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.

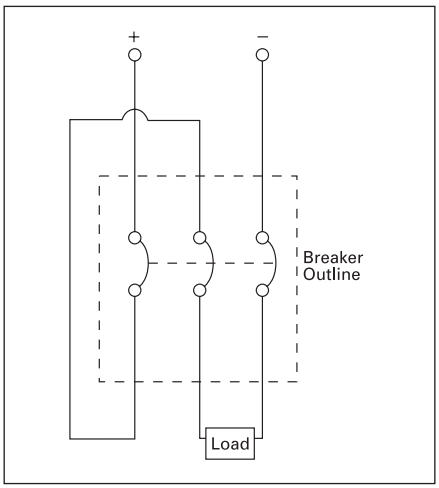
Frame, Trip Unit and Lugs Ordered Together

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.

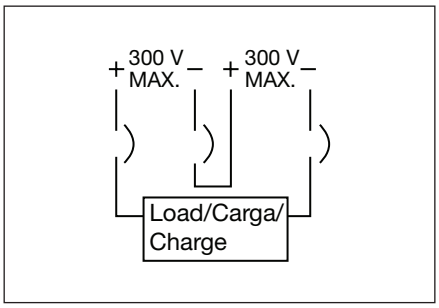


500V DC Wiring Configuration

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.



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.

Breaker Type	Ampere Rating	Instantaneous Trip Range② Minimum③	Instantaneous Trip Range② Maximum③	Complete Circuit Breaker Without Lugs⑤ Catalog Number 2-Pole	Complete Circuit Breaker Without Lugs⑤ 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
FXD6④ 600V AC 250V DC	150	400	800	—	**FXD63L150■**
	150	800	1500	—	**FXD63A150**
	150	1100	2500	—	**FXD63H150**
	250	1100	2500	—	**FXD63A250**
	SHIPPING:				9 lbs. each
CFD6④ 600V AC 250V DC	150	400	800	—	**CFD63L150■**
	150	800	1500	—	**CFD63A150■**
	150	1100	2500	—	**CFD63H150■**
	250	1100	2500	—	**CFD63A250■**
	SHIPPING:			12 lbs. each	12 lbs. each
JXD6(A)① 600V AC 250V DC	400	1250	2500	—	**JXD63L400**
	400	2000	4000	**JXD62H400■**	**JXD63H400**
	SHIPPING:			16 lbs. each	20 lbs. each
CJD6① 600V AC 250V DC	400	1250	2500	—	**CJD63L400■**
	400	2000	4000	—	**CJD63H400■**
	SHIPPING:			29.5 lbs. each	31.5 lbs. each
LXD6(A)① 600V AC 250V DC	600	2000	4000	**LXD62L600■**	**LXD63L600■**
	600	3000	6000	—	**LXD63H600**
	SHIPPING:			16 lbs. each	20 lbs. each
CLD6① 600V AC 250V DC	600	2000	4000	—	**CLD63L600■**
	600	3000	6000	—	**CLD63H600■**
	SHIPPING:				31.5 lbs. each
LMXD6④ 600V AC 250V DC	800	2800	6000	—	**LMXD63L800■**
	800	3200	8000	—	**LMXD63A800**
	SHIPPING:				35 lbs. each
MXD6④ 600V AC 250V DC	800	3000	6000	—	**MXD63L800■**
	800	4000	8000	—	**MXD63A800■**
	800	5000	10000	—	**MXD63H800**
	SHIPPING:				33 lbs. each
CMD6④ 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.

⑤ **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.**

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

■ 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 settings are -20%/+20%

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

General

Protection of Motor Circuits

Molded case circuit breakers are used in motor circuits as a disconnecting means and for short-circuit protection. They should be used in conjunction with motor-running, over-current-protection devices, and should permit the motor to start without nuisance tripping from motor-inrush current. The circuit breaker should have a continuous-current rating of not less than 115% of the motor full-load current.

The recommended motor circuit protectors (Siemens ETI instantaneous only circuit breakers) listed have continuous-current ratings of at least 115% of motor full-load currents. The trip-setting positions are approximately 11 times motor full-load currents. The suggested trip settings may have to be adjusted upward to no higher than 1300% of full-load current for non-design E type motors, and no greater than 1700% of full load current for design E motors, to allow for motor start-up due to inrush currents.

