

# Molded Case Circuit Breakers

## Introduction

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

**Siemens BL and NGB circuit breaker** families are now eligible to be marked "NAVAL" for use on non-combat vessels. These breakers meet the requirements of UL 489 Supplement SB. Consult your local sales office for availability.

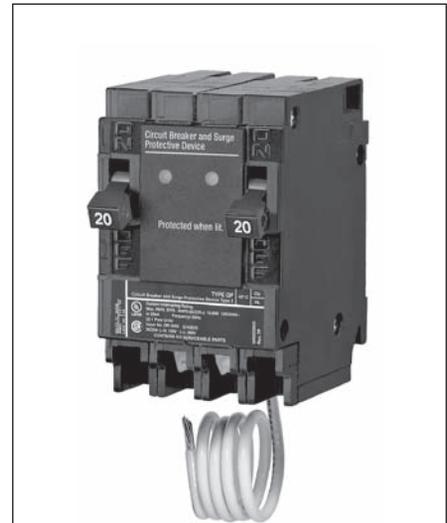
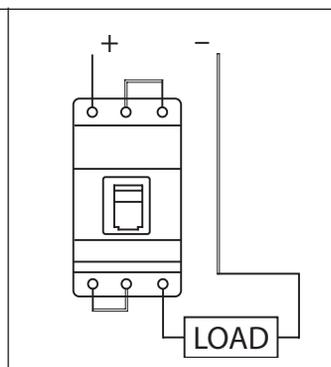


Now available from stock Siemens offers **distribution lugs for the NGB circuit breaker** family for use in UL 508A control panels. These lugs will accept up to (6) copper wires from #14 to #4 gauge or aluminum wires from #6 to #4 gauge.



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

Siemens now offers a line of **VL circuit breakers** which are rated for use at **600VDC** with interrupting ratings between 42KAIC and 65KAIC.



### Circuit Breaker and Surge Protective Device (SPD)

By installing a Siemens Circuit Breaker and Surge Protective Device (SPD) in the load center of the residence, surge protection is provided for all branch circuits (1).

- UL and CSA, Meets UL 1449 3rd Edition
  - Easy to install and perfect for retrofit
  - Offer in 15 or 20 amps
  - LEDs provide protection status
- (1) See warranty for detailed coverage information. [www.usa.siemens.com/surge](http://www.usa.siemens.com/surge)

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MOLDED CASE  
CIRCUIT BREAKERS

## 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.

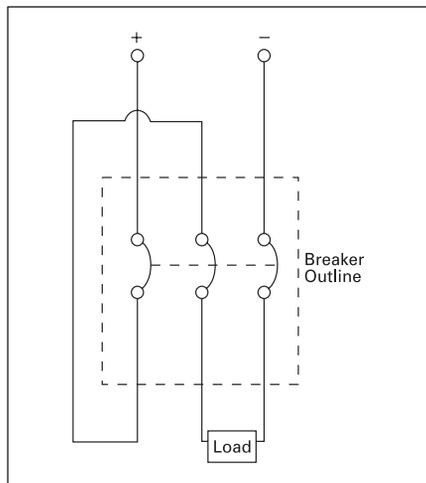
### Frame, Trip Unit and Lugs Ordered Together

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.

# Molded Case Circuit Breakers

## Federal Specification Classification

Reference

W-C-375C/GEN

Class	Interrupting Rating		Poles	Range of Current Trip <sup>③</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, NEG, NEB
15b	65,000	240	2 or 3	15–225	ED6, ED4, FXD6, FD6, HED4, BQD, CQD, HOJ2H, 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.

# Molded Case Circuit Breakers

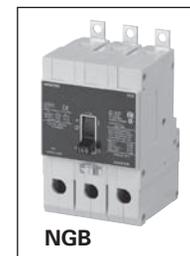
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07/20/14

