

## 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 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.

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



## 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.

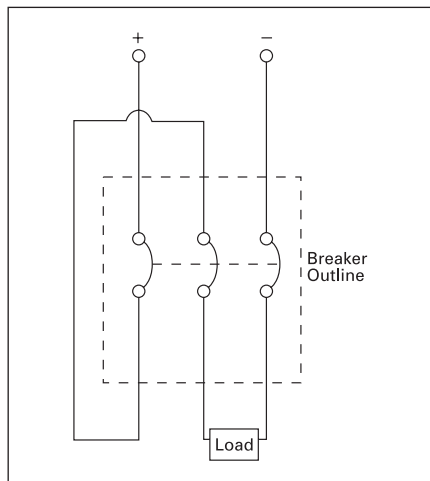
### Frame, Trip Unit and Lugs Ordered Together

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.

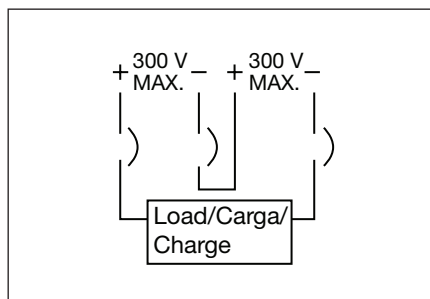


500V DC Wiring Configuration

## 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 <sup>®</sup>	Breaker Type (All Circuit Breakers Meet or Exceed the Indicated Class Level)
	Symmetrical Amperes <sup>①</sup>	Volts AC 60HZ			
10a <sup>②</sup>	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 <sup>②</sup>	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

7  
MOLDED CASE  
CIRCUIT BREAKERS

### 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

LD 600A Frame Sentron Series

Selection

Type LXD6-A <sup>①④</sup>		Blue Label	
Non-Interchangeable Trip (Assembled Circuit Breaker without Lugs)			
Continuous Current Rating @ 40°C	2-Pole (3-Pole Width)		3-Pole
	600V AC	250V DC	600V AC 500V DC
	Catalog Number		Catalog Number
450	LXD62B450■		LXD63B450
500	LXD62B500■		LXD63B500
600	LXD62B600		LXD63B600

Type LD6-A <sup>④</sup>		Blue Label	
Interchangeable Trip			
Continuous Current Rating @ 40°C	Complete Breaker Unassembled w/Lugs	Frame Only	Trip Unit Only
	Catalog Number	Catalog Number	Catalog Number
<b>2-Pole 600V AC, 250V DC (3-Pole Width)</b>			
250	LD62B250■	LD62F600	JD62T250■
300	LD62B300■		JD62T300■
350	LD62B350■		JD62T350■
400	LD62B400		JD62T400
450	LD62B450■		LD62T450■
500	LD62B500■		LD62T500■
600	LD62B600		LD62T600

<b>3-Pole 600V AC, 500V DC<sup>②</sup></b>			
250	LD63B250	LD63F600	JD63T250
300	LD63B300		JD63T300
350	LD63B350		JD63T350
400	LD63B400		JD63T400
450	LD63B450		LD63T450
500	LD63B500		LD63T500
600	LD63B600		LD63T600

## Interrupting Ratings

Breaker Type	RMS Symmetrical Amperes (KA)										
	UL 489 AIR (File E10848)					IEC 947-2					
	Volts AC (50/60Hz)			Volts DC		Volts AC (50/60Hz)					
	240	480	600	250	500 <sup>③</sup>	220/240		380/415		500	
					(lcu)	(lcs)	(lcu)	(lcs)	(lcu)	(lcs)	
LD6-A, LXD6-A	65	35	25	30 (2-P)	25 (3-P)	65	33	40	20	—	—
HLD6-A, HLXD6-A	100	65	35	30 (2-P)	35 (3-P)	100	50	65	33	—	—
HHL6, HHLXD6	200	100	50	—	—	—	—	—	—	—	—
CLD6-A	200	150	100	—	50 (3-P)	—	—	—	—	—	—

## Instantaneous Adjustment Trip Range

Breaker Ampere Rating	Nominal Instantaneous Values							
	±20% Tolerance Low	2	3	4	5	6	7	±20% Tolerance High
250-300	1250	1430	1610	1790	1960	2140	2320	2500
350-450	2000	2290	2570	2860	3140	3430	3710	4000
500-600	3000	3430	3800	4290	4710	5140	5570	6000

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

① Type LXD6A circuit breakers are UL Listed for reverse fed applications.

