

# Overview of Low voltage equipment - Moulded-case & Air circuit-breakers

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**ABB**

# ABB SACE.

## At the forefront of Low voltage.

Once again ABB SACE is a synonym for quality and innovation in the Low voltage sector, with products, which, by being perfectly integrated, adapt to different service and installation requirements. The range of SACE Emax air circuit-breakers covers all user needs with sizes from 800 up to 6300 A, whereas the moulded-case circuit-breakers have sizes from 160 to 3200 A, with a complete offer which includes the two Tmax and Isomax families and provides considerable application advantages. Perfect integration between the two series, higher performances in circuit-breakers with even more limited dimensions, a range of standardised accessories which considerably simplifies selection of the apparatus ... today all this is possible thanks to the six sizes of the new Tmax moulded-case circuit-breaker which runs alongside the Isomax series. Tmax is the first circuit-breaker compared to any other similar apparatus to reach 630 A with such limited overall dimensions: a depth of just 70 millimetres for T1 T2 and T3, and 103.5 millimetres for T4, T5 and T6 circuit-breakers. Furthermore it is designed respecting the strictest environmental sustainability criteria:





Tmax T1 was the first product in Italy to receive official validation for the Environmental Product Declaration (EPD) from the National Agency for Protection of the Environment (ANPA). In accordance with the commitment and awareness of the group towards the environment, ABB

SACE has always paid great attention to achieving the objectives of sustainable development and environmental protection. All the company production sites have obtained ISO 9001 quality certification, and most



of these also have ISO 14001 environmental management system certification. All the factories of ABB SACE have also obtained certification for integrated management of their Quality Assurance, Environmental and Safety systems in compliance with the ISO 9001-2000, ISO 14001-96 and OHSAS 18001-99 Standards.



From the safety viewpoint, ABB SACE is, once again, a guarantee of compliance with the electrical safety regulations, in accordance with the international Standards. In the ABB laboratories – accredited by the major national and International organisations (SINAL, ACAE and LOVAG) – our products are subjected to the most severe tests of compliance with the Standards as well as to the required type tests.