## Reference Guide

## Selection/Application

### Thermal-Magnetic Trip Breakers

Page		Plug-In Breakers							Panelboard Breakers									
		QT	QP, QPP <sup>②</sup>	QPH, QPPH <sup>②</sup>	HQP, HQPP <sup>②</sup>	HQPPH <sup>②</sup>	QPJ <sup>③</sup>	BL	BLH	HBL	BOD, BOD6	NGB	NEB	HEB				
Ratings	Poles	1, 2	1, 2, 3	1, 2, 3	1, 2, 3 <sup>②</sup>	2	2, 3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3			
	Amperes	15-50	10-125 <sup>③④</sup>	10-125 <sup>③④</sup>	10-125 <sup>③⑤</sup>	100-225	150-200	10-125	15-125	15-100	15-100	15-125	15-125	15-125	15-125			
	Volts (50/60 Hz)	1 Pole	120/240	120/240	120/240	120/240	120/240	120/240	120/240	120/240	120/240	277	347	347	347			
		2 Pole	—	—	—	—	—	—	—	—	—	480/277	600/347	600/347	600/347			
		3 Pole	—	240	240	240	240	240	240	240	240	480/277	600/347	600/347	600/347			
	Interrupt Ratings	UL	120V	10,000	10,000	22,000	65,000	—	—	10000	22000	65000	65000	—	—	—		
			240V	10,000	10,000	22,000	65,000	100,000	10,000	10000	22000	65000	65000	100000	85000	100000		
			277V	—	—	—	—	—	—	—	—	—	—	14000	—	—		
			347V	—	—	—	—	—	—	—	—	—	—	10000	—	—		
			480/277V	—	—	—	—	—	—	—	—	—	—	14000	25000	—		
			480V	—	—	—	—	—	—	—	—	—	—	—	—	35000	65000	
		IEC 947-2 50/60 Hz	600/347V	—	—	—	—	—	—	—	—	—	—	10000	14000	—		
			600V	—	—	—	—	—	—	—	—	—	—	—	—	—		
			220/240V	I <sub>cu</sub>	—	—	—	—	—	—	—	—	—	—	—	65000	85000	100000
				I <sub>cs</sub>	—	—	—	—	—	—	—	—	—	—	—	32000	42000	50000
380/415V			I <sub>cu</sub>	—	—	—	—	—	—	—	—	—	—	—	25000	40000	70000	
			I <sub>cs</sub>	—	—	—	—	—	—	—	—	—	—	—	12000	20000	35000	
500V	I <sub>cu</sub>	—	—	—	—	—	—	—	—	—	—	—	—	—				
	I <sub>cs</sub>	—	—	—	—	—	—	—	—	—	—	—	—	—				
DC	125/250 V DC Interrupting Rating	2-Pole	—	—	—	—	—	—	—	—	—	14000	14000	35000	42000			
		3-Pole	—	—	—	—	—	—	—	—	—	—	—	35000	42000			
Dimensions in Inches	Height	10-50A	—	2.87	2.87	—	—	—	3.56	3.56	3.75	4.50	5.00	5.50	5.50			
		10-60A	3.12	—	—	—	—	—	—	—	—	—	—	—	—			
		55-125A	—	3.12	3.12	3.12	3.12	3 <sup>⑥</sup>	3.75	3.75	3.75	4.50	5.00	5.50	5.50			
	Width	1-Pole	1.00	1.00	1.00	1.00	—	—	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
		2-Pole	2.00 <sup>⑦</sup>	2.00 <sup>②</sup>	2.00 <sup>②</sup>	2.00	4.00 <sup>②</sup>	⑧	2.00	2.00	2.00	2.00	2.00	2.00	2.00			
3-Pole		2.00 <sup>③</sup>	3.00	3.00	3.00	—	3.00 <sup>③</sup>	3.00	3.00	3.00	3.00	3.00	3.00	3.00				
Depth	—	2.06	2.37	2.37	2.37	2.34	2.37	2.37	2.37	2.37	2.69	2.71	3.00	3.00				
Overcurrent Devices	Thermal and Fixed magnetic Trip	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
	Thermal and Adjustable Magnetic trip	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
	Adjustable Magnetic trip only	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
	Motor Circuit Protector	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
	Molded Case Switch	—	✓ <sup>⑩</sup>	—	—	—	—	—	—	—	—	—	—	✓	✓			
Accessories & Modifications	Undervoltage Trip	—	—	—	—	—	—	—	—	—	—	—	—	✓	✓			
	Shunt Trip	—	✓ <sup>⑩</sup>	✓ <sup>⑩</sup>	✓ <sup>⑩</sup>	✓ <sup>⑩</sup>	—	✓	✓	✓	✓	✓	✓	✓	✓			
	Auxiliary Switch	—	—	—	—	—	✓ <sup>⑩</sup>	—	✓	✓	✓	✓	✓	✓	✓			
	Alarm Switch	—	—	—	—	—	—	—	—	—	—	—	—	✓	✓			
	Mechanical Interlock	—	—	—	—	—	—	—	—	—	—	—	—	✓	✓			
Fungus Proofing (ref. page 7-91)	—	—	—	—	—	—	—	✓	✓	✓	✓	✓	✓	✓				
Individual Enclosures	Type 1 - Indoor Surface	✓	✓	✓	✓	✓	—	—	—	—	—	—	—	—	—			
	Type 1 - Indoor, Flush	—	✓	✓	✓	✓	—	—	—	—	—	—	—	—	—			
	Type 3R - Outdoor-Rainproof	—	✓	✓	✓	✓	—	—	—	—	—	—	—	—	—			



For inches / millimeters conversion, see Application Data section.  
For Plug-in Breakers, see Load Centers & Circuit Breakers section.

① BOD6 CSA certified 10,000A @ 600Y/347V 15-70A only.  
② Types QPP, QPPH, HQPP and HQPPH are special 2-pole configurations for metering equipment. Amperage range = 125-225A, width = 4 in.

③ Single pole breakers available in ratings 10-70A only.  
④ 125A, 2-pole 120/240V AC only.  
⑤ Not applicable to types QPP and QPPH.  
⑥ Single pole circuit breakers available in ratings 15-70A only.

