# Section 11

# Obsolescent and Obsolete Circuit Breakers

**Table 11.1: Circuit Breaker Availability**

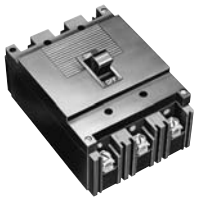
| Series of Cat. No. | Frame Size | Volts | Poles | Amperes | Availability | |
|---|---|---|---|---|---|---|
| | | | | | Obsolete No Longer Available | Obsolescent |
| 115A–130A | MO-1 (Add-on) | 120 Vac | 1 | 15–30 | X | |
| 215A–250A | MO-2 (Add-on) | 120/240 Vac | 2 | 15–50 | X | |
| 215B–250B | MO-2B (Add-on) | 120/240 Vac | 2 S.P. | 15–50 | X | |
| 70000 | Multi-Breaker | 120 Vac | 4 S.P. | 15–50 | X | |
| 111600 | MO-2 | 120/240 Vac | 2 | 15–30 | X | |
| 131600 | MO-2 | 120/240 Vac | 2 | 15–30 | X | |
| 151101 | MO-1 | 120 Vac | 1 | 15–30 | X | |
| 151600 | MO-2 | 120/240 Vac | 2 | 15–30 | X | |
| 161101 | MO-1 | 120 Vac | 1 With SN | 15–30 | X | |
| 161600 | MO-2 | 120/240 Vac | 2 With SN | 15–30 | X | |
| 161700 | MO-2 | 120/240 Vac | 2 S.P. | 15–30 | X | |
| 260000 | MB (Left-hand) | 120 Vac | 4 S.P. | 15–50 | X | |
| 270000 | MB (Right-hand) | 120 Vac | 4 S.P. | 15–50 | X | |
| 460000 | MO-8 | 120/240 Vac | 4 S.P. | 15–50 | X | |
| 470000 | MO-4 | 120/240 Vac | 4 S.P. | 15–40 | X | |
| 480000 | MO-4 (Plug-in) | 120/240 Vac | 4 S.P. | 15–50 | X | |
| 940000 | LM | 600 Vac | 2-3 | 125–800 | X | |
| 950000 | 50 A Form W | 250 Vac | 1, 2, 3 | 15–50 | X | |
| 951000 | 50 A Form W | 250 Vac | 2, 3 | 15–50 | X | |
| 952000 | 50 A Form W | 250 Vac | 2, 3 | 15–50 | X | |
| 953000 | Flip-on Form W | 230 Vac | 1, 2, 3 | 15–50 | X | |
| 954000 | 100 A Form W (Trip Unit) | 250 Vac | 2, 3 | 50–100 | X | |
| 955000 | 100 A Form W | 250 Vac | 2, 3 | 50–100 | X | |
| 956000 | 225 A Form W | 250 Vac | 2, 3 | 70–225 | X | |
| 957000 | 400 A (KL) Form W | 250 Vac | 2, 3 | 125–400 | X | |
| 958000 | 600 A (WL) Form W | 250 Vac | 2, 3 | 225–600 | X | |
| 959000 | KL Frame Only | 600 Vac | 2, 3 | 125–400 | X | |
| 961000 | 50 A Form W | 600 Vac | 2, 3 | 15–50 | X | |
| 962000 | 50 A Form W | 600 Vac | 2, 3 | 15–50 | X | |
| 964000 | 100 A Form W | 600 Vac | 2, 3 | 50–100 | X | |
| 965000 | 100 A Form W | 600 Vac | 2, 3 | 50–100 | X | |
| 966000 | 225 A Form W | 600 Vac | 2, 3 | 70–225 | X | |
| 967000 | 400 A (KL) Form W | 600 Vac | 2, 3 | 125–400 | X | |
| 968000 | 600 A (WL) Form W | 600 Vac | 2, 3 | 225–600 | X | |
| 970000 | Type L Form W | 240 Vac | 1, 2, 3 | 10–50 | X | |
| 971000 | Type L Form W (Flip-on) | 240 Vac | 1, 2, 3 | 10–50 | X | |
| 972000 | M1 (Bolt-on) | 240 Vac | 2, 3 | 15–70 | X | |
| 973000 | M2 (Bolt-on) | 240 Vac | 2, 3 | 50–100 | X | |
| 974000 | MM (M) (Bolt-on) | 120/240 Vac | 2 S.P. | 15–50 | X | |
| 975000 | 100 A Trip Unit | 250 Vac | 2, 3 | 50–100 | X | |
| 976000 | 225 A Trip Unit | 250 Vac | 2, 3 | 70–225 | X | |
| 977000 | KL Trip Unit | 600 Vac | 2, 3 | 125–400 | X | |
| 978000 | LM Trip Unit | 600 Vac | 2, 3 | 225–800 | X | |
| 979000 | WL Frame | 600 Vac | 2, 3 | 225–600 | X | |
| 982000 | 50 A Form W (Flip-on) | 125/250 Vac | 1, 2, 3 | 15–50 | X | |
| 984000 | ML-2 | 250 Vac | 2, 3 | 50–100 | X | |
| 985000 | 100 A (G) Form W | 600 Vac | 2, 3 | 50–100 | X | |
| 986000 | 100 A (F) Form W | 600 Vac | 2, 3 | 10–100 | X | |
| 987000 | ML-3 | 250 Vac | 2, 3 | 125–225 | X | |
| 988000 | ML-1 | 250 Vac | 2, 3 | 15–100 | X | |
| 989000 | ML-1 | 480 Vac | 2, 3 | 15–100 | X | |
| 991000 | QB | 120/240 Vac | 1 | 15–50 | X | |
| 992000 | ML | 120/240 Vac | 1, 2, 3 | 10–50 | X | |
| 992900 | ML Form Y | 277 Vac | 1 | 10–20 | X | |
| 994000 | ML-2 | 600 Vac | 2, 3 | 15–100 | X | |
| 995000 | 100 A (G) Form W | 600 Vac | 2, 3 | 15–100 | X | |
| 996000 | 100 A (F) Form W | 600 Vac | 2, 3 | 15–100 | X | |
| 997000 | ML-3 | 600 Vac | 2, 3 | 50–225 | X | |
| 998000 | ML-1 | 600 Vac | 2, 3 | 15–100 | X | |
| 999000 | ML-1 | 600 Vac | 2, 3 | 15–100 | X | |
| A1B | 100 A | 120/240 Vac | 1, 2, 3 | 15–100 | X | |
| EH, EHB | 100 A | 480Y/277 Vac | 1, 2, 3 | 15–100 | EH | See page 11-13 |
| FC | 100 A | 480 Vac | 2, 3 | 15–100 | FC | See page 11-5 |
| FD, FG, FJ | 100 A | 480Y/277 Vac | 1, 2, 3 | 15–100 | FD, FG | FJ, page 11-14 |
| GJL / NENL | 100 A | 480 Vac | 3 | 15–100 | X | |
| KA, KH, KC | 250 A | 480 Vac | 2, 3 | 70–250 | X | See pgs. 11-6–11-8 |
| IF, IFL | 100 A | 480 Vac | 2, 3 | 20–100 | X | |
| IK, IKL | 225 A | 480 Vac | 2, 3 | 110–225 | X | |
| IL, ILL | 400 A | 480 Vac | 2, 3 | 300–400 | X | |
| KD, KG | 250 A | 240 Vac | 2, 3 | 100–250 | KG | See page 11-16 |
| LA(JKL) 0000 | 400 A | 600 Vac | 2, 3 | 125–400 | X | |
| MA-0000 | 1000 A | 600 Vac | 2, 3 | 125–1000 | X | |
| Masterpact | 6300 A | 600 Vac | 3, 4 | 800–6300 | | See pgs. 11-29–11-33 |
| MEC | 225 A | 600 Vac | 2, 3 | 100–225 | X | |
| MEC | 400 A | 600 Vac | 2, 3 | 250–400 | X | |
| MEC | 800 A | 600 Vac | 2, 3 | 400–800 | X | |
| MHAB, BC, CA | MM (Plug-on) | 120/240 Vac | 2 S.P. | 15–50 | X | |
| MHAB, BC, CA | M1 (Plug-on) | 120/240 Vac | 2, 3 | 15–70 | X | |
| MHAB, BC, CA | M2 (Plug-on) | 120/240 Vac | 2, 3 | 70–100 | X | |
| NHL | 1200 A | 480 Vac | 2, 3 | 800–1200 | | See page 11-17 |
| PEC | 1200 A | 600 Vac | 2, 3 | 600–1200 | X | |
| PEC | 1600 A | 600 Vac | 2, 3 | 1000–1600 | X | |
| PEC | 2000 A | 600 Vac | 2, 3 | 1000–2000 | X | |
| QOT | Series 1 | 120/240 Vac | 1, 2 | 30 | X | |
| Q1, Q1B | 150 A | 120/240 Vac | 1, 2 | 15–100 | X | |
| Q1, Q1B | 150 A | 240 Vac | 3 | 15–100 | X | |
| Q1-H, Q1B-H | 100 A | 240 Vac | 2 | 15–100 | X | |
| Q1-VH, Q1B-VH | 125 A | 120/240 Vac | 2 | 15–30 | X | |
| Q1-VH, Q1B-VH | 100 A | 240 Vac | 3 | 15–30 | X | |
| Q2, Q2-H, Q2H | 225 A | 240 Vac | 2, 3 | 100–225 | X | |
| QE | 200 A | 120/240 Vac | 2, 3 | 70–200 | | See page 11-15 |
| SE | 4000 A | 600 Vac | 3 | 200–4000 | | See pgs. 11-19 |
| CK | 1200 A | 480 Vac | 3 | 400–1200 | X | |
| CM | 2000 A | 480 Vac | 3 | 1250–2000 | X | |
| XO | 50 A | 120/240 Vac | 1, 2 | 15–50 | X | |
| Y1B | 100 A | 277 Vac | 1 | 15–100 | X | |

Contact your local Sales Office for availability.

ILL

LA (W)

MA (W)

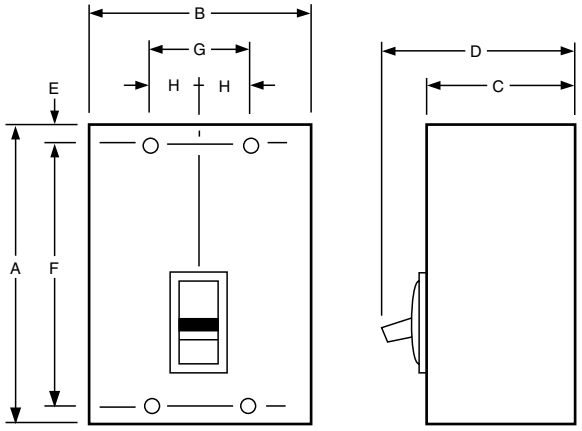


ML-1

ML-2

**Table 11.2: Circuit Breaker Dimensions**

| Circuit Breaker Type | Cat. No. Prefix | Number Poles | Dimensions | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | | B | | C | | D | | E | | F | | G | | H | |
| | | | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm |
| QB | 991 | 1 | 3.75 | 95 | 1.00 | 25 | 2.50 | 63 | 3.06 | 78 | — | — | — | — | — | — | — | — |
| ML | 992 | 1 | 6.00 | 152 | 1.00 | 25 | 3.09 | 78 | 3.91 | 99 | .88 | 22 | 4.25 | 108 | — | — | .33 | 8 |
| | 992 | 2 | 6.00 | 152 | 2.00 | 51 | 3.09 | 78 | 3.91 | 99 | .88 | 22 | 4.25 | 108 | — | — | .19 | 5 |
| | 992 | 3 | 6.00 | 152 | 3.00 | 76 | 3.09 | 78 | 3.91 | 99 | .88 | 22 | 4.25 | 108 | — | — | 1.83 | 46 |
| ML-1 | 999 | 2 & 3 | 6.50 | 165 | 4.47 | 113 | 3.06 | 78 | 3.94 | 100 | .94 | 24 | 4.25 | 108 | 1.50 | 38 | .75 | 19 |
| ML-2 | 994 | 2 & 3 | 9.56 | 243 | 4.47 | 113 | 3.75 | 95 | 4.88 | 124 | 1.69 | 43 | 6.50 | 165 | 1.50 | 38 | .75 | 19 |
| ML-3 | 997 | 2 & 3 | 10.38 | 264 | 5.97 | 152 | 3.88 | 98 | 5.31 | 135 | 1.69 | 43 | 6.63 | 168 | 2.00 | 51 | 1.00 | 25 |
| LA (W) | LA | 2 & 3 | 10.75 | 273 | 8.25 | 209 | 4.31 | 109 | 5.50 | 140 | .63 | 16 | 9.50 | 241 | 2.75 | 70 | 1.38 | 35 |
| MA (W) | MA | 2 & 3 | 16.00 | 406 | 8.25 | 209 | 4.06 | 103 | 6.06 | 154 | .88 | 22 | 14.25 | 362 | 2.75 | 70 | 1.38 | 35 |
| KL | 967 | 2 & 3 | 22.00 | 559 | 8.25 | 209 | 5.50 | 140 | 7.00 | 178 | .63 | 16 | 20.75 | 527 | 2.75 | 70 | 1.38 | 35 |
| LM | 940 | 2 & 3 | 22.00 | 559 | 8.25 | 209 | 5.50 | 140 | 7.00 | 178 | .63 | 16 | 20.75 | 527 | 2.75 | 70 | 1.38 | 35 |
| IFL (4) | IFL | 2 & 3 | 8.29 | 210 | 4.46 | 113 | 3.67 | 93 | 4.70 | 119 | .44 | 11 | 7.41 | 188 | 1.50 | 38 | .75 | 19 |
| IKL (4) | IKL | 2 & 3 | 11.00 | 279 | 6.00 | 152 | 4.02 | 102 | 5.51 | 140 | .88 | 22 | 9.25 | 235 | 2.00 | 51 | 1.00 | 25 |
| ILL | ILL | 2 & 3 | 11.00 | 279 | 12.00 | 305 | 4.05 | 103 | 6.11 | 155 | .88 | 22 | 9.25 | 235 | 4.00 | 102 | 2.00 | 51 |
| NHL | NHL | 2 & 3 | 20.00 | 508 | 12.00 | 305 | 5.75 | 146 | 8.12 | 206 | 5.87 | 149 | 7.76 | 197 | 4.00 | 102 | 2.00 | 51 |



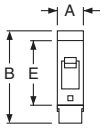



**Figure 1**

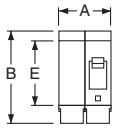



**Figure 2**

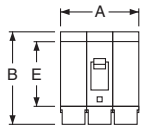
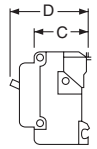



**Figure 3**




**EH, EHB**

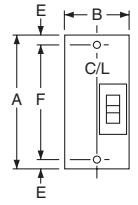



**Figure 4**

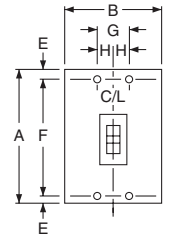
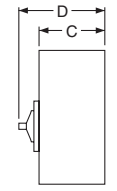



**Figure 5**




**Q2L**

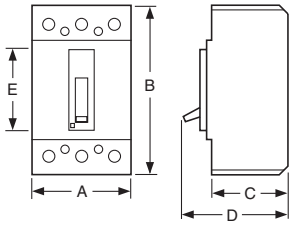



**Figure 6**

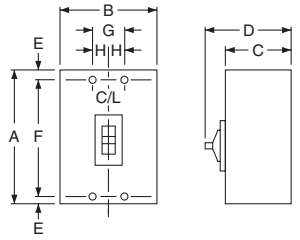



**Figure 7**

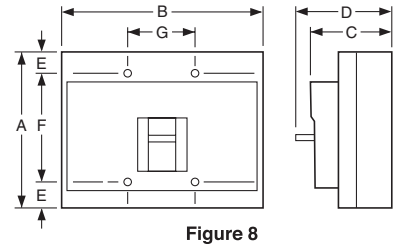



**Figure 8**

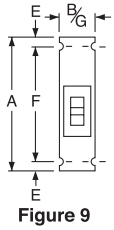



**Figure 9**

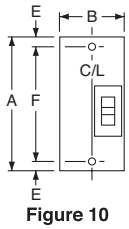



**Figure 10**

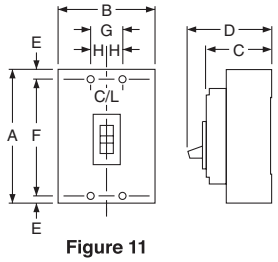



**Figure 11**

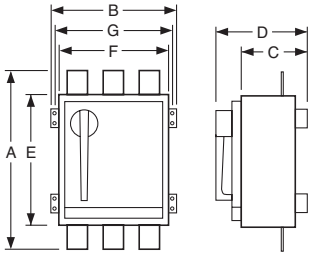



**Figure 12**

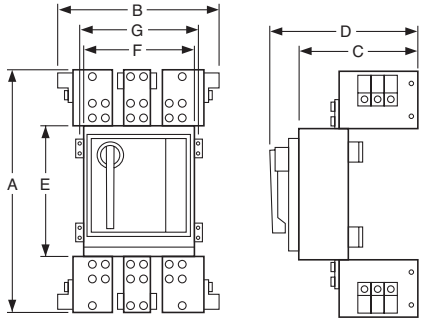



**Figure 13**

**Table 11.3: Circuit Breaker Dimensions**

| Circuit Breaker Cat. No. Prefix | No. Poles | Fig. No. | Dimensions—In. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | F | G | H |
| EH, EHB | 1 | 1 | 1.00 | 3.50 | 2.00 | 2.97 | 2.44 | — | — | — |
| | 2 | 2 | 2.00 | 3.50▲ | 2.00 | 2.97 | 2.44 | — | — | — |
| | 3 | 3 | 3.00 | 3.50▲ | 2.00 | 2.97 | 2.44 | — | — | — |
| FDA, FGA, FJA | 1 | Width 1.50 | | | | | | | | |
| | 2, 3 | Width 3.00 | | | | | | | | |
| Q2L, Q2L-H | 2 | 4 | 6.44 | 3.00 | 3.16 | 3.92 | ■ | 4.25 | — | — |
| | 3 | 5 | 6.44 | 4.50 | 3.16 | 3.92 | ■ | 4.25 | 1.50 | 0.75 |
| KD, KG | 2, 3 | 6 | 4.12 | 7.35 | 3.20 | 4.17 | 3.34 | — | — | — |
| MXL, MEL | 2 & 3 | 7 | 14.75 | 9.00 | 4.37 | 6.50 | 1.66 | 11.43 | 3.00 | 1.50 |
| NAL, NCL, NEL, NXL | 2 & 3 | 8 | 12.12 | 14.98 | 6.40 | 8.07 | 1.69 | 8.75 | 5.00 | — |
| FCL | 1 | 9 | 6.00 | 1.50 | 3.16 | 4.13 | 0.44 | 5.13 | 1.50 | — |
| | 2 | 10 | 6.00 | 3.00♦ | 3.16 | 4.13 | 0.44 | 5.13 | — | — |
| | 3 | 11 | 6.00 | 4.50 | 3.16 | 4.13 | 0.44 | 5.13 | 1.50 | 0.75 |
| MAL, MHL | 2 & 3 | 8 | 14.00 | 9.00 | 4.53 | 6.50 | 1.66 | 10.69 | 3.00 | 1.50 |
| NA, NC, NX, NE | 2 & 3 | 8 | 12.12 | 14.98 | 6.40 | 8.07 | 1.69 | 8.75 | 5.0 | — |
| PA, PH, PX, PE | 2 & 3 | 12 | 20.06 | 13.70 | 7.25 | 10.47 | 14.00 | 12.00 | 12.75 | — |
| PC, PX-25, PE-20-25 | 2 & 3 | 13 | 26.10 | 23.30 | 13.33 | 16.55 | 14.10 | 12.00 | — | — |

▲ 70–100 A is 4.00 in.
■ Dimensions E are 1.59 in at ON end and 0.63 in at OFF end.
♦ FCL 2-pole circuit breaker dimension B is 4.50 as in Fig. 23.

**Table 11.4:**

| Frame Size | Approx. Shipping Weight (Lbs.) |
|---|---|
| MAL<br>MHL | 34 |
| PAF<br>PHF | 69 |
| PXF<br>PEF | 80 |

FAL/FHL 2P
15–100 A

FAL/FHL 3P
15–100 A

Thermal-magnetic molded case circuit breakers shown on page 11-5 are permanent trip UL Listed, CSA® Certified, IEC rated, and also meet the requirements of Federal Specification W–C–375B/GEN as indicated on Digest pages 7-4 through 7-7.

