information Mechanical interlock accessory – 160–400 A

Coil voltage	Catalogue No.
Vertical mounting	SLA-MIV
Horizontal mounting	SLA-MIV

Electrical connection diagram



Electrical connection diagram of magnetic sticking



Electrical connection diagram of mechanical latch

Note: ①For opening circuit, 2 sets of auxiliary contact must be connected.
②For closing circuit, intermediate relay connection point control must be applied.

Fixed Type SL Medium Voltage Contactor

Optional accessories for SL range 800A equipment

Mechanical latch optional accessory - SL vacuum contactor size 800A. They are mounted in factory to 800A SL vacuum contactor with a wide selection of coil voltage from AC and DC voltage. Double spiral tube latch accessories can be used as well.

Mechanical latch coil voltage

Coil voltage

24VDC	Double spiral tube latch accessories can be used as well. Please consult with factories for more detailed information
48VDC	
96-125VDC	
110/50,120/60	
220/50,240/60	

Features—SL vacuum contactor size at 800 A

Table 1— Altitude

Altitude	Low	Standard	High
Meter	N/A	-1000 to +3600	+3600 to 4900
Foot	N/A	-3281 to +11,811	+11,811 to +16,076

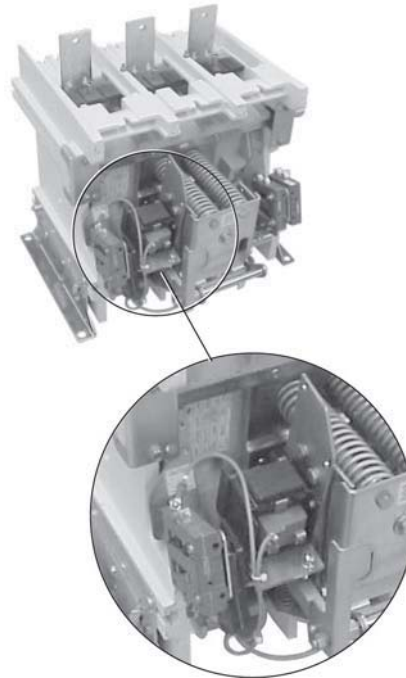
Table 2—Ratings for contacting use

Rated current	Maximum open current	Short-time current (1s)	Lightning surge
Mounted 800A inside cabin 720A	13,200A	10,800A	60kV

Table 3—coil setup/Tripping time

Factory setup

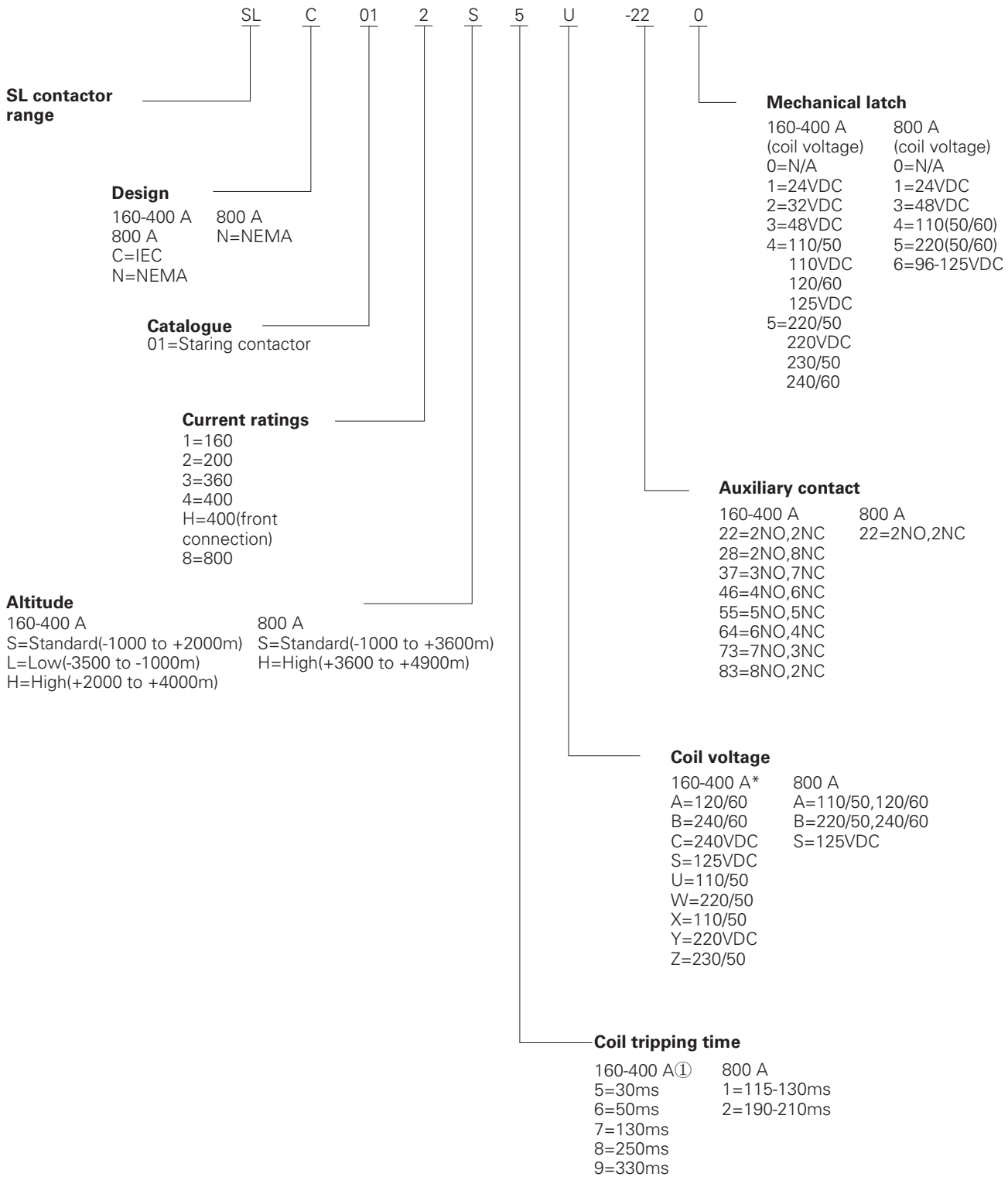
coil voltage		Tripping time	
110/50, 120/60	220/50, 240/60	125VDC	115-130mS 190-210ms



Mechanical latch accessory 800 A

Fixed Type SL Medium Voltage Contactor

Catalogue number selection instruction



Factory improvement for SL range products

After the order is confirmed

Please refer to Catalogue reference selection instruction. Select required optional accessory code.