125A available as a 2-pole only.  
⑧ Not applicable to type HQPP and HQPPH.  
⑨ Fits only Siemens EQIII load centers. Breaker is 2 or 3 poles wide.

# Molded Case Circuit Breakers

## Panelboard Mounting with INSTA-WIRE

*Selection*

### 1-Pole Bolt-On (120V AC)<sup>⑤</sup>

Continuous Current Rating @ 40° C	Type BL <sup>①</sup>	Type BLH <sup>①</sup>	Type HBL
	10,000A IR	22,000A IR	65,000A IR
	Catalog Number	Catalog Number	Catalog Number
10 <sup>②</sup>	B110	—	—
15	B115 <sup>④</sup>	B115H <sup>④</sup>	B115HH <sup>⑥</sup>
20	B120 <sup>④</sup>	B120H <sup>④</sup>	B120HH <sup>⑥</sup>
25	B125	B125H	B125HH■
30	B130	B130H	B130HH
35	B135	B135H■	B135HH■
40	B140	B140H	B140HH
45	B145■	B145H■	B145HH■
50	B150	B150H	B150HH■
60	B160	B160H■	B160HH■
70	B170	B170H■	B170HH■

### 2-Pole Bolt-On (Common-Trip 120/240V AC)<sup>④</sup>

10	B210	—	—
15	B215	B215H	B215HH
20	B220	B220H	B220HH
25	B225	B225H■	B225HH■
30	B230	B230H	B230HH
35	B235	B235H■	B235HH■
40	B240	B240H	B240HH
45	B245	B245H■	B245HH■
50	B250	B250H	B250HH
60	B260	B260H	B260HH
70	B270	B270H■	B270HH■
80	B280	B280H■	B280HH■
90	B290	B290H■	B290HH■
100	B2100	B2100H	B2100HH
110	B2110■	B2110H■	B2110HH■
125	B2125	B2125H	B2125HH■

### 2-Pole Bolt-On (Common-Trip 240V AC)<sup>③⑥⑩</sup>

15	B215R	—	—
20	B220R	—	—
30	B230R	—	—
40	B240R■	—	—
50	B250R	—	—
60	B260R	—	—
70	B270R■	—	—
80	B280R■	—	—
90	B290R■	—	—
100	B2100R■	—	—

### 3-Pole Bolt-On (Common-Trip 240V AC)<sup>⑦</sup>

15	B315	B315H	B315HH
20	B320	B320H	B320HH
25	B325	B325H	B325HH■
30	B330	B330H	B330HH
35	B335	B335H■	B335HH■
40	B340	B340H	B340HH
45	B345	B345H■	B345HH■
50	B350	B350H	B350HH
60	B360	B360H	B360HH
70	B370	B370H	B370HH
80	B380	B380H■	B380HH
90	B390	B390H■	B390HH
100	B3100	B3100H	B3100HH

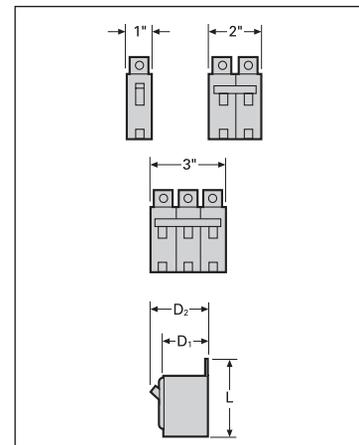
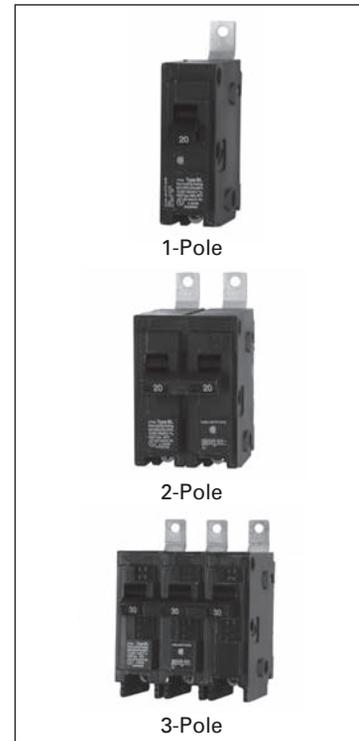
### BL/BLH/HBL Internal Accessories

Description	Catalog Number	Field/Factory Installed
120V Shunt Trip	add suffix...00S01■	Factory
24V Shunt Trip	add suffix...00S07■	Factory
120V Auxiliary Switch	add suffix...01■ <sup>②</sup>	Factory

### Modifications

Description	Catalog Number
400Hz Calibration	add suffix...Y <sup>⑧</sup>
Marine 50°C Ambient Calibration	add suffix...M
Fungus Proofing	add suffix...F

For external accessories, please refer to page 7-93



Breaker Type	Amperes	Dimensions		
		L	D1	D2
BL, BLH	15-50	3 <sup>3</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>16</sub>	3
BL, BLH	55-125	3 <sup>3</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>16</sub>	3
HBL	15-125	3 <sup>3</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>16</sub>	3

■ Built to order. Allow 2-3 weeks for delivery  
 ⑤ UL Listed for use with 60/75° wire through 40 amps, UL listed for use with 75° wire only for 50 amps and above, HACR rated. 120V AC Fluorescent Lighting.

