SACE Tmax XT
Low voltage molded case circuit-breakers

Break new ground
- Data and connectivity
- Ease of use and installation
- Performance and protection
- Safety and reliability
SACE Tmax XT
The complete offering
Installation

**Installation environment**
- Temperature
- Environmental conditions
- Shocks and vibrations
- Electromagnetic compatibility
- Degrees of protection
- Installation position

**Temperature performance**
- Circuit-breakers with thermal-magnetic trip units
- Circuit-breaker with magnetic only or electronic trip units and switch-disconnectors
- Power losses

**Magnetic trip values**

**Insulation distances**
- Clearances for installation in metallic cubicles
- Alternating Current (AC) Application
- Direct Current (DC) Application
- Minimum clearance between two side by side circuit-breakers
- Minimum clearance between two superimposed circuit-breakers
- The first insulated anchor

**Special applications**
- Use of apparatus at 400Hz
- Use of direct current apparatus
- Variation of magnetic tripping

**Characteristic curves**
- Example of curves reading
- Trip curves with thermal-magnetic trip unit
- Trip curves with electronic trip unit Ekip Dip
- Trip curves with electronic trip unit Ekip Touch and Hi-Touch
- Specific let-through energy curves
- Limiting curves
Installation environment

Temperature

The Tmax XT circuit-breakers can be used in environmental conditions where the ambient air temperature varies between -25°C and +70°C, and can be stored at temperatures between -40 °C and +70 °C. Circuit-breakers fitted with thermomagnetic trip units have their thermal element set for a reference temperature. For temperatures other than the reference, a trip threshold variation must be taken into account. Electronic trip units do not undergo any variations in performance as the temperature varies, but, in the case of temperatures exceeding +40°C, the maximum setting for protection L (protection against overloads) must be reduced, as indicated in the derating graph, to take into account the heating phenomena which occur in the copper parts of the circuit-breaker which the phase current passes through. For temperatures above +70°C the circuit-breaker performances are not guaranteed.

Environmental conditions

The Tmax XT circuit-breakers are designed to operate in environments with a pollution degree of 3 according to the IEC 60947-2 Standard classification.

Altitude

Up to an altitude of 2000m, the Tmax XT circuit-breakers do not undergo any alteration in their rated performances. As the altitude increases, the atmospheric properties are altered in terms of composition, dielectric resistance, cooling capacity and pressure. Therefore, some performance aspects of the circuit-breaker (e.g. the maximum rated operating voltage and the rated uninterrupted current) undergo derating.

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<th>Altitude</th>
<th>2000m</th>
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<th>4000m</th>
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Shocks and vibrations

The Tmax XT circuit-breakers are unaffected by vibrations generated mechanically and due to electromagnetic effects, in compliance with the IEC 60068-2-6 Standards and the regulations of the major shipping registers including:
- RINA
- Det Norske Veritas
- Bureau Veritas
- Lloyd’s Register of Shipping
- Germanischer Lloyd
- ABS
- Russian Maritime Register of Shipping
- Nippon Kaiji Kyokai.

The Tmax XT circuit-breakers are also tested according to the IEC 60068-2-27 Standard to resist shocks up to 12g for 11 ms.

Electromagnetic compatibility

Protection is guaranteed in the presence of interference caused by electronic apparatus, atmospheric disturbances or electrical discharges by using the electronic trip units and the electronic residual current releases. No interference with other electronic apparatus near the place of installation is generated either. This is in compliance with the IEC 60947-2 Annex B + Annex F Standards and European Directive No. 89/336 regarding EMC - electromagnetic compatibility.
Degrees of protection
The IP degree of the circuit-breaker can vary depending on the area considered and on the presence of accessories such as a motor or terminal cover.
The following table indicates the degrees of protection guaranteed by Tmax XT circuit-breakers according to the prescriptions of the IEC 60529 Standard, in the different configurations. Furthermore, special kits are available to achieve IP54 with the MOE or RHD installed on the XT7.

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<td>XT1, XT2, XT3, XT4</td>
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<table>
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<th>With RHD</th>
<th>With RHE</th>
<th>Motor operator MOD, MOE or MOE-E</th>
<th>Residual current devices</th>
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<td>IP40</td>
<td>IP40</td>
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* XT7 : IP65

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<td>B</td>
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<table>
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<th>Automatic Transfer Switch ATS021, ATS022</th>
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Installation position
It is possible to mount circuit-breakers in the fixed version in horizontal, vertical or lying down positions without any derating of the rated characteristics.
## Temperature performance

Circuit-breakers with thermal-magnetic trip units

The circuit-breakers fitted with thermal-magnetic trip units have the thermal element set for a reference temperature of +40°C. With the same setting, for temperatures other than +40°C there is a variation in the thermal trip threshold as indicated in the tables below.

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</table>
Circuit-breaker with magnetic only or electronic trip units and switch-disconnectors

The electronic overcurrent trip units do not undergo any variations in performance as the temperature varies. However, even though heating does not affect the trip thresholds of the electronic trip units, in the case of temperatures exceeding +40°C it is advisable to reduce the maximum L (protection against overloads) setting to protect the copper parts of the circuit-breaker against high temperatures.

The same considerations can be made for the switch-disconnectors and magnetic only circuit-breakers. The table below shows the maximum value at which the threshold of I₁ of the overcurrent protection (L) must be set according to the ambient temperature and for the type of terminals used.

<table>
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<tr>
<th></th>
<th>40°C</th>
<th>45°C</th>
<th>50°C</th>
<th>55°C</th>
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Power losses
To ensure service continuity of the plants, careful assessment of how to keep temperatures within acceptable levels to guarantee operation of all devices is necessary (e.g. by using forced ventilation in switchboards and installation rooms).

The table below shows the dissipated power values per single pole at the rated current In for each circuit-breaker used. The total maximum dissipated power for a circuit-breaker used at 50/60Hz is equal to the power per single pole multiplied by the number of poles.

<table>
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<th>XT4</th>
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<td>F</td>
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<tr>
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</tr>
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</table>

Power losses gives indication of the heat generated under specified conditions. Measurement of power losses are performed according to Annex G of IEC (free air, on new samples). These values shall be assumed as average values.
Temperature performance

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<th>Power [W/pole]</th>
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<th>XT7-XT7 M</th>
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<td>57</td>
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<td>94</td>
<td>141</td>
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# Magnetic trip values

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<tr>
<th>Breaker</th>
<th>Trip Unit</th>
<th>In [A]</th>
<th>I3 [A]</th>
<th>Single phase trip current (%I3)</th>
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<tbody>
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<td>14..2240</td>
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<td>16..1600</td>
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</tr>
<tr>
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<td>1..10xIn</td>
<td>100%</td>
</tr>
<tr>
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<td>1..10xIn</td>
<td>100%</td>
</tr>
<tr>
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<td>Ekip Dip LSIG</td>
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<td>1..10xIn</td>
<td>100%</td>
</tr>
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<td>100%</td>
</tr>
<tr>
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<td>6..13xIn</td>
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<td>1..5..10xIn</td>
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<td>300..2500</td>
<td>150%</td>
</tr>
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<td>1..10xIn</td>
<td>100%</td>
</tr>
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<td>1..10xIn</td>
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</tr>
<tr>
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</tr>
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<td>1..10xIn</td>
<td>100%</td>
</tr>
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<td>320..1600</td>
<td>1..10xIn</td>
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(1) This satisfies the requirements of the IEC 60947-2 Standard, section 8.3.3.1.2.
Clearances for installation in metallic cubicles

This section provides the compliance clearances for the installation of the circuit-breaker inside a metal cubicle. The cubicle is the reference for the metallic parts of the switchgear assembly adjacent to the circuit-breaker and is used as a reference to define the clearances to be observed to permit the free evacuation of ionized gases and metal vapors and to prevent the ignition of adjacent parts. The clearances refer to the tests carried out in compliance with the IEC 60947-2 Standard.

The installation modality in relation to the type of circuit-breaker and the compulsory protections that must be used depending on the connection terminals is summarized in the tables below.

For further details about installation, please see the related instructions provided with the circuit-breaker.

<table>
<thead>
<tr>
<th></th>
<th>LTC</th>
<th>HTC</th>
<th>HTC-ES</th>
<th>PB 25mm</th>
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<tbody>
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### XT4

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### XT7

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### Alternating Current (AC) Application

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<th>High terminal cover (HTC)</th>
<th>Phase separators 25mm</th>
<th>Phase separators 100mm</th>
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<td>*</td>
<td>25</td>
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<td>20</td>
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<tr>
<td>$440 \text{V} \leq U \leq 500 \text{V}$</td>
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<td>*</td>
<td>25</td>
<td>20</td>
<td>20</td>
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<tr>
<td>$500 \text{V} &lt; U \leq 690 \text{V}$</td>
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<td>20</td>
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<td>$U &lt; 440 \text{V}$</td>
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<td>20</td>
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<td>$U &lt; 440 \text{V}$</td>
<td>*</td>
<td>*</td>
<td>50</td>
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<td>20</td>
</tr>
<tr>
<td>$440 \text{V} \leq U \leq 500 \text{V}$</td>
<td>*</td>
<td>*</td>
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<td>20</td>
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<tr>
<td>$500 \text{V} &lt; U \leq 690 \text{V}$</td>
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<td><strong>XT4</strong></td>
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</tr>
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<td>*</td>
<td>*</td>
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<td>$440 \text{V} \leq U \leq 500 \text{V}$</td>
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<td>*</td>
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<td>$500 \text{V} &lt; U \leq 690 \text{V}$</td>
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<td>10</td>
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<td>$440 \text{V} \leq U \leq 500 \text{V}$</td>
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* Not allowed
** For details about allowed terminals configurations see XT4 instruction manual
(1) In case of ES terminals, this distance must be added to the maximum lateral dimension of the terminals
(2) In case of ES terminals, this distance must be 70 mm and must be added to the maximum lateral dimension of the terminals
Direct Current (DC) Application

<table>
<thead>
<tr>
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<th>Phase separators 25mm</th>
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<td>0 0 20</td>
<td>0 0 20</td>
</tr>
<tr>
<td>250V &lt; U ≤ 500V</td>
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<td></td>
</tr>
<tr>
<td>U ≤ 250V</td>
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<td>*</td>
<td>50 45 50</td>
<td>25 20 50</td>
<td>0 0 50</td>
</tr>
<tr>
<td>250V &lt; U ≤ 500V</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>50 45 50</td>
<td>25 20 50</td>
<td>0 0 50</td>
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<tr>
<td>250V &lt; U ≤ 500V</td>
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<td>50 20 20</td>
<td>25 0 20</td>
<td>0 0 20</td>
</tr>
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</tr>
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<td>U ≤ 250V</td>
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<td>*</td>
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<tr>
<td>U ≤ 500V</td>
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<td>20</td>
<td>5 0 5</td>
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<td>20</td>
<td>30 10 5</td>
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* Not allowed
** Considered only FC CuAl with PB 25mm configuration
(1) In case of ES terminals, this distance must be added to the maximum lateral dimension of the terminals
(2) In case of ES terminals, this distance must be 70 mm and must be added to the maximum lateral dimension of the terminals
Insulation distances

Minimum clearance between two side by side circuit-breakers

This section gives the clearances to be observed for side by side installation of SACE Tmax XT circuit-breakers in plants with voltages up to 690V AC.

The following table show the minimum center distance between two circuit-breaker side by side. When side by side breakers are different in size, the larger reference clearance should be considered.

In case of Tmax XT1 up to XT4, the values are valid only when they have an HTC or a phase separator is inserted in the slot formed when placing the two fixed circuit-breakers side by side.

<table>
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<tr>
<th>Circuit-breaker width (mm)</th>
<th>Centre distance I (mm)</th>
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<td>XT1</td>
<td>76</td>
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<td>XT2</td>
<td>90</td>
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<tr>
<td>XT3</td>
<td>105</td>
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<tr>
<td>XT4</td>
<td>105</td>
</tr>
<tr>
<td>XT7</td>
<td>210</td>
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</table>

(1) with phases separators or HTC between two circuit-breakers (see Fig. 1 and Fig. 2)
If the conditions written above are not fulfilled, SACE Tmax XT circuit-breakers can be installed side by side with a minimum clearance D as shown in the following table:

<table>
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<th>Circuit-breaker</th>
<th>Terminals</th>
<th>D [mm]</th>
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<td>ES</td>
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<td>EF</td>
<td>35</td>
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<td></td>
<td>Other types of terminals</td>
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<td>XT2-XT4 F-P-W</td>
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<td>EF</td>
<td>35</td>
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<tr>
<td></td>
<td>Other types of terminals</td>
<td>25</td>
</tr>
</tbody>
</table>

Here are some examples:

- Adjustable rear terminals R and low terminal covers LTC
- Circuit-breakers with front extended spread terminals ES
- Circuit-breakers with front extended terminals EF
Insulation distances

Minimum clearance between two superimposed circuit-breakers

This section gives the clearances H to meet for superimposed mounting of the SACE Tmax XT circuit-breakers in installations with voltages up to 690Vac. Verify that the bare bars or connection cables do not reduce the recommended clearances.

The distances given in the table refer to the maximum overall dimensions of the circuit-breakers in the different versions (F/W/P), with terminals and metallic lugs of insulated cables included, for example. When superimposed circuit-breakers are different in size, the larger reference clearance should be considered.

<table>
<thead>
<tr>
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<th>H [mm]</th>
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<tr>
<td>XT3</td>
<td>140</td>
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<tr>
<td>XT4</td>
<td>150</td>
</tr>
<tr>
<td>XT7</td>
<td>180</td>
</tr>
</tbody>
</table>

In case of cables with metallic lugs, an insulating screen behind the metallic lugs (on the rear of the circuit-breaker) or high terminal covers is mandatory.
The first insulated anchor

For the Tmax XT molded-case circuit-breakers, the figure below gives an example of the maximum recommended distance (in mm) within which the first insulated anchor should be positioned according to the highest admissible peak current value of the circuit-breaker and according to the cross-sectional area of the cable.

The maximum recommended distance is also valid for busbar connections. For further information and details, circuit-breaker instruction manuals should be consulted.

SACE Tmax XT1

SACE Tmax XT2

SACE Tmax XT3

SACE Tmax XT4
Use of apparatus at 400Hz

The circuit-breakers used for power distribution can operate in alternating current at different frequencies from 50/60Hz (reference frequencies for the rated performances of the apparatus) as long as the appropriate derating coefficients are applied.

At 400Hz, the performance of the circuit-breakers is reclassified to take the following phenomena into account:

- an increase in the skin effect and increased inductive reactance (which are directly proportional to the frequency) overheat the conductors or the copper components that normally carry the current in the circuit-breaker;
- lengthening of the hysteresis loop and reduction of the magnetic saturation value, which consequently varies the forces associated with the magnetic field at a given current value.

These phenomena influence the behaviour of both the thresholds of the thermal-magnetic trip units as well as the current carrying capacity of the circuit-breaker.

All the circuit-breakers in the SACE Tmax XT family equipped with thermal-magnetic or electronic Ekip Dip trip units (except for the Ekip M-I and Ekip M-LIU) can be used in 400Hz installations with the modifications described below.

The trip thresholds of the thermal components decrease as the frequency increases due to the reduced conductivity of the materials and to the increase in the associated thermal phenomena.

Vice versa, the magnetic thresholds (I3) increase in accordance to Km multiplication factor, due to induced magnetic fields. The circuit-breakers with electronic trip units do not undergo any changes of the trip thresholds, but the maximum current carrying capacity may be reduced.

The following tables refer to circuit-breakers with a breaking capacity up to 36kA for the XT1, XT2, XT3 and XT4.