② When wired as shown on page 7-4, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS systems only.

③ See Note: A, page 7-88.

④ HACR rated.

Note: LD frame qualified to UL489 supplement SB "NAVAL". See page 7-91 for additional information.

Modifications page 7-91  
Enclosures Section 6  
Accessories pages 7-58 and 7-95 to 7-100

## Ordering Information

### Complete Breaker Unassembled with Lugs

Prices of LD6, HLD6, and HHL6 breakers include frame, trip, and both line and load lugs (TA2J6500). When ordered by these catalog numbers, the customer will receive the frame, trip and lugs separately packaged. For applications requiring different lugs, order individual items as needed.

### Complete Breaker Assembled with-out Lugs

Prices of LXD6, HLXD6, HHLXD6, and CLD6 include frame with non-interchangeable trip unit installed only. Order required lugs separately. For line and load lugs (TA2J6500) installed, add suffix "L" to catalog number (add 2 times list price of lugs for each pole).

### 100% Rated (3-pole only)

Types LXD6 and HLXD6 breakers are available with 100% ratings. To order add suffix "H" to catalog number, and 10% to list price. 100% rated LD breakers require the use of 90°C Cu cable sized at 75°C ampacity and lugs TC1J6600 or TC2J6500.

50°C Applications see page 7-91.

400Hz Applications see page 7-91.

## Shipping Weights

Number of Poles	Number per Carton	Shipping Weight (lbs.)
<b>LXD6, LD6, HLD6, HHL6 Assembled Breaker (less terminals)</b>		
2	1	17.5
3	1	19.5
<b>LD6, HLD6, HHL6 Frame Only</b>		
2	1	14
3	1	15.5
<b>LD6, HHL6 Trip Unit Only</b>		
2	1	3.5
3	1	4
<b>CLD6 Complete Assembled Breaker (less terminals)</b>		
3	1	31.5

## Lugs For 75°C Wire<sup>③</sup>

Catalog Number	Cables per Lug	Wire Range
TA2J6500	1, 2	#3/0 500 kcmil Cu #4/0 500 kcmil Al
TC2J6500	2	#3/0-500 kcmil Cu
TA1L6750	1	500-750 kcmil Al
TC1J6600	1	500-600 kcmil Cu
<b>Compression Lug</b>		
CCL600	1	500 kcmil Cu/Al