Breaker Mounted Immediately Ahead of Motor Starter

Siemens ETI motor circuit protectors are recommended for use in combination motor starters to provide selective short-circuit protection for the motor branch circuit. The adjustable instantaneous-trip feature of the Siemens ETI motor circuit protector provides for a trip setting slightly above the peak motor-inrush current. With this setting, no delay is introduced in opening the circuit when a fault occurs. This circuit breaker has no time-delay trip element. Therefore it must be used in conjunction with, and immediately ahead of, the motor-running overcurrent protective device.

Important: The information below does not apply to all motor applications: it is recommended that the user refer to the National Electrical Code (NEC) for specific needs.

Table 1 (When Breaker is Mounted Immediately Ahead of Motor Starter)

3-Phase Induction Type Motors (Siemens ETI motor circuit protectors for branch circuit use with alternating-current combination, full voltage motor starters).

Motor Full Load Amperes	Catalog Number	ETI Trip Setting Adjustment	ETI Trip Setting Amperes
0.69 – 0.91	HEM3M003L	A (min)	9
1.1 – 1.3		B	15
1.6 – 1.7		C	21
2.0 – 2.2		D	27
2.3 – 2.5		E	30
2.6 – 2.8		F (max)	33
1.5 – 2.0	HEM3M007L	A (min)	21
2.6 – 3.1		B	35
3.7 – 3.9		C	49
4.8 – 5.2		D	63
5.3 – 5.7		E	70
5.8 – 6.1		F (max)	77
3.4 – 4.5	HEM3M015L	A (min)	45
5.7 – 6.8		B	75
8.0 – 9.1		C	100
10.4 – 11.4		D	135
11.5 – 12.6		E	150
12.7 – 13.0		F (max)	165
3.9 – 9.1	HEM3M030L	A (min)	90
11.5 – 13.7		B	150
16.1 – 18.3		C	210
20.7 – 22.9		D	270
23.0 – 25.2		E	300
25.3 – 26.1		F (max)	330
11.5 – 15.2	HEM3M050L	A (min)	150
19.2 – 22.9		B	250
26.9 – 30.6		C	350
34.6 – 38.3		D	450
38.4 – 42.1		E	500
42.2 – 43.5		F (max)	550
16.1 – 30.6	HEM3M070L	A (min)	210
26.9 – 32.2		B	350
37.6 – 42.9		C	490
48.4 – 53.7		D	630
53.8 – 59.1		E	700
59.2 – 60.9		F (max)	770
23.0 – 30.9	HEM3M100L	A (min)	300
38.4 – 46.0		B	500
53.8 – 61.4		C	700
69.2 – 76.8		D	900
76.9 – 84.5		E	1000
84.6 – 87.0		F (max)	1100
.20 – .33	ED63A001 CED63A001	Low	2.6
.34 – .45		2	4.5
.46 – .56		3	6
.57 – .68		4	7.5
.69 – .81		High	9
.53 – .83	ED63A002 CED63A002	Low	7
.84 – 1.14		2	11
1.15 – 1.45		3	15
1.46 – 1.68		4	19
1.69 – 2.00		High	22
.76 – 1.29	ED63A003 CED63A003	Low	10
1.30 – 1.75		2	17
1.76 – 2.29		3	23
2.30 – 2.68		4	30
2.69 – 3.18		High	35