### XT1 160 - TMF/TMD 16÷100 A

<table>
<thead>
<tr>
<th>XT1B 160</th>
<th>I1 (400Hz)</th>
<th>I3 (50Hz)</th>
<th>km</th>
<th>I3 (400Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>XT1C 160</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XT1N 160</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In</td>
<td>MIN</td>
<td>MED</td>
<td>MAX</td>
<td>I3</td>
</tr>
<tr>
<td>----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>----</td>
</tr>
<tr>
<td>16</td>
<td>10</td>
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<td>450</td>
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<td>72</td>
<td>800</td>
</tr>
<tr>
<td>100</td>
<td>63</td>
<td>77</td>
<td>90</td>
<td>1000</td>
</tr>
</tbody>
</table>
### XT2 160 - TMD/TMA 1.6+100 A

<table>
<thead>
<tr>
<th>XT2N 160</th>
<th>I₁ (400Hz)</th>
<th>I₃</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MIN</td>
<td>MED</td>
</tr>
<tr>
<td>1.6</td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td>2</td>
<td>1.3</td>
<td>1.5</td>
</tr>
<tr>
<td>2.5</td>
<td>1.6</td>
<td>2</td>
</tr>
<tr>
<td>3.2</td>
<td>2</td>
<td>2.5</td>
</tr>
<tr>
<td>4</td>
<td>2.5</td>
<td>3.1</td>
</tr>
<tr>
<td>5</td>
<td>3.2</td>
<td>3.8</td>
</tr>
<tr>
<td>6.3</td>
<td>4</td>
<td>4.8</td>
</tr>
<tr>
<td>8</td>
<td>5</td>
<td>6.1</td>
</tr>
<tr>
<td>10</td>
<td>6.3</td>
<td>7.7</td>
</tr>
<tr>
<td>12.5</td>
<td>7.9</td>
<td>9.6</td>
</tr>
<tr>
<td>16</td>
<td>10</td>
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<td>50</td>
<td>61</td>
</tr>
<tr>
<td>100</td>
<td>63</td>
<td>77</td>
</tr>
</tbody>
</table>

### XT3 250 - TMD/TMA 63+160 A

<table>
<thead>
<tr>
<th>XT3N 250</th>
<th>I₁ (400Hz)</th>
<th>I₃</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MIN</td>
<td>MED</td>
</tr>
<tr>
<td>63</td>
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<td>50</td>
<td>61</td>
</tr>
<tr>
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<td>63</td>
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<tr>
<td>125</td>
<td>79</td>
<td>96</td>
</tr>
<tr>
<td>160</td>
<td>101</td>
<td>122</td>
</tr>
</tbody>
</table>

### XT4 160 - TMD/TMA 16+160 A

<table>
<thead>
<tr>
<th>XT4N 160</th>
<th>I₁ (400Hz)</th>
<th>I₃</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MIN</td>
<td>MED</td>
</tr>
<tr>
<td>16</td>
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<tr>
<td>20</td>
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<tr>
<td>125</td>
<td>79</td>
<td>96</td>
</tr>
<tr>
<td>160</td>
<td>101</td>
<td>122</td>
</tr>
</tbody>
</table>
### Special applications

**XT2 160 - Ekip trip units 10÷100 A**

<table>
<thead>
<tr>
<th>In (A)</th>
<th>MAX (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>63</td>
<td>63</td>
</tr>
<tr>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>160</td>
<td>125</td>
</tr>
</tbody>
</table>

* Not valid for the Ekip Touch, Ekip M-I, Ekip M-LIU and Ekip M-LRIU trip units

**XT4 160 - Ekip trip units 40÷160 A**

<table>
<thead>
<tr>
<th>In (A)</th>
<th>MAX (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>63</td>
<td>63</td>
</tr>
<tr>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>160</td>
<td>160</td>
</tr>
</tbody>
</table>

* Not valid for the Ekip Touch, Ekip M-I, Ekip M-LIU and Ekip M-LRIU trip units

**XT4 250 - Ekip trip units 160÷200 A**

<table>
<thead>
<tr>
<th>In (A)</th>
<th>MAX (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>200</td>
</tr>
</tbody>
</table>

* Not valid for the Ekip Touch, Ekip M-I, Ekip M-LIU and Ekip M-LRIU trip units
Use of direct current apparatus

**Variation in magnetic tripping**
The thermal-magnetic trip units of the SACE Tmax XT circuit-breakers are suitable for use in direct current applications. For the protection thresholds against short-circuits, correction values (Km) must be used, according to the type of distribution network and to the number of poles to be connected in series (the thermal threshold does not undergo any alteration). The correction value to be used can be found in the following tables.

**Connection diagrams of poles in an insulated network**

<table>
<thead>
<tr>
<th>Insulated network</th>
<th>Un ≤250</th>
<th>≤500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protection +</td>
<td><img src="insulated_network.png" alt="Connection Diagram" /></td>
<td></td>
</tr>
<tr>
<td>isolation function</td>
<td><img src="insulated_network.png" alt="Connection Diagram" /></td>
<td></td>
</tr>
<tr>
<td>XT1</td>
<td>1.3</td>
<td>-</td>
</tr>
<tr>
<td>XT2</td>
<td>1.3</td>
<td>-</td>
</tr>
<tr>
<td>XT3</td>
<td>1.3</td>
<td>-</td>
</tr>
<tr>
<td>XT4</td>
<td>1.3</td>
<td>1.3</td>
</tr>
</tbody>
</table>

**Connection diagrams of poles in a network with one grounded polarity**

<table>
<thead>
<tr>
<th>Network with one grounded polarity</th>
<th>Un ≤250</th>
<th>≤500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protection +</td>
<td><img src="grounded_network.png" alt="Connection Diagram" /></td>
<td></td>
</tr>
<tr>
<td>isolation function</td>
<td><img src="grounded_network.png" alt="Connection Diagram" /></td>
<td></td>
</tr>
<tr>
<td>XT1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>XT2</td>
<td>1.15</td>
<td>-</td>
</tr>
<tr>
<td>XT3</td>
<td>1.15</td>
<td>-</td>
</tr>
<tr>
<td>XT4</td>
<td>1.15</td>
<td>1.15</td>
</tr>
</tbody>
</table>

Note: In the considered connections, the earthed polarity is the negative one.
## Special applications

Connection diagrams of poles in switch-disconnectors

<table>
<thead>
<tr>
<th>Protection + Insulation function</th>
<th>Un ≤250</th>
<th>≤500</th>
<th>≤750</th>
</tr>
</thead>
<tbody>
<tr>
<td>XT1</td>
<td><img src="XT1_diagram" alt="Diagram" /></td>
<td><img src="XT1_diagram" alt="Diagram" /></td>
<td><img src="XT1_diagram" alt="Diagram" /></td>
</tr>
<tr>
<td>XT3</td>
<td><img src="XT3_diagram" alt="Diagram" /></td>
<td><img src="XT3_diagram" alt="Diagram" /></td>
<td><img src="XT3_diagram" alt="Diagram" /></td>
</tr>
<tr>
<td>XT4</td>
<td><img src="XT4_diagram" alt="Diagram" /></td>
<td><img src="XT4_diagram" alt="Diagram" /></td>
<td><img src="XT4_diagram" alt="Diagram" /></td>
</tr>
<tr>
<td>XT7</td>
<td><img src="XT7_diagram" alt="Diagram" /></td>
<td><img src="XT7_diagram" alt="Diagram" /></td>
<td><img src="XT7_diagram" alt="Diagram" /></td>
</tr>
</tbody>
</table>
Characteristic curves
Example of curves reading

Example 1 - XT3N 250
Trip curves for distribution - (thermal magnetic trip unit)

Let us consider an XT3N 250 TMD In=250 A circuit-breaker. The trip time of the thermal protection varies considerably depending on the conditions when the overload occurs, i.e. whether the circuit-breakers is at the thermal regime (either cold or hot trip conditions). For example, for an overload current 3xIₚ, the trip time ranges from 107.9 s to 31.5 s for cold tripping and from 31.5 s to 7.0 s for hot tripping. For fault current values higher than 2500 A, the circuit-breaker trips with the instantaneous magnetic protection Iₚ.

Example 2 - XT2N 160
Specific let-through energy curves

The following figure shows an example of the graph of the specific let-through energy of the XT2N 160 In=160A circuit-breaker at 220/230V. The prospective symmetrical short-circuit current is indicated on the abscissas, whereas the values of the specific let-through energy expressed in A²s are shown on the ordinate. The circuit-breaker lets through a value of I²t equal to 0.76 · 10^6 · A²s in correspondence with a short-circuit current of 20 kA.
**Characteristic curves**

Example of curves reading

---

**Example 3 - XT2N 160**

**Limitation curves**

The figure below gives the trend of the limitation curves of the XT2N 160 In=160 A circuit-breaker. The effective value of the prospective symmetrical short-circuit current is given on the abscissa of the graph, whereas the peak value of the short-circuit current is indicated on the ordinate.

The limiting effect can be evaluated by comparing the peak value corresponding to the prospective short-circuit current (curve A) with the peak limited value (curve B), at the same value of symmetrical short-circuit current.

For a fault current of 20 kA, the XT2N 160 circuit-breaker with a thermal magnetic trip unit In =160 A limits the peak prospective short-circuit current to 13.5 kA at a voltage of 500 V, with a reduction of 36.5 kA in relation to the peak value of the prospective short-circuit current.
Example 4 - XT4N 250 Ekip M-LIU
Cold trip / hot trip curves
The first curve shows the time of intervention of the trip unit in case of fault under cold conditions. Each curve is related to a single operating class defined by Standard IEC 60947-4-1 (3E, 5E, 10E or 10E). The second curve, hot trip, must be read in relation with the previous one. Considering the time the circuit-breaker has remained open after the first trip (t-off on the abscissa), the t-hot/t-cold ratio can be identified on the ordinate.

Once the cold trip time has been identified on the first graph in relation to a fault current, the hot trip time can be calculated on the second graph, based on t-off and class of intervention. For a XT4N 250 In=200A in the operating class 10E, given a fault current of 0.8kA (4xIn), the cold trip time for intervention is 7s. If we consider a t_off = 90s, t-hot/t-cold = 0.4, the hot trip time results 2.8s.
Characteristic curves
Trip curves with thermal magnetic trip unit

Trip curves for distribution

**XT1 160 TMD In=16...63A**

**XT1 160 TMD In=80...160A**

**XT2 160 TMA In=1.6...50A**

**XT2 160 TMA In=63...160A**
Characteristic curves
Trip curves with thermal magnetic trip unit

Trip curves for motor protection

**XT1 125 MA In=3.2...6.3A**

**XT1 125 MA In=16...125A**

**XT2 160 MF/MA In=1...160A**

**XT3 250 MA In=100...250A**
XT4 200 MA In=10...200A
Characteristic curves
Trip curves with thermal magnetic trip unit

Trip curves for generator protection

XT2 160 TMG $I_n=16\ldots160A$  

XT3 250 TMG $I_n=63\ldots250A$
Characteristic curves
Trip curves with electronic trip unit Ekip Dip

Trip curves for distribution

**XT2 Ekip LS/I**
L-I functions

**XT2 Ekip LS/I**
L-S functions

**XT2 Ekip LIG**
L-I functions

**XT2 Ekip LIG**
G function
Characteristic curves
Trip curves with electronic trip unit Ekip Dip

XT2 Ekip LSI
L-S-I functions

XT2 Ekip LSIG
L-S-I functions

XT2 Ekip LSIG
G function

XT4 Ekip LS/I
L-I functions
Characteristic curves
Trip curves with electronic trip unit Ekip Dip

XT4 Ekip LSIG, Ekip E-LSIG
L-S-I functions

XT7 - XT7 M Ekip Dip LS/I
L-I functions

XT4 Ekip LSIG, Ekip E-LSIG
G function

XT7 - XT7 M Ekip Dip LS/I
L-S functions
Characteristic curves
Trip curves with electronic trip unit Ekip Dip

XT7 - XT7 M Ekip Dip LSIG
G function
Trip curves for motor protection

**XT2 Ekip I**
I function

**XT4 Ekip I**
I function

**XT2 - XT4 Ekip M-LIU**
L function (cold trip)

**XT2 - XT4 Ekip M-LIU**
(hot trip)
Characteristic curves
Trip curves with electronic trip unit Ekip Dip

XT2 - XT4 Ekip M-LIU
I function

XT2 - XT4 Ekip M-LIU
U function

XT2 - XT4 Ekip M-LRIU
L function (cold trip)

XT2 - XT4 Ekip M-LRIU
I function

---

Hot trip
Thermal memory
reset time

*ask ABB for additional details
Characteristic curves
Trip curves with electronic trip unit Ekip Dip

Trip curves for generator protection

XT2 Ekip G-LS/I
L-I functions

XT2 Ekip G-LS/I
L-S functions

XT4 Ekip G-LS/I
L-I functions

XT4 Ekip G-LS/I
L-S functions
XT7 - XT7 M Ekip G Dip LS/I
L-I functions

XT7 - XT7 M Ekip G Dip LS/I
L-S functions
Characteristic curves
Trip curves with electronic trip unit Ekip Touch and Hi-Touch

Trip curves for distribution

**XT2**
Ekip Touch LSI • Ekip Touch LSIG • Ekip Touch Measuring LSI • Ekip Touch Measuring LSIG • Ekip Hi-Touch LSI-Ekip Hi-Touch LSIG • L – S – I function

**XT2**
Ekip Touch LSIG • Ekip Touch Measuring LSIG • Ekip Hi-Touch LSIG • G function

**XT4**
Ekip Touch LSI • Ekip Touch LSIG • Ekip Touch Measuring LSI • Ekip Touch Measuring LSIG • Ekip Hi-Touch LSI • Ekip Hi-Touch LSIG • L – S – I function

**XT4**
Ekip Touch LSIG • Ekip Touch Measuring LSIG • Ekip Hi-Touch LSIG • G function
Characteristic curves
Trip curves with electronic trip unit Ekip Touch and Hi-Touch

Trip curves for motor protection

XT2 Ekip M Touch LRIU
L function (cold trip)

XT2 Ekip M Touch LRIU
R function

XT2 Ekip M Touch LRIU
I function

XT2 Ekip M Touch LRIU
U function
Characteristic curves
Trip curve with electronic trip unit Ekip Touch and Hi-Touch
Trip curves for generator protection

XT7 – XT7 M Ekip G Touch LSIG / Ekip G Hi-Touch LSIG

L-S-I functions

G function
Characteristic curves
Specific let-through energy curves

240V

XT1

XT2

XT3

XT4 N-S-H-L-V
Characteristic curves
Specific let-through energy curves

415V

XT1

415V

XT2

415V

XT3

415V

XT4 N-S-H-L-V

415V
INSTALLATION

XT4X
415V

XT7 - XT7 M S-H-L
415V
Characteristic curves
Specific let-through energy curves

440V

XT1

XT2

XT3

XT4 N-S-H-L-V
Characteristic curves
Specific let-through energy curves

500V

XT1
500V

XT2
500V

XT3
500V

XT4 N-S-H-L-V
500V
Characteristic curves
Specific let-through energy curves

690V

XT1

XT2

XT3

XT4 N-S-H-L-V

Characteristic curves
Specific let-through energy curves
Characteristic curves
Limiting curves

240V

**XT1**

![Characteristic curve for 240V XT1](image)

**XT2**

![Characteristic curve for 240V XT2](image)

**XT3**

![Characteristic curve for 240V XT3](image)

**XT4**

![Characteristic curve for 240V XT4](image)
Characteristic curves
Limiting curves

415V

XT1
415V

XT2
415V

XT3
415V

XT4 N-S-H-L-V
415V
Characteristic curves
Limiting curves
Characteristic curves
Limiting curves

500V

XT1

XT2

XT3

XT4 N-S-H-L-V
XT4X 500V

XT7 - XT7 M S-H-L 500V
Characteristic curves
Limiting curves

690V

XT1 690V

XT2 690V

XT3 690V

XT4 N-S-H-L-V 690V
# Overall dimensions

**Tmax XT1 – Installation**
- 2/3 Installation for fixed circuit breaker
- 2/6 Terminals for fixed circuit-breaker
- 2/9 Accessories for fixed circuit-breaker
- 2/17 Installation for plug-in circuit breaker
- 2/20 Terminals for plug-in circuit-breaker
- 2/23 Accessories for plug-in circuit-breaker

**Tmax XT2 – Installation**
- 2/24 Installation for fixed circuit breaker
- 2/27 Terminals for fixed circuit-breaker
- 2/31 Accessories for fixed circuit-breaker
- 2/37 Installation for plug-in circuit breaker
- 2/41 Terminals for plug-in circuit-breaker
- 2/45 Accessories for plug-in circuit-breaker
- 2/49 Installation for withdrawable circuit breaker
- 2/53 Terminals for withdrawable circuit-breaker
- 2/58 Accessories for withdrawable circuit-breaker

**Tmax XT3 – Installation**
- 2/63 Installation for fixed circuit breaker
- 2/66 Terminals for fixed circuit-breaker
- 2/70 Accessories for fixed circuit-breaker
- 2/76 Installation for plug-in circuit breaker
- 2/79 Terminals for plug-in circuit-breaker
- 2/83 Accessories for plug-in circuit-breaker

**Tmax XT4 – Installation**
- 2/84 Installation for fixed circuit breaker
- 2/87 Terminals for fixed circuit-breaker
- 2/92 Accessories for fixed circuit-breaker
- 2/98 Installation for plug-in circuit breaker
- 2/102 Terminals for plug-in circuit-breaker
- 2/106 Accessories for plug-in circuit-breaker
- 2/110 Installation for withdrawable circuit breaker
- 2/114 Terminals for withdrawable circuit-breaker
- 2/119 Accessories for withdrawable circuit-breaker

**Tmax XT7 – Installation**
- 2/124 Installation for fixed circuit breaker
- 2/125 Terminals for fixed circuit-breaker
- 2/128 Accessories for fixed circuit-breaker
- 2/130 Installation for withdrawable circuit breaker
- 2/131 Terminals for withdrawable circuit-breaker
- 2/134 Accessories for withdrawable circuit-breaker
Tmax XT7 M – Installation
2/136 Installation for fixed circuit breaker
2/137 Terminals for fixed circuit-breaker
2/140 Installation for withdrawable circuit breaker
2/141 Terminals for withdrawable circuit-breaker

Tmax XT – Common accessories
2/142 Horizontal interlock XT series
2/143 Vertical interlock XT series
**Tmax XT1 – Installation**

Installation for fixed circuit-breaker

**Fixing on support sheet**

### Key
1. Bracket for fixing
2. Overall dimension of optional wiring ducts
3. 25mm insulating barriers between phases (compulsory) provided
4. Optional front cover for DIN rail

### Overall Dimensions

<table>
<thead>
<tr>
<th>Key</th>
<th>Dimension</th>
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<tbody>
<tr>
<td>1</td>
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<td>7</td>
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</tr>
<tr>
<td>14</td>
<td>3.2</td>
<td>III-IV</td>
</tr>
</tbody>
</table>

