

What's **new** in molded case circuit breakers:

The Siemens GG circuit breaker is a compact, industrial design thermal magnetic breaker with valuable features for the global markets. These features include a design that meets multi-national standards, is suitable for DIN rail or base mounting without the need for adapters, and includes UL listed field installable accessories. The GG also has an over center toggle mechanism that is trip free and uses repulsion contact arm construction. Therefore, should a short circuit or tripping condition occur, the contacts are forced apart and the breaker cannot be held closed by means of the handle.



The New Siemens QR Circuit Breaker

Implemented in load centers, panelboards, switchboards, meter centers, and modular metering, the new QR breaker is the same form-factor/mounting as QJ breaker for easy retrofit.

Design enhancements include:

- Trip unit ratings from 100A to 250A.
- Field installable internal accessories – shunt trip, aux switch or shunt/aux combo.
- Two accessory pockets in 3-pole breakers. One accessory pocket in 2-pole breakers.
- High in-rush current capability (450%).
- Push-to-trip button.



BOD and NGB, HGB, LGB handle ties are now released for use where single pole breakers are using shared neutrals and must be locked out simultaneously.

The **Dual Function Circuit Breaker** combines GFCI and AFCI, protecting against both Arc Faults and Ground Faults. This, along with the new Self-Test & Lockout feature, makes it the first in class in electrical safety for homeowners.

- Faster Installation
- Cost savings
- Smaller Device
- Self Test & Lockout feature as required by UL 943 effective June 2015



The development of **VL Circuit Breaker enclosures** for the 150A and 250A breakers demonstrates a significant enhancement of the Siemens product offering. The fundamental objective of this family of enclosures is to reduce installation cost of the breaker, as well as reducing the space required for low amperage breaker enclosures.

Ordering

In the FD through RD frames, you may order molded case circuit breakers three basic ways:

- As separately ordered frames, trip units and lugs
- As frame, trip unit and lugs ordered as one catalog number and shipped unassembled or assembled
- As Frame and Trip Unit shipped assembled and with the trip unit made non-removable, in compliance with UL 489 requirements that to be reverse fed the circuit breaker must not have an interchangeable trip unit.

These two options are described in the following:

Components Ordered Separately

To get the components for a 3-pole, 400 Amp standard interrupting circuit breaker, you would order the frame (JD63F400), the trip unit (JD63T400) and six lugs (TA2J6500). This option is normally useful only if you stock and use large volumes of product and wish to reduce your inventory cost. You may stock, for example, a smaller number of frames (JD63F400) and a variety of trip units (JD63T300, JD63T350, etc.) and assemble breakers as you need them.

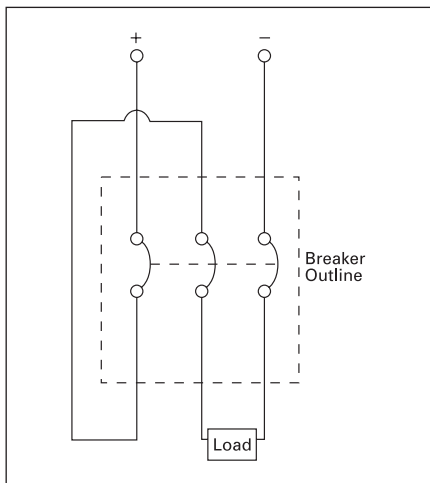
Frame, Trip Unit and Lugs Ordered Together

If you order the catalog number JD63B400, you will receive a frame, a trip unit and 6 lugs in separate packages. By suffixing this number with "L" (e.g. JD63B400L), you will receive frame, trip unit and lugs assembled in one container. Pursuant to UL 489, a product ordered thus will have the markings "LINE" and "LOAD", and may not be "reverse fed" (with power flowing from the "OFF" end of the breaker toward the "ON" end).

