

# Emax Air Circuit Breaker Electrical Specifications

Description			
Voltages	Rated Service Voltage	Ue [V]	690(ac) 250(dc)
	Rated Insulation Voltage	Ui [V]	1000
	Rated Impulse Voltage	Uimp [kV]	12

Temperature	Service	°C	-5...+70
	Storage	°C	-40...+70

Performance Level			
Rated uninterrupted current @ 40°C	lu	[A]	
		[A]	
		[A]	
		[A]	
		[A]	

Capacity of neutral on 4 pole breakers	% lu		
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Rated ultimate short circuit breaking capacity		l <sub>cu</sub>
220/230/380/400/415 Vac	[kA]	
440 Vac	[kA]	
500/660/690 Vac	[kA]	
250Vdc	[kA]	

Rated duty short circuit breaking capacity		l <sub>cs</sub>
220/230/380/400/415 Vac	[kA]	
440 Vac	[kA]	
500/660/690 Vac	[kA]	
250 Vdc	[kA]	

Rated short time withstand current		l <sub>cw</sub>
1 sec	[kA]	
3 secs	[kA]	

Rated short circuit making capacity		l <sub>cm</sub>
220/230/380/400/415 Vac	[kA]	
440 Vac	[kA]	
500/600/690 Vac	[kA]	

Utilisation category (according to BS EN 60947-2)			
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Microprocessor-based releases for a.c. applications operating time		
Closing time (max)	[mS]	
Break time for I < l <sub>cw</sub> (max)	[mS]	
Break time for I > l <sub>cw</sub> (max)	[mS]	

Dimensions		
Fixed (H=418mm D=302mm W=3/4 pole)	[mm]	
Drawout (H=461mm D=396.5mm W=3/4 pole)	[mm]	

Weight		
Fixed 3/4 pole	[kg]	
Drawout 3/4 pole	[kg]	

Rated uninterrupted current @ 40°C		
lu	[A]	
Mechanical Life (with routine maintenance)	[ops x 1000]	
Frequency	[No. ops per Hr]	
Electrical Life	[ops x 1000]	
Frequency	[No. ops per Hr]	



E1	E2		
	N	B	L
800	1600	1250	1250
1250	2000	1600	1600
-	-	2000	-
-	-	-	-
-	-	-	-
100%		100%	
50	42	65	130
50	42	65	110
36	42	55	85
36	40	55	-
50	42	65	130
50	42	65	110
36	42	55	65
36	42	55	-
50	42	55	10
36	42	42	-
105	88.2	143	286
105	88.2	143	242
75.6	88.2	121	187
B	B	B	A
80	80	80	80
70	70	70	70
30	30	30	12
296/386		296/386	
324/414		324/414	
45/54	50/61	50/61	52/63
70/82	78/93	78/93	80/95
800/1250	1250	1600	2000
25	25(B-N) 10(L)	25(B-N) 20(L)	25
60	60	60	60
10	15(B-N) 4(L)	12(B-N) 3(L)	10
30	30	30	30

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### E3

N	S	H/b	H	L
2500	1250	1250	1250	2000
3200	1600	1600	1600	2500
-	2000	2000	2000	-
-	2500	2500	2500	-
-	3200	3200	3200	-
100%				
65	75	80	100	130
65	75	80	100	110
65	75	75	85	85
65	75	75	75	-
65	75	80	85	130
65	75	80	85	110
65	75	75	85	65
65	75	75	75	-
65	75	80	75	15
65	65	-	65	-
143	165	176	220	286
143	165	176	220	242
143	165	165	187	187
B	B	B	B	A
80	80	80	80	80
70	70	70	70	70
30	30	30	30	12
		404/530		
		432/558		
66/80	66/80	66/80	66/80	72/83
104/125	104/125	104/125	104/125	110/127
1250	1600	2000	2500	3200
20	20	20(N-S-H) 15(L)	20(N-S-H) 15(L)	20
60	60	60	60	60
12	10	9(N-S-H) 2(L)	8(N-S-H) 1.8(L)	6
20	20	20	20	20

### E4

S	S/f	H
4000	3200	3200
-	4000	4000
-	-	-
-	-	-
-	-	-
50% 100% 50%		
75	80	100
75	80	100
75	75	85
75	75	100
75	80	100
75	80	100
75	75	85
75	75	100
75	80	100
75	-	75
165	176	220
165	176	220
165	165	187
B	B	B
80	80	80
70	70	70
30	30	30
556/656	757*	556/656
594/684	778*	594/684
97/117	132*	97/117
147/165	211*	147/165

### E6

H	H/f
5000	5000
6300	6300
-	-
-	-
-	-
50% 100%	
100	100
100	100
100	100
100	100
100	100
100	100
100	100
100	100
100	100
85	-
220	220
220	220
220	220
B	B
80	80
70	70
30	30
782/908	1045*
810/936	1062*
140/160	193*
210/240	295*
3200	4000
12	12
60	60
5	4
10	10

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# Emax Air Circuit Breakers

## Microprocessor-based overcurrent releases

General specifications of the microprocessor-based releases include:

- operation without the need for an external power supply
- microprocessor technology (8-bit for SACE PR111 and 16-bit for SACE PR112 and PR113)
- high precision
- sensitivity to the true r.m.s. value of the current
- interchangeability among all types of releases
- setting for neutral normally 50% of setting phases, with possibility of setting it to 100% (on request only for circuit -breakers E1, E2, E3 standard and £4/f, E6/f full size versions).

For the release PR113, it is also possible to select neutral protection at 150% and 200% of the rated current of the phases, if compatible with the setting of the current transformers.  
The main performance features of the releases are listed in the tables below.