Design and test standard

- IEC #60470(only for 160-400A)
- CSA T.I.L. D-21, File #LR28548
- ANSI/NEMA ICS 3, Part 2
- UL347, File #E63257
- GB/T 14808—2001
- GB/T 11022—1999

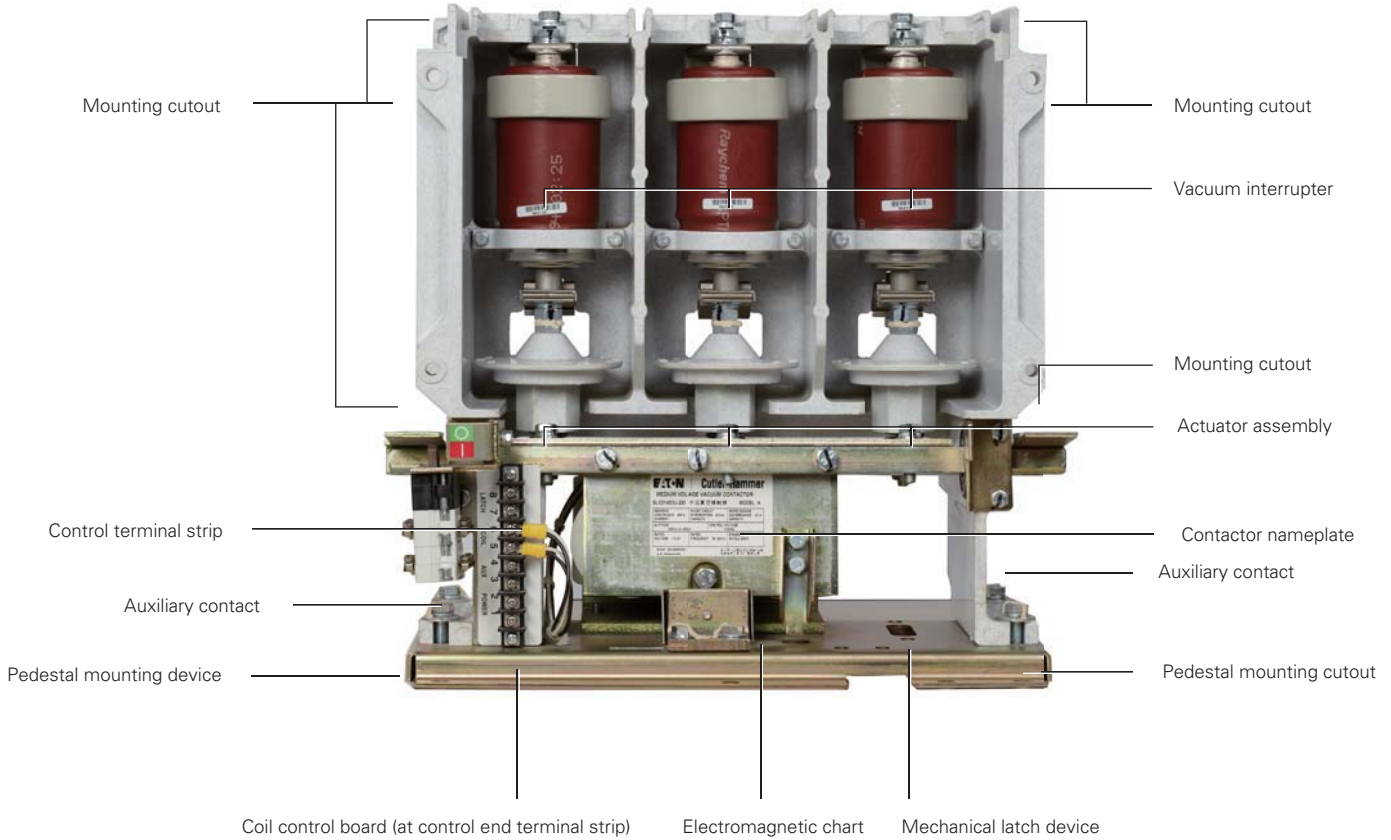
Ordering Information Factory improvement

Catalogue description	Optional accessory code
Basic	
160 A SL contactors	1
200 A SL contactors	2
360 A SL contactors	3
400 A SL contactors	4
800 A SL contactors	8
Housing	
NO	01
Coil voltage	
110/50,120/60 AC	A,U
220/50,240/60 AC	B,W
125VDC	S
Coil tripping time^①	
30—50 ms (only for 160—400 A)	5
50—70 ms (only for 160—400 A)	6
30—170 ms (only for 160—400 A)	7
210—250 ms (only for 160—400 A)	8
115—130 ms (only for 800 A)	1
190—210 ms (only for 800 A)	2
Auxiliary contact	
2NO—2NC	22
2NO—8NC (only for 160—400 A)	28
3NO—7NC (only for 160—400 A)	37
4NO—6NC (only for 160—400 A)	46
5NO—5NC (only for 160—400 A)	55
6NO—4NC (only for 160—400 A)	64
7NO—3NC (only for 160—400 A)	73
8NO—2NC (only for 160—400 A)	82
Mechanical latch ^①	
N/A	0
24 VDC coil	1
32 VDC coil (only for 160—400 A)	2
48 VDC coil	3
96—125 VDC coil (only for 800 A)	6
110/50,120/60 VDC coil	4
125 VDC coil (only for 160—400 A)	4
220/50,240/60 coil	5

