**Manual Motor Protectors**

**Product Description**
Eaton’s new XT family of manual motor protectors (MMPs) features a pushbutton or rotary ON/OFF manual disconnect, Class 10 adjustable bimetallic overload relay and fixed magnetic short-circuit trip capability in one compact unit. Two frame sizes are available: Frame B (45 mm) for motors with FLA ratings up to 32A and Frame D (55 mm) covers motor FLA ratings up to 65A.

**Application Description**
The XTPB and XTPR MMPs can be used in the following applications.

**Motor Protective Circuit Breaker**
In many countries outside of the United States and Canada, especially Europe, the MMPs are tested and classified as thermal-magnetic circuit breakers for use in motor branch circuits. This can be an important consideration for all companies who export their equipment and machines internationally. Both the XTPB and XTPR conform to IEC/EN 60947 and have the CE Mark.

**Manual Motor Protectors**
The XTPB and XTPR MMPs are UL listed under UL 508 as manual motor protectors. They provide an economical solution for applications requiring simple manual starting and stopping of motors. When used as a manual starter, they are typically installed in an enclosure. Many enclosures are offered as accessories for the MMPs. Separate short-circuit protective devices, such as circuit breakers or fuses, are wired ahead of the MMPs. The short-circuit protective device should be sized per the NEC and should not exceed 400% of the maximum FLA dial setting of the MMP.

**Group Motor Installations**
A group motor installation can be defined as more than one motor circuit protected by a single set of fuses or circuit breaker on a motor branch circuit. This eliminates the need for individual fuses or circuit breakers for each motor circuit. Substantial component cost savings, panel space savings and reduced wiring installation time can be achieved in group motor installations.

The MMPs are tested and listed for group installation. If remote operation is required, a magnetic contactor can be wired in series with the MMP.

**Group Motor Installations**
A group motor installation can be defined as more than one motor circuit protected by a single set of fuses or circuit breaker on a motor branch circuit. This eliminates the need for individual fuses or circuit breakers for each motor circuit. Substantial component cost savings, panel space savings and reduced wiring installation time can be achieved in group motor installations.

**Individual Branch Motor Applications**
A UL 508 Type E self-protected manual combination starter/motor controller consists of a single device possessing four essential elements: disconnect, short circuit protection, motor controller, and motor overload protection. Some MMPs require use of a lineside adapter for this type of approval. When tested as an official combination by UL, this device takes the place of a fuse-starter or breaker-starter. XT Type E MMPs are self-protected, meaning they do not need additional short circuit protection of a fuse or breaker. Type E devices can also be used with a contactor or other types of UL approved controllers. If tested with a contactor, the combination motor controller becomes a Type F device. See Page V5-T1-199 for XTFC Type F devices.
### IEC Contactors and Starters

#### XT IEC Power Control

## 1.1 Features and Benefits

- ON/OFF rotary handle with lockout provision
- Visible trip indication
- Class 10 overload protection
- Phase loss sensitivity
- Ambient temperature compensation to IEC/EN 60947, VDE 0660
- Fixed short-circuit trip—14 times maximum setting of overload FLA dial
- Type 2 coordination per IEC 947
- Identification markers standard on starter faceplate
- Motor applications from 0.1A to 65A
- Built-in heater and magnetic trip elements to protect the motor
- Adjustment dial for setting motor FLA
- DIN rail mount
- Terminal types available:
  - Screw terminals
  - Screw (line) and spring cage (load) terminals
  - Spring cage terminals
- Accessories include:
  - Front and side auxiliary contacts
  - Trip indicating contacts
  - Tamperproof cover for OLR dial
  - Undervoltage release
  - Shunt trip
  - Through-the-door operators
  - Enclosures
  - Three-phase line side connecting links

## Standards and Certifications

- CE approved
- UL listed File No. E245398
- UL 508 group motor and Type E compliant
- IEC/EN 60947
- CSA File 229767, Class 3211-05
- DIN VDE 0660 Part 100, Part 101 and Part 102

### Note:

For Type 2 Coordination of MMCs, see Page V5-T1-230.

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## Line Side Adapters—When to Use Them

**Note:** Line side adapters are not required for non-US applications. Most countries outside of the US classify the MMP as a thermal magnetic circuit breaker.

### Manual Motor Protectors
Self-Protected Manual Combination Starters

- **Group Installation**
  - Upstream SCPD required.
  - UL 508 Type E Self-Protected Manual Combination Starter
  - Self-protected. No additional SCPD needed in branch circuit.

