

Miniature Circuit Breakers and Supplementary Protectors

Miniature Circuit Breakers and Supplementary Protectors



1.1 Industrial Circuit Breakers

| | |
|---|-----------------|
| QUICKLAG® | V4-T1-2 |
| QUICKLAG Plug-On Types HQP, QPHW, QHPX, QHPW | V4-T1-5 |
| QUICKLAG Plug-On Ground Fault and Equipment Protectors, Types QPHGFT, QPHGFT, QPGFEP, QPHGFEP | V4-T1-8 |
| Bolt-On Types BAB, QBHW, HBAX, HBAW | V4-T1-11 |
| Bolt-On Arc Fault Circuit Interrupter Types QBAF, QBCAF | V4-T1-14 |
| Bolt-On Ground Fault and Equipment Protectors, Types QBGFT, QBHGFT, QBGFEP, QBHGFEP | V4-T1-17 |
| Cable-In/Cable-Out Types QC, QCD, QCHW, QHCX, QHCW | V4-T1-20 |
| Cable-In/Cable-Out, 1/2-Inch Wide, Types QCR, QCF, QCRH, QCFH | V4-T1-24 |
| Cable-In/Cable-Out Ground Fault and Equipment Protectors, Types QCGFT, QCHGFT, QCGFEP, QCHGFEP | V4-T1-28 |
| Solenoid-Operated, Remote-Controlled Latching Types BABRP, BABRSP, BRRP and CLRP | V4-T1-31 |
| Solenoid Operator—Remote-Controlled Latching for Type GHBS, GBHS and GHQRSP Breakers | V4-T1-34 |
| International Rated Types HQP, BA, QC, GFMB, GFXBC | V4-T1-37 |
| Special Application Breakers, Types HQP, BA, QC | V4-T1-40 |

1.2 UL 489 DIN Rail Miniature Circuit Breakers

| | |
|-------------------------------|-----------------|
| FAZ-NA Circuit Breakers | V4-T1-49 |
|-------------------------------|-----------------|

1.3 UL 1077 DIN Rail Supplementary Protectors

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|----------------------------|-----------------|
| FAZ Circuit Breakers | V4-T1-67 |
|----------------------------|-----------------|

1.4 UL 1053 DIN Rail RCCB

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|--|-----------------|
| UL 1053 DIN Rail RCCB 480/277 Vac | V4-T1-87 |
| UL 1053 DIN Rail RCCB 208Y/120 Vac | V4-T1-93 |



Revision notes

Volume 4—Circuit Protectors, CA08100005E

Tab 1—Miniature Circuit Breakers and Supplementary Protectors

| Revision date | Section | Change page(s) | Description |
|---------------|---------|----------------|--------------|
| 11/30/2016 | 1.3 | V4-T1-70 | Content edit |



Powering Business Worldwide

Miniature Circuit Breakers and Supplementary Protectors



Contents

Description

Quick Reference

QUICKLAG

Quick Reference

Eaton's QUICKLAG Industrial Circuit Breakers ① Plug-In, Bolt-On, Cable-In/Cable-Out

| Circuit Breaker Type | Circuit Breaker Type Code | Continuous Ampere Rating at 40°C | Number of Poles | Vac | | Federal Spec. W-C-375b | Interrupting Ratings rms Symmetrical Amperes | | | | | | Page Number |
|----------------------|---------------------------|----------------------------------|-----------------|---------|--------------|------------------------|--|---------|--------|---------------|------|------|-------------|
| | | | | Vac | Vdc | | Vac Ratings | | | Vdc Ratings ② | | | |
| | | | | | | | 120 | 120/240 | 240 | 24-48 | 62.5 | 80 | |
| HQP | P | 10-70 | 1 | 120/240 | 24, 48, 62.5 | 10a, 11a, 12a | — | 10,000 | — | 5000 | ③ | — | V4-T1-6 |
| HQP | P | 10-125 | 2 | 120/240 | 24, 48, 80 | 10a, 12a | — | 10,000 | — | 5000 | 5000 | 5000 | V4-T1-6 |
| HQP | P | 10-100 | 2, 3 | 240 | — | 10b, 11b, 12b | — | — | 10,000 | — | — | — | V4-T1-6 |
| QPHW | P | 15-70 | 1 | 120/240 | 24, 48, 62.5 | 14a | — | 22,000 | — | 5000 | ③ | — | V4-T1-6 |
| QPHW | P | 15-125 | 2 | 120/240 | 24, 48, 80 | 14a | — | 22,000 | — | 5000 | 5000 | 5000 | V4-T1-6 |
| QPHW | P | 15-100 | 2, 3 | 240 | — | 14b | — | — | 22,000 | — | — | — | V4-T1-6 |
| QHPX | P | 15-70 | 1 | 120/240 | 24, 48, 62.5 | — | — | 42,000 | — | 5000 | ③ | — | V4-T1-7 |
| QHPX | P | 15-100 | 2 | 120/240 | 24, 48, 80 | — | — | 42,000 | — | 5000 | 5000 | 5000 | V4-T1-7 |
| QHPX | P | 15-100 | 3 | 240 | — | — | — | — | 42,000 | — | — | — | V4-T1-7 |
| QHPW | P | 15-30 | 1 | 120/240 | 24, 48, 62.5 | 15a | — | 65,000 | — | 5000 | ③ | — | V4-T1-7 |
| QHPW | P | 15-30 | 2 | 120/240 | 24, 48, 80 | 15a | — | 65,000 | — | 5000 | 5000 | 5000 | V4-T1-7 |
| QHPW | P | 15-20 | 3 | 240 | — | 15b | — | — | 65,000 | — | — | — | V4-T1-7 |
| QPGFT | P, GF | 15-40 | 1 | 120 | — | 10a, 11a, 12a | 10,000 | — | — | — | — | — | V4-T1-9 |
| QPGFT | P, GF | 15-50 | 2 | 120/240 | — | 10a, 11a, 12a | — | 10,000 | — | — | — | — | V4-T1-9 |

Notes

① QUICKLAG circuit breakers are suitable for application in relative humidity 0-95% noncondensing.

② Two-pole DC interrupting ratings based on two poles connected in series. Not UL® listed.

③ 62.5 Vac interrupting rating is 3800 AIC 10-50A and 2500 AIC 55-100A continuous.

Circuit Breaker Type Codes: **P** Plug-In; **B** Bolt-On; **C** Cable-In/Cable-Out; **GF** Ground Fault, 5 mA; **GFEP** Ground Fault, 30 mA.

For Types GHBS, GBHS and BABRP solenoid-operated, remote-controlled circuit breakers, see **Pages V4-T1-31 to V4-T1-36**.

Eaton's QUICKLAG Industrial Circuit Breakers ① Plug-In, Bolt-On, Cable-In/Cable-Out, continued

| Circuit Breaker Type | Circuit Breaker Type Code | Continuous Ampere Rating at 40°C | Number of Poles | Vac | | Federal Spec. W-C-375b | Interrupting Ratings rms Symmetrical Amperes | | | | | | Page Number |
|----------------------|---------------------------|----------------------------------|-----------------|---------|--------------|------------------------|--|---------|--------|---------------|------|------|-------------|
| | | | | Vac | Vdc | | Vac Ratings | | | Vdc Ratings ② | | | |
| | | | | | | | 120 | 120/240 | 240 | 24-48 | 62.5 | 80 | |
| QPHGFT | P, GF | 15-30 | 1 | 120 | — | 10a, 11a, 12a | 22,000 | — | — | — | — | — | V4-T1-9 |
| QPHGFT | P, GF | 15-50 | 2 | 120/240 | — | 10a, 11a, 12a | — | 22,000 | — | — | — | — | V4-T1-9 |
| QPGFEP | P, GFEP | 15-40 | 1 | 120 | — | — | 10,000 | — | — | — | — | — | V4-T1-9 |
| QPGFEP | P, GFEP | 15-50 | 2 | 120/240 | — | — | — | 10,000 | — | — | — | — | V4-T1-9 |
| QPHGFEP | P, GFEP | 15-30 | 1 | 120 | — | — | 22,000 | — | — | — | — | — | V4-T1-9 |
| BABRSP | B | 15-30 | 1 | 120 | — | — | 10,000 | — | — | — | — | — | V4-T1-12 |
| BABRSP | B | 15-30 | 2 | 120/240 | — | — | — | 10,000 | — | — | — | — | V4-T1-12 |
| BRRP | P | 15-30 | 1 | 120 | — | — | 10,000 | — | — | — | — | — | V4-T1-32 |
| BRRP | P | 15-30 | 2 | 120/240 | — | — | — | 10,000 | — | — | — | — | V4-T1-32 |
| CLRP | P | 15-30 | 1 | 120 | — | — | 10,000 | — | — | — | — | — | V4-T1-32 |
| CLRP | P | 15-30 | 2 | 120/240 | — | — | — | 10,000 | — | — | — | — | V4-T1-32 |
| BAB | B | 10-70 | 1 | 120/240 | 24, 48, 62.5 | 10a, 11a, 12a | — | 10,000 | — | 5000 | ③ | — | V4-T1-12 |
| BAB | B | 10-125 | 2 | 120/240 | 24, 48, 80 | 10a, 12a | — | 10,000 | — | 5000 | 5000 | 5000 | V4-T1-12 |
| BAB | B | 10-100 | 2, 3 | 240 | — | 10b, 11b, 12b | — | — | 10,000 | — | — | — | V4-T1-12 |
| BABRP | B | 15-30 | 1 | 120 | — | — | 10,000 | — | — | — | — | — | V4-T1-32 |
| BABRP | B | 15-30 | 2 | 120/240 | — | — | — | 10,000 | — | — | — | — | V4-T1-32 |
| QBAF | B, AF | 15-20 | 1, 2 | 120/240 | — | — | — | 10,000 | — | — | — | — | V4-T1-15 |
| QBCAF | B, AF, GF | 15-20 | 1, 2 | 120/240 | — | — | — | 10,000 | — | — | — | — | V4-T1-15 |
| QBHW | B | 15-70 | 1 | 120/240 | 24, 48, 62.5 | 14a | — | 22,000 | — | 5000 | ③ | — | V4-T1-12 |
| QBHW | B | 15-125 | 2 | 120/240 | 24, 48, 80 | 14a | — | 22,000 | — | 5000 | 5000 | 5000 | V4-T1-12 |
| QBHW | B | 15-100 | 2, 3 | 240 | — | 14b | — | — | 22,000 | — | — | — | V4-T1-12 |
| HBAX | B | 15-70 | 1 | 120/240 | 24, 48, 62.5 | — | — | 42,000 | — | 5000 | ③ | — | V4-T1-13 |
| HBAX | B | 15-100 | 2 | 120/240 | 24, 48, 80 | — | — | 42,000 | — | 5000 | 5000 | 5000 | V4-T1-13 |
| HBAX | B | 15-100 | 3 | 240 | — | — | — | — | 42,000 | — | — | — | V4-T1-13 |
| HBAW | B | 15-30 | 1 | 120/240 | 24, 48, 62.5 | 15a | — | 65,000 | — | 5000 | ③ | — | V4-T1-13 |
| HBAW | B | 15-30 | 2 | 120/240 | 24, 48, 80 | 15a | — | 65,000 | — | 5000 | 5000 | 5000 | V4-T1-13 |
| HBAW | B | 15-20 | 3 | 240 | — | 15b | — | — | 65,000 | — | — | — | V4-T1-13 |
| QBGFT | B, GF | 15-40 | 1 | 120 | — | 10a, 11a, 12a | 10,000 | — | — | — | — | — | V4-T1-18 |
| QBGFT | B, GF | 15-50 | 2 | 120/240 | — | 10a, 11a, 12a | — | 10,000 | — | — | — | — | V4-T1-18 |
| QBHGFT | B, GF | 15-30 | 1 | 120 | — | 10a, 11a, 12a | 22,000 | — | — | — | — | — | V4-T1-18 |
| QBHGFT | B, GF | 15-30 | 1 | 120/240 | — | 10a, 11a, 12a | — | 22,000 | — | — | — | — | V4-T1-18 |
| QBGFEP | B, GFEP | 15-40 | 1 | 120 | — | — | 10,000 | — | — | — | — | — | V4-T1-18 |
| QBGFEP | B, GFEP | 15-50 | 2 | 120/240 | — | — | — | 10,000 | — | — | — | — | V4-T1-18 |
| QBHGFEP | B, GFEP | 15-30 | 1 | 120 | — | — | 22,000 | — | — | — | — | — | V4-T1-18 |
| QBHGFEP | B, GFEP | 15-30 | 2 | 120/240 | — | — | 22,000 | 22,000 | — | — | — | — | V4-T1-18 |
| QC | C | 10-70 | 1 | 120/240 | 24, 48, 62.5 | 10a, 11a, 12a | — | 10,000 | — | 5000 | ③ | — | V4-T1-41 |
| QC | C | 10-100 | 2 | 120/240 | 24, 48, 80 | 10a, 12a | — | 10,000 | — | 5000 | 5000 | 5000 | V4-T1-41 |
| QC | C | 10-100 | 2, 3, 4 | 240 | — | 10b, 11b, 12b | — | — | 10,000 | — | — | — | V4-T1-41 |
| QCD | C | 10-60 | 1, 2 | 120/240 | 24, 48, 62.5 | — | 10,000 | 10,000 | — | 3000 | 3000 | — | V4-T1-23 |
| QCD | C | 10-100 | 2, 3 | 240 | 24, 48, 62.5 | — | — | 10,000 | — | 3000 | 3000 | — | V4-T1-23 |
| QCF | C | 10-60 | 1, 2 | 120/240 | 24, 48, 62.5 | — | 10,000 | 10,000 | — | 3000 | 3000 | — | V4-T1-42 |

Notes

① QUICKLAG circuit breakers are suitable for application in relative humidity 0-95% noncondensing.

② Two-pole DC interrupting ratings based on two poles connected in series. Not UL listed.

③ 62.5 Vac interrupting rating is 3800 AIC 10-50A and 2500 AIC 55-100A continuous.

Circuit Breaker Type Codes: **P** Plug-In; **B** Bolt-On; **C** Cable-In/Cable-Out; **GF** Ground Fault, 5 mA; **GFEP** Ground Fault, 30 mA.

For Types GHBS, GBHS and BABRP solenoid-operated, remote-controlled circuit breakers, see **Pages V4-T1-31 to V4-T1-36**.

Eaton's QUICKLAG Industrial Circuit Breakers ① Plug-In, Bolt-On, Cable-In/Cable-Out, continued

| Circuit Breaker Type | Circuit Breaker Type Code | Continuous Ampere Rating at 40°C | Number of Poles | Vac | | | Federal Spec. W-C-375b | Interrupting Ratings rms Symmetrical Amperes | | | | | | Page Number |
|----------------------|---------------------------|----------------------------------|-----------------|---------|--------------|-----|------------------------|--|--------|-------|---------------|------|----------|-------------|
| | | | | Vac | Vdc | Vdc | | Vac Ratings | | | Vdc Ratings ② | | | |
| | | | | | | | 120 | 120/240 | 240 | 24-48 | 62.5 | 80 | | |
| QCF | C | 15-20 | 1, 2 | 120/240 | 24, 48, 62.5 | — | 22,000 | — | — | 3000 | 3000 | — | V4-T1-27 | |
| QCF | C | 15-30 | 2, 3 | 240 | 24, 48, 62.5 | — | — | 10,000 | — | 3000 | 3000 | — | V4-T1-27 | |
| QCR | C | 10-60 | 1, 2 | 120/240 | 24, 48, 62.5 | — | 10,000 | 10,000 | — | 3000 | 3000 | — | V4-T1-27 | |
| QCR | C | 15-20 | 1, 2 | 120/240 | 24, 48, 62.5 | — | 22,000 | — | — | 3000 | 3000 | — | V4-T1-27 | |
| QCR | C | 15-30 | 2, 3 | 240 | 24, 48, 62.5 | — | — | 10,000 | — | 3000 | 3000 | — | V4-T1-27 | |
| QCHW | C | 15-70 | 1 | 120/240 | 24, 48, 62.5 | 14a | — | 22,000 | — | 5000 | ③ | — | V4-T1-22 | |
| QCHW | C | 15-100 | 2 | 120/240 | 24, 48, 80 | 14a | — | 22,000 | — | 5000 | 5000 | 5000 | V4-T1-22 | |
| QCHW | C | 15-100 | 2, 3 | 240 | — | 14b | — | — | 22,000 | — | — | — | V4-T1-22 | |
| QHCX | C | 15-70 | 1 | 120/240 | 24, 48, 62.5 | — | — | 42,000 | — | 5000 | ③ | — | V4-T1-22 | |
| QHCX | C | 15-100 | 2 | 120/240 | 24, 48, 80 | — | — | 42,000 | — | 5000 | 5000 | 5000 | V4-T1-22 | |
| QHCX | C | 15-100 | 3 | 240 | — | — | — | — | 42,000 | — | — | — | V4-T1-22 | |
| QHCW | C | 15-30 | 1 | 120/240 | 24, 48, 62.5 | 15a | — | 65,000 | — | 5000 | ③ | — | V4-T1-22 | |
| QHCW | C | 15-30 | 2 | 120/240 | 24, 48, 80 | 15a | — | 65,000 | — | 5000 | 5000 | 5000 | V4-T1-22 | |
| QHCW | C | 15-20 | 3 | 240 | — | 15b | — | — | 65,000 | — | — | — | V4-T1-22 | |
| QCGFT | C, GF | 15-40 | 1 | 120 | — | — | 10,000 | — | — | — | — | — | V4-T1-29 | |
| QCGFT | C, GF | 15-50 | 2 | 120/240 | — | — | — | 10,000 | — | — | — | — | V4-T1-29 | |
| QCHGFT | C, GF | 15-30 | 1 | 120 | — | — | 22,000 | — | — | — | — | — | V4-T1-29 | |
| QCHGFT | C, GF | 15-30 | 2 | 120/240 | — | — | — | 22,000 | — | — | — | — | V4-T1-29 | |
| QCGFEP | C, GFEP | 15-40 | 1 | 120 | — | — | 10,000 | — | — | — | — | — | V4-T1-29 | |
| QCGFEP | C, GFEP | 15-50 | 2 | 120/240 | — | — | — | 10,000 | — | — | — | — | V4-T1-29 | |
| QCHGFEP | C, GFEP | 15-30 | 1 | 120 | — | — | 22,000 | — | — | — | — | — | V4-T1-29 | |
| QCHGFEP | C, GFEP | 15-30 | 2 | 120/240 | — | — | — | 22,000 | — | — | — | — | V4-T1-29 | |

Notes

① QUICKLAG circuit breakers are suitable for application in relative humidity 0–95% noncondensing.

② Two-pole DC interrupting ratings based on two poles connected in series. Not UL listed.

③ 62.5 Vac interrupting rating is 3800 AIC 10–50A and 2500 AIC 55–100A continuous.

Circuit Breaker Type Codes: **P** Plug-In; **B** Bolt-On; **C** Cable-In/Cable-Out; **GF** Ground Fault, 5 mA; **GFEP** Ground Fault, 30 mA.

For Types GHBS, GBHS and BABRP solenoid-operated, remote-controlled circuit breakers, see **Pages V4-T1-31 to V4-T1-36**.

QUICKLAG Type HQP Single-Pole



Contents

| <i>Description</i> | <i>Page</i> |
|---|-----------------|
| Quick Reference | V4-T1-2 |
| QUICKLAG Plug-On Types HQP, QPHW, QHPX, QHPW | |
| Product Selection | V4-T1-6 |
| Dimensions | V4-T1-7 |
| QUICKLAG Plug-On Ground Fault and Equipment | |
| Protectors, Types QPGFT, QPHGFT, QPGFEP, QPHGFEP | V4-T1-8 |
| Bolt-On Types BAB, QBHW, HBAX, HBAW | V4-T1-11 |
| Bolt-On Arc Fault Circuit Interrupter Types | |
| QBAF, QBCAF | V4-T1-14 |
| Bolt-On Ground Fault and Equipment Protectors, | |
| Types QBGFT, QBHGFT, QBGFEP, QBHGFEP | V4-T1-17 |
| Cable-In/Cable-Out Types QC, QCD, QCHW, | |
| QHCX, QHCW | V4-T1-20 |
| Cable-In/Cable-Out, 1/2-Inch Wide, Types QCR, QCF, | |
| QCRH, QCFH | V4-T1-24 |
| Cable-In/Cable-Out Ground Fault and Equipment | |
| Protectors, Types QCGFT, QCHGFT, QCGFEP, QCHGFEP | V4-T1-28 |
| Solenoid-Operated, Remote-Controlled Latching | |
| Types BABRP, BABRSP, BRRP and CLRP | V4-T1-31 |
| Solenoid Operator—Remote Controlled Latching for | |
| Type GHBS, GBHS and GHQRSP Breakers | V4-T1-34 |
| International Rated Types HQP, BA, QC, GFMB, GFXBC | V4-T1-37 |
| Special Application Breakers, Types HQP, BA, QC | V4-T1-40 |

QUICKLAG Plug-On Types HQP, QPHW, QHPX, QHPW

Product Description

- All products 15–100A are HACR rated
- Switching duty rated for 120 Vac fluorescent light applications

Standards and Certifications

- Built and listed to UL 489
- All products UL and CSA® listed



Product Selection

QUICKLAG Type HQP
Single-Pole

QUICKLAG Type: HQP 10,000A Interrupting Capacity Thermal-Magnetic Breakers

| Continuous Ampere Rating at 40°C | Single-Pole 120/240 Vac Catalog Number | Two-Pole 120/240 Vac Catalog Number | Two-Pole 240 Vac Catalog Number | Three-Pole 240 Vac Catalog Number |
|--|--|---|---------------------------------------|---|
| 10 | HQP1010 | HQP2010 | — | HQP3010H ^③ |
| 15 | HQP1015 ^{①②} | HQP2015 | HQP2015H | HQP3015H |
| 20 | HQP1020 ^{①②} | HQP2020 | HQP2020H | HQP3020H |
| 25 | HQP1025 | HQP2025 | HQP2025H | HQP3025H |
| 30 | HQP1030 | HQP2030 | HQP2030H | HQP3030H |
| 35 | HQP1035 | HQP2035 | HQP2035H | HQP3035H |
| 40 | HQP1040 | HQP2040 | HQP2040H | HQP3040H |
| 45 | HQP1045 | HQP2045 | HQP2045H | HQP3045H |
| 50 | HQP1050 | HQP2050 | HQP2050H | HQP3050H |
| 55 | HQP1055 | HQP2055 | HQP2055H | HQP3055H |
| 60 | HQP1060 | HQP2060 | HQP2060H | HQP3060H |
| 70 | HQP1070 | HQP2070 | HQP2070H | HQP3070H |
| 80 | — | HQP2080 | HQP2080H | HQP3080H |
| 90 | — | HQP2090 | HQP2090H | HQP3090H |
| 100 | HQP1100 | HQP2100 | HQP2100H | HQP3100H |
| 110 | — | HQP2110 | — | — |
| 125 | — | HQP2125 | — | — |
| 150 | — | HQP2150 | — | — |

QUICKLAG Type: HQP Non-Automatic Switches

| Continuous Ampere Rating at 40°C | Single-Pole 120/240 Vac Catalog Number | Two-Pole 120/240 Vac Catalog Number | Two-Pole 240 Vac Catalog Number | Three-Pole 240 Vac Catalog Number |
|--|--|---|---------------------------------------|---|
| 50 | HQP1050N | — | HQP2050N | HQP3050N |
| 60 | HQP1060N | — | HQP2060N | HQP3060N |
| 100 | HQP1100N | — | HQP2100N | HQP3100N |

QUICKLAG Type: QPHW 22,000A Interrupting Capacity Thermal-Magnetic Breakers

| Continuous Ampere Rating at 40°C | Single-Pole 120/240 Vac Catalog Number | Two-Pole 120/240 Vac Catalog Number | Two-Pole 240 Vac Catalog Number | Three-Pole 240 Vac Catalog Number |
|--|--|---|---------------------------------------|---|
| 15 | QPHW1015 ^① | QPHW2015 | QPHW2015H | QPHW3015H |
| 20 | QPHW1020 ^① | QPHW2020 | QPHW2020H | QPHW3020H |
| 25 | QPHW1025 | QPHW2025 | QPHW2025H | QPHW3025H |
| 30 | QPHW1030 | QPHW2030 | QPHW2030H | QPHW3030H |
| 35 | QPHW1035 | QPHW2035 | QPHW2035H | QPHW3035H |
| 40 | QPHW1040 | QPHW2040 | QPHW2040H | QPHW3040H |
| 45 | QPHW1045 | QPHW2045 | QPHW2045H | QPHW3045H |
| 50 | QPHW1050 | QPHW2050 | QPHW2050H | QPHW3050H |
| 55 | QPHW1055 | QPHW2055 | QPHW2055H | QPHW3055H |
| 60 | QPHW1060 | QPHW2060 | QPHW2060H | QPHW3060H |
| 70 | QPHW1070 | QPHW2070 | QPHW2070H | QPHW3070H |
| 80 | — | QPHW2080 | QPHW2080H | QPHW3080H |
| 90 | — | QPHW2090 | QPHW2090H | QPHW3090H |
| 100 | — | QPHW2100 | QPHW2100H | QPHW3100H |
| 110 | — | QPHW2110 | — | — |
| 125 | — | QPHW2125 | — | — |

Notes

- ^① Switching duty rated for 120 Vac fluorescent light applications.
- ^② For special low-magnetic breaker, order **HQP1015L1** or **HQP1020L1**.
- ^③ Not UL listed.

QUICKLAG Type: QHPX 42,000A Interrupting Capacity Thermal-Magnetic Breakers

| Continuous Ampere Rating at 40°C | Single-Pole 120/240 Vac Catalog Number | Two-Pole 120/240 Vac Catalog Number | Two-Pole 240 Vac Catalog Number | Three-Pole 240 Vac Catalog Number |
|----------------------------------|--|---|---------------------------------------|---|
| 15 | QHPX1015 ① | QHPX2015 | — | QHPX3015H |
| 20 | QHPX1020 ① | QHPX2020 | — | QHPX3020H |
| 25 | QHPX1025 | QHPX2025 | — | QHPX3025H |
| 30 | QHPX1030 | QHPX2030 | — | QHPX3030H |
| 35 | QHPX1035 | QHPX2035 | — | QHPX3035H |
| 40 | QHPX1040 | QHPX2040 | — | QHPX3040H |
| 45 | QHPX1045 | QHPX2045 | — | QHPX3045H |
| 50 | QHPX1050 | QHPX2050 | — | QHPX3050H |
| 55 | QHPX1055 | QHPX2055 | — | QHPX3055H |
| 60 | QHPX1060 | QHPX2060 | — | QHPX3060H |
| 70 | QHPX1070 | QHPX2070 | — | QHPX3070H |
| 80 | — | QHPX2080 | — | QHPX3080H |
| 90 | — | QHPX2090 | — | QHPX3090H |
| 100 | — | QHPX2100 | — | QHPX3100H |

QUICKLAG Type: QHPW 65,000A Interrupting Capacity Thermal-Magnetic Breakers

| Continuous Ampere Rating at 40°C | Single-Pole 120/240 Vac Catalog Number | Two-Pole 120/240 Vac Catalog Number | Two-Pole 240 Vac Catalog Number | Three-Pole 240 Vac Catalog Number |
|----------------------------------|--|---|---------------------------------------|---|
| 15 | QHPW1015 ① | QHPW2015 | — | QHPW3015H |
| 20 | QHPW1020 ① | QHPW2020 | — | QHPW3020H |
| 25 | QHPW1025 | QHPW2025 | — | — |
| 30 | QHPW1030 | QHPW2030 | — | — |

Dimensions

Approximate Dimensions in Inches (mm)

Shipping Data

| Number of Poles | Carton Quantity | Approximate Weight Lbs (kg) | Dimensions |
|-----------------|-----------------|-----------------------------|---|
| 1 | 24 | 9.00 (4.1) | 12.50 x 7.50 x 5.00 (317.5 x 190.5 x 127.0) |
| 2 | 12 | 9.00 (4.1) | 12.50 x 7.50 x 5.00 (317.5 x 190.5 x 127.0) |
| 3 | 8 | 9.00 (4.1) | 12.50 x 7.50 x 5.00 (317.5 x 190.5 x 127.0) |

Note

① Switching duty rated for 120 Vac fluorescent light applications.

QUICKLAG Type QPGFT Single-Pole Ground Fault Circuit Breaker



Contents

| <i>Description</i> | <i>Page</i> |
|--|-----------------|
| Quick Reference | V4-T1-2 |
| QUICKLAG Plug-On Types HQP, QPHW, QHPX, QHPW | V4-T1-5 |
| QUICKLAG Plug-On Ground Fault and Equipment Protectors, Types QPGFT, QPHGFT, QPGFEP, QPHGFEP | |
| Product Selection | V4-T1-9 |
| Wiring Diagram | V4-T1-10 |
| Dimensions | V4-T1-10 |
| Bolt-On Types BAB, QBHW, HBAX, HBAW | V4-T1-11 |
| Bolt-On Arc Fault Circuit Interrupter Types QBAF, QBCAF | V4-T1-14 |
| Bolt-On Ground Fault and Equipment Protectors, Types QBGFT, QBHGFT, QBGFEP, QBHGFEP | V4-T1-17 |
| Cable-In/Cable-Out Types QC, QCD, QCHW, QHCX, QHCW | V4-T1-20 |
| Cable-In/Cable-Out, 1/2-Inch Wide, Types QCR, QCF, QCRH, QCFH | V4-T1-24 |
| Cable-In/Cable-Out Ground Fault and Equipment Protectors, Types QCGFT, QCHGFT, QCGFEP, QCHGFEP | V4-T1-28 |
| Solenoid-Operated, Remote-Controlled Latching Types BABRP, BABRSP, BRRP and CLRP | V4-T1-31 |
| Solenoid Operator—Remote Controlled Latching for Type GHBS, GBHS and GHORSP Breakers | V4-T1-34 |
| International Rated Types HQP, BA, QC, GFMB, GFXBC | V4-T1-37 |
| Special Application Breakers, Types HQP, BA, QC | V4-T1-40 |

QUICKLAG Plug-On Ground Fault and Equipment Protectors, Types QPGFT, QPHGFT, QPGFEP, QPHGFEP

Product Description

QUICKLAG Ground Fault Circuit Breakers, Class A GFCI

- 5 mA trip sensitivity

QUICKLAG Ground Fault Equipment Protectors

- 30 mA trip sensitivity

Standards and Certifications

- Built and listed to UL 489

QUICKLAG Ground Fault Circuit Breakers, Class A GFCI

- Built and tested to UL 943

QUICKLAG Ground Fault Equipment Protectors

- Built and listed to UL 1053



Product Selection

QUICKLAG Type QPGFT Single-Pole



Ground Fault Circuit Breakers—5 mA Sensitivity QUICKLAG Type: QPGFT 10,000A Interrupting Capacity Thermal-Magnetic Breakers

| Continuous Ampere Rating at 40°C | Single-Pole | Two-Pole |
|----------------------------------|---------------------------|-------------------------------|
| | 120 Vac Catalog Number | 120/240 Vac Catalog Number |
| 15 | QPGFT1015 | QPGFT2015 |
| 20 | QPGFT1020 | QPGFT2020 |
| 25 | QPGFT1025 | QPGFT2025 |
| 30 | QPGFT1030 | QPGFT2030 |
| 40 | QPGFT1040 | QPGFT2040 |
| 50 | — | QPGFT2050 |

QUICKLAG Type: QPHGFT 22,000A Interrupting Capacity Thermal-Magnetic Breakers

| Continuous Ampere Rating at 40°C | Single-Pole | Two-Pole |
|----------------------------------|---------------------------|-------------------------------|
| | 120 Vac Catalog Number | 120/240 Vac Catalog Number |
| 15 | QPHGF1015 | QPHGF2015 |
| 20 | QPHGF1020 | QPHGF2020 |
| 25 | QPHGF1025 | QPHGF2025 |
| 30 | QPHGF1030 | QPHGF2030 |

Ground Fault Equipment Breakers—30 mA Sensitivity QUICKLAG Type: QPGFEP 10,000A Interrupting Capacity Thermal-Magnetic Breakers

| Continuous Ampere Rating at 40°C | Single-Pole | Two-Pole |
|----------------------------------|---------------------------|-------------------------------|
| | 120 Vac Catalog Number | 120/240 Vac Catalog Number |
| 15 | QPGFEP1015 | QPGFEP2015 |
| 20 | QPGFEP1020 | QPGFEP2020 |
| 25 | QPGFEP1025 | QPGFEP2025 |
| 30 | QPGFEP1030 | QPGFEP2030 |
| 40 | QPGFEP1040 | QPGFEP2040 |
| 50 | — | QPGFEP2050 |

QUICKLAG Type: QPHGFEP 22,000A Interrupting Capacity Thermal-Magnetic Breakers

| Continuous Ampere Rating at 40°C | Single-Pole | Two-Pole |
|----------------------------------|---------------------------|-------------------------------|
| | 120 Vac Catalog Number | 120/240 Vac Catalog Number |
| 15 | QPHGFEP1015 | QPHGFEP2015 |
| 20 | QPHGFEP1020 | QPHGFEP2020 |
| 25 | QPHGFEP1025 | QPHGFEP2025 |
| 30 | QPHGFEP1030 | QPHGFEP2030 |

Special Application Ground Fault Circuit Protectors—5 mA Sensitivity QUICKLAG Type: QPGFT 10,000A Interrupting Capacity with Bell Alarm (W1) or Auxiliary Switch (W2)

| Continuous Ampere Rating at 40°C | Single-Pole | Two-Pole |
|--|---------------------------|-------------------------------|
| | 120 Vac Catalog Number | 120/240 Vac Catalog Number |
| 15 | QPGFT1015W1 | QPGFT2015W1 |
| 20 | QPGFT1020W1 | QPGFT2020W1 |
| 25 | QPGFT1025W1 | QPGFT2025W1 |
| 30 | QPGFT1030W1 | QPGFT2030W1 |
| 40 | — | QPGFT2040W1 |
| 50 | — | QPGFT2050W1 |
| 15 | QPGFT1015W2 | — |
| 20 | QPGFT1020W2 | — |
| 25 | QPGFT1025W2 | — |
| 30 | QPGFT1030W2 | — |

Special Application Ground Fault Circuit Protectors—30 mA Sensitivity QUICKLAG Type: QPGFEP 10,000A Interrupting Capacity with Bell Alarm (W1) or Auxiliary Switch (W2)

| Continuous Ampere Rating at 40°C | Single-Pole | Two-Pole |
|--|---------------------------|-------------------------------|
| | 120 Vac Catalog Number | 120/240 Vac Catalog Number |
| 15 | QPGFEP1015W1 | QPGFEP2015W1 |
| 20 | QPGFEP1020W1 | QPGFEP2020W1 |
| 25 | QPGFEP1025W1 | QPGFEP2025W1 |
| 30 | QPGFEP1030W1 | QPGFEP2030W1 |
| 40 | — | QPGFEP2040W1 |
| 50 | — | QPGFEP2050W1 |
| 15 | QPGFEP1015W2 | — |
| 20 | QPGFEP1020W2 | — |
| 25 | QPGFEP1025W2 | — |
| 30 | QPGFEP1030W2 | — |

Wiring Diagram

Bell Alarm and Auxiliary Contact Schematic



Single-throw double-pole contacts are UL and CSA listed for 5A at 250 Vac.

Bell Alarm (W1)—contacts change state when breaker trips.

Auxiliary Switch (W2)—contacts change state when breaker is opened (or tripped) or closed.

14-inch (355.6 mm) long 18 AWG pigtail wire leads provided.

Dimensions

Approximate Dimensions in Inches (mm)

Shipping Data

| Number of Poles | Carton Quantity | Approximate Weight Lbs (kg) | Dimensions |
|-----------------|-----------------|-----------------------------|---|
| 1 | 24 | 11.00 (5.0) | 12.50 x 6.50 x 5.00 (317.5 x 165.1 x 127.0) |
| 2 | 5 | 5.00 (2.3) | 15.50 x 6.00 x 4.50 (393.7 x 152.4 x 114.3) |

Note

Shipped individually or in carton quantities.

QUICKLAG Type BAB Single-Pole



Contents

| <i>Description</i> | <i>Page</i> |
|--|-----------------|
| Quick Reference | V4-T1-2 |
| QUICKLAG Plug-On Types HQP, QPHW, QHPX, QHPW | V4-T1-5 |
| QUICKLAG Plug-On Ground Fault and Equipment Protectors, Types QPGFT, QPHGFT, QPGFEP, QPHGFEP | V4-T1-8 |
| Bolt-On Types BAB, QBHW, HBAX, HBAW | |
| Product Selection | V4-T1-12 |
| Dimensions | V4-T1-13 |
| Bolt-On Arc Fault Circuit Interrupter Types | |
| QBAF, QBCAF | V4-T1-14 |
| Bolt-On Ground Fault and Equipment Protectors, Types QBGFT, QBHGFT, QBGFEP, QBHGFEP | V4-T1-17 |
| Cable-In/Cable-Out Types QC, QCD, QCHW, QHCX, QHCW | V4-T1-20 |
| Cable-In/Cable-Out, 1/2-Inch Wide, Types QCR, QCF, QCRH, QCFH | V4-T1-24 |
| Cable-In/Cable-Out Ground Fault and Equipment Protectors, Types QCGFT, QCHGFT, QCGFEP, QCHGFEP | V4-T1-28 |
| Solenoid-Operated, Remote-Controlled Latching Types BABRP, BABRSP, BRRP and CLRP | V4-T1-31 |
| Solenoid Operator—Remote Controlled Latching for Type GHBS, GBHS and GHQRSP Breakers. | V4-T1-34 |
| International Rated Types HQP, BA, QC, GFMB, GFXBC | V4-T1-37 |
| Special Application Breakers, Types HQP, BA, QC | V4-T1-40 |

Bolt-On Types BAB, QBHW, HBAX, HBAW

Product Description

- All products 15–100A are HACR rated
- Switching duty rated for 120 Vac fluorescent light applications

Standards and Certifications

- Built and listed to UL 489
- All products UL and CSA listed



Product Selection

QUICKLAG Type BAB
Single-Pole

QUICKLAG Type: BA 10,000A Interrupting Capacity Thermal-Magnetic Breakers

| Continuous Ampere Rating at 40°C | Single-Pole 120/240 Vac Catalog Number | Two-Pole 120/240 Vac Catalog Number | Two-Pole 240 Vac Catalog Number | Three-Pole 240 Vac Catalog Number |
|--|--|---|---------------------------------------|---|
| 10 | BAB1010 | BAB2010 | BAB2010H ③ | BAB3010H ③ |
| 15 | BAB1015 ①② | BAB2015 | BAB2015H | BAB3015H |
| 20 | BAB1020 ①② | BAB2020 | BAB2020H | BAB3020H |
| 25 | BAB1025 | BAB2025 | BAB2025H | BAB3025H |
| 30 | BAB1030 | BAB2030 | BAB2030H | BAB3030H |
| 35 | BAB1035 | BAB2035 | BAB2035H | BAB3035H |
| 40 | BAB1040 | BAB2040 | BAB2040H | BAB3040H |
| 45 | BAB1045 | BAB2045 | BAB2045H | BAB3045H |
| 50 | BAB1050 | BAB2050 | BAB2050H | BAB3050H |
| 55 | BAB1055 | BAB2055 | BAB2055H | BAB3055H |
| 60 | BAB1060 | BAB2060 | BAB2060H | BAB3060H |
| 70 | BAB1070 | BAB2070 | BAB2070H | BAB3070H |
| 80 | — | BAB2080 | BAB2080H | BAB3080H |
| 90 | — | BAB2090 | BAB2090H | BAB3090H |
| 100 | BAB1100 | BAB2100 | BAB2100H | BAB3100H |
| 110 | — | BAB2110 | — | — |
| 125 | — | BAB2125 | — | — |

QUICKLAG Type: BA Non-Automatic Switches

| Continuous Ampere Rating at 40°C | Single-Pole 120/240 Vac Catalog Number | Two-Pole 120/240 Vac Catalog Number | Two-Pole 240 Vac Catalog Number | Three-Pole 240 Vac Catalog Number |
|--|--|---|---------------------------------------|---|
| 50 | BAB1050N | — | BAB2050N | BAB3050N |
| 60 | BAB1060N | — | BAB2060N | BAB3060N |
| 100 | BAB1100N | — | BAB2100N | BAB3100N |

QUICKLAG Type: QBHW 22,000A Interrupting Capacity Thermal-Magnetic Breakers

| Continuous Ampere Rating at 40°C | Single-Pole 120/240 Vac Catalog Number | Two-Pole 120/240 Vac Catalog Number | Two-Pole 240 Vac Catalog Number | Three-Pole 240 Vac Catalog Number |
|--|--|---|---------------------------------------|---|
| 15 | QBHW1015 ① | QBHW2015 | QBHW2015H | QBHW3015H |
| 20 | QBHW1020 ① | QBHW2020 | QBHW2020H | QBHW3020H |
| 25 | QBHW1025 | QBHW2025 | QBHW2025H | QBHW3025H |
| 30 | QBHW1030 | QBHW2030 | QBHW2030H | QBHW3030H |
| 35 | QBHW1035 | QBHW2035 | QBHW2035H | QBHW3035H |
| 40 | QBHW1040 | QBHW2040 | QBHW2040H | QBHW3040H |
| 45 | QBHW1045 | QBHW2045 | QBHW2045H | QBHW3045H |
| 50 | QBHW1050 | QBHW2050 | QBHW2050H | QBHW3050H |
| 55 | QBHW1055 | QBHW2055 | QBHW2055H | QBHW3055H |
| 60 | QBHW1060 | QBHW2060 | QBHW2060H | QBHW3060H |
| 70 | QBHW1070 | QBHW2070 | QBHW2070H | QBHW3070H |
| 80 | — | QBHW2080 | QBHW2080H | QBHW3080H |
| 90 | — | QBHW2090 | QBHW2090H | QBHW3090H |
| 100 | — | QBHW2100 | QBHW2100H | QBHW3100H |
| 110 | — | QBHW2110 | — | — |
| 125 | — | QBHW2125 | — | — |

Notes

- ① Switching duty rated for 120 Vac fluorescent light applications.
- ② For special low-magnetic breaker, order **BAB1015L1** or **BAB1020L1**.
- ③ Not UL listed.