① 1A and 1B contacts.  
 ② UL Listed for use on 3-phase grounded "B" systems — 10,000 for this application.  
 ③ UL Listed for frequent switching applications (SWD).  
 ④ Shipped 12 per sleeve.

⑥ Shipped 6 per sleeve.  
 ⑦ Shipped 4 per sleeve.  
 ⑧ UL Listed 5KA IR.  
 ⑩ 10 Amp breaker does not have INSTA-WIRE.  
 ⑪ For 3 Phase Applications.

# Lug information

• Revised •  
08/02/13

## Mechanical Lug

*Selection*

For Use With Type(s)	Circuit Breaker Ampere Rating	Cables Per Lug	Lug Wire Range	Catalog Number
BQ, BQH, BQHF BQE, BQF, BL, BLH, HBL, HBQ Switching Neutrals BG, BLG	<b>Line Side</b>			
	15-40	1 1	#14-#6 AWG Cu #12-#6 AWG Al	TC1Q1 <sup>①②</sup>
	45-125	1 1	#8-#1 AWG Cu #6-#1/0 AWG Al	TA1Q1 <sup>②</sup>
	<b>Load Side</b>			
	15-20	1 1	#14-#10 AWG Cu #12-#10 AWG Al	Lugs are integral to Circuit Breaker
	25-35	1 1	#14-#6 AWG Cu #12-#6 AWG Al	
	40-50	1 1	#8-#6 AWG Cu #8-#4 AWG Al	
	55-70	1 1	#8-#4 AWG Cu #8-#2 AWG Al	
	80-100	1 1	#4-#1/0 AWG Cu #2-#1/0 AWG Al	
	110-125	1 1	#2-#1/0 AWG Cu #1/0-#2/0 AWG Al	
<b>Line Side (CQD, CQD6) &amp; Load Side</b>				
BQD, CQD BQD6, CQD6	15-40	1	#14-#6 AWG Cu #12-#6 AWG Al	Integral
	45-100	1	#8-#1 AWG Cu #6-#1/0 AWG Al	Integral
NGG, HGG, LGG	15-30	1	#14-#6 AWG Cu #12-#6 AWG Al	TC1Q1
	15-30	1	#14-#6 AWG Cu #12-#6 AWG Al	3TC1Q1 (pkg. of 3)
	35-125	1	#8-#1/0 AWG Cu #8-#2/0 AWG Al	3TC1GG20 (pkg. of 3)
	15-125	—	NUT KEEPER PLATE	TNKG3 <sup>③</sup> (pkg. of 3)
NEG, HEG	15-125	1	#14-3/0 AWG Cu	3TW1EG30 (pkg. of 3)
	15-125	1	#14-1/0 AWG Cu/Al	3TA1EG10 (pkg. of 3)
	15-125	1	#6-3/0 AWG Cu/Al	3TA1EG30 (pkg. of 3)
	15-125	—	Nut Keeper Kit (3-pole)	TNKE3 (pkg. of 3)
	15-125	—	Nut Keeper Kit (4-pole)	TNKE4 (pkg. of 4)

Connector wire ranges and cavities are established in conjunction with Table 6.1.4.2.1 of UL 489 standards.

**Note:**

(A) Molded case circuit breakers having a rated ampacity of 125 amperes or less are to be connected with 60 or 75°C wire. Circuit breakers having a rated ampacity greater than 125 amperes shall only be cabled with 75°C cable unless otherwise indicated on the circuit breaker label. Exceptions to this rule are outlined in article 110-14 C(1)(2) of the 2005 National Electrical Code.

(B) Connector wire ranges and cavities are established in conjunction with Table 6.1.4.2.1 of UL 489 standards.

① Lug is steel.

② Sold in package of six.

③ One nut keeper plate is required with each lug on the NGG breaker.

