Emax air circuit-breakers. The evolution continues.

Preliminary - 1SDC200006B0201







he new Emax air circuit-breakers are the result of the constant commitment of ABB SACE to look for new solutions along with the expertise in design they have developed over the years. This evolution has been taking place since 1942. The new Emax series is an incredibly innovative high quality circuit breaker range, designed to satisfy all application requirements. The range has completely re-engineered releases fitted with latest generation electronics, improved performances within the same dimensions and new applications to fulfil the latest market needs. The new electronics open up a window on a world of extraordinary solutions, with connectivity options never seen before in the market. Discover the great advantages of ABB SACE's new Emax.

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Continuing the tradition of ABB SACE, the new Emax range offers performances at the top of their category. The Emax series offers you a great advantage: with the increased performances, you can now utilise the smaller circuit-breaker frames, obtaining considerable savings both in economic terms and in physical space within the switchboard.

Emax E1 now offers current ratings up to 1600A, whilst

Emax E3 is enhanced by version V with top of the range

performances.

Always aware of the rapid changes in the market, ABB SACE has made some specific versions to cover new applications and to simplify retrofitting operations.



Now there is remote control

You can gain great benefits from the high level of connectivity possibilities: the new Emax can be connected to handheld and laptop computers utilising Bluetooth technology. The freedom of working with the latest technology offers many useful options: remote programming, supervision and maintenance information gathering can be carried out thanks to a new remote control supervision display. By means of new communication and configuration units, transmitting information to the outside world becomes childsplay. It is even possible to control and monitor devices outside the circuit-breaker with the new external input/output modules.

Extremely simple installation

Installation of the Emax air circuit-breaker is simple thanks to the reduced number of fixing points positioned on the base of the unit. The availability of a wide range of terminals and conversion kits means wall-mounted or rear-accessed switchgear can be built with ease.

Standardised accessories over the whole range

Simplicity, convenience, safety and speed - these are the advantages of the accessory systems designed for the new Emax. The same accessories cover the entire range and can be used both with direct and alternating current. Assembly is always carried out from the front without the need for cabling, with considerable time saving. Thanks to the wide range of accessories available, customisation can be achieved effectively for all customer requirements.

The size advantage increases.



New Emax. Brilliant intelligence.

Emax

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he new Emax range shines like a light from within: the new generation of protection releases is fitted with the latest advances in electronics, offering individual bespoke solutions for control and protection. The new releases, which are amazingly versatile and simple to use, offer important innovations, like the brand-new, intuitive operator interface allowing complete control of the system with just a few simple keystrokes.

Unique to the market, the PR123 release is fitted with directional protection, double protection against earth fault (G protection)



and residual current protection. Discover just how intelligent the new Emax are.

Modularity

The latest generation electronics from ABB SACE have made it possible to design the new, revolutionary PR121, PR122 and PR123 protection releases. The re-engineered hardware architecture allows flexible and precise configuration. It is no longer necessary to completely replace the release with the new Emax - simply

add the module which satisfies your requirements: a great advantage, both in terms

of flexibility and customisation. The new Emax always offers you the most suitable solution for your installation requirement, even the most complicated ones.





Faults: no problem

Indication of the cause of faults is now available on all the release versions. Furthermore, the exclusive data logger function automatically stores the evolution of the last fault and the information about the last twenty faults, helping you to analyse the cause of supply system interruptions. The new releases have many types of protection and alarms available, according to the version and configuration selected; features include maximum and minimum frequency, residual current protection and control of energy flow. It is no longer even necessary to use a different current sensor for each current rating. The new Emax offer you a world of extra solutions which are, at the same time, simple to use.



The new PR122 release can now be personalized, thanks to the communication, remote signalling, protection and advanced measurements modules at any time. In addition to these characteristics, the PR123 release makes all the system measurements, from current flow to the analysis of the harmonic content, available on board of the ACB, with high precision and clarity which makes the traditional external dedicated instruments unnecessary. Moreover, and unique to the market, it offers double protection against short time-delay short-circuit (protection "S"), for more efficient discrimination with moulded-case circuit-breakers on the supply side.



New Emax. Ensured reliability.

eliability and safety have been two of the key factors in the success story of Emax and are a characteristic of the new series, too. Careful selection of materials, meticulous assembly and a

an extremely reliable and sturdy product, able to withstand high dynamic and thermal stresses for longer than any other circuit-breaker in its category. With the new Emax, you are safe and the installation is safe. Furthermore, ABB SACE puts a highly specialised and rapid customer assistance service at your disposal. The new



Emax gives you that comfortable feeling of safety which only a reliable product can do.