***NOTE:*** *Consider using PowerPact® circuit breakers for situations requiring circuit breaker accessories. See Digest Section 7 for more information.*

**Table 11.5: F-Frame—100 A, Thermal-Magnetic, Individually-Mounted, 480 Vac**

| Ampere Rating | Fixed AC Magnetic Trip | | Extra-High Interrupting 2P 480 Vac, 250 Vdc | | Extra-High Interrupting 3P 480 Vac, 250 Vdc | | Terminal Wire Range (AWG) |
|---|---|---|---|---|---|---|---|
| | Hold | Trip | Cat. No. | $ Price | Cat. No. | $ Price | |
| 15 A | 275 A | 600 A | — | — | FCL34015 | | CU30FA4 (1) 14–10 Cu |
| 20 A | 275 A | 600 A | — | — | FCL34020 | | |
| 25 A | 275 A | 600 A | — | — | FCL34025 | | |
| 30 A | 275 A | 600 A | — | — | FCL34030 | | |
| 35 A | 400 A | 850 A | — | — | FCL34035 | | AL100FA4 (1) 14–3 Cu or (2) 12–1 Al |
| 40 A | 400 A | 850 A | — | — | FCL34040 | | |
| 45 A | 400 A | 850 A | — | — | FCL34045 | | |
| 50 A | 400 A | 850 A | FCL24050 | | FCL34050 | | |
| 60 A | 800 A | 1450 A | FCL24060 | | FCL34060 | | |
| 70 A | 800 A | 1450 A | FCL24070 | | FCL34070 | | |
| 80 A | 800 A | 1450 A | FCL24080 | | FCL34080 | | |
| 90 A | 900 A | 1700 A | FCL24090 | | FCL34090 | | |
| 100 A | 900 A | 1700 A | FCL24100 | | FCL34100 | | |

**For pricing contact your local Schneider Electric distributor.**

**Table 11.6: Interrupting Ratings**

| Voltage | FAL 240 Vac | FAL 480 Vac | FAL 600 Vac | FHL | FCL | FIL |
|---|---|---|---|---|---|---|
| 240 Vac | 10 kA | 18 kA (1P), 25 kA (2P, 3P) | 25 kA | 25 kA (1P) 65 kA (2P, 3P) | 100 kA | 200 kA |
| 480 Vac | — | 18 kA | 18 kA | 25 kA (2P, 3P) | 65 kA | 200 kA |
| 600 Vac | — | — | 14 kA | 18 kA (2P, 3P) | — | 100 kA |

## Termination Option

| Termination Letter |
|---|
| F = No Lugs |
| L = Lugs both ends |
| P with MT Suffix = Lugs ON end |
| P = Lugs OFF end |

For factory-installed termination, place termination letter in the third block of the circuit breaker catalog number.

F A L 3 6 1 0 0
└Termination Letter

FA 2P
3 in. (76 mm)
Mounting Height

FA 3P
4.5 in. (114 mm)
Mounting Height

**Table 11.7: F-Frame—100 A, Thermal-Magnetic, I-Line® Construction, 480 Vac**

| Ampere Rating | Fixed AC Magnetic Trip | | Extra-High Interrupting♦ 2P▲ 480 Vac, 250 Vdc■ | | Extra-High Interrupting♦ 3P 480 Vac, 250 Vdc♦ | | Terminal Wire Range (AWG) |
|---|---|---|---|---|---|---|---|
| | Hold | Trip | Cat. No. | $ Price | Cat. No. | $ Price | |
| 15 A | 275 A | 600 A | — | | FC34015 | | CU30FA4 (1) 14–10 Cu |
| 20 A | 275 A | 600 A | — | | FC34020 | | |
| 25 A | 275 A | 600 A | — | | FC34025 | | |
| 30 A | 275 A | 600 A | — | | FC34030 | | |
| 35 A | 400 A | 850 A | — | | FC34035 | | AL100FA4 (1) 14–3 Cu or (1) 12–1 Al |
| 40 A | 400 A | 850 A | — | | FC34040 | | |
| 45 A | 400 A | 850 A | — | | FC34045 | | |
| 50 A | 400 A | 850 A | FC24050( ) | | FC34050 | | |
| 60 A | 800 A | 1450 A | FC24060( ) | | FC34060 | | |
| 70 A | 800 A | 1450 A | FC24070( ) | | FC34070 | | |
| 80 A | 800 A | 1450 A | FC24080( ) | | FC34080 | | |
| 90 A | 900 A | 1700 A | FC24090( ) | | FC34090 | | |
| 100 A | 900 A | 1700 A | FC24100( ) | | FC34100 | | |

**For pricing contact your local Schneider Electric distributor.**

▲ 1P and 2P circuit breaker catalog numbers are completed by adding the required phase connection letters as a suffix. See Phase Option Table.
■ FCL 2P circuit breakers are built using 3P module.
♦ FCL circuit breakers are not rated for 250 Vdc.

**Table 11.8: Phase Options**

| Phase Option Letter | 1P | 2P | 3P |
|---|---|---|---|
| A<br>B<br>C | FA14035A<br>FA14035B<br>FA14035C | | |
| AB<br>AC<br>BC | | FA24030AB<br>FA24030AC<br>FA24030BC | |
| ABC<br>CBA | | | FA34030<br>FA34030CBA |

**Table 11.9: Interrupting Ratings**

| Voltage | FA 240 Vac | FA 480 Vac | FA 600 Vac | FH | FC | FI |
|---|---|---|---|---|---|---|
| 240 Vac | 10 kA | 18 kA (1P), 25 kA (2P, 3P) | 25 kA | 25 kA (1P) 65 kA (2P, 3P) | 100 kA | 200 kA |
| 277 Vac | — | 18 kA | — | — | 65 kA | — |
| 480 Vac | — | 18 kA | 18 kA | 25 kA (2P, 3P) | 65 kA | 200 kA |
| 600 Vac | — | — | 14 kA | 18 kA (2P, 3P) | — | 100 kA |

Accessories . . . . . Page 11-30
OptionalLugs . . . . . Page 11-25
Dimensions . . . . . Page 11-4
Enclosures: see Digest Section 7

***NOTE:*** *Consider using PowerPact® circuit breakers for situations requiring circuit breaker accessories.*

**Table 11.10: K-Frame—250 A, Thermal-Magnetic, Individually-Mounted, 600 Vac**

| Ampere Rating | Adjustable AC Magnetic Trip▲ | | Standard Interrupting | | High Interrupting | | Extra-High Interrupting■ | | Terminal Wire Range |
|---|---|---|---|---|---|---|---|---|---|
| | Low | High | Cat. No. | $ Price | Cat. No. | $ Price | Cat. No. | $ Price | |
| **2P, 600 Vac, 250 Vdc** | | | | | | | | | |
| 70 | 350 A | 700 A | KAL26070 | | KHL26070 | | — | — | AL250KA (1) 4 AWG–350 kcmil Al |
| 80 | 400 A | 800 A | KAL26080 | | KHL26080 | | — | — | |
| 90 | 450 A | 900 A | KAL26090 | | KHL26090 | | — | — | |
| 100 | 500 A | 1000 A | KAL26100 | | KHL26100 | | — | — | |
| 110 | 550 A | 1100 A | KAL26110 | | KHL26110 | | KCL24110 | | |
| 125 | 625 A | 1250 A | KAL26125 | | KHL26125 | | KCL24125 | | |
| 150 | 750 A | 1500 A | KAL26150 | | KHL26150 | | KCL24150 | | |
| 175 | 875 A | 1750 A | KAL26175 | | KHL26175 | | KCL24175 | | |
| 200 | 1000 A | 2000 A | KAL26200 | | KHL26200 | | KCL24200 | | |
| 225 | 1125 A | 2250 A | KAL26225 | | KHL26225 | | KCL24225 | | |
| 250 | 1250 A | 2500 A | KAL26250 | | KHL26250 | | KCL24250 | | |
| **3P, 600 Vac, 250 Vdc** | | | | | | | | | |
| 70 | 350 A | 700 A | KAL36070 | | KHL36070 | | — | — | AL250KA (1) 4 AWG–350 kcmil Al |
| 80 | 400 A | 800 A | KAL36080 | | KHL36080 | | — | — | |
| 90 | 450 A | 900 A | KAL36090 | | KHL36090 | | — | — | |
| 100 | 500 A | 1000 A | KAL36100 | | KHL36100 | | — | — | |
| 110 | 550 A | 1100 A | KAL36110 | | KHL36110 | | KCL34110 | | |
| 125 | 625 A | 1250 A | KAL36125 | | KHL36125 | | KCL34125 | | |
| 150 | 750 A | 1500 A | KAL36150 | | KHL36150 | | KCL34150 | | |
| 175 | 875 A | 1750 A | KAL36175 | | KHL36175 | | KCL34175 | | |
| 200 | 1000 A | 2000 A | KAL36200 | | KHL36200 | | KCL34200 | | |
| 225 | 1125 A | 2250 A | KAL36225 | | KHL36225 | | KCL34225 | | |
| 250 | 1250 A | 2500 A | KAL36250 | | KHL36250 | | KCL34250 | | |

**For pricing contact your local Schneider Electric distributor.**

**Table 11.11: K-Frame—250A, Thermal-Magnetic, I-Line® Construction, 600 Vac**

| Ampere Rating | Adjustable AC Magnetic Trip▲ | | Standard Interrupting | | High Interrupting | | Extra-High Interrupting■ | | Terminal Wire Range |
|---|---|---|---|---|---|---|---|---|---|
| | Low | High | Cat. No. | $ Price | Cat. No. | $ Price | Cat. No. | $ Price | |
| **2P, 600 Vac, 250 Vdc♦** | | | | | | | | | |
| 70 | 350 A | 700 A | KA26070( ) | | KH26070( ) | | — | — | AL250KA (1) 4 AWG–350 kcmil Al |
| 80 | 400 A | 800 A | KA26080( ) | | KH26080( ) | | — | — | |
| 90 | 450 A | 900 A | KA26090( ) | | KH26090( ) | | — | — | |
| 100 | 500 A | 1000 A | KA26100( ) | | KH26100( ) | | — | — | |
| 110 | 550 A | 1100 A | KA26110( ) | | KH26110( ) | | KC24110( ) | | |
| 125 | 625 A | 1250 A | KA26125( ) | | KH26125( ) | | KC24125( ) | | |
| 150 | 750 A | 1500 A | KA26150( ) | | KH26150( ) | | KC24150( ) | | |
| 175 | 875 A | 1750 A | KA26175( ) | | KH26175( ) | | KC24175( ) | | |
| 200 | 1000 A | 2000 A | KA26200( ) | | KH26200( ) | | KC24200( ) | | |
| 225 | 1125 A | 2250 A | KA26225( ) | | KH26225( ) | | KC24225( ) | | |
| 250 | 1250 A | 2500 A | KA26250( ) | | KH26250( ) | | KC24250( ) | | |
| **3P, 600 Vac, 250 Vdc** | | | | | | | | | |
| 70 | 350 A | 700 A | KA36070 | | KH36070 | | — | — | AL250KA (1) 4 AWG–350 kcmil Al |
| 80 | 400 A | 800 A | KA36080 | | KH36080 | | — | — | |
| 90 | 450 A | 900 A | KA36090 | | KH36090 | | — | — | |
| 100 | 500 A | 1000 A | KA36100 | | KH36100 | | — | — | |
| 110 | 550 A | 1100 A | KA36110 | | KH36110 | | KC34110 | | |
| 125 | 625 A | 1250 A | KA36125 | | KH36125 | | KC34125 | | |
| 150 | 750 A | 1500 A | KA36150 | | KH36150 | | KH34150 | | |
| 175 | 875 A | 1750 A | KA36175 | | KH36175 | | KC34175 | | |
| 200 | 1000 A | 2000 A | KA36200 | | KH36200 | | KC34200 | | |
| 225 | 1125 A | 2250 A | KA36225 | | KH36225 | | KC34225 | | |
| 250 | 1250 A | 2500 A | KA36250 | | KH36250 | | KC34250 | | |

**For pricing contact your local Schneider Electric distributor.**

KA/KH/KC 2P and 3P 4.5 in. (114 mm) Mounting Height

▲ UL magnetic trip setting tolerances are ±25% for low and ±20% for high from nominal value shown.
■ KC circuit breakers are 480 Vac
♦ 2P and 3P circuit breaker catalog numbers are completed by adding the required phase connection letters as a suffix. See Phase Option Table.

**Table 11.12: Interrupting Ratings**

| Voltage | KA, KAL | KH, KHL | KC, KCL | KI, KIL |
|---|---|---|---|---|
| 240 Vac | 42 kA | 65 kA | 100 kA | 200 kA |
| 480 Vac | 25 kA | 35 kA | 65 kA | 200 kA |
| 600 Vac | 22 kA | 25 kA | — | 100 kA |

**Table 11.13: Phase Options**

| Phase Option Letter | 2P | 3P |
|---|---|---|
| AB | KA26250AB | |
| AC | KA26250AC | |
| BC | KA26250BC | |
| ABC | | KA36250 |
| CBA | | KA36250CBA |

**For pricing contact your local Schneider Electric distributor.**

**Table 11.14: Walking Beam Mechanical Interlock Components**

| Circuit Breaker Prefix | Manually Operated | | | | | | Electrically Operated | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Operator Suffix | $ Price Adder | Walking Beam Ass'y. | | Mounting Pan | | Operator Suffix | $ Price Adder | Walking Beam Ass'y. | | Mounting Pan | |
| | | | Cat. No. | $ Price | Cat. No. | $ Price | | | Cat. No. | $ Price | Cat. No. | $ Price |
| KAL | WB | | KA4WB | | KAWBP4 | | WBMO | | KA9WB | | KAWBP9 | |

★ Walking Beam Mechanical Interlock requires 2 circuit breakers with WB suffix, 1 walking beam assembly and 1 mounting pan.
▼ Fully enclosed interlocked units are available in Type 1 and Type 3R enclosures, with two neutrals provided in each enclosure. The completely enclosed assembly is not UL Listed. Consult your nearest Schneider Electric local sales office for more information.

Accessories . . . . . Page 11-30
OptionalLugs . . . . . Page 11-25
Dimensions. . . . . Page 11-4
Enclosures: see Digest Section 7

## Automatic Molded Case Switches

Automatic molded case switches open instantaneously at a factory preset magnetic trip point, calibrated to protect only the molded case switch itself, when it is subjected to high fault currents. The trip point is nonadjustable and provides no overload or low level fault protection.

Molded case switches open when the handle is switched to the OFF position or in response to an auxiliary tripping device such as a shunt trip.

Automatic switches will accept the same lugs and accessories as equivalent thermal-magnetic circuit breakers.

Automatic molded case switches are UL Listed per UL 489 and are CSA® Certified.

**For pricing contact your local Schneider Electric distributor.**

**Table 11.15: Automatic Molded Case Switches, 600 Vac**

| Ampere Rating | 2P | | 3P | | Withstand Rating★♦ | | | | Trip Point (A)▲ | | Lug Kit Installed |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cat. No. | $ Price | Cat. No. | $ Price | 240 Vac | 480 Vac | 600 Vac | 250 Vdc | AC | DC | |
| 100 | FHL26000M■ | 779.00 | FHL36000M■ | 1001.00 | 65k | 25k | 18k | 10k | 1500 | 1725 | AL100FA |
| 150 | — | — | FHL3600015M■ | 1500.00 | 65k | 25k | 18k | — | 2500 | — | AL150FA |
| 400 | LHL26000M | 3596.00 | LHL36000M | 4329.00 | 65k | 35k | 25k | 10k | 8000 | 9600 | AL400LA |
| 250 | KHL26000M■ | Not Available | KHL36000M■ | — | 65k | 35k | 25k | 10k | 4500 | 5175 | AL250KA |
| 600 | MHL260006M | 5340.00 | MHL360006M | 6584.00 | 65k | 65k | 25k | 10k | 9000 | 9900 | AL900MA |
| 800 | MHL260008M | 5991.00 | MHL360008M | 7236.00 | 65k | 65k | 25k | 10k | 9000 | 9900 | AL900MA |
| 1000 | MHL26000M | 7469.00 | MHL36000M | 9287.00 | 65k | 65k | 25k | 10k | 9000 | 9900 | AL900MA |
| 1200 A | NCL2600012M | 10887.00 | NCL3600012M | 12570.00 | 125k | 100 kA | 65 kA | — | 16000 A | N/A | AL1200NE6 |
| 2000 | PHF260000M | 15837.00 | PHF360000M | 19559.00 | 125k | 100k | 65k | — | 16000 | N/A | N/A |
| 2500 | PCF260000M | 25185.00 | PCF360000M | 31130.00 | 125k | 100k | 65k | — | 16000 | N/A | N/A |

▲ UL magnetic trip tolerances are -20% / +30% from the nominal values shown.
■ FHL and KHL automatic switches will not accept cylinder lock attachments.
♦ The withstand rating is the fault current at rated voltage that the molded case switch will withstand without damage when protected by a circuit breaker with an equal continuous current rating.
★ The short circuit current rating is the fault current, at rated voltage, that the molded case switch will withstand without damage when protected by a circuit breaker with an equal continuous current rating.

## Thermal-Magnetic Circuit Breakers for Mining Applications

These circuit breakers with the properly selected trip range provide protection for trailing cables in compliance with the Federal Register for Mining Applications.

The thermal-magnetic circuit breakers listed below have thermally-responsive trip elements in addition to adjustable instantaneous trip mechanisms. They allow for independent selection of thermal and magnetic trip characteristics. See selection chart below. For Mag-Gard® instantaneous trip magnetic-only circuit breakers refer to Digest.

MHL Switch

PHF/PCF Switch

**Table 11.16: Circuit Breakers for Mining Applications**

| Adjustable Magnetic Trip Range▲ | | Cat. No. | $ Price |
|---|---|---|---|
| Low | High | | |
| 750 A | 1500 A | MAL3630026T | 7560.00 |
| | | MAL3635026T | 7560.00 |
| 1000 A | 2000 A | MAL3630030T | 7560.00 |
| | | MAL3635030T | 7560.00 |
| | | MAL3640030T | 7560.00 |
| | | MAL3645030T | 7560.00 |
| | | MAL3650030T | 7560.00 |
| 1250 A | 2500 A | MAL3635032T | 7560.00 |
| | | MAL3640032T | 7560.00 |
| | | MAL3645032T | 7560.00 |
| | | MAL3650032T | 7560.00 |
| | | MAL3660032T | 7560.00 |
| 1500 A | 3000 A | MAL3630033T | 7560.00 |
| | | MAL3635033T | 7560.00 |
| | | MAL3640033T | 7560.00 |
| | | MAL3645033T | 7560.00 |
| | | MAL3650033T | 7560.00 |
| | | MAL3660033T | 7560.00 |
| | | MAL3670033T | 9927.00 |
| | | MAL3680033T | 9927.00 |
| 2000 A | 4000 A | MAL3640036T | 7560.00 |
| | | MAL3645036T | 7560.00 |
| | | MAL3650036T | 7560.00 |
| | | MAL3660036T | 7560.00 |
| | | MAL3670036T | 9927.00 |
| | | MAL3680036T | 9927.00 |
| | | MAL3690036T | 12705.00 |
| | | MAL36100036T | 12705.00 |
| 2500 A | 5000 A | MAL3650040T | 7560.00 |
| | | MAL3660040T | 7560.00 |
| | | MAL3670040T | 9927.00 |
| | | MAL3680040T | 9927.00 |
| | | MAL3690040T | 12705.00 |
| | | MAL36100040T | 12705.00 |
| 3000 A | 6000 A | MAL3660042T | 7560.00 |
| | | MAL3670042T | 9927.00 |
| | | MAL3680042T | 9927.00 |
| | | MAL3690042T | 12705.00 |
| | | MAL36100042T | 12705.00 |
| 3500 A | 7000 A | MAL3680044T | 9927.00 |
| | | MAL3690044T | 12705.00 |
| | | MAL36100044T | 12705.00 |
| 4000 A | 8000 A | MAL3680045T | 9927.00 |
| | | MAL3690045T | 12705.00 |
| | | MAL36100045T | 12705.00 |
| 4500 A | 9000 A | MAL3690046T | 12705.00 |
| | | MAL36100046T | 12705.00 |

▲ Magnetic trip setting tolerances are -20% and +30% from nominal values shown.