**Fixing on DIN 50022 rail**

### Key
1. Bracket for fixing
2. Overall dimension of optional wiring ducts
3. 25mm insulating barriers between phases (compulsory) provided
4. Optional front cover for DIN rail

### Overall Dimensions

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</tbody>
</table>
**Tmax XT1 – Installation**

Installation for fixed circuit-breaker

Drilling templates for circuit-breaker fixing

---

**Key**

1. Flange for circuit-breaker III
2. Flange for circuit-breaker IV
3. Flange for circuit-breaker III with RC Sel - RC Inst residual current release
4. Flange for circuit-breaker IV with RC Sel - RC Inst residual current release
5. Flange for fixed circuit-breaker III-IV with direct motor operator (MOD)
6. Flange for circuit-breaker III-IV with direct rotary handle (RHD)
7. Optional flange

---
Drilling templates compartment door

With standard flange

A=74
3 POLES

Without flange

A=71
3 POLES

A=71
4 POLES

A=79
3-4 POLES

With optional flange

A=79
3-4 POLES
Tmax XT1 – Installation
Terminals for fixed circuit-breaker

Key
1. Front terminals for busbars connection
7. 25mm insulating barriers between phases (compulsory) provided

Key
2. Front extended terminals
3. High terminal covers with degree of protection IP40 (optional) not provided
5. 100mm insulating barriers between phases (compulsory) provided
9. Internal insulating plate compulsory with phase barriers (customer attention)

Key
4. Front extended spread terminals for busbar connection
6. 200mm insulating barriers between phases (compulsory) provided
**OVERALL DIMENSIONS**

---

**Key**
1. 1x1.5...50mm² front terminal FCCuAl
2. 25mm insulating barriers between phases (compulsory) provided

---

**1x1.5...50mm² terminals FCCuAl**

---

**Key**
1. External terminal FCCuAl
2. High terminal covers with degree of protection IP40 (optional) provided

---

**1x35...95mm² terminals FCCuAl**

---

**Key**
2. Front terminal FCCu

---

**Terminals FCCu**

---

**Key**
4. Terminal covers with degree of protection IP40 (compulsory) provided
5. Front terminal for multicable connection

---

**Terminals MC**
Tmax XT1 – Installation

Terminals for fixed circuit-breaker

Terminals R

---

Key
1 Adjustable rear terminals
2 Bottom terminal covers with degree of protection IP30 (optional) not provided
3 Drilling template for circuit-breaker III fixing on sheet
4 Drilling template for circuit-breaker IV fixing on sheet
Tmax XT1 – Installation
Accessories for fixed circuit-breaker

Rotary handle operating mechanism on circuit-breakers (RHD)

Key
2 Rotary handle operating mechanism on circuit-breaker RHD
4 Door drilling template with direct rotary handle
6 25mm insulating barriers between phases (compulsory) provided
**Tmax XT1 – Installation**

Accessories for fixed circuit-breaker

Rotary handle operating mechanism on the compartment door (RHE)

---

**Key**

1. Transmitted rotary handle
2. Door drilling template with transmitted rotary mandly
3. Transmission unit
4. 25mm insulating barriers between phases provided with circuit-breaker

---

![Diagram of Tmax XT1 installation accessories.](image-url)
Large rotary handle operating mechanism on the compartment door (RHE-LH)

Key
1 Transmission unit
2 25mm insulating barriers between phases provided with circuit-breaker
3 Optional wiring ducts
4 Wide type rotary handle
5 Door drilling template with transmitted rotary handle

MINIMUM DISTANCE FROM DOOR HINGE R min 200

HEIGHTS FOR DOOR WITH MAXIMUM DISTANCE
Tmax XT1 – Installation

Accessories for fixed circuit-breaker

Large rotary handle operating mechanism on the compartment door (RHE-LH)

Key
1 Transmission unit
2 25mm Insulating barriers between phases (compulsory) provided
3 Optional wiring ducts
4 Wide type rotary handle
5 Door drilling template with transmitted rotary handle
Direct motor operator (MOD)

Key:
3 Key lock (on request)
4 Direct motor operator (MOD)
5 Drilling template of door with MOD without flange
6 Drilling template of door with MOD with flange
7 Cables connection
8 25mm phase barriers
Tmax XT1 – Installation

Accessories for fixed circuit-breaker

Direct motor operator (MOD)

Key
1 Front terminals for busbars connection
2 Terminal covers with degree of protection IP40
3 Drilling template of door with direct rotary handle with flange
4 Drilling template of door with direct rotary handle without flange
5 Drilling template for circuit-breaker fixing on sheet

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>74</th>
</tr>
</thead>
<tbody>
<tr>
<td>With standard flange</td>
<td>III</td>
<td>74</td>
</tr>
<tr>
<td>Without flange</td>
<td>III</td>
<td>71</td>
</tr>
</tbody>
</table>
RC Inst and RC Sel residual current release for 4 poles circuit-breaker

**Key**

1. Front terminals for busbars connection
2. Terminal covers with degree of protection IP40
3. Drilling template of door with direct rotary handle with flange
4. Drilling template of door with direct rotary handle without flange
5. Drilling template for circuit-breaker fixing on sheet

<table>
<thead>
<tr>
<th></th>
<th>With standard flange</th>
<th>IV</th>
<th>74</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Without flange</td>
<td>IV</td>
<td>71</td>
</tr>
</tbody>
</table>
Tmax XT1 – Installation
Accessories for fixed circuit-breaker

RC Sel 200 4 poles residual current release

Key
1 Front terminals for busbars connection
2 Terminal covers with degree of protection IP40
3 Drilling template of door with direct rotary handle
4 Drilling template for circuit-breaker fixing on sheet
Tmax XT1 – Installation
Installation for plug-in circuit-breaker

Fixing on support sheet

Drilling templates for fixing circuit-breaker
Tmax XT1 – Installation
Installation for plug-in circuit-breaker

Flanges

Key
1 Flange for plug-in circuit-breaker III
2 Flange for circuit-breaker IV
5 Flange for plug-in circuit-breaker III-IV with direct motor operator (MOD)
6 Flange for plug-in circuit-breaker III-IV with direct rotary handle RHD
7 Optional flange
Drilling templates compartment door

**With standard flange**

B=124  C=144  
3 POLES

B=124  C=144  
4 POLES

**Without flange**

B=121  C=141  
3 POLES

B=121  C=141  
4 POLES

B=129  C=149  
3-4 POLES

**With optional flange**

B=129  C=149  
3-4 POLES
**Tmax XT1 – Installation**

Terminals for plug-in circuit-breaker

**Terminals EF**

![Diagram of Terminals EF]

**Key**

4 Front extended terminals
5 100mm insulating barriers between phases (compulsory) provided

**Terminals ES**

![Diagram of Terminals ES]

**Key**

3 Front extended spread terminals
6 200mm insulating barriers between phases (compulsory) provided
7 Adaptor (compulsory) not provided
**OVERALL DIMENSIONS**

**1x1.5...50mm² terminals FCCuAl**

- Key
  1. External terminal FCCuAl
  2. High terminal covers with degree of protection IP40 (optional) provided
  5. Adaptor (compulsory) optional
  6. 25mm insulating barriers between phases (compulsory) provided

**1x35...95mm² terminals FCCuAl**

- Key
  1. External terminal FCCuAl
  2. High terminal covers with degree of protection IP40 (optional) provided

**Terminals FCCu**

- Key
  4. Terminals FCCu
  5. Adaptor (compulsory) not provided
  6. 25mm insulating barriers between phases (compulsory) provided

---

**FIXING AT 50mm**
**Tmax XT1 – Installation**

Terminals for plug-in circuit-breaker

### Terminals MC

![Diagram of Terminals MC]

**Key**
1. Rear vertical terminals
2. Rear horizontal terminals
3. 90mm insulating barriers between phases (compulsory) not provided

### Terminals HR/VR

![Diagram of Terminals HR/VR]

**Key**
1. Terminal covers with degree of protection IP40 (optional) provided
2. Front terminal for multicable connection
3. Adaptor (compulsory) not provided
**Tmax XT1 – Installation**

Accessories for plug-in circuit-breaker

Direct motor operator (MOD)

---

**Key**

1. Fixed part
2. Moving part
3. Key lock (on request)
4. Direct motor operator (MOD)
5. Drilling template of door with MOD without flange
6. Drilling template of door with MOD with flange
7. Cables connection
Tmax XT2 – Installation

Installation for fixed circuit-breaker

**Fixed circuit-breaker fixing on sheet**

Key

1. Bracket for fixing
2. Optional wiring ducts
3. 25mm insulating barriers between phases (compulsory) provided

---

With standard III-IV 86 flange

Without flange III-IV 83.5

---

**With side connector for Ekip Touch trip units**

Key

1. Front terminals
2. Flange for IV circuit-breaker (always supplied with IV cb)
3. Flange for III circuit-breaker (always supplied with III cb)
4. Tightening torque 1.1 Nm - 10 In.Lbs
5. Tightening torque 6 Nm - 53 In.Lbs
6. Optional wiring duct
7. Interphase insulating barriers 25mm - 0.98” (compulsory)
8. Rear plate insulating III (only ul version)
9. Rear plate insulating IV (only ul version)
10. Connection kit F/P IntBus/ExtNeut/Se

---

**Fixed circuit-breaker fixing on DIN EN 50022 rail**

Key

1. Bracket for fixing
2. 25mm insulating barriers between phases (compulsory) provided
Drilling templates and support sheet

Flanges

Key
1 Flange for fixed circuit-breaker III
2 Flange for fixed circuit-breaker IV
3 Flange for fixed circuit-breaker III-IV with MOE and FLD
4 Flange for circuit-breaker III-IV with direct rotary handle RHD
8 Flange for circuit-breaker IV with fixed residual current and front terminals
9 Optional flange
Tmax XT2 – Installation
Installation for fixed circuit-breaker

Drilling templates compartment door

With standard flange

<table>
<thead>
<tr>
<th>Pole Configuration</th>
<th>Execution</th>
<th>A</th>
<th>B</th>
<th>C</th>
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<tbody>
<tr>
<td>3 POLES</td>
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<td>92</td>
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<td>4 POLES</td>
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Without flange

<table>
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<th>Pole Configuration</th>
<th>Execution</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 POLES</td>
<td>fixed</td>
<td>86</td>
<td></td>
<td>3-4 poles</td>
</tr>
<tr>
<td>4 POLES</td>
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<td>118</td>
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<td>3-4 poles</td>
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</table>

With optional flange

<table>
<thead>
<tr>
<th>Pole Configuration</th>
<th>Execution</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-4 POLES</td>
<td>fixed</td>
<td>97</td>
<td></td>
<td>3-4 poles</td>
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</table>

Key
1. Optional flange
**Tmax XT2 – Installation**

**Terminals for fixed circuit-breaker**

**Terminals F**

**Key**
1. 25mm insulating barriers between phases (compulsory) not provided
2. Front terminals for busbars connection

**Terminals EF**

**Key**
3. Front extended terminals
4. Terminal covers with degree of protection IP40 (optional) not provided
5. 100mm insulating barriers between phases (compulsory) provided
6. Insulated plate (compulsory) provided for XT2 Ue>440V
7. Drilling template for 3p circuit-breaker Ue>440V (compulsory)
8. Drilling template for 4p circuit-breaker Ue>440V (compulsory)
**Tmax XT2 – Installation**

**Terminals for fixed circuit-breaker**

---

**Terminals ES**

- **Key**
  1. Drilling template for 3p circuit-breaker Ue>440V (compulsory)
  2. Drilling template for 4p circuit-breaker Ue>440V (compulsory)
  3. Front extended spread terminals
  4. 200mm insulating barriers between phases (compulsory) provided for Ue>440V
  5. Insulated plate (compulsory) provided for XT2 Ue>440V

---

**1x1...95mm² terminals FCCuAl**

- **Key**
  1. 1x1...95mm² terminals FCCuAl
  3. 25mm insulating barriers between phases (compulsory) provided
OVERALL DIMENSIONS

1x70...185mm² terminals FCCuAl

Key
1 External terminal FCCuAl
2 High terminal covers with degree of protection IP40 (optional) provided

2x35...95mm² terminals FCCuAl

Key
2 2x35...95mm² terminals FCCuAl
4 Terminal covers with degree of protection IP40 (optional) provided

Termsinals FCCu

Key
3 25mm insulating barriers between phases (compulsory) provided as standard with the circuit-breaker
6 Terminals FCCu
**Tmax XT2 – Installation**

Terminals for fixed circuit-breaker

---

**Terminals MC**

Key

- 6 Multicable terminals

---

**Terminals R**

Key

- 1 Rear adjustable terminals
- 2 Bottom terminal covers with degree of protection IP30 (optional) provided
- 3 Drilling template for circuit-breaker III fixing on sheet
- 4 Drilling template for circuit-breaker IV fixing on sheet

---
**Tmax XT2 – Installation**

**Accessories for fixed circuit-breaker**

Rotary handle operating mechanism on circuit-breaker (RHD)

---

Key:

2 Rotary handle operating mechanism on circuit-breaker

4 Drilling template of door with direct rotary handle

6 25mm insulating barriers between phases provided with circuit-breaker

---

**OVERALL DIMENSIONS**

---

**MINIMUM ROTATION RADIUS FOR DOOR FULCRUM**

---

2 Rotary handle operating mechanism on circuit-breaker (RHD)
Tmax XT2 – Installation

Accessories for fixed circuit-breaker

Rotary handle operating mechanism on the compartment door (RHE)

---

Key

1 Transmission mechanism
2 Rotary handle operating mechanism for compartment door
3 Compartment door sheet steel drilling
4 Tightening torque 1.1Nm
Stored energy motor operator (MOE)

Key
1 Stored energy motor operator (MOE)
2 Key lock optional
3 Drilling template of door with MOE with flange
4 Door drilling template with MOE without flange
5 Drilling template for circuit-breaker 3p fixing on sheet
6 Drilling template for circuit-breaker 4p fixing on sheet
7 25mm insulating barriers between phases provided with circuit-breaker
Tmax XT2 – Installation
Accessories for fixed circuit-breaker

Front for lever operating mechanism (FLD)

Key
1 Key lock optional
2 Front for lever operating mechanism (FLD)
3 Drilling template of door with FLD with flange
4 Drilling template of door with FLD without flange
5 25mm insulating barriers between phases provided with circuit-breaker
Ekip Display or Ekip LED Meter

Key
1 25mm insulating barriers between phases provided with circuit-breaker
2 Ekip Display or Ekip LED Meter
**Tmax XT2 – Installation**

**Accessories for fixed circuit-breaker**

Residual current RC Sel

---

**Key**

1. Residual current
2. Front terminals
7. Drilling template of door with direct rotary handle and fixing with flange
8. Drilling template of door with direct rotary handle and fixing without flange
9. Drilling template for circuit-breaker fixing on sheet

<table>
<thead>
<tr>
<th></th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>With standard flange</td>
<td>IV 86</td>
</tr>
<tr>
<td>Without flange</td>
<td>IV 83.5</td>
</tr>
</tbody>
</table>
**Tmax XT2 – Installation**

**Installation for plug-in circuit-breaker**

Plug-in circuit-breaker fixing on sheet

---

**Key**
1. Fixed part
2. Moving part

**Fixing at 50mm**
- With standard III-IV 136 flange
- Without flange III-IV 133.5

**Fixing at 70mm for extended terminals**
- With standard III-IV 156 flange
- Without flange III-IV 153.5

---

**With side connector for Ekip Touch trip units**

---

**Key**
9. Optional wiring duct
10. Interphase Insulating barriers 25mm - 0.98” (COMPULSORY)
15. Connection kit F/P IntBus/ExtNeut/Se
**Tmax XT2 – Installation**

Installation for plug-in circuit-breaker

Drilling templates for support sheet
Flanges

Key
1 Flange for circuit-breaker removable III
2 Flange for circuit-breaker IV
3 Flange for plug-in circuit-breaker III-IV with MOE and FLD
4 Flange for circuit-breaker III-IV with direct rotary handle (RHD)
8 Flange for circuit-breaker IV with residual current and plug-in with front terminals
9 Optional flange
Tmax XT2 – Installation
Installation for plug-in circuit-breaker

Drilling templates compartment door

With standard flange

Without flange

With optional flange
## Tmax XT2 – Installation

### Terminals for plug-in circuit-breaker

#### Terminals EF

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Front extended terminals</td>
</tr>
<tr>
<td>5</td>
<td>100mm insulating barriers between phases (compulsory) provided</td>
</tr>
</tbody>
</table>

![Diagram of Terminals EF](image)

#### Terminals ES

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Front extended spread terminals</td>
</tr>
<tr>
<td>2</td>
<td>200mm insulating barriers between phases (compulsory) provided</td>
</tr>
<tr>
<td>3</td>
<td>Insulated plate (compulsory) provided</td>
</tr>
<tr>
<td>4</td>
<td>Drilling template for 3p circuit-breaker Ue&gt;440V (compulsory)</td>
</tr>
<tr>
<td>5</td>
<td>Drilling template for 4p circuit-breaker Ue&gt;440V (compulsory)</td>
</tr>
</tbody>
</table>

