

Main characteristics

1

Molded case circuit breakers (MCCB)

| | | | XT1 | | |
|--|-----------------------------|-------------------------|--|----------|----------|
| Frame size | | [A] | 125 | | |
| Rated | | 80% rated | ■ | | |
| | | 100% rated TM | up to 100A | | |
| | | 100% rated Ekip | - | | |
| Poles | | [No.] | 3, 4 | | |
| Rated voltage | (AC) 50-60Hz | [V] | 600Y/347 | | |
| | (DC) | [V] | 500 | | |
| Versions | | | Fixed, Plug-in | | |
| Interrupting ratings | | | N | S | H |
| 240 V (AC) | | [kA] | 50 | 65 | 100 |
| 480 V (AC) | | [kA] | 25 | 35 | 65 |
| 600Y/347 V (AC) | | [kA] | 18 | 22 | 25 |
| 600 V (AC) | | [kA] | - | - | - |
| 250 V (DC) 2 poles in series | | [kA] | 35 | 42 | 50 |
| 500 V (DC) 3 poles in series | | [kA] | - | - | - |
| 500 V (DC) 4 poles in series | | [kA] | 35 | 50 | 50 |
| 600 V (DC) 3 poles in series | | [kA] | - | - | - |
| Mechanical life | | [No. Operations] | 25000 | | |
| | | [No. Hourly operations] | 240 | | |
| Dimensions - Fixed (Width x Depth x Height) | 3 poles | [mm]/[in] | [76,2 x 70 x 130] / [3 x 2.75 x 5.12] | | |
| | 4 poles | [mm]/[in] | [101,6 x 70 x 130] / [4 x 2.75 x 5.12] | | |
| Weight | Fixed 3/4 poles | [kg]/[lbs] | [1,1 - 2.43] / [1,4 - 3.07] | | |
| | Plug-in (EF) 3/4 poles | [kg]/[lbs] | [2,21 - 4.87] / [2,82 - 6.22] | | |
| | Withdrawable (EF) 3/4 poles | [kg]/[lbs] | - | | |
| Total opening time | CB with SOR | [ms] | 15 | | |
| | CB with UVR | [ms] | 15 | | |
| Trip units for power distribution | | | ■ | | |
| TMF | | | | | |
| TMA | | | | | |
| Ekip LS/I | | | | | |
| Ekip LSI | | | | | |
| Ekip LSIG | | | | | |
| Ekip E-LSIG | | | | | |

⁽¹⁾ Current Limiting circuit breaker in 480V AC and 600V AC

⁽²⁾ 2-poles version available only as complete circuit breaker with TMF; 4-poles version available only as complete circuit breaker from In=80 to In=250 with TMF

⁽³⁾ With F, EF, ES, FCCuAl installation

⁽⁴⁾ 100kA up to 150A, 65kA from 175A up to 250A

Motor protection ⁽¹⁾

| | | | XT1 | | |
|---------------------------------|--------------|-------|----------------|--|--|
| Frame size | | [A] | 125 | | |
| Poles | | [No.] | 3 | | |
| Rated service voltage | (AC) 50-60Hz | [V] | 600Y/347 | | |
| | (DC) | [V] | 500 | | |
| Versions | | | Fixed, Plug-in | | |
| Rating level | | | H | | |
| Trip units for motor protection | | | ■ | | |
| MA (MCP) | | | | | |
| Ekip M-LIU (MPCB) | | | | | |
| Ekip I | | | | | |

⁽¹⁾ Available only as complete circuit breaker

Molded case disconnect switches (MCS)

| | | | XT1 | | |
|-------------------|--------------|-------|---|----------|----------|
| Frame Size | | [A] | 125 | | |
| Poles | | [No.] | 3, 4 | | |
| Rated voltage | (AC) 50-60Hz | [V] | 600Y/347 | | |
| | (DC) | [V] | 500 4p series / 3p CB up to 250V DC 2p series | | |
| Versions | | | Fixed, Plug-in | | |
| Rating level | | | N | S | H |
| Magnetic Override | | [A] | 1250 | | |