QUICKLAG Type: HBAX 42,000A Interrupting Capacity Thermal-Magnetic Breakers

| Continuous Ampere Rating at 40°C | Single-Pole 120/240 Vac Catalog Number | Two-Pole 120/240 Vac Catalog Number | Two-Pole 240 Vac Catalog Number | Three-Pole 240 Vac Catalog Number |
|----------------------------------|--|-------------------------------------|---------------------------------|-----------------------------------|
| 15 | HBAX1015 ^① | HBAX2015 | — | HBAX3015H |
| 20 | HBAX1020 ^① | HBAX2020 | — | HBAX3020H |
| 25 | HBAX1025 | HBAX2025 | — | HBAX3025H |
| 30 | HBAX1030 | HBAX2030 | — | HBAX3030H |
| 35 | HBAX1035 | HBAX2035 | — | HBAX3035H |
| 40 | HBAX1040 | HBAX2040 | — | HBAX3040H |
| 45 | HBAX1045 | HBAX2045 | — | HBAX3045H |
| 50 | HBAX1050 | HBAX2050 | — | HBAX3050H |
| 55 | HBAX1055 | HBAX2055 | — | HBAX3055H |
| 60 | HBAX1060 | HBAX2060 | — | HBAX3060H |
| 70 | HBAX1070 | HBAX2070 | — | HBAX3070H |
| 80 | — | HBAX2080 | — | HBAX3080H |
| 80 | — | HBAX2080 | — | HBAX3080H |
| 90 | — | HBAX2090 | — | HBAX3090H |
| 100 | — | HBAX2100 | — | HBAX3100H |

QUICKLAG Type: HBAW 65,000A Interrupting Capacity Thermal-Magnetic Breakers

| Continuous Ampere Rating at 40°C | Single-Pole 120/240 Vac Catalog Number | Two-Pole 120/240 Vac Catalog Number | Two-Pole 240 Vac Catalog Number | Three-Pole 240 Vac Catalog Number |
|----------------------------------|--|-------------------------------------|---------------------------------|-----------------------------------|
| 15 | HBAW1015 ^① | HBAW2015 | — | HBAW3015H |
| 20 | HBAW1020 ^① | HBAW2020 | — | HBAW3020H |
| 25 | HBAW1025 | HBAW2025 | — | — |
| 30 | HBAW1030 | HBAW2030 | — | — |

Dimensions

Approximate Dimensions in Inches (mm)

Shipping Data

| Number of Poles | Carton Quantity | Approximate Weight Lbs (kg) | Dimensions |
|-----------------|-----------------|-----------------------------|---|
| 1 | 24 | 9.00 (4.1) | 12.50 x 7.50 x 5.00 (317.5 x 190.5 x 127.0) |
| 2 | 12 | 9.00 (4.1) | 12.50 x 7.50 x 5.00 (317.5 x 190.5 x 127.0) |
| 3 | 8 | 9.00 (4.1) | 12.50 x 7.50 x 5.00 (317.5 x 190.5 x 127.0) |

Note

^① Switching duty rated for 120 Vac fluorescent light applications.

Bolt-On Arc Fault Circuit Interrupter QUICKLAG Types QBAF, QBCAF



Contents

| <i>Description</i> | <i>Page</i> |
|--|-----------------|
| Quick Reference | V4-T1-2 |
| QUICKLAG Plug-On Types HQP, QPHW, QHPX, QHPW | V4-T1-5 |
| QUICKLAG Plug-On Ground Fault and Equipment Protectors, Types QPGFT, QPHGFT, QPGFEP, QPHGFEP | V4-T1-8 |
| Bolt-On Types BAB, QBHW, HBAX, HBAW | V4-T1-11 |
| Bolt-On Arc Fault Circuit Interrupter Types QBAF, QBCAF | |
| Product Selection | V4-T1-15 |
| Wiring Diagrams | V4-T1-16 |
| Bolt-On Ground Fault and Equipment Protectors, Types QBGFT, QBHGFT, QBGFEP, QBHGFEP | V4-T1-17 |
| Cable-In/Cable-Out Types QC, QCD, QCHW, QHCX, QHCW | V4-T1-20 |
| Cable-In/Cable-Out, 1/2-Inch Wide, Types QCR, QCF, QCRH, QCFH | V4-T1-24 |
| Cable-In/Cable-Out Ground Fault and Equipment Protectors, Types QCGFT, QCHGFT, QCGFEP, QCHGFEP | V4-T1-28 |
| Solenoid-Operated, Remote-Controlled Latching Types BABRP, BABRSP, BRRP and CLRP. | V4-T1-31 |
| Solenoid Operator—Remote Controlled Latching for Type GHBS, GBHS and GHORSP Breakers | V4-T1-34 |
| International Rated Types HQP, BA, QC, GFMB, GFXBC | V4-T1-37 |
| Special Application Breakers, Types HQP, BA, QC . . . | V4-T1-40 |

Bolt-On Arc Fault Circuit Interrupter Types QBAF, QBCAF

Product Description

- All products HACR rated

Features, Benefits and Functions

- 10 and 22 kAIC rating at 120V and 120/240V
- Single-pole AFCI
- HID ratings for HID (High Intensity Discharge) lighting
- All models are HACR rated

Standards and Certifications

- Built and listed to UL 489
- UL File E7819 for QBAF



Product Selection

QBCAF and QBAF Type AFCIs

Effective immediately, Eaton AFCIs are available for use in Sumter panels with a 22 kAIC rating. This higher rated breaker will allow us to win jobs where AFCIs are specified at higher than 10 kAIC. This breaker provides standard thermal-

magnetic protection of branch circuits. This product will have the same form, fit and function of the current bolt-on AFCI (QBCAF and QBAF Type). Product scope is below. These breakers are in Bid Manager™ for Pow-R-Line 1a, Pow-R-Line 1a-LX,

Pow-R-Line 3a and Pow-R-Line 4a panelboards. For series rated combinations, continue to use the less expensive 10 kAIC QBCAF and QBAF offerings.

Breakers can also be ordered from Vista.

QBHCAF

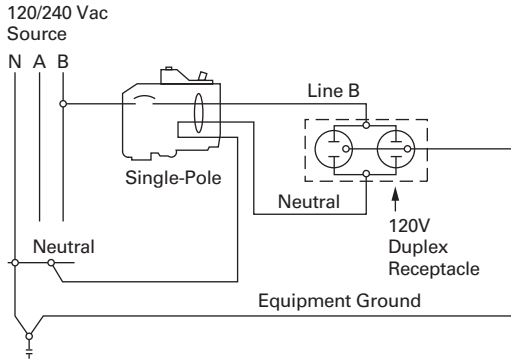
1-Inch (25.4 mm) Wide Bolt-On Arc Fault Circuit Interrupter



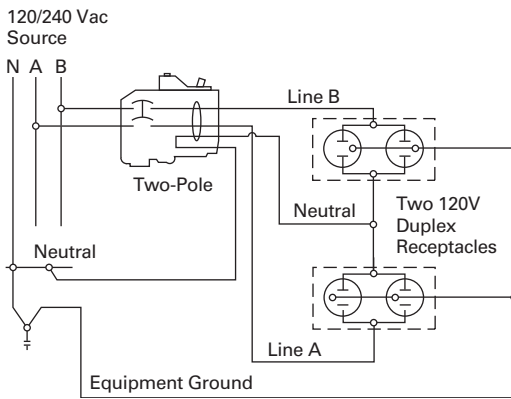
| Poles | kAIC Rating | Ampere Rating | Configuration | Catalog Number |
|-------------------------------------|-------------|---------------|--------------------|-------------------|
| Type QBCAF Combination AFCI | | | | |
| Single-pole | 10 kAIC | 15 | Combination AFCI | QBCAF1015 |
| | | 20 | Combination AFCI | QBCAF1020 |
| | 22 kAIC | 15 | Combination AFCI | QBHCAF1015 |
| | | 20 | Combination AFCI | QBHCAF1020 |
| Type QBAF Branch Feeder AFCI | | | | |
| Single-pole | 10 kAIC | 15 | Branch Feeder AFCI | QBAF1015 |
| | | 20 | Branch Feeder AFCI | QBAF1020 |
| | 22 kAIC | 15 | Branch Feeder AFCI | QBHAF1015 |
| | | 20 | Branch Feeder AFCI | QBHAF1020 |

Wiring Diagrams

Single-Pole 120V Load Application Sourced by 120/240 Vac



Single-Pole Shared Neutral with Multi-Duplex Receptacle Application



QUICKLAG Type QBGFT Single-Pole Ground Fault Circuit Breaker



Contents

| <i>Description</i> | <i>Page</i> |
|--|-----------------|
| QUICKLAG Plug-On Types HQP, QPHW, QHPX, QHPW | V4-T1-5 |
| QUICKLAG Plug-On Ground Fault and Equipment Protectors, Types QPGFT, QPHGFT, QPGFEP, QPHGFEP | V4-T1-8 |
| Bolt-On Types BAB, QBHW, HBAX, HBAW | V4-T1-11 |
| Bolt-On Arc Fault Circuit Interrupter Types QBAF, QBCAF | V4-T1-14 |
| Bolt-On Ground Fault and Equipment Protectors, Types QBGFT, QBHGFT, QBGFEP, QBHGFEP | V4-T1-18 |
| Product Selection | V4-T1-19 |
| Wiring Diagram | V4-T1-19 |
| Dimensions | V4-T1-19 |
| Cable-In/Cable-Out Types QC, QCD, QCHW, QHCX, QHCW | V4-T1-20 |
| Cable-In/Cable-Out, 1/2-Inch Wide, Types QCR, QCF, QCRH, QCFH | V4-T1-24 |
| Cable-In/Cable-Out Ground Fault and Equipment Protectors, Types QCGFT, QCHGFT, QCGFEP, QCHGFEP | V4-T1-28 |
| Solenoid-Operated, Remote-Controlled Latching Types BABRP, BABRSP, BRRP and CLRP | V4-T1-31 |
| Solenoid Operator—Remote Controlled Latching for Type GHBS, GBHS and GHQRSP Breakers. | V4-T1-34 |
| International Rated Types HQP, BA, QC, GFMB, GFXBC | V4-T1-37 |
| Special Application Breakers, Types HQP, BA, QC | V4-T1-40 |

Bolt-On Ground Fault and Equipment Protectors, Types QBGFT, QBHGFT, QBGFEP, QBHGFEP

Product Description

QUICKLAG Ground Fault Circuit Breakers, Class A GFCI

- 5 mA trip sensitivity

QUICKLAG Ground Fault Equipment Protectors

- 30 mA trip sensitivity

Standards and Certifications

- Built and tested to UL 489

QUICKLAG Ground Fault Circuit Breakers, Class A GFCI

- Built and tested to UL 943

QUICKLAG Ground Fault Equipment Protectors

- Built and tested to UL 1053



Product Selection

QUICKLAG Type QBGFT
Single-Pole
**Ground Fault Circuit Breakers—5 mA Sensitivity QUICKLAG Type:
QBGFT 10,000A Interrupting Capacity Thermal-Magnetic Breakers**

| Continuous Ampere Rating at 40°C | Single-Pole | Two-Pole |
|--|---------------------------|-------------------------------|
| | 120 Vac Catalog Number | 120/240 Vac Catalog Number |
| 15 | QBGFT1015 | QBGFT2015 |
| 20 | QBGFT1020 | QBGFT2020 |
| 25 | QBGFT1025 | QBGFT2025 |
| 30 | QBGFT1030 | QBGFT2030 |
| 40 | QBGFT1040 | QBGFT2040 |
| 50 | — | QBGFT2050 |

**QUICKLAG Type: QBHGFT 22,000A Interrupting Capacity
Thermal-Magnetic Breakers**

| Continuous Ampere Rating at 40°C | Single-Pole | Two-Pole |
|--|---------------------------|-------------------------------|
| | 120 Vac Catalog Number | 120/240 Vac Catalog Number |
| 15 | QBHGFT1015 | QBHGFT2015 |
| 20 | QBHGFT1020 | QBHGFT2020 |
| 25 | QBHGFT1025 | QBHGFT2025 |
| 30 | QBHGFT1030 | QBHGFT2030 |

**Ground Fault Equipment Breakers—30 mA Sensitivity QUICKLAG Type:
QBGFEP 10,000A Interrupting Capacity Thermal-Magnetic Breakers**

| Continuous Ampere Rating at 40°C | Single-Pole | Two-Pole |
|--|---------------------------|-------------------------------|
| | 120 Vac Catalog Number | 120/240 Vac Catalog Number |
| 15 | QBGFEP1015 | QBGFEP2015 |
| 20 | QBGFEP1020 | QBGFEP2020 |
| 25 | QBGFEP1025 | QBGFEP2025 |
| 30 | QBGFEP1030 | QBGFEP2030 |
| 40 | QBGFEP1040 | QBGFEP2040 |
| 50 | — | QBGFEP2050 |

**QUICKLAG Type: QBHGFEP 22,000A Interrupting Capacity
Thermal-Magnetic Breakers**

| Continuous Ampere Rating at 40°C | Single-Pole | Two-Pole |
|--|---------------------------|-------------------------------|
| | 120 Vac Catalog Number | 120/240 Vac Catalog Number |
| 15 | QBHGFEP1015 | QBHGFEP2015 |
| 20 | QBHGFEP1020 | QBHGFEP2020 |
| 25 | QBHGFEP1025 | QBHGFEP2025 |
| 30 | QBHGFEP1030 | QBHGFEP2030 |

Special Application Ground Fault Circuit Protectors—5 mA Sensitivity QUICKLAG Type: QBGFT 10,000A Interrupting Capacity with Bell Alarm (W1) or Auxiliary Switch (W2)

| Continuous Ampere Rating at 40°C | Single-Pole | Two-Pole |
|----------------------------------|---------------------------|-------------------------------|
| | 120 Vac Catalog Number | 120/240 Vac Catalog Number |
| 15 | QBGFT1015W1 | QBGFT2015W1 |
| 20 | QBGFT1020W1 | QBGFT2020W1 |
| 25 | QBGFT1025W1 | QBGFT2025W1 |
| 30 | QBGFT1030W1 | QBGFT2030W1 |
| 40 | — | QBGFT2040W1 |
| 50 | — | QBGFT2050W1 |
| 15 | QBGFT1015W2 | — |
| 20 | QBGFT1020W2 | — |
| 25 | QBGFT1025W2 | — |
| 30 | QBGFT1030W2 | — |

Special Application Ground Fault Circuit Protectors—30 mA Sensitivity QUICKLAG Type: QBGFEP 10,000A Interrupting Capacity with Bell Alarm (W1) or Auxiliary Switch (W2)

| Continuous Ampere Rating at 40°C | Single-Pole | Two-Pole |
|----------------------------------|---------------------------|-------------------------------|
| | 120 Vac Catalog Number | 120/240 Vac Catalog Number |
| 15 | QBGFEP1015W1 | QBGFEP2015W1 |
| 20 | QBGFEP1020W1 | QBGFEP2020W1 |
| 25 | QBGFEP1025W1 | QBGFEP2025W1 |
| 30 | QBGFEP1030W1 | QBGFEP2030W1 |
| 40 | — | QBGFEP2040W1 |
| 50 | — | QBGFEP2050W1 |
| 15 | QBGFEP1015W2 | — |
| 20 | QBGFEP1020W2 | — |
| 25 | QBGFEP1025W2 | — |
| 30 | QBGFEP1030W2 | — |

Wiring Diagram

Bell Alarm and Auxiliary Contact Schematic



Single-throw double-pole contacts are UL and CSA listed for 5A at 250 Vac.
 Bell Alarm (W1)—contacts change state when breaker trips.
 Auxiliary Switch (W2)—contacts change state when breaker is opened (or tripped) or closed.
 14-inch (355.6 mm) long 18 AWG pigtail wire leads provided.

Dimensions

Approximate Dimensions in Inches (mm)

Shipping Data

| Number of Poles | Approximate Weight Lbs (kg) | Dimensions |
|-----------------|-----------------------------|---|
| 1 | 11.00 (5.0) | 12.50 x 6.50 x 5.00 (317.5 x 165.1 x 127.0) |
| 2 | 5.00 (2.3) | 15.50 x 6.00 x 4.50 (393.7 x 152.4 x 114.3) |

Note

Shipped individually or in carton quantities.

QUICKLAG Type QC Single-Pole



Contents

| <i>Description</i> | <i>Page</i> |
|---|-----------------|
| Quick Reference | V4-T1-2 |
| QUICKLAG Plug-On Types HQP, QPHW, QHPX, QHPW Protectors, Types QPGFT, QPHGFT, QPGFEP, QPHGFEP | V4-T1-5 |
| QUICKLAG Plug-On Ground Fault and Equipment Protectors, Types QPGFT, QPHGFT, QPGFEP, QPHGFEP | V4-T1-8 |
| Bolt-On Types BAB, QBHW, HBAX, HBAW | V4-T1-11 |
| Bolt-On Arc Fault Circuit Interrupter Types QBAF, QBCAF | V4-T1-14 |
| Bolt-On Ground Fault and Equipment Protectors, Types QBGFT, QBHGFT, QBGFEP, QBHGFEP | V4-T1-17 |
| Cable-In/Cable-Out Types QC, QCD, QCHW, QHCX, QHCW Product Selection | V4-T1-21 |
| Dimensions | V4-T1-23 |
| Cable-In/Cable-Out, 1/2-Inch Wide, Types QCR, QCF, QCRH, QCFH | V4-T1-24 |
| Cable-In/Cable-Out Ground Fault and Equipment Protectors, Types QCGFT, QCHGFT, QCGFEP, QCHGFEP | V4-T1-28 |
| Solenoid-Operated, Remote-Controlled Latching Types BABRP, BABRSP, BRRP and CLRP | V4-T1-31 |
| Solenoid Operator—Remote Controlled Latching for Type GHBS, GBHS and GHORSP Breakers | V4-T1-34 |
| International Rated Types HQP, BA, QC, GFMB, GFXBC | V4-T1-37 |
| Special Application Breakers, Types HQP, BA, QC | V4-T1-40 |

Cable-In/Cable-Out Types QC, QCD, QCHW, QHCX, QHCW

Product Description

- All products 10–100A are HACR rated
- Switching duty rated for 120 Vac fluorescent light applications only

Standards and Certifications

- Built and listed to UL 489
- All products UL and CSA listed



Product Selection

QUICKLAG
Type QC Single-Pole



QUICKLAG Type: QC 10,000A Interrupting Capacity Thermal-Magnetic Breakers

| Continuous Ampere Rating at 40°C | Single-Pole 120/240 Vac Catalog Number | Two-Pole 120/240 Vac Catalog Number | Two-Pole 240 Vac Catalog Number | Three-Pole 240 Vac Catalog Number | Four-Pole 240 Vac Catalog Number |
|----------------------------------|--|-------------------------------------|---------------------------------|-----------------------------------|----------------------------------|
| 5 | QC1005 ^① | QC2005 ^① | — | — | — |
| 10 | QC1010 | QC2010 | QC2010H ^① | QC3010H ^① | — |
| 15 | QC1015 ^② | QC2015 | QC2015H | QC3015H | QC4015H |
| 20 | QC1020 ^② | QC2020 | QC2020H | QC3020H | QC4020H |
| 25 | QC1025 | QC2025 | QC2025H | QC3025H | QC4025H |
| 30 | QC1030 | QC2030 | QC2030H | QC3030H | QC4030H |
| 35 | QC1035 | QC2035 | QC2035H | QC3035H | QC4035H |
| 40 | QC1040 | QC2040 | QC2040H | QC3040H | QC4040H |
| 45 | QC1045 | QC2045 | QC2045H | QC3045H | QC4045H |
| 50 | QC1050 | QC2050 | QC2050H | QC3050H | QC4050H |
| 55 | QC1055 | QC2055 | QC2055H | QC3055H | QC4055H |
| 60 | QC1060 | QC2060 | QC2060H | QC3060H | QC4060H |
| 70 | QC1070 | QC2070 | QC2070H | QC3070H | QC4070H |
| 70 | — | QC2080 | QC2080H | QC3080H | QC4080H |
| 90 | — | QC2090 | QC2090H | QC3090H | QC4090H |
| 100 | QC1100 | QC2100 | QC2100H | QC3100H | QC4100H |

QUICKLAG Type: QC Non-Automatic Switches

| Continuous Ampere Rating at 40°C | Single-Pole 120/240 Vac Catalog Number | Two-Pole 120/240 Vac Catalog Number | Two-Pole 240 Vac Catalog Number | Three-Pole 240 Vac Catalog Number | Four-Pole 240 Vac Catalog Number |
|----------------------------------|--|-------------------------------------|---------------------------------|-----------------------------------|----------------------------------|
| 50 | QC1050N | — | QC2050N | QC3050N | — |
| 60 | QC1060N | — | QC2060N | QC3060N | — |
| 100 | QC1100N | — | QC2100N | QC3100N | — |

Notes

① Not UL listed.

② Switching duty rated for 120 Vac fluorescent light applications only.

For special low-magnetic breaker, order **QC1015L1** or **QC1020L1**. Non-automatic switches, see **Page V4-T1-42**.

QUICKLAG Type: QCHW 22,000A Interrupting Capacity Thermal-Magnetic Breakers

| Continuous Ampere Rating at 40°C | Single-Pole 120/240 Vac Catalog Number | Two-Pole 120/240 Vac Catalog Number | Two-Pole 240 Vac Catalog Number | Three-Pole 240 Vac Catalog Number | Four-Pole 240 Vac Catalog Number |
|----------------------------------|--|---|---------------------------------------|---|--|
| 15 | QCHW1015 ① | QCHW2015 | QCHW2015H | QCHW3015H | QCHW4015H |
| 20 | QCHW1020 ① | QCHW2020 | QCHW2020H | QCHW3020H | QCHW4020H |
| 25 | QCHW1025 | QCHW2025 | QCHW2025H | QCHW3025H | QCHW4025H |
| 30 | QCHW1030 | QCHW2030 | QCHW2030H | QCHW3030H | QCHW4030H |
| 35 | QCHW1035 | QCHW2035 | QCHW2035H | QCHW3035H | QCHW4035H |
| 40 | QCHW1040 | QCHW2040 | QCHW2040H | QCHW3040H | QCHW4040H |
| 45 | QCHW1045 | QCHW2045 | QCHW2045H | QCHW3045H | QCHW4045H |
| 50 | QCHW1050 | QCHW2050 | QCHW2050H | QCHW3050H | QCHW4050H |
| 55 | QCHW1055 | QCHW2055 | QCHW2055H | QCHW3055H | QCHW4055H |
| 60 | QCHW1060 | QCHW2060 | QCHW2060H | QCHW3060H | QCHW4060H |
| 70 | QCHW1070 | QCHW2070 | QCHW2070H | QCHW3070H | QCHW4070H |
| 70 | — | QCHW2080 | QCHW2080H | QCHW3080H | QCHW4080H |
| 90 | — | QCHW2090 | QCHW2090H | QCHW3090H | QCHW4090H |
| 100 | — | QCHW2100 | QCHW2100H | QCHW3100H | QCHW4100H |

QUICKLAG Type: QHCX 42,000A Interrupting Capacity Thermal-Magnetic Breakers

| Continuous Ampere Rating at 40°C | Single-Pole 120/240 Vac Catalog Number | Two-Pole 120/240 Vac Catalog Number | Two-Pole 240 Vac Catalog Number | Three-Pole 240 Vac Catalog Number | Four-Pole 240 Vac Catalog Number |
|----------------------------------|--|---|---------------------------------------|---|--|
| 15 | QHCX1015 ① | QHCX2015 | — | QHCX3015H | — |
| 20 | QHCX1020 ① | QHCX2020 | — | QHCX3020H | — |
| 25 | QHCX1025 | QHCX2025 | — | QHCX3025H | — |
| 30 | QHCX1030 | QHCX2030 | — | QHCX3030H | — |
| 35 | QHCX1035 | QHCX2035 | — | QHCX3035H | — |
| 40 | QHCX1040 | QHCX2040 | — | QHCX3040H | — |
| 45 | QHCX1045 | QHCX2045 | — | QHCX3045H | — |
| 50 | QHCX1050 | QHCX2050 | — | QHCX3050H | — |
| 55 | QHCX1055 | QHCX2055 | — | QHCX3055H | — |
| 60 | QHCX1060 | QHCX2060 | — | QHCX3060H | — |
| 70 | QHCX1070 | QHCX2070 | — | QHCX3070H | — |
| 70 | — | QHCX2080 | — | QHCX3080H | — |
| 90 | — | QHCX2090 | — | QHCX3090H | — |
| 100 | — | QHCX2100 | — | QHCX3100H | — |

QUICKLAG Type: QHCW 65,000A Interrupting Capacity Thermal-Magnetic Breakers

| Continuous Ampere Rating at 40°C | Single-Pole 120/240 Vac Catalog Number | Two-Pole 120/240 Vac Catalog Number | Two-Pole 240 Vac Catalog Number | Three-Pole 240 Vac Catalog Number | Four-Pole 240 Vac Catalog Number |
|----------------------------------|--|---|---------------------------------------|---|--|
| 15 | QHCW1015 ① | QHCW2015 | — | QHCW3015H | — |
| 20 | QHCW1020 ① | QHCW2020 | — | QHCW3020H | — |
| 25 | QHCW1025 | QHCW2025 | — | — | — |
| 30 | QHCW1030 | QHCW2030 | — | — | — |

Notes

① Switching duty rated for 120 Vac fluorescent light applications only.

Non-automatic switches, see **Page V4-T1-42**.

QUICKLAG Type QCD Miniature Circuit Breakers

QCD breakers are used primarily in HVAC and industrial applications.

- Single-, two- and three-pole options
- Modular construction
- DIN mounted (symmetrical rail 35 x 7.5 DIN/EN 50 022)
- QCD same profile as Type QCR
- Flexible power feed connection: wire size, position
- Same breaker size for entire rating range
- Field mountable accessories: finger shroud proof, quick connect terminals
- Other accessories: jumper unit

QUICKLAG Type QCD Miniature Circuit Breaker



QUICKLAG Type QCD 10,000A Interrupting Capacity Thermal-Magnetic Breakers

| Continuous Ampere Rating at 40°C | Single-Pole | Two-Pole | Two-Pole | Three-Pole |
|----------------------------------|-------------------------------|-------------------------------|---------------------------|---------------------------|
| | 120/240 Vac Catalog Number | 120/240 Vac Catalog Number | 240 Vac Catalog Number | 240 Vac Catalog Number |
| 10 | QCD1010 | QCD2010 | — | — |
| 15 | QCD1015 | QCD2015 | QCD2015H | QCD3015H |
| 20 | QCD1020 | QCD2020 | QCD2020H | QCD3020H |
| 25 | QCD1025 | QCD2025 | QCD2025H | QCD3025H |
| 30 | QCD1030 | QCD2030 | QCD2030H | QCD3030H |
| 35 | QCD1035 | QCD2035 | QCD2035H | QCD3035H |
| 40 | QCD1040 | QCD2040 | QCD2040H | QCD3040H |
| 45 | QCD1045 | QCD2045 | QCD2045H | QCD3045H |
| 50 | QCD1050 | QCD2050 | QCD2050H | QCD3050H |
| 55 | QCD1055 | QCD2055 | QCD2055H | QCD3055H |
| 60 | QCD1060 | QCD2060 | QCD2060H | QCD3060H |
| 70 | — | QCD2070 | QCD2070H | QCD3070H |
| 80 | — | QCD2080 | QCD2080H | QCD3080H |
| 90 | — | QCD2090 | QCD2090H | QCD3090H |
| 100 | — | QCD2090 | QCD2090H | QCD3100H |
| | — | QCD2100 | QCD2100H | — |

QUICKLAG Type QCD Non-Automatic Switches

| Continuous Ampere Rating at 40°C | Single-Pole | Two-Pole | Two-Pole | Three-Pole |
|----------------------------------|-------------------------------|-------------------------------|---------------------------|---------------------------|
| | 120/240 Vac Catalog Number | 120/240 Vac Catalog Number | 240 Vac Catalog Number | 240 Vac Catalog Number |
| 60 | — | — | QCD2060NA | — |
| 100 | — | — | — | — |

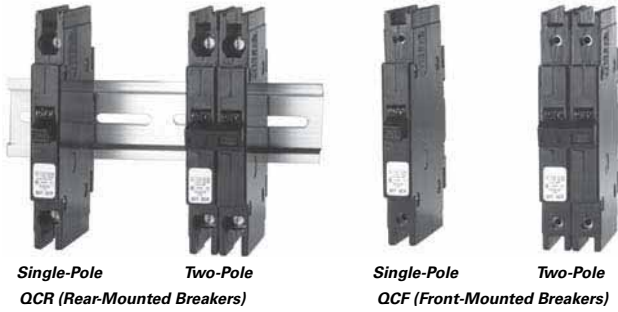
Dimensions

Approximate Dimensions in Inches (mm)

Shipping Data

| Number of Poles | Carton Quantity | Approximate Weight Lbs (kg) | Dimensions |
|-----------------|-----------------|-----------------------------|---|
| 1 | 24 | 9.00 (4.1) | 12.50 x 7.50 x 5.00 (317.5 x 190.5 x 127.0) |
| 2 | 12 | 9.00 (4.1) | 12.50 x 7.50 x 5.00 (317.5 x 190.5 x 127.0) |
| 3 | 8 | 9.00 (4.1) | 12.50 x 7.50 x 5.00 (317.5 x 190.5 x 127.0) |

Cable-In/Cable-Out, 1/2-Inch Wide, Types QCR, QCF, QCRH, QCFH



Contents

| <i>Description</i> | <i>Page</i> |
|---|-----------------|
| Quick Reference | V4-T1-2 |
| QUICKLAG Plug-On Types HQP, QPHW, QHPX, QHPW Protectors, Types QPGFT, QPHGFT, QPGFEP, QPHGFEP | V4-T1-5 |
| Bolt-On Types BAB, QBHW, HBAX, HBAW | V4-T1-8 |
| Bolt-On Arc Fault Circuit Interrupter Types QBAF, QBCAF | V4-T1-11 |
| Bolt-On Ground Fault and Equipment Protectors, Types QBGFT, QBHGFT, QBGFEP, QBHGFEP | V4-T1-14 |
| Cable-In/Cable-Out Types QC, QCD, QCHW, QHCX, QHCW | V4-T1-17 |
| Cable-In/Cable-Out, 1/2-Inch Wide, Types QCR, QCF, QCRH, QCFH | V4-T1-20 |
| Product Selection | V4-T1-25 |
| QCR and QCF Options and Accessories | V4-T1-27 |
| Cable-In/Cable-Out Ground Fault and Equipment Protectors, Types QCGFT, QCHGFT, QCGFEP, QCHGFEP | V4-T1-28 |
| Solenoid-Operated, Remote-Controlled Latching Types BABRP, BABRSP, BRRP and CLRP | V4-T1-31 |
| Solenoid Operator—Remote Controlled Latching for Type GHBS, GBHS and GHORSP Breakers | V4-T1-34 |
| International Rated Types HQP, BA, QC, GFMB, GFXBC | V4-T1-37 |
| Special Application Breakers, Types HQP, BA, QC | V4-T1-40 |

Cable-In/Cable-Out, 1/2-Inch Wide, Types QCR, QCF, QCRH, QCFH

Product Description

Eaton Type QCR circuit breakers have as a standard feature provisions for 35 mm DIN rail rear mounting with a spring-loaded release. Optional clips for individual mounting are available as a separate accessory.

Type QCF have two threaded steel inserts to facilitate front mounting with #6–32 steel screws. The clamp type terminals are accessible from the rear of the breaker so that cables can be accessed without removal of the breaker from the front cover.

Application Description

QCR and QCF circuit breakers are only 1/2-inch (12.7 mm) wide per pole and are excellent for general purpose industrial applications where space savings is required.

Features, Benefits and Functions

- 1/2-inch (12.7 mm) wide per pole
- Cable-in/cable-out
- Black cases with black handles
- Three position handle: ON, Tripped (center), OFF
- Thermal-magnetic protection

Standards and Certifications

- Built and listed to UL 489
- UL File No. E7819
- CSA File No. LR48907
- Type QCR and QCF circuit breakers are UL listed circuit breakers that are suitable for use as branch circuit protectors
- All ratings 15–60A are HACR rated



Product Selection

Cable-In/Cable-Out,
1/2-Inch Wide



QCR Breaker Catalog Numbers ^{①②③④}

| Continuous Ampere Rating at 40°C | Single-Pole 120/240 Vac Catalog Number | Two-Pole 120/240 Vac Catalog Number | Two-Pole 240 Vac ^⑤ Catalog Number | Three-Pole Catalog Number |
|---|--|---|--|------------------------------|
| QCR Breaker 10 kAIC Interrupting Ratings | | | | |
| 10 | QCR1010 | QCR2010 | — | — |
| | QCR1010T | QCR2010T | — | — |
| | — | QCR2010P | — | — |
| 15 | QCR1015 ^⑥ | QCR2015 | QCR2015H | QCR3015H |
| | QCR1015T ^⑥ | QCR2015T | QCR2015HT | QCR3015HT |
| | — | QCR2015P | — | — |
| 20 | QCR1020 ^⑥ | QCR2020 | QCR2020H | QCR3020H |
| | QCR1020T ^⑥ | QCR2020T | QCR2020HT | QCR3020HT |
| | — | QCR2020P | — | — |
| 25 | QCR1025 | QCR2025 | QCR2025H | QCR3025H |
| | QCR1025T | QCR2025T | QCR2025HT | QCR3025HT |
| | — | QCR2025P | — | — |
| 30 | QCR1030 | QCR2030 | QCR2030H | QCR3030H |
| | QCR1030T | QCR2030T | QCR2030HT | QCR3030HT |
| | — | QCR2030P | — | — |
| 35 | QCR1035 | QCR2035 | — | — |
| | — | QCR2035P | — | — |
| 40 | QCR1040 | QCR2040 | — | — |
| | — | QCR2040P | — | — |
| 45 | QCR1045 | QCR2045 | — | — |
| | — | QCR2045P | — | — |
| 50 | QCR1050 | QCR2050 | — | — |
| | — | QCR2050P | — | — |
| 55 | QCR1055 | QCR2055 | — | — |
| | — | QCR2055P | — | — |
| 60 ^⑦ | QCR1060 | QCR2060 | — | — |
| | — | QCR2060P | — | — |
| QCR Breaker 22 kAIC Interrupting Ratings | | | | |
| 15 | QCRH1015 ^⑥ | QCRH2015 | — | — |
| | QCRH1015T ^⑥ | QCRH2015T | — | — |
| 20 | QCRH1020 ^⑥ | QCRH2020 | — | — |
| | QCRH1020T ^⑥ | QCRH2020T | — | — |

Notes

- ① Standard breaker terminals are box type lugs.
- ② Breakers with **T** Catalog Number Suffix are suitable for line and load side ring terminal connection (#10–32 plus/minus terminal screw provided).
- ③ Breakers with **P** Catalog Number Suffix are suitable for terminating two 10 AWG Quick-Connect Type Terminals per phase on breaker load side.
- ④ Breakers with Shunt Trip (extra pole required on breaker right-hand side) are available on single-, two- and three-pole. Contact the Customer Support Center at 1-800-356-1243.
- ⑤ Breakers with **H** Catalog Suffix have 240 Vac construction.
- ⑥ All 15 and 20A single-pole breakers are SWD (Switching Duty) rated for fluorescent lighting applications.
- ⑦ 60/75°C Cu/Al wire on all ratings except 60A, which requires Cu only conductor.

Cable-In/Cable-Out,
1/2-Inch WideQCF Breaker Catalog Numbers ^{①②③}

| Continuous Ampere Rating at 40°C | Single-Pole 120/240 Vac | Two-Pole 120/240 Vac | Two-Pole 240 Vac ^④ | Three-Pole |
|---|----------------------------|-------------------------|----------------------------------|----------------|
| | Catalog Number | Catalog Number | Catalog Number | Catalog Number |
| QCF Breaker 10 kAIC Interrupting Ratings | | | | |
| 10 | QCF1010 | QCF2010 | — | — |
| | QCF1010T | QCF2010T | — | — |
| 15 | QCF1015 ^⑤ | QCF2015 | QCF2015H | QCF3015H |
| | QCF1015T ^⑤ | QCF2015T | QCF2015HT | QCF3015HT |
| 20 | QCF1020 ^⑤ | QCF2020 | QCF2020H | QCF3020H |
| | QCF1020T ^⑤ | QCF2020T | QCF2020HT | QCF3020HT |
| 25 | QCF1025 | QCF2025 | QCF2025H | QCF3025H |
| | QCF1025T | QCF2025T | QCF2025HT | QCF3025HT |
| 30 | QCF1030 | QCF2030 | QCF2030H | QCF3030H |
| | QCF1030T | QCF2030T | QCF2030HT | QCF3030HT |
| 35 | QCF1035 | QCF2035 | — | — |
| 40 | QCF1040 | QCF2040 | — | — |
| 45 | QCF1045 | QCF2045 | — | — |
| 50 | QCF1050 | QCF2050 | — | — |
| 55 | QCF1055 | QCF2055 | — | — |
| 60 ^⑥ | QCF1060 | QCF2060 | — | — |
| QCF Breaker 22 kAIC Interrupting Ratings | | | | |
| 15 | QCFH1015 ^⑤ | QCFH2015 | — | — |
| | QCFH1015T ^⑤ | QCFH2015T | — | — |
| 20 | QCFH1020 ^⑤ | QCFH2020 | — | — |
| | QCFH1020T ^⑤ | QCFH2020T | — | — |

Notes

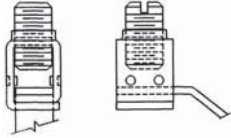
- ① Standard breaker terminals are box type lugs.
- ② Breakers with **T** Catalog Number Suffix are suitable for line and load side ring terminal connection (#10–32 plus/minus terminal screw provided).
- ③ Breakers with Shunt Trip Attachment (extra pole required on breaker right-hand side) are available. Contact the Customer Support Center.
- ④ Breakers with **H** Catalog Suffix have 240 Vac construction.
- ⑤ All 15 and 20A single-pole breakers are SWD (Switching Duty) rated for fluorescent lighting applications.
- ⑥ 60/75°C Cu/Al wire on all ratings except 60A, which requires Cu only conductor.

QCR and QCF Options and Accessories

QCR and QCF Standard Box Terminals

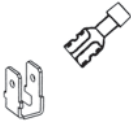
Factory-installed line and load side breaker terminal to accommodate 14 AWG to 4 AWG wire.

Standard Box Terminals



QCR Quick-Connect Terminals

Factory-installed two-prong quick-connect terminal on breaker load side suitable for terminating two 10 AWG wire with insulated slip-on terminals as shown. Line side terminal is the standard type.

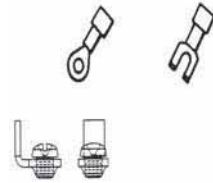


Catalog Suffix "P"

QCR and QCF Ring or Spade Lug Terminals (10 to 30A Ratings Only)

Factory-installed line and load side terminals each equipped with a #10–32 screw suitable for terminating one 10 AWG wire with insulated ring or spade type terminal as shown.

