Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

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Table 1. Revision notes

Note: Unless noted below, all curves remain unchanged from their prior revision.

<table>
<thead>
<tr>
<th>Revision</th>
<th>Curve number</th>
<th>Page</th>
<th>Date</th>
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<tbody>
<tr>
<td>1</td>
<td>Power Defense frame 3 initial release</td>
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<td>02/12/2019</td>
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Technical Data TD012065EN
Effective February 2019

Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

This information is provided only as an aid to understand the catalog numbers.
It is not to be used to build catalog numbers for circuit breakers or trip units as all combinations may not be available.

Table 2. Circuit breaker catalog number convention

<table>
<thead>
<tr>
<th>Breaker Family</th>
<th>Continuous Current Rating</th>
<th>Interrupting Rating Designator</th>
<th>Trip Unit Type</th>
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<td>T##</td>
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<tr>
<td></td>
<td></td>
<td>F</td>
<td>Thermal Magnetic Trip Unit (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>G</td>
<td>50°C Calibrated Thermal Magnetic Trip Unit (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>K</td>
<td>PXR 10 (1)</td>
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<tr>
<td></td>
<td></td>
<td>N</td>
<td>PXR 20 (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P</td>
<td>PXR 25 (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>KNS Molded Case Switch</td>
</tr>
<tr>
<td>PDF3</td>
<td></td>
<td></td>
<td>SNN Switch Disconnector</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J</td>
<td>No Terminals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>K</td>
<td>Line only terminals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>L</td>
<td>Load only terminals</td>
</tr>
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<td>PDD3</td>
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<tr>
<td>PDC3</td>
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<th>Continuous Current Rating</th>
<th>Interrupting Rating Designator</th>
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<td>F 25</td>
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<tr>
<td>3</td>
<td>125 A</td>
<td>F 25</td>
</tr>
<tr>
<td>4</td>
<td>150 A</td>
<td>G 35</td>
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<td>175 A</td>
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<td>6</td>
<td>200 A</td>
<td>K 50</td>
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<td>7</td>
<td>225 A</td>
<td>K 50</td>
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<tr>
<td>8</td>
<td>250 A</td>
<td>M 85</td>
</tr>
<tr>
<td>9</td>
<td>300 A</td>
<td>M 80</td>
</tr>
<tr>
<td>10</td>
<td>350 A</td>
<td>N 35</td>
</tr>
<tr>
<td>11</td>
<td>400 A</td>
<td>N 35</td>
</tr>
<tr>
<td>12</td>
<td>500 A</td>
<td>P 100</td>
</tr>
<tr>
<td>13</td>
<td>600 A</td>
<td>P 100</td>
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<tr>
<td>14</td>
<td>250 A High Override</td>
<td>H250</td>
</tr>
<tr>
<td>15</td>
<td>400 A High Override</td>
<td>H400</td>
</tr>
</tbody>
</table>

Note: 1 See catalog for ## (protection type and available configured options)

Note: 2 All PD-3 2-pole breakers are physically the same size as a 3-pole frame with the outer poles used for electrical connections.

Note: 3 IEC standard breakers include the CE mark; GB standard breakers include the CCC mark.
Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

Table 3. Electronic trip unit catalog number convention

<table>
<thead>
<tr>
<th>Style Family</th>
<th>Ampere Frame Rating</th>
<th>Trip Unit</th>
<th>ETU Trip Unit Style</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDG3</td>
<td>0125 125A Frame</td>
<td>PXR</td>
<td>B PXR 10</td>
<td>N None</td>
</tr>
<tr>
<td></td>
<td>0250 250A Frame</td>
<td></td>
<td>E PXR 20</td>
<td>R Relays</td>
</tr>
<tr>
<td></td>
<td>0400 400A Frame</td>
<td></td>
<td>D PXR 20D</td>
<td>Z ZSI, Relays</td>
</tr>
<tr>
<td></td>
<td>0600 600A Frame</td>
<td></td>
<td>P PXR 25</td>
<td>M Modbus, CAM Interface, Relays</td>
</tr>
<tr>
<td></td>
<td>0630 630A Frame</td>
<td></td>
<td></td>
<td>W ZSI, Modbus</td>
</tr>
<tr>
<td></td>
<td>0800 800A Frame</td>
<td></td>
<td></td>
<td>X ZSI, CAM Interface, Relays</td>
</tr>
<tr>
<td></td>
<td>0830 830A Frame</td>
<td></td>
<td></td>
<td>Y ZSI, Modbus, CAM Interface, Relays</td>
</tr>
<tr>
<td></td>
<td>1000 1000A Frame</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1250 1250A Frame</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1500 1500A Frame</td>
<td></td>
<td></td>
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<td></td>
<td>1750 1750A Frame</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2000 2000A Frame</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>2250 2250A Frame</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2500 2500A Frame</td>
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<tr>
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<td>3000 3000A Frame</td>
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<td>3500 3500A Frame</td>
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<tr>
<td></td>
<td>4000 4000A Frame</td>
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</tr>
<tr>
<td></td>
<td>5000 5000A Frame</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>6300 6300A Frame</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Note: IEC standard breakers include the CE mark; GB standard breakers include the CCC mark.