Non-Interchangeable Trip Breakers

If you place an "X" after the frame size designator (e.g. JXD63B400), you will receive a frame and trip unit assembled, with the trip unit made non-removable. If you suffix an "L" to this catalog number (e.g. JXD63B400L), you will receive the breaker, non-removable trip unit and lugs assembled. Unless you anticipate a specific need to change the breaker's ampere rating in the future, this is the preferred ordering method, as the products are assembled to Siemens' specifications in our factories. These breakers are suitable for use reverse fed according to UL 489, since the trip unit is not removable.

The smaller frames (QJ, ED and below) do not have removable trip units, and consequently are shipped only as assembled products. To add lugs, see the ordering instructions on each product's catalog page.

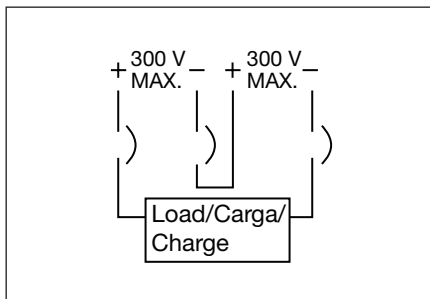


500V DC Wiring Configuration

Connecting Breakers for DC Application

Most Siemens thermal magnetic trip MCCBs are applicable on direct current (dc) systems. Generally, for 250 V dc systems a two pole breaker is used, with one pole on each leg of the supply circuit. For three pole breakers applied on 500 V undergrounded DC systems, it is important to connect the power supply "zig-zag" through the breaker as shown in the figure below. This assures that the Voltage between phases on the breaker terminals is uniformly distributed.

See below for an alternative connection diagram. For a list of Sentron breakers with the DC ratings, please refer to pages 7-11 to 7-16.



Molded Case Circuit Breakers

Federal Specification Classification

Reference

W-C-375C/GEN

Class	Interrupting Rating		Poles	Range of Current Trip [®]	Breaker Type (All Circuit Breakers Meet or Exceed the Indicated Class Level)
	Symmetrical Amperes ^①	Volts AC 60HZ			
10a ^②	5,000	120/240	1 or 2	15–100	QP, BQ, QT, BL
10b	5,000	240	2 or 3	15–100	QP, BQ, BQD, CQD, BL
11a	7,500	120	1	15–100	QP, BQ, BQD, CQD, BL
11b	7,500	240	2 or 3	15–100	QP, BQ, BQD, CQD, BL
12a ^②	10,000	120/240	1 or 2	15–100	QP, BQ, QT, ED2, BL
12b	10,000	240	2 or 3	15–225	QP, BQ, QJ2, ED2, BQD, CQD, BL
12c	10,000	277	1	15–100	BQD, CQD, NGG, NGB, NEG, NEB
13a	14,000	277	1	15–100	ED4, BQD, CQD, NGG, NGB, NEG, NEB
13b	14,000	277/480	1, 2, or 3	15–100	ED4, BQD, CQD
14a	22,000	120/240	1 or 2	15–100	QPH, BQH, BLH
14b	22,000	240	2 or 3	70–400	QJH2, QJ2-H, BQH, BQD, CQD, BLH
15a	65,000	120/240	1 or 2	15–100	HQP, HBQ, ED4, HED4, NGG, NGB
15b	65,000	240	2 or 3	15–225	ED6, ED4, FXD6, FD6, HED4, BQD, CQD, HQJ2H, NGG, NGB, NEG, NEB
16a	100,000	480	2 or 3	15–225	CFD6, CED6
16b	100,000	600	2 or 3	15–600	CED6, CFD6, CJD6, SCJD6, CLD6, SCLD6
17a	200,000	600	2 or 3	70–2000	—
18a	18,000 14,000 14,000	240 480 600	2 or 3	15–125	ED6, HED6, HHED6
19a	22,000 18,000 14,000	240 480 600	2 or 3	70–225	FXD6, FD6, CFD6, HFD6
20a	25,000 22,000 22,000	240 480 600	2 or 3	70–225	FXD6-A, FD6-A, CFD6, HFD6
21a	42,000 30,000 22,000	240 480 600	2 or 3	70–800	HFD6, CFD6, JXD6(A), JD6(A), SJD6(A), HJD(A), HJXD6(A), HHJD6, SHJD6(A), CJD6, SCJD6, LXD6(A), LD6(A), SLD6(A), HLD6(A), HLXD6(A), HHL6(A), SHLD6(A), SHLD6(A), CLD6, SCLD6, LMD6, LMXD6, HLMD6, HLMXD6, MD6, MXD6, SMD6, HMD6, HMXD6, SHMD6, CMD6, SCMD6
22a	65,000 25,000 18,000	240 480 600	2 or 3	15–125	CED6, ED6, HED6, HHED6, FXD6-A, FD6-A
23a	65,000 35,000 25,000	240 480 600	2 or 3	70–1200	HHED6, FXD6-A, FD6-A, HFD6, HHFD6, CFD6, JD6(A), JXD6(A), SJD6(A), HJD6(A), HJXD6(A), SHJD6(A), HHJD6, HHJXD6, CJD6, SCJD6, LXD6(A), LD6(A), SLD6(A), HLD6(A), HLXD6(A), SHLD6(A), HHL6(A), HHLXD6, CLD6, SCLD6, LMD6, LMXD6, HLMD6, HLMXD6, MD6, MXD6, SMD6, HMD6, HMXD6, SHMD6, CMD6, SCMD6, ND6, NXD6, SND6, HND6, HNXD6, SHND6, CND6, SCND6
24a	65,000 50,000 42,000	240 480 600	2 or 3	1200–2000	PD6, PXD6, HPD6, HPXD6, CPD6, RD6, RXD6, HRD6, HRXD6, SPD6, SHPD6
25a	125,000 80,000 60,000	240 480 600	2 or 3	600–4000	HHL6, CLD6, CMD6, CND6, SCLD6, SCMD6, SCND6, CPD6

