TemBreak & TemBreak

The Ultimate Safety Breaker

Molded Case Circuit Breaker

TERASAKI ELECTRIC CO., LTD.
www.terasaki.co.jp

Catalogue No.:10-143Ec
Safety Notice

Carefully read instruction manual to ensure proper installation, connection, operation, handling and maintenance of the product.
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## General

### Approvals by ship classification societies

<table>
<thead>
<tr>
<th>Society</th>
<th>Name</th>
</tr>
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<tbody>
<tr>
<td>NK</td>
<td>NIPPON KAIJI KYOKAI</td>
</tr>
<tr>
<td>LR</td>
<td>Lloyd's Register of Shipping</td>
</tr>
<tr>
<td>ABS</td>
<td>The American Bureau of Shipping</td>
</tr>
<tr>
<td>GL</td>
<td>Germanischer Lloyd</td>
</tr>
<tr>
<td>BV</td>
<td>Bureau Veritas</td>
</tr>
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<td>CCS</td>
<td>China Classification Society</td>
</tr>
<tr>
<td>KR</td>
<td>Korean Register of Shipping</td>
</tr>
<tr>
<td>RINA</td>
<td>Registro Italiano Navale</td>
</tr>
</tbody>
</table>

### Based Standards

- **IEC 60947-2**: International Electrotechnical Commission
- **EN 60947-2**: European Standard
**Isolation capability**

The isolation capability means that, as long as the main contact is closed, the toggle is not in the OFF position and cannot be locked at the OFF position. The toggle being in the OFF position hence shows the main contact is open and personnel are not exposed to electrical shock hazard when working in the load side.

**Direct Opening Action**

Under the heading “Measures to minimize the risk in the event of failure”, IEC 60204-1 Safety of Machinery-Electrical Equipment of Machinery includes the following recommendation: “the use of switching devices having positive (or direct) opening operation.”

**Safety lock for Plug-in versions**

There are three plug-in types available according to applications,

**[For switchboards]**

- **Standard type**
  Suitable for angle-mounted or rear-connected application

- **High-performance type**
  Suitable for angle-mounted, front panel-mounted or rear panel-mounted application. The plug-in MCCB is locked to the base when the toggle is ON. It cannot be removed unless the toggle is OFF or TRIPPED. The safety lock prevents a trip occurring as the MCCB is being removed from the base.

**[For distribution boards]**

Suitable for front-connected application where the breaker depth is smaller than for switchboards

**Enhanced Insulation**

The risk of touching live parts has been minimized by design. If the toggle is broken by accident or misuse, no live part is exposed.
**Rated service short-circuit breaking capacity (I_{cs})**

The rated service short-circuit breaking capacity (I_{cs}) is the maximum short-circuit current defined by IEC 60947-2 which a circuit breaker can break in accordance with a sequence of opening and closing operations (O-CO-CO). *TemBreak2* has greatly been improved in its rated service short-circuit capacity, thereby providing more safety.

![Rated service short-circuit breaking capacity (I_{cs})](image)

**Smaller size and higher breaking capacity, allowing a downsizing of switchboards**

*TemBreak2* current limiting breakers are reduced in size to at least one-half and enhanced in breaking capacity.

- **Smaller in size than existing models**
  - 50%
  - 30%
  - 50%
  
  ![Smaller in size than existing models](image)
### Selection Chart

#### Molded Case Circuit Breakers

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>30</th>
<th>50</th>
<th>100</th>
<th>125</th>
<th>225</th>
<th>300</th>
<th>400</th>
<th>600</th>
<th>630</th>
<th>800</th>
<th>1000</th>
<th>1200</th>
<th>1250</th>
<th>1600</th>
<th>2000</th>
<th>2500</th>
<th>3200</th>
<th>4000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Motor protection series</strong></td>
<td>S400-GF</td>
<td>S400-GF</td>
<td>S400-GF</td>
<td>S400-GF</td>
<td>S400-GF</td>
<td>S400-GF</td>
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<td>S400-GF</td>
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<td>S400-GF</td>
<td>S400-GF</td>
<td>S400-GF</td>
<td>S400-GF</td>
</tr>
<tr>
<td><strong>Switch-disconnectors</strong></td>
<td>S100-NM</td>
<td>S100-NM</td>
<td>S100-NM</td>
<td>S100-NM</td>
<td>S100-NM</td>
<td>S100-NM</td>
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#### Notes:
- For breaking capacity, see pages 2-2 to 2-15
- For AC 500 V
- For AC 460 V
- For AC 250 V

Planned to be released. Contact us for the release date.
2 Ratings and Specifications

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### Ratings and Specifications

#### Molded Case Circuit Breakers

#### 1. Economical series

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Type</th>
<th>50-5F</th>
<th>100-5F</th>
<th>250-5F</th>
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<tr>
<td>Number of poles</td>
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<td>2</td>
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#### Ratings

<table>
<thead>
<tr>
<th>Rated current, A</th>
<th>Calibrated at 45°C</th>
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<tbody>
<tr>
<td>10</td>
<td>10/10</td>
</tr>
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<td>15</td>
<td>15/15</td>
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<tr>
<td>20</td>
<td>20/20</td>
</tr>
<tr>
<td>30</td>
<td>30/30</td>
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</tbody>
</table>

#### Standard specifications

<table>
<thead>
<tr>
<th>Standard specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overcurrent trip mechanism</td>
</tr>
<tr>
<td>Yes (Red)</td>
</tr>
<tr>
<td>Non</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Trip button (color)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Non</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Suitability for isolation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Non</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CE marking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Yes</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Notes:</th>
</tr>
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<tbody>
<tr>
<td>Option: This configuration used unless otherwise specified.</td>
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</table>
### Molded Case Circuit Breakers

#### 2 Standard series

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>50SF</th>
<th>100SF</th>
<th>125SF</th>
<th>150SF</th>
<th>175SF</th>
<th>200SF</th>
<th>250SF</th>
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<td>Type</td>
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<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<tr>
<td>Number of poles</td>
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<td>3</td>
<td>3</td>
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#### Ratings

<table>
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<tr>
<th>Current, A</th>
<th>15</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>125</th>
<th>150</th>
<th>175</th>
<th>200</th>
<th>250</th>
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</thead>
<tbody>
<tr>
<td>Calibrated at 45°C</td>
<td>15</td>
<td>50</td>
<td>15</td>
<td>50</td>
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<td>25</td>
<td>125</td>
<td>175</td>
<td>150</td>
<td>250</td>
</tr>
</tbody>
</table>

- DC rating available on request.
- Overcurrent trip mechanism
- TemPlug
- Draw-out type (DR)
- Rear-connected (RC)
- Bolt studs
- Internally calibrated at 45°C
- Cu/Cu
- Mechanical interlock Slide type
- Motor operator
- Terminal block for lead

#### Accessories (optional)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Auxiliary switch</th>
<th>Alarm switch</th>
<th>Short trips</th>
<th>Undervoltage trips</th>
<th>Motor operator</th>
<th>External operating Breaker-mounted</th>
<th>Handle</th>
<th>Door-mounted (variable depth)</th>
<th>Toggle extension</th>
<th>Mechanical interlock Slide type</th>
<th>Toggle holder</th>
<th>Toggle lock</th>
<th>Terminal cover</th>
<th>For front-connected</th>
<th>For rear-connected and plug-in</th>
<th>Interpole barrier</th>
<th>Terminal block for lead</th>
<th>Door flap</th>
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<tbody>
<tr>
<td></td>
<td>●</td>
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<td>●</td>
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<td>●</td>
<td>●</td>
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#### Standard specifications

<table>
<thead>
<tr>
<th>Current trip mechanisms</th>
<th>Thermal-magnetic (Yes)</th>
<th>Thermal-magnetic (Yes)</th>
<th>Thermal-magnetic (Yes)</th>
<th>Thermal-magnetic (Yes)</th>
<th>Thermal-magnetic (Yes)</th>
<th>Thermal-magnetic (Yes)</th>
<th>Thermal-magnetic (Yes)</th>
<th>Thermal-magnetic (Yes)</th>
<th>Thermal-magnetic (Yes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trip button (color)</td>
<td>Yes (Red)</td>
<td>Yes (Red)</td>
<td>Yes (Red)</td>
<td>Yes (Red)</td>
<td>Yes (Red)</td>
<td>Yes (Red)</td>
<td>Yes (Red)</td>
<td>Yes (Red)</td>
<td>Yes (Red)</td>
</tr>
<tr>
<td>Handle position indication (ON: Red, OFF: Green)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Suitability for isolation</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>CE marking</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>Page on which characteristics and outline dimensions are shown</td>
<td>7/6</td>
<td>7/10</td>
<td>7/8</td>
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<td>7/12</td>
<td>7/14</td>
<td>7/16</td>
<td>7/16</td>
<td>7/16</td>
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</tbody>
</table>

#### Notes:

- ●: Standard. This configuration used unless otherwise specified. ○: Optional standard. Specify when ordering. ▲: Semi-standard. ●: “yes” or “available”. ○: “no” or “not available”.
- ①: DC rating available on request. ②: Optional standard. Specify when ordering. ③: Line side interpole barriers are supplied as standard. (Front connection only)
- ④: The UVT controller is installed externally, when provided with AC UVT. ⑤: Hydraulic-magnetic type for below 10A rating. ⑥: Provided with DIN rail adopter.
### Rated Impulse Withstand Current, kA

<table>
<thead>
<tr>
<th>Type</th>
<th>Rated Impulse Withstand Voltage ((I_{\text{imp}})) kV</th>
<th>Rated Insulation Voltage ((U_{\text{ins}})) kV</th>
<th>Rated Short Time Withstand Current ((I_{\text{smt}})) kA</th>
</tr>
</thead>
<tbody>
<tr>
<td>S400-NE</td>
<td>4000</td>
<td>5000</td>
<td>2000</td>
</tr>
<tr>
<td>S400-CF</td>
<td>4000</td>
<td>5000</td>
<td>2000</td>
</tr>
<tr>
<td>S400-NF</td>
<td>4000</td>
<td>5000</td>
<td>2000</td>
</tr>
</tbody>
</table>

### Connections and Mountings

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Included in Standard Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary switch</td>
<td>A X</td>
<td>Yes</td>
</tr>
<tr>
<td>Alarm switch</td>
<td>A L</td>
<td>Yes</td>
</tr>
<tr>
<td>Shunt trips</td>
<td>S H</td>
<td>Yes</td>
</tr>
<tr>
<td>Undervoltage trips</td>
<td>U V</td>
<td>Yes</td>
</tr>
<tr>
<td>Motor operator</td>
<td>M C</td>
<td>Yes</td>
</tr>
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</table>

### Accessories (optional)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Included in Standard Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal-magnetic</td>
<td>Electronic</td>
<td>Yes</td>
</tr>
<tr>
<td>Thermal-magnetic</td>
<td>Electronic</td>
<td>Yes</td>
</tr>
<tr>
<td>Electronic</td>
<td>Electronic</td>
<td>Yes</td>
</tr>
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</table>

### Special applications

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Included in Standard Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal-magnetic</td>
<td>Electronic</td>
<td>Yes</td>
</tr>
<tr>
<td>Thermal-magnetic</td>
<td>Electronic</td>
<td>Yes</td>
</tr>
<tr>
<td>Electronic</td>
<td>Electronic</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Notes

- Standard: This configuration used when otherwise specified.  
- Optional: Standard. Specify when ordering.  
- Semi-standard: "yes" or "available".  
- "no" or "not available".  
- DC rating available on request.
- Line side interpole barriers are supplied as standard. (Front connect only)  
- The mechanical interlock is not applicable to the draw-out type (DR).  
- Optional pretrip alarm or ground fault trip function available on request.
### Molded Case Circuit Breakers

#### Standard series

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>500-CF</th>
<th>500-NF</th>
<th>500-NF</th>
<th>5120-NF</th>
<th>5160-NF</th>
<th>51900-NF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>1250</td>
<td>1600</td>
<td>2000</td>
</tr>
<tr>
<td>Number of poles</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
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</tbody>
</table>

#### Ratings

<table>
<thead>
<tr>
<th>Rated current, A</th>
<th>Calibrated at 45°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>700</td>
<td>800</td>
</tr>
<tr>
<td>350</td>
<td>500</td>
</tr>
<tr>
<td>400</td>
<td>600</td>
</tr>
<tr>
<td>500</td>
<td>1200</td>
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</tbody>
</table>

#### Notes:
- Trip function available on request.
- when provided with AC UVT.
- CE marking
- Suitability for isolation
- Standard specifications

#### Connections and Mountings

<table>
<thead>
<tr>
<th>Rated impulse withstand voltage (Uimp) kV</th>
<th>DIN rail mount</th>
<th>TemPlug</th>
<th>Draw-out type (DR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>5</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

#### Weight (marked standard type) kg

<table>
<thead>
<tr>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
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#### Accessories (optional)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Auxiliary switch</th>
<th>Alarm switch</th>
<th>Line trip</th>
<th>Undervoltage trips</th>
<th>Motor operator</th>
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<tbody>
<tr>
<td>A</td>
<td>●</td>
<td>●</td>
<td>●</td>
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#### Standard specifications

<table>
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<tr>
<th>Suitability for isolation</th>
<th>CE marking</th>
<th>Page on which characteristics and outline dimensions are shown</th>
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<tr>
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<td>7-40 7-42 7-46 7-48 7-76</td>
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#### Notes:
- Standard. This configuration used unless otherwise specified.
- Optional standard. Specify when ordering.
- Semi-standard. "yes" or "available". — "no" or "not available".
- DC rating available on request.
- Supplied as standard.
- Line side interpole barriers are supplied as standard. (Front connection only)
- The UVT controller is installed externally, when provided with AC UVT.
- The mechanical interlock is not applicable to the draw-out type (DR).
- Being or will be applied. at 500V AC.
- One is supplied with every five breakers. Please specify if more are required.
2 Ratings and Specifications

Molded Case Circuit Breakers

3 High-fault level series

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Type</th>
<th>Number of poles</th>
</tr>
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<tbody>
<tr>
<td>100</td>
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Notes:
- : Standard. This configuration used unless otherwise specified. • : Optional standard. Specify when ordering. ▲ : Semi-standard. • : “yes” or “available”: — : “no” or “not available”.
1 : DC rating available on request. 2 : Optional pretrip alarm function available on request. 3 : Optional pretrip alarm function available on request.
### Ratings and Specifications

#### Molded Case Circuit Breakers

#### High-fault level series

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Type</th>
<th>Number of poles</th>
<th>3P80-PF</th>
<th>4P80-PF</th>
<th>5P80-RF</th>
<th>6P80-RF</th>
<th>7P80-RF</th>
<th>8P80-RE</th>
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#### Ratings

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<th>Symbol</th>
<th>Description</th>
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<tr>
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<td>AX</td>
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<tr>
<td>Alarm switch</td>
<td>AL</td>
<td></td>
</tr>
<tr>
<td>Shunt trips</td>
<td>SH</td>
<td></td>
</tr>
<tr>
<td>Undervoltage trips</td>
<td>UV</td>
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<tr>
<td>Motor operator</td>
<td>M/C</td>
<td></td>
</tr>
<tr>
<td>External-operating</td>
<td>H/B</td>
<td></td>
</tr>
<tr>
<td>Brecker-mounted</td>
<td>H/P</td>
<td></td>
</tr>
<tr>
<td>Handle</td>
<td>H/P</td>
<td></td>
</tr>
<tr>
<td>Mechanical interlock</td>
<td>M/S</td>
<td></td>
</tr>
<tr>
<td>Toggle</td>
<td>H/L</td>
<td></td>
</tr>
<tr>
<td>Terminal cover</td>
<td>C/F</td>
<td></td>
</tr>
<tr>
<td>For-rear-connected</td>
<td>C/R</td>
<td></td>
</tr>
<tr>
<td>Interpole barrier</td>
<td>T/B</td>
<td></td>
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<tr>
<td>Door flange</td>
<td>D/F</td>
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#### Connections and Mountings

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<thead>
<tr>
<th>Connections</th>
<th>Mountings</th>
<th>Symbol</th>
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<tr>
<td>Front-connected (FC)</td>
<td>Terminal screws</td>
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<tr>
<td>Rear-connected (RC)</td>
<td>Screw with extension bars</td>
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<tr>
<td>Plug-in (PM)</td>
<td>For switchboards (Standard (PM))</td>
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<td>For distribution boards (PM)</td>
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<td></td>
<td>Flush-mounted (FP)</td>
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<tr>
<td></td>
<td>With flat bar studs</td>
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<tr>
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<td>Draw-out type (DR)</td>
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<tr>
<td></td>
<td>With plug-in (PG)</td>
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</tr>
<tr>
<td></td>
<td>With DIN rail mount</td>
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#### Accessories (optional)

<table>
<thead>
<tr>
<th>Accessories (optional)</th>
<th>Symbol</th>
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<tbody>
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<td>Auxiliary switch</td>
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<tr>
<td>Alarm switch</td>
<td>AL</td>
</tr>
<tr>
<td>Shunt trips</td>
<td>SH</td>
</tr>
<tr>
<td>Undervoltage trips</td>
<td>UV</td>
</tr>
<tr>
<td>Motor operator</td>
<td>M/C</td>
</tr>
<tr>
<td>External-operating</td>
<td>H/B</td>
</tr>
<tr>
<td>Brecker-mounted</td>
<td>H/P</td>
</tr>
<tr>
<td>Handle</td>
<td>H/P</td>
</tr>
<tr>
<td>Mechanical interlock</td>
<td>M/S</td>
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<tr>
<td>Toggle</td>
<td>H/L</td>
</tr>
<tr>
<td>Terminal cover</td>
<td>C/F</td>
</tr>
<tr>
<td>For-rear-connected</td>
<td>C/R</td>
</tr>
<tr>
<td>Interpole barrier</td>
<td>T/B</td>
</tr>
<tr>
<td>Door flange</td>
<td>D/F</td>
</tr>
</tbody>
</table>

**Notes:**

- Standard: This configuration used unless otherwise specified. ☐: Optional standard. Specify when ordering. ☑: Semi-standard. ☑: “yes” or “available”. ☐: “no” or “not available”.
- DC: DC rating available on request. ☑: Line side interpole barriers are supplied as standard. (Front connection only) ☑: The mechanical interlock is not applicable to the draw-out type (DR).
- “Yes” or “no” will be applied. ☑: Optional pretrip alarm or ground fault trip function available or required. ☐: One is supplied with every five breakers. Please specify if more are required.
## Molded Case Circuit Breakers

### Ratings and Specifications

#### Current limiting series

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>100</th>
<th>125</th>
<th>160</th>
<th>200</th>
<th>250</th>
<th>315</th>
<th>400</th>
<th>500</th>
<th>630</th>
<th>800</th>
<th>1000</th>
<th>1600</th>
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</thead>
<tbody>
<tr>
<td>Type</td>
<td>1100-NF</td>
<td>1125-NF</td>
<td>1225-NF</td>
<td>2000-NF</td>
<td>2250-NF</td>
<td>2500-NF</td>
<td>3150-NF</td>
<td>3600-NF</td>
<td>4000-NF</td>
<td>5000-NF</td>
<td>6300-NF</td>
<td>8000-NF</td>
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<td>Number of poles</td>
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<td>3</td>
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</table>

#### Rated current, A

- 15: 50
- 20: 60
- 30: 75
- 40: 100
- (Adjustable): 125
- 125: 175
- 200: 250
- 250: 350
- 315: 450
- 400: 500
- (Adjustable): 600
- 500: 700
- (Adjustable): 700
- 630: 800
- (Adjustable): 800
- 800: 1000
- (Adjustable): 1000

#### Calibrated at 45°C

<table>
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<th>Type</th>
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<th>1125-NF</th>
<th>1225-NF</th>
<th>2000-NF</th>
<th>2250-NF</th>
<th>2500-NF</th>
<th>3150-NF</th>
<th>3600-NF</th>
<th>4000-NF</th>
<th>5000-NF</th>
<th>6300-NF</th>
<th>8000-NF</th>
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</thead>
<tbody>
<tr>
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#### Rated impulse withstand voltage (Vimp) kV

<table>
<thead>
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<th>Type</th>
<th>1100-NF</th>
<th>1125-NF</th>
<th>1225-NF</th>
<th>2000-NF</th>
<th>2250-NF</th>
<th>2500-NF</th>
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<th>3600-NF</th>
<th>4000-NF</th>
<th>5000-NF</th>
<th>6300-NF</th>
<th>8000-NF</th>
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</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
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</tbody>
</table>

#### Rated breaking capacity, kA

<table>
<thead>
<tr>
<th>Type</th>
<th>1100-NF</th>
<th>1125-NF</th>
<th>1225-NF</th>
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<th>2500-NF</th>
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<th>3600-NF</th>
<th>4000-NF</th>
<th>5000-NF</th>
<th>6300-NF</th>
<th>8000-NF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
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<td>3</td>
<td>3</td>
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</tbody>
</table>

#### External dimensions, mm

- Width: 105
- Length: 140
- Height: 80

#### Weight (marked standard type) kg

- 2.4
- 4.2
- 4.2
- 7.1
- 9.4
- 13.5
- 19.6
- 23.0
- 23.0
- 23.0
- 23.0
- 23.0
- 23.0

#### Accessories (optional)

- Auxiliary switch: A X
- Alarm switch: A L
- Shunt trips: S H
- Undervoltage trips: U V
- Motor operator: M C
- External operating: H B
- Handle: Door-mounted (variable depth)
- Terminal cover: For front-connected
- Terminal block for lead: T F
- Door flange: D F

#### Standard specifications

- Overcurrent trip mechanism
- Trip button (color)
- Handle position indication (On: Red, Off: Green)
- Suitability for isolation
- CE marking

**Notes:**

- : Standard. This configuration used unless otherwise specified.
- ( ): Optional standard. Specify when ordering.
- : Semi-standard. •: "yes" or "available". —: "no" or "not available".
- (DC): DC rating available on request.
- ( ): Line side interpole barriers are supplied as standard. (Front connection only)
- : The UVT controller is installed externally, when provided with AC UVT.
- ( ): The mechanical interlock is not applicable to the draw-out type (DR).
- ( ): Optional pretrip alarm or ground fault trip function available on request.
- : at 460V AC.

---

**Material:**

- DIN rail mount

---

**Additional Notes:**

- One is supplied with every five breakers. Please specify if more are required.
## Ratings and Specifications

### Molded Case Circuit Breakers

**Current limiting series**

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>100</th>
<th>125</th>
<th>225</th>
<th>400</th>
<th>630</th>
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<tbody>
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<td>Type</td>
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<td>1250-NF</td>
<td>2250-NF</td>
<td>4000-NF</td>
<td>6300-NF</td>
<td>8000-NF</td>
</tr>
<tr>
<td>Number of poles</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

### Ratings

| Rated current, A | 15 | 50 | 125 | 125 (Adjustable) | 125 | 125 | 125 (Adjustable) | 125 (Adjustable) |
| Calibrated at 45°C | 20 | 60 | 150 | 175 | 175 | 200 | 300 | 600 |
| Rated impulse withstand voltage (Vimp) kV | 30 | 75 | 175 | 200 | 250 | 500 | 350 | 600 |
| Rated short time withstand current, kA | 40 | 100 | 200 | 175 | 250 | 400 | 630 | 800 |

### Connections and Mountings

| Front-connected (FC) | Terminal screws | With extension bars | Bolt studs | Flat bar studs |
| Rear-connected (RC) | Motor operator | Interpole barrier | Terminal block for lead | Door flange |

### Accessories (optional)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Auxiliary switch</th>
<th>Alarm switch</th>
<th>Short trips</th>
<th>Undervoltage trips</th>
<th>Motor operator</th>
<th>External-operating Breaker-mounted handle</th>
<th>Door-mounted (variable depth)</th>
<th>Motor extension</th>
<th>Mechanical interlock 3: Slide type</th>
<th>Toggle holder</th>
<th>Toggle lock</th>
<th>Terminal cover</th>
<th>Terminal block for lead</th>
<th>Door flange</th>
</tr>
</thead>
</table>

### Standard specifications

<table>
<thead>
<tr>
<th>Overcurrent trip mechanism</th>
<th>Thermal-magnetic</th>
<th>Thermal-magnetic</th>
<th>Thermal-magnetic</th>
<th>Electronic 15</th>
<th>Electronic 15</th>
<th>Electronic 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trip button (color)</td>
<td>Yes (Red)</td>
<td>Yes (Red)</td>
<td>Yes (Red)</td>
<td>Yes (Red)</td>
<td>Yes (Red)</td>
<td>Yes (Red)</td>
</tr>
<tr>
<td>Handle position indication (ON: Red, OFF: Green)</td>
<td>Yes (Red)</td>
<td>Yes (Red)</td>
<td>Yes (Red)</td>
<td>Yes (Red)</td>
<td>Yes (Red)</td>
<td>Yes (Red)</td>
</tr>
<tr>
<td>Suitability for isolation</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CE marking</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Page on which characteristics and outline dimensions are shown</td>
<td>7-22</td>
<td>7-24</td>
<td>7-26</td>
<td>7-32</td>
<td>7-38</td>
<td>7-44</td>
</tr>
</tbody>
</table>

**Notes:**

- Standard. This configuration used unless otherwise specified.
- Optional standard. Specify when ordering. 
- Semi-standard. “yes” or “available”. 
- “no” or “not available”.
- DC rating available on request.
- Line side interpole barriers are supplied as standard. (Front connection only) 
- The mechanical interlock is not applicable to the draw-out type (DR).
- Optional pretrip alarm or ground fault trip function available on request. 
- Also applicable to AC415V.
# Molded Case Circuit Breakers

## 5 Motor protection series

### Ratings and Specifications

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>30</th>
<th>100</th>
<th>225</th>
<th>225-NM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>E50-CM</td>
<td>E100-NM</td>
<td>E225-NM</td>
<td></td>
</tr>
<tr>
<td>Number of poles</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

#### Ratings

- **Motor rated capacity (kW)**
- **and breaker rated current (A)**

Calibrated at 45°C

Note: Line side interpole barriers are supplied as standard. (Front connection only)

- **Line side interpole barriers are supplied as standard. (Front connection only)**

- **Suitability for isolation**

- **Page on which characteristics and outline dimensions are shown**

#### Notes:

- Standard. This configuration used unless otherwise specified. **: Standard. Specify when ordering.**

- Optional standard. Specify when ordering.

- Line side interpole barriers are supplied as standard. (Front connection only)

- Provided with DIN rail adaptor.

- at 500V AC.

- at 250V AC.

- Hydraulic-magnetic type for below 5A rating.
### Ratings and Specifications

#### Molded Case Circuit Breakers

#### 6 Switch-disconnectors

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Type</th>
<th>Number of poles</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>S100-N</td>
<td>3</td>
</tr>
<tr>
<td>125</td>
<td>S125-SN</td>
<td>3</td>
</tr>
<tr>
<td>125</td>
<td>S125-N</td>
<td>3</td>
</tr>
<tr>
<td>250</td>
<td>S250-N</td>
<td>3</td>
</tr>
<tr>
<td>400</td>
<td>S400-N</td>
<td>3</td>
</tr>
<tr>
<td>630</td>
<td>S630-SN</td>
<td>3</td>
</tr>
</tbody>
</table>

### Ratings

- **Rated current, A**: 100 - 250
- **Rated insulation voltage (U1) V**: AC 690V, DC 250V
- **Rated operational voltage V**: AC 690V, DC 250V
- **Rated short circuit making capacity, kA peak**: 10 (sec)
- **Rated short circuit withstand voltage (Ump) kV**: 8
- **Upstream breaker (OCPD)**: DC 250V

### Performance

- **Utilization category**: IEC 60947-3
- **Terminal block for lead**: Internally mounted
- **Connections and Mountings**: For switchboards (Standard (PM))
- **External dimensions, mm**: a 90, b 75, c 100, d 90
- **Weight (marked standard type) kg**: 1.1
- **Front-connected (FC)**: Terminal screws with extension bars
- **Rear-connected (RC)**: Bolt studs, flat bar studs
- **Plug-in (PM)**: For switchboards (Standard (PM))
- **DIN rail mount**: With flat bar studs

### Accessories (optional)

- **Symbol**
  - Auxiliary switch: AX
  - Alarm switch: AL
  - Shunt trips: SH
  - Undervoltage trips: UV
  - Motor operator: M/C
  - External operating handle: HB
  - Door-mounted (variable depth): H/P
  - Toggle extension: HA
  - Mechanical interlock: Slide type: MS
  - Toggle lock: HL
  - Terminal cover: FC
  - For front-connected: C F
  - For rear-connected and plug-in: C F
  - Terminal block for lead: TF
  - Door flange: DF

### Standard specifications

- **Trip button (color)**: Yes (Red)
- **Handle position indication (ON: Red, OFF: Green)**: Yes
- **Suitability for isolation**: Yes
- **Phase on which characteristics and outline dimensions are shown**: 103, 140, 185

#### Notes:

- **Standard**: This configuration used unless otherwise specified. ○: Optional standard. Specify when ordering. ❌: Semi-standard. ❌: "yes" or "available". ❌: "no" or "not available".
- **Line side interpole barriers are supplied as standard. (Front connection only)**.
- **The mechanical interlock is not applicable to the draw-out type (DR)**.
- **Provided with DIN rail adaptor**.
- **Required for overcurrent protection. Rated conditional short-circuit current (Icu) will be the same as Rated short-circuit breaking capacity of upstream breaker.**
## Ratings and Specifications

### Molded Case Circuit Breakers

#### Switch-disconnectors

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Number of poles</th>
<th>Type</th>
<th>Rated current, A</th>
<th>Rated insulation voltage, V AC</th>
<th>Rated operational voltage, V DC</th>
<th>Rated short circuit making capacity, kA peak</th>
<th>Rated short time withstand current, kA</th>
<th>Rated impulse withstand voltage, kV AC</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>S800-NN</td>
<td>3</td>
<td>800</td>
<td>1250</td>
<td>800</td>
<td>890</td>
<td>17</td>
<td>8</td>
<td>8</td>
<td>AC-22A</td>
</tr>
<tr>
<td>S1250-NN</td>
<td>3</td>
<td>1250</td>
<td>2500</td>
<td>1250</td>
<td>110</td>
<td>15</td>
<td>8</td>
<td>8</td>
<td>AC-22A</td>
</tr>
<tr>
<td>S1600-NN</td>
<td>3</td>
<td>1600</td>
<td>3400</td>
<td>1600</td>
<td>120</td>
<td>18</td>
<td>8</td>
<td>8</td>
<td>AC-22A</td>
</tr>
</tbody>
</table>

#### External dimensions, mm

<table>
<thead>
<tr>
<th>Weight (marked standard type) kg</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8.0</td>
<td>11.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Connections and Mountings

- Front-connected (FC) Terminal screws
- With extension bars
- Rear-connected (RC) Bolt studs
- Flat bar studs
- Plug-in (PM) For switchboards Standard (PMC)
- High-performance (PMB) For distribution boards (PMC)
- Flush-mounted (FP) With flat bar studs
- Draw-out type (DR)
- TemPlug70 (PG)
- TemPlug55 (PG4)
- DIN rail mount

#### Accessories (optional)

- Auxiliary switch A X
- Alarm switch A L
- Shunt trips S H
- Undervoltage trips U V
- Motor operator M C
- External opening Breaker-mounted H B handle
- Door-mounted (variable depth) H F
- Toggle extension H A
- Mechanical interlock Slide type M S
- Toggle holder H H
- Manual toggle H L
- Terminal cover For front-connected C F
- For rear-connected and plug-in C K
- Interpole barrier B A
- Terminal block for lead T F
- Door flange D F

#### Standard specifications

- Trip button color: Yes (Red)
- Handle position indication (ON: Red, OFF: Green)
- Suitability for isolation
- CE marking
- Page on which characteristics and outline dimensions are shown

### Notes:

- Standard. This configuration used unless otherwise specified.
- Optional standard. Specify when ordering.
- Semi-standard.
- “yes” or “available”.
- “no” or “not available”.
- One is supplied with every five breakers. Please specify if more are required.
- Required for overcurrent protection. Rated conditional short-circuit current \( I_{cc} \) will be the same as Rated short-circuit breaking capacity of upstream breaker.
### Ratings and Specifications

#### Molded Case Circuit Breakers

#### Non-automatic trip breakers

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Type</th>
<th>Number of poles</th>
<th><strong>TemBreak</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2000</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>4</td>
<td>X3100NN</td>
</tr>
</tbody>
</table>

#### Ratings

<table>
<thead>
<tr>
<th>Type</th>
<th>Rated current, A</th>
<th>Rated insulation voltage (U)</th>
<th>Rated operational voltage (U)</th>
<th>Rated short circuit making capacity, kA peak</th>
<th>Rated short time withstand current, kA</th>
<th>Rated impulse withstand voltage (Uimp)</th>
<th>Max switching current</th>
<th>Endurance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2000</td>
<td>690</td>
<td>980</td>
<td>250</td>
<td>35 (0.3sec)</td>
<td>8</td>
<td>12000</td>
<td>5000</td>
</tr>
</tbody>
</table>

#### Performance

<table>
<thead>
<tr>
<th>Type</th>
<th>Max switching current, A</th>
<th>IEC 60947-2 AnnL CB/YY</th>
<th>Endurance</th>
<th>Number of operating cycles with current</th>
<th>Number of operating cycles without current</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>12000</td>
<td>5000</td>
<td>2500</td>
</tr>
</tbody>
</table>

#### Upstream breaker (OCPD)

<table>
<thead>
<tr>
<th>Type</th>
<th>External dimensions, mm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b: 320, c: 429, d: 140</td>
</tr>
</tbody>
</table>

#### Connections and Mountings

<table>
<thead>
<tr>
<th>Type</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Accessories (optional)

<table>
<thead>
<tr>
<th>Type</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Standard specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Notes:

- : Standard. This configuration used unless otherwise specified. ○: Optional standard. Specify when ordering. ▲: Semi-standard. ●: “yes” or “available”. —: “no” or “not available”.
- : Supplied as standard. ●: The UVT controller is installed externally, when provided with AC UVT. ▲: The mechanical interlock is not applicable to the draw-out type (DR).
- : Required for overcurrent protection. Rated conditional short-circuit current \( I_{cc} \) will be the same as Rated short-circuit breaking capacity of upstream breaker.
- : Fixed depth, not adjustable.
## Ratings and Specifications

**Molded Case Circuit Breakers**

**TB series for distribution boards**

### Frame size (A)

<table>
<thead>
<tr>
<th>Type</th>
<th>50</th>
<th>50</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>1, 2, 3, 4</td>
<td>1, 2</td>
<td>2</td>
</tr>
</tbody>
</table>

### Ratings

| Rated current, A | 10 | 30 | 90 | 10 | 30 | 90 | 10 | 30 | 15 | 40 | 50 | 15 | 40 |
| Rated voltage V | 265 | 460 | 460 | 265 | 460 | 250 |

### Rated breaking capacity, kA

| NK (sym) | AC 250 V | — | 5 kA | — | — | 5 kA | 5 kA |
| DC 125 V | — | 42 | — | — | 42 | — | 42 |

### External dimensions, mm

| a | 25 | 50 | 75 | 100 | 25 | 50 | 75 | 100 |
| b | 95 | 74.5 | 74.5 |
| c | 60 | 60 | 60 |
| d | 77 | 79 | 79 | 79 |

### Weight kg

| 0.16 | 0.34 | 0.5 | 0.66 | 0.13 | 0.28 | 0.28 |

### Connecting scheme

- Front-connected both on the line and load sides
- Plug-in on the line side and front-connected on the load side
- Plug-in both on the line and load sides

### Mounting scheme (optional)

- Clip-in chassis
- Single mounting base
- Double mounting base

### Accessories (optional)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>H H</th>
<th>H L</th>
<th>H C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toggle holder</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Toggle lock</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Toggle cap</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Interpole barrier</td>
<td>B A</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

### Standard specifications

<table>
<thead>
<tr>
<th>Overcurrent trip mechanism</th>
<th>Thermal-magnetic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trip button (color)</td>
<td>Non</td>
</tr>
<tr>
<td>Handle position indication (ON: Red, OFF: Green)</td>
<td>Non</td>
</tr>
<tr>
<td>Suitability for isolation</td>
<td>Non</td>
</tr>
<tr>
<td>CE marking</td>
<td>Non</td>
</tr>
</tbody>
</table>

Page on which characteristics and outline dimensions are shown: 7-80 to 7-84

### Notes:

- "yes" or "available", "—": "no" or "not available".
- $2.5$ kA for 10 A.
- Specify the branch bars when ordering.

---

2-14
# Molded Case Circuit Breakers
## Ratings and Specifications

### Current limiting series (planned to be released)

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>1250</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>H256-RE</td>
</tr>
<tr>
<td>Number of poles</td>
<td>3 4</td>
</tr>
<tr>
<td><strong>Ratings</strong></td>
<td></td>
</tr>
<tr>
<td>Rated current, A</td>
<td>(Adjustable) 500 1000 600 1200 700 800</td>
</tr>
<tr>
<td>Calibrated at 45°C</td>
<td></td>
</tr>
<tr>
<td><strong>Rated insulation voltage (Ui) V</strong></td>
<td>AC 690</td>
</tr>
<tr>
<td><strong>Rated breaking capacity (Icu) kA</strong></td>
<td>AC 25/20</td>
</tr>
<tr>
<td><strong>Rated impulse withstand voltage (Uimp) kV</strong></td>
<td>AC 690</td>
</tr>
<tr>
<td><strong>Rated short time withstand current, kA</strong></td>
<td>AC 25/20</td>
</tr>
</tbody>
</table>

### External dimensions, mm

| a | 210 |
| b | 280 |
| c | 370 |
| d | 160 |
| e | 191 |

### Weight (marked standard type) kg

- 14.3
- 20.2

### Connections and Mountings

- **Front-connected (FC)**
  - Terminal screws
  - With extension bars
- **Rear-connected (RC)**
  - Bolt studs
  - Flat bar studs
- **Plug-in (PM)**
  - For switchboards - Standard (PMC)
  - High-performance (PMB)
  - For distribution boards (PMD)
  - For flat bar studs
- **Flush-mounted (FP)**
- **Draw-out type (DR)**
- **TemPlug (PG)**
- **TemPlug 45 (PG)**
- **DIN rail mount**

### Accessories (optional)

<table>
<thead>
<tr>
<th>Symbol</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>L</td>
<td>A</td>
</tr>
<tr>
<td>S</td>
<td>H</td>
</tr>
<tr>
<td>U</td>
<td>V</td>
</tr>
<tr>
<td>M</td>
<td>C</td>
</tr>
<tr>
<td>H</td>
<td>B</td>
</tr>
<tr>
<td>H</td>
<td>P</td>
</tr>
<tr>
<td>M</td>
<td>S</td>
</tr>
<tr>
<td>H</td>
<td>M</td>
</tr>
<tr>
<td>C</td>
<td>R</td>
</tr>
<tr>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>D</td>
<td>F</td>
</tr>
</tbody>
</table>

### Standard specifications

- **Overcurrent trip mechanism**: Electronic %
- **Trip button (color)**: Yes (Red)
- **Handle position indication (ON: Red, OFF: Green)**: Yes
- **Suitability for isolation**: Yes
- **CE marking**: Yes

### Notes:

- Standard: This configuration used unless otherwise specified. ☑: Optional standard. Specify when ordering. ◀: Semi-standard. ●: “yes” or “available”. ◀: “no” or “not available”.
- ◀: Line side interpole barriers are supplied as standard. (Front connection only) ☑: The mechanical interlock is not applicable to the draw-out type (DR). ◀: Being or will be applied.
- ☑: Optional pretrip alarm or ground fault trip function available on request. ●: One is supplied with every five breakers. Please specify if more are required.
## Ratings and Specifications

**Molded Case Circuit Breakers**

### TemBreak

#### List of breakers for marine use and rated breaking capacities (approved by ship classification societies)

<table>
<thead>
<tr>
<th>Frame size</th>
<th>Type</th>
<th>Rated current (A)</th>
<th>Poles</th>
<th>Rated voltage (V)</th>
<th>N K</th>
<th>L R</th>
<th>A B S</th>
<th>G L</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>E50-SF</td>
<td>10,15,20, 30,40,50</td>
<td>2</td>
<td>25(54.4) 13(29.6) 25(54.4) 13(29.6) 25(54.4) 13(29.6) 25(54.4) 13(29.6)</td>
<td>1(4.5)</td>
<td>2(9.9)</td>
<td>2(9.9)</td>
<td>1(4.5)</td>
</tr>
<tr>
<td></td>
<td>E50-CM</td>
<td>0.71.4,5.8, 2,6,4.5,8, 10,12,16,25, 32,40,45</td>
<td>3</td>
<td>2(9.9) 2(9.9) 2(9.9) 2(9.9) 2(9.9) 2(9.9) 2(9.9) 2(9.9)</td>
<td>1(4.5)</td>
<td>2(9.9)</td>
<td>2(9.9)</td>
<td>1(4.5)</td>
</tr>
<tr>
<td>75</td>
<td>S50-SF</td>
<td>15,20,30, 40,50</td>
<td>2</td>
<td>25(54.4) 13(29.6) 25(54.4) 13(29.6) 25(54.4) 13(29.6) 25(54.4) 13(29.6)</td>
<td>1(4.5)</td>
<td>2(9.9)</td>
<td>2(9.9)</td>
<td>1(4.5)</td>
</tr>
<tr>
<td></td>
<td>S50-GF</td>
<td>15,20,30, 40,50</td>
<td>2</td>
<td>25(54.4) 13(29.6) 25(54.4) 13(29.6) 25(54.4) 13(29.6) 25(54.4) 13(29.6)</td>
<td>1(4.5)</td>
<td>2(9.9)</td>
<td>2(9.9)</td>
<td>1(4.5)</td>
</tr>
<tr>
<td></td>
<td>S50-GFL</td>
<td>15,20,30, 40,50</td>
<td>2</td>
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**Notes:**
- : at 450V AC.  : at 240V AC.  : at 125V AC.  : at 600V AC.  : at 525V AC.  : Not being or will be applied.
- : at 220V AC.  : at 110V AC.  : at 250V AC.  : at 440V AC.  : at 500V AC.  : at 250V AC.  : at 125V AC.
## Ratings and Specifications

### Molded Case Circuit Breakers

#### List of breakers for marine use and rated breaking capacities (approved by ship classification societies)

| Frame Size | Type  | Rated Current (A) | Poles | Rated Voltage (V) | IC4 | IC5 | IC6 | IC7 | IC8 | IC9 | IC10 | IC11 | IC12 | IC13 | IC14 | IC15 | IC16 |
|------------|-------|-------------------|-------|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 50         | E50-SF| 10, 15, 20, 30, 40, 50 | 2     | AC450            | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 |
|            |       |                   | 3     | AC240            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|            |       |                   |       | DC250            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 0.7, 1.4, 2, 2.6, 4.5, 8, 10, 12, 16, 25, 32, 40, 50 | E50-CM| 3    | AC450            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|            |       |                   |       | AC240            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|            |       |                   | 3    | AC240            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 15, 20, 30, 40, 50 | S50-GF| 3    | AC450            | 5/10 | 5/10 | 5/10 | 5/10 | 5/10 | 5/10 | 5/10 | 5/10 | 5/10 | 5/10 | 5/10 | 5/10 | 5/10 | 5/10 | 5/10 |
|            |       |                   |       | AC151            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 15, 20, 30, 40, 50 | S50-GFL| 3   | AC450           | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 |
| 15, 20, 30, 40, 50 | S50-GFH| 3   | AC450           | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 |
| 100        | E100-SF| 10, 15, 20, 30, 40, 50, 60, 75, 100 | 2    | AC450            | 10/15 | 10/15 | 10/15 | 10/15 | 10/15 | 10/15 | 10/15 | 10/15 | 10/15 | 10/15 | 10/15 | 10/15 | 10/15 | 10/15 | 10/15 |
|            |       |                   | 3    | AC240            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|            |       |                   |       | AC115            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|            |       |                   |       | DC250            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|            |       |                   | 3    | AC240            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 15, 20, 30, 40, 50, 60, 75, 100 | S100-NFL| 3   | AC450          | AC450 | AC450 | AC450 | AC450 | AC450 | AC450 | AC450 | AC450 | AC450 | AC450 | AC450 | AC450 | AC450 | AC450 | AC450 |
|            |       |                   |       | AC151            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|            |       |                   |       | DC250            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 15, 20, 30, 40, 50, 60, 75, 100 | S100-NFH| 3   | AC450          | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 |
|            |       |                   |       | AC151            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|            |       |                   |       | DC250            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 16, 24, 32, 40, 45, 60, 75, 100 | S100-NM| 3    | AC450            | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 |
|            |       |                   |       | AC151            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|            |       |                   |       | DC250            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 15, 20, 30, 40, 50, 60, 75, 100 | S100-SF| 2    | AC450            | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 | 6/12 |
|            |       |                   | 3    | AC240            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|            |       |                   |       | DC250            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
## Molded Case Circuit Breakers

### Ratings and Specifications

#### List of Breakers for Marine Use and Rated Breaking Capacities (Approved by Ship Classification Societies)

**TemBreak2**

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<th>Rated current(A)</th>
<th>Poles</th>
<th>Rated voltage (V)</th>
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### Rated Breaking Capacities, kA (sym.)

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### Notes:

- **1**: at 450V AC  
- **2**: at 240V AC  
- **3**: at 120V AC  
- **4**: at 600V AC  
- **5**: at 525V AC  
- **6**: Being or will be applied.
- **7**: at 220V AC  
- **8**: at 110V AC  
- **9**: at 230V AC  
- **10**: at 480V AC  
- **11**: at 500V AC  
- **12**: at 250V AC  
- **13**: at 125V AC

*Center pole omitted.*
## Ratings and Specifications

### Molded Case Circuit Breakers

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*Note: All specifications are approved by ship classification societies.*
### Molded Case Circuit Breakers

#### List of breakers for marine use and rated breaking capacities (approved by ship classification societies)

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#### Notes:
1. at 450V AC
2. at 240V AC
3. at 120V AC
4. at 660V AC
5. at 525V AC
6. Beating or will be applied.
7. at 220V AC
8. at 110V AC
9. at 225V AC
10. at 440V AC
11. at 500V AC
12. at 250V AC
13. at 125V AC

*center pole omitted.*

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Ratings and Specifications

Molded Case Circuit Breakers

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List of breakers for marine use and rated breaking capacities (approved by ship classification societies)
### TemBreak

**List of breakers for marine use and rated breaking capacities (approved by ship classification societies)**

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<thead>
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<th>Frame size</th>
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<th>Rated current(A)</th>
<th>Poles</th>
<th>Rated voltage (V)</th>
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### Notes:
- **A**: at 450V AC.
- **B**: at 240V AC.
- **C**: at 120V AC.
- **D**: at 660V AC.
- **E**: at 525V AC.
- **F**: Being or will be applied.
- **G**: at 220V AC.
- **H**: at 110V AC.
- **I**: at 225V AC.
- **J**: at 440V AC.
- **K**: at 500V AC.
- **L**: at 250V AC.
- **M**: at 125V AC.
## Ratings and Specifications

### Molded Case Circuit Breakers

#### TemBreak2

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<th>Frame Size</th>
<th>Type</th>
<th>Rated current (A)</th>
<th>Poles</th>
<th>Rated voltage (V)</th>
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### Ratings and Specifications for Marine Use

- **Table of breakers for marine use and rated breaking capacities (approved by ship classification societies)**

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- **Ratings and Specifications**

For detailed specifications, please refer to the manufacturer's documentation.
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Notes: 1: at 450V AC. 2: at 240V AC. 3: at 120V AC. 4: at 660V AC. 5: at 525V AC. 6: Being or will be applied. 7: at 220V AC. 8: at 110V AC. 9: at 225V AC. 10: at 440V AC. 11: at 500V AC. 12: at 250V AC. 13: at 125V AC.
2

Ratings and Specifications
Molded Case Circuit Breakers
⁄0List of breakers for marine use and rated breaking capacities (approved by ship classification societies)

Rated
Poles voltage
(V)

Frame
size

Type

800

S800-CF

700,800

3

S800-NF

700,800

3

1600

S800-NE

350〜800
(350,400,
450,500,
600,700,800)

3

S800-NEH

350〜800
(350,400,
450,500,
600,700,800)

3

S800-RF

700,800

3

S800-RE

3
350〜800
(350,400,450,500,
600,700,800)

H800-NE

350〜800
(350,400,
450,500,
600,700,800)

3

L800-NE

350〜800
(350,400,
450,500,
600,700,800)

3

S1250-NE

500〜1250
(500,600,700,
800,1000,1200)

3

S1250-NEH 500〜1250
(500,600,700,
800,1000,1200)

3

S1250-GE

500〜1250
(500,600,700,
800,1000,1200)

3

H1250-NE

500〜1200
(500,600,700,
800, 1000,1200)

3

S1600-NE

700〜1600
(700,800,900,1000,
1200,1400,1600)

3

S1600-NEH 700〜1600
(700,800,900,1000,
1200,1400,1600)

3

AC690
AC525
AC450
AC415
AC240
DC250
AC690
AC525
AC450
AC415
AC240
DC250
AC690
AC525
AC450
AC415
AC240
AC690
AC525
AC450
AC415
AC240
AC690
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DC250
AC690
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AC240

Rated breaking capacities, kA (sym.) Values enclosed in square brackets “[ ]” represent the making current, kA.

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2
Ratings and Specifications

1250

Rated current(A)

2-25


# Molded Case Circuit Breakers

## List of breakers for marine use and rated breaking capacities (approved by ship classification societies)

### TemBreak

<table>
<thead>
<tr>
<th>Frame size</th>
<th>Type</th>
<th>Rated current (A)</th>
<th>Rated voltage (V)</th>
<th>Poleness</th>
<th>Rated breaking capacities, kA (sym.)</th>
<th>Values enclosed in square brackets [ ] represent the making current, kA.</th>
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</thead>
<tbody>
<tr>
<td>50</td>
<td>T8-5S</td>
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<td>AC250</td>
<td>2.5(4.1)</td>
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<td></td>
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### Notes:
- : at 450V AC.
- : at 240V AC.
- : at 120V AC.
- : at 660V AC.
- : at 525V AC.
- : Being or will be applied.
- : at 220V AC.
- : at 110V AC.
- : at 225V AC.
- : at 440V AC.
- : at 500V AC.
- : at 250V AC.
- : at 125V AC.
List of breakers for marine use and rated breaking capacities (approved by ship classification societies)

## Molded Case Circuit Breakers

### TemBreak

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<thead>
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<th>Frame size</th>
<th>Type</th>
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<th>Poles</th>
<th>Rated voltage (V)</th>
<th>Rated breaking capacities, kA (sym.)</th>
<th>Values enclosed in square brackets &quot;[  &quot;] represent the making current, kA.</th>
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3 Selection

1. Combination of breakers for cascade breaking .................. 3-2
2. Selection of breakers for selectivity coordination .............. 3-4
### Breaker combination table for cascade breaking for 450V AC circuit (approved by NK, LR, AB)

<table>
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<th>Backup breaker</th>
<th>E50</th>
<th>E100</th>
<th>H800</th>
<th>L225</th>
<th>L630</th>
<th>L800</th>
<th>L1000</th>
<th>E50</th>
<th>E100</th>
<th>H800</th>
<th>L225</th>
<th>L630</th>
<th>L800</th>
<th>L1000</th>
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<td>150</td>
<td>200</td>
<td>240</td>
<td>280</td>
</tr>
</tbody>
</table>

### Notes:
- Values enclosed in square brackets denote the breaking capacity in kA rms.
- The rated breaking capacity of each combination is 2.5 kA.

### Selection of Backup MCCB

- Selection of the rated breaking capacity of each combination is 2.5 kA.
- The rated breaking capacity of each combination is 2.5 kA.

---

3 Molded Case Circuit Breakers

1. Combination of breakers for cascade breaking

The following table shows possible combinations of backup and backed-up breakers (conforming to Appendix A, IEC 60947-2) as well as the cascade breaking capacity (kA rms.) of each combination.

<table>
<thead>
<tr>
<th>Breaker combination table for cascade breaking for 240V AC circuit (approved by NK, LR, AB)</th>
</tr>
</thead>
</table>

### Notes:
- Values enclosed in square brackets denote the breaking capacity in kA rms.
- If the rated current is greater than 230A, the rated breaking capacity is 2.5 kA.

---

3 Selection

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3-3
The following table shows possible combinations of main circuit breakers and branch circuit breakers capable of selectivity coordination with the main circuit breakers as well as the breaking capacity (kA sym.) of each combination at the points where the branch circuit breaker is installed.

### Breaker combination table for selectivity coordination for 450V AC circuit

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<tr>
<th>Main circuit breaker</th>
<th>S400-NE</th>
<th>S400-NEH</th>
<th>S400-GEH</th>
<th>S630-NEH</th>
<th>S630-NE</th>
<th>S800-NEH</th>
<th>H800-NE</th>
<th>H100-NEH</th>
<th>H125-NEH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Branch circuit breaker</td>
<td>45 45 65 65 120 180 50 50 100 100</td>
<td>125 125 50 50</td>
<td>125 125 65 65</td>
<td>125 125 35 35</td>
<td>125 125 35 35</td>
<td>125 125 35 35</td>
<td>125 125 35 35</td>
<td>125 125 35 35</td>
<td>125 125 35 35</td>
</tr>
</tbody>
</table>

---

**Note:**
- The table assumes that:
  - The trip pickup current of the main circuit breakers is set to the maximum;
  - The main circuit breakers are provided with the long time delay, short time delay and instantaneous trip functions;
  - For CCS, the values are being or will be applied. Contact us for the details.
- The main circuit breakers marked with ⚥ are high instantaneous trip breakers.
Special Breakers

1. Instantaneous trip only breakers ........................................ 4-2
2. Special instantaneous trip breakers ................................... 4-3
   1. High Instantaneous Trip ................................................ 4-3
   2. Low Instantaneous Trip ................................................. 4-4
These are standard breakers without the thermal overload trip. They have the instantaneous tripping characteristic, normally used when short circuit protection only is required. Other ratings and specifications and outline dimensions of these breakers are the same as those of standard breakers of the same types.

