

Engine Generator Circuit Breakers

Engine Generator Circuit Breakers



Molded Case Circuit Breakers

| | |
|---|---|
| Product Description | 2 |
| Application Description | 2 |
| Standards and Certifications | 2 |
| Technical Data and Specifications | 2 |
| Catalog Number Selection | 3 |
| Product Selection | 4 |
| Accessories | 6 |
| Breaker Dimensions | 9 |

Engine Generator Circuit Breakers

Molded Case Circuit Breakers

Engine Generator Circuit Breakers



Product Description

Eaton’s engine generator molded case circuit breakers are designed specifically for application on diesel engine powered standby generators where high interrupting circuit breakers are not required. The JG through NG breakers are equipped with a special trip unit, that includes standard thermal (overload) protection and special low magnetic pickup range (FG includes a fixed thermal-magnetic pickup). The standard thermal trip unit provides overload protection for conductors per the National Electrical Code®. The low magnetic pickup range is approximately two to five times the continuous rating and provides closer low-level short-circuit protection when applied on generators that have very low short-circuit capacity. This combination allows the user to customize the breaker to the generator output.

Application Description

Engine generator circuit breakers are suitable for reverse feed application.

Standards and Certifications

Engine generator molded case circuit breakers are designed to conform with the following standards:

- Underwriters Laboratories Standard UL 489, Molded Case Circuit Breakers and Circuit Breaker Enclosures File E7819
- Canadian Standards Association Standard C22.2 No. 5, Service Entrance and Branch Circuit Breakers
- International Electrotechnical Commission Recommendations IEC 947-2, Circuit Breakers



Conformance with these standards satisfies most local and international codes, assuming user acceptability and simplified application.

Technical Data and Specifications

UL 489 Interrupting Capacity Ratings

| Volts AC (50/60 Hz) | Interrupting Capacity (Symmetrical Amperes) |
|------------------------|--|
| 240 | 18,000 |
| 480 | 14,000 |
| 600 | 10,000 |

IEC 947-2 Interrupting Capacity Ratings

| Volts AC (50/60 Hz) | Interrupting Capacity (Symmetrical Amperes) I_{cu}/I_{cs} |
|------------------------|---|
| 220, 240 | 18,000/9,000 |
| 380, 415 | 14,000/7,000 |
| 660, 690 | 18,000/9,000 14,000/7,000 10,000/5,000 |

Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers.

- FG breakers include both line and load side terminals

- JG, KG, LG and NG breakers with **W** catalog number suffix do not include any terminals
- JG, KG, LG and NG breakers without **W** catalog number suffix include both line and load terminals

- Contact Eaton for additional ratings and internal/external accessories
- Accessories shown for F-Frame have a quick ship availability

Circuit Breakers FG, JG, KG, LG and NG

| FG 3 100 W A06 | | | | |
|----------------|-----------------|--------------|--|--|
| Frame | Number of Poles | Trip Amperes | | |
| FG | 3 = Three-pole | 015 | Suffix W = Without terminals Blank = Terminals included | |
| | | 020 | | |
| | | 025 | Accessory ^① A06 = 1A-1B A13 = 2A-2B B06 = 1 Mk-1 Brk C05 = 1A-1B/Mk Brk S02 = 12-24 Vac S06 = 48-127 Vac S18 = 12-24 Vac S22 = 48-127 Vac N02 = 24 Vdc U14 = 110-127 Vdc | |
| | | 030 | | |
| | | 035 | | |
| | | 040 | | |
| | | 045 | | |
| | | 050 | | |
| | | 060 | | |
| | | 070 | | |
| | | 080 | | |
| | | 090 | | |
| | | 100 | | |
| | | 125 | | |
| | | 150 | | |
| | | 175 | | |
| | | 200 | | |
| | | 225 | | |
| JG | | 175 | | |
| | | 200 | | |
| | | 225 | | |
| | | 250 | | |
| KG | | 300 | | |
| | | 350 | | |
| | | 400 | | |
| LG | | 450 | | |
| | | 500 | | |
| | | 600 | | |
| NG | | 700 | | |
| | | 800 | | |
| | | 900 | | |
| | | 1000 | | |
| | | 1200 | | |

^① Accessories shown are for common F-Frame only; other configurations are available. See catalog for other frame sizes.