Applicable Standards

UL489 — Molded Case Circuit Breakers and Circuit Breaker Enclosures.

UL486A — Wire Connectors and Solderless Lugs for use with copper wire

UL486B — Wire Connectors and Solderless Lugs for use with aluminum wire

UL943 — Ground Fault Interrupters (for personnel protectors)

UL1087 — Molded Case Switches

UL50 — Cabinets and Boxes

UL869 — Service Equipment

NEMA AB-1 — Molded Case Circuit Breakers and Molded Case Switches

CSA-C22.2 No. 5, C22.2 No. 14

Note:

- (A) Molded case circuit breakers are designed and tested in accordance to applicable portions of UL489 and meet application requirements of the National Electric Code. Unless marked otherwise, circuit breakers are 80% duty rated.
(B) Molded case circuit breakers are to be connected with 60 or

75°C wire for circuit breakers having a rated ampacity of 100 amperes or less. Circuit breakers having a rated ampacity greater than 100 amperes shall only be cabled with 75°C cable unless otherwise indicated on the circuit breaker label. Exceptions to this rule are outlined in the article 110-14 C(1)(2) of the 2005 National Electric Code.

- ① Interrupting ratings are not limited to the values or groups of values listed. However, the values listed are minimum values for the class specified.
② Single-unit or duplex construction must be specified.
③ Use minimum frame size for ampere rating.

Sentron Molded Case Circuit Breakers

If used on 250A frame and above means non-interchangeable trip breaker with factory assembled frame and trip. Solid state trip and current limiting (S or C in first character) are non-interchangeable only, and the "X" is omitted.