Note: The Selective frame styles have a higher override value for higher selective coordination capability.

Table 4. Thermal magnetic trip unit catalog number convention

<table>
<thead>
<tr>
<th>Style Family</th>
<th>Ampere Frame Rating</th>
<th>Trip Unit</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDG3</td>
<td>0100 100A Frame</td>
<td>TFA</td>
<td>N None</td>
</tr>
<tr>
<td></td>
<td>0125 125A Frame</td>
<td>TAA</td>
<td>R Relays</td>
</tr>
<tr>
<td></td>
<td>0150 150A Frame</td>
<td>VFA</td>
<td>Z ZSI, Relays</td>
</tr>
<tr>
<td></td>
<td>0175 175A Frame</td>
<td>VAA</td>
<td>M Modbus, CAM Interface, Relays</td>
</tr>
<tr>
<td></td>
<td>0200 200A Frame</td>
<td></td>
<td>W ZSI, Modbus</td>
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<td>0225 225A Frame</td>
<td></td>
<td>X ZSI, CAM Interface, Relays</td>
</tr>
<tr>
<td></td>
<td>0250 250A Frame</td>
<td></td>
<td>Y ZSI, Modbus, CAM Interface, Relays</td>
</tr>
<tr>
<td></td>
<td>0300 300A Frame</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0350 350A Frame</td>
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</tr>
<tr>
<td></td>
<td>0400 400A Frame</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>0500 500A Frame</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0600 600A Frame</td>
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</tr>
<tr>
<td></td>
<td>0630 630A Frame</td>
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<td>0800 800A Frame</td>
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<td></td>
<td>0830 830A Frame</td>
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<tr>
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<tr>
<td></td>
<td>6300 6300A Frame</td>
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</tr>
</tbody>
</table>

Note: IEC standard breakers include the CE mark; GB standard breakers include the CCC mark.
### Time current curves Power Defense MCCB
**Frame 3 thermal-magnetic and PXR electronic trip units**

Standards: UL, CSA, IEC, CCC

---

**Table 5. Symmetrical RMS interruption ratings \( I_{cu} \) (kA) for each breaker frame**

<table>
<thead>
<tr>
<th>Frame</th>
<th>UL / CSA</th>
<th>IEC / CCC</th>
<th>250 Vdc*</th>
<th>250 Vdc*</th>
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<tr>
<td></td>
<td>240V</td>
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<td>200</td>
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</table>

* Two poles in series

---

**Table 6. Curve notes**

1. These curves apply for 50Hz and 60Hz applications.
2. The maximum voltage rating for the frame style is stated in Table 5.
3. These curves are comprehensive for Power Defense style circuit breakers including frame sizes, ratings and constructions stated.
4. The total clearing times shown include the response time for the trip unit, the breaker opening and the interruption of the current. The bottom of the time band is the minimum commit to trip time.
5. The end of the curve is determined by the application or the interrupting rating of the circuit breaker.
6. Thermal Magnetic trip unit calibration based on 40°C ambient, cold start. Tested with 4 feet of rated wire (75°C) per terminal. Tested in open air with current in all poles.
7. Thermal Magnetic trip unit instantaneous calibration based on single pole testing.
8. All electronic trip units have an over temperature protection feature that will trip the breaker when the internal temperature of the ETU is over 105°C.
Labels

PXR 25 and PXR 20 – unit with LSIG protection and maintenance mode pictured

PXR 20 – unit with LSIG protection and maintenance mode pictured

PXR 10 – unit with LSI protection pictured

Adjustable thermal, adjustable magnetic unit pictured

Figure 1. Power Defense frame 3 trip unit front labels.