![Diagram of Terminals ES](image)
**Tmax XT2 – Installation**

**Terminals for plug-in circuit-breaker**

- **1x1...95mm² terminals FCCuAl**

- **1x70...185mm² terminals FCCuAl**

- **2x35...95mm² terminals FCCuAl**
OVERALL DIMENSIONS

Terminals FCCu

Key
3 Terminals FCCu
4 Adaptor (compulsory) not provided

Note:
25mm insulating barriers between phases (compulsory) provided as standard with the circuit-breaker

Terminals MC

Key
3 High terminal covers with degree of protection IP40 (optional) provided
4 Multicable terminals
6 Adaptor (compulsory) not provided
Tmax XT2 – Installation
Terminals for plug-in circuit-breaker

Terminals HR/VR

- Key
  1 Rear vertical terminals
  2 Rear horizontal terminals
  3 90mm insulating barriers between phases (compulsory) not provided

FIXING AT 50mm
**Tmax XT2 – Installation**

**Accessories for plug-in circuit-breaker**

**Stored energy motor operator (MOE)**

---

**Key**

1. Fixed part  
2. Moving part  
3. MOE  
4. Key lock optional  
5. 100mm insulating barriers between phases (compulsory) provided  
6. Drilling template of door with direct rotary handle with flange  
7. Drilling template of door with direct rotary handle without flange

---
Tmax XT2 – Installation
Accessories for plug-in circuit-breaker

Front for lever operating mechanism (FLD)

Key
1 Fixed part
2 Moving part
3 Front for lever operating mechanism (FLD)
4 Key lock optional
5 100mm insulating barriers between phases (compulsory) provided
6 Drilling template of door with direct rotary handle with flange
7 Drilling template of door with direct rotary handle without flange
Ekip Display or Ekip LED Meter

---

Key
1. 100mm insulating barriers between phases
2. Ekip Display or Ekip LED Meter
**Tmax XT2 – Installation**

Accessories for plug-in circuit-breaker

### Residual current RC Sel

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Residual current</td>
</tr>
<tr>
<td>2</td>
<td>Fixed part</td>
</tr>
<tr>
<td>3</td>
<td>Moving part</td>
</tr>
<tr>
<td>4</td>
<td>500mm insulating barriers between phases (compulsory) provided</td>
</tr>
<tr>
<td>5</td>
<td>Extended terminals</td>
</tr>
<tr>
<td>6</td>
<td>Drilling template of door with direct rotary handle and fixing with flange</td>
</tr>
<tr>
<td>7</td>
<td>Drilling template of door with direct rotary handle and fixing without flange</td>
</tr>
<tr>
<td>8</td>
<td>Drilling template for circuit-breaker fixing on sheet</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>With standard flange</th>
<th>Without flange</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td><strong>IV 136</strong></td>
<td><strong>IV 133.5</strong></td>
</tr>
</tbody>
</table>
### Tmax XT2 – Installation

Installation for withdrawable circuit-breaker

**Fixing on sheet**

![Diagram](image)

<table>
<thead>
<tr>
<th>A</th>
<th>With standard flange</th>
<th>III - IV Fixing at 50mm</th>
<th>170</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>III - IV Fixing at 70mm for extended front terminals</td>
<td>190</td>
</tr>
</tbody>
</table>

**Key**

1. Fixed part
2. Moving part
3. FLD (FLD o RHD o RHE o MOE)
   - mandatory for withdrawable version
4. Optional wiring ducts
Tmax XT2 – Installation
Installation for withdrawable circuit-breaker

With side connector for Ekip Touch trip units

---

**Key**
1. Fixed part
2. Moving part
3. FLD (FLD o RHD o RHE o MOE)
   - mandatory for withdrawable version
10. Optional Wiring Duct
13. Connection Kit W
   - IntBus/ExtNeut/Sel

---

<table>
<thead>
<tr>
<th></th>
<th>With standard flange</th>
<th>III - IV Fixing at 50mm</th>
<th>III - IV Fixing at 70mm for extended front terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>170</td>
<td>190</td>
</tr>
</tbody>
</table>
Drilling templates for support sheet

3 POLES

4 POLES

3-4 POLES

Flanges

Key
5 Flange for circuit-breaker III-IV withdrawable
6 Flange for circuit-breaker withdrawable III-IV with direct rotary handle RHD
7 Flange for circuit-breaker residual current IV withdrawable with front extended terminals

<table>
<thead>
<tr>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>RHD</td>
<td>111</td>
</tr>
<tr>
<td>FLD - MOE</td>
<td>114.3</td>
</tr>
</tbody>
</table>
Tmax XT2 – Installation
Installation for withdrawable circuit-breaker

Drilling templates compartment door

With standard flange

With standard flange

Without flange

With standard flange

B=136  C=156
3 POLES

B=136  C=156
4 POLES

B=133.5  C=153.5
3 POLES

B=133.5  C=153.5
4 POLES

B=141.5  C=101.5
3-4 POLES

B=142  C=162
3-4 POLES
Tmax XT2 – Installation
Terminals for withdrawable circuit-breaker

Terminals EF

Key
2 Moving part
3 FLD (FLD or RHD or RHE or MOE) mandatory for withdrawable version
4 Front extended terminals
5 100mm insulating barriers between phases (compulsory) provided

Note:
Insulated plate (compulsory) provided
**Tmax XT2 – Installation**

Terminals for withdrawable circuit-breaker

**Terminals ES**

**FIXING AT 50mm**

---

**Key**

1. 200mm insulating barriers between phases (compulsory) provided
2. Front extended spread terminals
3. Adaptor (compulsory) not provided
4. Insulated plate (compulsory) provided
5. Drilling template for 3p circuit-breaker $U_e>440V$ (compulsory)
6. Drilling template for 4p circuit-breaker $U_e>440V$ (compulsory)
OVERALL DIMENSIONS

1x1...95mm² terminals FCCuAl

Key
1 25mm insulating barriers between phases (compulsory) provided
2 External terminal
3 High terminal
4 1x1...95mm² front terminals FCCuAl
5 Adaptor (compulsory) not provided

1x70...185mm² terminals FCCuAl

Key
1 External terminal
2 High terminal
3 1x70...185mm² front terminals FCCuAl
4 Insulating barriers between phases (optional) provided
5 Adaptor (compulsory) not provided

2x35...95mm² terminals FCCuAl

Key
1 External terminal
2 High terminal
3 2x35...95mm² front terminals FCCuAl
4 Insulating barriers between phases (optional) provided
5 Adaptor (compulsory) not provided
**Tmax XT2 – Installation**

**Terminals for withdrawable circuit-breaker**

**Terminals FCCu**

- Key
  - 2 Terminals FCCu
  - 4 Adaptor (compulsory) not provided
  - 5 25mm insulating barriers between phases (compulsory) provided as standard with the circuit-breaker

**Terminals MC**

- Key
  - 1 Multicable terminals
  - 3 High terminal covers with degree of protection IP40 (optional) provided
  - 4 Adaptor (compulsory) not provided
Terminals HR/VR

Key
1 Rear vertical terminals
2 Rear horizontal terminals
3 90mm insulating barriers between phases (compulsory) not provided
Tmax XT2 – Installation
Accessories for withdrawable circuit-breaker

Rotary handle operating mechanism on circuit-breakers (RHD)

Key
1 Fixed part
2 Moving part
3 Rotary handle operating mechanism on circuit-breaker
4 100mm insulating barriers between phases (compulsory) provided
5 Extended terminals
6 Drilling template of door with direct rotary handle
Rotary handle operating mechanism on the compartment door (RHE)

Key:
1. Fixed part
2. Moving part
3. Rotary handle operating mechanism on the compartment door (RHE)
4. 100mm insulating barriers between phases (compulsory) provided
5. Extended terminals
6. Door drilling template with transmitted rotary handle
7. Transmission unit
**Tmax XT2 – Installation**

Accessories for withdrawable circuit-breaker

Stored energy motor operator (MOE)

---

**Key**

1. Fixed part
2. Moving part
3. 100mm insulating barriers between phases (compulsory) provided
4. Extended terminals
5. Key lock optional
6. Stored energy motor operator (MOE)

---

**Motor operator MOE**

<table>
<thead>
<tr>
<th>A</th>
<th>III-IV</th>
<th>222</th>
</tr>
</thead>
</table>

---
Front for lever operating (FLD)

Key
1 Fixed part
2 Moving part
3 Front for lever operating (FLD)
4 100mm insulating barriers between phases (compulsory) provided
5 Extended terminals
6 Key lock optional

Front for lever operating FLD III-IV 170
Tmax XT2 – Installation
Accessories for withdrawable circuit-breaker

Residual current RC Sel 4 poles

---

Key
1 Fixed part
2 Moving part
3 Front for lever operating
4 Residual current connector (optional)
5 100mm insulating barriers between phases (compulsory) provided
6 Residual current
7 Extended terminals
8 Fixing screws for fixed part of connector
9 Door drilling template and flange fixing
Tmax XT3 – Installation
Installation for fixed circuit-breaker

Fixing on sheet

Key
1 Bracket for fixing
2 Optional wiring ducts
3 Optional front cover for DIN rail
4 25mm insulating barriers between phases (compulsory) provided

<table>
<thead>
<tr>
<th>Key</th>
<th>With standard flange</th>
<th>Without flange</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>II IV 74</td>
<td>III - IV 79</td>
</tr>
<tr>
<td>2</td>
<td>25mm insulating barriers between phases (compulsory) provided</td>
<td></td>
</tr>
</tbody>
</table>

Fixing on DIN EN 50022 rail

Key
1 Bracket for fixing
2 Optional wiring ducts
3 Optional front cover for DIN rail
4 25mm insulating barriers between phases (compulsory) provided
Tmax XT3 – Installation
Installation for fixed circuit-breaker

Drilling templates for circuit-breaker fixing

Flanges

Key
1 Flange for fixed circuit-breaker III
2 Flange for fixed circuit-breaker IV
3 Flange for circuit-breaker with direct motor operator MOD
4 Flange for circuit-breaker with direct rotary handle (RHD)
5 Flange for circuit-breaker III with residual current
6 Flange for circuit-breaker IV with residual current
7 Optional flange
Drilling templates compartment door

With standard flange

A=74
3 POLES

A=74
4 POLES

Without flange

A=71
3 POLES

A=71
4 POLES

A=79
3-4 POLES

With optional flange

A=79
3-4 POLES

---

Key
1 Optional flange
Tmax XT3 – Installation
Terminals for fixed circuit-breaker

Terminals F

Key
1 Front terminals for busbars connection
7 25mm insulating barriers between phases (compulsory) provided

Terminals EF

Key
2 Front extended terminals
3 Terminal covers with degree of protection IP40 (optional) not provided
5 100mm insulating barriers between phases (compulsory) provided

Terminals ES

Key
4 Front extended spread terminals for busbars connection
6 200mm insulating barriers between phases (compulsory) provided
1x90...185mm² terminals FCCuAl

Key
1 1x90...185mm² terminals FCCuAl
9 25mm insulating barriers between phases (compulsory) provided as standard with the circuit-breaker

2x35...150mm² terminals FCCuAl

Key
2 2x35...150mm² terminals FCCuAl
3 Terminal covers with degree of protection IP40 (optional) provided
4 Provided rear insulated plate (mandatory for CuAl 2x150mm² cables)
7 Drilling template for circuit-breaker fixing on sheet III with rear insulated plate
8 Drilling template for circuit-breaker fixing on sheet IV with rear insulated plate
Tmax XT3 – Installation
Terminals for fixed circuit-breaker

30...150mm² terminals FCCuAl

Key
1 30...150mm² terminals FCCuAl
2 25mm insulating barriers between phases (compulsory) provided as standard with the circuit-breaker

Terminals FCCu

Key
6 Front terminals FCCu
9 25mm insulating barriers between phases (compulsory) provided as standard with the circuit-breaker

Terminals MC

Key
3 Terminal covers with degree of protection IP40 (optional) provided
5 Front terminal for multicable connection
Terminals R

Key
1 Adjustable rear terminals
2 Bottom terminal covers with degree of protection IP30 (optional) provided
3 Drilling template for circuit-breaker IV fixing on sheet
4 Drilling template for circuit-breaker III fixing on sheet
**Tmax XT3 – Installation**

Accessories for fixed circuit-breaker

Rotary handle operating mechanism on circuit-breaker (RHD)

---

**Key**

2 Rotary handle operating mechanism on circuit-breaker RHD

4 Drilling template of door with direct rotary handle

6 25mm insulating barriers between phases (compulsory) provided as standard with the circuit-breaker
Rotary handle operating mechanism on the compartment door (RHE)

Key
1 Transmission mechanism
2 Rotary handle operating mechanism for compartment door (RHE)
5 Compartment door sheet steel drilling
4 Tighten torque 1.1Nm

OVERALL DIMENSIONS
**Tmax XT3 – Installation**

**Accessories for fixed circuit-breaker**

Large rotary handle operating mechanism on the compartment door (RHE-LH)

Key

1. Transmission unit
2. 25mm insulating barriers between phases (compulsory) provided as standard with the circuit-breaker
3. Optional wiring ducts
4. Large transmitted rotary handle
5. Drilling template of door with large transmitted rotary handle
Direct motor operator (MOD)

Key
3 Key lock (on request)
4 Direct motor operator MOD
5 Drilling template of door with MOD with flange
6 Drilling template of door with MOD without flange
7 25mm insulating barriers
Tmax XT3 – Installation
Accessories for fixed circuit-breaker

RC Inst and RC Sel residual current release for 3 poles circuit-breaker

---

**Key**

1. Front terminals for cables connection
2. Terminal covers with degree of protection IP40
3. Drilling template of door with direct rotary handle with flange
4. Drilling template of door with direct rotary handle without flange
5. Drilling template for circuit-breaker fixing on sheet

---

<table>
<thead>
<tr>
<th></th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>With standard flange</td>
<td>III</td>
</tr>
<tr>
<td>Without flange</td>
<td>III</td>
</tr>
</tbody>
</table>
RC Inst and RC Sel residual current release for 4 poles circuit-breaker

Key
1. Front terminals for cables connection
2. Terminal covers with degree of protection IP40
3. Drilling template of door with direct rotary handle with flange
4. Drilling template of door with direct rotary handle without flange
5. Drilling template for circuit-breaker fixing on sheet

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>With standard flange</td>
<td>IV</td>
<td>74</td>
</tr>
<tr>
<td>Without flange</td>
<td>IV</td>
<td>71</td>
</tr>
</tbody>
</table>
Tmax XT3 – Installation
Installation for plug-in circuit-breaker

Fixing on support sheet

<table>
<thead>
<tr>
<th>Fixing at 50mm</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>With standard flange</td>
<td>III-IV 124</td>
</tr>
<tr>
<td>Without flange</td>
<td>III-IV 121</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fixing at 70mm for extended front terminals</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>With standard flange</td>
<td>III-IV 144</td>
</tr>
<tr>
<td>Without flange</td>
<td>III-IV 141</td>
</tr>
</tbody>
</table>

Key
1 Fixed part
2 Moving part
Drilling templates for support sheet

Flanges

Key
1 Flange for plug-in circuit-breaker III
2 Flange for plug-in circuit-breaker IV
3 Flange for plug-in circuit-breaker with direct motor operator MOD
7 Optional flange
Tmax XT3 – Installation
Installation for plug-in circuit-breaker

Drilling templates compartment door

With standard flange

Without flange

With optional flange
Tmax XT3 – Installation
Terminals for plug-in circuit-breaker

Terminals EF

Key
4 Front extended terminals
5 100mm insulating barriers between phases (compulsory) provided

Terminals ES

Key
3 Front extended spread terminals for busbars connection
5 Adapter for fixed part (compulsory) not provided
6 200mm insulating barriers between phases (compulsory) provided
**Tmax XT3 – Installation**

**Terminals for plug-in circuit-breaker**

1x90...185mm² terminals FCCuAl

2x35...150mm² terminals FCCuAl

---

### Key

1. 1x90...185mm² front terminal FCCuAl
2. Adapter for fixed part (compulsory) not provided
3. 25mm insulating barriers between phases (compulsory) provided

---

### Key

1. 1x35...95 mm² external terminal FCCuAl
2. High terminal covers with degree of protection IP40
3. Rear insulated plate (compulsory with 2x150mm²)
4. Drilling template for fixing circuit-breaker III with rear insulated plate
5. Drilling template for fixing circuit-breaker IV with rear insulated plate
30...150mm$^2$ terminals FCCuAl

Key
1 30...150mm$^2$ terminals FCCuAl
2 25mm insulating barriers between phases (compulsory) provided as standard with the circuit-breaker
3 Adapter for fixed part (compulsory) not provided

Fixing AT 50mm

Terminals FCCu

Key
4 Front terminals FCCu
5 Adapter for fixed part (compulsory) not provided
6 25mm insulating barriers between phases (compulsory) provided as standard with the circuit-breaker

Fixing AT 50mm

Terminals MC

Key
2 High terminal covers with degree of protection IP40 (compulsory with multicable)
3 Front terminal for multicable connection
5 Adapter for fixed part (compulsory) not provided

Fixing AT 50mm
Tmax XT3 – Installation

Terminals for plug-in circuit-breaker

Terminals HR/VR

Key
1 Rear vertical
terminals
2 Rear horizontal
terminals
3 90mm Insulating
bars between
phases (compulsory)
not provided

FIXING AT 50mm 

FIXING AT 50mm
**Tmax XT3 – Installation**

Accessories for plug-in circuit-breaker

Direct motor operator (MOD)