| XT2 | | | | | | | XT3 | | | | | XT4 | | | | | |
|---|-----|------------------|------------------|------------------|-----|--|---|----|--|----|-----|--|------------------|------------------|-----------------------|--|--|
| 125 | | | | | | | 225 | | | | | 250 | | | | | |
| ■ | | | | | | | ■ | | | | | ■ | | | | | |
| up to 100A | | | | | | | fixed version only | | | | | up to 250A ⁽³⁾ | | | | | |
| ■ | | | | | | | - | | | | | up to 250A ⁽³⁾ | | | | | |
| 3, 4 | | | | | | | 3, 4 | | | | | 2 (for N version) 3, 4 | | | | | |
| 600 | | | | | | | 600Y/347 | | | | | 600 | | | | | |
| 500 | | | | | | | 500 | | | | | 600 | | | | | |
| Fixed, Plug-in, Withdrawable | | | | | | | Fixed, Plug-in | | | | | Fixed, Plug-in, Withdrawable | | | | | |
| N | S | H ⁽¹⁾ | L ⁽¹⁾ | V ⁽¹⁾ | X | | N | S | | N | S | H ⁽¹⁾ | L ⁽¹⁾ | V ⁽¹⁾ | X | | |
| 65 | 100 | 150 | 200 | 200 | 200 | | 50 | 65 | | 65 | 100 | 150 | 200 | 200 | 200 | | |
| 25 | 35 | 65 | 100 | 150 | 200 | | 25 | 35 | | 25 | 35 | 65 | 100 | 150 | 200 | | |
| - | - | - | - | - | - | | 10 | 10 | | - | - | - | - | - | - | | |
| 18 | 22 | 25 | 35 | 42 | 45 | | - | - | | 18 | 22 | 25 | 50 | 65 | 100/65 ⁽⁴⁾ | | |
| 35 | 50 | 65 | 75 | 85 | 85 | | 25 | 35 | | 35 | 42 | 50 | 85 | 100 | - | | |
| 35 | 50 | 65 | 75 | 85 | 85 | | 25 | 35 | | - | - | - | - | - | - | | |
| - | - | - | - | - | - | | - | - | | - | - | - | - | - | - | | |
| - | - | - | - | - | - | | - | - | | 35 | 50 | 65 | 75 | 85 | - | | |
| 25000 | | | | | | | 25000 | | | | | 25000 | | | | | |
| 240 | | | | | | | 240 | | | | | 240 | | | | | |
| [90 x 82,5 x 130] / [3.54 x 3.25 x 5.12] | | | | | | | [105 x 70 x 150] / [4.13 x 2.75 x 5.90] | | | | | [105 x 82,5 x 160] - [4.13 x 3.25 x 6.3] | | | | | |
| [120 x 82,5 x 130] / [4.72 x 3.25 x 5.12] | | | | | | | [140 x 70 x 150] / [5.51 x 2.75 x 5.90] | | | | | [140 x 82,5 x 160] - [5.51 x 3.25 x 6.3] | | | | | |
| [1,2 - 2.65] / [1,6 - 3.53] | | | | | | | [1,7 - 3.37] / [2,1 - 4.63] | | | | | [2,5 - 5.51] / [3,5 - 7.72] | | | | | |
| [2,54 - 5.60] / [3,27 - 7.21] | | | | | | | [3,24 - 7.14] / [4,1 - 9.04] | | | | | [4,19 - 9.24] / [5,52 - 12.17] | | | | | |
| [3,32 - 7.32] / [4,04 - 8.91] | | | | | | | | | | | | [5 - 11.02] / [6,76 - 14.90] | | | | | |
| 15 | | | | | | | 15 | | | | | 15 | | | | | |
| 15 | | | | | | | 15 | | | | | 15 | | | | | |
| ■ | | | | | | | ■ | | | | | ■ | | | | | |
| ■ | | | | | | | ■ | | | | | ■ | | | | | |
| ■ | | | | | | | ■ | | | | | ■ | | | | | |
| ■ | | | | | | | ■ | | | | | ■ | | | | | |
| ■ | | | | | | | ■ | | | | | ■ | | | | | |

| XT2 | | | | | | | XT3 | | | | | XT4 | | | | | |
|------------------------------|--|--|--|--|--|--|----------------|--|--|--|--|------------------------------|--|--|--|--|--|
| 125 | | | | | | | 225 | | | | | 250 | | | | | |
| 3 | | | | | | | 3 | | | | | 3 | | | | | |
| 600 | | | | | | | 600Y/347 | | | | | 600 | | | | | |
| 500 | | | | | | | 500 | | | | | 600 | | | | | |
| Fixed, Plug-in, Withdrawable | | | | | | | Fixed, Plug-in | | | | | Fixed, Plug-in, Withdrawable | | | | | |
| H | | | | | | | S | | | | | H | | | | | |
| ■ | | | | | | | ■ | | | | | ■ | | | | | |
| ■ | | | | | | | ■ | | | | | ■ | | | | | |
| ■ | | | | | | | ■ | | | | | ■ | | | | | |