### SACE PR111



	PR111/P	PR111/P	PR111/P
Protection	<b>L S I G</b>	<b>L S I</b>	<b>L I</b>

### SACE PR112



	PR112/P	PR112/P		
Protection	<b>L S I G</b>	<b>L S I</b>		
	PR112/PD	PR112/PD	PR112/PD	PR112/PD
Protection & Communication	Modbus	Modbus	LON	LON
	<b>L S I G</b>	<b>L S I</b>	<b>L S I G</b>	<b>L S I</b>

### SACE PR113



	PR113/P									
Protection	<b>L S I G</b>	D	U	OT	UV	OV	RV	RP	M	
	PR113/PD									
Protection & Communication	Modbus	<b>L S I G</b>	D	U	OT	UV	OV	RV	RP	M

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# Emax Air Circuit Breakers

## Microprocessor-based overcurrent releases

Protection Functions	PR111	PR112	PR113
<b>L</b> Inverse long time-delay trip overload protection Adjustable-slope curve (IEC 60255-3)	■	■	■
<b>S</b> Selective short-circuit protection with inverse or definite short time-delay trip	■	■	■
<b>I</b> Instantaneous short-circuit protection with adjustable trip current threshold	■	■	■
<b>G</b> Earth fault protection	■	■	■
		■	■
	residual (internal sensor)		
	source ground return (external sensor)		
<b>D</b> Directional short-circuit protection with adjustable delay			■
<b>U</b> Protection against phase unbalance			■
<b>OT</b> Protection against over temperature		■	■
<b>OV</b> Undervoltage and overvoltage protection			■
<b>RV</b> Residual voltage protection / neutral displacement protection			■
<b>RP</b> Reverse power protection			■
<b>M</b> Thermal memory for L and S functions		■	■
<b>Measurements</b>			
Currents (phases, neutral, earth fault)		■	■
Voltage (phase-phase, phase-neutral, residual)			■
Power (active, reactive, apparent)			■
Power factor		■	
Frequency and peak factor			■
Energy (active, reactive, apparent, counter)			■
Harmonics calculation (displays waveform and module of the harmonics)			■
<b>Maintenance events and data</b>			
Events stored in chronological order		■	■
Counting number of operations and contact wear		■	■
<b>Communication with centralized supervision and control system</b>			
Remote setting of parameters for protection functions, unit configuration and communication	■	■	
Transmission of measurements, states and alarms from circuit-breaker to system		■	■
Transmission of maintenance events and data from circuit-breaker to system		■	■
<b>Self-test</b>			
Alarm and tripping for release overtemperature		■	■
Alarm for microprocessor fault		■	■
<b>User interface</b>			
Parameters set using DIP switches	■		
Parameters set using keys and liquid crystal display		■	■
Alarm signals for L, S, I and G functions		■	■
Alarm signalling one of the following protections: undervoltage, overvoltage, residual voltage, reverse power			■
Imbalance phase and overtemperature signal		■	■
Complete management of pre-alarms and alarms for all protection and self monitoring functions	■	■	
Password for use with "READ" or "EDIT" mode		■	■
<b>Load control</b>			
Connection-disconnection of loads in relation to the current flowing through the circuit breaker	■	■	
<b>Zone selectivity</b>			
May be activated for protection functions S or G		■	
May be activated for protection functions S, G or D			■
<b>Number of programmable contacts</b>		1	2
<b>Start-up function S, D, I and G</b>			■

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# Emax Air Circuit Breakers

## Automatic circuit-breakers with full-size neutral conductor



The Emax range of automatic circuit-breakers with full size neutral conductor is used in special applications where the presence of triple-N harmonics on individual phases may lead to a very high current on the neutral conductor.

Typical applications include installations with loads having high harmonics distortions (computers and electronic devices in general), lighting systems with a large number of fluorescent lamps, systems with inverters and rectifiers, UPS, systems for adjusting the speed of electric motors.

This range includes standard circuit-breakers with full-size neutral conductor in sizes E1, E2, E3.

Models E4 and E6 are available in the “full size” version up to rated currents of 6300A. Models E4/f and E6/f are available in fixed and withdrawable four-pole versions. These models may be fitted with all accessories available of the Emax range; the exception, on the E6/f model, are the mechanical interlocks made using flexible wires and 15 external auxiliary contacts, which are therefore incompatible.

All the models may be fitted with all available version of electronic protection relays, in the standard version.

		E4S/f	E6H/f	
Rated uninterrupted current (at 40°C) $I_u$	[A]	4000	5000	
	[A]		6300	
Number of poles		4	4	
Rated service voltage $U_e$	[V~]	690	690	
Rated ultimate short-circuit breaking capacity $I_{cu}$				
	220/230/380/400/415 V ~	[kA]	80	100
	440 V ~	[kA]	80	100
	500/660/690 V ~	[kA]	75	100
Rated service short-circuit breaking capacity $I_{cs}$				
	220/230/380/400/415 V ~	[kA]	80	100
	440 V ~	[kA]	80	100
	500/660/690 V ~	[kA]	75	100
Rated short-time withstand current $I_{cw}$				
	(1s)	[kA]	80	100
	(3s)	[kA]	75	85
Rated short-circuit making capacity (peak value) $I_{cm}$	[kA]	176	220	
Application category (in accordance with IEC 60947-2)		B	B	
Isolation behavior (in accordance with IEC 60947-2)		■	■	
<b>Overall dimensions</b>				
	Fixed: H= 418mm - D= 302mm L	[mm]	746	1034
	Withdrawable: H=461 - D= 396.5mm L	[mm]	774	1062
<b>Weights (circuit-breaker complete with releases and CT, not including accessories)</b>				
	Fixed	[kg]	120	165
	Withdrawable (including fixed part)	[kg]	170	250

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# Emax Air Circuit Breakers

## Switch-disconnectors



The switch-disconnectors are derived from the corresponding automatic circuit-breakers, of which they maintain the overall dimensions and the possibility of mounting accessories.

This version differs from the automatic circuit-breakers only in the absence of overcurrent releases.

The circuit-breaker is available in both fixed and withdrawable versions, three-pole and four-pole. The switch-disconnectors, identified by the label "/MS", may be used according to the category of use AC-23A (switching motor loads or other highly inductive loads) in accordance with the standard IEC 60947-3. The electrical specifications of the switch-disconnectors are listed below.

