



ABB SACE LTT -40 °C circuit-breakers
Special version for low temperature
environments

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Introduction

ABB SACE Division goes beyond limits by launching a new version of circuit-breakers for extreme environments: a special version of breakers able to operate from -40°C to $+70^{\circ}\text{C}$, which stand out on the market as being unique and complete.

Over the past years, new industrial needs and rapid growth of renewable energy power generation have led to new requirements for electrical installations in terms of extremely low operating temperatures.

Sensitive to these market dynamics and closely following technological innovation, ABB SACE Division offers the new version of circuit-breakers suitable for applications where the ambient temperature is critical.

Introducing a new generation of high performance grease and improving the reliability of the mechanical and electronic components at extremely low temperatures, ABB SACE LTT breakers are the best solution for:

- Substations without heating in the coldest regions of the world
- Wind turbine applications, both onshore and offshore
- Industrial processes with outdoor switchboards
- Dockyards and temporary external switchboards
- Traction applications, such as external infrastructures



ABB SACE Division now offers this distinctive temperature feature in its Emax air circuit-breakers and Emax switch-disconnectors.

Moreover, a wide range of mechanical and electrical accessories completes the ABB SACE LTT version, making the offer complete and suitable for all customer requirements.

The circuit-breakers and their accessories conform to the following major International Standards:

- IEC60947
- UL1066

This new special version can easily be recognized by the dedicated logo -40°C SACE LTT – Low temperature technology, which is always applied on the circuit-breakers.



Emax - Air circuit-breakers

The ABB SACE Emax low temperature range covers all user needs with three sizes, rated uninterrupted currents up to 3200A according to IEC Standards and up to 3200A for breakers according to UL1066 Standards. It is available in three and four poles, fixed and withdrawable versions.

Short-circuit performances, mechanical dimensions and fixing points of the SACE LTT version are the same as those for the standard version family.

Moreover, the mechanical and electrical¹ accessories available for SACE LTT circuit-breaker are in common with the Emax standard version.

¹ Except gearmotor for automatic charging of the closing springs. All electrical accessories are available at 220V AC/DC.



Ranges available

Circuit breaker range	E1	E2	E3
Automatic circuit-breaker		PR121/P LI - LSI - LSI ²	
According to IEC60947		■	
According to UL1066		■	
Switch-disconnector			
According to IEC60947		■	
According to UL1066		■	
Automatic circuit-breaker for variable frequency	-	PR111/VF (High frequency)	
According to IEC60947	-		■
According to UL1066	-		■
Switch-disconnector for variable frequency	-		
According to IEC60947	-		■
According to UL1066	-		■



Accessories available

Mechanical accessories	Circuit-breaker version	
	Fixed	Withdrawable
Mechanical operation counter	■	■
Key lock and padlock in open position	■	■
Key lock and padlock in racked-in/test isolated/racked-out position		■
Accessories for lock in test isolated/racked-out position		■
Padlock devices for safety shutter		■
Mechanical lock for compartment door	■	■
Sealable relay protection	■	■
IP30 flange for switchgear compartment door	■	■

Electrical accessories	Circuit-breaker version	
	Fixed	Withdrawable
Shunt opening and closing releases *	■	■
Second shunt opening release *	■	■
Undervoltage release *	■	■
Gearmotor for the automatic charging of the closing springs*	■	■
Electrical signaling of electronic release tripped	■	■
Electrical signaling of electronic release tripped with remote reset command	■	■
Electrical signaling of circuit breaker open/closed	■	■
External supplementary electrical signaling of circuit breaker open/closed	■	■
Electrical signaling of circuit breaker racked-in/test isolated/racked-out		■
Contact signaling closing springs charged	■	■
Contact signaling for undervoltage release de-energised	■	■

* Dedicated code for low temperature application

Emax air circuit-breakers



Electrical and mechanical operations

	E1		E2			E3			
-40 °C SACE LTT - IEC 60947	800 1600	800 1600	2000	1250 L 1600 L	800 1600	2000	2500	3200	2000L 2500L
Mechanical life with regular ordinary maintenance									
[No.Operations x 1000]	8	8	8	8	8	8	8	8	8
[Operations/ hour]	60	60	60	60	60	60	60	60	60
Electrical Life @ 440 V									
Electrical Life @ 690 V									
[No.Operations x 1000]	8	8	8	3	8	8	8	6	1,8
[No.Operations x 1000]	8	8	8	2	8	8	7	5	1,3
[Operations/ hour]	30	30	30	20	20	20	20	20	20