# Moulded-case circuit-breakers for distribution



		Tmax T1 1P				Tmax T1				Tmax T2				Tmax T3		
Rated uninterrupted current, <b>I<sub>u</sub></b> (A)	[I <sub>u</sub> ]	<b>160</b>				<b>160</b>				<b>160</b>				<b>250</b>		
Poles	[Nr]	1				3 - 4				3 - 4				3 - 4		
Rated service voltage, <b>U<sub>e</sub></b>	(AC) 50-60 Hz	[V]	240				690				690				690	
	(DC)	[V]	125				500				500				500	
Rated impulse withstand voltage, <b>U<sub>imp</sub></b>	[kV]	8				8				8				8		
Rated insulation voltage, <b>U<sub>i</sub></b>	[V]	500				800				800				800		
Test voltage at industrial frequency for 1 min.	[V]	3000				3000				3000				3000		
Rated ultimate short-circuit breaking capacity, <b>I<sub>cu</sub></b>		<b>B</b>	<b>B</b>			<b>C</b>			<b>N</b>			<b>N</b>		<b>S</b>		
	(AC) 50-60 Hz 220/230 V	[kA]	25 <sup>(1)</sup>	25	40	50	65	85	100	120	50	85				
<b>(AC) 50-60 Hz 380/415 V</b>	<b>[kA]</b>	<b>16</b>	<b>25</b>	<b>36</b>	<b>36</b>	<b>50</b>	<b>70</b>	<b>85</b>	<b>36</b>	<b>50</b>						
(AC) 50-60 Hz 440 V	[kA]	10	15	22	30	45	55	75	25	40						
(AC) 50-60 Hz 500 V	[kA]	8	10	15	25	30	36	50	20	30						
(AC) 50-60 Hz 690 V	[kA]	3	4	6	6	7	8	10	5	8						
(DC) 250 V - 2 poles in series	[kA]	25 (at 125 V)	16	25	36	36	50	70	85	36	50					
(DC) 250 V - 3 poles in series	[kA]		20	30	40	40	55	85	100	40	55					
(DC) 500 V - 2 poles in series	[kA]															
(DC) 500 V - 3 poles in series	[kA]		16	25	36	36	50	70	85	36	50					
(DC) 750 V - 3 poles in series	[kA]															
Rated short-circuit service breaking capacity, <b>I<sub>cs</sub></b>	[%I <sub>cu</sub> ]	75%	100%	75%	50% <sup>(3)</sup>	100%	100%	100%	75% <sup>(4)</sup>	75%	50% <sup>(5)</sup>					
Rated short-circuit making capacity (415 V)	[kA]	52.5 (at 220/230 V)	32	52.5	75.6	75.6	105	154	187	75.6	105					
Opening time (415 V)	[ms]	7	7	6	5	3	3	3	3	7	6					
Rated short-time withstand current for 1 s, <b>I<sub>cw</sub></b>	[kA]															
Utilisation category (IEC 60947-2, EN 60947-2)		A	A			A			A							
Isolation behaviour (IEC 60947-2, EN 60947-2)		■	■			■			■							
Reference Standard IEC 60947-2, EN 60947-2		■	■			■			■							
Releases:																
thermomagnetic																
T fixed, M fixed (10xIn)	TMF	■														
T adjustable, M fixed (10xIn)	TMD		■			■			■							
T adjustable, M adjustable (5...10xIn)	TMA															
T adjustable, M fixed (3xIn)	TMG								■							
T adjustable, M adjustable (2.5...5xIn)	TMG															
magnetic only																
M adjustable (6...12xIn)	MA					■ (MF up to I <sub>n</sub> 12.5 A)			■							
electronic																
	PR221DS (I-LS/I)					■										
	PR222DS/P (LSI-LSIG)															
	PR223DS/P															
	PR223EF															
	PR211/P (I-LI)															
	PR212/P (LSI-LSIG)															
	PR222 MP															
	PR212/MP															
Interchangeability (for T4, T5 and T6 only)																
Versions			F		F		F-P			F-P						
Terminals	Fixed (F)		FC Cu		FC Cu - EF - FC CuAl -HR		F - FC Cu - FC CuAl - EF - ES - R			F - FC Cu - FC CuAl - EF - ES - R						
	Plug-in (P)						F - FC Cu - FC CuAl - EF - ES - R			F - FC Cu - FC CuAl - EF - ES - R						
	Withdrawable (W)															
Fixing on DIN rail					DIN EN 50022		DIN EN 50022			DIN EN 50022						
Mechanical life	[No. operations / hourly operations]		25000 / 240		25000 / 240		25000 / 240			25000 / 240						
Electrical life (at 415 V)	[No. operations / hourly operations]		8000 / 120		8000 / 120		8000 / 120			8000 / 120						
Basic dimensions, fixed	3/4 poles	W [mm]	25.4 (1 pole)		76 / 102		90 / 120			105 / 140						
		D [mm]	70		70		70			70						
		H [mm]	130		130		130			150						
Weights	3/4 poles	fixed	0.4 (1 pole)		0.9 / 1.2		1.1 / 1.5			1.5 / 2						
		plug-in					1.5 / 1.9			2.7 / 3.7						
		withdrawable														

<sup>(1)</sup> R16 and R20 I<sub>cu</sub> = 16 kA @ 220/230 V

<sup>(2)</sup> All the versions with I<sub>cu</sub> = 35 kA are certified at 36 kA

<sup>(3)</sup> 25 kA

<sup>(4)</sup> 70 kA

<sup>(5)</sup> 27 kA

<sup>(6)</sup> Only 630 and 800 A

#### KEY TO TERMINALS

F = Front  
EF = Extended front  
ES = Extended spreaded front

FC = Front for copper cables  
FC CuAl = Front for copper or aluminium cables  
R = Rear  
RC = Rear for copper or aluminium cables