Catalog Suffix "T"



Available QCR and QCF Breaker Accessories

| Description | Catalog Number |
|--|-----------------|
| Steel mounting clip mounts QCR breaker if individual mounting is required. Quantity two required for single- and two-pole and four required for three-pole breakers. | QCRMTGFT |
| Removable padlock device for single-pole QCR or QCF breaker. | QCRFPL1P |
| Removable padlock device for multi-pole QCR or QCF breaker. | QCRFPLMP |
| Padlock bracket assembly for QCR or QCF single- or multi-pole breakers (OFF only). | QCRFLOFF |
| Padlock bracket for QCR, lock-off only. | QCRPLOFF |

Technical Data and Specifications

- Single-, two- and three-pole
- 10 kAIC at 120/240 Vac, 10–60A
- 22 kAIC at 120/240 Vac, 15–20A
- 10 kAIC at 240 Vac, 10–30A
- 3 kAIC at 62.5 Vdc (single-pole)
- 3 kAIC at 130 Vdc (two poles in series)
- Normal operating environment:
 - 0–40°C
 - 5–95% humidity (noncondensing)

QUICKLAG Type QCGFT Single-Pole Ground Fault Circuit Breaker



Cable-In/Cable-Out Ground Fault and Equipment Protectors, Types QCGFT, QCHGFT, QCGFEP, QCHGFEP

Product Description

QUICKLAG Ground Fault Circuit Breakers, Class A GFCI

- 5 mA trip sensitivity

QUICKLAG Ground Fault Equipment Protectors

- 30 mA trip sensitivity

Standards and Certifications

QUICKLAG Ground Fault Circuit Breakers, Class A GFCI

- Built and tested to UL 943

QUICKLAG Ground Fault Equipment Protectors

- Built and tested to UL 1053



Contents

| <i>Description</i> | <i>Page</i> |
|--|-----------------|
| Quick Reference | V4-T1-2 |
| QUICKLAG Plug-On Types HQP, QPHW, QHPX, QHPW | V4-T1-5 |
| QUICKLAG Plug-On Ground Fault and Equipment Protectors, Types QPGFT, QPHGFT, QPGFEP, QPHGFEP | V4-T1-8 |
| Bolt-On Types BAB, QBHW, HBAX, HBAW | V4-T1-11 |
| Bolt-On Arc Fault Circuit Interrupter Types QBAF, QBCAF | V4-T1-14 |
| Bolt-On Ground Fault and Equipment Protectors, Types QBGFT, QBHGFT, QBGFEP, QBHGFEP | V4-T1-17 |
| Cable-In/Cable-Out Types QC, QCD, QCHW, QHCX, QHCW | V4-T1-20 |
| Cable-In/Cable-Out, 1/2-Inch Wide, Types QCR, QCF, QCRH, QCFH | V4-T1-24 |
| Cable-In/Cable-Out Ground Fault and Equipment Protectors, Types QCGFT, QCHGFT, QCGFEP, QCHGFEP | |
| Product Selection | V4-T1-29 |
| Wiring Diagram | V4-T1-30 |
| Dimensions | V4-T1-30 |
| Solenoid-Operated, Remote-Controlled Latching Types BABRP, BABRSP, BRRP and CLRP. | V4-T1-31 |
| Solenoid Operator—Remote Controlled Latching for Type GHBS, GBHS and GHORSP Breakers. | V4-T1-34 |
| International Rated Types HQP, BA, QC, GFMB, GFXBC | V4-T1-37 |
| Special Application Breakers, Types HQP, BA, QC | V4-T1-40 |

Product Selection

**QUICKLAG Type QCGFT
Single-Pole Ground
Fault Circuit Breaker**



Breaker Catalog Numbers

| Continuous Ampere Rating at 40°C | Single-Pole | Two-Pole |
|--|---------------------------|-------------------------------|
| | 120 Vac Catalog Number | 120/240 Vac Catalog Number |
| Ground Fault Circuit Breakers—5 mA Sensitivity QUICKLAG Type: QCGFT 10,000A Interrupting Capacity Thermal-Magnetic Breakers | | |
| 15 | QCGFT1015 | QCGFT2015 |
| 20 | QCGFT1020 | QCGFT2020 |
| 25 | QCGFT1025 | QCGFT2025 |
| 30 | QCGFT1030 | QCGFT2030 |
| 40 | QCGFT1040 | QCGFT2040 |
| 50 | — | QCGFT2050 |
| QUICKLAG Type: QCHGFT 22,000A Interrupting Capacity Thermal-Magnetic Breakers | | |
| 15 | QCHGFT1015 | QCHGFT2015 |
| 20 | QCHGFT1020 | QCHGFT2020 |
| 25 | QCHGFT1025 | QCHGFT2025 |
| 30 | QCHGFT1030 | QCHGFT2030 |
| Ground Fault Equipment Protectors—30 mA Sensitivity QUICKLAG Type: QCGFEP 10,000A Interrupting Capacity Thermal-Magnetic Breakers | | |
| 15 | QCGFEP1015 | QCGFEP2015 |
| 20 | QCGFEP1020 | QCGFEP2020 |
| 25 | QCGFEP1025 | QCGFEP2025 |
| 30 | QCGFEP1030 | QCGFEP2030 |
| 40 | QCGFEP1040 | QCGFEP2040 |
| 50 | — | QCGFEP2050 |
| QUICKLAG Type: QCHGFEP 22,000A Interrupting Capacity Thermal-Magnetic Breakers | | |
| 15 | QCHGFEP1015 | QCHGFEP2015 |
| 20 | QCHGFEP1020 | QCHGFEP2020 |
| 25 | QCHGFEP1025 | QCHGFEP2025 |
| 30 | QCHGFEP1030 | QCHGFEP2030 |
| Special Application Ground Fault Circuit Protector—5 mA Sensitivity QUICKLAG Type: QCGFT 10,000A Interrupting Capacity with Bell Alarm (W1) or Auxiliary Switch (W2) | | |
| 15 | QCGFT1015W1 | QCGFT2015W1 |
| 20 | QCGFT1020W1 | QCGFT2020W1 |
| 25 | QCGFT1025W1 | QCGFT2025W1 |
| 30 | QCGFT1030W1 | QCGFT2030W1 |
| 40 | — | QCGFT2040W1 |
| 50 | — | QCGFT2050W1 |
| 15 | QCGFT1015W2 | — |
| 20 | QCGFT1020W2 | — |
| 25 | QCGFT1025W2 | — |
| 30 | QCGFT1030W2 | — |
| Special Application Ground Fault Equipment Protectors—30 mA Sensitivity QUICKLAG Type: QCGFEP 10,000A Interrupting Capacity with Bell Alarm (W1) or Auxiliary Switch (W2) | | |
| 15 | QCGFEP1015W1 | QCGFEP2015W1 |
| 20 | QCGFEP1020W1 | QCGFEP2020W1 |
| 25 | QCGFEP1025W1 | QCGFEP2025W1 |
| 30 | QCGFEP1030W1 | QCGFEP2030W1 |
| 40 | — | QCGFEP2040W1 |
| 50 | — | QCGFEP2050W1 |
| 15 | QCGFEP1015W2 | — |
| 20 | QCGFEP1020W2 | — |
| 25 | QCGFEP1025W2 | — |
| 30 | QCGFEP1030W2 | — |

Wiring Diagram

Bell Alarm and Auxiliary Contact Schematic



Single-throw double-pole contacts are UL and CSA listed for 5A at 250 Vac.

Bell Alarm (W1)—contacts change state when breaker trips.

Auxiliary Switch (W2)—contacts change state when breaker is opened (or tripped) or closed.

14-inch (355.6 mm) long 18 AWG pigtail wire leads provided.

Dimensions

Approximate Dimensions in Inches (mm)

Shipping Data

| Number of Poles | Carton Quantity | Approximate Weight Lbs (kg) | Dimensions |
|-----------------|-----------------|-----------------------------|---|
| 1 | 20 | 11.00 (5.0) | 12.50 x 6.50 x 5.00 (317.5 x 165.1 x 127.0) |
| 2 | 5 | 5.00 (2.3) | 15.50 x 6.00 x 4.50 (393.7 x 152.4 x 114.3) |

**BABRP and BABRSP Breakers—
Single- and Two-Pole**



Solenoid-Operated, Remote-Controlled Latching Types BABRP, BABRSP, BRRP and CLRP

Product Description

The BABRP and BABRSP are bolt-on branch circuit breakers designed for use in panelboards. The BRRP is a plug-on branch circuit breaker designed for use in load-centers not manufactured with breakers with a 1-inch wide format and are listed on the “Compatibility list for Classified Applications”—Pub. 26271. In addition to providing conventional branch circuit protection, they include a unique solenoid-operated mechanism that provides for efficient breaker pulse-on and pulse-off operation when used with a suitable controller like Eaton’s Pow-R-Command™ lighting control system. These breakers can also be controlled by pushbutton or a PLC unit.

Application Description

Eaton’s BABRP, BABRSP, BRRP and CLRP breakers are remotely operated molded case circuit breakers ideally suited for lighting control applications or energy management applications.

Contents

| <i>Description</i> | <i>Page</i> |
|--|-----------------|
| Quick Reference | V4-T1-2 |
| QUICKLAG Plug-On Types HQP, QPHW, QHPX, QHPW | V4-T1-5 |
| QUICKLAG Plug-On Ground Fault and Equipment Protectors, Types QPGFT, QPHGFT, QPGFEP, QPHGFEP | V4-T1-8 |
| Bolt-On Types BAB, QBHW, HBAX, HBAW | V4-T1-11 |
| Bolt-On Arc Fault Circuit Interrupter Types QBAF, QBCAF | V4-T1-14 |
| Bolt-On Ground Fault and Equipment Protectors, Types QBGFT, QBHGFT, QBGFEP, QBHGFEP | V4-T1-17 |
| Cable-In/Cable-Out Types QC, QCD, QCHW, QHCX, QHCW | V4-T1-20 |
| Cable-In/Cable-Out, 1/2-Inch Wide, Types QCR, QCF, QCRH, QCFH | V4-T1-24 |
| Cable-In/Cable-Out Ground Fault and Equipment Protectors, Types QCGFT, QCHGFT, QCGFEP, QCHGFEP | V4-T1-28 |
| Solenoid-Operated, Remote-Controlled Latching Types BABRP, BABRSP, BRRP and CLRP | V4-T1-32 |
| Product Selection | V4-T1-33 |
| Technical Data and Specifications | V4-T1-33 |
| Wiring Diagrams | V4-T1-33 |
| Solenoid Operator—Remote Controlled Latching for Type GHBS, GBHS and GHQRSP Breakers | V4-T1-34 |
| International Rated Types HQP, BA, QC, GFMB, GFXBC | V4-T1-37 |
| Special Application Breakers, Types HQP, BA, QC | V4-T1-40 |

Features, Benefits and Functions

- Bolt-on line-side terminal (BABRP, BABRSP—Type BA)
- Plug-on line-side terminal (BRRP—Type BR, CLRP—Type CL)
- Cable connected load-side terminal
- Four-position control terminal
- Bi-metal assembly for thermal overload protection
- Fast-acting short-circuit protection
- Arc-chute assembly for fast-acting arc extinction
- Three-position handle: OFF, TRIP (Center), ON
- Handle permits manual switching when control power is lost
- Mechanical trip indicator
- 15 and 20A breakers SWD (switching duty) rated
- HID ratings for HID (high intensity discharge) lighting
- All models HACR rated
- Status feedback of control circuit (BABRSP)
- Series rated (BABRP, BABRSP only)
 - BRRP series rated same as BR breakers
 - BABRP, BABRSP same as BA breakers

Product Selection

QUICKLAG Type QCGFT Single-Pole Ground Fault Circuit Breaker



BABRP UL 489 and CSA 22.2 Interrupting Ratings

| Number of Poles | Ampere Rating ^① | Interrupting Capacity (Symmetrical Amperes) | | | Catalog Number |
|-----------------|----------------------------|---|---------|---------|------------------|
| | | Vac (50/60 Hz) 120 | 120/240 | 277/480 | |
| 1 | 15 | 10,000 | — | — | BABRP1015 |
| | 20 | 10,000 | — | — | BABRP1020 |
| | 25 | 10,000 | — | — | BABRP1025 |
| | 30 | 10,000 | — | — | BABRP1030 |
| 2 | 15 | — | 10,000 | — | BABRP2015 |
| | 20 | — | 10,000 | — | BABRP2020 |
| | 25 | — | 10,000 | — | BABRP2025 |
| | 30 | — | 10,000 | — | BABRP2030 |

BRRP UL 489 and CSA 22.2 Interrupting Ratings

| Number of Poles | Ampere Rating | Interrupting Capacity (Symmetrical Amperes) | | Catalog Number |
|-----------------|---------------|---|---------|----------------|
| | | Vac (50/60 Hz) 120 | 120/240 | |
| 1 | 15 | 10,000 | — | BRRP115 |
| | 20 | 10,000 | — | BRRP120 |
| | 25 | 10,000 | — | BRRP125 |
| | 30 | 10,000 | — | BRRP130 |
| 2 | 15 | — | 10,000 | BRRP215 |
| | 20 | — | 10,000 | BRRP220 |
| | 25 | — | 10,000 | BRRP225 |
| | 30 | — | 10,000 | BRRP230 |

BABRP and BABRSP Wire Harness

| Description | Catalog Number |
|---|------------------|
| This 60-inch (1524.0 mm) wire pigtail provides a connection from a single BABRP's control plug to a customer's pushbutton, relay or PLC. Each box contains 12 pigtails. Wires are 22 AWG, 600V. Order in multiples of 12. | SLBKRPTL1 |

BABRSP UL 489 and CSA 22.2 Interrupting Ratings

| Number of Poles | Ampere Rating ^① | Interrupting Capacity (Symmetrical Amperes) | | | Catalog Number |
|-----------------|----------------------------|---|---------|---------|-------------------|
| | | Vac (50/60 Hz) 120 | 120/240 | 277/480 | |
| 1 | 15 | 10,000 | — | — | BABRSP1015 |
| | 20 | 10,000 | — | — | BABRSP1020 |
| | 25 | 10,000 | — | — | BABRSP1025 |
| | 30 | 10,000 | — | — | BABRSP1030 |
| 2 | 15 | — | 10,000 | — | BABRSP2015 |
| | 20 | — | 10,000 | — | BABRSP2020 |
| | 25 | — | 10,000 | — | BABRSP2025 |
| | 30 | — | 10,000 | — | BABRSP2030 |

CLRP UL 489 and CSA 22.2 Interrupting Ratings

| Number of Poles | Ampere Rating | Interrupting Capacity (Symmetrical Amperes) | | Catalog Number |
|-----------------|---------------|---|---------|----------------|
| | | Vac (50/60 Hz) 120 | 120/240 | |
| 1 | 15 | 10,000 | — | CLRP115 |
| | 20 | 10,000 | — | CLRP120 |
| | 25 | 10,000 | — | CLRP125 |
| | 30 | 10,000 | — | CLRP130 |
| 2 | 15 | — | 10,000 | CLRP215 |
| | 20 | — | 10,000 | CLRP220 |
| | 25 | — | 10,000 | CLRP225 |
| | 30 | — | 10,000 | CLRP230 |

Note

^① Continuous current rating at 40°C.

Technical Data and Specifications

Solenoid Operating Data

- Power requirements: 24 Vac/dc (20.4V minimum–30V maximum)
 - Controlled signal: +AC/DC 8 ms minimum with zero cross, 300 ms maximum
- AC: 1.3 cycles minimum, 18 cycles or 300 ms maximum
- DC: 8 ms minimum, 300 ms maximum
- Maximum duty cycle of 6 OPEN/CLOSE cycles per minute
- Current draw: open 1A, close 3/4A
- Blue wire: power input (see power requirements)
- Black wire: remote opening
- Red wire: remote closing
- Yellow wire: feedback status from power input, maximum 0.50A draw (BABRSP only)

Operation

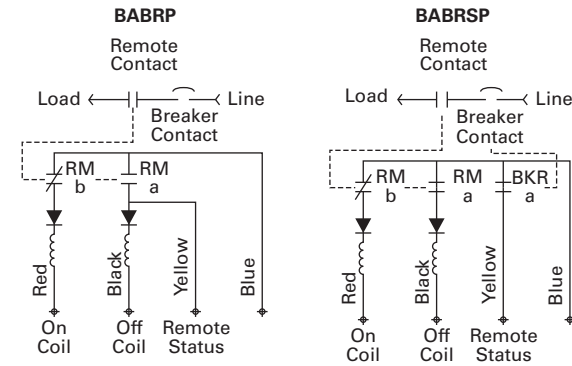
- Tripping system—the BABRP, BABRSP, BRRP and CLRP circuit breakers have a permanent trip unit that contains a factory preset thermal (overload) trip element in each pole
- Operating mechanism—the BABRP, BABRSP, BRRP and CLRP circuit breakers have an over-center toggle mechanism that provides quick-make, quick-break operation. The operating mechanism is trip free. An internal cross-bar provides a common tripping of all multi-pole circuit breakers

Operating/Application Data

- Ambient temperature: 0 to 40°C
- Nominal pulse magnitude: 24 Vac/dc
- Frequency: 50/60 Hz
- Maximum breaker cycling: 6 operations per minute
- Tolerance: +10% to –15% of nominal voltage
- Humidity: 0 to 95% noncondensing

Wiring Diagrams

Control Circuit for the BABRP and BABRSP



GHBS and GHQRSP



Contents

| <i>Description</i> | <i>Page</i> |
|--|-----------------|
| Quick Reference | V4-T1-2 |
| QUICKLAG Plug-On Types HQP, QPHW, QHPX, QHPW | V4-T1-5 |
| QUICKLAG Plug-On Ground Fault and Equipment Protectors, Types QPGFT, QPHGFT, QPGFEP, QPHGFEP | V4-T1-8 |
| Bolt-On Types BAB, QBHW, HBAX, HBAW | V4-T1-11 |
| Bolt-On Arc Fault Circuit Interrupter Types QBAF, QBCAF | V4-T1-14 |
| Bolt-On Ground Fault and Equipment Protectors, Types QBGFT, QBHGFT, QBGFEP, QBHGFEP | V4-T1-17 |
| Cable-In/Cable-Out Types QC, QCD, QCHW, QHCX, QHCW | V4-T1-20 |
| Cable-In/Cable-Out, 1/2-Inch Wide, Types QCR, QCF, QCRH, QCFH | V4-T1-24 |
| Cable-In/Cable-Out Ground Fault and Equipment Protectors, Types QCGFT, QCHGFT, QCGFEP, QCHGFEP | V4-T1-28 |
| Solenoid-Operated, Remote-Controlled Latching Types BABRP, BABRSP, BRRP and CLRP | V4-T1-31 |
| Solenoid Operator—Remote Controlled Latching for Type GHBS, GBHS and GHQRSP Breakers | |
| Product Selection | V4-T1-35 |
| Technical Data and Specifications | V4-T1-36 |
| Wiring Diagrams | V4-T1-36 |
| International Rated Types HQP, BA, QC, GFMB, GFXBC | V4-T1-37 |
| Special Application Breakers, Types HQP, BA, QC | V4-T1-40 |

Solenoid Operator—Remote-Controlled Latching for Type GHBS, GBHS and GHQRSP Breakers

Product Description

Eaton’s GHBS, GBHS and GHQRSP circuit breakers are bolt-on branch circuit breakers designed for use in 277/480 Vac panelboards. In addition to providing conventional branch circuit protection, they include a unique solenoid-operated mechanism that provides for efficient breaker pulse-on and pulse-off operation when used with a suitable controller like Eaton’s Pow-R-Command lighting control system.

Features, Benefits and Functions

- Bolt-on line-side terminal
- Cable-connected load-side terminal
- Status switch—remote status and breaker status available from internal auxiliary switches
- Bi-metal assembly for thermal overload protection
- Fast-acting short-circuit protection
- Arc-runner and arc-chute assembly for fast-acting arc extinction
- Three-position breaker handle: OFF, TRIP (Center), ON
- Visual indication of the remotely operated contact’s position (open, closed or trip)
- Remote override handle permits manual switching when control power is lost
- 15 and 20A breakers SWD (switching duty) rated.
- 15 and 20A breakers HID rated for HID (High intensity discharge) lighting
- All models HACR rated
- Series rated with various Eaton main circuit breakers

Product Selection

GHBS—Single-Pole



GHBS UL 489 Interrupting Ratings

| Number of Poles | Ampere Rating ^① | Interrupting Capacity (Symmetrical Amperes) | | | Catalog Number |
|-----------------|----------------------------|---|--------|---------|------------------|
| | | Vac (50/60 Hz) 120 | 240 | 277/480 | |
| 1 | 15 | 65,000 | — | 14,000 | GHBS1015D |
| | 20 | 65,000 | — | 14,000 | GHBS1020D |
| | 30 | 65,000 | — | 14,000 | GHBS1030D |
| 2 | 15 | — | 65,000 | 14,000 | GHBS2015D |
| | 20 | — | 65,000 | 14,000 | GHBS2020D |
| | 30 | — | 65,000 | 14,000 | GHBS2030D |

GBHS CSA 22.2 Interrupting Ratings (Not UL Listed)

| Number of Poles | Ampere Rating ^① | Interrupting Capacity (Symmetrical Amperes) | | Catalog Number |
|-----------------|----------------------------|---|--|------------------|
| | | Vac (50/60 Hz) 347/600 | | |
| 1 | 15 | 10,000 | | GBHS1015D |
| | 20 | 10,000 | | GBHS1020D |
| 2 | 15 | 10,000 | | GBHS2015D |
| | 20 | 10,000 | | GBHS2020D |

GHQRSP UL 489 and CSA 22.2 Interrupting Ratings

| Number of Poles | Ampere Rating ^① | Interrupting Capacity (Symmetrical Amperes) | | | | Catalog Number ^② |
|-----------------|----------------------------|---|---------|--------|----------|-----------------------------|
| | | Vac (50/60 Hz) 120 | 120/240 | 277 | 480Y/277 | |
| 1 | 15 | 65,000 | 65,000 | 14,000 | 14,000 | GHQRSP1015 |
| | 20 | 65,000 | 65,000 | 14,000 | 14,000 | GHQRSP1020 |
| | 30 | 65,000 | 65,000 | 14,000 | 14,000 | GHQRSP1030 |
| 2 | 15 | 65,000 | 65,000 | 14,000 | 14,000 | GHQRSP2015 |
| | 20 | 65,000 | 65,000 | 14,000 | 14,000 | GHQRSP2020 |
| | 30 | 65,000 | 65,000 | 14,000 | 14,000 | GHQRSP2030 |

Notes

- ① Continuous current rating at 40°C.
- ② All UL listed circuit breakers are HID (high intensity discharge) rated.

Technical Data and Specifications

Solenoid Operating Data

- Power requirements: 24 Vac/dc (20.4V minimum–30V maximum)
 - Controlled signal: +AC/DC 8 ms minimum with zero cross, 300 ms maximum
 - AC: 1.3 cycles minimum, 18 cycles or 300 ms maximum
 - DC: 8 ms minimum, 300 ms maximum
 - Maximum duty cycle of 6 OPEN/CLOSE cycles per minute
- Current draw: open 1A, close 3/4A
- Blue wire: power input (see power requirements)
- Black wire: remote opening

- Red wire: remote closing
- Yellow wire: feedback status from power input, maximum 0.50A draw

Operation

Mechanism manually operated by external handle allowing ON, OFF and RESET operation. Handle assumes a center TRIP position after performing protective response.

Operating/Application Data

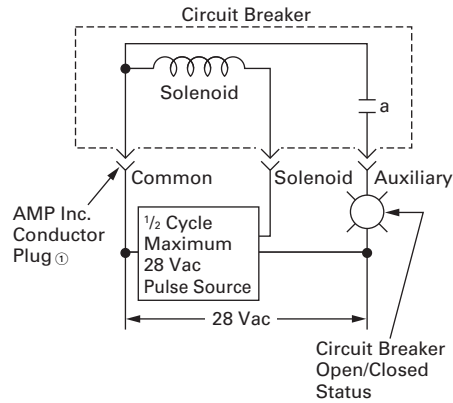
- Ambient temperature: 0–40°C
- Frequency: 48–62 Hz
- Humidity: 0–95% noncondensing

Terminal Type

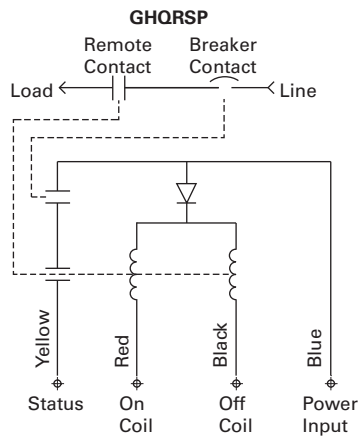
| Circuit Breaker Type | Circuit Breaker Amperes | Screw Head Type | Terminal Type | Range |
|----------------------|-------------------------|-----------------|---------------|------------|
| GHQRSP | 15–20 | Slotted | Clamp | #14–#4 AWG |

Wiring Diagrams

Typical Single-Pole Circuit Breaker Schematic Diagram for GBHS and GBHS Breakers



Typical Single-Pole Circuit Breaker Schematic Diagram for GHQRSP Breakers



Dimensions

Approximate Dimensions in Inches (mm)

Dimensions per Pole

| Circuit Breaker Type | Width | Height ^② | Length ^③ |
|----------------------|-------------|---------------------|---------------------|
| GHQRSP | 1.00 (25.4) | 4.63 (117.6) | 2.81 (71.4) |

Notes

- ① Purchase separate AMP Inc. conductor plug #640426-3.
- ② Excluding line terminal.
- ③ Excluding handle.

International Rated



Contents

| <i>Description</i> | <i>Page</i> |
|--|-----------------|
| Quick Reference | V4-T1-2 |
| QUICKLAG Plug-On Types HQP, QPHW, QHPX, QHPW | V4-T1-5 |
| QUICKLAG Plug-On Ground Fault and Equipment Protectors, Types QPGFT, QPHGFT, QPGFEP, QPHGFEP | V4-T1-8 |
| Bolt-On Types BAB, QBHW, HBAX, HBAW | V4-T1-11 |
| Bolt-On Arc Fault Circuit Interrupter Types QBAF, QBCAF | V4-T1-14 |
| Bolt-On Ground Fault and Equipment Protectors, Types QBGFT, QBHGFT, QBGFEP, QBHGFEP | V4-T1-17 |
| Cable-In/Cable-Out Types QC, QCD, QCHW, QHCX, QHCW | V4-T1-20 |
| Cable-In/Cable-Out, 1/2-Inch Wide, Types QCR, QCF, QCRH, QCFH | V4-T1-24 |
| Cable-In/Cable-Out Ground Fault and Equipment Protectors, Types QCGFT, QCHGFT, QCGFEP, QCHGFEP | V4-T1-28 |
| Solenoid-Operated, Remote-Controlled Latching Types BABRP, BABRSP, BRRP and CLRP | V4-T1-31 |
| Solenoid Operator—Remote Controlled Latching for Type GHBS, GBHS and GHQRSP Breakers. | V4-T1-34 |
| International Rated Types HQP, BA, QC, GFMB, GFXBC Product Selection | V4-T1-38 |
| Technical Data and Specifications | V4-T1-39 |
| Dimensions | V4-T1-39 |
| Special Application Breakers, Types HQP, BA, QC | V4-T1-40 |

International Rated Types HQP, BA, QC, GFMB, GFXBC

Product Description

QUICKLAG International Circuit Breakers

- Bolt-on Type BA

QUICKLAG International Ground Fault Circuit Breakers

- Plug-on Type GFMB
- Cable-in/cable-out Type GFXBC

Standards and Certifications

QUICKLAG International Circuit Breakers

- Built and test certified to BS3871, Pt. 1
- 50/60 Hz, 40°C

QUICKLAG International Ground Fault Circuit Breakers

- Built and test certified to BS3871, Pt. 1; BS3871, Section 31-C; BS4293
- 50/60 Hz, 40°C; 30 mA sensitivity

Product Selection

BAB



Breaker Catalog Numbers

| Continuous Ampere Rating at 40°C | Single-Pole | Two-Pole | Three-Pole |
|---|-------------------------------|-------------------------------|-------------------------------|
| | 240/415 Vac Catalog Number | 240/415 Vac Catalog Number | 240/415 Vac Catalog Number |
| 3000A Interrupting Capacity (M3) Bolt-On Thermal-Magnetic Circuit Breakers | | | |
| 10 | BAB1010E | BAB2010E | BAB3010E |
| 15 | BAB1015E | BAB2015E | BAB3015E |
| 16 | — | — | — |
| 20 | BAB1020E | BAB2020E | BAB3020E |
| 25 | BAB1025E | BAB2025E | BAB3025E |
| 30 | BAB1030E | BAB2030E | BAB3030E |
| 32 | — | — | — |
| 40 | BAB1040E | BAB2040E | BAB3040E |
| 50 | BAB1050E | BAB2050E | BAB3050E |
| 60 | BAB1060E | BAB2060E | BAB3060E |
| 70 | BAB1070E | BAB2070E | BAB3070E |
| 90 | — | BAB2090E | BAB3090E |
| 100 | — | BAB2100E | BAB3100E |

6000A Interrupting Capacity (M6) Bolt-On Thermal-Magnetic Circuit Breakers

| | | | |
|-----|-----------|-----------|-----------|
| 15 | BAB1015HE | BAB2015HE | BAB3015HE |
| 20 | BAB1020HE | BAB2020HE | BAB3020HE |
| 25 | BAB1025HE | BAB2025HE | BAB3025HE |
| 30 | BAB1030HE | BAB2030HE | BAB3030HE |
| 40 | BAB1040HE | BAB2040HE | BAB3040HE |
| 50 | BAB1050HE | BAB2050HE | BAB3050HE |
| 60 | BAB1060HE | BAB2060HE | BAB3060HE |
| 70 | BAB1070HE | BAB2070HE | BAB3070HE |
| 90 | — | BAB2090HE | BAB3090HE |
| 100 | — | BAB2100HE | BAB3100HE |

Breaker Catalog Numbers—Ground Fault Single-Pole 30 mA Sensitivity

| Continuous Ampere Rating at 40°C | 240/415 Vac Catalog Number |
|---|-------------------------------|
| 3000A Interrupting Capacity (M3) Plug-On Thermal-Magnetic Circuit Breakers | |
| 10 | GFMB110B2 |
| 15 | GFMB115B2 |
| 16 | GFMB116B2 |
| 20 | GFMB120B2 |
| 25 | GFMB125B2 |
| 30 | GFMB130B2 |
| 32 | GFMB132B2 |
| 40 | GFMB140B2 |

Note

For other 240/415V applications, please contact the Customer Support Center at 1-800-356-1243.

Technical Data and Specifications

Interrupting Ratings

| Ratings | Suffix E | Suffix HE |
|--|------------|------------|
| International Circuit Breakers | | |
| NEMA® 120/240 Vac | 10,000 AIC | 10,000 AIC |
| BS3871 220/380, 240/415 Vac | 3000 AIC | 6000 AIC |
| International Ground Fault Circuit Breakers | | |
| BS3871 220/380, 240/415 Vac | 3000 AIC | |

Dimensions

Approximate Dimensions in Inches (mm)

Shipping Data

| Miniature Circuit Breaker | Number of Poles | Standard Carton Quantity | Approximate Carton Weight Lbs (kg) | Approximate Standard Carton |
|------------------------------|-----------------|--------------------------|------------------------------------|---|
| QUICKLAG Type B | 1 | 24 | 9.00 (4.1) | 12.50 x 7.50 x 5.00 (317.5 x 190.5 x 127.0) |
| | 2 | 12 | 9.00 (4.1) | 12.50 x 7.50 x 5.00 (317.5 x 190.5 x 127.0) |
| | 3 | 8 | 9.00 (4.1) | 12.50 x 7.50 x 5.00 (317.5 x 190.5 x 127.0) |
| QUICKLAG Ground Fault | | | | |
| Type P—All | 1 | 20 | 11.00 (5.0) | 12.50 x 6.50 x 5.00 (317.5 x 165.1 x 127.0) |
| Types B and C—All | 1 | 20 | 11.00 (5.0) | 12.50 x 7.00 x 5.50 (317.5 x 177.8 x 139.7) |
| Types P and B—All | 2 | 5 | 5.00 (2.3) | 12.50 x 6.00 x 4.50 (317.5 x 152.4 x 114.3) |

QUICKLAG Type P Switching Neutral



Contents

| <i>Description</i> | <i>Page</i> |
|--|-----------------|
| Quick Reference | V4-T1-2 |
| QUICKLAG Plug-On Types HQP, QPHW, QHPX, QHPW | V4-T1-5 |
| QUICKLAG Plug-On Ground Fault and Equipment Protectors, Types QPGFT, QPHGFT, QPGFEP, QPHGFEP | V4-T1-8 |
| Bolt-On Types BAB, QBHW, HBAX, HBAW | V4-T1-11 |
| Bolt-On Arc Fault Circuit Interrupter Types QBAF, QBCAF | V4-T1-14 |
| Bolt-On Ground Fault and Equipment Protectors, Types QBGFT, QBHGFT, QBGFEP, QBHGFEP | V4-T1-17 |
| Cable-In/Cable-Out Types QC, QCD, QCHW, QHCX, QHCW | V4-T1-20 |
| Cable-In/Cable-Out, 1/2-Inch Wide, Types QCR, QCF, QCRH, QCFH | V4-T1-24 |
| Cable-In/Cable-Out Ground Fault and Equipment Protectors, Types QCGFT, QCHGFT, QCGFEP, QCHGFEP | V4-T1-28 |
| Solenoid-Operated, Remote-Controlled Latching Types BABRP, BABRSP, BRRP and CLRP | V4-T1-31 |
| Solenoid Operator—Remote Controlled Latching for Type GHBS, GBHS and GHQRSP Breakers | V4-T1-34 |
| International Rated Types HQP, BA, QC, GFMB, GFXBC | V4-T1-37 |
| Special Application Breakers, Types HQP, BA, QC Product Selection | V4-T1-41 |
| Accessories | V4-T1-43 |
| Factory Modifications and Installed Terminals | V4-T1-46 |
| Technical Data and Specifications | V4-T1-47 |
| Dimensions | V4-T1-48 |

Special Application Breakers, Types HQP, BA, QC

Product Description

Breakers

- Plug-on Type HQP: 10–30A, single- and two-pole, 10 kAIC
- Bolt-on Type BA: 10–30A, single- and two-pole, 10 kAIC
- Cable-in Type QC: 10–30A, single- and two-pole, 10 kAIC

Switching neutral QUICKLAG breakers available in single- and two-pole configurations, plus neutral pole for applications in accordance with NEC® 514.5, 240.22 and 380.2. A single-pole device takes two pole spaces, and a two-pole device takes three pole spaces.

QUICKLAG HID (High Intensity Discharge) Breakers

- Plug-on Type HQP: 15–60A, single- and two-pole, 10 kAIC
- Bolt-on Type BA: 15–60A, single- and two-pole, 10 kAIC
- Cable-in Type QC: 15–60A, single- and two-pole, 10 kAIC

Breakers designed specifically for use with high intensity discharge (HID) lighting applications. (UL listed as standard lighting breakers.)

Standards and Certifications

- All products UL and CSA listed



Molded Case Switches—Non-automatic QUICKLAG Molded Case Switch

- Plug-on Type HQP: 50, 60, 100A, single-, two- and three-pole
- Bolt-on Type BA: 50, 60, 100A, single-, two- and three-pole
- Cable-in Type QC: 50, 60, 100A, single-, two- and three-pole

Product Selection

QUICKLAG Type P
Switching Neutral



Breaker Catalog Numbers

| Continuous Ampere Rating at 40°C | Single-Pole 120/240 Vac Catalog Number | Two-Pole 120/240 Vac Catalog Number | Two-Pole 240 Vac Catalog Number | Three-Pole 240 Vac Catalog Number |
|--|--|---|---------------------------------------|---|
| QUICKLAG Type: HQP Switching Neutral Thermal-Magnetic Breakers | | | | |
| 10 | HQP2010B | HQP3010B | — | — |
| 15 | HQP2015B | HQP3015B | — | — |
| 20 | HQP2020B | HQP3020B | — | — |
| 25 | HQP2025B | HQP3025B | — | — |
| 30 | HQP2030B | HQP3030B | — | — |
| QUICKLAG Type: BA Switching Neutral Thermal-Magnetic Breakers | | | | |
| 10 | BAB2010C | BAB3010C | — | — |
| 15 | BAB2015C | BAB3015C | — | — |
| 20 | BAB2020C | BAB3020C | — | — |
| 25 | BAB2025C | BAB3025C | — | — |
| 30 | BAB2030C | BAB3030C | — | — |
| QUICKLAG Type: QC Switching Neutral Thermal-Magnetic Breakers | | | | |
| 10 | QC2010B | QC3010B | — | — |
| 15 | QC2015B | QC3015B | — | — |
| 20 | QC2020B | QC3020B | — | — |
| 25 | QC2025B | QC3025B | — | — |
| 30 | QC2030B | QC3030B | — | — |
| QUICKLAG Type: HQP HID (High Intensity Discharge) Thermal-Magnetic Breakers | | | | |
| 15 | HQP1015D | HQP2015D | — | — |
| 20 | HQP1020D | HQP2020D | — | — |
| 25 | HQP1025D | HQP2025D | — | — |
| 30 | HQP1030D | HQP2030D | — | — |
| 35 | HQP1035D | HQP2035D | — | — |
| 40 | HQP1040D | HQP2040D | — | — |
| 50 | HQP1050D | HQP2050D | — | — |
| 60 | HQP1060D | HQP2060D | — | — |
| QUICKLAG Type: BA HID (High Intensity Discharge) Thermal-Magnetic Breakers | | | | |
| 15 | BAB1015D | BAB2015D | — | — |
| 20 | BAB1020D | BAB2020D | — | — |
| 25 | BAB1025D | BAB2025D | — | — |
| 30 | BAB1030D | BAB2030D | — | — |
| 35 | BAB1035D | BAB2035D | — | — |
| 40 | BAB1040D | BAB2040D | — | — |
| 50 | BAB1050D | BAB2050D | — | — |
| 60 | BAB1060D | BAB2060D | — | — |
| QUICKLAG Type: QC HID (High Intensity Discharge) Thermal-Magnetic Breakers | | | | |
| 15 | QC1015D | QC2015D | — | — |
| 20 | QC1020D | QC2020D | — | — |
| 25 | QC1025D | QC2025D | — | — |
| 30 | QC1030D | QC2030D | — | — |
| 35 | QC1035D | QC2035D | — | — |
| 40 | QC1040D | QC2040D | — | — |
| 50 | QC1050D | QC2050D | — | — |
| 60 | QC1060D | QC2060D | — | — |

Breaker Catalog Numbers, continued




| Continuous Ampere Rating at 40°C | Single-Pole | Two-Pole | Two-Pole | Three-Pole |
|--|-------------------------------|-------------------------------|---------------------------|---------------------------|
| | 120/240 Vac Catalog Number | 120/240 Vac Catalog Number | 240 Vac Catalog Number | 240 Vac Catalog Number |
| QUICKLAG Type: HQP Non-Automatic Switches | | | | |
| 50 | HQP1050N | — | HQP2050N | HQP3050N |
| 60 | HQP1060N | — | HQP2060N | HQP3060N |
| 100 | HQP1100N | — | HQP2100N | HQP3100N |
| QUICKLAG Type: BA Non-Automatic Switches | | | | |
| 50 | BAB1050N | — | BAB2050N | BAB3050N |
| 60 | BAB1060N | — | BAB2060N | BAB3060N |
| 100 | BAB1100N | — | BAB2100N | BAB3100N |
| QUICKLAG Type: QC Non-Automatic Switches | | | | |
| 50 | QC1050N | — | QC2050N | QC3050N |
| 60 | QC1060N | — | QC2060N | QC3060N |
| 100 | QC1100N | — | QC2100N | QC3100N |
| QUICKLAG Type: QCD Non-Automatic Switches | | | | |
| 60 | — | — | QCD2060NA | — |
| 100 | — | — | — | — |

Accessories ①

Handle Locks: Non-Padlockable ②

| | Description | Order in Multiples of | Catalog Number |
|---|---|-----------------------|----------------|
| QL1NPL | QUICKLAG Type P, B, C—single-pole | 10 | QL1NPL |
|  | | | |
| QL23NPL | QUICKLAG Type P, B, C—two- and three-pole | 10 | QL23NPL |
|  | | | |

Handle Locks: Padlockable ②

| | Description | Order in Multiples of | Catalog Number |
|---|--|-----------------------|-------------------|
| QL1PL | QUICKLAG Type P, B, C—single-pole | 10 | QL1PL |
|  | | | |
| QL123PL | QUICKLAG Type P, B and ground fault—single-, two- and three-pole | 10 | QL123PL |
|  | | | |
| QC123PL | QUICKLAG Type C—single-, two- and three-pole | 10 | QC123PL |
|  | | | |
| | QUICKLAG Type P, B—single-, two- and three-pole (off only) | 10 | QL123PLOFF |
| | QUICKLAG Type C—single-, two- and three-pole (off only) | 10 | QC123PLOFF |

Notes

- ① See **Page V4-T1-27** for QCR and QCF accessories.
- ② Can lock in ON or OFF position.

