



New SACE Emax 2 From Circuit-breaker to Power Manager

Measure

POWER MANAGER

reliability

EFFICIENCY

EASY
to use!

performance

CONNECTIVITY



Circuit-breakers switch power SACE Emax 2 manages it.

SACE Emax 2 is the new benchmark of air circuit-breakers. Efficient and simple to use, the range offers innovative solutions for today's needs, while anticipating those of tomorrow.

The air circuit-breaker becomes a Power Manager with unique performance that is able to control electrical installations. It is simply integrated into all projects: from standard systems to the most complex and automated networks. Lighting up the future of energy.



Efficiency and control

The power needed, when needed.



SACE Emax 2 air circuit-breakers up to 6300A have been designed to increase efficiency in all installations: from industrial and naval applications to traditional and renewable power generation installations, buildings, data centers and shopping centers. Reliable protection and systems managed with competence.



Thanks to the exclusive **Power Controller** function, the available power can be utilized more efficiently and cleaner energy can be used. The Power Controller, patented by ABB, disconnects non-priority utilities during the times when consumption limits need to be respected and connects them again as soon as it is appropriate. When required, Emax 2 automatically activates auxiliary power supplies such as generator sets.

The Ekip Touch trip units measure power and energy with precision and save the most recent alarms, events and measurements in order to prevent faults to the installation or trip effectively when necessary.



The exclusive **Network Analyzer** function controls the quality of energy in real time.

The innovative **Ekip Touch** and **Hi Touch** protection trip units in the G version include all functions of generator protection switchgear, offering a safe control solution that is ready to use and requires no external devices, wiring or inspections.

Productivity, efficiency, and savings, are guaranteed.

Connectivity Integration is easy. Even from afar.



SACE Emax 2 series circuit-breakers have been designed to be integrated directly into all types of switchgear and automation and energy management systems to improve productivity and energy consumption. Complete integration into smart grids, in buildings and industrial plants is possible.



All circuit-breakers can be equipped with communication units for use with Modbus, Profibus and Devicenet protocols and with the modern Modbus TCP, Profinet and Ethernet IP protocols, which can be installed directly on the terminal box at any time.

The integrated IEC61850 communication module enables connection to automation systems and intelligent networks (Smart Grids).

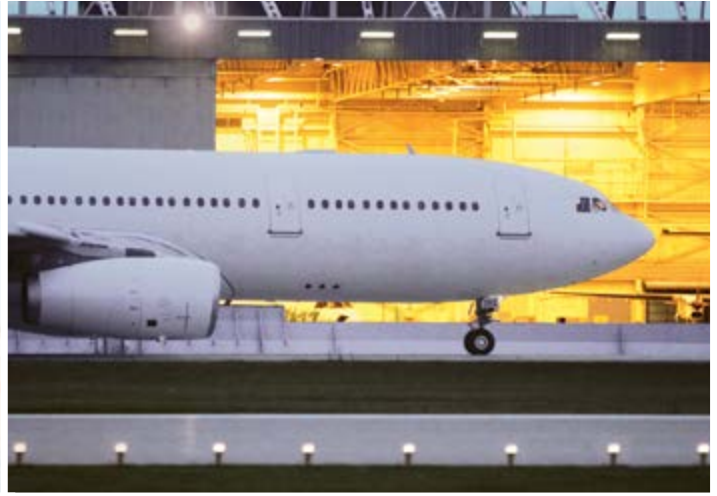
Accurate measurements of current, voltage, power and energy are all available by means of the communication modules and allow the trip units to be used as multimeters.

All circuit-breaker functions are also accessible via the Internet, in complete safety, through the Ekip Link switchgear supervision system and the Ekip Control Panel operator panel.

The power and auxiliary connections are optimized to simplify connection to the switchgear. The power terminals, which can be oriented horizontally or vertically, have been designed for the most common busbars, while the push-in connections of the auxiliaries ensure immediate and safe wiring.

Performance

A size for every requirement.



SACE Emax 2 series air circuit-breakers offer tailored performance to meet the demands of today's installations. Four sizes are available for creating switchgear of compact dimensions and high performance, with busbars of optimized length and cross-sections.

E1.2



E2.2



E4.2



E6.2



E1.2 offers 1,600A with breaking capacity up to 66kA, and withstand current of 50kA for 1 second. It enables switchgear of 66kA to be built in units of 400mm, which are indispensable in places where reduced dimensions are essential, such as in naval and offshore installations.

E2.2 enables ratings of up to 2,500A to be achieved in switchgear with a width of 400mm. In addition, it provides short-circuit currents up to 100kA and withstand current of 85kA for 1 second.

E4.2 is the new 4,000A circuit-breaker, designed to withstand high short-circuit and withstand currents of 100kA for 1 second without the need for particular precautions.

E6.2 is the top of the range model with a breaking capacity of up to 200kA and a structure that allows 6,300A to be reached in switchgear, even in complex installation conditions.

The sizes from E2.2 to E6.2 have the same height and depth.

High short-time currents, together with the efficiency of the protection functions, guarantee complete selectivity in all situations. Accurate 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 a 30% savings at the same performance can be obtained.

Ease of use and safety
Everything under control and
problem free.



Simplified installation and maintenance. The SACE Emax 2 series circuit-breakers are equipped with protection trip units containing a large colour touch-screen display for maximum ease of use. Productivity is increased while all stages, from design to daily operations, are simplified.



Double insulation between the front of the switchgear and live parts, plus essential information, that is clearly available in the central area of the shield, ensure operation in complete safety.

Access from the front, without having to remove the shield, simplifies maintenance.