HR = Rear horizontal flat bar  
VR = Rear vertical flat bar



# Moulded-case circuit-breakers for specific applications



Tmax T1

Tmax T2

Tmax T3



## Current-limiting circuit-breakers

T2L

Poles		3 - 4
Iu	[A]	160
Ue	[V]	690
Icu @ 380/415 V	[kA]	85
Icu @ 440 V	[kA]	75
Icu @ 690 V	[kA]	10
Ics/Icu %		75% (70 kA)
Dimensions	W [mm]	90 / 120
	H [mm]	130
	D [mm]	70



## Advanced zone selectivity

Iu	[A]	
Poles	[Nr]	
Ue	(AC) 50-60 Hz	[V]
Electronic release PR223EF		



## Motor protection

T2

T3

Poles		3	3
Iu	[A]	160	250
In	[A]	1 - 100	100 - 200
Ue	[V]	690	690
Release magnetic only, M fixed		■ (up to In 12.5)	-
Release magnetic only, M adjustable		■ (from In 20)	■
Electronic release PR221DS-I		■	-
Electronic release PR 212/P I		-	-
Electronic release PR222MP, IEC 60947-4-1		-	-
Electronic release PR212MP, IEC 60947-4-1		-	-



## Range at 1000 V AC-DC

Poles		
Iu	[A]	
Ue	[V]	
Icu @ 1000 V AC	[kA]	
Icu @ 1000 V DC	4 poles in series	[kA]



## Switch-disconnectors according to IEC 60947-3 Standards

T1D

T3D

Poles		3 - 4	3 - 4
Ith	[A]	160	250
Ie	[A]	125	200
Ue	[V]	690	690
Uimp	[kV]	8	8
Ui	[V]	800	800
Icm	[kA]	2.8	5.3
Icw	[kA]	2	3.6



## UL/CSA (UL 489 and CSA C22.2)

T1

T2

T3

Poles		1 - 3 - 4	3 - 4	3 - 4
Maximum continuous current @ 40 °C	[A]	100	100	225
Maximum Ampere Interrupting Capacity @ 480 V	[kA]	22	35 - 65	25 - 35
Maximum Ampere Interrupting Capacity @ 600 V	[kA]	-	-	-
Thermal-magnetic trip unit		■	■	■
Magnetic only		-	■	■
Electronic trip unit		-	■	-
MCCB		■	■	■
MCP		-	■	■
MCS		■	-	■



Tmax T4	Tmax T5	Tmax T6	Isomax S7	Isomax S8
<b>T4V</b>	<b>T5V</b>			
3 - 4	3 - 4			
250 / 320	400 / 630			
690	690			
200	200			
180	180			
80	80			
100%	100%			
105 / 140	140 / 184			
205	205			
103.5	103.5			

T4	T5	T6
250 / 320	400 / 630	630 / 800 / 1000
3 - 4	3 - 4	3 - 4
690	690	690
■	■	■

T4	T5	T6	S7
3	3	3	3
250 - 320	400 - 630	800	1250 - 1600
10...320	320 - 400 - 630	630 - 800	1000...1600
690	690	690	690
-	-	-	-
■	-	-	-
■	■	■	-
-	-	-	■
■	■	■	-
-	-	-	■

T4	T5	T6
3 (AC) - 4	3 (AC) - 4	3 (AC) - 4 (DC)
250	400 - 630	630 - 800
1000	1000	1000
12 - 20	12 - 20	12 / 30
40	40	40 - 50

T4D	T5D	T6D	S7D	S8D
3 - 4	3 - 4	3 - 4	3 - 4	3 - 4
320	400 / 630	400 - 630 - 800	1000 - 1250 - 1600	2000 - 2500 - 3200
320	400 / 630	-	-	-
690	690	690	690	690
8	8	8	8	8
800	800	800	800	800
5.3	11	30	52.5	85
3.6	6	15	25	40