Trip Unit Type

- Omitted — Thermal-Magnetic
- S — Sensitrip® Electronic Trip

Sentron Series Type/Interrupting Range

- Omitted — Standard Rating
- H — High IC Rating
- HH — Extra High IC Rating
- C — Highest IC Rating and Current Limiting

Frame Identifier

- E — Type ED
- F — Type FD
- J — Type JD
- L — Type LD
- LM — Type LMD
- M — Type MD
- N — Type ND
- P — Type PD
- R — Type RD

Maximum Voltage

- 2 — 240 Vac
- 4 — 480 Vac
- 6 — 600 Vac

Number of Poles

- 1
- 2
- 3
- 9 used to indicate the max. functions for an electronic trip circuit breaker (always 3 poles)

(Specific Application Type)

- B — Standard 40°C Breaker
- M — Calibrated for 50°C Application
- F — Frame Only
- T — 40°C Trip Unit Only
- W — 50°C Trip Unit Only
- S — Molded Case Switch
- L — Low Instantaneous Range ETI Breaker
- A — Standard Range ETI Breaker
- H — High Instantaneous Range ETI Breaker

Maximum Continuous Current Rating

- ED Frame — 015, 020, 025, 030, 035, 040, 045, 050, 060, 070, 080, 090, 100, 110, 125
- FD Frame — 070, 080, 090, 100, 110, 125, 150, 175, 200, 225, 250
- JD Frame — 200, 225, 250, 300, 350, 400
- LD Frame — 250, 300, 350, 400, 450, 500, 600
- LMD Frame — 500, 600, 700, 800
- MD Frame — 500, 600, 700, 800
- ND Frame — 900, 100 (1000A), 120 (1200A)
- PD Frame — 120 (1200A), 140 (1400A), 160 (1600A)
- RD Frame — 160 (1600A), 180 (1800A), 200 (2000A)

Suffix

- L — where applicable indicates a breaker shipped with line/loads lugs installed
- A — used with a switch to show automatic self protection
- Y — 400 Hertz
- H — 100% rated
- P — Load side lugs only
- NAV — Navel Ratings

NOTE:

- Position omitted if not used.