Engine Generator Circuit Breakers

Molded Case Circuit Breakers

Product Selection

The following table lists FG through NG engine generator breakers with the maximum generator kVA and kW rating. Engine generator breakers are applied at 115% of the

generator full load current rating (FLA). The maximum kW rating is based on three-phase generators at 80% power factor.

Breakers shown below include line and load terminals.

Thermal-Magnetic

| Magnetic Pickup Range | Maximum Generator Rating 60 Hz | | 480 Vac | | 600 Vac | | Engine Generator Breaker ^③ |
|-----------------------|--------------------------------|-----------------|------------------|-----------------|------------------|-----------------|---------------------------------------|
| | 240 Vac kVA ^① | kW ^② | kVA ^① | kW ^② | kVA ^① | kW ^② | Catalog Number |
| Fixed | 5 | 4 | 11 | 9 | 14 | 11 | FG3015 |
| Fixed | 7 | 6 | 14 | 12 | 18 | 14 | FG3020 |
| Fixed | 9 | 7 | 18 | 14 | 23 | 18 | FG3025 |
| Fixed | 11 | 9 | 22 | 17 | 27 | 22 | FG3030 |
| Fixed | 13 | 10 | 25 | 20 | 32 | 25 | FG3035 |
| Fixed | 14 | 12 | 29 | 23 | 36 | 29 | FG3040 |
| Fixed | 16 | 13 | 32 | 26 | 41 | 32 | FG3045 |
| Fixed | 18 | 14 | 36 | 29 | 45 | 36 | FG3050 |
| Fixed | 22 | 17 | 43 | 35 | 54 | 43 | FG3060 |
| Fixed | 25 | 20 | 51 | 40 | 63 | 51 | FG3070 |
| Fixed | 29 | 23 | 58 | 46 | 72 | 58 | FG3080 |
| Fixed | 32 | 26 | 65 | 52 | 81 | 65 | FG3090 |
| Fixed | 36 | 29 | 72 | 58 | 90 | 72 | FG3100 |
| Fixed | 40 | 32 | 79 | 64 | 99 | 79 | FG3110 |
| Fixed | 45 | 36 | 90 | 72 | 113 | 90 | FG3125 |
| Fixed | 54 | 43 | 108 | 87 | 135 | 108 | FG3150 |
| Fixed | 63 | 51 | 126 | 101 | 158 | 126 | FG3175 |
| Fixed | 72 | 58 | 144 | 116 | 181 | 144 | FG3200 |
| Fixed | 81 | 65 | 162 | 130 | 203 | 162 | FG3225 |
| 350–700 | 63 | 51 | 126 | 101 | 158 | 126 | JG3175 |
| 350–700 | 72 | 58 | 144 | 116 | 181 | 144 | JG3200 |
| 350–700 | 81 | 65 | 162 | 130 | 203 | 162 | JG3225 |
| 350–700 | 90 | 72 | 181 | 144 | 226 | 181 | JG3250 |
| 500–1000 | 108 | 87 | 217 | 173 | 271 | 217 | KG3300 |
| 500–1000 | 126 | 101 | 253 | 202 | 316 | 253 | KG3350 |
| 1000–2000 | 144 | 116 | 289 | 231 | 361 | 289 | KG3400 |

Notes

① Breaker continuous current is based on 115% of the generator full load ampere rating.

② Based on three-phase generators at 80% power factor.

③ FG, JG, KG include thermal-magnetic trip units; LG and NG include electronic trip units.

The following catalog numbers have center tap studs for dual voltage applications: JG3070CT, JG3100CT, JG3125CT, KG3175CT, LG3300CTW.