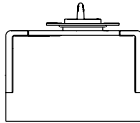
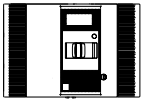
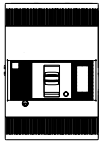
| XT2 | | | | | | | XT3 | | | | | XT4 | | | | | |
|------------------------------|---|--|--|--|--|--|----------------|---|------|---|--|------------------------------|--|---|---|---|--|
| 125 | | | | | | | 225 | | | | | 250 | | | | | |
| 3, 4 | | | | | | | 3, 4 | | | | | 3, 4 | | | | | |
| 600 | | | | | | | 600Y/347 | | | | | 600 | | | | | |
| 500 3p series | | | | | | | 500 3p series | | | | | 600 3p series | | | | | |
| Fixed, Plug-in, Withdrawable | | | | | | | Fixed, Plug-in | | | | | Fixed, Plug-in, Withdrawable | | | | | |
| N | H | | | | | | L | V | N | S | | | | H | L | V | |
| 1250 | | | | | | | | | 2250 | | | | | | | | |

Main characteristics

1



Positive operation



Installation positions

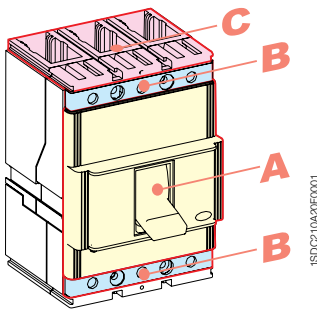
The references in round brackets ^(Gx.x) refer to the Glossary in the final chapter of the technical catalog.

All circuit breakers in the SACE Tmax XT family are made with the following construction characteristics:

- double insulation^(G1.5);
- positive operation^(G1.6);
- isolation behavior^(G1.7);
- electromagnetic compatibility^(G1.8);
- tropicalization^(G1.9);
- impact and vibration resistance^(G1.10);
- power supply from the top towards the bottom or vice versa, except for over 480V on XT2 and over 600V on XT4;
- installation versatility. Circuit breaker can be mounted in a horizontal or vertical position or laid flat without any derating of rated characteristics;
- no nominal performance derating for use up to an altitude of 2000m/6561ft. Above 2000m/6561ft, atmospheric properties (air composition, dielectric strength, cooling power and pressure) change, affecting the main parameters that define the circuit breaker. The table below shows changes to the main performance parameters:

| Altitude | | 2000m/ 6561ft | 3000m/ 9842ft | 4000m/ 13123ft | 5000m/ 16404ft |
|--------------------------------------|--------|------------------|------------------|-------------------|-------------------|
| Rated employ voltage, U _e | [V AC] | 600 | 528 | 468 | 408 |
| Rated uninterrupted current | % | 100 | 98 | 93 | 90 |

- SACE Tmax XT circuit breakers can be used in ambient temperatures between -25°C/-13°F and +70°C/158°F and stored in ambient temperatures between -40°C/-40°F and +70°C/158°F. For temperatures outside these ranges, see the “Temperature performance” paragraph of the “Typical curves and technical information” chapter;
- different degrees of IP (International Protection)^{(G 1.11)²⁾};



Protection degrees

Circuit-breaker

| | With front | Without front ⁽¹⁾ | With front for lever -FLD- | With rotary handles | With extended rotary handle and accessory IP54 | With high terminal covers HTC | With low terminal covers LTC |
|----------|------------|------------------------------|----------------------------|---------------------|--|-------------------------------|------------------------------|
| A | IP40 | IP20 | IP40 | IP40 | IP54 | IP40 | IP40 |
| B | IP20 | IP20 | IP20 | IP20 | IP20 | IP40 | IP40 |
| C | NC | NC | NC | NC | NC | IP40 | IP30 |

⁽¹⁾ During the installation of electrical accessories

NC Not classifiable

⁽²⁾ IEC only

Accessories

| | Motor operator MOD, MOE or MOE-E | Residual current devices | Residual current from switchboard RCQ020 | Automatic transfer switch ATS021 and ATS022 |
|----------|----------------------------------|--------------------------|--|---|
| On Front | IP30 | IP40 | IP41 | IP40 |

- all circuit breakers in the XT family have a pushbutton for performing the release test. The circuit breaker must be closed, with no current, while the test is being performed.