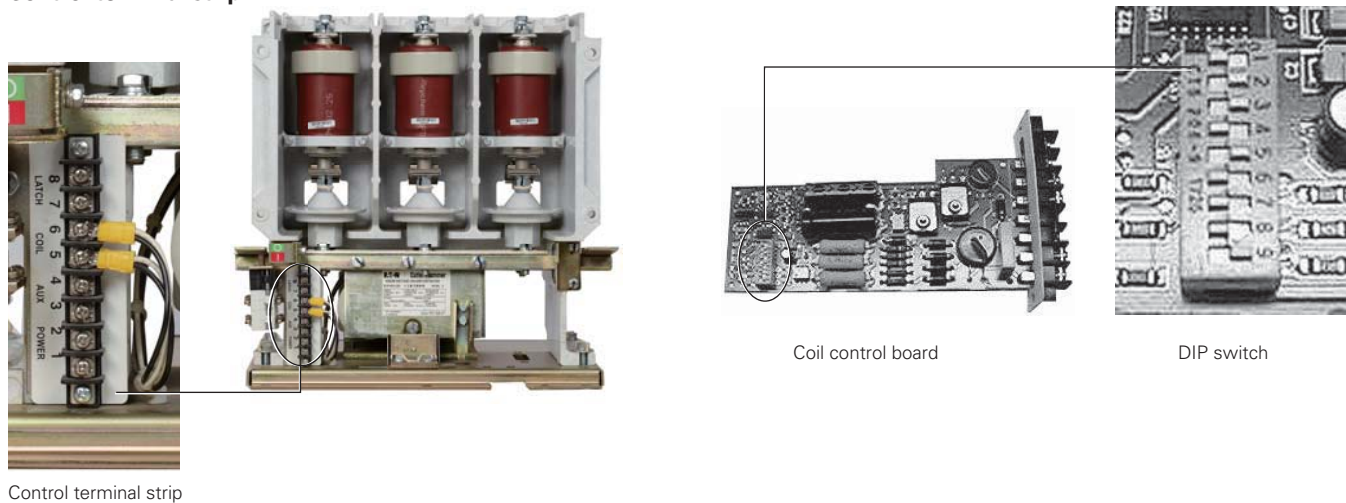
Fixed Type SL Medium Voltage Contactor

Medium voltage contactor component identification

SL range 160-400 A



Control terminal strip



Control terminal strip

Coil control board

DIP switch

Fixed Type SL Medium Voltage Contactor

Technical data of medium voltage contactors

SL range product ratings

160 A SL vacuum contactor ratings

Rated voltage	Breaking ratings			Application fields			Capacitor (A)①	Maximum Insulation voltage
	Without fuse	With fuse	Induction motor (kW)	Synchronous motor (kW) (0.8PF)	Synchronous motor (kW) (1.0PF)	Transformer		
2200 to 2500	4.5 kA	50 kA	450	450	600	600 kVA	120	7200
3000 to 3600	4.5 kA	50 kA	675	675	750	800 kVA		
3800 to 4800	4.5 kA	50 kA	900	900	1050	1000 kVA		
6000 to 6900	4.5 kA	50 kA	1350	1350	1650	1600 kVA		

Specification

Maximum breaking current

(3 operations) _____ 4500 A

Rated current _____ 160 A closed circuit

IE Closing and switching capacity - AC4

Closing _____ 1600 A

Switching _____ 1280 A

Short-time current

30s _____ 2400 A

1s _____ 6000 A

8.7ms (0.5 cycles) _____ 63kA peak value

Normal operation altitude _____ **-1000M to +2000M**

Mechanical life _____ **2,500,000operations**

Electrical life

Ac3 _____ 300,000 operations

Ac4 _____ 300,000 operations

Lightning surge _____ **60kV (1.2x50ms)**

Dielectric strength _____ **32kV RMS (1M)**

Closing time _____ **80ms**

(connected to contact pickup)

Switching time optional② _____ **30 - 300ms**

Arc time _____ **12ms (0.75 cycle) or less**

Starting voltage _____ **80% of rated coil voltage**

Tripping voltage _____ **60% of rated coil voltage**

Control voltage

AC/Hz _____ 110/50,120/60,220/50,240/60

DC _____ 125

Control circuit load

Closing 100 - 125V _____ 1kVA

200 - 240V _____ 1.8kVA

Keeping 100 - 125V _____ 40VA

200 - 240V _____ 50VA

Auxiliary contact ratings

Voltage max. _____ 600V

Current _____ 10 A

closing capacity (AC) _____ 7200VA

(DC) _____ 125VA

Switching capacity (AC) _____ 720VA

(DC) _____ 125VA

Latch (optional)

Mechanical life _____ 250,000 operations

Tripping voltage (DC) _____ 24V

(DC) _____ 125V

(AC) _____ 110/120V

Tripping voltage min. _____ 80 % of rated coil voltage

Tripping load _____ 400VA

Tripping time _____ 30ms

Weight _____ **21.4kg**

①Ratings are not applicable for back to back switching. Please consult with factories for how to use back to back switching.

②Approximate value. Please refer to Table 2 on Page 3 for detailed range.

Fixed Type SL Medium Voltage Contactor

200 A SL vacuum contactor ratings

Rated voltage	Breaking ratings			Application fields			Capacitor (A)①	Maximum Insulation voltage
	Without fuse	With fuse	Induction motor (kW)	Synchronous motor (kW)		Transformer		
				(0.8PF)	(1.0PF)			
2200 to 2500	4.5 kA	50 kA	600	600	750	750 kVA	150	7200
3000 to 3600	4.5 kA	50 kA	825	825	950	1000 kVA		
3800 to 4800	4.5 kA	50 kA	1100	1100	1300	1250 kVA		
6000 to 6900	4.5 kA	50 kA	1675	1675	2020	2000 kVA		

Specification

Maximum breaking current

(3 operations) _____ 4500 A

Rated current _____ 200 A closed circuit

IE Closing and switching capacity - AC4

Closing _____ 2000 A

Switching _____ 1600 A

Short-time current

30s _____ 2400 A

1s _____ 6000 A

8.7ms (0.5 cycles) _____ 63kA peak value

Normal operation altitude _____ **-1000M to +2000M**

Mechanical life _____ **2,500,000operations**

Electrical life

Ac3 _____ 300,000 operations

Ac4 _____ 300,000 operations

Lightning surge _____ **60kV (1.2x50ms)**

Dielectric strength _____ **32kV RMS (1M)**

Closing time _____ **80ms**

(connected to contact pickup)