# Panelboards

## General Specifications

General

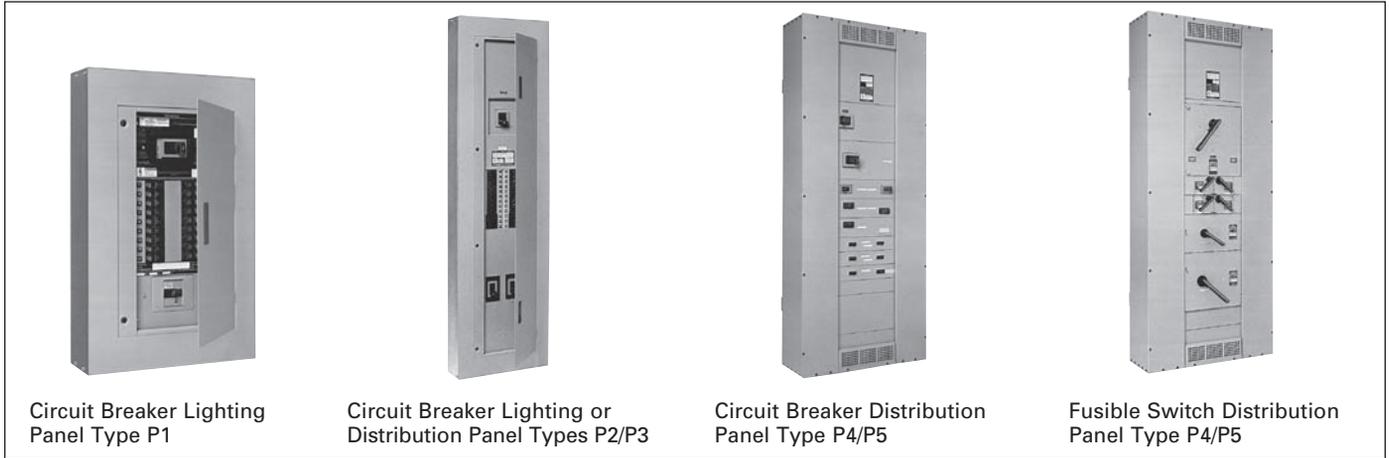
### Bussing Sequence

Interiors are designed to accommodate top or bottom feed. Regardless of which is specified, the uppermost pole is always on "A" phase; the second pole down is always on "B" phase, and the third pole down is always on "C" phase (assuming 3Ø panel).

As standard, branch breakers shall be mounted at the top of the panel with "spaces" at the bottom, regardless of the direction panel is fed.

All breakers have bolted connections except plug-in type. The panel design provides bracing up to 200,000A IR UL short circuit rating. Case-hardened, high performance, thread rolling screws are used on branch bus.

11  
PANELBOARDS



### Panelboard Ratings

Description	P1	P2	P3	P4	P5
<b>Max. Voltage</b>	480Y/277V AC Max. 250V DC Max	600V AC Max. 500V DC Max.	600V AC Max. 500V DC Max.	600V AC Max. 500V DC Max.	600V AC Max. 500V DC Max.
<b>System</b>	1-Phase, 2-wire 1-Phase, 3-wire 3-Phase, 3-wire 3-Phase, 4-wire	1-Phase, 2-wire 1-Phase, 3-wire 3-Phase, 3-wire 3-Phase, 4-wire	1-Phase, 2-wire 1-Phase, 3-wire 3-Phase, 4-wire 3-Phase, 3-wire	1-Phase, 3-wire 3-Phase, 4-wire 3-Phase, 3-wire	1-Phase, 3-wire 3-Phase, 4-wire 3-Phase, 3-wire
<b>Mains</b>					
Main Lugs	125A-400A	125A-600A	250A-800A	400A-1200A	800A-1200A
Main Breaker	100A-400A	100A-600A	225A-600A	400A-800A	800A-1200A
Main Switch	—	—	—	—	200A-1200A
<b>Circuits</b>	18, 30, 42	18, 30, 42, 54, 66 78, 90 ①	—	—	—
<b>Branch Ratings</b>	15-125A ②	15-400A	15-400A	15-800A MCCB 30-200A Fusible	15-1200A MCCB 30-1200 Fusible
<b>Branch Disconnect Devices</b>	BL, BLH, HBL, BQD, BQD6, BLE, BLEH, BLF, BLHF, BAF, BAFH, BGL, NGB ⑦	BL, BLH, HBL, BQD, BQD6, QJ2, HQJ2, QJ2H, HQJ2H ⑧, ED2, ED4, HED4, ED6, HHED6, BLE, BLEH, BLF, BLHF, BAF, BAFH, BGL, NGB	BL, BLH, HBL, BQD, BQD6, QJ2, HQJ2, QJ2H, HQJ2H ⑧, ED2, ED4, HED4, ED6, BLHF, BAF, BAFH, BGL, NGB, NEB, HEB	All 15-1200A MCCBs, VL MG at 800A and 30-200A VB switches	All 15-1200A MCCBs, 30-600A VB switches and 400-1200A HCP switches
<b>Subfeed Circuit Breakers ②③</b>	ED2, ED4, ED6, HED4, HED6, QJ2, QJH2, QJ2-H, FD6, HFD6, FXD6, HFXD6	JD6, HJD6, JXD6, HJXD6, FD6, HFD6, FXD6, HFXD6	JD6, HJD6, JXD6, HJXD6, FD6, HFD6, FXD6, HFXD6	—	—
<b>Enclosure Heights Inches – (mm)</b>	32, 38, 44 @250 A (813, 965, 1118) 56, 62, 68 @400 A (1422, 1575, 1727)	26, 32, 38, 44, 50, 56, 62, 68, 74 (660-1880)	56, 62, 68, 74, 80 (1422-2032)	60, 75, 90 (1524, 1905, 2286)	60, 75, 90 (1524, 1905, 2286)
<b>Standard Trims</b>	Fas-Latch – 1 Piece Surface or Flush	Fas-Latch – 1 Piece Surface or Flush	Fas-Latch – 1 Piece Surface or Flush	Four Piece ④ Surface or Flush	Four Piece ④ Surface or Flush

① Functional pricing is based on circuits shown. However, the panel can be figured with less circuits.  
② P1 can have 1 subfeed breaker. P2 and P3 can have up to (2) FD subfeed breakers.