	E1		E2			E3	
-40 °C SACE LTT - UL 1066	800 1200	800 1600			800 1600	2000	2500 3200
Mechanical life with regular ordinary maintenance							
[No.Operations x 1000]	8	8			8*	8	8
[Operations/ hour]	30	30			30	30	30
Electrical Life @ 600 V							
[No.Operations x 1000]	8	8			8	8	8
[Operations/ hour]	30	30			30	30	30

	E2			E3	
-40 °C SACE LTT - VF	800 1600		1200 1600	2000	2500
Mechanical life with regular ordinary maintenance					
[No.Operations x 1000]		8	8	8	8
[Operations/ hour]		30	30	0	0
Electrical Life @ 690 V					
[No.Operations x 1000]		8	7	7	7
[Operations/ hour]		30	20	20	20

Instructions for ordering

The ABB SACE LTT circuit-breakers can be ordered by adding the dedicated extracode for -40 °C SACE LTT version as first item to the standard commercial code.

Mechanical and electrical accessories can be ordered already mounted on the breaker.

1SDA082039R1	SHUNT OPENING RELEASE 110/120V LTT E1/3
1SDA082040R1	SHUNT OPENING RELEASE 220/240V LTT E1/3
1SDA082041R1	SHUNT CLOSING RELEASE 110/120V LTT E1/3
1SDA082042R1	SHUNT CLOSING RELEASE 220/240V LTT E1/3
1SDA082043R1	UNDER VOLTAGE RELEASE 110/120V LTT E1/3
1SDA082044R1	UNDER VOLTAGE RELEASE 220/240V LTT E1/3
1SDA082045R1	SHUNT OPENING RELEASE ADD.110/120V LTT E1/3
1SDA082046R1	SHUNT OPENING RELEASE ADD.220/240V LTT E1/3
1SDA082047R1	SUPPORT YO-YC-YU RELEASES LTT E1/3

The protection trip units cannot be ordered as loose parts (please contact ABB).

Electrical accessories, such as shunt opening and closing releases, undervoltage releases and geared motors for automatic spring charging are available at 110V and 220V operating voltage.

Emax - Air circuit-breaker - ACB's

	Circuit-breaker commercial code		Extracode
E1	1SDA.....R1	+	1SDA069520R1
E2	1SDA.....R1	+	1SDA069521R1
E3	1SDA.....R1	+	1SDA069522R1

Dedicated accessory codes

E1-E3 1SDA069526R1 Geared motor for the automatic charging of the closing spring LOW TEMP 220...250V AC/DC

How to order - Examples

Example 1

Emax E3N 3200A PR121/P LSI 3 poles, withdrawable version, shunt opening release and geared motor 220V...240V AC/DC:

- Standard code **1SDA056161R1** E3N 3200A PR121/P LSI 3p
- Extracode **1SDA069522R1** E3 -40 °C SACE LTT version
- Dedicated code **1SDA082040R1** Shunt opening release 220...240V AC/DC
- Dedicated code **1SDA069526R1** Geared motor for the automatic charging of the closing spring LOW TEMP 220...250V AC/DC

Example 2

Emax E2N/VF 1600A PR111/VF for high frequency application (20...200Hz), 3 poles fixed version with horizontal terminals:

- Standard code **1SDA069488R1** E2N/VF 1600 PR111VF 3p, fixed version, HR
- Extracode **1SDA069521R1** E2 -40 °C SACE LTT version

Standard code cross references

All the standard commercial codes can be found in our product catalogues:

- Emax – Low voltage air circuit-breakers (IEC) 1SDC200006D0207
- Emax – Low voltage power circuit-breakers (UL) 1SDC200008D0202
- SACE Tmax VF and Emax VF - Low voltage circuit breakers for variable frequency applications 1SDC007904D0201

Contact us

ABB SACE

A division of ABB S.p.A.

L.V. Breakers

Via Baioni, 35

24123 Bergamo - Italy

Tel.: +39 035 395 111

Fax: +39 035 395306-433

www.abb.com

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