Electronic

| Magnetic Pickup Range | Maximum Generator Rating 60 Hz | | | | | | Engine Generator Breaker ^③ |
|-----------------------|--------------------------------|-----------------|-----------------------------|-----------------|-----------------------------|-----------------|---------------------------------------|
| | 240 Vac kVA ^① | kW ^② | 480 Vac kVA ^① | kW ^② | 600 Vac kVA ^① | kW ^② | Catalog Number |
| 500–2500 | 162 | 130 | 325 | 260 | 406 | 325 | LG3450 ^④ |
| 500–2500 | 181 | 144 | 361 | 289 | 451 | 361 | LG3500 ^④ |
| 500–2500 | 217 | 173 | 433 | 347 | 542 | 433 | LG3600 ^④ |
| 500–2500 | 253 | 202 | 505 | 404 | 632 | 505 | NG3700 ^④ |
| 500–2500 | 289 | 231 | 578 | 462 | 722 | 578 | NG3800 ^④ |
| 1250–5000 | 325 | 260 | 650 | 520 | 812 | 650 | NG3900 ^④ |
| 1250–5000 | 361 | 289 | 722 | 578 | 903 | 722 | NG31000 ^④ |
| 1250–5000 | 433 | 347 | 867 | 693 | 1083 | 867 | NG31200 ^④ |

Notes

- ① Breaker continuous current is based on 115% of the generator full load ampere rating.
- ② Based on three-phase generators at 80% power factor.
- ③ FG, JG, KG include thermal-magnetic trip units; LG and NG include electronic trip units.
- ④ Breaker includes line and load terminals.

The following catalog numbers have center tap studs for dual voltage applications: JG3070CT, JG3100CT, JG3125CT, KG3175CT, LG3300CTW.

Engine Generator Circuit Breakers

Molded Case Circuit Breakers

Accessories Selection Guide and Ordering Information

Enclosures

Type 1 General Purpose

- Surface or flush mounting
- 15–1200 ampere range
- 600 Vac, 500 Vdc

Type 1 enclosed breakers are designed for use in commercial buildings, apartment buildings and other areas where a general purpose enclosure is applicable. The breaker is front operable and is capable of being padlocked in either the ON or OFF position. Ratings through 1200 amperes are listed with Underwriters Laboratories as approved for service entrance application. Both surface and flush mounted enclosures are available.

Type 12 Dustproof Surface Mounting

- No knockouts or other openings
- 15–1200 ampere range
- 600 Vac, 500 Vdc

The Type 12 enclosure is designed in line with specifications for special industry applications where unusually severe conditions involving oil, coolant, dust and other foreign materials exist in the operating atmosphere. The handle padlocks in the OFF position and the cover is interlocked with the handle mechanism to prevent opening the cover with the circuit breaker in the ON position. Ratings through 1200 amperes are listed by Underwriters Laboratories as suitable for service entrance application.

Type 3R Rainproof Surface Mounting

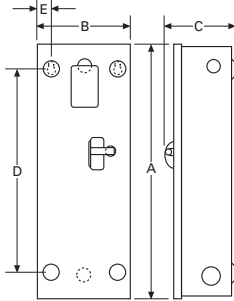
- Interchangeable hubs (through 400 amperes)
- 15–1200 ampere range
- 600 Vac, 500 Vdc

This general purpose outdoor service center employs a circuit breaker inside a weatherproof sheet steel breaker enclosure to serve as a main disconnect and protective device for feeder circuits. Ratings through 1200 amperes are listed by Underwriters Laboratories as suitable for service entrance application.