		E1B/MS	E1N/MS	E2B/MS	E2N/MS	E3N/MS	E3S/MS	E4S/MS	E4S/fMS	E4H/MS	E6H/MS	E6H/fMS
Rated uninterrupted current (at 40°C) I <sub>u</sub>	[A]	800	800	1600	1250	2500	1250	4000	4000	3200	5000	5000
	[A]	1250	1250	2000	1600	3200	1600	-	-	4000	6300	6300
	[A]	-	-	-	2000	-	2000	-	-	-	-	-
	[A]	-	-	-	-	-	2500	-	-	-	-	-
	[A]	-	-	-	-	-	3200	-	-	-	-	-
Rated service voltage U <sub>e</sub>	[V ~]	690	690	690	690	690	690	690	690	690	690	690
	[V ~]	250	250	250	250	250	250	250	250	250	250	250
Rated insulation voltage U <sub>i</sub>	[V ~]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated impulse withstand voltage U <sub>imp</sub>	[kV]	12	12	12	12	12	12	12	12	12	12	12
Rated short-time withstand current I <sub>cw</sub>	(1s) [kA]	36	50	42	55	65	75	75	80	100	100	100
	(3s) [kA]	36	36	42	42	65	65	75	75	75	85	85
Rated short-circuit making capacity (peak value) I <sub>CM</sub>												
220/230/380/400/415/440 V ~	[kA]	75.6	105	88.2	121	143	165	165	176	220	220	220
500/660/690 V ~	[kA]	75.6	75.6	88.2	121	143	165	165	165	187	220	220

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# Emax Air Circuit Breakers

## Emax E1 - Fixed Rear Horizontal Terminals



### Ratings @ 415V

	I <sub>cu</sub>	I <sub>cs</sub>	I <sub>cw</sub> (1sec)
E1N	50kA	50kA	50kA

### With Rear Horizontal Terminals

Ordering example: place five digit code below into order reference eg 1SDA0 39676 R1  
 For version with FULLY RATED NEUTRAL, add /FRN to order reference  
 eg 1SDA0 39676R1/FRN

I <sub>cu</sub> (415V)	Model	Current (A) I <sub>th</sub>	Protection	Non Automatic		PR111 1SDA0□□□□□R1		PR112	
				3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole
42kA	E1N 08	800A	LI	53803	53804	-	-	-	-
			LSI	-	-	53754	53761	53757	53763
			LSIG	-	-	53755	53762	53758	53764
42kA	E1N 12	1250A	LI	53805	53806	-	-	-	-
			LSI	-	-	53767	53773	53769	53775
			LSIG	-	-	53768	53774	53770	53776

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# Emax Air Circuit Breakers

## Emax E1 - Drawout



### Ratings @ 415V

	Icu	Ics	Icw (1sec)
E1N	50kA	50kA	50kA

### Moving Portions

Ordering example: place five digit code below into order reference eg 1SDA0 39676 R1  
 For version with FULLY RATED NEUTRAL, add /FRN to order reference  
 eg 1SDA0 39676R1/FRN

Icu (415V)	Model	Current (A) I <sub>th</sub>	Protection	Non Automatic		PR111 1SDA0□□□□R1		PR112	
				3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole
42kA	E1N 08	800A	LI	53807	53808	-	-	-	-
			LSI	-	-	53780	53786	53782	53788
			LSIG	-	-	53781	53787	53783	53789
42kA	E1N 12	1250A	LI	53809	53810	-	-	-	-
			LSI	-	-	53792	53798	53794	53800
			LSIG	-	-	53793	53799	53795	53801

Refer to sales office for breakers fitted with PR113 release

### Fixed Portions

Ordering example: place five digit code below into order reference eg 1SDA0 39676 R1  
 Front, Flat and mixed terminal versions available on request, refer to technical catalogue

### Terminal type

	1SDA0□□□□R1	
	3 pole	4pole
Rear Horizontal	37821	37826
Rear Vertical	37872	37877

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# Emax Air Circuit Breakers

## Emax E2 - Fixed Rear Horizontal Terminals



### Ratings @ 415V

	Icu	Ics	Icw (1sec)
E2N	65kA	65kA	55kA
E2L	130kA	130kA	10kA

### With Rear Horizontal Terminals

Ordering example: place five digit code below into order reference eg 1SDA0 39676 R1  
For version with FULLY RATED NEUTRAL, add /FRN to order reference  
eg 1SDA0 39676R1/FRN

Icu (415V)	Model	Current (A) I <sub>th</sub>	Protection	Non-Automatic		PR111 1SDA0□□□□R1		PR112	
				3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole
65kA	E2N 12	800A	MS	n/a	n/a	-	-	-	-
			LSI	-	-	39676	39791	39684	39799
			LSIG	-	-	39680	39795	39688	39803
65kA	E2N12	1250A	MS	37531	37559	-	-	-	-
			LSI	-	-	39677	39792	39685	39800
			LSIG	-	-	39681	39796	39689	39803
65kA	E2N 16	1600A	MS	37532	37560	-	-	-	-
			LSI	-	-	39906	39994	39912	40000
			LSIG	-	-	39909	39997	39915	40003
65kA	E2N 20	2000A	MS	37533	37561	-	-	-	-
			LSI	-	-	40082	40170	40088	40176
			LSIG	-	-	40085	40173	40091	40091
130kA	E2L 12	1250A	MS	n/a	n/a	-	-	-	-
			LSI	-	-	43394	40341	43402	40349
			LSIG	-	-	43398	40345	43406	40353
130kA	E2L 16	1600A	MS	n/a	n/a	-	-	-	-
			LSI	-	-	40455	40543	40461	40549
			LSIG	-	-	40458	40546	40464	40552

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# Emax Air Circuit Breakers

## Emax E2 - Drawout



### Ratings @ 415V

	Icu	Ics	Icw (1sec)
E2N	65kA	65kA	55kA
E2L	130kA	130kA	10kA

Refer to sales office for breakers fitted with PR113 release

### Fixed Portions

Ordering example: place five digit code below into order reference eg 1SDA0 39676 R1  
Front, Flat and mixed terminal versions available on request, refer to technical catalogue