Note: Trip unit drawings in Figure 1 are representative of the face plates provided. Values on the trip unit dials will change based upon the specific breaker and trip unit. Refer to the time current curve of the breaker or the PXR User Guide for the specific settings.
Technical Data TD012065EN
Effective February 2019

Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

Curves

**PXR20D / PXR25 - I^2t Long Delay and Flat Short Delay Curves**

<table>
<thead>
<tr>
<th>Current Setting</th>
<th>PDG</th>
<th>PDF</th>
<th>PDG</th>
<th>PDG</th>
<th>PDG</th>
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<tbody>
<tr>
<td>Min.</td>
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<td>160A</td>
<td>250A</td>
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<tr>
<td>Max.</td>
<td>125A</td>
<td>250A</td>
<td>400A</td>
<td>600A</td>
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<td>100A</td>
<td>200A</td>
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<tr>
<td>Max.</td>
<td>250A</td>
<td>400A</td>
<td>630A</td>
</tr>
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</table>

**Notes:**
1. Long Delay pickup is 110% of the Ir setting with ±5% tolerance. Ir is set from Min to Max at steps of 1A.
2. Long Delay Time Settings adjustable from 0.5s - 24s at steps of 0.1s with +0%/-30% tolerance.
3. If Thermal Memory is enabled, trip times may be shorter than indicated in this curve.
4. Short Delay pickup settings adjustable from 1.5x - 12x at steps of 0.1x with ±5% tolerance.
5. Short delay time settings adjustable from 0.05s to 0.500s at steps of 0.01s with tolerances as follows: time delay settings 0.500s to greater than 0.200s have tolerances of +0%/-40%, time delay settings between 0.200s to 0.100s have tolerances of +0%/-50%, and time delay settings below 0.100s to 0.050s have tolerances of ±10%.
6. If the Long Delay time is projected to be faster than the Short Delay time, the Long Delay trip time will go no faster than the Short Delay time value.
7. With ZSI enabled and no auxiliary power, tripping times for 3-phase faults will be a maximum of 60ms for 60Hz and 63ms for 50Hz.

**Figure 2. PXR 20D / PXR 25 - I^2t long delay and flat short delay.**

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Figure 3. PXR 20 - $I^2t$ long delay and flat short delay.

Notes:
1. Long Delay pickup is 110% of the Ir setting with ±5% tolerance.
2. Long Delay Time Settings as shown have ±0% / -30% tolerance.
3. If Thermal Memory is enabled, trip times may be shorter than indicated in this curve.
4. Short Delay pickup settings as shown have ±5% tolerance.
5. Short Time delays are shown with tolerances.
6. If the Long Delay time is projected to be faster than the Short Delay time, the Long Delay trip time will go no faster than the Short Delay time value.
7. With ZSI enabled and no auxiliary power, tripping times for 3-phase faults will be a maximum of 60ms for 60Hz and 63ms for 50Hz.

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Figure 4. PXR 20D / PXR 25 - I²t Long Delay and I²t Short Delay Curves

Notes:
1. Long Delay pickup is 110% of the Ir setting with ±5% tolerance. Ir is set from Min to Max at steps of 1A.
2. Long Delay Time Settings adjustable from 0.5s - 24s at steps of 0.1s with +0%/-30% tolerance.
3. If Thermal Memory is enabled, trip times may be shorter than indicated in this curve.
4. Short Delay pickup settings adjustable from 1.5x - 12x at steps of 0.1x with ±5% tolerance.
5. Short delay time settings adjustable from 0.067s – 0.300s at steps of 0.010s with tolerances as follows:
   - I²t time delay slope settings from 0.3 to 0.100s have a tolerance of ±30%.
   - I²t time delay slope settings below 0.100s to 0.067s have ±0/-40% tolerance.
   - Time delay settings greater than 0.200s have tolerances of ±0/-30%.
   - Time delay settings between 0.200s to 0.100s have ±0/-40% tolerance.
   - Time delay settings below 0.100s to 0.067s have ±0/-50% tolerance.
6. If the Long Delay time is projected to be faster than the Short Delay time, the Long Delay trip time will go no faster than the Short Delay time value.
7. With ZSI enabled and no auxiliary power, tripping times for 3-phase faults will be a maximum of 60ms for 60Hz and 63ms for 50Hz.
Figure 5. PXR 20 I²t long delay and I²t short delay.
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**Time current curves Power Defense MCCB**