Molded Case Circuit Breakers

Magnetic Trip Only — ETI Motor Circuit Protector

Selection

Breaker Type	Ampere Rating	Instantaneous Trip Range ^②		Complete Circuit Breaker Without Lugs ^③		
		Minimum ^③	Maximum ^③	Catalog Number 2-Pole	Catalog Number 3-Pole	
HEM	3	9	33	—	HEM3M003L	
	7	21	77	—	HEM3M007L	
	15	45	165	—	HEM3M015L	
	30	90	330	—	HEM3M030L	
	50	150	550	—	HEM3M050L	
	70	210	770	—	HEM3M070L	
	100	300	1100	—	HEM3M100L	
	SHIPPING:					3.7 lbs. each
ED6-A 600V AC 250V DC	1	2.6	9	—	ED63A001	
	2	7	22	—	ED63A002	
	3	10	35	—	ED63A003	
	5	16	54	—	ED63A005	
	10	30	100	—	ED63A010	
	25	55	180	—	ED63A025	
	30	80	270	—	ED63A030	
	40	115	375	—	ED63A040	
	50	180	600	—	ED63A050	
	100	315	1000	—	ED63A100	
	125	500	1250	—	ED63A125	
	SHIPPING:					3.8 lbs. each
	CED6-A 600V AC 250V DC	1	2.6	9	—	CED63A001■
2		7	22	—	CED63A002■	
3		10	35	—	CED63A003■	
5		16	54	—	CED63A005■	
10		30	100	—	CED63A010■	
25		55	180	—	CED63A025■	
30		80	270	—	CED63A030■	
40		115	375	—	CED63A040■	
50		180	600	—	CED63A050■	
100		315	1000	—	CED63A100■	
125	500	1250	—	CED63A125■		
SHIPPING:					6 lbs. each	
FXD6 ^④ 600V AC 250V DC	150	400	800	—	FXD63L150■	
	150	800	1500	—	FXD63A150	
	150	1100	2500	—	FXD63H150	
	250	1100	2500	—	FXD63A250	
SHIPPING:					9 lbs. each	
CFD6 ^④ 600V AC 250V DC	150	400	800	—	CFD63L150■	
	150	800	1500	—	CFD63A150■	
	150	1100	2500	—	CFD63H150■	
	250	1100	2500	—	CFD63A250■	
SHIPPING:					12 lbs. each	
JXD6(A) ^① 600V AC 250V DC	400	1250	2500	—	JXD63L400	
	400	2000	4000	JXD62H400■	JXD63H400	
SHIPPING:					16 lbs. each	
CJD6 ^① 600V AC 250V DC	400	1250	2500	—	CJD63L400■	
	400	2000	4000	—	CJD63H400■	
SHIPPING:					29.5 lbs. each	
LXD6(A) ^① 600V AC 250V DC	600	2000	4000	LXD62L600■	LXD63L600■	
	600	3000	6000	—	LXD63H600	
SHIPPING:					20 lbs. each	
CLD6 ^① 600V AC 250V DC	600	2000	4000	—	CLD63L600■	
	600	3000	6000	—	CLD63H600■	
SHIPPING:					31.5 lbs. each	
LMXD6 ^④ 600V AC 250V DC	800	2800	6000	—	LMXD63L800■	
	800	3200	8000	—	LMXD63A800	
SHIPPING:					35 lbs. each	
MXD6 ^④ 600V AC 250V DC	800	3000	6000	—	MXD63L800■	
	800	4000	8000	—	MXD63A800■	
	800	5000	10000	—	MXD63H800	
SHIPPING:					33 lbs. each	
CMD6 ^④ 600V AC 250V DC	800	3000	6000	—	CMD63L800■	
	800	4000	8000	—	CMD63A800■	
	800	5000	10000	—	CMD63H800■	
SHIPPING:					80 lbs. each	

Important Information

ETI interrupting ratings are determined through combination tests with properly sized overload relays and contactors.

③ Connectors included when ordering by circuit breaker catalog number for HEM, ED and CED6 ETIs. Order ETI circuit breaker and lugs (2 per pole) separately for the FXD6, CFD6, MXD6, CMD6, JXD6, CJD6, LXD6 and CLD6 ETI's.

■ Built to order. Allow 2-3 weeks for delivery.

① 2-pole available in 3-pole width only.

② When applied on DC Circuits — Trip levels will increase approximately +15 to 20%.

③ Tolerance -20%/+30% for lowest setting. All other set-

tings are -20%/+20%

④ For 2-pole application use outside poles of 3-pole circuit breaker.

Lug Information pages 7-88 to 7-90
Enclosures Section 6
Accessories pages 7-95 to 7-100
Application data pages 7-75 to 7-76