Accessories . . . . . Page 11-30
OptionalLugs . . . . . Page 11-25
Dimensions . . . . . Page 11-4

## Mag-Gard® Motor Circuit Protector

Instantaneous trip magnetic only circuit breakers have a single adjustment which simultaneously sets the magnetic trip level of each individual pole. Mag-Gard circuit breakers comply with NEC® requirements for providing motor circuit protection when installed as part of a UL Listed combination controller having motor overload protection. Interrupting ratings are established for these UL Recognized Components only when they are used in combination with motor starters with properly sized overload relays and contactors.

Mag-Gard circuit breakers will accept the same lugs and accessories as equivalent thermal-magnetic circuit breakers. Mag-Gard circuit breakers are available with I-Line construction. H-construction Mag-Gard circuit breakers are also available.

**Table 11.17: Magnetic Only 3–1200 A 600 Vac, 50/60 Hz**

| Ampere Rating | | Adjustable▲ Trip Range | 3P only Cat. No. | | $ Price |
|---|---|---|---|---|---|
| KAL | 150 A | 750–1500 A | KAL3615026M | | |
| | 250 A | 400–800 A<br>500–1000 A<br>625–1250 A<br>750–1500 A<br>875–1750 A<br>1000–2000 A<br>1125–2250 A<br>1250–2500 A<br>1500–3000 A | KAL3625021M<br>KAL3625022M<br>KAL3625025M<br>KAL3625026M<br>KAL3625029M<br>KAL3625030M<br>KAL3625031M<br>KAL3625032M<br>KAL3625033M■ | | |
| FAL | 3 A<br>7 A<br>15 A<br>30 A<br>30 A<br>50 A<br>50 A<br>100 A<br>100 A<br>150 A | 8–28 A<br>18–70 A<br>50–180 A<br>50–180 A<br>100–350 A<br>75–260 A<br>150–580 A<br>150–580 A<br>300–1100 A<br>450–1100 A | FAL3600311M<br>FAL3600712M<br>FAL3601513M<br>FAL3603013M<br>FAL3603015M<br>FAL3605014M<br>FAL3605016M<br>FAL3610016M<br>FAL3610018M<br>FAL3615024M | | **906.00**<br>**906.00**<br>**906.00**<br>**906.00**<br>**906.00**<br>**906.00**<br>**1151.00**<br>**1151.00**<br>**1374.00**<br>**1374.00**<br>**1889.00** |
| MAL♦★ | 600<br>800<br>1000 | 625–1250 A<br>750–1500 A<br>1000–2000 A<br>1500–3000 A<br>2000–4000 A<br>2500–5000 A<br>3000–6000 A<br>3500–7000 A<br>4000–8000 A<br>4500–9000 A<br>5000–10000 A | MAL36600<br>MAL36800<br>MAL361000 | 25M<br>26M<br>30M<br>33M<br>36M<br>40M<br>42M<br>44M<br>45M<br>46M<br>47M | **7560.00**<br>**9927.00**<br>**12705.00** |
| NAL♦ | 1200 A | 4000–8000 A<br>4500–9000 A<br>5000–10000 A | NAL36120045M<br>NAL36120046M<br>NAL36120047M | | **19049.00**<br>**19049.00**<br>**19049.00** |

**For pricing contact your local Schneider Electric distributor.**

▲ UL magnetic trip setting tolerances are -20%/+30% from the nominal values shown.
■ Not UL Recognized.
♦ Each ampere rating can be ordered with any designated trip range for the frame by adding the proper suffix to the catalog numbers.
★ 250 Vdc ratings are available . No UL component recognition.

| Circuit Breaker | 250 Vdc Multiplier |
|---|---|
| MAL | High = 1.1<br>Low = 1.2 |

Adjustable instantaneous-trip circuit breakers are intended for use in combination with motor starters with overload relays for the protection of motor circuits from short circuits. Other specific applications include rectifiers and resistance welders. These circuit breakers contain a magnetic trip element in each pole with the trip point adjustable from the front. Interrupting ratings are determined by testing the instantaneous-trip circuit breakers in combination with a contactor and overload relay.

Select instantaneous-trip circuit breakers as follows:

1. Use selection table for motors, other than NEMA Design E, with locked-rotor indicating code letters per NEC® Table 430.7 (b) as follows:

| Horsepower | Motor Code Letters |
|---|---|
| 1/2 or less | A–L |
| 3/4 to 1-1/2 | A–K |
| 2 to 3 | A–J |
| 5 to 25 | A–H |
| 30 to 125 | A–G |
| 150 or more | A–F |

   For other motors order a special thermal-magnetic circuit breaker with magnetic trip settings for the specific motor— specify motor horsepower, voltage, frequency, full-load current and code letter or locked rotor current.

2. Determine motor hp rating from the motor nameplate.
3. Refer to the table at right and select an instantaneous-trip circuit breaker with an Ampere rating recommended for the hp and voltage involved.
4. Select an adjustable trip setting of at least 800%, not to exceed 1300%, of the motor full-load Amperes. (FLA) for other than Design E motors. For Design E motors, select an adjustable trip setting of at least 1100% not to exceed 1700% of FLA.
5. The NEC 1300% maximum setting may be inadequate for instantaneous-trip circuit breakers to withstand current surges typical of the magnetization current of autotransformer type reduced voltage starters, or open transition wye-delta starters during transfer from “start” to “run,” constant hp multi-speed motors, and motors labeled “high efficiency.” Select thermal-magnetic circuit breakers from Digest page 7-32 for those applications.
6. Part-winding motors, per NEC® 430.3, should have two circuit breakers selected from the above at not more than one half the allowable trip setting for the horsepower rating. The two circuit breakers should operate simultaneously as a disconnecting means per NEC 430.103.

Accessories . . . . . Page 11-30
OptionalLugs . . . . . Page 11-25
Dimensions. . . . . Page 11-4

**Table 11.18: Adjustable Instantaneous-Trip Circuit Breakers for Single Motor Circuit Protection**

| Hp Ratings of Induction Type Squirrel-Cage and Wound Rotor Motors 3Ø 60 Hz ac | | | | Full Load Amperes▲ | Mag-Gard Circuit Breaker Cat. No. | Magnetic Trip Settings ■ | |
|---|---|---|---|---|---|---|---|
| 200 V | 230 V | 460 V | 575 V | | | MIN | MAX |
| | | | 1/2 | 0.8 | FAL3600311M▲ | 1000% | 3500% |
| | | 1/2 | | 1 | FAL3600311M▲ | 800% | 2800% |
| | | | 3/4 | 1.1 | FAL3600311M | 700% | 2500% |
| | | 3/4 | 1 | 1.4 | FAL3600311M | 600% | 2000% |
| | | 1 | | 1.8 | FAL3600311M | 400% | 1600% |
| | 1/2 | | | 2 | FAL3600311M | 400% | 1400% |
| | | | 1-1/2 | 2.1 | FAL3600311M | 400% | 1300% |
| 1/2 | | | | 2.3 | FAL3600311M | 300% | 1200% |
| | | 1-1/2 | | 2.6 | FAL3600712M | 700% | 2700% |
| | | | 2 | 2.7 | FAL3600712M | 700% | 2600% |
| | 3/4 | | | 2.8 | FAL3600712M | 600% | 2500% |
| 3/4 | | | | 3.2 | FAL3600712M | 600% | 2200% |
| | | 2 | | 3.4 | FAL3600712M | 500% | 2100% |
| | 1 | | | 3.6 | FAL3600712M | 500% | 1900% |
| | | | 3 | 3.9 | FAL3600712M | 500% | 1800% |
| 1 | | | | 4.1 | FAL3600712M | 400% | 1700% |
| | | 3 | | 4.8 | FAL3600712M | 400% | 1500% |
| | 1-1/2 | | | 5.2 | FAL3600712M | 300% | 1300% |
| 1-1/2 | | | | 6 | FAL3600712M | 300% | 1200% |
| | | | 5 | 6.1 | FAL3600712M | 300% | 1100% |
| | 2 | | | 6.8 | FAL3601513M | 700% | 2600% |
| | | 5 | | 7.6 | FAL3601513M | 700% | 2400% |
| 2 | | | | 7.8 | FAL3601513M | 600% | 2300% |
| | | | 7-1/2 | 9 | FAL3601513M | 600% | 2000% |
| | 3 | | | 9.6 | FAL3601513M | 500% | 1900% |
| 3 | | 7-1/2 | 10 | 11 | FAL3601513M | 500% | 1600% |
| | | 10 | | 14 | FAL3603015M | 700% | 2500% |
| | 5 | | | 15.2 | FAL3603015M | 700% | 2300% |
| | | | 15 | 17 | FAL3603015M | 600% | 2100% |
| 5 | | | | 17.5 | FAL3603015M | 600% | 2000% |
| | | 15 | | 21 | FAL3603015M | 500% | 1700% |
| | 7-1/2 | | 20 | 22 | FAL3605016M | 700% | 2600% |
| 7-1/2 | | | | 25.3 | FAL3605016M | 600% | 2300% |
| | | 20 | 25 | 27 | FAL3605016M | 600% | 2100% |
| | 10 | | | 28 | FAL3605016M | 500% | 2100% |
| | | | 30 | 32 | FAL3605016M | 500% | 1800% |
| 10 | | | | 32.2 | FAL3605016M | 500% | 1800% |
| | | 25 | | 34 | FAL3605016M | 400% | 1700% |
| | | 30 | | 40 | FAL3605016M | 400% | 1500% |
| | | | 40 | 41 | FAL3610018M | 700% | 2700% |
| | 15 | | | 42 | FAL3610018M | 700% | 2600% |
| 15 | | | | 48.3 | FAL3610018M | 600% | 2300% |
| | | 40 | 50 | 52 | FAL3610018M | 600% | 2100% |
| | 20 | | | 54 | FAL3610018M | 600% | 2000% |
| 20 | | | 60 | 62 | FAL3610018M | 500% | 1800% |
| | | 50 | | 65 | FAL3610018M | 500% | 1700% |
| | 25 | | | 68 | FAL3610018M | 400% | 1600% |
| | | 60 | 75 | 77 | FAL3615024M | 600% | 1400% |
| 25 | | | | 78.2 | FAL3615024M | 600% | 1400% |
| | 30 | | | 80 | FAL3615024M | 600% | 1400% |
| 30 | | | | 92 | KAL3625025M | 700% | 1400% |
| | | 75 | | 96 | KAL3625025M | 700% | 1300% |
| | | | 100 | 99 | KAL3625025M | 600% | 1300% |
| | 40 | | | 104 | KAL3625026M | 700% | 1400% |
| 40 | | | | 120 | KAL3625029M | 700% | 1500% |
| | | 100 | | 124 | KAL3625029M | 700% | 1400% |
| | | | 125 | 125 | KAL3625029M | 700% | 1400% |
| | 50 | | | 130 | KAL3625029M | 700% | 1300% |
| | | | 150 | 144 | KAL3625030M | 700% | 1400% |
| 50 | | | | 150 | KAL3625030M | 700% | 1300% |
| | 60 | | | 154 | KAL3625031M | 700% | 1500% |
| | | 125 | | 156 | KAL3625031M | 700% | 1400% |
| 60 | | | | 177.1 | KAL3625032M | 700% | 1400% |
| | | 150 | | 180 | KAL3625032M | 700% | 1400% |
| | 75 | | 200 | 192 | KAL3625032M | 700% | 1300% |
| | | | 350 | 336 | MAL3660040M | 700% | 1500% |
| 125 | | | | 359 | MAL3660040M | 700% | 1400% |
| | 150 | | | 360 | MAL3660040M | 700% | 1400% |
| | | 300 | | 361 | MAL3660040M | 700% | 1400% |
| | | | 400 | 382 | MAL3660040M | 700% | 1300% |
| 150 | | 350 | | 414 | MAL3660042M | 700% | 1400% |
| | | | 500 | 472 | MAL3660044M | 700% | 1500% |
| | | 400 | | 477 | MAL3660044M | 700% | 1500% |
| | 200 | | | 480 | MAL3660044M | 700% | 1500% |
| 200 | | | | 552 | MAL3680045M | 700% | 1400% |
| | | 500 | | 590 | MAL3680045M | 700% | 1400% |
| | 250 | | | 602 | MAL3680045M | 700% | 1300% |

▲ Motor full-load currents are taken from NEC Table 430.150. Select wire and circuit breakers on basis of horsepower rather than nameplate full-load current per NEC 430.6 (A) for general motor applications. Do not use these values to select overload relay thermal units. See Digest Section 15 for selection of thermal units when actual full load current is not known. The voltages listed are rated motor voltages. Corresponding nominal system voltages are 200 to 208, 220 to 240, 440 to 480 and 550 to 600 volts.

■ Only MIN and MAX settings are shown, intermediate settings are available on all circuit breakers.

Accessories . . . . . Page 11-30
OptionalLugs . . . . . Page 11-25
Dimensions . . . . . Page 11-4

For use on vessels over 65 ft. (19,8) in length
Para utilizarse en embarcaciones mayores a 65 pies (19,8) de longitud
À utiliser sur des navires ayant plus de 65 pi (19,8) de long

## UL Marine Listed Circuit Breakers

A standard for molded case circuit breakers which are intended to be installed and used aboard a boat or vessel is included in Supplement SA to UL 489, "Standard for Molded Case Circuit Breakers and Circuit Breaker Enclosures" (also referred to as UL product category DKTY). This UL Standard was established in accordance with U.S. Coast Guard regulations, applicable American Boat and Yacht Council Inc. publications, and NFPA® 302 "Standard for Motor Craft (Pleasure and Commercial)". In order to be UL Listed for marine use, circuit breakers must not use aluminum or aluminum alloys for terminal connections and must be calibrated at an ambient temperature of 40 °C. Standard circuit breakers should not be specified or used in place of marine circuit breakers.

The following table lists those circuit breakers which are UL Marine Listed for use on vessels over 65 ft. (19.8 m) in length. (PowerPact H and J-frame circuit breakers can also be used in vessels under 65 ft. [19.8 m] in length.)

**Table 11.19: CIrcuit Breakers for Marine Applications**

| Cat. No. Prefix | Poles | Ampere Rating | Application | Cat. No. | $ Price |
|---|---|---|---|---|---|
| FC, FCL | 2, 3 | 15–100 A | For use only on vessels over 65 feet (19.8 m) in length. | Add the number "9" after the catalog number prefix of the standard circuit breaker catalog number. Example: Standard FAL36100 Marine FAL936100 | There is a 20% adder to the price of the e quivalent standard circuit breaker. All marine circuit breakers are supplied with copper lugs. |
| KA, KAL | 2, 3 | 70–250 A | | | |
| KH, KHL | 2, 3 | 70–250 A | | | |
| KC, KCL | 2, 3 | 110–250 A | | | |

## UL Listed 500 Vdc Circuit Breakers

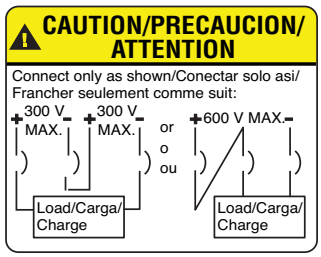

The UL Listed thermal-magnetic molded case circuit breakers shown below are specifically designed for use on ungrounded dc systems having a maximum short-circuit voltage of 500 Vdc or a maximum floating (unloaded) voltage of 600 Vdc. The circuit breakers are suitable for use only with UPS (uninterruptable power supplies) and ungrounded systems.

This two-level voltage rating allows these circuit breakers to be applied to battery sources having a short-circuit availability of 20,000 amperes for FH, KH, LH, and MH circuit breakers and 25,000 amperes for PAF circuit breakers at 500 Vdc.

FH, KH, LH and MH circuit breakers are provided with an adjustable magnetic trip that is readily accessible by means of a single adjustment on the face of the circuit breaker. PAF circuit breakers have a fixed magnetic trip range.

These circuit breakers are UL Listed for the interrupting ratings shown only if applied with three poles connected in series (series connection is external to circuit breaker). See diagram below.

***NOTE:*** *Due to external series connection, I-Line® circuit breakers are not available for this application.*




Source = 600 Vdc max. (floating)
500 Vdc max. (loaded)

**For pricing contact your local Schneider Electric distributor.**

**Table 11.20: DC Molded Case Circuit Breakers**

| Ampere Rating | Circuit Breaker Cat. No. | Adjustable Magnetic Trip Range DC Amperes▲ | | Interrupting Rating @ 500 Vdc | $ Price |
|---|---|---|---|---|---|
| | | Low | High | | |
| 125 A | KHL3612517DC | 350 | 700 | 20 kAIR | |
| 150 A | KHL3615017DC | 350 | 700 | | |
| 175 A | KHL3617521DC | 400 | 800 | | |
| 200 A | KHL3620022DC | 500 | 1000 | | |
| 225 A | KHL3622522DC | 500 | 1000 | | |
| 250 A | KHL3625025DC | 625 | 1250 | | |

▲ Magnetic trip tolerances are -20%/+30% from the nominal values shown.

Accessories . . . . . Page 11-30
Optional Lugs . . . . . Page 11-25
Dimensions. . . . . Pages 11-4
Enclosures: see Digest Section 7

2P QO

2P QOB


2P Q1

## Replacing Obsolescent Q1 and Q1B Circuit Breakers In NQO, NQOB and NQOD Panelboards

Q1 and Q1B circuit breakers have been replaced by QO and QOB circuit breakers.

Table 1 below is used for replacing 1P, 2P or 3P Q1 and Q1B circuit breakers with QO and QOB branch circuit breakers in NQO, NQOB and NQOD panelboards.

Table 2 below is used for replacing Q1 and Q1B main circuit breakers in NQO and NQOB panelboards.

**Table 11.21: Replacing Q1 and Q1B Circuit Breakers with QO and QOB Branch Circuit Breakers**

| Panelboard Type | Branch Circuit Breaker | | Mounting Assembly Required♦ | $ Price |
|---|---|---|---|---|
| | Obsolete | Available | | |
| NQOB | Q1B | QOB | SK5668 | **93.00** |
| NQOD | | QO | SKNQOD225■ | **75.00** |
| NQOD | | QOB | SKNQOD225■ | **75.00** |

**Table 11.22: Replacing Q1 and Q1B Main Circuit Breakers in NQO and NQOB Panelboards**

| Panelboard Type | Main Circuit Breaker | | Mounting Assembly Required♦ | $ Price | Retaining Kit Required | $ Price |
|---|---|---|---|---|---|---|
| | Obsolete | Available | | | | |
| NQOB | Q1B | QOB | SK5668 | **93.00** | — | — |

▲ Mounting assembly SK5669 is used to mount both Q1 and QO circuit breakers. Not required for replacement purposes.
■ 225 A maximum. For 400–600 ampere circuit breaker mounting assembly, see Class 1630 Service Bulletin.
♦ Discount Schedule PE1A.

## Branch Circuit Breakers and Mounting Assemblies for ML Panelboards

Replacement circuit breakers for ML panelboards are determined by the manufacture date of the panel and the panel depth. (See chart below)

**Table 11.23: Replacement Circuit Breakers in ML Panelboards**

| Manufacture Date | Panel Depth | | Availability of Replacement Circuit Breakers |
|---|---|---|---|
| | in. | mm | |
| 1948–1956 | 8.63 | 219 | No Replacements Available |
| 1958–1961 | 10.00 | 254 | No Replacements Available |
| 1962–1968 | 10.63 | 270 | Refer to Tables Below |

The tables below are used for replacing or adding circuit breakers to 10-5/8 inch deep ML panelboards manufactured from 1962–1968 and for switchboards manufactured from 1962–1968.