**Frame 3 thermal-magnetic and PXR electronic trip units**

**Standards: UL, CSA, IEC, CCC**

---

**Figure 6. PXR 20D / PXR 25 - I^t Long Delay and Flat Short Delay Curves**

- **Time Current Curves**
- **Power Defense Circuit Breakers**
  - **Style:** Frame 3
  - **Configuration:** 3 and 4 Poles
  - **Trip Unit Type:** Power Xpert Release – PXR 20D / PXR 25
  - **Curve:** Long I^t Delay and Short Flat Delay

**Notes:**
1. Long Delay pickup is 110% of the Ir setting with ±5% tolerance. Ir is set from Min to Max at steps of 1A
2. Long Delay Time Settings adjustable from 0.5s - 7s at steps of 0.1s with +0%/-30% tolerance.
3. If Thermal Memory is enabled, trip times may be shorter than indicated in this curve.
4. Short Delay pickup settings adjustable from 1.5x - 12x at steps of 0.1x with ±5% tolerance.
5. Short delay time settings adjustable from 0.050s – 0.500s at steps of 0.010s with tolerances as follows: time delay settings greater than 0.200s have tolerances of ±0/-30%, time delay settings between 0.200s and 0.100s have tolerances of ±0/-40%, and time delay settings below 0.100s to 0.050s have tolerances of ±0/-50%.
6. If the Long Delay time is projected to be faster than the Short Delay time, the Long Delay trip time will go no faster than the Short Delay time value.
7. With ZSI enabled and no auxiliary power, tripping times for 3-phase faults will be a maximum of 60ms for 60Hz and 63ms for 50Hz.

---

**Current in Multiples of Long Delay Pickup (I_r)**

**Time in Seconds**

---

**Figure 6. PXR 20D / PXR 25 - I^t long delay and flat short delay.**

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Figure 7. PXR 20D / PXR 25 ground (earth) flat delay.

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**Time Current Curves**

**Power Defense Circuit Breakers**

**Style:** Frame 3

**Configuration:** 3 and 4 Poles

**Trip Unit Type:** Power Xpert Release – PXR 20D / PXR 25

**Curve:** Ground (Earth) \( I^2T \) Delay

**Notes:**

1. Ground Pickup settings adjustable from 0.2x - 1.0x at steps of 0.01x are for Residual sensing with a tolerance of ±10%.

2. Ground \( I^2T \) delay time settings adjustable from 0.067s – 0.300s at steps of 0.010s with tolerances as follows: \( I^2T \) slope tolerances are +0/-30%, flat time delay settings after 1.0x In for settings of 0.300s to 0.200s have tolerances of +0/-30%, time delay settings between 0.200s to 0.100s have tolerances of +0/-40% and time delay settings below 0.100s to 0.067s have tolerances of +0/-50%.

3. If Thermal Memory is enabled, trip times may be shorter than indicated in this curve.

4. With ZSI enabled and no auxiliary power, tripping times for 3-phase faults will be a maximum of 60ms for 60Hz and 63ms for 50Hz.

---

**Figure 8. PXR 20D / PXR 25 - ground (earth) \( I^2T \) delay.**

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Figure 9. PXR 20 - ground (earth) flat delay.
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Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

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Figure 10. PXR 20 - ground (earth) I²T Delay Curves

Notes:
1. Ground Pickup settings as shown are for residual sensing with a tolerance of ±10%.
2. Ground slope I²T time settings are shown with tolerances.
3. If Thermal Memory is enabled, trip times may be shorter than indicated in this curve.
4. With ZSI enabled and no auxiliary power, tripping times for 3-phase faults will be a maximum of 60ms for 60Hz and 63ms for 50Hz.
**Technical Data**

**PXR20D / PXR25  125A Frame Instantaneous Curves**

**E.T.N.**

Time Current Curves
Power Defense Circuit Breakers
Style: Frame 3
Configuration: 3 and 4 Poles
Trip Unit Type: Power Xpert Release – PXR 20D / PXR 25
Curve: Instantaneous and Override for 125A frame

Notes:
1. The instantaneous pickup settings adjustable from 2x – 24x (Max) at steps of 0.10x with a ±10% tolerance.
2. For high fault current levels a fixed instantaneous override is provided at 3000A and has a ±15% tolerance.