Test pushbutton



Hologram

Conformity with Standards

SACE Tmax XT circuit breakers and their accessories are constructed in conformity with:

- Standard^(G6.1):
 - UL 489;
 - CSA C22.2 No. 5;
 - IEC 60947-2;
- Directives^(G6.2):
 - EC “Low Voltage Directive” (LVD) N° 2006/95/EC (replacing 73/23/EEC and subsequent amendments);
 - EC “Electromagnetic Compatibility Directive” (EMC) 2004/108/CE;
- Naval Registers^(G6.3) (ask ABB SACE for the versions available):
 - ABS.

Certification of conformity with the product Standards is carried out in the ABB SACE test laboratory (accredited by SINAL) in respect of the EN 45011 European Standard, by the Italian certification body ACAE (Association for Certification of Electrical Apparatus), member of the European LOVAG organization (Low Voltage Agreement Group) and by the Swedish certification body SEMKO belonging to the International IECCE organization.

The SACE Tmax XT series has a hologram on the front, obtained using special anti-forgery techniques. This ensures the quality and authenticity of the circuit breaker as a genuine ABB SACE product.



Naval Registers

Company Quality System

The ABB SACE Quality System conforms to the following Standards:

- ISO 9001 International Standard;
- EN ISO 9001 (equivalent) European Standards;
- UNI EN ISO 9001 (equivalent) Italian Standards;
- IRIS International Railway Industry Standard.

The ABB SACE Quality System attained its first certification with the RINA certification body in 1990.

Environmental management system, social responsibility and ethics

For ABB SACE, environmental protection is a top priority, as evidenced when ours was the first industry in Italy’s electromechanical sector to have obtained the RINA’s Environmental Management System certification in recognition of the company’s commitment in conformity with the International ISO 14001 Standard.

In 1999, the Environmental Management System and the Occupational Health and Safety Management System were integrated according to the OHSAS 18001 Standard. In 2005, the SA 8000 (Social Accountability 8000) Standard was integrated, committing itself to respect business ethics and working conditions.

Our commitment to environmental protection is solidified through:

- selection of materials, processes and packaging which mitigate the true environmental impact of the product;
- use of recyclable materials;
- voluntary adherence to the RoHS directive^(G6.4).

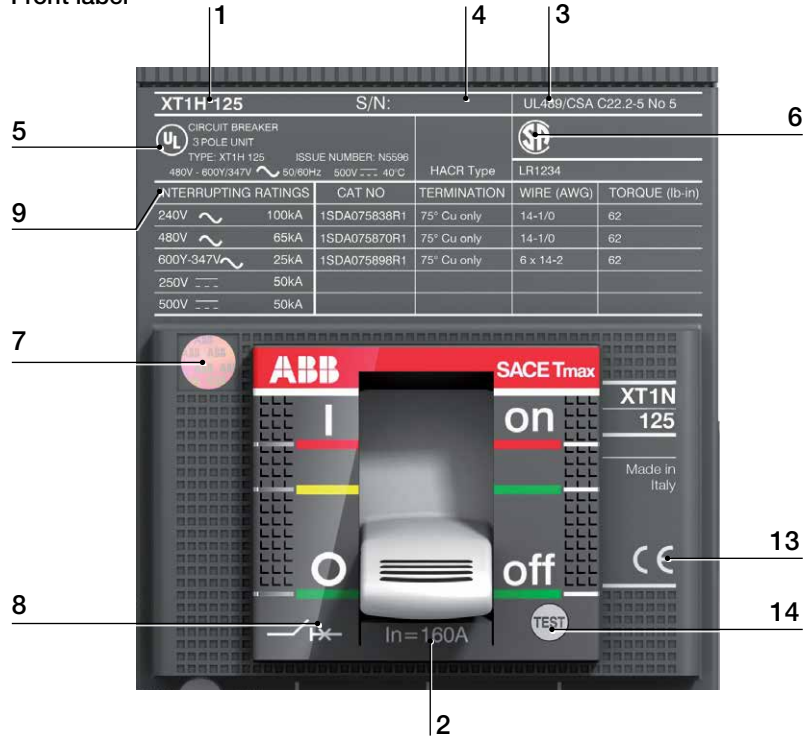
ISO 14001, 18001 and SA8000 recognitions together with ISO 9001 made it possible for ABB SACE to obtain RINA BEST FOUR CERTIFICATION.