### Instantaneous trip only breakers

#### Molded Case Circuit Breakers

<table>
<thead>
<tr>
<th>Category</th>
<th>Type</th>
<th>For AC/DC</th>
<th>Rated current, A</th>
<th>Code number</th>
<th>Instantaneous trip current, A</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S50-GF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>S100-NF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>S100-GF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>H100-NF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>L100-NF</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>S225-NF</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>S225-GF</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>H225-NF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>L225-NF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>S400-CF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>S400-NF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>S400-GF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>S630-CF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>S630-NF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>S630-RF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>S800-CF</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>S800-NF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>S800-RF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
1. Setting tolerance: ±20% (Please specify the code number).
2. For AC:
   - The selector dial is factory set to position "12" unless the instantaneous trip current is specified. Setting tolerance: ±20% (Please specify the code number).
3. For DC:
   - The instantaneous trip current cannot be adjusted by the customer. The instantaneous trip current is factory set to the value specified by the customer. Setting tolerance: ±10% (State the version (DC), code number and instantaneous trip current you require).
1. High Instantaneous Trip

High instantaneous trip breakers are the breakers having a high instantaneous trip pickup current. Use these breakers in order to achieve selective coordination or to provide protection on the primary side of transformer.

### Table: Ratings and Specifications of High-Inst Breakers

<table>
<thead>
<tr>
<th>Category</th>
<th>Type (Reference type)</th>
<th>Rated current, A</th>
<th>Instantaneous trip pickup current, A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal-Magnetic type</td>
<td>S50-GFH (S50-GF)</td>
<td>15</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30</td>
<td>600</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40</td>
<td>800</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60</td>
<td>1200</td>
</tr>
<tr>
<td></td>
<td></td>
<td>70</td>
<td>1500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>80</td>
<td>1800</td>
</tr>
<tr>
<td></td>
<td>S100-NFH (S100-NF)</td>
<td>125</td>
<td>2500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>150</td>
<td>3000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>175</td>
<td>3500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>200</td>
<td>4000</td>
</tr>
<tr>
<td></td>
<td>S225-NFH (S225-NF)</td>
<td>225</td>
<td>4500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>250</td>
<td>5000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>275</td>
<td>5500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>300</td>
<td>6000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>325</td>
<td>6500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>350</td>
<td>7000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>375</td>
<td>7500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>400</td>
<td>8000</td>
</tr>
<tr>
<td></td>
<td>S400-NEH (S400-NE)</td>
<td>400</td>
<td>9000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>425</td>
<td>9500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>450</td>
<td>10000</td>
</tr>
<tr>
<td></td>
<td>S630-NEH (S630-NE)</td>
<td>630</td>
<td>11000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>650</td>
<td>11500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>675</td>
<td>12000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>700</td>
<td>12500</td>
</tr>
<tr>
<td></td>
<td>S800-NEH (S800-NE)</td>
<td>800</td>
<td>13500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>825</td>
<td>14000</td>
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<td></td>
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<td>15000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>900</td>
<td>15500</td>
</tr>
<tr>
<td></td>
<td>S1250-NEH (S1250-NE)</td>
<td>1250</td>
<td>16500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1275</td>
<td>17000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1300</td>
<td>17500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1325</td>
<td>18000</td>
</tr>
<tr>
<td></td>
<td>S1600-NEH (S1600-NE)</td>
<td>1600</td>
<td>19000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1625</td>
<td>19500</td>
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<td></td>
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<td>1675</td>
<td>20500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1700</td>
<td>21000</td>
</tr>
<tr>
<td></td>
<td>S3200NEHE</td>
<td>2000</td>
<td>22000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2025</td>
<td>22500</td>
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<td></td>
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<td>2050</td>
<td>23000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2075</td>
<td>23500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2100</td>
<td>24000</td>
</tr>
</tbody>
</table>

### Notes:
1. Setting tolerance: ±10%.
2. Setting tolerance: ±20%.
3. Ratings and specifications, except for the instantaneous trip pickup current, and outline dimensions of the High-Inst breakers are the same as those of the reference breakers enclosed in parentheses.
4. An optional trip indicator cannot be added.
2. Low Instantaneous Trip

Low instantaneous trip breakers are the breakers having a low instantaneous trip pickup current. Use these breakers in order to achieve selective coordination with a high-voltage fuse located on the primary side of the breakers.

<table>
<thead>
<tr>
<th>Category</th>
<th>Type (Reference type)</th>
<th>Rated current, A</th>
<th>Instantaneous trip pickup current, A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal-Magnetic</td>
<td>S50-GFL (S50-GF)</td>
<td>15</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30</td>
<td>180</td>
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<tr>
<td></td>
<td></td>
<td>40</td>
<td>240</td>
</tr>
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<td>50</td>
<td>300</td>
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<td></td>
<td></td>
<td>60</td>
<td>360</td>
</tr>
<tr>
<td></td>
<td></td>
<td>75</td>
<td>450</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100</td>
<td>600</td>
</tr>
<tr>
<td></td>
<td>S50-NFL (S50-NF)</td>
<td>125</td>
<td>750</td>
</tr>
<tr>
<td></td>
<td>S50-GFL (S50-GF)</td>
<td>150</td>
<td>900</td>
</tr>
<tr>
<td></td>
<td></td>
<td>175</td>
<td>1050</td>
</tr>
<tr>
<td></td>
<td></td>
<td>200</td>
<td>1200</td>
</tr>
<tr>
<td></td>
<td></td>
<td>225</td>
<td>1350</td>
</tr>
</tbody>
</table>

Notes:
1. Setting tolerance: ±10%.
2. Ratings and specifications, except for the instantaneous trip pickup current, and outline dimensions of the Low-Inst breakers are the same as those of the reference breakers enclosed in parentheses.
5 Mounting and Connection

1 Type of connections and mountings ........................................... 5-2
   List of connecting type ............................................................. 5-2
   Connecting parts ....................................................................... 5-6
   Plug-in type (PM) ..................................................................... 5-8
   1. For switchboards ................................................................. 5-8
   2. For distribution boards ......................................................... 5-9
2 Compression terminals ................................................................. 5-14
3 Terminal screw sizes and standard torques ............................ 5-16
4 Insulation distance from the line side ....................................... 5-20
5 Reverse connection .................................................................... 5-22
6 Lists of breaker mounting screws ........................................... 5-23
### Mounting and Connection

**Molded Case Circuit Breakers**

#### 1. Type of connections and mountings

#### List of Connecting Types

<table>
<thead>
<tr>
<th>Connecting types (Abbreviation)</th>
<th>Front-connected (FC)</th>
<th>Rear-connected (RC)</th>
<th>Plug-in (PM)</th>
<th>Plug-in (PM)</th>
<th>Flush Plate (FP)</th>
<th>Draw-out type (DR)</th>
<th>TempPlug (PG) (PG)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>For compression</td>
<td>Flat bar studs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>terminals/flat bars</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>With extension bars</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>With cable clamps</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Std can be turned</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>$^\circ$ or $^\circ$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Remarks

- Connect compression terminals or flat bars directly to breaker terminals.
- Extension bars are attached to breaker terminals. Connect compression terminals or flat bars to the extension bars.
- Cable clamps are attached to breaker terminals. Connect wires directly to cable clamps.
- Flat bar studs will be factory installed in the horizontal position unless otherwise specified.
- Flat bar studs in the vertical position are available on request. Please select a position code from those shown in the table below.
- Position of flat bar studs

<table>
<thead>
<tr>
<th>Position</th>
<th>Line side</th>
<th>Load side</th>
</tr>
</thead>
<tbody>
<tr>
<td>RC-D</td>
<td>Horizontal</td>
<td>Horizontal</td>
</tr>
<tr>
<td>RC-C</td>
<td>Vertical</td>
<td>Vertical</td>
</tr>
<tr>
<td>RC-A</td>
<td>Vertical</td>
<td>Horizontal</td>
</tr>
</tbody>
</table>

- To make connection, push the breaker into the mounting base already wired to the main and control circuits. The breaker can be fixed by the mounting screws.
- High-performance models have a safety mechanism that prevents them from being mounted or removed as long as they are in the ON state.
- Models meeting protection grade IP20 are available as options. IEC 60529 specifies that IP20-compliant devices be designed and constructed so that live parts of the device cannot be touched by hand. When ordering the products, please specify as ‘IP20 applied products’.
- Plug-in type with front connection suitable for the small depth.
- Install the mounting frame directly to a panel.
- Use the flat bar studs in the same manner as for rear-connected breakers.
- The plate is painted in the same manner as for rear-connected breakers.

#### Notes

- See pages 5-16 for dimensions and tightening torque of terminal screws.
- See page 5-9 for details.
- See page 5-0 for details.
- See page 5-1 for details.
- TemPlug (PG) (PG) is not applicable.
- Standard. This configuration is used unless otherwise specified.
- Optional standard. Specify when ordering.
- Custom-built. Contact us for details.
- “no” or “not available”.

---

See pages 5-16 and 5-17 for dimensions and tightening torque of terminal screws.

1. Except 4-pole breakers.
2. May not be applied to 2 or 4-pole breakers of some types.
3. See page 5-9 for details.
4. See page 5-0 and 5-1 for details.
5. TemPlug (PG) (PG) is not applicable.

---

### Mounting and Connection

---

---
### Mounting and Connection

#### Molded Case Circuit Breakers

#### Type of connections and mountings

### List of Connecting Types

<table>
<thead>
<tr>
<th>Breaker</th>
<th>Connecting types (Abbreviation)</th>
<th>Front-connected (FC)</th>
<th>Rear-connected (RC)</th>
<th>Plug-in (PM)</th>
<th>Draw-out type (DR)</th>
<th>Flush Plate (FP)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>For compression</td>
<td>Flat bar studs</td>
<td></td>
<td>Two-position type</td>
<td>Flat bar studs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>semin-al flat bars</td>
<td></td>
<td></td>
<td>Three-position type</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>with extension bars</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB-SS</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>TB-SP</td>
<td>(Load side)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>TB-SD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E30-3F, E100-3F, E30-CN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S1250-NE, S1250-GE, S1250-NN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL-1000NE, TL-1200NE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S1600-NE, S1600-NN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XS2000NE, XS2000NN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Remarks:**
- Connect compression terminals directly to breaker terminals.
- Extension bars are attached to breaker terminals. Connect compression terminals or flat bars to the extension bars.

- To make connection, push the breaker into the plug-in cradle already wired to the main and control circuits. The plug-in cradle has two positions: “Connected” and “Isolated”.
- The plate is painted in Munsell 5Y 7/1.

See pages 5-10 and 5-13 for dimensions and tightening torque of terminal screws.

**Notes:**
- Breakers are mounted on angles.
- Flat bars will be factory installed in the horizontal position unless otherwise specified.
- Vertical installation is required, please state when ordering.
- See page 5-4 for details.

#### Notes:
- Standard. This configuration used unless otherwise specified.
- Optional standard. Specify when ordering.
- Semi-standard. Contact us for details.
- “-” or “not available”.

---

**Front-connected (FC):**
- Stud can be turned 90° Fixed

**Rear-connected (RC):**
- Stud can be turned 90° Fixed

**Plug-in (PM):**
- For switchboards
- For distribution boards

**Draw-out type (DR):**
- Two-position type
- Three-position type

**Flush Plate (FP):**
- Flat bar studs

---

See page 5-6 for details.
## Mounting and Connection

### Molded Case Circuit Breakers

#### 1. Type of connections and mountings

### Connecting parts

There are the following connecting/mounting hardware available as options:

1. **Extension bars for front connection**

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of poles</th>
<th>Applicable breakers</th>
<th>Min order qty</th>
<th>Extension parts</th>
<th>Screw D</th>
<th>Screw C</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>T2FB12L2SH</td>
<td>2</td>
<td>S50-GF</td>
<td>1/2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>T2FB12L3SH</td>
<td>3</td>
<td>S125-GF,S125-SF,S125-SN</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>T2FB12L2SB</td>
<td>2</td>
<td>S50-GF,S100-NF,S100-GF</td>
<td>1</td>
<td>3</td>
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2. **Flat bar stud for rear connection**

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<th>Type</th>
<th>Number of poles</th>
<th>Applicable breakers</th>
<th>Min order qty</th>
<th>Extension parts</th>
<th>Screw D</th>
<th>Screw C</th>
<th>Remarks</th>
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*See page 5-16 for screws B and C.

**Note:** Two sets, one for the line side and one for the load side, are required per breaker.

### 2. Flange stud bar for rear connection

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of poles</th>
<th>Applicable breakers</th>
<th>Min order qty</th>
<th>Extension parts</th>
<th>Screw D</th>
<th>Screw C</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
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*See page 5-16 for screws D and E.

**Note:** The stud can be rotated to four angular positions: 0 (horizontal), 45, 90 (vertical) and 135 degrees.
### 3. Plug-in base

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<th>Number of poles</th>
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<th>Applicable breakers</th>
<th>Min. order qty</th>
<th>Constituent parts</th>
<th>Plug-in base</th>
<th>Nut J</th>
<th>Remarks</th>
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### 4. Flush Plate (with flat bar studs)

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<th>Applicable breakers</th>
<th>Min. order qty</th>
<th>Constituent parts</th>
<th>Flush plate</th>
<th>Flush-mounting frame</th>
<th>Stud bar</th>
<th>Frame mounting screw</th>
<th>Panel mounting screw</th>
<th>Remarks</th>
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</tbody>
</table>

**Notes:**
1. Possible mounting positions include four angular ones: (horizontal), 45, 90 (vertical) and 135 degrees.
2. The flush plate is painted in Munsell 5Y 7/1.
3. Use the breaker mounting screws (supplied with the breaker) to secure the breaker in the flush-mounting frame.
4. Stud bars are not supplied with the flush-mounting frame. See "2. Studs for rear connection" on page 5-6 to select and order suitable studs.

---

5. Mounting and Connection

---
## 1. Type of connections and mountings

### Plug-in type (PM)

#### 1. For switchboards

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<th>Type of connections and mountings</th>
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<td><img src="#" alt="Diagram 2" /></td>
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<td>Mounting and Connection</td>
<td><img src="#" alt="Diagram 1" /></td>
<td><img src="#" alt="Diagram 2" /></td>
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<tr>
<td>Molded Case Circuit Breakers</td>
<td><img src="#" alt="Diagram 1" /></td>
<td><img src="#" alt="Diagram 2" /></td>
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<tr>
<td>Terminal leads for internally</td>
<td><img src="#" alt="Diagram 1" /></td>
<td><img src="#" alt="Diagram 2" /></td>
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<tr>
<td>mounted accessories</td>
<td><img src="#" alt="Diagram 1" /></td>
<td><img src="#" alt="Diagram 2" /></td>
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<td>Lead wires from switchboard</td>
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<td>Auxiliary circuit terminals</td>
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<td>mounted on breaker body</td>
<td><img src="#" alt="Diagram 1" /></td>
<td><img src="#" alt="Diagram 2" /></td>
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<tr>
<td>Conductor (Not supplied)</td>
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<tr>
<td>Terminal (Not supplied)</td>
<td><img src="#" alt="Diagram 1" /></td>
<td><img src="#" alt="Diagram 2" /></td>
</tr>
<tr>
<td>Terminal leads for internally</td>
<td><img src="#" alt="Diagram 1" /></td>
<td><img src="#" alt="Diagram 2" /></td>
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<tr>
<td>mounted accessories</td>
<td><img src="#" alt="Diagram 1" /></td>
<td><img src="#" alt="Diagram 2" /></td>
</tr>
<tr>
<td>Mounting angle (Not supplied)</td>
<td><img src="#" alt="Diagram 1" /></td>
<td><img src="#" alt="Diagram 2" /></td>
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<tr>
<td>Auxiliary circuit terminals</td>
<td><img src="#" alt="Diagram 1" /></td>
<td><img src="#" alt="Diagram 2" /></td>
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<tr>
<td>mounted on breaker body</td>
<td><img src="#" alt="Diagram 1" /></td>
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<td>mounted accessories</td>
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<tr>
<td>Mounting angle (Not supplied)</td>
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<td>Auxiliary circuit terminals</td>
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<td>(See page 9-4)</td>
<td><img src="#" alt="Diagram 1" /></td>
<td><img src="#" alt="Diagram 2" /></td>
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</table>

#### High-performance

- Plug-in base
- Conductor (Not supplied)
- Mounting angle (Not supplied)
- Auxiliary circuit terminals (See page 9-4)
## 2. For distribution boards

### Plug-in base

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Breaker</th>
<th>Nr. of poles</th>
<th>Order codes for Plug-in bases</th>
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<tr>
<td>50</td>
<td>S50-SF</td>
<td>2</td>
<td>For double: T2PM12LD2</td>
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<td>For single: T2PM12LS2</td>
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<td>For single: T2PM12LS3</td>
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<td>S100-SF</td>
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<td>E100-GF</td>
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<td>For single: T2PM12LS3</td>
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</table>
### Components / Parts to be purchased

<table>
<thead>
<tr>
<th>Breaker</th>
<th>Components / Parts to be purchased</th>
<th>Mounting/connecting screws</th>
<th>Remarks</th>
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<td>E00-SF</td>
<td>Plug-in base XDA1D-2</td>
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<td>E00-SF</td>
<td>XDA1D-3</td>
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<td>2</td>
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<tr>
<td>E100-SF</td>
<td>Branching bar (thickness) 2RT-LD (l=22)</td>
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<td>E100-SF</td>
<td>2RT-LD10 (l=3)</td>
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<tr>
<td>E100-SF</td>
<td>2S-LD10 (l=3)</td>
<td>1</td>
<td>1</td>
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<tr>
<td>E100-SF</td>
<td>Connecting plate Connecting plate 3PD (for 3-pole breaker)</td>
<td>1</td>
<td>1</td>
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<tr>
<td>E100-SF</td>
<td>Arc guard 2PD (for 2-pole breaker)</td>
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<tr>
<td>E100-SF</td>
<td>Arc guard 3PD (for 3-pole breaker)</td>
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<tr>
<td>E100-SF</td>
<td>Branching bar barrier Busbar barrier D</td>
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<td>S05-SF</td>
<td>Plug-in base XDA1B-2</td>
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<td>S05-SF</td>
<td>XDA1B-3</td>
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<td>S125-SF</td>
<td>Branching bar (thickness) 1R-LD (l=22)</td>
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<td>1S-LD (l=22)</td>
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<tr>
<td>S125-SF</td>
<td>1T-LD (l=22)</td>
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<td>S125-SF</td>
<td>1R-LD10 (l=3)</td>
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<td>S125-SF</td>
<td>1S-LD10 (l=3)</td>
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<tr>
<td>S125-SF</td>
<td>1T-LD10 (l=3)</td>
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<td>1</td>
</tr>
<tr>
<td>S125-SF</td>
<td>Connecting plate Connecting plate 2PD (for 2-pole breaker)</td>
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<td>1</td>
</tr>
<tr>
<td>S125-SF</td>
<td>Arc guard 2PD (for 2-pole breaker)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>S125-SF</td>
<td>Arc guard 3PD (for 3-pole breaker)</td>
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<tr>
<td>S125-SF</td>
<td>Branching bar barrier Busbar barrier D</td>
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<tr>
<td>S50-SF</td>
<td>Plug-in base XDA2D-3</td>
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<td>2</td>
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<tr>
<td>S50-SF</td>
<td>Branching bar (thickness) 2RT-L (l=22)</td>
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<td>S50-SF</td>
<td>2S-L (l=22)</td>
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<td>S50-SF</td>
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<tr>
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<tr>
<td>S50-SF</td>
<td>Arc guard 3PD (for 3-pole breaker)</td>
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<tr>
<td>S50-SF</td>
<td>Branching bar barrier Busbar barrier E</td>
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</tr>
</tbody>
</table>

**Notes:**

1. The number required to form either single or double plug-in base for 3 pole construction.
2. Branch bars for 10 - 50A and 60 - 125A differ in thickness only. The conductor for 10 - 50A (2 mm thick) can be used for applications where the breaker rated current is 50A or less.
Mounting and Connection

### Outline dimensions

<table>
<thead>
<tr>
<th>XDA1D-2, XDA1S-2, XDA1D-3, XDA1S-3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Applicable breaker types</strong></td>
</tr>
<tr>
<td>E50-SF</td>
</tr>
</tbody>
</table>

- **XDA1D-2, XDA1D-3 (3 poles only for E50-CM)**
  - M5x0.8 tapped hole for connection of 2RT-LD, 2RT-LD10
  - M5x0.8 tapped hole for connection of 2RT-LD 2RT-LD10
  - ø4.8 mounting holes

- **XDA1S-2, XDA1S-3 (3 poles only for E50-CM)**
  - M5x0.8 tapped hole for connection of 1RT-LD, 1RT-LD10
  - M5x0.8 tapped hole for connection of 1R-LD, 1R-LD10
  - ø4.8 mounting holes

* Allow a clearance of 5 mm from the adjacent breaker if optional internally mounted accessories are installed.

### Components / Parts to be purchased

- **Branching bar**
- **Insulator for arc**
- **Branching bar barrier**
- **Connecting plate**

* Screws are not supplied.
Mounting and Connection

Molded Case Circuit Breakers

Type of connections and mountings

Outline dimensions

T2PM12LD2, T2PM12LD3, T2PM12LS2, T2PM12LS3

<table>
<thead>
<tr>
<th>Applicable breaker types</th>
<th>SS5-SF</th>
<th>S125-SF</th>
<th>S125-SN</th>
</tr>
</thead>
</table>

- **T2PM12LD2, T2PM12LD3**

- **T2PM12LS2, T2PM12LS3**

Components / Parts to be purchased

- **Branching bar**
- **Insulator for arc**
- **Branching bar barrier**
- **Connecting plate**

Drilling plan

Insulation plate, t = 1.6
(Not supplied)

Mounting angle
(Not supplied)

Branching bar barrier
(Installed under branching bar 2RT-LDB, 2RT-LD10B)

Insulation plate, t = 1.6
(Not supplied)

Busbar
(Not supplied)

Insulation plate, t = 1.6
(Not supplied)

Branching bar barrier

Insulation plate, t = 1.6
(Not supplied)

Mounting angle
(Not supplied)

Drilling plan

Insulation plate, t = 1.6
(Not supplied)

Mounting angle
(Not supplied)

Branching bar barrier
(Installed under branching bar 2RT-LDB, 2RT-LD10B)

Insulation plate, t = 1.6
(Not supplied)

Busbar
(Not supplied)

Insulation plate, t = 1.6
(Not supplied)

Branching bar barrier

Insulation plate, t = 1.6
(Not supplied)

Mounting angle
(Not supplied)

Drilling plan

Insulation plate, t = 1.6
(Not supplied)

Mounting angle
(Not supplied)

Branching bar barrier
(Installed under branching bar 2RT-LDB, 2RT-LD10B)

Insulation plate, t = 1.6
(Not supplied)

Busbar
(Not supplied)

Insulation plate, t = 1.6
(Not supplied)

Branching bar barrier

Insulation plate, t = 1.6
(Not supplied)

Mounting angle
(Not supplied)

Drilling plan

Insulation plate, t = 1.6
(Not supplied)

Mounting angle
(Not supplied)

Branching bar barrier
(Installed under branching bar 2RT-LDB, 2RT-LD10B)

Insulation plate, t = 1.6
(Not supplied)

Busbar
(Not supplied)

Insulation plate, t = 1.6
(Not supplied)

Branching bar barrier

Insulation plate, t = 1.6
(Not supplied)

Mounting angle
(Not supplied)

Drilling plan

Insulation plate, t = 1.6
(Not supplied)

Mounting angle
(Not supplied)

Branching bar barrier
(Installed under branching bar 2RT-LDB, 2RT-LD10B)

Insulation plate, t = 1.6
(Not supplied)

Busbar
(Not supplied)

Insulation plate, t = 1.6
(Not supplied)

Branching bar barrier

Insulation plate, t = 1.6
(Not supplied)

Mounting angle
(Not supplied)

Screws are not supplied.
### Outline dimensions

**XDA2D-3, XDA2S-3**

<table>
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<tr>
<th>Breaker Types</th>
<th>S50-GF</th>
<th>S100-NF</th>
<th>S100-GF</th>
<th>S100-NN</th>
<th>S125-NF</th>
<th>S125-GF</th>
<th>S125-NN</th>
</tr>
</thead>
</table>

#### XDA2D-3

- **Components / Parts to be purchased**
  - **Branching bar**
  - **Insulator for arc**
  - **Branching bar barrier**
  - **Connecting plate**

- Screws are not supplied.
## Mounting and Connection

### Molded Case Circuit Breakers

#### Compression terminals

<table>
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<tr>
<th>Breaker</th>
<th>Nominal wire size (mm²)</th>
<th>2</th>
<th>5.5</th>
<th>8</th>
<th>14</th>
<th>22</th>
<th>38</th>
<th>60</th>
<th>80</th>
<th>100</th>
<th>150</th>
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</thead>
<tbody>
<tr>
<td>E50-SF, S50-SF</td>
<td></td>
<td>R2-5</td>
<td>R5-5</td>
<td>R6-5</td>
<td>R14-5</td>
<td>NTMCR2-3S</td>
<td>AMP3114</td>
<td>S0-2BA</td>
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<td>S50-GF</td>
<td></td>
<td>R2-8</td>
<td>R5-8</td>
<td>R8-8</td>
<td>R14-8</td>
<td>R22-8</td>
<td>AMP32070</td>
<td>JST38-8</td>
<td>NTK-R38-8</td>
<td>NTM8-9</td>
<td>CB60-8</td>
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<td>S100-NF, S100-GF, S100-MM</td>
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<td>R2-8</td>
<td>R5-8</td>
<td>R8-8</td>
<td>R14-8</td>
<td>R22-8</td>
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### Front connected type (with extension bar)

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<td>R60-12</td>
<td>R80-12</td>
<td>R100-12</td>
<td>R150-12</td>
<td>R200-12</td>
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<td>R60-12</td>
<td>R80-12</td>
<td>R100-12</td>
<td>R150-12</td>
<td>R200-12</td>
<td>JST325-12</td>
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</tbody>
</table>

### Notes:

1. Commercially made compression terminals can be used (refer to boxes)
2. R/RD : JIS-compliant
3. CB : JEM 1399-compliant
4. AMP : Made by Nippon AMP Co., Ltd.
5. JST : Made by Japan Soldierless Terminal Manufacturing Co., Ltd.
6. NTK : Made by Nippon Tanshi Co., Ltd.
7. NTM : Made by Nichifu Terminal Industries Co., Ltd.
8. Only a single terminal can be connected.
9. Compression terminals in box cells are made by us at Terasaki. They are available from us or our authorized agents.
10. Compression terminals enclosed in parentheses are to be used as the lower terminal when two terminals are connected.

---

5-14
Connection (two terminals)

If a shortage of insulating occurs between the mounting plate and a terminal, use a recommended taping or insulator.

Terasaki made compression terminals are used (refer to box)

Connection (one electric cable)

If a shortage of insulating occurs, use a recommended taping or insulator.

Make connection so that the screw heads face toward the mounting surface.

Connection (two electric cables)

If a shortage of insulating occurs, use a recommended typing or insulator.

Make connection so that the screw heads face toward the mounting surface.
<table>
<thead>
<tr>
<th>Type</th>
<th>Connecting types</th>
<th>Front connection (FC)</th>
<th>Rear connection (RC) (Flat bar stud)</th>
<th>Flush Plate (FP)</th>
<th>Plug-in (PM)</th>
<th>Draw-out (DR)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Screw size (A)</td>
<td>Screw size (B)</td>
<td>Screw size (C)</td>
<td>Torque (N·m)</td>
<td>Screw size (D)</td>
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<tr>
<td>50</td>
<td>345-0F</td>
<td>Pan head M8X1.6</td>
<td>4.0–6.0</td>
<td>Hex socket head M8X1.0 2.0–3.0</td>
<td>11.9–16.6</td>
<td>Pan head M8X1.6</td>
</tr>
<tr>
<td>100</td>
<td>345-0F</td>
<td>Pan head M8X1.6</td>
<td>4.0–6.0</td>
<td>Hex socket head M8X1.0 2.0–3.0</td>
<td>11.9–16.6</td>
<td>Pan head M8X1.6</td>
</tr>
<tr>
<td>150</td>
<td>345-0F</td>
<td>Pan head M8X1.6</td>
<td>4.0–6.0</td>
<td>Hex socket head M8X1.0 2.0–3.0</td>
<td>11.9–16.6</td>
<td>Pan head M8X1.6</td>
</tr>
<tr>
<td>200</td>
<td>345-0F</td>
<td>Pan head M8X1.6</td>
<td>4.0–6.0</td>
<td>Hex socket head M8X1.0 2.0–3.0</td>
<td>11.9–16.6</td>
<td>Pan head M8X1.6</td>
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<tr>
<td>250</td>
<td>345-0F</td>
<td>Pan head M8X1.6</td>
<td>4.0–6.0</td>
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<td>11.9–16.6</td>
<td>Pan head M8X1.6</td>
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<tr>
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<td>4.0–6.0</td>
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<td>Pan head M8X1.6</td>
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<td>350</td>
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<td>4.0–6.0</td>
<td>Hex socket head M8X1.0 2.0–3.0</td>
<td>11.9–16.6</td>
<td>Pan head M8X1.6</td>
</tr>
</tbody>
</table>

Notes:
1. Connecting method and standard torques are same as plug-in (PM).
2. Secure the conductor with the correct nut and washer to ensure full contact of conductor with terminal on the plug-in base, so that the steel terminal bolt is not used at the current path.
### 5 Terminal screw sizes and standard torques

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Screws</th>
<th>Compression terminal</th>
<th>Expansion bar</th>
<th>Screw size (C)</th>
<th>Torque (N·m)</th>
<th>Screw size (D)</th>
<th>Torque (N·m)</th>
<th>Note</th>
</tr>
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<tbody>
<tr>
<td>TB-5S, TB-5P</td>
<td>Pan head M4 × 12</td>
<td>3.3 - 3.4</td>
<td>After clamping screw</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>TB-GD</td>
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<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>S50</td>
<td>Pan head M4 × 12</td>
<td>2.3 - 3.4</td>
<td>After clamping screw</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>S100</td>
<td>Pan head M4 × 14</td>
<td>1.1 - 1.7</td>
<td>Hex. nut M4</td>
<td>2.7 - 4.5</td>
<td>Hex. nut M4</td>
<td>2.6 - 6.0</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>S200 SP</td>
<td>Pan head M4 × 14</td>
<td>1.1 - 1.7</td>
<td>Hex. nut M4</td>
<td>2.7 - 4.5</td>
<td>Hex. nut M4</td>
<td>2.6 - 6.0</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>S200 SP</td>
<td>Pan head M6 × 14</td>
<td>1.1 - 1.7</td>
<td>Hex. nut M6</td>
<td>1.9 - 3.5</td>
<td>Hex. nut M6</td>
<td>1.6 - 3.0</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>L50</td>
<td>Pan head M6 × 14</td>
<td>1.1 - 1.7</td>
<td>Hex. nut M6</td>
<td>1.9 - 3.5</td>
<td>Hex. nut M6</td>
<td>1.6 - 3.0</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>L100</td>
<td>Pan head M6 × 14</td>
<td>1.1 - 1.7</td>
<td>Hex. nut M6</td>
<td>1.9 - 3.5</td>
<td>Hex. nut M6</td>
<td>1.6 - 3.0</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>L150</td>
<td>Pan head M6 × 14</td>
<td>1.1 - 1.7</td>
<td>Hex. nut M6</td>
<td>1.9 - 3.5</td>
<td>Hex. nut M6</td>
<td>1.6 - 3.0</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>L200</td>
<td>Pan head M8 × 14</td>
<td>1.1 - 1.7</td>
<td>Hex. nut M8</td>
<td>1.9 - 3.5</td>
<td>Hex. nut M8</td>
<td>1.6 - 3.0</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

**Note:** Terminal screws for 100AF and over are not provided as standard.

---

### Mounting and Connection

**Molded Case Circuit Breakers**

3 Terminal screw sizes and standard torques

<table>
<thead>
<tr>
<th>Connecting types</th>
<th>Front connection (FC)</th>
<th>Rear connection (RC) (Flat bar stud)</th>
<th>Rear connection (RC) (Bolt stud)</th>
<th>Plug-in (PM)</th>
<th>Draw-out (DR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**

1. Secure the conductor with the correct nut and washer to ensure full contact of conductor with terminal on the plug-in or draw-out. A lock bolt is not used as the current path.

---

**Terminal Conductor**

[Diagram of terminal connections]
Mounting and Connection
Molded Case Circuit Breakers

Insulation distance from the line side

The insulation distance between the breaker and earthed metal parts and insulators shown in the table on the next page must be maintained to prevent arcing faults occurring due to conductive ionised gas. In addition, completely cover exposed conductors, to their roots at the breaker or below the height protected by interpole barriers, on the line side of the breaker using insulation tube or tape, in order to provide positive protection against short circuit or ground fault due to metal chipping, surge voltage, dust particles or salt. Be sure to install the interpole barriers supplied with the breaker.

A . Distance from lower breaker to exposed live part of upper breaker terminal (front connection) or distance from lower breaker to end face of upper breaker (rear connection).
B₁ . Distance from end face of breaker to top plate.
B₂ . Distance from end face of breaker to insulation plate.
C . Gap between breakers.
D . Distance from side of breaker to side plate (earthed metal).
E . Dimension of insulation over exposed conductors.
## Insulation distance, mm (AC 460 V or less) Note ①

### Molded Case Circuit Breakers

<table>
<thead>
<tr>
<th>Series</th>
<th>Breaker</th>
<th>A Note</th>
<th>B1</th>
<th>B2</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Economical</strong></td>
<td>E50-SF</td>
<td>30</td>
<td>10</td>
<td>10</td>
<td>*</td>
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<td>40</td>
<td>40</td>
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<td>Possible to set close</td>
<td>50</td>
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<tr>
<td><strong>Standard</strong></td>
<td>S50-SF</td>
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<td>30</td>
<td>10</td>
<td>*</td>
<td>Possible to set close</td>
<td>25</td>
</tr>
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<td>25</td>
</tr>
<tr>
<td></td>
<td>S100-NF</td>
<td>50</td>
<td>50</td>
<td>10</td>
<td>*</td>
<td>Possible to set close</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>S225-NF</td>
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<td>50</td>
</tr>
<tr>
<td></td>
<td>S400-CF</td>
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<td>60</td>
<td>60</td>
<td>*</td>
<td>Possible to set close</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>S400-NE</td>
<td>100</td>
<td>80</td>
<td>60</td>
<td>*</td>
<td>Possible to set close</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>S800-CF</td>
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<td>100</td>
<td>80</td>
<td>*</td>
<td>Possible to set close</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>S800-NE</td>
<td>120</td>
<td>100</td>
<td>80</td>
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<td>80</td>
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</tr>
<tr>
<td><strong>High-fault</strong></td>
<td>S50-GF</td>
<td>75</td>
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<tr>
<td><strong>Level</strong></td>
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<td>75</td>
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<td>Possible to set close</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>S225-GF</td>
<td>100</td>
<td>80</td>
<td>60</td>
<td>*</td>
<td>Possible to set close</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>S400-GF</td>
<td>100</td>
<td>80</td>
<td>60</td>
<td>*</td>
<td>Possible to set close</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>S400-PF</td>
<td>120</td>
<td>120</td>
<td>80</td>
<td>*</td>
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<td>80</td>
</tr>
<tr>
<td></td>
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<td>120</td>
<td>120</td>
<td>80</td>
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<td>80</td>
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</tr>
<tr>
<td></td>
<td>S800-RF</td>
<td>150</td>
<td>120</td>
<td>80</td>
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<td>Not less than the length of the bare live part  Route ③</td>
</tr>
<tr>
<td></td>
<td>S1250-GE</td>
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<td>150</td>
<td>100</td>
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<td>100</td>
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<tr>
<td><strong>Current-limiting</strong></td>
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<td>60</td>
<td>*</td>
<td>Possible to set close</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>H125-NF</td>
<td>100</td>
<td>80</td>
<td>60</td>
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<td>50</td>
</tr>
<tr>
<td></td>
<td>H225-NF</td>
<td>120</td>
<td>120</td>
<td>80</td>
<td>*</td>
<td>Possible to set close</td>
<td>80</td>
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<tr>
<td></td>
<td>H800-NF</td>
<td>120</td>
<td>120</td>
<td>80</td>
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<td>80</td>
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</tr>
<tr>
<td></td>
<td>TL-1000NE</td>
<td>150</td>
<td>150</td>
<td>100</td>
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<tr>
<td></td>
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<td></td>
<td>L100-NF</td>
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<td>80</td>
<td>60</td>
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<td>Possible to set close</td>
<td>50</td>
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<tr>
<td></td>
<td>L125-NF</td>
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<td>80</td>
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<td>Possible to set close</td>
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<tr>
<td></td>
<td>L225-NF</td>
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<td>120</td>
<td>80</td>
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<tr>
<td></td>
<td>L400-NE</td>
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<tr>
<td></td>
<td>L630-NE</td>
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<tr>
<td><strong>Motor protection</strong></td>
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<td>E225-NM</td>
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<td>40</td>
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<td>Possible to set close</td>
<td>50</td>
</tr>
</tbody>
</table>

### Notes:

① Required to allow free and uninterrupted flow of arc gases. Ensure additional clearance or insulation distance if required to perform wiring, barrier installation or electrical work or to meet the need for more insulation distance between bare live parts and grounded metal members in a switchboard or the like.

② The figures are for lower breakers.

③ For front connection breakers, insulate all exposed conductors of the line side until the breaker end. If interpole barriers are packed, be sure to use the barriers; more over, insulate all exposed conductors by insulating tape or the like so that the tape overlaps with the barriers.

✽ If using extension bars (optional), ensure the insulation distance specified for the application.
The breakers are available for normal connection by default. Reverse connection is optionally allowed. See the tables below.

<table>
<thead>
<tr>
<th>Breaker</th>
<th>AC240V</th>
<th>AC415V</th>
<th>AC450V</th>
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<td>E50-SF, E100-SF, E250-SF</td>
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<td>S100-NM, S100-NN</td>
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<tr>
<td>S125-NN, S125-SN</td>
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<tr>
<td>TL-1000NE, TL-1200NE</td>
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## Mounting and Connection

### Molded Case Circuit Breakers

#### 6 Lists of breaker mounting screws

<table>
<thead>
<tr>
<th>Series</th>
<th>Breaker</th>
<th>Number of poles</th>
<th>Front-connected (FC)</th>
<th>Rear-connected (RC)</th>
<th>Plug-in (PM) for switchboards</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Screw size</td>
<td>Qty</td>
<td>Screw size</td>
</tr>
<tr>
<td>Economic</td>
<td></td>
<td></td>
<td>Standard</td>
<td>QTY</td>
<td>High-fault Level</td>
</tr>
<tr>
<td>E100-SF</td>
<td>2,3</td>
<td>Pan head M4×35</td>
<td>2</td>
<td>Pan head M4×35</td>
<td>4</td>
</tr>
<tr>
<td>E125-SF</td>
<td>2,3</td>
<td>Pan head M4×65</td>
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<td>Pan head M4×65</td>
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<td>S50-5F</td>
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<td>Pan head M4×55</td>
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<td>Pan head M4×55</td>
<td>2</td>
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<tr>
<td>S800-CF, S800-NF, S800-RF</td>
<td>2,3</td>
<td>Pan head M4×55</td>
<td>2</td>
<td>Pan head M4×55</td>
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<tr>
<td>S125-GF</td>
<td>2,3</td>
<td>Pan head M4×55</td>
<td>2</td>
<td>Pan head M4×55</td>
<td>2</td>
</tr>
<tr>
<td>S125-GE</td>
<td>3</td>
<td>Pan head M4×90</td>
<td>2</td>
<td>Pan head M4×90</td>
<td>2</td>
</tr>
<tr>
<td>S125-MM</td>
<td>3</td>
<td>Pan head M4×90</td>
<td>2</td>
<td>Pan head M4×90</td>
<td>2</td>
</tr>
<tr>
<td>S400-CF, S400-MF</td>
<td>4</td>
<td>Pan head M6×100</td>
<td>4</td>
<td>Pan head M6×100</td>
<td>2</td>
</tr>
<tr>
<td>S630-CF, S630-MF, S630-RF</td>
<td>4</td>
<td>Pan head M8×45</td>
<td>4</td>
<td>Pan head M8×45</td>
<td>2</td>
</tr>
<tr>
<td>S800-CF, S800-NF, S800-RF</td>
<td>4</td>
<td>Pan head M8×50</td>
<td>4</td>
<td>Pan head M8×50</td>
<td>2</td>
</tr>
<tr>
<td>S850-NE, S1250-GE</td>
<td>4</td>
<td>Pan head M8×50</td>
<td>4</td>
<td>Pan head M8×50</td>
<td>2</td>
</tr>
<tr>
<td>S980-NE</td>
<td>3</td>
<td>Pan head M8×50</td>
<td>4</td>
<td>Pan head M8×50</td>
<td>2</td>
</tr>
<tr>
<td>S1000-NE</td>
<td>3</td>
<td>Pan head M8×50</td>
<td>4</td>
<td>Pan head M8×50</td>
<td>2</td>
</tr>
<tr>
<td>S1100-NE</td>
<td>3</td>
<td>Pan head M8×50</td>
<td>4</td>
<td>Pan head M8×50</td>
<td>2</td>
</tr>
<tr>
<td>S1300-NE</td>
<td>3</td>
<td>Pan head M8×50</td>
<td>4</td>
<td>Pan head M8×50</td>
<td>2</td>
</tr>
</tbody>
</table>

**Mounting and Connection**

1. *Width across flats of hex socket: 8 mm (M10), thread size: M8*

---

### Notes:

1. The length of mounting screws may differ from the standard one if the breaker is equipped with external accessories (motor operator, external operation handle, etc.) Consult the operating Instructions of external accessories for details.

2. *Width across flats of hex socket: 8 mm (M10), thread size: M8*
6 Accessories

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1. TemBreak2 Electronic OCR (Standard type)

(1) Overcurrent trip characteristics

■ TemBreak2 Electronic OCR for S400-NE

<table>
<thead>
<tr>
<th>CT rated current (I_{CT})</th>
<th>poles</th>
<th>Protection code</th>
<th>Long time, Short time, Instantaneous</th>
<th>Preferential trip alarm (PTA)</th>
<th>Ground fault trip (GF)</th>
<th>Neutral protection (NP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>3</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>AP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>AP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>AN</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>APN</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

■ TemBreak2 OCR Specifications

CT rated current (I_{CT})

<table>
<thead>
<tr>
<th>260</th>
<th>175</th>
<th>225</th>
<th>250</th>
<th>300</th>
<th>350</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>260</td>
<td>175</td>
<td>225</td>
<td>250</td>
<td>300</td>
<td>350</td>
<td>400</td>
</tr>
</tbody>
</table>

■ OCR characteristics for S400-NE

<table>
<thead>
<tr>
<th>Characteristics No.</th>
<th>I_{A}</th>
<th>I_{B}</th>
<th>I_{C}</th>
<th>I_{D}</th>
<th>I_{E}</th>
<th>I_{F}</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.004</td>
<td>0.006</td>
<td>0.008</td>
<td>0.01</td>
<td>0.015</td>
<td>0.02</td>
</tr>
<tr>
<td>2</td>
<td>0.006</td>
<td>0.008</td>
<td>0.01</td>
<td>0.015</td>
<td>0.02</td>
<td>0.025</td>
</tr>
<tr>
<td>3</td>
<td>0.01</td>
<td>0.015</td>
<td>0.02</td>
<td>0.025</td>
<td>0.03</td>
<td>0.035</td>
</tr>
<tr>
<td>4</td>
<td>0.015</td>
<td>0.02</td>
<td>0.025</td>
<td>0.03</td>
<td>0.035</td>
<td>0.04</td>
</tr>
<tr>
<td>5</td>
<td>0.02</td>
<td>0.025</td>
<td>0.03</td>
<td>0.035</td>
<td>0.04</td>
<td>0.045</td>
</tr>
<tr>
<td>6</td>
<td>0.025</td>
<td>0.03</td>
<td>0.035</td>
<td>0.04</td>
<td>0.045</td>
<td>0.05</td>
</tr>
<tr>
<td>7</td>
<td>0.03</td>
<td>0.035</td>
<td>0.04</td>
<td>0.045</td>
<td>0.05</td>
<td>0.055</td>
</tr>
</tbody>
</table>

■ Applicable breakers

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Type of breaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>225</td>
<td>S225-GE</td>
</tr>
<tr>
<td>400</td>
<td>S400-NE, S400-GE, S400-PE</td>
</tr>
<tr>
<td>600</td>
<td>S600-NE, S600-GE, S600-PE</td>
</tr>
<tr>
<td>800</td>
<td>S800-NE, S800-GE, S800-RE, S800-RE, S800-NE, L800-NE</td>
</tr>
<tr>
<td>1250</td>
<td>S1250-NE, S1250-GE</td>
</tr>
<tr>
<td>1600</td>
<td>S1600-NE</td>
</tr>
</tbody>
</table>

TemBreak2 electronic OCR allows you to achieve a wide range of protection simply by setting two dials located on the front of the breakers; one for selecting the rated current and the other for selecting a protection characteristic. Coming standard with seven protection characteristics, the OCR provides optimum selective coordination between upstream breakers and downstream breakers and/or loads.

(5 protection characteristics for S225-GE)

Characteristic 1: For generator protection

Characteristics 2, 3 and 4: For general feeder protection. The possibility of selecting one from three options makes it easy to achieve selective coordination with upstream or downstream breakers.

Characteristics 5, 6 and 7: For motor protection. The selection of the option best suited to motor startup characteristics provides an optimum protection solution to motors.
(2) Optional OCR functions

**Pretrip alarm (PTA)**

The pretrip alarm function causes the alarm LED to flash when the load current exceeds 80% of the rated current \((I_R)\) and, after 40 seconds, provides a contact output \((1a)\). The contact output can be used to provide an alarm. The PTA function uses RMS sensing and hence does not suffer a malfunction due to harmonics. Control power and the OCR controller (supplied by Terasaki) are required to use this function.

**Notes:**
- When the OCR controller is installed on the breaker, the breaker cannot be equipped with a terminal block for connection to the shunt trip device and undervoltage trip device.

### Specifications of OCR controller

| Control voltage  | AC100 – 120 V or AC200 – 240 V |
| Current consumption, VA | 2VA |

**Note:** The control voltage must be 50 to 110% of the rated voltage. Please state the rated voltage when ordering.

| Operating time \((t_P)\) | 40 secs (fixed definite time-delay) setting tolerance is ± 10% |
| Output contact | Normally open contact, \((1a)\) integral lead is standard, length (450mm) |

| Resistive load | Inductive load |
| 230V AC | 125V A (2A max) |
| 220V DC | 80W (2A max) |
| 16V | 10W (2A max) |

| Tripped indication | Pick-up LED flickers |

**Note:** The pick-up LED flickers at a higher current than \((I_P)\). When higher current flows continuously for 40 secs, the contact \((1a)\) automatically resets.

### OCR controller connection diagram

**Applicable breakers:** S225-GE

**Applicable breakers:** S400-NE, S400-GE, S400-PE, H400-NE, L400-NE, S630-NE, S630-RE, H630-NE, L630-NE, S800-NE, S800-RE, H800-NE, L800-NE, S1250-NE, S1250-GE, S1600-NE

**Notes:**
- Separate installation of the OCR controller is not available.
- Standard installation of the OCR controller is on the right side of the breaker. Separate installation is standard for the flush-mounted breakers.
## Ground fault trip (GF)

The ground fault trip pickup current is 20% of the CT rated current ($I_{CT}$). The GF function provides protection against fire that may be caused by arcing ground fault current. The GF function is not available when $I_{CT}$ is 250A.

**Note:** Separate type neutral CT is required when the GF function is added to a 3-pole breaker used in a 3-phase, 4-wire system. Contact us for details.

## N-phase protection (NP)

The NP function is available on 4-pole breakers and provides protection to the neural conductor in a 3-phase, 4-wire system against overcurrent. The NP pickup current ($I_{N}$) can be selected with $1.0 \times I_{R}$ or $0.5 \times I_{R}$ rated current. For S225 and H225, $I_{N}$ is $1.0 \times I_{R}$ only. Characteristic of N-phase protection ($I_N$ vs $I_R$) is identical to characteristic of phase protection ($I_R$ vs $I_R$).
(3) How to change the tripping characteristics

The electronic breakers are designed so that their protective functions, i.e., long time delay trip, short time delay trip, instantaneous trip, ground fault trip and pretrip alarm functions, can be adjusted depending on a change in load or layout of power distribution lines.

Outer view

<table>
<thead>
<tr>
<th>Item</th>
<th>Rated current</th>
<th>Long time delay trip, short time delay trip, instantaneous trip, ground fault trip, pretrip alarm</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Turn the breaker to OFF position before changing the settings.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Peel the sealing sticker off and remove the cover.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Rotate the “IR(A)” dial to the desired position using a flatblade screwdriver.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Take an appropriate current rating sticker and a sealing sticker from the replacement sticker storage.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Peel the existing current rating sticker off and affix the replacement current rating sticker.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Reinstall the cover and affix the replacement sealing sticker.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Adjusting procedure</strong></td>
<td><strong>Characteristics</strong> dial</td>
<td><strong>IR(A)</strong> dial</td>
</tr>
<tr>
<td>225</td>
<td>2500</td>
<td>500</td>
</tr>
<tr>
<td>200</td>
<td>350</td>
<td>360</td>
</tr>
<tr>
<td>175</td>
<td>480</td>
<td>400</td>
</tr>
<tr>
<td><strong>Replacement sticker storage</strong></td>
<td><strong>Replacement sticker storage</strong></td>
<td><strong>Replacement sticker storage</strong></td>
</tr>
<tr>
<td>S225-GE, S400-GE, S400-PE, H400-NE, L400-NE</td>
<td>S630-NE, S630-RE, H630-NE, L630-NE, S800-NE, S800-RE, H800-NE, L800-NE</td>
<td>S1250-NE, S1250-GE, S1600-NE</td>
</tr>
<tr>
<td><strong>OCR Cover</strong></td>
<td><strong>OCR Cover</strong></td>
<td><strong>OCR Cover</strong></td>
</tr>
</tbody>
</table>

• Turn the breaker to OFF position before changing the settings.

1. Peel the sealing sticker off and remove the cover.
2. Rotate the “Characteristics” dial to the desired position using a flatblade screwdriver.
3. Take a sealing sticker from the replacement sticker storage.
4. Reinstall the cover and affix the replacement sealing sticker.
2. TemBreak Electronic OCR

(1) Overcurrent trip characteristics

■ TemBreak electronic OCR for XS2000NE

![Diagram of TemBreak electronic OCR]

The electronic type TemBreak incorporates an adjustable long time-delay, short time-delay and instantaneous trips, enabling co-ordination with fuses on the high voltage side and down stream breakers.

### Standard Protective Characteristics

The electronic type TemBreak incorporates an adjustable long time-delay, short time-delay and instantaneous trips, enabling co-ordination with fuses on the high voltage side and down stream breakers.

### Adjustable LTD

Essential for general industrial plants and generator protection

### OCR characteristics for XS2000NE

<table>
<thead>
<tr>
<th>CT rated current (A) (I&lt;sub&gt;CT&lt;/sub&gt;)</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long time-delay pick-up current (A) (I&lt;sub&gt;1&lt;/sub&gt;)</td>
<td>1000, 1200, 1400, 1600, 1800, 2000</td>
</tr>
<tr>
<td>Long time-delay time settings (S) (T&lt;sub&gt;1&lt;/sub&gt;)</td>
<td>5–15–15–20–30 at (I&lt;sub&gt;1&lt;/sub&gt;) x 600% current Setting tolerance ±20%</td>
</tr>
<tr>
<td>Short time-delay pick-up current (A) (I&lt;sub&gt;2&lt;/sub&gt;)</td>
<td>(I&lt;sub&gt;1&lt;/sub&gt;) x 200, 400, 600, 800, 1000% Setting tolerance ±15%</td>
</tr>
<tr>
<td>Short time-delay time settings (S) (T&lt;sub&gt;2&lt;/sub&gt;)</td>
<td>Opening time (0.1, 0.15, 0.2, 0.25, 0.3) in the definite time-delay. Total clearing time is +50ms and resettable time –20ms for the time-delay settings</td>
</tr>
<tr>
<td>Instantaneous trip pick-up current (A) (I&lt;sub&gt;3&lt;/sub&gt;)</td>
<td>Continuously adjustable from (I&lt;sub&gt;1&lt;/sub&gt;) x 300 – 1200% Setting tolerance ±20%</td>
</tr>
<tr>
<td>Pre-trip alarm pick-up current (A) (I&lt;sub&gt;4&lt;/sub&gt;) (optional)</td>
<td>(I&lt;sub&gt;1&lt;/sub&gt;) x 70, 80, 90, 100% Setting tolerance ±10%</td>
</tr>
<tr>
<td>Pre-trip alarm time setting (S) (T&lt;sub&gt;4&lt;/sub&gt;) (optional)</td>
<td>40 fixed definite time-delay. Setting tolerance ±10%</td>
</tr>
<tr>
<td>Ground fault trip pick-up current (A) (I&lt;sub&gt;5&lt;/sub&gt;) (optional)</td>
<td>Continuously adjustable from (I&lt;sub&gt;1&lt;/sub&gt;) x 10 – 40% Setting tolerance ±15%</td>
</tr>
<tr>
<td>Ground fault trip time setting (S) (T&lt;sub&gt;5&lt;/sub&gt;) (optional)</td>
<td>Opening time (0.1, 0.2, 0.3, 0.4, 0.8) in the definite time-delay. Total clearing time is +50ms and resettable time –20ms for the time-delay settings</td>
</tr>
</tbody>
</table>

**NOTE:** The underlined values will be applied as standard ratings unless otherwise specified when ordering.

### Ramp Characteristic [I<sub>2t</sub>, STD]

The ramp characteristic [I<sub>2t</sub>] enables precise co-ordination with thermal magnetic MCCBs or fuses. The ramp characteristic or the definite time-delay characteristic can be used by operating the OFF-ON switch (on for [I<sub>2t</sub>] ramp characteristic).

The definite time-delay characteristic is 1000% of the rated current [I<sub>1</sub>].

### Applicable breakers

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Type of breaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>TL-1000NE</td>
</tr>
<tr>
<td>1200</td>
<td>TL-1200NE</td>
</tr>
<tr>
<td>2000</td>
<td>XS2000NE</td>
</tr>
</tbody>
</table>

### Time/Current characteristic curves

![Time/Current characteristic curves diagram]
(2) Optional OCR functions

■ Pretrip alarm (PTA)

The pretrip alarm function causes the alarm LED to flash when the load current exceeds the pre-set current value and, after 40 seconds, provides a contact output (1a). The contact output can be used to provide an alarm. The PTA function uses RMS sensing and hence does not suffer a malfunction due to harmonics. Control power and the OCR controller (supplied by Terasaki) are required to use this function.

