Time current curves, Power Defense
Motor circuit protectors (MCP)
Frame size 1, 2, 3 magnetic only
Standards: UL, CSA, IEC, CCC

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<table>
<thead>
<tr>
<th>Revision</th>
<th>Figure number</th>
<th>Page</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Power Defense MCP curves initial release</td>
<td></td>
<td></td>
<td>10/01/2019</td>
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</table>


Table 2. Catalog number convention

<table>
<thead>
<tr>
<th>Style family</th>
<th>PDG = PD Global UL / CSA / CE / CCC</th>
<th>PDC = PD IEC / CE / CCC</th>
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</thead>
<tbody>
<tr>
<td>Frame size</td>
<td>1 = Frame PD1</td>
<td>2 = Frame PD2</td>
</tr>
<tr>
<td>Poles</td>
<td>3 = 3 pole</td>
<td></td>
</tr>
<tr>
<td>Intermuption capacity</td>
<td>PDG</td>
<td>PDC</td>
</tr>
<tr>
<td>F = -</td>
<td>25kA @ 415V</td>
<td></td>
</tr>
<tr>
<td>G = -</td>
<td>36kA @ 415V</td>
<td></td>
</tr>
<tr>
<td>K = -</td>
<td>50kA @ 415V</td>
<td></td>
</tr>
<tr>
<td>M = Standard</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>N = -</td>
<td>65kA @ 415V</td>
<td></td>
</tr>
<tr>
<td>Continuous current rating</td>
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<td># value</td>
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<tr>
<td>0003 = 3 A</td>
<td>0200 = 200 A</td>
<td></td>
</tr>
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<td>0007 = 7 A</td>
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<tr>
<td>0015 = 15 A</td>
<td>0225 = 225 A</td>
<td></td>
</tr>
<tr>
<td>0025 = 25 A</td>
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<td>0150 = 150 A</td>
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<td>0160 = 160 A</td>
<td>0600 = 600 A</td>
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<tr>
<td>0175 = 175 A</td>
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</tbody>
</table>

* Applies to PDG2 ONLY.

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

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 3. Continuous current rating by frame

<table>
<thead>
<tr>
<th>Continuous current rating by frame</th>
<th>PDG1</th>
<th>PDG2</th>
<th>PDG3</th>
<th>PDC1</th>
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<tr>
<td>0003</td>
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</table>

### Table 4. Curve notes

1. These curves apply for 50Hz and 60Hz applications.
2. The maximum voltage rating for the frame style is stated in curve.
3. These curves are comprehensive for Power Defense style motor circuit protectors 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.
5. The end of the curve is determined by the application or the interrupting rating of the circuit protector.
6. All current values are in RMS amperes.
Time current curves, Power Defense motor circuit protectors (MCP)

PD1 motor circuit protector curves
Figure 1. PD1 MCP 3 amp standard calibration motor circuit protector.
Figure 2. PD1 MCP 7 amp standard calibration motor circuit protector.
Figure 3. PD1 MCP 15 amp standard calibration motor circuit protector.
**Figure 4. PD1 MCP 30 amp standard calibration motor circuit protector.**

**Technical Data**

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**Time current curves, Power Defense motor circuit protectors (MCP)**

**PD1 MCP, 30 Amps, 3 Pole**

**Time current curves**

Power Defense circuit breakers

- **Style:** PD1 motor circuit protector
- **Configuration:** 3 pole
- **Trip unit type:** Motor protection
- **Curve:** Instantaneous protection
- **Catalog numbers:** PDG13M0030MSAJ

**Dial adjustment setting**

<table>
<thead>
<tr>
<th>Setting</th>
<th>Instantaneous pickup setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90 A</td>
</tr>
<tr>
<td>B</td>
<td>150 A</td>
</tr>
<tr>
<td>C</td>
<td>210 A</td>
</tr>
<tr>
<td>D</td>
<td>270 A</td>
</tr>
<tr>
<td>E</td>
<td>300 A</td>
</tr>
<tr>
<td>F</td>
<td>330 A</td>
</tr>
</tbody>
</table>

**Maximum voltage**

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Current rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>600/347 Vac (50/60 Hz)</td>
<td>30 A</td>
</tr>
<tr>
<td>480 Vac (50/60 Hz)</td>
<td>30 A</td>
</tr>
<tr>
<td>250 Vdc</td>
<td>30 A</td>
</tr>
</tbody>
</table>

**Notes:**

1. For DC applications, pickup settings are approximately 40% higher.
2. Pickup tolerances are - 20%, +30% as shown by the width of the box for each setting on the curve.
Time current curves, Power Defense motor circuit protectors (MCP)

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Figure 5. PD1 MCP 50 amp standard calibration motor circuit protector.
**Time current curves, Power Defense motor circuit protectors (MCP)**

Figure 6. PD1 MCP 70 amp standard calibration motor circuit protector.