Certifications

ABB SACE circuit-breakers have always been appreciated worldwide for their reliability and versatility. These qualities are consistently recognised by countless international certifications. The new Emax air circuit-breakers and their accessories are in accordance with the international IEC 60947-2, EN 60947 (harmonised in 28 countries by CENELEC), CEI EN 60947 and IEC 61000 Standards and conform to the following European directives:

- "Low Voltage Directives" (LVD) no. 73/23/CEE (and subsequent variants)

- "Electromagnetic Compatibility Directive" (EMC) no. 89/336/CEE

The series conforms to the regulations for on-board installations and have been approved by the following Shipping Registers:

- RINA (Italian Shipping Register)
- Det Norske Veritas
- Bureau Veritas
- Germanischer Lloyd
- Lloyd's Register of Shipping
- Polskj Rejester Statkow
- ABS (American Bureau of Shipping)
- RMRS (Russian Maritime Register of Shipping)
- NK (Nippon Kaiji Kyokai)

RINA

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The Emax series also has a range complying with the ANSI C37.13, C37.16, C37.17 and C37.50 Standards and is certified according to the strict American UL 1066 Standard. It is certified by the Russian certification body GOST (Russia Certificate of Conformity) and has obtained the China CCC (China Compulsory Certification) certificate. Certification of conformity with the product Standards is carried out in accordance with the European EN 45011 Standard by the Italian certification body ACAE (Association for Certification of Electrical Apparatus), recognised by the European organisation LOVAG (Low Voltage Agreement Group). ABB SACE's Quality System conforms to the international ISO 9001 Standard (model for quality assurance in design, development, manufacturing, installation and assistance), to the equivalent European EN ISO 9001 Standard and to the UNI EN ISO 9001 Italian transposition. The external certifying Body is RINA-QUACER. ABB SACE obtained its first certification with three-year validity in 1990 and has now reached its fourth

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certification. The manufacturing facility in Frosinone has also obtained ISO 14001 environ-

mental certification.

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SACE Emax automatic circuit-breakers

Common data											
Voltages											
Rated service voltage Ue	[V]	690 ~									
Rated insulation voltage Ui	[V]	1000									
Rated impulse withstand											
voltage Uimp	[kV]	12									
Operating temperature	[°C]	-25+70									
Storage temperature	[°C]	-40+70									
Frequency f	[Hz]	50 - 60									
Number of poles		3 - 4									
Versions	Fixed - Withdrawable										



			E	E1		E	2	
Performance levels			В	Ν	В	Ν	S	L
Currents: rated uninterrupted current (at 4	0 °C) lu	[A]	800	800	1600	1000	800	1250
		[A]	1000	1000	2000	1250	1000	1600
		[A]	1250	1250		1600	1250	
		[A]	1600	1600		2000	1600	
		[A]					2000	
		[A]						
		[A]						
Neutral pole current-carrying capacity for 4-po	ole CBs	[%lu]	100	100	100	100	100	100
Rated ultimate breaking capacity under short	-circuit Icu							
220/230/380/400/415 V ~		[kA]	42	50	42	65	85	130
440 V ~		[kA]	42	50	42	65	85	110
500/525 V ~		[kA]	36	36	42	55	65	85
660/690 V ~		[kA]	36	36	42	55	65	85
Rated service breaking capacity under short-	circuit Ics							
220/230/380/400/415 V ~		[kA]	42	50	42	65	85	130
440 V ~		[kA]	42	50	42	65	85	110
500/525 V ~		[kA]	36	36	42	55	65	65
660/690 V ~		[kA]	36	36	42	55	65	65
Rated short-time withstand current Icw	(1s)	[kA]	42	50	42	55	65	10
	(3s)	[kA]	36	36	42	42	42	_
Rated making capacity under short-circuit (pe	eak value) Icm							
220/230/380/400/415 V ~		[kA]	88.2	105	88.2	143	187	286
440 V ~		[kA]	88.2	105	88.2	143	187	242
500/525 V ~		[kA]	75.6	75.6	84	121	143	187
660/690 V ~		[kA]	75.6	75.6	84	121	143	187
Utilisation category (according to CEI EN 6	0947-2)		В	В	В	В	В	A
Isolation behaviour (according to CEI EN 60	0947-2)							
Overcurrent protection								
Electronic releases for AC applications								
Operating times								
Closing time (max)		[ms]	80	80	80	80	80	80
Breaking time for I <icw (max)<sup="">(1)</icw>		[ms]	70	70	70	70	70	70
Breaking time for I>Icw (max)		[ms]	30	30	30	30	30	12
Overall dimensions								
Fixed: H = 418 mm - D = 302 mm L (3/4 poles	s)	[mm]	296	/386		296	/386	
Withdrawable: H = 461 mm - D = 396.5 mm L	. (3/4 poles)	[mm]	324	/414		324	/414	
Weights (circuit-breaker complete with release	ses and CTs, including ac	cessories)						
Fixed 3/4 poles		[kg]	45/54	45/54	50/61	50/61	50/61	52/63
Withdrawable 3/4 poles (including fixed part)		[kg]	70/82	70/82	78/93	78/93	78/93	80/95

(1) Without intentional delays; (2) The performance at 600V is 100kA.

