

BROCHURE

# SACE Emax 2 - E4.2 3600A UL1066

Get more with same size





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The world of electrical power distribution changes fast and major new trends such as renewables, energy storage and microgrids are now crowding onto the stage. These trends lead to new customer and application demands.

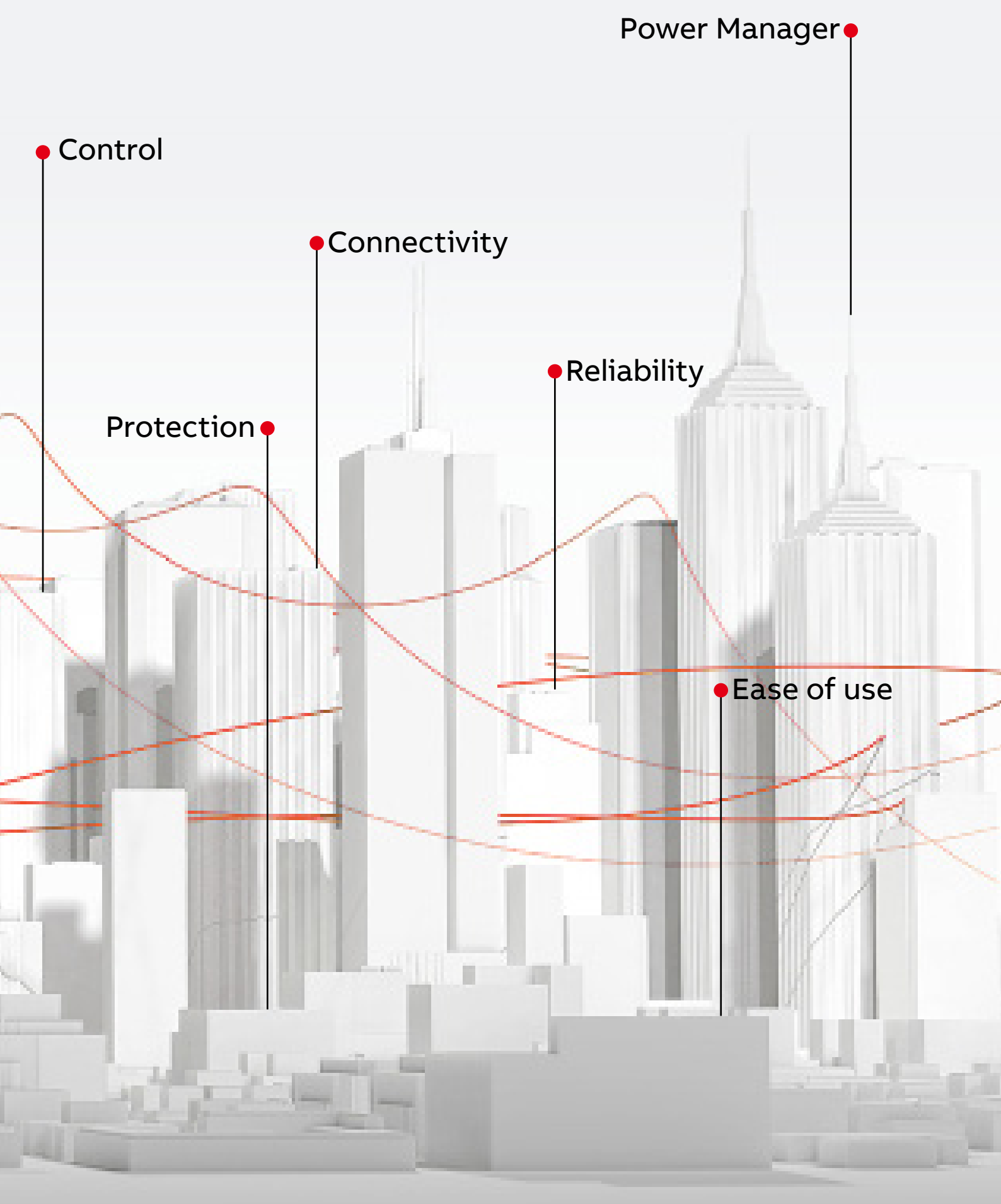
To meet these demands, ABB has now unveiled the innovative Emax 2 all-in-one, the evolution of the Emax 2 into a multifunctional platform that is able to manage the next generation of electrical distribution systems such as microgrids.