Mounting Hardware

| | Description | Order in Multiples of | Catalog Number |
|---|--|-----------------------|------------------|
|  | QUICKLAG Type C face mounting clip | 24 | QCFLIP |
|  | QUICKLAG Type C face mounting plate—single-pole | 10 | QC1FP |
|  | QUICKLAG Type C face mounting plate—two-pole | 10 | QC2FP |
|  | QUICKLAG Type C face mounting plate—three-pole | 10 | QC3FP |
| | QUICKLAG Type C face mounting plate and lock-off (off only)—two-pole ① | 10 | QC2FPLOFF |
| | QUICKLAG Type C face mounting plate and lock-off (off only)—three-pole | 10 | QC3FPLOFF |
|  | QUICKLAG Type C base mounting clamp | 10 | QCBCLIP |
|  | QUICKLAG Type mounting plate—six poles total | 10 | QC6BP |

Note

① Suitable for ground fault breakers.

Mounting Hardware, continued

QCDJ4



| Description | Order in Multiples of | Catalog Number |
|--|-----------------------|-------------------|
| QUICKLAG Type C base mounting plate—six poles total—heavy-duty screw-secured | 10 | QC6BPS |
| QUICKLAG Type C (QCD) 2-way jumper unit with cover | 10 | QCDJ2 |
| QUICKLAG Type C (QCD) 4-way jumper unit with cover | 10 | QCDJ4 |
| QUICKLAG Type C (QCD) 6-way jumper unit with cover | 10 | QCDJ6 |
| QUICKLAG Type C (QCD) 2-way jumper unit, no cover | 10 | QCDJ2T |
| QUICKLAG Type C (QCD) 4-way jumper unit, no cover | 10 | QCDJ4T |
| QUICKLAG Type C (QCD) 6-way jumper unit, no cover | 10 | QCDJ6T |
| QUICKLAG Type QCD Finger protection attachment | 10 | QCDFP |
| QUICKLAG Type QCD 4-prong Quick Connect | 10 | QCDQUICK |
| QUICKLAG Type C DIN rail adapter | 6 | QCDINADAPT |

QCDINADAPT



QCDRING



Dummy Breakers

| Description | Order in Multiples of | Catalog Number |
|--------------------------------------|-----------------------|-------------------|
| QUICKLAG Type P | 1 | HQP1000 |
| QUICKLAG Type B | 1 | BAB1000 |
| QUICKLAG Type C | 1 | QC1000 |
| QUICKLAG Type C clear choice breaker | 4 | QC30SAMPLE |

QCRSPACER



Miscellaneous

| Description | Order in Multiples of | Catalog Number |
|------------------------|-----------------------|------------------|
| QUICKLAG Type C Spacer | 1 | QCRSPACER |

QL1HT



Handle Tie

| Description | Order in Multiples of | Catalog Number |
|---------------------------------|-----------------------|----------------|
| QUICKLAG handle tie—single-pole | 100 | QL1HT |

Factory Modifications and Installed Terminals

Factory Modifications ^①

| Type of Modification | Breaker Type | Catalog Suffix |
|--|---|-------------------------------|
| Shunt trip (requires one extra pole space on right side) 120, 208, 240 Vac Draws 2.6A at 120V, draws 11A at 24 Vdc | QUICKLAG Types P, B and C | S |
| Shunt trip (requires one extra pole space on right side) 24, 48 Vac/dc Draws 2.6A at 120V, draws 11A at 24 Vdc | QUICKLAG Types P, B and C | S1 |
| Special calibration (50°C) (no UL) | QUICKLAG Types P, B and C | V |
| Shock testing | QUICKLAG Types P, B and C | L |
| Freeze testing | QUICKLAG Types P, B and C | Y |
| Moisture-fungus treatment | QUICKLAG Types P, B, C and ground fault | F |
| Marine duty | QUICKLAG Types P, B, C | H08 |
| Naval duty | QUICKLAG Types P, B, C | H09 |
| 400 Hz calibration | QUICKLAG Types P, B, C | G |
| Specific DC ratings (breaker marked with a max. Vdc rating) | QUICKLAG Types P, B, C | Q thru Q9 ^② |

Spare Terminal Hardware Screws (Lugs not Included)

| Terminal Type | Description | Order in Multiples of | Catalog Number |
|---------------|--|-----------------------|-----------------|
| 1 | QUICKLAG terminal screw | 10 | QLD TSA |
| 2 | QUICKLAG terminal screw | 10 | QLD TSB |
| 3 | QUICKLAG terminal screw | 10 | QLD TSC |
| 5 | QUICKLAG binding head terminal screw and clamp | 10 | QLB HTSE |
| 6 and 7 | QUICKLAG terminal screw | 10 | QLLNTSFG |

Notes

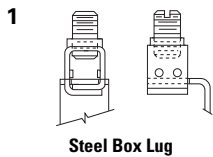
^① Contact Eaton for factory modifications available for QCR and QCF breakers.

^② Q = 32 Vdc; Q1 = 32–40 Vdc; Q2 = 37.5 Vdc; Q3 = 45 Vdc; Q4 = 48 Vdc; Q5 = 50 Vdc; Q6 = 62.5 Vdc; Q7 = 75 Vdc (2P); Q8 = 80 Vdc (2P); Q9 = 125 Vdc (QCR 2P); Q10 = 62.5 Vdc (QCR 1P).

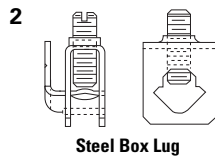
Technical Data and Specifications

Factory-Installed Breaker Terminals

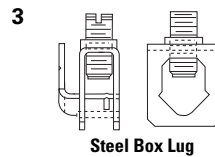
| Breaker Type | Continuous Ampere Rating | Standard Line Terminal | | | Standard Load Terminal | | | Optional Terminals | |
|--|--------------------------|---|-----------|------------------|--------------------------|-----------|------------------|--------------------|------------|
| | | Terminal Type | Wire Type | Wire Range (AWG) | Terminal Type | Wire Type | Wire Range (AWG) | Line | Load |
| QUICKLAG Type P HQP, QPHW, QHPX, QHPW | 10–30 | Plug-on female clips that mate with the bus stabs | | | 1 | Cu/Al | 14–4 | N/A | 3 |
| | 35–50 | | | | 2 | Cu/Al | 14–4 | N/A | 3 |
| | 55–125 | | | | 3 | Cu/Al | 8–1/0 | N/A | — |
| QUICKLAG ground fault QPGFT, QPGFEP, QPHGFT, QPHGFEP | 10–40 | Plug-on female clips that mate with the bus stabs | | | 1 (single-pole) | Cu/Al | 14–4 | N/A | 3 |
| | 10–40 | | | | 1 | Cu/Al | — | N/A | 3 |
| | 10–30 | | | | 1 | Cu | 14–8 | N/A | — |
| QUICKLAG Type B BAB, QBHW, HBAX, HBAW | 10–40 | Extended tangs that bolt directly to the bus | | | 1 (single- and two-pole) | Cu/Al | 14–4 | N/A | 3 |
| | 35–50 | | | | 2 (three-pole) | Cu/Al | 14–4 | N/A | 3 |
| | 55–125 | | | | 3 | Cu/Al | 8–1/0 | N/A | — |
| QUICKLAG ground fault QBGFT, QBGFEP, QBHGFT, QBHGFEP | 10–40 | Extended tangs that bolt directly to the bus | | | 1 (single-pole) | Cu/Al | 14–4 | N/A | N/A |
| | 10–40 | | | | 1 | Cu/Al | 14–8 | N/A | N/A |
| | 10–30 | | | | 1 | Cu | 14–8 | N/A | N/A |
| QUICKLAG Type C QC, QCHW, QHCX, QHCW | 10–20 | 5 | Cu/Al | TBD | 5 | Cu/Al | 14–10 | 6, 7 | 6, 7, 8 |
| | 25–60 | 6 | Cu/Al | TBD | 2 | Cu/Al | 14–4 | 5, 7 | 5, 6, 7, 8 |
| | 70–100 | 7 | Cu/Al | TBD | 3 | Cu/Al | 8–1/0 | 5 | 5, 7, 8 |
| QUICKLAG QCR, QCF | 10–55 | 1 | Cu/Al | TBD | 1 | Cu/Al | 14–4 | N/A | N/A |
| | 60 | 1 | Cu | TBD | 1 | Cu | 14–4 | N/A | N/A |
| QUICKLAG ground fault QCGFT, QCGFEP, QCHGFT, QCHGFEP | 10–20 | 6 | Cu/Al | TBD | 14–8 | Cu/Al | 14–4 | 6, 7 | 5 |
| | 25–50 | 6 | Cu/Al | TBD | 1 | Cu/Al | 14–4 | 5, 7 | 5 |
| | 10–30 | 6 | — | — | — | — | — | — | — |
| QUICKLAG QCD | 10–60 | 9 | Cu/Al | 14–4 | 9 | Cu/Al | 14–4 | See Accessories | |
| | 70–100 | 10 | Cu | 4–1/0 | 10 | Cu | 4–1/0 | See Accessories | |



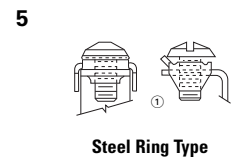
Steel Box Lug



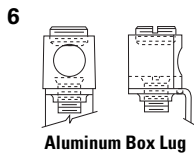
Steel Box Lug



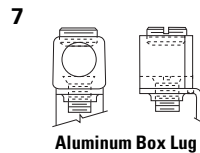
Steel Box Lug



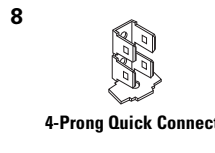
Steel Ring Type



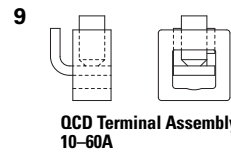
Aluminum Box Lug



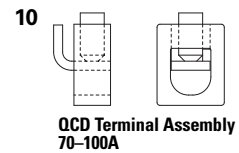
Aluminum Box Lug



4-Prong Quick Connect



QCD Terminal Assembly
10–60A



QCD Terminal Assembly
70–100A

Note

⊙ Clamp on line side only.

Dimensions

Approximate Dimensions in Inches (mm)

Shipping Data

| Miniature Circuit Breaker | Number of Poles | Standard Carton Quantity | Approximate Carton Weight Lbs (kg) | Approximate Standard Carton |
|--------------------------------------|----------------------------|---|---|---|
| QUICKLAG Types B, P, C—all | 1 | 24 | 9.00 (4.1) | 12.50 x 7.50 x 5.00 (317.5 x 190.5 x 127.0) |
| QUICKLAG Types B, P, C—all | 2 | 12 | 9.00 (4.1) | 12.50 x 7.50 x 5.00 (317.5 x 190.5 x 127.0) |
| QUICKLAG Types B, P, C—all | 3 | 8 | 9.00 (4.1) | 12.50 x 7.50 x 5.00 (317.5 x 190.5 x 127.0) |
| QUICKLAG ground fault Type P—all | 1 | 20 | 11.00 (5.0) | 12.50 x 6.50 x 5.00 (317.5 x 165.1 x 127.0) |
| Types B and C—all | 1 | 20 | 11.00 (5.0) | 12.50 x 7.00 x 5.50 (317.5 x 177.8 x 139.7) |
| Types P and B—all | 2 | 5 | 5.00 (2.3) | 12.50 x 6.00 x 4.50 (317.5 x 152.4 x 114.3) |

FAZ-NA Circuit Breakers



Optimum and Efficient Protection for Every Application

Contents

Description

| | <i>Page</i> |
|---|-----------------|
| FAZ-NA Circuit Breakers | |
| Catalog Number Selection | V4-T1-50 |
| Product Selection | V4-T1-51 |
| Accessories | V4-T1-55 |
| Technical Data and Specifications | V4-T1-57 |
| Dimensions | V4-T1-66 |

FAZ-NA Circuit Breakers

Product Overview

Optimum product quality, tested reliability and safety stand for best protection of personnel, installations and plant. Eaton's FAZ-NA DIN rail mountable circuit breaker is designed for use in branch service applications.

Powerful Offering for Machine and System Builders

The FAZ-NA is available with B, C and D characteristics in accordance with UL® 489, CSA® C22.2 No.5; UL 1077, CSA C22.2 No.235 and IEC 60947-2. These devices are CE marked.

Application Description

Feeder and branch circuit protection for:

- Convenience receptacle circuits (internal/external)
- Motor control circuits
- Load circuits leaving the equipment (external)
- HACR internal/external equipment (heating, air conditioning, refrigeration)
- PLC I/O points
- Computers
- Power supplies
- Control instrumentation
- Relays
- UPS
- Power conditioners

Features

- Complete range of UL 489 listed DIN rail mounted miniature circuit breakers up to 40A current rating
- Standard ratings of 10 kAIC up to 277/480 Vac
- Select amperages available at 14 kAIC up to 277/480 Vac and 10 kAIC up to 125 Vdc per pole
- Current limiting design provides fast short-circuit interruption that reduces the let-through energy, which can damage the circuit
- Suitable for branch circuit device protection
- Thermal-magnetic overcurrent protection
 - Three levels of short-circuit protection, categorized by B, C and D curves
- Trip-free design—breaker can not be defeated by holding the handle in the ON position
- Captive screws cannot be lost
- SWD (switching duty)—suitable for switching fluorescent lighting loads ($I_n \leq 20A$)
- Fulfill UL 489, CSA C22.2 No.5 and also IEC 60947-2 Standard
- For use in applications for which UL 1077 or CSA C22.2 No.235 are also allowed
- Field-installable shunt trip and auxiliary switch subsequent mounting
- Separate version for ring-tongue connection (Type FAZ-RT), terminal screws can be removed (on both sides)
- Module width of only 17.7 mm (per pole)
- Contact Position Indicator (red/green)
- Easy installation on DIN rail
- Possibility for sealing the toggle in ON or OFF position

Device Printing on Front and Side Installation options

These branch circuit breakers are available in two terminal configurations: standard box terminals that accept multiple conductors and ring-tongue terminals, ideally suited to demanding requirements of the semi-conductor industry. All breakers mount on standard 35 mm DIN rail. Bus connectors and feeder terminal facilitate mounting and wiring of multiple miniature circuit breaker arrays in control panel assemblies. These circuit breakers can also be reverse feed.

1.2

Miniature Circuit Breakers and Supplementary Protectors

UL 489 DIN Rail Miniature Circuit Breakers

1

Standards and Certifications

FAZ-NA complies with the latest national and international standards.

- RoHS compliant
- VDE compliant
- ABS compliant

• UL 489

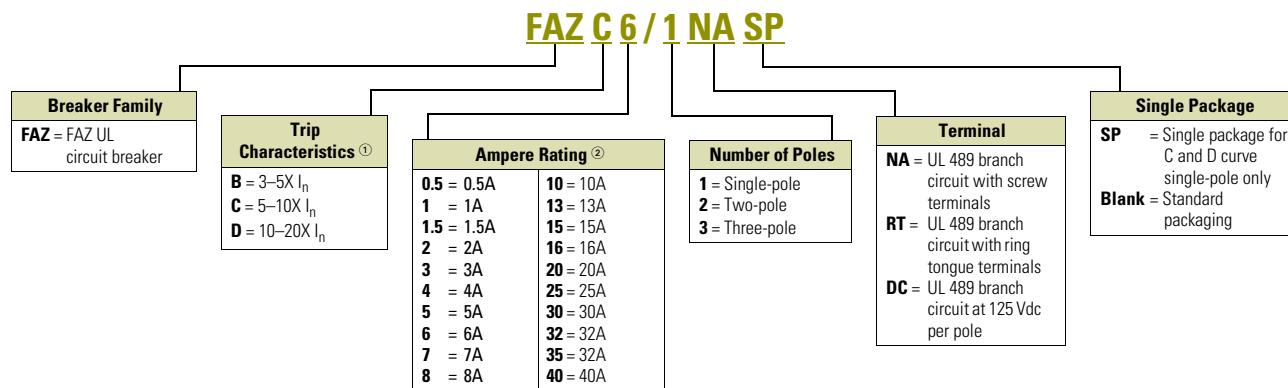
- Standard for molded case circuit breakers (MCCB) for feeder and branch circuit protection
- Products meet the requirements of the National Electrical Code® (NEC®)



• CSA C22.2 No.5

- Standard for molded case circuit breakers (MCCB) for feeder and branch circuit protection (corresponds closely to UL 489 Standard)
- Products meet the requirements of the Canadian Electrical Code (CEC)

Catalog Number Selection



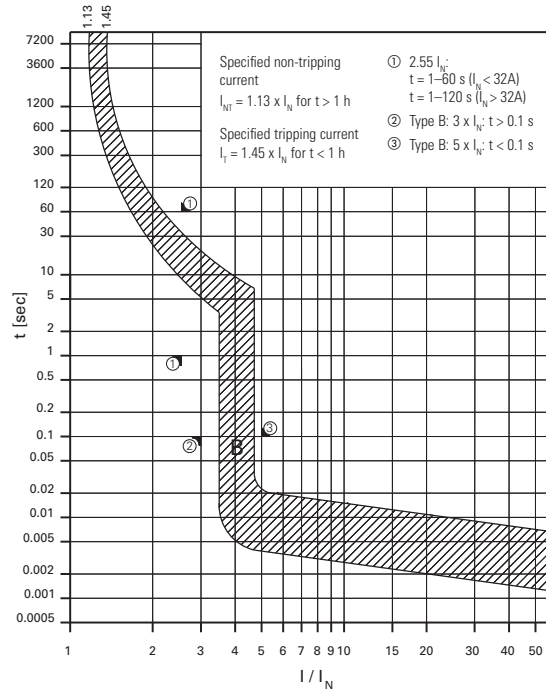
Notes

- ① I_n = Rated current for instantaneous trip characteristics.
- ② B curve starts at 1 ampere.

Product Selection

FAZ-NA B Curve

- UL approved (UL 489) and CSA Certified (CSA C22.2 No.5-02) as branch circuit breakers
- Interrupting capacity: 10 kA UL/CSA; 15 kA IEC 60947-2
- Current limiting device
- UL file number E235139



Single-Pole



Two-Pole



Three-Pole



FAZ-NA UL 489 Circuit Breakers— 10 kAIC, 14 kAIC B Curve (15–25A)

| Amperes | Single-Pole ^① Catalog Number | Two-Pole Catalog Number | Three-Pole Catalog Number |
|--|--|----------------------------|------------------------------|
| B Curve (3–5X I_N Current Rating) | | | |
| 1 | FAZ-B1/1-NA | FAZ-B1/2-NA | FAZ-B1/3-NA |
| 1.5 | FAZ-B1.5/1-NA | FAZ-B1.5/2-NA | FAZ-B1.5/3-NA |
| 2 | FAZ-B2/1-NA | FAZ-B2/2-NA | FAZ-B2/3-NA |
| 3 | FAZ-B3/1-NA | FAZ-B3/2-NA | FAZ-B3/3-NA |
| 4 | FAZ-B4/1-NA | FAZ-B4/2-NA | FAZ-B4/3-NA |
| 5 | FAZ-B5/1-NA | FAZ-B5/2-NA | FAZ-B5/3-NA |
| 6 | FAZ-B6/1-NA | FAZ-B6/2-NA | FAZ-B6/3-NA |
| 7 | FAZ-B7/1-NA | FAZ-B7/2-NA | FAZ-B7/3-NA |
| 8 | FAZ-B8/1-NA | FAZ-B8/2-NA | FAZ-B8/3-NA |
| 10 | FAZ-B10/1-NA | FAZ-B10/2-NA | FAZ-B10/3-NA |
| 13 | FAZ-B13/1-NA | FAZ-B13/2-NA | FAZ-B13/3-NA |
| 15 | FAZ-B15/1-NA | FAZ-B15/2-NA | FAZ-B15/3-NA |
| 16 | FAZ-B16/1-NA | FAZ-B16/2-NA | FAZ-B16/3-NA |
| 20 | FAZ-B20/1-NA | FAZ-B20/2-NA | FAZ-B20/3-NA |
| 25 | FAZ-B25/1-NA | FAZ-B25/2-NA | FAZ-B25/3-NA |
| 30 | FAZ-B30/1-NA | FAZ-B30/2-NA | FAZ-B30/3-NA |
| 32 | FAZ-B32/1-NA | FAZ-B32/2-NA | FAZ-B32/3-NA |
| 35 ^② | FAZ-B35/1-NA | FAZ-B35/2-NA | FAZ-B35/3-NA |
| 40 ^② | FAZ-B40/1-NA | FAZ-B40/2-NA | FAZ-B40/3-NA |

Single-Pole



Two-Pole



Three-Pole



FAZ-RT UL 489 Circuit Breakers with Ring-Tongue Terminals— 10 kAIC, 14 kAIC B Curve (15–25A)

| Amperes | Single-Pole ^① Catalog Number | Two-Pole Catalog Number | Three-Pole Catalog Number |
|---|--|----------------------------|------------------------------|
| B Curve with Ring-Tongue Terminals (3–5X I_N Current Rating) | | | |
| 1 | FAZ-B1/1-RT | FAZ-B1/2-RT | FAZ-B1/3-RT |
| 1.5 | FAZ-B1.5/1-RT | FAZ-B1.5/2-RT | FAZ-B1.5/3-RT |
| 2 | FAZ-B2/1-RT | FAZ-B2/2-RT | FAZ-B2/3-RT |
| 3 | FAZ-B3/1-RT | FAZ-B3/2-RT | FAZ-B3/3-RT |
| 4 | FAZ-B4/1-RT | FAZ-B4/2-RT | FAZ-B4/3-RT |
| 5 | FAZ-B5/1-RT | FAZ-B5/2-RT | FAZ-B5/3-RT |
| 6 | FAZ-B6/1-RT | FAZ-B6/2-RT | FAZ-B6/3-RT |
| 7 | FAZ-B7/1-RT | FAZ-B7/2-RT | FAZ-B7/3-RT |
| 8 | FAZ-B8/1-RT | FAZ-B8/2-RT | FAZ-B8/3-RT |
| 10 | FAZ-B10/1-RT | FAZ-B10/2-RT | FAZ-B10/3-RT |
| 13 | FAZ-B13/1-RT | FAZ-B13/2-RT | FAZ-B13/3-RT |
| 15 | FAZ-B15/1-RT | FAZ-B15/2-RT | FAZ-B15/3-RT |
| 16 | FAZ-B16/1-RT | FAZ-B16/2-RT | FAZ-B16/3-RT |
| 20 | FAZ-B20/1-RT | FAZ-B20/2-RT | FAZ-B20/3-RT |
| 25 | FAZ-B25/1-RT | FAZ-B25/2-RT | FAZ-B25/3-RT |
| 30 | FAZ-B30/1-RT | FAZ-B30/2-RT | FAZ-B30/3-RT |
| 32 | FAZ-B32/1-RT | FAZ-B32/2-RT | FAZ-B32/3-RT |
| 35 ^② | FAZ-B35/1-RT | FAZ-B35/2-RT | FAZ-B35/3-RT |
| 40 ^② | FAZ-B40/1-RT | FAZ-B40/2-RT | FAZ-B40/3-RT |

Notes

- ^① Two-piece order. Quantities of two per box.
- ^② 240 Vac rated only.

1.2

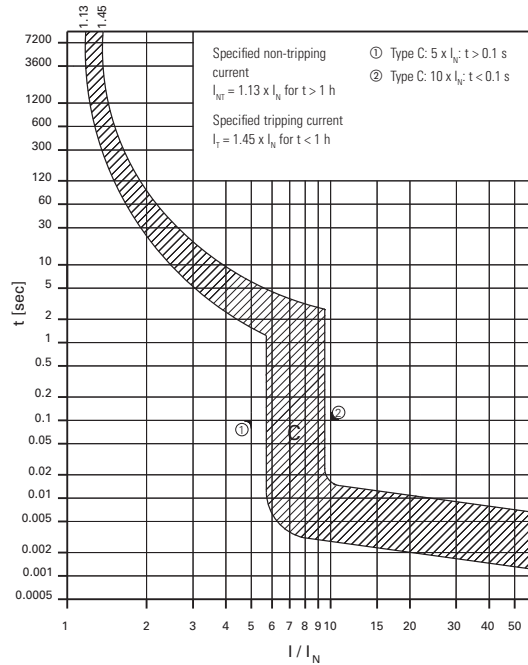
Miniature Circuit Breakers and Supplementary Protectors

UL 489 DIN Rail Miniature Circuit Breakers

1

FAZ-NA C Curve

- UL approved (UL 489) and CSA Certified (CSA C22.2 No.5-02) as branch circuit breakers
- Interrupting capacity: 10 kA UL/CSA; 15 kA IEC 60947-2
- Current limiting device
- UL file number E235139



Single-Pole



Two-Pole



Three-Pole



FAZ-NA UL 489 Circuit Breakers— 10 kAIC, 14 kAIC C Curve (15–25A)

| Amperes | Single-Pole ① Catalog Number | Two-Pole Catalog Number | Three-Pole Catalog Number |
|---|------------------------------------|-------------------------------|---------------------------------|
| C Curve (5–10X I_n Current Rating) | | | |
| 0.5 | FAZ-C0.5/1-NA-SP | FAZ-C0.5/2-NA | FAZ-C0.5/3-NA |
| 1 | FAZ-C1/1-NA-SP | FAZ-C1/2-NA | FAZ-C1/3-NA |
| 1.5 | FAZ-C1.5/1-NA-SP | FAZ-C1.5/2-NA | FAZ-C1.5/3-NA |
| 2 | FAZ-C2/1-NA-SP | FAZ-C2/2-NA | FAZ-C2/3-NA |
| 3 | FAZ-C3/1-NA-SP | FAZ-C3/2-NA | FAZ-C3/3-NA |
| 4 | FAZ-C4/1-NA-SP | FAZ-C4/2-NA | FAZ-C4/3-NA |
| 5 | FAZ-C5/1-NA-SP | FAZ-C5/2-NA | FAZ-C5/3-NA |
| 6 | FAZ-C6/1-NA-SP | FAZ-C6/2-NA | FAZ-C6/3-NA |
| 7 | FAZ-C7/1-NA-SP | FAZ-C7/2-NA | FAZ-C7/3-NA |
| 8 | FAZ-C8/1-NA-SP | FAZ-C8/2-NA | FAZ-C8/3-NA |
| 10 | FAZ-C10/1-NA-SP | FAZ-C10/2-NA | FAZ-C10/3-NA |
| 13 | FAZ-C13/1-NA-SP | FAZ-C13/2-NA | FAZ-C13/3-NA |
| 15 | FAZ-C15/1-NA-SP | FAZ-C15/2-NA | FAZ-C15/3-NA |
| 16 | FAZ-C16/1-NA-SP | FAZ-C16/2-NA | FAZ-C16/3-NA |
| 20 | FAZ-C20/1-NA-SP | FAZ-C20/2-NA | FAZ-C20/3-NA |
| 25 | FAZ-C25/1-NA-SP | FAZ-C25/2-NA | FAZ-C25/3-NA |
| 30 | FAZ-C30/1-NA-SP | FAZ-C30/2-NA | FAZ-C30/3-NA |
| 32 | FAZ-C32/1-NA-SP | FAZ-C32/2-NA | FAZ-C32/3-NA |
| 35 ② | FAZ-C35/1-NA-SP | FAZ-C35/2-NA | FAZ-C35/3-NA |
| 40 ② | FAZ-C40/1-NA-SP | FAZ-C40/2-NA | FAZ-C40/3-NA |

Single-Pole



Two-Pole



Three-Pole



FAZ-RT UL 489 Circuit Breakers with Ring-Tongue Terminals— 10 kAIC, 14 kAIC C Curve (15–25A)

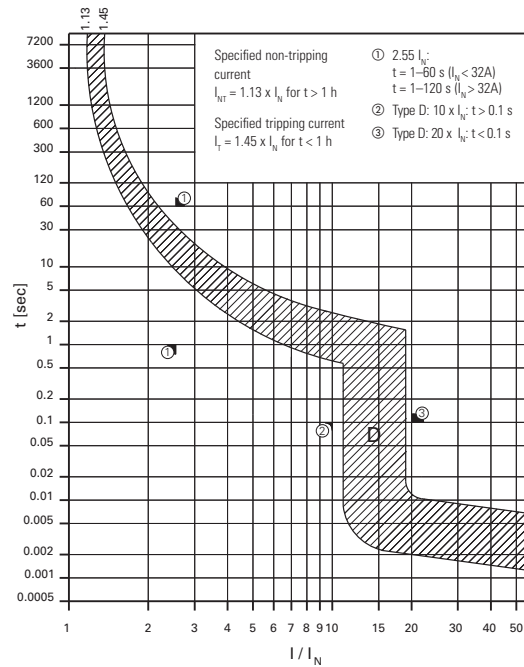
| Amperes | Single-Pole ① Catalog Number | Two-Pole Catalog Number | Three-Pole Catalog Number |
|--|------------------------------------|-------------------------------|---------------------------------|
| C Curve with Ring-Tongue Terminals (5–10X I_n Current Rating) | | | |
| 0.5 | FAZ-C0.5/1-RT-SP | FAZ-C0.5/2-RT | FAZ-C0.5/3-RT |
| 1 | FAZ-C1/1-RT-SP | FAZ-C1/2-RT | FAZ-C1/3-RT |
| 1.5 | FAZ-C1.5/1-RT-SP | FAZ-C1.5/2-RT | FAZ-C1.5/3-RT |
| 2 | FAZ-C2/1-RT-SP | FAZ-C2/2-RT | FAZ-C2/3-RT |
| 3 | FAZ-C3/1-RT-SP | FAZ-C3/2-RT | FAZ-C3/3-RT |
| 4 | FAZ-C4/1-RT-SP | FAZ-C4/2-RT | FAZ-C4/3-RT |
| 5 | FAZ-C5/1-RT-SP | FAZ-C5/2-RT | FAZ-C5/3-RT |
| 6 | FAZ-C6/1-RT-SP | FAZ-C6/2-RT | FAZ-C6/3-RT |
| 7 | FAZ-C7/1-RT-SP | FAZ-C7/2-RT | FAZ-C7/3-RT |
| 8 | FAZ-C8/1-RT-SP | FAZ-C8/2-RT | FAZ-C8/3-RT |
| 10 | FAZ-C10/1-RT-SP | FAZ-C10/2-RT | FAZ-C10/3-RT |
| 13 | FAZ-C13/1-RT-SP | FAZ-C13/2-RT | FAZ-C13/3-RT |
| 15 | FAZ-C15/1-RT-SP | FAZ-C15/2-RT | FAZ-C15/3-RT |
| 16 | FAZ-C16/1-RT-SP | FAZ-C16/2-RT | FAZ-C16/3-RT |
| 20 | FAZ-C20/1-RT-SP | FAZ-C20/2-RT | FAZ-C20/3-RT |
| 25 | FAZ-C25/1-RT-SP | FAZ-C25/2-RT | FAZ-C25/3-RT |
| 30 | FAZ-C30/1-RT-SP | FAZ-C30/2-RT | FAZ-C30/3-RT |
| 32 | FAZ-C32/1-RT-SP | FAZ-C32/2-RT | FAZ-C32/3-RT |
| 35 ② | FAZ-C35/1-RT-SP | FAZ-C35/2-RT | FAZ-C35/3-RT |
| 40 ② | FAZ-C40/1-RT-SP | FAZ-C40/2-RT | FAZ-C40/3-RT |

Notes

- ① Option for single packaging on single-pole C and D curves only; add suffix SP when ordering.
- ② 240 Vac rated only.

FAZ-NA D Curve

- UL approved (UL 489) and CSA Certified (CSA C22.2 No.5-02) as branch circuit breakers
- Interrupting capacity: 10 kA UL/CSA; 15 kA IEC 60947-2
- Current limiting device
- UL file number E235139



Single-Pole



FAZ-NA UL 489 Circuit Breakers— 10 kAIC, 14 kAIC D Curve (13–20A)

| Amperes | Single-Pole ^① Catalog Number | Two-Pole Catalog Number | Three-Pole Catalog Number |
|--|--|----------------------------|------------------------------|
| D Curve (10–20X I_N Current Rating) | | | |
| 0.5 | FAZ-D0.5/1-NA-SP | FAZ-D0.5/2-NA | FAZ-D0.5/3-NA |
| 1 | FAZ-D1/1-NA-SP | FAZ-D1/2-NA | FAZ-D1/3-NA |
| 1.5 | FAZ-D1.5/1-NA-SP | FAZ-D1.5/2-NA | FAZ-D1.5/3-NA |
| 2 | FAZ-D2/1-NA-SP | FAZ-D2/2-NA | FAZ-D2/3-NA |
| 3 | FAZ-D3/1-NA-SP | FAZ-D3/2-NA | FAZ-D3/3-NA |
| 4 | FAZ-D4/1-NA-SP | FAZ-D4/2-NA | FAZ-D4/3-NA |
| 5 | FAZ-D5/1-NA-SP | FAZ-D5/2-NA | FAZ-D5/3-NA |
| 6 | FAZ-D6/1-NA-SP | FAZ-D6/2-NA | FAZ-D6/3-NA |
| 7 | FAZ-D7/1-NA-SP | FAZ-D7/2-NA | FAZ-D7/3-NA |
| 8 | FAZ-D8/1-NA-SP | FAZ-D8/2-NA | FAZ-D8/3-NA |
| 10 | FAZ-D10/1-NA-SP | FAZ-D10/2-NA | FAZ-D10/3-NA |
| 13 | FAZ-D13/1-NA-SP | FAZ-D13/2-NA | FAZ-D13/3-NA |
| 15 | FAZ-D15/1-NA-SP | FAZ-D15/2-NA | FAZ-D15/3-NA |
| 16 | FAZ-D16/1-NA-SP | FAZ-D16/2-NA | FAZ-D16/3-NA |
| 20 | FAZ-D20/1-NA-SP | FAZ-D20/2-NA | FAZ-D20/3-NA |
| 25 | FAZ-D25/1-NA-SP | FAZ-D25/2-NA | FAZ-D25/3-NA |
| 30 | FAZ-D30/1-NA-SP | FAZ-D30/2-NA | FAZ-D30/3-NA |
| 32 | FAZ-D32/1-NA-SP | FAZ-D32/2-NA | FAZ-D32/3-NA |
| 35 ^② | FAZ-D35/1-NA-SP | FAZ-D35/2-NA | FAZ-D35/3-NA |
| 40 ^② | FAZ-D40/1-NA-SP | FAZ-D40/2-NA | FAZ-D40/3-NA |

Two-Pole



Three-Pole



Single-Pole



FAZ-RT UL 489 Circuit Breakers with Ring-Tongue Terminals— 10 kAIC, 14 kAIC D Curve (13–20A)

| Amperes | Single-Pole ^① Catalog Number | Two-Pole Catalog Number | Three-Pole Catalog Number |
|---|--|----------------------------|------------------------------|
| D Curve with Ring-Tongue Terminals (10–20X I_N Current Rating) | | | |
| 0.5 | FAZ-D0.5/1-RT-SP | FAZ-D0.5/2-RT | FAZ-D0.5/3-RT |
| 1 | FAZ-D1/1-RT-SP | FAZ-D1/2-RT | FAZ-D1/3-RT |
| 1.5 | FAZ-D1.5/1-RT-SP | FAZ-D1.5/2-RT | FAZ-D1.5/3-RT |
| 2 | FAZ-D2/1-RT-SP | FAZ-D2/2-RT | FAZ-D2/3-RT |
| 3 | FAZ-D3/1-RT-SP | FAZ-D3/2-RT | FAZ-D3/3-RT |
| 4 | FAZ-D4/1-RT-SP | FAZ-D4/2-RT | FAZ-D4/3-RT |
| 5 | FAZ-D5/1-RT-SP | FAZ-D5/2-RT | FAZ-D5/3-RT |
| 6 | FAZ-D6/1-RT-SP | FAZ-D6/2-RT | FAZ-D6/3-RT |
| 7 | FAZ-D7/1-RT-SP | FAZ-D7/2-RT | FAZ-D7/3-RT |
| 8 | FAZ-D8/1-RT-SP | FAZ-D8/2-RT | FAZ-D8/3-RT |
| 10 | FAZ-D10/1-RT-SP | FAZ-D10/2-RT | FAZ-D10/3-RT |
| 13 | FAZ-D13/1-RT-SP | FAZ-D13/2-RT | FAZ-D13/3-RT |
| 15 | FAZ-D15/1-RT-SP | FAZ-D15/2-RT | FAZ-D15/3-RT |
| 16 | FAZ-D16/1-RT-SP | FAZ-D16/2-RT | FAZ-D16/3-RT |
| 20 | FAZ-D20/1-RT-SP | FAZ-D20/2-RT | FAZ-D20/3-RT |
| 25 | FAZ-D25/1-RT-SP | FAZ-D25/2-RT | FAZ-D25/3-RT |
| 30 | FAZ-D30/1-RT-SP | FAZ-D30/2-RT | FAZ-D30/3-RT |
| 32 | FAZ-D32/1-RT-SP | FAZ-D32/2-RT | FAZ-D32/3-RT |
| 35 ^② | FAZ-D35/1-RT-SP | FAZ-D35/2-RT | FAZ-D35/3-RT |
| 40 ^② | FAZ-D40/1-RT-SP | FAZ-D40/2-RT | FAZ-D40/3-RT |

Two-Pole



Three-Pole



Notes

- ① Option for single packaging on single-pole C and D curves only; add suffix SP when ordering.
- ② 240 Vac rated only.

1.2

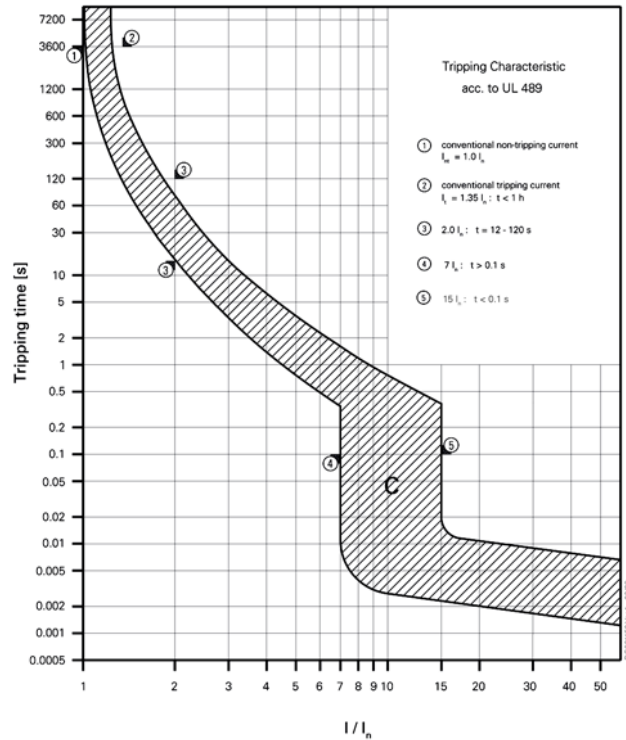
Miniature Circuit Breakers and Supplementary Protectors

UL 489 DIN Rail Miniature Circuit Breakers

1

FAZ-NA-DC C Curve

- UL approved (UL 489) and CSA Certified (CSA C22.2 No.5-02) as Branch Circuit Breakers
- Interrupting capacity: 10 kA at 125 Vdc UL/CSA, 10 kA at 250 Vdc
- 125 Vdc for one-pole, 250 Vdc for two-pole in series
- Current limiting device
- Polarity (+/-) sensitive and not for use on photovoltaic string application
- UL file number E235139



Single-Pole



Two-Pole



FAZ-NA-DC UL 489 Circuit Breakers—10 kAIC at 125 Vdc Per Pole





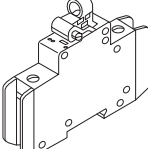
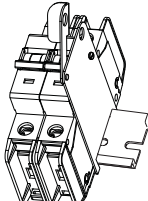
| Amperes | Single-Pole ① Catalog Number | Two-Pole Catalog Number |
|--|------------------------------------|-------------------------------|
| C Curve (5–10X I_n Current Rating) | | |
| 2 | FAZ-C2/1-NA-DC-SP | FAZ-C2/2-NA-DC |
| 3 | FAZ-C3/1-NA-DC-SP | FAZ-C3/2-NA-DC |
| 4 | FAZ-C4/1-NA-DC-SP | FAZ-C4/2-NA-DC |
| 5 | FAZ-C5/1-NA-DC-SP | FAZ-C5/2-NA-DC |
| 6 | FAZ-C6/1-NA-DC-SP | FAZ-C6/2-NA-DC |
| 7 | FAZ-C7/1-NA-DC-SP | FAZ-C7/2-NA-DC |
| 8 | FAZ-C8/1-NA-DC-SP | FAZ-C8/2-NA-DC |
| 10 | FAZ-C10/1-NA-DC-SP | FAZ-C10/2-NA-DC |
| 13 | FAZ-C13/1-NA-DC-SP | FAZ-C13/2-NA-DC |
| 15 | FAZ-C15/1-NA-DC-SP | FAZ-C15/2-NA-DC |
| 16 | FAZ-C16/1-NA-DC-SP | FAZ-C16/2-NA-DC |
| 20 | FAZ-C20/1-NA-DC-SP | FAZ-C20/2-NA-DC |
| 25 | FAZ-C25/1-NA-DC-SP | FAZ-C25/2-NA-DC |
| 30 | FAZ-C30/1-NA-DC-SP | FAZ-C30/2-NA-DC |
| 32 | FAZ-C32/1-NA-DC-SP | FAZ-C32/2-NA-DC |
| 35 | FAZ-C35/1-NA-DC-SP | FAZ-C35/2-NA-DC |
| 40 | FAZ-C40/1-NA-DC-SP | FAZ-C40/2-NA-DC |

Note



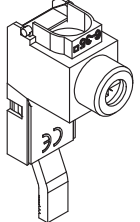

① Option for single packaging on single-pole C curves only; add suffix SP when ordering.