T4	T5	T6	S7	S8
3 - 4	3 - 4	2 - 3 - 4	2 - 3 - 4	3
250	400 - 600	800	1200	1600 - 2000 - 2500
25 - 150	25 - 150	50 - 100	65	100
18 - 85	18 - 85	25 - 42	50	85
■	■	■	-	-
-	-	-	-	-
■	■	■	■	■
■	■	■	■	■
■	■	■	■	■

# Accessories for Moulded-case circuit-breakers



	Tmax T1	Tmax T2	Tmax T3
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## Service releases

Shunt opening release	■	■	■
Shunt closing release			
Undervoltage release	■	■	■
Time-delayed undervoltage release	■	■	■

## Electric signals

Contacts:			
2 open/closed change over contacts			
1 open/closed change over contact and 1 release tripped change over	■	■	■
3 open/closed change over contact and 1 release tripped change over	■		■
1 open change over contact, 1 closed change over contact and 1 release tripped change over		■ <sup>(1)</sup>	
Early making contact for undervoltage release	■ (n°2)	■ (n°2)	■ (n°2)
Contacts for signalling circuit-breaker racked in-out		■	■

## Remote controls

Solenoid operating mechanism	■	■	■
Stored energy motor operator			
Geared motor for automatically charging of the closing springs			

## Operating mechanisms and locks

Rotary handle operating mechanism (direct or transmitted version)	■	■	■
IP54 protection for rotary handle operating mechanism	■	■	■
Front flange for lever operating mechanism			
Key lock in open position			
Padlock for operating lever	■	■	■
Anti-tampering lock of the thermomagnetic release	■	■	■
Compartment door lock	■	■	■
Mechanical interlock between two circuit-breakers	■	■	■

## Electronic residual current releases

Residual current release beside the circuit-breaker	RC221/1 - RC222/1	RC221/2 - RC222/2	RC221/3 - RC222/3
SACE RCQ switchboard residual-current relays	■	■	■

## Accessories for electronic releases

Front display unit - FDU			
SACE TT1 Test unit		■	
SACE PR212/K signalling unit			
SACE PR010/K signalling unit			
PR021/K signalling unit		■	
SACE PR010/T Test and Configuration Unit			
SACE PR212/CI contactor control unit			
SACE PR212/D-M Modbus dialogue unit + SACE PR212/T actuator unit			
SACE PR212/D-L Lon dialogue unit + SACE PR212/T actuator unit			

## Automatic transfer switch

ATS010			
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<sup>(1)</sup> Pre-cabled version for PR221DS electronic release only



Tmax T4

Tmax T5

Tmax T6

Isomax S7

Isomax S8

RC222/4-RC223/4

■	■	■	■	■
■	■	■	■	■
■	■	■	■	■

RC222/5

■	■	■	■	■
■	■	■	■	■
■	■	■	■	■
■	■	■	■	■
■	■	■	■	■

RC222/4-RC223/4

■	■	■	■	■
■	■	■	■	■

RC222/5

■	■	■	■	■
■	■	■	■	■
■	■	■	■	■
■	■	■	■	■
■	■	■	■	■
■	■	■	■	■
■	■	■	■	■
■	■	■	■	■

RC222/4-RC223/4

■	■	■	■	■
■	■	■	■	■

RC222/5

■	■	■	■	■
■	■	■	■	■
■	■	■	■	■
■	■	■	■	■
■	■	■	■	■
■	■	■	■	■
■	■	■	■	■
■	■	■	■	■

RC222/4-RC223/4

■	■	■	■	■
■	■	■	■	■

■ (supplied with front flange)    ■ (supplied with front flange)