Switching time optional② _____ **30 - 300ms**

Arc time _____ **12ms (0.75 cycle) or less**

Starting voltage _____ **80% of rated coil voltage**

Tripping voltage _____ **60% of rated coil voltage**

Control voltage

AC/Hz _____ 110/50,120/60,220/50,240/60

DC _____ 125

Control circuit load

Closing 100 - 125V _____ 1kVA

200 - 240V _____ 1.8kVA

Keeping 100 - 125V _____ 40VA

200 - 240V _____ 50VA

Auxiliary contact ratings

Voltage max. _____ 600V

Current _____ 10 A

closing capacity (AC) _____ 7200VA

(DC) _____ 125VA

Switching capacity (AC) _____ 720VA

(DC) _____ 125VA

Latch (optional)

Mechanical life _____ 250,000 operations

Tripping voltage (DC) _____ 24V

(DC) _____ 125V

(AC) _____ 110/120V

Tripping voltage min. _____ 80 % of rated coil voltage

Tripping load _____ 400VA

Tripping time _____ 30ms

Weight _____ **21.4kg**

①Ratings are not applicable for back to back switching. Please consult with factories for how to use back to back switching.

②Approximate value. Please refer to Table 2 on Page 3 for detailed range.

Fixed Type SL Medium Voltage Contactor

360 A SL vacuum contactor ratings

Rated voltage	Breaking ratings			Application fields			Capacitor (A)①	Maximum Insulation voltage
	Without fuse	With fuse	Induction motor (kW)	Synchronous motor (kW)		Transformer		
				(0.8PF)	(1.0PF)			
2200 to 2500	4.5 kA	50 kA	1100	1100	1300	1200 kVA	270	7200
3000 to 3600	4.5 kA	50 kA	1500	1500	1850	1600 kVA		
3800 to 4800	4.5 kA	50 kA	1850	1850	2250	2000 kVA		
6000 to 6900	4.5 kA	50 kA	3000	3000	3750	3200 kVA		

Specification

Maximum breaking current

(3 operations) _____ 4500 A

Rated current _____ 360 A closed circuit

IE Closing and switching capacity - AC4

Closing _____ 3600 A

Switching _____ 2880 A

Short-time current

30s _____ 2400 A

1s _____ 6000 A

8.7ms (0.5 cycles) _____ 63kA peak value

Normal operation altitude _____ **-1000M to +2000M**

Mechanical life _____ **2,500,000operations**

Electrical life

Ac3 _____ 300,000 operations

Ac4 _____ 300,000 operations

Lightning surge _____ **60kV (1.2x50ms)**

Dielectric strength _____ **32kV RMS (1M)**

Closing time _____ **80ms**

(connected to contact pickup)

Switching time optional② _____ **30 - 300ms**

Arc time _____ **12ms (0.75 cycle) or less**

Starting voltage _____ **80% of rated coil voltage**

Tripping voltage _____ **60% of rated coil voltage**

Control voltage

AC/Hz _____ 110/50,120/60,220/50,240/60

DC _____ 125

Control circuit load

Closing 100 - 125V _____ 1kVA

200 - 240V _____ 1.8kVA

Keeping 100 - 125V _____ 40VA

200 - 240V _____ 50VA

Auxiliary contact ratings

Voltage max. _____ 600V

Current _____ 10 A

closing capacity (AC) _____ 7200VA

(DC) _____ 125VA

Switching capacity (AC) _____ 720VA

(DC) _____ 125VA

Latch (optional)

Mechanical life _____ 250,000 operations

Tripping voltage (DC) _____ 24V

(DC) _____ 125V

(AC) _____ 110/120V

Tripping voltage min. _____ 80% of rated coil voltage

Tripping load _____ 400VA

Tripping time _____ 30ms

Weight _____ **21.4kg**

①Ratings are not applicable for back to back switching. Please consult with factories for how to use back to back switching.

②Approximate value. Please refer to Table 2 on Page 3 for detailed range.

Fixed Type SL Medium Voltage Contactor

400 A SL vacuum contactor ratings

Rated voltage	Breaking ratings			Application fields			Capacitor (A)①	Maximum Insulation voltage
	Without fuse	With fuse	Induction motor (kW)	Synchronous motor (kW)		Transformer		
				(0.8PF)	(1.0PF)			
2200 to 2500	4.5 kA	50 kA	1300	1300	1500	1500 kVA	295	7200
3000 to 3600	4.5 kA	50 kA	1675	1675	1850	2000 kVA		
3800 to 4800	4.5 kA	50 kA	2250	2250	2600	2500 kVA		
6000 to 6900	4.5 kA	50 kA	3350	3350	4100	4000 kVA		

Specification

Maximum breaking current

(3 operations) _____ 8500 A

Rated current _____ 400 A closed circuit

IE Closing and switching capacity - AC4

Closing _____ 4000 A

Switching _____ 3200 A

Short-time current

30s _____ 2400 A

1s _____ 6000 A

8.7ms (0.5 cycles) _____ 63kA peak value

Normal operation altitude _____ **-1000M to +2000M**

Mechanical life _____ **2,500,000operations**

Electrical life

Ac3 _____ 300,000 operations

Ac4 _____ 300,000 operations

Lightning surge _____ **60kV (1.2x50ms)**

Dielectric strength _____ **32kV RMS (1M)**

Closing time _____ **80ms**

(connected to contact pickup)

Switching time optional② _____ **30 - 300ms**

Arc time _____ **12ms (0.75 cycle) or less**

Starting voltage _____ **80% of rated coil voltage**

Tripping voltage _____ **60% of rated coil voltage**

Control voltage

AC/Hz _____ 110/50,120/60,220/50,240/60

DC _____ 125

Control circuit load

Closing 100 - 125V _____ 1kVA

200 - 240V _____ 1.8kVA

Keeping 100 - 125V _____ 40VA

200 - 240V _____ 50VA

Auxiliary contact ratings

Voltage max. _____ 600V

Current _____ 10 A

closing capacity (AC) _____ 7200VA

(DC) _____ 125VA

Switching capacity (AC) _____ 720VA

(DC) _____ 125VA

Latch (optional)

Mechanical life _____ 250,000 operations

Tripping voltage (DC) _____ 24V

(DC) _____ 125V

(AC) _____ 110/120V

Tripping voltage min. _____ 80 % of rated coil voltage

Tripping load _____ 400VA

Tripping time _____ 30ms

Weight _____ **22.2kg**

①Ratings are not applicable for back to back switching. Please consult with factories for how to use back to back switching.