---

1. For DC applications, pickup settings are approximately 40% higher.
2. Pickup tolerances are -20%, +30% as shown by the width of the box for each setting on the curve.
Time current curves, Power Defense motor circuit protectors (MCP)

Figure 7. PD1 MCP 100 amp standard calibration motor circuit protector.

- Style: PD1 motor circuit protector
- Configuration: 3 pole
- Trip unit type: Motor protection
- Curve: Instantaneous protection
- Catalog numbers: PDG13M0100MSAJ

<table>
<thead>
<tr>
<th>Dial adjustment setting</th>
<th>Instantaneous pickup setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>300 A</td>
</tr>
<tr>
<td>B</td>
<td>500 A</td>
</tr>
<tr>
<td>C</td>
<td>700 A</td>
</tr>
<tr>
<td>D</td>
<td>900 A</td>
</tr>
<tr>
<td>E</td>
<td>1000 A</td>
</tr>
<tr>
<td>F</td>
<td>1100 A</td>
</tr>
</tbody>
</table>

- Maximum voltage current rating:
  - 600/347 Vac (50/60 Hz) 100 A
  - 480 Vac (50/60 Hz) 100 A
  - 250 Vdc 100 A

Notes:
1. For DC applications, pickup settings are approximately 40% higher.
2. Pickup tolerances are -20%, +30% as shown by the width of the box for each setting on the curve.
**Figure 8. PD1 MCP 100 amp high calibration motor circuit protector.**

**Time current curves, Power Defense motor circuit protectors (MCP)**

**Effective October 2019**

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PD2 motor circuit protector curves
Figure 9. PD2 MCP 3 amp standard calibration motor circuit protector.
Figure 10. PD2 MCP 7 amp standard calibration motor circuit protector.
Figure 11. PD2 MCP 15 amp standard calibration motor circuit protector.
Figure 12. PD2 MCP 30 amp standard calibration motor circuit protector.
Figure 13. PD2 MCP 50 amp standard calibration motor circuit protector.
Figure 14. PD2 MCP 70 amp standard calibration motor circuit protector.
PD2 MCP, 100 Amp, 3 Pole

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Power Defense circuit breakers
Style: PD2 100 A motor circuit protector
Configuration: 3 pole
Trip unit type: Motor protection
Curve: Instantaneous protection
Catalog numbers: PDG23M0100MRAJ, PDG23M0100MSAJ

Dial adjustment setting | Instantaneous pickup setting
---|---
A | 300 A
B | 400 A
C | 500 A
D | 600 A
E | 700 A
F | 800 A
G | 900 A
H | 1000 A

Maximum voltage | Current rating
---|---
600 Vac (50/60 Hz) | 100 A
250 Vac | 100 A

Notes:
1. For DC applications, pickup settings are approximately 40% higher.
2. Pickup tolerances are -20%, +30% as shown by the width of the box for each setting on the curve.

Figure 15. PD2 MCP 100 amp standard calibration motor circuit protector.
Time current curves, Power Defense motor circuit protectors (MCP)

**Figure 16. PD2 MCP 150 amp standard calibration motor circuit protector.**

- **Style:** PD2 150 A motor circuit protector
- **Configuration:** 3 pole
- **Trip unit type:** Motor protection
- **Curve:** Instantaneous protection
- **Catalog numbers:** PDG23M0150MRAJ, PDG23M0150MSAJ

### Dial adjustment setting

<table>
<thead>
<tr>
<th>Setting</th>
<th>Current Setting</th>
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<td>A</td>
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<tr>
<td>B</td>
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<tr>
<td>C</td>
<td>750 A</td>
</tr>
<tr>
<td>D</td>
<td>900 A</td>
</tr>
<tr>
<td>E</td>
<td>1050 A</td>
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<tr>
<td>F</td>
<td>1200 A</td>
</tr>
<tr>
<td>G</td>
<td>1350 A</td>
</tr>
<tr>
<td>H</td>
<td>1500 A</td>
</tr>
</tbody>
</table>

### Maximum voltage Current rating

- 600 Vac (50/60 Hz): 150 A
- 250 Vdc: 150 A

### Notes:

1. For DC applications, pickup settings are approximately 40% higher.
2. Pickup tolerances are - 20%, +30% as shown by the width of the box for each setting on the curve.
Time current curves, Power Defense motor circuit protectors (MCP)

PD2 MCP, 150 Amp, 3 Pole

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Figure 17. PD2 MCP 150 amp high calibration motor circuit protector

Technical Data
TD012069EN
Effective October 2019

Time in seconds
Current in amperes

Maximum voltage
Current rating

Notes:
1. For DC applications, pickup settings are approximately 40% higher.
2. Pickup tolerances are -20%, +30% as shown by the width of the box for each setting on the curve.