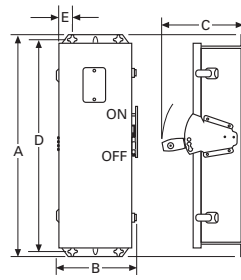
Enclosure Selection Data

| Breaker Frame Amperes | Enclosure Type Class | A | B | C | D | E | Approx. Weight Lbs (kg) | Conduit Sizes, Inches | Catalog Number |
|-----------------------|----------------------|----------------|---------------|---------------|----------------|-------------|-------------------------|--|----------------|
| FG 15–225 | Type 1 | 23.25 (590.6) | 8.41 (213.6) | 6.28 (159.5) | 18.75 (476.3) | 1.20 (30.5) | 15 (7) | 0.25, 0.50, 0.75, 1, 1.25, 1.50, 2, 2.50 | SFDN225 |
| | Type 3R | 25.66 (651.8) | 8.84 (224.7) | 9.31 (236.5) | 24.28 (616.7) | 1.70 (43.2) | 19 (9) | 0.25, 0.50, 0.75, 1, 1.25, 1.50, 2, 2.50 | RFDN225 |
| | Type 12 | 25.66 (651.8) | 8.84 (224.7) | 9.31 (236.5) | 24.28 (616.7) | 1.70 (43.2) | 18 (8) | — | JFDN225 |
| JG 175–250 | Type 1 | 34.70 (881.4) | 10.92 (277.4) | 7.20 (182.9) | 30.00 (762.0) | 1.88 (47.8) | 31 (14) | 0.25, 0.50, 2, 2.50, 3 | SJDN250 |
| | Type 3R | 37.50 (952.5) | 11.56 (293.6) | 10.22 (259.6) | 35.77 (908.6) | 1.94 (49.3) | 40 (18) | 0.25, 0.50, 2, 2.50, 3 | RJDN250 |
| | Type 12 | 37.53 (953.3) | 11.56 (293.6) | 10.22 (259.6) | 35.77 (908.6) | 1.94 (49.3) | 37 (17) | — | JJDN250 |
| KG 300–400 | Type 1 | 38.81 (985.8) | 11.06 (280.9) | 10.94 (277.9) | 34.00 (863.6) | 2.28 (57.9) | 53 (24) | 0.25, 0.50, 0.75, 1.50, 2, 2.50, 3, 3.50 | SKDN400 |
| | Type 3R | 41.69 (1058.9) | 11.75 (298.5) | 14.06 (357.1) | 39.90 (1013.5) | 1.97 (50.0) | 60 (27) | 0.25, 0.50, 0.75, 2.50, 3, 3.50 | RKDN400 |
| | Type 12 | 41.69 (1058.9) | 11.75 (298.5) | 14.06 (357.1) | 39.90 (1013.5) | 1.97 (50.0) | 53 (24) | — | JKDN400 |
| LG 450–600 | Type 1 | 45.88 (1165.4) | 14.31 (363.5) | 12.38 (314.5) | 46.56 (1182.6) | 1.91 (48.5) | 81 (37) | 0.25, 0.50, 0.75, 3, 3.50, 4 | SLDN600 |
| | Type 3R | 48.31 (1227.1) | 14.91 (378.7) | 15.50 (393.7) | 46.56 (1182.6) | 1.92 (48.8) | 84 (38) | 0.25, 0.50, 0.75, 3, 3.50, 4 | RLDN600 |
| | Type 12 | 48.31 (1227.1) | 14.91 (378.7) | 15.50 (393.7) | 46.56 (1182.6) | 1.92 (48.8) | 81 (37) | — | JLDN600 |
| NG 700–1200 | Type 1 | 61.22 (1555.0) | 21.44 (544.6) | 15.41 (391.4) | 61.84 (1570.7) | 1.97 (50.0) | 178 (81) | — | SNDN1200 |
| | Type 3R | 63.59 (1615.2) | 22.00 (558.8) | 17.63 (447.8) | 61.84 (1570.7) | 1.97 (50.0) | 175 (79) | — | RNDN1200 |
| | Type 12 | 63.59 (1615.2) | 22.00 (558.8) | 17.63 (447.8) | 61.84 (1570.7) | 1.97 (50.0) | 170 (77) | — | JNDN1200 |

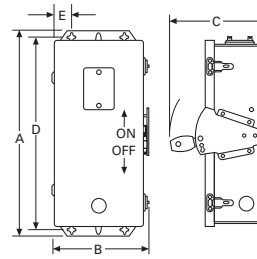
Type 1 Surface Mounted



Type 3R Rainproof



Type 12, 12K Dustproof



Enclosures, continued

Neutral Kits, Insulated and Groundable

| Max. Enclosure Rating (Amperes) | Main Lug Number Size Cu/Al | Ground Lug Size Cu/Al | Catalog Number |
|---------------------------------|---|--------------------------|----------------|
| 100 | (1) 14-1/0 | (1) 14-1/0 | INK100 |
| 250 | (1) 6-350 kcmil | (1) 4-300 kcmil | INK250 |
| 400 | (1) 4-750 kcmil or (2) 1/0-250 kcmil | (1) 4-300 kcmil | INK400 |
| 600 | (2) 250-500 kcmil | (1) 4-300 kcmil | INK600 |
| 1200 | (3) 1/0 to 750 kcmil or (4) 1/0 to 750 kcmil | (1) 6-250 kcmil | INK1200 |