**Table 11.24: Replacement of Existing Circuit Breakers**

| Existing Circuit Breaker | Ampere Rating | Mounting Height | | Cat. No. Prefix | Replacement Circuit Breaker | Mounting Assembly Required | Poles Required | Single or Twin (Mounting Assembly) | Mounting Assembly $ Price |
|---|---|---|---|---|---|---|---|---|---|
| | | in. | mm | | | | | | |
| ML-1 | 15–100 A | 4.50 | 114 | 989 or 999 | FAL | SK4515★ | 3P | Twin | **1637.00** |
| ML-3 | 100–225 A | 6.00 | 152 | 997 | KAL | SK4516★ | 3P | Twin | **1784.00** |
| LA (W) | 225–400 | 8.25 | 210 | LA | LAL | SK4517 | 3P | Single | **2135.00** |
| MA (W) | 125–1000 A | 8.25 | 210 | MA | MAL | SK4578 | 3P | Single | **2783.00** |
| FAL | 15–100 A | 4.50 | 114 | FAL | FAL | No Mounting Assembly Required | 3P | Twin | N/A |
| KAL | 70–250 A | 4.50 | 114 | KAL | KAL | | 3P | Twin | |
| LAL | 125–400 A | 6.00 | 152 | LAL | LAL | | 3P | Single | |
| MAL | 300–1000 A | 9.00 | 229 | MAL | MAL | | 3P | Single | |
| MAL | 125–250 A | 9.00 | 229 | MAL | LAL | SK4517 | 3P | Single | **2135.00** |

**Table 11.25: Adding New Circuit Breakers**

| Cat. No. Prefix | Ampere Rating | Mounting Assembly Required | Mounting Height | | Poles Required | Single or Twin (Mounting Assembly) | Mounting Assembly $ Price |
|---|---|---|---|---|---|---|---|
| | | | in. | mm | | | |
| FAL | 15–100 A | SK4515 | 4.50 | 114 | 3P | Twin | **1637.00** |
| KAL | 70–250 A | SK4516 | 4.50 | 114 | 3P | Twin | **1784.00** |
| LAL | 125–400 A | SK4517 | 6.00 | 152 | 3P | Single | **2135.00** |
| MAL | 300–1000 A | SK4578 | 9.00 | 229 | 3P | Single | **2783.00** |

★ Mounting assemblies for twin-mounted circuit breakers will only accept the same family and configuration of circuit breakers, i.e., FAL and FAL.

# Rating Plugs For Obsolete Electronic Trip Circuit Breakers

Class **666, 671, 677**



ME Micrologic Circuit Breakers

ME Circuit Breakers Manufactured before Micrologic

PE Micrologic Circuit Breakers

PE Circuit Breakers Manufactured before Micrologic

SE Micrologic Circuit Breakers

Replacement rating plugs for circuit breakers manufactured before Micrologic®.

**Table 11.26: Replacement Rating Plugs for Pre-Micrologic Circuit Breakers**

| Circuit Breakers Manufactured Before Micrologic | Frame Size | Ampere Rating | Cat. No.▲ | $ Price |
|---|---|---|---|---|
| ME | 225 A | 100 A | ME2100 | 2997.00 |
| | | 110 A | ME2110 | |
| | | 125 A | ME2125 | |
| | | 150 A | ME2150 | |
| | | 175 A | ME2175 | |
| | 400 A | 250 A | ME4250 | 2997.00 |
| | | 350 A | ME4350 | |
| | 800 A | 450 A | ME8450 | 2997.00 |
| | | 500 A | ME8500 | |
| | | 700 A | ME8700 | |
| PE-G/PEC-G Built before June 1, 1982 and all PE/PEC | 1200 A | 600 A | PE120600 | 2997.00 |
| | | 700 A | PE120700 | |
| | | 800 A | PE120800 | |
| | | 900 A | PE120900 | |
| | | 1200 A | PE121200 | |
| | 1600 A | 1000 A | PE161000 | 2997.00 |
| | | 1200 A | PE161200 | |
| | | 1400 A | PE161400 | |
| | 2000 A | 1000 A | PE161000 | 2997.00 |
| | | 1200 A | PE161200 | |
| | | 1400 A | PE161400 | |
| | | 1800 A | PE201800 | |
| | | 2000 A | PE202000 | |
| PE-G/PEC-G Built after June 1, 1982 | 1200 A | 600 A | PEG120600 | 2997.00 |
| | | 700 A | PEG120700 | |
| | | 800 A | PEG120800 | |
| | | 1000 A | PEG121000 | |
| | | 1200 A | PEG121200 | |
| | 1600 A | 1000 A | PEG161000 | 2997.00 |
| | | 1200 A | PEG161200 | |
| | | 1400 A | PEG161400 | |
| | 2000 A | 1000 A | PEG161000 | 2997.00 |
| | | 1200 A | PEG161200 | |
| | | 1400 A | PEG161400 | |
| | | 1800 A | PEG201800 | |
| | | 2000 A | PEG202000 | |

▲ Contact your local sales office for availability.

**Table 11.27: Interchangeable Rating Plug Kits for ME, NE, PE and SE Circuit Breakers with Full-Function Micrologic Trip System Manufactured Between December 1989 and September 1992**

| Old Cat. No. | New Cat. No.■ | Multiplier Value | $ Price |
|---|---|---|---|
| RP040 | ARP040 | 0.400 | 297.00 |
| RP050 | ARP050 | 0.500 | |
| RP056 | ARP056 | 0.563 | 297.00 |
| RP058 | ARP058 | 0.583 | |
| RP060 | ARP060 | 0.600 | |
| RP063 | ARP063 | 0.625 | 297.00 |
| RP067 | ARP067 | 0.667 | |
| RP070 | ARP070 | 0.700 | |
| RP075 | ARP075 | 0.750 | 297.00 |
| RP080 | ARP080 | 0.800 | |
| RP083 | ARP083 | 0.833 | |
| RP088 | ARP088 | 0.875 | 297.00 |
| RP090 | ARP090 | 0.900 | |
| RP100 | ARP100 | 1.000 | |

■ Discount Schedule DE2

**Table 11.28: Replacement Rating Plugs for Micrologic Circuit Breakers**

| Circuit Breaker | Frame Size | Ampere Rating | Cat. No.♦ | $ Price |
|---|---|---|---|---|
| Micrologic ME Series 3 | 225 A | 100 A | ME2100RP | 1332.00 |
| | | 110 A | ME2110RP | |
| | | 150 A | ME2150RP | |
| | | 175 A | ME2175RP | |
| | 400 A | 250 A | ME4250RP | 1332.00 |
| | 800 A | 450 A | ME8450RP | 1332.00 |
| | | 500 A | ME8500RP | |
| | | 700 A | ME8700RP | |
| Micrologic NE Series 1 | 1200 A | 600 A | NE120600RP | 1332.00 |
| | | 630 A | NE120630RP | |
| | | 700 A | NE120700RP | |
| | | 800 A | NE120800RP | |
| | | 900 A | NE120900RP | |
| | | 1000 A | NE121000RP | |
| Micrologic PE Series 4 | 1200 A | 600 A | PE120600RP | 1332.00 |
| | | 700 A | PE120700RP | |
| | | 1000 A | PE121000RP | |
| | | 1200 A | PE121200RP | |
| | 1600 A | 1000 A | PE161000RP | 1332.00 |
| | | 1200 A | PE161200RP | |
| | 2000 A | 1000 A | PE201000RP | 1332.00 |
| | | 1200 A | PE201200RP | |
| | | 1400 A | PE201400RP | |
| | | 1600 A | PE201600RP | |
| | | 1800 A | PE201800RP | |
| Micrologic SE Series 2 | 200 A | 100 A | S9020100RP | 1332.00 |
| | | 125 A | S9020125RP | |
| | | 150 A | S9020150RP | |
| | | 175 A | S9020175RP | |
| | | 200 A | S9020200RP | |
| | 400 A | 200 A | S9040200RP | 1332.00 |
| | | 250 A | S9040250RP | |
| | | 300A | S9040300RP | |
| | | 350 A | S9040350RP | |
| | 800 A | 450 A | S9080450RP | 1332.00 |
| | | 500 A | S9080500RP | |
| | | 700 A | S9080700RP | |
| | 1200 A | 800 A | S9120800RP | 1332.00 |
| | | 1000 A | S9121000RP | |
| | | 1200 A | S9121200RP | |
| | 1600 A | 1600 A | S9161600RP | 1332.00 |
| | 2000 A | 2000 A | S9202000RP | |

♦ Contact your nearest local sales office for availability.

**EH/EHB circuit breakers are in obsolescence. Do not use on new applications. Limited service stock is available for replacement or fill purposes. Contact your local Sales Office for product availability.**

### Table 11.29: E Frame—100 A, Thermal Magnetic (480Y/277 Vac)

| Amp Rating | 1P 277 Vac—14 kA 120 Vac—65 kA | | | | 2P 480Y/277 Vac—14 kA 120/240 Vac—65 kA | | 3P 480Y/277 Vac—14 kA 240 Vac—65 kA | | Wire Size (AWG) | | Wire Temp. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| |  Requires 1 Space | |  Requires 1 Space | |  Requires 2 Spaces | |  Requires 3 Spaces | | | | |
| | Plug-On | | Bolt-On | | Bolt-On | | Bolt-On | | | | |
| | Cat. No. | $ Price | Cat. No. | $ Price | Cat. No. | $ Price | Cat. No. | $ Price | Al | Cu | |
| **EH/EHB Circuit Breakers** | | | | | | | | | | | |
| 15 A | Not Available | Not Available | EHB14015▲ | **207.00** | EHB24015 | **527.00** | EHB34015 | **921.00** | — | (2) 14–10 | 60/75 °C |
| | — | — | — | — | — | — | EHB340151042 | **1676.00** | — | (2) 14–10 | 60/75 °C |
| | — | — | EHB140151082 | **962.00** | — | — | EHB340151082 | **1676.00** | — | (2) 14–10 | 60/75 °C |
| 20 A | Not Available | Not Available | EHB14020▲ | **207.00** | Not Available | Not Available | EHB34020 | **921.00** | — | (2) 14–10 | 60/75 °C |
| | — | — | — | — | — | — | EHB340201042 | **1676.00** | — | (2) 14–10 | 60/75 °C |
| | — | — | Not Available | Not Available | EHB240201082 | **1281.00** | EHB340201082 | **1676.00** | — | (2) 14–10 | 60/75 °C |
| | — | — | — | — | Not Available | Not Available | EHB340201212 | **1233.00** | — | (2) 14–10 | 60/75 °C |
| 25 A | Not Available | Not Available | Not Available | Not Available | Not Available | Not Available | Not Available | Not Available | 12–8 | 14–8 | 60/75 °C |
| 30 A | Not Available | Not Available | Not Available | Not Available | EHB24030 | **527.00** | EHB34030 | **921.00** | 12–8 | 14–8 | 60/75 °C |
| | — | — | EHB140301082 | **962.00** | EHB240301042 | **1281.00** | EHB340301082 | **1676.00** | 12–8 | 14–8 | 60/75 °C |
| | — | — | — | — | EHB240301082 | **1218.00** | EHB340301212 | **1233.00** | 12–8 | 14–8 | 60/75 °C |
| | — | — | — | — | — | — | EHB3403035 | **1106.00** | 12–8 | 14–8 | 60/75 °C |
| 35 A | Not Available | Not Available | Not Available | Not Available | EHB24035 | **527.00** | EHB34035 | **921.00** | 12–2 | 14–2 | 75 °C |
| 40 A | Not Available | Not Available | Not Available | Not Available | Not Available | Not Available | Not Available | Not Available | 12–2 | 14–2 | 75 °C |
| | — | — | — | — | — | — | Not Available | Not Available | 12–2 | 14–2 | 75 °C |
| | — | — | — | — | — | — | EHB340401212 | **1233.00** | 12–2 | 14–2 | 75 °C |
| 45 A | Not Available | Not Available | EHB14045 | **207.00** | EHB24045 | **527.00** | Not Available | Not Available | 12–2 | 14–2 | 75 °C |
| 50 A | Not Available | Not Available | Not Available | Not Available | EHB24050 | **527.00** | Not Available | Not Available | 12–2 | 14–2 | 75 °C |
| | — | — | — | — | — | — | EHB340501042 | **1676.00** | 12–2 | 14–2 | 75 °C |
| | — | — | — | — | — | — | EHB340501082 | **1676.00** | 12–2 | 14–2 | 75 °C |
| | — | — | — | — | — | — | Not Available | Not Available | 12–2 | 14–2 | 75 °C |
| 60 A | Not Available | Not Available | Not Available | Not Available | EHB24060 | **527.00** | Not Available | Not Available | 12–2 | 14–2 | 75 °C |
| | — | — | — | — | — | — | EHB340601042 | **1592.00** | 12–2 | 14–2 | 75 °C |
| | — | — | — | — | — | — | Not Available | Not Available | 12–2 | 14–2 | 75 °C |
| 70 A | — | — | — | — | Not Available | Not Available | Not Available | Not Available | 4–2/0 | 4–2/0 | 75 °C |
| 80 A | — | — | — | — | Not Available | Not Available | Not Available | Not Available | 4–2/0 | 4–2/0 | 75 °C |
| 90 A | — | — | — | — | Not Available | Not Available | Not Available | Not Available | 4–2/0 | 4–2/0 | 75 °C |
| 100 A | — | — | — | — | EHB24100■ | **1040.00** | Not Available | Not Available | 4–2/0 | 4–2/0 | 75 °C |
| 100 A | — | — | — | — | EHB241001082 | **1794.00** | Not Available | Not Available | 4–2/0 | 4–2/0 | 75 °C |
| **EH/EHB HID Circuit Breakers — For Use on High Intensity Discharge Lighting Systems** | | | | | | | | | | | |
| 15 A | Not Available | Not Available | Not Available | Not Available | EHB24015HID | **561.00** | Not Available | Not Available | — | (2) 14–10 | 60/75 °C |
| 20 A | Not Available | Not Available | EHB14020HID▲ | **234.00** | Not Available | Not Available | EHB34020HID | **972.00** | — | (2) 14–10 | 60/75 °C |
| 25 A | Not Available | Not Available | Not Available | Not Available | Not Available | Not Available | Not Available | Not Available | 12–8 | 14–8 | 60/75 °C |
| 30 A | Not Available | Not Available | Not Available | Not Available | Not Available | Not Available | EHB34030HID | **972.00** | 12–8 | 14–8 | 60/75 °C |

▲ UL Listed as SWD (switching duty) rated.
■ For use only in Series 3 or Series E1 panelboards. Contact your nearest local sales office for use in earlier series panelboards

**FJ 3-pole circuit breakers are in obsolescence. Do not use on new applications. Limited service stock is available for replacement or fill purposes. Contact your local Sales Office for product availability. FD and FG circuit breakers are obsolete and are no longer available.**

FJ 3P
3 in. (76 mm) Mounting Height

### Table 11.30: FJ Powerpact®—100 A, Thermal-Magnetic (480Y/277 Vac)

| Cont. Current Rating @ 40°C | AC Magnetic Trip Settings | | J Interrupting | | Terminal Wire Range |
|---|---|---|---|---|---|
| | Hold | Trip | Cat. No. | $ Price | |
| **3P, 480Y/277 Vac** | | | | | |
| 20 A | 250 A | 500 A | FJA34020 | **2318.00** | AL30FD 12–6 AWG Al or 14–6 AWG Cu |
| 25 A | 250 A | 500 A | FJA34025 | | |
| 30 A | 250 A | 500 A | FJA34030 | | |
| 35 A | 550 A | 1100 A | FJA34035 | **2318.00** | AL100FD 12–2/0 AWG Al or 14–2/0 AWG Cu |
| 40 A | 550 A | 1100 A | FJA34040 | | |
| 45 A | 550 A | 1100 A | FJA34045 | | |
| 60 A | 550 A | 1100 A | FJA34060 | | |
| 70 A | 550 A | 1100 A | FJA34070 | **2852.00** | |
| 80 A | 550 A | 1800 A | FJA34080 | | |
| 90 A | 550 A | 1800 A | FJA34090 | | |
| 100 A | 550 A | 1800 A | FJA34100 | | |

### Table 11.31: Mechanical Lug Kit Information

| Circuit Breaker Application | | | | Number of Wires Per Lug and Wire Range▲ | Kit Cat. No. | Lugs Per Kit | $ Price Per Kit★ |
|---|---|---|---|---|---|---|---|
| Standard | Ampere Rating | Optional | Ampere Rating | | | | |
| **Al Lugs for Use with Al or Cu Wire** | | | | | | | |
| FJ | 15–30 A | — | — | (1) 12–6 AWG Al or (1) 14–6 AWG Cu | AL30FD | 3 | **41.30** |
| FJ | 35–125 A | FJ | 15–30 A | (1) 12–2/0 AWG Al or (1) 14–2/0 AWG Cu | AL100FD | 3 | **41.30** |
| **Cu Lugs for Use with Cu Wire Only** | | | | | | | |
| — | — | FJ | 15–125 A | (1) 14–1/0 AWG Cu | CU100FD | 3 | **41.30** |

### Table 11.32: UL Listed Field-installable Compression Lug Kits

| Circuit Breaker Type | System Range▲ | Dimension A (in.) | Max. Lugs Per Terminal | Kit Cat. No. | Lug Qty. Per Kit | $ Price Per Kit★ |
|---|---|---|---|---|---|---|
| **Aluminum Compression Lug Kits** | | | | | | |
| FJ | 8–1/0 AWG | 1.375 | 1 | VC100FD | 3 | **102.00** |
| **Copper Compression Lug Kits** | | | | | | |
| FJ | 6–1/0 AWG | 1.375 | 1 | CVC100FD | 3 | **102.00** |

### Table 11.33: Electrical Accessory Package for FJ Circuit Breakers
### Add suffix to catalog number (ie. FJA34015 becomes FJA34015AABASA)

| Accessory Package■ | Suffix | $ Price |
|---|---|---|
| **Auxiliary Switch/Alarm Switch/Shunt Trip Package** | AABASA | **1067.00** |

### Table 11.34: Terminal Nut Insert Kit

| Circuit Breaker Type | Qty. per Kit | Cat. No. | $ Price★ |
|---|---|---|---|
| FJ | 3 | TIKFD | **17.40** |

### Table 11.35: Handle Accessories

| Circuit Breaker Type | No. of Poles | Cat. No. | $ Price★ |
|---|---|---|---|
| **Handle Padlock Attachment (locks ON or OFF)** | | | |
| FJ | 1, 2 or 3 | HPAFD | **25.50** |

| Phase Option No. | Phase Connection | 3P |
|---|---|---|
| Standard ♦ | ABC | FJA34020 |
| 6 | CBA | FJA340206 |

▲ Unless otherwise specified, wire sizes apply to both aluminum and copper conductors.
■ Accessory package takes an additional pole space.
♦ The absence of a phase option number after a 3-pole catalog number will result in an ABC phase connection.
★ Discount Schedule DE2.

### Table 11.36: Interrupting Ratings (kA)

| Voltage | J |
|---|---|
| 480Y/277 | 65 |

**QE circuit breakers are in obsolescence. Do not use on new applications. Limited service stock is available for replacement or fill purposes. Contact your local Sales Office for product availability.**

**Table 11.37: Branch Circuit Breakers**

| Branch Device | | | |
|---|---|---|---|
| System Type | Branch Circuit Breaker | | |
| | Ampere Rating | Cat. No. | $ Price |
| **1Ø IN – 1Ø OUT or 3Ø IN – 1Ø3W OUT** | | | |
| 200 A Max. | 70 A | QE270VH | **438.00** |
| | 80 A | QE280VH | **489.00** |
| | 90 A | QE290VH | **489.00** |
| | 100 A | QE2100VH | **489.00** |
| | 125 A | QE2125VH | Not Available |
| | 150 A | QE2150VH | **1158.00** |
| | 175 A | QE2175VH | Not Available |
| | 200 A | QE2200VH | Not Available |
| **3Ø IN 3Ø OUT** | | | |
| 200 A Max. | 70 A | QE370VH | **489.00** |
| | 80 A | QE380VH | Not Available |
| | 90 A | QE390VH | Not Available |
| | 100 A | QE3100VH | Not Available |
| | 125 A | QE3125VH | Not Available |
| | 150 A | QE3150VH | Not Available |
| | 175 A | QE3175VH | Not Available |
| | 200 A | QE3200VH | Not Available |

## Rear-Connected Studs

Rear- Connected Studs

Rear-connected studs are designed to allow rear termination in applications such as control panels where wire gutter space may be limited. The studs may be bolted directly to the bus or lugs may be attached to the studs.

***NOTE:****Long and short studs must be alternated on adjacent poles to assure proper electrical clearance*

**Table 11.38: Rear-Connected Studs—Not UL Listed**

| Circuit Breaker Cat. No. Prefix | Ampere Ratings | Stud Cat. No. | Dimensions | | | |
|---|---|---|---|---|---|---|
| | | | Overall Length | To Back of Circuit Breaker | Diameter | T |
| KAL, KHL | 70–250 A | KAS21 | 2-1/4 in. | 2-1/8 in. | 1/2 in. | |
| KAL, KHL | 70–250 A | KAS45 | 5-1/8 in. | 4-5/8 in. | 1/2 in. | |
| MAL, MHL | 300–1000 A | MAS54 | 6-3/16 in. | 5-1/2 in. | 1-1/4 in. | |
| MAL, MHL | 300–1000 A | MAS114 | 12-3/16 in. | 11-1/2 in. | 1-1/4 in. | |

Note:Use alternate size studs on adjacent poles to obtain proper electrical clearance.