● PTA specifications

Pick-up current (A) \( I_P \)

<table>
<thead>
<tr>
<th>Current (%)</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>( I_P )</td>
<td>0.8</td>
<td>0.9</td>
<td>1.0</td>
<td></td>
</tr>
</tbody>
</table>

Adjustable steps of 70, 80, 90, 100% of the selected rated current \( I_R \).

Setting tolerance ± 10%

Note: The long time-delay trip does not operate 'first' when the pick-up current is adjusted to 100% of the rated current \( I_R \).

Operating time (s) \( T_P \) 40 secs (fixed definite time-delay) setting tolerance is ± 10%.

Output contact

<table>
<thead>
<tr>
<th>Rating of contact</th>
<th>Resitive load</th>
<th>Inductive load</th>
</tr>
</thead>
<tbody>
<tr>
<td>250V AC</td>
<td>125VA (2A max)</td>
<td>20VA (2A max)</td>
</tr>
<tr>
<td>220V DC</td>
<td>60W (2A max)</td>
<td>10W (2A max)</td>
</tr>
</tbody>
</table>

Tripped indication 1) Pick-up LED flickers

Note: 1) the pick-up LED flickers at a higher current than \( I_P \).

When higher current flows continuously for 40 secs, the contact (1a) automatically resets.

● OCR controller (PTA and trip indication)

The OCR controller is installed in the left hand of the breaker (standard). This can also be installed externally to the breaker (please specify when ordering).

● Specifications of OCR controller

Control voltage 2) AC100 - 120 V or AC200 - 240 V
(Rated voltage) Current consumption, VA 2VA

Note: 2) The control voltage must be 80 to 110% of the rated voltage.

Please state the rated voltage when ordering.

● OCR controller connection diagram

OCR controller installed on the breaker

OCR controller installed external to the breaker

● Mounting dimensions and terminal arrangement of the OCR controller installed on the breaker

Dimension table (mm)

<table>
<thead>
<tr>
<th>Type of MCCB</th>
<th>With UVT controller</th>
<th>Without UVT controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>TL-1000NE</td>
<td>51</td>
<td>114</td>
</tr>
<tr>
<td>TL-1200NE</td>
<td>54</td>
<td>180</td>
</tr>
<tr>
<td>XS2000NE</td>
<td>62</td>
<td>115</td>
</tr>
</tbody>
</table>

Remarks:
1) Standard torque for the terminal screws M3.5 —— 0.9~1.2N.m
2) Connected cable size —— Max. 2.0mm²
(2) Optional OCR functions

**Ground fault trip (GF)**

The ground fault trip pickup current is 10 to 40% of the CT rated current ($I_{CT}$). The GF function provides protection against fire that may be caused by arcing ground fault current. Note that a separate type neutral CT is required when the GF function is added to a 3-pole breaker used in a 3-phase, 4-wire system. Contact us for details.

**Trip indicators**

The LEDs, when lit, indicate which trip function tripped the breaker: Long time-delay (LTD), short time-delay/instantaneous (ST/INST) or ground fault (GF) (control power required). If a pre-trip alarm (PTA) is fitted, the LED control power can be used (common). See page 6-7 for PTA. This is not applicable to high instantaneous trip breakers (See page 4-3).

**Trip indicator display**

![Trip indicator display diagram](image-url)
### (3) How to change the tripping characteristics

The electronic breakers are designed so that their protective functions, i.e., long time delay trip, short time delay trip, instantaneous trip, ground fault trip and pretrip alarm functions, can be adjusted depending on a change in load or layout of power distribution lines.

**Adjusting procedure**

1. Peel the sealing sticker off, loosen the cover mounting screws and remove the cover.
2. Rotate the “RATED CUR. (A)” dial using a flatblade screwdriver so that the black points on the dial point the desired position.
3. Take an appropriate current rating sticker and a sealing sticker from the replacement sticker storage.
4. Peel the existing current rating sticker off and affix the replacement current rating sticker.
5. Reinstall the cover and affix the replacement sealing sticker.

---

<table>
<thead>
<tr>
<th>Item</th>
<th>Rated current</th>
<th>Long time delay trip, short time delay trip, instantaneous trip, ground fault trip, pretrip alarm</th>
</tr>
</thead>
</table>
| • Turn OFF the breaker before changing the settings. | 1. Peel the sealing sticker off, loosen the cover mounting screws and remove the cover.  
2. Rotate the desired dial using a flatblade screwdriver so that the black points on the dial point the desired position.  
3. Take a sealing sticker from the replacement sticker storage.  
4. Reinstall the cover and affix the replacement sealing sticker. | 1. Peel the sealing sticker off, loosen the cover mounting screws and remove the cover.  
2. Rotate the desired dial using a flatblade screwdriver so that the black points on the dial point the desired position.  
3. Take a sealing sticker from the replacement sticker storage.  
4. Reinstall the cover and affix the replacement sealing sticker. |

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1. Overview

The following internally mounted accessories are available. See the tables of possible combinations of internally mounted accessories on pages 6-12 to 6-14 for the number of accessories that can be installed per breaker and their locations.

- **Alarm switch** AL
  Provides an electrical indication that the breaker is in a tripped state.

- **Auxiliary switch** AX
  Provides an electrical indication that the breaker is in an ON or OFF state.

- **Shunt trip device** SH
  Electrically trips the breaker open from a remote location.

- **Undervoltage trip device** UV
  Trips the breaker open when the voltage of the power distribution line lowers. This device can also be used to trip the breaker open from a remote location.

  Caution: Combined use of SH and UV is not available.

**Termination or ending of lead wires from accessories**

There are three manners in which lead wires from accessories are ended or terminated, as shown below:

**Lead wires are open:**
- Standard lead wire ending manner for front-connected, rear-connected and flush-mounted breakers. Lead wires from accessories are derived vertically, thereby enabling contact mounting.

**Lead wires specifications**

<table>
<thead>
<tr>
<th>accessory</th>
<th>Grade</th>
<th>Size (mm²)</th>
<th>Finished OD (mm)</th>
<th>Length (mm)</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>SH</td>
<td>Heat resistant</td>
<td>0.5</td>
<td>3.0</td>
<td>500</td>
<td>Black</td>
</tr>
<tr>
<td>UV</td>
<td>Heat resistant</td>
<td>3.5</td>
<td>5.0</td>
<td>500</td>
<td>Black</td>
</tr>
<tr>
<td>AX</td>
<td></td>
<td>1.8</td>
<td>7.0</td>
<td>700</td>
<td>Grey</td>
</tr>
<tr>
<td>AL</td>
<td></td>
<td>1.8</td>
<td>7.0</td>
<td>700</td>
<td>Black</td>
</tr>
</tbody>
</table>

**Lead wires are terminated in a terminal block:**
- Optional lead wire termination manner for front-connected and rear-connected breakers.
- There are two types of terminal blocks available depending on the direction in which lead wires are derived; vertical and horizontal. See pages 6-61 to 6-67 for details.

**Lead wires are ended at auxiliary circuit (self-engaging) terminals:**
- Standard lead wire ending manner for plug-in breakers.
- See pages 9-4 and 9-7 for the standard arrangement of auxiliary circuit terminals.
- Contact us for other arrangements.
## 2. Connection diagrams and terminal numbers

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Combination symbol</th>
<th>Connection diagram and terminal No.</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short trip device</td>
<td>SH</td>
<td>![Connection Diagram]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>With anti-burn switch</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>S2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>S1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>C1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>C2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Without anti-burn switch</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>D1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>D2</td>
<td></td>
</tr>
<tr>
<td>Undervoltage trip</td>
<td>UV</td>
<td>![Connection Diagram]</td>
<td></td>
</tr>
<tr>
<td>device</td>
<td></td>
<td>![Connection Diagram]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Applicable to E50-SF, E100-SF, TL-1000NE and TL-1200NE. UVT controller is required for AC UVT. See page 6-18 for the details.</strong></td>
<td></td>
</tr>
<tr>
<td>Auxiliary switch</td>
<td>AX</td>
<td>![Connection Diagram]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>1pc Aux. SW installed.</strong></td>
<td></td>
</tr>
<tr>
<td>Alarm switch</td>
<td>AL</td>
<td>![Connection Diagram]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>2pcs Alarm. SW installed. Available for S125-SF, S250-SF, S630, S800, S1250 and S1600.</strong></td>
<td></td>
</tr>
</tbody>
</table>
### 3. Possible combinations

<table>
<thead>
<tr>
<th>Type</th>
<th>Economical series</th>
<th>S50-SF</th>
<th>S100-NF</th>
<th>E225-NF</th>
<th>E250-SF</th>
<th>S1250-GE</th>
<th>S1250-NE</th>
<th>S1600-NE</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-fault level series</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current limiting series</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current limiting series</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor protection series</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of poles</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Notes:

1. The two-pole type breaker obtained by modifying a three-pole breaker by removing the conductive part of its central pole is regarded as the same as the three-pole type.
### Molded Case Circuit Breakers

<table>
<thead>
<tr>
<th>Type</th>
<th>E50-SF</th>
<th>E50-SF</th>
<th>E100-SF</th>
<th>E100-SF</th>
<th>Number of poles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economical series</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Standard series</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High-fault level series</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current limiting series</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of poles: 1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>AX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Motor protection series

<table>
<thead>
<tr>
<th>Type</th>
<th>E50-CM</th>
</tr>
</thead>
<tbody>
<tr>
<td>AX</td>
<td></td>
</tr>
<tr>
<td>AL</td>
<td></td>
</tr>
<tr>
<td>SH</td>
<td></td>
</tr>
<tr>
<td>UV</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

1. The two-pole type breaker obtained by modifying a three-pole breaker by removing the conductive part of its central pole is regarded as the same as the three-pole type.
2. For the four-pole type, also see the column for the three-pole type.
3. A breaker with AC UVT is provided with an external UVT controller. See page 6-18.
## 3. Possible combinations

### Molded Case Circuit Breakers

#### Switch disconnectors

<table>
<thead>
<tr>
<th>Type</th>
<th>S125-SN</th>
<th>S100-NN</th>
<th>S250-SN</th>
<th>S400-NN</th>
<th>S630-GN</th>
<th>S800-NN</th>
<th>S1250-NN</th>
<th>S1600-NN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>AX</td>
<td><img src="AX1.png" alt="Image" /></td>
<td><img src="AX2.png" alt="Image" /></td>
<td><img src="AX3.png" alt="Image" /></td>
<td><img src="AX4.png" alt="Image" /></td>
<td><img src="AX5.png" alt="Image" /></td>
<td><img src="AX6.png" alt="Image" /></td>
<td><img src="AX7.png" alt="Image" /></td>
<td><img src="AX8.png" alt="Image" /></td>
</tr>
<tr>
<td>AL</td>
<td><img src="AL1.png" alt="Image" /></td>
<td><img src="AL2.png" alt="Image" /></td>
<td><img src="AL3.png" alt="Image" /></td>
<td><img src="AL4.png" alt="Image" /></td>
<td><img src="AL5.png" alt="Image" /></td>
<td><img src="AL6.png" alt="Image" /></td>
<td><img src="AL7.png" alt="Image" /></td>
<td><img src="AL8.png" alt="Image" /></td>
</tr>
<tr>
<td>SH</td>
<td><img src="SH1.png" alt="Image" /></td>
<td><img src="SH2.png" alt="Image" /></td>
<td><img src="SH3.png" alt="Image" /></td>
<td><img src="SH4.png" alt="Image" /></td>
<td><img src="SH5.png" alt="Image" /></td>
<td><img src="SH6.png" alt="Image" /></td>
<td><img src="SH7.png" alt="Image" /></td>
<td><img src="SH8.png" alt="Image" /></td>
</tr>
<tr>
<td>UV</td>
<td><img src="UV1.png" alt="Image" /></td>
<td><img src="UV2.png" alt="Image" /></td>
<td><img src="UV3.png" alt="Image" /></td>
<td><img src="UV4.png" alt="Image" /></td>
<td><img src="UV5.png" alt="Image" /></td>
<td><img src="UV6.png" alt="Image" /></td>
<td><img src="UV7.png" alt="Image" /></td>
<td><img src="UV8.png" alt="Image" /></td>
</tr>
</tbody>
</table>

#### Combinations of accessories

- AX
- AL
- SH
- UV

### Molded Case Circuit Breakers

#### Non-automatic breakers

<table>
<thead>
<tr>
<th>Type</th>
<th>XS2000NN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>3</td>
</tr>
<tr>
<td>AX</td>
<td><img src="AX1.png" alt="Image" /></td>
</tr>
<tr>
<td>AL</td>
<td><img src="AL1.png" alt="Image" /></td>
</tr>
<tr>
<td>SH</td>
<td><img src="SH1.png" alt="Image" /></td>
</tr>
<tr>
<td>UV</td>
<td><img src="UV1.png" alt="Image" /></td>
</tr>
</tbody>
</table>

### Notes:

- A breaker with AC UVT is provided with an external UVT controller. See page 6-18.
4. Ratings and operation data of auxiliary and alarm switches

(1) Ratings of AX and AL

* The applicable load of the switch shall be no larger than the rating and no smaller than the minimum load.

<table>
<thead>
<tr>
<th>Type of breaker</th>
<th>Standard</th>
<th>For microload</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage (V)</td>
<td>Current (A)</td>
<td>Voltage (V)</td>
</tr>
<tr>
<td>Resistive load</td>
<td>Inductive load</td>
<td>Resistive load</td>
</tr>
<tr>
<td>E225-NF</td>
<td>480</td>
<td>250</td>
</tr>
<tr>
<td>E250-SF</td>
<td>250</td>
<td>125</td>
</tr>
<tr>
<td>S100-NF,S100-GF</td>
<td>125</td>
<td>3</td>
</tr>
<tr>
<td>S125-NF</td>
<td>125</td>
<td>3</td>
</tr>
<tr>
<td>S125-SN</td>
<td>125</td>
<td>3</td>
</tr>
<tr>
<td>S225-GE</td>
<td>125</td>
<td>3</td>
</tr>
</tbody>
</table>

Note: 1 This is a custom-made product. When ordering for this product, specify that it is intended for minute load use.

Note: 2 The inductive load means power factor of no smaller than 0.4 and time constant of no larger than 7 ms.

(2) Operation of AX and AL

<table>
<thead>
<tr>
<th>Switch</th>
<th>Breaker status</th>
<th>[ON]</th>
<th>[OFF]</th>
<th>[TRIP]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary switch (AX) status</td>
<td>11/AXc-14/AXa “Closed”</td>
<td>11/AXc-14/AXa “Open”</td>
<td>11/AXc-14/AXa “Open”</td>
<td></td>
</tr>
<tr>
<td>Alarm switch (AL) status</td>
<td>91/ALc-94/ALa “Open”</td>
<td>91/ALc-94/ALa “Open”</td>
<td>91/ALc-94/ALa “Closed”</td>
<td></td>
</tr>
</tbody>
</table>
## 5. Shunt trip device (SH)

### Ratings of SHT

<table>
<thead>
<tr>
<th>Type of breaker</th>
<th>Rated voltage</th>
<th>AC (V)</th>
<th>DC (V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E225-NF</td>
<td>100-120</td>
<td>200-240</td>
<td>380-450</td>
</tr>
<tr>
<td>E250-SF</td>
<td>0.014</td>
<td>0.014</td>
<td>0.0065</td>
</tr>
<tr>
<td>S50-GF, S50-SF</td>
<td>100-115</td>
<td>200-480</td>
<td></td>
</tr>
<tr>
<td>S100-NF, S100-GF</td>
<td>0.03</td>
<td></td>
<td>0.03</td>
</tr>
<tr>
<td>S125-NF, S125-GF</td>
<td>0.045</td>
<td>0.045</td>
<td></td>
</tr>
<tr>
<td>S125-SF</td>
<td>0.05</td>
<td></td>
<td>0.05</td>
</tr>
<tr>
<td>S225-NF, S225-SF</td>
<td>0.065</td>
<td>0.065</td>
<td></td>
</tr>
<tr>
<td>S250-NF, S250-GF</td>
<td>0.07</td>
<td>0.07</td>
<td>0.07</td>
</tr>
<tr>
<td>S250-SF</td>
<td>0.08</td>
<td></td>
<td>0.08</td>
</tr>
<tr>
<td>S400-CF, S400-NF</td>
<td>0.09</td>
<td></td>
<td>0.09</td>
</tr>
<tr>
<td>S400-GF, S400-GE</td>
<td>0.1</td>
<td></td>
<td>0.1</td>
</tr>
<tr>
<td>S400-PF, S400-PF</td>
<td>0.11</td>
<td></td>
<td>0.11</td>
</tr>
<tr>
<td>S630-CF, S630-NF, S630-RF</td>
<td>0.12</td>
<td></td>
<td>0.12</td>
</tr>
<tr>
<td>S800-CF, S800-NF, S800-RF</td>
<td>0.13</td>
<td></td>
<td>0.13</td>
</tr>
<tr>
<td>S1250-NE, S1250-GE</td>
<td></td>
<td></td>
<td>0.14</td>
</tr>
<tr>
<td>S1600-NE</td>
<td>0.15</td>
<td></td>
<td>0.15</td>
</tr>
<tr>
<td>H100-NF, L100-NF</td>
<td>0.16</td>
<td></td>
<td>0.16</td>
</tr>
<tr>
<td>H225-NF, L225-NF</td>
<td>0.17</td>
<td></td>
<td>0.17</td>
</tr>
<tr>
<td>H125-NF, L125-NF</td>
<td>0.18</td>
<td></td>
<td>0.18</td>
</tr>
<tr>
<td>H400-NE, L400-NE</td>
<td>0.19</td>
<td></td>
<td>0.19</td>
</tr>
<tr>
<td>H630-NE, L630-NE</td>
<td>0.2</td>
<td></td>
<td>0.2</td>
</tr>
<tr>
<td>H800-NE, L800-NE</td>
<td>0.21</td>
<td></td>
<td>0.21</td>
</tr>
<tr>
<td>S100-NM</td>
<td>0.22</td>
<td></td>
<td>0.22</td>
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<tr>
<td>S225-NM</td>
<td>0.23</td>
<td></td>
<td>0.23</td>
</tr>
<tr>
<td>S100-NN</td>
<td>0.24</td>
<td></td>
<td>0.24</td>
</tr>
<tr>
<td>S125-SN</td>
<td>0.25</td>
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<td>0.25</td>
</tr>
<tr>
<td>S250-SN</td>
<td>0.26</td>
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<td>0.26</td>
</tr>
<tr>
<td>S400-NN</td>
<td>0.27</td>
<td></td>
<td>0.27</td>
</tr>
<tr>
<td>S630-GN</td>
<td>0.28</td>
<td></td>
<td>0.28</td>
</tr>
<tr>
<td>S800-NN</td>
<td>0.29</td>
<td></td>
<td>0.29</td>
</tr>
<tr>
<td>S1250-NN</td>
<td>0.3</td>
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</tr>
<tr>
<td>S1600-NN</td>
<td>0.31</td>
<td></td>
<td>0.31</td>
</tr>
</tbody>
</table>

### Notes:

1. Exclusive use for 200V class and 400V class.
2. The permissible voltage range is from 85% to 110% of the rated voltage for AC or 75% to 125% thereof for DC.
3. Ensure that the voltage does not drop exceeding the permissible voltage range when SHT is actuated.
4. Breaker contacts usually start opening within 30 ms after the rated voltage is applied to the breaker.
# 6. Undervoltage trip device (UV)

## Ratings of UVT with Inst

<table>
<thead>
<tr>
<th>Type of breaker</th>
<th>Power supply capacity, VA</th>
<th>Exciting current, mA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AC (V)</td>
<td>DC (V)</td>
</tr>
<tr>
<td>Rated voltage</td>
<td>100-120</td>
<td>200-240</td>
</tr>
</tbody>
</table>

**Ratings of UVT with Inst**

<table>
<thead>
<tr>
<th>Type of breaker</th>
<th>Power supply capacity, VA</th>
<th>Exciting current, mA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AC (V)</td>
<td>DC (V)</td>
</tr>
<tr>
<td>Rated voltage</td>
<td>100-110</td>
<td>115-120</td>
</tr>
</tbody>
</table>

Note: 1: No UVT controller is required.

## Notes:

1. No UVT controller is required.
2. Equipped with the UVT controller. See page 6-18 for specifications of the UVT controller.
6. Undervoltage trip device (UV)

**UVT controller**
- See pages 6-17 for the breakers on which the UVT controller is installed.
- A breaker equipped with the AC UV need a UVT controller. The UVT controller is installed on the breaker by default. Separate installation of the controller is also available on request. If the breaker is of flush-mounted (FP) type, the UVT controller is separately installed by default. Also a UVT controller (type XCU1D) with a time delay of less than 500 ms is available on request.

**UVT controller connection diagram**

![UVT controller connection diagram](image)

**Mounting dimensions and terminal arrangement of the UVT controller installed on the breaker**

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Type of breaker</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>E100-SF</td>
<td>12.5</td>
<td>36</td>
<td></td>
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<tr>
<td>100</td>
<td>E100-SF</td>
<td>30.5</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>1200</td>
<td>TL-1000NE, TL-1200NE</td>
<td>114 (130)</td>
<td>—</td>
<td>92</td>
</tr>
</tbody>
</table>

**Notes:**
1. Dimension A shown in parentheses ( ) are the case fitted with OCR controller.
2. Tightening torque of terminal screws: 0.88 – 1.18 N·m
3. Applicable wire size: 2.0 mm² max
6. Undervoltage trip device (UV)

**UVT with time delays for TemBreak2**

TemBreak2 UVT are available with 500±300 msec time delays. UVT controller is installed on the breaker.

### Rating of UVT with time delay

**Time delays: 500±300 msec.**

<table>
<thead>
<tr>
<th>Applicable breakers</th>
<th>Power supply capacity, VA</th>
<th>Exciting current, mA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AC (V)</td>
<td>DC (V)</td>
</tr>
<tr>
<td></td>
<td>100-110</td>
<td>115-120</td>
</tr>
<tr>
<td></td>
<td>230-240</td>
<td>380-415</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>100-110</td>
</tr>
<tr>
<td></td>
<td></td>
<td>230-240</td>
</tr>
</tbody>
</table>

- **S50-GF, S100, S125, E250, S225, S250, H100, H125, H225, H100, L125, L225, S400, H400, L400**
- **S630, S800, H630, L630, H800, L800, S1250, S1600**

### Mounting dimensions and terminal arrangement of the UVT controller installed on the breaker

- **Notes:**
  1. Tightening torque of terminal screws: 0.9 – 1.2 N·m
  2. Applicable lead wire size: 2.0 mm² max

- The UVT controller is installed in the right hand side of the breaker

- The UVT controller is installed in the left hand side of the breaker

---

**Exciting current, mA**

<table>
<thead>
<tr>
<th>Rated voltage</th>
<th>AC (V)</th>
<th>DC (V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-110</td>
<td>1.1</td>
<td>22</td>
</tr>
<tr>
<td>115-120</td>
<td>1.3</td>
<td>7.6</td>
</tr>
<tr>
<td>200-220</td>
<td>2.1</td>
<td>6.3</td>
</tr>
<tr>
<td>230-240</td>
<td>2.5</td>
<td>8.3</td>
</tr>
<tr>
<td>380-415</td>
<td>1.5</td>
<td>8.6</td>
</tr>
<tr>
<td>440-450</td>
<td>1.7</td>
<td>9.3</td>
</tr>
<tr>
<td>100-110</td>
<td>22</td>
<td>13</td>
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<tr>
<td>115-120</td>
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<td>13</td>
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<tr>
<td>200-220</td>
<td>6.3</td>
<td>11</td>
</tr>
<tr>
<td>230-240</td>
<td>8.3</td>
<td>11</td>
</tr>
<tr>
<td>380-415</td>
<td>8.6</td>
<td></td>
</tr>
<tr>
<td>440-450</td>
<td>9.3</td>
<td></td>
</tr>
<tr>
<td>100-110</td>
<td>22</td>
<td>13</td>
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<tr>
<td>115-120</td>
<td>7.6</td>
<td>13</td>
</tr>
<tr>
<td>200-220</td>
<td>6.3</td>
<td>11</td>
</tr>
<tr>
<td>230-240</td>
<td>8.3</td>
<td>11</td>
</tr>
<tr>
<td>380-415</td>
<td>8.6</td>
<td></td>
</tr>
<tr>
<td>440-450</td>
<td>9.3</td>
<td></td>
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<tr>
<td>100-110</td>
<td>22</td>
<td>13</td>
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<tr>
<td>115-120</td>
<td>7.6</td>
<td>13</td>
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<tr>
<td>200-220</td>
<td>6.3</td>
<td>11</td>
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<tr>
<td>230-240</td>
<td>8.3</td>
<td>11</td>
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<tr>
<td>380-415</td>
<td>8.6</td>
<td></td>
</tr>
<tr>
<td>440-450</td>
<td>9.3</td>
<td></td>
</tr>
</tbody>
</table>
1. Overview

Motor operator
Allows electrical operation (closing, opening and resetting) of the breaker.

External operating handle
Allows the breaker installed in a switchboard or box to be operated from outside.
Breaker-mounted
The handle is mounted directly on the breaker.
Door-mounted (depth adjustable)
The handle is coupled to the breaker through a shaft.

Toggle extension
Lessens the force required to close, open or reset the breaker.
(Applicable to breakers with a frame size of 600A or larger)

Mechanical interlock
Provides an interlock that allows one of two breakers to be closed.
Slide type

Toggle holder
Holds the breaker on or off when simply fitted onto the breaker toggle.

Toggle lock
Allows the breaker to be locked on or off with commercially available padlocks.

Terminal cover
Prevents live parts of the breaker from being exposed.
For front-connected breakers
For rear-connected and plug-in breakers
For front-connected breakers with cable clamps

Interpole barrier
Enhances electrical insulation between poles and prevents short-circuit due to electrically conductive foreign matter.

Terminal block
Terminates lead wires from internally mounted accessories.

Door flange
Is intended to cover the cutout of a switchboard from the front.

DIN rail adaptor
Allows the breaker to be mounted on DIN rails.
2. Toggle extension (HA)

Outline dimensions

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Type of breaker</th>
<th>Toggle extension</th>
<th>Order codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>630</td>
<td>S630-CT, S630-MF, S630-NE</td>
<td>①</td>
<td>T2HA80</td>
</tr>
<tr>
<td></td>
<td>S630-RF, S630-NE</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>S630-SN, H630-NE, L630-NE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>800</td>
<td>S800-CT, S800-MF, S800-NE</td>
<td>①</td>
<td>T2HA80</td>
</tr>
<tr>
<td></td>
<td>S800-RF, S800-NE</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>S800-SN, H800-NE, L800-NE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1000</td>
<td>TL-1000NE</td>
<td>②</td>
<td>XHA9B</td>
</tr>
<tr>
<td>1200</td>
<td>TL-1200NE</td>
<td>②</td>
<td>XHA9B</td>
</tr>
<tr>
<td>1250</td>
<td>S1250-NE, S1250-GE, S1250-MN</td>
<td>②</td>
<td>T2HA80</td>
</tr>
<tr>
<td>1600</td>
<td>S1600-NE, S1600-NN</td>
<td>②</td>
<td>T2HA80</td>
</tr>
<tr>
<td>2000</td>
<td>XS2000NE, XS2000NN</td>
<td>③</td>
<td>XHA10</td>
</tr>
</tbody>
</table>

Note: ① Optional. Specify when ordering.
② One is supplied with every five breakers. Please specify if more are required.
③ Supplied as standard.

Mounting and Removal
Pull lock pins out left and right in direction of the arrows, and slot the toggle extension in place.
The lock pins are spring loaded.
Removal—Pull out left and right hand lock pins and hold while removing.
3. Toggle holder (HH) and toggle lock (HL)

### Toggle holder (HH)

Simply fitting the toggle holder onto the breaker toggle disables breaker operation without using padlocks.

### Toggle lock (HL)

The toggle lock is a tool that locks the breaker on or off. When an overcurrent occurs, the breaker will trip even if the breaker toggle is locked in the ON position. (Use commercially available padlocks).

### Toggle holders/toggle locks

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Type of breaker</th>
<th>Toggle holder</th>
<th>Marking codes</th>
<th>Order codes</th>
<th>Marking codes</th>
<th>Figure</th>
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</thead>
<tbody>
<tr>
<td>50</td>
<td>S50-SF</td>
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<td>T2HH5L</td>
<td>1</td>
<td>T2HL5L</td>
<td>2</td>
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<tr>
<td>100</td>
<td>S100-NF, S50-GF</td>
<td>T2HH5S</td>
<td>T2HH5S</td>
<td>1</td>
<td>T2HL5S</td>
<td>2</td>
</tr>
<tr>
<td></td>
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<td>225</td>
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<td>3</td>
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<td>S400-GE</td>
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<td>S400-PP, S400-PF</td>
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<tr>
<td></td>
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<td>S630-SN</td>
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<td>800</td>
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<td>1250</td>
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<td>T2HLX6</td>
<td>T2HLX6</td>
<td>6 (l=86)</td>
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<td>for 1P ~ TKB-50SH (TAA-5CR)</td>
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<td>7 (a)</td>
<td>TKB-50SG</td>
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<td></td>
<td>for 2P ~ TAA-52BH (TAA-5CR)</td>
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<td>7 (b)</td>
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<tr>
<td></td>
<td>for 3P ~ TAA-53BH (TAA-5CR)</td>
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<td>7 (c)</td>
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<tr>
<td>630 SF, 1100-NN, 150-CM</td>
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<td></td>
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<td>XKC10</td>
<td>6 (l=94)</td>
<td>XKC10</td>
<td>6 (l=94)</td>
</tr>
</tbody>
</table>

**Notes:**

1. Same as toggle lock.
2. Order codes shown in parentheses "(     )" are toggle caps. The colour is Red.
3. A hole must be drilled in the breaker toggle. Please state "with toggle lock (HL)" when ordering.
Toggle holder (HH): Make sure the lock lever of the toggle holder is in the UNLOCK position, fit the toggle holder onto the toggle and swing the lock lever to the LOCK position. The toggle is now locked on or off.

Toggle lock (HL): Padlock the toggle in the ON or OFF position.

---

Fig. 1

Fig. 2

Padlock
Up to three padlocks can be used

Fig. 3

Padlock
Up to three padlocks can be used

Fig. 4

Padlock
Up to three padlocks can be used

Fig. 5

Padlock
Up to three padlocks can be used

Fig. 6

Padlock
Up to three padlocks can be used

Length to the lever tip
ø8 or less

(a) (b)
Accessories
Molded Case Circuit Breakers

4. Motor operators (MC)

4-1. TemBreak2

Motor driven type

<table>
<thead>
<tr>
<th>Accessories</th>
<th>Molded Case Circuit Breakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of breaker</td>
<td>Notes:</td>
</tr>
<tr>
<td>T2MC12 / T2MC25</td>
<td>- Permissible operating range is 85 to 110%. A power transformer is available as option for AC800V or AC400-460V.</td>
</tr>
<tr>
<td>T2MC25L</td>
<td>- The currents shown are the maximum values at the maximum rated operational voltage.</td>
</tr>
<tr>
<td>T2MC40</td>
<td>- The operating time is the value when the rated operational voltage is supplied. Allow a longer time for the motor operator to complete the operation.</td>
</tr>
<tr>
<td>T2MC80</td>
<td>- The motor operator is of a short time duty. Do not subject it to more than 10 continuous ON-OFF operations. If this occurs, allow the motor operator to cool for at least 15 minutes.</td>
</tr>
<tr>
<td>T2MC40/80</td>
<td>- When the rated operational voltage is DC24V the open voltage will be DC22V.</td>
</tr>
</tbody>
</table>

Features

Installation and removal ease
T2MC12/25/25L: Simply rotate two knobs allows the motor operator to be installed on or removed from the breaker.
T2MC40/80: The compact and lightweight design enables easy installation and removal.

High-speed, stable actuation
The operating time as short as up to 0.1 second makes it possible to use the motor operators for synchronized closing of breakers.

Silent operation
T2MC12/25/25L use a direct drive system, providing operational silence.

“Lock-in off” capability
This capability allows the breaker to be padlocked in the OFF state. Up to three padlocks with a 5 to 8 mm hasp diameter can be used. Padlocks are not supplied.

Compact and lightweight
T2MC40/80 is of compact design where the OCR of the breakers do not hide behind the operator, and thus does not need to be removed when changes in setting of the OCR are to be made.
Motorized operation

The motor operator has an input-signal self-hold circuit; closing the ON or OFF switch (see circuit diagrams shown below) momentarily allows activating the motor operator. To reset the tripped breaker to the OFF position, close the OFF (RESET) switch. The voltage presence LED indication is on when the power is supplied to the motor operator.

Auto reset feature (optional)

The auto reset feature allows the breaker to be automatically reset approx. 1.5 seconds after the breaker trips open. This option contains auto-reset switches and does not require to use auxiliary or alarm switches installed in the breaker.

Note: that after the thermal OCR trips a thermal-magnetic breaker, the breaker cannot be immediately closed though it can be auto-reset.

Wait for a few minutes after the tripping and provide a close signal to the breaker.

This option resets the tripped breaker automatically, regardless of the cause of the tripping.

Manual operation

T2MC12/25/25L: Pull the operating handle out. Rotating the handle counterclockwise turns ON the breaker and clockwise turns OFF or resets the breaker.

T2MC40/80: Use the spring charging handle to charge the spring and press the ON or TRIP button.

T2MC40/80: When the TRIP button is pressed while the control power is supplied, the breaker turns OFF and if equipped with an alarm switch, it provides an output signal.

Operation precautions

1. Ensure that the actual operation voltage ranges from 85% to 110% of the rated one.
2. Use operation switches whose ratings and power capacity is as specified in the “Ratings and Specifications” table on the previous page.
3. Use noise filters if the control power supply of the motor operator is shared by peripheral devices. Otherwise, power supply noise may cause malfunction of the peripheral devices.
4. When the motors are used in conjunction with the mechanical interlock the electrical interlock should be provided between the motors in order to avoid the simultaneous closing. The followings are the available electrical interlock cables.

Control circuit diagrams of motor operators
4. Motor operators (MC)

4-2. TemBreak

Motor driven type

<table>
<thead>
<tr>
<th>Ratings and Specifications</th>
<th>XMB1</th>
<th>XMB10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series/type of breaker</td>
<td>E50-SF E100-SF</td>
<td>XS200NE XS200NN</td>
</tr>
<tr>
<td>Rated operational voltage</td>
<td>AC100-110V AC200-220V DC100V</td>
<td>AC100-110V AC200-220V DC100-110V</td>
</tr>
<tr>
<td>Auto reset</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>Peak steady-state/starting current, A</td>
<td>AC100-110V 2.0/4.5 0.85/3.5</td>
<td>AC200-220V 1.6/2.1</td>
</tr>
<tr>
<td>Operating method</td>
<td>Motor driven</td>
<td>Motor driven</td>
</tr>
<tr>
<td>Operating time, s at rated voltage</td>
<td>ON 1.2</td>
<td>OFF/RESET 0.85</td>
</tr>
<tr>
<td>Operating switch ratings</td>
<td>250V, 5A</td>
<td>250V, 5A</td>
</tr>
<tr>
<td>Power supply required</td>
<td>100 VA or higher</td>
<td>300VA or higher</td>
</tr>
<tr>
<td>Dielectric withstand voltage (for one minute)</td>
<td>AC1000V</td>
<td>AC1000V</td>
</tr>
<tr>
<td>Weight</td>
<td>1.8</td>
<td>16</td>
</tr>
</tbody>
</table>

Notes: ① Ensure that the actual operation voltage is within the following range: 85% to 110% of the AC rated voltage, or 75% to 110% of the DC rated voltage. In case the rated operation voltage is AC 380 V or AC 400 to 460 V, optional power supply transformers are available on request.

② Auto reset require to use auxiliary switch (1b) installed in the breaker. If the number of auxiliary switches is insufficient, actuate an external relay via an auxiliary switch (1a) and use the relay contact (1b) for auto reset.

③ The currents shown are the maximum values at the maximum rated operational voltage.

④ The operating time assume the motor operator is supplied with the rated operation voltage. Longer operating time will be required under actual operating conditions.

⑤ The motor operator is short-time rated. The number of continuous switching (ON-OFF) cycles must not exceed 10. After any 10 continuous switching cycles, provide a pause of at least 15 minutes to the motor operator for cooling.

⑥ Can be custom-made on request. The outline dimensions of the motor operator will be larger. An auto-reset switch cannot be used. Contact us for details.
Operation mechanism

Motorized operation

■ Breaker ON
Closing the ON switch throws the motor switch from contact status “1-2” to “3-2”, thereby activating the X relay and energizing the motor operator to turn the breaker ON. When the breaker turns ON, the motor switch is thrown from contact status “3-2” to “1-2”, thereby releasing the X relay to de-energize and stop the motor operator.

■ Breaker OFF
Closing the OFF/RESET switch throws the motor switch from contact status “3-2” to “1-2”, thereby activating the Y relay and energizing the motor operator to turn the breaker OFF. When the breaker turns OFF, the motor switch is thrown from contact status “1-2” to “3-2”, thereby releasing the Y relay to de-energize and stop the motor operator.

■ Breaker RESET
To reset the tripped breaker to the OFF position, close the OFF/RESET switch.

■ Breaker auto-reset (optional)
Using the AUTO RESET auxiliary switch (1b) of the breaker allows resetting the breaker automatically when the breaker trips open.

Note: Do not use a normally closed switch as the ON switch. Doing so will result in “ON-TRIP-RESET-ON” cycles repeated unless the cause of tripping is removed.

Manual operation
Mount the operating handle onto the mounting shaft located on the front of the motor operator and rotate the shaft to turn the breaker ON or OFF. Rotating the handle anti-clockwise turns ON the breaker and clockwise turns OFF or resets the breaker. When the operating handle is mounted, the motorized operation mechanism is disengaged. Removing the handle engages the motorized operation mechanism to enable motorized operation.

■ Handle switch
With the addition of a handle switch, the motor operator mechanism can be automatically brought to the manually operated position (ON or OFF) on removal of the handle, providing that the motor operator is powered up.

Operation precautions
● When the breaker is ON and is then tripped, the ON/OFF indicator on the motor operator will indicate ON until the breaker is reset. Note: The breaker’s condition may differ.
● When a thermal-magnetic breaker is tripped by the thermal OCR, wait for a few minutes; then reset the breaker.
● When a breaker equipped with the UVT device is in the OFF position and the UVT device is deenergized, the breaker cannot be closed. To close such a breaker, perform ON and OFF (RESET) operation on the motor operator once and repeat ON operation. The breaker will be able to closed.
(Breaker XS2000NE can be closed without the need for the ON and OFF (RESET) operation on the motor operator described above).
● Use noise filters if the control power supply of the motor operator is shared by peripheral devices. Otherwise, power supply noise may cause malfunction of the peripheral devices.

Control circuit diagrams of motor operators
4. Motor operators (MC)

4-3. TemBreak2, TemBreak

Spring charged type

- Manual operating handle
- Indicator
- Lock plate
- Control circuit terminal

(T2MCX6 / XMD9)

**Ratings and Specifications**

<table>
<thead>
<tr>
<th></th>
<th>T2MCX6</th>
<th>XMD9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicable breakers</td>
<td>S1250-RE, S1250-GE, S1250-NN, S1600-RE, S1600-NN</td>
<td>TL-1000NE, TL-1200NE</td>
</tr>
<tr>
<td>Rated operational voltage ¹</td>
<td>●AC100-115V, ●AC200-230V, ●DC100-110V, ●DC24V</td>
<td></td>
</tr>
<tr>
<td>Peak steady-state/ starting current, A ²</td>
<td>AC100-115V ON —/3.1</td>
<td>OFF, RESET 1.8/8.0</td>
</tr>
<tr>
<td></td>
<td>AC200-230V ON —/7.2</td>
<td>OFF, RESET 1.8/8.0</td>
</tr>
<tr>
<td></td>
<td>DC100-110V ON —/0.8</td>
<td>OFF, RESET 1.1/4.2</td>
</tr>
<tr>
<td></td>
<td>DC24V ON —/4.5</td>
<td>OFF, RESET 4.0/12.0</td>
</tr>
<tr>
<td>Operation method</td>
<td>Spring charged</td>
<td></td>
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<tr>
<td>Operating time, s</td>
<td>ON (Max) 0.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OFF/RESET 3.0</td>
<td></td>
</tr>
<tr>
<td>Power supply required</td>
<td>300VA</td>
<td></td>
</tr>
<tr>
<td>Dielectric withstand voltage (for one minute)</td>
<td>AC1500V ⁴</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>6.4kg</td>
<td></td>
</tr>
</tbody>
</table>

**Features**

**★ Clear status indication**

Color indication: Red means ON, green OFF and white TRIPPED.

**★ Quick closing**

Energy in a charged spring closes the breaker 60 msec or less.
High-speed, time-stable operation is ensured after multiple times of closing cycles.

**★ Equipped with anti-pumping circuit**

When the closing signal is applied, TRIP-RESET-ON cycles are not repeated even though the cause of tripping is in the breaker.

**★ Ease of manual ON-OFF operation**

Simply pressing the ON or OFF button closes or opens the breaker.

**★“Lock-in off” capability**

This capability allows the breaker to be pad-locked in the OFF state. Padlocks are not supplied.

---

¹: Permissible operating range
AC—85 to 110%
DC—75 to 115%
A power transformer is available as option for AC380V or AC400-460V.

²: The currents shown are the maximum values at the maximum rated operational voltage.

³: The operating time is the value when the rated operational voltage is supplied. Allow a longer time for the motor operator to complete the operation.

⁴: Dielectric withstand voltage for DC 24 V motor is AC 500 V.
**Operation mechanism**

### Motorized operation

**Breaker ON**
Closing the ON switch activates the latch release coil (LRC), thereby releasing the closing spring to turn the breaker ON.

**Breaker OFF (RESET)**
Closing the OFF/RESET switch activates the (Y) control relay, thereby starting the motor to turn the breaker OFF. At the same time, the closing spring is charged. The motor is deenergized when the breaker turns OFF (RESET).

**Breaker auto-reset (optional)**
The auto-reset option uses an auto-reset switch (alarm switch) through which the closing spring is charged and the breaker is reset automatically after the breaker trips open. This option both for XMD and T2MC will be factory wired.

**Manual operation** *

**Breaker ON · OFF (RESET)**
Pulling down the operating lever turns the breaker ON and OFF/REST alternately.
The handle returns to the original position when released.

* With auto-charge/discharge feature:
  When manual ON operation is performed while the control power is applied, the handle switch (HS) operates to discharge the closing spring.
  OFF operation causes the closing spring to be charged.
  When manual ON or OFF operation is performed while the control power is lost, and afterwards the control power is recovered, the closing spring is discharged or charged in the same manner as described above.
  When the auto-charge/discharge action is in progress, mechanical noises will be heard. The noises however do not mean a failure.

### Operation Precautions
- Ensure that the actual operation voltage ranges from 85% to 110% for AC or 75% to 110% for DC of the rated one.
- The currents shown are the maximum values at the maximum rated operational voltage.
- When conducting the dielectric withstand voltage test, apply voltage between the control terminal group and ground. Ensure that the test voltage does not exceed AC 1500 V (AC 500 V if the rated operation voltage is DC 24 V).
- If the breaker is equipped with the UVT device, ensure that the UVT device is reset before providing a closing signal to the breaker.
- It takes up to three seconds to complete motorized OFF operation. If the breaker requires to be immediately opened from a remote location in an emergency, add the SHT or UVT device to the breaker for remote electrical tripping.
- When a thermal-magnetic breaker is tripped by the thermal OCR, wait for a few minutes; then reset the breaker.
- Make sure that the current and switching capacities of the operation switch are appropriate for the application.
- Avoid repeated and continuous applications of the operation power supply to the motor operator.
- Use noise filters if the control power supply of the motor operator is shared by peripheral devices. Otherwise, power supply noise may cause malfunction of the peripheral devices.
- Be sure to apply power to control power terminal MP1. If the breaker is turned ON or OFF manually without power applied to MP1, the auto-charge/discharge feature is disabled, and thus the motor operator will not be activated next time. In such a case, applying the rated operation voltage between control power terminals MP1 and MP2 will enable the auto charge/discharge feature.
5. External operating handles

5-1. Breaker-mounted (field installable) (HB)

The external operating handle is a tool that allows the breaker installed in a switchboard to be operated from outside and complies with IEC 60204-1.

The breaker-mounted type external operating handle is designed to be mounted directly to the breaker body.

### Mounting instructions

The external operating handle has not been mounted on the breakers.

For details on how to mount the handle, see the Operating Instructions packaged with the product.

#### [1] Mounting of external operating handle assembly

- Make sure that the breaker is in the OFF position.
- Put the external operating handle assembly onto the breaker in place so that the breaker handle is engaged with the handle catch of the assembly.
  - Tighten the screw to secure the handle assembly.

#### [2] Installation of handle escutcheon and latch plate

- Drill holes in the panel according to the panel cutout dimensions.
  - Sandwich the panel between the handle escutcheon and latch plate and temporarily tighten using the supplied screws.
- Close the panel.
  - Make adjustment so that the gap between the handle assembly and handle escutcheon is even and the assembly is not inclined against the breaker.

### Breaker mounting direction

The ON and OFF positions of the handle and the positions of drilled holes in the panel do not need to be changed depending on the breaker mounting direction. The upper power supply type is standard. If a non-standard type is required, state the type when ordering.

- **For a change in mounting direction**, see the Operating Instructions packaged with the product.
Panel lock mechanism
The external operating handle keeps the panel door locked when in the ‘ON’ position. There are two types, RESET, Open and OFF, Open.

(1) Reset, Open (Standard type)
The handle is turned to the ‘RESET/OPEN COVER’ position to open the panel door.

(2) OFF, Open
The handle is turned to the OFF position to open the panel door.

Panel lock release knob
The release knob enables the panel door to be opened with the handle in the ‘ON’ position. To release: turn the release knob in the direction of anti-clockwise with a flat-bladed screwdriver.

Safety interlock (Standard)
The safety interlock prevents the breaker from turning ON as long as the panel is open. This interlock can be released using the hook lever.

Possible combinations of breaker and external operating handle

<table>
<thead>
<tr>
<th>Frame size</th>
<th>Type of breaker</th>
<th>Type of external operating handle</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>S50-SF</td>
<td>T2HB12</td>
</tr>
<tr>
<td>100</td>
<td>S100-SF</td>
<td>T2HB12</td>
</tr>
<tr>
<td></td>
<td>S100-GF</td>
<td>T2HB12</td>
</tr>
<tr>
<td></td>
<td>T100-MF</td>
<td>T2HB25</td>
</tr>
<tr>
<td></td>
<td>L100-MF</td>
<td>T2HB25</td>
</tr>
<tr>
<td></td>
<td>S100-NM</td>
<td>T2HB12</td>
</tr>
<tr>
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<td>S100-NN</td>
<td>T2HB12</td>
</tr>
<tr>
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<td>S125-SF</td>
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</tr>
<tr>
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<td>T2HB12</td>
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<td>S125-SR</td>
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<td>S125-NR</td>
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<td>S225-GF</td>
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<tr>
<td></td>
<td>S225-GE</td>
<td>T2HB25</td>
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<tr>
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<td>T2HB25</td>
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<tr>
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<td>E225-NR</td>
<td>T2HB12</td>
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To be stated when ordering

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<td>T2HB12</td>
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<tr>
<td>T2HB25L</td>
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<tr>
<td>T2HB40</td>
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<td>T2HB60</td>
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<table>
<thead>
<tr>
<th>Type of external operating handle</th>
<th>Breaker mounting direction</th>
<th>Panel lock</th>
<th>Protection degree</th>
<th>Colour</th>
<th>Key lock</th>
</tr>
</thead>
<tbody>
<tr>
<td>T2HB12</td>
<td>U: Upper power supply type</td>
<td>R: RESET open</td>
<td>F: OFF open</td>
<td>Black handle (Light gray base)</td>
<td>W: with key lock</td>
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<td>T2HB16L</td>
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<td>T2HB25</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>T2HB25L</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T2HB40</td>
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<tr>
<td>T2HB60</td>
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<table>
<thead>
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<th>Dia.</th>
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<td>13 mm</td>
<td>ø5.5-8</td>
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Protection degree (IEC 60529)

<table>
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<tr>
<th>Protection degree</th>
<th>Colour</th>
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<tbody>
<tr>
<td>IP30</td>
<td>standard specification</td>
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<tr>
<td>IP50</td>
<td>optional, with a dust proof packing</td>
</tr>
<tr>
<td>IP55</td>
<td>special specification</td>
</tr>
</tbody>
</table>

Toggle lock mechanism

Padlock (Standard)
This mechanism allows the breaker to be padlocked in the OFF position. Padlocks are not supplied. Up to three padlocks can be installed.

Key lock (Optional)
Key locking is possible in the OFF position. Key lock is not available for the breakers marked by ① in the following table.

Key lock mechanism

■ Protection degree (IEC 60529)
5. External operating handles

Outline dimensions

T2HB16L

Outline dimensions

- Positions of the hinge and handle as seen from the load side of the breaker. Ensure that the hinge is positioned in the area.

Panel cutout dimensions

- Panel lock release
- Hook lever
- Handle escutcheon
- Panel
- Plate thickness 1.2-3.2

Applicable breaker types

S50-SF  S125-SF  S125-SN

ASL: Arrangement Standard Line
HL: Handle Frame Centre Line
CL: Handle Centre Line
T2HB25L

<table>
<thead>
<tr>
<th>Applicable breaker types</th>
</tr>
</thead>
<tbody>
<tr>
<td>E250-SF</td>
</tr>
</tbody>
</table>

- **Outline dimensions**

- **Panel cutout dimensions**

- **Positions of the hinge and handle as seen from the load side of the breaker.** Ensure that the hinge is positioned in the area.

ASL: Arrangement Standard Line
HL: Handle Frame Centre Line
CL: Handle Centre Line
5. External operating handles

**Outline dimensions**

<table>
<thead>
<tr>
<th>T2HB12</th>
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</thead>
</table>

**Applicable breaker types**

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<thead>
<tr>
<th>S50-GF</th>
<th>S100-NF</th>
<th>S100-GF</th>
<th>S100-NM</th>
<th>S100-NN</th>
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</thead>
<tbody>
<tr>
<td>S125-NF</td>
<td>S125-GF</td>
<td>S125-NN</td>
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</tbody>
</table>

**Panel cutout dimensions**

- Handles escutcheon
- Hook lever
- Panel lock release
- Key for key lock (optional)
- Panel
- Plate thickness 1.2-3.2
- Indicator
- Breaker

- Positions of the hinge and handle as seen from the load side of the breaker. Ensure that the hinge is positioned in the area.

**Outline dimensions**

- ASL: Arrangement Standard Line
- HL: Handle Frame Centre Line
- CL: Handle Centre Line
### T2HB25

#### Applicable breaker types

<table>
<thead>
<tr>
<th>Breaker Type</th>
<th>A</th>
</tr>
</thead>
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<td>E225-NF</td>
<td>106 ± 2</td>
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<td>S225-NF</td>
<td></td>
</tr>
<tr>
<td>S225-NM</td>
<td></td>
</tr>
<tr>
<td>E250-NF</td>
<td></td>
</tr>
<tr>
<td>S250-NF</td>
<td></td>
</tr>
<tr>
<td>S250-GF</td>
<td></td>
</tr>
<tr>
<td>H100-NF</td>
<td>141 ± 2</td>
</tr>
<tr>
<td>L100-NF</td>
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<td>H225-NF</td>
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<td>L225-NF</td>
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<tr>
<td>S225-GE</td>
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</tr>
<tr>
<td>H125-NF</td>
<td></td>
</tr>
<tr>
<td>L125-NF</td>
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</tr>
</tbody>
</table>

#### Outline dimensions

- Handle escutcheon
- Hook lever
- Panel lock release
- Key for key lock (optional)
- Plate thickness 1.2-3.2

#### Panel cutout dimensions

- ASL: Arrangement Standard Line
- HL: Handle Frame Centre Line
- CL: Handle Centre Line

- Positions of the hinge and handle as seen from the load side of the breaker. Ensure that the hinge is positioned in the shaded area.

---

**Panel lock release**

**Hook lever**

**Handle escutcheon**

**Key for key lock (optional)**

**Plate thickness 1.2-3.2**

---

**Positions of the hinge and handle as seen from the load side of the breaker. Ensure that the hinge is positioned in the shaded area.**
5. External operating handles

**Outline dimensions**

For the model T2HB40:

<table>
<thead>
<tr>
<th>Applicable breaker types</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>S400-CF</td>
<td>150 ± 2</td>
<td>97</td>
</tr>
<tr>
<td>S400-NF</td>
<td>150 ± 2</td>
<td>97</td>
</tr>
<tr>
<td>S400-GE</td>
<td>150 ± 2</td>
<td>97</td>
</tr>
<tr>
<td>S400-PF</td>
<td>150 ± 2</td>
<td>97</td>
</tr>
<tr>
<td>S400-PE</td>
<td>150 ± 2</td>
<td>97</td>
</tr>
<tr>
<td>S400-NN</td>
<td>150 ± 2</td>
<td>97</td>
</tr>
<tr>
<td>H400-NE</td>
<td>187 ± 2</td>
<td>134</td>
</tr>
<tr>
<td>L400-NE</td>
<td>187 ± 2</td>
<td>134</td>
</tr>
</tbody>
</table>

ASL: Arrangement Standard Line
HL: Handle Frame Centre Line
CL: Handle Centre Line

- Positions of the hinge and handle as seen from the load side of the breaker. Ensure that the hinge is positioned in the **bold** area.
T2HB80

<table>
<thead>
<tr>
<th>Applicable breaker types</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>S630-CF S630-NE S630-RF</td>
<td>37 A</td>
</tr>
<tr>
<td>S800-CF S800-NE S800-RF</td>
<td>130</td>
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<tr>
<td>H630-NE L630-NE</td>
<td>187</td>
</tr>
<tr>
<td>H800-NE L800-NE</td>
<td>187</td>
</tr>
</tbody>
</table>

### Outline dimensions
- Handle escutcheon
- Hook lever
- Panel lock release
- Indicator

### Panel cutout dimensions
- Positions of the hinge and handle as seen from the load side of the breaker.
  Ensure that the hinge is positioned in the area.