Engine Generator Circuit Breakers

Molded Case Circuit Breakers

Options and Accessories

Internal Accessories

Standard Terminals

| Breaker Frame | Max. Amp Rating | AWG Wire Range | Metric Wire Range mm ² | Catalog Number |
|---------------|-----------------|-------------------|-----------------------------------|----------------|
| FG | 100 | 14–1/0 | 2.5–50 | 3T100FB ① |
| FG | 150 | 4–4/0 | 25–95 | 3TA225FD ① |
| JG | 250 | 4–350 kcmil | 25–185 | TA250KB |
| KG | 350 | 250–500 kcmil | 120–240 | TA350K |
| KG | 400 | 3/0–250 kcmil (2) | 95–120 | 3TA400K ① |
| LG | 600 | 250–500 kcmil (2) | 120–240 | 3TA603LDK |
| NG | 700 | 1–500 kcmil (2) | 50–300 | TA700NB1 |
| NG | 1000 | 3/0–400 kcmil (3) | 95–185 | TA1000NB1 |
| NG | 1200 | 4/0–500 kcmil (4) | 120–300 | TA1200NB1 |

Optional Terminals

| Breaker Frame | Max. Amp Rating | AWG Wire Range | Z Suffix (Line and Load Terminals) | Catalog Number |
|---------------|-----------------|-------------------|------------------------------------|----------------|
| FD, FG | 100 | 14–1/0 | LZ04 | 3T100FB |
| | 225 | 4–4/0 | LZ05 | 3TA225FD |
| JD, JG | 250 | 4–350 kcmil | N/A | TA250KB |
| KD, KG | 225 | (1) 3–350 kcmil | Z01 | TA300K |
| | 350 | (1) 250–500 kcmil | Z02 | TA350K |
| | 400 | (2) 3/0–250 kcmil | Z04 | 3TA400K |
| LD, LG | 400 | (1) 4/0–600 kcmil | Z12 | 3TA401LDK |
| | 450 | (2) 4–4/0 | Z22 | TA450LD |
| | 500 | (2) 3/0–350 | Z01 | TA602LD |
| | 600 | (2) 400–500 kcmil | Z04 | 3TA603LDK |
| ND, NG | 700 | (2) 1–500 kcmil | Z01 | TA700NB1 |
| | 1000 | (3) 3/0–400 kcmil | Z02 | TA1000NB1 |
| | 1200 | (4) 4/0–500 kcmil | Z04 | TA1200NB1 |
| | 1200 | (3) 500–750 kcmil | Z03 | TA1201NB1 |

Auxiliary Switch ②

| Breaker Frame | Factory Mounted | 1A-1B Field Kit Catalog Number | Factory Mounted | 2A-2B Field Kit Catalog Number |
|---------------|-----------------|--------------------------------|-----------------|--------------------------------|
| FG ③ | A06 | A1X1PK | A13 | A2X1RPK |
| JG | A06 | A1X2PK | A13 | A2X2PK |
| KG | A06 | A1X3PK | A13 | A2X3PK |
| LG | A06 | A1X4PK | A13 | A2X4PK |
| NG | A06 | A1X5PK | A13 | A2X5PK |

Shunt Trip ②

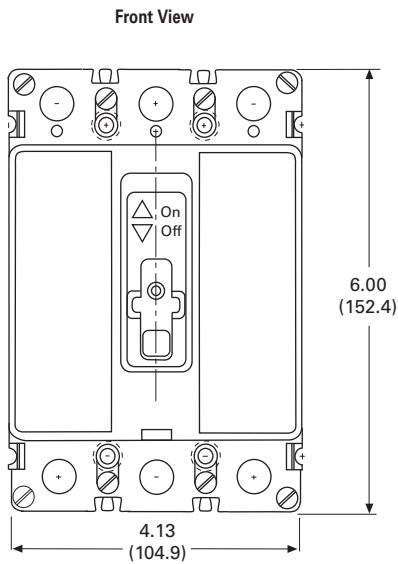
| Breaker Frame | Rating | Factory Mounted | Field Kit Catalog Number |
|---------------|-----------|-----------------|--------------------------|
| FG ③ | 12–24 Vdc | S02 | SNT1LP03K |
| JG | 12–24 Vdc | S42 | SNT2P04K |
| KG | 12–24 Vdc | S42 | SNT3P04K |
| LG | 12–24 Vdc | S02 | SNT4LP03K |
| NG | 12–24 Vdc | S02 | SNT5LP03K |