RC222/4-RC223/4

RC222/5

# Emax air circuit-breakers for distribution

## Common data

Voltages			
Rated service voltage	U <sub>e</sub>	[V]	690 ~
Rated insulation voltage	U <sub>i</sub>	[V]	1000
Rated impulse withstand voltage	U <sub>imp</sub>	[kV]	12
Service temperature			
		[°C]	-25...+70
Storage temperature			
		[°C]	-40...+70
Frequency	f	[Hz]	50 - 60
Number of poles			3 - 4
Versions			Fixed - Withdrawable



## E1

### Performance level

				B	N
<b>Currents: Rated uninterrupted current (at 40 °C)</b>					
	I <sub>u</sub>		[A]	800	800
			[A]	1000	1000
			[A]	1250	1250
			[A]	1600	1600
			[A]		
			[A]		
Neutral pole current-carrying capacity for 4-pole CBs			[%I <sub>u</sub> ]	100	100
Rated ultimate breaking capacity under short-circuit	I <sub>cu</sub>	220/230/380/400/415 V ~	[kA]	42	50
		440 V ~	[kA]	42	50
		500/525 V ~	[kA]	42	50
		660/690 V ~	[kA]	42	50
			[kA]	42	50
Rated service breaking capacity under short-circuit	I <sub>cs</sub>	220/230/380/400/415 V ~	[kA]	42	50
		440 V ~	[kA]	42	50
		500/525 V ~	[kA]	42	50
		660/690 V ~	[kA]	42	50
			[kA]	42	50
Rated short-time withstand current	I <sub>cw</sub>	(1s)	[kA]	42	50
		(3s)		36	36
Rated making capacity under short-circuit (peak value)	I <sub>cm</sub>	220/230/380/400/415 V ~	[kA]	88.2	105
		440 V ~	[kA]	88.2	105
		500/525 V ~	[kA]	75.6	75.6
		660/690 V ~	[kA]	75.6	75.6
			[kA]		
<b>Utilisation category</b>	(according to CEI EN 60947-2)			B	B
<b>Isolation behaviour</b>	(according to CEI EN 60947-2)			■	■
<b>Overcurrent protection</b>				■	■
Electronic releases for AC applications				■	■
<b>Operating times</b>					
Closing time (max)			[ms]	80	80
Break time for I < I <sub>cw</sub> (max) <sup>(1)</sup>			[ms]	70	70
Break time for I > I <sub>cw</sub> (max)			[ms]	30	30
<b>Overall dimensions</b>					
Fixed: H = 418 mm - D = 302 mm	W	(3/4 poles)	[mm]	296/386	
Withdrawable: H = 461 mm - D = 396.5 mm	W	(3/4 poles)	[mm]	324/414	
<b>Weights</b> (circuit-breaker complete with releases and CTs, excluding accessories)					
Fixed 3/4 Poles			[kg]	45/54	45/54
Withdrawable 3/4 Poles (including fixed part)			[kg]	70/82	70/82

<sup>(1)</sup> Without intentional delays

<sup>(2)</sup> The performance at 600 V is 100 kA

## E1 B-N

## E2 B-N-S

			800	1000-1250	1600	800	1000-1250	1600	2000
<b>Rated uninterrupted current (at 40 °C)</b>	I <sub>u</sub>	[A]							
<b>Mechanical life</b> with regular routine maintenance		[No. operations x 1000]	25	25	25	25	25	25	25
Frequency		[Operations / hour]	60	60	60	60	60	60	60
Electrical life	(440 V ~)	[No. operations x 1000]	10	10	10	15	15	12	10
	(690 V ~)	[No. operations x 1000]	10	8	8	15	15	10	8
Frequency		[Operations / hour]	30	30	30	30	30	30	30