**ASL**: Arrangement Standard Line
**HL**: Handle Frame Centre Line
**CL**: Handle Centre Line
5. External operating handles

5-2. Breaker-mounted (HB)

The external operating handle is a tool that allows the breaker installed in a switchboard to be operated from outside. The breaker-mounted type external operating handle is designed to be mounted directly to the breaker body.

### Outer view

![Outer view](image)

### Mounting instructions

The external operating handle has not been mounted on the breakers. For details on how to mount the handle, see the Operating Instructions packaged with the product.

#### [1] Mounting of external operating handle assembly

1.1 Secured to backplate (TFJ21B / TFJ21XH)

- Make sure that the breaker is in the OFF position.
- Put the external operating handle assembly onto the breaker in place so that the breaker toggle is engaged with the slide lever of the assembly. Secure the assembly together with the breaker to the back plate.

![Diagram](image)

1.2 Secured to breaker cover (TFJ38X / T2HBX6)

- Make sure that the breaker is in the OFF position.
- Remove the four breaker cover mounting screws at the positions where the external operating handle assembly is secured.
- Put the handle assembly onto the breaker in place so that the breaker toggle is engaged with the slide lever of the assembly. Use the supplied mounting screws to secure the assembly to the breaker.

![Diagram](image)

#### [2] Installation of handle escutcheon and latch plate

- Drill holes in the panel according to the panel cutout dimensions. Sandwich the panel between the handle escutcheon and latch plate and temporarily tighten using the supplied screws.
- Close the panel. Make adjustment so that the gap between the handle assembly and handle escutcheon is even and the assembly is not inclined against the breaker.

![Diagram](image)

### Breaker mounting direction

The ON and OFF positions of the handle and the positions of drilled holes in the panel do not need to be changed depending on the breaker mounting direction. The upper power supply type is standard. If a non-standard type is required, state the type when ordering.

<table>
<thead>
<tr>
<th>R: Right power supply type</th>
<th>U: Upper power supply type (standard)</th>
<th>L: Left power supply type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>Power supply</td>
<td>Power supply</td>
</tr>
</tbody>
</table>

* For a change in mounting direction, see the Operating Instructions packaged with the product.
The external operating handle keeps the panel door locked when in the ‘ON’ position. There are two types, RESET, Open and OFF, Open.

(1) Reset, Open (Standard type)
The handle is turned to the ‘RESET/OPEN COVER’ position to open the panel door.

(2) OFF, Open
The handle is turned to the OFF position to open the panel door.

- Panel lock release knob
  The release knob enables the panel door to be opened with the handle in the ‘ON’ position. To release: turn the release knob in the direction of anti-clockwise with a flat-bladed screwdriver.

- Safety interlock (Standard)
The safety interlock prevents the breaker from turning ON as long as the panel is open. This interlock can be released using the hook lever.

- Padlock (Standard)
  This mechanism allows the breaker to be padlocked in the ON or OFF position. Padlocks are not supplied. Up to three padlocks can be installed.

**Protection degree (IEC 60529)**

<table>
<thead>
<tr>
<th>Protection degree</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP30</td>
<td>Standard specification</td>
</tr>
<tr>
<td>IP50</td>
<td>Optional, with a dust proof packing</td>
</tr>
<tr>
<td>IP55</td>
<td>Special specification</td>
</tr>
</tbody>
</table>

**Dustproof packing for IP50 (optional) (mm)**

<table>
<thead>
<tr>
<th>Type of handle</th>
<th>Type of dustproof packing</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>TFJ21B</td>
<td>Dustproof packing /2</td>
<td>93</td>
<td>73</td>
<td>7</td>
</tr>
<tr>
<td>TFJ38X</td>
<td>Dustproof packing /3</td>
<td>145</td>
<td>117</td>
<td>7</td>
</tr>
<tr>
<td>T2HBX6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Possible combinations of breaker and external operating handle**

<table>
<thead>
<tr>
<th>Type of external operating handle</th>
<th>Type of breaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>TFJ21B</td>
<td>E50-SF,E50-CM</td>
</tr>
<tr>
<td>TFJ21XH</td>
<td>E100-SF</td>
</tr>
<tr>
<td>TFJ38X</td>
<td>TL-1000NE,TL-1200NE</td>
</tr>
<tr>
<td>T2HBX6</td>
<td>S1250-NE,S1250-GE,S1250-NN</td>
</tr>
<tr>
<td></td>
<td>S1600-NE,S1600-NN</td>
</tr>
</tbody>
</table>

**To be stated when ordering**

**Order code** TFJ38X

<table>
<thead>
<tr>
<th>Type of external operating handle</th>
<th>Breaker mounting direction</th>
<th>Panel lock</th>
<th>Protection degree</th>
<th>Colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>TFJ21B</td>
<td>U: Upper power supply type #</td>
<td>R : RESET open #</td>
<td>3 : IP30 #</td>
<td>B : Black handle (Black base) #</td>
</tr>
<tr>
<td>TFJ38X</td>
<td>R: Right power supply type</td>
<td>F : OFF open</td>
<td>5 : IP50</td>
<td>R : Red handle (Yellow base)</td>
</tr>
<tr>
<td>T2HBX6</td>
<td>L: Left power supply type</td>
<td></td>
<td>55 : IP55 (special spec.)</td>
<td></td>
</tr>
</tbody>
</table>

*: Standard specification.
## 5. External operating handles

### Outline dimensions

#### T2HBX6

<table>
<thead>
<tr>
<th>Applicable breaker types</th>
<th>A (mm)</th>
<th>Mounting screw</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1250-NE, S1250-GE</td>
<td>197 ± 2</td>
<td>M6 × 110, 4 pcs</td>
</tr>
<tr>
<td>S1250-NN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S1600-NE, S1600-NN</td>
<td>217 ± 2</td>
<td></td>
</tr>
</tbody>
</table>

* Secured to breaker cover.

![Outline dimensions diagram](image1)

### Panel cutout dimensions

![Panel cutout dimensions diagram](image2)

#### Toggle extension for T2HBX6 (optional)

![Toggle extension diagram](image3)
### TFJ21B
**Applicable breaker types**
- E50-SF, E50-CM

**Mounting screw**
- M4 × 72, 2 pcs

Secured to backing plate.

### TFJ21XH
**Applicable breaker types**
- E100-SF

**Mounting screw**
- M4 × 75, 2 pcs

Secured to backing plate.

---

**Outline dimensions**
- Plate thickness: 1.2-3.2
- Panel cutout dimensions
- Relative positions of the hinge and handle as seen from the load side of the breaker

- Panel lock release
- Hook lever
- Panel cutout dimensions
- Relative positions of the hinge and handle as seen from the load side of the breaker

ASL: Arrangement Standard Line
HL: Handle Frame Centre Line
CL: Handle Centre Line

Secured to backing plate.
5. External operating handles

### Outline dimensions

**TFJ38X**

<table>
<thead>
<tr>
<th>Applicable breaker types</th>
<th>Mounting screw</th>
</tr>
</thead>
<tbody>
<tr>
<td>TL-1000NE</td>
<td>M6 × 110, 4 pcs</td>
</tr>
<tr>
<td>TL-1200NE</td>
<td></td>
</tr>
</tbody>
</table>

* Secured to breaker cover.

- **Outline dimensions**
- **Panel cutout dimensions**
- **Relative positions of the hinge and handle as seen from the load side of the breaker**

**Toggle extension for TFJ38X (optional)**

**Order code**

THC5
5-3. Door-mounted (depth adjustable) (HP)

Door-mounted type external operating handles allow breakers installed in control centers or switchboards to be manually operated from outside and complies with IEC 60204-1. This handle assembly consists of an operation mechanism section which is to be installed in the breaker body, a handle section which is to be installed in a panel and a square shaft which couples both the sections.

■ Outer view

![Outer view](image)

■ Operation direction of handles

Rotate the operating handle clockwise to turn the breaker on.

![Operation direction](image)

■ Breaker mounting direction

The ON and OFF positions of the handle and the positions of drilled holes in the panel do not need to be changed depending on the breaker mounting direction.
5. External operating handles

- **Panel lock mechanism**
  The external operating handle keeps the panel door locked when in the ‘ON’ position. There are two types, RESET, Open and OFF, Open.

  (1) Reset, Open (Standard type)
  The handle is turned to the ‘RESET/OPEN COVER’ position to open the panel door.

  (2) OFF, Open
  The handle is turned to the OFF position to open the panel door.

- **Panel lock release knob**
  The release knob enables the panel door to be opened with the handle in the ‘ON’ position. To release: turn the release knob in the direction of anti-clockwise with a flat-bladed screwdriver.

- **Toggle lock mechanism**
  - **Padlock (Standard)**
    This mechanism allows the breaker to be padlocked in the OFF position.
    Padlocks are not supplied.
    Up to three padlocks can be installed.

  - **Key lock (Optional)**
    Key locking is possible in the OFF position.

<table>
<thead>
<tr>
<th>Padlock dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of handle</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>T2HP</td>
</tr>
</tbody>
</table>

- **Protection degree (IEC 60529)**
  - IP54: standard specification
  - IP65: special specification

- **Dimensions of square shafts available**
  There are the following shaft dimensions available. Select an appropriate shaft depending on the mounting position of the breaker. Cut the shaft to an appropriate length if required. Coat the cut end faces of the shaft with an anti-corrosion paint.

<table>
<thead>
<tr>
<th>Shafts order codes</th>
<th>Lx (mm)</th>
<th>Lb (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T2PS251</td>
<td>121</td>
<td></td>
</tr>
<tr>
<td>T2PS252</td>
<td>221</td>
<td></td>
</tr>
<tr>
<td>T2PS253</td>
<td>321</td>
<td></td>
</tr>
<tr>
<td>T2PS254</td>
<td>421</td>
<td></td>
</tr>
<tr>
<td>T2PS801</td>
<td>147.5</td>
<td>8</td>
</tr>
<tr>
<td>T2PS802</td>
<td>247.5</td>
<td></td>
</tr>
<tr>
<td>T2PS803</td>
<td>347.5</td>
<td>14</td>
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<tr>
<td>T2PS804</td>
<td>447.5</td>
<td></td>
</tr>
</tbody>
</table>

- **To be stated when ordering**
  - **Order code**: T2HP25
  - **Type of external operating handle**
    - T2HP12
    - T2HP25
    - T2HP40
    - T2HP80
    - T2HPX6
  - **Panel lock**
    - R: RESET open
    - F: OFF open
  - **Protection degree**
    - S: IP54
    - 6: IP65
  - **Colour**
    - B: Black handle (Light gray base)
    - R: Red handle (Yellow base)
  - **Key lock**
    - W: with key lock
    - T: without key lock

  *: standard specification
### Possible combinations of breaker and external operating handle

<table>
<thead>
<tr>
<th>Frame size</th>
<th>Type of breaker</th>
<th>Type of external operating handle</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>E50-SF, E50-CN</td>
<td>T1HP50</td>
</tr>
<tr>
<td></td>
<td>S50-SF</td>
<td>T2HP10L</td>
</tr>
<tr>
<td></td>
<td>S50-GF</td>
<td>T2HP12</td>
</tr>
<tr>
<td>100</td>
<td>E100-SF</td>
<td>T1HP10X</td>
</tr>
<tr>
<td></td>
<td>S100-NF</td>
<td>T2HP12</td>
</tr>
<tr>
<td></td>
<td>S100-GF</td>
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<tr>
<td></td>
<td>H100-NF</td>
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<td>1000</td>
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<td>TL-1200NE</td>
<td>T1HPX6</td>
</tr>
<tr>
<td>1250</td>
<td>S1250-NE</td>
<td>T2HPX6</td>
</tr>
<tr>
<td></td>
<td>S1250-GE</td>
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<tr>
<td></td>
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<td>1600</td>
<td>S1600-NE</td>
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</tr>
<tr>
<td></td>
<td>S1600-NN</td>
<td></td>
</tr>
</tbody>
</table>
5. External operating handles

■ Outline dimensions

T2HP16L

- Outline dimensions
- Panel cutout dimensions

• Positions of the hinge and handle as seen from the load side of the breaker. Ensure that the hinge is positioned in the area.

Applicable breaker types

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Square shaft applicable</th>
<th>Shaft support</th>
</tr>
</thead>
<tbody>
<tr>
<td>S55-SF</td>
<td>229 min.</td>
<td>56</td>
<td>107</td>
<td>186</td>
<td>T2PS251</td>
<td>Yes</td>
</tr>
<tr>
<td>S125-SF</td>
<td>243 max.</td>
<td>70</td>
<td>121</td>
<td>186</td>
<td>T2PS252</td>
<td>Yes</td>
</tr>
<tr>
<td>S125-SN</td>
<td>343 max.</td>
<td>170</td>
<td>221</td>
<td>186</td>
<td>T2PS253</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>543 max.</td>
<td>270</td>
<td>321</td>
<td>186</td>
<td>T2PS254</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Note:
- "Min (minimum)" means the minimum possible distance from the panel surface to the breaker mounting surface, which can be formed by cutting the square shaft.
- "Max (maximum)" means the maximum distance of the same section, which is formed with no cutting of the square shaft.

A: Distance from the panel surface to the breaker mounting surface
B: Length of the tube used to cover the square shaft
C: Length of the square shaft used
D: Distance from the tip of the shaft support to the breaker mounting surface
### Outline dimensions

#### T2HP25L

- **Outline dimensions**

![Outline dimensions diagram]

- **Panel cutout dimensions**

![Panel cutout dimensions diagram]

- **Positions of the hinge and handle as seen from the load side of the breaker. Ensure that the hinge is positioned in the area.**

#### Table: Applicable breaker types

<table>
<thead>
<tr>
<th>Applicable breaker types</th>
<th>A (min)</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Square shaft applicable</th>
<th>Shaft support</th>
</tr>
</thead>
<tbody>
<tr>
<td>E250-SF</td>
<td>229</td>
<td>56</td>
<td>107</td>
<td>186</td>
<td>T2HP251</td>
<td>Yes</td>
</tr>
<tr>
<td>E250-SF</td>
<td>243</td>
<td>70</td>
<td>121</td>
<td>186</td>
<td>T2HP252</td>
<td>Yes</td>
</tr>
<tr>
<td>E250-SN</td>
<td>343</td>
<td>170</td>
<td>221</td>
<td>186</td>
<td>T2PS252</td>
<td>Yes</td>
</tr>
<tr>
<td>E250-SN</td>
<td>443</td>
<td>270</td>
<td>321</td>
<td>186</td>
<td>T2PS253</td>
<td>Yes</td>
</tr>
<tr>
<td>E250-SN</td>
<td>543</td>
<td>370</td>
<td>421</td>
<td>186</td>
<td>T2PS254</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Note:**

- "Min (minimum)" means the minimum possible distance from the panel surface to the breaker mounting surface, which can be formed by cutting the square shaft.
- "Max (maximum)" means the maximum distance of the same section, which is formed with no cutting of the square shaft.

A: Distance from the panel surface to the breaker mounting surface  
B: Length of the tube used to cover the square shaft  
C: Length of the square shaft used  
D: Distance from the tip of the shaft support to the breaker mounting surface
5. External operating handles

### Outline dimensions

**T2HP12**

- **Outline dimensions**

  ![](image1.png)

- **Panel cutout dimensions**

  ![](image2.png)

### Applicable breaker types

<table>
<thead>
<tr>
<th>Applicable breaker types</th>
<th>A (min)</th>
<th>B (max)</th>
<th>C (max)</th>
<th>D (max)</th>
<th>Square shaft applicable</th>
<th>Shaft support</th>
</tr>
</thead>
<tbody>
<tr>
<td>S50-GF</td>
<td>229</td>
<td>56</td>
<td>107</td>
<td>186</td>
<td>T2PS251</td>
<td>Yes</td>
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<td>S100-NF</td>
<td>243</td>
<td>70</td>
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<td>186</td>
<td>T2PS252</td>
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<td>S100-NN</td>
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<td>221</td>
<td>186</td>
<td>T2PS253</td>
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</tr>
<tr>
<td>S125-NF</td>
<td>443</td>
<td>270</td>
<td>321</td>
<td>186</td>
<td>T2PS254</td>
<td>Yes</td>
</tr>
<tr>
<td>S125-NN</td>
<td>543</td>
<td>370</td>
<td>421</td>
<td>186</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
- "Min (minimum)" means the minimum possible distance from the panel surface to the breaker mounting surface, which can be formed by cutting the square shaft.
- "Max (maximum)" means the maximum distance of the same section, which is formed with no cutting of the square shaft.

A: Distance from the panel surface to the breaker mounting surface
B: Length of the tube used to cover the square shaft
C: Length of the square shaft used
D: Distance from the tip of the shaft support to the breaker mounting surface
### Outline dimensions

#### T2HP25

- **Outline dimensions**

```
\[ \text{Diagram showing outline dimensions} \]
```

- **Panel cutout dimensions**

```
\[ \text{Diagram showing panel cutout dimensions} \]
```

#### Applicable breaker types

<table>
<thead>
<tr>
<th>Applicable breaker types</th>
<th>A (min.)</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Square shaft applicable</th>
<th>Shaft support</th>
</tr>
</thead>
<tbody>
<tr>
<td>E225-NF</td>
<td>229</td>
<td>70</td>
<td>170</td>
<td>200</td>
<td>T2P25</td>
<td>Yes</td>
</tr>
<tr>
<td>S250-NF</td>
<td>243</td>
<td>70</td>
<td>171</td>
<td>200</td>
<td>T2P25</td>
<td>Yes</td>
</tr>
<tr>
<td>H100-NF</td>
<td>343</td>
<td>70</td>
<td>171</td>
<td>200</td>
<td>T2P25</td>
<td>Yes</td>
</tr>
<tr>
<td>H225-NF</td>
<td>443</td>
<td>70</td>
<td>171</td>
<td>200</td>
<td>T2P25</td>
<td>Yes</td>
</tr>
<tr>
<td>S225-GE</td>
<td>543</td>
<td>70</td>
<td>171</td>
<td>200</td>
<td>T2P25</td>
<td>Yes</td>
</tr>
</tbody>
</table>

#### Note:

- **Min (minimum)** means the minimum possible distance from the panel surface to the breaker mounting surface, which can be formed by cutting the square shaft.
- **Max (maximum)** means the maximum distance of the same section, which is formed with no cutting of the square shaft.

**A:** Distance from the panel surface to the breaker mounting surface  
**B:** Length of the tube used to cover the square shaft  
**C:** Length of the square shaft used  
**D:** Distance from the tip of the shaft support to the breaker mounting surface
## 5. External operating handles

### Outline dimensions

**T2HP40**

**Outline dimensions**

![Outline dimensions diagram]

**Panel cutout dimensions**

![Panel cutout dimensions diagram]

### Applicable breaker types

<table>
<thead>
<tr>
<th>Applicable breaker types</th>
<th>A (mm)</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Square shaft applicable</th>
<th>Shaft support</th>
</tr>
</thead>
<tbody>
<tr>
<td>S400-CF S400-NF S400-NE</td>
<td>270 min.</td>
<td>12</td>
<td>107.5</td>
<td>—</td>
<td>—</td>
<td>T2PS401</td>
</tr>
<tr>
<td>S400-GF S400-GE S400-PF</td>
<td>310 max.</td>
<td>52</td>
<td>147.5</td>
<td>—</td>
<td>—</td>
<td>T2PS401</td>
</tr>
<tr>
<td>S400-PE S400-NN</td>
<td>340 min.</td>
<td>80</td>
<td>247.5</td>
<td>261</td>
<td>T2PS402</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>340 max.</td>
<td>10</td>
<td>177.5</td>
<td>261</td>
<td>T2PS402</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>410 max.</td>
<td>180</td>
<td>347.5</td>
<td>261</td>
<td>T2PS403</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>610 max.</td>
<td>280</td>
<td>447.5</td>
<td>261</td>
<td>T2PS404</td>
<td>Yes</td>
</tr>
<tr>
<td>H400-NE L400-NE</td>
<td>307 min.</td>
<td>12</td>
<td>107.5</td>
<td>—</td>
<td>—</td>
<td>T2PS401</td>
</tr>
<tr>
<td></td>
<td>347 max.</td>
<td>52</td>
<td>147.5</td>
<td>—</td>
<td>—</td>
<td>T2PS401</td>
</tr>
<tr>
<td></td>
<td>377 min.</td>
<td>10</td>
<td>177.5</td>
<td>298</td>
<td>T2PS402</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>447 max.</td>
<td>80</td>
<td>247.5</td>
<td>298</td>
<td>T2PS404</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>547 max.</td>
<td>180</td>
<td>347.5</td>
<td>298</td>
<td>T2PS404</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>647 max.</td>
<td>280</td>
<td>447.5</td>
<td>298</td>
<td>T2PS404</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Notes:

1. "Min (minimum)" means the minimum possible distance from the panel surface to the breaker mounting surface, which can be formed by cutting the square shaft.
2. "Max (maximum)" means the maximum distance of the same section, which is formed with no cutting of the square shaft.
3. When dimension A is in a range of 310 mm to 340 mm, cut square shaft T2PS402 to an appropriate length and use the shaft without shaft support.

A: Distance from the panel surface to the breaker mounting surface  
B: Length of the tube used to cover the square shaft  
C: Length of the square shaft used  
D: Distance from the tip of the shaft support to the breaker mounting surface
Notes:
1. “Min (minimum)” means the minimum possible distance from the panel surface to the breaker mounting surface, which can be formed by cutting the square shaft.
2. “Max (maximum)” means the maximum distance of the same section, which is formed with no cutting of the square shaft.
3. When dimension A is in a range of 310 mm to 340 mm, cut square shaft T2PS402 PS401 to an appropriate length and use the shaft without shaft support.

A: Distance from the panel surface to the breaker mounting surface
B: Length of the tube used to cover the square shaft
C: Length of the square shaft used
D: Distance from the tip of the shaft support to the breaker mounting surface

Applicable breaker types

<table>
<thead>
<tr>
<th>Applicable breaker types</th>
<th>A 1</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Square shaft applicable</th>
<th>Shaft support</th>
</tr>
</thead>
<tbody>
<tr>
<td>S630-CF</td>
<td>270 min.</td>
<td>12</td>
<td>107.5</td>
<td>—</td>
<td>T2PS401</td>
<td>Non</td>
</tr>
<tr>
<td>S630-NE</td>
<td>310 max.</td>
<td>52</td>
<td>147.5</td>
<td>—</td>
<td>T2PS402</td>
<td>Yes</td>
</tr>
<tr>
<td>S800-CF</td>
<td>340 min.</td>
<td>10</td>
<td>177.5</td>
<td>261</td>
<td>T2PS403</td>
<td>Yes</td>
</tr>
<tr>
<td>S800-NE</td>
<td>410 max.</td>
<td>80</td>
<td>247.5</td>
<td>261</td>
<td>T2PS404</td>
<td>Yes</td>
</tr>
<tr>
<td>H800-NE</td>
<td>307 min.</td>
<td>12</td>
<td>107.5</td>
<td>—</td>
<td>T2PS401</td>
<td>Non</td>
</tr>
<tr>
<td>H800-NE</td>
<td>347 max.</td>
<td>52</td>
<td>147.5</td>
<td>—</td>
<td>T2PS402</td>
<td>Yes</td>
</tr>
<tr>
<td>L800-NE</td>
<td>377 min.</td>
<td>10</td>
<td>177.5</td>
<td>298</td>
<td>T2PS403</td>
<td>Yes</td>
</tr>
<tr>
<td>L800-NE</td>
<td>447 max.</td>
<td>80</td>
<td>247.5</td>
<td>298</td>
<td>T2PS404</td>
<td>Yes</td>
</tr>
<tr>
<td>L800-NE</td>
<td>547 max.</td>
<td>180</td>
<td>347.5</td>
<td>298</td>
<td>T2PS404</td>
<td>Yes</td>
</tr>
<tr>
<td>L800-NE</td>
<td>647 max.</td>
<td>280</td>
<td>447.5</td>
<td>298</td>
<td>T2PS404</td>
<td>Yes</td>
</tr>
</tbody>
</table>
5. External operating handles

### Outline dimensions

**T2HPX6**

- **Outline dimensions**

**Panel cutout dimensions**

- **Positions of the hinge and handle as seen from the load side of the breaker.**
  Ensure that the hinge is positioned in the area.

---

### Applicable breaker types

<table>
<thead>
<tr>
<th>Applicable breaker types</th>
<th>A (mm)</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Square shaft applicable</th>
<th>Shaft support</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1250-NE S1250-GE S1250-NN</td>
<td>36/mm</td>
<td>52</td>
<td>147.5</td>
<td>317</td>
<td>T2P401</td>
<td>Non</td>
</tr>
<tr>
<td></td>
<td>46/mm</td>
<td>80</td>
<td>247.5</td>
<td>317</td>
<td>T2P402</td>
<td></td>
</tr>
<tr>
<td></td>
<td>56/mm</td>
<td>180</td>
<td>347.5</td>
<td>317</td>
<td>T2P403</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>66/mm</td>
<td>280</td>
<td>447.5</td>
<td>317</td>
<td>T2P404</td>
<td></td>
</tr>
<tr>
<td>S1600-NE S1600-NN</td>
<td>36/mm</td>
<td>52</td>
<td>147.5</td>
<td>337</td>
<td>T2P401</td>
<td>Non</td>
</tr>
<tr>
<td></td>
<td>46/mm</td>
<td>80</td>
<td>247.5</td>
<td>337</td>
<td>T2P402</td>
<td></td>
</tr>
<tr>
<td></td>
<td>56/mm</td>
<td>180</td>
<td>347.5</td>
<td>337</td>
<td>T2P403</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>66/mm</td>
<td>280</td>
<td>447.5</td>
<td>337</td>
<td>T2P404</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**

- Min (minimum) means the minimum possible distance from the panel surface to the breaker mounting surface, which can be formed by cutting the square shaft.
- Max (maximum) means the maximum distance of the same section, which is formed with no cutting of the square shaft.

A: Distance from the panel surface to the breaker mounting surface
B: Length of the tube used to cover the square shaft
C: Length of the square shaft used
D: Distance from the tip of the shaft support to the breaker mounting surface

ASL: Arrangement Standard Line
HL: Handle Frame Centre Line
CL: Handle Centre Line

Accessories
Molded Case Circuit Breakers
Exterally mounted accessories
**Outline dimensions**

**T1HP05, T1HP10X**

- **Outline dimensions**

- **Panel cutout dimensions**

---

### Applicable breaker types

<table>
<thead>
<tr>
<th>Type</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Square shaft applicable</th>
<th>Shaft support</th>
</tr>
</thead>
<tbody>
<tr>
<td>E50-SF, E50-CM (T1HP05)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>230min.</td>
<td>56</td>
<td>107</td>
<td>194</td>
<td></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>250max.</td>
<td>70</td>
<td>121</td>
<td>194</td>
<td></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>350max.</td>
<td>170</td>
<td>221</td>
<td>194</td>
<td></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>450max.</td>
<td>270</td>
<td>321</td>
<td>194</td>
<td></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>550max.</td>
<td>370</td>
<td>421</td>
<td>194</td>
<td></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>E100-SF (T1HP10X)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>236min.</td>
<td>56</td>
<td>107</td>
<td>194</td>
<td>T2PS251</td>
<td>Yes</td>
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<tr>
<td>254max.</td>
<td>70</td>
<td>121</td>
<td>194</td>
<td>T2PS252</td>
<td>Yes</td>
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<tr>
<td>564max.</td>
<td>170</td>
<td>221</td>
<td>194</td>
<td>T2PS253</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>236min.</td>
<td>56</td>
<td>107</td>
<td>194</td>
<td>T2PS254</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

---

**Note:**

"Min (minimum)" means the minimum possible distance from the panel surface to the breaker mounting surface, which can be formed by cutting the square shaft.

"Max (maximum)" means the maximum distance of the same section, which is formed with no cutting of the square shaft.

---

A: Distance from the panel surface to the breaker mounting surface
B: Length of the tube used to cover the square shaft
C: Length of the square shaft used
D: Distance from the tip of the shaft support to the breaker mounting surface

---

ASL: Arrangement Standard Line
HL: Handle Frame Centre Line
CL: Handle Centre Line
5. External operating handles

![Diagram of external operating handles]

**Outline dimensions**

**T1HPX6**

- **Panel cutout dimensions**
- **Mounting dimensions**

### Table: Applicable breaker types

<table>
<thead>
<tr>
<th>Applicable breaker types</th>
<th>A (mm)</th>
<th>B (mm)</th>
<th>C (mm)</th>
<th>D (mm)</th>
<th>Square shaft applicable</th>
<th>Shaft support</th>
</tr>
</thead>
<tbody>
<tr>
<td>TL-1000NE</td>
<td>TL-1200NE</td>
<td>387/min.</td>
<td>52</td>
<td>147.5</td>
<td>337</td>
<td>T2PS401</td>
</tr>
<tr>
<td>487/max.</td>
<td>80</td>
<td>247.5</td>
<td>337</td>
<td>T2PS402</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>587/max.</td>
<td>180</td>
<td>347.5</td>
<td>337</td>
<td>T2PS403</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>687/max.</td>
<td>280</td>
<td>447.5</td>
<td>337</td>
<td>T2PS404</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

1. “Min (minimum)” means the minimum possible distance from the panel surface to the breaker mounting surface, which can be formed by cutting the square shaft.
2. “Max (maximum)” means the maximum distance of the same section, which is formed with no cutting of the square shaft.

A: Distance from the panel surface to the breaker mounting surface
B: Length of the tube used to cover the square shaft
C: Length of the square shaft used
D: Distance from the tip of the shaft support to the breaker mounting surface
(4) Door-mounted (depth fixed) (HP)

Door-mounted type external operating handles allow breakers installed in control centers or switchboards to be manually operated from outside.

■ Outer view

■ Operation mechanism

ON
Turn the handle clockwise to the ‘ON’ position on the indication plate.

OFF
Turn the handle anti-clockwise to the ‘OFF’ position on the indication plate.

RESET
When the breaker trips, the handle indicates tripped turn the handle anti-clockwise to the RESET position. This will reset the breaker.

OPENING THE PANEL
Turn the handle anti-clockwise to ‘OPEN COVER’. The lock is released and the panel can be opened.

■ Panel lock mechanism

The external operating handle keeps the panel door locked when in the ‘ON’, ‘OFF’ or ‘TRIP’ position.
Hook holder shown in the outline dimension drawing should be provided.

- Panel lock release knob
  When the release knob is turned clockwise the panel door can be opened irrespective of the handle being in the ‘ON’, ‘OFF’ or ‘TRIP’ position.

■ Toggle lock mechanism

- Padlock (Standard)
  This mechanism allows the breaker to be padlocked in the ON or OFF position.
  Padlocks are not supplied.
  Up to three padlocks can be installed.

■ Outline dimensions

XFE10

<table>
<thead>
<tr>
<th>Applicable breaker types</th>
</tr>
</thead>
<tbody>
<tr>
<td>XS2000NE</td>
</tr>
</tbody>
</table>

Door-mounted (depth fixed) (HP)
6. Terminal covers CF/CR/CS

Terminal covers prevent live parts of the breaker from being exposed to the external environment. There are three types of terminal covers available: CF for front-connected breakers, CR for rear-connected and plug-in breakers, and CS for front-connected breakers with cable clamps. Select appropriate terminal covers depending on the type and application of the breaker.

(1) CF for front-connected breakers

---

**Plug-in mounted version**

This version can be mounted simply by being plugged in the breaker body.

**Screw-mounted version**

The terminal covers for 630 to 800AF are mounted to the breakers using tapping screws. The terminal cover for 1250AF is mounted to insert nuts of the breaker cover using screws. The insert nuts do not come standard with the breaker. Please be sure to state “with terminal cover (CF)” when ordering the breaker.
## Types and dimensions of terminal covers, units in mm

**CF for front-connected breakers**

<table>
<thead>
<tr>
<th>Type of breakers</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frame size (A)</strong></td>
<td><strong>Types of breakers</strong></td>
<td><strong>Terminal cover</strong></td>
<td><strong>Order codes</strong></td>
<td><strong>Note</strong></td>
</tr>
<tr>
<td>50</td>
<td>E50-SF, E50-CM</td>
<td>Large</td>
<td>TPF15 * G</td>
<td>—</td>
</tr>
<tr>
<td>Small</td>
<td>TPF10 * G</td>
<td>—</td>
<td>50</td>
<td>75</td>
</tr>
<tr>
<td>500-SF</td>
<td>Large</td>
<td>T2CF16 * SLNG</td>
<td>T2CF12 * SL</td>
<td>—</td>
</tr>
<tr>
<td>Small</td>
<td>T2CF12 * SSLNG</td>
<td>—</td>
<td>90</td>
<td>120</td>
</tr>
<tr>
<td>100</td>
<td>E100-SF</td>
<td>Large</td>
<td>XPR1 * G</td>
<td>—</td>
</tr>
<tr>
<td>Small</td>
<td>XPR1 * C</td>
<td>—</td>
<td>49</td>
<td>74</td>
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<tr>
<td>500-NF, 500-GF</td>
<td>Large</td>
<td>T2CF12 * SLNG</td>
<td>T2CF12 * SL</td>
<td>60</td>
</tr>
<tr>
<td>Small</td>
<td>T2CF12 * SSLNG</td>
<td>—</td>
<td>60</td>
<td>90</td>
</tr>
<tr>
<td>125</td>
<td>S125-SF, S125-SN</td>
<td>Large</td>
<td>T2CF16 * SLNG</td>
<td>T2CF12 * SL</td>
</tr>
<tr>
<td>Small</td>
<td>T2CF12 * SSLNG</td>
<td>—</td>
<td>90</td>
<td>120</td>
</tr>
<tr>
<td>500-SF</td>
<td>Large</td>
<td>T2CF12 * SLNG</td>
<td>T2CF12 * SL</td>
<td>60</td>
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<tr>
<td>Small</td>
<td>T2CF12 * SSLNG</td>
<td>—</td>
<td>60</td>
<td>90</td>
</tr>
<tr>
<td>250</td>
<td>S250-SF, S250-GF</td>
<td>Large</td>
<td>T2CF16 * SLNG</td>
<td>T2CF12 * SL</td>
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<tr>
<td>Small</td>
<td>T2CF12 * SSLNG</td>
<td>—</td>
<td>90</td>
<td>120</td>
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<tr>
<td>500-NF, S500-SF, S500-GF, S500-NE</td>
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<td>T2CF12 * SL</td>
<td>—</td>
</tr>
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<td>Small</td>
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<td>62</td>
<td>90</td>
<td>120</td>
</tr>
<tr>
<td>125</td>
<td>S125-SF, S125-SN</td>
<td>Large</td>
<td>T2CF16 * SLNG</td>
<td>T2CF12 * SL</td>
</tr>
<tr>
<td>Small</td>
<td>T2CF12 * SSLNG</td>
<td>—</td>
<td>90</td>
<td>120</td>
</tr>
<tr>
<td>Notes:</td>
<td></td>
<td>1. The asterisk indicates the number of poles. Please state the number of poles at the asterisk position when ordering.</td>
<td>5. Values in parentheses indicate the distance to the head of terminal cover mounting screws.</td>
<td>6. For 4 poles, Gray colour only.</td>
</tr>
<tr>
<td></td>
<td>2. Not applicable to 3-pole breakers with extension bars.</td>
<td>(1) Terminal covers for motor protection breakers are 3-pole type only.</td>
<td>(2) Terminal covers for switch-disconnectors are 3-pole and 4-pole type only.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Applicable to 3-pole breakers with spread extension bars.</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>4. There will be an approx. 40 mm gap between the bottom of the terminal cover and the breaker mounting surface.</td>
<td></td>
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</tr>
</tbody>
</table>
6. Terminal covers CF/CR/CS

(2) CR for rear-connected and plug-in breakers
CS for front-connected breakers with cable clamps

Plug-in mounted version
This version can be mounted simply by being plugged in the breaker body.

Screw-mounted version
The terminal covers for 630 to 800AF are mounted to the breakers using tapping screws.

To be stated when ordering
• Please state “with CR” if ordering along with the breaker.
• Please state the order codes on the next page if ordering separately from the breaker.
One set includes one terminal cover for the ON side and one for the OFF side.
## Types and dimensions of terminal covers, units in mm

### CR for rear-connected and plug-in breakers

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>Terminal cover</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Colour of cover</th>
<th>Mounting version</th>
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</thead>
<tbody>
<tr>
<td>30</td>
<td>550-SF</td>
<td>T2CR12L * SG</td>
<td>50</td>
<td>75</td>
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<td>—</td>
<td>61</td>
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</tr>
<tr>
<td>500-SF</td>
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<td></td>
<td>60</td>
<td>90</td>
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<td>6</td>
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<td>6</td>
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<td>—</td>
<td>61</td>
<td>61</td>
</tr>
<tr>
<td>5125-NF, 5125-GF</td>
<td>T2CR12L * SG</td>
<td>60</td>
<td>90</td>
<td>2</td>
<td>6</td>
<td>41.5</td>
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<tr>
<td>225</td>
<td>5225-SF, 5225-GE</td>
<td>T2CR25L * SG</td>
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<td>140</td>
<td>2</td>
<td>2</td>
<td>61</td>
<td>61</td>
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<tr>
<td>250</td>
<td>5225-NF, 5225-GF</td>
<td>T2CR25L * SG</td>
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<tr>
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</tbody>
</table>

### CS for front-connected with cable clamps breakers

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>Terminal cover</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Colour of cover</th>
<th>Mounting version</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>550-SF</td>
<td>T2CS12 * SG</td>
<td>90</td>
<td>120</td>
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<td>6</td>
<td>61</td>
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<tr>
<td>500-SF</td>
<td></td>
<td>T2CS12 * SG</td>
<td>90</td>
<td>120</td>
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<td>6</td>
<td>61</td>
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</tr>
<tr>
<td>500-NF</td>
<td>5100-NF, 5100-NM, 5100-NN</td>
<td>T2CS12 * SG</td>
<td>105</td>
<td>140</td>
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<td>6</td>
<td>61</td>
<td>61</td>
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<td>100</td>
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<td>6</td>
<td>61</td>
<td>61</td>
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<tr>
<td>125</td>
<td>5125-SF, 5125-SN</td>
<td>T2CS12 * SG</td>
<td>105</td>
<td>140</td>
<td>2.5</td>
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</tr>
<tr>
<td>225</td>
<td>5225-SF, 5225-GE</td>
<td>T2CS25 * SG</td>
<td>105</td>
<td>140</td>
<td>2.5</td>
<td>6</td>
<td>61</td>
<td>61</td>
</tr>
<tr>
<td>250</td>
<td>5225-SF, 5225-GF</td>
<td>T2CS25 * SG</td>
<td>105</td>
<td>140</td>
<td>2.5</td>
<td>6</td>
<td>61</td>
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</tr>
<tr>
<td>375</td>
<td>5375-SF, 5375-GE</td>
<td>T2CS35 * SG</td>
<td>140</td>
<td>185</td>
<td>3</td>
<td>5</td>
<td>61</td>
<td>61</td>
</tr>
</tbody>
</table>

### Notes:
1. The asterisk indicates the number of poles. Please state the number of poles at the asterisk position when ordering.
2. Values in parentheses indicate the distance to the head of terminal cover mounting screws.
3. There will be an approx. 40 mm gap between the bottom of the terminal cover and the breaker mounting surface.

### Order codes

<table>
<thead>
<tr>
<th>Order codes</th>
<th>Marking codes</th>
<th>Notes</th>
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</tr>
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<td></td>
</tr>
<tr>
<td>500-NF</td>
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</tr>
<tr>
<td>5100-SF</td>
<td>T2CR12L * SG</td>
<td></td>
</tr>
<tr>
<td>5125-SF</td>
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<td></td>
</tr>
<tr>
<td>5225-NF</td>
<td>T2CR25L * SG</td>
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</tr>
<tr>
<td>5375-SF</td>
<td>T2CR35L * SG</td>
<td></td>
</tr>
<tr>
<td>5400-CF</td>
<td>T2CR40L * SG</td>
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</tr>
<tr>
<td>550-CM</td>
<td>T2CS12 * SG</td>
<td></td>
</tr>
<tr>
<td>500-CF</td>
<td>T2CS12 * SG</td>
<td></td>
</tr>
<tr>
<td>500-NF</td>
<td>T2CS12 * SG</td>
<td></td>
</tr>
<tr>
<td>5100-CF</td>
<td>T2CS12 * SG</td>
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</tr>
<tr>
<td>5125-SF</td>
<td>T2CS12 * SG</td>
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</tr>
<tr>
<td>5225-SF</td>
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<tr>
<td>5375-SF</td>
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</tr>
<tr>
<td>5400-CF</td>
<td>T2CS40 * SG</td>
<td></td>
</tr>
</tbody>
</table>

### Mounting version

- **Plug-in mounted**: various types
- **Screw-mounted**: various types

---

**Notes:**
1. The asterisk indicates the number of poles. Please state the number of poles at the asterisk position when ordering.
2. Values in parentheses indicate the distance to the head of terminal cover mounting screws.
3. There will be an approx. 40 mm gap between the bottom of the terminal cover and the breaker mounting surface.

---

**Accessories**

- **SG**: Gray
- **CR**: Black
- **NS**: Natural
- **PF**: Purple
- **PE**: Periwinkle
7. Interpole barriers (BA)

Interpole barriers serve to enhance electrical insulation between poles and prevent short-circuit due to electrically conductive foreign matter. Combined use of interpole barriers and terminal covers (standard type) is not possible.

- Slide interpole barriers into the grooves located on the breaker.

To be stated when ordering
Please state the type when ordering. One set contains two barriers.

Caution: Be sure to use the interpole barriers supplied with the breaker in order to prevent accidents.

**Types and dimensions of interpole barriers, units in mm**

<table>
<thead>
<tr>
<th>Frame size</th>
<th>Types of breakers</th>
<th>Interpole barrier</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>E50-SF, E50-CM</td>
<td>TQQ-2CC</td>
<td>36</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>S50-SF</td>
<td>T2BA16L3SH</td>
<td>50</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>S50-GF</td>
<td>T2BA123SH</td>
<td>47</td>
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<tr>
<td>100</td>
<td>E100-SF</td>
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</tr>
<tr>
<td></td>
<td>S100-NF, S100-GF</td>
<td>T2BA123SH</td>
<td>47</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>S100-NM, S100-NN</td>
<td>T2BA25L</td>
<td>100</td>
<td>88</td>
</tr>
<tr>
<td></td>
<td>H100-NF, L100-NF</td>
<td>T2BA16L3SH</td>
<td>50</td>
<td>55</td>
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<tr>
<td></td>
<td>S125-SF, S125-EN</td>
<td>T2BA123SH</td>
<td>47</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>S125-NS, S125-GF</td>
<td>T2BA25L</td>
<td>100</td>
<td>88</td>
</tr>
<tr>
<td></td>
<td>H125-NF, L125-NF</td>
<td>T2BA16L3SH</td>
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<td>55</td>
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<td>225</td>
<td>E225-NF, S225-GF, S225-NM</td>
<td>T2BA25SH</td>
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<td>53</td>
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<td>T2BA25SH</td>
<td>100</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>S225-GE</td>
<td>T2BA25L</td>
<td>100</td>
<td>88</td>
</tr>
<tr>
<td></td>
<td>E250-SF, S250-SF, S250-EN</td>
<td>T2BA25SH</td>
<td>100</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>S250-NF, S250-GF</td>
<td>T2BA25L</td>
<td>100</td>
<td>88</td>
</tr>
<tr>
<td>400</td>
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<td>95</td>
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<tr>
<td>630</td>
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<td>1600</td>
<td>S1600-NE, S1600-NN</td>
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<td>95</td>
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</table>

Note: Line side interpole barriers are supplied as standard for all front connected breakers except E50-SF, E50-CM and E100-SF.
8. Terminal blocks (TF)

6 terminals
Vertical leading type with 50/100A frame

11 terminals
Vertical leading type with 50/100A frame

**Mounting position/typical terminal arrangement**

**Dimensions, mm**

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>S50-GF</td>
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<td>S125-NF,S125-GF, S125-NM</td>
<td>42.5</td>
<td>27</td>
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</tbody>
</table>

Notes:
1) Tightening torque of M3.5 terminal screws: 0.9 – 1.2 N\cdot m
2) Applicable wire size: 1.25mm² max
3) Horizontal leading type with max applicable wire size of 2.0 mm² is available on request. Contact us for details.

Notes:
1) Special specification. Not applicable to Plug-in (High-performance) type.
8. Terminal blocks (TF)

6 terminals
Vertical leading type with 50/125A frame

<table>
<thead>
<tr>
<th>Mounting position/typical terminal arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Diagram" /></td>
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</table>

<table>
<thead>
<tr>
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<td>ALa1</td>
</tr>
<tr>
<td>ALb1</td>
<td>ALb1</td>
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<td>ALc1</td>
<td>ALc1</td>
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<td>AXc1</td>
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<td>AXb1</td>
<td>AXb1</td>
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<td>AXa1</td>
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</table>

Dimensions, mm

<table>
<thead>
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<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
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<td>9</td>
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<tr>
<td>125</td>
<td>S125-SF (3/4 poles)</td>
<td>9</td>
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</tbody>
</table>

Notes:
1) Tightening torque of M3.5 terminal screws: 0.9 – 1.2 N•m
2) Applicable wire size: 2.0mm² max

6 terminals
Vertical leading type with 250A frame

<table>
<thead>
<tr>
<th>Mounting position/typical terminal arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image2" alt="Diagram" /></td>
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</table>

<table>
<thead>
<tr>
<th>Ex. 1</th>
<th>Ex. 2</th>
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</thead>
<tbody>
<tr>
<td>ALa1</td>
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<td>ALb1</td>
<td>ALb1</td>
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<tr>
<td>ALc1</td>
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<td>AXb1</td>
<td>AXb1</td>
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<td>AXa1</td>
<td>AXa1</td>
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</table>

Dimensions, mm

<table>
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<th>Types of breakers</th>
<th>A</th>
</tr>
</thead>
<tbody>
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<td>7</td>
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<tr>
<td>3250</td>
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<td>7</td>
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</tbody>
</table>

Notes:
1) Tightening torque of M3.5 terminal screws: 0.9 – 1.2 N•m
2) Applicable wire size: 2.0mm² max

2 pieces of terminal blocks can be fitted side by side.
6 terminals
Vertical leading type with 100/125/225/250A frame

Mounting position/typical terminal arrangement

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
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<td>125 H125-NF,L125-NF</td>
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<tr>
<td>225 E225-NF,S225-NF,S225-GF</td>
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<td></td>
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<tr>
<td>S225-GF,H225-NF,L225-NF</td>
<td>42.5</td>
<td>27</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1) Tightening torque of M3.5 terminal screws: 0.9 – 1.2 N • m
2) Applicable wire size: 1.25mm² max
3) Horizontal leading type with max applicable wire size of 2.0 mm² is available on request. Contact us for details.

11 terminals
Vertical leading type with 125/225/250A frame

Mounting position/typical terminal arrangement

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>A</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
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<td>2</td>
<td>35.5</td>
<td>75</td>
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<td>125 H125-NF,L125-NF</td>
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<td>75</td>
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<td>S225-GF,H225-NF,L225-NF</td>
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<td>35.5</td>
<td>75</td>
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<td>S225-GF,H225-NF,L225-NF</td>
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<td>5.5</td>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1) Tightening torque of M3.5 terminal screws: 0.9 – 1.2 N • m
2) Applicable wire size: 2.0mm² max
8. Terminal blocks (TF)

6 terminals
Vertical leading type with 400A frame

**Mounting position/typical terminal arrangement**

![Diagram of terminal block arrangement]

**Dimensions, mm**

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>400</td>
<td>S400-CF, S400-NF, S400-GE, S400-PF, S400-PE</td>
<td>72.5</td>
<td>57</td>
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<td></td>
<td>S400-IN</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>H400-NE, L400-NE</td>
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<td>94</td>
</tr>
</tbody>
</table>

**Notes:**

1) Tightening torque of M3.5 terminal screws: 0.9 – 1.2 N•m
2) Applicable wire size: 1.25mm² max
3) Horizontal leading type with max applicable wire size of 2.0 mm² is available on request. Contact us for details.

11 terminals
Vertical leading type with 400A frame

**Mounting position/typical terminal arrangement**

![Diagram of terminal block arrangement]

**Dimensions, mm**

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>A</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>400</td>
<td>S400-CF, S400-NF, S400-GE, S400-PF, S400-PE</td>
<td>39.5</td>
<td>30.5</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>S400-IN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>H400-NE, L400-NE</td>
<td>39.5</td>
<td>87.5</td>
<td>107</td>
</tr>
</tbody>
</table>

**Notes:**

1) Tightening torque of M3.5 terminal screws: 0.9 – 1.2 N•m
2) Applicable wire size: 2.0mm² max
6 terminals
Vertical leading type with 630/800A frame

Mounting position/typical terminal arrangement

Dimensions, mm

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>630</td>
<td>S630-CF, S630-NF, S630-RF, S630-NE, S630-RE, S630-GN</td>
<td>72.5</td>
<td>57</td>
</tr>
<tr>
<td></td>
<td>H630-NE, L630-NE</td>
<td>109.5</td>
<td>94</td>
</tr>
<tr>
<td>800</td>
<td>S800-CF, S800-NF, S800-RF, S800-NE, S800-RE, S800-NN</td>
<td>72.5</td>
<td>57</td>
</tr>
<tr>
<td></td>
<td>H800-NE, L800-NE</td>
<td>109.5</td>
<td>94</td>
</tr>
</tbody>
</table>

Notes:
1) Tightening torque of M3.5 terminal screws: 0.9 – 1.2 N•m
2) Applicable wire size: 1.25mm² max
3) Horizontal leading type with max applicable wire size of 2.0 mm² is available on request. Contact us for details.
4) Contact us for details if 2 alarm switches are required.

11 terminals
Vertical leading type with 630/800A frame

Mounting position/typical terminal arrangement

Dimensions, mm

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>A</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>630</td>
<td>S630-CF, S630-NF, S630-RF, S630-NE, S630-RE, S630-GN</td>
<td>31</td>
<td>30.5</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>H630-NE, L630-NE</td>
<td>31</td>
<td>67.5</td>
<td>107</td>
</tr>
<tr>
<td>800</td>
<td>S800-CF, S800-NF, S800-RF, S800-NE, S800-RE, S800-NN</td>
<td>31</td>
<td>30.5</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>H800-NE, L800-NE</td>
<td>31</td>
<td>67.5</td>
<td>107</td>
</tr>
</tbody>
</table>

Notes:
1) Tightening torque of M3.5 terminal screws: 0.9 – 1.2 N•m
2) Applicable wire size: 2.0mm² max
8. Terminal blocks (TF)

Vertical leading type with 50A frame

Mounting position/typical terminal arrangement

Dimensions, mm

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>E50-5F,E50-C1E</td>
<td>16.5</td>
<td>16.5</td>
<td>21</td>
<td>36</td>
</tr>
</tbody>
</table>

Notes:
1. Tightening torque of M3.5 terminal screws: 0.9 – 1.2 N·m
2. Applicable wire size: 1.25mm² max (Vinyl-coated wire)

Vertical leading type with 100A frame

Mounting position/typical terminal arrangement

Dimensions, mm

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>E100-5F</td>
<td>16.5</td>
<td>16.5</td>
<td>21</td>
<td>36</td>
</tr>
</tbody>
</table>

Notes:
1. Terminal block cannot be mounted on the breaker which is equipped with the motor operator.
2. Tightening torque of M3.5 terminal screws: 0.9 – 1.2 N·m
3. Applicable wire size: 1.25mm² max (Vinyl-coated wire)
Horizontal leading type with 1250/1600A frame

Mounting position/typical terminal arrangement

Dimensions, mm

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1250</td>
<td>S1250-NE</td>
<td>51</td>
<td>114(124)</td>
<td>57</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>S1250-GE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>S1250-NN</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1600</td>
<td>S1600-NE</td>
<td>51</td>
<td>114(124)</td>
<td>77</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td>S1600-NN</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1) Values in parentheses applies to 4-pole breakers.
2) Tightening torque of M3.5 terminal screws: 0.9 – 1.2 N·m
3) Applicable wire size: 2.0mm² max x 2

---

Horizontal leading type with 1000 to 2000A frame

Mounting position/typical terminal arrangement

Dimensions, mm

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>TL-1000NE</td>
<td>51</td>
<td>114 (184)</td>
<td>77</td>
<td>92</td>
</tr>
<tr>
<td>1200</td>
<td>TL-1200NE</td>
<td>51</td>
<td>114 (184)</td>
<td>77</td>
<td>92</td>
</tr>
<tr>
<td>2000</td>
<td>XS2000NE,XS2000NN</td>
<td>54</td>
<td>208</td>
<td>100</td>
<td>115</td>
</tr>
</tbody>
</table>

Notes:
1) The terminal arrangement example shown in the figure applies to type XS2000NE breakers only.
2) Values in parentheses applies to 4-pole breakers.
3) Tightening torque of M3.5 terminal screws: 0.9 – 1.2 N·m
4) Applicable wire size: 2.0mm² max x 2
9. Mechanical interlock

Slide interlock (MS)

The slide interlock provides a mechanical interlock between two breakers so that only one of the two can be closed. Moving the slide on the front of the breaker left and right allows activation or deactivation of the interlock.

### Dimensions mm

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>Number of poles</th>
<th>Breaker connection method</th>
<th>Interlock</th>
<th>Order codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 125</td>
<td>S125-SF, S125-SN</td>
<td>3</td>
<td>FC, RC</td>
<td></td>
<td>T2MS16L3SF</td>
</tr>
<tr>
<td>50 125</td>
<td></td>
<td>4</td>
<td>FC, RC</td>
<td></td>
<td>T2MS16L4SF</td>
</tr>
</tbody>
</table>

### Panel cutout (front view)

The cutout dimensions allow for a side clearance of 1.0 mm from the bank of the breaker.

### Drilling plan (front view)

ASL: Arrangement Standard Line
HL: Handle Frame Centre Line
CL: Handle Centre Line
### Dimensions mm

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>Number of poles</th>
<th>Breaker contact method</th>
<th>Interlock Order codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>S50-SF</td>
<td>3</td>
<td>PMC</td>
<td>T2M516L36C</td>
</tr>
<tr>
<td>125</td>
<td>S125-SF, S125-SN</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Panel cutout (front view)

The cutout dimensions allow for a side clearance of 1.0 mm from the bank of the breaker.