### Terminal type

	1SDA0□□□□R1	
	3 pole	4pole
Rear Horizontal	37822	37827
Rear Vertical	37873	37886

### Moving Portions

Ordering example: place five digit code below into order reference eg 1SDA0 39676 R1  
For version with FULLY RATED NEUTRAL, add /FRN to order reference  
eg 1SDA0 39676R1/FRN

Icu (415V)	Model	Current (A) I <sub>n</sub>	Protection	Non-Automatic		PR111 1SDA0□□□□R1		PR112	
				3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole
65kA	E2N 12	800A	MS	n/a	n/a	-	-	-	-
			LSI	-	-	39762	39878	39770	39886
			LSIG	-	-	39766	39882	39774	39890
65kA	E2N 12	1250A	MS	37648	37652	-	-	-	-
			LSI	-	-	39763	39879	39771	39887
			LSIG	-	-	39767	39883	39775	39891
65kA	E2N 16	1600A	MS	37647	37651	-	-	-	-
			LSI	-	-	39972	40060	39978	40066
			LSIG	-	-	39975	40064	39981	40069
65kA	E2N 20	2000A	MS	37649	37650	-	-	-	-
			LSI	-	-	40148	40214	40154	40220
			LSIG	-	-	40151	40217	40157	40223
130kA	E2L 12	1250A	MS	n/a	n/a	-	-	-	-
			LSI	-	-	40296	40428	40304	40436
			LSIG	-	-	40300	40432	40308	40440
130kA	E2L 16	1600A	MS	n/a	n/a	-	-	-	-
			LSI	-	-	40521	40609	40527	40615
			LSIG	-	-	40524	40612	40530	40618

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# Emax Air Circuit Breakers

## Emax E3N, S - Fixed Rear Horizontal Terminals



### Ratings @ 415V

	Icu	Ics	Icw (1sec)
E3N	65kA	65kA	65kA
E3S	75kA	75kA	75kA

### With Rear Horizontal Terminals

Ordering example: place five digit code below into order reference eg 1SDA0 39676 R1  
For version with FULLY RATED NEUTRAL, add /FRN to order reference  
eg 1SDA0 39676R1/FRN

Icu (415V)	Model	Current (A) I <sub>n</sub>	Protection	Non-Automatic		PR111 1SDA0□□□□□R1		PR112	
				3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole
65kA	E3N 25	2500A	MS	-	-	-	-	-	-
			LSI	-	-	40651	40711	40655	40715
			LSIG	-	-	41653	41713	40657	40717
65kA	E3N 32	3200A	MS	-	-	-	-	-	-
			LSI	-	-	40786	43375	40790	43379
			LSIG	-	-	40788	43377	40792	43381
75kA	E3S 12	1250A	MS	-	-	-	-	-	-
			LSI	-	-	40891	40951	40895	40955
			LSIG	-	-	40893	40953	40897	40957
75kA	E3S 16	1600A	MS	-	-	-	-	-	-
			LSI	-	-	41011	41071	41015	41075
			LSIG	-	-	41013	41073	41017	41077
75kA	E3S 20	2000A	MS	-	-	-	-	-	-
			LSI	-	-	41131	41191	41135	41195
			LSIG	-	-	41133	41193	41137	41197
75kA	E3S 25	2500A	MS	-	-	-	-	-	-
			LSI	-	-	41251	41311	41255	41315
			LSIG	-	-	41253	41313	41257	41317
75kA	E3S 32	3200A	MS	-	-	-	-	-	-
			LSI	-	-	41371	41431	41375	41435
			LSIG	-	-	41373	41933	41377	41437

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# Emax Air Circuit Breakers

## Emax E3H/b, H, L - Fixed Rear Horizontal Terminals



### Ratings @ 415V

	Icu	Ics	Icw (1sec)
E3H/b	80kA	80kA	80kA
E3H	100kA	85kA	75kA
E3L	130kA	130kA	15kA

### With Rear Horizontal Terminals

Ordering example: place five digit code below into order reference eg 1SDA0 39676 R1  
For version with FULLY RATED NEUTRAL, add /FRN to order reference  
eg 1SDA0 39676R1/FRN

Icu (415V)	Model	Current (A) I <sub>n</sub>	Protection	Non-Automatic		PR111 1SDA0□□□□□R1		PR112	
				3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole
80kA	E3H/b 12	1250A	MS	TBC	TBC				
			LSI			TBC	TBC	TBC	TBC
			LSIG			TBC	TBC	TBC	TBC
80kA	E3H/b 16	1600A	MS	TBC	TBC				
			LSI			TBC	TBC	TBC	TBC
			LSIG			TBC	TBC	TBC	TBC
80kA	E3H/b 20	2000A	MS	TBC	TBC				
			LSI			TBC	TBC	TBC	TBC
			LSIG			TBC	TBC	TBC	TBC
80kA	E3H/b 25	2500A	MS	TBC	TBC				
			LSI			TBC	TBC	TBC	TBC
			LSIG			TBC	TBC	TBC	TBC
80kA	E3H/b 32	3200A	MS	TBC	TBC				
			LSI			TBC	TBC	TBC	TBC
			LSIG			TBC	TBC	TBC	TBC
100kA	E3H 12	1250A	MS	-	-				
			LSI	-	-	41491	41551	41495	41555
			LSIG	-	-	41493	41553	41497	41557
100kA	E3H 16	1600A	MS	-	-				
			LSI	-	-	41611	41671	41615	41675
			LSIG	-	-	41613	41673	41617	41677
100kA	E3H 20	2000A	MS	-	-				
			LSI	-	-	41731	41791	41735	41795
			LSIG	-	-	41733	41793	41737	41797
100kA	E3H 25	2500A	MS	-	-				
			LSI	-	-	41851	41911	41855	41915
			LSIG	-	-	41853	41913	41857	41917
100kA	E3H 32	3200A	MS	-	-				
			LSI	-	-	41971	42031	41975	42035
			LSIG	-	-	41973	42033	41977	42037
130kA	E3L 20	2000A	MS	-	-				
			LSI	-	-	42091	42151	42095	42155
			LSIG	-	-	42093	42153	42097	42157
130kA	E3L 25	2500A	MS	-	-				
			LSI	-	-	42211	42271	42215	42275
			LSI	-	-	42213	42273	42217	42277