The withdrawable circuit-breaker can be inserted and removed via dedicated guide rails that simplify movement. The correct movement from the “racked-out” position to the “test” position and then to the “racked-in” position is guaranteed by a lock in each position. The shutters of the fixed part can be locked, even from the front, for maximum safety when the circuit-breaker is removed. The shutters of the upper terminals are independent of those of the lower terminals to facilitate checking and maintenance operations.

SACE Emax 2 circuit-breakers use the same protection trip units, auxiliary connections and main accessories throughout the range.

The **Ekip Touch protection trip units** are equipped with a large colour touch-screen display that ensures safe and intuitive operation. The Ekip units can be programmed and consulted from a tablet, smart phone or portable PC via the Ekip Connect application, which allows the parameters of the safety devices calculated in the DOC project software to be automatically downloaded into the units, without errors.

The trip units are easily interchangeable from the front of the circuit-breaker, and all communication units can be installed directly on the terminal box with just a few simple operations.

Product conformity Approvals and certification.



The SACE Emax 2 circuit-breakers and their accessories have been built in compliance with the international IEC 60947, EN 60947 (harmonized in 30 CENELEC countries), CEI EN 60947 and IEC 61000 Standards, and conform to EC "Low Voltage Directives" (LVD) and "Electromagnetic Compatibility Directive" (EMC).

The main versions of the devices are about to be approved by the following shipping registers: RINA, Lloyd's Register of Shipping, ABS Germanischer Lloyd, Bureau Veritas, Det Norske Veritas, Russian Maritime Register of Shipping, CCS and NKK.

The ABB air circuit-breakers also include a range that has been certified according to American UL 1066 Standards; it is also certified by the Russian certification body GOST (Russia Certificate of Conformity) and has achieved China CCC Certification (China Compulsory Certification).

For the types of certified circuit-breakers, certified ratings and corresponding validity, please contact ABB SACE.

Quality and Sustainability

Company efficiency and integrated management systems.



The involvement of all company departments and the organization of processes since the eighties have led the company to develop, implement and certify management systems in compliance with international standards:

- ISO 9001 for quality management
- IRIS for the quality of supplies in the railway sector (International Railway Industry Standards)
- ISO 14001 for environmental management
- OHSAS 18001 for the management of the health and safety of employees in the workplace
- SA 8000 for the management of social responsibility.

A further commitment aimed at safeguarding the environment has been achieved by assessing the products' life cycle (LCA, [Life Cycle Assessment](#)). This includes assessment and improvement of the environmental performance of the products throughout their entire life cycle, beginning from the initial design stage.

The materials, processes and packaging are chosen so that the real environmental impact of the product is optimized, including considerations for their energy efficiency and recyclability.

SACE Emax 2

Electrical characteristics.

Common data		
Rated service voltage Ue	[V]	690
Rated insulation voltage Ui	[V]	1000
Rated impulse withstand voltage Uimp	[kV]	12
Frequency	[Hz]	50 - 60
Number of poles		3 - 4
Version		Fixed - Withdrawable

SACE Emax 2

Performance levels

Rated uninterrupted current Iu @ 40°C		[A]
		[A]
		[A]
		[A]
		[A]
		[A]
Neutral pole current-carrying capacity for 4-pole CBs		[%Iu]
Rated ultimate short-circuit breaking capacity Icu	400-415 V	[kA]
	690 V	[kA]
Rated service short-circuit breaking capacity Ics		[%Icu]
Rated short-time withstand current Icw	(1s)	[kA]
Utilization category (according to IEC 60947-2)		
Dimensions	H - Fixed / Withdrawable	[mm]
	D - Fixed / Withdrawable	[mm]
	W - Fixed 3p / 4p / 4p Fs Withdrawable 3p / 4p / 4p Fs	[mm]
Available versions	Automatic circuit-breakers @ 690-1150 V AC	
	Switch-disconnectors @ 690-1150V AC, 1000 V DC	
	Sectionalizing truck	
	Earthing switch with making capacity	
	Earthing truck	



Protection trip units

Application	Ekip Dip
Distribution	Protection
Power control	—
Generators	—



E1.2				E2.2				E4.2				E6.2			
B	C	N	L	B	N	S	H	N	S	H	V	H	V	X	
630	630	250	630	1600	800	250	800	3200	3200	3200	2000	4000	4000	4000	
800	800	630	800	2000	1000	800	1000	4000	4000	4000	2500	5000	5000	5000	
1000	1000	800	1000		1250	1000	1250				3200	6300	6300	6300	
1250	1250	1000	1250		1600	1250	1600				4000				
1600	1600	1250			2000	1600	2000								
		1600			2500	2000	2500								
					2500										
100				100				100				50-100			
42	50	66	150	42	66	85	100	66	85	100	150	100	150	200	
42	42	50	60	42	66	66	85	66	66	85	100	100	100	120	
100	100	100 ⁽¹⁾	100	100	100	100	100	100	100	100	85	100	100	100	
42	42	50	15	42	66	66	85	66	66	85	100	100	100	120	
B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	
296 / 363.5				371 / 425				371 / 425				371 / 425			
183 / 271				270 / 383				270 / 383				270 / 383			
210 / 280 278 / 348				276 / 366 317 / 407				384 / 510 425 / 551				762 / 888 / 1014 803 / 929 / 1069			
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⁽¹⁾Ics: 50kA for 400V...440V voltage



Ekip Touch	Ekip Hi-Touch	Ekip G Touch	Ekip G Hi-Touch
Protection and Measurement	Protection, Measurement, Network analyzer	—	—
Protection and Measurement	Protection, Measurement, Network analyzer	Protection and Measurement	Protection, Measurement, Network analyzer
—	—	Protection and Measurement	Protection, Measurement, Network analyzer

Contact us

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