**Powerpact KD and KG circuit breakers are in obsolescence. Do not use on new applications. Limited service stock is available for replacement or fill purposes. Contact your local Sales Office for product availability.**

KDL and KGL
Circuit Breaker
3P
100–250 A

### Table 11.39: Powerpact® K Frame—250 A, Thermal-Magnetic (240 Vac)

| Continuous Current Rating @ 40° C | AC Magnetic Trip Settings | | D Interrupting Level | | G Interrupting Level | | Terminal Wire Range |
|---|---|---|---|---|---|---|---|
| | Hold | Trip | Cat. No. | $ Price | Cat. No. | $ Price | |
| **2P, 240 Vac** | | | | | | | |
| 100 A | 1100 A | 1700 A | KDL22100 | Not Available | KGL22100 | Not Available | AL250KD 6 AWG–350 kcmil Al or Cu |
| 110 A | 1100 A | 1700 A | KDL22110 | Not Available | KGL22110 | Not Available | |
| 125 A | 1100 A | 1700 A | KDL22125 | Not Available | KGL22125 | Not Available | |
| 150 A | 1100 A | 1700 A | KDL22150 | Not Available | KGL22150 | Not Available | |
| 175 A | 1400 A | 2400 A | KDL22175 | Not Available | KGL22175 | Not Available | |
| 200 A | 1400 A | 2400 A | KDL22200 | Not Available | KGL22200 | Not Available | |
| 225 A | 1400 A | 2400 A | KDL22225 | Not Available | KGL22225 | Not Available | |
| 250 A | 1400 A | 2400 A | KDL22250 | Not Available | KGL22250 | Not Available | |
| **3P, 240 Vac** | | | | | | | |
| 100 A | 1100 A | 1700 A | KDL32100 | **2123.00** | KGL32100 | Not Available | AL250KD 6 AWG–350 kcmil Al or Cu |
| 110 A | 1100 A | 1700 A | KDL32110 | Not Available | KGL32110 | Not Available | |
| 125 A | 1100 A | 1700 A | KDL32125 | **2123.00** | KGL32125 | Not Available | |
| 150 A | 1100 A | 1700 A | KDL32150 | **2123.00** | KGL32150 | Not Available | |
| 175 A | 1400 A | 2400 A | KDL32175 | Not Available | KGL32175 | Not Available | |
| 200 A | 1400 A | 2400 A | KDL32200 | Not Available | KGL32200 | Not Available | |
| 225 A | 1400 A | 2400 A | KDL32225 | **2123.00** | KGL32225 | Not Available | |
| 250 A | 1400 A | 2400 A | KDL32250 | Not Available | KGL32250 | Not Available | |

### Table 11.40: Mechanical Lug Kit Information

| Kit Catalog Number | Circuit Breaker Application | | | | Number of Wires Per Lug and Wire Range | Torque | Lugs Per Kit | $ Price |
|---|---|---|---|---|---|---|---|---|
| | Standard | Ampere Rating | Optional | Ampere Rating | | | | |
| **Al Lugs for Use with Al or Cu Wire** | | | | | | | | |
| AL250KD | KDL, KGL | 100–250 A | — | — | (1) 6 AWG–350 kcmil | 300 lb-in (34 N•m) | 3 | Not Available |
| **Cu Lugs for Use with Cu Wire Only** | | | | | | | | |
| CU250KD | — | — | KDL, KGL | 100–250 | (1) 6 AWG–350 kcmil | 300 lb-in (34 N•m) | 3 | **134.00** |

### Table 11.41: Handle Accessories

| Circuit Breaker Type | Cat. No. | $ Price |
|---|---|---|
| **Handle Padlock Attachment (locks ON or OFF)** | | |
| KDL, KGL | HPAKD | Not Available |

### Table 11.42: Interrupting Ratings (kA)

| | KDL |
|---|---|
| 240 V | 25 |
| 480 V | — |
| 600 V | — |

**NHL circuit breakers and related accessory products are in obsolescence. Do not use on new applications. Limited service stock is available for replacement or fill purposes. Contact your local Sales Office for product availability.**

NHL Circuit Breaker
800–1200 A

### Table 11.43: NHL Circuit Breaker (1200 A, 480 Vac)

| Ampere Rating | AC Magnetic Trip Settings Amperes | | 2P | | 3P | | Standard Lug Kit Wire Range |
|---|---|---|---|---|---|---|---|
| | Low | High | Cat. No. | $ Price | Cat. No. | $ Price | |
| 800 A | 4000 A | 8000 A | — | — | NHF368001021 | **20795.00** | AL1200NA (4) 350–750-kcmil |
| 1000 A | 5000 A | 10000 A | — | — | NHF3610001021 | **24486.00** | |
| 1200 A | 5000 A | 10000 A | — | — | NHF361200 | **27903.00** | |
| 1200 A | 5000 A | 10000 A | — | — | NHF3612001021 | **28731.00** | |
| 800 A | 4000 A | 8000 A | — | — | NHL36800 | **19965.00** | |
| 1000 A | 5000 A | 10000 A | NHL261000 | **21123.00** | NHL361000 | **23658.00** | |
| 1000 A | 5000 A | 10000 A | — | — | NHL3610001021 | **24486.00** | |
| 1200 A | 5000 A | 10000 A | NHL261200 | **25173.00** | NHL361200 | **27903.00** | |
| 1200 A | 5000 A | 10000 A | — | — | NHL3612001021 | **28731.00** | |

### Table 11.44: Mechanical Lug Kit

| Kit Cat. No. | Circuit Breaker | Ampere Rating | Number of Wires Per Lug and Wire Range▲ | Lugs Per Kit | $ Price |
|---|---|---|---|---|---|
| AL1200NA | NH | 600–1200 | (4) 350–750 kcmil | 1 | **290.00** |

### Table 11.45: Compression Lug Kit

| Kit Cat. No. | Circuit Breaker | Number of Lugs Per Terminal and Wire Range▲ | Lugs Per Kit | $ Price |
|---|---|---|---|---|
| VC1200NA5 | NH | (1) 2/0 AWG–500 kcmil | 1 | **713.00** |
| VC1200NA7 | NH | (1) 500–750 kcmil Al or 500 kcmil Cu | 1 | **776.00** |

▲ Unless otherwise specified, wire sizes apply to both aluminum and copper conductors.

### Table 11.46: Mechanical Accessories

| Cat. No. | Circuit Breaker | Description | No. of Poles | $ Price |
|---|---|---|---|---|
| HPANA■ | NH | Handle Padlock Attachment | 2, 3 | **36.50** |
| NAHEX | NH | Handle Extension | 2, 3 | **228.00** |

■ Use with NAHEX handle extension.

### Table 11.47: Control Wire Terminations

| Cat. No. | Standard Package Quantity | $ Price per Lug |
|---|---|---|
| AL1200NAT | 1 | **276 .00** |

**SE circuit breakers and related accessories are in obsolescence. Do not use on new applications. Limited service stock is available for replacement or fill purposes. Contact your local Sales Office for product availability.**

**Table 11.48: SE Circuit Breaker**

| Sensor Size | Ampere Rating | Rating Plug Installed | Fixed-Mounted Circuit Breaker | | | Drawout Circuit Breaker | | |
|---|---|---|---|---|---|---|---|---|
| | | | Cat. No.▲■ | | $ Price | Cat. No.▲■ | | $ Price |
| | | | Long-Time Short-Time Instantaneous | Long-Time Short-Time Instantaneous w/Ground Fault♦ | | Long-Time Short-Time Instantaneous | Long-Time Short-Time Instantaneous w/Ground Fault♦ | |
| **Standard Interrupting Rating** | | | | | | | | |
| 1200 A | 1200 A | ARP100 | SEF361200LSMR | — | **46493.00** | — | — | — |
| 3000 A | 3000 A | | SEF363000LS | — | **88845.00** | SED363000LS | — | **105443.00** |
| | | | — | SEF363000LSG | **94695.00** | — | SED363000LSG | **111294.00** |
| | | | SEF363000LSMR | — | **95942.00** | SED363000LSMR | — | **112539.00** |
| | | | — | SEF363000LSGMR | **101792.00** | — | SED363000LSGMR | **118391.00** |
| 4000 A | 4000 A | | SEF364000LSZ | — | **141783.00** | — | — | — |
| | | | SEF364000LSMRZ | — | **148880.00** | | | |
| | | | — | SEF364000LSGMRZ | **154731.00** | — | SED364000LSGMR | **181920.00** |
| | | | — | SEF364000LSAMRZ | **154731.00** | — | — | — |
| **High Interrupting Rating** | | | | | | | | |
| 1200 A | 1200 A | ARP100 | — | SEHF361200LSGMR | **59051.00** | — | — | — |
| 3000 A | 3000 A | | SEHF363000LSMR | — | **112541.00** | — | — | — |

▲ "MR" (Motor Ready) indicates 120 Vac spring charging motor only already installed. Does not include shunt close or shunt trip option.
■ "Z" indicates circuit breaker supplied without terminal connector kit.
♦ Substitute (A) in place of (G) for ground-fault alarm (pick-up indication only).

**SE circuit breakers and related accessories are in obsolescence. Do not use on new applications. Limited service stock is available for replacement or fill purposes. Contact your nearest local sales office for product availability.**

### Table 11.49: Field-Replaceable Electronic Trip Unit Kits (Replaceable by Field Services Only)▲

| Ampere Rating | Trip Unit Function Cat. No. | | | $ Price |
|---|---|---|---|---|
| | Long-Time Short-Time Instantaneous | Long-Time Short-Time Instantaneous with Ground Fault | Long-Time Short-Time Instantaneous with Ground Fault Alarm | |
| 400 A | — | SETU400LSGB | — | **9147.00** |
| 800 A | SETU800LSB | — | — | **7163.00** |
| 800 A | — | SETU800LSGB | — | **9147.00** |
| 1200 A | SETU1200LSB | — | — | **7163.00** |
| 1200 A | — | SETU1200LSGB | — | **9147.00** |
| 1600 A | — | SETU1600LSGB | SETU1600LSAB | **9147.00** |
| 2500 A | — | SETU2500LSGB | — | **9147.00** |
| 3000 A | SETU3000LSB | — | — | **7163.00** |
| 3000 A | — | SETU3000LSGB | SETU3000LSAB | **9147.00** |
| 4000 A | SETU4000LSB | — | — | **7163.00** |
| 4000 A | — | SETU4000LSGB | — | **9147.00** |

▲ Used only with SE circuit breaker Series 3B.

### Table 11.50: SE Drawout Cell Keying Kit

| Cell Keying Kit Cat. No. | Cell Key Positions Table | | | | | | $ Price |
|---|---|---|---|---|---|---|---|
| | Frame Size | Drawout Carriage Cell Key Position | | | | | |
| | | A | B | C | D | E | |
| SECK0400 | 400 A | | X | | | X | Not Available |
| SECK0800 | 800 A | | | X | X | | Not Available |
| SECK1200 | 1200 A | X | X | | | | **212.00** |
| SECK1600 | 1600 A | | | | X | X | **212.00** |
| SECK2000 | 2000 A | X | | | X | | **212.00** |
| SECK2500 | 2500 A | X | | | | X | **212.00** |
| SECK3000 | 3000 A | | X | X | | | **212.00** |

### Table 11.51: Field-Replaceable Accessory Kits

| Description | | Kit Cat. No. | $ Price |
|---|---|---|---|
| Spring Charging Motor Replacement Kit | 120 Vac | S3MOT120AC2 | **7097.00** |
| | 24 Vdc | — | — |
| | 48 Vdc | — | — |
| | 125 Vdc | S3MOT125DC2 | **8094.00** |
| Shunt Close Replacement Kit | 120 Vac | S3SC120AC2 | **1266.00** |
| | 24 Vdc | S3SC024DC2 | **1266.00** |
| | 48 Vdc | S3SC048DC2 | **1266.00** |
| | 125 Vdc | S3SC125DC2 | **1266.00** |
| Shunt Trip■ Replacement Kit | 120 Vac | S3ST120AC2 | **1266.00** |
| | 24 Vdc | S3ST024DC2 | **1266.00** |
| | 48 Vdc | S3ST048DC2 | **1266.00** |
| | 125 Vdc | S3ST125DC2 | **1266.00** |
| Undervoltage Trip■ Replacement Kit | 120 Vac | — | — |
| Auxiliary Switch■ Replacement Kit | 4 ac/dc | S34DCB2 | **1364.00** |
| | 4 ac/dc add on | S34DCT2 | **1364.00** |
| | 4 ac only | S34AC2 | **809.00** |
| | 8 ac only | S38AC2 | **1611.00** |
| Alarm Switch■ Replacement Kit | 2 ac only | S3AS2 | **809.00** |

■ Also field-installable on Series 3 and newer, and for Series 2 ground fault circuit breakers.

### Table 11.52: Field-Installable External Accessory Kits

| Description | Kit Cat. No. | $ Price |
|---|---|---|
| Padlock Attachment | SE2PA | **210.00** |
| Close Button Cover | SE1CBC | **152.00** |
| Key Interlock Bracket♦ | SE1KI | **860.00** |
| Series 1 Primary Injection Test Plug | SEPITK1 | **209.00** |
| Series 2 Primary Injection Test Plug | SEPITK2 | **309.00** |
| SE Drawout Crank | SEDC | **209.00** |
| Fan Monitoring Switch Kit | SE40FAN | No Charge |

♦ Fixed-mounted circuit breakers only. Does not include key interlock.

### Table 11.53: Neutral Current Transformers

| Cat. No. | $ Price | Sensor | Where Used |
|---|---|---|---|
| SE12NCT | **644.00** | 800 | SE, SEH |
| SE12NCT | **644.00** | 1200 | SE, SEH |
| SE30NCT | **644.00** | 1600 | SE, SEH |
| SE30NCT | **644.00** | 2000 | SE, SEH |
| SE30NCT | **644.00** | 2500 | SE, SEH |
| SE30NCT | **644.00** | 3000 | SE, SEH |
| SE40NCT | **644.00** | 4000 | SE, SEH |

## Electric Joint Compound

SE drawout circuit breakers are supplied with factory-applied joint compound on the plug-on connectors. The compound should not be removed because it contributes to the overall performance of the connection.

Whenever one of these units is removed and reinstalled, the joint compound should be reapplied.

PJC 8311 is a two-ounce container of compound specially formulated for the SE drawout connections. This compound MUST BE USED ON SE DRAWOUT CONNECTIONS. No other type of commercially available joint compound should be used.

### Table 11.54: Electric Joint Compound

| Used With | Cat. No. | $ Price |
|---|---|---|
| SED Drawout Circuit Breakers | PJC8311 | **42.80** |

MAL/MHL 2P and 3p
300–1000 A

### Table 11.55: M-Frame—Thermal-Magnetic, Individually-Mounted Circuit Breakers, 600 Vac

| Ampere Rating | AC Magnetic Trip Settings▲ | | Standard Interrupting | | High Interrupting | | Terminal Wire Range |
|---|---|---|---|---|---|---|---|
| | Low | High | Cat. No. | $ Price | Cat. No. | $ Price | |
| **2P, 600 Vac, 250 Vdc** | | | | | | | |
| 300 A | 1500 A | 3000 A | MAL26300 | **5960.00** | MHL26300 | **7829.00** | AL900MA (3) 3/0 AWG–500 kcmil |
| 350 A | 1750 A | 3500 A | MAL26350 | **5960.00** | MHL26350 | **7829.00** | |
| 400 A | 2000 A | 4000 A | MAL26400 | **5960.00** | MHL26400 | **7829.00** | |
| 450 A | 2250 A | 4500 A | MAL26450 | **5960.00** | MHL26450 | **7829.00** | |
| 500 A | 2500 A | 5000 A | MAL26500 | **5960.00** | MHL26500 | **7829.00** | |
| 600 A | 3000 A | 6000 A | MAL26600 | **5960.00** | MHL26600 | **7829.00** | |
| 700 A | 3500 A | 7000 A | MAL26700 | **7719.00** | MHL26700 | **9657.00** | |
| 800 A | 4000 A | 8000 A | MAL26800 | **7719.00** | MHL26800 | **9657.00** | |
| 900 A | 4500 A | 9000 A | MAL26900 | **11012.00** | MHL26900 | **12212.00** | |
| 1000 A | 5000 A | 10000 A | MAL261000 | **11012.00** | MHL261000 | **12212.00** | |
| 1200 A | 5000 A | 10000 A | MAL261200 | **12948.00** | MHL261200 | **15252.00** | AL1000MA■ (4) 1/0 AWG–350 kcmil |
| **3P, 600 Vac, 250 Vdc** | | | | | | | |
| 300 A | 1500 A | 3000 A | MAL36300 | **7560.00** | MHL36300 | **9456.00** | AL900MA (3) 3/0 AWG–500 kcmil |
| 350 A | 1750 A | 3500 A | MAL36350 | **7560.00** | MHL36350 | **9456.00** | |
| 400 A | 2000 A | 4000 A | MAL36400 | **7560.00** | MHL36400 | **9456.00** | |
| 450 A | 2250 A | 4500 A | MAL36450 | **7560.00** | MHL36450 | **9456.00** | |
| 500 A | 2500 A | 5000 A | MAL36500 | **7560.00** | MHL36500 | **9456.00** | |
| 600 A | 3000 A | 6000 A | MAL36600 | **9927.00** | MHL36600 | **9456.00** | |
| 700 A | 3500 A | 7000 A | MAL36700 | **9927.00** | MHL36700 | **11882.00** | |
| 800 A | 4000 A | 8000 A | MAL36800 | **12705.00** | MHL36800 | **11882.00** | |
| 900 A | 4500 A | 9000 A | MAL36900 | **12705.00** | MHL36900 | **14078.00** | |
| 1000 A | 5000 A | 10000 A | MAL361000 | | MHL361000 | **14078.00** | |
| 1200 A | 5000 A | 10000 A | MAL361200 | **15107.00** | MHL361200 | **17612.00** | AL1000MA■ (4) 1/0 AWG–350 kcmil |

▲ UL magnetic trip setting tolerances are ±25% for low and ±20% for high from nominal values shown.
■ The AL100MA lug is the only lug available for the 1200 A MA and MH circuit breakers.

### Table 11.56: M-Frame—Thermal-Magnetic, I-Line® Construction Circuit Breakers, 600 Vac

| Ampere Rating | AC Magnetic Trip Settings♦ | | Standard Interrupting | | High Interrupting | | Terminal Wire Range |
|---|---|---|---|---|---|---|---|
| | Low | High | Cat. No. | $ Price | Cat. No. | $ Price | |
| **2P, 600 Vac, 250 Vdc★** | | | | | | | |
| 300 A | 1500 A | 3000 A | MA26300( ) | **6633.00** | MH26300( ) | **8253.00** | AL900MA (3) 3/0 AWG–500 kcmil |
| 350 A | 1750 A | 3500 A | MA26350( ) | **6633.00** | MH26350( ) | **8253.00** | |
| 400 A | 2000 A | 4000 A | MA26400( ) | **6633.00** | MH26400( ) | **8253.00** | |
| 450 A | 2250 A | 4500 A | MA26450( ) | **6633.00** | MH26450( ) | **8253.00** | |
| 500 A | 2500 A | 5000 A | MA26500( ) | **6633.00** | MH26500( ) | **8253.00** | |
| 600 A | 3000 A | 6000 A | MA26600( ) | **6633.00** | MH26600( ) | **8253.00** | |
| 700 A | 3500 A | 7000 A | MA26700( ) | **8370.00** | MH26700( ) | **10104.00** | |
| 800 A | 4000 A | 8000 A | MA26800( ) | **8370.00** | MH26800( ) | **10104.00** | |
| **3P, 600 Vac, 250 Vdc** | | | | | | | |
| 300 A | 1500 A | 3000 A | MA36300 | **8168.00** | MH36300 | **9929.00** | AL900MA (3) 3/0 AWG–500 kcmil |
| 350 A | 1750 A | 3500 A | MA36350 | **8168.00** | MH36350 | **9929.00** | |
| 400 A | 2000 A | 4000 A | MA36400 | **8168.00** | MH36400 | **9929.00** | |
| 450 A | 2250 A | 4500 A | MA36450 | **8168.00** | MH36450 | **9929.00** | |
| 500 A | 2500 A | 5000 A | MA36500 | **8168.00** | MH36500 | **9929.00** | |
| 600 A | 3000 A | 6000 A | MA36600 | **8168.00** | MH36600 | **9929.00** | |
| 700 A | 3500 A | 7000 A | MA36700 | **10608.00** | MH36700 | **12630.00** | |
| 800 A | 4000 A | 8000 A | MA36800 | **10608.00** | MH36800 | **12630.00** | |

♦ UL magnetic trip setting tolerances are ±25% for low and ±20% for high from nominal values shown.
★ 2P circuit breaker catalog numbers are completed by adding required phase connection letters as suffix to catalog numbers. See Phase Options table.