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# Emax Air Circuit Breakers

## Emax E3N, S - Drawout



### Ratings @ 415V

	Icu	Ics	Icw (1sec)
E3N	65kA	65kA	65kA
E3S	75kA	75kA	75kA

Refer to sales office for breakers fitted with PR113 release

### Fixed Portions

Ordering example: place five digit code below into order reference eg 1SDA0 39676 R1  
Front, Flat and mixed terminal versions available on request, refer to technical catalogue

### Terminal type

	1SDA0□□□□□R1	
	3 pole	4pole
Rear Horizontal	37822	37827
Rear Vertical	37873	37886

### Moving Portions

Ordering example: place five digit code below into order reference eg 1SDA0 39676 R1  
For version with FULLY RATED NEUTRAL, add /FRN to order reference eg 1SDA0 39676R1/FRN

Icu (415V)	Model	Current (A) I <sub>n</sub>	Protection	Non-Automatic		PR111 1SDA0□□□□□R1		PR112	
				3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole
65kA	E3N 25	2500A	MS	37656	37653	-	-	-	-
			LSI	-	-	40696	40756	40700	40760
			LSIG	-	-	40698	40758	40702	40762
65kA	E3N 32	3200A	MS	37655	37654	-	-	-	-
			LSI	-	-	40831	40876	40835	40880
			LSIG	-	-	40833	40878	40837	40882
75kA	E3S 12	1250A	MS	37657	37664	-	-	-	-
			LSI	-	-	40936	40996	40940	41000
			LSIG	-	-	40938	40998	40942	41002
75kA	E3S 16	1600A	MS	37660	37665	-	-	-	-
			LSI	-	-	41056	41116	41060	41120
			LSIG	-	-	41058	41118	41062	41122
75kA	E3S 20	2000A	MS	37658	37666	-	-	-	-
			LSI	-	-	41176	41236	41180	41240
			LSIG	-	-	41178	41238	41182	41242
75kA	E3S 25	2500A	MS	37661	37662	-	-	-	-
			LSI	-	-	41296	41356	41300	41360
			LSIG	-	-	41298	41358	41302	41362
75kA	E3S 32	3200A	MS	37659	37663	-	-	-	-
			LSI	-	-	41416	41476	41420	41480
			LSIG	-	-	41418	41478	41422	41482

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# Emax Air Circuit Breakers

## Emax E3H/b, H, L Drawout



### Ratings @ 415V

	Icu	Ics	Icw (1sec)
E3H/b	80kA	80kA	80kA
E3H	100kA	85kA	75kA
E3L	130kA	130kA	15kA

Refer to sales office for breakers fitted with PR113 release

Fixed Portions - Refer to page ????

### Moving Portions

Ordering example: place five digit code below into order reference eg 1SDA0 39676 R1  
For version with FULLY RATED NEUTRAL, add /FRN to order reference  
eg 1SDA0 39676R1/FRN

Icu (415V)	Model	Current (A) I <sub>n</sub>	Protection	Non-Automatic		PR111 1SDA0□□□□R1		PR112	
				3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole
80kA	E3H/b 12	1250A	MS	TBC	TBC				
			LSI			TBC	TBC	TBC	TBC
			LSIG			TBC	TBC	TBC	TBC
80kA	E3H/b 16	1600A	MS	TBC	TBC				
			LSI			TBC	TBC	TBC	TBC
			LSIG			TBC	TBC	TBC	TBC
80kA	E3H/b 20	2000A	MS	TBC	TBC				
			LSI			TBC	TBC	TBC	TBC
			LSIG			TBC	TBC	TBC	TBC
80kA	E3H/b 25	2500A	MS	TBC	TBC				
			LSI			TBC	TBC	TBC	TBC
			LSIG			TBC	TBC	TBC	TBC
80kA	E3H/b 32	3200A	MS	TBC	TBC				
			LSI			TBC	TBC	TBC	TBC
			LSIG			TBC	TBC	TBC	TBC
100kA	E3H 12	1250A	MS	-	-	-	-	-	-
			LSI	-	-	41536	41596	41540	41600
			LSIG	-	-	41568	41598	41542	41602
100kA	E3H 16	1600A	MS	-	-	-	-	-	-
			LSI	-	-	41656	41716	41660	41720
			LSIG	-	-	41658	41718	41662	41722
100kA	E3H 20	2000A	MS	-	-	-	-	-	-
			LSI	-	-	41776	41836	41780	41840
			LSIG	-	-	41778	41838	41782	41842
100kA	E3H 25	2500A	MS	-	-	-	-	-	-
			LSI	-	-	41896	41956	41900	41960
			LSIG	-	-	41898	41958	41902	41962
100kA	E3H 32	3200A	MS	-	-	-	-	-	-
			LSI	-	-	42016	42076	42020	42080
			LSIG	-	-	42018	42078	42022	42082
130kA	E3L 20	2000A	MS	-	-	-	-	-	-
			LSI	-	-	42136	42196	42140	42200
			LSIG	-	-	42138	42198	42142	42202
130kA	E3L 25	2500A	MS	-	-	-	-	-	-
			LSI	-	-	42256	42316	42260	42320
			LSI	-	-	42258	42318	42262	42322

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# Emax Air Circuit Breakers

## Emax E4S, S/f, H - Fixed - Rear Horizontal Terminals



### Ratings @ 415V

	Icu	Ics	Icw (1sec)	
E4S	75kA	75kA	75kA	
E4S/f	80kA	80kA	80kA	* Available in 4 pole (fully rated neutral) version only
E4H	100kA	100kA	100kA	* Available with 50% rated neutral only