E2				E3					E4			E6	
B	N	S	L	N	S	H	V	L	S	H	V	H	V
1600	1000	800	1250	2500	1000	800	800	2000	4000	3200	3200	4000	3200
2000	1250	1000	1600	3200	1250	1000	1250	2500		4000	4000	5000	4000
	1600	1250			1600	1250	1600					6300	5000
	2000	1600			2000	1600	2000						6300
		2000			2500	2000	2500						
					3200	2500	3200						
					3200								
100	100	100	100	100	100	100	100	100	50	50	50	50	50
42	65	85	130	65	75	100	130	130	75	100	150	100	150
42	65	85	110	65	75	100	130	110	75	100	150	100	150
42	55	65	85	65	75	85	100	85	75	100	130	100	130
42	55	65	85	65	75	85	100	85	75	85	100	100	100
42	65	85	130	65	75	85	100	130	75	100	125	100	125
42	65	85	110	65	75	85	100	110	75	100	125	100	125
42	55	65	65	65	75	85	85	65	75	100	130	100	100
42	55	65	65	65	75	85	85	65	75	85	100	100	100
42	55	65	10	65	75	75	85	15	75	100	100	100	100
42	42	42	-	65	65	65	65	-	75	75	75	85	85
88.2	143	187	286	143	165	220	286	286	165	220	330	220	330
88.2	143	187	242	143	165	220	286	286	165	220	330	220	330
88.2	121	143	187	143	165	187	220	187	165	220	286	220	286
88.2	121	143	187	143	165	187	220	187	165	187	220	220	220
B	B	B	A	B	B	B	B	A	B	B	B	B	B
■	■	■	■	■	■	■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■	■	■	■	■	■	■
80	80	80	80	80	80	80	80	80	80	80	80	80	80
70	70	70	70	70	70	70	70	70	70	70	70	70	70
30	30	30	12	30	30	30	30	12	30	30	30	30	30
		296/386				404/530				566/656		782/908	
		324/414				432/558				594/684		810/936	
50/61	50/61	50/61	52/63	66/80	66/80	66/80	66/80	72/83	97/117	97/117	97/117	140/160	140/160
78/93	78/93	78/93	80/95	104/125	104/125	104/125	104/125	110/127	147/165	147/165	147/165	210/240	210/240

E2 L		E3 N-S-H-V				E3 L		E4 S-H-V		E6 H-V						
1250	1600	800	1000-1250	1600	2000	2500	3200	3200	2000	2500	3200	4000	3200	4000	5000	6300
20	20	20	20	20	20	20	20	20	15	15	15	15	12	12	12	12
60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
4	3	12	12	10	9	8	6	6	2	1.8	7	5	5	4	3	2
3	2	12	12	10	9	7	5	5	1.5	1.3	7	4	5	4	2	1.5
20	20	20	20	20	20	20	20	20	20	20	10	10	10	10	10	10

# Emax Air circuit-breakers for specific applications



		E1		E2				
<b>Automatic circuit-breakers</b>		E1B	E1N	E2B	E2N	E2S	E2L	
Poles	[nr.]	3 - 4		3 - 4				
4p c.-b neutral current-carrying capacity	[% Iu]	100		100				
<b>Iu</b>	<b>(40 °C)</b>	<b>[A]</b>	<b>800-1000- 1250-1600</b>	<b>800-1000- 1250-1600</b>	<b>1600-2000</b>	<b>1000-1250- 1600-2000</b>	<b>800-1000- 1250-1600- 2000</b>	<b>1250-1600</b>
Ue		[V~]	690	690	690	690	690	690
Icu	(220...415 V)	[kA]	42	50	42	65	85	130
Ics	(220...415 V)	[kA]	42	50	42	65	85	130
Icw	(1s)	[kA]	42	50	42	55	65	10
	(3s)	[kA]	36	36	42	42	42	-

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

		Standard version		Standard version	
Poles	[nr.]	Standard version		Standard version	
4p c.-b neutral current-carrying capacity	[% Iu]				
Iu	(40 °C)	[A]			
Ue		[V~]			
Icu	(220...415 V)	[kA]			
Ics	(220...415 V)	[kA]			
Icw	(1s)	[kA]			
	(3s)	[kA]			