# Molded Case Circuit Breakers

Adjustable Instantaneous Magnetic Trip Settings

Application

Breaker Type	Maximum Continuous Amperes	Nominal AC Adjustable Trip Range								ETI Motor Circuit Protector Catalog Number		Thermal Magnetic Catalog Number		
		Low	2	3	4	5	6	7	High	3-Pole	2-Pole	3-Pole		
JXD2(A)	200	1250	1430	1610	1790	1960	2140	2320	2500	—	JXD22B200	JXD23B200		
	225	1250	1430	1610	1790	1960	2140	2320	2500	—	JXD22B225	JXD23B225		
	250	1250	1430	1610	1790	1960	2140	2320	2500	—	JXD22B250	JXD23B250		
	300	1250	1430	1610	1790	1960	2140	2320	2500	—	JXD22B300	JXD23B300		
	350	2000	2290	2570	2860	3140	3430	3710	4000	—	JXD22B350	JXD23B350		
	400	2000	2290	2570	2860	3140	3430	3710	4000	—	JXD22B400	JXD23B400		
JXD6(A)	200	1250	1430	1610	1790	1960	2140	2320	2500	—	JXD62B200	JXD63B200		
	225	1250	1430	1610	1790	1960	2140	2320	2500	—	JXD62B225	JXD63B225		
	250	1250	1430	1610	1790	1960	2140	2320	2500	—	JXD62B250	JXD63B250		
	300	1250	1430	1610	1790	1960	2140	2320	2500	—	JXD62B300	JXD63B300		
	350	2000	2290	2570	2860	3140	3430	3710	4000	—	JXD62B350	JXD63B350		
	400	2000	2290	2570	2860	3140	3430	3710	4000	—	JXD62B400	JXD63B400		
JD6(A)	200	1250	1430	1610	1790	1960	2140	2320	2500	—	JD62B200	JD63B200		
	225	1250	1430	1610	1790	1960	2140	2320	2500	—	JD62B225	JD63B225		
	250	1250	1430	1610	1790	1960	2140	2320	2500	—	JD62B250	JD63B250		
	300	1250	1430	1610	1790	1960	2140	2320	2500	—	JD62B300	JD63B300		
	350	2000	2290	2570	2860	3140	3430	3710	4000	—	JD62B350	JD63B350		
	400	2000	2290	2570	2860	3140	3430	3710	4000	—	JD62B400	JD63B400		
HJD6(A)	200	1250	1430	1610	1790	1960	2140	2320	2500	—	HJD62B200	HJD63B200		
	225	1250	1430	1610	1790	1960	2140	2320	2500	—	HJD62B225	HJD63B225		
	250	1250	1430	1610	1790	1960	2140	2320	2500	—	HJD62B250	HJD63B250		
	300	1250	1430	1610	1790	1960	2140	2320	2500	—	HJD62B300	HJD63B300		
	350	2000	2290	2570	2860	3140	3430	3710	4000	—	HJD62B350	HJD63B350		
	400	2000	2290	2570	2860	3140	3430	3710	4000	—	HJD62H400	HJD63B400		
HHJD6	200	1250	1430	1610	1790	1960	2140	2320	2500	—	HHJD62B200	HHJD63B200		
	225	1250	1430	1610	1790	1960	2140	2320	2500	—	HHJD62B225	HHJD63B225		
	250	1250	1430	1610	1790	1960	2140	2320	2500	—	HHJD62B250	HHJD63B250		
	300	1250	1430	1610	1790	1960	2140	2320	2500	—	HHJD62B300	HHJD63B300		
	350	2000	2290	2570	2860	3140	3430	3710	4000	—	HHJD62B350	HHJD63B350		
	400	2000	2290	2570	2860	3140	3430	3710	4000	—	HHJD62B400	HHJD63B400		
CJD6	200	1250	1430	1610	1790	1960	2140	2320	2500	—	—	CJD63B200		
	225	1250	1430	1610	1790	1960	2140	2320	2500	—	—	CJD63B225		
	250	1250	1430	1610	1790	1960	2140	2320	2500	—	—	CJD63B250		
	300	1250	1430	1610	1790	1960	2140	2320	2500	—	—	CJD63B300		
	350	2000	2290	2570	2860	3140	3430	3710	4000	—	—	CJD63B350		
	400	2000	2290	2570	2860	3140	3430	3710	4000	—	—	CJD63B400		
LXD6(A)	450	2000	2290	2570	2860	3140	3430	3710	4000	—	LXD62B450	LXD63B450		