Emax 2 all-in-one is the first circuit breaker that meets new grid requirements. It enables a direct communication to the new energy management cloud-computing platform ABB Ability™ Electrical Distribution Control System.

Smart plug and play architecture makes Emax 2 all-in-one easy to use. Leveraging also unmatched electrical performances, Emax 2 sets a new circuit breaker benchmark for the needs of today and tomorrow.

SACE Emax 2, the all-in-one solution to manage "low-voltage distribution systems".





Power Manager ●

● Control

● Connectivity

Protection ●

● Reliability

● Ease of use

# Performance

## A size for every requirement

The SACE Emax 2 up to 6000A UL range is made up of 4 frames: E1.2, E2.2, E4.2 and E6.2 which enable switchgear with compact dimensions and high ratings to be built with busbars of reduced length and cross-section.

The protection trip units, auxiliary connections and main accessories are the same throughout the range to simplify design and installation. Furthermore, the sizes from E2.2 to E6.2 have the same height and depth.

The rating levels are updated and standardized throughout the sizes to meet the demands and needs of today's installations, from 42kA to 100 kA UL, and to standardize switchgear projects. High short-time current ratings and flexible protection functions guarantee complete selectivity (or coordination) in all situations.

Efficient design and choice of materials enable optimization of the overall dimensions of the circuit breaker. In this way switchgear of compact dimensions can be built and outstanding savings with the same performance can be obtained.

The SACE Emax 2 range is available with UL certification, IEC certification, and now with UL, IEC, and CCC triple certification up to 5000A.



E1.2



E2.2



E4.2



E6.2





# SACE Emax 2

## Electrical characteristics

Common data		
Rated maximum voltage	[V]	635
Rated voltage	[V]	600
Test voltage (1min. 50/60 Hz)	[kV]	2.2
Frequency	[Hz]	50 - 60
Number of poles		3- 4
Version		Fixed (F) - Draw out (W)

### ABB SACE Emax 2 for UL1066

Performance levels			
Currents		[A]	
		[A]	
		[A]	
		[A]	
		[A]	
Neutral pole current-carrying capacity for 4 pole breaker		[%I <sub>u</sub> ]	
Interrupting rating	254 V	[kA]	
	508 V	[kA]	
	635 V	[kA]	
Rated short time current		[kA]	
Trip times	Break time with fault current < rated short time current	[ms]	
	Break time with fault current > rated short time current	[ms]	
Overall dimensions	Fixed	H	[in/mm]
		D	[in/mm]
		W 3p	[in/mm]
	Draw out	W 4p - 4p FS	[in/mm]
		H	[in/mm]
		D	[in/mm]
Weight	Fixed	3p / 4p / 4p FS	[lbs/Kg]
		Draw out	3p / 4p / 4p FS

### ABB SACE Emax 2 for UL1066

Mechanical and electrical life with regular ordinary maintenance prescribed by the manufacturer		[I <sub>u</sub> ]
		[Nr.cycles x 1000]
Electrical life	Frequency	[Cycles/Hour]
	508 V	[Nr.cycles x 1000]
	635 V	[Nr.cycles x 1000]
	Frequency	[Cycles/Hour]