Motor Full Load Amperes	Catalog Number	ETI Trip Setting Adjustment	ETI Trip Setting Amperes
1.23 – 1.99	ED63A005 CED63A005	Low	16
2.00 – 2.75		2	26
2.76 – 3.52		3	36
3.53 – 4.14		4	46
4.15 – 4.90		High	54
2.30 – 3.83	ED63A010 CED63A010	Low	30
3.84 – 5.37		2	50
5.38 – 6.52		3	70
6.53 – 7.68		4	85
7.69 – 9.10		High	100
4.23 – 6.91	ED63A025 CED63A025	Low	55
6.92 – 9.61		2	90
9.62 – 11.91		3	125
11.92 – 13.83		4	155
13.84 – 16.40		High	180
6.15 – 10.37	ED63A030 CED63A030	Low	80
10.38 – 14.22		2	135
14.23 – 18.06		3	185
18.07 – 20.75		4	235
20.76 – 24.50		High	270
8.84 – 14.22	ED63A040 CED63A040	Low	115
14.23 – 19.60		2	185
19.61 – 24.99		3	255
25.00 – 28.83		4	325
28.84 – 34.00		High	375
13.84 – 23.06	ED63A050 CED63A050	Low	180
23.07 – 31.52		2	300
31.53 – 39.99		3	410
40.00 – 46.14		4	520
46.15 – 54.50		High	600
24.23 – 41.52	ED63A100 CED63A100	Low	315
41.53 – 56.91		2	540
56.92 – 68.45		3	740
68.46 – 76.91		4	890
76.92 – 90.90		High	1000
38.46 – 55.37	ED63A125 CED63A125	Low	500
55.38 – 70.75		2	720
70.76 – 84.60		3	920
84.61 – 96.14		4	1100
96.15 – 113.60		High	1250
30.76 – 35.37	FXD63L150 CFD63L150	Low	400
35.38 – 39.99		2	460
44.51 – 49.23		4	580
53.84 – 58.45		6	700
58.46 – 63.06		7	760
63.07 – 74.50		High	820
61.53 – 69.22	FXD63A150 CFD63A150	Low	800
69.23 – 76.91		2	900
84.61 – 92.29		4	1100
100.00 – 108.00		6	1300
108.00 – 115.00		7	1400
115.00 – 136.00		High	1500
85.00 – 100.00	FXD63A250 CFD63A250	Low	1100
100.00 – 115.00		2	1300
131.00 – 146.00		4	1700
162.00 – 177.00		6	2100
177.00 – 192.00		7	2300
192.00 – 227.00		High	2500

Motor Full Load Amperes	Catalog Number	ETI Trip Setting Adjustment	ETI Trip Setting Amperes
95.00 – 110.00	JXD63L400 CJD63L400	Low	1250
110.00 – 124.00		2	1430
138.00 – 151.00		4	1790
165.00 – 178.00		6	2140
178.00 – 192.00		7	2320
192.00 – 227.00		High	2500
154.00 – 176.00	JXD63H400 CJD63H400	Low	2000
176.00 – 198.00		2	2290
220.00 – 242.00		4	2860
264.00 – 285.00		6	3430
285.00 – 308.00		7	3710
308.00 – 326.00		High	4000
155.00 – 176.00	LXD63L600 CLD63L600	Low	2000
176.00 – 198.00		2	2290
220.00 – 242.00		4	2860
264.00 – 285.00		6	3430
285.00 – 308.00		7	3710
308.00 – 326.00		High	4000
231.00 – 264.00	LXD63H600 CLD63H600	Low	3000
264.00 – 292.00		2	3430
330.00 – 362.00		4	4290
395.00 – 428.00		6	5140
428.99 – 462.00		7	5570
462.00 – 490.00		High	6000
215.00 – 238.00	LMXD63L800	Low	2800
238.00 – 261.00		2	3100
261.00 – 284.00		3	3400
308.00 – 369.00		5	4000
369.00 – 423.00		6	4800
423.00 – 462.00		7	5500
462.00 – 490.00		High	6000
246.00 – 269.00	LMXD63A800	Low	3200
269.00 – 284.00		2	3500
284.00 – 323.00		3	3700
362.00 – 492.00		5	4700
492.00 – 562.00		6	6400
562.00 – 616.00		7	7300
616.00 – 660.00		High	8000
231.00 – 264.00	MXD63L800 CMD63L800	Low	3000
264.00 – 292.00		2	3430
292.00 – 330.00		3	3800
362.00 – 395.00		5	4710
428.00 – 462.00		7	5570
462.00 – 490.00		High	6000
308.00 – 352.00	MXD63A800 CMD63A800	Low	4000
352.00 – 442.00		2	4570
442.00 – 447.00		3	5740
483.00 – 527.00		5	6280
571.00 – 616.00		7	7240
616.00 – 660.00		High	8000
385.00 – 440.00	MXD63H800 CMD63H800	Low	5000
495.00 – 550.00		3	6430
605.00 – 660.00		5	7860
660.00 – 695.00		6	8575

Note: Lowest instantaneous settings have a -20%/+30% tolerance and all other settings have a -20%/+20% tolerance.

A variety of internal and external accessories, as well as modifications, are available to adapt Siemens circuit breakers to special installation requirements. UL listed internal accessories for 100 through 2000A circuit breakers are field-addable.

Internal accessories fine tune an electrical distribution system, allowing control of the circuit breakers to meet special application requirements. For example, emergency situations may dictate tripping critically placed circuit breakers quickly. Shunt trips accomplish this conveniently and efficiently. Or, when voltage drops are a concern, undervoltage trips automatically open the circuit breaker at a predetermined voltage level.