Refer to sales office for breakers fitted with PR113 release

### With Rear Horizontal Terminals

Ordering example: place five digit code below into order reference eg 1SDA0 39676 R1  
 For E4S 3 pole version for use with fully rated external neutral CT, add /FRN to order reference eg 1SDA039791R1/FRN. For E4S 4 pole fully rated neutral version use E4S/f part numbers

Icu (415V)	Model	Current (A) I <sub>th</sub>	Protection	Non-Automatic		PR111 1SDA0□□□□□R1		PR112	
				3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole
75kA	E4S	4000A	MS	37546	37574	-	-	-	-
			LSI	-	-	42332	42392	42336	42396
			LSIG	-	-	42334	42394	42338	42398
80kA	E4S/f	4000A	MS	n/a	48737	n/a	-	n/a	-
			LSI	n/a	-	n/a	48675	n/a	48677
			LSIG	n/a	-	n/a	48676	n/a	48678
100kA	E4H 32	3200A	MS	37547	37575	-	-	-	-
			LSI	-	-	42452	43419	42456	42423
			LSIG	-	-	42454	43421	42458	42425
100kA	E4H 40	4000A	MS	37548	37576	-	-	-	-
			LSI	-	-	42557	42617	42561	42621
			LSIG	-	-	42559	42619	42563	42623

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# Emax Air Circuit Breakers

## Emax E4S, S/f, H Drawout



### Ratings @ 415V

	Icu	Ics	Icw (1sec)	
E4S	75kA	75kA	75kA	
E4S/f	80kA	80kA	80kA	* Note: Available in 4 pole (fully rated neutral) version only
E4H	100kA	100kA	100kA	* Note: Available with 50% rated neutral only

Refer to sales office for breakers fitted with PR113 release

### Fixed Portions

Ordering example: place five digit code below into order reference eg 1SDA0 39676 R1  
 Front, Flat and mixed terminal versions available on request, refer to technical catalogue  
 For E4S 4 pole fully rated neutral version use E4S/f part numbers

### Terminal type

		1SDA0□□□□R1	
		3 pole	4pole
Rear Horizontal	E4S & E4H	37824	37829
	E4S/f	n/a	48702
Rear Vertical	E4S & E4H	37875	37879
	E4S/f	n/a	48707

### Moving Portions

Ordering example: place five digit code below into order reference eg 1SDA0 39676 R1  
 For E4S 3 pole version for use with fully rated external neutral CT, add /FRN to order reference eg 1SDA039791R1/FRN. For E4S 4 pole fully rated neutral version use E4S/f part numbers

Icu (415V)	Model	Current (A) I <sub>n</sub>	Protection	Non-Automatic		PR111 1SDA0□□□□R1		PR112	
				3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole
75kA	E4S	4000A	MS	37677	37678	-	-	-	-
			LSI	-	-	42377	42437	42381	42441
			LSIG	-	-	42379	42439	42383	42443
80kA	E4S/f	4000A	MS	n/a	48740	n/a	-	n/a	-
			LSI	n/a	-	n/a	48696	n/a	48698
			LSIG	n/a	-	n/a	48697	n/a	48699
100kA	E4H 32	3200A	MS	37682	37679	-	-	-	-
			LSI	-	-	42497	42542	42501	42546
			LSIG	-	-	42499	42544	42503	42548
100kA	E4H 40	4000A	MS	37681	37680	-	-	-	-
			LSI	-	-	42602	42662	42606	42666
			LSIG	-	-	42604	42664	42608	42668

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# Emax Air Circuit Breakers

## Emax E6H, H/f, V - Fixed Rear Horizontal Terminals



### Ratings @ 415V

	Icu	Ics	Icw (1sec)	
E6H	100kA	100kA	100kA	
E6H/f	100kA	100kA	100kA	* Note: Available in 4 pole (fully rated neutral) version only
E6V	150kA	125kA	100kA	* Note: Available with 50% rated neutral only

### With Rear Horizontal Terminals

Ordering example: place five digit code below into order reference eg 1SDA0 39676 R1  
 For E6H 3 pole version for use with fully rated external neutral CT, add /FRN to order reference eg 1SDA039791R1/FRN. For E6H 4 pole fully rated neutral version use E6H/f part numbers

Icu (415V)	Model	Current (A) I <sub>n</sub>	Protection	Non-Automatic		PR111 1SDA0□□□□R1		PR112	
				3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole
100kA	E6H 50	5000A	MS	37549	37577	-	-	-	-
			LSI	-	-	42677	42737	42681	42741
			LSIG	-	-	42679	42739	42683	42743
100kA	E6H 63	6300A	MS	37550	37578	-	-	-	-
			LSI	-	-	42797	42857	42801	42861
			LSIG	-	-	42799	42859	42803	42863
100kA	E6H/f 50	5000A	MS	n/a	50810	n/a	-	n/a	-
			LSI	n/a	-	n/a	50768	n/a	50770
			LSIG	n/a	-	n/a	50769	n/a	50771
100kA	E6H/f 63	6300A	MS	n/a	50813	n/a	-	n/a	-
			LSI	n/a	-	n/a	50789	n/a	50791
			LSIG	n/a	-	n/a	50790	n/a	50792
150kA	E6V 32	3200A	MS	-	-	-	-	-	-
			LSI	-	-	42923	42955	42925	42957
			LSIG	-	-	42924	42956	42926	42958
150kA	E6V 40	4000A	MS	-	-	-	-	-	-
			LSI	-	-	42996	43056	43000	43060
			LSIG	-	-	42998	43058	43002	43062
150kA	E6V 50	5000A	MS	-	-	-	-	-	-
			LSI	-	-	43101	43161	43105	43165
			LSIG	-	-	43103	43163	43107	43167
150kA	E6V 63	6300A	MS	-	-	-	-	-	-
			LSI	-	-	43221	43281	43225	43285
			LSIG	-	-	43223	43283	43227	43287