---

Figure 11. PXR 20D / PXR 25 - instantaneous and override for 125A frame.
**Time current curves Power Defense MCCB**
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

Figure 12. PXR 20D / PXR 25 - instantaneous and override for 250A frame.

---

**Notes:**
1. The instantaneous pickup settings adjustable from 2x – 17.6x (Max) at steps of 0.10x with a ±10% tolerance.
2. For high fault current levels a fixed instantaneous override is provided at 4400A and has a ±15% tolerance.
Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

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Figure 13. PXR 20D / PXR 25 - instantaneous and override for 400A frame.

Notes:
1. The instantaneous pickup settings adjustable from 2x – 11x (Max) at steps of 0.10x with a ±10% tolerance.
2. For high fault current levels a fixed instantaneous override is provided at 4400A and has a ±15% tolerance.
Figure 14. PXR 20D / PXR 25 - instantaneous and override for H250A frame.
Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

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Figure 15. PXR 20D / PXR 25 - Instantaneous and override for H400A frame.

Notes:
1. The Instantaneous pickup settings adjustable from 2x – 18x (Max) at steps of 0.10x with a ±10% tolerance.
2. For high fault current levels a fixed instantaneous override is provided at 7200A and has a ±15% tolerance.
Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

Figure 16. PXR 20D / PXR 25 - instantaneous and override for 600A frame.

Notes:
1. The instantaneous pickup settings adjustable from 2x – 11.4x (Max) at steps of 0.10x with a ±10% tolerance.
2. For high fault current levels a fixed instantaneous override is provided at 7200A and has a ±15% tolerance.
Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

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Figure 17. PXR 20D / PXR 25 - instantaneous and override for 630A frame.
Figure 18. PXR 20 / PXR 10 - instantaneous and override for 125A frame.
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Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

PXR20 / PXR10  250A Frame Instantaneous Curves

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Figure 19. PXR 20 / PXR 10 - instantaneous and override for 250A frame.
Figure 20. PXR 20 / PXR 10 - instantaneous and override for 400A frame.
Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

Figure 21. PXR 20 / PXR 10 - instantaneous and override for H250A frame.
Figure 22. PXR 20 / PXR 10 - instantaneous and override for H400A frame.
Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

Figure 23. PXR 20 / PXR 10 - instantaneous and override for 600A frame.

Notes:
1. The instantaneous pickup settings as shown with a ±10% tolerance.
2. For high fault current levels a fixed instantaneous override is provided at 7200A and has a ±15% tolerance.
Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

Figure 24. PXR 20 / PXR 10 - instantaneous and override for 630A frame.

Notes:
1. The Instantaneous pickup settings as shown with a ±10% tolerance.
2. For high fault current levels a fixed instantaneous override is provided at 7200A and has a ±15% tolerance.
Figure 25. PXR 20 / PXR 20D / PXR 25 - maintenance mode.
Technical Data TD012065EN

Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

Figure 26. PXR 10 LI 125A frame.

Notes:
1. Long Delay pickup is 110% of the Ir setting with ±5% tolerance.
2. Long Delay Time Setting has +0%/-30% tolerance.
3. Instantaneous pickup settings have ±10% tolerance.
4. For high fault current levels a fixed instantaneous override is provided at 3000A and has a ±15% tolerance.
5. If Thermal Memory is enabled, trip times may be shorter than indicated in this curve.
Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

Figure 27. PXR 10 LI 250A frame.

Notes:
1. Long Delay pickup is 110% of the Ir setting with ±5% tolerance.
2. Long Delay Time Setting has ±0%/−30% tolerance.
3. Instantaneous pickup settings have ±10% tolerance.
4. For high fault current levels a fixed instantaneous override is provided at 4400A and has a ±15% tolerance.
5. If Thermal Memory is enabled, trip times may be shorter than indicated in this curve.