Maximum Interrupting Time

Adjustable Trip Setting Range A–H

Dial adjustment
Instantaneous pickup setting

A
750 A
B
1200 A
C
1250 A
D
1500 A
E
1750 A
F
2000 A
G
2250 A
H
2500 A

Maximum voltage current rating

600 Vac (50/60 Hz) 150 A
250 Vdc 150 A

Style: PD2 150 A motor circuit protector
Configuration: 3 pole
Trip unit type: Motor protection
Curve: Instantaneous protection
Catalog numbers: PDG23M0150MRAJ, high mag style

Notes:
1. For DC applications, pickup settings are approximately 40% higher.
2. Pickup tolerances are -20%, +30% as shown by the width of the box for each setting on the curve.
PD2 MCP, 25 Amp Low Magnetic Style, 3 Pole

**Time current curves**

**Power Defense circuit breakers**

- **Style:** PD2 25 A motor circuit protector
- **Configuration:** 3 pole
- **Trip unit type:** Motor protection
- **Curve:** Instantaneous low magnetic calibration protection
- **Catalog numbers:** PDG23M0025MLAJ

**Dial adjustment setting**

<table>
<thead>
<tr>
<th></th>
<th>Instantaneous pickup setting</th>
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</thead>
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<tr>
<td>A</td>
<td>40 A</td>
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<tr>
<td>B</td>
<td>43 A</td>
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<tr>
<td>C</td>
<td>46 A</td>
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<tr>
<td>D</td>
<td>49 A</td>
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<tr>
<td>E</td>
<td>52 A</td>
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<td>F</td>
<td>55 A</td>
</tr>
<tr>
<td>G</td>
<td>58 A</td>
</tr>
<tr>
<td>H</td>
<td>60 A</td>
</tr>
</tbody>
</table>

**Maximum voltage**

- **Current rating**
  - 600 Vac (50/60 Hz): 25 A
  - 250 Vdc: 25 A

**Notes:**

1. For DC applications, pickup settings are approximately 40% higher.
2. Pickup tolerances are -20%, +30% as shown by the width of the box for each setting on the curve.

**Figure 18. PD2 MCP 25 amp low calibration motor circuit protector.**
Figure 19. PD2 MCP 50 amp low calibration motor circuit protector. 

Time current curves, Power Defense motor circuit protectors (MCP)

Effective October 2019

PD2 MCP, 50 Amp Low Magnetic Style, 3 Pole

Time current curves
Power Defense circuit breakers
Style: PD2 50 A motor circuit protector
Configuration: 3 pole
Trip unit type: Motor protection
Curve: Instantaneous low magnetic
 calibration protection
Catalog numbers: PDG23M0050MLAJ

Dial adjustment setting | Instantaneous pickup setting
--- | ---
A | 80 A
B | 87 A
C | 93 A
D | 98 A
E | 103 A
F | 109 A
G | 115 A
H | 120 A

Maximum voltage | Current rating
--- | ---
600 Vac (50/60 Hz) | 50 A
250 Vdc | 50 A

Notes:
1. For DC applications, pickup settings are approximately 40% higher.
2. Pickup tolerances are -20%, +30% as shown by the width of the box for each setting on the curve.
Figure 20. PD2 MCP 70 amp low calibration motor circuit protector.
Technical Data TD012069EN
Time current curves, Power Defense motor circuit protectors (MCP)
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Figure 21. PD2 MCP 100 amp low calibration motor circuit protector.
PD3 motor circuit protector curves
Figure 22. PD3 MCP 100 amp standard calibration motor circuit protector.
Figure 23. PD3 MCP 125 amp standard calibration motor circuit protector.
Figure 24. PD3 MCP 150 amp standard calibration motor circuit protector.
Figure 25. PD3 MCP 175 amp standard calibration motor circuit protector.

Time current curves, Power Defense motor circuit protectors (MCP)  Technical Data TD012069EN
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Time current curves, Power Defense motor circuit protectors (MCP)

Figure 26. PD3 MCP 200 amp standard calibration motor circuit protector.
Figure 27. PD3 MCP 225 amp standard calibration motor circuit protector.

### Time Current Curves

- **Style:** PD3 motor circuit protector
- **Configuration:** 3 pole
- **Trip unit type:** Motor protection
- **Curve:** Instantaneous protection
- **Catalog numbers:** PDG33M0225MSAJ

#### Adjustable Trip Setting Range

- **A** - 1125 A
- **B** - 1265 A
- **C** - 1410 A
- **D** - 1545 A
- **E** - 1690 A
- **F** - 1830 A
- **G** - 1970 A
- **H** - 2110 A
- **I** - 2250 A

#### Maximum Voltage Current Rating

- **600 Vac (50/60 Hz):** 225 A
- **250 Vdc:** 225 A

#### Notes:

1. For DC applications, pickup settings are approximately 40% higher.
2. Pickup tolerances are -20%, +30% as shown by the width of the box for each setting on the curve.
Figure 28. PD3 MCP 250 amp standard calibration motor circuit protector.
Figure 29. PD3 MCP 300 amp standard calibration motor circuit protector.