②Approximate value. Please refer to Table 2 on Page 3 for detailed range.

Fixed Type SL Medium Voltage Contactor

800 A SL vacuum contactor ratings

Rated voltage	Breaking ratings		Induction motor (kW)	Application fields			Capacitor (A)①	Maximum Insulation voltage
	Without fuse	With fuse		Synchronous motor (kW)		Transformer		
				(0.8PF)	(1.0PF)			
2200 to 2500	13.2kA(50MVA)	50kA(2300V,200MVA)	2250	2250	2600	2500 kVA	550	7200
3000 to 3600	13.2kA(50MVA)	50kA(2300V,200MVA)	3000	3000	3750	3500 kVA		
3800 to 4800	13.2kA(50MVA)	50kA(2300V,200MVA)	3750	3750	4500	4500 kVA		
6000 to 6900	13.2kA(50MVA)	50kA(2300V,200MVA)	6000	6000	6000	6000 kVA		

Specification

Maximum breaking current

(3 operations) _____ 13200 A

Rated current _____ 800 A closed circuit

IE Closing and switching capacity - AC4

Closing _____ 8000 A

Switching _____ 6400 A

Short-time current

30s _____ 4320 A

1s _____ 10800 A

8.7ms (0.5 cycles) _____ 86kA peak value

Normal operation altitude _____ **-1000M to +2000M**

Mechanical life _____ **2,500,000operations**

Electrical life

Ac3 _____ 300,000 operations

Ac4 _____ 300,000 operations

Lightning surge _____ **60kV (1.2x50ms)**

Dielectric strength _____ **20kV RMS (1M)**

Closing time _____ **80ms**

(connected to contact pickup)

Switching time optional② _____ **30 - 300ms**

Arc time _____ **12ms (0.75 cycle) or less**

Starting voltage _____ **80% of rated coil voltage**

Tripping voltage _____ **60% of rated coil voltage**

Control voltage

AC/Hz _____ 110/50,120/60,220/50,240/60

DC _____ 125,250

Control circuit load

Closing 100-120VAC _____ 2600 VA

125VDC _____ 3000 VA

220-240VAC _____ 2800 VA

250VDC _____ 3200 VA

Keeping 100-125V _____ 50 VA

200-240V _____ 56 VA

220-240VAC _____ 52 VA

250VDC _____ 58 VA

Auxiliary contact ratings

Voltage max. _____ 600V

Current _____ 10 A

closing capacity (AC) _____ 7200VA

(DC) _____ 125VA

Switching capacity (AC) _____ 720VA

(DC) _____ 125VA

Latch optional

Mechanical life _____ 250,000 operations

Tripping voltage (DC) _____ 24V

(DC) _____ 125V

(AC) _____ 110/120V

Minimum tripping voltage _____ 80 % of rated coil voltage

Tripping load _____ 400VA

Tripping time _____ 30ms

Weight _____ 43.2kg

①Ratings are not applicable for back to back switching. Please consult with factories for how to use back to back switching.

②Approximate value. Please refer to Table 2 on Page 3 for detailed range.

Fixed Type SL Medium Voltage Contactor

Size and weight of medium voltage contactors

SL range: 160 - 400 A

160 - 400A equipments: front view and back view

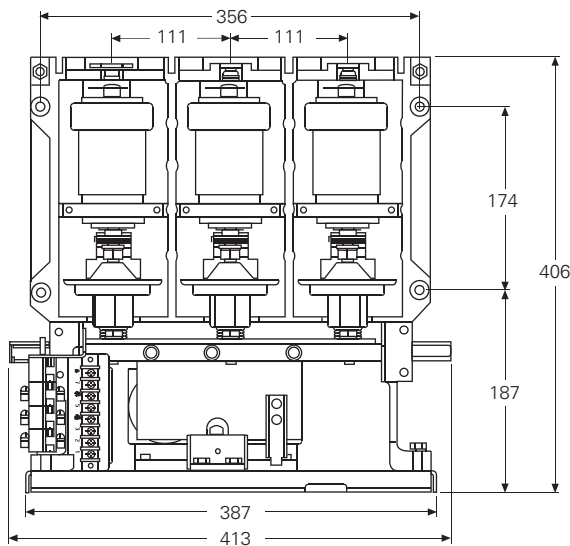


160 - 400 A equipment: front view

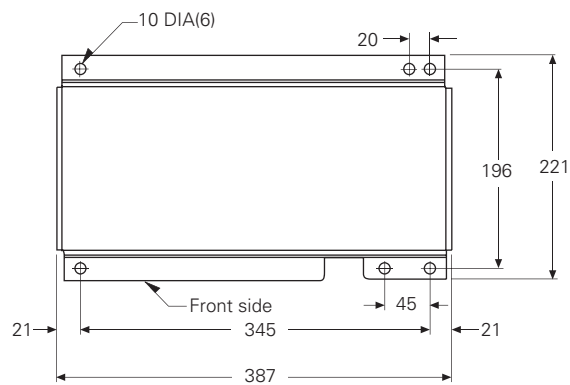


160 - 400 A equipment: back view

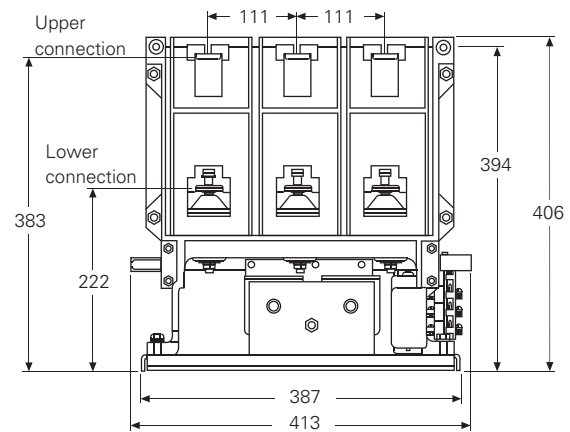
160 - 400 A equipment dimension diagram (mm)