<b>Switch-disconnectors</b>		E1B/MS	E1N/MS	E2B/MS	E2N/MS	E2S/MS
Poles	[nr.]	3 - 4	3 - 4	3 - 4	3 - 4	3 - 4
Iu	(40 °C)	[A]	800-1000- 1250-1600	800-1000- 1250-1600	1600-2000	1000-1250- 1600-2000
Ue		[V~]	690	690	690	690
Icw	(1s)	[kA]	42	50	42	55
	(3s)	[kA]	36	36	42	42
Icm	(220...440 V)	[kA]	88.2	105	88.2	121
						143



<b>Automatic circuit-breakers for applications up to 1150 V AC</b>		E2B/E	E2N/E
Poles	[nr.]	3 - 4	3 - 4
Iu	(40 °C)	[A]	1600-2000
Ue		[V~]	1150
Icu	(1000 V)	[kA]	20
Ics	(1000 V)	[kA]	20
Icw	(1s)	[kA]	20
			30

<b>Switch-disconnectors for applications up to 1150 V AC</b>		E2B/E MS	E2N/E MS
Poles	[nr.]	3 - 4	3 - 4
Iu	(40 °C)	[A]	1600-2000
Ue		[V~]	1150
Icw	(1s)	[kA]	20
Icm	(1000 V)	[kA]	40
			63

<b>Switch-disconnectors for ap. up to 1000 V DC</b>		E1B/E MS	E2N/E MS
Poles	[nr.]	3 - 4	3 - 4
Iu	(40 °C)	[A]	800-1250
Ue		[V~]	750 (3p) 1000 (4p)
Icw	(1s)	[kA]	20
Icm	(750 V)	[kA]	42
	(1000 V)	[kA]	42
			25
			52.5
			52.5

<b>Sectionalizing truck</b>		E1 CS	E2 CS
Iu	(40 °C)	[A]	1250
			2000

<b>Earthing switch with making capacity</b>		E1 MTP	E2 MTP
Iu	(40 °C)	[A]	1250
			2000

<b>Earthing truck</b>		E1 MT	E2 MT
Iu	(40 °C)	[A]	1250
			2000

<sup>1)</sup> The performance at 1000 V is 50 kA



E3					E4			E6	
E3N	E3S	E3H	E3V	E3L	E4S	E4H	E4V	E6H	E6V
		3 - 4				3 - 4			3 - 4
		100				50			50
2500-3200	1000-1250-1600-2000-2500-3200	800-1000-1250-1600-2000-2500-3200	800-1250-1600-2000-2500-3200	2000-2500	4000	3200-4000	3200-4000	4000-5000-6300	3200-4000-5000-6300
690	690	690	690	690	690	690	690	690	690
65	75	100	130	130	75	100	150	100	150
65	75	85	100	130	75	100	150	100	125
65	75	75	85	15	75	100	100	100	100
65	65	65	65	-	75	75	75	85	85
					E4S/f	E4H/f	E6H/f		
Standard version					4	4	4		
					100	100	100		
					4000	3200-4000	4000-5000-6300		
					690	690	690		
					80	100	100		
					80	100	100		
					80	85	100		
					75	75	100		
E3N/MS	E3S/MS	E3V/MS	E4S/MS			E4H/MS	E4H/f MS	E6H/MS	E6H/f MS
3 - 4	3 - 4	3 - 4	3 - 4			3 - 4	4	3 - 4	4
2500-3200	1000-1250-1600-2000-2500-3200	800-1250-1600-2000-2500-3200	4000			3200-4000	3200-4000	4000-5000-6300	4000-5000-6300
690	690	690	690			690	690	690	690
65	75	85	75			100	85	100	100
65	65	65	75			75	75	85	85
143	165	286	165			220	220	220	220
E3H/E			E4H/E			E6H/E			
3 - 4			3 - 4			3 - 4			
1250-1600-2000-2500-3200			3200-4000			4000-5000-6300			
1150			1150			1150			
30(*)			65			65			
30(*)			65			65			
30(*)			65			65			
E3H/E MS			E4H/E MS			E6H/E MS			
3 - 4			3 - 4			3 - 4			
1250-1600-2000-2500-3200			3200-4000			4000-5000-6300			
1150			1150			1150			
50			65			65			
105			143			143			
E3H/E MS			E4H/E MS			E6H/E MS			
3 - 4			3 - 4			3 - 4			
1250-1600-2000-2500-3200			3200-4000			4000-5000-6300			
750 (3p) 1000 (4p)			750 (3p) 1000 (4p)			750 (3p) 1000 (4p)			
40			65			65			
105			143			143			
105			143			143			
E3 CS			E4 CS			E6 CS			
3200			4000			6300			
E3 MTP			E4 MTP			E6 MTP			
3200			4000			6300			
E3 MT			E4 MT			E6 MT			
3200			4000			6300			