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<th>PDC 250A</th>
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<td>63A</td>
</tr>
<tr>
<td>2</td>
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<td>80A</td>
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**Technical Data**

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**Time current curves Power Defense MCCB**

**Frame 3 thermal-magnetic and PXR electronic trip units**

**Standards:** UL, CSA, IEC, CCC

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**Figure 28. PXR 10 LI 400A frame.**

---

**Notes:**

1. Long Delay pickup is 110% of the Ir setting with ±5% tolerance.
2. Long Delay Time Setting has +0%/-30% tolerance.
3. Instantaneous pickup settings have ±10% tolerance.
4. For high fault current levels a fixed instantaneous override is provided at 4400A and has a ±15% tolerance.
5. If Thermal Memory is enabled, trip times may be shorter than indicated in this curve.
Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

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Figure 29. PXR 10 LI H250A frame.

Technical Data TD012065EN

Power Defense Circuit Breakers
Style: Frame 3
Configuration: 3 and 4 Poles
Trip Unit Type: Power Xpert Release – PXR 10
Trip Unit Style: LI
Curve: Long I^2t Delay and Instantaneous with Override for H250A frame

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<tr>
<td>10</td>
<td>250A</td>
<td>250A</td>
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</table>

Notes:
1. Long Delay pickup is 110% of the Ir setting with ±5% tolerance.
2. Long Delay Time Setting has +0%/-30% tolerance.
3. Instantaneous pickup settings have ±10% tolerance.
4. For high fault current levels a fixed instantaneous override is provided at 7200A and has a ±15% tolerance.
5. If Thermal Memory is enabled, trip times may be shorter than indicated in this curve.
Figure 30. PXR 10 LI H400A frame.

Notes:
1. Long Delay pickup is 110% of the Ir setting with ±5% tolerance.
2. Long Delay Time Setting has +0%/-30% tolerance.
3. Instantaneous pickup settings have ±10% tolerance.
4. For high fault current levels a fixed instantaneous override is provided at 7200A and has a ±15% tolerance.
5. If Thermal Memory is enabled, trip times may be shorter than indicated in this curve.
**Technical Data**

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**Time current curves Power Defense MCCB**

**Frame 3 thermal-magnetic and PXR electronic trip units**

**Standards: UL, CSA, IEC, CCC**

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**Figure 31. PXR 10 LI 600A frame.**

**Notes:**

1. Long Delay pickup is 110% of the Ir setting with ±5% tolerance.
2. Long Delay Time Setting has ±0% to ±30% tolerance.
3. Instantaneous pickup settings have ±10% tolerance.
4. For high fault current levels a fixed instantaneous override is provided at 7200A and has a ±15% tolerance.
5. If Thermal Memory is enabled, trip times may be shorter than indicated in this curve.

---

**PXR - 600A LI Curve**

**Power Defense Circuit Breakers**

**Style:** Frame 3

**Configuration:** 3 and 4 Poles

**Trip Unit Type:** Power Xpert Release – PXR 10

**Trip Unit Style:** LI

**Curve:** Long I²t Delay and Instantaneous with Override for 600A frame

---

**Ir setting | PDG**

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Frame 3 thermal-magnetic and PXR electronic trip units
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Figure 32. PXR 10 LI 630A frame.
**Time Current Curves**

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Frame 3 thermal-magnetic and PXR electronic trip units

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**Figure 33. PXR 10 LSI profile for short flat curves.**

---

**Notes:**

1. Long Delay pickup is 110% of the Ir setting with ±5% tolerance.
2. Long Delay Time Setting has +0%/-30% tolerance.
3. Instantaneous pickup settings have ±10% tolerance.
4. Short Delay pickup settings as shown have ±5% tolerance.
5. If Thermal Memory is enabled, trip times may be shorter than indicated in this curve.
6. Profile J is set at a default value of 10x with 300ms time delay but is programmable with Isd 2.0x to 10.0x in steps of 0.5x and tsd 50ms to 300ms in steps of 50ms and I2t slope as an option.
7. When Profile K is selected, PXR10 LI style curve should be used.

---

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<td>B</td>
<td>2</td>
<td>0.300</td>
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---

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Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

Figure 34. PXR 10 LSI profile for I^2t short curves.

Profile | Isd (n x Ir) | tsd (s)
-------|-------------|--------
A      | 2           | 0.150  
B      | 2           | 0.300  
C      | 2           | 0.150  
D      | 4           | 0.150  
E      | 4           | 0.150  
F      | 6           | 0.150  
G      | 6           | 0.300  
H      | 8           | 0.150  
J      | 8           | 0.300  
K      | OFF         |        

Notes:
1. Long Delay pickup is 110% of the Ir setting with ±5% tolerance.
2. Long Delay Time Setting has +0%/-30% tolerance.
3. Instantaneous pickup settings have ±10% tolerance.
4. Short Delay pickup settings as shown have ±5% tolerance.
5. If Thermal Memory is enabled, trip times may be shorter than indicated in this curve.
Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

Figure 35. 100A fixed thermal adjustable magnetic.