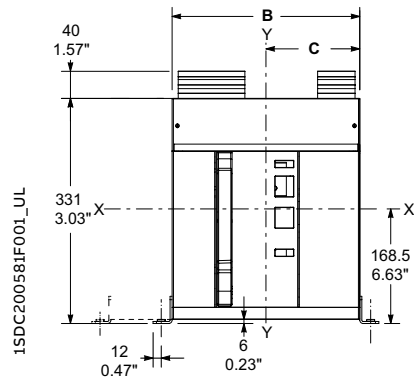
E1.2			E2.2					E4.2				E6.2			
B-A	N-A	S-A	B-A	N-A	S-A	H-A	V-A	S-A	H-A	V-A	L-A <sup>1</sup>	H-A	V-A	L-A <sup>1</sup>	
800	800	250	1600	1600	800	800	250	2500	2500	800	800	4000	4000	4000	
1200	1200	400		2000	1200	1200	400	3200	3200	1600	1600	5000	5000	5000	
		800			1600	1600	800	3600 <sup>2</sup>	3600 <sup>2</sup>	2000	2000	6000 <sup>3</sup>	6000 <sup>3</sup>	6000 <sup>3</sup>	
		1200			2000	2000	1200			2500	2500				
	1600	1250					1600			3200	3200				
		1600					2000			3600 <sup>2</sup>	3600 <sup>2</sup>				
100	100	100	100	100	100	100	100	100	100	100	100	50-100	50-100	50-100	
42	50	65	42	50	65	85	100	65	85	100	125	85	100	150	
42	50	65	42	50	65	85	100	65	85	100	125	85	100	150	
42	42	42	42	50	65	85	85	65	85	100	100	85	100	100	
42	50	50	42	50	65	85	85	65	85	100	100	85	100	100	
40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	
25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	
11.65 / 296			14.61/371					14.61/371				14.61/371			
7.20 / 183			10.63/270					10.63/270				10.63/270			
8.27 / 210			10.87/276					15.12/384				30.00/762			
11.02 / 280			14.41/366					20.08/510				34.96/888 - 39.92/1014			
14.33 / 363.5			16.73/425					16.73/425				16.73/425			
11.06 / 281			15.47/393					15.47/393				15.47/393			
10.94 / 278			12.48/317					16.73/425				31.61/803			
13.70 / 348			407/16.02					21.69/551				36.57/929 - 42.09/1069			

1. Version not yet available, please contact ABB | 2. Only Fixed | 3. Only Drawout and 3 poles. Version not yet available, please contact ABB.

E1.2			E2.2			E4.2				E6.2	
< 800	800	1200	< 1600	1600	2000	<2500	2500	3200	3600	4000	5000
20	20	20	25	25	25	20	20	20	15	12	12
60	60	60	60	60	60	60	60	60	60	60	60
8	8	7	15	12	10	10	8	7	5	4	3
8	8	6,5	15	10	8	10	8	7	4	4	2
30	30	30	30	30	30	20	20	20	20	10	10

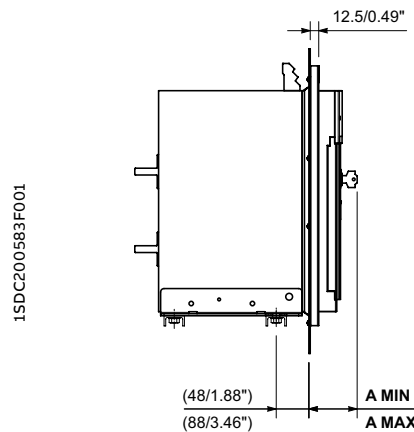
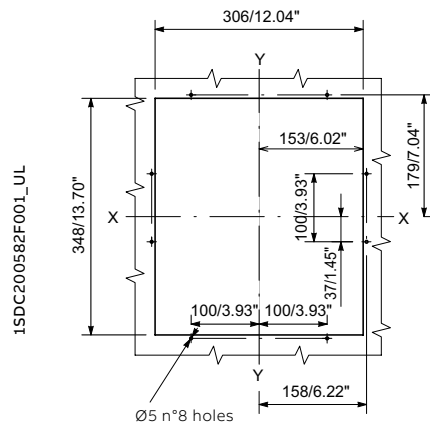
# Dimensions

## Fixed circuit-breaker



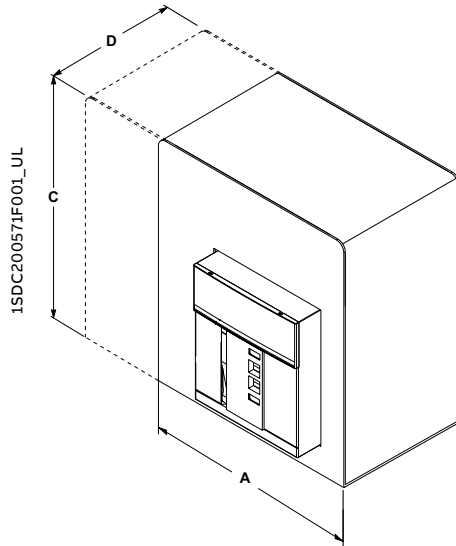
		B	C
		3p	3p
E2.2	[in/mm]	10.86/276	5.43/138
E4.2	[in/mm]	15.11/384	7.55/192
E6.2	[in/mm]	30/762	12.42/318

