The thermomagnetic automatic breakers TM 2-Exx series are devices designed for control and protection of induction motors from overload, overheating or short circuit. The overload motor protection is carried out by the built-in breaker thermal elements, and the short circuit protection is carried out by the magnetic elements. These magnetic elements allow the adjustment of the current leakage which is 13 times the maximum current of the thermal protection. The overload protection elements include automatic compensation for the ambient temperature changes. In combination with under-voltage release the thermomagnetic breaker TM 2-Exx also provides protection of the motors from fall out of a phase from the power supply. The choice of a suitable protection prevents motor's operation at unusual temperature conditions and guarantees maximum constant operation, increases the effectiveness and prolongs the term of exploitation.

Functions:
- switching off alternating current consumers at current overload
- switching off the electrical circuit to the consumer at short circuit
- protects the motor at lack/lowering of the phase voltage (if there is under voltage release)
- used as a protective operating element in control panels of induction motors
- remarkable with high reliability of current characteristics
- possibility for change/choice of the protection current (according to the operating current of the motor)
- automatic compensation of the ambient temperature

Technical data:
* Rated operating voltage: up to 690V AC; 50/60 Hz
* Rated operating current range: from 0.1 to 80A according to the type in table 1
* Insulation voltage: 690V
* Surge voltage withstand: 5000V
* Indication for protection activating
- switching on of the breaker manually with button "I" and switching off with button "O" manually or automatically at failure or after activating of the protection
- Possibility for range adjustment of the protection activating
- Possibility for operation at higher frequency
- Possibility for independent operation or as a part of a control system
* Mounting:
- mounting position: vertical gradient – maximum 5°
* Plastic: wear resistance of UV rays and non-flammable (self-extinguishing material)
* Ambient temperature: -10°C...+60°C
* Altitude: up to 2000m
For increasing the effectiveness of the thermomagnetic breakers TM 2-Exx operation, they can be supplied with auxiliary devices, designed for widening the practice range and improving the technical characteristics of the breakers.

**Voltage release (VR) for TM 2**

The release is designed to switch off the thermomagnetic breaker when the controlling voltage falls under breaking level 0.55 to 0.7 Un and does not allow switching on of the breaker unless the voltage is over 0.85 Un. Functions:

- switching off the breaker at power supply voltage fall under 0.55 – 0.7 Un
- does not allow switching on of the breaker when the power supply voltage is under 0.85 Un
- prevents unwanted secondary start of the breaker at falling off and restoring of the power supply voltage
- protects the motor at lack/lowing of the phase voltage
- used as a protective operating element in control panels of induction motors
- remarkable with high reliability of current characteristics

**Mounting:**

- laterally to a breaker
- at the side of the breaker through special openings

**Wateright box for TM 2-E**

Specially designed plastic box with silicon screen for increasing the IP code from dust and moisture to IP 65. Designed for thermal-magnetic circuit-breakers of up to 32A

- Mounting:
  - vertical to a breaker
  - mounted to horizontal surfaces (walls) with bolts
  - the breaker TM2 Exx is fixed inside of it on rail
- Plastic: wear resistance of UV rays and non-flammable (self-extinguishing material)

<table>
<thead>
<tr>
<th>Type</th>
<th>Voltage (V)</th>
<th>Catalogue number</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM2</td>
<td>230</td>
<td>40099</td>
</tr>
<tr>
<td>TM3</td>
<td>400</td>
<td>48098</td>
</tr>
</tbody>
</table>

**Auxiliary contact block TM2 AE11**

It is designed to switch on operational systems or signalization. Designed with one NO and one NC contact. It changes the position of its contacts according to the position of the breaker (switched on/off) to which it is mounted.

- Mounting:
  - laterally to a breaker TM2-Exx
  - Plastic: wear resistance of UV rays and non-flammable (self-extinguishing material)
  - Ambient temperature: -10°C – 60°C
  - Altitude: up to 2000m

<table>
<thead>
<tr>
<th>Type</th>
<th>Catalogue number</th>
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</thead>
<tbody>
<tr>
<td>TM2 AE11</td>
<td>48912</td>
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</tbody>
</table>

**Auxiliary contact block TM2 AN11**

It is designed to switch on operational circuits or signalization. It is designed with one NO and one NC contact. It changes the position of its contacts according to the position of the breaker (switched on/off) to which it is mounted.

- Mounting:
  - laterally to a breaker TM2-Exx
  - more than 5 auxiliary contact blocks can be mounted
  - Plastic: wear resistance of UV rays and non-flammable (self-extinguishing material)
  - Ambient temperature: -10°C – 60°C
  - Altitude: up to 2000m

<table>
<thead>
<tr>
<th>Type</th>
<th>Catalogue number</th>
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<tr>
<td>TM2 AN11</td>
<td>48911</td>
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<tr>
<td>TM2 AN11</td>
<td>48913</td>
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</table>

**Technical data:**

- Rated operating voltage: 690V
- Rated operating current range: from 7 to 93 A
- Insulation voltage: 690V
- Rated voltage of the controlling voltage: 230/400V AC; 50/60 Hz

**Specially designed plastic box with silicon screen for increasing the IP code from dust and moisture to IP 65.**

**Mounting:**

- mounted to horizontal surfaces (walls) with bolts
- Altitude: up to 2000m
- (self-extinguishing material)

**MTM 1=L T1- Dxx**

The electromagnetic starters LT 5 Dxx series are devices designed for remote control, direct control and protection of induction motors or other electrical consumers. They are a combination of contactors LT 1 Dxx series and thermal protection LT 2 Exx fabric cable. The starters are offered on the market in metal or plastic boxes with the corresponding IP code from dust and moisture. At mounting there should be provided protection of the device from short circuit through breakers or disconnectors. If necessary, at client’s order the fabric mounted thermal protection in the pneumatic starter can be substituted. The choice of a suitable protection prevents motor’s operation at unusual temperature conditions and guarantees maximum constant operation, increases the effectiveness and prolongs the term of exploitation.

Functions:

- switching on/off alternating current consumers
- does not allow secondary unwarranted switching on of the starter at transitory lowering of the voltage
- protects the motor from overload in the range of the corresponding thermal protection
- remarkable with high reliability of current characteristics

Technical data:

- Rated voltage of the controlling voltage: 230/400V AC; 50/60 Hz
- Note: In case you need different controlling coil voltages of the starters you can turn to our regional representatives.
- Rated operating voltage: 690V
- Rated operating current range: from 7 to 93 A
- Insulation voltage: 690V
- Surge voltage wear resistance: ≥4000V
- Joining terminal: screw terminal
- Little power consumption and small dimensions
- Connecting:
  - flexible or rigid conductors with or without cable terminal for joining to the consumer and section according to the motor power
  - two by two inputs/outlets supplied with orifices for the cables
- Possibility for range adjustment of the protection activating
- IP code: IP 44
- Possible for operation at higher frequency
- Mounting:
  - mounting to a flat surface (wall) with bolts/screws
  - mounting position: vertical gradient – maximum 5°
  - Plastic: wear resistance of UV rays and non-flammable (self-extinguishing material)
  - Metal corpus: corrosion-proof coating
  - Ambient temperature: -10°C – 60°C
  - Altitude: up to 2000m

<table>
<thead>
<tr>
<th>Type</th>
<th>Voltage (V)</th>
<th>Catalogue number</th>
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<tr>
<td>KM 1=L T2-Exx</td>
<td>W</td>
<td>22</td>
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</table>

**Type**

- Voltage (V)
- Catalogue number