#### Drilling plan (front view)

ASL: Arrangement Standard Line
HL: Handle Frame Centre Line
CL: Handle Centre Line
9. Mechanical interlock

Dimensions mm

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>Number of poles</th>
<th>Breaker connector method</th>
<th>Interlock order codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>S50-GF</td>
<td>3</td>
<td>FC, RC</td>
<td>THMS123SF</td>
</tr>
<tr>
<td>100</td>
<td>S100-GF, S100-NF, S100-GF, S100-NN</td>
<td>3</td>
<td>FC, RC</td>
<td>THMS124SF</td>
</tr>
<tr>
<td>125</td>
<td>S125-GF, S125-NF, S125-GF, S125-NN</td>
<td>4</td>
<td>FC, RC</td>
<td>THMS124SF</td>
</tr>
</tbody>
</table>

Notes:
1. The interlock cannot be applied to breakers equipped with a terminal block.

Panel cutout (front view)

The cutout dimensions allow for a side clearance of 1.0 mm from the bank of the breaker.

Drilling plan (front view)

The cutout dimensions allow for a side clearance of 1.0 mm from the bank of the breaker.
### Dimensions mm

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>Number of poles</th>
<th>Interlock method</th>
<th>Order codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>S50-GF, S100-NF, S50-GF, S100-NN, S125-NF, S125-GF, S125-NN</td>
<td>3</td>
<td>PMB</td>
<td>T2M3.123SP</td>
</tr>
<tr>
<td>100</td>
<td></td>
<td>4</td>
<td>PMB</td>
<td>T2M3.124SP</td>
</tr>
</tbody>
</table>

#### Panel cutout (front view)

The cutout dimensions allow for a side clearance of 1.0 mm from the bank of the breaker.

#### Drilling plan (front view)

ASL: Arrangement Standard Line

HL: Handle Frame Centre Line

CL: Handle Centre Line

For accessory wiring when necessary.
9. Mechanical interlock

Panel cutout (front view)

The cutout dimensions allow for a side clearance of 1.0 mm from the bank of the breaker.

Drilling plan (front view)

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>Number of poles</th>
<th>Interlock method</th>
<th>Interlock Order codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>S50-GF</td>
<td>3</td>
<td>PMC</td>
<td>T2MS123SC</td>
</tr>
<tr>
<td>100</td>
<td>S100-NF, S100-GF, S100-NN</td>
<td>3</td>
<td>PMC</td>
<td></td>
</tr>
<tr>
<td>125</td>
<td>S125-NF, S125-GF, S125-NN</td>
<td>3</td>
<td>PMC</td>
<td></td>
</tr>
</tbody>
</table>

Dimensions mm

ASL: Arrangement Standard Line
HL: Handle Frame Centre Line
CL: Handle Centre Line
Dimensions mm

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>Number of poles</th>
<th>Interlock Order codes</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>H100-NF, L100-NF</td>
<td>3</td>
<td>FC, RC</td>
<td>126.7</td>
</tr>
<tr>
<td>125</td>
<td>H125-NF, L125-NF</td>
<td>4</td>
<td>FC, RC</td>
<td>91.7</td>
</tr>
<tr>
<td>225</td>
<td>S225-NF, S225-GF</td>
<td>3</td>
<td>FC, RC</td>
<td>126.7</td>
</tr>
<tr>
<td>250</td>
<td>S250-NF, S250-GF</td>
<td>4</td>
<td>FC, RC</td>
<td>91.7</td>
</tr>
<tr>
<td>60</td>
<td>H225-NF, L225-NF,S225-GF</td>
<td>3</td>
<td>FC, RC</td>
<td>126.7</td>
</tr>
</tbody>
</table>

Panel cutout (front view)

The cutout dimensions allow for a side clearance of 1.0 mm from the bank of the breaker.

Drilling plan (front view)
9. Mechanical interlock

Dimensions mm

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>Number of poles</th>
<th>Breaker connection method</th>
<th>Interlock Method</th>
<th>Order codes</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 125</td>
<td>H100-NF, L100-NF</td>
<td>3</td>
<td>PMB</td>
<td>T2MS253LP</td>
<td>175</td>
<td></td>
</tr>
<tr>
<td></td>
<td>H125-NF, L125-NF</td>
<td>4</td>
<td>PMB</td>
<td>T2MS254LP</td>
<td>140</td>
<td></td>
</tr>
<tr>
<td>225 250</td>
<td>S225-NF, S250-NF</td>
<td>3</td>
<td>PMB</td>
<td>T2MS253SP</td>
<td>140</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S250-GF, S250-GF</td>
<td>4</td>
<td>PMB</td>
<td>T2MS254SP</td>
<td>175</td>
<td></td>
</tr>
<tr>
<td>325-400 425-480</td>
<td>H225-NF, L225-NF, S225-GF</td>
<td>3</td>
<td>PMB</td>
<td>T2MS253SP</td>
<td>175</td>
<td></td>
</tr>
<tr>
<td></td>
<td>H225-NF, L225-NF, S225-GF</td>
<td>4</td>
<td>PMB</td>
<td>T2MS254SP</td>
<td>175</td>
<td></td>
</tr>
</tbody>
</table>

The cutout dimensions allow for a side clearance of 1.0 mm from the bank of the breaker.
**Dimensions mm**

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>Number of poles</th>
<th>Interlock method</th>
<th>Order codes</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>H100-NF, L100-NF</td>
<td>3</td>
<td>PMC</td>
<td>T2M8253LC</td>
<td>150</td>
</tr>
<tr>
<td>125</td>
<td>H125-NF, L125-NF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>225</td>
<td>S225-NF, S225-GF</td>
<td>3</td>
<td>PMC</td>
<td>T2M8253SC</td>
<td>115</td>
</tr>
<tr>
<td>250</td>
<td>S225-NF, S225-GF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H225-NF, L225-NF, S225-GE</td>
<td>3</td>
<td>PMC</td>
<td>T2M8253LC</td>
<td>150</td>
<td></td>
</tr>
</tbody>
</table>

**Panel cutout (front view)**

The cutout dimensions allow for a side clearance of 1.0 mm from the bank of the breaker.

**Drilling plan (front view)**

ASL: Arrangement Standard Line

HL: Handle Frame Centre Line

CL: Handle Centre Line
9. Mechanical interlock

The cutout dimensions allow for a side clearance of 1.0 mm from the bank of the breaker.

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>Number of poles</th>
<th>Breaker connection method</th>
<th>Interlock Order codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>225</td>
<td>E250-SF, E250-SF</td>
<td>3</td>
<td>FC, RC</td>
<td>T2ME250L3SF</td>
</tr>
<tr>
<td>250</td>
<td>E250-SN</td>
<td>3</td>
<td>FC, RC</td>
<td>T2ME250L3SF</td>
</tr>
<tr>
<td>225</td>
<td></td>
<td>4</td>
<td>FC, RC</td>
<td>T2ME250L4SF</td>
</tr>
</tbody>
</table>

ASL: Arrangement Standard Line
HL: Handle Frame Centre Line
CL: Handle Centre Line
The cutout dimensions allow for a side clearance of 1.0 mm from the bank of the breaker.
9. Mechanical interlock

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>Number of poles</th>
<th>Breaker connection method</th>
<th>Interlock Order codes</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>400</td>
<td>S400-CP, S400-NF, S400-NE</td>
<td>3</td>
<td>FC, RC</td>
<td>T2MS403SF</td>
<td>136.5</td>
</tr>
<tr>
<td></td>
<td>S400-GF, S400-GE, S400-NN</td>
<td>4</td>
<td>FC, RC</td>
<td>T2MS404SF</td>
<td>172.5</td>
</tr>
<tr>
<td></td>
<td>S400-PF, S400-PE</td>
<td>3</td>
<td>FC, RC</td>
<td>T2MS403LF</td>
<td>136.5</td>
</tr>
<tr>
<td></td>
<td>H400-NE, L400-NE</td>
<td>4</td>
<td>FC, RC</td>
<td>T2MS404LF</td>
<td>172.5</td>
</tr>
</tbody>
</table>

Notes:
1. The interlock cannot be applied to breakers equipped with front extension bars due to the shortage of the insulating distance.
2. The interlock cannot be applied to breakers equipped with terminal block.
3. A terminal cover cannot be mounted.

ASL: Arrangement Standard Line
H: Handle Frame Centre Line
C: Handle Centre Line

The cutout dimensions allow for a side clearance of 1.0 mm from the bank of the breaker.
Dimensions mm

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>Number of poles</th>
<th>Interlock method</th>
<th>Order codes</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>400</td>
<td>S400-CF, S400-NF, S400-NE</td>
<td>3</td>
<td>PMB</td>
<td>T2MS403SP</td>
<td>183.5</td>
</tr>
<tr>
<td></td>
<td>S400-GF, S400-GE, S400-NN</td>
<td>4</td>
<td>PMB</td>
<td>T2MS404SP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S400-FF, S400-GE</td>
<td>4</td>
<td>PMB</td>
<td>T2MS404LP</td>
<td>220.5</td>
</tr>
</tbody>
</table>

Panel cutout (front view)

The cutout dimensions allow for a side clearance of 1.0 mm from the bank of the breaker.

Drilling plan (front view)

ASL: Arrangement Standard Line

HL: Handle Frame Centre Line

CL: Handle Centre Line
9. Mechanical interlock

The cutout dimensions allow for a side clearance of 1.0 mm from the bank of the breaker.

Panel cutout (front view)

Drilling plan (front view)

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>Number of poles</th>
<th>Breaker connection method</th>
<th>Interlock Order codes</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>400</td>
<td>S400-CP, S400-NF, S400-NE</td>
<td>3</td>
<td>PMC</td>
<td>T2MS403SC</td>
<td>158.5</td>
</tr>
<tr>
<td>S400-GF, S400-GS, S400-GN</td>
<td>3</td>
<td>PMC</td>
<td>T2MS403LC</td>
<td>196.5</td>
<td></td>
</tr>
<tr>
<td>S400-PE, S400-PE</td>
<td>3</td>
<td>PMC</td>
<td>T2MS403PC</td>
<td>158.5</td>
<td></td>
</tr>
</tbody>
</table>

ASL: Arrangement Standard Line
HL: Handle Frame Centre Line
CL: Handle Centre Line
### Dimensions mm

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>Number of poles</th>
<th>Breaker connection method</th>
<th>Interlock</th>
<th>Order codes</th>
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<tr>
<td>630</td>
<td>S630-CF,S630-NF,S630-RF</td>
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<tr>
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<tr>
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<td>FC,RC</td>
<td>T2MS804LF</td>
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</tr>
</tbody>
</table>

### Notes:
1. The interlock cannot be applied to breakers equipped with terminal block.

---

### Panel cutout (front view)

The cutout dimensions allow for a side clearance of 1.0 mm from the bank of the breaker.

---

### Drilling plan (front view)

M8 Tapped hole
M6 Tapped hole
9. Mechanical interlock

The cutout dimensions allow for a side clearance of 1.0 mm from the bank of the breaker.

### Dimensions mm

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>Number of poles</th>
<th>Breaker connection method</th>
<th>Interlock</th>
<th>Order codes</th>
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</thead>
<tbody>
<tr>
<td>630-800</td>
<td>S630-CP, S630-NF, S630-RF</td>
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<td>PMB</td>
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<td>S630-NE, S630-NE-5, S630-GN</td>
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<td>PMB</td>
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<td>S800-NE, S800-NE-5, S800-GN</td>
<td>4</td>
<td>PMB</td>
<td>T2MS8154LP</td>
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### Panel cutout (front view)

### Drilling plan (front view)
## Dimensions mm

<table>
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<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>Number of poles</th>
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<th>Interlock Order codes</th>
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<td>PMC</td>
<td>T2MS8080C</td>
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<td>S800-CF,S800-NF,S800-RF</td>
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<tr>
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<td>PMC</td>
<td>T2MS8080C</td>
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</table>

### Panel cutout (front view)

The cutout dimensions allow for a side clearance of 1.0 mm from the bank of the breaker.

### Drilling plan (front view)

ASL: Arrangement Standard Line
HL: Handle Frame Centre Line
CL: Handle Centre Line
Molded Case Circuit Breakers

9. Mechanical interlock

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of molded case circuit breakers</th>
<th>Order codes</th>
<th>Number of poles</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>e</th>
<th>f</th>
<th>g</th>
<th>h</th>
<th>k</th>
<th>m</th>
<th>f</th>
<th>R</th>
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</thead>
<tbody>
<tr>
<td>50, 100</td>
<td>E50-SF, E50-CM, E100-SF</td>
<td>XLF1①</td>
<td>3</td>
<td>100</td>
<td>150</td>
<td>102</td>
<td>26.5</td>
<td>153</td>
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<td>175</td>
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<td>1000</td>
<td>TL-1000NE</td>
<td>XLF9②</td>
<td>3</td>
<td>220</td>
<td>340</td>
<td>129</td>
<td>61.5</td>
<td>343</td>
<td>58</td>
<td>74</td>
<td>132</td>
<td>430</td>
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<tr>
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<td>TL-1200NE</td>
<td>XLF9②</td>
<td>4</td>
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<td>T2MSX54SF</td>
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<td>220</td>
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<td>T2MSX6SF</td>
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<tr>
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<td>X2000NE</td>
<td>XLF10①</td>
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<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Notes:
1. Please order with the breakers.
2. The interlock cannot be applied to breakers equipped with a terminal block, UVT controller or OCR controller.
3. See the outline dimensions of the breaker for the drilling plan.

Dimensions mm

ASL: Arrangement Standard Line
HL: Handle Frame Centre Line
C: Handle Centre Line

Contact us for the detailed dimensions.
10. Door Flange (D.F)

Door flanges are recommended to be used to cover the cutout of a switchboard panel.

**Fig. 1**

**Fig. 2**

### Dimensions mm

<table>
<thead>
<tr>
<th>Frame size (A)</th>
<th>Types of breakers</th>
<th>Order codes</th>
<th>Fig.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>K</th>
<th>d</th>
<th>t</th>
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<td>50</td>
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<td>65</td>
<td>65</td>
<td>105</td>
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<td>92</td>
<td>37</td>
<td>42</td>
<td>37</td>
<td>42</td>
<td>32</td>
<td>45</td>
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<tr>
<td>100</td>
<td>S225-SF, S225-GF</td>
<td>T2DF25</td>
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<td>77.5</td>
<td>77.5</td>
<td>105</td>
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<td>92</td>
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<td>42</td>
<td>37</td>
<td>42</td>
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<td></td>
<td>S100-NE, S100-GF</td>
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<td>45</td>
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<tr>
<td></td>
<td>S225-NG, S225-GF</td>
<td>T2DF25</td>
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<td>92</td>
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<td>42</td>
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<td>45</td>
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<tr>
<td></td>
<td>H800-NE, H800-GF</td>
<td>T2DF25</td>
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<td>105</td>
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<td>92</td>
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<td>42</td>
<td>37</td>
<td>42</td>
<td>32</td>
<td>45</td>
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</tbody>
</table>

**Notes:**

1. Handle centre line is applied.
2. ASL Arrangement standard line is applied.
## Characteristics and Outline Dimensions

### Molded Case Circuit Breakers

<table>
<thead>
<tr>
<th>Model</th>
<th>Page</th>
</tr>
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<td>S50-SF</td>
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<td>S125-SF</td>
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<td>S100-NF, S50-GF, S100-GF</td>
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<tr>
<td>S125-NF, S125-GF</td>
<td>7-12</td>
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<td>S225-NF, S225-GF</td>
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<td>E250-SF, S250-SF</td>
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<td>S1250-NE, S1250-GF</td>
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<td>TL-1000NE, TL-1200NE</td>
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<td>TB-5P</td>
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<td>TB-5D</td>
<td>7-84</td>
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### Motor operators

<table>
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<td>S225, S250-NF, S250-GF</td>
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<td>H630, H800, L630, L800</td>
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<td>S1600</td>
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<td>XS2000</td>
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</table>

- Mounting bases, branching bars and other accessories: 7-86
Molded Case Circuit Breakers

E50-SF

Characteristics and Outline Dimensions

**TemBreak2**

(50A Frame)

Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>50-SF</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>2</td>
<td></td>
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<tr>
<td><strong>Rated current, A</strong></td>
<td>10</td>
<td>40</td>
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<tr>
<td>Calibrated at 45°C</td>
<td>15</td>
<td>50</td>
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<tr>
<td>20</td>
<td>30</td>
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</table>

**Rated insulation voltage [U] V**

- AC: 690V
- DC: 250V

**Rated impulse withstand voltage [Uimp] kV**

- AC: 100
- DC: 125

**Rated breaking capacity, kA**

<table>
<thead>
<tr>
<th>NK</th>
<th>AC</th>
<th>690V</th>
<th>240V</th>
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<tbody>
<tr>
<td>DC</td>
<td>250V</td>
<td></td>
<td></td>
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</tbody>
</table>

**Rated short time withstand current, kA**

- 4.8
- 0.74

**Connections and Mountings**

- Front-connected (FC): Terminal screws
- Rear-connected (RC): Bolt studs, Flat bar studs
- Plug in (PM): For switchboards (Standard), High-performance (PMB)

**Accessories (optional)**

- Motor operator (M-C)
- External operating (H B)
- Door-mounted (H F)
- H A
- Slide type (M S)
- H H
- H L
- C F
- C R
- B A
- T F
- D F

**Standard specifications**

- Overcurrent trip mechanism: Tem-Mag/S
- Trip button (color): Yes (Red)
- Handle position indication (GN: Red, OFF: Green): Yes
- Suitability for isolation: Non
- CE marking: Non

**Notes:**

- Standard. This configuration used unless otherwise specified.
- Optional standard. Specify when ordering.
- “yes” or “available”, “no” or “not available”, “DC” rating available on request.
- Hydraulic-magnetic type for below 10A rating. 1: at 500V AC. 2: at 250V AC.

**Combinations of Internally Mounted Accessories (Optional)**

**Time/Current characteristic curves**

**Ambient Compensating Curves**

**Combination of Internally Mounted Accessories**

**Auxiliary switch**

**X-ray switch**

**Short trip**

**Under voltage trip**

**Combination of Internally Mounted Accessories**

**NOTE:** The UV Controller is installed externally when provided with AC UV.
Outline dimensions (mm)

E50-SF

Front-connected

12.5

2P

37.5

M5x0.8 screw

Mounting hole

M4x0.7

Mounting screw

Preparation of conductor

Drilling plan (front view)

Rear-connected

Insulated bushing

ø12

M6 screw

Mounting plate

(max. 13.2)

ASL

Mounting base (rear view)

The mounting plate is not supplied.

Preparation of conductor

Drilling plan (front view)

Plug-in (For Switch board)

The mounting plate is not supplied.

Mounting base (rear view)

Mounting plate

(=4max.)

Drilling plan (front view)

Flush-mounted

Mounting plate

(=4max.)

Drilling plan (front view)
Molded Case Circuit Breakers

E100-SF

Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>100-SF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>2</td>
</tr>
<tr>
<td>Rated short time withstand current, kA</td>
<td>248</td>
</tr>
<tr>
<td>Rated insulation voltage (U) V AC</td>
<td>690</td>
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<tr>
<td>Rated impulse withstand voltage (Uimp) kV</td>
<td>90</td>
</tr>
<tr>
<td>Rated breaking capacity, kA</td>
<td>600</td>
</tr>
</tbody>
</table>

Connections and Mountings

- Front-connected (FC) Terminal screws
- Rear-connected (RC) Flat bar studs
- Plug-in (PM) for switchboards: Standard (PMC)
- For distribution boards (PMC)
- Flush-mounted (FP)
- Draw-out type (DR)
- TemPlug® (PG)
- DIN rail mount
- Clip-in chassis mount

Accessories (optional)

- Motor operator
- External operating Breaker-mounted
- Handle Door-mounted (variable depth)
- Toggle extension
- Mechanical interlock Slide type
- Toggle holder
- Toggle lock
- Terminal cover
- Terminal block for lead
- Door flange

Standard specifications

- Overcurrent trip mechanism
- Trip button (color)
- Handle position indication (ON, Red; OFF, Green)
- Suitability for isolation
- CE marking

Notes:
- Standard: This configuration used unless otherwise specified.
- Optional standard: Specify when ordering.
- "yes" or "available": ○: Standard, □: Optional standard.
- Hydraulic-magnetic type for below 7 A rating.

Combinations of Internally Mounted Accessories (Optional)

<table>
<thead>
<tr>
<th>AX</th>
<th>AL</th>
<th>SH</th>
<th>UV</th>
<th>AX</th>
<th>AL</th>
<th>SH</th>
<th>UV</th>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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</tbody>
</table>

NOTE: 2-pole type breaker may incorporate only one combination of AX, AL, SH, UV into the left pole.

Notes:
- Trip button is provided with anti-burnout switch.
- The UV Controller is installed externally when provided with AC UV.

Ambient Compensating Curves

Time/Current characteristic curves

Ratings and Specifications

- Temperature compensation for Molded Case Circuit Breakers

Characteristics and Outline Dimensions

TemBreak2

(100A Frame)
**Outline dimensions (mm)**

**Front-connected**

- Rated Current (A) A1 A2 B1 B2 C
  - 10-50: 45 80 30 65 M6
  - 60-100: 52.1 87.1 32.1 67.1 M8

**Preparation of conductor**

**Drilling plan (front view)**

**Rear-connected**

**Plug-in (For Switch board)**

- Rated Current (A) A1 A2 B1 B2 C
  - 10-50: 98.8 133.8 83.8 118.8 M8
  - 60-100: 105.9 140.9 85.9 120.9 M8

**Flush-mounted**

- Rated Current (A) A1 A2 B1 B2 C
  - 10-50: 98.8 133.8 83.8 118.8 M8
  - 60-100: 105.9 140.9 85.9 120.9 M8
## Characteristics and Outline Dimensions

### Molded Case Circuit Breakers

#### (50A Frame)

### S50-SF

#### Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>S50-SF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>2</td>
</tr>
</tbody>
</table>

#### Optional

- Internally Mounted Accessories
  - Motor operator
  - External operating Breaker-mounted handle
  - Toggle extension
  - Mechanical interlock Slide type
  - Toggle holder
  - Toggle lock
  - Terminal cover
  - Terminal block for lead
  - Door flange

#### Standard specifications

- Overcurrent trip mechanism: Thermal-magnetic
- Trip button (color): Yes (Red)
- Handle position indication (ON: Red, OFF: Green): Yes
- Suitability for isolation: Yes
- CE marking: Yes

#### Notes:

- Standard: This configuration used unless otherwise specified.
- Optional standard: Specify when ordering.
- "yes" or "available": — —
- "no" or "not available": — —
- DC rating available on request.
- Line side interpole barriers are supplied as standard. (Front connection only)
- Provided with DIN rail adaptor.

### Combinations of Internally Mounted Accessories (Optional)

<table>
<thead>
<tr>
<th>Model</th>
<th>AX</th>
<th>AL</th>
<th>SH</th>
<th>UV</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Accessories

- AX: Auxiliary switch
- AL: Alarm switch
- SH: Short circuit
- UV: Under voltage

#### Poles

- Toggle Left pole
- Right pole
Outline dimensions (mm)

Front-connected

<table>
<thead>
<tr>
<th>Preparation of conductor</th>
<th>With extension bars (optional)</th>
<th>Drilling plan (front view)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M5×0.8 screw</td>
<td>M4×0.7 Mounting screw</td>
<td>M4×0.7 Tapped hole</td>
</tr>
<tr>
<td>12.5</td>
<td>50</td>
<td>10</td>
</tr>
<tr>
<td>3P</td>
<td>2P</td>
<td>3P</td>
</tr>
<tr>
<td>2P</td>
<td>3P</td>
<td>2P</td>
</tr>
</tbody>
</table>

Rear-connected

<table>
<thead>
<tr>
<th>Detail of connecting part</th>
<th>Drilling plan (front view)</th>
<th>Panel cutout (front view)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting plate (max. 15.2)</td>
<td>M4×0.7 Mounting screw</td>
<td>M4×0.7 Tapped hole</td>
</tr>
<tr>
<td>12.5</td>
<td>50</td>
<td>10</td>
</tr>
<tr>
<td>3P</td>
<td>2P</td>
<td>3P</td>
</tr>
<tr>
<td>2P</td>
<td>3P</td>
<td>2P</td>
</tr>
</tbody>
</table>

Plug-in (Standard)

<table>
<thead>
<tr>
<th>Detail of connecting part</th>
<th>Preparation of conductor</th>
<th>Mounting base (rear view)</th>
<th>Drilling plan (front view)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conductor</td>
<td>M5×0.8 Mounting screw</td>
<td>M5×0.8 Mounting screw</td>
<td>M4×0.7 Tapped hole</td>
</tr>
<tr>
<td>12.5</td>
<td>50</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>3P</td>
<td>2P</td>
<td>3P</td>
<td></td>
</tr>
<tr>
<td>2P</td>
<td>3P</td>
<td>2P</td>
<td></td>
</tr>
</tbody>
</table>

Flush-mounted

<table>
<thead>
<tr>
<th>Detail of connecting part</th>
<th>Drilling plan (front view)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M5×0.8 Mounting screw</td>
<td>M4×0.7 Tapped hole</td>
</tr>
<tr>
<td>12.5</td>
<td>50</td>
</tr>
<tr>
<td>3P</td>
<td>2P</td>
</tr>
</tbody>
</table>

Rated current (A) A B C D E

15-50 10.5 6.5 4 13 16

Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.
### Ratings and Specifications

**Type**
- Number of poles

<table>
<thead>
<tr>
<th>Type</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S125-SF</strong></td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

**Rated current, A**
- Calibrated at 45°C

<table>
<thead>
<tr>
<th>Rated current, A</th>
<th>15</th>
<th>50</th>
<th>125</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Rated insulation voltage ([U] V)**
- AC: 690V

<table>
<thead>
<tr>
<th>Rated insulation voltage</th>
<th>690V</th>
</tr>
</thead>
</table>

**Rated impulse withstand voltage ([U_{exp}] kV)**
- AC: 900V

<table>
<thead>
<tr>
<th>Rated impulse withstand voltage</th>
<th>900V</th>
</tr>
</thead>
</table>

**Rated breaking capacity, kA**
- IEC60947-2

<table>
<thead>
<tr>
<th>Rated breaking capacity</th>
<th>25/13</th>
<th>25/13</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.25/0.25</td>
<td>25/13</td>
<td>25/13</td>
</tr>
</tbody>
</table>

**Weight (m) standard type (kg)**
- DIN rail mount: 6.6, 8.6, 10.6

### Connections and Mountings

**Front-connected (FC)**
- Terminal screws

**Rear-connected (RC)**
- Bolt studs

**Plug-in (PM)**
- For switchboards (PM/C)
- For distribution boards (PM/B)

**Flush-mounted (FP)**
- With flat bar studs

**Draw-out type (DR)**
- TemPlug (PG)

**DIN rail mount**
- Clip-in chassis mount

### Accessories (optional)

**Motor operator**
- M (C)

**External operating (B) (A)**
- Door-mounted

**Toggle extension**
- H (A)

**Mechanical interlock (SL)**
- M (S)

**Toggle holder**
- H (H)

**Toggle lock**
- H (L)

**Terminal cover**
- For front-connected

**Terminal block for lead**
- T (F)

**Door flange**
- D (F)

### Standard specifications

**Overcurrent trip mechanism**
- Thermal-magnetic

**Trip button (color)**
- Yes (Red)

**Handle position indication (ON: Red, OFF: Green)**
- Yes

**Suitability for isolation**
- Yes

**CE marking**
- Yes

### Notes:
- □: Standard. This configuration used unless otherwise specified.
- ○: Optional standard. Specify when ordering.
- ●: “yes” or “available”. "no" or "not available".
- 1: DC rating available on request.
- ➤: Line sides interpole barriers are supplied as standard. (Front connection only)
- □: Provided with DIN rail adaptor.

### Combinations of Internally Mounted Accessories (Optional)

<table>
<thead>
<tr>
<th>Accessory</th>
<th>AX</th>
<th>AL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary switch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alarm switch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short hop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under voltage hop</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Characteristics and Outline Dimensions

#### Molded Case Circuit Breakers

**TemBreak2**

(125A Frame)

#### S125-SF

**Time/Current characteristic curves**

### Ambient Compensating Curves

#### Characteristic and Outline Dimensions

**TemPlug2**

(125A Frame)
**Outline dimensions (mm)**

**Front-connected**

Interlock barrier (removable)  
2P 12.5  
2L 95  
3P 22  
4P 60  
5P 75  
6P 100  

**Preparation of conductor**

M5x0.8 screw (15-50A)  
M6 screw (60-125A)  

**With extension bars**

(optional)  

**Drilling plan**

(front view)

**Rear-connected**

Detail of connecting part  

**Drilling plan**

(front view)

**Plug-in (Standard)**

Detail of connecting part  

**Mounting base**

(rear view)

**Drilling plan**

(front view)

**Flush-mounted**

Detail of connecting part  

**Drilling plan**

(front view)

---

ASL: Arrangement Standard Line  
H: Handle Frame Centre Line  
C: Handle Centre Line

Panels cutout dimensions shown give an allowance of 1.0mm around the handle escutheon.

<table>
<thead>
<tr>
<th>Rated current (A)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-50</td>
<td>10.5</td>
<td>6.5</td>
<td>4</td>
<td>13</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>60-125</td>
<td>12.5</td>
<td>8.5</td>
<td>4</td>
<td>13</td>
<td>16</td>
<td>5</td>
</tr>
</tbody>
</table>
### Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>$S100$-NF</th>
<th>$S50$-GF</th>
<th>$S100$-GF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Rated short time withstand current, kA</td>
<td>50</td>
<td>75</td>
<td>100</td>
</tr>
<tr>
<td>Rated impulse withstand voltage ($U_{imp}$) kV</td>
<td>90</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>Rated insulation voltage ($U_{AC}$)</td>
<td>690</td>
<td>690</td>
<td>690</td>
</tr>
<tr>
<td>Connections and Mountings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Front-connected (FC)</td>
<td>Terminal screws</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rear-connected (RC)</td>
<td>Bolt studs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plug-in (PM)</td>
<td>For switchboards (Standard (PMC))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flush-mounted (FP)</td>
<td>With flat bar studs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Draw-out type (DR)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TemPlug$^2$/P (PG)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIN rail mount</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clip-in chassis mount</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessories (optional)</td>
<td>Symbol</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor operator</td>
<td>M.C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor control</td>
<td>M.C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>External operating Breaking-mouted</td>
<td>H B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal operating Breaking-mouted</td>
<td>H B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toggle extension</td>
<td>H A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical interlock slide type</td>
<td>M S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toggle holder</td>
<td>H H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toggle lock</td>
<td>H L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terminal cover</td>
<td>For front-connected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpole barrier</td>
<td>B A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Door flange</td>
<td>D F</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Characteristics and Outline Dimensions

#### Time/Current characteristic curves

- **Max. (40–50A)**
- **Max. (60–100A)**
- **Max. (150–300A)**

#### Ambient Compensating Curves

- **10A**
- **30A**
- **50A**

### Combinations of Internally Mounted Accessories (Optional)

<table>
<thead>
<tr>
<th></th>
<th>AX</th>
<th>AL</th>
</tr>
</thead>
<tbody>
<tr>
<td>BX</td>
<td>AX</td>
<td>AL</td>
</tr>
<tr>
<td>Z</td>
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<td>AL</td>
</tr>
<tr>
<td>V</td>
<td>AX</td>
<td>AL</td>
</tr>
<tr>
<td>W</td>
<td>AX</td>
<td>AL</td>
</tr>
</tbody>
</table>

**NOTE:** 2-pole type breaker may incorporate only one combination of AX, AL, AX, AL, AX, AL or AX into the right pole.

### Notes:
- **•**: Standard. This configuration used unless otherwise specified. **○**: Optional standard. Specify when ordering.
- **•**: Yes or “available”. **○**: “no” or “not available”.
- **1**: DC rating available on request.
- **)): DIN rail adaptor.
- **•**: High-performance (PMB).
- **\(\bar{\epsilon}\)**: Marked standard type. Specify when ordering.
- **\(\bar{\epsilon}\)**: Provided with DIN rail adaptor.
Outline dimensions (mm)  S100-NF, S50-GF, S100-GF

Front-connected

Rear-connected

Plug-in (Standard)

Plug-in (High-performance)

Flush-mounted

Note: Studs are factory installed in horizontal direction both on the line and load sides.
Molded Case Circuit Breakers

TemBreak2

S125-NF, S125-GF

Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of poles</th>
<th>Ratings</th>
<th>S125-NF</th>
<th>S125-GF</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Rated current, A</td>
<td>125</td>
<td>125</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Calibrated at 45°C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Notations</th>
<th>Symbol</th>
<th>Accessories (optional)</th>
<th>Number of poles</th>
<th>S125-NF</th>
<th>S125-GF</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

| Characteristics and Outline Dimensions | Time/Current characteristic curves |

<table>
<thead>
<tr>
<th>Percent Rated Current</th>
<th>Percent Rated Current</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Percent Rated Current</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Ambient Compensating Curves

<table>
<thead>
<tr>
<th>Ambiente temperature (°C)</th>
<th>Percent Rated Current</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:

- Standard. This configuration used unless otherwise specified. ☑: Optional standard. Specify when ordering.
- “yes” or “available” — “no” or “not available”. ☑: DC rating available on request. ☑: Line side interpole barriers are supplied as standard. (Front connection only)
- ☑: Provided with DIN rail adaptor.

Combinations of Internally Mounted Accessories (Optional)

<table>
<thead>
<tr>
<th>AX</th>
<th>AL</th>
<th>SH</th>
<th>UV</th>
<th>AX</th>
<th>AL</th>
<th>SH</th>
<th>UV</th>
<th>AX</th>
<th>AL</th>
<th>SH</th>
<th>UV</th>
<th>AX</th>
<th>AL</th>
<th>SH</th>
<th>UV</th>
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<tbody>
<tr>
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<td></td>
</tr>
<tr>
<td>AX</td>
<td>AL</td>
<td>SH</td>
<td>UV</td>
<td>AX</td>
<td>AL</td>
<td>SH</td>
<td>UV</td>
<td>AX</td>
<td>AL</td>
<td>SH</td>
<td>UV</td>
<td>AX</td>
<td>AL</td>
<td>SH</td>
<td>UV</td>
</tr>
</tbody>
</table>

NOTE: 2-pole type breaker may incorporate only one combination of AX, AL, SH, UV.
Outline dimensions (mm) S125-NF, S125-GF

Front-connected

Preparation of conductor

With extension bars (optional)

Drilling plan (front view)

Rear-connected

Detail of connecting part

Drilling plan (front view)

Panel cutout (front view)

Plug-in (Standard)

Detail of connecting part

Preparation of conductor

Drilling plan (front view)

Plug-in (High-performance)

Detail of connecting part

Preparation of conductor

Drilling plan (front view)

Flush-mounted

Detail of connecting part

Panel cutout (front view)

Note: Studs are factory installed in horizontal direction both on the line and load sides.

Note: Studs are factory installed in horizontal direction both on the line and load sides.

Note: Studs can be turned 45° or 90°.

Note: Conductor overlap, max.

Note: Stud can be turned 45° or 90°.

Note: Studs are factory installed in horizontal direction both on the line and load sides.

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Note: Studs are factory installed in horizontal direction both on the line and load sides.
Molded Case Circuit Breakers

TemBreak2

S225-NF, S225-GF

(225A Frame)

Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>S225-NF</th>
<th>S225-GF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>2*3</td>
<td>2*3</td>
</tr>
<tr>
<td>Ratings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated current, A</td>
<td>125</td>
<td>125</td>
</tr>
<tr>
<td>Calibrated at 45°C</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>175</td>
<td>175</td>
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</tr>
<tr>
<td>200</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>225</td>
<td>225</td>
<td></td>
</tr>
</tbody>
</table>

Notes:

- Standard. This configuration used unless otherwise specified.
- Optional standard. Specify when ordering.
- Yes or “available”, — “no” or “not available”.
- DC rating available on request.
- Line side interpole barriers are supplied as standard. (Front connection only)

Characteristics and Outline Dimensions

Time/Current characteristic curves

Ambient Compensating Curves

Combinations of Internally Mounted Accessories (Optional)
**Outline dimensions (mm)**

**S225-NF, S225-GF**

### Front-connected

**Preparation of conductor**

- Conductor width, max. 25

**With extension bars (optional)**

- Conductor overlap, max

**Drilling plan (front view)**

- Stud can be turned 45° or 90°

### Rear-connected

**Drilling plan (front view)**

- Conductor width, max. 25

**Panel cutout (front view)**

- Stud can be turned 45° or 90°

### Plug-in (Standard)

**Preparation of conductor**

- Conductor width, max. 25

**Drilling plan (front view)**

- Conductor overlap, max.

### Plug-in (High-performance)

**Preparation of conductor**

- Conductor width, max. 22

**Drilling plan (front view)**

- Stud can be turned 45° or 90°

### Flush-mounted

**Preparation of conductor**

- Conductor overlap, max.

**Panel cutout (front view)**

- Stud can be turned 45° or 90°

---

Note: Studs are factory installed in horizontal direction both on the line and load sides.
Characteristics and Outline Dimensions TemBreak2

Molded Case Circuit Breakers (250A Frame)

E250-SF, S250-SF

Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>250-SF</th>
<th>250-SF</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Pole</td>
<td>2 Pole</td>
<td>2 Pole</td>
</tr>
<tr>
<td>Number of poles</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Rated current, A</td>
<td>125</td>
<td>250</td>
</tr>
<tr>
<td>Calibrated at 45°C</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>200</td>
<td>200</td>
</tr>
</tbody>
</table>

Notes:
- Center pole omitted
- Rated insulation voltage (U) V AC 690V
- Rated impulse withstand voltage (Uimp) kV 10/35
- Rated breaking capacity, kA 10/35
- Rated short time withstand current, kA 10/35

Connections and Mountings
- Front-connected (FC) Terminal screws
- Rear-connected (RC) Bolt studs
- Plug-in (PM) Flat bar studs
- Flush-mounted (FP) With flat bar studs
- Draw-out type (DR) With extension bars

Accessories (optional) Symbol
- Motor operator M/C
- External operating Breaker-mounted H B
- Handle Door-mounted (variable depth) H F
- Toggle extension H A
- Mechanical interlock Slide type M S
- Toggle holder H H
- Toggle lock H L
- Terminal cover For front-connected C F
- Interpole barrier B A
- Terminal block for lead T F
- Door flange D F

Overcurrent trip mechanism
- Thermal-magnetic Yes (Red)
- Thermal-magnetic Yes (Red)
- Thermal-magnetic Yes (Red)
- Thermal-magnetic Yes (Red)

Trip button (color)
- Handle position indication (GN: Red, DFF: Green)

Suitability for isolation
- Yes
- Yes
- Yes
- Yes

CE marking
- Yes
- Yes
- Yes
- Yes

Notes:
- : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering.
- : "yes" or "available", — : "no" or "not available".
- DC rating available on request.
- Line side interpole barriers are supplied as standard. (Front connection only)

Combinations of Internally Mounted Accessories (Optional)

<table>
<thead>
<tr>
<th>Type</th>
<th>AX</th>
<th>AL</th>
<th>SH</th>
<th>UV</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Pole</td>
<td>Left pole</td>
<td>Right pole</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Time/Current characteristic curves

Ambient Compensating Curves

Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>250-SF</th>
<th>250-SF</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Pole</td>
<td>2 Pole</td>
<td>2 Pole</td>
</tr>
<tr>
<td>Number of poles</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Rated current, A</td>
<td>125</td>
<td>250</td>
</tr>
<tr>
<td>Calibrated at 45°C</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>200</td>
<td>200</td>
</tr>
</tbody>
</table>

Notes:
- Center pole omitted
- Rated insulation voltage (U) V AC 690V
- Rated impulse withstand voltage (Uimp) kV 10/35
- Rated breaking capacity, kA 10/35
- Rated short time withstand current, kA 10/35

Connections and Mountings
- Front-connected (FC) Terminal screws
- Rear-connected (RC) Bolt studs
- Plug-in (PM) Flat bar studs
- Flush-mounted (FP) With flat bar studs
- Draw-out type (DR) With extension bars

Accessories (optional) Symbol
- Motor operator M/C
- External operating Breaker-mounted H B
- Handle Door-mounted (variable depth) H F
- Toggle extension H A
- Mechanical interlock Slide type M S
- Toggle holder H H
- Toggle lock H L
- Terminal cover For front-connected C F
- Interpole barrier B A
- Terminal block for lead T F
- Door flange D F

Overcurrent trip mechanism
- Thermal-magnetic Yes (Red)
- Thermal-magnetic Yes (Red)
- Thermal-magnetic Yes (Red)
- Thermal-magnetic Yes (Red)

Trip button (color)
- Handle position indication (GN: Red, DFF: Green)

Suitability for isolation
- Yes
- Yes
- Yes
- Yes

CE marking
- Yes
- Yes
- Yes
- Yes

Notes:
- : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering.
- : "yes" or "available", — : "no" or "not available".
- DC rating available on request.
- Line side interpole barriers are supplied as standard. (Front connection only)
Outline dimensions (mm)

**Front-connected**

- **Preparation of conductor** (optional)
- **With extension bars**
- **Drilling plan (front view)**

**Rear-connected**

- **Detail of connecting part**
- **Drilling plan (front view)**
- **Panel cutout (front view)**

**Plug-in (Standard)**

- **Detail of connecting part**
- **Mounting base (rear view)**
- **Drilling plan (front view)**

**Flush-mounted**

- **Drilling plan (front view)**

---

**Characteristics and Outline Dimensions**

- **ASL:** Arrangement Standard Line
- **HL:** Handle Frame Centre Line
- **CL:** Handle Centre Line

---

For the extension bars, straight bars or spread bars can be supplied.
**7**

**Characteristics and Outline Dimensions TemBreak2**

**Molded Case Circuit Breakers**

*S250-NF, S250-GF*

### Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>S250-NF</th>
<th>S250-GF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Rated current, A</td>
<td>250</td>
<td>250</td>
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</table>

### Connections and Mountings

<table>
<thead>
<tr>
<th>Description</th>
<th>S250-NF</th>
<th>S250-GF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center pole omitted</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Rated insulation voltage (U_i) V</td>
<td>690V</td>
<td>690V</td>
</tr>
<tr>
<td>Rated impulse withstand voltage (U_imp) kV</td>
<td>7/5, 5</td>
<td>7/5, 5</td>
</tr>
<tr>
<td>Rated breaking capacity, kA</td>
<td>65/65</td>
<td>65/65</td>
</tr>
<tr>
<td>DIN rail mount</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>TemPlug</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Draw-out type (DR)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Flush-mounted (FP)</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Rear-connected (RC)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Front-connected (FC)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Terminal cover For front-connected</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Toggle lock</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Terminal block for lead</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Door flange</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Accessories (optional)

<table>
<thead>
<tr>
<th>Description</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor operator</td>
<td>M.C.</td>
</tr>
<tr>
<td>External operating Breaker-mounted handle</td>
<td>H.B.</td>
</tr>
<tr>
<td>Door-mounted (variable depth)</td>
<td>H.F.</td>
</tr>
<tr>
<td>Toggle extension</td>
<td>H.A.</td>
</tr>
<tr>
<td>Mechanical interlock slide type</td>
<td>M.S.</td>
</tr>
<tr>
<td>Toggle holder</td>
<td>H.H.</td>
</tr>
<tr>
<td>Toggle lock</td>
<td>H.L.</td>
</tr>
<tr>
<td>Terminal cover For front-connected</td>
<td>C.F.</td>
</tr>
<tr>
<td>For rear-connected and plug in</td>
<td>C.R.</td>
</tr>
<tr>
<td>Interpole barrier</td>
<td>B.A.</td>
</tr>
<tr>
<td>Terminal block for lead</td>
<td>T.F.</td>
</tr>
<tr>
<td>Door flange</td>
<td>D.F.</td>
</tr>
</tbody>
</table>

### Standard specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>S250-NF</th>
<th>S250-GF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary switch</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Alarm switch</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Short trip</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Under voltage trip</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Overcurrent trip mechanism</td>
<td>Yes (Red)</td>
<td>Yes (Red)</td>
</tr>
<tr>
<td>Trip button (color)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Handle position indication (GN: Red, DFF: Green)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CE marking</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Notes

- **Standard.** This configuration used unless otherwise specified.
- **Optional standard.** Specify when ordering.
- **Yes** or **"available."** — "no" or **"not available."
- **DC rating available on request.**
- **Line side interpole barriers are supplied as standard.** (Front connection only)

### Combinations of Internally Mounted Accessories (Optional)

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary switch</td>
<td>AX</td>
</tr>
<tr>
<td>Alarm switch</td>
<td>AL</td>
</tr>
<tr>
<td>Short trip</td>
<td>SH</td>
</tr>
<tr>
<td>Under voltage trip</td>
<td>UV</td>
</tr>
</tbody>
</table>

---

**Time/Current characteristic curves**

**Ambient Compensating Curves**

- **Percent Rated Current**
- **Ambient temperature (°C)**
### Characteristics and Outline Dimensions

**S250-NF, S250-GF**

#### Outline dimensions (mm)

**Front-connected**

- **Preparation of conductor**
  - Conductor width, max. 25

- **With extension bars (optional)**
  - Conductor overlap, max.

- **Drilling plan (front view)**

**Rear-connected**

- **Drilling plan (front view)**

- **Panel cutout (front view)**

**Plug-in (Standard)**

- **Detail of connecting part**

- **Mounting base (rear view)**

- **Drilling plan (front view)**

**Plug-in (High-performance)**

- **Detail of connecting part**

- **Mounting base (rear view)**

- **Preparation of conductor**

- **Drilling plan (front view)**

**Flush-mounted**

- **Panel cutout (front view)**

**Note:** Studs are factory installed in horizontal direction both on the line and load sides.

---

**ASL:** Arrangement Standard Line  
**HL:** Handle Frame Centre Line  
**CL:** Handle Centre Line
Characteristics and Outline Dimensions

TemBreak2

Molded Case Circuit Breakers

S400-CF, S400-NF, S400-GF, S400-PF

(400A Frame)

7

Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>$S400$-CF</th>
<th>$S400$-NF</th>
<th>$S400$-GF</th>
<th>$S400$-PF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Rated current, A</td>
<td>125</td>
<td>125</td>
<td>125</td>
<td>125</td>
</tr>
<tr>
<td>Calibrated at 45°C</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
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<tr>
<td>150</td>
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<td>175</td>
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<tr>
<td>225</td>
<td>225</td>
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<td>225</td>
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<tr>
<td>Rated insulation voltage (U) V</td>
<td>600V</td>
<td>600V</td>
<td>600V</td>
<td>600V</td>
</tr>
<tr>
<td>Rated impulse withstand voltage (Uimp) kV</td>
<td>600V</td>
<td>600V</td>
<td>600V</td>
<td>600V</td>
</tr>
<tr>
<td>Rated breaking capacity, kA</td>
<td>10/15</td>
<td>10/15</td>
<td>10/15</td>
<td>10/15</td>
</tr>
<tr>
<td>(Ip/Ip(sym))</td>
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<td>3000 6000</td>
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</tr>
</tbody>
</table>

Time/Current characteristic curves

Ambient Compensating Curves

Magnetic trip pickup current

Combination of Internally Mounted Accessories (Optional)
TemBreak2
Molded Case Circuit Breakers
H100-NF, L100-NF
(100A Frame)

Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>100-NF</th>
<th>100-NF</th>
<th>100-NF</th>
<th>100-NF</th>
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</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Rated current, A</td>
<td>15</td>
<td>20</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td>Calibrated at 45°C</td>
<td>50</td>
<td>60</td>
<td>75</td>
<td>100</td>
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Ratings

<table>
<thead>
<tr>
<th>ISO</th>
<th>AC 690</th>
<th>6900</th>
<th>2500</th>
<th>1250</th>
<th>6300</th>
<th>4500</th>
<th>3000</th>
<th>2000</th>
<th>1250</th>
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<tbody>
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<td>20</td>
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<td>60</td>
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<td>600000</td>
<td>700000</td>
<td>800000</td>
<td>900000</td>
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</tbody>
</table>

Time/Current characteristic curves

Ambient Compensating Curves

Characteristics and Outline Dimensions

Combinations of Internally Mounted Accessories (Optional)

Notes:
- : Standard. This configuration used unless otherwise specified.
- : Optional standard. Specify when ordering.
- : Semi-standard. "yes" or "available".
- : "no" or "not available".
- : DC rating available on request.
- : Line side interpole barriers are supplied as standard. (Front connection only)
- : Also applicable to AC415V.
Molded Case Circuit Breakers

H125-NF, L125-NF

Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>H125-NF</th>
<th>L125-NF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td><strong>Ratings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated current, A</td>
<td>125</td>
<td>125</td>
</tr>
<tr>
<td>Rated insulation voltage (U) V AC</td>
<td>380</td>
<td>380</td>
</tr>
<tr>
<td>Rated impulse withstand voltage (Uimp) kV</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Rated breaking capacity, kA</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NK (U/Lopz(sym)) AC</td>
<td>690V</td>
<td>690V</td>
</tr>
<tr>
<td>260V</td>
<td></td>
<td></td>
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<tr>
<td>120/250V</td>
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</tr>
<tr>
<td>DC 250V</td>
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<tr>
<td>IEC60947-2 (U/Lopz(sym)) AC</td>
<td>690V</td>
<td>690V</td>
</tr>
<tr>
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<td>120/250V</td>
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<td></td>
</tr>
<tr>
<td>DC 250V</td>
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</tr>
<tr>
<td><strong>Rated short time withstand current, kA</strong></td>
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<tr>
<td>2.4</td>
<td>2.2</td>
<td>2.2</td>
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<tr>
<td><strong>Connections and Mountings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Front-connected (FC)</td>
<td>Terminal screws</td>
<td>With extension bars</td>
</tr>
<tr>
<td>Rear-connected (RC)</td>
<td>Flat bar studs</td>
<td>Bolt studs</td>
</tr>
<tr>
<td>Plug-in (PM)</td>
<td>For switchboards (Standard (PMC))</td>
<td>For distribution boards (PMC)</td>
</tr>
<tr>
<td>Flush-mounted (FP)</td>
<td>With flat bar studs</td>
<td></td>
</tr>
<tr>
<td>Draw-out type (DR)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TemPlug/0 (PG)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TemPlug/0B (PG4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIN rail mount</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clip-in chassis mount</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Accessories (optional)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor operator</td>
<td>M · C</td>
<td>M · C</td>
</tr>
<tr>
<td>External operating</td>
<td>H B</td>
<td>H B</td>
</tr>
<tr>
<td>Breaker-mounted handle</td>
<td>Door-mounted (variable depth)</td>
<td>H F</td>
</tr>
<tr>
<td>Toggle extension</td>
<td>H A</td>
<td>H A</td>
</tr>
<tr>
<td>Mechanical interlock slide type</td>
<td>M S</td>
<td>M S</td>
</tr>
<tr>
<td>Toggle holder</td>
<td>H H</td>
<td>H H</td>
</tr>
<tr>
<td>Toggle lock</td>
<td>H L</td>
<td>H L</td>
</tr>
<tr>
<td>Terminal cover</td>
<td>C F</td>
<td>C F</td>
</tr>
<tr>
<td>For front-connected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For rear-connected and plug in</td>
<td>C R</td>
<td>C R</td>
</tr>
<tr>
<td>Interpole barrier</td>
<td>B A</td>
<td>B A</td>
</tr>
<tr>
<td>Terminal block for lead</td>
<td>T F</td>
<td>T F</td>
</tr>
<tr>
<td>Door flange</td>
<td>D F</td>
<td>D F</td>
</tr>
<tr>
<td><strong>Standard specifications</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overcurrent trip mechanism</td>
<td>Thermal-magnetic (Red)</td>
<td>Thermal-magnetic (Red)</td>
</tr>
<tr>
<td>Trip button (color)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Handle position indication (GN: Red, DFF: Green)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Suitability for isolation</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CE marking</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Notes:
- Standard: This configuration used unless otherwise specified.
- Optional: Specify when ordering.
- Semi-standard: Yes or available.
- Other: No or not available.
- DC rating available on request.
- Front connection only.

Combinations of Internally Mounted Accessories (Optional)

<table>
<thead>
<tr>
<th>AX</th>
<th>AL</th>
<th>SH</th>
<th>UV</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7-24
Outline dimensions (mm)

Front-connected

Rear-connected

Plug-in (Standard)

Plug-in (High-performance)

Flush-mounted

Note: Studs are factory installed in horizontal direction both on the line and load sides.