③ JD and FD breakers are mounted vertical. Limitations apply.  
④ Trim ring provided for flush applications.  
⑤ A maximum of (4) QJ breakers may be mounted in a P2 Panel and are single mounted.

⑥ A maximum of (6) QJ breakers may be mounted in a P3 panel and are twin mounted.  
⑦ P1 panels with NGB breakers are limited to NGB branch devices only. BL and BQD frames may not be mixed in this panel type.

# Panelboards

## Panelboard Replacement, Modification, and Additions

*Selection*

S1/S2 Panels—All the P1 panel kits for 250 amp and below panels will work for 250 amp maximum S1/S2 panels.

### 400/600 Amp S1/S2 and All SE Panels

#### Lug Kits — Main or Feed Thru

Ampere Rating	Material	Wire Range	Service	Catalog Number
125A/250A	Al/Cu	(2) 1/0–250 kcmil	1-Phase	<b>MLKA1</b>
125A/250A	Al/Cu	(2) 1/0–250 kcmil	3-Phase	<b>MLKA3</b>
400A/600A	Al/Cu	(2) #4–250 kcmil or (1) 3/0–500 kcmil	1-Phase	<b>SMLKA1</b>
400A/600A	Al/Cu	(2) #4–250 kcmil or (1) 3/0–500 kcmil	3-Phase	<b>SMLKA3</b>

#### Breaker Mounting Kits

Ampere Rating	Breaker Types	Service	Catalog Number
125A	ED2, ED4, ED6, HED4, HED6, HHED6	1-Phase	<b>SMBKED1</b>
225A	ED2, ED4, ED6, HED4, HED6, HHED6	3-Phase	<b>SMBKED3</b>
225A	QJ2, HQJ2, HQJ2H <sup>Ⓞ</sup>	1-Phase	<b>SMBKQJ1</b>
225A	QJ2, HQJ2, HQJ2H <sup>Ⓞ</sup>	3-Phase	<b>SMBKQJ3</b>
250A	FXD6, FD6, HFXD6, HFD6	1-Phase	<b>SMBKFD1</b>
250A	FXD6, FD6, HFXD6, HFD6	3-Phase	<b>SMBKFD3</b>
400A	JD6, JXD6, HJD6, HJXD6	1-Phase	<b>SMBKJD1</b>
400A	JD6, JXD6, HJD6, HJXD6	3-Phase	<b>SMBKJD3</b>
600A	LD6, LXD6, HLD6, HLXD6	1-Phase	<b>SMBKLD1</b>
600A	LD6, LXD6, HLD6, HLXD6	3-Phase	<b>SMBKLD3</b>

#### Neutral Kits

Ampere Rating	Description	Catalog Number
250A max.	30/42 circuit 200% neutral kit	<b>2NLK2</b>
400/600A max.	42 circuit 200% neutral kit	<b>2NLK1</b>

Other applications:

For P4/S4 and 10" deep SPP panels see page 11-53 for branch breaker mounting kits.

For P5/S5 and 12.75" deep SPP panels see page 11-67 for branch breaker mounting kits.

For P4/F1 and 10" deep FPP panels see page 11-53 for branch fusible switch mounting kits.

For P5/F2 and 12.75" deep FPP panels see page 11-67 for branch fusible switch mounting kits.

For Series 5, Series 6, CDP6 and VB 6 panels as well as FC20, FCI, FCII, SB1, SB2 and SB3 distribution switchboards, see page 12-32 for branch device mounting kits.

<sup>Ⓞ</sup> QJ mounting kit is for subfeed breakers only, not main breaker.  
The kit contains mountings for (2) breakers.