Accessories

FAZ-NA UL 489 Breakers

| | Description | Catalog Number |
|---|---|---|
| Contact  | Two-pole contact or auxiliary contact/trip indicating contact | Z-NHK ^① |
| Auxiliary Contact  | Auxiliary contact | Z-IHK-NA |
| Shunt Trip   | Shunt trip 110–415 Vac Shunt trip 12–110 Vac | FAZ-XAA-NA110-415VAC FAZ-XAA-NA12-110VAC |
| Padlock Hasp  | Padlock hasp | Z-IS/SPE-1TE |
| Lockoff Device  | UL lockoff device | FAZPLOFF |

FAZ-NA UL 489 Breakers, continued

| | Description | Catalog Number |
|---|--|-----------------------------|
| Busbar  | Busbar—single-pole, 6 terminals ^{②③④⑤} | Z-SV/UL-16/1P-1TE/6 |
| | Busbar—single-pole, 12 terminals ^{②③④⑤} | Z-SV/UL-16/1P-1TE/12 |
| | Busbar—single-pole, 18 terminals ^{②③④⑤} | Z-SV/UL-16/1P-1TE/18 |
| | Busbar—two-pole, 6 terminals ^{②③④⑤} | Z-SV/UL-16/2P-2TE/6 |
| | Busbar—two-pole, 12 terminals ^{②③④⑤} | Z-SV/UL-16/2P-2TE/12 |
| | Busbar—two-pole, 18 terminals ^{②③④⑤} | Z-SV/UL-16/2P-2TE/18 |
| | Busbar—three-pole, 6 terminals ^{②③④⑤} | Z-SV/UL-16/3P-3TE/6 |
| | Busbar—three-pole, 12 terminals ^{②③④⑤} | Z-SV/UL-16/3P-3TE/12 |
| | Busbar—three-pole, 18 terminals ^{②③④⑤} | Z-SV/UL-16/3P-3TE/18 |
| Busbar Shroud  | Three-pole busbar shroud | ZV-BS-UL |
| Extension Terminal  | Extension terminal—35 mm ² (10–1/0 AWG) | Z-EK/35/UL |
| Bus Connector  | Bus connector—conductors up to 50 mm ² (–1/0 AWG) | Z-EB/50/UL |

Notes

- ① Voltage of FAZ-NA circuit breaker is limited to 300V with this auxiliary contact installed.
- ② Do not cut commoning link.
- ③ A maximum of three commoning links may be used in conjunction. Each breaker connected to the commoning link must have the same number of poles for proper use.
- ④ Not for use with ring-tongue circuit breakers.
- ⑤ Bus may be center fed for high current capacity.

1.2

Miniature Circuit Breakers and Supplementary Protectors

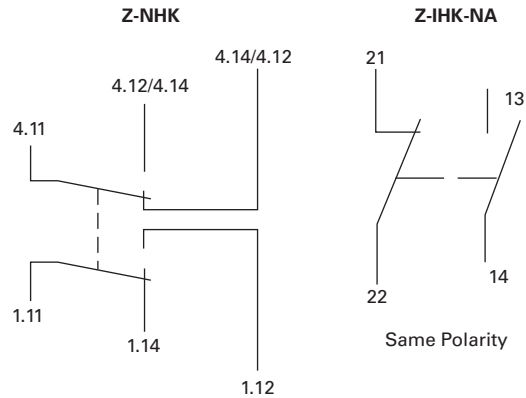
UL 489 DIN Rail Miniature Circuit Breakers

1

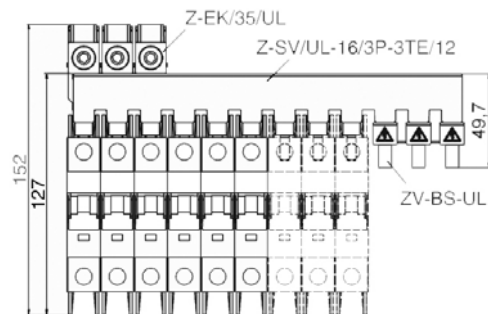
Tripping Signal Switch Z-NHK, Z-IHK-NA

- Design according to IEC/EN 60947-5-1, IEC/EN 62019
- Field installable
- The specified minimum voltages are per contact—take into account particularly in case of series connection
- Self-cleaning contacts
- Contact material and design particularly suitable for extra low voltage
- Z-NHK: the function of one of the two change-over contacts can be switched from “auxiliary switch” to “tripping signal switch”
- Tripping signal contact transmits message of electric tripping, not mechanical switch-off
- Test key for contact function “electrical tripping”
- Z-IHK-NA: will allow for > 480Y/277 Vac rating

Connection Diagram



Busbar Connection Example



Technical Data and Specifications

Trip Curve Chart

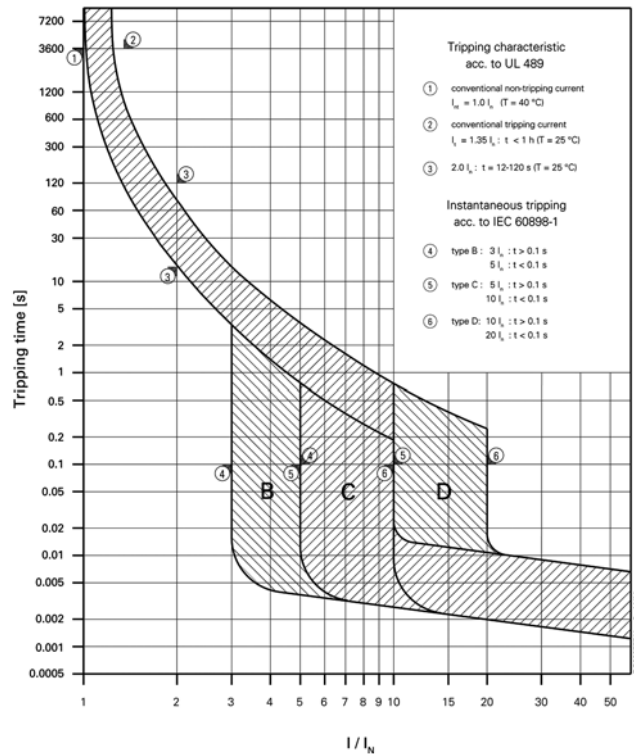
Eaton FAZ-NA branch circuit breakers are available with "B," "C" and "D" tripping characteristics. B-curve devices are suitable for applications where low levels of inrush current are expected.

C-curve devices are suitable for applications where medium levels of inrush current are expected. Applications include small transformers, lighting, pilot devices, control circuits and coils. C-curve devices provide a medium magnetic trip point.

D-curve devices are suitable for applications where high levels of inrush current are expected. The high magnetic trip point prevents nuisance tripping in high inductive applications such as motors, transformers and power supplies.

Eaton FAZ-NA devices are current limiting, which means they interrupt fault currents within one half cycle of the fault. Current limiting devices offer superior protection by reducing peak let-through current and energy.

Tripping Characteristics



1.2

Miniature Circuit Breakers and Supplementary Protectors

UL 489 DIN Rail Miniature Circuit Breakers

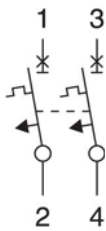
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Connection Diagrams

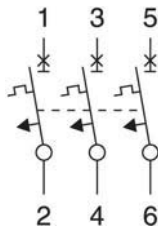
Single-Pole



Two-Pole



Three-Pole



Miniature Circuit Breakers FAZ-NA Technical Data

| Description | Specification |
|---|--|
| Electrical | |
| Design according to | UL 489, CSA C22.2 No.5, IEC 60947-2 |
| Rated voltage FAZ-NA UL/CSA | 10 kAIC at 277/480V from 0.5A to 32A 14 kAIC at select amperages B and C Curves (15–25A), D Curve (13–20A) |
| UL/CSA | 10 kAIC at 240 Vac for 35A and 40A |
| UL/CSA | 10 kAIC at 48 Vdc per pole |
| IEC 947-2 | 15 kAIC at 240/415 Vac |
| Rated voltage FAZ-NA-DC UL/CSA | 10 kAIC at 125 Vdc per pole (two poles maximum) 10 kAIC at 250 Vdc with two poles connected in series |
| Rated frequency | 50/60 Hz |
| Characteristic | B, C, D |
| Endurance | ≥ 20,000 operations |
| Line voltage connection | Suitable for reverse feed |
| Mechanical | |
| Frame size | 45 mm |
| Device height | 105 mm |
| Device width | 17.7 mm per pole |
| Terminal protection | Finger and hand touch safe according to BGV A3, OVE-EN 6 |
| Mounting | Quick fastening with two lock-in positions on IEC/EN 60715 |
| Upper and lower terminals | Open mouth/lift terminals |
| Terminal capacity | One wire: AWG 18–6 Two wires: AWG 18–10 |
| Terminal fastening torque | AWG 18–21: 21 lb-in AWG 10–8: 25 lb-in AWG 6: 36 lb-in |
| Mounting | Independent of position |
| Calibration temperature UL 489, CSA C22.2 No.5 | 40°C |
| IEC 60947-2 | 30°C |

Power Loss at I_n

| I_n [A] | Characteristic B | | | Characteristic C | | | Characteristic D | | |
|-----------|----------------------|-------------------|---------------------|----------------------|-------------------|---------------------|----------------------|-------------------|---------------------|
| | Single-Pole P [W] | Two-Pole P [W] | Three-Pole P [W] | Single-Pole P [W] | Two-Pole P [W] | Three-Pole P [W] | Single-Pole P [W] | Two-Pole P [W] | Three-Pole P [W] |
| 0.5 | — | — | — | 1.6 | 3.2 | 4.7 | 1.6 | 3.2 | 4.8 |
| 1.0 | 1.1 | 2.2 | 3.4 | 1.1 | 2.2 | 3.4 | 0.8 | 1.5 | 2.3 |
| 1.5 | 2.2 | 4.4 | 6.6 | 1.3 | 2.6 | 3.9 | 1.0 | 2.1 | 3.1 |
| 2.0 | 1.4 | 2.8 | 4.3 | 1.4 | 2.8 | 4.3 | 1.0 | 2.1 | 3.1 |
| 3.0 | 2.1 | 4.2 | 6.4 | 1.2 | 2.4 | 3.6 | 1.2 | 2.4 | 3.6 |
| 4.0 | 1.4 | 2.9 | 4.3 | 1.4 | 2.9 | 4.3 | 1.4 | 2.9 | 4.3 |
| 5.0 | 1.8 | 3.7 | 5.5 | 1.9 | 3.7 | 5.6 | 1.5 | 2.9 | 4.4 |
| 6.0 | 1.7 | 3.5 | 5.2 | 1.2 | 2.3 | 3.5 | 1.2 | 2.3 | 3.5 |
| 7.0 | 2.0 | 4.0 | 6.0 | 1.4 | 2.8 | 4.3 | 1.4 | 2.8 | 4.3 |
| 8.0 | 2.0 | 3.9 | 5.9 | 1.4 | 2.8 | 4.2 | 1.2 | 2.4 | 3.7 |
| 10.0 | 1.8 | 3.6 | 5.3 | 1.8 | 3.6 | 5.3 | 1.5 | 3.0 | 4.5 |
| 13.0 | 2.4 | 4.7 | 7.1 | 2.4 | 4.7 | 7.1 | 2.0 | 4.1 | 6.1 |
| 15.0 | 1.9 | 3.8 | 5.6 | 1.9 | 3.8 | 5.6 | 1.5 | 3.1 | 4.6 |
| 16.0 | 2.1 | 4.3 | 6.4 | 2.1 | 4.3 | 6.4 | 1.7 | 3.5 | 5.2 |
| 20.0 | 2.9 | 5.8 | 8.7 | 2.9 | 5.8 | 8.7 | 1.8 | 3.7 | 5.5 |
| 25.0 | 3.1 | 6.2 | 9.3 | 3.1 | 6.2 | 9.3 | 2.6 | 5.1 | 7.7 |
| 30.0 | 3.0 | 6.0 | 9.0 | 3.0 | 6.0 | 9.0 | 2.7 | 5.4 | 8.1 |
| 32.0 | 3.4 | 6.8 | 10.2 | 3.4 | 6.8 | 10.2 | 3.1 | 6.2 | 9.3 |
| 35.0 | 4.0 | 8.1 | 12.1 | 3.7 | 7.4 | 11.0 | 3.8 | 7.6 | 11.3 |
| 40.0 | 4.0 | 8.1 | 12.1 | 4.0 | 8.1 | 12.1 | 3.9 | 7.8 | 11.6 |

1.2

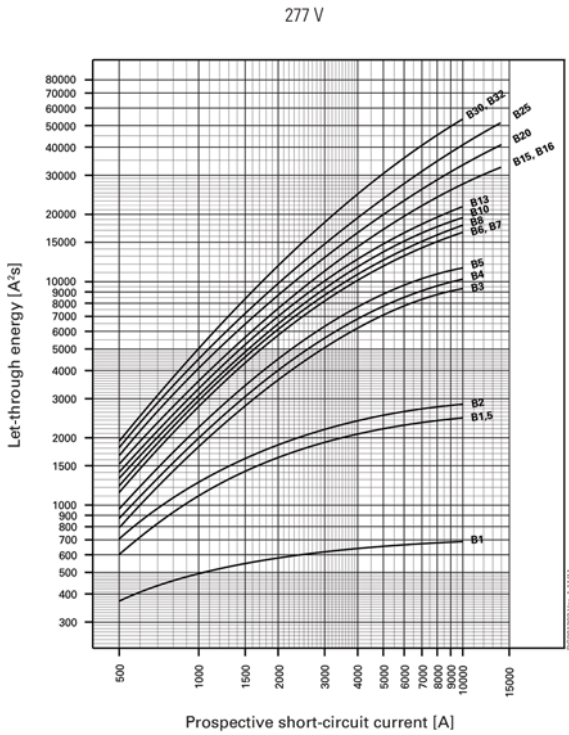
Miniature Circuit Breakers and Supplementary Protectors

UL 489 DIN Rail Miniature Circuit Breakers

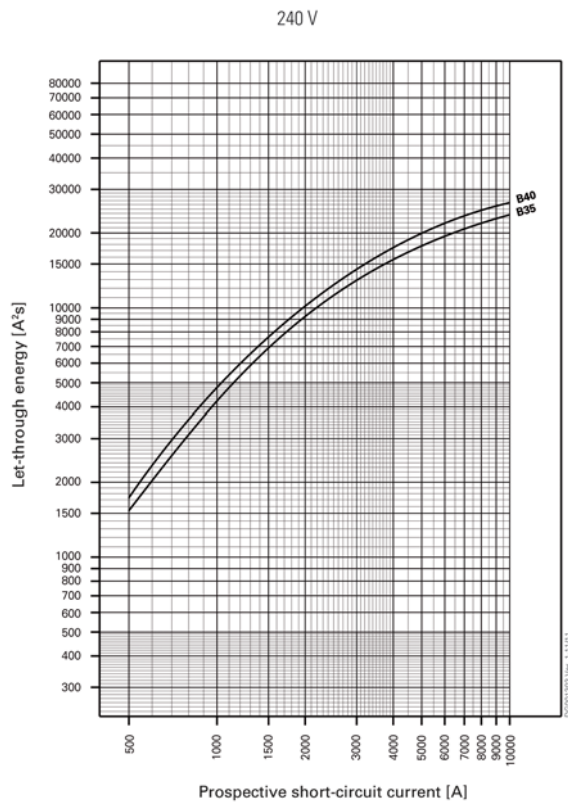
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Let-Through Energy

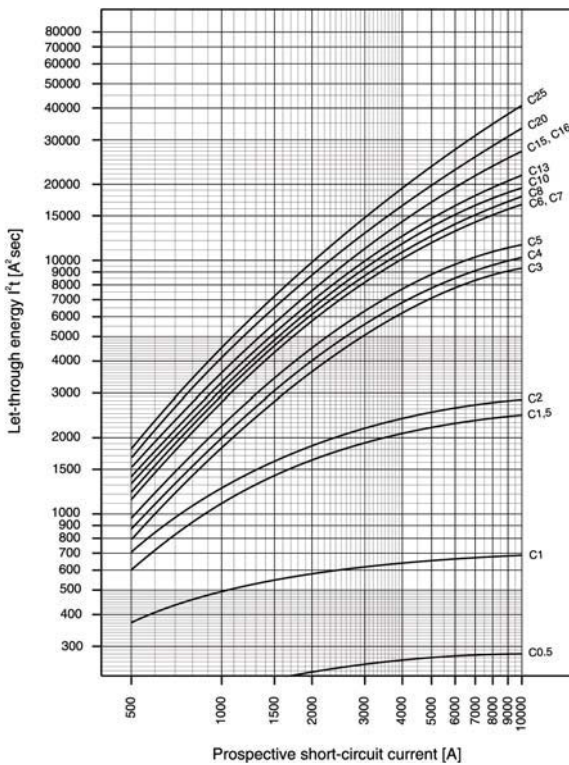
Characteristic B (1–32A), 277V



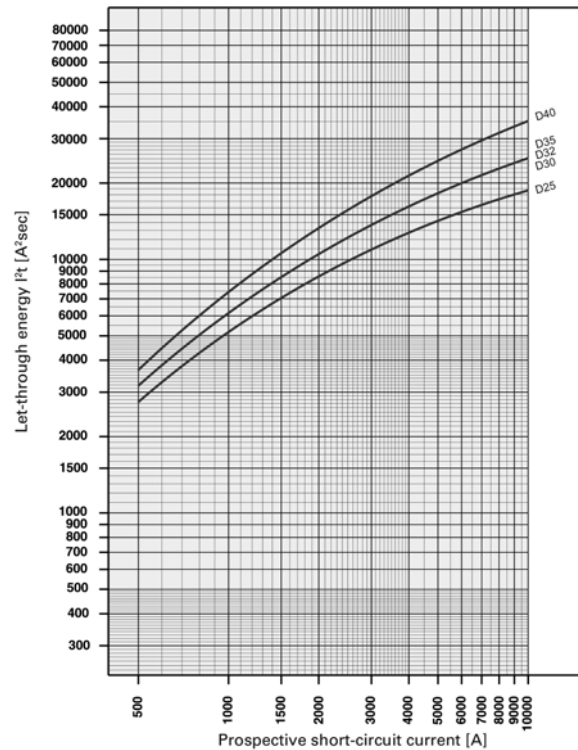
Characteristic B (35–40A), 240V



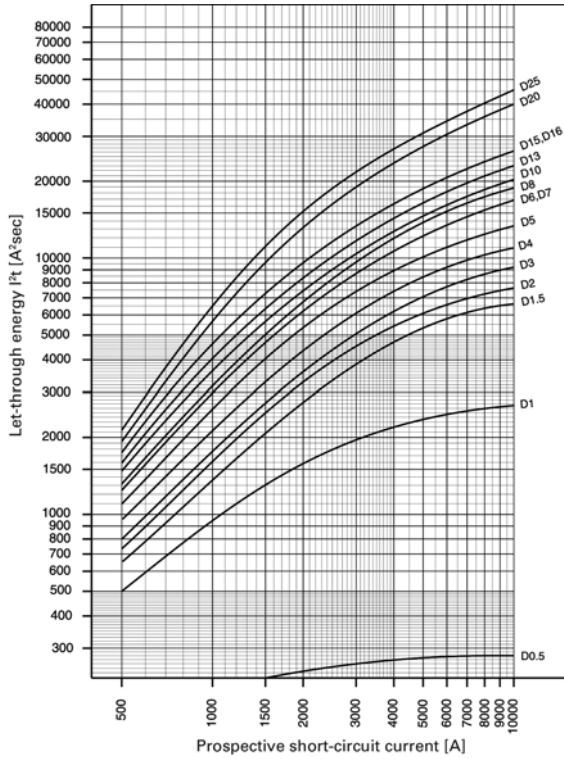
Characteristic C (0.5–32A), 277V



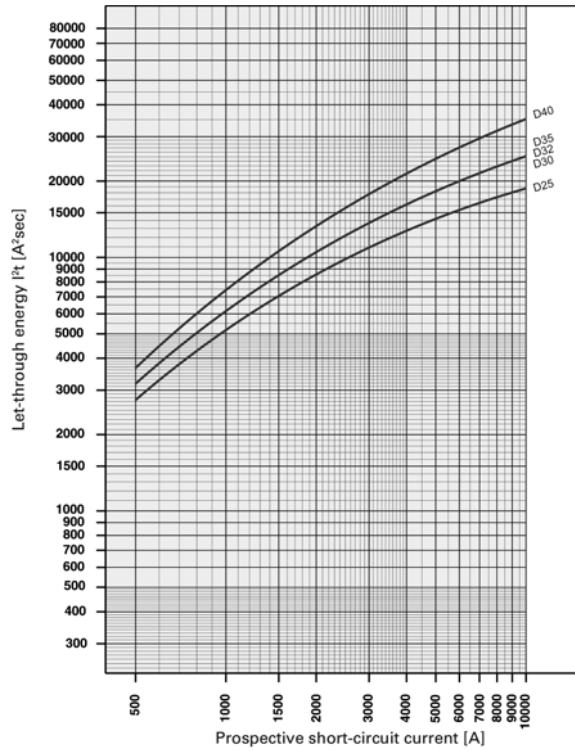
Characteristic C (40A), 240V



Characteristic D (0.5–32A), 277V



Characteristic D (40A), 240V



1.2

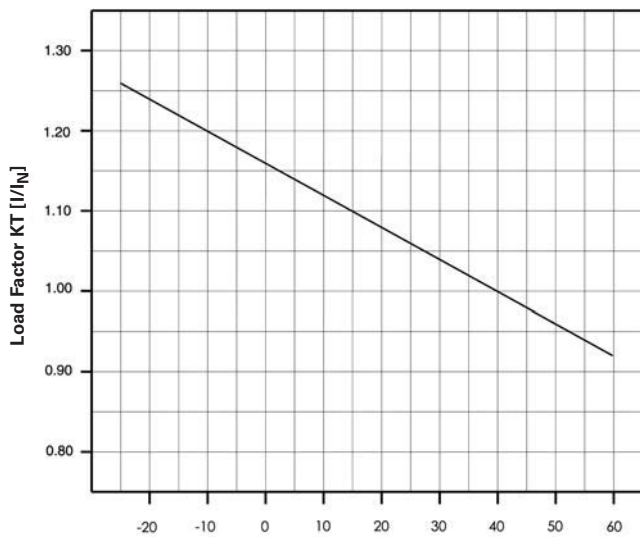
Miniature Circuit Breakers and Supplementary Protectors

UL 489 DIN Rail Miniature Circuit Breakers

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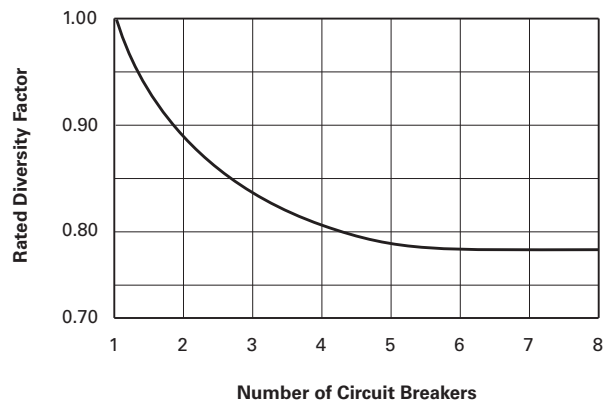
Influence of Ambient Temperature T on Load Carrying Capacity

| Device Market Current Rating I_n (A) at 40°C | I_n (A) at Higher Ambient Temperature | | | | | | | |
|--|---|------|------|------|------|------|------|------|
| | 15°C | 20°C | 25°C | 30°C | 40°C | 50°C | 55°C | 60°C |
| 0.5 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| 1.0 | 1.1 | 1.1 | 1.1 | 1.0 | 1.0 | 1.0 | 0.9 | 0.9 |
| 1.5 | 1.7 | 1.6 | 1.6 | 1.6 | 1.5 | 1.4 | 1.4 | 1.4 |
| 2.0 | 2.2 | 2.2 | 2.1 | 2.1 | 2.0 | 1.9 | 1.9 | 1.8 |
| 3.0 | 3.3 | 3.2 | 3.2 | 3.1 | 3.0 | 2.9 | 2.9 | 2.8 |
| 4.0 | 4.4 | 4.3 | 4.2 | 4.2 | 4.0 | 3.8 | 3.8 | 3.7 |
| 5.0 | 5.5 | 5.4 | 5.3 | 5.2 | 5.0 | 4.8 | 4.7 | 4.6 |
| 6.0 | 6.6 | 6.5 | 6.4 | 6.2 | 6.0 | 5.8 | 5.6 | 5.5 |
| 7.0 | 7.7 | 7.6 | 7.4 | 7.3 | 7.0 | 6.7 | 6.6 | 6.4 |
| 8.0 | 8.8 | 8.6 | 8.5 | 8.3 | 8.0 | 7.7 | 7.5 | 7.4 |
| 10.0 | 11.0 | 10.8 | 10.6 | 10.4 | 10.0 | 9.6 | 9.4 | 9.2 |
| 13.0 | 14.3 | 14.0 | 13.8 | 13.5 | 13.0 | 12.5 | 12.5 | 12.0 |
| 15.0 | 16.5 | 16.2 | 15.9 | 15.6 | 15.0 | 14.4 | 14.1 | 13.8 |
| 16.0 | 17.6 | 17.3 | 17.0 | 16.6 | 16.0 | 15.4 | 15.0 | 14.7 |
| 20.0 | 22.0 | 21.6 | 21.2 | 20.8 | 20.0 | 19.2 | 18.8 | 18.4 |
| 25.0 | 27.5 | 27.0 | 26.5 | 26.0 | 25.0 | 24.0 | 23.3 | 23.0 |
| 30.0 | 33.0 | 32.4 | 31.8 | 31.2 | 30.0 | 28.8 | 28.2 | 27.6 |
| 32.0 | 35.2 | 34.6 | 33.9 | 33.3 | 32.0 | 30.7 | 30.1 | 29.4 |
| 40.0 | 44.0 | 43.2 | 42.4 | 41.6 | 40.0 | 38.4 | 37.6 | 36.8 |



Maximum Load I_L at ambient temperature T: $I_L(T) = I_N K_T(T)$

Load Carrying Capacity of Adjoining Miniature Circuit Breakers



Z-NHK

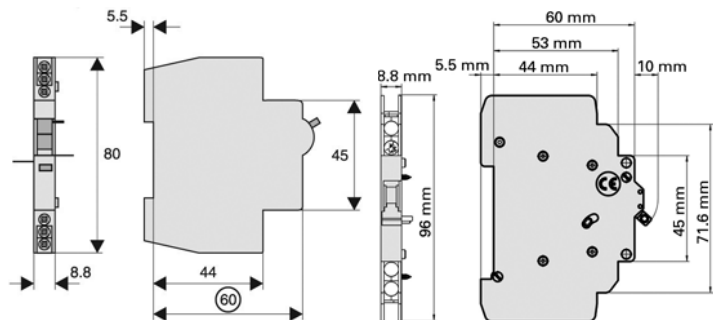


Z-IHK-NA



Contact and Auxiliary Contact

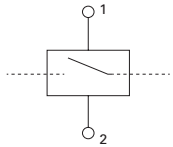
| Description | Z-NHK | Z-IHK-NA |
|--|---|---|
| Electrical | | |
| Contact function | 2CO | 1NO + 1NC |
| Rated voltage | 230V | 250V |
| Frequency | 50/60 Hz | 50/60 Hz |
| Rated current | 2A | 6A |
| Rated thermal current I_{th} | 2A | 6A |
| Utilization category AC13 Rated operational current I_b | 3A/250 Vac | 3A/250 Vac |
| Utilization category AC15 Rated operational current I_b | 2A/250 Vac | 2A/250 Vac |
| Utilization category DC12 Rated operational current I_b | 0.5A/110 Vdc | 0.5A/110 Vdc 0.25A/220 Vdc |
| Rated insulation voltage U_i | 250 Vac | 250 Vac |
| Minimum operational voltage per contact U_{min} | 5 Vdc | 5 Vdc |
| Minimum operational current I_{min} | 10 mA DC | 10 mA AC/DC |
| Rated peak withstand voltage U_{imp} (1.2/50 μ) | 2.5 kV | 4 kV |
| Conditional short-circuit current I_k with backup fuse 6A | 1 kA | 1 kA |
| Max. backup fuse, overload and short circuit | 6A gL | — |
| Mechanical | | |
| Tripping indicator "electrical tripping" | Blue/white | — |
| Frame size | 45 mm | 45 mm |
| Device height | 80 mm | 80 mm |
| Device width | 8.8 mm (0.5MU) | 8.8 mm (0.5MU) |
| Mounting | Onto switching device | — |
| Degree of protection, built-in | IP40 | IP40 |
| Terminal protection | Finger and hand touch safe According to BGV A3, ÖVE-EN 6 | Finger and hand touch safe According to BGV A3, ÖVE-EN 6 |
| Terminals | Lift terminals | Lift terminals |
| Terminal capacity | 20–14 AWG | 0.5–2.5 mm ² |
| Terminal screws | M3 (Posidrive Z0) | M3 (Posidrive Z0) |
| Fastening torque of terminal screws | 7 lb-in | Max. 1.2 Nm |



Shunt trip release FAZ-XAA-NA

- Remote release for subsequent mounting onto FAZ-NA/RT
- Additional installation of standard auxiliary switch is possible
- Position indicator red–green

Connection Diagram



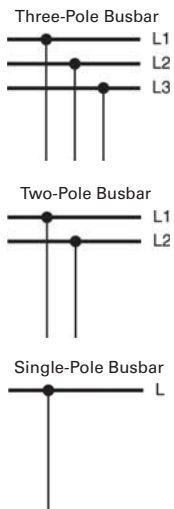
Shunt Trip Release FAZ-XAA-NA

| Description | FAZ-XAA-NA12-110VAC | FAZ-XAA-NA110-415VAC |
|--|--|-----------------------------|
| Electrical | | |
| Can be mounted onto | FAZ-NA / FAZ-NA-DC / FAZ-RT | FAZ-NA / FAZ-NA-DC / FAZ-RT |
| Operational voltage range | 12–110 Vac 12–60 Vdc | 110–415 Vac 110–230 Vdc |
| Frequency | 50/60 Hz | 50/60 Hz |
| Mechanical | | |
| Frame size | 45 mm | 45 mm |
| Device height | 105 mm | 105 mm |
| Device width | 17.5 mm | 17.5 mm |
| Mounting | Quick fastening with two lock-in positions on EN 50022 | |
| Degree of protection, built-in | IP40 | IP40 |
| Terminal protection | Finger and hand touch safe according to BGV A3, ÖVE-EN 6 | |
| Terminals | Open mouthed/lift | Open mouthed/lift |
| Terminal capacity One and two wires | 18–10 AWG | 18–10 AWG |

Busbar block UL 489 (pin)

- Tested according to UL 489
- Do not cut
- Extension terminal 35 mm² Z-EK/35/UL for copper conductors
- Incoming terminal 50 mm² Z-EB/50/UL
- For covering of not used pins, use busbar tag shrouds ZV-BS-UL

Connection Diagrams

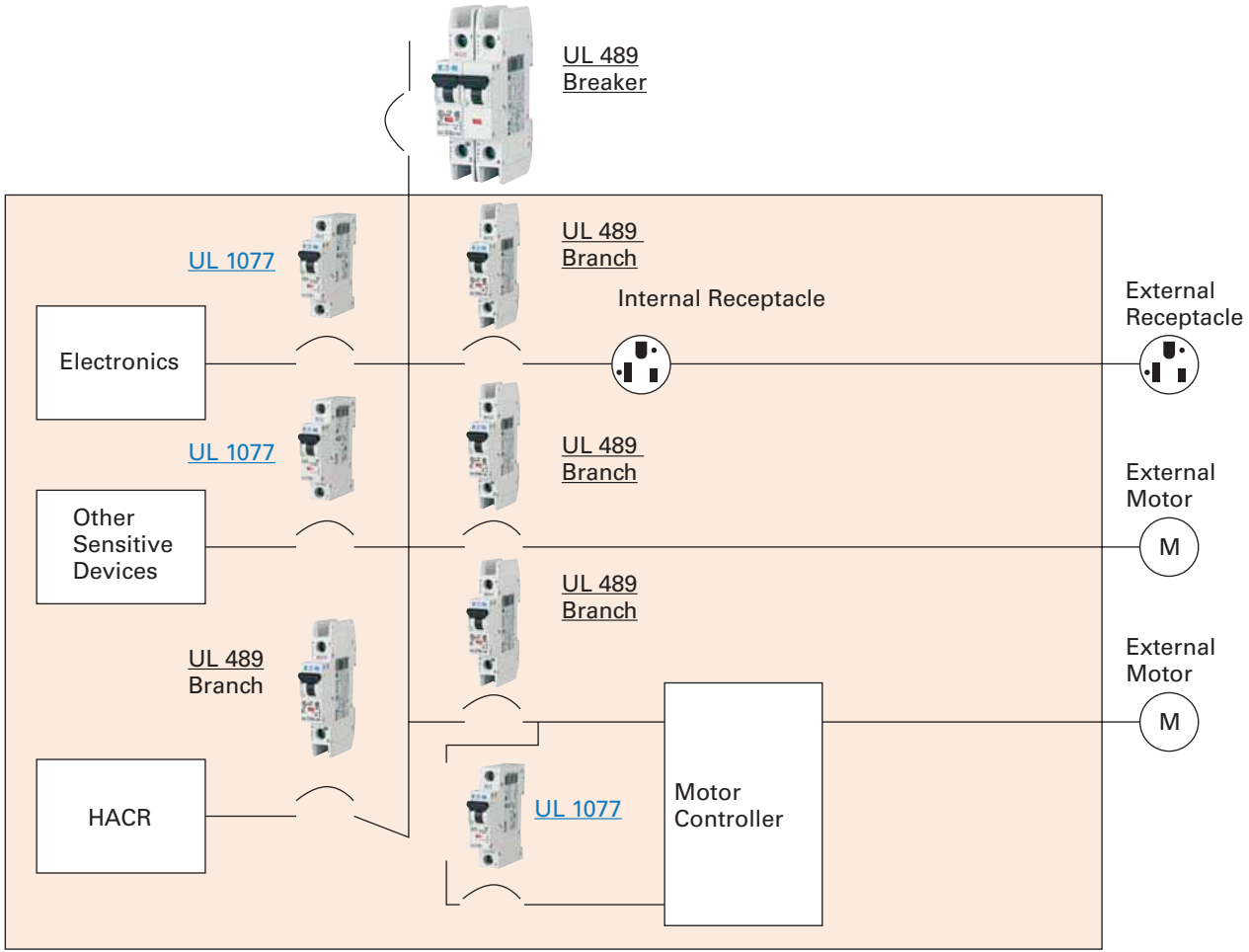


Busbar Block UL 489 (Pin)

| Description | UL 489 | IEC/EN 60947-2 |
|---|-----------------------|------------------------------|
| Electrical | | |
| Rated operational voltage | 480/277 Vac 96 Vdc | — |
| Rated frequency | 50/60 Hz | — |
| Rated voltage | 480 Vac | 690 Vac |
| Overvoltage category | — | III |
| Rated impulse withstand voltage U _{imp} | — | 9.5 kV |
| Rated current | 80A at 40°C | 80A at 30°C |
| Rated conditional short-circuit current AC with 350A gG | — | 15 kA |
| Short-circuit current | 10 kA | — |
| Mechanical | | |
| Busbar cross section | — | 16 mm ² Cu |
| Flame class according to UL 94 | V0 | — |
| Pollution degree | — | 2 |
| Comparative tracking index | — | CTI 600 |
| Minimum clearance (internal/external) | — | > 9.5/25.4 mm |
| Minimum creepage distance (internal/external) | — | > 12.7/50.8 mm |
| Resistance to climatic conditions | — | According to DIN/EN 60068 |

Application Guidelines

Example of UL 489 and UL 1077 Application



Example of UL 489 and UL 1077 Application

UL 489 circuit breakers

Used for branch circuit protection, internal/external receptacles, external motors and HACR equipment (heating, air conditioning and refrigeration).

UL 1077 supplementary protectors

Used for overcurrent protection within appliances or electrical equipment, where branch circuit protection is already provided or not required.

Note: UL 489 devices can be used in place of UL 1077; UL 1077 devices cannot be used in place of UL 489.

1.2

Miniature Circuit Breakers and Supplementary Protectors

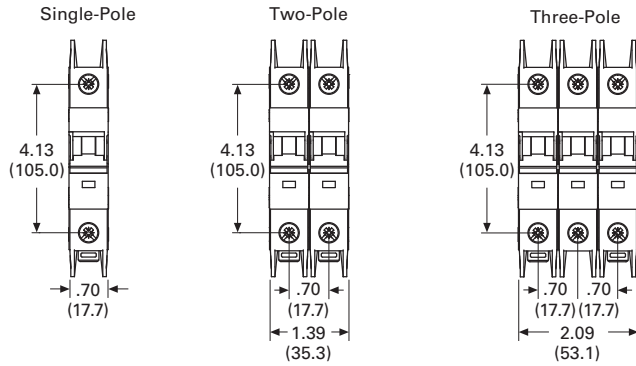
UL 489 DIN Rail Miniature Circuit Breakers

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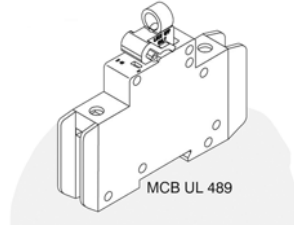
Dimensions

Approximate Dimensions in Inches (mm)

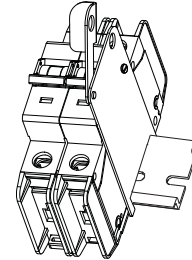
Miniature Circuit Breakers



Lockout Attachment—Z-IS/SPE-1TE

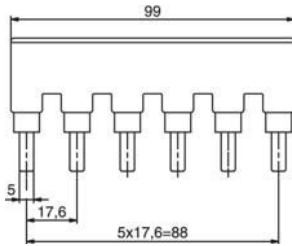


UL Lockoff Device—FAZPLOFF

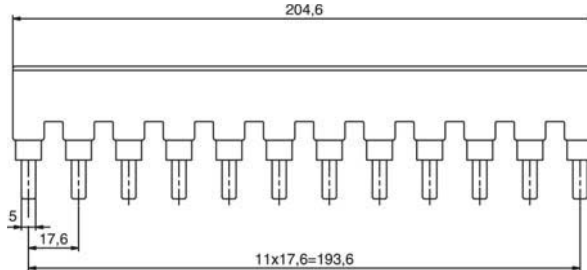


Accessories

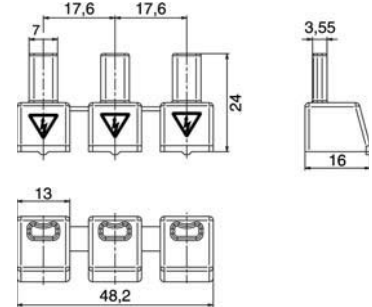
Z-SV/UL-16/6



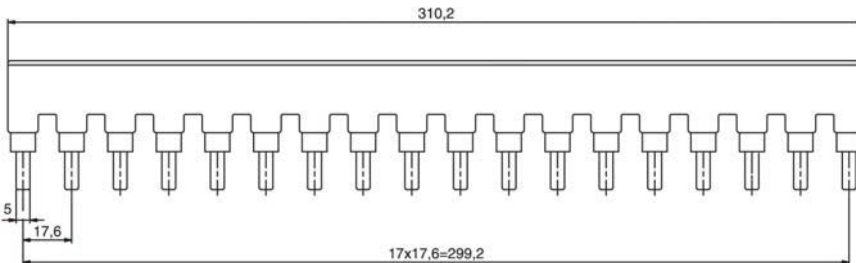
Z-SV/UL-18...12



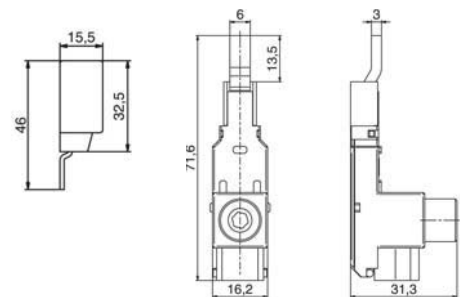
ZV-BS-UL



Z-SV/UL-16.../18



Z-EK/35/UL



Z-EK/35/UL

| Description | UL 489 | IEC/EN 60947-2 |
|-------------|-----------------------|---------------------------|
| U_e | 480 Vac/96 Vdc | 240/415 Vac |
| f | 50/60 Hz | 50/60 Hz |
| U_{imp} | — | 9.5 kV |
| I_e | 80A at 40°C | 80A at 30°C |
| | 10–1/0 AWG 60/75°C Cu | 2.5–35 mm ² Cu |
| | 0.56 in | 14 mm |

Z-EB/50/UL

| Description | UL 489 | IEC/EN 60947-2 |
|-------------|----------------------|---------------------------|
| U_e | 480 Vac/96 Vdc | 240/415 Vac |
| f | 50/60 Hz | 50/60 Hz |
| U_{imp} | — | 9.5 kV |
| I_e | 115A at 40°C | 160A at 30°C |
| | #1–14 AWG 60/75°C Cu | 1.5–50 mm ² Cu |
| | 0.56 in | 14 mm |

FAZ Circuit Breakers



Optimum and Efficient Protection for Every Application

Contents

Description

| | <i>Page</i> |
|---|-----------------|
| FAZ Circuit Breakers | V4-T1-67 |
| Catalog Number Selection | V4-T1-68 |
| Standards and Certifications | V4-T1-68 |
| Product Selection | V4-T1-69 |
| Accessories | V4-T1-75 |
| Technical Data and Specifications | V4-T1-78 |
| Dimensions | V4-T1-85 |

FAZ Circuit Breakers

Product Overview

Optimum product quality, tested reliability and safety stand for best protection of personnel, installations and plant. Eaton's FAZ DIN rail mountable circuit breaker is designed for use in control panel applications.