With extension bars (optional)

Drilling plan (front view)

Panel cutout (front view)

ASL: Arrangement Standard Line  HL: Handle Frame Centre Line  CL: Handle Centre Line
Molded Case Circuit Breakers  
TemBreak2  
H225-NF, L225-NF

### Ratings and Specifications

**Type**

- Number of poles

**Ratings**

<table>
<thead>
<tr>
<th>Type</th>
<th>H225-NF</th>
<th>L225-NF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated current, A</td>
<td>125</td>
<td>125</td>
</tr>
<tr>
<td></td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>175</td>
<td>175</td>
</tr>
<tr>
<td></td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>225</td>
<td>225</td>
</tr>
</tbody>
</table>

- Calibrated at 45°C

<table>
<thead>
<tr>
<th>Rated insulation voltage (U) V</th>
<th>380</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated impulse withstand voltage (Uimp) kV</td>
<td>5</td>
</tr>
</tbody>
</table>

**Rated breaking capacity, kA**

<table>
<thead>
<tr>
<th>Type</th>
<th>H225-NF</th>
<th>L225-NF</th>
</tr>
</thead>
<tbody>
<tr>
<td>NK</td>
<td>20/15</td>
<td>20/15</td>
</tr>
<tr>
<td></td>
<td>20/80</td>
<td>20/80</td>
</tr>
<tr>
<td></td>
<td>20/150</td>
<td>20/150</td>
</tr>
<tr>
<td>DC</td>
<td>250V</td>
<td>250V</td>
</tr>
</tbody>
</table>

| IEC60947-2 (U) sym | 20/15 | 20/15 |
|                   | 30/80 | 30/80 |
|                   | 120/80| 120/80|
|                   | 125/85| 125/85|
|                   | 125/85| 125/85|
| DC                | 250V  | 250V   |

- 1: For switching boards (Standard PM): High-performance (PMF), For distribution boards (PMF)

**Weight**

<table>
<thead>
<tr>
<th>Type</th>
<th>H225-NF</th>
<th>L225-NF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (marked standard type), kg</td>
<td>2.4</td>
<td>2.4</td>
</tr>
</tbody>
</table>

**Connections and Mountings**

<table>
<thead>
<tr>
<th>Front-connected (FC)</th>
<th>Terminal screws</th>
<th>With extension bars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rear-connected (RC)</td>
<td>Flat bar studs</td>
<td>Bolt studs</td>
</tr>
<tr>
<td>Plug-in (PM)</td>
<td>For switchboards (Standard PMC)</td>
<td>For distribution boards (PMF)</td>
</tr>
</tbody>
</table>

| Flush-mounted (FP)   | With flat bar studs |
| Draw-out type (DR)   |                       |
| TemPlug/PG (PG)      |                       |
| DIN rail mount       |                       |
| Clip-in chassis mount|                       |

**Accessories (optional)**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>M C</td>
<td>Motor operator</td>
</tr>
<tr>
<td>H F</td>
<td>External operating Breaker-mounted</td>
</tr>
<tr>
<td>H F</td>
<td>Handle Door-mounted (variable depth)</td>
</tr>
<tr>
<td>H A</td>
<td>Toggle extension</td>
</tr>
<tr>
<td>H S</td>
<td>Mechanical interlock Slide type</td>
</tr>
<tr>
<td>H H</td>
<td>Toggle holder</td>
</tr>
<tr>
<td>H L</td>
<td>Toggle lock</td>
</tr>
<tr>
<td>C F</td>
<td>Terminal cover</td>
</tr>
<tr>
<td>C R</td>
<td>For front-connected</td>
</tr>
<tr>
<td>B A</td>
<td>Interpole barrier</td>
</tr>
<tr>
<td>T F</td>
<td>Terminal block for lead</td>
</tr>
<tr>
<td>D F</td>
<td>Door flange</td>
</tr>
</tbody>
</table>

**Overcurrent trip mechanism**

- Thermal-magnetic: Yes (Red)
- Thermal-magnetic: Yes (Red)

**Trip button (color)**

- Handle position indication (GN: Red, OFF: Green)
- Yes: Yes

**Suitability for isolation**

- CE marking: Yes

**Notes:**

- Standard. This configuration used unless otherwise specified.
- Optional standard. Specify when ordering.
- Semi-standard. **“yes” or “available”, — “no” or “not available”**.
- DC rating available on request.
- Line side interpole barriers are supplied as standard. (Front connection only)
- Also applicable to AC115V.

### Time/Current characteristic curves

<table>
<thead>
<tr>
<th>Time/s</th>
<th>Current, kA</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.01</td>
<td>0.1</td>
</tr>
<tr>
<td>0.04</td>
<td>0.4</td>
</tr>
<tr>
<td>0.1</td>
<td>1.0</td>
</tr>
<tr>
<td>0.4</td>
<td>4.0</td>
</tr>
<tr>
<td>0.6</td>
<td>6.0</td>
</tr>
</tbody>
</table>

### Ambient Compensating Curves

<table>
<thead>
<tr>
<th>Calibrated temperature (°C)</th>
<th>5000</th>
<th>8000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Rated Current (%)</td>
<td>100</td>
<td>110</td>
</tr>
<tr>
<td>Ambient temperature (°C)</td>
<td>55</td>
<td>55</td>
</tr>
</tbody>
</table>

### Combinations of Internally Mounted Accessories (Optional)

- AX, AL, SH, UV
- AX, AL, SH, UV
- AX, AL, SH, UV
- AX, AL, SH, UV
- AX, AL, SH, UV
- AX, AL, SH, UV
- AX, AL, SH, UV
- AX, AL, SH, UV
Outline dimensions (mm)  

**Front-connected**

![Diagram of front-connected configuration]

Note: Studs are factory installed in horizontal direction both on the line and load sides.

**Rear-connected**

![Diagram of rear-connected configuration]

**Plug-in (Standard)**

![Diagram of plug-in (standard) configuration]

**Plug-in (High-performance)**

![Diagram of plug-in (high-performance) configuration]

**Flush-mounted**

![Diagram of flush-mounted configuration]

Note: Studs are factory installed in horizontal direction both on the line and load sides.
Characteristics and Outline Dimensions

**TemBreak2**

Molded Case Circuit Breakers

(225A Frame)

**S225-GE**

### Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Ratings**

- **Rated current, A**
  - Calibrated at 45°C (Adjustable)
  - 125
  - 150
  - 175
  - 200
  - 225

- **Rated insulation voltage (U) V**
  - AC: 690V
  - DC: 250V

- **Rated impulse withstand voltage (Uimp) kV**
  - 7/5/7 12
  - 7/5/7 12
  - 5/5/6 12
  - 5/5/6 12

- **Rated breaking capacity, kA**
  - AC: 240V
  - DC: 250V

- **Rated short time withstand current, kA**
  - 3.3
  - 2.1

### Connections and Mountings

- **Front-connected (FC)**
  - Terminal screws
  - With extension bars
  - Flat bar studs
  - Terminal cover
  - Plug-in (PM)
  - For switchboards Standard (PMC)
  - For distribution boards (PMC)
  - Door flange

- **Rear-connected (RC)**
  - Bolt studs
  - Terminal cover For front-connected
  - Toggle lock
  - Toggle holder
  - Mechanical interlock Slide type
  - Toggle extension
  - Terminal block for lead
  - Interpole barrier
  - Terminal block for lead
  - Door flange

### Accessories (optional)

- **Symbol**
  - Motor operator: M
  - External operating Breaker-mounted handle: H B
  - Door-mounted (variable depth): H F
  - Toggle extension: H A
  - Toggle holder: H H
  - Toggle lock: H L
  - Terminal cover: T C

### Standard specifications

- **Accessories (optional)**
  - Electronic \( \bigcirc \)
  - Trip button (color)
  - Handle position indication (GR: Red, DFF: Green)
  - CE marking

### Notes:

- •: Standard. This configuration used unless otherwise specified.
- ○: Optional standard. Specify when ordering.
- ●: Semi-standard. ●: “yes” or “available”, — “no” or “not available”.
- 1: Line side interpole barriers are supplied as standard. (Front connection only)
- 2: Being or will be applied. \( \bigcirc \): Optional pretrip alarm function available on request.

### Combinations of Internally Mounted Accessories (Optional)

<table>
<thead>
<tr>
<th>AX</th>
<th>AL</th>
<th>SH</th>
<th>UV</th>
</tr>
</thead>
<tbody>
<tr>
<td>AX</td>
<td>AL</td>
<td>SH</td>
<td>UV</td>
</tr>
</tbody>
</table>

### Overcurrent tripping characteristics

<table>
<thead>
<tr>
<th>Characteristic No.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long time-delay pick-up current (A) ( \bigcirc )</td>
<td>11</td>
<td>10</td>
<td>9</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Long time-delay time settings (s) ( \bigcirc )</td>
<td>5</td>
<td>10</td>
<td>20</td>
<td>30</td>
<td>60</td>
</tr>
<tr>
<td>Short time-delay pick-up current (A) ( \bigcirc )</td>
<td>2.5</td>
<td>2.5</td>
<td>5</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Short time-delay time settings (s) ( \bigcirc )</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>Instantaneous trip pick-up current (A) ( \bigcirc )</td>
<td>110</td>
<td>110</td>
<td>5</td>
<td>7</td>
<td>70</td>
</tr>
<tr>
<td>Instantaneous trip time settings (s) ( \bigcirc )</td>
<td>1,2</td>
<td>1,2</td>
<td>1,2</td>
<td>1,2</td>
<td>1,2</td>
</tr>
<tr>
<td>Minimum clearing time ( \bigcirc )</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Maximum clearing time ( \bigcirc )</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>Pretrip alarm Pick-up current (A) ( \bigcirc )</td>
<td>( \bigcirc )</td>
<td>( \bigcirc )</td>
<td>( \bigcirc )</td>
<td>( \bigcirc )</td>
<td>( \bigcirc )</td>
</tr>
<tr>
<td>Pretrip alarm Pick-up time (s) ( \bigcirc )</td>
<td>( \bigcirc )</td>
<td>( \bigcirc )</td>
<td>( \bigcirc )</td>
<td>( \bigcirc )</td>
<td>( \bigcirc )</td>
</tr>
<tr>
<td>Shunt trip ( \bigcirc )</td>
<td>( \bigcirc )</td>
<td>( \bigcirc )</td>
<td>( \bigcirc )</td>
<td>( \bigcirc )</td>
<td>( \bigcirc )</td>
</tr>
<tr>
<td>Intricate time-delay characteristic, ( \bigcirc )</td>
<td>( \bigcirc )</td>
<td>( \bigcirc )</td>
<td>( \bigcirc )</td>
<td>( \bigcirc )</td>
<td>( \bigcirc )</td>
</tr>
<tr>
<td>Intricate time-delay characteristic, ( \bigcirc )</td>
<td>( \bigcirc )</td>
<td>( \bigcirc )</td>
<td>( \bigcirc )</td>
<td>( \bigcirc )</td>
<td>( \bigcirc )</td>
</tr>
<tr>
<td>Intricate time-delay characteristic, ( \bigcirc )</td>
<td>( \bigcirc )</td>
<td>( \bigcirc )</td>
<td>( \bigcirc )</td>
<td>( \bigcirc )</td>
<td>( \bigcirc )</td>
</tr>
</tbody>
</table>

Note: Characteristic No.4 will be applied as standard setting unless otherwise specified.
Outline dimensions (mm)

Front-connected

<table>
<thead>
<tr>
<th>Component</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting plate</td>
<td>106</td>
</tr>
<tr>
<td>Conductor overlap</td>
<td>25</td>
</tr>
<tr>
<td>M8 screw</td>
<td>7</td>
</tr>
<tr>
<td>Mounting hole</td>
<td>15</td>
</tr>
</tbody>
</table>

Rear-connected

<table>
<thead>
<tr>
<th>Component</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting plate</td>
<td>106</td>
</tr>
<tr>
<td>Conductor overlap</td>
<td>25</td>
</tr>
<tr>
<td>M8 screw</td>
<td>7</td>
</tr>
<tr>
<td>Mounting hole</td>
<td>15</td>
</tr>
</tbody>
</table>

Plug-in (Standard)

<table>
<thead>
<tr>
<th>Component</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting plate</td>
<td>106</td>
</tr>
<tr>
<td>Conductor overlap</td>
<td>25</td>
</tr>
<tr>
<td>M8 screw</td>
<td>7</td>
</tr>
<tr>
<td>Mounting hole</td>
<td>15</td>
</tr>
</tbody>
</table>

Plug-in (High-performance)

<table>
<thead>
<tr>
<th>Component</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting plate</td>
<td>106</td>
</tr>
<tr>
<td>Conductor overlap</td>
<td>22</td>
</tr>
<tr>
<td>M8 screw</td>
<td>7</td>
</tr>
<tr>
<td>Mounting hole</td>
<td>15</td>
</tr>
</tbody>
</table>

Flush-mounted

<table>
<thead>
<tr>
<th>Component</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting plate</td>
<td>106</td>
</tr>
<tr>
<td>Conductor overlap</td>
<td>12.5</td>
</tr>
<tr>
<td>M8 screw</td>
<td>7</td>
</tr>
<tr>
<td>Mounting hole</td>
<td>15</td>
</tr>
</tbody>
</table>

Note: Studies are factory installed in horizontal direction both on the line and load sides.
**Characteristics and Outline Dimensions**

**TemBreak2**

**Molded Case Circuit Breakers**

**S400-NE, S400-GE, S400-PE**

### Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>$S400-NE$</th>
<th>$S400-GE$</th>
<th>$S400-PE$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

#### Ratings

- **Rated current, A**
  - Calibrated at 45°C

- **Rated insulation voltage (U) V**
  - AC: 390 – 400

- **Rated impulse withstand voltage ($U_{imp}$):**
  - AC: 900 – 960

#### Breaking capacity, kA

- **$I_{sym}$/AC:**
  - 20/15
  - 65/50
  - 100/85

- **$I_{sym}$/DC:**
  - 20/15
  - 65/50
  - 100/85

#### Rated short time withstand current, kA

- Weight: (marked standard type) kg

#### Connections and Mountings

- **Front-connected (FC):**
  - Terminal screws
  - With extension bars
- **Rear-connected (RC):**
  - Bolt studs
  - Flat bar studs

#### Accessories (optional)

- **Handle position indication:**
  - ON: Red, OFF: Green
- **Trip button (color):**
- **Overcurrent trip mechanism:**
  - Definite time-delay characteristic, $I_{sym}$
  - Short time-delay characteristic, $I_{sym}$

- **Terminal cover:**
  - For front-connected
- **Interpole barrier:**
  - B A
- **Terminal block for lead:**
  - T F

#### Time/Current characteristic curves

### Overcurrent tripping characteristics

<table>
<thead>
<tr>
<th>Characteristics No.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT rated current ($I_{sym}$): 250A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short-time-delay trip pick-up current ($I_{sym}$)</td>
<td>2.5</td>
<td>2.5</td>
<td>5</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Setting tolerance ±%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td></td>
</tr>
</tbody>
</table>

### Combinations of Internally Mounted Accessories (Optional)

<table>
<thead>
<tr>
<th>Function</th>
<th>AX</th>
<th>AL</th>
<th>SH</th>
<th>UV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary switch</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alarm switch</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short trip</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under voltage trip</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Notes:

- **Standard:** This configuration used unless otherwise specified.
- **Optional:** Standard specify when ordering.
- **Semi-standard:** ‘yes’ or ‘available’, — ‘no’ or ‘not available’.
- **Line side interpole barriers are supplied as standard. (Front connection only)**
- **The mechanical interlock is not applicable to the draw-out type (DR).**
- **Optional pretrip alarm or ground fault trip function available on request.**
The mechanical interlock is not applicable to the draw-out type (DR).

Line side interpole barriers are supplied as standard. (Front connection only)

Standard. This configuration used unless otherwise specified.

Notes:
- Semi-standard. "yes" or "available", — "no" or "not available".
- Line side interpole barriers are supplied as standard. (Front connection only)
- The mechanical interlock is not applicable to the draw-out type (DR).
- Optional trip alarm or ground fault trip function available on request.
- Also applicable to AC415V.

Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>400-NE</th>
<th>400-NE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>3 / 4</td>
<td>3 / 4</td>
</tr>
<tr>
<td>Rated current, A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calibrated at 45°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring/Measuring</td>
<td>125 175 175</td>
<td>125 175</td>
</tr>
<tr>
<td>150 200 150 200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>175 225 175 225</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200 250 200 250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>225 300 225 300</td>
<td></td>
<td></td>
</tr>
<tr>
<td>350 400 350 400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated insulation voltage (U) V</td>
<td>690</td>
<td>690</td>
</tr>
<tr>
<td>Rated impulse withstand voltage (Uimp) kV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NK</td>
<td>AC 60V</td>
<td>AC 60V</td>
</tr>
<tr>
<td>DC 250V</td>
<td>DC 250V</td>
<td></td>
</tr>
<tr>
<td>IEC60947-2</td>
<td>AC 690V</td>
<td>690V</td>
</tr>
<tr>
<td>DC 200V</td>
<td>200V</td>
<td></td>
</tr>
<tr>
<td>DIN rail mount</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TemPlug</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Draw-out type (DR)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TemPlug(^1) (PG)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIN rail mount</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clip-in chassis mount</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Connections and Mountings

Front-connected (FC) Terminal screws With extension bars
Rear-connected (RC) Bolt studs Flat bar studs
Plug-in (PM) For switchboards Standard (PMC) High-performance (PMB)
For distribution boards (PMI)
Flush-mounted (FP) With flat bar studs
DIN rail mount

Accessories (optional) Symbol
Motor operator M.C.
External operating Breaker-mounted H.B.
handle Door-mounted (variable height) H.F.
Toggle extension H.A.
Mechanical interlock\(^3\) Slide type M.S.
Toggle holder H.H.
Toggle lock H.L.
Terminal cover For front-connected C.F.
For rear-connected and plug in C.R.
Interpole barrier B.A.
Terminal block for lead T.F.
Door flange D.F.

Standard specifications

Overcurrent trip mechanism
Trip button (color) Electronic 16
Handle position indication (GN: Red, DFF: Green) Yes (Red)
Suitability for isolation Yes Yes
CE marking Yes Yes

Notes:
- Standard. This configuration used unless otherwise specified.
- Optional standard. Specify when ordering.
- Semi-standard. "yes" or "available", — "no" or "not available".
- Line side interpole barriers are supplied as standard. (Front connection only)
- The mechanical interlock is not applicable to the draw-out type (DR).
- Optional trip alarm or ground fault trip function available on request.
- Also applicable to AC415V.

Combinations of Internally Mounted Accessories (Optional)

<table>
<thead>
<tr>
<th>AX</th>
<th>AL</th>
<th>SH</th>
<th>UV</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUX</td>
<td>ALARM</td>
<td>SHORT</td>
<td>UNDER VOLTAGE</td>
</tr>
</tbody>
</table>

![Time/Current characteristic curves]

Characteristics and Outline Dimensions TemBreak2
Molded Case Circuit Breakers H400-NE, L400-NE
(400A Frame)
### Characteristics and Outline Dimensions

#### Outline dimensions (mm) H400-NE, L400-NE

**Front-connected**

<table>
<thead>
<tr>
<th>Component</th>
<th>Dimension (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpole barrier (removable)</td>
<td>116</td>
</tr>
<tr>
<td>Mounting hole</td>
<td>15</td>
</tr>
<tr>
<td>Preparation of conductor</td>
<td>66</td>
</tr>
<tr>
<td>ON side</td>
<td>75</td>
</tr>
<tr>
<td>OFF side</td>
<td>72</td>
</tr>
<tr>
<td>M10 screw</td>
<td>31</td>
</tr>
<tr>
<td>M6 Mounting screw</td>
<td>17</td>
</tr>
<tr>
<td>Panel cutout dimensions given an allowance of 1.0mm around the handle escutcheon.</td>
<td></td>
</tr>
</tbody>
</table>

**Rear-connected**

<table>
<thead>
<tr>
<th>Component</th>
<th>Dimension (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stud can be turned 45° or 90°</td>
<td></td>
</tr>
<tr>
<td>Conductor overlap, max</td>
<td>12</td>
</tr>
<tr>
<td>Conductor overlap, max</td>
<td>45</td>
</tr>
<tr>
<td>M6 Mounting screw</td>
<td>18</td>
</tr>
<tr>
<td>Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.</td>
<td></td>
</tr>
</tbody>
</table>

**Plug-in (Standard)**

<table>
<thead>
<tr>
<th>Component</th>
<th>Dimension (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M6 Mounting screw</td>
<td>14</td>
</tr>
<tr>
<td>Conductor width, max</td>
<td>30</td>
</tr>
<tr>
<td>M10 screw</td>
<td>19</td>
</tr>
<tr>
<td>Auxiliary circuit terminals</td>
<td>6</td>
</tr>
<tr>
<td>Drilling plan (front view)</td>
<td></td>
</tr>
</tbody>
</table>

**Plug-in (High-performance)**

<table>
<thead>
<tr>
<th>Component</th>
<th>Dimension (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M6 Mounting screw</td>
<td>15</td>
</tr>
<tr>
<td>Conductor width, max</td>
<td>30</td>
</tr>
<tr>
<td>M10 screw</td>
<td>20</td>
</tr>
<tr>
<td>Auxiliary circuit terminals</td>
<td>6</td>
</tr>
<tr>
<td>Drilling plan (front view)</td>
<td></td>
</tr>
</tbody>
</table>

**Flush-mounted**

<table>
<thead>
<tr>
<th>Component</th>
<th>Dimension (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting plate</td>
<td>195</td>
</tr>
<tr>
<td>Mounting screw</td>
<td>18</td>
</tr>
<tr>
<td>Panel cutout (front view)</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Studs are factory installed in horizontal direction both on the line and load sides.
**Characteristics and Outline Dimensions TemBreak2**

**S630-CF, S630-NF, S630-RF**

### Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>S630-CF</th>
<th>S630-NF</th>
<th>S630-RF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Rated current, A</td>
<td>500</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Calibrated at 45°C</td>
<td>600</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>630</td>
<td>630</td>
<td>630</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- Suitability for isolation
- Handle position indication (ON: Red, OFF: Green)
- Trip button (color)
- Overcurrent trip mechanism
- Terminal cover
- Door flange
- CE marking

**Connections and Mountings**

- Front-connected (FC)
  - Terminal screws
  - With extension bars
- Rear-connected (RC)
  - Bolt studs
- Plug-in (PM)
  - For switchboards (Standard (PMC))
  - High-performance (PMB)
  - For distribution boards (PMB)
- Flush-mounted (FP)
- Draw-out type (DR)
- TemPlug® (PG)
- TemPlug® (PG4)
- DIN rail mount
- Clip-in chassis mount

**Accessories (optional)**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>Motor operator</td>
</tr>
<tr>
<td>H</td>
<td>External operating</td>
</tr>
<tr>
<td>B</td>
<td>Breaker-mounted</td>
</tr>
<tr>
<td>H</td>
<td>handle</td>
</tr>
<tr>
<td>F</td>
<td>Door-mounted (variable depth)</td>
</tr>
<tr>
<td>A</td>
<td>Toggle extension</td>
</tr>
<tr>
<td>H</td>
<td>HARA Mechanical interlock</td>
</tr>
<tr>
<td>S</td>
<td>Slide type</td>
</tr>
<tr>
<td>M</td>
<td>Toggle holder</td>
</tr>
<tr>
<td>L</td>
<td>Toggle lock</td>
</tr>
<tr>
<td>C</td>
<td>Terminal cover</td>
</tr>
<tr>
<td>F</td>
<td>For front-connected</td>
</tr>
<tr>
<td>C</td>
<td>C.R. (C.R. for front-connected and plug-in)</td>
</tr>
<tr>
<td>A</td>
<td>Interpole barrier</td>
</tr>
<tr>
<td>B</td>
<td>A.B. (A.B. for front-connected)</td>
</tr>
<tr>
<td>T</td>
<td>Terminal block for lead</td>
</tr>
<tr>
<td>F</td>
<td>Door flange</td>
</tr>
</tbody>
</table>

**Standard specifications**

- Overcurrent trip mechanism
- Trip button (color)
- Handle position indication (GN: Red, DFF: Green)
- Suitability for isolation
- CE marking

**Ambient Compensating Curves**

- **Time/Current characteristic curves**
- **Magnetic trip pickup current**

**Combinations of Internally Mounted Accessories (Optional)**

- AX: Auxiliary switch
- AL: Alarm switch
- SH: Short trip
- UV: Under voltage trip

---

Notes:
- Standard. This configuration used unless otherwise specified.
- Optional standard. Specify when ordering.
- "Yes" or "Available": "No" or "Not Available".
- DC rating available on request.
- Line side interpole barriers are supplied as standard (Front connection only).
- The mechanical interlock is not applicable to the draw-out type (DR).
- Being or will be applied.
### Outline dimensions (mm)

**Front-connected**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3P</td>
<td>Interlock screw (removable)</td>
</tr>
<tr>
<td>4P</td>
<td>Mounting hole</td>
</tr>
<tr>
<td>8</td>
<td>Toggle extension (removable)</td>
</tr>
<tr>
<td>30</td>
<td>Conductor overlap, max</td>
</tr>
</tbody>
</table>

**Rear-connected**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3P</td>
<td>Stud can be turned 90°</td>
</tr>
<tr>
<td>4P</td>
<td>Toggle extension (removable)</td>
</tr>
<tr>
<td>15</td>
<td>ø15 for accessory wiring when necessary</td>
</tr>
<tr>
<td>30</td>
<td>Conductor overlap, max</td>
</tr>
</tbody>
</table>

**Plug-in (Standard)**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3P</td>
<td>Toggle extension (removable)</td>
</tr>
<tr>
<td>M8</td>
<td>M10 Mounting screw</td>
</tr>
</tbody>
</table>

**Plug-in (High-performance)**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3P</td>
<td>Toggle extension (removable)</td>
</tr>
<tr>
<td>M8</td>
<td>M10 Mounting screw</td>
</tr>
</tbody>
</table>

**Flush-mounted**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3P</td>
<td>Stud can be turned 90°</td>
</tr>
</tbody>
</table>

**Drilling plan (front view)**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3P</td>
<td>M8 Mounting screw</td>
</tr>
<tr>
<td>4P</td>
<td>M12 Mounting screw</td>
</tr>
</tbody>
</table>

**Panel cutout (front view)**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3P</td>
<td>ASL</td>
</tr>
</tbody>
</table>

**Note:** Studs are factory installed in horizontal direction both on the line and load sides.

---

**Characteristics and Outline Dimensions**

- **ASL:** Arrangement Standard Line
- **HL:** Handle Frame Centre Line
- **CL:** Handle Centre Line

---

**Mounting base (rear view)**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>80.5</td>
<td>15</td>
</tr>
</tbody>
</table>

**Drilling plan (front view)**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3P</td>
<td>M8 Mounting screw</td>
</tr>
</tbody>
</table>

**Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.**
### Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>$S630-NE$</th>
<th>$S630-RE$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of poles</strong></td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td><strong>Rated insulation voltage (U) V</strong></td>
<td>AC 380</td>
<td>AC 380</td>
</tr>
<tr>
<td><strong>Rated impulse withstand voltage ($U_{imp}$) kV</strong></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Rated breaking capacity, kA</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NK</td>
<td>AC 950V</td>
<td>AC 950V</td>
</tr>
<tr>
<td>DC 250V</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>IEC60947-2</td>
<td>AC 950V</td>
<td>AC 950V</td>
</tr>
<tr>
<td>DC 250V</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Rated short time withstand current, kA</strong></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Connections and Mountings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Front-connected (FC)</td>
<td>Terminal screws</td>
<td>Terminal screws</td>
</tr>
<tr>
<td>With extension bars</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rear-connected (PC)</td>
<td>Bolt studs</td>
<td>Bolt studs</td>
</tr>
<tr>
<td>Flat bar studs</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Plug-in (PM)</td>
<td>For switchboards</td>
<td>For distribution boards (PM)</td>
</tr>
<tr>
<td>Standard (PMC)</td>
<td>For high-performance (PMC)</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>For distribution boards (PMD)</td>
<td>-</td>
</tr>
<tr>
<td>Flush-mounted (FP)</td>
<td>With flat bar studs</td>
<td>-</td>
</tr>
<tr>
<td>Draw-out type (DR)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TemPlug®/PG</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TemPlug®/PG4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>DIN rail mount</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Clip-in chassis mount</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Accessories (optional)</strong></td>
<td>Symbol</td>
<td></td>
</tr>
<tr>
<td>Motor operator</td>
<td>M.C</td>
<td></td>
</tr>
<tr>
<td>External operating Breaker-mounted handle</td>
<td>H.E</td>
<td>H.E</td>
</tr>
<tr>
<td>Door-mounted (variable depth)</td>
<td>M.D</td>
<td>M.D</td>
</tr>
<tr>
<td>Toggle extension</td>
<td>H.A</td>
<td>H.A</td>
</tr>
<tr>
<td>Slide type</td>
<td>M.S</td>
<td>M.S</td>
</tr>
<tr>
<td>Toggle holder</td>
<td>H.H</td>
<td>H.H</td>
</tr>
<tr>
<td>Toggle lock</td>
<td>H.L</td>
<td>H.L</td>
</tr>
<tr>
<td>Terminal cover</td>
<td>For front-connected</td>
<td>C.R</td>
</tr>
<tr>
<td>For rear-connected and plug-in</td>
<td>C.R</td>
<td>C.R</td>
</tr>
<tr>
<td>Interpole barrier</td>
<td>B.A</td>
<td>B.A</td>
</tr>
<tr>
<td>Terminal block for lead</td>
<td>T.F</td>
<td>T.F</td>
</tr>
<tr>
<td>Door flange</td>
<td>D.F</td>
<td>D.F</td>
</tr>
<tr>
<td><strong>Standard specifications</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Overcurrent trip mechanism</strong></td>
<td>Electronic 16</td>
<td>Electronic 16</td>
</tr>
<tr>
<td>Trip button (color)</td>
<td>Yes (Red)</td>
<td>Yes (Red)</td>
</tr>
<tr>
<td>Handle position indication (GN: Red, DFF: Green)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Suitability for isolation</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CE marking</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Overcurrent Tripping Characteristics

<table>
<thead>
<tr>
<th>Characteristics No.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long time-delay pick-up current (A) ($I_{p}$)</td>
<td>20/20</td>
<td>50/50</td>
<td>100/100</td>
<td>200/200</td>
<td>300/300</td>
<td>400/400</td>
<td>500/500</td>
</tr>
<tr>
<td>Ground fault trip</td>
<td>200/200</td>
<td>300/300</td>
<td>400/400</td>
<td>500/500</td>
<td>600/600</td>
<td>800/800</td>
<td>1000/1000</td>
</tr>
<tr>
<td>Intentional tripping current (A) ($I_{p}$)</td>
<td>100/100</td>
<td>200/200</td>
<td>300/300</td>
<td>400/400</td>
<td>500/500</td>
<td>600/600</td>
<td>800/800</td>
</tr>
</tbody>
</table>

### Combinations of Internally Mounted Accessories (Optional)

<table>
<thead>
<tr>
<th>AX</th>
<th>AL</th>
<th>SH</th>
<th>UV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left pole</td>
<td>Right pole</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes:
- **Standard**: This configuration used unless otherwise specified. **Optional**: Specify when ordering.
- **Standard**: "Yes" or "Available". "No" or "Not Available".
- "Line side interpole barriers are supplied as standard. (Front connection only)".
- "The mechanical interlock is not applicable to the draw-out type (DR)."
- **Being or will be applied**.
- **Optional**: Pretrip alarm or ground fault trip function available on request.
Outline dimensions (mm) S630-NE, S630-RE

Front-connected

Rear-connected

Plug-in (Standard)

Plug-in (High-performance)

Flush-mounted

Note: Studs are factory installed in horizontal direction both on the line and load sides.

Note: Studs are factory installed in horizontal direction both on the line and load sides.

Note: Studs are factory installed in horizontal direction both on the line and load sides.
Molded Case Circuit Breakers  TemBreak2
H630-NE, L630-NE

Characteristics and Outline Dimensions

Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>H630-NE</th>
<th>L630-NE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

**Specifications**

- **Rated insulation voltage (U) V AC**: 800
- **Rated impulse withstand voltage (Uexp) kV**: 2
- **Rated breaking capacity, kA**:
  - IK: 250
  - IC: 300
  - IC/ICsym: 300

**Connections and Mountings**

- **Front-connected (FC)**: Terminal screws
- **Hear-connected (HC)**: Bolt studs
- **Plug-in (PM)**: With flat bar studs
- **Flush-mounted (FP)**: With flat bar studs
- **DIN rail mount**
- **Clamp-in chassis mount**

**Accessories (optional)**

- **Motor operator**
- **External operating breaker-mounted handle**
- **Toggle extension**
- **Mechanical interlock (3) Slide type**
- **Toggle holder**
- **Toggle lock**
- **Terminal cover**
- **Interpole barrier**
- **Terminal block for lead**
- **Door flange**

**Standard specifications**

- **Overcurrent trip mechanism**
- **Trip button (color)**
- **Handle position indication (GN: Red, DFF: Green)**
- **Suitability for isolation**
- **CE marking**

**Notes**

- **Standard**: This configuration used unless otherwise specified.
- **Optional standard**: Specify when ordering.
- **Semi-standard**: “yes” or “available”, “no” or “not available”.
- **Line side interpole barriers**: supplied as standard. (Front connection only)
- **Mechanical interlock**: not applicable to the draw-out type (DR).
- **Optional pretrip alarm or ground fault trip function**: Available on request.

**Overcurrent tripping characteristics**

- **Characteristics No.**: 1, 2, 4, 5, 6, 7
- **Long time-delay pickup current (A) (AI)**
- **Long time-delay time settings (s) (tsd)**
- **Short time-delay pickup current (A) (AII)**
- **Short time-delay time settings (s) (tsd)**
- **Interruption trip pickup current (A) (AI)**
- **Ground fault trip pickup current (A) (AI)**
- **Preferential trip alarm pickup current (A) (AI)**
- **Time-settings (s) (tsd)**
- **Ground fault trip time settings (s) (tsd)**
- **Neutral protection pickup current (A) (AI)**
- **Neutral protection time settings (s) (tsd)**

**Combinations of Internally Mounted Accessories (Optional)**

- **AX**: Auxiliary switch
- **AL**: Alarm switch
- **SH**: Short trip
- **UV**: Under voltage trip
- **AX**: Auxiliary switch
- **AL**: Alarm switch
- **SH**: Short trip
- **UV**: Under voltage trip
- **Left pole (L)**
- **Right pole (R)**
Outline dimensions (mm)

Front-connected

Drilling plan (front view) Panel cutout (front view)

Rear-connected

Drilling plan (front view) Panel cutout (front view)

Plug-in (Standard) Detail of connecting part

Mounting base (rear view) Drilling plan (front view)

Plug-in (High-performance) Detail of connecting part and Preparation of conductor

Mounting base (rear view) Drilling plan (front view)

Flush-mounted

Panel cutout (front view)

Note: Studs are factory installed in horizontal direction both on the line and load sides.

Note: Studs are factory installed in horizontal direction both on the line and load sides.

Characteristics and Outline Dimensions

ASL: Arrangement Standard Line HL: Handle Frame Centre Line CL: Handle Centre Line
Molded Case Circuit Breakers
TemBreak2
S800-CF, S800-NF, S800-RF
(800A Frame)

Characteristics and Outline Dimensions

Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>$S800$-CF</th>
<th>$S800$-NF</th>
<th>$S800$-RF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Rated current, A</td>
<td>700</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>Calibrated at 45°C</td>
<td>800</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>Rated insulation voltage ($U_{n}$) V</td>
<td>690</td>
<td>690</td>
<td>690</td>
</tr>
<tr>
<td>Rated impulse withstand voltage ($U_{imp}$) kV</td>
<td>10/10</td>
<td>20/20</td>
<td>25/25</td>
</tr>
<tr>
<td>Rated breaking capacity, kA</td>
<td>20/20</td>
<td>25/25</td>
<td>25/25</td>
</tr>
<tr>
<td>DIN rail mount</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>TemPlug</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Overcurrent trip mechanism</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thermal-magnetic (adjustable)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Mechanical interlock</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
| Ambient Compensating Curves

<table>
<thead>
<tr>
<th>Time/Current characteristic curves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calibrated at 45°C</td>
</tr>
<tr>
<td>Ambient temperature (°C)</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>Percent Rated Current</td>
</tr>
<tr>
<td>100</td>
</tr>
</tbody>
</table>
| Magnetic trip pickup current

<table>
<thead>
<tr>
<th>Magnetic trip pickup current</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated current $I_{rc}$ (A)</td>
</tr>
<tr>
<td>Adjustable range (A)</td>
</tr>
<tr>
<td>700</td>
</tr>
<tr>
<td>800</td>
</tr>
</tbody>
</table>

Notes:
1. Setting tolerance: ±20%.
2. Unless otherwise stated when ordering, the selector dial is factory set to position “10”.
3. The trip pickup current of DC models is not adjustable; the dial position corresponding to the trip pickup current is marked with a white point.

Combinations of Internally Mounted Accessories (Optional)

<table>
<thead>
<tr>
<th>Accessories (optional)</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor operator</td>
<td>M.C.</td>
</tr>
<tr>
<td>External operating</td>
<td>H.B.</td>
</tr>
<tr>
<td>handle</td>
<td>D.M.</td>
</tr>
<tr>
<td>Door-mounted (variable depth)</td>
<td>H.F.</td>
</tr>
<tr>
<td>Toggle extension</td>
<td>H.A.</td>
</tr>
<tr>
<td>Mechanical interlock</td>
<td>M.S.</td>
</tr>
<tr>
<td>Toggle body</td>
<td>H.B.</td>
</tr>
<tr>
<td>Toggle lock</td>
<td>H.L.</td>
</tr>
<tr>
<td>Terminal cover</td>
<td>F.C.</td>
</tr>
<tr>
<td>For front-connected</td>
<td>C.R.</td>
</tr>
<tr>
<td>For rear-connected and plug in</td>
<td>C.R.</td>
</tr>
<tr>
<td>Interpole barrier</td>
<td>B.A.</td>
</tr>
<tr>
<td>Terminal block for lead</td>
<td>T.F.</td>
</tr>
<tr>
<td>Door flange</td>
<td>D.F.</td>
</tr>
</tbody>
</table>

Notes:
1: Standard. This configuration used unless otherwise specified. 0: Optional standard. Specify when ordering.
A: Semi-standard. 0 “yes” or “available”, — “no” or “not available”. 1: DC rating available on request.
2: Line side interpole barriers are supplied as standard. (Front connection only) 3: The mechanical interlock is not applicable to the draw-out type (DR). 4: Being or will be applied.

Time/Current characteristic curves

<table>
<thead>
<tr>
<th>Time (min)</th>
<th>Current (kA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.005</td>
<td>0.04</td>
</tr>
<tr>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>0.4</td>
<td>0.6</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Percent Rated Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Magnetic trip pickup current</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated current $I_{rc}$ (A)</td>
</tr>
<tr>
<td>Adjustable range (A)</td>
</tr>
<tr>
<td>700</td>
</tr>
<tr>
<td>800</td>
</tr>
</tbody>
</table>

Notes:
1. Setting tolerance: ±20%.
2. Unless otherwise stated when ordering, the selector dial is factory set to position “10”.
3. The trip pickup current of DC models is not adjustable; the dial position corresponding to the trip pickup current is marked with a white point.
### Outline dimensions (mm)

<table>
<thead>
<tr>
<th>Feature</th>
<th>S800-CF, S800-NF, S800-RF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Front-connected</strong></td>
<td></td>
</tr>
<tr>
<td>Trip button (red)</td>
<td>140</td>
</tr>
<tr>
<td>Conductor overlap, max</td>
<td>210</td>
</tr>
<tr>
<td>M8 Mounting screw</td>
<td>80.5</td>
</tr>
<tr>
<td>Panel cutout</td>
<td></td>
</tr>
<tr>
<td>Conductor overlap, max</td>
<td>210</td>
</tr>
<tr>
<td>M8 Mounting screw</td>
<td>80.5</td>
</tr>
</tbody>
</table>

**Rear-connected**

- Toggle extension (removable)
- Stud can be turned 90°

**Plug-in (Standard)**

- Detail of connecting part
- M16 screw
- Conductor width, max. 40
- Auxiliary circuit terminals
- M10 Mounting screw

**Plug-in (High-performance)**

- Detail of connecting part and Preparation of conductor
- M12 screw
- M8 Mounting screw
- Panel cutout

**Flush-mounted**

- Trip button (red)
- M8 Mounting screw

### Notes:

- Studs are factory installed in horizontal direction both on the line and load sides.
- Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.

### Characteristics and Outline Dimensions

- **ASL**: Arrangement Standard Line
- **HL**: Handle Frame Centre Line
- **CL**: Handle Centre Line

---

**Drilling plan (front view)**

- Panel cutout (front view)

**Mounting base** (rear view)

- Toggle extension (removable)
- Conductor overlap, max
- Groove for dissipating heat generated by eddy current
- M8 Mounting screw
- Tapped hole

---

**Flush-mounted**

- Trip button (red)
- Stud can be turned 90°
Characteristics and Outline Dimensions

**TemBreak2**

Molded Case Circuit Breakers

**S800-NE, S800-RE**

**7**

### Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>800-NE</th>
<th>800-RE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Rated current, A</td>
<td>(Adjustable)</td>
<td>(Adjustable)</td>
</tr>
<tr>
<td>Calibrated at 45°C</td>
<td>350 600 350 600</td>
<td>400 700 400 700</td>
</tr>
<tr>
<td></td>
<td>450 800 450 800</td>
<td>500 500</td>
</tr>
<tr>
<td>Rated insulation voltage</td>
<td>AC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>180</td>
<td>180</td>
</tr>
<tr>
<td>Rated impulse withstand voltage</td>
<td>(U_{imp})</td>
<td></td>
</tr>
<tr>
<td></td>
<td>380</td>
<td>380</td>
</tr>
<tr>
<td>Rated breaking capacity, kA</td>
<td>125</td>
<td>125</td>
</tr>
<tr>
<td>NK</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>DC</td>
<td>250V</td>
<td>250V</td>
</tr>
<tr>
<td>IEC60947-2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>415V</td>
<td>415V</td>
</tr>
<tr>
<td></td>
<td>380V</td>
<td>380V</td>
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<tr>
<td></td>
<td>350V</td>
<td>350V</td>
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<tr>
<td></td>
<td>250V</td>
<td>250V</td>
</tr>
<tr>
<td></td>
<td>200V</td>
<td>200V</td>
</tr>
<tr>
<td>Rated short time withstand current, kA</td>
<td>100</td>
<td>100</td>
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<tr>
<td>Weight</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>S1</td>
<td>S1</td>
</tr>
<tr>
<td></td>
<td>S2</td>
<td>S2</td>
</tr>
<tr>
<td>Connections and Mountings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Front-connected (FC)</td>
<td>Terminal screws</td>
<td></td>
</tr>
<tr>
<td>With extension bars</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rear-connected (RC)</td>
<td>Bolt studs</td>
<td></td>
</tr>
<tr>
<td>Flat bar studs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plug-in (PM)</td>
<td>For switchboards Standard (PMC)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For distribution boards (PMDC)</td>
<td></td>
</tr>
<tr>
<td>Flush-mounted (FP)</td>
<td>With flat bar studs</td>
<td></td>
</tr>
<tr>
<td>Draw-out type (DR)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TemPlug (PG)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TemPlug (PG)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIN rail mount</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clip-in chassis mount</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessories (optional)</td>
<td>Symbol</td>
<td></td>
</tr>
<tr>
<td>Motor operator</td>
<td>M-C</td>
<td></td>
</tr>
<tr>
<td>External operating breaker-mounted handle</td>
<td>H-B</td>
<td></td>
</tr>
<tr>
<td>Door-mounted variable depth</td>
<td>H-F</td>
<td></td>
</tr>
<tr>
<td>Toggle extension</td>
<td>H-A</td>
<td></td>
</tr>
<tr>
<td>Mechanical interlock Slide type</td>
<td>M-S</td>
<td></td>
</tr>
<tr>
<td>Toggle holder</td>
<td>H-H</td>
<td></td>
</tr>
<tr>
<td>Toggle lock</td>
<td>H-L</td>
<td></td>
</tr>
<tr>
<td>Terminal cover</td>
<td>For front-connected</td>
<td></td>
</tr>
<tr>
<td>For rear-connected and plug in</td>
<td>C-R</td>
<td></td>
</tr>
<tr>
<td>Interpole barrier</td>
<td>B-A</td>
<td></td>
</tr>
<tr>
<td>Terminal block for lead</td>
<td>T-F</td>
<td></td>
</tr>
<tr>
<td>Door flange</td>
<td>D-F</td>
<td></td>
</tr>
<tr>
<td>Standard specifications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overcurrent trip mechanism</td>
<td>Electronic 16</td>
<td>Electronic 16</td>
</tr>
<tr>
<td>Trip button (color)</td>
<td>Yes (Red)</td>
<td>Yes (Red)</td>
</tr>
<tr>
<td>Handle position indication (N: Red, D:FF: Green)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Suitability for isolation</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CE marking</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

- : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering.
- : Semi-standard. • : "yes" or "available". • "no" or "not available". ○ : Line side interpole barriers are supplied as standard. (Front connection only) ∗ : The mechanical interlock is not applicable to the draw-out type (DR).
- : Being or will be applied. : Optional pretrip alarm or ground fault trip function available on request.

### Combinations of Internally Mounted Accessories (Optional)

![Combination Table]

**Overcurrent tripping characteristics**

<table>
<thead>
<tr>
<th>Characteristics No.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long time-delay pickup current (I_p(A))</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>130</td>
<td>130</td>
<td>130</td>
<td>130</td>
<td>130</td>
<td>130</td>
<td>130</td>
</tr>
<tr>
<td>Setting tolerance ±%</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Short time-delay pickup current (I_t(A))</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>500</td>
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<tr>
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<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Short time-delay pickup current (I_s(A))</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>800</td>
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<tr>
<td>Setting tolerance ±%</td>
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<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
</tbody>
</table>

**Percent Rated Current**

![Percent Rated Current Graph]

- : Percent Rated Current

**Percent Rated Breaker**

![Percent Rated Breaker Graph]

- : Percent Rated Breaker
Characteristics and Outline Dimensions

Outline dimensions (mm)

Front-connected

Rear-connected

Plug-in (Standard)

Plug-in (High-performance)

Flush-mounted

Interpole barrier (removable)

Note: Studs are factory installed in horizontal direction both on the line and load sides.

ASL: Arrangement Standard Line    HL: Handle Frame Centre Line    CL: Handle Centre Line
7 Characteristics and Outline Dimensions TemBreak2
Molded Case Circuit Breakers (800A Frame)
H800-NE, L800-NE

Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>H800-NE</th>
<th>L800-NE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Rated current, A (Adjustable)</td>
<td>350</td>
<td>600</td>
</tr>
<tr>
<td>Calibrated at 45°C</td>
<td>400</td>
<td>700</td>
</tr>
<tr>
<td>Rated insulation voltage (U) V</td>
<td>500</td>
<td>800</td>
</tr>
<tr>
<td>Rated impulse withstand voltage (Uimp) kV</td>
<td>900</td>
<td>900</td>
</tr>
<tr>
<td>Rated breaking capacity, kA</td>
<td>25/20</td>
<td>25/20</td>
</tr>
<tr>
<td>DIN rail mount</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Flush-mounted (FP)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Clip-in-chassis mount</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Accessories (optional) Symbol</td>
<td>Motor operator (M)</td>
<td>E</td>
</tr>
<tr>
<td></td>
<td>External operating Breaker-mounted handle (M)</td>
<td>E</td>
</tr>
<tr>
<td></td>
<td>Toggle extension (H)</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>Mechanical interlock (MS)</td>
<td>E</td>
</tr>
<tr>
<td></td>
<td>Toggle lock (L)</td>
<td>H</td>
</tr>
<tr>
<td></td>
<td>Terminal cover (CF)</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td>Interpole barrier (BA)</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>Terminal block for lead (TF)</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td>Door flange (DF)</td>
<td>F</td>
</tr>
<tr>
<td>Overcurrent trip mechanism</td>
<td>Electronic 16</td>
<td>Yes (Red)</td>
</tr>
<tr>
<td>Trip button (color)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Handle position indication (GN: Red, DFF: Green)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Suitability for isolation</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CE marking</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Notes:
- Standard. This configuration used unless otherwise specified. • Optional standard. Specify when ordering.
- Semi-standard. • "yes" or "available", "no" or "not available".
- Line side interpole barriers are supplied as standard. (Front connection only)
- The mechanical interlock is not applicable to the draw-out type (DR).
- Optional pretrip alarm or ground fault trip function available on request.

Combinations of Internally Mounted Accessories (Optional)

Time/Current characteristic curves

Overcurrent tripping characteristics

Characteristics No. 1 2 3 4 5 6 7

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short time-delay pick-up current (A) (Ip)</td>
<td>0.1</td>
<td>0.2</td>
<td>0.5</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Total clearing time + resettable time = 20ms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Interruption trip pick-up current (A) (Ith)

Preferred trip alarm

Pick-up current (A) (Ip) | 0.1 \(\times 100\) Setting tolerance +10%

Time-settings (s) (tp)

Definite time-delay characteristic, 40sec. Setting tolerance +10%

Ground fault trip

Pick-up current (A) (Ith) | 0.1 \(\times 100\) Setting tolerance +10%

Time-settings (s) (tp)

Definite time-delay characteristic, 30sec. Setting tolerance +10%, resettable time = 20ms.

Neutral protection

Pick-up current (A) (Ith) | 0.1 \(\times 100\) Setting tolerance +10%

Time-settings (s) (tp)

Same as Long-time delay time settings

Characteristic No. 4-7 will be applied as standard setting unless otherwise specified.

Note:
- In case of \(I_h\) > \(I_f\), the setting tolerance becomes big when \(I_h\) is set at \(I_h/5\)
Outline dimensions (mm)

**Front-connected**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>H800-NE</th>
<th>L800-NE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trip button (red)</td>
<td>140</td>
<td>210</td>
</tr>
<tr>
<td>Conductor overlap, max</td>
<td>70</td>
<td>70</td>
</tr>
</tbody>
</table>

**Rear-connected**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>H800-NE</th>
<th>L800-NE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trip button (red)</td>
<td>144</td>
<td>210</td>
</tr>
<tr>
<td>Conductor overlap, max</td>
<td>70</td>
<td>70</td>
</tr>
</tbody>
</table>

**Plug-in (Standard)**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>H800-NE</th>
<th>L800-NE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trip button (red)</td>
<td>205</td>
<td>210</td>
</tr>
<tr>
<td>Conductor width, max, max</td>
<td>40</td>
<td>40</td>
</tr>
</tbody>
</table>

**Plug-in (High-performance)**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>H800-NE</th>
<th>L800-NE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trip button (red)</td>
<td>205</td>
<td>210</td>
</tr>
<tr>
<td>Conductor width, max</td>
<td>40</td>
<td>40</td>
</tr>
</tbody>
</table>

**Flush-mounted**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>H800-NE</th>
<th>L800-NE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trip button (red)</td>
<td>205</td>
<td>210</td>
</tr>
</tbody>
</table>

**Note:** Studs are factory installed in horizontal direction both on the line and load sides.

---

**Characteristics and Outline Dimensions**

ASL: Arrangement Standard Line  HL: Handle Frame Centre Line  CL: Handle Centre Line
Molded Case Circuit Breakers  
**TemBreak2**  
S1250-NE, S1250-GE

### Characteristics and Outline Dimensions

#### S1250-NE, S1250-GE

<table>
<thead>
<tr>
<th>Type</th>
<th>S1250-NE</th>
<th>S1250-GE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Rated current, A</td>
<td>500, 1000</td>
<td>500, 1000</td>
</tr>
<tr>
<td>Calibrated at 45°C</td>
<td>600, 1200</td>
<td>600, 1200</td>
</tr>
<tr>
<td>700, 1250</td>
<td>700, 1250</td>
<td></td>
</tr>
<tr>
<td>800</td>
<td>800</td>
<td></td>
</tr>
</tbody>
</table>

- **Rated insulation voltage (U) V**: AC 690
- **Rated impulse withstand voltage (Uimp) kV**: AC 90
- **Rated breaking capacity, kA (Iimp sym)**:
  - AC 25/20, 12/45/12, 25/50/12, 12/50/12
  - DC 25/20

#### Ratings

- **Type**: Semi-standard. (Front connection only)
- **Suitability for isolation**
  - Handle position indication (ON: Red, OFF: Green)
- **Overcurrent trip mechanism**
  - DIN rail mount
  - TemPlug
  - TemPlug/0 (PG)
  - TemPlug/0B (PG4)
  - With extension bars
- **Door flange**
- **Terminal block for lead**
- **Interpole barrier**
- **Terminal block for lead**
- **Toggles**
- **Limiting current switch**

#### Accessories (optional)

- **Symbol**
- **Motor operator**
- **External operating**
- **Toggles extension**
- **Toggles holder**
- **Toggles lock**
- **Terminal cover**
- **Interpole barrier**
- **Door flange**
- **Electronic 16**
- **Electronic 16**

#### Notes:

- **Standard**: This configuration used unless otherwise specified.
- **Optional**: Specify when ordering.
- **Standard**
  - **Rated short time withstand current, kA**: 15, 19, 25
  - **Weight (marked standard type)**: 13.8, 15.0, 13.8, 25.0
  - **Connections and Mountings**
    - Front-connected (FC)
    - Terminal screws
    - With extension bars
    - Rear-connected (RC)
    - Bolt studs
    - For switchboards: Standard (PMC)
    - For distribution boards (PMC)
    - Plug-in (PM)
    - Flat bar studs
    - For switchboards: Standard (PMC)
    - For distribution boards (PMC)
    - Flush-mounted (FP)
    - With flat bar studs
    - Draw-out type (DR)
    - TemPlug/0 (PG)
    - TemPlug/0B (PG4)
    - DIN rail mount
    - Clip-in-chassis mount

#### Combinations of Internally Mounted Accessories (Optional)

<table>
<thead>
<tr>
<th>AX</th>
<th>AL</th>
<th>SH</th>
<th>UV</th>
</tr>
</thead>
</table>

- **Auxiliary switch**
- **Alarm switch**
- **Short trip**
- **Under voltage trip**

### Overcurrent tripping characteristics

- **Characteristics No.**
  - **Long-time delayed pickup current (I) kA**: 0.005, 0.015, 0.03, 0.04
  - **Long-time delayed time settings (s)**: 0, 5, 10, 20
  - **Definite time-delay characteristic, I (I) kA**: 0.01, 0.02, 0.04, 0.06
  - **Definite time-delay characteristic, I (I) kA**: 0.01, 0.02, 0.04, 0.06
  - **Definite time-delay characteristic, I (I) kA**: 0.01, 0.02, 0.04, 0.06
- **Total tripping time + resettable time**: 30ms
- **Tolerance (I) kA**: ±2%
  - **Max. (I) kA**: 120%
- **Preferential trip alarm**
  - **Pick-up current (I) kA**: 0.015
  - **Setting tolerance ±2%**
- **Time-depending trip**
  - **Pick-up current (I) kA**: 0.025
  - **Setting tolerance ±1%**
- **Ground fault trip**
  - **Pick-up current (I) kA**: 0.05
  - **Setting tolerance ±1%**
- **Neutral protection**
  - **Pick-up current (I) kA**: ±0.05
  - **Setting tolerance ±1%**
- **Time-delay trip**
  - **Pick-up current (I) kA**: ±0.05
  - **Setting tolerance ±1%**

### Characteristic No. 4 will be applied as standard setting unless otherwise specified.

- **Note**: In case of (I) kA < (I) kA, the setting tolerance becomes big when (I) kA is set at (I) kA = 50%.
Outline dimensions (mm) S1250-NE, S1250-GE

Front-connected

- Interpole barrier (removable)
- Trip button (red)
- CLCLCLCLCL
- ASL ASL
- 4P
- Conductor overlap, max
- 140
- 210
- 190
- 190
- 35
- 338
- 268
- 140
- 210
- 100
- 100
- 70
- 70
- 70
- 280
- 80
- 127
- 171
- 80
- 127
- 171
- 4P
- Flooding plan (front view)

Rear-connected

- Mounting plate
- Toggle extension (removable)
- Insulating plate
- M8 Mounting screw
- Soft plastic tubing ø50 to be provided on center pole and neutral pole of vertical terminal type for insulation.