# Panelboards

## Warehouse Stock/Unassembled

*Selection*

### Main Breaker Mounting Kits w/Breakers for P1 panels

Catalog Number	Description	Ratings	
		240V	480V
MBKED3100	Kit w/3-pole ED4 100A breaker	65KA	18KA
MBKED3125	Kit w/3-pole ED4 125A breaker	65KA	18KA
MBKQJ1125	Kit w/2-pole QJ2 125A breaker	10KA	—
MBKQJ1150	Kit w/2-pole QJ2 150A breaker	10KA	—
MBKQJ1175	Kit w/2-pole QJ2 175A breaker	10KA	—
MBKQJ1200	Kit w/2-pole QJ2 200A breaker	10KA	—
MBKQJ1225	Kit w/2-pole QJ2 225A breaker	10KA	—
MBKQJ3125	Kit w/3-pole QJ2 125A breaker	10KA	—
MBKQJ3150	Kit w/3-pole QJ2 150A breaker	10KA	—
MBKQJ3175	Kit w/3-pole QJ2 175A breaker	10KA	—
MBKQJ3200	Kit w/3-pole QJ2 200A breaker	10KA	—
MBKQJ3225	Kit w/3-pole QJ2 225A breaker	10KA	—
MBKQJ1125H	Kit w/2-pole QJ2H 125A breaker	42KA	—
MBKQJ1150H	Kit w/2-pole QJ2H 150A breaker	42KA	—
MBKQJ1175H	Kit w/2-pole QJ2H 175A breaker	42KA	—
MBKQJ1200H	Kit w/2-pole QJ2H 200A breaker	42KA	—
MBKQJ1225H	Kit w/2-pole QJ2H 225A breaker	42KA	—
MBKQJ3125H	Kit w/3-pole QJ2H 125A breaker	42KA	—
MBKQJ3150H	Kit w/3-pole QJ2H 150A breaker	42KA	—
MBKQJ3175H	Kit w/3-pole QJ2H 175A breaker	42KA	—
MBKQJ3200H	Kit w/3-pole QJ2H 200A breaker	42KA	—
MBKQJ3225H	Kit w/3-pole QJ2H 225A breaker	42KA	—
MBKFD3150	Kit w/3-pole FXD6 150A breaker	65KA	35KA
MBKFD3175	Kit w/3-pole FXD6 175A breaker	65KA	35KA
MBKFD3200	Kit w/3-pole FXD6 200A breaker	65KA	35KA
MBKFD3225	Kit w/3-pole FXD6 225A breaker	65KA	35KA
MBKFD3250	Kit w/3-pole FXD6 250A breaker	65KA	35KA
MBKJD1300	Kit w/2-pole JXD6 300A breaker	65KA	—
MBKJD3300	Kit w/3-pole JXD6 300A breaker	65KA	35KA
MBKJD1400 <sup>①</sup>	Kit w/2-pole JXD6 400A breaker	65KA	35KA
MBKJD3400 <sup>①</sup>	Kit w/3-pole JXD6 400A breaker	65KA	35KA

■ Built to order.

① 400 Amp Kit used as Main and for top feed application only. For bottom feed, order breaker, bracket and lugs separately.

### Branch Breakers Selection for P1

#### Selection Guide

1. Select breaker type.
2. Select required amperage.
3. Select number of poles.
4. Select branch breaker catalog numbers.

5. Select ground bar and filler plates. (See replacement parts & accessories on Page 11-11.)

### AFCI – Combination Type Arc Fault Circuit Interrupter

Breaker Type	Ampere Rating	Catalog Number	Interrupting Ratings (kA) RMS Symmetrical Amperes		
			Volts AC		
			120	120/240	240
BAF2 1-pole	15	BA115AFC	10	—	—
	20	BA120AFC	10	—	—
BAFH2 1-pole	15	BA115AFCH	22	—	—
	20	BA120AFCH	22	—	—
HBAF2 1-pole	15	BA115AFCHH	65	—	—
	20	BA120AFCHH	65	—	—

### AFCI – Branch Feeder Type Arc Fault Circuit Interrupter

Breaker Type	Ampere Rating	Catalog Number	Interrupting Ratings (kA) RMS Symmetrical Amperes		
			Volts AC		
			120	120/240	240
BAF2 1-pole	15	BA115AF	10	—	—
	20	BA120AF	10	—	—
BAFH2 1-pole	15	BA115AFH	22	—	—
	20	BA120AFH	22	—	—
HBAF2 1-pole	15	BA115AFHH	65	—	—
	20	BA120AFHH	65	—	—

### Switching Neutrals

Breaker Type	Ampere Rating	Catalog Number	Interrupting Ratings (kA) RMS Symmetrical Amperes		
			Volts AC		
			120	120/240	240
BG 2-Wire Common Trip	15	BG215■	10	—	—
	20	BG220■	10	—	—
	30	BG230■	10	—	—
BG 3-Wire Common Trip	15	BG315■	—	10	—
	20	BG320■	—	10	—
	30	BG330■	—	10	—

# Panelboards

## Warehouse Stock/Unassembled

Selection

### Branch Breakers Selection for P1

#### Selection Guide

1. Select breaker type.
2. Select required amperage.
3. Select number of poles.
4. Select branch breaker catalog numbers.
5. Select ground bar and filler plates. (See replacement parts & accessories on Page 11-11.)