- **Line Side Adapter (LSA)**
  - Not required

### Manual Motor Protector and Line Side Adapter

- **Line Side Adapter**
  - XTPAXLSA
- **MMP**
  - XTPR...BC1

- **Line Side Adapter**
  - XTPAXLSAD
- **MMP**
  - XTPR...DC1
1.1 IEC Contactors and Starters

**XT IEC Power Control**

### Product Identification

#### Basic Units
1. XTPB pushbutton manual motor protectors (see Page V5-T1-161)
   - Rated operational current up to 25A
   - Switching capacity 50 kA/415V
   - Short-circuit release, adjustable 0.6–1 x I₀
   - Single-phasing sensitive
2. XTPR rotary manual motor protectors (see Page V5-T1-162)
   - Rated operational current up to 32A, 65A
   - Switching capacity 150/50 kA/415V
   - Short-circuit release, fixed setting to 14 x I₀
   - Overload release, adjustable 0.6–1 x I₀
   - Single-phasing sensitive
   - With screws or spring-loaded terminals

#### Mounting Accessories
3. Rotary handle mechanism
   - (see Page V5-T1-167)
   - ON/OFF/tripped switch position indication
   - Lockable door/cover interlock
   - Extendable plug fit extension shaft
   - Handle latched in switch positions
   - Optionally also without locking and door interlock function
4. Insulated enclosures
   - (see Page V5-T1-171)
   - Surface mounting, enclosures, IP40, IP55 and IP40 and IP55 front flush mounting enclosure
5. Mounting/wiring (see Page V5-T1-167)
   - Component adapter for busbar mounting
   - Three-phase commoning link for side-by-side mounting
   - Mounting kits for rapid mounting of direct-on-line, reversing and star-delta starters

#### Add-On Functions
6. Voltage releases (see Page V5-T1-166)
   - Undervoltage release
   - Shunt releases
   - With screws or spring-loaded terminals
7. Standard auxiliary contacts
   - (see Page V5-T1-164)
   - ON/OFF indication
   - Differential fault indication
   - Overload/short-circuit release
   - ON/OFF for (high capacity) contact module
   - ON/OFF for starter combination
   - With early-make contacts
   - With screws or spring-loaded terminals
8. Current limiter (see Page V5-T1-166)
   - Increases the switching capacity of the 10–25A manual motor protectors to 100 kA/440V
   - Can be used for individual group protection

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Notes

- XTPB pushbutton manual motor protectors (see Page V5-T1-161)
- XTPR rotary manual motor protectors (see Page V5-T1-162)
- Insulated enclosures (see Page V5-T1-171)
- Mounting/wiring (see Page V5-T1-167)
- Voltage releases (see Page V5-T1-166)
- Standard auxiliary contacts (see Page V5-T1-164)
- Current limiter (see Page V5-T1-166)
## Catalog Number Selection

**XT Manual Motor Protectors**

<table>
<thead>
<tr>
<th>Type</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB</td>
<td>Manual motor protector—pushbutton</td>
</tr>
<tr>
<td>PR</td>
<td>Manual motor protector—rotary</td>
</tr>
<tr>
<td>PM</td>
<td>Manual motor protector—magnetic only</td>
</tr>
<tr>
<td>PT</td>
<td>Manual transformer protector (high mag.)</td>
</tr>
</tbody>
</table>

### Current Ratings

<table>
<thead>
<tr>
<th>Frame B</th>
<th>Frame D</th>
</tr>
</thead>
<tbody>
<tr>
<td>P16 = 0.16A</td>
<td>016 = 16A</td>
</tr>
<tr>
<td>P25 = 0.25A</td>
<td>025 = 25A</td>
</tr>
<tr>
<td>P40 = 0.40A</td>
<td>040 = 40A</td>
</tr>
<tr>
<td>P63 = 0.63A</td>
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<td>001 = 1A</td>
<td>000 = 0A</td>
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<tr>
<td>010 = 10A</td>
<td>010 = 10A</td>
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<tr>
<td>012 = 12A</td>
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<tr>
<td>016 = 16A</td>
<td>016 = 16A</td>
</tr>
<tr>
<td>020 = 20A</td>
<td>020 = 20A</td>
</tr>
<tr>
<td>025 = 25A</td>
<td>025 = 25A</td>
</tr>
<tr>
<td>032 = 32A</td>
<td>032 = 32A</td>
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</table>