# Accessories for Emax Air circuit-breakers



## Circuit-breaker version

	Circuit-breaker	
	Circuit-breakers with neutral conductor with full cross-section	
	Circuit-breakers for applications up to 1000 V AC	
	Fixed	Withdrawable
1a) Shunt opening/closing release (YO/YC) and second opening release (YO2)	■	■
1b) SOR test unit	■	■
2a) Undervoltage release (YU)	■	■
2b) Time-delay device for undervoltage release (D)	■	■
3) Geared motor for automatic charging of closing springs (M)	■	■
4a) Electrical signalling of electronic releases tripped	■	■
4b) Electrical signalling of electronic releases tripped with remote reset command	■	■
5a) Electrical signalling of circuit-breaker open/closed <sup>(1)</sup>	■	■
5b) External supplementary electrical signalling of circuit-breakers open/closed	■	■
5c) Electrical signalling of circuit-breaker racked-in/test isolated/racked-out	■	■
5d) Contact signalling closing springs charged	■	■
5e) Contact signalling undervoltage release de-energised (C. Aux YU)	■	■
6a) Current transformer for neutral conductor outside circuit-breaker	■	■
6b) Homopolar toroid for main power supply earthing conductor (star center of the transformer)	■	■
7) Mechanical operation counter	■	■
8a) Lock in open position: key	■	■
8b) Lock in open position: padlocks	■	■
8c) Circuit-breakers lock in racked-in/racked-out/test isolated position		■
8d) Accessory for lock in racked-out/test isolated position		■
8e) Accessory for shutter padlock device		■
8f) Mechanical lock for compartment door	■	■
9a) Protection for opening and closing pushbuttons	■	■
9b) IP54 door protection	■	■
10) Interlocks between circuit-breakers <sup>(2)</sup>	■	■
11) Automatic transfer switch - ATSO10 <sup>(3)</sup>	■	■

### CAPTION

- Accessory on request on fixed or on moving part
- Accessory on request for fixed part
- Accessory on request for moving part

<sup>(1)</sup> For automatic circuit-breakers four auxiliary contacts for electrical signalling of circuit-breaker open/closed is included in the supply as standard

<sup>(2)</sup> Incompatible with the E6/f versions with full cross-section neutral

<sup>(3)</sup> Incompatible with the range of circuit-breakers for applications up to 1150V AC



Switch-disconnector (MS)

Sectionalizing truck (CS)

Earthing switch with making capacity (MPT)

Earthing truck (MT)

Switch-disconnectors for applications up to 1000 V AC

Switch-disconnectors for applications up to 1000 V DC

Fixed

Withdrawable

Withdrawable

Withdrawable

Withdrawable



■ (YC)





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Due to possible developments of standards as well as of materials, the characteristics and dimensions specified in the present catalogue may only be considered binding after confirmation by ABB SACE.