---

**Key**

1. Fixed part
2. Moving part
3. Key lock (on request)
4. Direct motor operator MOD
5. Drilling template of door with MOD with flange
6. Drilling template of door with MOD without flange

---

**FIXING AT 50mm**
**Tmax XT4 – Installation**

Installation for fixed circuit-breaker

### Fixing on sheet

**Key**
1. Overall dimension of optional wiring ducts
2. 25mm insulating barriers between phases (compulsory) provided
3. 25mm insulating barriers between phases (compulsory) provided

- **With standard III-IV 86 flange**
- **Without flange III-IV 83.5**
- **Without flange III-IV 91.5**

### With side connector for Ekip Touch trip units

**Key**
1. Front terminals
2. Flange for IV circuit-breaker (always supplied with IV cb)
3. Flange for III circuit-breaker (always supplied with III cb)
4. Tightening torque 1.3 Nm - 10 In.lbs
5. Tightening torque 8 Nm - 70.3 In.lbs
6. Optional wiring duct
7. Interphase insulating barriers 25mm - 0.98” (compulsory)
8. Rear plate insulating IV (only ul version)
9. Rear plate insulating III (only ul version)
10. Connection kit F/P IntBus/ExtNeut/Se

### Fixing on DIN 50022 rail

**Key**
1. Bracket for fixing
2. 25mm insulating barriers between phases (compulsory) provided
Drilling templates for support sheet

**3 POLES**

- Flange for fixed circuit-breaker III
- Flange for fixed circuit-breaker IV
- Flange for fixed circuit-breaker III-IV with MOE and FLD
- Flange for circuit-breaker III-IV with direct rotary handle RHD
- Flange for fixed circuit-breaker IV with front extended terminals and residual current
- Optional flange

**4 POLES**

- Flange for fixed circuit-breaker III
- Flange for fixed circuit-breaker IV
- Flange for fixed circuit-breaker III-IV with MOE and FLD
- Flange for circuit-breaker III-IV with direct rotary handle RHD
- Flange for fixed circuit-breaker IV with front extended terminals and residual current
- Optional flange

**Flanges**

Key:
1. Flange for fixed circuit-breaker III
2. Flange for fixed circuit-breaker IV
3. Flange for fixed circuit-breaker III-IV with MOE and FLD
4. Flange for circuit-breaker III-IV with direct rotary handle RHD
5. Flange for fixed circuit-breaker IV with front extended terminals and residual current
6. Optional flange
Tmax XT4 – Installation
Installation for fixed circuit-breaker

Drilling templates compartment door

**With standard flange**

- **A=86**
  - 3 POLES
  - 4 POLES

**Without flange**

- **A=83.5**
  - 3 POLES
  - 4 POLES

**With optional flange**

- **A=92**
  - 3-4 POLES

---

---
Tmax XT4 – Installation
Terminals for fixed circuit-breaker

Terminals F

Key
1  25mm insulating barriers between phases (compulsory) provided
2  Top terminal covers with degree of protection IP30 (optional) not provided

Terminals EF

Key
3  Front extended terminals
4  Terminal covers with degree of protection IP40 (optional) not provided
5  100mm insulating barriers between phases (compulsory) provided
6  Insulated plate provided compulsory for Ue>440V
7  Drilling template for 3p circuit-breaker
8  Drilling template for 4p circuit-breaker
**Tmax XT4 – Installation**

**Terminals for fixed circuit-breaker**

**Terminals ES**

**Key**
1. Drilling template for 3p circuit-breaker
2. Drilling template for 4p circuit-breaker
3. Front extended spread terminals
4. 200mm insulating barriers between phases (compulsory) provided
5. Insulated plate provided compulsory for $U_e > 440V$

---

**1x1...185mm² terminals FCCuAl**

**Key**
1. 1x1...185mm² terminals FCCuAl
3. 25mm insulating barriers between phases (compulsory) provided
OVERALL DIMENSIONS

2x35...150mm² terminals FCCuAl

---

Key
2 2x35...150mm² terminals FCCuAl
4 Terminal covers with degree of protection IP40 (optional) provided
5 Provided rear insulated plate (mandatory for CuAl 2x150mm² cables)
6 Drilling template for circuit-breaker IV fixing with insulating courtes plate
7 Drilling template for circuit-breaker III fixing with insulating courtes plate
Tmax XT4 – Installation
Terminals for fixed circuit-breaker

Terminals FCCu

Key
1 Terminals FCCu
4 25mm insulating barriers between phases (compulsory) provided as standard with the circuit-breaker

Terminals MC

Key
2 Multicable terminals
3 Terminal covers with degree of protection IP40 (optional) provided
Terminals R

Key
1. Adjustable rear terminals
2. Bottom terminal covers with degree of protection IP40 (optional) provided
3. Drilling template for circuit-breaker III fixing on sheet
4. Drilling template for circuit-breaker IV fixing on sheet

3 POLES
4 POLES
Tmax XT4 – Installation
Accessories for fixed circuit-breaker

Rotary handle operating mechanism on circuit-breaker (RHD)

Key
2 Rotary handle operating mechanism on circuit-breaker
4 Drilling template of door with direct rotary handle
6 25mm insulating barriers between phases
Rotary handle operating mechanism of the compartment door (RHE)

Key
1 Rotary handle operating mechanism of the compartment door
3 Drilling template for RHE
5 Transmission unit
6 25mm Insulating barriers between phases
Tmax XT4 – Installation

Accessories for fixed circuit-breaker

Stored energy motor operator (MOE)

---

Key
1 Stored energy motor operator (MOE)
2 Key lock optional
3 Drilling template of door with direct rotary handle with flange (MOE)
4 Drilling template of door with direct rotary handle without flange (MOE)
5 Drilling template for circuit-breaker III fixing on sheet
6 Drilling template for circuit-breaker IV fixing on sheet
7 25mm insulating barriers between phases
Front for lever operating mechanism (FLD)

Key
1 Front for lever operating mechanism (FLD)
2 Key lock optional
3 Drilling template of door with direct rotary handle with flange (FLD)
4 Drilling template of door with direct rotary handle without flange (FLD)
5 Drilling template for circuit-breaker III fixing on sheet
6 Drilling template for circuit-breaker IV fixing on sheet
7 25mm insulating barriers between phases
**Tmax XT4 – Installation**

**Accessories for fixed circuit-breaker**

Ekip Display or LED Meter

---

**Key**

1. Ekip Display or LED Meter
2. Optional wiring ducts
3. 25mm insulating barriers between phases
Residual current RC Sel

Key
1 Residual current
2 Front terminals
7 Drilling template of door with direct rotary handle and fixing with flange
8 Drilling template of door with direct rotary handle and fixing without flange
9 Drilling template for circuit-breaker fixing on sheet

<table>
<thead>
<tr>
<th></th>
<th>With standard flange</th>
<th>Without flange</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV</td>
<td>86</td>
<td>83.5</td>
</tr>
</tbody>
</table>

| With standard flange   | 86                     |
| Without flange         | 83.5                   |
**Tmax XT4 – Installation**

Installation for plug-in circuit-breaker

**Fixing on sheet**

1. **Key**
   - 1 Fixed part
   - 2 Moving part

<table>
<thead>
<tr>
<th>Fixing at 50mm</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>With standard flange</td>
<td>III-IV 136</td>
</tr>
<tr>
<td>Without flange</td>
<td>III-IV 133.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fixing at 70mm for extended front terminals</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>With standard flange</td>
<td>III-IV 156</td>
</tr>
<tr>
<td>Without flange</td>
<td>III-IV 161.5</td>
</tr>
</tbody>
</table>

**With side connector for Ekip Touch trip units**

1. **Key**
   - 1 Front terminals
   - 2 Flange for IV circuit-breaker (always supplied with IV cb)
   - 9 Optional wiring duct
   - 10 Interphase insulating barriers 25mm - 0.98” (compulsory)
   - 15 Connection kit F/P IntBus/ExtNeut/Se

---

2/98 SACE TMAX XT LOW VOLTAGE MOLDED CASE CIRCUIT-BREAKERS - PRELIMINARY
Drilling templates for support sheet

3 POLES

4 POLES

3-4 POLES
**Tmax XT4 – Installation**

Installation for plug-in circuit-breaker

**Flanges**

Key:
1. Flange for plug-in circuit-breaker III
2. Flange for plug-in circuit-breaker IV
3. Flange for plug-in circuit-breaker III-IV with MOE and FLD
4. Flange for circuit-breaker III-IV with direct rotary handle
5. Flange for plug-in circuit-breaker IV with front extended terminals and residual current
6. Optional flange
Drilling templates compartment door

**With standard flange**

- **B=136 C=156**
  - 3 POLES
- **B=136 C=156**
  - 4 POLES

**Without flange**

- **B=133.5 C=153.5**
  - 3 POLES
- **B=133.5 C=153.5**
  - 4 POLES

**With optional flange**

- **B=142 C=162**
  - 3-4 POLES

OVERALL DIMENSIONS
**Tmax XT4 – Installation**

Terminals for plug-in circuit-breaker

### Terminals EF

**Key**

4  Front extended terminals  
5  100mm insulating barriers between phases (compulsory) provided

**Note:** Insulated plate to be provided by customer
Terminals ES

-key-
1. Front extended spread terminals
2. 200mm insulating barriers between phases (compulsory) provided
3. Insulated plate (compulsory) provided
4. Drilling template for 3p circuit-breaker
5. Drilling template for 4p circuit-break
6. Adaptor (compulsory) not provided
**Tmax XT4 – Installation**

**Terminals for plug-in circuit-breaker**

1x1...185mm² terminals FCCuAl

---

Key
1 1x1...185mm² front terminals FCCuAl
2 25mm insulating barriers between phases (compulsory) provided
6 Adaptor (compulsory) not provided

---

**2x35...150mm² terminals FCCuAl**

---

Key
1 2x150mm² external terminal FCCuAl
2 High terminal covers with degree of protection IP40 (optional) provided

---

**Terminals FCCu**

---

Key
2 25mm insulating barriers between phases (compulsory) provided as standard with the circuit-breaker
5 Terminals FCCu
6 Adaptor (compulsory) not provided
Terminals MC

Key
3 Provided high terminal covers with degree of protection IP40 (mandatory for multicables terminals)
4 Multicable terminals
6 Adaptor (compulsory) not provided

Terminals HR/VR

Key
1 Rear vertical terminals
2 Rear horizontal terminals
3 90mm insulating barriers between phases (compulsory) not provided
Tmax XT4 – Installation

Accessories for plug-in circuit-breaker

Stored energy motor operator (MOE)

---

Key
1 Fixed part
2 Moving part
3 Stored energy motor operator (MOE)
4 Key lock optional
5 100mm insulating barriers between phases (compulsory) provided
6 Drilling template of door with direct rotary handle with flange
7 Drilling template of door with direct rotary handle without flange
8 Extended terminals
Front for lever operating mechanism (FLD)

Key:
1. Fixed part
2. Moving part
3. Front for lever operating mechanism (FLD)
4. 100mm insulating barriers between phases (compulsory) provided
5. Drilling template of door with direct rotary handle with flange
6. Drilling template of door with direct rotary handle without flange
Tmax XT4 – Installation
Accessories for plug-in circuit-breaker

Ekip Display or LED Meter

Key
1 100mm insulating barriers between phases (compulsory) provided
2 Ekip Display or LED Meter
**Residual current RC Sel**

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Residual current</td>
</tr>
<tr>
<td>2</td>
<td>Fixed part</td>
</tr>
<tr>
<td>3</td>
<td>Moving part</td>
</tr>
<tr>
<td>4</td>
<td>100mm insulating barriers between phases (compulsory) provided</td>
</tr>
<tr>
<td>5</td>
<td>Extended terminals</td>
</tr>
<tr>
<td>6</td>
<td>Drilling template of door with direct rotary handle and fixing with flange</td>
</tr>
<tr>
<td>7</td>
<td>Drilling template of door with direct rotary handle and fixing without flange</td>
</tr>
<tr>
<td>8</td>
<td>Drilling template for circuit-breaker fixing on sheet</td>
</tr>
</tbody>
</table>

**Fixing at 50mm**  
**B**

| With standard flange | IV | 136 |
| Without flange       | IV | 133.5 |
**Tmax XT4 – Installation**

Installation for withdrawable circuit-breaker

**Fixing on sheet**

<table>
<thead>
<tr>
<th>With standard flange</th>
<th>III – IV Fixing at 50mm</th>
<th>170</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>III – IV Fixing at 70mm for front extended terminals</td>
<td>190</td>
</tr>
</tbody>
</table>

**Key**

1. Fixed part
2. Moving part
3. FLD (FLD or BHD or RHE or MOE) mandatory with withdrawable version
6. Optional wiring ducts
With side connector for Ekip Touch trip units

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fixed part</td>
</tr>
<tr>
<td>2</td>
<td>Moving part</td>
</tr>
<tr>
<td>3</td>
<td>FLD (FLD or RHD or RHE or MOE) mandatory with withdrawble version</td>
</tr>
<tr>
<td>4</td>
<td>Flange</td>
</tr>
<tr>
<td>9</td>
<td>Optional wiring ducts</td>
</tr>
<tr>
<td>11</td>
<td>Fld (FLD or RHD or RHE or MOE) compulsory with withdrawble version</td>
</tr>
<tr>
<td>12</td>
<td>Connection kit W IntBus/ExtNeut/Sel</td>
</tr>
</tbody>
</table>

**COMPARTMENT DEPTH**

- A

**ISOLATING DISTANCE**

- A

**OVERALL DIMENSIONS**

- With side connector for Ekip Touch trip units

### With standard flange

<table>
<thead>
<tr>
<th>III - IV Fixing</th>
<th>50mm 170</th>
</tr>
</thead>
<tbody>
<tr>
<td>III - IV Fixing</td>
<td>70mm 190</td>
</tr>
<tr>
<td>for front extended terminals</td>
<td>190</td>
</tr>
</tbody>
</table>
Tmax XT4 – Installation
Installation for withdrawable circuit-breaker

Drilling templates for support sheet

Flanges

Key
5 Flange for circuit-breaker III-IV estraibile
6 Flange for circuit-breaker residual current IV with front extended terminals

<table>
<thead>
<tr>
<th></th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>RHD</td>
<td>111</td>
<td>124.5</td>
</tr>
<tr>
<td>FLD-MOE</td>
<td>114.3</td>
<td>134.5</td>
</tr>
</tbody>
</table>
Drilling templates compartment door

**With standard flange**

- **B=136  C=156  3 POLES**
- **B=136  C=156  4 POLES**

**Without flange**

- **B=133.5  C=153.5  3 POLES**
- **B=133.5  C=153.5  4 POLES**

**With optional flange**

- **B=142  C=162  3-4 POLES**
Tmax XT4 – Installation
Terminals for withdrawable circuit-breaker

Terminals EF

---

Key
4 Front extended terminals
5 100mm insulating barriers between phases (compulsory) provided

---

Note:
Insulated plate (compulsory) provided
Terminals ES

Key
1. Front extended spread terminals
2. 200mm insulating barriers between phases (compulsory) provided
3. Insulated plate provided compulsory for Ue>440V
4. Drilling template for 3p circuit-breaker
5. Drilling template for 4p circuit-breaker
6. Adaptor (compulsory) not provided
Tmax XT4 – Installation
Terminals for withdrawable circuit-breaker

1x1...185mm² terminals FCCuAl

**Key**
1 2x35...150mm² terminals FCCuAl
2 Terminal covers with degree of protection IP40 (optional) provided
3 Provided rear insulated plate (mandatory for CuAl 2x150mm² cables)
4 Drilling template for circuit-breaker III fixing with insulating courtes plate
5 Drilling template for circuit-breaker IV fixing with insulating courtes plate

2x35...150mm² terminals FCCuAl

**Key**
1 2x35...150mm² terminals FCCuAl
2 Terminal covers with degree of protection IP40 (optional) provided
3 Provided rear insulated plate (mandatory for CuAl 2x150mm² cables)
4 Drilling template for circuit-breaker III fixing with insulating courtes plate
5 Drilling template for circuit-breaker IV fixing with insulating courtes plate
OVERALL DIMENSIONS

Terminals FCCu

Key
1 25mm insulating barriers between phases (compulsory) provided as standard with the circuit-breaker
2 Terminals FCCu
3 Adaptor (compulsory) not provided

Terminals MC

Key
1 Multicable terminals
3 High terminal covers with degree of protection IP40 (optional) provided
4 Adaptor (compulsory) not provided
**Tmax XT4 – Installation**

Terminals for withdrawable circuit-breaker

**Terminals HR/VR**

---

**Key**

1. Rear vertical terminals
2. Rear horizontal terminals
3. 90mm insulating barriers between phases (compulsory) not provided
Tmax XT4 – Installation

Accessories for withdrawable circuit-breaker

Front for lever operating mechanism (FLD)

---

**Key**

1. Fixed part
2. Moving part
3. Front for lever operating mechanism FLD
4. Drilling template of door with direct rotary handle and fixed flange
5. 100mm insulating barriers between phases (compulsory) provided
6. Extended terminals
Tmax XT4 – Installation

Accessories for withdrawable circuit-breaker

Stored energy motor operator (MOE)