Powerful offering for machine and system builders

The FAZ is available with B, C, D, K, S, and Z characteristics in accordance with UL 1077, CSA C22.2 No.235 and IEC 60947-2. These devices are CE marked.

Application Description

- Supplementary protection
- Control circuits
- Lighting
- Business equipment
- Appliances

Features

- Complete range of UL 1077 recognized DIN rail mounted miniature circuit breakers up to 63A current rating
- Standard ratings of 10 kAIC up to 277/480 Vac
- Current limiting design provides fast short-circuit interruption that reduces the let-through energy, which can damage the circuit
- Suitable for supplementary protection
- Thermal-magnetic overcurrent protection
 - Six levels of short-circuit protection, categorized by B, C, D, K, S, and Z curves
- Trip-free design—breaker can not be defeated by holding the handle in the ON position
- Captive screws cannot be lost
- Fulfill UL 1077, CSA C22.2 No.235 and also IEC 60947-2 Standard
- Field-installable shunt trip and auxiliary switch subsequent mounting
- Module width of only 17.7 mm (per pole)
- Contact position indicator (red/green)
- Easy installation on DIN rail
- Possibility for sealing the toggle in ON or OFF position

1.3

Miniature Circuit Breakers and Supplementary Protectors

UL 1077 DIN Rail Supplementary Protectors

1

Discover These Advanced Features

Breakers install on standard DIN rail

Available in one-, two-, three-, four-pole, 1+N and 3+N models

Color-coded indicator provides breaker status for easy troubleshooting



Captive Posidrive terminal screws with finger and back-of-hand protection (IP20)

Trip-free design; breaker cannot be defeated by holding the handle in the ON position

Breaker information printed on the front of the device for quick identification

Standards and Certifications

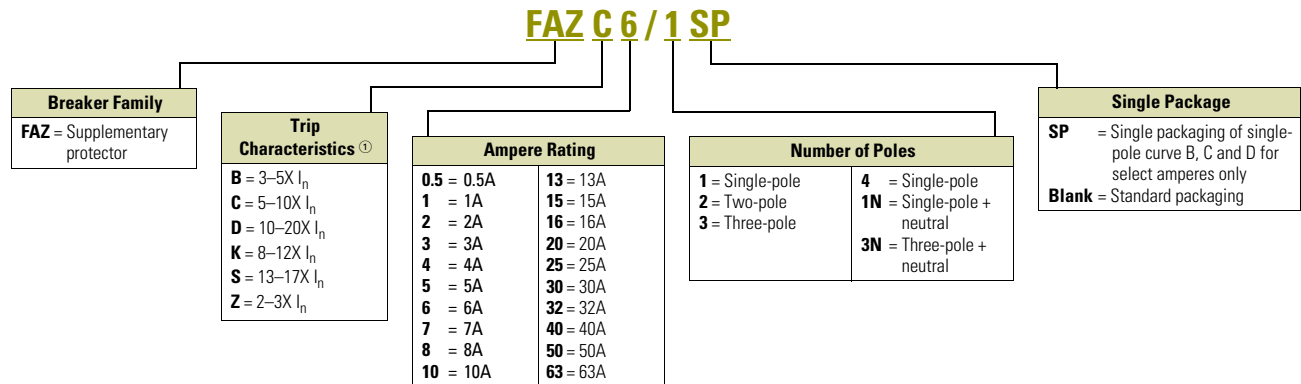
FAZ complies with the latest national and international standards.

- UL 1077, CSA C22.2 No. 235
- Apply to supplementary protectors intended for use as overcurrent, or overvoltage or undervoltage protection within an appliance or other electrical equipment where branch circuit protection is already provided, or is not required

- RoHS compliant
- VDE compliant
 - Devices with B, C, and D curves are VDE compliant
- CCC
 - Devices with B, C, and D curves are CCC compliant
- ABS compliant



Catalog Number Selection



Note

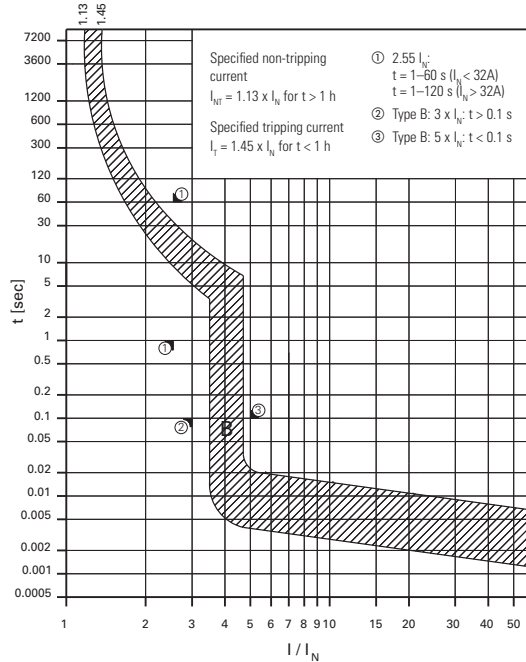
① I_n = Rated current for instantaneous trip characteristics.

Product Selection

FAZ B curve (3–5X I_n current rating)

- Designed for resistive or slightly inductive loads
- Response time of instantaneous trip: 3–5X I_n current rating
- UL recognized and CSA Certified as supplementary protectors
- For international and domestic use (conform to IEC 60947-2)
- UL file number 177451

Suitable for applications where protection against low-level short-circuit faults in control wiring is desired. Instantaneous trip is 3–5X continuous rating of device (I_n). Applications include PLC wiring, business equipment, lighting, appliances and some motors. Low magnetic trip point.



Single-Pole



Two-Pole



Three-Pole



B Curve (3–5X I_n Current Rating)— Designed for Resistive or Slightly Inductive Loads ①

| Amperes | Single-Pole ② Catalog Number | Two-Pole Catalog Number | Three-Pole Catalog Number |
|---------|---------------------------------|----------------------------|------------------------------|
| 1 | FAZ-B1/1-SP | FAZ-B1/2 | FAZ-B1/3 |
| 2 | FAZ-B2/1-SP | FAZ-B2/2 | FAZ-B2/3 |
| 3 | FAZ-B3/1-SP | FAZ-B3/2 | FAZ-B3/3 |
| 4 | FAZ-B4/1-SP | FAZ-B4/2 | FAZ-B4/3 |
| 5 | FAZ-B5/1-SP | FAZ-B5/2 | FAZ-B5/3 |
| 6 | FAZ-B6/1-SP | FAZ-B6/2 | FAZ-B6/3 |
| 7 | FAZ-B7/1-SP | FAZ-B7/2 | FAZ-B7/3 |
| 8 | FAZ-B8/1-SP | FAZ-B8/2 | FAZ-B8/3 |
| 10 | FAZ-B10/1-SP | FAZ-B10/2 | FAZ-B10/3 |
| 12 | FAZ-B12/1-SP | FAZ-B12/2 | FAZ-B12/3 |
| 13 | FAZ-B13/1-SP | FAZ-B13/2 | FAZ-B13/3 |
| 15 | FAZ-B15/1-SP | FAZ-B15/2 | FAZ-B15/3 |
| 16 | FAZ-B16/1-SP | FAZ-B16/2 | FAZ-B16/3 |
| 20 | FAZ-B20/1-SP | FAZ-B20/2 | FAZ-B20/3 |
| 25 | FAZ-B25/1-SP | FAZ-B25/2 | FAZ-B25/3 |
| 30 | FAZ-B30/1-SP | FAZ-B30/2 | FAZ-B30/3 |
| 32 | FAZ-B32/1-SP | FAZ-B32/2 | FAZ-B32/3 |
| 40 | FAZ-B40/1-SP | FAZ-B40/2 | FAZ-B40/3 |
| 50 | FAZ-B50/1-SP | FAZ-B50/2 | FAZ-B50/3 |
| 63 | FAZ-B63/1-SP | FAZ-B63/2 | FAZ-B63/3 |

Four-Pole



Single-Pole + Neutral



Three-Pole + Neutral



B Curve (3–5X I_n Current Rating)— Designed for Resistive or Slightly Inductive Loads, continued ①

| Amperes | Four-Pole Catalog Number | Single-Pole + Neutral Catalog Number | Three-Pole + Neutral Catalog Number |
|---------|-----------------------------|---|--|
| 1 | FAZ-B1/4 | FAZ-B1/1N | FAZ-B1/3N |
| 2 | FAZ-B2/4 | FAZ-B2/1N | FAZ-B2/3N |
| 3 | FAZ-B3/4 | FAZ-B3/1N | FAZ-B3/3N |
| 4 | FAZ-B4/4 | FAZ-B4/1N | FAZ-B4/3N |
| 5 | FAZ-B5/4 | FAZ-B5/1N | FAZ-B5/3N |
| 6 | FAZ-B6/4 | FAZ-B6/1N | FAZ-B6/3N |
| 7 | FAZ-B7/4 | FAZ-B7/1N | FAZ-B7/3N |
| 8 | FAZ-B8/4 | FAZ-B8/1N | FAZ-B8/3N |
| 10 | FAZ-B10/4 | FAZ-B10/1N | FAZ-B10/3N |
| 12 | FAZ-B12/4 | FAZ-B12/1N | FAZ-B12/3N |
| 13 | FAZ-B13/4 | FAZ-B13/1N | FAZ-B13/3N |
| 15 | FAZ-B15/4 | FAZ-B15/1N | FAZ-B15/3N |
| 16 | FAZ-B16/4 | FAZ-B16/1N | FAZ-B16/3N |
| 20 | FAZ-B20/4 | FAZ-B20/1N | FAZ-B20/3N |
| 25 | FAZ-B25/4 | FAZ-B25/1N | FAZ-B25/3N |
| 30 | FAZ-B30/4 | FAZ-B30/1N | FAZ-B30/3N |
| 32 | FAZ-B32/4 | FAZ-B32/1N | FAZ-B32/3N |
| 40 | FAZ-B40/4 | FAZ-B40/1N | FAZ-B40/3N |
| 50 | FAZ-B50/4 | FAZ-B50/1N | FAZ-B50/3N |
| 63 | FAZ-B63/4 | FAZ-B63/1N | FAZ-B63/3N |

Notes

- ① In North America, these switches are UL recognized and CSA Certified as supplementary protection devices. Per the intent of NEC (National Electrical Code), Article 240, and CEC (Canadian Electrical Code), Part 1 C22.1, supplementary breakers cannot be used as a substitute for the branch circuit protective device. They can be used to provide overcurrent protection within an appliance or other electrical equipment where branch circuit overcurrent protection is already provided, or is not required.
- ② Option for single packaging on single-pole B, C and D curves only; add suffix SP when ordering.

1.3

Miniature Circuit Breakers and Supplementary Protectors

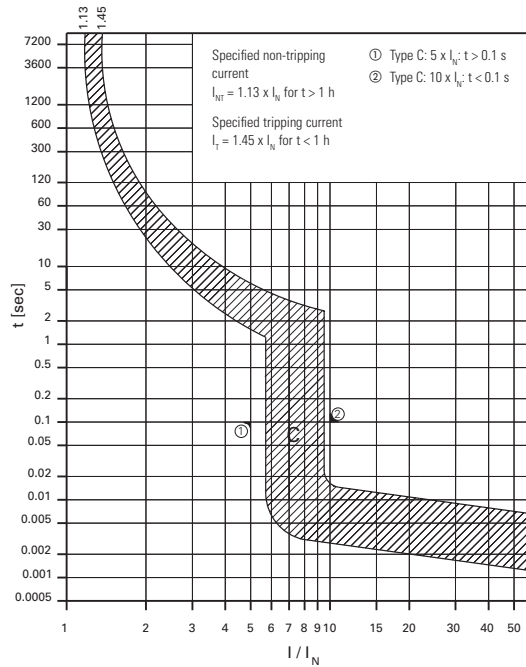
UL 1077 DIN Rail Supplementary Protectors

1

FAZ C curve (5–10X I_n current rating)

- Designed for inductive loads
- Response time of instantaneous trip: 5–10X I_n current rating
- UL recognized and CSA Certified as supplementary protectors
- For international and domestic use (conform to IEC 60947-2)
- UL file number 177451

Suitable for applications where medium levels of inrush current are expected. Instantaneous trip is 5–10X rating of device (I_n). Applications include small transformers, lighting, pilot devices, control circuits and coils. Medium magnetic trip point.



Single-Pole



Two-Pole



Three-Pole



C Curve (5–10X I_n Current Rating)— Designed Inductive Loads ①

| Amperes | Single-Pole ② Catalog Number | Two-Pole Catalog Number | Three-Pole Catalog Number |
|---------|------------------------------------|-------------------------------|---------------------------------|
| 0.5 | FAZ-C0.5/1-SP | FAZ-C0.5/2 | FAZ-C0.5/3 |
| 1 | FAZ-C1/1-SP | FAZ-C1/2 | FAZ-C1/3 |
| 1.6 | FAZ-C1.6/1-SP | FAZ-C1.6/2 | FAZ-C1.6/3 |
| 2 | FAZ-C2/1-SP | FAZ-C2/2 | FAZ-C2/3 |
| 3 | FAZ-C3/1-SP | FAZ-C3/2 | FAZ-C3/3 |
| 4 | FAZ-C4/1-SP | FAZ-C4/2 | FAZ-C4/3 |
| 5 | FAZ-C5/1-SP | FAZ-C5/2 | FAZ-C5/3 |
| 6 | FAZ-C6/1-SP | FAZ-C6/2 | FAZ-C6/3 |
| 7 | FAZ-C7/1-SP | FAZ-C7/2 | FAZ-C7/3 |
| 8 | FAZ-C8/1-SP | FAZ-C8/2 | FAZ-C8/3 |
| 10 | FAZ-C10/1-SP | FAZ-C10/2 | FAZ-C10/3 |
| 13 | FAZ-C13/1-SP | FAZ-C13/2 | FAZ-C13/3 |
| 15 | FAZ-C15/1-SP | FAZ-C15/2 | FAZ-C15/3 |
| 16 | FAZ-C16/1-SP | FAZ-C16/2 | FAZ-C16/3 |
| 20 | FAZ-C20/1-SP | FAZ-C20/2 | FAZ-C20/3 |
| 25 | FAZ-C25/1-SP | FAZ-C25/2 | FAZ-C25/3 |
| 30 | FAZ-C30/1-SP | FAZ-C30/2 | FAZ-C30/3 |
| 32 | FAZ-C32/1-SP | FAZ-C32/2 | FAZ-C32/3 |
| 40 | FAZ-C40/1-SP | FAZ-C40/2 | FAZ-C40/3 |
| 50 | FAZ-C50/1-SP | FAZ-C50/2 | FAZ-C50/3 |
| 63 | FAZ-C63/1-SP | FAZ-C63/2 | FAZ-C63/3 |

Notes

- ① In North America, these switches are UL recognized and CSA Certified as supplementary protection devices. Per the intent of NEC (National Electrical Code), Article 240, and CEC (Canadian Electrical Code), Part 1 C22.1, supplementary breakers cannot be used as a substitute for the branch circuit protective device. They can be used to provide overcurrent protection within an appliance or other electrical equipment where branch circuit overcurrent protection is already provided, or is not required.
- ② Option for single packaging on single-pole B, C and D curves only; add suffix SP when ordering.

Four-Pole



Single-Pole + Neutral



Three-Pole + Neutral



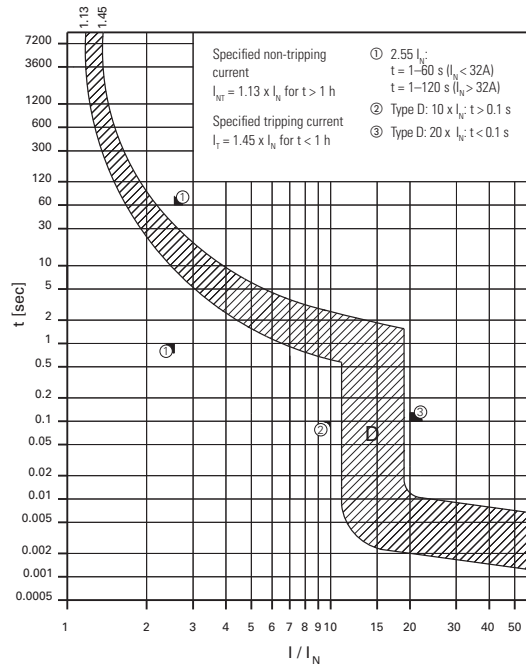
C Curve (5–10X I_n Current Rating)— Designed Inductive Loads, continued ①

| Amperes | Four-Pole Catalog Number | Single-Pole + Neutral Catalog Number | Three-Pole + Neutral Catalog Number |
|---------|--------------------------------|---|--|
| 0.5 | FAZ-C0.5/4 | FAZ-C0.5/1N | FAZ-C0.5/3N |
| 1 | FAZ-C1/4 | FAZ-C1/1N | FAZ-C1/3N |
| 1.6 | FAZ-C1.6/4 | FAZ-C1.6/1N | FAZ-C1.6/3N |
| 2 | FAZ-C2/4 | FAZ-C2/1N | FAZ-C2/3N |
| 3 | FAZ-C3/4 | FAZ-C3/1N | FAZ-C3/3N |
| 4 | FAZ-C4/4 | FAZ-C4/1N | FAZ-C4/3N |
| 5 | FAZ-C5/4 | FAZ-C5/1N | FAZ-C5/3N |
| 6 | FAZ-C6/4 | FAZ-C6/1N | FAZ-C6/3N |
| 7 | FAZ-C7/4 | FAZ-C7/1N | FAZ-C7/3N |
| 8 | FAZ-C8/4 | FAZ-C8/1N | FAZ-C8/3N |
| 10 | FAZ-C10/4 | FAZ-C10/1N | FAZ-C10/3N |
| 13 | FAZ-C13/4 | FAZ-C13/1N | FAZ-C13/3N |
| 15 | FAZ-C15/4 | FAZ-C15/1N | FAZ-C15/3N |
| 16 | FAZ-C16/4 | FAZ-C16/1N | FAZ-C16/3N |
| 20 | FAZ-C20/4 | FAZ-C20/1N | FAZ-C20/3N |
| 25 | FAZ-C25/4 | FAZ-C25/1N | FAZ-C25/3N |
| 32 | FAZ-C32/4 | FAZ-C32/1N | FAZ-C32/3N |
| 40 | FAZ-C40/4 | FAZ-C40/1N | FAZ-C40/3N |
| 50 | FAZ-C50/4 | FAZ-C50/1N | FAZ-C50/3N |
| 63 | FAZ-C63/4 | FAZ-C63/1N | FAZ-C63/3N |

FAZ D curve (10–20X I_n current rating)

- Designed for highly inductive loads
- Response time of instantaneous trip: 10–20X I_n current rating
- UL recognized and CSA Certified as supplementary protectors
- For international and domestic use (conform to IEC 60947-2)
- UL file number 177451

Suitable for applications where high levels of inrush current are expected. Instantaneous trip is 10–20X rating of device (I_n). The high magnetic trip point prevents nuisance tripping in high inductive applications such as motors, transformers and power supplies.



Single-Pole



Two-Pole



Three-Pole



D Curve (10–20X I_n Current Rating)— Designed for Inductive Loads ①

| Amperes | Single-Pole ② Catalog Number | Two-Pole Catalog Number | Three-Pole Catalog Number |
|---------|---------------------------------|----------------------------|------------------------------|
| 0.5 | FAZ-D0.5/1-SP | FAZ-D0.5/2 | FAZ-D0.5/3 |
| 1 | FAZ-D1/1-SP | FAZ-D1/2 | FAZ-D1/3 |
| 2 | FAZ-D2/1-SP | FAZ-D2/2 | FAZ-D2/3 |
| 3 | FAZ-D3/1-SP | FAZ-D3/2 | FAZ-D3/3 |
| 4 | FAZ-D4/1-SP | FAZ-D4/2 | FAZ-D4/3 |
| 5 | FAZ-D5/1-SP | FAZ-D5/2 | FAZ-D5/3 |
| 6 | FAZ-D6/1-SP | FAZ-D6/2 | FAZ-D6/3 |
| 7 | FAZ-D7/1-SP | FAZ-D7/2 | FAZ-D7/3 |
| 8 | FAZ-D8/1-SP | FAZ-D8/2 | FAZ-D8/3 |
| 10 | FAZ-D10/1-SP | FAZ-D10/2 | FAZ-D10/3 |
| 13 | FAZ-D13/1-SP | FAZ-D13/2 | FAZ-D13/3 |
| 15 | FAZ-D15/1-SP | FAZ-D15/2 | FAZ-D15/3 |
| 16 | FAZ-D16/1-SP | FAZ-D16/2 | FAZ-D16/3 |
| 20 | FAZ-D20/1-SP | FAZ-D20/2 | FAZ-D20/3 |
| 25 | FAZ-D25/1-SP | FAZ-D25/2 | FAZ-D25/3 |
| 30 | FAZ-D30/1-SP | FAZ-D30/2 | FAZ-D30/3 |
| 32 | FAZ-D32/1-SP | FAZ-D32/2 | FAZ-D32/3 |
| 40 | FAZ-D40/1-SP | FAZ-D40/2 | FAZ-D40/3 |
| 50 ③ | FAZ-D50/1-SP | FAZ-D50/2 | FAZ-D50/3 |
| 63 ③ | FAZ-D63/1-SP | FAZ-D63/2 | FAZ-D63/3 |

Four-Pole



Single-Pole + Neutral



Three-Pole + Neutral



D Curve (10–20X I_n Current Rating)— Designed for Inductive Loads, continued ①

| Amperes | Four-Pole Catalog Number | Single-Pole + Neutral Catalog Number | Three-Pole + Neutral Catalog Number |
|---------|-----------------------------|---|--|
| 0.5 | FAZ-D0.5/4 | FAZ-D0.5/1N | FAZ-D0.5/3N |
| 1 | FAZ-D1/4 | FAZ-D1/1N | FAZ-D1/3N |
| 2 | FAZ-D2/4 | FAZ-D2/1N | FAZ-D2/3N |
| 3 | FAZ-D3/4 | FAZ-D3/1N | FAZ-D3/3N |
| 4 | FAZ-D4/4 | FAZ-D4/1N | FAZ-D4/3N |
| 5 | FAZ-D5/4 | FAZ-D5/1N | FAZ-D5/3N |
| 6 | FAZ-D6/4 | FAZ-D6/1N | FAZ-D6/3N |
| 7 | FAZ-D7/4 | FAZ-D7/1N | FAZ-D7/3N |
| 8 | FAZ-D8/4 | FAZ-D8/1N | FAZ-D8/3N |
| 10 | FAZ-D10/4 | FAZ-D10/1N | FAZ-D10/3N |
| 13 | FAZ-D13/4 | FAZ-D13/1N | FAZ-D13/3N |
| 15 | FAZ-D15/4 | FAZ-D15/1N | FAZ-D15/3N |
| 16 | FAZ-D16/4 | FAZ-D16/1N | FAZ-D16/3N |
| 20 | FAZ-D20/4 | FAZ-D20/1N | FAZ-D20/3N |
| 25 | FAZ-D25/4 | FAZ-D25/1N | FAZ-D25/3N |
| 30 | FAZ-D30/4 | FAZ-D30/1N | FAZ-D30/3N |
| 32 | FAZ-D32/4 | FAZ-D32/1N | FAZ-D32/3N |
| 40 | FAZ-D40/4 | FAZ-D40/1N | FAZ-D40/3N |
| 50 ③ | FAZ-D50/4 | FAZ-D50/1N | FAZ-D50/3N |
| 63 ③ | FAZ-D63/4 | FAZ-D63/1N | FAZ-D63/3N |

Notes

- ① In North America, these switches are UL recognized and CSA Certified as supplementary protection devices. Per the intent of NEC (National Electrical Code), Article 240, and CEC (Canadian Electrical Code), Part 1 C22.1, supplementary breakers cannot be used as a substitute for the branch circuit protective device. They can be used to provide overcurrent protection within an appliance or other electrical equipment where branch circuit overcurrent protection is already provided, or is not required.
- ② Option for single packaging on single-pole B, C and D curves only; add suffix SP when ordering.
- ③ IEC 60947-2 only.

1.3

Miniature Circuit Breakers and Supplementary Protectors

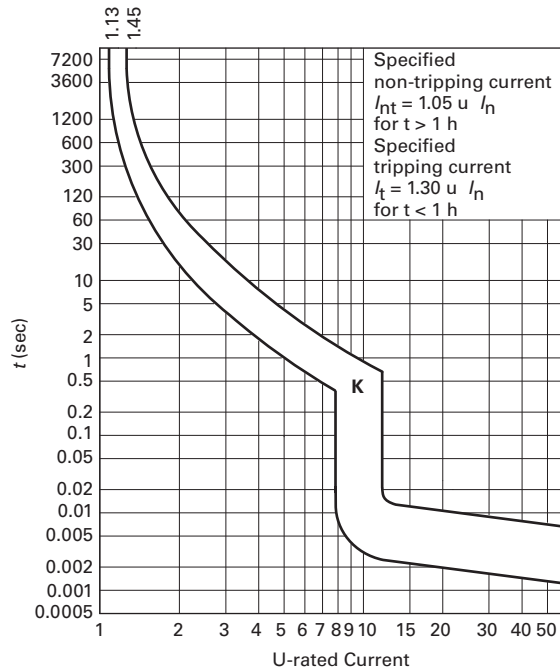
UL 1077 DIN Rail Supplementary Protectors

1

FAZ K curve (8–12X I_n current rating)

- Designed for motors, transformers and upstream electronics
- Response time of instantaneous trip: 8–12X I_n current rating
- UL recognized and CSA Certified as supplementary protectors
- For international and domestic use (conform to IEC 60947-2)
- UL file number 177451

Suitable for applications where medium levels of inrush current are expected. Instantaneous trip is 8–12X rating of device (I_n). Applications include small transformers, lighting, pilot devices, control circuits and coils. Medium magnetic trip point.



Single-Pole



Two-Pole



Three-Pole



K Curve (8–12X I_n Current Rating) – Designed for Inductive Loads ^{①②}

| Amperes | Single-Pole ^③ Catalog Number | Two-Pole Catalog Number | Three-Pole Catalog Number |
|---------|--|----------------------------|------------------------------|
| 0.5 | FAZ-K0.5/1 | FAZ-K0.5/2 | FAZ-K0.5/3 |
| 1 | FAZ-K1/1 | FAZ-K1/2 | FAZ-K1/3 |
| 1.6 | FAZ-K1.6/1 | FAZ-K1.6/2 | FAZ-K1.6/3 |
| 2 | FAZ-K2/1 | FAZ-K2/2 | FAZ-K2/3 |
| 3 | FAZ-K3/1 | FAZ-K3/2 | FAZ-K3/3 |
| 4 | FAZ-K4/1 | FAZ-K4/2 | FAZ-K4/3 |
| 6 | FAZ-K6/1 | FAZ-K6/2 | FAZ-K6/3 |
| 8 | FAZ-K8/1 | FAZ-K8/2 | FAZ-K8/3 |
| 10 | FAZ-K10/1 | FAZ-K10/2 | FAZ-K10/3 |
| 13 | FAZ-K13/1 | FAZ-K13/2 | FAZ-K13/3 |
| 16 | FAZ-K16/1 | FAZ-K16/2 | FAZ-K16/3 |
| 20 | FAZ-K20/1 | FAZ-K20/2 | FAZ-K20/3 |
| 25 | FAZ-K25/1 | FAZ-K25/2 | FAZ-K25/3 |
| 32 | FAZ-K32/1 | FAZ-K32/2 | FAZ-K32/3 |
| 40 | FAZ-K40/1 | FAZ-K40/2 | FAZ-K40/3 |
| 50 | FAZ-K50/1 | FAZ-K50/2 | FAZ-K50/3 |
| 63 | FAZ-K63/1 | FAZ-K63/2 | FAZ-K63/3 |

Four-Pole



Single-Pole + Neutral



Three-Pole + Neutral



K Curve (8–12X I_n Current Rating) – Designed for Inductive Loads, continued ^{①②}

| Amperes | Four-Pole ^③ Catalog Number | Single-Pole + Neutral Catalog Number | Three-Pole + Neutral Catalog Number |
|---------|--|---|--|
| 0.5 | FAZ-K0.5/4 | FAZ-K0.5/1N | FAZ-K0.5/3N |
| 1 | FAZ-K1/4 | FAZ-K1/1N | FAZ-K1/3N |
| 1.6 | FAZ-K1.6/4 | FAZ-K1.6/1N | FAZ-K1.6/3N |
| 2 | FAZ-K2/4 | FAZ-K2/1N | FAZ-K2/3N |
| 3 | FAZ-K3/4 | FAZ-K3/1N | FAZ-K3/3N |
| 4 | FAZ-K4/4 | FAZ-K4/1N | FAZ-K4/3N |
| 6 | FAZ-K6/4 | FAZ-K6/1N | FAZ-K6/3N |
| 8 | FAZ-K8/4 | FAZ-K8/1N | FAZ-K8/3N |
| 10 | FAZ-K10/4 | FAZ-K10/1N | FAZ-K10/3N |
| 13 | FAZ-K13/4 | FAZ-K13/1N | FAZ-K13/3N |
| 16 | FAZ-K16/4 | FAZ-K16/1N | FAZ-K16/3N |
| 20 | FAZ-K20/4 | FAZ-K20/1N | FAZ-K20/3N |
| 25 | FAZ-K25/4 | FAZ-K25/1N | FAZ-K25/3N |
| 32 | FAZ-K32/4 | FAZ-K32/1N | FAZ-K32/3N |
| 40 | FAZ-K40/4 | FAZ-K40/1N | FAZ-K40/3N |
| 50 | FAZ-K50/4 | FAZ-K50/1N | FAZ-K50/3N |
| 63 | FAZ-K63/4 | FAZ-K63/1N | FAZ-K63/3N |

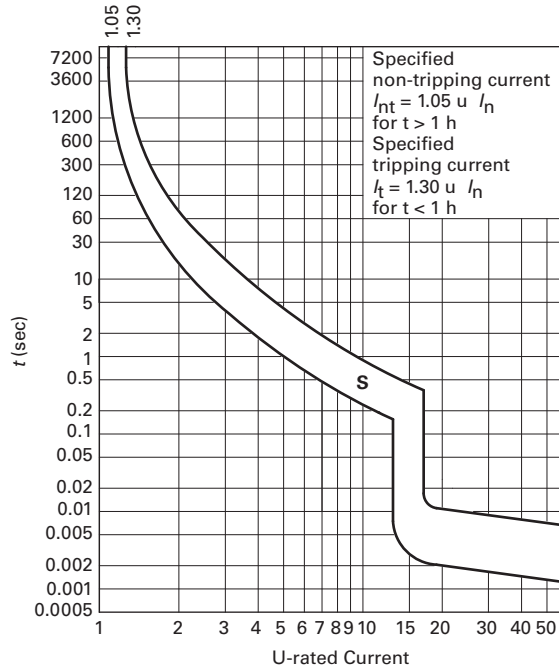
Notes

- ① In North America, these switches are UL recognized and CSA Certified as supplementary protection devices. Per the intent of NEC (National Electrical Code), Article 240, and CEC (Canadian Electrical Code), Part 1 C22.1, supplementary breakers cannot be used as a substitute for the branch circuit protective device. They can be used to provide overcurrent protection within an appliance or other electrical equipment where branch circuit overcurrent protection is already provided, or is not required.
- ② These breakers are available by special order and may result in additional delivery time.
- ③ Two-piece box order, quantities of 2.

FAZ S curve (13–17X I_n current rating)

- Designed for control circuits with high inrush
- Response time of instantaneous trip: 13–17X I_n current rating
- UL recognized and CSA Certified as supplementary protectors
- For international and domestic use (conform to IEC 60947-2)
- UL file number 177451

Suitable for applications where high levels of inrush current are expected. Instantaneous trip is 13–17X rating of device (I_n). The high magnetic trip point prevents nuisance tripping in high inductive applications such as motors, transformers and power supplies.



Single-Pole



Two-Pole



S Curve (13–17X I_n Current Rating)— Designed for Inductive Loads ①②

| Amperes | Single-Pole ③ | Two-Pole |
|---------|----------------|----------------|
| | Catalog Number | Catalog Number |
| 1 | FAZ-S1/1 | FAZ-S1/2 |
| 2 | FAZ-S2/1 | FAZ-S2/2 |
| 3 | FAZ-S3/1 | FAZ-S3/2 |
| 4 | FAZ-S4/1 | FAZ-S4/2 |
| 6 | FAZ-S6/1 | FAZ-S6/2 |
| 10 | FAZ-S10/1 | FAZ-S10/2 |
| 16 | FAZ-S16/1 | FAZ-S16/2 |
| 20 | FAZ-S20/1 | FAZ-S20/2 |
| 25 | FAZ-S25/1 | FAZ-S25/2 |
| 32 | FAZ-S32/1 | FAZ-S32/2 |
| 40 | FAZ-S40/1 | FAZ-S40/2 |

Notes

- ① In North America, these switches are UL recognized and CSA Certified as supplementary protection devices. Per the intent of NEC (National Electrical Code), Article 240, and CEC (Canadian Electrical Code), Part 1 C22.1, supplementary breakers cannot be used as a substitute for the branch circuit protective device. They can be used to provide overcurrent protection within an appliance or other electrical equipment where branch circuit overcurrent protection is already provided, or is not required.
- ② These breakers are available by special order and may result in additional delivery time.
- ③ Two-piece box order, quantities of 2.

1.3

Miniature Circuit Breakers and Supplementary Protectors

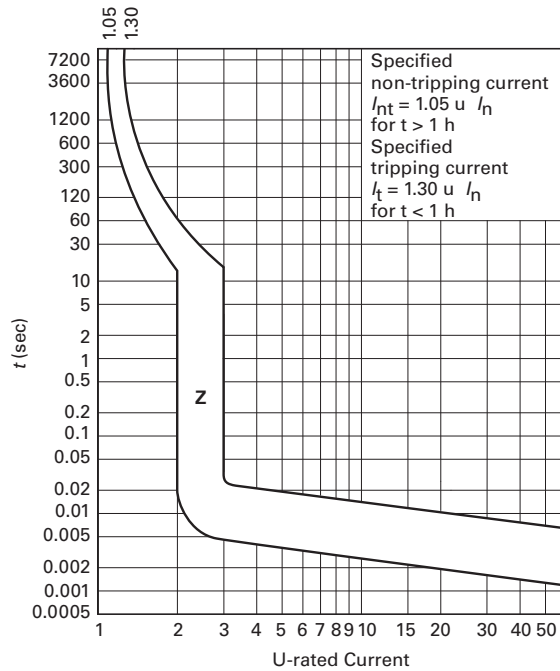
UL 1077 DIN Rail Supplementary Protectors

1

FAZ Z curve (2–3X I_n current rating)

- Designed for protection of electronic devices
- Response time of instantaneous trip: 2–3X I_n current rating
- UL recognized and CSA Certified as supplementary protectors
- For international and domestic use (conform to IEC 60947-2)

Suitable for applications where low levels of inrush current are expected. Instantaneous trip is 2–3X rating of device (I_n). Applications include small transformers, lighting, pilot devices, control circuits and coils. Medium magnetic trip point.



Single-Pole



Z Curve (2–3X I_n Current Rating)—Designed for Inductive Loads ①②

| Amperes | Single-Pole ③ Catalog Number | Two-Pole Catalog Number |
|---------|---------------------------------|----------------------------|
| 0.5 | FAZ-Z0.5/1 | FAZ-Z0.5/2 |
| 1 | FAZ-Z1/1 | FAZ-Z1/2 |
| 1.6 | FAZ-Z1.6/1 | FAZ-Z1.6/2 |
| 2 | FAZ-Z2/1 | FAZ-Z2/2 |
| 3 | FAZ-Z3/1 | FAZ-Z3/2 |
| 4 | FAZ-Z4/1 | FAZ-Z4/2 |
| 6 | FAZ-Z6/1 | FAZ-Z6/2 |
| 8 | FAZ-Z8/1 | FAZ-Z8/2 |
| 10 | FAZ-Z10/1 | FAZ-Z10/2 |
| 13 | FAZ-Z13/1 | FAZ-Z13/2 |
| 16 | FAZ-Z16/1 | FAZ-Z16/2 |
| 20 | FAZ-Z20/1 | FAZ-Z20/2 |
| 25 | FAZ-Z25/1 | FAZ-Z25/2 |
| 32 | FAZ-Z32/1 | FAZ-Z32/2 |
| 40 | FAZ-Z40/1 | FAZ-Z40/2 |
| 50 | FAZ-Z50/1 | FAZ-Z50/2 |
| 63 | FAZ-Z63/1 | FAZ-Z63/2 |

Two-Pole



Three-Pole



Z Curve (2–3X I_n Current Rating)—Designed for Inductive Loads, continued ①②

| Amperes | Three-Pole Catalog Number | Four-Pole Catalog Number |
|---------|------------------------------|-----------------------------|
| 0.5 | FAZ-Z0.5/3 | FAZ-Z0.5/4 |
| 1 | FAZ-Z1/3 | FAZ-Z1/4 |
| 1.6 | FAZ-Z1.6/3 | FAZ-Z1.6/4 |
| 2 | FAZ-Z2/3 | FAZ-Z2/4 |
| 3 | FAZ-Z3/3 | FAZ-Z3/4 |
| 4 | FAZ-Z4/3 | FAZ-Z4/4 |
| 6 | FAZ-Z6/3 | FAZ-Z6/4 |
| 8 | FAZ-Z8/3 | FAZ-Z8/4 |
| 10 | FAZ-Z10/3 | FAZ-Z10/4 |
| 13 | FAZ-Z13/3 | FAZ-Z13/4 |
| 16 | FAZ-Z16/3 | FAZ-Z16/4 |
| 20 | FAZ-Z20/3 | FAZ-Z20/4 |
| 25 | FAZ-Z25/3 | FAZ-Z25/4 |
| 32 | FAZ-Z32/3 | FAZ-Z32/4 |
| 40 | FAZ-Z40/3 | FAZ-Z40/4 |
| 50 | FAZ-Z50/3 | FAZ-Z50/4 |
| 63 | FAZ-Z63/3 | FAZ-Z63/4 |

Four-Pole



Notes

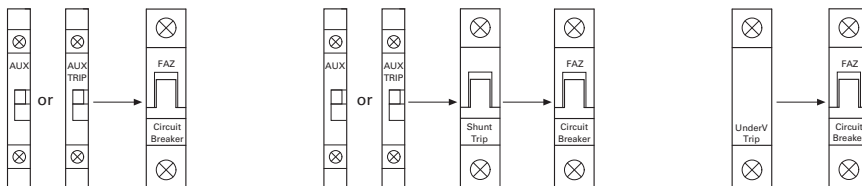
- ① In North America, these switches are UL recognized and CSA Certified as supplementary protection devices. Per the intent of NEC (National Electrical Code), Article 240, and CEC (Canadian Electrical Code), Part 1 C22.1, supplementary breakers cannot be used as a substitute for the branch circuit protective device. They can be used to provide overcurrent protection within an appliance or other electrical equipment where branch circuit overcurrent protection is already provided, or is not required.
- ② These breakers are available by special order and may result in additional delivery time.
- ③ Two-piece box order, quantities of 2.