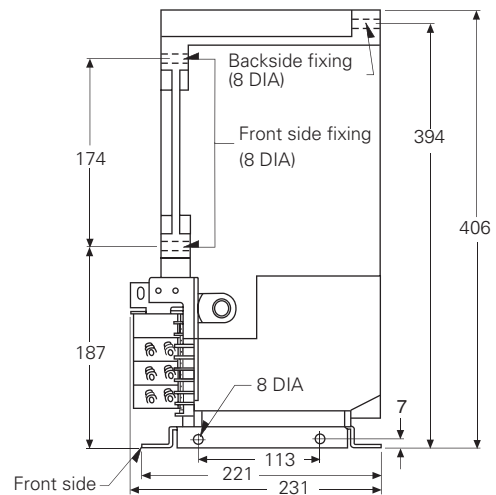
160 - 400 A equipment: front view dimensions



160 - 400 A equipment: pedestal size



160 - 400 A equipment: back view dimensions

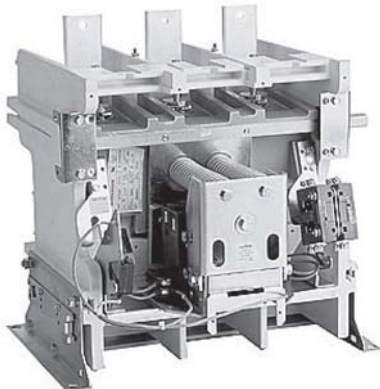


160 - 400 A equipment: side view dimensions

Fixed Type SL Medium Voltage Contactor

SL range: 800A

800A equipments: front view and back view

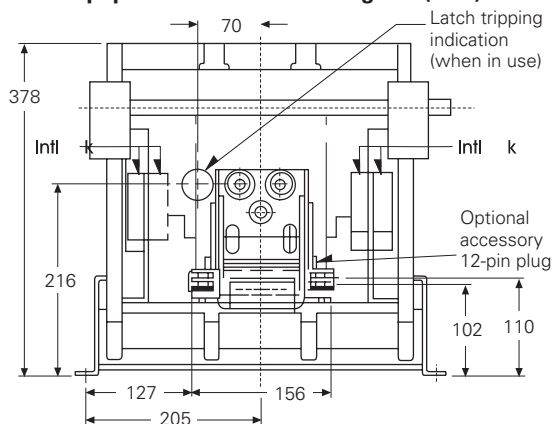


800 A equipment: front view

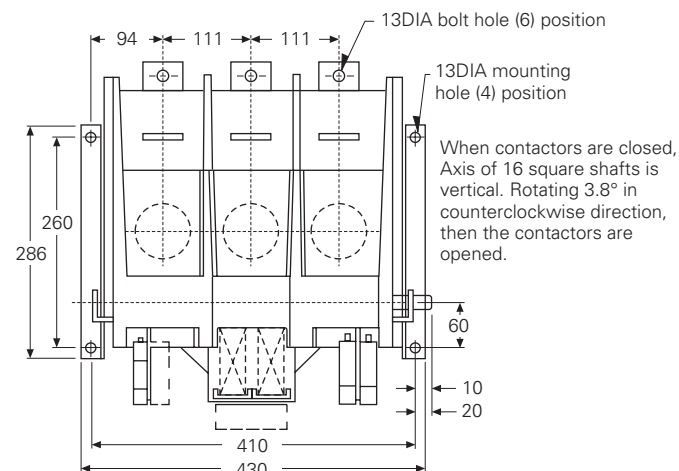


800 A equipment: back view

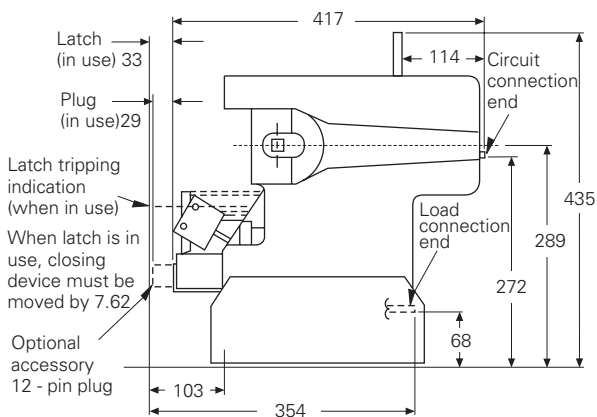
800 A equipment dimensional diagram (mm)