Notes

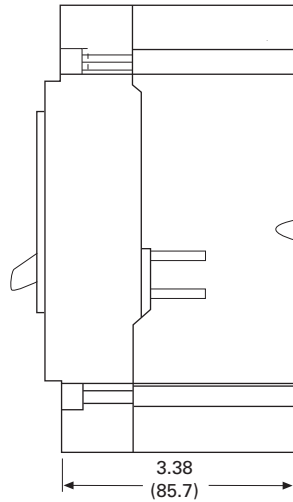
- ① Package of three terminals.
- ② Other accessories are available. Same as standard frame breakers.
- ③ Field installation on the FG Frame is not UL listed.

Breaker Dimensions

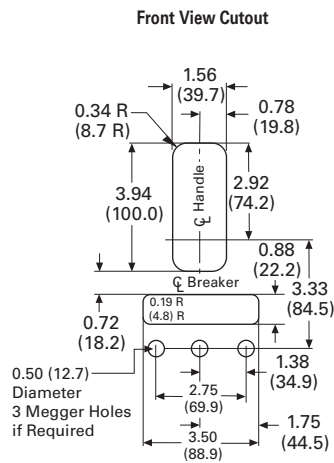
FG-Frame, Three-Pole



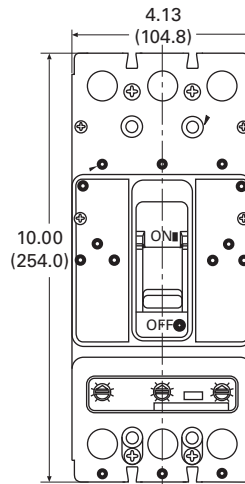
Side View



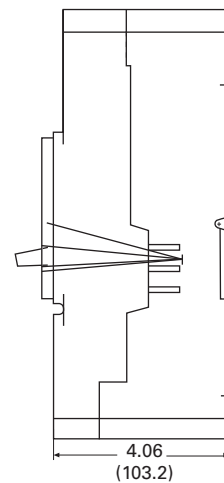
JG-Frame, Three-Pole



Front View



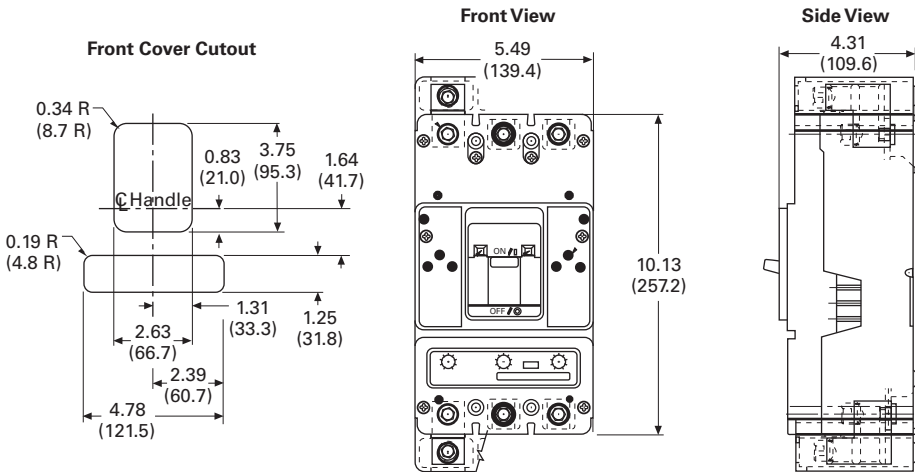
Side View



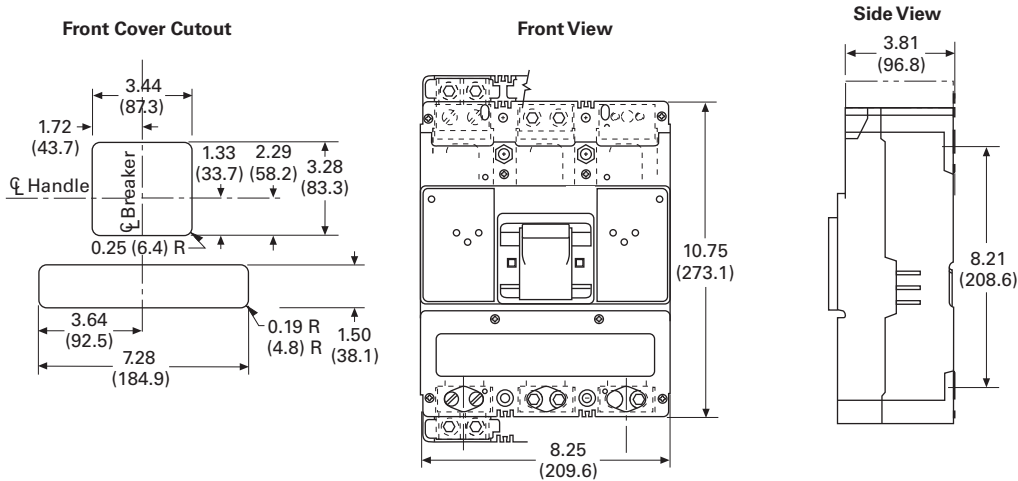
Engine Generator Circuit Breakers

Molded Case Circuit Breakers

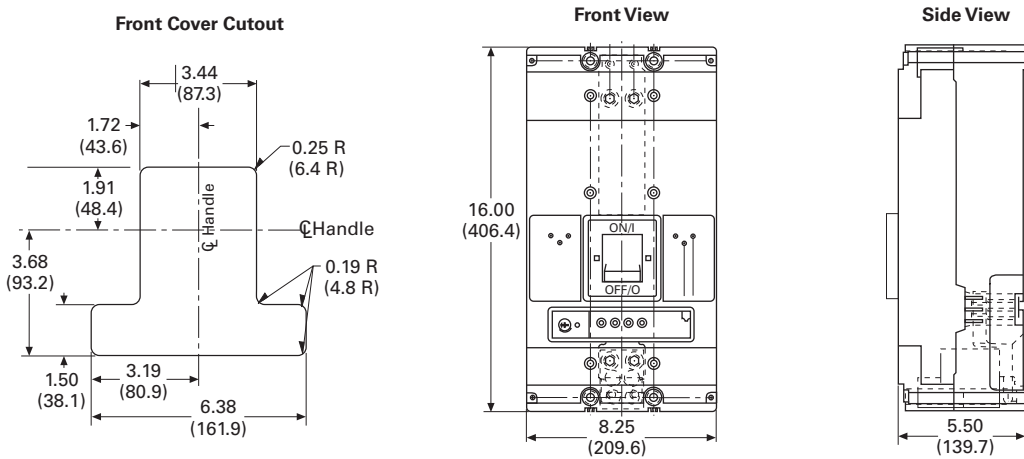
KG-Frame, Two- and Three-Pole



LG-Frame, Two- and Three-Pole



NG-Frame, Two- and Three-Pole



Eaton's Electrical Sector is a global leader in power distribution, power quality, control and automation, and monitoring products. When combined with Eaton's full-scale engineering services, these products provide customer-driven PowerChain™ solutions to serve the power system needs of the data center, industrial, institutional, public sector, utility, commercial, residential, IT, mission critical, alternative energy and OEM markets worldwide.

PowerChain solutions help enterprises achieve sustainable and competitive advantages through proactive management of the power system as a strategic, integrated asset throughout its life cycle, resulting in enhanced safety, greater reliability and energy efficiency. For more information, visit www.eaton.com/electrical.

Eaton Corporation

Electrical Sector
1111 Superior Ave.
Cleveland, OH 44114
United States
877-ETN-CARE (877-386-2273)
Eaton.com

©2011 Eaton Corporation
All Rights Reserved
Printed in USA
Publication No. CA01214001E / Z10660
June 2011



Eaton is a registered trademark of Eaton Corporation.

All other trademarks are property of their respective owners.