### Compartment door drilling



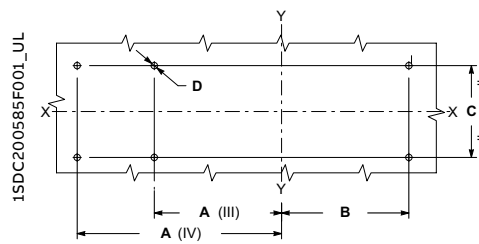
		Ronis/			
		Standard	Profalux	Kirk	Castell
A MIN	[in/mm]	1.16/29.5	1.63/41.5	1.83/46.5	2.55/65
A MAX	[in/mm]	2.73/69.5	3.20/81.5	3.40/86.5	4.13/105

**Minimum enclosure size**



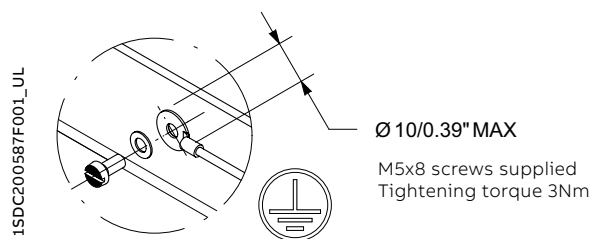
		A	C	D
		3p	3p	3p
E2.2	[in/mm]	15.74 /400	19.68/500	8.70/221
E4.2	[in/mm]	19.68/500	19.68/500	8.70/221
E6.2	[in/mm]	35.43/900	19.68/500	8.70/221

**Floor fixing**



		A	B	C	D
		3p	3p	3p	3p
E2.2	[in/mm]	6.06/154	6.06/154	5.90/150	0.41/10.5
E4.2	[in/mm]	8.18/208	8.18/208	5.90/150	0.41/10.5
E6.2	[in/mm]	18.11/460	13.14/334	5.90/150	0.41/10.5