---

Key
1 Fixed part
2 Moving part
3 Stored energy motor operator (MOE)
4 Drilling template of door with MOE and fixing flange
5 100mm insulating barriers between phases (compulsory) provided
6 Extended terminals
7 Key lock optional
Rotary handle operating mechanism on circuit-breakers (RHD)

Key
1 Fixed part
2 Moving part
4 Tightening torque 1.1 Nm
5 Flange for the compartment door
6 Rotary handle operating mechanism for circuit-breaker
Tmax XT4 – Installation
Accessories for withdrawable circuit-breaker

Rotary handle operating mechanism on the compartment door (RHE)

Key
1 Fixed part
2 Moving part
3 Shape for compartment door sheet steel drilling for fixed part
4 Tightening torque 1.1 Nm
5 Tightening torque 1.4 Nm
6 Transmission mechanism
7 Rotary handle operating mechanism for compartment door
8 Compartment door sheet steel drilling

<table>
<thead>
<tr>
<th>F</th>
<th>Fixing 3 poles</th>
<th>107</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fixing 4 poles</td>
<td>142</td>
</tr>
</tbody>
</table>

DIMENSION FOR DOOR WITH MAXIMUM DISTANCE
Residual current RC Sel 4 poles

Key
1 Fixed part
2 Moving part
3 Front for lever operating mechanism
4 Connector residual current (optional)
5 100mm insulating barriers between phases (compulsory) provided
6 Residual current
7 Extended terminals
8 Fixing screws for fixed part of connector
9 Drilling template of door with direct rotary handle and fixed flange
**Tmax XT7 – Installation**

Installation for fixed circuit-breaker

**Fixing on sheet**

- **1** Front terminals for flat connection
- **2** Extended front terminals
- **3** Flange for the compartment door
- **4** Flange fixing screws
- **5** Tightening torque 0.5 Nm - 4.4 lbs in
- **6** Fixing on sheet steel III
- **7** Fixing on sheet steel IV
- **8** Tightening torque 18 Nm - 159 lbs in
- **9** Key lock (optional)
- **10** Padlock device (optional)
- **11** Tightening torque 2 Nm - 18 lbs in
- **12** Compartment door sheet steel drilling for flange
- **13** Compartment door sheet steel drilling for 206x204 frontal
- **14** Clamp for auxiliary contacts

**Drilling templates for support sheet**

**Flange**

**Drilling templates compartment door**
**Tmax XT7 – Installation**

**Terminals for fixed circuit-breaker**

**Terminals EF**

- **Key**
  1. Extended front terminals EF
  2. Flange for the compartment door
  3. Flange fixing screws
  4. Tightening torque 0.5 nm - 4.4 lbs in
  7. Tightening torque 18 mm - 159 lbs in
  8. Key look (optional)
  9. Padlock device (optional)
  10. Tightening torque 2 Nm - 18 lbs in
  13. Clamp for auxiliary contacts
  14. Insulating plate
  15. Separating partitions 100mm
  16. High terminal cover with IP40 protection degree

**Terminals ES**

- **Key**
  1. Spreadead extended front terminals ES
  2. Flange for the compartment door
  3. Flange fixing screws
  4. Tightening torque 0.5 nm - 4.4 lbs in
  7. Tightening torque 18 mm - 159 lbs in
  8. Key look (optional)
  9. Padlock device (optional)
  10. Tightening torque 2 Nm - 18 lbs in
  13. Clamp for auxiliary contacts
  14. Insulating plate
  15. Separating partitions 200mm
**Tmax XT7 – Installation**

**Terminals for fixed circuit-breaker**

4 x 240mm² and 2 x 240mm² FC CuAl

---

**Key**

1. Fc Cu-Al terminal 4x240mm²
2. Fc Cu-Al terminal 2x240mm²
3. Flange for the compartment door
4. Flange fixing screws
5. Tightening torque 0.5 Nm - 4.4 lbs in
6. Flange fixing screws
7. Tightening torque 18 Nm - 159 lbs in
8. Key look (optional)
9. Padlock device (optional)
10. Tightening torque 2 Nm - 18 lbs in
11. Clamp for auxiliary contacts
12. Insulating plate
13. High terminal cover with IP40 protection degree
14. Low protection cover with IP30 protection degree
15. Tightening torque 18 Nm - 159 lbs in
Terminals R

- Key
- 1 HR horizontal rear terminal HR
- 2 VR vertical rear terminal VR
- 3 Flange for the compartment door
- 4 Flange fixing screws
- 5 Tightening torque 0.5 Nm - 4.4 lbs in
- 8 Drilling template support plate
- 9 Key lock (optional)
- 10 Padlock (optional)
- 11 Clamp for auxiliary contacts
- 12 Low protection cover with IP30 protection degree
- 13 Tightening torque 9 Nm - 79.6 lbs in

<table>
<thead>
<tr>
<th></th>
<th>III</th>
<th>IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>70</td>
<td>140</td>
</tr>
<tr>
<td>C</td>
<td>192.5</td>
<td>262.5</td>
</tr>
</tbody>
</table>
Tmax XT7 – Installation
Accessories for fixed circuit-breaker

Rotary handle operating mechanism on the circuit-breaker (RHD)

Drilling templates for support sheet

Flange

Drilling template compartment door

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>With flange</td>
<td>201</td>
<td>116</td>
<td>24.25</td>
</tr>
<tr>
<td>Without flange</td>
<td>192</td>
<td>107</td>
<td>19.75</td>
</tr>
</tbody>
</table>
Rotary handle operating mechanism on the compartment door (RHE)
Tmax XT7 – Installation
Installation for withdrawable circuit-breaker

Fixing on sheet

Drilling templates for support sheet

Flange

Drilling template compartment door

Key
1 EF front terminal
2 ES front terminal
3 Flange for the compartment door
4 Flange fixing screws
5 Tightening torque 0.5 Nm - 4.4 lbs in
6 Compartment door sheet steel drilling for flange
7 Fixing on sheet steel drilling template
8 Tightening torque 9 Nm - 79.6 lbs in
9 Mounting at wall
10 Key lock (optional)
11 Padlock (optional)
12 Clamp for auxiliary contacts
13 Tightening torque 9 Nm - 79.6 lbs in
**Tmax XT7 – Installation**

Terminals for withdrawable circuit-breaker

Terminals EF and ES

---

**Key**

1. EF front terminal
2. ES front terminal
4. Flange fixing screws
5. Tightening torque 0.5 Nm - 4.4 lbs in
8. Tightening torque 9 Nm - 79.6 lbs in
10. Key lock (optional)
11. Padlock (optional)
12. Clamp for auxiliary contacts
13. Tightening torque 9 Nm - 79.6 lbs in
**Tmax XT7 – Installation**

Terminals for withdrawable circuit-breaker

**Terminals R**

![Diagram of Terminals R]

**Terminals VR upper**

![Diagram of Terminals VR upper]

**Terminals HR lower**

![Diagram of Terminals HR lower]

---

**Key**

1. HR horizontal rear terminal HR
2. VR vertical rear terminal VR
3. Flange for the compartment door
4. Flange fixing screws
5. Tightening torque 0.5 Nm - 4.4 lbs in
6. Tightening torque 9 Nm - 79.6 lbs in
7. Mounting at wall
8. Key lock (optional)
9. Padlock (optional)
10. Clamp for auxiliary contacts
11. Tightening torque 9 Nm - 79.6 lbs in
Terminals SHR

Key:
1. SHR rear side terminals (III)
2. SHR rear side terminals (IV)
3. Flange for the compartment door
4. Flange fixing screws
5. Tightening torque 0.5 Nm - 4.4 lbs in
6. Tightening torque 9 Nm - 79.6 lbs in
7. Mounting at wall
8. Key lock (optional)
9. Padlock (optional)
10. Clamp for auxiliary contacts
11. Tightening torque 9 Nm - 79.6 lbs in

Terminals VR upper

Terminals HR lower
Tmax XT7 – Installation

Accessories for withdrawable circuit-breaker

Rotary handle operating mechanism on the circuit-breaker (RHD)

Drilling templates for support sheet

Flange

Drilling template compartment door
Rotary handle operating mechanism on the compartment door (RHE)
Tmax XT7 M – Installation
Installation for fixed circuit-breaker

Fixing on sheet

Drilling templates for support sheet

Flange

Drilling templates compartment door

Key
1 Front terminals for flat connection
2 Extended front terminals
3 Flange for the compartment door
4 Flange fixing screws
5 Tightening torque 0.5 Nm - 4.4 lbs in
6 Fixing on sheet steel III
7 Fixing on sheet steel IV
8 Tightening torque 18 Nm - 159 lbs in
9 Key look (optional)
10 Tightening torque 2 Nm - 18 lbs in
11 Compartment door sheet steel drilling for flange
12 Compartment door sheet steel drilling for 206x204 frontal
13 Clamp for auxiliary contacts
**Tmax XT7 M – Installation**

**Terminals for fixed circuit-breaker**

---

**Terminals EF**

---

**Terminals ES**

---

**Key**

1. Extended front terminals EF
2. Flange for the compartment door
3. Flange fixing screws
4. Tightening torque 0,5 Nm - 4,4 lbs in
5. Tightening torque 18 Nm - 159 lbs in
6. Key look (optional)
7. Tightening torque 2 Nm - 18 lbs in
8. Clamp for auxiliary contacts
9. Insulating plate
10. Separating partitions 100mm
11. High terminal cover with IP40 protection degree

---

**Key**

1. Spreadeed extended front terminals ES
2. Flange for the compartment door
3. Flange fixing screws
4. Tightening torque 0,5 Nm - 4,4 lbs in
5. Tightening torque 18 Nm - 159 lbs in
6. Key look (optional)
7. Tightening torque 2 Nm - 18 lbs in
8. Clamp for auxiliary contacts
9. Insulating plate
**Tmax XT7 M – Installation**

**Terminals for fixed circuit-breaker**

**Key**
1. Fc Cu-Al terminal 4x240mm²
2. Fc Cu-Al terminal 2x240mm²
3. Flange for the compartment door
4. Flange fixing screws
5. Tightening torque 0.5 Nm - 4.4 lbs in
6. Tightening torque 18 Nm - 159 lbs in
7. Tightening torque 43 Nm - 380 lbs in
8. Key look (optional)
9. Clamp for auxiliary contacts
10. Insulating plate
11. High terminal cover with IP40 protection degree
12. Low protection cover with IP30 protection degree
13. Tightening torque 2 Nm - 18 lbs in
14. 4 x 240mm² and 2 x 240mm² FC CuAl
Terminals R

Terminals HR upper

Terminals VR lower

---

Key
1 HR horizontal rear terminal HR
2 VR vertical rear terminal VR
3 Flange for the compartment door
4 Flange fixing screws
5 Tightening torque 0.5 Nm - 4.4 lbs in
8 Drilling template support plate
9 Key lock (optional)
10 Clamp for auxiliary contacts
11 Low protection cover with IP30 protection degree
12 Tightening torque 9 Nm - 79.6 lbs in

<table>
<thead>
<tr>
<th></th>
<th>III</th>
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<tbody>
<tr>
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</tr>
<tr>
<td>C</td>
<td>192.5</td>
<td>262.5</td>
</tr>
</tbody>
</table>
Tmax XT7 M – Installation
Installation for withdrawable circuit-breaker

Fixing on sheet

Drilling template for support sheet

Flange

Drilling template compartment door

Key
3 Flange for the compartment door
6 Compartment door sheet steel drilling for flange
7 Fixing on sheet steel drilling template
10 Key lock (optional)
11 Padlock (optional)
**Tmax XT7 M – Installation**

Terminals for withdrawable circuit-breaker

#### Terminals R

- 1 HR horizontal rear terminal HR
- 2 VR vertical rear terminal VR
- 3 Flange for the compartment door
- 4 Flange fixing screws
- 5 Tightening torque 0.5 Nm - 4.4 lbs in
- 6 Tightening torque 9 Nm - 79.6 lbs in
- 7 Mounting at wall
- 8 Key lock (optional)
- 9 Padlock (optional)
- 10 Clamp for auxiliary contacts
- 11 Tightening torque 9 Nm - 79.6 lbs in

---

#### Key

1. HR horizontal rear terminal HR
2. VR vertical rear terminal VR
3. Flange for the compartment door
4. Flange fixing screws
5. Tightening torque 0.5 Nm - 4.4 lbs in
6. Tightening torque 9 Nm - 79.6 lbs in
7. Mounting at wall
8. Key lock (optional)
9. Padlock (optional)
10. Clamp for auxiliary contacts
11. Tightening torque 9 Nm - 79.6 lbs in
Tmax XT – Common accessories

Horizontal interlock XT series

Key
1. Interlocking mechanism
2. Drilling template for fixing interlocking system
3. Drilling template for all version with rear terminals
4. Tightening torque 3.7Nm
5. Tightening torque 3Nm
6. Tightening torque 2.5Nm
7. Couplink plate for circuit-breakers
8. Breaking for 4p version
9. A = 35mm XT4 withdrawable with key lock for fixed part
   A = 25mm XT2 withdrawable with key lock for fixed part

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>XT1</td>
<td>104.25</td>
<td>129.25</td>
</tr>
<tr>
<td>XT2</td>
<td>101.75</td>
<td>131.75</td>
</tr>
<tr>
<td>XT3</td>
<td>99.75</td>
<td>133.75</td>
</tr>
<tr>
<td>XT4</td>
<td>99.25</td>
<td>134.25</td>
</tr>
</tbody>
</table>
Tmax XT – Common accessories
Vertical interlock XT series

Key:
1. Interlock device
2. Drilling template for fixing the interlock device on sheet
3. Drilling template for all rear terminal version
4. Tightening torque 9Nm
5. Tightening torque 1Nm
6. Tightening torque under customer’s responsibility
7. Pre-breacking for lv poles
8. A=35mm for XT4 fixed part
   Withdrawable with padlock device
9. A=30mm for XT2 fixed part
   Withdrawable with padlock device

Note:
For the overall dimension of the circuit-breaker see the relevant dimension tables and the configuration
Wiring diagrams

Reading information

3/2  Circuit-breakers
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3/33  Diagrams for XT7 and XT7 M
3/42  XT2-XT4-XT7-XT7 M modules
State of operation shown
The diagrams are shown in the following conditions:

- fixed version circuit-breaker, open;
- withdrawable or plug-in version circuit-breaker, open and connected;
- contactor for starting the motor open;
- circuits de-energised;
- trip units not tripped;
- motor operator with springs charged.

Reading information
Circuit-breakers

Description of figures
Fig. 1 = Shunt opening release.
Fig. 2 = Supplementary shunt opening release (only for four-pole circuit-breakers).
Fig. 4 = Supplementary permanent shunt opening release (only for four-pole circuit-breakers).
Fig. 5 = Instantaneous undervoltage release (see Notes B and F).
Fig. 6 = Undervoltage release with electronic time delay device outside the circuit-breaker, see note B).
Fig. 7 = Instantaneous undervoltage release in the version for machine tools with one contact in series (see Notes B, C and F).
Fig. 8 = Instantaneous undervoltage release in the version for machine tools with two contacts in series (see Notes B, C and F).
Fig. 9 = First auxiliary early contact operated by the crank handle.
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Fig. 11 = One changeover contact for electrical signaling of circuit-breaker open due to tripping of the residual current release type RC Inst, RC Sel, RC B Type or RC Sel 200.
Fig. 11a = Protection relay tripped signaling contact – S51
Fig. 12 = Residual current release circuits type RC Sel, RC B Type or RC Sel 200.
Fig. 12a = Contact for signaling position of loaded springs – S33M
Fig. 13 = Two contacts for electrical signaling of residual current release pre-alarm and alarm type RC Sel, RC B Type or RC Sel 200.
Fig. 13a = Motor for loading closing springs – M
Fig. 14a = Trip contact reset coil – YR
Fig. 16 = Tripped position breaker signaling contact SY
Fig. 17 = Auxiliary early contacts – S4
Fig. 21 = Direct control motor operator (MOD) (only for XT1 and XT3 fixed or plug-in circuit-breakers) (see note I).
Fig. 22 = Motor operator with stored energy (MOE) (only for circuit-breakers XT2 and XT4).
Fig. 23 = A contact for electrical signaling of stored energy motor operator that can be operated remotely.
Fig. 24 = RC residual current sensor input (ANSI 64&80N TD)
Fig. 24a = RC differential ground fault protection sensor input (ANSI 87N)
Fig. 25 = Transformer star centre sensor input
Fig. 27 = Current sensor input on external neutral (only for 3-pole circuit breaker)
Fig. 31 = One changeover contact for electrical signaling of circuit-breaker open or closed and one changeover contact for electrical signaling of circuit-breaker open due to tripping of the magnetic, thermal magnetic or electronic trip units, YO, YO1, YO2, YU (tripped position) (only for voltages up to 250V) (see notes E and I).
Fig. 32 = Two changeover contacts for electrical signaling of circuit-breaker open or closed, two changeover contacts for electrical signaling of circuit-breaker open due to tripping of the magnetic, thermal magnetic or electronic trip units, YO, YO1, YO2, YU (tripped position) and one changeover contact for electrical signaling of circuit-breaker open due to tripping of the thermal magnetic or electronic trip unit (only for voltages up to 250V).
Fig. 33 = Three changeover contacts for electrical signaling of circuit-breaker open or closed and two changeover contacts for electrical signaling of circuit-breaker open due to tripping of the magnetic, thermal magnetic or electronic trip units, YO, YO1, YO2, YU (tripped position) (only for voltages up to 250V).