#### BL Branch Breakers – 10,000A IR<sup>②</sup>

Amp Rating	1-Pole 120/240V	2-Pole 120/240V	2-Pole 240V	3-Pole 240V
15	B115	B215	B215R	B315
20	B120	B220	B220R	B320
25	B125	B225	B225R	B325
30	B130	B230	B230R	B330
35	B135	B235	B235R	B335
40	B140	B240	B240R	B340
45	B145	B245	B245R	B345
50	B150	B250	B250R	B350
55	B155	—	—	—
60	B160	B260	B260R	B360
70	B170	B270	B270R	B370
80	—	B280	B280R	B380
90	—	B290	B290R	B390
100	—	B2100	B2100R	B3100
110	—	B2110	—	—
125	—	B2125	—	—

#### BLH Branch Breakers – 22,000A IR<sup>②</sup>

Amp Rating	1-Pole 120/240V	2-Pole 120/240V	3-Pole 240V
15	B115H	B215H	B315H
20	B120H	B220H	B320H
25	B125H	B225H	B325H
30	B130H	B230H	B330H
40	B140H	B240H	B340H
50	B150H	B250H	B350H
55	B155H	—	—
60	B160H	B260H	B360H
70	B170H	B270H	B370H
80	—	B280H	B380H
90	—	B290H	B390H
100	—	B2100H	B3100H

#### BQD Branch Breakers – 14,000A IR Max. @ 480/277 Vac / 65,000A IR max. @ 240 Vac<sup>③</sup>

Amp Rating	1-Pole 277V	2-Pole 480Y/277V	3-Pole 480Y/277V
15	BQD115	BQD215	BQD315
20	BQD120	BQD220	BQD320
25	BQD125	BQD225	BQD325
30	BQD130	BQD230	BQD330
35	BQD135	BQD235	BQD335
40	BQD140	BQD240	BQD340
45	BQD145	BQD245	BQD345
50	BQD150	BQD250	BQD350
60	BQD160	BQD260	BQD360
70	BQD170	BQD270	BQD370
80	BQD180	BQD280	BQD380
90	BQD190	BQD290	BQD390
100	BQD1100	BQD2100	BQD3100

#### HBL Branch Breakers – 65,000A IR<sup>②</sup>

Amp Rating	1-Pole 120/240V	2-Pole 120/240V	3-Pole 240V
15	B115HH	B215HH	B315HH
20	B120HH	B220HH	B320HH
30	B130HH	B230HH	B330HH
40	B140HH	B240HH	B340HH
50	B150HH	B250HH	B350HH
60	—	B260HH	B360HH
70	—	B270HH	B370HH
80	—	B280HH	B380HH
90	—	B290HH	B390HH
100	—	B2100HH	B3100HH

#### GFCI Personnel Protection (5MA)

Breaker Type	Ampere Rating	Catalog Number	Interrupting Ratings (kA) RMS Symmetrical Amperes		
			Volts AC		
			120	120/240	240
BLF 1-Pole	15	BF115	10	—	—
	20	BF120	10	—	—
	25	BF125■	10	—	—
	30	BF130	10	—	—
BLF 2-Pole	15	BF215	—	10	—
	20	BF220	—	10	—
	30	BF230	—	10	—
	40	BF240■	—	10	—
	50	BF250■	—	10	—
	60	BF260■	—	10	—
BLHF 1-Pole	15	BF115H	22	—	—
	20	BF120H	22	—	—
	30	BF130H■	22	—	—
BLHF 2-Pole	15	BF215H■	—	22	—
	20	BF220H■	—	22	—
	30	BF230H■	—	22	—
	40	BF240H■	—	22	—
	50	BF250H■	—	22	—
	60	BF260H■	—	22	—

#### NGB Branch Breakers – 25,000 A IR Max. @ 480/277V AC / 100,000 A IR @ 240V AC

Amp Rating	1-pole 277V	2-pole 480Y/277V	3-pole 480Y/277V
15	NGB1B015B	NGB2B015B	NGB3B015B
20	NGB1B020B	NGB2B020B	NGB3B020B
25	NGB1B025B	NGB2B025B	NGB3B025B
30	NGB1B030B	NGB2B030B	NGB3B030B
35	NGB1B035B	NGB2B035B	NGB3B035B
40	NGB1B040B	NGB2B040B	NGB3B040B
45	NGB1B045B	NGB2B045B	NGB3B045B
50	NGB1B050B	NGB2B050B	NGB3B050B
60	NGB1B060B	NGB2B060B	NGB3B060B
70	NGB1B070B	NGB2B070B	NGB3B070B
80	NGB1B080B	NGB2B080B	NGB3B080B
90	NGB1B090B	NGB2B090B	NGB3B090B
100	NGB1B100B	NGB2B100B	NGB3B100B
110	NGB1B110B	NGB2B110B	NGB3B110B
125	NGB1B125B	NGB2B125B	NGB3B125B

■ Built to order. Allow 2-3 weeks for delivery.  
⑥ HACR rated.

② To add shunt trip to BL breakers, see page 7-29 Accessories.

③ To add shunt trip to BQD breakers, see page 7-36 Accessories.