Plug-in (Standard)

- Mounting angle
- Auxiliary test terminals
- M8 Mounting screw
- Conductor overlap, max
- ø15 for accessory wiring when necessary

Flush-mounted

- Trip button (red)
- M8 Mounting screw
- Soft plastic tubing ø50 to be provided on center pole and neutral pole of vertical terminal type for insulation.

Note:
- Studs are factory installed in horizontal direction both on the line and load sides.
- Studs are factory installed in horizontal direction both on the line and load sides.
### Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>1600-NE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>3/4</td>
</tr>
<tr>
<td>Rated current, A</td>
<td>(Adjustable)</td>
</tr>
<tr>
<td>Calibrated at 45°C</td>
<td></td>
</tr>
</tbody>
</table>

- Standard insulation voltage (Ue) V: AC 90
- Rated impulse withstand voltage (Uimp) kV: 98
- Rated breaking capacity, kA:
  - NK: AC 600V
  - DC 200V
  - IEC60947-2: AC 600V
  - DC 250V
- Interpole barrier
- Terminal block for lead T F
- Interpole barrier B A

- Connectors and Mountings
  - Front-connected (FC): Terminal screws
  - With extension bars
  - Rear-connected (RC): Flat bar studs
  - For switchboards: Standard (PMC)
  - For distribution boards (PM):
    - Flush-mounted (FP): With flat bar studs
    - Draw-out type (DR)
  - Terminal cover:
    - For front-connected C F
    - For rear-connected and plug-in C R
- Grounding point:
  - Interpole barrier B A
- Terminal block for lead T F
- Door flange D F
- Standard specifications
- Time/current characteristic curves

### Overcurrent tripping characteristics

- Characteristic No. 1-2-3
- Long-time delay pickup current (IΔ): 180A
- Long-time delay time settings (Δt): 11 - 21 - 50 - 10 - 50 - 10 - 10 - 10 - 10
- Short-time delay
  - Inrush: 0.1 - 0.1 - 0.1 - 0.1 - 0.1 - 0.2 - 0.2 - 0.2 - 0.2
  - Setting tolerance ±10%
- Neutral protection
  - After trip current (ΔI): 100%
- Setting tolerance ±10%
- Characteristic No. 4 will be applied as standard setting unless otherwise specified.

### Combinations of Internally Mounted Accessories (Optional)

<table>
<thead>
<tr>
<th>AX</th>
<th>AL</th>
<th>SH</th>
<th>UV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- AX: Auxiliary switch
- AL: Alarm switch
- SH: Short trip
- UV: Under voltage trip

- Note: 11: One is supplied with every five breakers. Please specify if more are required.
### Molded Case Circuit Breakers

#### E50-CM

**Ratings and Specifications**

- **Type**
  - Number of poles: 3

- **Ratings**
  - Motor rated capacity (kW) and breaker rated current (A) Calibrated at 45°C

- **Rated insulation voltage** (V) AC 690V
- **Rated impulse withstand voltage** (V sym) 800 V

- **Rated breaking capacity, kA**
  - AC 900A
  - DC 500A

- **Weight** (marked standard type) kg 0.74

- **Connections and Mountings**
  - Front-connected (FC) Terminal screws
  - Rear-connected (RC) Bolt studs
  - Plug-in (PM) For switchboards Standard (PMC)
  - Flush-mounted (FP) With flat bar studs

- **Clip-in chassis mount**
  - DIN rail mount

- **Accessories (optional)**
  - Motor operator
  - External operating Breaker-mounted
  - Handle Door-mounted (variable depth)
  - Toggle extension
  - Mechanical interlock Slide type

- **Standard specifications**
  - Overcurrent trip mechanism
  - Trip button (color)
  - Handle position indication (ON: Red, OFF: Green)

**Notes:**
- Standard. This configuration used unless otherwise specified.
- Optional standard. Specify when ordering.
- “yes” or “available”, “no” or “not available”.
- : at 500V AC.
- *: at 250V AC.
- *: Hydraulic-magnetic type for below 5A rating.

**Combinations of Internally Mounted Accessories (Optional)**

<table>
<thead>
<tr>
<th>Pole</th>
<th>AX</th>
<th>AL</th>
<th>SH</th>
<th>UV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Time/Current characteristic curves**

- **Motor output (kW) and Rated current (A)**
  - Min. (0.7-25A)
  - Min. (32-45A)

Ambient Compensating Curves

- **Ambient temperature (°C)**
  - Calibrated current (A)

**Combination of Internally Mounted Accessories with Anti-burnout Switch**

- Left pole
  - AX
  - AL
  - SH
  - UV

- Right pole
  - AX
  - AL
  - SH
  - UV

**Notes:**
- Shunt trip is provided with anti-burnout switch.
### Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of poles</th>
<th>S100-NM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

#### Ratings

<table>
<thead>
<tr>
<th>Motor rated capacity (kW) and breaker rated current (A)</th>
<th>Calibrated at 40°C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Select an appropriate one depending on the total load current of the motor operator.

<table>
<thead>
<tr>
<th>Rated insulation voltage (U_i) V AC</th>
<th>890</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated impulse withstand voltage (U_imp) kV</td>
<td>8</td>
</tr>
<tr>
<td>Rated breaking capacity, kA</td>
<td>690</td>
</tr>
<tr>
<td>(I_b/ I_{sym})</td>
<td>25/25</td>
</tr>
<tr>
<td>DC</td>
<td>50/50</td>
</tr>
<tr>
<td>IEC 60947-2</td>
<td>55/55</td>
</tr>
<tr>
<td>(I_b/ I_{sym})</td>
<td>30/30</td>
</tr>
<tr>
<td>DC</td>
<td>30/30</td>
</tr>
</tbody>
</table>

Weight (marked standard type) kg: 1.1

#### Connections and Mountings

- Front-connected (FC) Terminal screws
- Rear-connected (RC) Bolt studs
- Plug-in (PM) For switchboards Standard (PMC)
- Plug-in (PM) High-performance (PMB)
- Flush-mounted (FP) With flat bar studs
- Draw-out type (DR)
- DIN rail mount
- Clip-in chassis mount

#### Accessories (optional)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M C</td>
<td>Motor operator</td>
</tr>
<tr>
<td>H B</td>
<td>External operating handle</td>
</tr>
<tr>
<td>H F</td>
<td>Door-mounted (variable depth)</td>
</tr>
<tr>
<td>H A</td>
<td>Toggle extension</td>
</tr>
<tr>
<td>M S</td>
<td>Mechanical interlock slide type</td>
</tr>
<tr>
<td>H H</td>
<td>Toggle holder</td>
</tr>
<tr>
<td>H L</td>
<td>Toggle lock</td>
</tr>
<tr>
<td>C F</td>
<td>Terminal cover For front-connected</td>
</tr>
<tr>
<td>C R</td>
<td>For rear-connected and plug-in</td>
</tr>
</tbody>
</table>

#### Standard specifications

- Thermal-magnetic Overcurrent trip mechanism: Yes
- Trip button (color): Red
- Handle position indication (ON: Red, OFF: Green): Yes
- Suitability for isolation: Yes
- CE marking: Yes

### Time/Current characteristic curves

#### Ambient Compensating Curves

<table>
<thead>
<tr>
<th>Percent Rated current (C)</th>
<th>Ambient temperature (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50%</td>
<td>100</td>
</tr>
<tr>
<td>60%</td>
<td>110</td>
</tr>
<tr>
<td>70%</td>
<td>120</td>
</tr>
<tr>
<td>80%</td>
<td>130</td>
</tr>
</tbody>
</table>

### Combinations of Internally Mounted Accessories (Optional)

![Combinations of Internally Mounted Accessories](image)
Outline dimensions (mm) $S100$-NM

### Front-connected

<table>
<thead>
<tr>
<th>Preparation of conductor</th>
<th>With extension bars (optional)</th>
<th>Drilling plan (front view)</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Diagram" /></td>
<td><img src="image2.png" alt="Diagram" /></td>
<td><img src="image3.png" alt="Diagram" /></td>
</tr>
</tbody>
</table>

**Note:** Studs are factory installed in horizontal direction both on the line and load sides.

### Rear-connected

<table>
<thead>
<tr>
<th>Detail of connecting part</th>
<th>Drilling plan (front view)</th>
<th>Panel cutout (front view)</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image4.png" alt="Diagram" /></td>
<td><img src="image5.png" alt="Diagram" /></td>
<td><img src="image6.png" alt="Diagram" /></td>
</tr>
</tbody>
</table>

**Note:** Studs are factory installed in horizontal direction both on the line and load sides. Stud can be turned 45° or 90°.

### Flush-mounted

<table>
<thead>
<tr>
<th>Detail of connecting part</th>
<th>Panel cutout (front view)</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image7.png" alt="Diagram" /></td>
<td><img src="image8.png" alt="Diagram" /></td>
</tr>
</tbody>
</table>

**Note:** Studs are factory installed in horizontal direction both on the line and load sides.
### Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of poles</th>
<th>225-NM</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

#### Ratings

<table>
<thead>
<tr>
<th>Motor rated capacity (kW)</th>
<th>Breaker rated current (A) Calibrated at 40°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>kVA</td>
<td>kW</td>
</tr>
<tr>
<td>50</td>
<td>10, 15</td>
</tr>
<tr>
<td>15</td>
<td>25</td>
</tr>
<tr>
<td>10</td>
<td>35, 45</td>
</tr>
<tr>
<td>75</td>
<td>50, 90</td>
</tr>
<tr>
<td>25</td>
<td>110</td>
</tr>
</tbody>
</table>

Note: Select an appropriate one depending on the total load current of the motor operator.

#### Connections and Mountings

- Front-connected (FC): Terminal screws
  - With extension bars
- Rear-connected (RC): Bolt studs
  - Flat bar studs
- Plug-in (PM): For switchboards: Standard (PMC)
  - High-performance (PMB)
  - For distribution boards: PMC
- Flush-mounted (FP): With flat bar studs
- Draw-out type (UR):
- TemPlug70 (PG):
- TemPlug56 (PG4):
- DIN rail mount
- Clip-in chassis mount

#### Accessories (optional)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Motor operator (MC)</th>
<th>External operating handle (HB)</th>
<th>Door-mounted (variable depth) (HP)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Toggle extension (HA)</th>
<th>Toggle holder (HH)</th>
<th>Toggle lock (HL)</th>
<th>Terminal cover (CF)</th>
<th>Interpole barrier (BA)</th>
<th>Terminal block for lead (TF)</th>
<th>Door flange (DF)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Standard specifications

- Overcurrent trip mechanism: Thermal-magnetic
- Trip button (color): Yes (Red)
- Handle position indication (ON: Red, OFF: Green): Yes
- Suitability for isolation: Yes
- CE marking: Yes

Notes:
- Standard. This configuration used unless otherwise specified.
- Optional standard. Specify when ordering.
- "yes" or "available", "no" or "not available".
- : Line side interpole barriers are supplied as standard. (Front connection only)

#### Combinations of Internally Mounted Accessories (Optional)

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>AX</td>
<td>AL</td>
<td>SH</td>
</tr>
<tr>
<td>UV</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- AX: Auxiliary switch
- AL: Alarm switch
- SH: Short trip
- UV: Under voltage trip

Left pole: Right pole
### Outline dimensions (mm) S225-NM

#### Front-connected

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel cutout (front view)</td>
<td>126</td>
</tr>
<tr>
<td>Panel cutout (front view)</td>
<td>136</td>
</tr>
<tr>
<td>Stud can be turned</td>
<td>45° or 90°</td>
</tr>
<tr>
<td>Conductor overlap, max.</td>
<td>10</td>
</tr>
<tr>
<td>M4x0.7 Mounting screw</td>
<td></td>
</tr>
<tr>
<td>4-Ø6 Mounting hole</td>
<td></td>
</tr>
<tr>
<td>Panel cutout dimensions shown give an allowance of 1.0mm or more around the handle escutcheon.</td>
<td></td>
</tr>
</tbody>
</table>

#### Rear-connected

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel cutout (front view)</td>
<td>126</td>
</tr>
<tr>
<td>Panel cutout (front view)</td>
<td>136</td>
</tr>
<tr>
<td>Stud can be turned</td>
<td>45° or 90°</td>
</tr>
<tr>
<td>Conductor overlap, max.</td>
<td>10</td>
</tr>
<tr>
<td>M4x0.7 Mounting screw</td>
<td></td>
</tr>
<tr>
<td>4-Ø6 Mounting hole</td>
<td></td>
</tr>
<tr>
<td>Panel cutout dimensions shown give an allowance of 1.0mm or more around the handle escutcheon.</td>
<td></td>
</tr>
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</table>

#### Flush-mounted

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel cutout (front view)</td>
<td>126</td>
</tr>
<tr>
<td>Panel cutout (front view)</td>
<td>136</td>
</tr>
<tr>
<td>Stud can be turned</td>
<td>45° or 90°</td>
</tr>
<tr>
<td>Conductor overlap, max.</td>
<td>10</td>
</tr>
<tr>
<td>M5x0.8 Mounting screw</td>
<td></td>
</tr>
<tr>
<td>4-Ø6 Mounting hole</td>
<td></td>
</tr>
<tr>
<td>Panel cutout dimensions shown give an allowance of 1.0mm or more around the handle escutcheon.</td>
<td></td>
</tr>
</tbody>
</table>
## Characteristics and Outline Dimensions  
### Molded Case Circuit Breakers  
### (100A Frame)  
### S100-NN

#### Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>S100-NN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Ratings</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated current, A</td>
</tr>
<tr>
<td>Rated insulation voltage (V AC)</td>
</tr>
<tr>
<td>Rated operational voltage (V DC)</td>
</tr>
<tr>
<td>Rated short circuit making capacity, kA peak</td>
</tr>
<tr>
<td>Rated short time withstand current, kA</td>
</tr>
<tr>
<td>Rated impulse withstand voltage (V)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Performance</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Utilization category</td>
</tr>
<tr>
<td>Weight (marked standard type) kg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Connections and Mountings</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Front-connected (FC) Terminal screws</td>
</tr>
<tr>
<td>Rear-connected (RC) Bolt studs</td>
</tr>
<tr>
<td>Plug-in (PM) For switchboards Standard (PMC)</td>
</tr>
<tr>
<td>For distribution boards (PMC)</td>
</tr>
<tr>
<td>Flush-mounted (FP) With flat bar studs</td>
</tr>
<tr>
<td>Draw-out type (DR)</td>
</tr>
<tr>
<td>TemPlug (PG)</td>
</tr>
<tr>
<td>TemPlugSP (PG4)</td>
</tr>
<tr>
<td>DIN rail mount</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Clip-in chassis mount</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor operator</td>
</tr>
<tr>
<td>External operating breaker-mounted handle</td>
</tr>
<tr>
<td>Door-mounted (variable depth)</td>
</tr>
<tr>
<td>Toggle extension</td>
</tr>
<tr>
<td>Mechanical interlock slide type</td>
</tr>
<tr>
<td>Toggle holder</td>
</tr>
<tr>
<td>Terminal cover</td>
</tr>
<tr>
<td>Terminal block for lead</td>
</tr>
<tr>
<td>Door flange</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Standard specifications</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Trip button (color)</td>
</tr>
<tr>
<td>Handle position indication (ON: Red, OFF: Green)</td>
</tr>
<tr>
<td>Suitability for isolation</td>
</tr>
<tr>
<td>CE marking</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Notes:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>#: Standard. This configuration used unless otherwise specified.</td>
</tr>
<tr>
<td>#: Optional standard. Specify when ordering.</td>
</tr>
<tr>
<td>#: “yes” or “available”.</td>
</tr>
<tr>
<td>#: “no” or “not available”.</td>
</tr>
<tr>
<td>#: Required for overcurrent protection. Rated conditional short-circuit current [I_{cc}] will be the same as Rated short-circuit breaking capacity of upstream breaker.</td>
</tr>
<tr>
<td>#: Required for short-circuit protection.</td>
</tr>
</tbody>
</table>

### Combinations of Internally Mounted Accessories (Optional)

<table>
<thead>
<tr>
<th>AX</th>
<th>AL</th>
<th>SH</th>
<th>UV</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>A</td>
<td>X</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>A</td>
<td>X</td>
<td>X</td>
<td>A</td>
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<tr>
<td>A</td>
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<td>A</td>
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<td>A</td>
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<td>X</td>
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<td>A</td>
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<td>X</td>
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<td>A</td>
<td>X</td>
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</tr>
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<td>A</td>
<td>X</td>
<td>X</td>
<td>A</td>
</tr>
<tr>
<td>A</td>
<td>X</td>
<td>A</td>
<td>X</td>
</tr>
</tbody>
</table>

### Notes:

- AX: Auxiliary switch
- AL: Alarm switch
- SH: Short trip
- UV: Under voltage trip
- A: Left pole
- X: Right pole
### Outline dimensions (mm) S100-NN

#### Front-connected

<table>
<thead>
<tr>
<th>Part</th>
<th>Dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpole barrier (removable)</td>
<td>3P: 25 54 106</td>
</tr>
<tr>
<td>Mounting hole</td>
<td>3P: 14 28 52</td>
</tr>
</tbody>
</table>

#### Rear-connected

<table>
<thead>
<tr>
<th>Part</th>
<th>Dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stud can be turned</td>
<td>45° or 90°</td>
</tr>
</tbody>
</table>

#### Plug-in (Standard)

<table>
<thead>
<tr>
<th>Part</th>
<th>Dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting screw</td>
<td>M6x0.7</td>
</tr>
</tbody>
</table>

#### Plug-in (High-performance)

<table>
<thead>
<tr>
<th>Part</th>
<th>Dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting screw</td>
<td>M6x0.8</td>
</tr>
</tbody>
</table>

Note: Studs are factory installed in horizontal direction both on the line and load sides.

---

### Characteristics and Outline Dimensions

**ASL**: Arrangement Standard Line  **HL**: Handle Frame Centre Line  **CL**: Handle Centre Line

7-57
## Molded Case Circuit Breakers

### S125-SN

#### Characteristics and Outline Dimensions

**TemBreak2**

#### S125-SN

### Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>S125-SN</td>
</tr>
<tr>
<td>Rated current, A</td>
<td>100 125</td>
</tr>
<tr>
<td>Rated isolation voltage (U&lt;sub&gt;i&lt;/sub&gt;) V</td>
<td>890 890</td>
</tr>
<tr>
<td>Rated operational voltage V</td>
<td>890 890</td>
</tr>
<tr>
<td>Rated short circuit making capacity, kA peak</td>
<td>2.8 2.8</td>
</tr>
<tr>
<td>Rated short time withstand current, kA</td>
<td>2.0(0.3sec) 2.0(0.3sec)</td>
</tr>
<tr>
<td>Rated impulse withstand voltage (U&lt;sub&gt;imp&lt;/sub&gt;) kV</td>
<td>6 6</td>
</tr>
</tbody>
</table>

### Performance

<table>
<thead>
<tr>
<th>Utilization category</th>
<th>IEC 60947-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upstream breaker</td>
<td>B125-SF B125-SF</td>
</tr>
<tr>
<td>Weight (marked standard type) kg</td>
<td>0.7 0.9 0.7 0.9</td>
</tr>
</tbody>
</table>

### Connections and Mounting

| Front-connected (FC) Terminal screws | With extension bars |
| Rear-connected (RC) Bolt studs | Flat bar studs |
| Plug-in (PM) For switchboards | Standard (PM) High-performance (PM) |
| For distribution boards (PMC) | |
| Flush-mounted (FP) With flat bar studs | |
| Draw-out type (DR) | |
| TemPlug70 (PG7) | |
| TemPlug58 (PG4) | |
| DIN rail mount | |

### Accessories (optional) Symbol

| Motor operator | M.C. |
| External operating breaker-mounted handle | H.B. |
| Door-mounted (variable depth) | H.P. |
| Toggle extension | H.A. |
| Mechanical interlock: Slide type | M.S. |
| Toggle holder | H.H. |
| Toggle lock | H.L. |
| Terminal cover | C.F. |
| For rear-connected and plug-in | C.R. |
| Intermodule barrier | B.A. |
| Terminal block for lead | T.F. |
| Door flange | D.F. |

### Standard specifications

| Trip button (color) | Yes (Red) Yes (Red) |
| Handle position indication (ON: Red, OFF: Green) | Yes Yes |

### Notes:

| - | Standard. This configuration used unless otherwise specified. |
| - | Optional standard. Specify when ordering. |
| - | “yes” or “available”. |
| - | “no” or “not available”. |
| - | Lined side interpole barriers are supplied as standard. (Front connection only) |
| - | The mechanical interlock is not applicable to the draw-out type (DR). |
| - | Provided with DIN rail adaptor. |
| - | Required for overcurrent protection. Rated conditional short-circuit current (I<sub>cc</sub>) will be the same as Rated short-circuit breaking capacity of upstream breaker. |

### Combinations of Internally Mounted Accessories (Optional)

| AX | AL | SH | UV |
| AX | AL | SH | UV |
| AX | AL | SH | UV |
| AX | AL | SH | UV |
| AX | AL | SH | UV |
| AX | AL | SH | UV |

### Trip button (color)

- Yes (Red)
- Yes (Green)
- Yes (Red)

### Handle position indication

- ON: Red
- OFF: Green

### Notes:

- Standard. This configuration used unless otherwise specified.
- Optional standard. Specify when ordering.
- “yes” or “available”.
- “no” or “not available”.
- Lined side interpole barriers are supplied as standard. (Front connection only)
- The mechanical interlock is not applicable to the draw-out type (DR).
- Provided with DIN rail adaptor.
- Required for overcurrent protection. Rated conditional short-circuit current (I<sub>cc</sub>) will be the same as Rated short-circuit breaking capacity of upstream breaker.
## Characteristics and Outline Dimensions

### Molded Case Circuit Breakers

#### S125-NN

### Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>S125-NN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>3</td>
</tr>
<tr>
<td><strong>Ratings</strong></td>
<td>4</td>
</tr>
<tr>
<td>Rated current, A</td>
<td>125</td>
</tr>
<tr>
<td>Rated insulation voltage (U) V</td>
<td>AC 690</td>
</tr>
<tr>
<td>Rated operational voltage V</td>
<td>AC 890</td>
</tr>
<tr>
<td>Rated operational voltage V</td>
<td>DC 250</td>
</tr>
<tr>
<td>Rated short circuit making capacity, kA peak</td>
<td>1.6</td>
</tr>
<tr>
<td>Rated short time withstand current, kA</td>
<td>(10 sec)</td>
</tr>
<tr>
<td>Rated impulse withstand voltage (Uimp) kV</td>
<td>8</td>
</tr>
</tbody>
</table>

#### Performance

<table>
<thead>
<tr>
<th>Utilization category</th>
<th>AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEC 60947-3</td>
<td>DC</td>
</tr>
<tr>
<td>Upstream breaker @9</td>
<td>1.1</td>
</tr>
</tbody>
</table>

### Weight

| Weight (marked standard type) kg | 1.4 |

#### Connections and Mountings

<table>
<thead>
<tr>
<th>Front-connected (FC) Terminal screws</th>
<th>With extension bars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolt studs</td>
<td>Flat bar studs</td>
</tr>
</tbody>
</table>

| Rear-connected (RC) Bolt studs       | For distribution boards (PMC) |
| Draw-out type (DR)                   | For switchboards. Standard (PMC) |
| TemPlug70 (PG)                       | High-performance (PMB) |
| TemPlug55B (PG4)                     |                                 |

### Clip-in chassis mount

| Motor operator | H A |
| External operating breaker-mounted handle | H B |
| Toggle extension | H L |
| Toggle holder | H F |
| Toggle lock | H P |
| Terminal cover For front-connected | C F |
| For rear-connected and plug in | C R |
| Interpole barrier | B A |
| Terminal block for lead | T F |
| Door flange | D F |

### Standard specifications

| Trip button (color) | Yes (Red) |
| Handle position indication (ON: Red, OFF: Green) | Yes |
| Suitability for isolation | Yes |
| CE marking | Yes |

### Notes:

- : Standard. This configuration used unless otherwise specified.
- : Optional standard. Specify when ordering.
- : "yes" or "available".
- : "no" or "not available".
- 1: Line side interpole barriers are supplied as standard. (Front connection only)
- 2: Required for overcurrent protection. Rated conditional short-circuit current \( I_{cc} \) will be the same as Rated short-circuit breaking capacity of upstream breaker.

### Combinations of Internally Mounted Accessories (Optional)

<table>
<thead>
<tr>
<th>AX</th>
<th>AL</th>
<th>AX</th>
<th>AX</th>
<th>AL</th>
<th>AL</th>
<th>AL</th>
<th>AX</th>
<th>AX</th>
<th>AX</th>
<th>AL</th>
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</thead>
<tbody>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Outline dimensions (mm) **S125-NN**

#### Front-connected

<table>
<thead>
<tr>
<th>Component</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpole barrier (removable)</td>
<td>3P 4P</td>
</tr>
<tr>
<td>Mounting hole</td>
<td>134</td>
</tr>
<tr>
<td>ø9</td>
<td>8.5 (max.) 17 (max.)</td>
</tr>
<tr>
<td>max.t</td>
<td>5</td>
</tr>
<tr>
<td>155</td>
<td></td>
</tr>
<tr>
<td>ø18</td>
<td>10 (max.) 15 (max.)</td>
</tr>
<tr>
<td>ø6.5</td>
<td>10 (max.) 15 (max.)</td>
</tr>
</tbody>
</table>

#### Preparation of conductor

- With extension bars (optional)
- Drilling plan (front view)

#### Rear-connected

<table>
<thead>
<tr>
<th>Component</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stud can be turned</td>
<td>45° or 90°</td>
</tr>
<tr>
<td>Mounting plate (max. t3.2)</td>
<td></td>
</tr>
</tbody>
</table>

#### Plug-in (Standard)

<table>
<thead>
<tr>
<th>Component</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting hole</td>
<td>3P</td>
</tr>
<tr>
<td>ø18 for accessory wiring when necessary</td>
<td></td>
</tr>
</tbody>
</table>

#### Plug-in (High-performance)

<table>
<thead>
<tr>
<th>Component</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>ø18 for accessory wiring when necessary</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Studs are factory installed in horizontal direction both on the line and load sides.

---

**Characteristics and Outline Dimensions**

ASL: Arrangement Standard Line  HL: Handle Frame Centre Line  CL: Handle Centre Line
### Characteristic and Outline Dimensions TemBreak2

#### Molded Case Circuit Breakers

**S250-SN**

#### Type

<table>
<thead>
<tr>
<th>Number of poles</th>
<th>S25-SN</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

#### Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of poles</th>
<th>S25-SN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated current, A</td>
<td>25</td>
<td>50</td>
</tr>
<tr>
<td>Rated insulation voltage, V</td>
<td>690</td>
<td>690</td>
</tr>
<tr>
<td>Rated operational voltage, V</td>
<td>690</td>
<td>690</td>
</tr>
<tr>
<td>Rated short circuit making capacity, kA peak</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Rated short time withstand current, kA</td>
<td>(0.3 sec)</td>
<td>(0.3 sec)</td>
</tr>
<tr>
<td>Rated impulse withstand voltage, kV</td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>

#### Performance

<table>
<thead>
<tr>
<th>Utilization category</th>
<th>DC 690-7.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEC 690-7.3</td>
<td>AC-22A</td>
</tr>
<tr>
<td>DC-22A</td>
<td>S250-SF</td>
</tr>
<tr>
<td>S250-SF</td>
<td>S250-SF</td>
</tr>
</tbody>
</table>

#### Weight

- Marked standard type: 1.5 kg
- Optional standard: 1.9 kg

#### Connections and Mounting

- Front-connected (FC): Terminal screws
  - With extension bars
- Rear-connected (RC): Bolt studs
  - Flat bar studs
- Plug-in (PI): For switchboards, standard (PMC)
  - High-performance (PMB)
- For distribution boards (PMC)
- Flush-mounted (FM): With flat bar studs
- Draw-out type (DR): TemPlug70 (PG)
- TemPlug50 (PG5)
- DIN rail mount

#### Accessories (optional)

- Motor operator
- External operating breaker-mounted handle
- Door-mounted (variable depth)
- Toggle extension
- Mechanical interlock slide type
- Toggle holder
- Toggle lock
- Terminal cover
- For front-connected
- For rear-connected and plug-in
- Interpole barrier
- Terminal block for lead
- Door flange

#### Standard specifications

- Trip button (color)
- Handle position indication (ON: Red, OFF: Green)
- Suitable for isolation

#### Notes:

- Standard. This configuration used unless otherwise specified.
- Optional standard. Specify when ordering.
- Yes or available.
- No or not available.
- For overcurrent protection. Rated conditional short-circuit current \( I_{cc} \) will be the same as Rated short-circuit breaking capacity of upstream breaker.

#### Combinations of Internally Mounted Accessories (Optional)

<table>
<thead>
<tr>
<th>AX</th>
<th>AL</th>
<th>SH</th>
<th>UV</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>A2</td>
<td>A3</td>
<td>A4</td>
</tr>
</tbody>
</table>

- AX: Auxiliary switch
- AL: Alarm switch
- SH: Short trip
- UV: Under voltage trip
- A1: Left pole
- A2: Right pole

---

**Combinations of Internally Mounted Accessories (Optional)**

- For S250-SN: AX, AL, SH, UV
- For S250-SF: AX, AL, SH, UV
Outline dimensions (mm)

**Front-connected**

**Preparation of conductor**

**With extension bars (optional)**

**Drilling plan (front view)**

**Rear-connected**

**Drilling plan (front view)**

**Panel cutout (front view)**

**Plug-in (Standard)**

**Detail of connecting part**

**Mounting base (rear view)**

**Drilling plan (front view)**

**Flush-mounted**

**Drilling plan (front view)**
Molded Case Circuit Breakers

S400-NN

7-64
Characteristics and Outline Dimensions

Front-connected

Rear-connected

Plug-in (Standard)

Plug-in (High-performance)

Flush-mounted
### Characteristics and Outline Dimensions **TemBreak2**

**Molded Case Circuit Breakers**  
(630A Frame)

**S630-GN**

#### Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of poles</th>
<th>S630-GN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated current, A</td>
<td>630</td>
<td></td>
</tr>
<tr>
<td>Rated insulation voltage (LI) V</td>
<td>690</td>
<td></td>
</tr>
<tr>
<td>Rated operational voltage V</td>
<td>890</td>
<td></td>
</tr>
<tr>
<td>DC</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>Rated short circuit making capacity, kA peak</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Rated short time withstand current, kA</td>
<td>10 (0.3sec)</td>
<td></td>
</tr>
<tr>
<td>Rated impulse withstand voltage (Uimp) kV</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

### Performance

<table>
<thead>
<tr>
<th>Utilization category</th>
<th>IEC 60947-3</th>
<th>DC-22A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upstream breaker @9</td>
<td>S630-NF</td>
<td></td>
</tr>
</tbody>
</table>

### Weight (marked standard type) kg

- 8.0 [AC-23A]
- 11.0 [DC-22A]

### Connections and Mountings

<table>
<thead>
<tr>
<th>Front-connected (FC)</th>
<th>Terminal screws</th>
</tr>
</thead>
<tbody>
<tr>
<td>With extension bars</td>
<td></td>
</tr>
<tr>
<td>Rear-connected (RC)</td>
<td>Bolt studs</td>
</tr>
<tr>
<td>Flat bar studs</td>
<td></td>
</tr>
<tr>
<td>Plug-in (PM)</td>
<td>For switchboards, Standard (PMC)</td>
</tr>
<tr>
<td>High-performance (PMB)</td>
<td></td>
</tr>
<tr>
<td>For distribution boards (PMC)</td>
<td></td>
</tr>
<tr>
<td>Flush-mounted (FP)</td>
<td>With flat bar studs</td>
</tr>
<tr>
<td>Draw-out type (DR)</td>
<td></td>
</tr>
<tr>
<td>TemPlug® (PG1)</td>
<td></td>
</tr>
<tr>
<td>TemPlug® (PG4)</td>
<td></td>
</tr>
<tr>
<td>DIN rail mount</td>
<td></td>
</tr>
</tbody>
</table>

### Clip-in chassis mount

<table>
<thead>
<tr>
<th>Accessories (optional)</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor operator</td>
<td>M C</td>
</tr>
<tr>
<td>External operating breaker-mounted handle</td>
<td>H B</td>
</tr>
<tr>
<td>Door-mounted (variable depth)</td>
<td>H P</td>
</tr>
<tr>
<td>Toggle extension</td>
<td>H A</td>
</tr>
<tr>
<td>Mechanical interlock: Slide type</td>
<td>M S</td>
</tr>
<tr>
<td>Toggle holder</td>
<td>H H</td>
</tr>
<tr>
<td>Toggle lock</td>
<td>H L</td>
</tr>
<tr>
<td>Terminal cover</td>
<td>For front-connected C F</td>
</tr>
<tr>
<td>For rear-connected and plug-in</td>
<td>C R</td>
</tr>
<tr>
<td>Interpole barrier</td>
<td>B A</td>
</tr>
<tr>
<td>Terminal block for lead</td>
<td>T F</td>
</tr>
<tr>
<td>Door flange</td>
<td>D F</td>
</tr>
</tbody>
</table>

### Standard specifications

<table>
<thead>
<tr>
<th>Trip button (color)</th>
<th>Yes (Red)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handle position indication (ON: Red, OFF: Green)</td>
<td>Yes</td>
</tr>
<tr>
<td>Suitability for isolation</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Notes:

- Standard. This configuration used unless otherwise specified.
- Optional standard. Specify when ordering.
- Semi-standard.
- “yes” or “available”.
- “no” or “not available”.
- Line side interpole barriers are supplied as standard. (Front connection only)
- The mechanical interlock is not applicable to the draw-out type (DR).
- Required for overcurrent protection. Rated conditional short-circuit current \(I_{cc}\) will be the same as Rated short-circuit breaking capacity of upstream breaker.

#### Combinations of Internally Mounted Accessories

<table>
<thead>
<tr>
<th>AX</th>
<th>AL</th>
<th>SH</th>
<th>UV</th>
</tr>
</thead>
<tbody>
<tr>
<td>AX</td>
<td>AL</td>
<td>SH</td>
<td>UV</td>
</tr>
<tr>
<td>AX</td>
<td>AL</td>
<td>SH</td>
<td>UV</td>
</tr>
<tr>
<td>AX</td>
<td>AL</td>
<td>SH</td>
<td>UV</td>
</tr>
<tr>
<td>AX</td>
<td>AL</td>
<td>SH</td>
<td>UV</td>
</tr>
<tr>
<td>AX</td>
<td>AL</td>
<td>SH</td>
<td>UV</td>
</tr>
<tr>
<td>AX</td>
<td>AL</td>
<td>SH</td>
<td>UV</td>
</tr>
<tr>
<td>AX</td>
<td>AL</td>
<td>SH</td>
<td>UV</td>
</tr>
</tbody>
</table>

---

7-66
Outline dimensions (mm)

ASL: Arrangement Standard Line  HL: Handle Frame Centre Line  CL: Handle Centre Line

Front-connected

Rear-connected

Plug-in (Standard)

Detail of connecting part

Plug-in (High-performance)

Detail of connecting part and Preparation of conductor

Flush-mounted

Drilling plan (front view)

Drilling plan (front view)

Note: Studs are factory installed in horizontal direction both on the line and load sides.

Panel cutout (front view)

Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.

Characteristics and Outline Dimensions
TemBreak2
Molded Case Circuit Breakers
(800A Frame)

S800-NN


Characteristics and Outline Dimensions

Ratings and Specifications

Type
Number of poles

S800-NN

7

Ratings
Rated current, A
800
Rated insulation voltage (U) V
AC 690
Rated operational voltage V
AC 690
Rated short circuit making capacity, kA peak
DC 250
Rated short time withstand current, kA
17
Rated impulse withstand voltage (Uimp) kV
10 (0.3sec)

Performance
Utilization category
IEC 60947-3
AC-23A
DC-22A
Upstream breaker @
S800-NF
Weight (marked standard type) kg
8.0

Connections and Mountings
Front-connected (FC) Terminal screws
Rear-connected (RC) Bolt studs
Plug-in (PM) For switchboards. Standard (PMC)
Flush-mounted (FP) With flat bar studs
High-performance (PM3)

Clip-in chassis mount

Accessories (optional)
Symbol
Motor operator
M C
External operating breaker-mounted handle
Door-mounted (variable depth)
H P
Toggle extension
H A
Mechanical interlock: Slide type
M S
Toggle holder
H H
Toggle lock
H L
Terminal cover For front-connected
C F
For rear-connected and plug-in
C R
Tongue barrier
B A
Terminal block for lead
T F
Door flange
D F

Standard specifications
Trip button (color)
Yes (Red)
Handle position indication (ON: Red, OFF: Green)
Yes
Suitability for isolation
Yes

Notes:
• Standard. This configuration used unless otherwise specified.
○ Optional standard. Specify when ordering.
▲ Semi-standard.
● “yes” or “available”.
□ “no” or “not available”.
① Line side interpole barriers are supplied as standard. (Front connection only)
② The mechanical interlock is not applicable to the draw-out type (DR).
③ Required for overcurrent protection. Rated conditional short-circuit current (Icc) will be the same as Rated short-circuit breaking capacity of upstream breaker.

Combinations of Internally Mounted Accessories

<table>
<thead>
<tr>
<th>AX</th>
<th>AL</th>
<th>SH</th>
<th>UV</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUX</td>
<td>AL</td>
<td>SH</td>
<td>UV</td>
</tr>
</tbody>
</table>

Left pole
Right pole
### Outline dimensions (mm)  S800-NN

#### Front-connected

- **Stud can be turned 90°**
- **Auxiliary circuit terminals**
- **Conductor width, max 40**
- **Toggle extension (removable)**

#### Rear-connected

- **Groove for dissipating heat generated by eddy current**
- **Mounting base (rear view)**
- **M10 Mounting screw**
- **M16 screw**

#### Plug-in (Standard)

- **Detail of connecting part**
- **Trip button (red)**
- **Mounting base (front view)**
- **Drilling plan (front view)**

#### Plug-in (High-performance)

- **Detail of connecting part and Preparation of conductor**
- **M8 Mounting screw**
- **Mounting base (front view)**
- **Drilling plan (front view)**

#### Flush-mounted

- **Stud can be turned 90°**
- **Mounting hole**
- **Toggle extension (removable)**
- **Drilling plan (front view)**

---

**Note:** Studs are factory installed in horizontal direction both on the line and load sides.

---

**Note:** Studs are factory installed in horizontal direction both on the line and load sides.

---

**Note:** Studs are factory installed in horizontal direction both on the line and load sides.

---

**Interpole barrier (removable)**

**Mounting hole**

**Conductor overlap, max**

**ASL : Arrangement Standard Line**  
**HL : Handle Frame Centre Line**  
**CL : Handle Centre Line**
### Characteristics and Outline Dimensions

#### Molded Case Circuit Breakers

**S1250-NN**

(1250A Frame)

### Ratings and Specifications

<table>
<thead>
<tr>
<th>S1250-NN</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td></td>
</tr>
<tr>
<td>Number of poles</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Ratings</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated current, A</td>
<td>1250</td>
</tr>
<tr>
<td>Rated insulation voltage (U) V AC</td>
<td>690</td>
</tr>
<tr>
<td>Rated operational voltage V AC</td>
<td>690</td>
</tr>
<tr>
<td>Rated short circuit making capacity, kA peak</td>
<td>250</td>
</tr>
<tr>
<td>Rated short time withstand current, kA</td>
<td>15 (U=3sec)</td>
</tr>
<tr>
<td>Rated impulse withstand voltage (Uimp) kV</td>
<td>8</td>
</tr>
</tbody>
</table>

| **Performance** |  |
| Utilization category | IEC 60947-3 |
| Upstream breaker |  |
| Weight (marked standard type) kg |  |

| **Connections and Mountings** |  |
| Front-connected (FC) | Terminal screws |
| With extension bars |  |
| Rear-connected (RC) | Bolt studs |
| Flat bar studs |  |
| Plug-in (PM) | For switchboards: Standard (PMC) |
| High-performance (PMB) |  |
| For distribution boards (PMC) |  |
| Flush-mounted (FP) | With flat bar studs |

| **Clip-in chassis mount** |  |

<table>
<thead>
<tr>
<th><strong>Accessories (optional)</strong></th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor operator</td>
<td>M</td>
</tr>
<tr>
<td>External operating breaker-mounted handle</td>
<td>H</td>
</tr>
<tr>
<td>Door-mounted (variable depth)</td>
<td>H</td>
</tr>
<tr>
<td>Toggle extension</td>
<td>H</td>
</tr>
<tr>
<td>Mechanical interlock: Slide type</td>
<td>M</td>
</tr>
<tr>
<td>Toggle holder</td>
<td>H</td>
</tr>
<tr>
<td>Toggle lock</td>
<td>H</td>
</tr>
<tr>
<td>Terminal cover</td>
<td>C</td>
</tr>
<tr>
<td>For front-connected</td>
<td>C</td>
</tr>
<tr>
<td>For rear-connected and plug-in</td>
<td>C</td>
</tr>
<tr>
<td>Interepole barrier</td>
<td>B</td>
</tr>
<tr>
<td>Terminal block for lead</td>
<td>T</td>
</tr>
<tr>
<td>Door flange</td>
<td>D</td>
</tr>
</tbody>
</table>

| **Standard specifications** |  |
| Trip button (color) | Yes (Red) |
| Handle position indication (ON: Red, OFF: Green) | Yes |
| Suitability for isolation | Yes |

<table>
<thead>
<tr>
<th><strong>Notes</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>#: Standard. This configuration used unless otherwise specified.</td>
<td></td>
</tr>
<tr>
<td>• #: Optional standard. Specify when ordering.</td>
<td></td>
</tr>
<tr>
<td>▲ #: Semi-standard.</td>
<td></td>
</tr>
<tr>
<td>● #: “yes” or “available”.</td>
<td></td>
</tr>
<tr>
<td>❌ #: “no” or “not available”.</td>
<td></td>
</tr>
<tr>
<td>① #: Line side interpole barriers are supplied as standard. (Front connection only)</td>
<td></td>
</tr>
<tr>
<td>② #: The mechanical interlock is not applicable to the draw-out type (DR).</td>
<td></td>
</tr>
<tr>
<td>③ #: One is supplied with every five breakers. Please specify if more are required.</td>
<td></td>
</tr>
<tr>
<td>④ #: Required for overcurrent protection.</td>
<td></td>
</tr>
</tbody>
</table>

---

### Combinations of Internally Mounted Accessories

![Combinations of Internally Mounted Accessories](image-url)
Outline dimensions (mm) S1250-NN

Front-connected

Interpole barrier (removable)

ASL: Arrangement Standard Line  HL: Handle Frame Centre Line  CL: Handle Centre Line

Rear-connected

Mounting plate

M8 Mounting screw

Soft plastic tubing ø50 to be provided on center pole and neutral pole of vertical terminal type for insulation.

Plug-in (Standard)

Mounting angle

Auxiliary circuit terminals

Mounting base (rear view)

Soft plastic tubing ø50 to be provided on center pole and neutral pole of vertical terminal type for insulation.

Flush-mounted

Mounting plate

Insulating plate

Max. 75

Conductor overlap, max

Drilling plan (front view)

Soft plastic tubing ø50 to be provided on center pole and neutral pole of vertical terminal type for insulation.

Note: Studs are factory installed in horizontal direction both on the line and load sides.

Note: Studs are factory installed in horizontal direction both on the line and load sides.
### Characteristics and Outline Dimensions

**TemBreak2**

**Molded Case Circuit Breakers (1600A Frame)**

**S1600-NN**

#### Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>S1600-NN</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Ratings</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated current, A</td>
<td>1250</td>
<td></td>
</tr>
<tr>
<td>Rated insulation voltage (U) V AC</td>
<td>690</td>
<td></td>
</tr>
<tr>
<td>Rated operational voltage V AC</td>
<td>690</td>
<td></td>
</tr>
<tr>
<td>Rated short circuit making capacity, kA peak</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>Rated short time withstand current, kA</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Rated impulse withstand voltage (Uimp) kV</td>
<td>20 (Usec)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Performance</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Utilization category</td>
<td>AC 22A</td>
<td></td>
</tr>
<tr>
<td>Upstream breaker 9</td>
<td>DC 22A</td>
<td></td>
</tr>
<tr>
<td>Weight (marked standard type) kg</td>
<td>S1600-NE</td>
<td></td>
</tr>
<tr>
<td>Weight (marked standard type)</td>
<td>24.9</td>
<td></td>
</tr>
<tr>
<td>Weight (marked standard type)</td>
<td>32.9</td>
<td></td>
</tr>
</tbody>
</table>

| **Connections and Mountings** |          |   |
| Front-connected (FC) Terminal screws |          |   |
| With extension bars |          |   |
| Rear-connected (RC) Bolt studs |          |   |
| Flat bar studs |          |   |
| Plug-in (PM) For switchboards Standard (PMC) |          |   |
| High-performance (PMB) |          |   |
| For distribution boards (PMC) |            |   |
| Draw-out type (DR) |          |   |
| TempPlug P (PG) |          |   |
| TempPlug SB (PG4) |          |   |
| DIN rail mount |          |   |

<table>
<thead>
<tr>
<th><strong>Accessories (optional)</strong></th>
<th>Symbol</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor operator M</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>External operating breaker-mounted H</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>handle Door-mounted (variable depth) H</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>Toggle extension H</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>Mechanical interlock Slide type M</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>Toggle holder H</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>Toggle lock H</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>Terminal cover For front-connected C</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>For rear-connected and plug-in</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>Intermale barrier B</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>Terminal block for lead T</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>Door flange D</td>
<td>F</td>
<td></td>
</tr>
</tbody>
</table>

| **Standard specifications** |   |
| Trip button (color) | Yes (Red) |
| Handle position indication (ON: Red, OFF: Green) | Yes |
| Suitability for isolation | Yes |

**Notes:**

- *Standard. This configuration used unless otherwise specified.
- Optional standard. Specify when ordering.
- "yes" or "available".
- "no" or "not available".
- "1": Line side interpole barriers are supplied as standard. (Front connection only)
- "3": The mechanical interlock is not applicable to the draw-out type (DR).
- "9": One is supplied with every five breakers. Please specify if more are required.
- "@4": Required for overcurrent protection.

#### Combinations of Internally Mounted Accessories

<table>
<thead>
<tr>
<th>AX</th>
<th>AL</th>
<th>SH</th>
<th>UV</th>
<th>AX</th>
<th>SH</th>
<th>UV</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL</td>
<td>AX</td>
<td>AX</td>
<td>AL</td>
<td>AL</td>
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<tr>
<td>AL</td>
<td>AL</td>
<td>AL</td>
<td>AL</td>
<td>AL</td>
<td>AL</td>
<td>AL</td>
</tr>
<tr>
<td>AL</td>
<td>AL</td>
<td>AL</td>
<td>AL</td>
<td>AL</td>
<td>AL</td>
<td>AL</td>
</tr>
<tr>
<td>AL</td>
<td>AL</td>
<td>AL</td>
<td>AL</td>
<td>AL</td>
<td>AL</td>
<td>AL</td>
</tr>
</tbody>
</table>

**Left pole**

**Right pole**
Characteristics and Outline Dimensions

Molded Case Circuit Breakers

Electronic
(1000A - 1200A Frame)

TL-1000NE, TL-1200NE

**Ratings and Specifications**

<table>
<thead>
<tr>
<th>Type</th>
<th>TL-1000NE</th>
<th>TL-1200NE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

**Ratings**

- **Rated current, A**: Adjustable
- **Rated impulse withstand voltage (Uimp)**: 450V
- **Rated breaking capacity, kA**: 8000
- **Rated short time withstand current, kA**: 6000

<table>
<thead>
<tr>
<th>Type</th>
<th>TL-1000NE</th>
<th>TL-1200NE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

**Connections and Mountings**

- **Front-connected (FC)**: Terminal screws
- **Standard specifications**
  - **Interpole barrier**: B A
  - **Door flange**: D F

**Standard specifications**

- **Overcurrent trip mechanism**: Electronic
- **Trip button (color)**: White
- **Handle position indication (GN: Red, DFF: Green)**: Yes
- **CE marking**: Non

**Notes**:

- Standard. This configuration used unless otherwise specified.
- Optional standard. Specify when ordering.
- Semi-standard.
- *"yes" or "available."
- "no" or "not available."
- "Yes" or "no" or "not available."
- "yes" or "available."
- "no" or "not available."
- Line side interpole barriers are supplied as standard. (Front connection only)
- The mechanical interlock is not applicable to the draw-out type (DR).
- Optional pretrip alarm or ground fault trip function available on request.
- at 460V AC. One is supplied with every five breakers. Please specify if more are required.
- Ground fault trip can not be equipped with Pre-trip alarm.

**Combinations of Internally Mounted Accessories**

<table>
<thead>
<tr>
<th>AX</th>
<th>AL</th>
<th>SH</th>
<th>UV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Time/Current characteristic curves**

<table>
<thead>
<tr>
<th>Type</th>
<th>TL-1000NE</th>
<th>TL-1200NE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated current (I) I1</td>
<td>1000</td>
<td>1250</td>
</tr>
<tr>
<td>Long time-delay pick-up current (A) (I1)</td>
<td>1500</td>
<td>1250</td>
</tr>
<tr>
<td>Short time-delay pick-up current (A) (I1)</td>
<td>1500</td>
<td>1250</td>
</tr>
<tr>
<td>Instantaneous trip pick-up current (A) (I1)</td>
<td>1500</td>
<td>1250</td>
</tr>
<tr>
<td>Trip alarm pick-up current (A) (I1)</td>
<td>1500</td>
<td>1250</td>
</tr>
<tr>
<td>Overcurrent trip setting (S) (T1)</td>
<td>1500</td>
<td>1250</td>
</tr>
<tr>
<td>Ground fault trip setting (S) (T1) (optional)</td>
<td>1500</td>
<td>1250</td>
</tr>
</tbody>
</table>

**Overcurrent tripping characteristics**

<table>
<thead>
<tr>
<th>Type</th>
<th>TL-1000NE</th>
<th>TL-1200NE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated short time withstand current, kA</td>
<td>8000</td>
<td>6000</td>
</tr>
<tr>
<td>Rated impulse withstand voltage (Uimp)**</td>
<td>450V</td>
<td>450V</td>
</tr>
</tbody>
</table>

**Notes**: The undefined values will be applied as standard ratings unless otherwise specified when ordering.

**Combination of Internally Mounted Accessories**

- **AX**: Auxiliary switch
- **AL**: Alarm switch
- **SH**: Short trip
- **UV**: Under voltage

**NOTE**: The UV Controller is installed externally when provided with AC UV.
### Outline dimensions (mm)

#### TL-1000NE, TL-1200NE

**Front-connected**

- **Mounting hole**
- **Conductor overlap, max.**
- **Toggle extension (removable)**
- **Drilling plan (front view)**

**Rear-connected**

- **Mounting hole**
- **Conductor overlap, max.**
- **Insulating plate (Factory fitted)**
- **Drilling plan (front view)**

**Plug-in**

- **M10 Mounting screw**
- **Auxiliary circuit terminals**
- **Mounting base (rear view)**
- **Drilling plan (front view)**

**Flush-mounted**

- **Mounting plate**
- **Drilling plan (front view)**

---

**Note:** Studs are factory installed in horizontal direction both on the line and load sides.

---

ASL: Arrangement Standard Line  HL: Handle Frame Centre Line  CL: Handle Centre Line

---

**Characteristics and Outline Dimensions**
Molded Case Circuit Breakers

XS2000NE

Characteristics and Outline Dimensions

Overcurrent tripping characteristics

- CT rated current (A) \(I_{c}\)
- 2000
- Long time-delay
- pick-up current (A) \(I_{l}\)
- 1000, 1200, 1400, 1600, 1800, 2000
- time settings (S) \(T_{l}\)
- Setting tolerance ±20%
- Short time-delay
- pick-up current (A) \(I_{g}\)
- Setting tolerance ±10%
- Instantaneous tripping
- pick-up current (A) \(I_{i}\)
- Setting tolerance ±10%
- Pre-trip alarm pick-up current (A) \(I_{p}\)
- Setting tolerance ±10%
- Ground fault trip pick-up current (A) \(I_{g}\)
- Setting tolerance ±15%
- Ground fault trip-time setting (S) \(T_{g}\)
- Setting tolerance ±15%
- Trip button (color)
- Electronic (Red)
- Yes (Red)
- Standard specifications
- No (Red)
- CE marking
- Non
- Notes:
- *: Standard. This configuration used unless otherwise specified.
- ○: Optional standard. Specify when ordering.
- #: “yes” or “available”, “−”: “no” or “not available”, \(\odot\): Supplied as standard.
- \(\wedge\): The mechanical interlock is not applicable to the draw-out type (DR).
- \(\cup\): at 500V AC.
- \(\odot\): Optional pretrip alarm or ground fault trip function available on request.
- \(\wedge\): Ground fault trip can not be equipped with Pre-trip alarm.