Fig. 34 = Three changeover contacts for electrical signaling of circuit-breaker open and one changeover contact for electrical signaling of circuit-breaker open due to tripping of the magnetic, thermal magnetic or electronic trip units, YO, YO1, YO2, YU (tripped position) (only for voltages up to 250V).

Fig. 35 = One changeover contact for electrical signaling of circuit-breaker open due to tripping of the thermal magnetic electronic trip unit (only for voltages up to 250V).

Fig. 36 = Two changeover contacts for electrical signaling of circuit-breaker open or closed and one changeover contact for electrical signaling of circuit-breaker open due to tripping of the magnetic, thermal magnetic or electronic trip units, YO, YO1, YO2, YU (tripped position) (only for voltages up to 250V).

Fig. 37 = One changeover contact for electrical signaling of circuit-breaker open or closed and one changeover contact for electrical signaling of circuit-breaker open due to tripping of the magnetic, thermal magnetic or electronic trip units, YO, YO1, YO2, YU (tripped position) (only for voltages up to 400V).

Fig. 38 = Two changeover contacts for electrical signaling of circuit-breaker open or closed (only for voltage up to 400V).

Fig. 39 = Three supplementary changeover contacts for electrical signaling of circuit-breaker open or closed (only for fixed or plug-in version circuit-breakers).

Fig. 40 = First changeover position contact of the circuit-breaker, for electrical signaling of connected (only for plug-in or withdrawable version circuit-breakers).

Fig. 41 = Second changeover position contact of the circuit-breaker, for electrical signaling of connected (only for plug-in or withdrawable version circuit-breakers).

Fig. 42 = Third changeover position contact of the circuit-breaker, for electrical signaling of connected (only for plug-in or withdrawable version circuit-breakers).

Fig. 43 = Fourth changeover position contact of the circuit-breaker, for electrical signaling of connected (only for plug-in or withdrawable version circuit-breakers).

Fig. 44 = First changeover position contact of the circuit-breaker, for electrical signaling of isolated (only for withdrawable version circuit-breakers).

Fig. 45 = Second changeover position contact of the circuit-breaker, for electrical signaling of isolated (only for withdrawable version circuit-breakers).

Fig. 46 = Current transformer circuit on the neutral conductor outside the circuit-breaker (for plug-in or withdrawable version circuit-breakers).

Fig. 47 = Auxiliary circuits of the 24V auxiliary power supply unit and of the HMI030 type interface unit (see note E).

Fig. 48 = Auxiliary circuits of the Ekip E-LSIG microprocessor-based release connected to the Ekip Display (display) or Ekip LED Meter (current display) display unit.

Fig. 49 = Auxiliary circuits of the electronic trip unit type Ekip LSI, Ekip LSiG or Ekip MLRIU connected to display unit type Ekip Display (display) or Ekip LED Meter (current display).

Fig. 50 = Auxiliary circuits of the Ekip Com type interface unit and of the HMI030 type interface unit (see note E).
Fig. 53 = Auxiliary circuits of the electronic trip unit type Ekip LSI, Ekip LSIG or Ekip M-LRIU connected to interface unit type Ekip Com and with actuator unit type MOE-E for the stored energy motor operator.

Fig. 54 = Auxiliary circuits of the electronic trip unit type Ekip M-LRIU connected to the contactor control unit for starting the motor type PR212/CI (the circuit to the motor thermistor is optional).

Fig. 54a = Stand alone interface unit type Ekip Com with MOE-E motor operator.

Fig. 55 = Auxiliary circuits of the electronic trip unit type Ekip M-LRIU connected to the contactor control unit for starting the motor type PR212/CI and with ABB AF series contactor (the circuit to the motor thermistor is optional).

Fig. 55a = Interface unit type Ekip Com with direct supply to relay and MOE-E motor operator

Fig. 56 = Modbus RTU STA interface of Ekip Com Unit to install inside the circuit-breaker

Fig. 57 = First opening coil – YO

Fig. 57a = Ekip Cartridge for one module and one Ekip Supply

Fig. 58 = First opening coil with control from protection trip unit – YO, Ekip Com Actuator

Fig. 58a = Ekip Cartridge for three modules and one Ekip Supply

Fig. 59 = First closing coil – YC

Fig. 60 = First opening coil with control from protection trip unit – YC, Ekip Com Actuator

Fig. 61 = Modbus RTU STA interface of Ekip Com Unit to install inside the circuit-breaker

Fig. 61a = Ekip Supply: auxiliary supply through module 110-240Vac/dc or 24/48Vdc and local bus

Fig. 62 = Motor thermistor circuit.

Fig. 62a = Modbus RTU interface of Ekip Com Unit to install inside the circuit-breaker

Fig. 63 = Circuit of the voltage socket on the neutral conductor outside the circuit-breaker (for Ekip E_LSIG type microprocessor-based plug-in or withdrawable circuit-breaker).

Fig. 63a = Modbus TCP STA interface of Ekip Com Unit to install inside the circuit-breaker

Fig. 64 = Modbus TCP interface of Ekip Com Unit to install inside the circuit-breaker

Fig. 65 = Profinet interface of Ekip Com Unit to install inside the circuit-breaker

Fig. 66 = Ethernet IP interface of Ekip Com Unit to install inside the circuit-breaker

Fig. 67 = IEC61850 interface of Ekip Com Unit to install inside the circuit-breaker

Fig. 68 = Ekip Link interface of Ekip Com Unit to install inside the circuit-breaker

Fig. 69 = Ekip Com Hub interface of Ekip Com Unit to install inside the circuit-breaker

Fig. 70 = Profinet interface of Ekip Com Hub to install inside the circuit-breaker

Fig. 70a = Contacts for signaling of circuit-breaker in racked-in, test, racked-out position

Fig. 71 = Ekip Com Hub

Fig. 72 = Ekip Com Profinet

Fig. 72a = Supplementary open/close auxiliary contacts outside the circuit-breaker

Fig. 73 = Ekip Com IEC61850

Fig. 74 = Ekip Link

Fig. 75 = First opening coil – YO

Fig. 75a = Ekip Cartridge for one module and one Ekip Supply

Fig. 76 = First opening coil with control from protection trip unit – YO, Ekip Com Actuator

Fig. 76a = Ekip Cartridge for three modules and one Ekip Supply

Fig. 77 = First closing coil – YC

Fig. 78 = First opening coil with control from protection trip unit – YC, Ekip Com Actuator

Fig. 79 = Open/Close auxiliary contacts of circuit-breaker (first set)

Fig. 81 = Ekip Supply: auxiliary supply through module 110-240Vac/dc or 24/48Vdc and local bus

Fig. 82 = Ekip Signalling 2K-1

Fig. 83 = Ekip Signalling 2K-2

Fig. 84 = Ekip Signalling 2K-3

Fig. 85 = Ekip Synchrocheck

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Fig. 87 = Ekip Signalling 3T-2

Fig. 88 = Ekip Modbus RTU

Fig. 89 = Ekip Modbus TCP

Fig. 90 = Ekip Profibus DP

Fig. 91 = Ekip Profibus DP

Fig. 91a = Supplementary open/close auxiliary contacts outside the circuit-breaker

Fig. 92 = Ekip Com Ethernet IP

Fig. 93 = Ekip Com Devicenet™

Fig. 94 = Ekip Com IEC61850

Fig. 95 = Ekip Link

Fig. 95a = Contacts for signaling of circuit-breaker in racked-in, test, racked-out position

Fig. 96 = Ekip Com Hub

Fig. 97 = Ekip Com Profinet

Fig. 98 = Ekip Com IEC61850

Fig. 99 = Ekip Link

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Fig. 104 = Auxiliary circuits of Ekip Com or Kit of 24V DC auxiliary voltage for electronic trip units and of Ekip Multimeter display.

Fig. 105 = Ekip Com Modbus RTU redundant

Fig. 106 = Ekip Com Modbus TCP redundant

Fig. 107 = Ekip Com Profibus DP redundant

Fig. 108 = Ekip Com Profinet redundant

Fig. 109 = Ekip Com Devicenet™ redundant
Fig. 115 = Ekip Com Ethernet IP redundant
Fig. 116 = Ekip Com IEC61850 redundant
Fig. 132 = Motor starting module Ekip CI with ABB contactor series AF

Key

- Diagram figure number
- See the note indicated by the letter
- Applications located on the moving part of the circuit-breaker
- Indicative devices and connections for control and signaling, outside the circuit-breaker
- Display unit type Ekip Display (display) or Ekip LED Meter (current display)
- Interface unit type Ekip Com (with MODBUS serial communication)
- Signaling unit type LD030 DO
- Actuator unit type MOE-E for the stored energy motor operator
- Ekip Multimeter.
- Actuator unit type MOE for the stored energy motor operator
- 24V auxiliary power supply unit (see note E)
- Undervoltage release electronic time delay device (outside the circuit-breaker) (only for voltages up to 250V)
- Signaling lamp
- Signaling lamp for stored energy motor operator blocked
- Connectors for the auxiliary contacts of the withdrawable version circuit-breaker; extraction of the connectors takes place at the same time as that of the circuit-breaker.
- Contactor for starting the motor
- Electronic trip unit:
  - overcurrent release type Ekip LS/I, Ekip N-LS/I, Ekip LSI, Ekip LSIG, Ekip E-LSIG
  - of motor protection type Ekip I, Ekip M-I, Ekip M-LIU, Ekip M-LRIU
  - of generator protection Ekip G-LSI

K87 = Residual current release type RC Inst, RC Sel, RC Sel 200, RC B Type
KO = Auxiliary opening relay
M = Motor with excitation in series for opening and closing the circuit-breaker (fig. 21)
M1 = Three-phase asynchronous motor
Q = Main circuit-breaker
Q/0.3 = Circuit-breaker auxiliary contacts
Q/0.7 = Circuit-breaker auxiliary contacts
Q/1...25 = Open/close auxiliary contacts of circuit-breaker
R = Resistor (see note F)
R1 = Resistor (see note H)
R2 = Motor thermistor
RC = RC (residual current) protection sensor
RTC = Contact for signaling circuit-breaker is ready to close
S1 = Contact controlled by the cam of the motor operator
S2 = Contact controlled by the key lock of the motor operator with direct action
S3/1-2 = Contacts controlled by the Auto/Manual selector and key lock of the stored energy motor operator
S33M/1-2 = Limit contacts of spring loading motor
S4 = Contact controlled by the cam of the motor operator with direct action
S4/1-2 = Early auxiliary contacts
S4/1-4 = Auxiliary early contacts operated by the circuit-breaker mounted crank handle (see note C)
S43 = Switch for presetting remote/local control
S51 = Contact for electrical signaling of circuit-breaker open due to tripping of the thermal magnetic or electronic trip unit
S52 = Contact for signaling circuit breaker open due to tripping of opening coil and of undervoltage coil
## Reading information

### Circuit-breakers

<table>
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<tr>
<th>Symbol</th>
<th>Description</th>
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<tbody>
<tr>
<td>S6/1-2</td>
<td>Contacts controlled by the Auto/Manual selector of the motor operator with direct action</td>
</tr>
<tr>
<td>S87/1</td>
<td>Contact for electrical signaling of pre-alarm of the residual current release type RC Sel, RC B or RC Sel 200</td>
</tr>
<tr>
<td>S87/2</td>
<td>Contact for electrical signaling of alarm of the residual current release type RC Sel, RC B or RC Sel 200</td>
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<tr>
<td>S87/3</td>
<td>Contact for electrical signaling of circuit-breaker open due to tripping of the residual current release type RC Sel, RC Inst, RC B or RC Sel 200</td>
</tr>
<tr>
<td>S75I/1..4</td>
<td>Contacts for electrical signaling of circuit-breaker in the connected position (only provided with plug-in or withdrawable version circuit-breakers)</td>
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<tr>
<td>S75E/1-2</td>
<td>Contacts for electrical signaling of circuit-breaker in racked-out position (only provided with withdrawable version circuit-breakers)</td>
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<tr>
<td>S75I/1-2-5</td>
<td>Contacts for signaling circuit-breaker in racked-in position (only provided with withdrawable version circuit-breakers)</td>
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<tr>
<td>S75S/1-2</td>
<td>Contacts for electrical signaling of circuit-breaker in the racked-out position (only provided with withdrawable version circuit-breakers)</td>
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<tr>
<td>S75T/1-2</td>
<td>Contact for signaling circuit-breaker in test position (only provided with withdrawable version circuit-breakers)</td>
</tr>
<tr>
<td>SC</td>
<td>Pushbutton or contact for closing the circuit-breaker</td>
</tr>
<tr>
<td>SC3</td>
<td>Pushbutton for starting the motor</td>
</tr>
<tr>
<td>SD</td>
<td>Power supply switch-disconnector of the residual current release type RC Inst, RC Sel, RC Sel 200 or RC B Type</td>
</tr>
<tr>
<td>SO</td>
<td>Pushbutton or contact for opening the circuit-breaker</td>
</tr>
<tr>
<td>SO1,S02</td>
<td>Pushbuttons or contacts for opening the circuit-breaker (see “Instructions for resetting the circuit-breaker following release tripping”)</td>
</tr>
<tr>
<td>SO3</td>
<td>Pushbutton for stopping the motor</td>
</tr>
<tr>
<td>SR</td>
<td>Pushbutton or contact for electrical resetting of S51 trip contact</td>
</tr>
<tr>
<td>SY</td>
<td>Contact for signaling circuit-breaker open due to tripping of overcurrent protection release and of YO, YO2, YU coils ( tripped position)</td>
</tr>
<tr>
<td>SY/1</td>
<td>Contacts for electrical signaling of circuit-breaker open due to tripping of the thermal magnetic trip units, YO, YO1, YO2, YU ( tripped position)</td>
</tr>
<tr>
<td>SY/1..2</td>
<td>Contacts for electrical signaling of circuit-breaker open due to tripping of the thermal magnetic trip units, YO, YO1, YO2, YU ( tripped position)</td>
</tr>
<tr>
<td>SY/1..3</td>
<td>Contacts for electrical signaling of circuit-breaker open due to tripping of the thermal magnetic trip units, YO, YO1, YO2, YU ( tripped position)</td>
</tr>
<tr>
<td>TI</td>
<td>Toroidal current transformer</td>
</tr>
<tr>
<td>TI/L1</td>
<td>Current transformer placed on phase L1</td>
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<tr>
<td>TI/L2</td>
<td>Current transformer placed on phase L2</td>
</tr>
<tr>
<td>TI/L3</td>
<td>Current transformer placed on phase L3</td>
</tr>
<tr>
<td>TI/N</td>
<td>Current transformer placed on the neutral</td>
</tr>
<tr>
<td>UI/N</td>
<td>Current sensor on neutral</td>
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<tr>
<td>UI/O</td>
<td>Single-pole current sensor</td>
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<td>V4</td>
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<tr>
<td>WI</td>
<td>Serial interface with the trip unit accessories</td>
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<tr>
<td>WS</td>
<td>Serial interface with the control system (MODBUS EIA RS485 interface)</td>
</tr>
<tr>
<td>X</td>
<td>Delivery connector for auxiliary circuits of withdrawable circuit-breaker</td>
</tr>
<tr>
<td>X3</td>
<td>Connector of the circuit for the 24V auxiliary power supply unit</td>
</tr>
</tbody>
</table>
X5 = Circuit connector towards PR212/CI unit
X41 = Circuit connector for external neutral
X42 = Circuit connector for the motor thermistor
X11-3-X4 = Trip unit connectors
XB.. = Three-way connector for the plug-in version circuit-breaker auxiliary circuits
XB1..7 = Connectors for circuit-breaker applications
XC.. = Six-way connector for the plug-in version circuit-breaker auxiliary contacts
XD.. = Nine-way connector for the auxiliary circuits of the plug-in version circuit-breaker
XE.. = Fifteen-way connector for the auxiliary circuits of the plug-in version circuit-breaker
XG-XH = Electronic trip unit connectors
XH1 = Electronic trip unit contacts
XK7 = Connector for auxiliary circuits of communication modules
XV = Terminal boxes of the circuit-breaker applications
YC = Shunt closing release of the stored energy motor operator
YO = Shunt opening release
YO1 = Opening solenoid of the microprocessor-based overcurrent release
YO2 = Opening solenoid of the residual current release
YR = Coil for electrical resetting of trip contact S51
YU = Undervoltage release (see note B)

Notes
B) The undervoltage release is supplied for power supply branched on the supply side of the circuit-breaker or from an independent source: closing is only possible with the release energised (the lock on closing is made mechanically).

C) Contacts S4/1 and S4/2 shown in figures 7-8 open the circuit with the circuit-breaker open and reclose when a manual closing command is given by means of the rotary handle, in accordance with the Standards regarding machine tools (in any case closing does not take place if the undervoltage release is not supplied).

E) The 24V auxiliary power supply unit of fig. 48 must necessarily be installed in the circuit-breaker seats marked SY/1 and Q/2. Therefore, should you want to install the unit in fig. 48 and the contacts in fig. 31 at the same time, the contacts of fig. 31 must be installed in the adjacent slots; that is, contact SY/1 in the slot marked SY/2 and contact Q/2 in the slot marked Q/1.

F) Additional external resistor for undervoltage supplied at 380/440V AC and 480/525V AC.