Notes:
1. Single pole test data at 25°C based on NEMA procedures (AB 4) for verifying performance of molded case circuit breakers.
2. DC instantaneous trip values are approximately 40% higher.
Technical Data TD012065EN
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Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

**Figure 36. 125A fixed thermal adjustable magnetic.**

- **Time Current Curves**
- **Power Defense Circuit Breakers**
- **Style:** Frame 3
- **Configuration:** 2, 3 and 4 Poles
- **Trip Unit Type:** Thermal Magnetic
- **Trip Unit Style:** Fixed Thermal – Adjustable Magnetic
- **Breaker Frame:** PDG, PDD style

**Notes:**
1. Single pole test data at 25°C based on NEMA procedures (AB 4) for verifying performance of molded case circuit breakers.
2. DC instantaneous trip values are approximately 40% higher.
Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

Figure 37. 150A fixed thermal adjustable magnetic.
Figure 38. 175A fixed thermal adjustable magnetic.
Figure 39. 200A fixed thermal adjustable magnetic.
Figure 40. 225A fixed thermal adjustable magnetic.
Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

Figure 41. 250A fixed thermal adjustable magnetic.
Figure 42. 300A fixed thermal adjustable magnetic.
Figure 43. 350A fixed thermal adjustable magnetic.
400A Fixed Thermal Adjustable Magnetic

**Time Current Curves**
Power Defense Circuit Breakers
Style: Frame 3
Configuration: 2, 3 and 4 Poles
Trip Unit Type: Thermal Magnetic
Trip Unit Style: Fixed Thermal – Adjustable Magnetic
Breaker Frame: PDG, PDD, or PDF style

Notes:
1. Single pole test data at 25°C based on NEMA procedures (AB 4) for verifying performance of molded case circuit breakers.
2. DC instantaneous trip values are approximately 40% higher.

Figure 44. 400A fixed thermal adjustable magnetic.
Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

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Figure 45. 250A/320A/400A adjustable thermal - adjustable magnetic.
Figure 46. 250A/320A/400A adjustable thermal - adjustable magnetic current limiting.
Figure 47. 250A – 600A fixed thermal adjustable magnetic.
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Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

Figure 48. 500A/630A adjustable thermal - adjustable magnetic.
Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

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Figure 49. Peak let through current 400A @ 240V.

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Figure 50. Peak let through energy 400A @ 240V.
Figure 51. Peak let through current 400A @ 415V.
Technical Data TD012065EN
Effective February 2019

Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

Figure 52. Peak let through energy 400A @ 415V.

Available Short Circuit Current, kA rms

Peak Let Through Energy $\int t \cdot A^2$ sec

PD3 400A 415V
Peak Let Through Energy

415V

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Figure 53. Peak let through current 400A @ 415V-480V.
Figure 54. Peak let through energy 400A @ 415V-480V.
Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

Technical Data TD012065EN
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Figure 55. Peak let through current 400A @ 600V.
Figure 56. Peak let through energy 400A @ 600V
Figure 57. Peak let through current 400A @ 690V.
Figure 58. Peak let through energy 400A @ 690V.
Figure 59. Peak let through current selective frames 600A @ 240V.
Figure 60. Peak let through energy selective frames 600A @ 240V.
Figure 61. Peak let through current selective frames 630A @ 240V.
Figure 62. Peak let through energy selective frames 600A @ 240V
Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

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Figure 63. Peak let through current selective 600A @ 415V-480V.
Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

Figure 64. Peak let through energy selective 600A @ 415V-480V.
Figure 65. Peak let through current selective 630A @ 415V-440V.
Figure 66. Peak let through energy selective 630A @ 415V-440V.
Time current curves Power Defense MCCB
Frame 3 thermal-magnetic and PXR electronic trip units
Standards: UL, CSA, IEC, CCC

Figure 67. Peak let through current selective 600A @ 600V.
Figure 68. Peak let through energy selective 600A @ 600V.
Figure 69. Peak let through current selective 630A @ 690V.
Figure 70. Peak let through energy selective 630A @ 690V