800 A equipment: front view dimensions



800 A equipment: top view dimensions

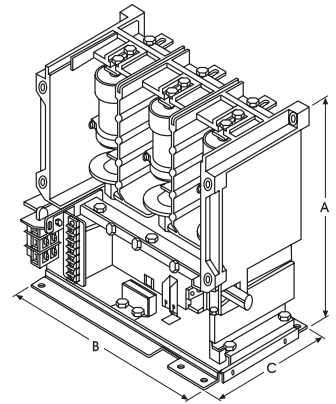


800 A equipment: side view dimensions

Fixed Type SL Medium Voltage Contactor

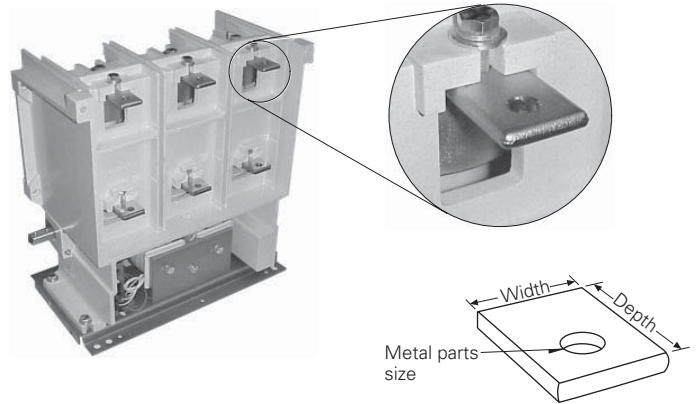
SL range products dimensions and weight

Current size	Mounting Catalogue	Length (A)		Width (B)		Height (C)		Weight	
		mm	foot	mm	foot	mm	foot	kg	pound
160	Control panel or pedestal	406	16.00	387	15.25	221	8.70	21.4	47
200	Control panel or pedestal	406	16.00	387	15.25	221	8.70	21.4	47
360	Control panel or pedestal	406	16.00	387	15.25	221	8.70	21.4	47
400	Control panel or pedestal	406	16.00	387	15.25	221	8.70	22.2	49
800	Control panel or pedestal	378	14.89	430	16.93	466	18.34	43.2	95

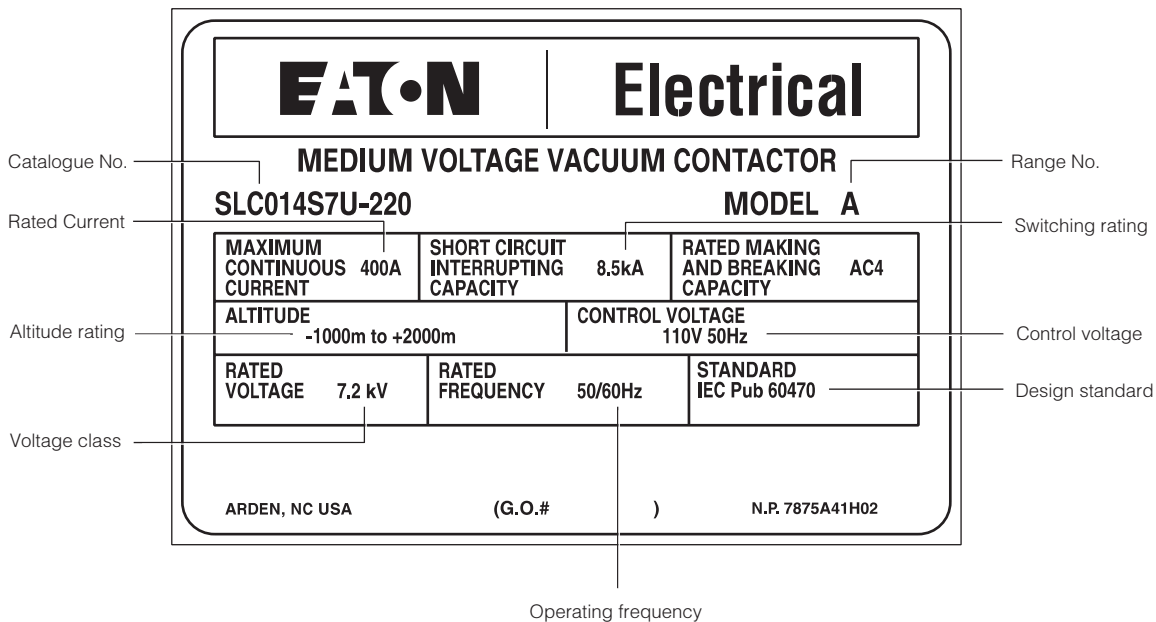


Primary connection terminal dimension

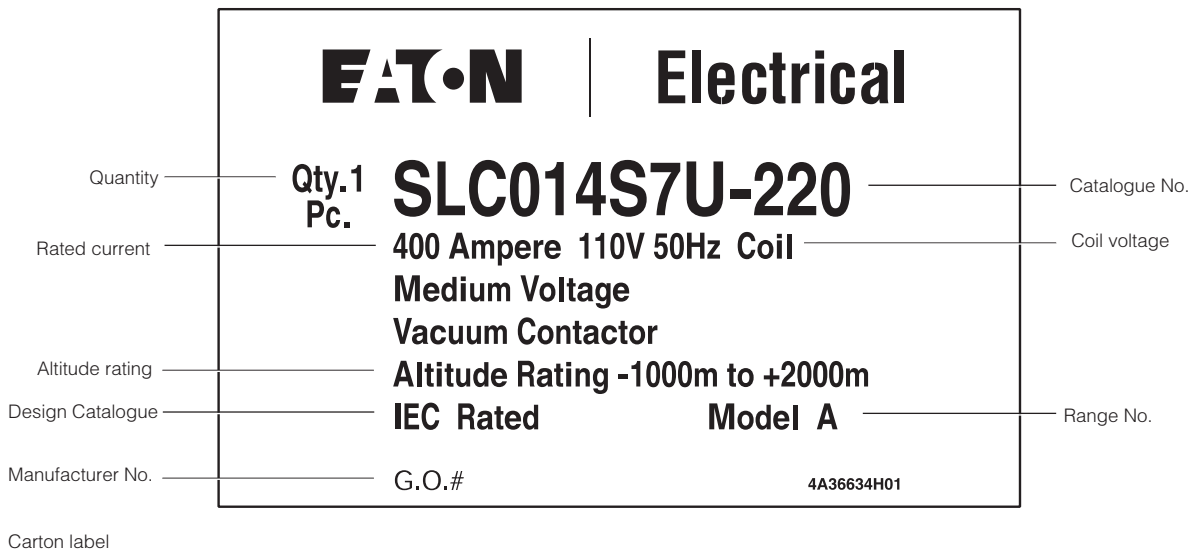
Contactor rated current	Width (mm)	Depth (mm)	Metal parts (bolt size,mm)
Upper connection terminal			
160	19.1	33.3	10
200	25.4	33.3	10
360	25.4	33.3	10
400	25.4	33.3	10
800	44.5	50.8	10
Lower connection terminal			
160	31.8	27.9	10
200	31.8	27.9	10
360	31.8	27.9	10
400	31.8	27.9	10
800	38.1	38.1	10