### Table 11.57: Interrupting Ratings

| Voltage | MA/MAL | MH/MHL |
|---|---|---|
| 240 Vac | 42 kA | 65 kA |
| 480 Vac | 30 kA | 65 kA |
| 600 Vac | 22 kA | 25 kA |

### Table 11.58: Phase Options

| Phase Option Letter | 2P | 3P |
|---|---|---|
| AB<br>AC<br>BC | MA26800AB<br>MA26800AC<br>MA26800BC | |
| ABC<br>CBA | | MA36800<br>MA36800CBA |

Accessories . . . . . Page 11-30
OptionalLugs . . . . . Page 11-25
Dimensions. . . . . Page 11-4
Enclosures: see Digest Section 7

MXL/MEL Circuit Breaker

## Table 11.59: M-Frame—Micrologic® Trip System, 3P, 600 Vac

| Ampere Rating | Trip Function | Individually-Mounted Circuit Breakers | | | | I-Line Circuit Breakers | | | | Installed Rating Plug | Terminal Wire Range |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Standard Function | | 100% Rated, Full Function▲ | | Standard Function | | 100% Rated, Full Function▲ | | | |
| | | Cat. No. | $ Price | Cat. No. | $ Price | Cat. No. | $ Price | Cat. No. | $ Price | | |
| **250 A Sensor Size** | | | | | | | | | | | |
| 100 A | LI | — | — | MEL36100LI | 10737.00 | — | — | ME36100LI | 11271.00 | ARP040 | AL250ME (1) 6 AWG–350 kcmil |
| | LSI | MXL36100 | 7466.00 | MEL36100LS | 16080.00 | MX36100 | 7838.00 | ME36100LS | 16614.00 | | |
| | LIG | — | — | MEL36100LIG | 16080.00 | — | — | ME36100LIG | 16614.00 | | |
| | LSIG | MXL36100G | 9542.00 | MEL36100LSG | 21423.00 | MX36100G | 9914.00 | ME36100LSG | 21957.00 | | |
| 125 A | LI | — | — | MEL36125LI | 10737.00 | — | — | ME36125LI | 11271.00 | ARP050 | |
| | LSI | MXL36125 | 7466.00 | MEL36125LS | 16080.00 | MX36125 | 7838.00 | ME36125LS | 16614.00 | | |
| | LIG | — | — | MEL36125LIG | 16080.00 | — | — | ME36125LIG | 16614.00 | | |
| | LSIG | MXL36125G | 9542.00 | MEL36125LSG | 21423.00 | MX36125G | 9914.00 | ME36125LSG | 21957.00 | | |
| 150 A | LI | — | — | MEL36150LI | 10737.00 | — | — | ME36150LI | 11271.00 | ARP060 | |
| | LSI | MXL36150 | 7466.00 | MEL36150LS | 16080.00 | MX36150 | 7838.00 | ME36150LS | 16614.00 | | |
| | LIG | — | — | MEL36150LIG | 16080.00 | — | — | ME36150LIG | 16614.00 | | |
| | LSIG | MXL36150G | 9542.00 | MEL36150LSG | 21423.00 | MX36150G | 9914.00 | ME36150LSG | 21957.00 | | |
| 175 A | LI | — | — | MEL36175LI | 10737.00 | — | — | ME36175LI | 11271.00 | ARP070 | |
| | LSI | MXL36175 | 7466.00 | MEL36175LS | 16080.00 | MX36175 | 7838.00 | ME36175LS | 16614.00 | | |
| | LIG | — | — | MEL36175LIG | 16080.00 | — | — | ME36175LIG | 16614.00 | | |
| | LSIG | MXL36175G | 9542.00 | MEL36175LSG | 21423.00 | MX36175G | 9914.00 | ME36175LSG | 21957.00 | | |
| 200 A | LI | — | — | MEL36200LI | 10737.00 | — | — | ME36200LI | 11271.00 | ARP080 | |
| | LSI | MXL36200 | 7466.00 | MEL36200LS | 16080.00 | MX36200 | 7838.00 | ME36200LS | 16614.00 | | |
| | LIG | — | — | MEL36200LIG | 16080.00 | — | — | ME36200LIG | 16614.00 | | |
| | LSIG | MXL36200G | 9542.00 | MEL36200LSG | 21423.00 | MX36200G | 9914.00 | ME36200LSG | 21957.00 | | |
| 225 A | LI | — | — | MEL36225LI | 10737.00 | — | — | ME36225LI | 11271.00 | ARP090 | |
| | LSI | MXL36225 | 7466.00 | MEL36225LS | 16080.00 | MX36225 | 7838.00 | ME36225LS | 16614.00 | | |
| | LIG | — | — | MEL36225LIG | 16080.00 | — | — | ME36225LIG | 16614.00 | | |
| | LSIG | MXL36225G | 9542.00 | MEL36225LSG | 21423.00 | MX36225G | 9914.00 | ME36225LSG | 21957.00 | | |
| 250 A | LI | — | — | MEL36250LI | 10737.00 | — | — | ME36250LI | 11271.00 | ARP100 | |
| | LSI | MXL36250 | 7466.00 | MEL36250LS | 16080.00 | MX36250 | 7838.00 | ME36250LS | 16614.00 | | |
| | LIG | — | — | MEL36250LIG | 16080.00 | — | — | ME36250LIG | 16614.00 | | |
| | LSIG | MXL36250G | 9542.00 | MEL36250LSG | 21423.00 | MX36250G | 9914.00 | ME36250LSG | 21957.00 | | |
| **400 A Sensor Size** | | | | | | | | | | | |
| 300 A | LI | — | — | MEL36300LI | 12282.00 | — | — | ME36300LI | 12893.00 | ARP075 | AL900MA (3) 3/0 AWG–500 kcmil |
| | LSI | MXL36300 | 9861.00 | MEL36300LS | 17625.00 | MX36300 | 10460.00 | ME36300LS | 18236.00 | | |
| | LIG | — | — | MEL36300LIG | 17625.00 | — | — | ME36300LIG | 18236.00 | | |
| | LSIG | MXL36300G | 11937.00 | MEL36300LSG | 22968.00 | MX36300G | 12536.00 | ME36300LSG | 23579.00 | | |
| 350 A | LI | — | — | MEL36350LI | 12282.00 | — | — | ME36350LI | 12893.00 | ARP088 | |
| | LSI | MXL36350 | 9861.00 | MEL36350LS | 17625.00 | MX36350 | 10460.00 | ME36350LS | 18236.00 | | |
| | LIG | — | — | MEL36350LIG | 17625.00 | — | — | ME36350LIG | 18236.00 | | |
| | LSIG | MXL36350G | 11937.00 | MEL36350LSG | 22968.00 | MX36350G | 12536.00 | ME36350LSG | 23579.00 | | |
| 400 A | LI | — | — | MEL36400LI | 12282.00 | — | — | ME36400LI | 12893.00 | ARP100 | |
| | LSI | MXL36400 | 9861.00 | MEL36400LS | 17625.00 | MX36400 | 10460.00 | ME36400LS | 18236.00 | | |
| | LIG | — | — | MEL36400LIG | 17625.00 | — | — | ME36400LIG | 18236.00 | | |
| | LSIG | MXL36400G | 11937.00 | MEL36400LSG | 22968.00 | MX36400G | 12536.00 | ME36400LSG | 23579.00 | | |
| **800 A Sensor Size** | | | | | | | | | | | |
| 450 A | LI | — | — | MEL36450LI | 17925.00 | — | — | ME36450LI | 18825.00 | ARP056 | AL900MA (3) 3/0 AWG–500 kcmil |
| | LSI | MXL36450 | 13721.00 | MEL36450LS | 23268.00 | MX36450 | 14514.00 | ME36450LS | 24168.00 | | |
| | LIG | — | — | MEL36450LIG | 23268.00 | — | — | ME36450LIG | 24168.00 | | |
| | LSIG | MXL36450G | 15795.00 | MEL36450LSG | 28611.00 | MX36450G | 16590.00 | ME36450LSG | 29511.00 | | |
| 500 A | LI | — | — | MEL36500LI | 17925.00 | — | — | ME36500LI | 18825.00 | ARP063 | |
| | LSI | MXL36500 | 13721.00 | MEL36500LS | 23268.00 | MX36500 | 14514.00 | ME36500LS | 24168.00 | | |
| | LIG | — | — | MEL36500LIG | 23268.00 | — | — | ME36500LIG | 24168.00 | | |
| | LSIG | MXL36500G | 15795.00 | MEL36500LSG | 28611.00 | MX36500G | 16590.00 | ME36500LSG | 29511.00 | | |
| 600 A | LI | — | — | MEL36600LI | 17925.00 | — | — | ME36600LI | 18825.00 | ARP075 | |
| | LSI | MXL36600 | 13721.00 | MEL36600LS | 23268.00 | MX36600 | 14514.00 | ME36600LS | 24168.00 | | |
| | LIG | — | — | MEL36600LIG | 23268.00 | — | — | ME36600LIG | 24168.00 | | |
| | LSIG | MXL36600G | 15795.00 | MEL36600LSG | 28611.00 | MX36600G | 16590.00 | ME36600LSG | 29511.00 | | |
| 700 A | LI | — | — | MEL36700LI | 17925.00 | — | — | ME36700LI | 18825.00 | ARP088 | |
| | LSI | MXL36700 | 13721.00 | MEL36700LS | 23268.00 | MX36700 | 14514.00 | ME36700LS | 24168.00 | | |
| | LIG | — | — | MEL36700LIG | 23268.00 | — | — | ME36700LIG | 24168.00 | | |
| | LSIG | MXL36700G | 15795.00 | MEL36700LSG | 28611.00 | MX36700G | 16590.00 | ME36700LSG | 29511.00 | | |
| 800 A | LI | — | — | MEL36800LI | 17925.00 | — | — | ME36800LI | 18825.00 | ARP100 | |
| | LSI | MXL36800 | 13721.00 | MEL36800LS | 23268.00 | MX36800 | 14514.00 | ME36800LS | 24168.00 | | |
| | LIG | — | — | MEL36800LIG | 23268.00 | — | — | ME36800LIG | 24168.00 | | |
| | LSIG | MXL36800G | 15795.00 | MEL36800LSG | 28611.00 | MX36800G | 16590.00 | ME36800LSG | 29511.00 | | |

▲ Substitute (A) in place of (G) for ground-fault alarm (pick up indication only.) No instantaneous OFF position for LI or LIG circuit breakers

## Table 11.60: Interrupting Ratings

| Voltage | MX, MXL | ME, MEL |
|---|---|---|
| 240 V | 65 kA | 65 kA |
| 480 V | 65 kA | 65 kA |
| 600 V | 25 kA | 25 kA |

Accessories . . . . . Page 11-30
OptionalLugs . . . . . Page 11-25
Dimensions . . . . . Page 11-4
Enclosures: see Digest Section 7

NAL/NCL
2P and 3P
600–1200 A

### Table 11.61: N-Frame, Thermal-Magnetic Circuit Breakers, 600 Vac

| Continuous Current Rating @ 40°C | AC Magnetic Trip Settings▲ | | Individually-Mounted Circuit Breakers | | | | I-Line® Circuit Breakers | | | | Terminal Wire Range |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Standard Interrupting | | Extra High Interrupting | | Standard Interrupting | | Extra High Interrupting | | |
| | Low | High | Cat. No. | $ Price | Cat. No. | $ Price | Cat. No. | $ Price | Cat. No. | $ Price | |
| **2P, 600 Vac■** | | | | | | | | | | | |
| 600 A | 4000 A | 8000 A | NAL26600 | **17363.00** | NCL26600 | **19994.00** | NA26600( ) | **18321.00** | NC26600( ) | **20948.00** | AL1200NE6 (4) 3/0 AWG–600 kcmil |
| 700 A | 4000 A | 8000 A | NAL26700 | **17363.00** | NCL26700 | **19994.00** | NA26700( ) | **18321.00** | NC26700( ) | **20948.00** | |
| 800 A | 4000 A | 8000 A | NAL26800 | **17363.00** | NCL26800 | **19994.00** | NA26800( ) | **18321.00** | NC26800( ) | **20948.00** | |
| 900 A | 5000 A | 10000 A | NAL26900 | **17363.00** | NCL26900 | **19994.00** | NA26900( ) | **18321.00** | NC26900( ) | **20948.00** | |
| 1000 A | 5000 A | 10000 A | NAL261000 | **17363.00** | NCL261000 | **19994.00** | NA261000( ) | **18321.00** | NC261000( ) | **20948.00** | |
| 1200 A | 5000 A | 10000 A | NAL261200 | **17363.00** | NCL261200 | **19994.00** | NA261200( ) | **18321.00** | NC261200( ) | **20948.00** | |
| **3P, 600 Vac** | | | | | | | | | | | |
| 600 A | 4000 A | 8000 A | NAL36600 | **19049.00** | NCL36600 | **21452.00** | NA36600 | **20003.00** | NC36600 | **22410.00** | AL1200NE6 (4) 3/0 AWG–600 kcmil |
| 700 A | 4000 A | 8000 A | NAL36700 | **19049.00** | NCL36700 | **21452.00** | NA36700 | **20003.00** | NC36700 | **22410.00** | |
| 800 A | 4000 A | 8000 A | NAL36800 | **19049.00** | NCL36800 | **21452.00** | NA36800 | **20003.00** | NC36800 | **22410.00** | |
| 900 A | 5000 A | 10000 A | NAL36900 | **19049.00** | NCL36900 | **21452.00** | NA36900 | **20003.00** | NC36900 | **22410.00** | |
| 1000 A | 5000 A | 10000 A | NAL361000 | **19049.00** | NCL361000 | **21452.00** | NA361000 | **20003.00** | NC361000 | **22410.00** | |
| 1200 A | 5000 A | 10000 A | NAL361200 | **19049.00** | NCL361200 | **21452.00** | NA361200 | **20003.00** | NC361200 | **22410.00** | |

▲ UL magnetic trip setting tolerances are ±25% (for low) and ±20% (for high) from nominal values shown.
■ 2P I-Line circuit breaker catalog numbers are completed by adding required phase connection letters as suffix to catalog number.

### Table 11.62: N-Frame —Micrologic® Electronic Trip System, 3P Circuit Breakers, 600Vac

| Sensor Size | Ampere Rating | Trip Function | Individually-Mounted Circuit Breakers | | | | I-Line® Circuit Breakers | | | | Installed Rating Plug | Terminal Wire Range |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Standard Function | | 100% Rated, Full Function♦ | | Standard Function | | 100% Rated, Full Function♦ | | | |
| | | | Cat. No. | $ Price | Cat. No. | $ Price | Cat. No. | $ Price | Cat. No. | $ Price | | |
| 1200 A | 600 A | LI | — | — | NEL36600LI | **32372.00** | — | — | NE36600LI | **33990.00** | ARP050 | AL1200NE6 (4) 3/0 AWG–600 kcmil |
| | | LSI | NXL36600 | **20873.00** | NEL36600LS | **37715.00** | NX36600 | **21917.00** | NE36600LS | **39333.00** | | |
| | | LIG | — | — | NEL36600LIG | **37715.00** | — | — | NE36600LIG | **39333.00** | | |
| | | LSIG | NXL36600G | **22949.00** | NEL36600LSG | **43058.00** | NX36600G | **23993.00** | NE36600LSG | **44676.00** | | |
| | 700 A | LI | — | — | NEL36700LI | **32372.00** | — | — | NE36700LI | **33990.00** | ARP058 | |
| | | LSI | NXL36700 | **20873.00** | NEL36700LS | **37715.00** | NX36700 | **21917.00** | NE36700LS | **39333.00** | | |
| | | LIG | — | — | NEL36700LIG | **37715.00** | — | — | NE36700LIG | **39333.00** | | |
| | | LSIG | NXL36700G | **22949.00** | NEL36700LSG | **43058.00** | NX36700G | **23993.00** | NE36700LSG | **44676.00** | | |
| | 800 A | LI | — | — | NEL36800LI | **32372.00** | — | — | NE36800LI | **33990.00** | ARP067 | |
| | | LSI | NXL36800 | **20873.00** | NEL36800LS | **37715.00** | NX36800 | **21917.00** | NE36800LS | **39333.00** | | |
| | | LIG | — | — | NEL36800LIG | **37715.00** | — | — | NE36800LIG | **39333.00** | | |
| | | LSIG | NXL36800G | **22949.00** | NEL36800LSG | **43058.00** | NX36800G | **23993.00** | NE36800LSG | **44676.00** | | |
| | 900 A | LI | — | — | NEL36900LI | **32372.00** | — | — | NE36900LI | **33990.00** | ARP075 | |
| | | LSI | NXL36900 | **20873.00** | NEL36900LS | **37715.00** | NX36900 | **21917.00** | NE36900LS | **39333.00** | | |
| | | LIG | — | — | NEL36900LIG | **37715.00** | — | — | NE36900LIG | **39333.00** | | |
| | | LSIG | NXL36900G | **22949.00** | NEL36900LSG | **43058.00** | NX36900G | **23993.00** | NE36900LSG | **44676.00** | | |
| | 1000 A | LI | — | — | NEL361000LI | **32372.00** | — | — | NE361000LI | **33990.00** | ARP083 | |
| | | LSI | NXL361000 | **21917.00** | NEL361000LS | **37715.00** | NX361000 | **23013.00** | NE361000LS | **39333.00** | | |
| | | LIG | — | — | NEL361000LIG | **37715.00** | — | — | NE361000LIG | **39333.00** | | |
| | | LSIG | NXL361000G | **23993.00** | NEL361000LSG | **43058.00** | NX361000G | **25193.00** | NE361000LSG | **44676.00** | | |
| | 1200 A | LI | — | — | NEL361200LI | **32372.00** | — | — | NE361200LI | **33990.00** | ARP100 | |
| | | LSI | NXL361200 | **21917.00** | NEL361200LS | **37715.00** | NX361200 | **23013.00** | NE361200LS | **39333.00** | | |
| | | LIG | — | — | NEL361200LIG | **37715.00** | — | — | NE361200LIG | **39333.00** | | |
| | | LSIG | NXL361200G | **23993.00** | NEL361200LSG | **43058.00** | NX361200G | **25193.00** | NE361200LSG | **44676.00** | | |

♦ Substitute (A) in place of (G) for ground-fault alarm (pick up indication only). No instantaneous OFF position for LI or LIG circuit breakers.

### Table 11.63: Interrupting Ratings

| Voltage | NA, NAL, | NC, NCL | NX, NXL | NE, NEL |
|---|---|---|---|---|
| 240 V | 100kA | 125 kA | 125 kA | 125 kA |
| 480 V | 50 kA | 100 kA | 100 kA | 100 kA |
| 600 V | 25 kA | 65 kA | 65 kA | 65 kA |

Accessories . . . . . Page 11-30
OptionalLugs . . . . . Page 11-25
Dimensions. . . . . Page 11-4
Enclosures: see DIgest Section 7

PALTB

PCF Circuit Breaker

PAF, PHF, PXF-12, PEF-12, PXF-16, PEF-16, and PXF-20 circuit breakers can be bus- or cable-connected. For cable connections, optional terminal pad kit PALTB or equivalent bus structure is required. Each PALTB kit contains terminal pads for one end of the circuit breaker only and has provisions for mounting a maximum of six lugs per phase. Order lugs separately. See page 11-25.

PCF, PEF-20, PXF-25 or PEF-25 circuit breakers are supplied with terminal pads for both ends of the circuit breaker. The supplied terminal pads or equivalent bus structure must be used for bus- or cable-connections. Terminal pads have provisions for mounting a maximum of eight lugs per phase. Order lugs separately. See page 11-25.