Accessories

FAZ Auxiliary Contacts and Voltage Trips

| | Circuit Diagram | Description | Rated Operational Voltage | Catalog Number |
|--|-----------------|---|---------------------------|-----------------------------|
| Standard Auxiliary Contacts | | | | |
| | | <ul style="list-style-type: none"> 1NO/1NC Installs on left side of FAZ or shunt trip Max. one per FAZ (1077) device Switches when FAZ is tripped electrically or manually | 230 Vac | FAZ-XHIN11 |
| | | <ul style="list-style-type: none"> 1 changeover contact Installs on left side of FAZ or shunt trip Max. one per FAZ (1077) device Switches when FAZ is tripped electrically or manually | 230 Vac | FAZ-XHINW1 |
| Auxiliary/Trip Indicating Contact | | | | |
| | | <ul style="list-style-type: none"> Small selector screw changes mode Two Form C (changeover) contacts Installs on left side of FAZ or shunt trip Auxiliary contacts switch when FAZ is tripped electrically or manually Trip indicating contact switches only when FAZ is tripped electrically | 230 Vac | FAZ-XAM002 |
| | | | | |
| Undervoltage Trip | | | | |
| | | <ul style="list-style-type: none"> Prevents FAZ from operating unless voltage is present | 115 Vac | FAZ-XUA(115VAC) |
| | | <ul style="list-style-type: none"> Installs on left side of FAZ | 230 Vac | FAZ-XUA(230VAC) |
| | | <ul style="list-style-type: none"> Includes test button | 400 Vac | FAZ-XUA(400VAC) |
| Shunt Trip | | | | |
| | | <ul style="list-style-type: none"> Allows remote trip of FAZ | 12–110 Vac | FAZ-XAA-C-12-110VAC |
| | | <ul style="list-style-type: none"> Installs on left side of FAZ | 12–60 Vdc | FAZ-XAA-C-110-415VAC |
| | | | 110–415 Vac | FAZ-XAA-C-110-415VAC |
| | | | 110–230 Vdc | FAZ-XAA-C-110-415VAC |

Allowable Combinations of Accessories



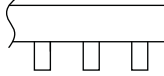
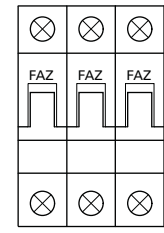
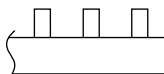
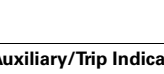
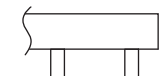
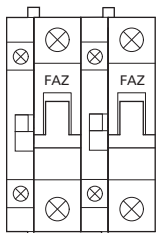


1.3

Miniature Circuit Breakers and Supplementary Protectors

UL 1077 DIN Rail Supplementary Protectors

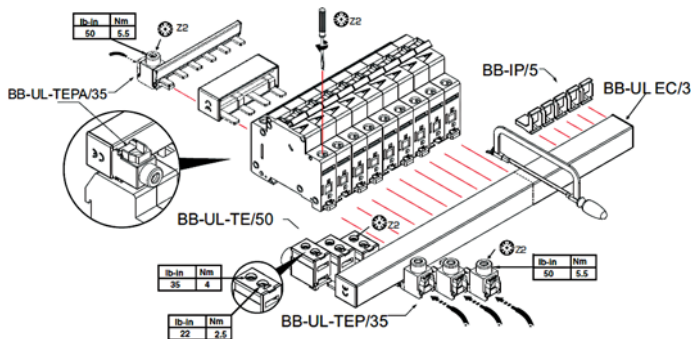
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Busbar System

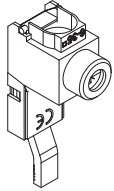
| Description | Rated Operational Current | Number of Poles per Device | Number of Terminals | Catalog Number ^① |
|--|---------------------------|----------------------------|---------------------|-------------------------------|
| Without Auxiliary Contacts | | | | |
| For connecting FAZ supplementary protectors without auxiliary contacts. May be fed from line or load side. | 80A | 1 | 57 | BB-UL-18/1P-1M/57 |
|  | | 2 | 56 | BB-UL-18/2P-2M/56 |
|  | | 3 | 57 | BB-UL-18/3P-3M/57 |
| | 100A | 1 | 57 | BB-UL-25/1P-1M/57 |
|  | | 2 | 56 | BB-UL-25/2P-2M/56 |
|  | | 3 | 57 | BB-UL-25/3P-3M/57 |
| Auxiliary/Trip Indicating Contacts | | | | |
| For connecting FAZ supplementary protectors with auxiliary contacts. May be fed from line or load side. | 80A | 1 | 37 | BB-UL-18/1P-1,5M/37 |
|  | | 2 | 46 | BB-UL-18/2P+AS-2,5M/46 |
|  | | 3 | 48 | BB-UL-18/3P+AS-3,5M/48 |
| | 100A | 1 | 37 | BB-UL-25/1P-1,5M/37 |
|  | | 2 | 46 | BB-UL-25/2P+AS-2,5M/46 |
|  | | 3 | 48 | BB-UL-25/3P+AS-3,5M/48 |

Note

① Bus may be center fed for high current capacity.



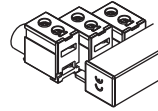
Incoming Terminal



Pin Type Incoming Supply Terminals

| Description | Catalog Number |
|---|---------------------|
| <ul style="list-style-type: none"> Accommodates conductors from 6–35 mm²/#10–2 AWG 4–5.5 Nm/35–50 lb-in Two- and three-pole | BB-UL-TEP/35 |

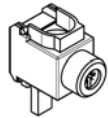
Incoming Terminal



Bus Incoming Supply Terminals

| Description | Catalog Number |
|---|--------------------|
| <ul style="list-style-type: none"> 50 mm² #14–1 AWG 75 Deg wire 115 A/Y, 480V UL 160 A/Y 690V IEC | BB-UL-TE/50 |

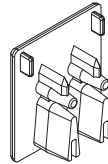
Incoming Terminal



Pin Type Incoming Supply Terminals—Single-Phase Only

| Description | Catalog Number |
|--|----------------------|
| <ul style="list-style-type: none"> Accommodates conductors from 6–35 mm²/#10–2 AWG 4–5.5 Nm/35–50 lb-in | BB-UL-TEPA/35 |

Fork Connector



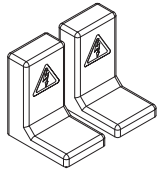
Busbar End Cap

| Description | Poles | Catalog Number |
|--|---------|-------------------|
| <ul style="list-style-type: none"> Install after cutting busbar | 2 and 3 | BB-EV-EC/3 |
| <ul style="list-style-type: none"> Protects end of busbar | 1 | BB-UL-EC/1 |

Protective Accessories

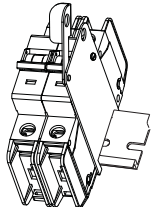
| Description | Catalog Number |
|-------------------------------|----------------|
| For covering unused terminals | BB-IP/5 |

Busbar Terminal Cover



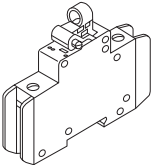
Lockoff Device

| | |
|-------------------|-----------------|
| UL lockoff device | FAZPLOFF |
|-------------------|-----------------|



Padlock Hasp

| | |
|---|---------------------|
| <ul style="list-style-type: none"> Prevents reactivation of the device during maintenance Holds one padlock | Z-IS/SPE-1TE |
|---|---------------------|



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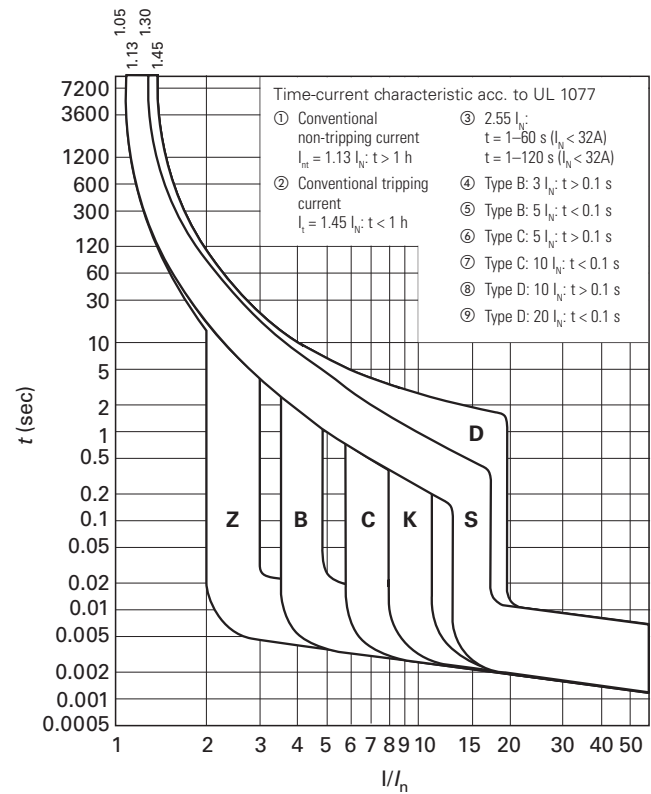
Technical Data and Specifications

Trip Curves Chart

Eaton FAZ supplementary protectors are available with six different tripping characteristics, including Type B, C, D, K, S and Z. Definitions for each trip curve are contained on the ordering pages and can be used to determine the optimal characteristic for your application. For example, low-level short-circuit faults in control wiring, such as PLCs, are best protected by devices with Type B trip characteristics (3–5X continuous rating of the device I_n).

Even though not required by NEC or CEC for supplementary protectors, Eaton's FAZ devices are current limiting, which means that they interrupt fault currents within one half cycle. Current limiting devices offer superior protection by reducing peak let-through current and energy.

Tripping Characteristics



FAZ Miniature Circuit Breakers Technical Data

| Description | B Curve | C Curve | D Curve |
|---|---|---|---|
| Electrical | | | |
| Approvals | UR (UL 1077), CSA (CSA 22.2 No. 235), CE | | |
| Standards | IEC/EN 60947-2 | | |
| Short-circuit trip response | 3–5 I_n | 5–10 I_n | 10–20 I_n |
| Supplementary Protectors—UL/CSA | | | |
| Current range | 1–63A | 0.5–63A | 0.5–40A |
| Maximum voltage ratings—UL/CSA | | | |
| Single-pole, single-pole + neutral | 277 Vac 48 Vdc | 277 Vac 48 Vdc | 277 Vac 48 Vdc |
| Two-, three-pole, four-pole and three-pole + neutral Two poles in series | 480Y/277 Vac 96 Vdc | 480Y/277 Vac 96 Vdc | 480Y/277 Vac 96 Vdc |
| Thermal tripping characteristics | | | |
| Single-pole | 1.35 x I_n @ 40°C | 1.35 x I_n @ 40°C | 1.35 x I_n @ 40°C |
| Multi-pole | 1.45 x I_n @ 40°C | 1.45 x I_n @ 40°C | 1.45 x I_n @ 40°C |
| Short-circuit ratings (at max. voltage) | | | |
| Single-pole | 10 kA (5 kA for 40–63A device) | 10 kA (5 kA for 40–63A device) | 5 kA |
| Two-, three-pole | 10 kA (5 kA for 40–63A device) | 10 kA (5 kA for 40–63A device) | 5 kA |
| Single-pole | 10 kA @ 48 Vdc | 10 kA @ 48 Vdc | 10 kA @ 48 Vdc |
| Two poles in series | 10 kA @ 96 Vdc | 10 kA @ 96 Vdc | 10 kA @ 96 Vdc |
| Miniature Circuit Breaker—IEC | | | |
| Current range | 1–63A | 0.5–63A | 0.5–63A |
| Maximum voltage ratings—IEC 68898-1 | | | |
| Single-pole | 230 Vac | 230 Vac | 230 Vac |
| Two-, three-pole | 230/400 Vac | 230/400 Vac | 230/400 Vac |
| Maximum voltage ratings—IEC 60947-2 | | | |
| Single-pole | 240 Vac 48 Vdc | 240 Vac 48 Vdc | 240 Vac 48 Vdc |
| Two-, three-pole | 240/415 Vac | 240/415 Vac | 240/415 Vac |
| Two poles in series | 96 Vdc | 96 Vdc | 96 Vdc |
| Thermal tripping characteristics | | | |
| Single-pole | > 1 hour @ 1.05 x I_n | > 1 hour @ 1.05 x I_n | > 1 hour @ 1.05 x I_n |
| Multi-pole | < 1 hour @ 1.3 x I_n | < 1 hour @ 1.3 x I_n | < 1 hour @ 1.3 x I_n |
| Interrupt ratings (at max. voltage) | | | |
| IEC 60947-2 | 15 kA | 15 kA | 15 kA (10 kA for 50 and 63A) |
| IEC 60898 | 10 kA | 10 kA | 10 kA (50 and 63A not available) |
| Operational switching capacity | 7.5 kA | 7.5 kA | 7.5 kA |
| Max. backup fuse [gL/gG] | 125A | 125A | 125A |
| Rated impulse withstand— U_{imp} | 4000 Vac | 4000 Vac | 4000 Vac |
| Rated insulation voltage— U_i | 440 Vac | 440 Vac | 440 Vac |
| Environmental/General | | | |
| Selectivity class | 3 | 3 | 3 |
| Lifespan (operations) | > 10,000 (1 operation = ON/OFF) | > 10,000 (1 operation = ON/OFF) | > 10,000 (1 operation = ON/OFF) |
| Shock (IEC 68-2-22) | 10g–120 ms | 10g–120 ms | 10g–120 ms |
| Operating temperature range | –40 to +167°F (–40 to +75°C) | –40 to +167°F (–40 to +75°C) | –40 to +167°F (–40 to +75°C) |
| Shipment and short-term storage | –40 to +185°F (–40 to +85°C) | –40 to +185°F (–40 to +85°C) | –40 to +185°F (–40 to +85°C) |
| Housing material | Nylon | Nylon | Nylon |
| Mechanical | | | |
| Standard front dimension | | | |
| Device height | 80 mm | 80 mm | 80 mm |
| Terminal protection | Finger and back-of-hand proof to IEC 536 | Finger and back-of-hand proof to IEC 536 | Finger and back-of-hand proof to IEC 536 |
| Mounting width per pole | 17.5 mm | 17.5 mm | 17.5 mm |
| Mounting | IEC/EN 60715 top-hat rail | IEC/EN 60715 top-hat rail | IEC/EN 60715 top-hat rail |
| Degree of protection | IP20 | IP20 | IP20 |
| Terminals top and bottom | Twin-purpose terminals | Twin-purpose terminals | Twin-purpose terminals |
| Supply connection | Line or load side | Line or load side | Line or load side |
| Terminal capacity [mm ²] | 1 x 25 (AWG 4–18)/2 x 10 (AWG 8–18) | 1 x 25 (AWG 4–18)/2 x 10 (AWG 8–18) | 1 x 25 (AWG 4–18)/2 x 10 (AWG 8–18) |
| Torque | 2.4 Nm | 2.4 Nm | 2.4 Nm |
| Imperial torque | 21 lb-in (AWG 18–12), 25 lb-in (AWG 10–8), 36 lb-in (AWG 6–4) | 21 lb-in (AWG 18–12), 25 lb-in (AWG 10–8), 36 lb-in (AWG 6–4) | 21 lb-in (AWG 18–12), 25 lb-in (AWG 10–8), 36 lb-in (AWG 6–4) |
| Thickness of busbar material | 0.8–2 mm | 0.8–2 mm | 0.8–2 mm |
| Mounting position | As required | As required | As required |

1.3

Miniature Circuit Breakers and Supplementary Protectors

UL 1077 DIN Rail Supplementary Protectors

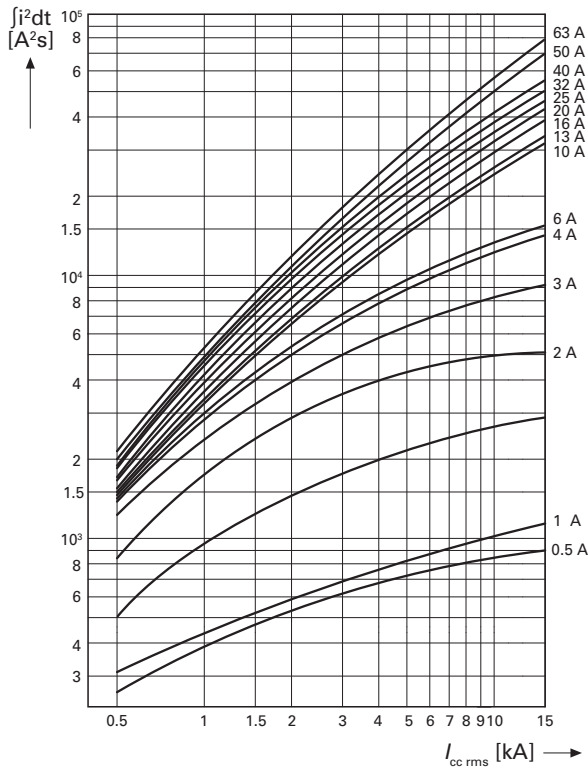
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FAZ Miniature Circuit Breakers Technical Data, continued

| Description | K Curve | S Curve | Z Curve |
|--|---|---|---|
| Electrical | | | |
| Approvals | UR (UL 1077), CSA (CSA 22.2 No. 235), CE | | |
| Standards | IEC/EN 60947-2, E177451, 204453 | | |
| Short-circuit trip response | 8–12 I_n | 13–17 I_n | 2–3 I_n |
| Supplementary Protectors—UL/CSA | | | |
| Current range | 0.5–63A | 0.5–40A | 1–63A |
| Maximum voltage ratings—UL/CSA | | | |
| Single-pole, single-pole + neutral | 277 Vac 48 Vdc | 277 Vac 48 Vdc | 277 Vac 48 Vdc |
| Two-, three-, four-pole and three-pole + neutral | 480Y/277 Vac | 480Y/277 Vac | 480Y/277 Vac |
| Two poles in series | 96 Vdc | 96 Vdc | 96 Vdc |
| Thermal tripping characteristics | | | |
| Single-pole | 1.35 x I_n @ 40°C | 1.35 x I_n @ 40°C | 1.35 x I_n @ 40°C |
| Multi-pole | 1.45 x I_n @ 40°C | 1.45 x I_n @ 40°C | 1.45 x I_n @ 40°C |
| Short-circuit ratings (at max. voltage) | | | |
| Single-pole | 5 kA @ 277 Vac | 5 kA @ 277 Vac | 5 kA @ 277 Vac |
| Single-pole + neutral | 5 kA @ 277 Vac | 5 kA @ 277 Vac | 5 kA @ 277 Vac |
| Two-, three-, four-pole | 5 kA @ 480Y/277 Vac | 5 kA @ 480Y/277 Vac | 5 kA @ 480Y/277 Vac |
| Two poles in series | — | — | — |
| Miniature Circuit Breaker—IEC | | | |
| Current range | 0.5–63A | 0.5–40A | 1–63A |
| Maximum voltage ratings—IEC 60947-2 | | | |
| Single-pole, single-pole + neutral | 240 Vac | 240 Vac | 240 Vac |
| Two-, three-, four-pole, three-pole + neutral | 240/415 Vac | 240/415 Vac | 240/415 Vac |
| Thermal tripping characteristics | | | |
| Single-pole | > 1 Hour @ 1.05 x I_n | > 1 Hour @ 1.05 x I_n | > 1 Hour @ 1.05 x I_n |
| Multi-pole | < 1 Hour @ 1.3 x I_n | < 1 Hour @ 1.3 x I_n | < 1 Hour @ 1.3 x I_n |
| Interrupt ratings (at max. voltage) | | | |
| IEC 60947-2 | 15 kA | 10 kA | 10 kA |
| Operational switching capacity | 7.5 kA | 7.5 kA | 7.5 kA |
| Max. backup fuse [gL/gG] | 125A | 125A | 125A |
| Rated impulse withstand— U_{imp} | 4000 Vac | 4000 Vac | 4000 Vac |
| Rated insulation voltage— U_i | 440 Vac | 440 Vac | 440 Vac |
| Environmental/General | | | |
| Selectivity class | 3 | 3 | 3 |
| Lifespan (operations) | > 10,000 (1 operation = ON/OFF) | > 10,000 (1 operation = ON/OFF) | > 10,000 (1 operation = ON/OFF) |
| Shock (IEC 68-2-22) | 10g–120 ms | 10g–120 ms | 10g–120 ms |
| Operating temperature range | –40 to +167°F (–40 to +75°C) | –40 to +167°F (–40 to +75°C) | –40 to +167°F (–40 to +75°C) |
| Shipment and short-term storage | –40 to +185°F (–40 to +85°C) | –40 to +185°F (–40 to +85°C) | –40 to +185°F (–40 to +85°C) |
| Housing material | Nylon | Nylon | Nylon |
| Mechanical | | | |
| Standard front dimension | | | |
| Device height | 80 mm | 80 mm | 80 mm |
| Terminal protection | Finger and back-of-hand proof to IEC 536 | Finger and back-of-hand proof to IEC 536 | Finger and back-of-hand proof to IEC 536 |
| Mounting width per pole | 17.7 mm | 17.7 mm | 17.7 mm |
| Mounting | IEC/EN 60715 top-hat rail | IEC/EN 60715 top-hat rail | IEC/EN 60715 top-hat rail |
| Degree of protection | IP20 | IP20 | IP20 |
| Terminals top and bottom | Twin-purpose terminals | Twin-purpose terminals | Twin-purpose terminals |
| Supply connection | Line or load side | Line or load side | Line or load side |
| Terminal capacity [mm ²] | 1 x 25 (AWG 4–18) / 2 x 10 (AWG 8–18) | 1 x 25 (AWG 4–18) / 2 x 10 (AWG 8–18) | 1 x 25 (AWG 4–18) / 2 x 10 (AWG 8–18) |
| Torque | 2.4 Nm | 2.4 Nm | 2.4 Nm |
| Imperial torque | 21 lb-in (AWG 18–12), 25 lb-in (AWG 10–8), 36 lb-in (AWG 6–4) | 21 lb-in (AWG 18–12), 25 lb-in (AWG 10–8), 36 lb-in (AWG 6–4) | 21 lb-in (AWG 18–12), 25 lb-in (AWG 10–8), 36 lb-in (AWG 6–4) |
| Thickness of busbar material | 0.8–2 mm | 0.8–2 mm | 0.8–2 mm |
| Mounting position | As required | As required | As required |

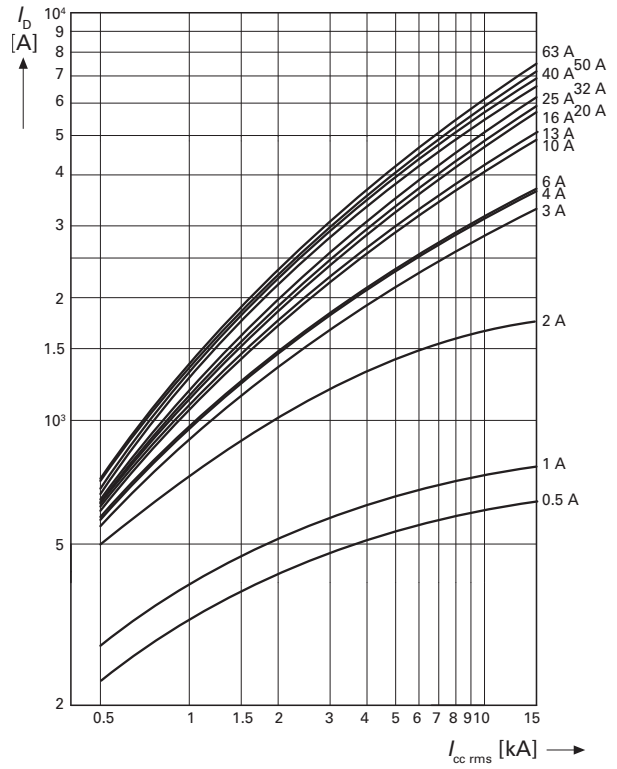
Let-Through Energy I^2t

Characteristic B and C

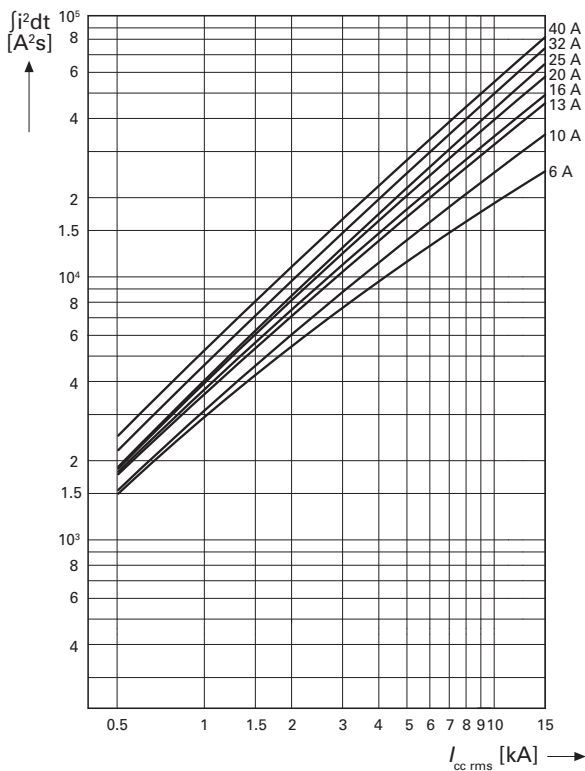


Let-Through Energy I_D

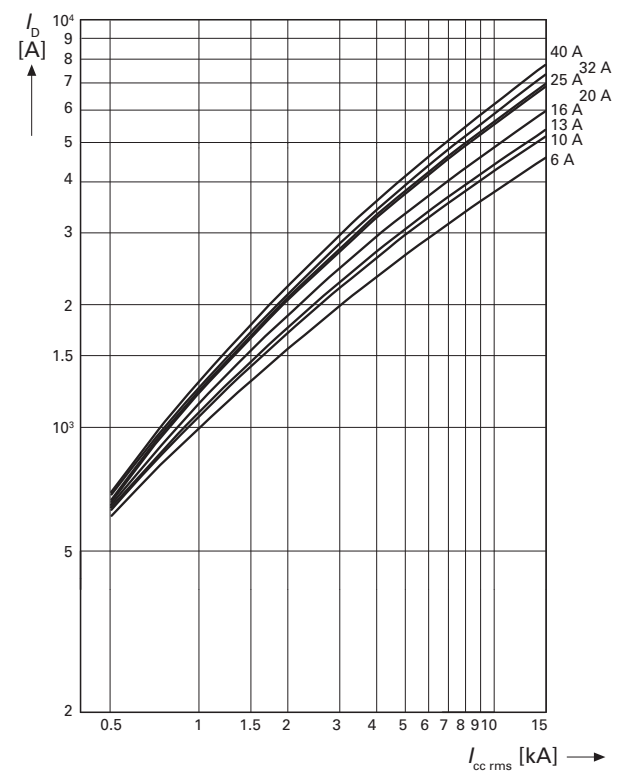
Characteristic B and C



Characteristic D



Characteristic D



1.3

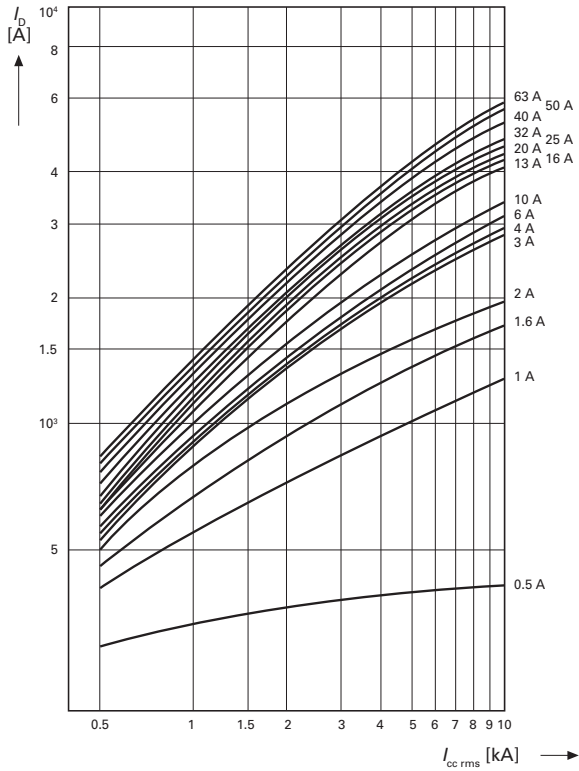
Miniature Circuit Breakers and Supplementary Protectors

UL 1077 DIN Rail Supplementary Protectors

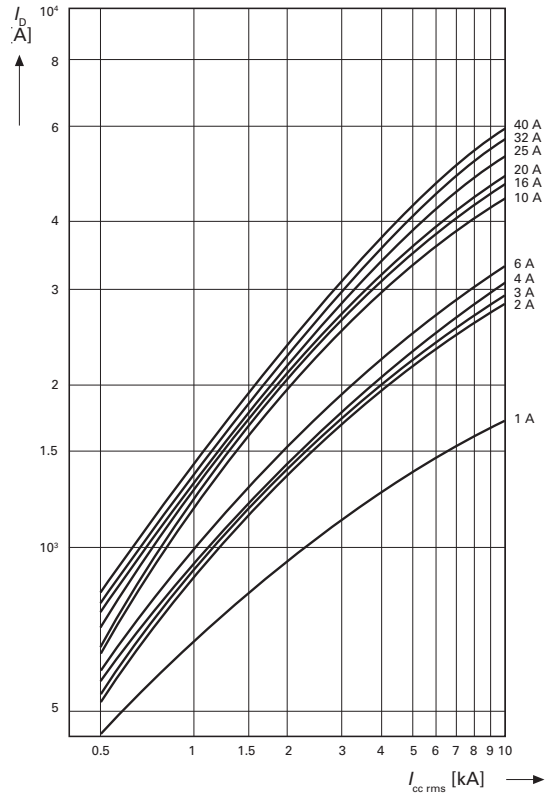
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Let-Through Energy I^2t

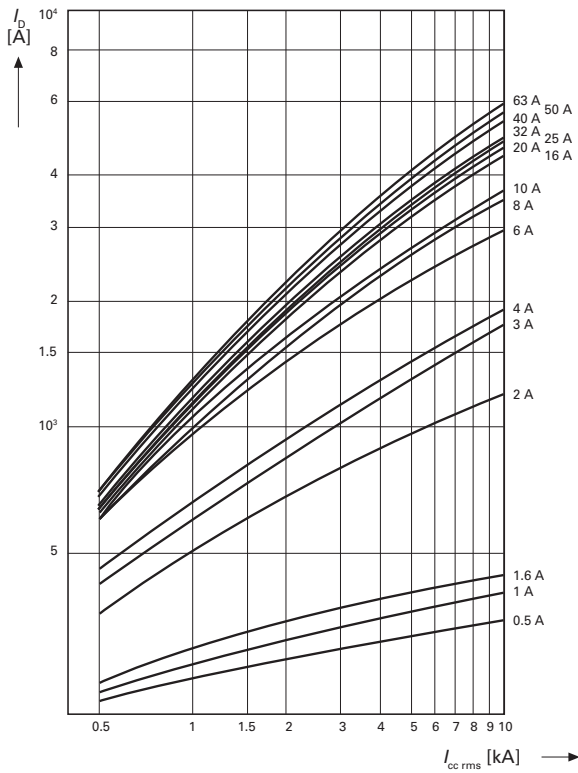
Characteristic K



Characteristic S



Characteristic Z



Influence of the Ambient Temperature on the Thermal Tripping Behavior

Corrected values of the rated current dependent on the ambient temperature

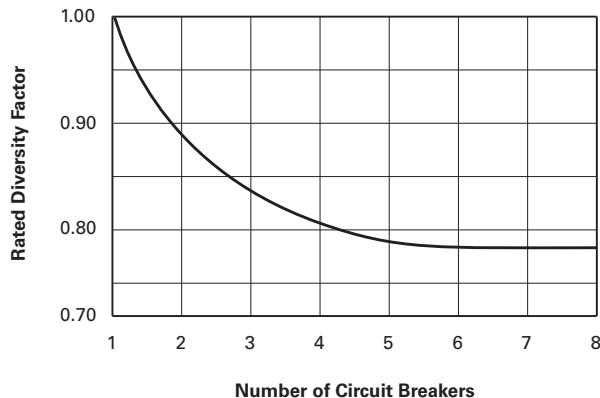
| I_n (A) | Ambient Temperature T | | | | | | | | | | | | | | | | |
|-----------|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | -40°C | -30°C | -20°C | -10°C | 0°C | 10°C | 20°C | 30°C | 35°C | 40°C | 45°C | 50°C | 55°C | 60°C | 65°C | 70°C | 75°C |
| 0.16 | 0.20 | 0.20 | 0.19 | 0.19 | 0.18 | 0.17 | 0.17 | 0.16 | 0.16 | 0.15 | 0.15 | 0.15 | 0.14 | 0.14 | 0.14 | 0.14 | 0.13 |
| 0.25 | 0.32 | 0.31 | 0.30 | 0.29 | 0.28 | 0.27 | 0.26 | 0.25 | 0.25 | 0.24 | 0.24 | 0.23 | 0.23 | 0.22 | 0.22 | 0.21 | 0.21 |
| 0.50 | 0.64 | 0.62 | 0.60 | 0.58 | 0.56 | 0.54 | 0.52 | 0.50 | 0.49 | 0.48 | 0.47 | 0.46 | 0.45 | 0.44 | 0.43 | 0.42 | 0.41 |
| 0.75 | 0.96 | 0.93 | 0.90 | 0.87 | 0.84 | 0.81 | 0.78 | 0.75 | 0.74 | 0.73 | 0.71 | 0.69 | 0.68 | 0.66 | 0.65 | 0.64 | 0.62 |
| 1.00 | 1.30 | 1.20 | 1.20 | 1.20 | 1.10 | 1.10 | 1.00 | 1.00 | 0.99 | 0.97 | 0.95 | 0.93 | 0.90 | 0.89 | 0.87 | 0.85 | 0.83 |
| 1.50 | 1.90 | 1.90 | 1.80 | 1.70 | 1.70 | 1.60 | 1.60 | 1.50 | 1.50 | 1.50 | 1.40 | 1.40 | 1.40 | 1.30 | 1.30 | 1.30 | 1.20 |
| 1.60 | 2.00 | 2.00 | 1.90 | 1.90 | 1.80 | 1.70 | 1.70 | 1.60 | 1.60 | 1.50 | 1.50 | 1.50 | 1.40 | 1.40 | 1.40 | 1.40 | 1.30 |
| 2.00 | 2.60 | 2.50 | 2.40 | 2.30 | 2.20 | 2.20 | 2.10 | 2.00 | 2.00 | 1.90 | 1.90 | 1.90 | 1.80 | 1.80 | 1.70 | 1.70 | 1.70 |
| 2.50 | 3.20 | 3.10 | 3.00 | 2.90 | 2.80 | 2.70 | 2.60 | 2.50 | 2.50 | 2.40 | 2.40 | 2.30 | 2.30 | 2.20 | 2.20 | 2.10 | 2.10 |
| 3.00 | 3.80 | 3.70 | 3.60 | 3.50 | 3.40 | 3.30 | 3.10 | 3.00 | 3.00 | 2.90 | 2.80 | 2.80 | 2.70 | 2.70 | 2.60 | 2.50 | 2.50 |
| 3.50 | 4.50 | 4.40 | 4.20 | 4.10 | 3.90 | 3.80 | 3.70 | 3.50 | 3.40 | 3.40 | 3.30 | 3.20 | 3.20 | 3.10 | 3.00 | 3.00 | 2.90 |
| 4.00 | 5.10 | 5.00 | 4.80 | 4.70 | 4.50 | 4.30 | 4.20 | 4.00 | 3.90 | 3.90 | 3.80 | 3.70 | 3.60 | 3.50 | 3.50 | 3.40 | 3.30 |
| 5.00 | 6.40 | 6.20 | 6.00 | 5.80 | 5.60 | 5.40 | 5.20 | 5.00 | 4.90 | 4.80 | 4.70 | 4.60 | 4.50 | 4.40 | 4.30 | 4.20 | 4.10 |
| 6.00 | 7.70 | 7.50 | 7.20 | 7.00 | 6.70 | 6.50 | 6.30 | 6.00 | 5.90 | 5.80 | 5.70 | 5.60 | 5.40 | 5.30 | 5.20 | 5.10 | 5.00 |
| 7.00 | 9.00 | 8.70 | 8.40 | 8.20 | 7.80 | 7.60 | 7.40 | 7.00 | 6.90 | 6.80 | 6.70 | 6.50 | 6.30 | 6.20 | 6.10 | 6.00 | 5.80 |
| 8.00 | 10.20 | 9.90 | 9.60 | 9.30 | 9.00 | 8.70 | 8.40 | 8.00 | 7.90 | 7.70 | 7.60 | 7.40 | 7.20 | 7.10 | 6.90 | 6.80 | 6.60 |
| 10.00 | 13.00 | 12.00 | 12.00 | 12.00 | 11.00 | 11.00 | 10.00 | 10.00 | 9.90 | 9.70 | 9.50 | 9.30 | 9.00 | 8.90 | 8.70 | 8.50 | 8.30 |
| 12.00 | 15.00 | 15.00 | 14.00 | 14.00 | 13.00 | 13.00 | 13.00 | 12.00 | 12.00 | 12.00 | 11.00 | 11.00 | 11.00 | 11.00 | 10.00 | 10.00 | 10.00 |
| 13.00 | 17.00 | 16.00 | 16.00 | 15.00 | 15.00 | 14.00 | 14.00 | 13.00 | 13.00 | 13.00 | 12.00 | 12.00 | 12.00 | 12.00 | 11.00 | 11.00 | 11.00 |
| 15.00 | 19.00 | 19.00 | 18.00 | 17.00 | 17.00 | 16.00 | 16.00 | 15.00 | 15.00 | 15.00 | 14.00 | 14.00 | 14.00 | 13.00 | 13.00 | 13.00 | 12.00 |
| 16.00 | 20.00 | 20.00 | 19.00 | 19.00 | 18.00 | 17.00 | 17.00 | 16.00 | 16.00 | 15.00 | 15.00 | 15.00 | 14.00 | 14.00 | 14.00 | 14.00 | 13.00 |
| 20.00 | 26.00 | 25.00 | 24.00 | 23.00 | 22.00 | 22.00 | 21.00 | 20.00 | 20.00 | 19.00 | 19.00 | 19.00 | 18.00 | 18.00 | 17.00 | 17.00 | 17.00 |
| 25.00 | 32.00 | 31.00 | 30.00 | 29.00 | 28.00 | 27.00 | 26.00 | 25.00 | 25.00 | 24.00 | 24.00 | 23.00 | 23.00 | 22.00 | 22.00 | 21.00 | 21.00 |
| 32.00 | 41.00 | 40.00 | 38.00 | 37.00 | 36.00 | 35.00 | 33.00 | 32.00 | 32.00 | 31.00 | 30.00 | 30.00 | 29.00 | 28.00 | 28.00 | 27.00 | 26.00 |
| 35.00 | 45.00 | 43.00 | 41.00 | 41.00 | 38.00 | 38.00 | 36.00 | 35.00 | 35.00 | 34.00 | 33.00 | 32.00 | 32.00 | 32.00 | 30.00 | 29.00 | 29.00 |
| 40.00 | 51.00 | 50.00 | 48.00 | 47.00 | 45.00 | 43.00 | 42.00 | 40.00 | 39.00 | 39.00 | 38.00 | 37.00 | 36.00 | 35.00 | 35.00 | 34.00 | 33.00 |
| 50.00 | 64.00 | 62.00 | 60.00 | 58.00 | 56.00 | 54.00 | 52.00 | 50.00 | 49.00 | 48.00 | 47.00 | 46.00 | 45.00 | 44.00 | 43.00 | 42.00 | 41.00 |
| 63.00 | 81.00 | 78.00 | 76.00 | 73.00 | 71.00 | 68.00 | 66.00 | 63.00 | 62.00 | 61.00 | 60.00 | 58.00 | 57.00 | 56.00 | 55.00 | 53.00 | 52.00 |

Influence of the Mains Frequency

Influence of the mains frequency on the tripping behavior I_{MA} of the instantaneous release

| $I_{MA}(f)/I_{MA}(50\text{ Hz})$ [%] | Mains Frequency f [Hz] | | | | | | |
|--------------------------------------|------------------------|-----|-----|-----|-----|-----|-----|
| | 16 2/3 | 50 | 60 | 100 | 200 | 300 | 400 |
| | 91 | 100 | 101 | 106 | 115 | 134 | 141 |