Label identification



Contactor label



Carton label

Fixed Type SL Medium Voltage Contactor

Fuse data

SL range fuse

Fuse list for SL contactor use

Motor FLA	Voltage	Recommended Eaton's fuse ^①	Rating	Minimum breaking time
SL-160				
11.0-18	2400-4800	449D597G01	30-1R	30
18-31		449D597G02	70-2R	30
31-46		449D597G03	100-3R	30
46-62		449D597G04	130-4R	30
62-74		449D597G05	150-5R	30
74-93		449D597G06	170-6R	30
93-137		151D933G01	200-9R	130
137-160		151D933G02	230-12R	130
11.0-34	5500-6900	151D963G01	70-2R	30
34-46		151D963G02	100-3R	30
46-56		151D963G03	130-4R	30
56-68		151D963G04	150-5R	30
68-85		151D963G05	170-6R	30
85-137		151D963G06	200-9R	60
137-160		151D963G07	230-12R	250
SL-200				
11.0-18	2400-4800	449D597G01	30-1R	30
18-31		449D597G02	70-2R	30
31-46		449D597G03	100-3R	30
46-62		449D597G04	130-4R	30
62-74		449D597G05	150-5R	30
74-93		449D597G06	170-6R	30
93-137		151D933G01	200-9R	130
137-200 ^②		151D933G02	230-12R	130
11.0-34	5500-6900	151D963G01	70-2R	30
34-46		151D963G02	100-3R	30
46-56		151D963G03	130-4R	30
56-68		151D963G04	150-5R	30
68-85		151D963G05	170-6R	30
85-137		151D963G06	200-9R	60
137-200		151D963G07	230-12R	250
SL-360				
11.0-18	2400-4800	449D597G01	30-1R	30
18-31		449D597G02	70-2R	30
31-46		449D597G03	100-3R	30
46-62		449D597G04	130-4R	30
62-74		449D597G05	150-5R	30
74-93		449D597G06	170-6R	30
93-137		151D933G01	200-9R	130
137-187		151D933G02	230-12R	130
187-200 ^②		151D933G02	230-12R	130
211-360		N/A		
11.0-34	5500-6900	151D963G01	70-2R	30
34-46		151D963G02	100-3R	30
46-56		151D963G03	130-4R	30
56-68		151D963G04	150-5R	30
68-85		151D963G05	170-6R	30
85-137		151D963G06	200-9R	30
137-200		151D963G07	230-12R	250
201-360		N/A		

Motor FLA	Voltage	Recommended Eaton's fuse ^①	Rating	Minimum breaking time
SL-400				
11.0-18	2400-4800	449D597G01	30-1R	30
18-31		449D597G02	70-2R	30
31-46		449D597G03	100-3R	30
46-62		449D597G04	130-4R	30
62-74		449D597G05	150-5R	30
74-93		449D597G06	170-6R	30
93-137		151D933G01	200-9R	30
137-187		151D933G02	230-12R	30
187-244		151D933G03	390-18R	60
244-360		151D933G04	450-24R	130
360-400 ^③		151D933G04	450-24R	130
11.0-34	5500-6900	151D963G01	70-2R	30
34-46		151D963G02	100-3R	30
46-56		151D963G03	130-4R	30
56-68		151D963G04	150-5R	30
68-85		151D963G05	170-6R	30
85-137		151D963G06	200-9R	30
137-187		151D963G07	230-12R	30
187-273		151D963G10	230-12R	60
273-400		151D963G11	230-12R	250
SL-800^④				
225-360	2400-4800	Consulting firms	450-24R	-
360-449		Consulting firms	650-36R	-
450-720		Consulting firms	800-44R	-
225-400	5500-6900	Consulting firms	450-24R	-
400-449		Consulting firms	650-36R	-
450-720		Consulting firms	800-44R	-

Note: The selection of fuse is based on below equation: $LRC = FLA \times 6$. Unless otherwise stated, acceleration time is set as 10 S.

①ANSI/NEMA fuses. Special installation configuration. Please consult with factories for more information.

②For fuse with FLA>180, the maximum acceleration speed is 4.5 S

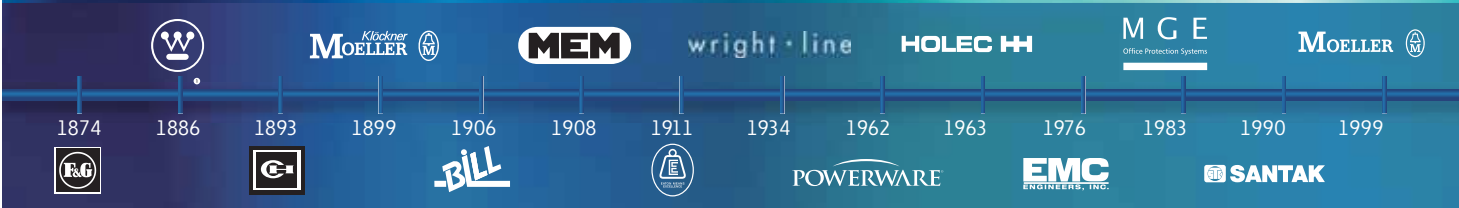
③For fuse with FLA>360, the maximum acceleration speed is 6 S

④Based on Ampgard fuse chuck design. Please consult with production factories when installing on site.

EAT•N

The power of fusion.

Brand inception dates:



EAT•N

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Eaton Electrical Sector

Moeller Electric (SH) Co. Ltd
Building 3, 280 Nong, Linhong Road, Changning district, Shanghai
Tel: 0086-21-52000099
Fax: 0086-21-52000101/52000102
Postcode:200335
Internet: www.eaton.com
Fixed Catalogue SL-EN (11-2011)



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Customer service center
Contact: 800-988-1203
Working hour: 09:00-17:00 (Monday till Friday)
Email: CustomerServicePDCNA@eaton.com