A wide range of external operating and mounting accessories is also available. For example, face, shallow, and back mounting plates are ideal for tailoring BQ circuit breakers to OEM applications. A complete line of operating handles and handle-blocking devices meet switchboard, enclosure and safety needs. Plug-in mounting assemblies, which simplify switchboard mounting of circuit breakers and permit breaker removal without disconnecting bus or cable connections, are available.

50°C Ambient Calibration — Not UL listed and not available for solid state, 100% rated breakers or 400HZ calibrated breakers.

For BL Type Circuit Breakers
— Add suffix 'M' to catalog number
(Example: B120M) ..... No Charge

For BQ and ED Frame Circuit Breakers
— Replace 'B' in catalog number with 'M' ..... No Charge
(Example: BQ3M060, ED63M060)

For FD, JD, LD, LMD, MD, ND, PD, and RD Frame Circuit Breakers
Non-Interchangeable Trip (3–pole only) ..... No Charge
— Replace 'B' in catalog number with 'M'
(Example: FXD63M225, JXD63M400)

400 HZ Calibration

UL Listed (5KA IR)

For BQ & BL Type Circuit Breakers (200A max.) ..... Add 25% to list price
— Add suffix 'Y' to catalog number

Not UL Listed
For all other Circuit Breakers, see derating tables on page 7-102 and order standard circuit breakers.

Fungus Proofing

All BQD, CQD, GB, GG, ED, FD, JD, LD, LMD, MD, ND, PD, RD, DG, FG, JG, LG, MG, NG, and PG Frame Circuit Breakers are inherently fungus resistant and do not require special treatment.

For BL, and BQ Type Circuit Breakers ..... Add $10.00 net per pole
— Consult Sales Office for Availability

For all other Circuit Breaker Types ..... Add $160.00 net per device
— Consult Sales Office for Availability

Certificate of Compliance with Test Report (catalog number CERT OF COMP.) Add $210.00 net
Certificate of compliance testing must be performed on the actual device being shipped. The certificate cannot be provided after initial shipment. Order for devices with COC requirement must be placed directly with the factory by the sales office and shipped directly to the end user.

UL 489 Supplement SB Naval Use Breakers

Breakers tested to UL 489 Supplement SB are qualified for use on non combat and auxiliary naval vessels.

Siemens molded case breakers, including BL, NGB and Sentron ED through RD frames can be labeled "NAVAL" in compliance with UL 489 Supplement SB.

Supplement SB testing comprises two sets of vibration tests. The first is to find mechanical resonances in the product and to subject the breaker to extreme testing at each resonant frequency. The second is a swept frequency test, in which the frequency of excitation is changed in intervals of 1Hz, and held at each frequency for five minutes. The excitation frequencies run from 4 to 33Hz, and the test is conducted in each of the three orthogonal axes of the breaker.

During these tests, the breaker must not trip from the closed position, nor may the contacts touch from the open position. Calibration and insulation resistance are also verified during the test.

For detailed information, refer to UL 489, Supplement SB.

Ordering Information

For "NAVAL" label, add **$75.** net per catalog number per order. Order must be placed directly with the factory by Siemens Sales Office.

Types	UL File
BQD/CQD	E10848, Vol 10, Sec 1
GG	E10848, Vol 10, Sec 2
GB	E10848, Vol 10, Sec 3
ED2, ED4, IIED4, HED6	E10848, Vol 4, Sec 11
CED6	E10848, Vol 4, Sec 13
FD6, FXD6, HFD6, HFXD6	E10848, Vol 4, Sec 17
CFD6	E10848, Vol 4, Sec 18
JXD2, JD6, JXD6, LXD6, LD6, HJD6, HJXD6, HLD6, HLXD6	E10848, Vol 4, Sec 8
HHJD6, HHJXD6, HHLD6, HHLXD6	E10848, Vol 4, Sec 20
CJD6, CLD6	E10848, Vol 4, Sec 14
MD6, MXD6, HMD6, HMXD6, CMD6, ND6, NXD6, HND6, HNXD6, CND6	E10848, Vol 4, Sec 15
PD6, PXD6, HPD6, HPXD6, CPD6, RD6, RXD6, HRD6, HRXD6	E10848, Vol 4, Sec 19