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# Emax Air Circuit Breakers

## Emax E6H, H/f, V Drawout



### Ratings @ 415V

	Icu	Ics	Icw (1sec)
E6H	100kA	100kA	100kA
E6H/f	100kA	100kA	100kA
E6V	150kA	125kA	100kA

\* Note: Available in 4 pole (fully rated neutral) version only

\* Note: Available with 50% rated neutral only

Refer to sales office for breakers fitted with PR113 release

### Fixed Portions

Ordering example: place five digit code below into order reference eg 1SDA0 39676 R1  
Front, Flat and mixed terminal versions available on request, refer to technical catalogue  
For E6H 4 pole fully rated neutral version use E6H/f part numbers

Terminal type		1SDA0□□□□□R1	
		3 pole	4pole
Rear Horizontal	E6H & E6V	37825	37830
	E6H/f	n/a	50816
Rear Vertical	E6H & E6V	37876	37880
	E6H/f	n/a	50821

### Moving Portions

Ordering example: place five digit code below into order reference eg 1SDA0 39676 R1. For E6H 3 pole version for use with fully rated external neutral CT, add /FRN to order reference eg:1SDA039791R1/FRN. For E6H 4 pole fully rated neutral version use E6H/f part numbers

Icu (415V)	Model	Current (A) I <sub>tn</sub>	Protection	Non-Automatic		PR111		PR112	
				3 Pole	4 Pole	1SDA0□□□□□R1		3 Pole	4 Pole
						3 Pole	4 Pole	3 Pole	4 Pole
100kA	E6H 50	5000A	MS	37683	37686	-	-	-	-
			LSI	-	-	42722	42782	42726	42786
			LSIG	-	-	42742	42784	42728	42788
100kA	E6H 63	6300A	MS	37684	37685	-	-	-	-
			LSI	-	-	42842	42902	42846	42906
			LSIG	-	-	42844	42904	42848	42908
100kA	E6H/f 50	5000A	MS	n/a	50812	n/a	-	n/a	-
			LSI	n/a	-	n/a	50782	n/a	50784
			LSIG	n/a	-	n/a	50783	n/a	50785
100kA	E6H/f 63	6300A	MS	n/a	50815	n/a	-	n/a	-
			LSI	n/a	-	n/a	50804	n/a	50806
			LSIG	n/a	-	n/a	50805	n/a	50807
150kA	E6V 32	3200A	MS	-	-	-	-	-	-
			LSI	-	-	42939	42971	42941	42973
			LSIG	-	-	42940	42972	42942	42974
150kA	E6V 40	4000A	MS	-	-	-	-	-	-
			LSI	-	-	43026	43086	43030	43090
			LSIG	-	-	43028	43088	43032	43092
150kA	E6V 50	5000A	MS	-	-	-	-	-	-
			LSI	-	-	43146	43206	43150	43210
			LSIG	-	-	43148	43208	43152	43212
150kA	E6V 63	6300A	MS	-	-	-	-	-	-
			LSI	-	-	43266	43311	43270	43315
			LSIG	-	-	43268	43313	43272	43317

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# Emax Air Circuit Breakers

## Emax fixed part accessories

### Electrical Accessories

#### 1). Shunt opening/closing release



E 1/6	1SDA0□□□□□R1
24 V	38286
30 V	38287
48 V	38288
60 V	38289
110...120 V	38290
120...127 V	38291
220...240 V	38292
240...250 V	38293
380...400 V	38294
440 V	38295

the shunt opening release and closing release share the same construction and are therefore interchangeable. Their function is determined by the position in which they are mounted on the circuit-breaker.

#### 2a). Undervoltage release




E1/6	1SDA0□□□□□R1
24 V	38306
30 V	38307
48 V	38308
60 V	38309
110...120 V	38310
120...127 V	38311
220...240 V	38312
240...250 V	38313
380...400 V	38314
440...480 V	38315

#### 2b). Electronic time-delay device for undervoltage release

E1/6	1SDA0□□□□□R1
24...30 V	38316
48 V	38317
60 V	38318
110...115 V	38319
220...250 V	38320

#### 3). Geared motor for automatic charging of closing springs



E1/6	1SDA0□□□□□R1
24...30 V	38321
48...60 V	38322
100...130 V	38323
220...250 V	38324

supplied as standard with limit contact and microswitch for signalling the closing springs are charged

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# Emax Air Circuit Breakers

## Emax fixed part accessories

### Electrical Accessories cont...



#### 4). Signal for overload current releases tripped

E 1/6	1SDA0□□□□□R1
Mechanical	38337
Electrical <sup>1)</sup>	38338

<sup>1)</sup> Requires mechanical signal as well.



#### 5a). Electrical signalling of circuit-breaker open/closed

E1/6	1SDA0□□□□□R1
4 auxiliary contacts <sup>2)</sup>	38326
10 auxiliary contacts <sup>3) 4)</sup>	38327
15 additional auxiliary contacts <sup>5)</sup>	43475
15 additional auxiliary contacts (special version for withdrawable) <sup>5)</sup>	48827

<sup>2)</sup> Order for MS-CS-MT-MTP version only. Already included for automatic circuit-breaker.

<sup>3)</sup> Not available with PR112 release.

<sup>4)</sup> Order for MS-CS-MT-MTP version. Order as a loose kit only for automatic circuit-breaker

<sup>5)</sup> Outside circuit-breaker. Order as alternative to various types of interlock and to accessory 8e.