**Table 11.64: P-Frame Thermal-Magnetic CIrcuit Breakers**

| Ampere Rating | AC Magnetic Trip Settings | | 2P—600 Vac | | | | | 3P—600 Vac | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Frame Only | | Rating Columns Two Per Kit | | Total $ Price ▲ | Frame Only | | Rating Columns Three Per Kit | | Total $ Price ▲ |
| | Low | High | Cat. No. | $ Price | Kit Cat. No. | Kit $ Price | | Cat. No. | $ Price | Kit Cat. No. | Kit $ Price | |
| **2000 A Frame PAF** | **Standard Interrupting—Complete Circuit Breaker Requires Frame and Rating Columns** | | | | | | | | | | | |
| 600 A | 3200 A | 9000 A | | | PA2600RC | | | | | PA3600RC | | |
| 700 A | 3200 A | 9000 A | | | PA2700RC | | | | | PA3700RC | | |
| 800 A | 3200 A | 9000 A | | | PA2800RC | | | | | PA3800RC | | |
| 1000 A | 3500 A | 9000 A | | | PA21000RC | | | | | PA31000RC | | |
| 1200 A | 3500 A | 9000 A | PAF2026 | 17024.00 | PA21200RC | 366.00 | 17390.00 | PAF2036 | 21822.00 | PA31200RC | 552.00 | 22374.00 |
| 1400 A | 4500 A | 9000 A | | | PA21400RC | | | | | PA31400RC | | |
| 1600 A | 5000 A | 10000 A | | | PA21600RC | | | | | PA31600RC | | |
| 1800 A | 6500 A | 11000 A | | | PA21800RC | | | | | PA31800RC | | |
| 2000 A | 8000 A | 12000 A | | | PA22000RC | | | | | PA32000RC | | |
| **2000 A Frame PHF** | **High Interrupting—Complete Circuit Breaker Requires Frame and Rating Columns** | | | | | | | | | | | |
| 600 A | 3200 A | 9000 A | | | PA2600RC | | | | | PA3600RC | | |
| 700 A | 3200 A | 9000 A | | | PA2700RC | | | | | PA3700RC | | |
| 800 A | 3200 A | 9000 A | | | PA2800RC | | | | | PA3800RC | | |
| 1000 A | 3500 A | 9000 A | | | PA21000RC | | | | | PA31000RC | | |
| 1200 A | 3500 A | 9000 A | PHF2026 | 19526.00 | PA21200RC | 366.00 | 19892.00 | PHF2036 | 24171.00 | PA31200RC | 552.00 | 24723.00 |
| 1400 A | 4500 A | 9000 A | | | PA21400RC | | | | | PA31400RC | | |
| 1600 A | 5000 A | 10000 A | | | PA21600RC | | | | | PA31600RC | | |
| 1800 A | 6500 A | 11000 A | | | PA21800RC | | | | | PA31800RC | | |
| 2000 A | 8000 A | 12000 A | | | PA22000RC | | | | | PA32000RC | | |
| **2500 A Frame PCF** | **High Interrupting—Complete Circuit Breaker Requires Frame and Rating Columns** | | | | | | | | | | | |
| 1600 A | 6000 A | 12000 A | | | PC21600RC | | | | | PC31600RC | | |
| 1800 A | 6000 A | 12000 A | PCF2526 | 31413.00 | PC21800RC | 366.00 | 31779.00 | PCF2536 | 38832.00 | PC31800RC | 552.00 | 39384.00 |
| 2000 A | 6000 A | 12000 A | | | PC22000RC | | | | | PC32000RC | | |
| 2500 A | 8000 A | 14000 A | | | PC22500RC | | | | | PC32500RC | | |

▲ Price does not include lugs.See page 11-25 for catalog numbers and prices.
■ UL magnetic trip setting tolerances are ±25% for low and ±20% for high from nominal values shown.

**Table 11.65: Interrupting Ratings**

| Voltage | PAF |
|---|---|
| 240 Vac | 65 kA |
| 480 Vac | 50 kA |
| 600 Vac | 42 kA |

| PCF/PHF | PXF/PEF |
|---|---|
| 125 kA | 125 kA |
| 100 kA | 100 kA |
| 65 kA | 65 kA |

Accessories Page 11-30
OptionalLugs Page 11-25
Dimensions Page 11-4

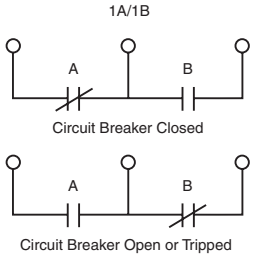
**Table 11.66: P-Frame Micrologic Series B Electronic Trip Unit Circuit Breakers**

| Sensor Size | Ampere Rating | Trip Function | Standard Function | | 100% Rated ♦, Full Function★ | | Installed Rating Plug |
|---|---|---|---|---|---|---|---|
| | | | Cat. No. | $ Price | Cat. No. | $ Price | |
| 1200 A | 600 A | LI | — | — | PEF36600LI | 29163.00 | ARP050 |
| | | LSI | PXF36600 | 18872.00 | PEF36600LS | 34506.00 | |
| | | LIG | — | — | PEF36600LIG | 34506.00 | |
| | | LSIG | PXF36600G | 20948.00 | PEF36600LSG | 39849.00 | |
| | 700 A | LI | — | — | PEF36700LI | 29163.00 | ARP058 |
| | | LSI | PXF36700 | 18872.00 | PEF36700LS | 34506.00 | |
| | | LIG | — | — | PEF36700LIG | 34506.00 | |
| | | LSIG | PXF36700G | 20948.00 | PEF36700LSG | 39849.00 | |
| | 800 A | LI | — | — | PEF36800LI | 29163.00 | ARP067 |
| | | LSI | PXF36800 | 18872.00 | PEF36800LS | 34506.00 | |
| | | LIG | — | — | PEF36800LIG | 34506.00 | |
| | | LSIG | PXF36800G | 20948.00 | PEF36800LSG | 39849.00 | |
| | 900 A | LI | — | — | PEF36900LI | 29163.00 | ARP075 |
| | | LSI | PXF36900 | 18872.00 | PEF36900LS | 34506.00 | |
| | | LIG | — | — | PEF36900LIG | 34506.00 | |
| | | LSIG | PXF36900G | 20948.00 | PEF36900LSG | 39849.00 | |
| | 1000 A | LI | — | — | PEF361000LI | 29163.00 | ARP083 |
| | | LSI | PXF361000 | 18872.00 | PEF361000LS | 34506.00 | |
| | | LIG | — | — | PEF361000LIG | 34506.00 | |
| | | LSIG | PXF361000G | 20948.00 | PEF361000LSG | 39849.00 | |
| | 1200 A | LI | — | — | PEF361200LI | 29163.00 | ARP100 |
| | | LSI | PXF361200 | 18872.00 | PEF361200LS | 34506.00 | |
| | | LIG | — | — | PEF361200LIG | 34506.00 | |
| | | LSIG | PXF361200G | 20948.00 | PEF361200LSG | 39849.00 | |
| 1600 A | 1400 A | LI | — | — | PEF361400LI | 31403.00 | ARP088 |
| | | LSI | PXF361400 | 20610.00 | PEF361400LS | 36746.00 | |
| | | LIG | — | — | PEF361400LIG | 36746.00 | |
| | | LSIG | PXF361400G | 22686.00 | PEF361400LSG | 42089.00 | |
| | 1600 A | LI | — | — | PEF361600LI | 31403.00 | ARP100 |
| | | LSI | PXF361600 | 20610.00 | PEF361600LS | 36746.00 | |
| | | LIG | — | — | PEF361600LIG | 36746.00 | |
| | | LSIG | PXF361600G | 22686.00 | PEF361600LSG | 42089.00 | |
| 2000 A | 1800 A | LI | — | — | PEF361800LI | 37256.00 | ARP090 |
| | | LSI | PXF361800 | 23234.00 | PEF361800LS | 42599.00 | |
| | | LIG | — | — | PEF361800LIG | 42599.00 | |
| | | LSIG | PXF361800G | 25310.00 | PEF361800LSG | 47942.00 | |
| | 2000 A | LI | — | — | PEF362000LI | 37256.00 | ARP0100 |
| | | LSI | PXF362000 | 2324.00 | PEF362000LS | 42599.00 | |
| | | LIG | — | — | PEF362000LIG | 42599.00 | |
| | | LSIG | PXF362000G | 25310.00 | PEF362000LSG | 47942.00 | |
| 2500 A♦ | 2500 A | LI | — | — | PEF362500LI | 56922.00 | ARP100 |
| | | LSI | PXF362500 | 39261.00 | PEF362500LS | 62265.00 | |
| | | LIG | — | — | PEF362500LIG | 62265.00 | |
| | | LSIG | PXF362500G | 41337.00 | PEF362500LSG | 67608.00 | |

♦ 2500 A sensor is 80% rated.
★ Substitute (A) in place of (G) for ground-fault alarm (pick up indication only.) Requires CIM3F with PowerLogic® or see Data Bulletin **0502DB0001**. No instantaneous OFF position for LI or LIG circuit breakers.

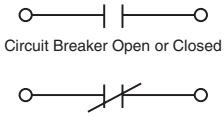
**Auxiliary Switch Contact Configuration**

Color Code:
"A" Contact - Yellow Leads
"B" Contact - Blue Leads
Common-Striped Leads



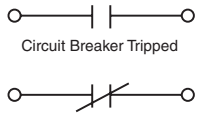

**1A Alarm Switch Configuration**

Color Code: Red Leads

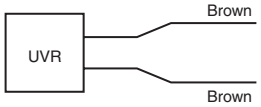



**1B Alarm Switch Configuration**

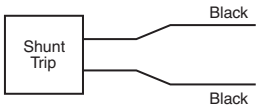
Color Code: Red Leads




**Undervoltage Trip Wiring Diagram**




**Shunt Trip Wiring Diagram**




## Field-Installable Electrical Accessories

Complete field-installable accessory catalog number by inserting suffix from 3-20 between the parentheses in the catalog numbers shown in the table below. (Example: LA11212) See 3-20 for accessory pricing; add 20% to factory-install field-installable devices.

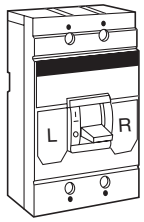
**Table 11.67: Field-Installable Accessories for Thermal-Magnetic and Electronic Trip Circuit Breakers**

| Circuit Breaker | Shunt Trip | Ground-Fault Shunt Trip▲ | Undervoltage Trip | Auxiliary Switches | Alarm Switch |
|---|---|---|---|---|---|
| MA, MH Series 2 | MA1( ) | MA1G | MA1 ( ) | MA1( ) | Factory-Installed Only Center Pole |
| ME, MX | Factory-Installed Only | Factory-Installed Only | Factory-Installed Only | Factory-Installed Only | Factory-Installed Only |
| NA, NC, NE, NX Series 1, 2, 3 | NA1( ) | NA1( ) | NA1( ) | NA1( ) | NA1( ) |
| PA, PH, PC Series 4 | PA1( ) | Factory-Installed Only | PA11121 PA11124 | PA1( ) | Factory-Installed Only |
| PE, PX Series 4, 5, 6 | PA1( ) | Factory-Installed Only | PA11121 PA11124 | PA1( ) | Factory-Installed Only |

▲ Used with obsolete GP Ground-Censor® system or add-on ground-fault modules.

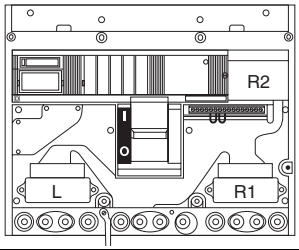
Complete field-installable accessory catalog number by inserting suffix from 3-20 between the parentheses in the catalog numbers shown in the table below. (Example: LA11212) See 3-20 for accessory pricing; add 20% to factory-install field-installable devices.

**Table 11.68: Accessory Mounting Locations**



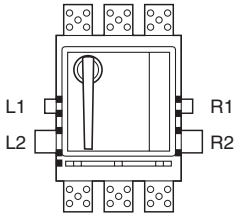

MA, MH Series 2 circuit breakers or newer = Field-installable accessories

ME/MX circuit breakers = Not field-installable accessories




NA, NC, NE, NX circuit breakers - FIeld-installable accessories

"L" port and "R" port will accept shunt trips, alarm switches and UVRs; "R2" port will accept auxiliary switches. Maximum of one device per port.




PA, PH, PC, PE, PX Series 4 circuit breakers or newer = FIield-installable accessories.

"L1" and "L2" or "R1" and "R2" port combinations are required to mount a single shunt trip. Both "L2" and "R2" ports will accept a UVR. Both "L1" and R1" ports will accept auxiliary switches. If alarm switch is factory installed in PA or PC circuit breaker, it will be installed in "R2" port. For a PE or PX circuit breaker, the alarm switch will be factory installed in "L2" port.

AL900MA

AL800MA7

AL1000MA

AL2500PA

### Table 11.69: Mechanical Lug Kit Information

| Circuit Breaker Application | | | | (Number of Wires Per Lug ) Wire Range▲ | Cat. No. | Lugs Per Kit | $ Price Per Kit |
|---|---|---|---|---|---|---|---|
| Standard | Ampere Rating | Optional | Ampere Rating | | | | |
| **Al Lugs for Use with Al or Cu Wire** | | | | | | | |
| — | — | LC, LI, LE, LX, LXI | — | (1) 500–750 kcmil | AL600LI7 | 1 | **53.00** |
| MA, MH | 300–1000 A | — | — | (3) 3/0 AWG–500 kcmil | AL900MA | 1 | **95.00** |
| — | — | MA, MH | 300–1000 A | (2) 500–750 kcmil | AL800MA7 | 1 | **192.00** |
| — | — | MA, MH | 300–1200 A | (4) 1/0 AWG–350 kcmil | AL1000MA | 1 | **95.00** |
| ME, MX | 100–250 A | — | — | (1) 6 AWG–350 kcmil | AL250ME | 3 | **472.00** |
| — | — | ME, MX | 250–400 A | (1) 350–750 kcmil | AL400ME7 | 1 | **300.00** |
| — | — | ME, MX | 100–800 A | (2) 500–750 kcmil | AL800MA7 | 1 | **192.00** |
| ME, MX | 300–800 A | ME, MX | 100–250 A | (3) 3/0 AWG–500 kcmil | AL900MA | 1 | **95.00** |
| — | — | ME, MX | 300–1200 A | (4) 1/0 AWG–350 kcmil | AL1000MA | 1 | **95.00** |
| NA, NC, NE, NX | 600–1200 A | — | — | (4) 3/0 AWG–600 kcmil | AL1200NE6 | 1 | **215.00** |
| — | — | PAF, PHF, PEF, PXF, PCF | 600–2500 A | (1) 1/0 AWG–750 kcmil | AL2500PA | 2 | **132.00** |
| **Cu Lugs for Use with Cu Wire Only ♦** | | | | | | | |
| — | — | MA, MH | 300–1000 A | (3) 3/0 AWG–500 kcmil Cu | CU1000MA | 1 | **299.00** |
| — | — | ME, MX | 125–250 A | (1) 4 AWG–250 kcmil Cu | CU250ME | 3 | **732.00** |
| — | — | ME, MX | 100–800 A | (3) 3/0 AWG–500 kcmil Cu | CU1000MA | 1 | **299.00** |
| — | — | NA, NC, NE, NX | 600–1200 A | (4) 3/0 AWG–600 kcmil Cu | CU1200NE6 | 1 | **598.00** |

▲ Unless otherwise specified, wire sizes apply to both aluminum and copper conductors.
■ For use in the OFF end only, when the OFF end is the load end.
♦ Use suffix 8002 for factory-installed Cu lugs. **(20% adder.)**

## Compression Lug Kits

### Table 11.70: Field-installable Compression Lug Kits▲

| Circuit Breaker Type | Wire Range■ | Dimension A (In) | Max. Lugs Per Terminal | Cat. No. | Lug Qty. Per Kit | $ Price Per Kit |
|---|---|---|---|---|---|---|
| **Aluminum Compression Lug Kits** | | | | | | |
| MA, MH | 2/0 AWG–500 kcmil | 1.9 | 2 | VC600MA5 | 2 | **293.00** |
| | 500–750 kcmil | 2.1 | 2 | VC800MA7 | 2 | **312.00** |
| ME2, MX2 | 4 AWG–300 kcmil | 1.5 | 1 | VC250ME3 | 3 | **823.00** |
| | 250–350 kcmil | 1.5 | 1 | VC250ME35 | 3 | **194.00** |
| ME4, MX4 | 2/0 AWG–500 kcmil | 2.2 | 1 | VC400ME5 | 1 | **379.00** |
| | 500–750 kcmil Al or 500 kcmil Cu | 2.5 | 1 | VC400ME7 | 1 | **412.00** |
| ME, MX, MA, MH | 2/0 AWG–500 kcmil | 1.9 | 2 | VC600MA5 | 2 | **293.00** |
| | 500–750 kcmil Al or 500 kcmil Cu | 2.1 | 2 | VC800MA7 | 2 | **312.00** |
| NA, NC, NE, NX | 2/0 AWG–500 kcmil | 3.3 | 4 | VC1200NE5 | 4 | **942.00** |
| | 500–750 kcmil Al or 500 kcmil Cu | 3.6 | 4 | VC1200NE7 | 4 | **942.00** |
| PAF, PHF, PCF, PEF | 2/0 AWG–500 kcmil | ♦ | 6–8 | VC2000PA5 | 4 | **96.00** |
| | 2/0 AWG–500 kcmil | ♦ | 6–8 | VC2500PA7 | 4 | **194.00** |
| **Copper Compression Lug Kits** | | | | | | |
| ME4, MX4 | 250–500 kcmil Cu | 2.6 | 1 | CVC400ME5 | 1 | **295.00** |
| ME, MX | 250–500 kcmil Cu | 2.4 | 2 | CVC600MA5 | 2 | **425.00** |
| NA, NC, NE, NX | 250–500 kcmil Cu | 3.3 | 4 | CVC1200NE5 | 4 | **944.00** |
| | 500–750 kcmil Cu | 3.6 | 4 | CVC1200NE7 | 4 | **944.00** |

▲ See instruction bulletins for recommended tools.
■ Unless otherwise specified, wire sizes apply to both aluminum and copper conductors.
♦ All P-frame circuit breakers require terminal pads for mounting lugs of any type.

## Power Distribution Connectors (PDC) for Circuit Breakers—for Field Replacement of Mechanical Lugs

Can be used for multiple load connections on one circuit breaker. Use in place of standard distribution blocks to save space and time.

Field-installable kits, including tin-plated aluminum connectors and all necessary mounting hardware are available for Square D FA, LA and Q4-frame molded case circuit breakers.

Connectors are UL Listed:

- For use on load end of circuit breaker only
- For use in UL508 Industrial Control applications only
- For use in UL 1995/CSA C22.2 No. 236 heating and cooling equipment
- For copper wire only

### Table 11.71: PDC Lugs

| Use With Circuit Breaker★ | Cicuit Breaker Ampere Rating | Wires Per Terminal & Wire Range▼ Cu | Cat. No. | Lug Quantity Per Kit | Dimension A (i.) | $ Price Per Kit |
|---|---|---|---|---|---|---|
| MAL, MHL, MEL, MXL | 125–1000 A | (6) 12–2/0 AWG Cu | PDC6MA20 | 1 | 0.0 | **194.00** |
| | | (12) 14–4 AWG Cu | PDC12MA4 | 1 | 0.0 | **129.00** |

★ Not for use with I-Line circuit breakers.
▼ When using fine stranded wire, increased cross sectional area may cause maximum wire size to be reduced.
△ OFF end only when OFF end is the load end.

***NOTE:*** Listed below are the catalog numbers and the components required for testing the entire family of Micrologic trip systems. The listing includes obsolete series trip systems.

## Micrologic Series B Trip Systems

Identified by label on front of trip unit
(LE/LX/LXI, ME/MX, NE/NX and PE/PX circuit breaker 9/92 to present)
(SE circuit breaker 10/92 to present)

This is the latest series of standard (LX/LXI, MX, NX and PX) and full-function (LE, ME, NE, PE and SE) Micrologic trip systems.

**Table 11.72: Universal Test Set**

| Description | Cat. No. | $ Price |
|---|---|---|
| Universal Test Set includes the following:<br>1. Self-test module (CBTMT)<br>2. Standard and full-function Micrologic Series B module (CBTMB) includes rating plug adapter<br>3. Power cord<br>4. Ribbon cable for making the connection from the test set to the rating plug adapter<br>5. Instruction manual | UTS3 | **14022.00** |
| For those customers who already own the Universal Test Set and want to test the latest standard and full-function (Series B) trip systems, all that is needed is Micrologic Series B module (CBTMB). Included is the rating plug adapter and instruction manual. | CBTMB | **2349.00** |
| Replacement ribbon cable and rating plug adapter for CBTMB | CBTMBRK | **627.00** |
| Long-time and ground-fault memory reset module (Series B Electronics) | MTMB | **381.00** |

## Micrologic Series 3 and Series A Trip Systems

Identified by two rows of rotary switches
(ME/MX, NE/NX and PE/PX circuit breakers 11/89 to 9/92)
(SE circuit breakers 5/90 to 10/92)

For those customers who already own the Universal Test Set (CBTU1 or UTS3) and want to test these earlier series Micrologic trip systems, see the following chart.