		E	E1 B-	N	E	2 B	-N-S	;	E2	2 L	
	[A]	800 -	1000-125	01600	80010	000-128	501600	2000	1250	1600	
nance [No. op	perations x 1000]	25	25	25	25	25	25	25	20	20	
[Operations/hour]	60	60	60	60	60	60	60	60	60	
(440 V ~) [No. op	perations x 1000]	10	10	10	15	15	12	10	4	3	
(690 V ~) [No. op	erations x 1000]	10	8	8	15	15	10	8	3	2	
[Operations/hour]	30	30	30	30	30	30	30	20	20	
1	nance [No. op [t (440 V ~) [No. op (690 V ~) [No. op [t	[A] nance [No. operations x 1000] [Operations/hour] (440 V ~) [No. operations x 1000] (690 V ~) [No. operations x 1000] [Operations/hour]	[A] 800 60 nance [No. operations x 1000] 25 [Operations/hour] 60 (440 V ~) [No. operations x 1000] 10 (690 V ~) [No. operations x 1000] 10 [Operations/hour] 30	[A] 800 1000-125 nance [No. operations x 1000] 25 25 [Operations/hour] 60 60 (440 V ~) [No. operations x 1000] 10 10 (690 V ~) [No. operations x 1000] 10 8 [Operations/hour] 30 30	Image: E1 B-N [A] 800 1000-12501600 nance [No. operations x 1000] 25 25 [Operations/hour] 60 60 60 (440 V ~) [No. operations x 1000] 10 10 10 (690 V ~) [No. operations x 1000] 10 8 8 [Operations/hour] 30 30 30	[A] 800 1000-12501600 80010 nance [No. operations x 1000] 25 25 25 [Operations/hour] 60 60 60 (440 V ~) [No. operations x 1000] 10 10 15 (690 V ~) [No. operations x 1000] 10 8 8 15 [Operations/hour] 30 30 30 30	E1 B-N E2 B [A] 800 1000-12501600 8001000-12501600 nance [No. operations x 1000] 25 25 25 25 [Operations/hour] 60 60 60 60 (440 V ~) [No. operations x 1000] 10 10 15 15 (690 V ~) [No. operations x 1000] 10 8 8 15 15 [Operations/hour] 30 30 30 30 30	E1 B-N E2 B-N-S [A] 800 1000-12501600 8001000-12501600 nance [No. operations x 1000] 25 25 25 25 25 [Operations/hour] 60 60 60 60 60 (440 V ~) [No. operations x 1000] 10 10 15 15 12 (690 V ~) [No. operations x 1000] 10 8 8 15 10 [Operations/hour] 30 30 30 30 30 30	E1 B-N E2 B-N-S [A] 800 1000-12501600 8001000-12501600 2000 nance [No. operations x 1000] 25 105 10 10 10 10 10 10 10 10 10 10 <t< td=""><td>E1 B-N E2 B-N-S E2 [A] 800 1000-12501600 8001000-12501600 2000 1250 nance [No. operations x 1000] 25 25 25 25 25 25 25 25 20 (440 V ~) [No. operations x 1000] 10 10 15 15 12 10 4 (690 V ~) [No. operations x 1000] 10 8 8 15 15 10 8 3 [Operations/hour] 30 30 30 30 30 30 30 30 20</td><td>E1 B-N E2 B-N-S E2 L [A] 800 1000-12501600 8001000-12501600 2000 1250 1600 nance [No. operations x 1000] 25 25 25 25 25 25 20 20 [Operations/hour] 60 <td< td=""></td<></td></t<>	E1 B-N E2 B-N-S E2 [A] 800 1000-12501600 8001000-12501600 2000 1250 nance [No. operations x 1000] 25 25 25 25 25 25 25 25 20 (440 V ~) [No. operations x 1000] 10 10 15 15 12 10 4 (690 V ~) [No. operations x 1000] 10 8 8 15 15 10 8 3 [Operations/hour] 30 30 30 30 30 30 30 30 20	E1 B-N E2 B-N-S E2 L [A] 800 1000-12501600 8001000-12501600 2000 1250 1600 nance [No. operations x 1000] 25 25 25 25 25 25 20 20 [Operations/hour] 60 <td< td=""></td<>



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	2500	2000	2500											
 	3200	2500	3200											
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		432/558				594/	/684					810/936		
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104/125	104/1:	25104/125	104/125	110/127	147	/190147	7/190	0147/190			210/260) 21	0/260	
	E:	3 N-S-	H-V		E3			F4	S-H-V			F6	H-V	
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12	12	10	9	8	6	2	1.8		7	5		5	4	3	2		
12	12	10	9	7	5	1.5	1.3		7	4		5	4	2	1.5		
20	20	20	20	20	20	20	20		10	10		10	10	10	10		



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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.