Molded Case Circuit Breakers

Superseded Breakers

General

Sentron Series	Note	Superseded	Note	Superseded
JD62B200-JD62B400 JD63B200-JD63B400	① ①	JLB200-JL62B400 JL63B200-JL63B400	② ②	JL2B070-JL2B400 JL3B0L0-JL3B400
JXD22B200-JXD22B400 JXD22S400A JXD23B200-JXD23B400 JXD23S400A	① ① ① ①	JD22B200-JD22B400 JD22S400 JD23B200-JD23B400 JD23S400	② ② ② ②	JD2B250-JD2B400 JD2S400 JD3B250-JD3B400 JD3S400
JXD62B200-JXD62B400 JXD62H400, JXD62L400 JXD62S400A JXD63B200-JXD63B400 JXD63H400, JXD63L400 JXD63S400A	① ① ① ① ① ①	JJ62B200-JJ62B400 JL62L400, JL62H400 JJ62S400A JJ63B200-JJ63B400 JL63A400, JL63H400, JL63L400 JJ63S400A	② ② ② ② ②	JJ2B250-JJ2B400 JL2L400-JL2H400 JJ3B200-JJ3B400 JL3H400, JL3L400, JL3A225
LD62B250-LD62B500 LD62B250-LD63B600	① ①	LL63B250-LL62B600 LL63B250-LL63B600	② ②	LL2B450-LL2B600 LL3B450-LL3B600
LXD62B450-LXD62B600 LXD62J600, LXD62L600 LXD62S600A LXD63B450-LXD63B600 LXD64H600, LXD63L600 LXD63S600A	① ② ① ① ① ①	LJ62B450-LJ62B600 LL2H600, LL2U600, LL2X600 LJ62S600 LJ63B450-LJ63B600 LL63H600, LL63L600 LJ63S600A	② ②	LL3A450, LL3H600 LL3S600
MD62B500-MD62B800 MD63B500-MD63B800	② ②	KM2B500-KM2B800 KM3B500-KM3B800		
MXD62A800, MXD62H800, MXD62L800 MXD62S800A MXD63A800, MXD63H800, MXD63L800 MXD63S800A	② ② ② ②	KM2A800, KM2H800, KM2L800 KM2S800 KM3A600, KM3H800, KM3L800 KM3S800		
ND63B100-ND63B900 NXD63S120A	② ②	KP3B100-KP3B900 KP3S120		
PD63B120-PD63B160 PXD63S160A	② ②	HP3B120-HP3B160 HP3S160		
RD63B160-RD63B200	②	HR3B160-HR3B200		
QR22B100 – QR22B225 QR22B100H – QR22B225H HQR23S250HA QJ23B100 – QR23B225 QR23B100H – QR23B225H QRH22B100 – QRH22B225 QRH23B100 – QRH23B225 HQR23S250HA		QJ22B060-QJ22B225 QJ22B060H-QJ22B225H QJ22S225 QJ23B060-QJ23B225 QJ23B060H-QJ23B225H QJH22B060-QJH22B225 QJH23B060-QJH23B225 QJH23S225	①	
QJH22B060-QJH22B225 QJH23B060-QJH23B225 QJH23S225	① ① ①	QJ2H125-QJ2B225 QJ3H125-QJ3H225 QJ3S225		
RD63B160-RD63B200 RXD63S200A	② ②	HR3B160-HR3B200 HR3S200		
SHJD69200-SHJD69400 SHJD69200G-SHJD69400G SHJD69200NGT-SHJD69400NGT SHJD69200NT-SHJD69400NT	① ① ① ①	SHJ63B200-SHJ63B400G SHJ63B200G-SHJ63B400G SHJ63N200G-SHJ63N400G SHJ63N200-SHJ63N400		
SHLD69300-SHLD69600 SHLD69300G-SHLD69600G SHLD69300NGT-SHLD69600NG SHLD69300NT-SHLD69600NT	① ① ① ①	SHL63B300-SHL63B600 SHL63B300G-SHL63B600G SHL63N300G-SHL63N600G SHL63N300-SHL63N600		
SHND69100A-SHND69120A SHND69100AG-SHND69120AG	① ①	SHND69100-SHND69800 SHND69100G-SHND69800G	② ②	SHKF3B100-SHKF3B800 SHKF3B100G-SHKF3B800G
SHPD69120-SHPD69160 SHPD69120G-SHPD69160G	② ②	SHPF3B120-SHPF3B160 SHPF3B120G-SHPF3B160G		

①Mechanically and electrically interchangeable.

②Electrically interchangeable only, refer to sales office for further details.

③Electrically interchangeable only if the system interrupting capacity is less than or equal to:
200 kA at 240V AC
200 kA at 480V AC
100 kA at 600V AC

④Electrically interchangeable only if the system interrupting capacity is less than or equal to:
200 kA at 240V AC
150 kA at 480V AC
100 kA at 600V AC

⑤Refer to local sales office for replacement information.