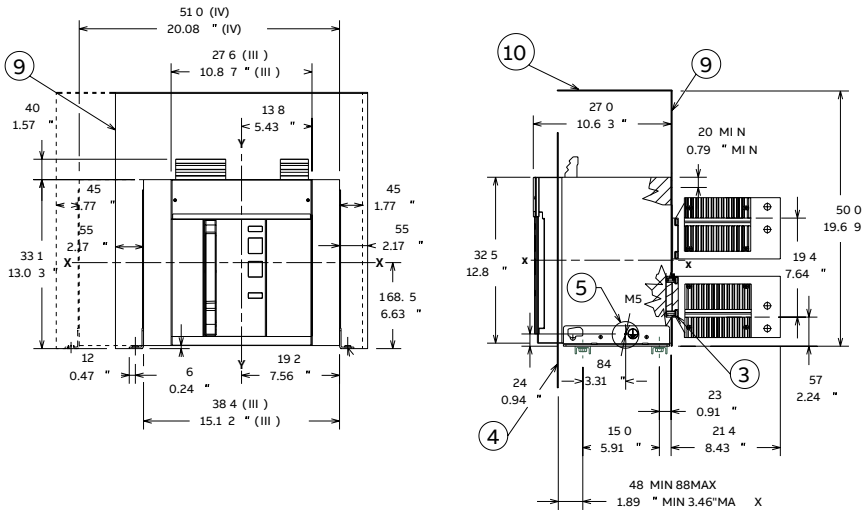
**Earthing device**



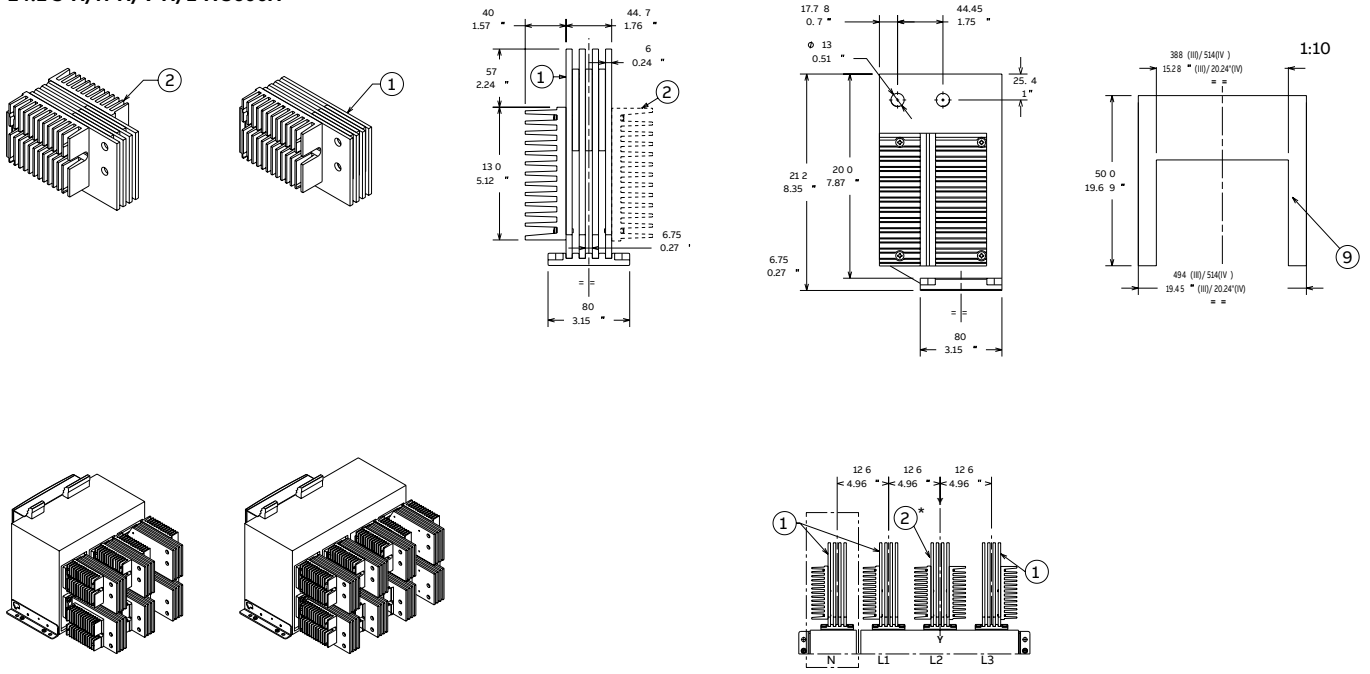
# Dimensions

## Terminals

### Vertical rear terminals - VR



### E4.2 S-A/H-A/V-A/L-A 3600A

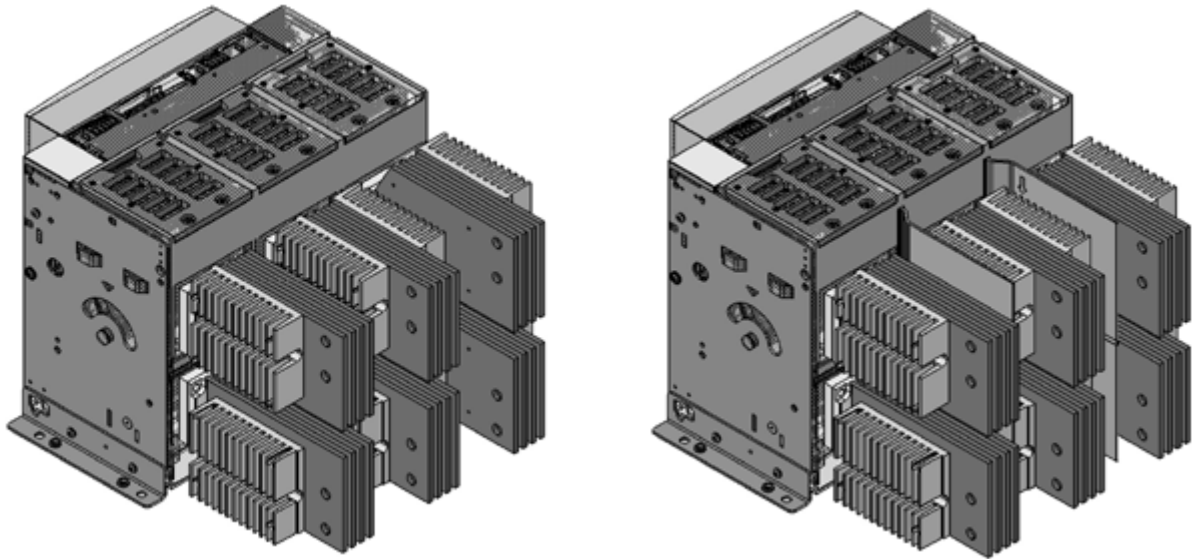


- Key**
- 1 LATERAL VERTICAL TERMINAL 3600A (\*)
  - 2 CENTRAL VERTICAL TERMINAL 3600A (\*)
  - 3 TIGHTENING TORQUE 20 Nm - 177 lb in
  - 4 DOOR POSITION-FLANGE: SEE TN 1SDH001000R0120
  - 5 GROUNDING
  - 6 FERRULE FOR GROUNDING BY THE CUSTOMER
  - 7 SCREW M5x8 WITH NUT PROVIDED TIGHTENING TORQUE 3 Nm - 26 lb in
  - 8 MOUNTING OUTSIDE FEET - SCREWS RECCOMEND M10x25 HIGH - CLASS 8.8 OR COUPLE SUPERIOR - TIGHTENING TORQUE 40 Nm - 354 lb in - COMPULSORY FIXING SCREWS FROM TOP
  - 9 INSULATING SHEET OR INSULATED METALLIC SHEET
  - 10 METALLIC SHEET