**Table 11.73: Micrologic Series 3 and Series A Circuit Breaker Test Module**

| Circuit Breaker Test Module | Cat. No. | $ Price |
|---|---|---|
| Includes rating plug adapter and instruction manual | CBTM4A | **2349.00** |
| Replacement ribbon cable and rating plug adapter for CBTM4A | CBTM4RK | **627.00** |

## Micrologic Series 2 Trip Systems

Identified by only one row of rotary switches

Micrologic Series 2 Test Modules are obsolete and no longer available.

**Table 11.74: Micrologic Series 2 Circuit Breaker Test Module**

| Circuit Breaker Test Modules | Cat. No. | $ Price |
|---|---|---|
| **SE** (5/85-5/90) includes rating plug adapter and instruction pages | CBTM1 | **Not Available** |
| Replacement ribbon cable and rating plug for CBTM1 | CBTM1A | **Not Available** |
| **ME, PE** (4/85-11/89) CBTM2 obsolete, no longer available | CBTM2 | **Not Available** |
| **ME, NE, PE** (10/86-11/89) includes rating plug adapter and instruction manual | CBTM3 | **Not Available** |
| Replacement ribbon cable and rating plug for CBTM3 | CBTM3A | **Not Available** |

**Table 11.75: Micrologic Series 1 Trip Systems for Circuit Breakers Manufactured Before Micrologic**

| | |
|---|---|
| **ME/PE** (8/78-4/85) Identified by slide type switches instead of rotary switches. The very first series ME and PE electronic trip circuit breakers offered by Square D. | **Test Set Not Available** |
| **SE** (7/83-5/85) The very first series of SE electronic trip circuit breakers had rotary switches and can be identified by a three-digit serial number. | **Test Set Not Available** |

Note: For trip systems of this type that require testing, contact Technical Services toll free at 1-800-634-2003.

**Table 11.76: Neutral Current Transformers**

| Cat. No. | $ Price | Sensor | Where Used |
|---|---|---|---|
| ME25CT2 | **588.00** | 250 A | MXL,MEL |
| ME4CT2 | **588.00** | 400 A | |
| ME8CT2 | **588.00** | 800 A | |
| NE12CT2 | **588.00** | 1200 A | NXL,NEL |
| PE12CT2 | **588.00** | 1200 A | PXF, PEF |
| PE16CT2 | **588.00** | 1600 A | |
| PE20CT2 | **588.00** | 2000 A | |
| PE25CT2 | **588.00** | 2500 A | |


GFM250

## Micrologic® Add-On Ground-Fault Module (GFM)

The Micrologic ground-fault module (GFM) is a UL Listed circuit breaker accessory for equipment protection. It is a combination ground-fault relay and ground-fault sensing device.

### Micrologic Add-On Ground-Fault Module Features:

- Used in combination with the FA, KA, FC, KC, FI, and KI type circuit breakers with a ground-fault shunt trip factory installed (add the suffix "G" to the circuit breaker)
- Adjustable ground-fault pickup levels
- Adjustable ground-fault time delays
- Integral ground fault push-to-test feature and ground-fault indicator
- All GFMs supplied for I-Line® mounting, easily convertible to unit mount by removing the I-Line brackets
- Neutral current transformer is supplied for 3-phase 4-wire applications. Refer to instructions for proper installation
- Zone-selective interlocking capability is standard with upstream Micrologic trip system circuit breakers. The GFM can also be zone interlocked with the GC ground-fault system by using a restraint interface module.See Supplementary Digest
- 120 Vac control power is required for integral test feature. Meets NEC 230-95(c)

*NOTE: Ground-fault modules cannot be reverse fed.*

Table 11.77: Module/Enclosure Selection Chart

| Companion Circuit Breaker Prefix | Cat. No. | Enclosure Space Required | | Ground-Fault Pickup Adjustment Range | GFM $ Price |
|---|---|---|---|---|---|
| | | I-Line Switchboard | Individual Enclosure ▲ | | |
| FAL, FHL, FCL, FA, FH, FC | GFM100FA | LA | KA | 20–100 A | 4250.00 |
| FI | GFM100FI | LA | — | 20–100 A | 4250.00 |
| KAL, KHL, KI, KA, KH, KC | GFM250 | LA | LA | 40–200 A | 4250.00 |

▲ Use NEMA 1 or 3R enclosures only. See page 11-4 for dimensions.

## Ground-Censor® Type GA—600 Vac

The Type GA Ground-Censor equipment ground-fault protection system is recommended for protection of motor branch circuits. The type GA system is not recommended for service entrance applications, see GC200 in Section 7 of the Digest. The GA system requires the following components: GA relay, GA sensor, and circuit interrupter with 120 Vac shunt trip. GA test panel is optional, however sensor selected must be compatible with test panel when one is used▲.

Consider substituting GC-200 or Vigirex® ground-fault relays.

### Type GA System Features:

- Ground-fault current pickup adjustable from 4–1200 A, dependent on the sensor used and the connections
- Time delay field adjustable from instantaneous to 36 cycles
- Test panel available to meet NEC 230-95. Test with or without tripping. Requires 120 Vac 50/60 Hz power (50 VA min.)
- 120 Vac shunt trip is required on the circuit breaker to interrupt the circuit
- Relay contacts are rated for 10 A continuous @ 250 Vac UL Listed

Table 11.78: GA Catalog Numbers

| Description | | Ground-Fault Trip Range | Cat. No. | $ Price |
|---|---|---|---|---|
| Instantaneous relay Time delay relay (for motor starter applications) | | Dependent on sensor and connections | GA12<br>GAT12 | 990.00<br>1428.00 |
| Sensor Type GA■ | Window Size | | | |
| | 3-3/4 in. Dia. | 4–12, 12–36 A | GA375T | 671.00 |
| | 3-3/4 in. Dia. | 4–12 A | GA375▲ | 611.00 |
| | 2-1/2 in. Dia. | 4–12 A | GA250▲ | 566.00 |
| | | 25–75, 50–150, 150–450, | | |
| | 7-7/8 in. x 11-1/4 in. | 400–1200 A | GA811 | 1211.00 |
| | 7-7/8 in. x 15-3/4 in. | 50–150, 150–450, 400–1200 A | GA816 | 1376.00 |
| | 7-7/8 in. x 24-5/8 in. | 150–400, 400–1200 A | GA825 | 1665.00 |
| Test Panel | | Same As Sensor | GA12TPM | 1589.00 |

▲ Does not have connections for test panel.
■ Requires 2 inch clearance from current carrying wires on all sides.

## RIM32 Restraint Interface Module

Table 11.79: ZSI Combinations

ZSI Combinations (Where All Inputs Driven Are Same Column)

| Circuit Breaker Series: Inputs → / Output ↓ | SE 2 (Ground Fault) | SE 2 (Short Time) | ME 3, NE1, PE 4 | ME 4 & 5, NE 2 & 3 PE 5 & 6, SE 3 | ME 5A, NE 3A, PE 6A, SE 3A | LE 1B, ME 5B, NE 3B, PE 6B, SE 3B | GC100 | RIM 32 |
|---|---|---|---|---|---|---|---|---|
| SE 2 (Ground Fault) | 50 | | R | R | R | R | R | 50 |
| SE 2 (Short Time) | | 1 | R | R | R | R | R | 50 |
| ME 3, NE1, PE 4 | 50 | R | 15 | 2 | 13 | 47 | R | 50 |
| ME 4, 5 & 5A, NE 2, 3 & 3A, PE 5, 6 & 6A, SE 3, 3A | 50 | R | R | 1 | 1 | 7 | R | 14 |
| LE 1B, ME 5B, NE 3B, PE 6B, SE 3B | 50 | R | 10 | 1 | R | 26 | R | 44 |
| GC 100 | R | R | R | R | R | R | 7 | 50 |
| GFM▲ | 50 | | 2 | 1 | 1 | 5 | R | 10 |
| RIM32 | 50 | 6 | 50 | 7 | 37 | 50 | 15 | 50 |

▲ GFM is an output device only.

| | |
|---|---|
| # | Maximum inputs without RIM32. Self-restraint counts as one input. |
| R | RIM32(s) required to restrain any devices. |
| | Present design. |
| | Invalid combination. |

The RIM32 Restraint Interface Module is used to interface the restraint signals between various Square D Micrologic® circuit breakers, Micrologic ground-fault modules, and GC-100 ground-fault protection systems.

The restraint interface module operates on either 120 or 240 Vac, 50/60 Hz. The module is protected by a 1/4 A fuse.

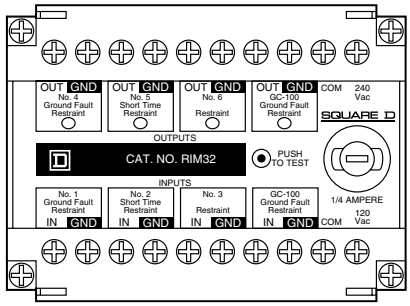
Allowable ZSI combinations are shown in Table 11.79. (Series numbers for current design circuit breakers end in B, for example NE Series 3B.) For double-ended or larger systems, or systems which contain devices from different columns in Table 11.79, contact your local Sales Office for combination information.

If more inputs or outputs are needed, another restraint interface module is necessary. Contact your local Sales Office for information on multiple module installations.

*NOTE: The maximum distance between devices is 1000 ft. (305 m).*

Table 11.80: RIM32

| Cat. No. | $ Price |
|---|---|
| RIM32 | 2768.00 |



**Masterpact® circuit breakers and related accessories are in obsolescence. Use Masterpact NT/NW for new applications. See DIgest 175. Limited service stock is available for replacement or fill purposes. Contact your local sales office for product availability.**

### To order a complete circuit breaker, order:

1. Circuit breaker fixed or drawout frame.....page 11-28
   or cradle only.....page 11-32
   or circuit breaker without cradle.....page 11-28
2. Connections.....page 11-25
3. Control unit.....page 11-29
4. Rating plug.....page 11-29
5. Accessories.....page 11-30

Fixed and Drawout breakers listed below are complete with STR58U Trip unit which includes Long time, short time, instantaneous and ground fault as well as options T (residual) and I (ammeter).

**Table 11.81: UL Listed Masterpact Circuit Breaker Frame**

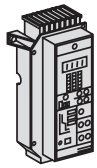
| | | Rating | AIR/ 480 V | Fixed 3P | Drawout without Cradle 3P | Cradle Only 3P | $ Price |
|---|---|---|---|---|---|---|---|
| **MP16 to MP30— UL 489/NEMA AB1 Standards** | **High Interrupting (H2)** | | | | | | Contact Schneider Electric Cedar Rapids Plant Customer Service Group for current pricing and availability. |
| | MP16H2 | 1600 A | 100 kA | MP100135 | MP100136 | MP100141 | |
| | MP20H2 | 2000 A | 100 kA | MP100137 | MP100138 | MP100133 | |
| | MP30H2 | 3000 A | 100 kA | MP100139 | MP100140 | MP100132 | |

■ Not UL Listed

Additional information: Catalog **0631CT9501**, Data Sheet **0631HO9701**

Masterpact® circuit breakers and related accessories are in obsolescence. Use Masterpact NT/NW for new applications. See DIgest 175. Limited service stock is available for replacement or fill purposes. Contact your local sales office for product availability.

Table 11.82: Control Units

| | Control Unit | Ground-Fault Protection▲ | $ Price | Without Ground-Fault Protection▲ | $ Price |
|---|---|---|---|---|---|
|  | STR 58U (long-time, short-time and instantaneous protection) | | | | |
| | STR58U (long-time = 0.4x1 sensor rating) | Includes Residual Type T — and Ammeter — I | | | |
| | | External neutral sensor (TCE) ■– see page 11-30 | | | |
| | | M1008H2 | 12663.00 | M1008H2NG | 12663.00 |
| | | M10H2 | 12663.00 | M10H2NG | 12663.00 |
| | | M1612H2 | 12663.00 | M1612H2NG | 12663.00 |
| | | M16H2 | 12663.00 | M16H2NG | 12663.00 |
| | | M20H2 | 12663.00 | M20H2NG | 12663.00 |
| | | M25H2 | 12663.00 | M25H2NG | 12663.00 |
| | | M3230H2 | 12663.00 | M3230H2NG | 12663.00 |
| | | M32H2 | 12663.00 | M32H2NG | 12663.00 |
| | | M6340H2 | 12663.00 | M6340H2NG | 12663.00 |
| | | M6350H2 | 12663.00 | M6350H2NG | 12663.00 |
| | | M63H2 | 12663.00 | M63H2NG | 12663.00 |

▲ External neutral sensor not included.
■ External AD module (see page 11-30) is required if load is below 20% or if setting is red zone.

Table 11.83: Rating Plug (RL)

| Sensor Rating | Plug Rating | Cat. No. | $ Price |
|---|---|---|---|
| 250 A | 150 A | 54732 | 327.00 |
| | 200 A | 54733 | 327.00 |
| | 250 A | 54734 | 327.00 |
| 400 A | 200 A | 54735 | 327.00 |
| | 250 A | 54736 | 327.00 |
| | 300 A | 54737 | 327.00 |
| | 400 A | 54738 | 327.00 |
| 600 A | 300 A | 54739 | 327.00 |
| | 400 A | 54740 | 327.00 |
| | 500 A | 54741 | 327.00 |
| | 600 A | 54742 | 327.00 |
| 800 A | 400 A | 54743 | 327.00 |
| | 500 A | 54744 | 327.00 |
| | 600 A | 54745 | 327.00 |
| | 800 A | 54746 | 327.00 |
| 1200 A | 600 A | 54747 | 327.00 |
| | 800 A | 54748 | 327.00 |
| | 1200 A | 54750 | 327.00 |
| 2500 A | 1200 A | 54759 | 327.00 |
| 5000 A | 3000 A | 54772 | 327.00 |
| | 4000 A | 54773 | 327.00 |
| | 5000 A | 54774 | 327.00 |

*NOTE: Mandatory for UL Listed Masterpact circuit breakers with STR 28D, STR 38S and STR 58U control units. Not required on IEC Rated Masterpact circuit breakers.*

**Masterpact® circuit breakers and related accessories are in obsolescence. Use Masterpact NT/NW for new applications. See DIgest 175. Limited service stock is available for replacement or fill purposes. Contact your local sales office for product availability.**

**Table 11.84: Neutral Sensor for 3ØH4W Systems (TCE)**

***NOTE:*** *External neutral transformer (TCE) must have the same rating as the circuit breaker current sensor.*

| | Rating | Cat. No. | $ Price▲ |
|---|---|---|---|
|  | 800 A | 54422 | **1584.00** |
| | 1250 A | 54426 | **1584.00** |
| | 2000 A | 54427 | **1584.00** |

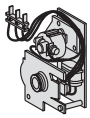
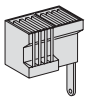
▲ Discount Schedule DE2G.

**Table 11.85: Accessories (**Must be ordered as separate items**)**

| | Accessory | Description | Discount Schedule | Cat. No. | $ Price |
|---|---|---|---|---|---|
| Power Supply Module (AD) | | Input voltage | | | |
|  | For STR 18M to STR 58U control units **Output voltage:** 24 Vdc | 24/30 Vdc | DE2F | 54440 | **1238.00** |
| | | 48/60 Vdc | | 54441 | **1238.00** |
| | | 10 Vac 50/60 Hz | | 54443 | **1238.00** |
| | | 220 Vac 50/60 Hz | | 54444 | **1238.00** |
| | | 380 Vac 50/60 Hz | | 54446 | **1238.00** |
| Battery Module (BAT) | | | | | |
|  | Battery back-up power supply for AD module | | DE2F | 54446 | **3570.00** |

**Masterpact® circuit breakers and related accessories are in obsolescence. Use Masterpact NT/NW for new applications. See DIgest 175. Limited service stock is available for replacement or fill purposes. Contact your local sales office for product availability.**

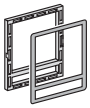
**Table 11.86: Accessories for Circuit Breaker Frame**

| | | Volts (V) | Cat. No. (XF) | Cat. No. (MX) | $ Price |
|---|---|---|---|---|---|
| • When adding (not replacing) field-installable accessories, refer to page 11-32 for secondary disconnects.<br>• Maximum 2 shunt trips or 1 shunt trip + 1 undervoltage trip. | | | | | |
| Closing Coil (XF)/Shunt Trip (MX) | | | | | |
|  | AC 50/60 Hz | 110/127 | 54449 | 54449 | **1095.00** |
| | | 220/250 | 54503 | 54503 | **1095.00** |
| | | 277 ▲ | 54504 | 54504 | **1095.00** |
| | DC | 24 | 54495 | 54495 | **1095.00** |
| | | 48 | 54497 | 54497 | **1095.00** |
| | | 100/110 ▲ | 54449 | 54449 | **1095.00** |
| | | 200/220 ▲ | 54503 | 54503 | **1095.00** |
| | | 250 | 54504▲ | 54504 | **1095.00** |
| Undervoltage Trip (MN) | | | | | |
|  | AC 50/60 Hz | 440/480 | | 54481 | **1731.00** |
| | DC | 24 | | 54470 | **1731.00** |
| | | 100/110 ▲ | | 54474 | **1731.00** |
| | | 200/220▲ | | 54478 | **1731.00** |
| Time Delayed Undervoltage Trip (MNR) – Not UL Listed | | | | | |
|  | AC 50/60 Hz | 110/127 | | 54486 | **3360.00** |
| | | 220/250 | | 54488 | **3360.00** |
| Spring Charging Motor (MCH)—Includes Spring Charged Switch | | | | | |
|  | AC 50/60 Hz | 100/127 | | 54512 | **6135.00** |
| | | 200/240 | | 54513 | **6135.00** |
| | | 480▲ | | 54518 | **6135.00** |
| | DC | 48/60 | | 54511 | **6135.00** |
| • When adding (not replacing) field-installable accessories, refer to this page for secondary disconnects. | | | | | |
| Two Standard (2a+2b) Auxiliary Switches | | | | Standard | No charge |
| Four Auxiliary Switches (OF) | | | | | |
|  | Four changeovers (SPDT) | | | 54525 | **897.00** |
| One Ready to Close Switch (PF) | | | | | |
|  | One ready to close switch | | | 54528 | **774.00** |
| One Overcurrent Trip Switch (SDE) | | | | | |
| | Not available on switch version | | | Standard | No charge |
| "OFF" Position Lock by Key Lock | | | | | |
|  | Provision for KIRK key lock | | VKA | 54536 | **1491.00** |
| | Ronis (1 key lock) with provision | | VSRA1 | 54533 | **711.00** |

▲ Not UL Listed.

**Masterpact® circuit breakers and related accessories are in obsolescence. Use Masterpact NT/NW for new applications. See DIgest 175. Limited service stock is available for replacement or fill purposes. Contact your local sales office for product availability.**

**Table 11.87: Accessories for Cradle**

| | | Cat. No. | $ Price |
|---|---|---|---|
| Position Switches | | | |
|  | Four SPDT connected position switches (CE) | 54590 | **375.00** |
|  | Two SPDT disconnected position switches (CD) | 54591 | **183.00** |
| Door Escutcheon | | | |
|  | Can be used with fixed or drawout circuit breakers | 54594▲ | **404.00** |

▲ Discount Schedule DE2F

**Masterpact® circuit breakers and related accessories are in obsolescence. Use Masterpact NT/NW for new applications. See DIgest 175. Limited service stock is available for replacement or fill purposes. Contact your local sales office for product availability.**

**Table 11.88: Spare Parts**

| | | | Cat. No. | $ Price |
|---|---|---|---|---|
| **Clusters for Cradle (Set of 2)** | | | | |
|  | MP25–MP30 3P | M20–M25L 3P | 54063 (3)▲ | **2346.00** |
| | MP25–MP30 4P | M20–M25L 4P | 54063 (4)▲ | **2346.00** |
| | | M32H 3P | 54063 (3)▲ | **2346.00** |
| | | M32H 4P | 54063 (4)▲ | **2346.00** |
| | MP40–MP50 3P | M50H 3P | 54063 (6)▲ | **2346.00** |
| | | M50H 4P | 54063 (7)▲ | **2346.00** |
| **Charging Handle** | | | | |
|  | One piece | | 685713 | **267.00** |
| **Racking Handle** | | | | |
|  | One piece | | 685631 | **450.00** |
| Vertical UL 489—UL 1066 Connectors | | | | |
| | MP25–MP30 3P (set of three top or bottom connectors) | | 54107 (2)▲ | **3489.00** |

▲ Price is for each.