	500	3000	3430	3860	4290	4710	5140	5570	6000	—	LXD62B500	LXD63B500		
	600	3000	3430	3860	4290	4710	5140	5570	6000	—	LXD62B600	LXD63B600		
	250	1250	1430	1610	1790	1960	2140	2320	2500	—	LD62B250	LD63B250		
	300	1250	1430	1610	1790	1960	2140	2320	2500	—	LD62B300	LD63B300		
	350	2000	2290	2570	2860	3140	3430	3710	4000	—	LD62B350	LD63B350		
LD6(A)	400	2000	2290	2570	2860	3140	3430	3710	4000	—	LD62B400	LD63B400		
	450	2000	2290	2570	2860	3140	3430	3710	4000	—	LD62B450	LD63B450		
	500	3000	3430	3800	4290	4710	5140	5570	6000	—	LD62B500	LD63B500		
	600	2000	2290	2570	2860	3140	3430	3710	4000	—	—	—		
	600	3000	3430	3800	4290	4710	5140	5570	6000	—	LXD63L600	—		
	600	3000	3430	3800	4290	4710	5140	5570	6000	—	LXD63H600	LD63B600		
HLD6(A)	250	1250	1430	1610	1790	1960	2140	2320	2500	—	HLD62B250	HLD63B250		
	300	1250	1430	1610	1790	1960	2140	2320	2500	—	HLD62B300	HLD63B300		
	350	2000	2290	2570	2860	3140	3430	3710	4000	—	HLD62B350	HLD63B350		
	400	2000	2290	2570	2860	3140	3430	3710	4000	—	HLD62B400	HLD63B400		
	450	2000	2290	2570	2860	3140	3430	3710	4000	—	HLD62B450	HLD63B450		
	500	3000	3430	3860	4290	4710	5140	5570	6000	—	HLD62B500	HLD63B500		
HHLD6	600	3000	3430	3860	4290	4710	5140	5570	6000	—	HLD62B600	HLD63B600		
	250	1250	1430	1610	1790	1960	2140	2320	2500	—	HHLD62B250	HHLD63B250		
	300	1250	1430	1610	1790	1960	2140	2320	2500	—	HHLD62B300	HHLD63B300		
	350	2000	2290	2570	2860	3140	3430	3710	4000	—	HHLD62B350	HHLD63B350		
	400	2000	2290	2570	2860	3140	3430	3710	4000	—	HHLD62B400	HHLD63B400		
	450	2000	2290	2570	2860	3140	3430	3710	4000	—	HHLD62B450	HHLD63B450		
CLD6	500	3000	3430	3860	4290	4710	5140	5570	6000	—	HHLD62B500	HHLD63B500		
	600	3000	3430	3860	4290	4710	5140	5570	6000	—	HHLD62B600	HHLD63B600		
	250	1250	1430	1610	1790	1960	2140	2320	2500	—	—	CJD63B250		
	300	1250	1430	1610	1790	1960	2140	2320	2500	—	—	CJD63B300		
	350	2000	2290	2570	2860	3140	3430	3710	4000	—	—	CJD63B350		
	400	2000	2290	2570	2860	3140	3430	3710	4000	—	—	CLD63B400		
LMXD6	450	2000	2290	2570	2860	3140	3430	3710	4000	—	—	CLD63B450		
	500	3000	3430	3860	4290	4710	5140	5570	6000	—	—	CLD63B500		
	600	2000	2290	2570	2860	3140	3430	3710	4000	—	—	—		
	600	3000	3430	3860	4290	4710	5140	5570	6000	—	—	—		
	600	3000	3430	3860	4290	4710	5140	5570	6000	—	—	—		
	600	3000	3430	3860	4290	4710	5140	5570	6000	—	—	CLD63B600		
LMD6	500	3000	3430	3860	4290	4710	5140	5570	6000	—	—	LMXD63B500		
	600	3000	3430	3860	4290	4710	5140	5570	6000	—	—	LMXD63B600		
	700	3200	3500	3700	4200	4700	6400	7300	8000	—	—	LMXD63B700		
	800	3200	3500	3700	4200	4700	6400	7300	8000	—	—	LMXD63B800		
LMD6	500	3000	3430	3860	4290	4710	5140	5570	6000	—	—	LMD62B500		
	600	3000	3430	3860	4290	4710	5140	5570	6000	—	—	LMD62B600		
	700	3200	3500	3700	4200	4700	6400	7300	8000	—	—	LMD62B700		
	800	3200	3500	3700	4200	4700	6400	7300	8000	—	—	LMD62B800		