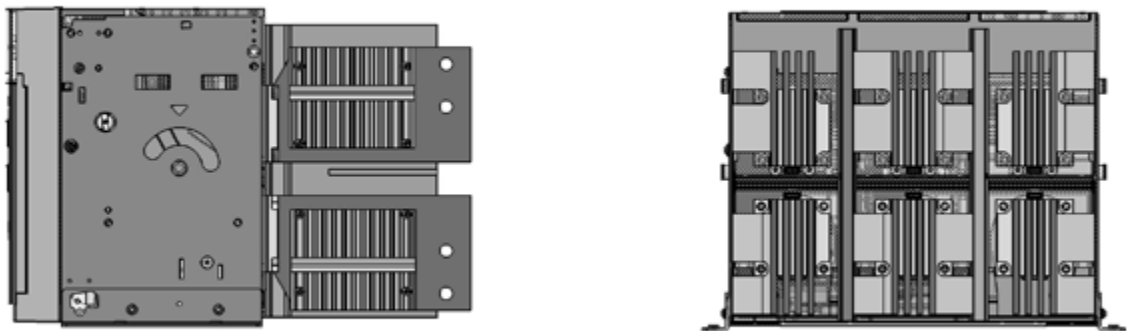
# Product design

## Overview

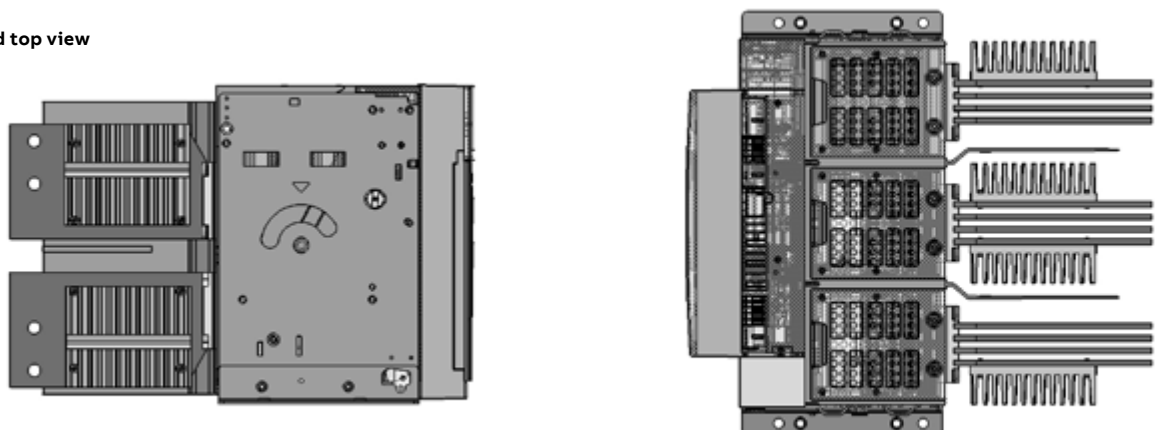
3D Back view



Right side view and back side view



Left side view and top view



# Automatic circuit-breakers

## Fixed version for power distribution

### SACE Emax E4.2 S-A, H-A, V-A, L-A

Size	Frame Amps (440 V)	Int. Rating (kA@580V)	Withstand (kA)	Type	3 Poles Code
E4.2S-A	3600	65	65	E4.2S-A 3600 Ekip Dip LI	1SDA078018R1
				E4.2S-A 3600 Ekip Dip LSI	1SDA078019R1
				E4.2S-A 3600 Ekip Dip LSIG	1SDA078020R1
				E4.2S-A 3600 Ekip Touch LI	1SDA078021R1
				E4.2S-A 3600 Ekip Touch LSI	1SDA078022R1
				E4.2S-A 3600 Ekip Touch LSIG	1SDA078023R1
				E4.2S-A 3600 Ekip G Touch LSIG	1SDA078024R1
				E4.2S-A 3600 Ekip Hi-Touch LSI	1SDA078025R1
				E4.2S-A 3600 Ekip Hi-Touch LSIG	1SDA078026R1
				E4.2S-A 3600 Ekip G Hi-Touch LSIG	1SDA078027R1
E4.2H-A	3600	85	85	E4.2H-A 3600 Ekip Dip LI	1SDA077928R1
				E4.2H-A 3600 Ekip Dip LSI	1SDA077929R1
				E4.2H-A 3600 Ekip Dip LSIG	1SDA077930R1
				E4.2H-A 3600 Ekip Touch LI	1SDA077931R1
				E4.2H-A 3600 Ekip Touch LSI	1SDA077932R1
				E4.2H-A 3600 Ekip Touch LSIG	1SDA077933R1
				E4.2H-A 3600 Ekip G Touch LSIG	1SDA077934R1
				E4.2H-A 3600 Ekip Hi-Touch LSI	1SDA077935R1
				E4.2H-A 3600 Ekip Hi-Touch LSIG	1SDA077936R1
				E4.2H-A 3600 Ekip G Hi-Touch LSIG	1SDA077937R1
E4.2V-A	3600	100	100	E4.2V-A 3600 Ekip Dip LI	1SDA078078R1
				E4.2V-A 3600 Ekip Dip LSI	1SDA078079R1
				E4.2V-A 3600 Ekip Dip LSIG	1SDA078080R1
				E4.2V-A 3600 Ekip Touch LI	1SDA078081R1
				E4.2V-A 3600 Ekip Touch LSI	1SDA078082R1
				E4.2V-A 3600 Ekip Touch LSIG	1SDA078083R1
				E4.2V-A 3600 Ekip G Touch LSIG	1SDA078084R1
				E4.2V-A 3600 Ekip Hi-Touch LSI	1SDA078085R1
				E4.2V-A 3600 Ekip Hi-Touch LSIG	1SDA078086R1
				E4.2L-A <sup>1</sup>	3600
E4.2L-A 3600 Ekip Dip LSI	1SDA077989R1				
E4.2L-A 3600 Ekip Dip LSIG	1SDA077990R1				
E4.2L-A 3600 Ekip Touch LI	1SDA077991R1				
E4.2L-A 3600 Ekip Touch LSI	1SDA077992R1				
E4.2L-A 3600 Ekip Touch LSIG	1SDA077993R1				
E4.2L-A 3600 Ekip G Touch LSIG	1SDA077994R1				
E4.2L-A 3600 Ekip Hi-Touch LSI	1SDA077995R1				
E4.2L-A 3600 Ekip Hi-Touch LSIG	1SDA077996R1				
E4.2L-A 3600 Ekip G Hi-Touch LSIG	1SDA077997R1				

# Switch-disconnectors

## Fixed version

SACE Emax 2 E4.2 S-A/MS, V-A/MS, L-A/MS

Size	Frame Amps (440 V)	Int. Rating (kA@580V)	Withstand (kA)	Type	3 Poles Code
E4.2S-A	3600	65	65	E4.2S-A/MS 3600	1SDA079598R1
E4.2V-A	3600	100	100	E4.2V-A/MS 3600	1SDA079604R1
E4.2L-A <sup>1</sup>	3600	120	120	E4.2L-A/MS 3600	1SDA079607R1

1. Version not yet available, please contact ABB.



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