G) In the case of a three-pole fixed version circuit-breaker with a current transformer on the neutral conductor outside the circuit-breaker, when you want to remove the circuit-breaker it is necessary to short-circuit the terminals of the TI/N transformer.

H) Having requested a Uaux insulated from earth, one must use “galvanically separated converters” in compliance with IEC 60950 (UL 1950) or equivalent Standards that ensure a common mode current or leakage current (see IEC 478/1, CEI 22/3) no greater than 3.5 mA, IEC 60364-41 and CEI 64-8.

I) If MOD (application in figure 21) and auxiliary contacts 1Q+1SY (in figure 31) are installed at the same time, contact Q/2 must be installed in the slot marked as Q/1.
Reading information
Circuit-breakers

Graphical symbols for electrical diagrams (Standards IEC 617)

Thermal effect
Electromagnetic effect
Timing
Mechanical connection
Manual mechanical operating mechanism (general case)
Rotary handle operating mechanism
Pushbutton operating mechanism
Converter separated galvanically
Conductors in shielded cable (example two conductors)
Watt-hour meter
Conductors with corded cables (example two conductors)
Key operating mechanism
Cam operating mechanism
Ground (general symbol)
Connection of conductors
Terminal or clamp
Socket and plug (female and male)
Resistor (general symbol)
Resistor dependent on the temperature
Motor (general symbol)
Three-phase asynchronous motor, with short-circuited rotor (cage)
Current transformer
Current transformer with primary consisting of 4 passing conductors and with wound secondary, with socket
Closing contact
Voltmeter
Opening contact
Changeover contact with momentary break
Closing position contact (limit switch)
Opening position contact (limit switch)
Changeover contact with momentary break (limit switch)
WIRING DIAGRAMS

Overcurrent release for earth fault with short inverse time characteristic

Current relay for unbalance between phases

Residual current release

Instantaneous overcurrent release

Overcurrent release with short adjustable time delay characteristic

Overcurrent release with short inverse adjustable time delay characteristic

Contactor (closing contact)

Power cut-off of switch-disconnector power with automatic opening

Switch-disconnector

Control coil (general symbol)

Thermal trip unit

Instantaneous overcurrent release

Ammeter

Overcurrent release with short adjustable time delay characteristic

Overcurrent release with short inverse adjustable time delay characteristic

Brush

Wattmeter

Screen, shield (it may be drawn in any convenient shape)

Ideal current source

Three connections

Voltage transformer

Winding of three-phase transformer, connection star

Primary cell, secondary cell, battery of primary cell or secondary cell

Motor with excitation in series

Lamp, general symbol

Relay for detecting lack of phase in a three-phase system

Relay for detecting blocked rotor by means of current measurement
Wiring diagrams

Three-pole or four-pole circuit-breaker with thermal magnetic trip unit

Three-pole or four-pole switch-disconnector

Three-pole or four-pole circuit-breaker with magnetic trip unit

Three-pole or four-pole version circuit-breaker with Ekip Dip trip unit
Three-pole or four-pole version circuit-breaker with Ekip Touch trip unit

Three-pole or four-pole version circuit-breaker with thermal magnetic trip unit and residual current device

Three-pole or four-pole version circuit-breaker with electronic trip unit and residual current device
Wiring diagrams
Diagrams for XT2 and XT4

Four-pole circuit-breaker with thermal magnetic trip unit and RC Sel 200 or RC B type residual current release

Three-pole fixed version circuit-breaker with Ekip Dip trip unit with current transformer on the neutral conductor outside the circuit-breaker

Four-pole circuit-breaker with electronic trip unit and RC Sel residual current release

Three-pole or four-pole XT4 circuit-breaker with Ekip E-LSIG microprocessor based release

Four-pole circuit-breaker with thermal magnetic trip unit and RC Sel residual current release

Fixed version three-pole XT4 circuit-breaker with Ekip E-LSIG with current transformer on neutral conductor, external to circuit-breaker
Three-pole fixed version circuit-breaker with Ekip Touch trip unit with current sensor on the neutral conductor outside the circuit-breaker.

Diagram recommended for three-pole plug-in or withdrawable version circuit-breakers with Ekip Dip trip unit on the neutral conductor outside the circuit-breaker.

Advisable diagram for plug-in or withdrawable version three-pole circuit-breakers with Ekip Dip trip unit, current transformer and voltage connection on neutral conductor, external to circuit-breaker.
Wiring diagrams
Diagrams for XT2 and XT4

Service releases
1) Shunt opening release.
2) Supplementary shunt opening release (only for four-pole circuit-breakers).
4) Supplementary permanent shunt opening release (only for four-pole circuit-breakers).
5) Instantaneous undervoltage release (see Notes B and F).
6) Undervoltage release with electronic time delay device outside the circuit-breaker, see note B).
7) Instantaneous undervoltage release in the version for machine tools with one contact in series (see notes B, C and F).
8) Instantaneous undervoltage release in the version for machine tools with two contacts in series (see Notes B, C and F).
9) First auxiliary early contact operated by the crank handle.
10) Second auxiliary early contact operated by the crank handle.
11) One changeover contact for electrical signaling of circuit-breaker open due to tripping of the residual current release type RC Inst, RC Sel, RC B Type or RC Sel 200.
12) Residual current release circuits type RC Sel, RC B Type or RC Sel 200.
13) Two contacts for electrical signaling of residual current release pre-alarm and alarm type RC Sel, RC B Type or RC Sel 200.
**Wiring diagrams**

Diagrams for XT2 and XT4

Motor operator

21) Direct control motor operator (MOD) (only for XT1 and XT3 fixed or plug-in circuit-breakers) (see note I).

22) Motor operator with stored energy (MOE) (only for circuit-breakers XT2 and XT4).

23) A contact for electrical signaling of stored energy motor operator that can be operated remotely.
Signaling contacts

31) One changeover contact for electrical signaling of circuit-breaker open or closed and one changeover contact for electrical signaling of circuit-breaker open due to tripping of the magnetic, thermal magnetic or electronic trip units, YO, YO1, YO2, YU (tripped position) (only for voltages up to 250V) (see notes E and I).

32) Two changeover contacts for electrical signaling of circuit-breaker open or closed, two changeover contacts for electrical signaling of circuit-breaker open due to tripping of the magnetic, thermal magnetic or electronic trip units, YO, YO1, YO2, YU (tripped position) and one changeover contact for electrical signaling of circuit-breaker open due to tripping of the ther momagnetic or electronic trip unit (only for voltages up to 250V).

33) Three changeover contacts for electrical signaling of circuit-breaker open or closed and two changeover contacts for electrical signaling of circuit-breaker open due to tripping of the magnetic, thermal magnetic or electronic trip units, YO, YO1, YO2, YU (tripped position) (only for voltages up to 250V).
Wiring diagrams
Diagrams for XT2 and XT4

Signaling contacts

34) Three changeover contacts for electrical signaling of circuit-breaker open and one changeover contact for electrical signaling of circuit-breaker open due to tripping of the magnetic, thermal-magnetic or electronic trip units, YO, YO1, YO2, YU (tripped position) (only for voltages up to 250V).

35) One changeover contact for electrical signaling of circuit-breaker open due to tripping of the thermal magnetic electronic trip unit (only for voltages up to 250V).

36) Two changeover contacts for electrical signaling of circuit-breaker open or closed and one changeover contact for electrical signaling of circuit-breaker open due to tripping of the magnetic, thermal magnetic or electronic trip units, YO, YO1, YO2, YU (tripped position) (only for voltages up to 250V).

37) One changeover contact for electrical signaling of circuit-breaker open or closed and one changeover contact for electrical signaling of circuit-breaker open due to tripping of the magnetic, thermal magnetic or electronic trip units, YO, YO1, YO2, YU (tripped position) (only for voltage up to 400V).

38) Two changeover contacts for electrical signaling of circuit-breaker open or closed (only for voltage up to 400V).
39) Three supplementary changeover contacts for electrical signaling of circuit-breaker open or closed (only for fixed or plug-in version circuit-breakers).

41) First changeover position contact of the circuit-breaker, for electrical signaling of connected (only for plug-in or withdrawable version circuit-breakers).

42) Second changeover position contact of the circuit-breaker, for electrical signaling of connected (only for plug-in or withdrawable version circuit-breakers).

43) Third changeover position contact of the circuit-breaker, for electrical signaling of connected (only for plug-in or withdrawable version circuit-breakers).

44) Fourth changeover position contact of the circuit-breaker, for electrical signaling of connected (only for plug-in or withdrawable version circuit-breakers).

45) First changeover position contact of the circuit-breaker, for electrical signaling of isolated (only for withdrawable version circuit-breakers).

46) Second changeover position contact of the circuit-breaker, for electrical signaling of isolated (only for withdrawable version circuit-breakers).

48) Auxiliary circuits of the 24V auxiliary power supply unit and of the HMI030 type interface unit (see note E).
Wiring diagrams
Diagrams for XT2 and XT4

Signaling contacts

104) Auxiliary circuits of Ekip Com or Kit of 24V DC auxiliary voltage for electronic trip units and
of Ekip Multimeter display.
Electronic trip unit Ekip E-LSIG connected with Ekip Display or Ekip LED Meter

50) Auxiliary circuits of the Ekip E-LSIG microprocessor-based release connected to the Ekip Display (display) or Ekip LED Meter (current display) display unit.
Wiring diagrams
Diagrams for XT2 and XT4

Electronic trip unit Ekip LSI, Ekip LSIG, Ekip M-LRIU connected with Ekip Display or Ekip LED Meter

51) Auxiliary circuits of the electronic trip unit type Ekip LSI, Ekip LSIG or Ekip MLRIU connected to display unit type Ekip Display (display) or Ekip LED Meter (current display).
Auxiliary circuit of Ekip-Com and HMI030

52) Auxiliary circuits of the Ekip Com type interface unit and of the HMI030 type interface unit (see note E).
**Wiring diagrams**

Diagrams for XT2 and XT4

Electronic trip unit Ekip LSI, Ekip LSIG or Ekip M-LRIU connected to interface unit Ekip Com and with actuator unit type MOE-E for the stored energy motor operator.

23) One Contact for electrical signaling of stored energy motor operator that can be operated remotely.

53) Auxiliary circuits of the electronic trip unit type Ekip LSI, Ekip LSIG or Ekip M-LRIU connected to interface unit type Ekip Com and with actuator unit type MOE-E for the stored energy motor operator.
Auxiliary circuits of the electronic trip unit Ekip M-LRIU connected to the contactor control unit for starting the motor PR212/CI (the circuit to the motor thermistor is optional)

54) Auxiliary circuits of the electronic trip unit type Ekip M-LRIU connected to the contactor control unit for starting the motor type PR212/CI (the circuit to the motor thermistor is optional).

62) Motor thermistor circuit.
Wiring diagrams
Diagrams for XT2 and XT4

Electronic trip unit Ekip M-LRIU connected to the contactor control unit for starting the motor PR212/CI and with ABB AF series contactor (the circuit to the motor thermistor is optional)

55) Auxiliary circuits of the electronic trip unit type Ekip M-LRIU connected to the contactor control unit for starting the motor type PR212/CI and with ABB AF series contactor (the circuit to the motor thermistor is optional).

62) Motor thermistor circuit.
Instructions for resetting the circuit-breaker after tripping

Selection of the type of circuit-breaker resetting depends on design requirements and on service conditions.
Resetting can take place following tripping of the following releases:
- overcurrent;
- undervoltage;
- shunt opening.

The following three possibilities are suggested (see diagrams in the following page):
1. Only manual resetting
   To be wired (by the customer): contact SO1, contact SY/1 and the auxiliary relay KO (only for MOD).
   Opening is prevented until the circuit-breaker is in the tripped position.
   To reset the circuit-breaker it is necessary to activate the special lever on the front of the motor until the circuit-breaker goes into the open position.

2. Electrical resetting under the operator's responsibility
   To be wired (by the customer): contact SO1, SO2, contact SY/1 and the auxiliary relay KO (only for MOD).
   Opening of the circuit-breaker is allowed by means of the contact SO2. Such contact shall be protected to avoid unwanted activation and can be used only if the information received by the operator make it possible to exclude tripping due to a short-circuit, or if the causes of the short-circuit have been removed.

3. Electrical resetting always allowed
   To be wired (by the customer): contact SO1, SO2, contact SY/1 and the auxiliary relay KO (only for MOD).
   Opening is always allowed by means of contact SO2.

NB: If the magnetic, thermal magnetic or electronic trip unit is present, it is necessary to find the causes which led to the circuit-breaker being in the tripped position so as to prevent reclosing under short-circuit conditions. In all cases, manual resetting is always allowed.
Wiring diagrams
Diagrams for XT2 and XT4
55a) Interface unit type Ekip Com with direct supply to the trip unit and MOE-E motor operator
Wiring diagrams
Diagrams for XT2 and XT4

54a) Stand-alone interface unit type Ekip Com with MOE-E motor operator
61) Modbus RTU STA interface of Ekip Com Unit to be installed inside the circuit-breaker
62a) Modbus RTU interface of Ekip Com Unit to be installed inside the circuit-breaker
63a) Modbus TCP STA interface of Ekip Com Unit to be installed inside the circuit-breaker
64) Modbus TCP interface of Ekip Com Unit to be installed inside the circuit-breaker
65) Profinet interface of Ekip Com Unit to be installed inside the circuit-breaker
66) Ethernet IP interface of Ekip Com Unit to be installed inside the circuit-breaker
67) IEC61850 interface of Ekip Com Unit to be installed inside the circuit-breaker
68) Ekip Link interface of Ekip Com Unit to be installed inside the circuit-breaker
69) Ekip Com Hub interface of Ekip Com Unit to be installed inside the circuit-breaker

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61 - 62 - 63 - 64 - 65 - 66 - 67 - 68 - 69 as an alternative to each other
Wiring diagrams
Diagrams for XT2 and XT4

132) Motor starting module Ekip CI with ABB contactor series AF
Wiring diagrams
Diagrams for XT7 and XT7 M

Three-pole or four-pole circuit-breaker with Ekip Dip trip unit

Three-pole or four-pole circuit-breaker with Ekip Touch trip unit

Three-pole or four-pole switch-disconnector
Wiring diagrams
Diagrams for XT7 and XT7 M

11a) Protection trip unit tripped signaling contact – S51
12a) Contact for signaling position of loaded springs – S33M
13a) Motor for loading closing springs – M
14a) Trip contact reset coil – YR

---

12 - 13 - 14 only for XT7 M circuit-breakers
16) Tripped position breaker signaling contact SY
17) Auxiliary early contacts – S4
Wiring diagrams
Diagrams for XT7 and XT7 M

24) RC residual current sensor input (ANSI 64&50N TD)
24a) RC differential ground fault protection sensor input (ANSI 87N)

24 - 24a as an alternative to each other and to figure 25
25) Transformer star centre sensor input
27) Current sensor input on external neutral (only for 3-pole circuit breaker)

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25 as an alternative to figures 24 - 24a
Wiring diagrams
Diagrams for XT7 and XT7 M

70) Y02/YU opening coil state signaling contact – S52
71) Ready to close contact – RTC
72) Second opening coil – YO2
73) Undervoltage coil – YU
73) Undervoltage coil with externa time-lag device YU, D
75) First opening coil – YO
76) First opening coil with control from protection trip unit – YO, Ekip Com Actuator
77) First closing coil – YC
78) First opening coil with control from protection trip unit – YC, Ekip Com Actuator
Wiring diagrams
Diagrams for XT7 and XT7 M

81) Open/Close auxiliary contacts of the circuit-breaker (first set)
91a) Supplementary open/close auxiliary contacts outside the circuit-breaker
95a) Contacts for signaling of circuit-breaker in racked-in, test, racked-out position

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only for withdrawable version

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Wiring diagrams
XT2-XT4-XT7-XT7 M modules

75a) Ekip Cartridge for one module and one Ekip Supply
76a) Ekip Cartridge for three modules and one Ekip Supply

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75 - 76 as an alternative to each other
Installation slot
For XT2-XT4 Ekip Cartridge

81a) Ekip Supply: auxiliary supply through module 110-240Vac/dc or 24/48Vdc and local bus
Wiring diagrams

XT2-XT4-XT7-XT7 M modules

83) Ekip Signalling 2K-1
84) Ekip Signalling 2K-2
85) Ekip Signalling 2K-3
86) Ekip Synchrocheck
Wiring diagrams
XT2-XT4-XT7-XT7 M modules

87) Ekip Signalling 3T-1
88) Ekip Signalling 3T-2
89) Ekip Com Modbus RTU
90) Ekip Com Modbus TCP
92) Ekip Com Ethernet/IP
94) Ekip Com IEC61850
95) Ekip Link
96) Ekip Com HUB
97) Ekip Com Profinet
91) Ekip Com Profibus DP
93) Ekip Com DeviceNet
Wiring diagrams

XT2-XT4-XT7-XT7 M modules

Installation slot
For XT7-X7M terminal box

For XT2-XT4 Ekip Cartiridge

110) Ekip Com Modbus RTU redundant
111) Ekip Com Modbus TCP redundant
113) Ekip Com Profinet redundant
115) Ekip Com Ethernet IP redundant
116) Ekip Com IEC61850 redundant
112) Ekip Com Profibus DP redundant
114) Ekip Com Devicenet™ redundant