For mounting on fixed circuit-breaker requires accessory 10.4 as well (interlock plate for fixed circuit-breaker)



#### 5b). Electrical signalling of connected/isolated/isolated for test position

	1SDA0□□□□□R1
E1/E6 - 5 auxiliary contacts	38361
E1/E2 - 10 auxiliary contacts 3 poles	38360
E1/E2 - 10 auxiliary contacts 4 poles	43467
E3 - 10 auxiliary contacts 3 poles	43468
E3 - 10 auxiliary contacts 4 poles	43469
E4/E6 - 10 auxiliary contacts 3/4 poles	43470

#### 5c). Contact for signalling closing springs charged

E1/6	1SDA0□□□□□R1
-	38325

Order as alternative to geared motor

#### 5d). Contact for signalling undervoltage release energised

E1/6	1SDA0□□□□□R1
1 normally open contact	38340
1 normally closed contact	38341

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# Emax Air Circuit Breakers

## Emax fixed part accessories

### Electrical Accessories cont...

#### 6a). Current transformer for neutral conductor outside circuit-breaker

E2	1SDA0□□□□□R1
R250	38269
R400	38270
R800	38271
R1250	38272
R1600	38273
R2000	38274

E3	1SDA0□□□□□R1
R250	48952
R400	48953
R800	38277
R1250	38278
R1600	38279
R2000	38280
R2500	38281
R3200	38282

E4	1SDA0□□□□□R1
R2000	48957
R3200	38275
R4000	38276

E6	1SDA0□□□□□R1
R3200	48958
R4000	38283
R5000	38284
R6300	38285

#### 6b). Homopolar toroid for the main power supply earthing conductor

	1SDA0□□□□□R1
In 100A	48067
In 250A	48068
In 400A	48069
In 800A	48070

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# Emax Air Circuit Breakers

## Emax fixed part accessories

### Mechanical Accessories



#### 7). Mechanical operation counter

E 1/6	1SDA0□□□□□R1
	38345

<sup>1)</sup> Requires mechanical signal as well.



#### 8a). Lock in open position

E1/6 - key lock	1SDA0□□□□□R1
for 1 circuit-breaker (different keys)	38350
for sets of circuit-breakers (same keys No. 3004222)	38346
for sets of circuit-breakers (same keys No. 0025431)	38347
for sets of circuit-breakers (same keys No. 0233424)	38348
for sets of circuit-breakers (same keys No. 0335452)	38349
padlock (as alternative to mechanical accessory 3a)	38351
castell lock (not supplied please order from Castell International Ref: PDS01388(s))	NONSTD161



#### 8b). Circuit-breaker lock in connected/isolated/isolated for test position

E1/6 - key lock + padlock	1SDA0□□□□□R1
for 1 circuit-breaker (different keys)	38356
for sets of circuit-breakers (same keys No. 3004222)	38352
for sets of circuit-breakers (same keys No. 0025431)	38353
for sets of circuit-breakers (same keys No. 0233424)	38354
for sets of circuit-breakers (same keys No. 0335452)	38355



#### 8c). Accessory for lock in isolated/isolated for test position

E1/6	1SDA0□□□□□R1
-	38357

Order in addition to mechanical accessory 2b

#### 8d). Accessory for padlock device for shutters

E1/6	1SDA0□□□□□R1
-	38363



#### 8e). Mechanical lock for compartment door

E1/6	1SDA0□□□□□R1
- <sup>1) 2) 3)</sup>	45039

1) Order as an alternative to the various types of interlocks and electrical accessory 5a (15 auxiliary contacts)  
 2) the use of accessory 10.2 is necessary for installation  
 3) for fixed circuit-breaker, plate 10.4

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# Emax Air Circuit Breakers

## Emax fixed part accessories

### Mechanical Accessories

#### 9a). Protection cover opening and closing pushbuttons

E 1/6	1SDA0□□□□□R1
-	38343

#### 9b). IP54 protective cover for door

E1/6 - key lock	1SDA0□□□□□R1
-	38344

#### 10a). Interlock cable set (order one per interlock set)



E1/6 Description	Horizontal	Vertical
	1SDA0□□□□□R1	1SDA0□□□□□R1
A type cable set	38329	38333
B type cable set	38330	38334
C type cable set	38331	38335
D type cable set	38332	38336

#### 10b). Interlock mechanism (order one per breaker)

Type	1SDA0□□□□□R1
E1	38366
E2	38366
E3	38367
E4 - 3 poles	38368
E5 - 4 poles / E6 - 3 poles	43466
E6 - 4 poles	38369

#### 10c). Interlock mechanism (order one per breaker)



Type		1SDA0□□□□□R1
A	E2 - E6 fixed or moving part	38364
B	E2 - E6 fixed or moving part	38364
C	E2 - E6 fixed or moving part	38365
D	E2 - E6 fixed or moving part	38364

#### 10d). Interlock plate for fixed breaker (order one per breaker)

E1/6	1SDA0□□□□□R1
-	38363

#### Mechanical Interlock Ordering Example:

C type horizontal interlock for 3 off E2N drawout pattern breakers		
1 off	C type cable set (10a)	1SDA038331R1
2 off	Interlock mechanism (10c)	1SDA038366R1
3 off	Interlock mechanism (10b)	1SDA038365R1
3 off E2N fixed pattern breakers		
3 off	Interlock mechanism (10d)	1SDA038358R1

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# Emax Air Circuit Breakers

## Conversion kit for fixed circuit-breaker or fixed parts

### Conversion Kits

#### Kit for converting fixed circuit-breaker with horizontal rear terminals to vertical rear terminals

Type	3 terminals for 3 poles	1SDA000000R1	4 terminals for 4 poles
E1	38052		38057
E2	38053		38058
E3	38054		38059
E4	38055		38060
E6	38056		38061

Each kit fits both upper and lower application. To convert a complete circuit-breaker, order 2 kits.

#### Kit for converting fixed circuit-breaker with horizontal rear terminals to front terminals

Type	3 terminals for 3 poles	1SDA000000R1	4 terminals for 4 poles
E1	38062		38067
E2	38063		38068
E3	38064		38069
E4	38065		38070
E6	38066		38071

Each kit fits both upper and lower application. To convert a complete circuit-breaker, order 2 kits.

#### Kit for converting fixed parts with horizontal rear terminals to front terminals

Type	3 terminals for 3 poles	1SDA000000R1	4 terminals for 4 poles
E1	38062		38067
E2	45031		45035
E3	45032		45036
E4	45033		45037
E6	45034		45038

Each kit fits both upper and lower application. To convert a complete circuit-breaker, order 2 kits.

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