Load Carrying Capacity of Adjoining Miniature Circuit Breakers



1.3

Miniature Circuit Breakers and Supplementary Protectors

UL 1077 DIN Rail Supplementary Protectors

1

Accessories Technical Data

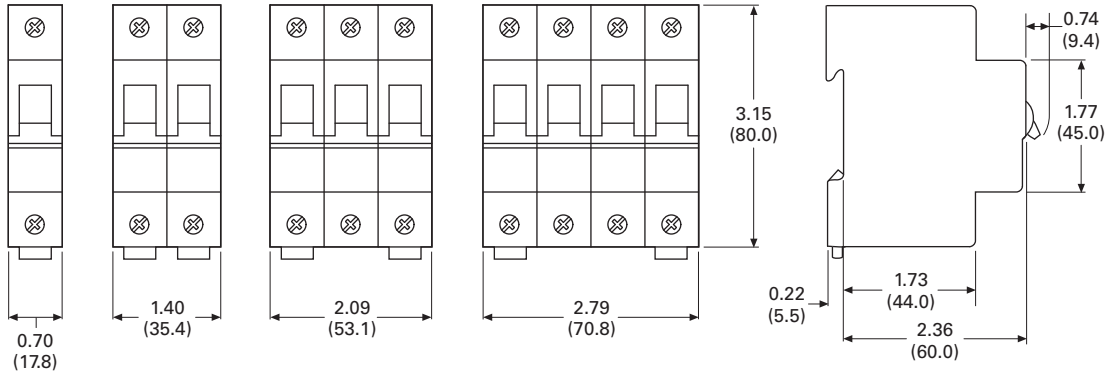
| Description | FAZ-XHIN FAZ-XAM002 | FAZ-XAA-C | FAZ-XUA |
|--|--|--|--|
| Electrical | | | |
| Contact function | 1A + 1B 2 C/O | — | — |
| Rated operational voltage U_n | 250 Vac | — | 115 Vac 230 Vac 400 Vac |
| Voltage range | — | 12–110 Vac 12–60 Vdc | — |
| Voltage range | — | 110–415 Vac 110–230 Vdc | — |
| Closing threshold [$\times U_n$] | — | — | 0.8 |
| Tripping threshold [$\times U_n$] | — | — | 0.5 |
| Rated frequency f | 50/60 Hz | 50/60 Hz | 50/60 Hz |
| General use (UL/CSA) AC—230/240 Vac DC—110/120 Vdc | 2/2A 0.5/0.5A | — | — |
| Pilot duty | A600/Q600 | — | — |
| Conventional free air thermal current I_{th} | 4A | — | — |
| Rated operational current AC-13 I_b AC-15 I_b DC-13 I_b | 3A (250 Vac) 2A (250 Vac) 0.5A (110 Vdc) | — | — |
| Rated insulation voltage U_i | 250 Vac | — | — |
| Minimum operating voltage per contract U_{min} | 5 Vdc | — | — |
| Rated impulse withstand voltage (1.2/50 μ) U_{imp} | 2.5 kV | — | — |
| Rated conditional short-circuit current with 6A backup fuse I_{SC} | 1 kA | — | — |
| Max. admissible backup fuse | 4A gL | — | — |
| Mechanical | | | |
| Standard front dimension | 45 mm | 45 mm | 45 mm |
| Device height | 80 mm | 80 mm | 80 mm |
| Mounting width | 8.8 mm | 17.6 mm | 17.8 mm |
| Mounting | On MCB | IEC/EN 60715 top-hat rail | IEC/EN 60715 top-hat rail |
| Degree of protection enclosed | IP40 | IP40 | IP40 |
| Terminal protection | Protection against electric shock to IEC 536 | Protection against electric shock to IEC 536 | Protection against electric shock to IEC 536 |
| Terminals | Lift terminals | Twin-purpose terminals | Twin-purpose terminals |
| Terminal capacity Solid Flexible | 0.5–2.5 mm ² 0.5–2.5 mm ² | 1–2.5 mm ² 1–2.5 mm ² | 2 x (1–2.5) mm ² 2 x (1–2.5) mm ² |
| Tightening torque of terminal screws | 0.8–1.0 Nm (7–9 lb-in) | 2.4 Nm (21 lb-in) | 0.8 Nm (7 lb-in) |

Dimensions

Approximate Dimensions in Inches (mm)

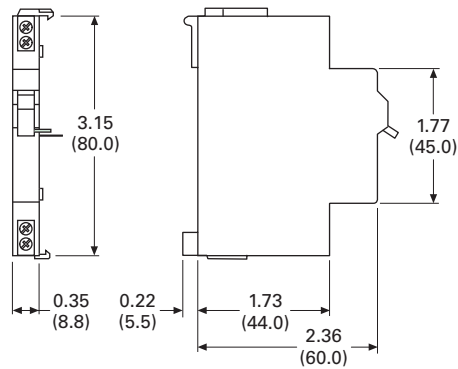
Miniature Circuit Breakers

FAZ

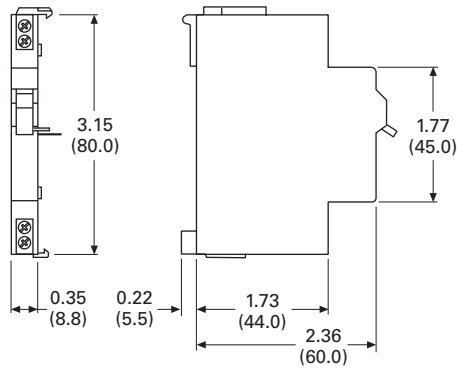


Auxiliary Contacts

FAZ-XHI11 and FAZ-XHI1NW1

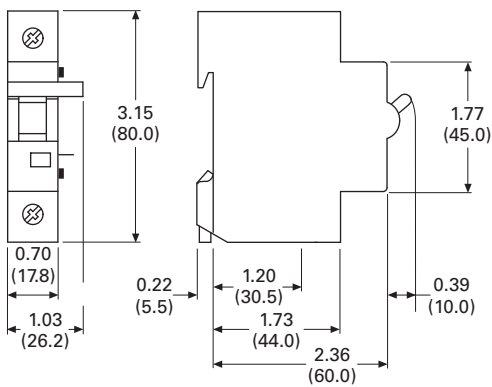


FAZ-XAM002



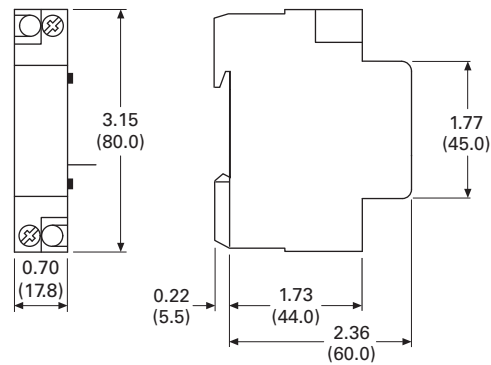
Shunt Releases

FAZ-XAA



Undervoltage Releases

FAZ-XUA



1.3

Miniature Circuit Breakers and Supplementary Protectors

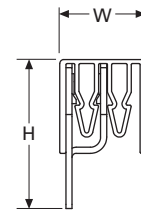
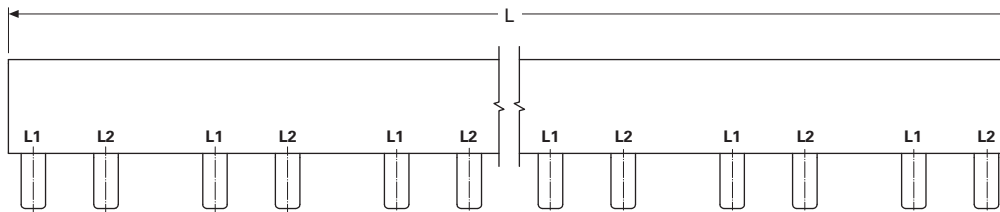
UL 1077 DIN Rail Supplementary Protectors

1

Approximate Dimensions in Inches (mm)

Busbar and Accessory Weights and Dimensions

| Unit Weight (kg) | Length | Width | Height | Catalog Number |
|------------------|----------------|-------------|-------------|------------------------|
| 0.29 | 39.72 (1009.0) | 0.59 (15.0) | 0.59 (15.0) | BB-UL-18/1P-1M/57 |
| 0.64 | 39.02 (991.0) | 0.87 (22.0) | 1.46 (37.0) | BB-UL-18/2P-2M/56 |
| 0.83 | 39.72 (1009.0) | 0.87 (22.0) | 1.46 (37.0) | BB-UL-18/3P-3M/57 |
| 0.26 | 38.78 (985.0) | 0.59 (15.0) | 0.59 (15.0) | BB-UL-18/1P-1.5M/37 |
| 0.63 | 39.72 (1009.0) | 0.87 (22.0) | 1.46 (37.0) | BB-UL-18/2P+AS-2.5M/46 |
| 0.79 | 38.66 (982.0) | 0.87 (22.0) | 1.46 (37.0) | BB-UL-18/3P+AS-3.5M/48 |
| 0.36 | 39.72 (1009.0) | 0.59 (15.0) | 0.59 (15.0) | BB-UL-25/1P-1M/57 |
| 0.79 | 39.02 (991.0) | 0.87 (22.0) | 1.46 (37.0) | BB-UL-25/2P-2M/56 |
| 1.04 | 39.72 (1009.0) | 0.87 (22.0) | 1.46 (37.0) | BB-UL-25/3P-3M/57 |
| 0.31 | 38.78 (985.0) | 0.59 (15.0) | 0.59 (15.0) | BB-UL-25/1P-1.5M/37 |
| 0.73 | 39.72 (1009.0) | 0.87 (22.0) | 1.46 (37.0) | BB-UL-25/2P+AS-2.5M/46 |
| 0.97 | 38.66 (982.0) | 0.87 (22.0) | 1.46 (37.0) | BB-UL-25/3P+AS-3.5M/48 |
| 0.03 | 2.36 (60.0) | 0.67 (17.0) | 1.14 (29.0) | BB-UL-TEP/35 |
| 0.03 | 1.42 (36.0) | 0.67 (17.0) | 1.14 (29.0) | BB-UL-TEPA/35 |
| 0.03 | 1.57 (40.0) | 0.71 (18.0) | 1.18 (30.0) | BB-UL-TE/50 |
| 0.003 | 3.35 (85.0) | 0.47 (12.0) | 0.94 (24.0) | BB-IP/5 |
| 0.001 | 0.55 (14.0) | 0.20 (5.0) | 0.39 (10.0) | BB-EV-EC/3 |
| 0.001 | 0.94 (24.0) | 0.87 (22.0) | 0.39 (10.0) | BB-UL-EC/1 |



UL 1053 DIN Rail RCCB



Contents

Description

| Description | Page |
|--|-----------------|
| UL 1053 DIN Rail RCCB 480/277 Vac | |
| Product Selection | V4-T1-88 |
| Accessories | V4-T1-89 |
| Technical Data and Specifications | V4-T1-90 |
| Dimensions | V4-T1-91 |
| UL 1053 DIN Rail RCCB 208Y/120 Vac | V4-T1-93 |

UL 1053 DIN Rail RCCB 480/277 Vac

Product Overview

Optimum product quality, tested reliability and safety stand for best protection of installations and plant. Eaton's UL 1053 Residual Current Circuit Breaker (RCCB) is designed for use in residual current applications.

Application Description

- Motor control circuits
- HVAC internal/external equipment
- PLCs
- HMIs
- Equipment protection
- European housing

Features

- Wide range of compact RCCB types serving as fault-current and additional protection according to UL 1053 and IEC/EN 61008 standards, suitable for worldwide use
- Type A or Type G/A (with delay) protection available
- Comprehensive range of accessories
- Real contact position indicator
- Fault current tripping indicator
- Transparent designation plate
- Trip-free design—RCCB can not be defeated by holding the handle in the ON position
- Captive screws cannot be lost

Standards and Certifications

- UL 1053
- IEC/EN 61008
- CSA
- ÖVE
- CE Marked



Product Selection

UL 1053 RCCB 480Y/277V Type A

Two-Pole



Conditionally Surge Current-Proof 250A, Sensitive to Residual Pulsating DC, Type A

Two-Pole

| Amperes | GF Sensitivity (mA) | Catalog Number ^① | Designation |
|---------|---------------------|-----------------------------|---------------------|
| 25 | 30 | 167113 | FRCmM-25/2/003-A-NA |
| | 300 | 167116 | FRCmM-25/2/03-A-NA |
| 40 | 30 | 167114 | FRCmM-40/2/003-A-NA |
| | 300 | 167117 | FRCmM-40/2/03-A-NA |
| 63 | 30 | 167115 | FRCmM-63/2/003-A-NA |
| | 300 | 167118 | FRCmM-63/2/03-A-NA |

Four-Pole



Conditionally Surge Current-Proof 250A, Sensitive to Residual Pulsating DC, Type A

Four-Pole

| Amperes | GF Sensitivity (mA) | Catalog Number ^① | Designation |
|---------|---------------------|-----------------------------|---------------------|
| 25 | 30 | 167125 | FRCmM-25/4/003-A-NA |
| | 300 | 167104 | FRCmM-25/4/03-A-NA |
| 40 | 30 | 167102 | FRCmM-40/4/003-A-NA |
| | 300 | 167105 | FRCmM-40/4/03-A-NA |
| 63 | 30 | 167103 | FRCmM-63/4/003-A-NA |
| | 300 | 167106 | FRCmM-63/4/03-A-NA |

UL 1053 RCCB 480Y/277V Type G/A

Type G/A has a 10 ms delay.

Two-Pole



Surge Current-Proof 3 kA, Sensitive to Residual Pulsating DC, Type G/A (ÖVE E 8601)

Two-Pole

| Amperes | GF Sensitivity (mA) | Catalog Number ^① | Designation |
|---------|---------------------|-----------------------------|-----------------------|
| 25 | 30 | 167119 | FRCmM-25/2/003-G/A-NA |
| | 300 | 167122 | FRCmM-25/2/03-G/A-NA |
| 40 | 30 | 167120 | FRCmM-40/2/003-G/A-NA |
| | 300 | 167123 | FRCmM-40/2/03-G/A-NA |
| 63 | 30 | 167121 | FRCmM-63/2/003-G/A-NA |
| | 300 | 167124 | FRCmM-63/2/03-G/A-NA |

Four-Pole



Surge Current-Proof 3 kA, Sensitive to Residual Pulsating DC, Type G/A (ÖVE E 8601)

Four-Pole


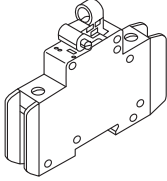
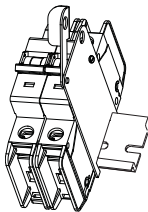
| Amperes | GF Sensitivity (mA) | Catalog Number ^① | Designation |
|---------|---------------------|-----------------------------|-----------------------|
| 25 | 30 | 167107 | FRCmM-25/4/003-G/A-NA |
| | 300 | 167110 | FRCmM-25/4/03-G/A-NA |
| 40 | 30 | 167108 | FRCmM-40/4/003-G/A-NA |
| | 300 | 167111 | FRCmM-40/4/03-G/A-NA |
| 63 | 30 | 167109 | FRCmM-63/4/003-G/A-NA |
| | 300 | 167112 | FRCmM-63/4/03-G/A-NA |

Note

^① Has no thermal element; must be paired with FAZ-NA or FAZ per application.

Accessories

UL 1053 DIN Rail RCCB 480/277 Vac

| | Description | Catalog Number | Description | Catalog Number | |
|---|---|----------------|--|-------------------|---------------------|
| Contact  | Two-pole contact or auxiliary contact / trip indicating contact | Z-NHK ① | Padlock Hasp  | Padlock hasp | Z-IS/SPE-1TE |
| | | | | | |
| | | | Lockoff Device  | UL lockoff device | FAZPLOFF |
| | | | | | |

Note

① Voltage of FAZ-NA circuit breaker is limited to 300V with this auxiliary contact installed.

Technical Data and Specifications

- Residual current devices
- Has no thermal protection; must be paired with FAZ-NA or FAZ per application
- Captive screw terminals
- Universal tripping signal switch, also suitable for Z-A; can be mounted subsequently
- Auxiliary switch Z-HK can be mounted subsequently
- Red-green contact position indicator
- White-blue tripping indicator
- Delayed types recommended for use with standard fluorescent tubes with or without electronical ballast (30mA-RCD: 30 units per phase conductor, 100mA-RCD: 90 units per phase conductor)
- The device functions irrespective of the position of installation
- Tripping is line voltage-independent. Consequently, the RCD is suitable for “fault current/residual current protection” and “additional protection” within the meaning of the applicable installation rules
- Reverse-feed permitted
- The four-pole device can also be used for two-pole connection. For this purpose, use terminals 5-6 and N-N
- The test key “T” must be pressed every month. The system operator must be informed of this obligation and responsibility in a way that can be proven (self-adhesive RCD-label enclosed)
- Pressing the test key “T” serves the only purpose of function testing the residual current device (RCD). This test does not make earthing resistance measurement (RE) or proper checking of the earth conductor condition redundant, which must be performed separately
- **Type -A:** Protects against special forms of residual pulsating DC that have not been smoothed
- **Type -G/A:** Additionally protects against special forms of residual pulsating DC that have not been smoothed

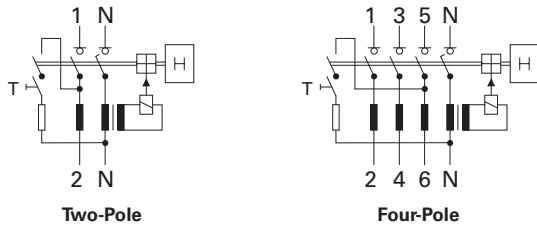
UL 1053 DIN Rail RCCB Technical Data

| Description | Specification | |
|--|----------------------------|--------------------------|
| Electrical According to IEC/EN 61008 | | |
| Design according to | IEC/EN 61008 ÖVE E 8601 | |
| Current test marks as printed onto the device | | |
| Tripping Type G | 10 ms delay | |
| Rated voltage U_n | 230/400V, 50 Hz | |
| Rated tripping current $I_{\Delta n}$ | 30, 300 mA | |
| Sensitivity | AC and pulsating DC | |
| Rated insulation voltage U_i | 440V | |
| Rated impulse withstand voltage U_{imp} | 4 kV | |
| Rated short-circuit capacity I_{nc} | 10 kA | |
| Maximum backup fuse | Overload protection | Short-circuit protection |
| $I_n = 25-40A$ | 25A gG/gL | 63A gG/gL |
| $I_n = 63A$ | 40A gG/gL | 63A gG/gL |
| Rated breaking capacity I_m bzw. Rated fault breaking capacity $I_{\Delta m}$ | | |
| $I_n = 25-40A$ | 500A | |
| $I_n = 63A$ | 630A | |
| Voltage range of test button | Two-pole | 184–250V~ |
| | Four-pole | 184–440V~ |
| Endurance | Electrical | >4000 operating cycles |
| | Mechanical | >20,000 operating cycles |
| Overvoltage category | III | |

UL 1053 DIN Rail RCCB Technical Data, continued

| Description | Specification | |
|--|---|--------------------------|
| Electrical According to UL 1053 | | |
| Design according to | UL 1053 | |
| Current test marks as printed onto the device | | |
| Tripping Type G | 8 ms delay | |
| Rated voltage U_n | 480Y/277V, 60 Hz | |
| Pickup current | 22, 200 mA | |
| Sensitivity | AC and pulsating DC | |
| Overvoltage tested | 530V | |
| Rated impulse withstand voltage U_{imp} | 4 kV | |
| Rated short-circuit capacity I_{nc} | 5 kA according to CSA | |
| Maximum backup fuse | Overload protection | Short-circuit protection |
| $I_n = 25-40A$ | 25A gG/gL | 63A gG/gL |
| $I_n = 63A$ | 40A gG/gL | 63A gG/gL |
| Rated breaking capacity I_m or Rated fault breaking capacity $I_{\Delta m}$ | | |
| $I_n = 25-40A$ | 500A | |
| $I_n = 63A$ | 630A | |
| Voltage range of test button | Two-pole | 184–305V~ |
| | Four-pole | 184–528V~ |
| Endurance | Electrical | >4000 operating cycles |
| | Mechanical | >20,000 operating cycles |
| Mechanical | | |
| Frame size | 45.0 mm | |
| Device height | 80.0 mm | |
| Device width | 35 mm (2TE), 70 mm (4TE) | |
| Device width | Quick fastening with two lock-in positions on DIN rail IEC/EN 60715 | |
| Degree of protection, built-in | IP40 | |
| Degree of protection in moisture-proof enclosure | IP54 | |
| Upper and lower terminals | Lift terminals | |
| Terminal protection | Finger and hand touch safe BGV A3, ÖVE-EN 6 | |
| Terminal capacity | 1.5–35 mm ² single-wire | |
| | 2 x 16 mm ² multi-wire | |
| Busbar material thickness | 0.8–2 mm | |
| Tripping temperature | –25°C to +60°C | |
| Resistance to climatic conditions | According to IEC 61008 | |
| Humidity | 5–95% | |

Connection Diagram



Impact of Ambient Temperature on the Maximum Permanent Current Allowed (A)

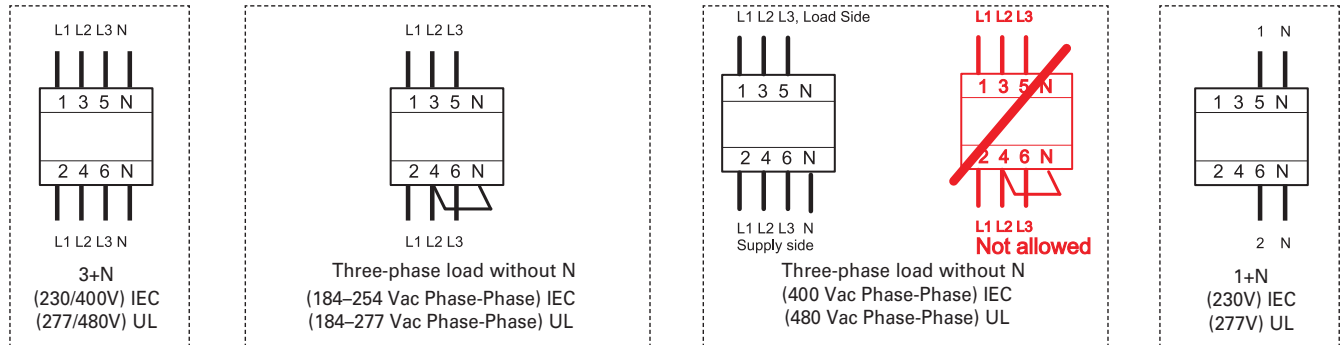
| Tripping Temperature | 16A | | 25A | | 40A | | 63A | |
|----------------------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| | Two-Pole | Four-Pole | Two-Pole | Four-Pole | Two-Pole | Four-Pole | Two-Pole | Four-Pole |
| 40°C | 16 | 16 | 25 | 25 | 40 | 40 | 63 | 63 |
| 45°C | 14 | 14 | 21 | 22 | 37 | 37 | 59 | 59 |
| 50°C | 11 | 11 | 18 | 19 | 33 | 34 | 55 | 55 |
| 55°C | 9 | 9 | 14 | 16 | 30 | 31 | 50 | 50 |
| 60°C | ① | — | — | — | 26 | 27 | 45 | 45 |

Notes

① Do not use.

Please make sure that these values are not exceeded and that any upstream overload protection switches off in time.

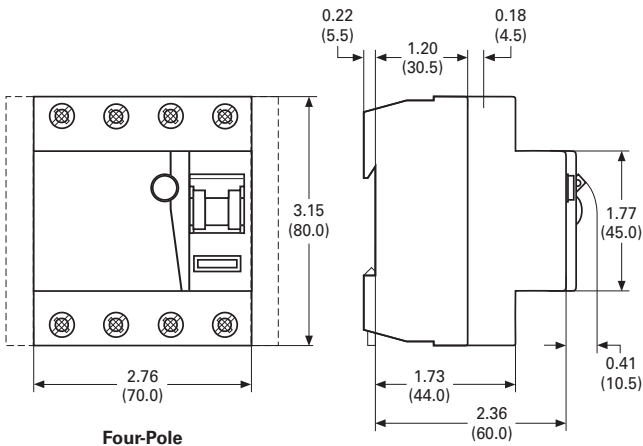
Correct Connection



Dimensions

Approximate Dimensions in Inches (mm)

UL 1053 DIN Rail RCCB



Accessories Technical Data

| Description | Z-NHK |
|--|---|
| Electrical | |
| Contact function | 2CO |
| Rated voltage | 230V |
| Frequency | 50/60 Hz |
| Rated current | 2A |
| Rated thermal current I_{th} | 2A |
| Utilization category AC13 Rated operational current I_b | 3A/250 Vac |
| Utilization category AC15 Rated operational current I_b | 2A/250 Vac |
| Utilization category DC12 Rated operational current I_b | 0.5A/110 Vdc |
| Rated insulation voltage U_i | 250 Vac |
| Minimum operational voltage per contact U_{min} | 5 Vdc |
| Minimum operational current I_{min} | 10 mA DC |
| Rated peak withstand voltage U_{imp} (1.2/50 μ) | 2.5 kV |
| Conditional short-circuit current I_k with backup fuse 6A | 1 kA |
| Maximum backup fuse, overload and short circuit | 6A gL |
| Mechanical | |
| Tripping indicator "electrical tripping" | Blue/white |
| Frame size | 45 mm |
| Device height | 80 mm |
| Device width | 8.8 mm (0.5MU) |
| Mounting | Onto switching device |
| Degree of protection, built-in | IP40 |
| Terminal protection | Finger and hand touch safe According to BGV A3, ÖVE-EN 6 |
| Terminals | Lift terminals |
| Terminal capacity | 20–14 AWG |
| Terminal screws | M3 (Posidrive Z0) |
| Fastening torque of terminal screws | 7 lb-in maximum |

UL 1053 DIN Rail RCCB



Contents

Description

| | |
|---|----------|
| UL 1053 DIN Rail RCCB 480/277 Vac | V4-T1-87 |
| UL 1053 DIN Rail RCCB 208Y/120 Vac | |
| Product Selection | V4-T1-94 |
| Accessories | V4-T1-95 |
| Technical Data and Specifications | V4-T1-96 |
| Dimensions | V4-T1-97 |

Page

UL 1053 DIN Rail RCCB 208Y/120 Vac

Product Overview

Optimum product quality, tested reliability and safety stand for best protection of installations and plant. Eaton's UL 1053 Residual Current Circuit Breaker (RCCB) is designed for use in residual current applications.

Application Description

- Motor control circuits
- HVAC internal/external equipment
- PLCs
- HMIs
- Equipment protection

Features

- Wide range of compact RCD type serving as fault-current and additional protection according to UL 1053 and IEC/EN 61008 standards, suitable for worldwide use in the 110V range of applications
- Type A or Type G/A (with delay) protection available
- Comprehensive range of accessories
- Real contact position indicator
- Fault current tripping indicator
- Transparent designation plate
- Trip-free design—RCCB can not be defeated by holding the handle in the ON position
- Captive screws cannot be lost

Standards and Certifications

- UL 1053
- IEC/EN 61008



1.4

Miniature Circuit Breakers and Supplementary Protectors

UL 1053 DIN Rail RCCB

1

Product Selection

UL 1053 RCCB 208Y/120 Vac Type A

Four-Pole



Conditionally Surge Current-Proof 250A, Sensitive to Residual Pulsating DC, Type A

Four-Pole

| Amperes | GF Sensitivity (mA) | Catalog Number ^① | Designation |
|---------|---------------------|-----------------------------|-------------------------|
| 25 | 30 | 167699 | FRCmM-25/4/003-A-NA-110 |
| | 300 | 167702 | FRCmM-25/4/03-A-NA-110 |
| 40 | 30 | 167700 | FRCmM-40/4/003-A-NA-110 |
| | 300 | 167703 | FRCmM-40/4/03-A-NA-110 |
| 63 | 30 | 167701 | FRCmM-63/4/003-A-NA-110 |
| | 300 | 167704 | FRCmM-63/4/03-A-NA-110 |

UL 1053 RCCB 208Y/120 Vac Type G/A

Type G/A has a 10 ms delay.

Two-Pole



Surge Current-Proof 3 kA, Sensitive to Residual Pulsating DC, Type G/A (ÖVE E 8601)

Two-Pole

| Amperes | GF Sensitivity (mA) | Catalog Number ^① | Designation |
|---------|---------------------|-----------------------------|---------------------------|
| 25 | 30 | 167693 | FRCmM-25/2/003-G/A-NA-110 |
| | 300 | 167696 | FRCmM-25/2/03-G/A-NA-110 |
| 40 | 30 | 167694 | FRCmM-40/2/003-G/A-NA-110 |
| | 300 | 167697 | FRCmM-40/2/03-G/A-NA-110 |
| 63 | 30 | 167695 | FRCmM-63/2/003-G/A-NA-110 |
| | 300 | 167698 | FRCmM-63/2/03-G/A-NA-110 |

Four-Pole



Surge Current-Proof 3 kA, Sensitive to Residual Pulsating DC, Type G/A (ÖVE E 8601)

Four-Pole

| Amperes | GF Sensitivity (mA) | Catalog Number ^① | Designation |
|---------|---------------------|-----------------------------|---------------------------|
| 25 | 30 | 167705 | FRCmM-25/4/003-G/A-NA-110 |
| | 300 | 167708 | FRCmM-25/4/03-G/A-NA-110 |
| 40 | 30 | 167706 | FRCmM-40/4/003-G/A-NA-110 |
| | 300 | 167709 | FRCmM-40/4/03-G/A-NA-110 |
| 63 | 30 | 167707 | FRCmM-63/4/003-G/A-NA-110 |
| | 300 | 167710 | FRCmM-63/4/03-G/A-NA-110 |

Note

^① Has no thermal element; must be paired with FAZ-NA or FAZ per application.

Accessories

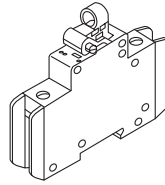
UL 1053 DIN Rail RCCB 208Y/120 Vac

Contact



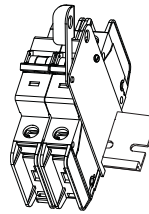
| Description | Catalog Number |
|---|----------------|
| Two-pole contact or auxiliary contact / trip indicating contact | Z-NHK ① |

Padlock Hasp



| Description | Catalog Number |
|--------------|----------------|
| Padlock hasp | Z-IS/SPE-1TE |

Lockoff Device



| Description | Catalog Number |
|-------------------|----------------|
| UL lockoff device | FAZPLOFF |

Note

① Voltage of FAZ-NA circuit breaker is limited to 300V with this auxiliary contact installed.

Technical Data and Specifications

- Residual current devices
- Has no thermal protection; must be paired with FAZ-NA or FAZ per application
- Captive screw terminals
- Universal tripping signal switch, also suitable for Z-A; can be mounted subsequently
- Auxiliary switch Z-HK can be mounted subsequently
- Red-green contact position indicator
- White-blue tripping indicator
- Delayed types recommended for use with standard fluorescent tubes with or without electronical ballast (30mA-RCD: 30 units per phase conductor, 100mA-RCD: 90 units per phase conductor)
- The device functions irrespective of the position of installation
- Tripping is line voltage-independent. Consequently, the RCD is suitable for “fault current/residual current protection” and “additional protection” within the meaning of the applicable installation rules
- Reverse-feed permitted
- The four-pole device can also be used for two-pole connection. For this purpose, use terminals 5-6 and N-N
- The test key “T” must be pressed every month. The system operator must be informed of this obligation and responsibility in a way that can be proven (self-adhesive RCD-label enclosed)
- Pressing the test key “T” serves the only purpose of function testing the residual current device (RCD). This test does not make earthing resistance measurement (RE) or proper checking of the earth conductor condition redundant, which must be performed separately
- **Type -A:** Protects against special forms of residual pulsating DC that have not been smoothed
- **Type -G/A:** Additionally protects against special forms of residual pulsating DC that have not been smoothed

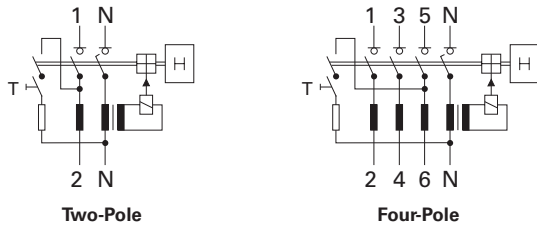
UL 1053 DIN Rail RCCB Technical Data

| Description | Specification | |
|--|----------------------------|--------------------------|
| Electrical According to IEC/EN 61008 | | |
| Design according to | IEC/EN 61008 ÖVE E 8601 | |
| Current test marks as printed onto the device | | |
| Tripping Type G | 10 ms delay | |
| Rated voltage U_n | 230/400V, 50 Hz | |
| Rated tripping current $I_{\Delta n}$ | 30, 300 mA | |
| Sensitivity | AC and pulsating DC | |
| Rated insulation voltage U_i | 440V | |
| Rated impulse withstand voltage U_{imp} | 4 kV | |
| Rated short-circuit capacity I_{nc} | 10 kA | |
| Maximum backup fuse | Overload protection | Short-circuit protection |
| $I_n = 25-40A$ | 25A gG/gL | 63A gG/gL |
| $I_n = 63A$ | 40A gG/gL | 63A gG/gL |
| Rated breaking capacity I_m bzw. Rated fault breaking capacity $I_{\Delta m}$ | | |
| $I_n = 25-40A$ | 500A | |
| $I_n = 63A$ | 630A | |
| Voltage range of test button | Two-pole | 100–132V– |
| | Four-pole | 100–230V– |
| Endurance | Electrical | >4000 operating cycles |
| | Mechanical | >20,000 operating cycles |
| Overvoltage category | III | |

UL 1053 DIN Rail RCCB Technical Data, continued

| Description | Specification | |
|--|---|--------------------------|
| Electrical According to UL1053 | | |
| Design according to | UL 1053 | |
| Current test marks as printed onto the device | | |
| Tripping Type G | 8 ms delay | |
| Rated voltage U_n | 208Y/120V, 60 Hz | |
| Pickup current | 22, 200 mA | |
| Sensitivity | AC and pulsating DC | |
| Overvoltage tested | 530V | |
| Rated impulse withstand voltage U_{imp} | 4 kV | |
| Rated short-circuit capacity I_{nc} | 5 kA according to CSA | |
| Maximum backup fuse | Overload protection | Short-circuit protection |
| $I_n = 25-40A$ | 25A gG/gL | 63A gG/gL |
| $I_n = 63A$ | 40A gG/gL | 63A gG/gL |
| Rated breaking capacity I_m or Rated fault breaking capacity $I_{\Delta m}$ | | |
| $I_n = 25-40A$ | 500A | |
| $I_n = 63A$ | 630A | |
| Voltage range of test button | Two-pole | 100–121V– |
| | Four-pole | 100–210V– |
| Endurance | Electrical | >4000 operating cycles |
| | Mechanical | >20,000 operating cycles |
| Mechanical | | |
| Frame size | 45.0 mm | |
| Device height | 80.0 mm | |
| Device width | 35 mm (2TE), 70 mm (4TE) | |
| Device width | Quick fastening with two lock-in positions on DIN rail IEC/EN 60715 | |
| Degree of protection, built-in | IP40 | |
| Degree of protection in moisture-proof enclosure | IP54 | |
| Upper and lower terminals | Lift terminals | |
| Terminal protection | Finger and hand touch safe BGV A3, ÖVE-EN 6 | |
| Terminal capacity | 1.5–35 mm ² single-wire 2 x 16 mm ² multi-wire | |
| Busbar material thickness | 0.8–2 mm | |
| Tripping temperature | –25°C to +60°C | |
| Resistance to climatic conditions | According to IEC 61008 | |
| Humidity | 5–95% | |

Connection Diagram



Impact of Ambient Temperature on the Maximum Permanent Current Allowed (A)

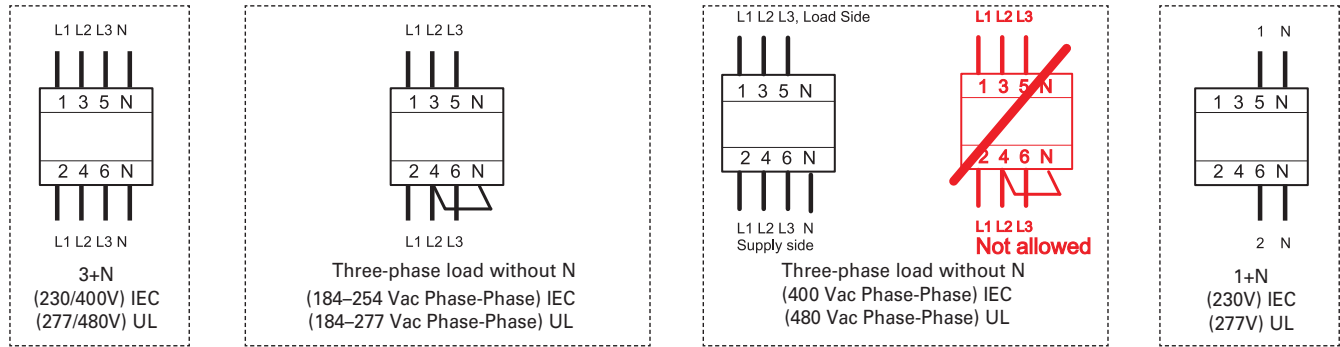
| Tripping Temperature | 16A | | 25A | | 40A | | 63A | |
|----------------------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| | Two-Pole | Four-Pole | Two-Pole | Four-Pole | Two-Pole | Four-Pole | Two-Pole | Four-Pole |
| 40°C | 16 | 16 | 25 | 25 | 40 | 40 | 63 | 63 |
| 45°C | 14 | 14 | 21 | 22 | 37 | 37 | 59 | 59 |
| 50°C | 11 | 11 | 18 | 19 | 33 | 34 | 55 | 55 |
| 55°C | 9 | 9 | 14 | 16 | 30 | 31 | 50 | 50 |
| 60°C | ① | — | — | — | 26 | 27 | 45 | 45 |

Notes

① Do not use.

Please make sure that these values are not exceeded and that any upstream overload protection switches off in time.

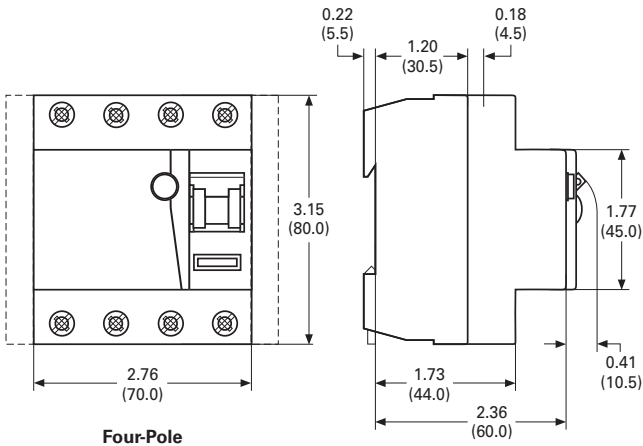
Correct Connection



Dimensions

Approximate Dimensions in Inches (mm)

UL 1053 DIN Rail RCCB



Accessories Technical Data

| Description | Z-NHK | Z-IHK-NA |
|--|---|---|
| Electrical | | |
| Contact function | 2CO | 1NO + 1NC |
| Rated voltage | 230V | 250V |
| Frequency | 50/60 Hz | 50/60 Hz |
| Rated current | 2A | 6A |
| Rated thermal current I_{th} | 2A | 6A |
| Utilization category AC13 Rated operational current I_b | 3A/250 Vac | 3A/250 Vac |
| Utilization category AC15 Rated operational current I_b | 2A/250 Vac | 2A/250 Vac |
| Utilization category DC12 Rated operational current I_b | 0.5A/110 Vdc | 0.5A/110 Vdc 0.25A/220 Vdc |
| Rated insulation voltage U_i | 250 Vac | 250 Vac |
| Minimum operational voltage per contact U_{min} | 5 Vdc | 5 Vdc |
| Minimum operational current I_{min} | 10 mA DC | 10 mA AC/DC |
| Rated peak withstand voltage U_{imp} (1.2/50 μ) | 2.5 kV | 4 kV |
| Conditional short-circuit current I_k with backup fuse 6A | 1 kA | 1 kA |
| Maximum backup fuse, overload and short circuit | 6A gL | — |
| Mechanical | | |
| Tripping indicator "electrical tripping" | Blue/white | — |
| Frame size | 45 mm | 45 mm |
| Device height | 80 mm | 80 mm |
| Device width | 8.8 mm (0.5MU) | 8.8 mm (0.5MU) |
| Mounting | Onto switching device | — |
| Degree of protection, built-in | IP40 | IP40 |
| Terminal protection | Finger and hand touch safe According to BGV A3, ÖVE-EN 6 | Finger and hand touch safe According to BGV A3, ÖVE-EN 6 |
| Terminals | Lift terminals | Lift terminals |
| Terminal capacity | 20–14 AWG | 0.5–2.5 mm ² |
| Terminal screws | M3 (Posidrive Z0) | M3 (Posidrive Z0) |
| Fastening torque of terminal screws | 7 lb-in maximum | 1.2 Nm |

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