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Technical Data TD012069EN

Effective October 2019

Time current curves, Power Defense motor circuit protectors (MCP)
PD3 MCP, 350 Amp, 3 Pole

Time current curves
Power Defense circuit breakers
Style: PD3 motor circuit protector
Configuration: 3 pole
Trip unit type: Motor protection
Curve: Instantaneous protection
Catalog numbers: PDG33M0350MSAJ

Dial adjustment setting | Instantaneous pickup setting
------------------------|-----------------------------
A 1750 A                |
B 1970 A                |
C 2190 A                |
D 2410 A                |
E 2625 A                |
F 2845 A                |
G 3065 A                |
H 3285 A                |
I 3500 A                |

Maximum voltage Current rating
600 Vac (50/60 Hz) 350 A
250 Vdc 350 A

Notes:
1. For DC applications, pickup settings are approximately 40% higher.
2. Pickup tolerances are -20%, +30% as shown by the width of the box for each setting on the curve.

Figure 30. PD3 MCP 350 amp standard calibration motor circuit protector.
Figure 31. PD3 MCP 400 amp standard calibration motor circuit protector.
Figure 32. PD3 MCP 400 amp high calibration motor circuit protector.
Figure 33. PD3 MCP 600A frame 250 amp standard calibration motor circuit protector.

**Technical Data**

**TD012069EN**

Effective October 2019

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Figure 34. PD3 MCP 600A frame 300 amp standard calibration motor circuit protector.
Figure 35. PD3 MCP 600A frame 350 amp standard calibration motor circuit protector.

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**Effective October 2019**

Time current curves, Power Defense motor circuit protectors (MCP)

**PD3 MCP, 600A Frame, 350 Amp, 3 Pole**

**EATON**
Power Defense circuit breakers
Style: PD3 motor circuit protector
Configuration: 3 pole
Trip unit type: Motor protection
Catalog numbers: PDG33MH350MSAJ

<table>
<thead>
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<th>Instantaneous pickup setting</th>
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<tr>
<td>A</td>
<td>1750 A</td>
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<tr>
<td>B</td>
<td>1970 A</td>
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<tr>
<td>C</td>
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<td>H</td>
<td>3285 A</td>
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<td>I</td>
<td>3500 A</td>
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Maximum voltage Current rating
- 600 Vac (50/60 Hz) 350 A
- 250 Vdc 350 A

Notes:
1. For DC applications, pickup settings are approximately 40% higher.
2. Pickup tolerances are +/- 20% as shown by the width of the box for each setting on the curve.

**Adjustable Trip Setting Range**
A - I

**Maximum Interrupting Time**
End of Curve.
Figure 36. PD3 MCP 600A frame 400 amp standard calibration motor circuit protector.
Time current curves, Power Defense motor circuit protectors (MCP)

Effective October 2019

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Figure 37: PD3 MCP 600A frame 450 amp standard calibration motor circuit protector.
Figure 38. PD3 MCP 600A frame 500 amp standard calibration motor circuit protector.
Time current curves, Power Defense motor circuit protectors (MCP)

Effective October 2019

Figure 39. PD3 MCP 600A frame 600 amp standard calibration motor circuit protector

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**Time current curves**
Power Defense circuit breakers
Style: PD3 motor circuit protector
Configuration: 3 pole
Trip unit type: Motor protection
Curve: Instantaneous protection
Catalog numbers: PDG33M0600MSAJ

<table>
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<td>B 3375 A</td>
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<td>C 3760 A</td>
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<td>D 4120 A</td>
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<td>E 4500 A</td>
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<tr>
<td>H 5630 A</td>
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<tr>
<td>I 6000 A</td>
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**Maximum voltage**

<table>
<thead>
<tr>
<th>Current rating</th>
<th>Current rating</th>
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<tbody>
<tr>
<td>600 Vac (50/60 Hz)</td>
<td>600 A</td>
</tr>
<tr>
<td>250 Vdc</td>
<td>600 A</td>
</tr>
</tbody>
</table>

**Notes:**
1. For DC applications, pickup settings are approximately 40% higher.
2. Pickup tolerances are +/- 20% as shown by the width of the box for each setting on the curve.
Technical Data TD012069EN
Effective October 2019

Time current curves, Power Defense motor circuit protectors (MCP)