Combinations of Internally Mounted Accessories

- Auxiliary switch
- Alarm switch
- Short trip
- Under voltage trip
- Various types

Notes: * The UV Controller is installed externally when provided with AC UV.
Outline dimensions (mm)  

Front-connected

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting hole</td>
<td>ø11</td>
</tr>
<tr>
<td>Toggle extension</td>
<td>(removable)</td>
</tr>
</tbody>
</table>

Drilling plan (front view)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting angle</td>
<td>28.8</td>
</tr>
<tr>
<td>Mounting screw</td>
<td>30</td>
</tr>
</tbody>
</table>

Rear-connected

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toggle extension</td>
<td>(removable)</td>
</tr>
<tr>
<td>Conductor overlap, max</td>
<td>110</td>
</tr>
</tbody>
</table>

Drilling plan (front view)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting angle</td>
<td>30</td>
</tr>
<tr>
<td>Mounting screw</td>
<td>105</td>
</tr>
</tbody>
</table>

Draw-out

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draw-out handle</td>
<td>(removable)</td>
</tr>
<tr>
<td>Conductor overlap, max</td>
<td>25</td>
</tr>
</tbody>
</table>

Drilling plan (front view)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting angle</td>
<td>30</td>
</tr>
<tr>
<td>Mounting screw</td>
<td>105</td>
</tr>
</tbody>
</table>

Flush-mounted

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel cutout</td>
<td>(front view)</td>
</tr>
</tbody>
</table>

Drilling plan (front view)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting angle</td>
<td>30</td>
</tr>
<tr>
<td>Mounting screw</td>
<td>105</td>
</tr>
</tbody>
</table>

7 Characteristics and Outline Dimensions
# Molded Case Circuit Breakers

## XS2000NN

### Characteristics and Outline Dimensions

#### Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of poles</th>
<th>XS2000NN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ratings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated current, A</td>
<td>3</td>
<td>6000</td>
</tr>
<tr>
<td>Rated insulation voltage (U) V</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>Rated operational voltage V</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>Rated short circuit making capacity, kA peak</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>Rated short time withstand current, kA</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Rated impulse withstand voltage (Uimp) kV</td>
<td>35 (0.3sec)</td>
<td></td>
</tr>
<tr>
<td><strong>Performance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max switching current A</td>
<td>1200</td>
<td></td>
</tr>
<tr>
<td>IEC 60947-2 Ann.L CBI-Y</td>
<td>5000</td>
<td></td>
</tr>
<tr>
<td>Endurance Number of operating cycles with current</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>Number of operating cycles without current</td>
<td>2500</td>
<td></td>
</tr>
<tr>
<td>Upstream breaker (CCPD)</td>
<td>XS2000NE</td>
<td>15.8</td>
</tr>
<tr>
<td>Weight (marked standard type) kg</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Connections and Mountings

- **Front-connected (FC)** Terminal screws
- **Rear-connected (RC)** Bolt studs
- **Plug-in (PM)** For switchboards: Standard (PMC), High-performance (PMB)
- **Flush-mounted (FP)** With bolt studs
- **Draw-out type (DR)**
- **TemPlug (PG)**
- **TemPlugSE (PG4)**
- **DIN rail mount**

#### Clip-in chassis mount

- **Accessories (optional)** Symbol
  - Motor operator: M C
  - External operating handle: H B
  - Toggle extension: H A
  - Toggle lock: H L
  - Terminal cover: M S
  - Interpole barrier: B A
  - Terminal block for lead: T F
  - Door flange: D F

#### Standard specifications

- Trip button (color): Yes (Red)
- Handle position indication (ON: Red, OFF: Green): Yes
- Suitability for isolation: Non
- CE marking: Non

### Notes:

- **: Standard. This configuration used unless otherwise specified.
- ̐: Optional standard. Specify when ordering.
- ̓: “yes” or “available”.
- ̒: “no” or “not available”.
- ̕: Supplied as standard.
- ̖: The mechanical interlock is not applicable to the draw-out type (DR).
- ̗: Required for overcurrent protection.
- ̘: Fixed depth, not adjustable.

---

### Combinations of Internally Mounted Accessories

<table>
<thead>
<tr>
<th>Left pole</th>
<th>Right pole</th>
</tr>
</thead>
<tbody>
<tr>
<td>AX</td>
<td>AL</td>
</tr>
<tr>
<td>AL</td>
<td>SH</td>
</tr>
<tr>
<td>SH</td>
<td>UV</td>
</tr>
<tr>
<td>UV</td>
<td>AX</td>
</tr>
<tr>
<td>AL</td>
<td>AX</td>
</tr>
<tr>
<td>AX</td>
<td>AL</td>
</tr>
<tr>
<td>AL</td>
<td>SH</td>
</tr>
<tr>
<td>SH</td>
<td>UV</td>
</tr>
<tr>
<td>UV</td>
<td>AX</td>
</tr>
</tbody>
</table>

**NOTE:** The UV Controller is installed externally when provided with AC UV.
## Outline dimensions (mm)

**XS2000NN**

### Front-connected

- **Mounting hole**: ø12
- **4P Mounting screw**: M10
- **Toggle extension (removable)**
- **Mounting angle**: 90°
- **Conductor overlap, max**: 105
- **Panel cutout dimensions shown give an allowance of 2mm around the handle escutcheon.**

### Rear-connected

- **Mounting hole**: ø11
- **4P Mounting screw**: M10
- **Toggle extension (removable)**
- **Mounting angle**: Use non-magnetic angle (SUS 304 etc.)
- **Conductor overlap, max**: 105
- **Panel cutout dimensions shown give an allowance of 2mm around the handle escutcheon.**

### Draw-out

- **Auxiliary circuit terminals (Automatic connection)**
- **Mounting hole**: ø11
- **4P Draw-out handle (removable)**
- **Mounting angle**: Use non-magnetic angle (SUS 304 etc.)
- **Conductor overlap, max**: 105

### Flush-mounted

- **3P Mounting screw**: M10
- **4P Mounting angle**: 90°
- **Panel cutout dimensions shown give an allowance of 2mm around the handle escutcheon.**

### Drilling plan (front view)

#### Panel cutout (front view)

- **ASL**: Arrangement Standard Line
- **HL**: Handle Frame Centre Line
- **CL**: Handle Centre Line

Contact Terasaki if manual connection is required.
## Molded Case Circuit Breakers

### TB-5S

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of poles</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ratings</strong></td>
<td>Rated current, A</td>
<td>10</td>
<td>30</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Calibrated at 45°C</td>
<td>15</td>
<td>40</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated voltage V</td>
<td>AC 265</td>
<td>460</td>
<td>460</td>
<td>460</td>
<td></td>
</tr>
<tr>
<td>DC 125</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td><strong>Rated breaking capacity, kA</strong></td>
<td>NK</td>
<td>AC 250 V</td>
<td>265</td>
<td>265</td>
<td>265</td>
</tr>
<tr>
<td>(sym)</td>
<td>DC 125 V</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Weight kg</td>
<td>0.16</td>
<td>0.34</td>
<td>0.5</td>
<td>0.66</td>
<td></td>
</tr>
</tbody>
</table>

#### Connecting scheme
- Front-connected both on the line and load sides
- Plug-in on the line side and front-connected on the load side
- Plug-in on both the load and line sides

#### Mounting scheme (optional)
- Clip-in chassis
- Mounting base for single-row installation
- Mounting base for branched-into-dual-rows installation

#### Accessories (optional)
- Toggle holder
- Toggle lock
- Toggle cap
- Interpole barrier

#### Standard specifications
- Overcurrent trip mechanism
- Trip button (color)
- Handle position indication (ON: Red, OFF: Green)
- Suitability for isolation
- CE marking

### Notes:
- "Yes" or "available".
- "No" or "not available".
- $2.5kA$ for $10A$.

#### Characteristics and Outline Dimensions

### Time/Current characteristic curves

#### Ambient Compensating Curves
Outline dimensions (mm)

Front-connected

Clip and Clip-in chassis

Clip-in Chassis, part number TDB-50SG
(12-pieces snap-off chassis)

Clips A are supplied with breakers, 2 pieces/pole.
For multi-pole installation, clip-to-clip distance is 25 mm.

NOTE: 1. Clip-in chassis is notched between every two pieces to adjust number of pieces to number of breaker poles. (Bend once or twice to snap off.)

2. Screw clip-in chassis down at 4 or 5 pole intervals.
### Molded Case Circuit Breakers

#### TB-5P

<table>
<thead>
<tr>
<th>Type</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ratings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated current, A</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>@ 45°C</td>
<td>15</td>
<td>40</td>
</tr>
<tr>
<td>Rated voltage V AC</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>DC</td>
<td></td>
<td>250</td>
</tr>
<tr>
<td>Rated breaking capacity, kA</td>
<td>5.86</td>
<td>42</td>
</tr>
<tr>
<td>NK AC 250 V (sym)</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>DC 125 V</td>
<td></td>
<td>0.13</td>
</tr>
<tr>
<td>Weight kg</td>
<td>0.28</td>
<td></td>
</tr>
<tr>
<td><strong>Connecting scheme</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Front-connected both on the line and load sides</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plug-in on the line side and front-connected on the load side</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plug-in both on the line and load sides</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mounting scheme (optional)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clip-in chassis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mounting base for single-row installation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mounting base for branched-into-dual-rows installation</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Accessories (optional)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toggle holder H H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toggle lock H L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toggle cap H C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpole barrier B A</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Standard specifications</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overcurrent trip mechanism</td>
<td>Thermal-magnetic</td>
<td></td>
</tr>
<tr>
<td>Trip button (color)</td>
<td>Non</td>
<td></td>
</tr>
<tr>
<td>Handle position indication (ON: Red, OFF: Green)</td>
<td>Non</td>
<td></td>
</tr>
<tr>
<td>Suitability for isolation</td>
<td>Non</td>
<td></td>
</tr>
<tr>
<td>CE marking</td>
<td>Non</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- "yes" or "available".
- "no" or "not available".
- ☑: 2.5kA for 10A.
- ☑?: Specify the branch bars when ordering. See page 7-86, 87 for details.

#### Time/Current characteristic curves

- Percent Rated Current
- Trip Time (seconds)

#### Ambient Compensating Curves

- Percent Rated Current
- Ambient temperature (°C)

**Calibrated at 45°C**

---

### Characteristics and Outline Dimensions

**Type**

- Molded Case Circuit Breakers

**Ratings and Specifications**

- Type: TB-5P
- Number of poles: 1, 2
- Rated current, A @ 45°C: 10, 30, 15, 40, 20, 50
- Rated voltage V AC, DC
- Rated breaking capacity, kA NK AC 250 V (sym) 125 V DC 125 V
- Weight kg
- Connecting scheme
- Mounting scheme (optional)
- Accessories (optional)
- Standard specifications

---
**Characteristics and Outline Dimensions**

**Molded Case Circuit Breakers (50A Frame)**

**TB-5D**

### Ratings and Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of poles</th>
<th><strong>TB-5D</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Ratings</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated current, A</td>
<td></td>
</tr>
<tr>
<td>Calibrated at 45°C</td>
<td></td>
</tr>
<tr>
<td>Rated voltage V</td>
<td>AC</td>
</tr>
<tr>
<td></td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>DC</td>
</tr>
<tr>
<td></td>
<td>125</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Rated breaking capacity, kA</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(sym)</td>
<td></td>
</tr>
<tr>
<td>AC 250 V</td>
<td>28</td>
</tr>
<tr>
<td>DC 125 V</td>
<td>22</td>
</tr>
</tbody>
</table>

| **Weight** | 0.28 kg |

<table>
<thead>
<tr>
<th><strong>Connecting scheme</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Front-connected both on the line and load sides</td>
<td></td>
</tr>
<tr>
<td>Plug-in on the line side and front-connected on the load side</td>
<td></td>
</tr>
<tr>
<td>Plug-in both on the line and load sides</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Mounting scheme (optional)</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Clip-in chassis</td>
<td></td>
</tr>
<tr>
<td>Mounting base for single-row installation</td>
<td></td>
</tr>
<tr>
<td>Mounting base for branched-into-dual-rows installation</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Accessories (optional)</strong></th>
<th>Symbol</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Toggle holder</td>
<td>H H</td>
<td></td>
</tr>
<tr>
<td>Toggle lock</td>
<td>H L</td>
<td></td>
</tr>
<tr>
<td>Toggle cap</td>
<td>H C</td>
<td></td>
</tr>
<tr>
<td>Interpole barrier</td>
<td>B A</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Standard specifications</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Overcurrent trip mechanism</td>
<td>Thermal-magnetic</td>
</tr>
<tr>
<td>Trip button (color)</td>
<td>Non</td>
</tr>
<tr>
<td>Handle position indication (ON: Red, OFF: Green)</td>
<td>Non</td>
</tr>
<tr>
<td>Suitability for isolation</td>
<td>Non</td>
</tr>
<tr>
<td>CE marking</td>
<td>Non</td>
</tr>
</tbody>
</table>

**Notes:**

- “yes” or “available”.
- “no” or “not available”.

- 2.5kA for 10A.

- Specify the branch bars when ordering. See page 7-86, 87 for details.

### Time/Current characteristic curves

[Graph showing time/current characteristic curves]

### Ambient Compensating Curves

[Graph showing ambient compensating curves]
Outline dimensions (mm)  TB-5D

Front-connected

Single mounting base-TDB-50DC

Double mounting base-TDA-50DC

Drilling plan

ASL: Arrangement Standard Line  H: Handle Frame Centre Line  C: Handle Centre Line

Example 1

Example 2

ASL

CL

ø10.5  
for Branching  
bar mtg.

ø4.5  Mounting hole

M5×0.8 screw  
Load end terminal

Pressure plate-SC  
T1

Type BH-SC  
Line blade terminal  
(separately sold)

Pressure plate-DC  
T1

Applied branching bars  
type 1RT/LC  
(separately sold)  
M4×15-LC

Bus bar  
(6×32 max.)  
(not supplied)

Mounting plate  
(not supplied)

Load end plug-in terminal

Line end plug-in terminal

 ø10.5  
for Branching  
bar mtg.

ø4.5  Mounting hole

M5×0.8 screw  
Load end terminal

Pressure plate-SC  
T1

Pressure plate-SC  
T1

M6×0.8 screw  
Load end terminal

M5×0.8 screw  
Load end terminal

Mounting plate  
(not supplied)

Mounting plate  
(not supplied)

 ø10.5  
for Branching  
bar mtg.

ø4.5  Mounting hole

M5×0.8 screw  
Load end terminal

Pressure plate-DC  
T1

Pressure plate-SC  
T1

M5×0.8 tapped hole  
for Branching bar connecting,  
type 1S-LC  
type 2S-LC

M5×0.8 tapped hole  
for Branching bar connecting,  
type 1RT-LC  
type 2RT-LC  
type 1T-LC

 ø4.5  Mounting hole

Bus bar  
(6×32 max.)  
(not supplied)

Mounting plate  
(not supplied)

(Min. mounting pitch)
### Characteristics and Outline Dimensions

#### Molded Case Circuit Breakers

**TB-5P, TB-5D**

#### Mounting bases, branching bars and other accessories

<table>
<thead>
<tr>
<th>Mounting bases for dual-row installation (for four circuits)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td><strong>Applicable breaker</strong></td>
<td><strong>Outline</strong></td>
</tr>
<tr>
<td>TDA-50PC</td>
<td>TB-5P</td>
<td><img src="image1" alt="Diagram" /></td>
</tr>
<tr>
<td>TDA-50DC</td>
<td>TB-5D</td>
<td><img src="image2" alt="Diagram" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mounting bases for single-row installation (for two circuits)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td><strong>Applicable breaker</strong></td>
<td><strong>Outline</strong></td>
</tr>
<tr>
<td>TDB-50PC</td>
<td>TB-5P</td>
<td><img src="image3" alt="Diagram" /></td>
</tr>
<tr>
<td>TDB-50DC</td>
<td>TB-5D</td>
<td><img src="image4" alt="Diagram" /></td>
</tr>
</tbody>
</table>

#### Accessories

<table>
<thead>
<tr>
<th>Name</th>
<th>Outline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retainer plate DC</td>
<td><img src="image5" alt="Diagram" /></td>
</tr>
<tr>
<td>Retainer plate SC</td>
<td><img src="image6" alt="Diagram" /></td>
</tr>
<tr>
<td>Braided line terminal BH-SC</td>
<td><img src="image7" alt="Diagram" /></td>
</tr>
<tr>
<td>Application</td>
<td>Type</td>
</tr>
<tr>
<td>-------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Two branches from outer busbar</td>
<td>2RT-LC</td>
</tr>
<tr>
<td>Two branches from inner busbar</td>
<td>2S-LC</td>
</tr>
<tr>
<td>One branch from inner busbar</td>
<td>1S-LC</td>
</tr>
<tr>
<td>One branch from outer busbar</td>
<td>1RT-LC</td>
</tr>
<tr>
<td>One branch from outer busbar in opposite direction</td>
<td>1L-LC</td>
</tr>
</tbody>
</table>
Outline dimensions (mm) (Type T2MC25)

Front-connected

Preparation of conductor with extension bars (optional)

Drilling plan (front view)

Rear-connected

Panel cutout (front view)

Plug-in (Standard)

Panel hinge position (hatching area) (bottom view)

Plug-in (High-performance)

Panel cutout dimensions shown give an allowance of 1.5mm around motor operator.

Characteristics and Outline Dimensions

ASL: Arrangement Standard Line
HL: Handle Frame Centre Line
CL: Handle Centre Line
For the extension bars, straight bars or spread bars can be supplied.
Outline dimensions (mm) (Type T2MC40) $400

Front-connected

Preparation of conductor

With extension bars (optional)

Drilling plan (front view)

Rear-connected

Mounting plate

Manual operating handle

(removable)

Drilling plan (front view)

Panel cutout (front view)

Plug-in (Standard)

Detail of connecting part

Mounting base (rear view)

Drilling plan (front view)

Panel hinge position (hatching area) (bottom view)

Plug-in (High-performance)

Detail of connecting part

Preparation of conductor

Mounting base (rear view)

Drilling plan (front view)

ASL: Arrangement Standard Line

HL: Handle Frame Centre Line

CL: Handle Centre Line

Note: Studs are factory installed in horizontal direction both on the load and line sides.

Panel cutout dimensions shown give an allowance of 1.5mm around motor operator.

Manual operating handle (removable)
ASL: Arrangement Standard Line  H: Handle Frame Centre Line  C: Handle Centre Line

**Outline dimensions (mm) (Type T2MC40)**

**Front-connected**

Preparation of conductor

With extension bars (optional)

Drilling plan (front view)

**Rear-connected**

Drilling plan (front view)

Panel cutout (front view)

**Plug-in (Standard)**

Detail of connecting part

Mounting base (rear view)

Drilling plan (front view)

Panel hinge position (hatching area) (bottom view)

**Plug-in (High-performance)**

Detail of connecting part

Preparation of conductor

Mounting base (rear view)

Drilling plan (front view)
Outline dimensions (mm) (Type T2MC80) S630, S800

Front-connected

Rear-connected

Plug-in (Standard)

Plug-in (High-performance)

Panel cutout dimensions shown give an allowance of 1.5mm around motor operator.

Note: Studs are factory installed in horizontal direction both on the line and load sides.
Outline dimensions (mm) (Type T2MC80) H630, H800, L630, L800

Front-connected

Rear-connected

Plug-in (Standard)

Detail of connecting part and Preparation of conductor

Mounting base (rear view)

Drilling plan (front view)

Panel cutout (front view)

Drilling plan (front view)

Panel hinge position (hatching area) (bottom view)

ASL: Arrangement Standard Line  HL: Handle Frame Centre Line  CL: Handle Centre Line

ASL : Arrangement Standard Line     HL : Handle Frame Centre Line     CL : Handle Centre Line

Note: Studs are factory installed in horizontal direction both on the line and load sides.

Panel cutout dimensions shown give an allowance of 1.5mm around motor operator.

Characteristics and Outline Dimensions
ASL: Arrangement Standard Line  HL: Handle Frame Centre Line  CL: Handle Centre Line

Outline dimensions (mm) (Type XMD9)  TL-1000NE, TL-1200NE

Front-connected

Drilling plan (front view)

Panel cutout (front view)

Rear-connected

Drilling plan (front view)

Plug-in (Standard)

Mounting base (XDM9)

Drilling plan (front view)

Note: Studs are factory installed in horizontal direction both on the line and load sides.

Soft plastic tubing ø50 to be provided on center pole and neutral pole of vertical terminal type for insulation.
Outline dimensions (mm) (Type T2MCX6) S1250-NE, S1250-GE, S1250-NN

Front-connected

Drilling plan (front view)

Rear-connected

Drilling plan (front view)

Panel cutout (front view)

Plug-in (Standard)

Drilling plan (front view)

Panel cutout dimensions shown give an allowance of 1.0mm around motor operator.

Note: Studs are factory installed in horizontal direction both on the line and load sides.

ASL: Arrangement Standard Line  HL: Handle Frame Centre Line  CL: Handle Centre Line
**Outline dimensions (mm) (Type T2MCX6)**

### Front-connected

![Diagram of front-connected with dimensions]

- **ASL**: Arrangement Standard Line
- **HL**: Handle Frame Centre Line
- **CL**: Handle Centre Line

### Rear-connected

![Diagram of rear-connected with dimensions]

### Draw-out

![Diagram of draw-out with dimensions]

- **ASL**: Arrangement Standard Line
- **HL**: Handle Frame Centre Line
- **CL**: Handle Centre Line

Panel cutout dimensions shown give an allowance of 1.0mm around motor operator.

- **Contact Terasaki if manual connection is required.**
Outline dimensions (mm) (Type XMB10) XS2000NE, XS2000NN

Front-connected

Drilling plan (front view)

Rear-connected

Drilling plan (front view)

Draw-out

Drilling plan (front view)

- Use non-magnetic angle (SUS 304 etc.)
- Contact TERASAKI if manual connection is required.
- Mounting angle
- Mounting screw
- Mounting hole
- Manual operating handle (removable)
- Conductor overlap, max
- Auxiliary circuit terminals (Automatic connection)
- Draw-out handle (removable)
- Conductor overlap, max
- Manual operating handle (removable)
- Draw-out handle (removable)
- Conductor overlap, max

ASL: Arrangement Standard Line  HL: Handle Frame Centre Line  CL: Handle Centre Line
Handling and maintenance

1. Transportation and storage ................................................................. 8-2
2. Environmental operating conditions .................................................. 8-2
3. Installation and connection ................................................................. 8-2
4. Maintenance and inspection ............................................................... 8-4
1 Transportation and storage

Storage Precautions

- Avoid corrosive gases:
  Do not leave the breakers in an atmosphere of hydrogen sulfide or ammonia gas.
- Avoid humidity:
  Do not leave the breakers in high humidity for a long period.
- Avoid direct sunlight:
  Do not expose the breakers to direct sunlight for a long period.
- Avoid dust:
  Keep the breakers in the ON position and covered against dust during storage.
- Storage temperature: –20 to +60°C

Transportation Precautions

- Handle and transport with care:
  Do not drop the breakers during transportation. Carefully pack the breakers before transportation. Take due measures against moisture and gas absorption of the breakers during long transportation.
- Hold by the breaker body:
  Be sure to hold the breaker by its body during handling and transportation. Holding the breaker by a lead wire, terminal cover, stud or flash plate may result in the breaker being dropped, damaged and/or failed.

2 Environmental operating conditions

Use the breakers in the following environmental conditions:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temperature</td>
<td>–5°C to +45°C. The average ambient temperature</td>
</tr>
<tr>
<td></td>
<td>over a period of 24 hours must not exceed 35°C.</td>
</tr>
<tr>
<td>Humidity</td>
<td>45 to 85% RH</td>
</tr>
<tr>
<td>Vibration/Shock</td>
<td>No unusual vibration and mechanical shock</td>
</tr>
<tr>
<td>Altitude</td>
<td>2,000 m max</td>
</tr>
<tr>
<td>Atmosphere</td>
<td>No excessive water vapor, oil vapor, dust, salt</td>
</tr>
<tr>
<td></td>
<td>or corrosive substances.</td>
</tr>
<tr>
<td></td>
<td>No sudden change in temperature. Non-condensing</td>
</tr>
</tbody>
</table>

3 Installation and connection

Installation Precautions

- Avoid direct sunlight:
  Install the breakers in an area that is not exposed to direct sunlight. Otherwise, the breakers may malfunction due to a temperature rise.
- Avoid vibration and shock:
  If installing the breakers in an area that is exposed to vibration or shock, use cushions to relieve vibration or shock applied to the breakers.
- Avoid dust and chippings:
  Take measures so that the breakers are not directly exposed to rainwater, oil, dust or chippings. Pay special attention to electrically conducive particles such as iron chippings that can enter the breakers. House the breakers in enclosures during use.
- Do not block the arc gas exhaust ports:
  Do not block the arc gas exhaust ports. Doing so may deteriorate the breaking capacity. Ensure due insulation distance (arc space) between current carrying parts and grounded metal members in the vicinity of the exhaust ports. See page 5-20 for instructions regarding insulation distance.
- Do not remove the back cover:
  Do not remove the base back cover or thread locking compound.
■ Connection Precautions

**• Tighten to a proper torque:**

Undertightening terminal screws may result in overheat or malfunction and overtightening in damage to the mold. Tighten the screws to the specified torques. See pages 5-16 to 5-19 for proper tightening torques. Use screwdrivers suited to the size and type of screws.

**• Never lubricate threads:**

Do not lubricate screw threads. Doing so will decrease the frictional resistance, resulting in looseness and overheat.

**• Insulate exposed live parts:**

Electrically and positively insulate bare live parts of front-connected breakers using interpole barriers, terminal covers, insulation tube and/or insulation tape.

**• Do not deform studs:**

Tighten the conductor connections of rear-connected or plug-in breakers so that the studs do not suffer deformation due to excessive force.

**• Normal connection of power supply and load is preferable:**

It is preferable in principle that the breaker is in normal connection. If reverse connection is necessary, refer to page 5-22.

**• Firmly secure pole conductors in parallel with each other:**

Install connecting conductors so that they are in parallel with each other. Firmly secure or tie the conductors by insulating support in case they are acted upon by an electromagnetic force, the strength of which depends on the magnitude of fault current. See the table to the right.

---

**Electromagnetic force acted per meter of conductor**

<table>
<thead>
<tr>
<th>Conventional rated current (kA) (Power factor)</th>
<th>Electromagnetic force (three-phase short-circuit) N</th>
<th>Conductor clearance: 10 cm</th>
<th>Conductor clearance: 20 cm</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 (0.4)</td>
<td></td>
<td>490</td>
<td>245</td>
</tr>
<tr>
<td>18 (0.3)</td>
<td></td>
<td>1880</td>
<td>940</td>
</tr>
<tr>
<td>25 (0.2)</td>
<td></td>
<td>4430</td>
<td>2215</td>
</tr>
<tr>
<td>35 (0.2)</td>
<td></td>
<td>8690</td>
<td>4345</td>
</tr>
<tr>
<td>42 (0.2)</td>
<td></td>
<td>12520</td>
<td>6260</td>
</tr>
<tr>
<td>50 (0.2)</td>
<td></td>
<td>17740</td>
<td>8870</td>
</tr>
<tr>
<td>65 (0.2)</td>
<td></td>
<td>29980</td>
<td>14990</td>
</tr>
<tr>
<td>85 (0.2)</td>
<td></td>
<td>51270</td>
<td>25635</td>
</tr>
<tr>
<td>100 (0.2)</td>
<td></td>
<td>70960</td>
<td>35480</td>
</tr>
<tr>
<td>125 (0.2)</td>
<td></td>
<td>110970</td>
<td>55435</td>
</tr>
</tbody>
</table>
1. Initial Inspection

After installing the breakers, inspect them according to the table shown below before energizing them for the first time. Make sure that the breakers are not energized before starting the inspection.

<table>
<thead>
<tr>
<th>Check item</th>
<th>Criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Packing material debris, iron chippings, electrical wire debris or other electrically conductive foreign matter</td>
<td>Must have been completely removed.</td>
</tr>
<tr>
<td>2. Cracks or damage to the cover and base</td>
<td>Must not have occurred.</td>
</tr>
<tr>
<td>3. Terminal screws and conductor clamping screws</td>
<td>Must have been tightened to the torques specified on pages 5-16 to 5-19.</td>
</tr>
<tr>
<td>4. Insulation resistance</td>
<td>Must be 5 megohms or higher when measured with a 500V megger.</td>
</tr>
<tr>
<td>5. Rated voltage and circuit voltage</td>
<td>Must be identical or within the permitted range.</td>
</tr>
</tbody>
</table>

■ Caution on dielectric withstand test voltage

Perform the dielectric withstand test according to the table shown below. Make sure that the test voltage does not exceed the upper limits specified in the table.

<table>
<thead>
<tr>
<th>Main circuit</th>
<th>Auxiliary or control circuit (Note 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated insulation voltage</td>
<td>Test voltage (ac rms)</td>
</tr>
<tr>
<td>U ≤ 300</td>
<td>2000</td>
</tr>
<tr>
<td>300 &lt; U ≤ 690</td>
<td>2500</td>
</tr>
</tbody>
</table>

Notes:
1. Between terminal group and ground only
2. Isolate DC 24 V motors from the control circuit. Dielectric withstand voltage: AC 500V.

2. Periodic Inspection

Periodic inspection is needed to maintain the optimum performance of the breakers and prevent malfunctions. Perform the first inspection one month after the system is put into commission and subsequently, at periodic intervals depending on the operating conditions.

■ Guidelines for inspection intervals

<table>
<thead>
<tr>
<th>Operating conditions</th>
<th>Installation location</th>
<th>Examples</th>
<th>Guidelines for inspection intervals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical</td>
<td>Where the ambient air is always clean and dry.</td>
<td>Dustproof and air-conditioned electrical installation rooms</td>
<td>Every 2 or 3 years before 10 years since installation Every year after 10 years since installation Every 6 months after 15 years since installation</td>
</tr>
<tr>
<td></td>
<td>Indoors where dust is low and corrosive gases are not present.</td>
<td>Switchboards or enclosures in electrical installation rooms not dustproof nor air-conditioned</td>
<td>Every year before 10 years since installation Every 6 months after 10 years since installation Every month after 15 years since installation</td>
</tr>
<tr>
<td>Harsh</td>
<td>Where sulfur dioxide, hydrogen sulfide, chloride and/or high-humidity gases are present and dust is low.</td>
<td>Geothermal power plants sewage treatment plants, steelmaking plants, papermaking plants or pulp making plants</td>
<td>Every 6 months before 5 years since installation Every month after 5 years since installation</td>
</tr>
<tr>
<td></td>
<td>Where dust and/or corrosive gases are severe, making it impossible for people to stay in for a long time.</td>
<td>Chemical plants, quarries or mines.</td>
<td>Every month</td>
</tr>
</tbody>
</table>
■ Check items

Make sure that the breakers are not energized before starting the inspection.

<table>
<thead>
<tr>
<th>Check item</th>
<th>Criterion</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Terminal screws</td>
<td>Must not be loosened.</td>
<td>If loosened, retighten to the torque specified on pages 5-16 to 5-19.</td>
</tr>
<tr>
<td>2. Terminals and their vicinities</td>
<td>Must be free of dust and oil.</td>
<td>If not, clean with a cleaner. Wipe with a clean cloth.</td>
</tr>
<tr>
<td>3. Cracks of or damage to the cover and base</td>
<td>Must not have occurred.</td>
<td>If cracks or damage is found, replace.</td>
</tr>
<tr>
<td>4. Operating mechanism</td>
<td>Must work smoothly.</td>
<td>If not, replace or contact us.</td>
</tr>
<tr>
<td>5. Discoloration or overheat signs of terminals and/or base</td>
<td>Must not be present by visual inspection.</td>
<td>If present, replace. (Discoloration of silver coating to a certain degree proves no problem).</td>
</tr>
<tr>
<td>6. Insulation resistance</td>
<td>Must be 5 megohms or higher when measured with a 500V megger.</td>
<td>If not, replace.</td>
</tr>
</tbody>
</table>

3. Inspection and action after interruption of fault current

When a breaker trips to interrupt a fault current, check the breaker to determine if it can be reused or must be replaced.

1. If arc gas exhaust ports are kept clean and no anomaly is found, the breaker can be reused.
2. If arc gas exhaust ports are blackened by soot, the breaker may be reused provided that the insulation resistance is 5 MΩ or higher, live parts including terminals are not overheated during energization and no other anomaly is found. If the insulation resistance is lower than 5 megohms, perform the dielectric withstand test of the breaker. If the test shows that the breaker still has the specified dielectric strength, the breaker may be reused provided that live parts including terminals are not overheated. It is strongly recommended, however, that the breaker be reused for a limited duration of time and be replaced with new one as early as possible.
   • The dielectric withstand test is to be done according to the description on page 8-4.
3. If the handle and arc gas exhaust ports are heavily blackened by soot and molten metal grains are found around the ports, replace the breaker with new one.

4. Operation durability

The operation durability of breakers depends on their frame size. Larger the frame size is, the lower the operation durability is. IEC 60947-2 specifies the operation durability of breakers as shown in the table below. Breakers are a protection tool and unlike electromagnetic relays, are originally inappropriate for frequent switching operation.

<table>
<thead>
<tr>
<th>Rated current, A (Note 1)</th>
<th>Number of operation cycles per hour (Note 2)</th>
<th>Number of operation cycles</th>
<th>Admissible number of operation cycles of molded case circuit breakers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Number of operation cycles</td>
<td>Energized (Note 3)</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>Not energized</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100 &lt; Iₙ ≤ 315</td>
<td>120</td>
<td>8500</td>
<td>1500</td>
</tr>
<tr>
<td>315 &lt; Iₙ ≤ 630</td>
<td>120</td>
<td>7000</td>
<td>1000</td>
</tr>
<tr>
<td>630 &lt; Iₙ ≤ 2500</td>
<td>60</td>
<td>4000</td>
<td>1000</td>
</tr>
<tr>
<td>2500 &lt; Iₙ</td>
<td>10</td>
<td>2500</td>
<td>500</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Notes:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Max value applicable to respective frame size</td>
</tr>
<tr>
<td>2.</td>
<td>Min value. This may be increased by agreement.</td>
</tr>
<tr>
<td>3.</td>
<td>The breakers must be kept closed at each operation cycle for a duration of time sufficient for the current to be established. The duration, however, does not need to be longer than two seconds.</td>
</tr>
</tbody>
</table>
## Troubles in breakers

<table>
<thead>
<tr>
<th>Category</th>
<th>Symptom</th>
<th>Possible cause</th>
<th>Remedy/Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overheat</td>
<td>Overheat (exceeding 70°C) of breaker molded case</td>
<td>Increase in contact resistance of contactors</td>
<td>Replace.</td>
</tr>
<tr>
<td></td>
<td>Overheat of terminals</td>
<td>Looseness of terminal screws or conductor clamping screws</td>
<td>Retighten.</td>
</tr>
<tr>
<td></td>
<td>Burnout of terminal insulation</td>
<td>Increase in contact resistance of contactors, Contact failure between stud conductor and terminal (due to looseness of screws or foreign matter)</td>
<td>Replace.</td>
</tr>
<tr>
<td>Continuity failure</td>
<td>Abnormal voltage on load side</td>
<td>Excessive wear of contactors, Foreign matter between contactors, Damage to current carrying parts (due to excessively frequent switching or corrosive gases)</td>
<td>Replace.</td>
</tr>
<tr>
<td>Inoperativeness</td>
<td>Closing not allowed</td>
<td>Breaker is kept in tripped state, i.e., is not reset.</td>
<td>Reset.</td>
</tr>
<tr>
<td></td>
<td>Resetting not allowed</td>
<td>UVT is not excited.</td>
<td>Energize.</td>
</tr>
<tr>
<td></td>
<td>Tripping occurring while rated current is still not reached</td>
<td>Ambient temperature too high (exceeding 40°C)</td>
<td>Reduce ambient temperature e.g. through ventilation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Overheat due to looseness of terminal screws, Overheat of interior parts</td>
<td>Retighten, Replace.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vibration and/or shock</td>
<td>Use cushions or the like to dampen vibration and shock.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Incompatible frequency (for thermal-magnetic breakers with CT)</td>
<td>Replace to match frequency.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High-frequency distortion of load current</td>
<td>Reduce load current or change current rating.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Conductor size smaller than specified</td>
<td>Use larger size conductors or change current rating.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Electromagnetic-induced noise (for electronic breakers)</td>
<td>Isolate noise source.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Excessive surge (for electronic breakers)</td>
<td>Isolate surge source.</td>
</tr>
<tr>
<td></td>
<td>Tripping due to starting current</td>
<td>Inrush starting current, Switching operation of star-delta starter, Start of inching (resulting in instantaneous tripping)</td>
<td>Change instantaneous trip pickup current or replace with breaker having larger current rating.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Starting current too high (resulting in long-delayed tripping), Starting time too long (resulting in long-delayed tripping)</td>
<td>Replace with breaker having larger current rating.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Short-circuit in motor, Errorenous connection of control circuit for SHT or UVT</td>
<td>Repair or replace motor, Check connection.</td>
</tr>
<tr>
<td>Nuisance tripping</td>
<td>No response to overcurrent</td>
<td>Failure in coordination with an upstream current-limiting fuse or breaker</td>
<td>Review coordination.</td>
</tr>
<tr>
<td></td>
<td>No tripping at trip pickup current</td>
<td>Ambient temperature too low</td>
<td>Check compensation current.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Incompatible frequency</td>
<td>Match frequency.</td>
</tr>
</tbody>
</table>
### Troubles in accessories

<table>
<thead>
<tr>
<th>Category</th>
<th>Symptom</th>
<th>Possible cause</th>
<th>Remedy/Action</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><img src="#" alt="Failure of motor operator" /></td>
<td><img src="#" alt="Wiring mistakes in control circuit" /></td>
<td><img src="#" alt="Check and correct wiring." /></td>
</tr>
<tr>
<td></td>
<td><img src="#" alt="Continuous on/off operations due to wiring mistakes in control circuit" /></td>
<td><img src="#" alt="Voltage drop due to insufficient capacity of power supply cable" /></td>
<td></td>
</tr>
<tr>
<td></td>
<td><img src="#" alt="Insufficient power supply capacity of control circuit" /></td>
<td><img src="#" alt="Use larger size cable." /></td>
<td></td>
</tr>
<tr>
<td></td>
<td><img src="#" alt="Closing/opening/resetting not allowed due to improper stroke adjustment of operation mechanism" /></td>
<td><img src="#" alt="Increase power supply capacity." /></td>
<td><img src="#" alt="Return to Terasaki for stroke readjustment." /></td>
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<tr>
<td>Failure of accessories</td>
<td><img src="#" alt="Failure of SHT" /></td>
<td><img src="#" alt="Supply-voltage drop due to insufficient current carrying capacity of control circuit" /></td>
<td><img src="#" alt="Increase current carrying capacity." /></td>
</tr>
<tr>
<td></td>
<td><img src="#" alt="Supply-voltage drop due to insufficient current carrying capacity" /></td>
<td><img src="#" alt="Increase power supply capacity." /></td>
<td></td>
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<tr>
<td></td>
<td><img src="#" alt="Coil burnout due to continuous excitations, improper coil ratings, failure or fusion of anti-burnout contacts, etc." /></td>
<td><img src="#" alt="Return to Terasaki or replace." /></td>
<td></td>
</tr>
<tr>
<td></td>
<td><img src="#" alt="Failure of UVT" /></td>
<td><img src="#" alt="Remanence" /></td>
<td><img src="#" alt="Repair or replace." /></td>
</tr>
<tr>
<td></td>
<td><img src="#" alt="Improper stroke adjustment" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><img src="#" alt="Failure of auxiliary and/or alarm switches" /></td>
<td><img src="#" alt="Fusion or burnout of microswitch contacts due to their improper ratings" /></td>
<td><img src="#" alt="Return to Terasaki or replace. Load to microswitch contacts will be relieved e.g through auxiliary relays." /></td>
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<td></td>
<td><img src="#" alt="Improper adjustment of microswitches" /></td>
<td></td>
<td><img src="#" alt="Return to Terasaki for repair." /></td>
</tr>
</tbody>
</table>
1. Handle operation and dimensions ................................................. 9-2
2. Mounting positions for trip button ............................................. 9-3
3. Standard arrangement for plug-in type auxiliary circuit terminals  
   (for high-performance type) ................................................... 9-4
4. Standard arrangement for plug-in type auxiliary circuit terminals  
   (for standard type) ............................................................... 9-5
5. Internal resistance and power consumptions of breakers .............. 9-8
### Molded Case Circuit Breakers

<table>
<thead>
<tr>
<th>Frame (A)</th>
<th>Ref. figure</th>
<th>Operation angle</th>
<th>Dimensions</th>
<th>Operation effort N</th>
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<tbody>
<tr>
<td>50</td>
<td>E50-SF,E50-CM</td>
<td>(a^<em>) (b^</em>) (y^<em>) (\beta^</em>)</td>
<td>32.8 87 +3 6 7 10 15.5</td>
<td>19.6 9.8 39.2 54.2</td>
</tr>
<tr>
<td></td>
<td>S50-SF</td>
<td>2 17 7 6.5 12</td>
<td>40.6 95 -2 7.4 7.8 13 22.8</td>
<td>44.1 37.2 78.4 54.5</td>
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<tr>
<td></td>
<td>S50-GF</td>
<td>2 19.2 16.5 4.1 19</td>
<td>26 92 0 6.8 9.3 13 20.4</td>
<td>22.0 28.0 68.0 60.0</td>
</tr>
<tr>
<td>100</td>
<td>E100-SF</td>
<td>2 17 7 6.5 12</td>
<td>32.8 87 +3 6 7 10 15.5</td>
<td>19.6 9.8 39.2 54.2</td>
</tr>
<tr>
<td></td>
<td>S100-NF,S100-GF,S100-NM,S100-NN</td>
<td>2 19.2 16.5 4.1 19</td>
<td>26 92 0 6.8 9.3 13 20.4</td>
<td>22.0 28.0 68.0 60.0</td>
</tr>
<tr>
<td></td>
<td>H100-NF,L100-NF</td>
<td>2 19.2 16.5 4.1 19</td>
<td>61 127 0 6.8 9.3 13 20.4</td>
<td>25.0 36.0 76.0 60.0</td>
</tr>
<tr>
<td>125</td>
<td>S125-SF,S125-GN</td>
<td>2 19.2 16.5 4.1 19</td>
<td>40.6 95 -2 7.4 7.8 13 22.8</td>
<td>44.1 37.2 78.4 54.5</td>
</tr>
<tr>
<td></td>
<td>S125-NF,S125-GF,S125-NN</td>
<td>2 19.2 16.5 4.1 19</td>
<td>26 92 0 6.8 9.3 13 20.4</td>
<td>22.0 28.0 68.0 60.0</td>
</tr>
<tr>
<td></td>
<td>H125-NF,L125-NF</td>
<td>2 19.2 16.5 4.1 19</td>
<td>61 127 0 6.8 9.3 13 20.4</td>
<td>25.0 36.0 76.0 60.0</td>
</tr>
<tr>
<td>225</td>
<td>S225-NF,S225-GF,S225-MM</td>
<td>2 19.2 16.5 4.1 19</td>
<td>26 92 0 6.8 9.3 13 20.4</td>
<td>25.0 36.0 76.0 60.0</td>
</tr>
<tr>
<td></td>
<td>S225-GE,H225-NF,L225-NF</td>
<td>2 19.2 16.5 4.1 19</td>
<td>61 127 0 6.8 9.3 13 20.4</td>
<td>25.0 36.0 76.0 60.0</td>
</tr>
<tr>
<td></td>
<td>E225-SF,S225-GF,S225-SN</td>
<td>2 19.2 16.5 4.1 19</td>
<td>40.5 95 0 7.4 7.2 13 21.1</td>
<td>53.0 57.0 91.0 54.4</td>
</tr>
<tr>
<td>250</td>
<td>S250-NF,S250-GF</td>
<td>2 19.2 16.5 4.1 19</td>
<td>26 92 0 6.8 9.3 13 20.4</td>
<td>25.0 36.0 76.0 60.0</td>
</tr>
<tr>
<td>400</td>
<td>S400-CF,S400-NF</td>
<td>3 19.8 19.3 -3.5 22.5</td>
<td>53.6 145 +2.8 14 9 34 39.5</td>
<td>110 115 125 91.4</td>
</tr>
<tr>
<td></td>
<td>S400-NE,S400-NN</td>
<td>3 19.8 19.3 -3.5 22.5</td>
<td>90.6 182 +2.8 14 9 34 39.5</td>
<td>110 115 125 91.4</td>
</tr>
<tr>
<td></td>
<td>S400-GF,S400-GE</td>
<td>3 19.8 19.3 -3.5 22.5</td>
<td>53.7 145 +5 13 11 40 39.5</td>
<td>140 140 10 91.3</td>
</tr>
<tr>
<td></td>
<td>S400-PF,S400-PE</td>
<td>3 19.8 19.3 -3.5 22.5</td>
<td>90.7 145 +5 13 11 40 39.5</td>
<td>140 140 10 91.3</td>
</tr>
<tr>
<td>630</td>
<td>S630-CF,S630-NF,S630-RF</td>
<td>3 20 18 2 22</td>
<td>53.7 145 +5 13 11 40 39.5</td>
<td>140 140 10 91.3</td>
</tr>
<tr>
<td></td>
<td>S630-NE,S630-RE,S630-GN</td>
<td>3 20 18 2 22</td>
<td>90.7 145 +5 13 11 40 39.5</td>
<td>140 140 10 91.3</td>
</tr>
<tr>
<td></td>
<td>H630-NE,L630-NE</td>
<td>3 20 18 2 22</td>
<td>53.7 145 +5 13 11 40 39.5</td>
<td>140 140 10 91.3</td>
</tr>
<tr>
<td>800</td>
<td>S800-CF,S800-NF,S800-RF</td>
<td>3 20 18 2 22</td>
<td>90.7 145 +5 13 11 40 39.5</td>
<td>140 140 10 91.3</td>
</tr>
<tr>
<td></td>
<td>S800-NE,S800-RE,S800-GN</td>
<td>3 20 18 2 22</td>
<td>90.7 145 +5 13 11 40 39.5</td>
<td>140 140 10 91.3</td>
</tr>
<tr>
<td></td>
<td>H800-NE,L800-NE</td>
<td>3 20 18 2 22</td>
<td>90.7 145 +5 13 11 40 39.5</td>
<td>140 140 10 91.3</td>
</tr>
<tr>
<td>1000</td>
<td>TL-1000NE</td>
<td>1 22 4 3 9</td>
<td>93.5 191 -2.8 11 12.5 40 30</td>
<td>157 118 343 98.3</td>
</tr>
<tr>
<td>1200</td>
<td>TL-1200NE</td>
<td>1 22 4 3 9</td>
<td>93.5 191 -2.8 11 12.5 40 30</td>
<td>157 118 343 98.3</td>
</tr>
<tr>
<td>1250</td>
<td>S1250-NE,S1250-GF,S1250-NN</td>
<td>2 22 4 12 9</td>
<td>73.5 171 -2.8 11 12.5 40 30</td>
<td>157 294 343 98.3</td>
</tr>
<tr>
<td>1600</td>
<td>S1600-NE,S1600-NN</td>
<td>2 22 4 12 9</td>
<td>73.5 171 -2.8 11 12.5 40 30</td>
<td>157 294 343 98.3</td>
</tr>
<tr>
<td>2000</td>
<td>X25000NE,X25000NN</td>
<td>1 18.3 10 7.7 15.3</td>
<td>100 245 +2 20.5 24 60 42.5</td>
<td>382 322 559 146</td>
</tr>
</tbody>
</table>

**Note:** Operation effort \(N\) is in kgf.
Appendix

2 Mounting positions for trip button

<table>
<thead>
<tr>
<th>Frame Breaker Ref.</th>
<th>Trip button</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>50 S50-SF, S50-GF</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td>100 S100-NF, S100-GF</td>
<td>2</td>
</tr>
<tr>
<td>S100-NM, S100-NN</td>
<td>2</td>
</tr>
<tr>
<td>H100-NF, H100-MF</td>
<td>2</td>
</tr>
<tr>
<td>S125-SF, S125-SN</td>
<td>2</td>
</tr>
<tr>
<td>S125-NF, S125-GF, S125-NN</td>
<td>2</td>
</tr>
<tr>
<td>H125-NF, H125-MF</td>
<td>2</td>
</tr>
<tr>
<td>S225-SF, S225-SN</td>
<td>2</td>
</tr>
<tr>
<td>S225-NF, S225-GF</td>
<td>2</td>
</tr>
<tr>
<td>H225-NF, H225-MF, H225-GF</td>
<td>2</td>
</tr>
<tr>
<td>E250-SF, E250-SN</td>
<td>1</td>
</tr>
<tr>
<td>S250-SF, S250-GF</td>
<td>2</td>
</tr>
<tr>
<td>400 S400-CF, S400-NF</td>
<td>3</td>
</tr>
<tr>
<td>S400-NE, S400-NN</td>
<td>3</td>
</tr>
<tr>
<td>S400-GF, S400-GE, S400-PF, S400-PE</td>
<td>3</td>
</tr>
<tr>
<td>H400-NE, L400-NE</td>
<td>3</td>
</tr>
<tr>
<td>630 S630-CF, S630-NF, S630-RF</td>
<td>3</td>
</tr>
<tr>
<td>S630-NE, S630-RE, S630-GN</td>
<td>3</td>
</tr>
<tr>
<td>H630-NE, H630-RE</td>
<td>3</td>
</tr>
<tr>
<td>800 S800-CF, S800-NF, S800-RF</td>
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<td>S800-NE, S800-RE, S800-GN</td>
<td>3</td>
</tr>
<tr>
<td>H800-NE, L800-NE</td>
<td>3</td>
</tr>
</tbody>
</table>

Notes:
1. 400AF apply C Handle Centre Line.
2. 630AF and 800AF apply ASL Arrangement Standard Line.
3. 2 trip buttons are equipped.
Auxiliary circuit terminals are of self-engaging type.

Shown in the table below are standard terminal arrangements as seen from the front of the plug-in base for high-performance type.

Contact us for non-standard arrangements.

Terminal screw M3.5

Suitable compression terminal R1.25–3.5

<table>
<thead>
<tr>
<th>Breaker</th>
<th>S100-NF</th>
<th>S100-GF</th>
<th>S125-NF</th>
<th>S125-GF</th>
<th>S50-GF</th>
<th>S100-NF, S100-GF, S100-NN</th>
<th>S125-NF, S125-GF, H225-NF, H225-GF</th>
<th>S225-NF, S225-GF, H225-NF, H225-GF</th>
<th>S400-CF, S400-NF, S400-NE</th>
<th>S400-GF, S400-GE, S400-NN</th>
<th>S400-PF, S400-PE, H400-NE, L400-NE</th>
<th>S630-CF, S630-NF, S630-RF</th>
<th>S630-NE, S630-RE, S630-GN</th>
<th>S800-CF, S800-NF, S800-GE, S800-NF</th>
<th>S800-NE, S800-RE, S800-NN</th>
<th>H630-NE, L630NE, H800-NE, L800NE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of auxiliary circuit terminals (Max allowable)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Arrangement 1</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>C1</td>
<td>AXa1</td>
<td>AXa2</td>
<td>ALa1</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>AXb1</td>
<td>AXb2</td>
<td>ALb1</td>
<td>C1</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>C2</td>
<td>AXc1</td>
<td>AXc2</td>
<td>ALc1</td>
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<td>D1</td>
<td>AXa1</td>
<td>AXa2</td>
<td>ALa1</td>
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<tr>
<td></td>
<td></td>
<td>AXb1</td>
<td>AXb2</td>
<td>ALb1</td>
<td>D1</td>
<td></td>
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</table>
Five auxiliary circuit terminals (self-engaging) constitute a terminal block.

Shown in the table below are standard terminal arrangements as seen from the rear of the plug-in base for standard type.

Contact us for non-standard arrangements.

<table>
<thead>
<tr>
<th>Breaker</th>
<th>S50-SF, S125-SF</th>
<th>S50-SF, S125-SF</th>
<th>E250-SF, S250-SF</th>
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<td>Number of auxiliary circuit terminals (Max allowable)</td>
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<tr>
<td>Arrangement 1</td>
<td>AXc1 AXa1 AXb1 C1 C2</td>
<td>AXc1 AXa1 AXb1 C1 C2</td>
<td>AXc1 AXa1 AXb1 C1 C2</td>
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<td>ALc1 ALa1 ALb1 C1 C2</td>
<td>ALc1 ALa1 ALb1 C1 C2</td>
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<td>Arrangement 2</td>
<td>AXc1 AXa1 AXb1 D1 D2</td>
<td>AXc1 AXa1 AXb1 D1 D2</td>
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</table>
Five auxiliary circuit terminals (self-engaging) constitute a terminal block.

Shown in the table below are standard terminal arrangements as seen from the rear of the plug-in base for standard type.

Contact us for non-standard arrangements.

* If the number of auxiliary circuit terminals (self-engaging) is insufficient for E50-SF, E50-CM and E100-SF lead wires are to be used along with the auxiliary circuit terminals.

Please state the accessories for which lead wires are used, when ordering.

E50-CM and E100-SF lead wires are to be used along with the auxiliary circuit terminals.

If the number of auxiliary circuit terminals (self-engaging) is insufficient for E50-SF, substitute UC and OS for P2 and connect these terminals to the controller terminals having the same numbers.

If the OCR controller is installed separately, substitute OS and connect these terminals to the controller terminals having the same numbers.

If the UVT controller is installed separately, substitute UC and OS for P2 and connect these terminals to the controller terminals having the same numbers.

### Table: Standard arrangement for plug-in type auxiliary circuit terminals (for standard type)

<table>
<thead>
<tr>
<th>Breaker</th>
<th>E50-SF</th>
<th>E50-CM</th>
<th>E100-SF</th>
<th>S550-GF, S100-NF, S100-GF, S100-NN, H100-NF, L100-NF</th>
<th>S400-GF, S400-NF, S400-GF, S400-NN, S400-GE, S400-PE, S400-PE</th>
<th>S630-CF, S630-NF, S630-RF, S630-RE, S630-NE, S630-GF, S630-GF, S630-NN, S630-NF, S630-GE, S630-GE, S630-NN</th>
<th>TL-1000NE, TL-1200NE</th>
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</thead>
<tbody>
<tr>
<td>Number of auxiliary circuit terminals (Max allowable)</td>
<td></td>
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<td>Arrangement 1</td>
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</tbody>
</table>

Note:
1. If the OCR controller is installed separately, substitute OS2 and OS2 for P1 and connect these terminals to the controller terminals having the same numbers.
2. If the UVT controller is installed separately, substitute UC1 and UC2 for P1 and P2 and connect these terminals to the controller terminals having the same numbers.
### Internal resistance and power consumptions of breakers

#### Molded Case Circuit Breakers

<table>
<thead>
<tr>
<th>Frame (A)</th>
<th>Breaker</th>
<th>Rated Current, A</th>
<th>Internal resistance, MΩ (Note 1)</th>
<th>Power consumption, W (Note 2)</th>
<th>Plug-in</th>
<th>Front-connected</th>
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<tr>
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</table>

**Notes:**
1. The resistance values shown above are for reference purpose only.
2. The power consumptions shown above are calculated on the basis of the dc internal resistance.
3. Applicable to draw-out type.
Since 1971 when we established TERASAKI ELECTRIC Europe, our first overseas subsidiary, in the UK, we have assembled a global network of 10 overseas subsidiaries and 58 agents to provide sales and technical supports to customers worldwide.

Safety Notice

Carefully read instruction manual to ensure proper installation, connection, operation, handling and maintenance of the product.