Identification of the SACE Tmax XT circuit breakers

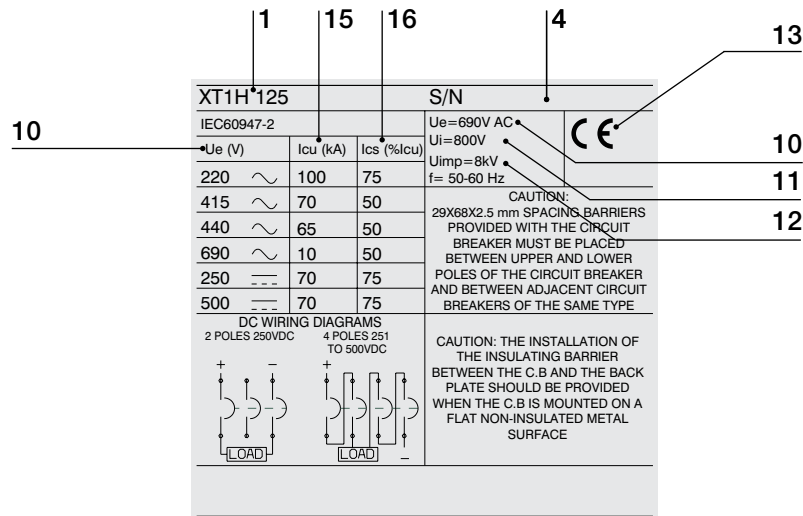
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The specifications of each circuit breaker appear on the rating name plate on both the front and side of the unit.

Front label



Side label



- | | | | |
|---|----------------------------------|----|--|
| 1 | Name and performance level | 9 | Interrupting ratings |
| 2 | In: rated current | 10 | Rated service voltage |
| 3 | Reference standard UL489/CSA22.2 | 11 | Rated insulation voltage |
| 4 | Serial number | 12 | Rated impulse withstand voltage |
| 5 | UL marking | 13 | CE marking |
| 6 | CSA marking | 14 | Test pushbutton |
| 7 | Anti-forgery logo | 15 | Rated ultimate short-circuit breaking capacity |
| 8 | Symbol of isolation behavior | 16 | Rated short-circuit duty breaking capacity |

Nomenclature of the trip units

The tables below outline the logic behind the naming of each thermal magnetic and electronic trip unit.

Magnetic trip units

| Family name | | Protection |
|-------------|---|------------------------------|
| M: magnetic | + | A: with adjustable threshold |

Thermal magnetic trip units

| Family name | | Protection |
|----------------------|---|--|
| TM: thermal magnetic | + | F: with fixed threshold A: with adjustable thermal and magnetic threshold |

Example:

- MA: magnetic only trip unit, with adjustable protection threshold (MCP);
- TMF: thermal magnetic trip unit, with fixed thermal and fixed magnetic protection threshold;

Electronic trip units

| Family name | | Application | | Protection |
|-------------|---|--|---|---------------------------------|
| Ekip | + |: Distribution M: Motor protection E: Energy measurements | + | I LS/I LSI LSIG LIU |

Example:

- Ekip LS/I: electronic trip unit for distribution networks protection, with “L” against overload and either “S” protection function against delay short circuit or “I” protection function against instantaneous short circuit;
- Ekip M-LIU: electronic trip unit for motor protection, with LIU protection functions.

Residual current protection devices⁽¹⁾

| Family name | | Typology |
|-------------|---|---|
| RC | + | Inst: instantaneous type 'A' Sel: selective type 'A' Sel 200: selective type 'A' reduced to 200mm B Type: selective type 'B' |

⁽¹⁾ IEC only