# Molded Case Circuit Breakers

## Typical Specifications

Reference

### General Specifications

Molded case circuit breakers shall provide circuit overcurrent protection with inverse time and instantaneous tripping characteristics and shall be Siemens Sentron, Sensitrip or approved equal.

All circuit breakers shall be listed by Underwriters' Laboratories, Inc., conform to applicable requirements of NEMA Standard Publication No. AB1 and meet appropriate classifications of Federal Specifications W C 375B/Gen.

All circuit breakers shall have a quick-make, quick-break over center toggle type mechanism and the handle mechanism shall be trip free to prevent holding contacts closed against a short circuit or sustained overload. All circuit breaker handles shall assume a position between "ON" and "OFF" when tripped automatically. Multi-pole circuit breakers shall be common-trip such that an overload or short circuit on any one pole will result in all poles opening simultaneously. Arc extinction is to be accomplished by magnetic arc chutes. All ratings are to be clearly visible. When reverse feed is indicated on the drawings, in accordance with UL, circuit breakers with sealed trip units shall be supplied.

### Thermal Magnetic Specifications

Unless otherwise noted on the drawings, all Circuit breakers 2000 Ampere and below shall have thermal-magnetic trip units, with inverse time-current characteristics. Automatic operation of these circuit breakers shall be obtained by means of thermal-magnetic tripping devices located in each pole providing inverse time delay and instantaneous circuit protection. Circuit breakers shall be ambient compensating in that, as the ambient temperature increases over 40°C, the circuit breaker automatically derates itself so as to better protect its associated conductor. Thermal magnetic breakers from 250 to 2000A frames shall have thermal interchangeable trip units, with instantaneous magnetic trip settings that are adjustable and accessible from the front of all circuit breakers on frame sizes 250 Amperes and above. Where indicated, provide circuit breakers UL listed for application at 100% of their continuous ampere rating in their intended enclosure.

### Motor Circuit Protectors

Where indicated on the drawings and in the combination motor starter/motor control center schedule, furnish instantaneous magnetic trip only circuit breakers for motor short circuit protection. The magnetic trips shall be adjustable and accessible from the front of all circuit breaker frames. The continuous current rating shall be between 1 and 800 Amperes as indicated on the drawing.

The interrupting rating of the circuit breakers shall be as indicated in the specifications, and shown on the drawing or single line diagram. The interrupting rating of the circuit breakers shall be at least equal to the available short circuit current at the line terminals of the circuit breaker and correspond to the UL listed integrated short circuit current rating specified.

### Internal Accessories

Provide shunt trips, bell alarms, and auxiliary switches as shown on the contract drawings. Gold plated auxiliary switches shall be supplied for PLC connection. Internal accessories for all breakers shall be UL listed for field installation and modification.

### Connection Accessories

Unless otherwise noted, Mechanical lugs shall be provided with all Molded Case Breakers. Where indicated on the drawings, compression lugs shall be provided on 1200 Ampere frame and below circuit breakers. All compression lugs shall be supplied by the Circuit Breaker Manufacturer. Where indicated on the drawings, UL listed plug-in or rear connectors shall be supplied.

### Solid State Sensing Specifications

As indicated on the drawings, circuit breaker frames 400 Ampere through 3200-Ampere shall have microprocessor-based RMS sensing trip units, with the capability to measure through to the 21st harmonic. Automatic operation of all circuit breaker frames 400A and larger shall be obtained by means of solid state tripping elements providing inverse time delay and (instantaneous) and/or (short-time delay) circuit protection. Continuous current ratings shall be adjustable from 20% to 100% of the trip unit rating, without the need for a rating plug. Long-time delay and instantaneous trip shall be adjustable. The optional short-time trip function shall have adjustable pick-up settings, three fixed times, and I<sup>2</sup>t ramp. Circuit breaker frames 400A and larger, and where indicated on the drawings, shall be 100% equipment rated.

### Integral Ground Fault Option

Main and feeder circuit breakers, as indicated on the drawings, shall be provided with integral ground fault protection. Ground fault pick-up shall be adjustable from 20% to 70% of the circuit breakers maximum continuous current rating. Ground fault time delay shall be adjustable with three I<sup>2</sup>t ramps.

### Metering Option

When indicated on the drawings, solid state trip breakers shall be furnished with a plug-in or panel mounted metering device. This device shall simultaneously display all three phase currents, as well as average current, ground current, and phase unbalance. In addition it shall display breaker status, a max log, and a trip log. The trip log will retain and display date, time and type of trip (overload, short circuit or ground fault) for the most recent 5 trip events.

### Current Limiting Specifications

Where indicated on the drawings, Siemens current limiting circuit breakers are to be furnished. Current limiting circuit breakers shall limit the let-through I<sup>2</sup>t to a value less than the I<sup>2</sup>t of one-half cycle wave of the symmetrical prospective current without any fusible elements when operating within its current range.

### Series Connected Combination Specifications

Where protective devices are applied in series combination, such that the prospective available fault current exceeds the interrupting rating (AIR) of the downstream protective devices, such combinations shall be UL recognized combinations. All electrical equipment using these UL recognized circuit breaker combinations shall be clearly marked in accordance with NEC Section 240-83(c).

# 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		

① Mechanically and electrically interchangeable.

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

③ Electrically 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

④ Electrically 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

⑤ Refer to local sales office for replacement information.