### Frame Size

<table>
<thead>
<tr>
<th>Frame B</th>
<th>Frame D</th>
</tr>
</thead>
<tbody>
<tr>
<td>B = 45 mm</td>
<td>D = 55 mm</td>
</tr>
</tbody>
</table>

### Trip Class

- **C1** = Class 10
- **Blank** = Magnetic only (no thermal trip)
1.1 IEC Contactors and Starters

XT IEC Power Control

XT PR Rotary Manual Motor Protectors with Screw Terminals—Global Ratings and North American Ratings—Frame B

Type 1 and Type 2 Coordination Motor Protective Device with Thermal and Magnetic Trip

<table>
<thead>
<tr>
<th>Rated Uninterrupted Current—( I_u = I_n ) (Amps)</th>
<th>FLA Adjustment Range/Overload Release—( I_o ) (Amps)</th>
<th>Short Circuit Release—( I_{oc} ) (Amps)</th>
<th>Maximum Motor Ratings</th>
<th>Maximum kW Rating AC-3—P (kW)</th>
<th>Maximum hp Rating—P (hp) UL 508/CSA C22.2 No. 14</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.16</td>
<td>0.1–0.18</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>0.06</td>
</tr>
<tr>
<td>0.25</td>
<td>0.18–0.25</td>
<td>3.5</td>
<td>—</td>
<td>0.06</td>
<td>0.06</td>
</tr>
<tr>
<td>0.4</td>
<td>0.25–0.4</td>
<td>5.6</td>
<td>0.06</td>
<td>0.09</td>
<td>0.12</td>
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<td>0.63</td>
<td>0.4–0.63</td>
<td>8.8</td>
<td>0.09</td>
<td>0.12</td>
<td>0.18</td>
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<td>1</td>
<td>0.63–1</td>
<td>14</td>
<td>0.12</td>
<td>0.25</td>
<td>0.25</td>
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<tr>
<td>1.6</td>
<td>1–1.6</td>
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<td>0.55</td>
<td>0.55</td>
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<td>1.5</td>
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<td>4</td>
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<td>8–12</td>
<td>168</td>
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<td>5.5</td>
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<td>11</td>
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<td>25</td>
<td>20–25</td>
<td>350</td>
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<td>12.5</td>
<td>12.5</td>
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<td>32</td>
<td>25–32</td>
<td>448</td>
<td>7.5</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

Notes

- Single-phasing sensitivity to IEC/EN 60947-4-1, VDE 0660 Part 102.

Frame D

XT PR Rotary Manual Motor Protectors with Screw Terminals—Global Ratings and North American Ratings—Frame D

Type 1 and Type 2 Coordination Motor Protective Device with Thermal and Magnetic Trip

<table>
<thead>
<tr>
<th>Rated Uninterrupted Current—( I_u = I_n ) (Amps)</th>
<th>FLA Adjustment Range/Overload Release—( I_o ) (Amps)</th>
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<th>Maximum hp Rating—P (hp) UL 508/CSA C22.2 No. 14</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>10–16</td>
<td>224</td>
<td>4</td>
<td>7.5</td>
<td>9</td>
</tr>
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<td>25</td>
<td>16–25</td>
<td>350</td>
<td>5.5</td>
<td>12.5</td>
<td>12.5</td>
</tr>
<tr>
<td>32</td>
<td>25–32</td>
<td>448</td>
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<td>560</td>
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<td>50</td>
<td>40–50</td>
<td>700</td>
<td>14</td>
<td>25</td>
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<td>58</td>
<td>50–58</td>
<td>812</td>
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<td>65</td>
<td>55–65</td>
<td>882</td>
<td>18.5</td>
<td>34</td>
<td>37</td>
</tr>
</tbody>
</table>

Notes

- Single-phasing sensitivity to IEC/EN 60947-4-1, VDE 0660 Part 102.
- Can be snap-fit to IEC/EN 60715 top-hat (DIN) with 7.5 or 15 mm height.
- Service Factor (SF)—Setting \( I_f \) of current scale in dependence of load factor:
  - SF = 1.15 \( \rightarrow I_f = 1 \times I_{nf} \)
  - SF = 1 \( \rightarrow I_f = 0.9 \times I_{nf} \)
- For manual motor protective circuit breaker switching capacity, see Page V5-T1-181.
- Select manual motor protectors by full load amperes. Maximum motor ratings (kW, hp) are for reference only.
- In this range, calculate motor rating according to rated current. Specified values to NEC 430.6A(1).